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doi: 10.1007/s11036-017-0838-5.
[https://doi.org/10.1007/s11036-017-0838-5](https://doi.org/10.1007/s11036-017-0838-5).

**ABSTRACT:** With the fast proliferation of the smartphone usage, the mobile traffic has far more exceeded than the capacity of the LTE-A (Long Term Evolution-Advanced) networks. Hence, the Mobile Network Operators (MNOs) are looking for alternative opportunities to handle the network traffic instead of deploying cost-incurring classical devices. Mobile data offloading, which refers to diverting traffic from cellular networks to other complementary technologies such as WiFi access points offer to be a promising solution. APs provides better data services due to the small coverage area (100 m) and improves battery life. WiFi offloading, when implemented using Software-Defined Networking (SDN) helps in the dynamic management of a complex Heterogeneous Networks (HetNets). In this paper, we propose a novel SDN-Assisted Learning Approach (SALA) to provide better Quality of Experience (QoE) for both the cell edge users and intensive network users at the LTE-A base station using the unlicensed spectrum of the APs. We then verify our novel SALA framework against simulations based on real-world usage, and offer insight to the expected offloading gains in practice.

doi: 10.1109/MWC.2017.8014286.
[http://dx.doi.org/10.1109/MWC.2017.8014286](http://dx.doi.org/10.1109/MWC.2017.8014286).

**ABSTRACT:** The articles in this special section focus on the design of 5G mobile communication networks that deploy the development of green and sustainable networking and computing protocols.


**ABSTRACT:** The increasing usage of smart devices and the penetration of mobile phones in the low-end markets have outpaced the average growth of this wireless mobile communications industry due to which the world is witnessing the demands of burgeoning data traffic, proliferating bandwidth and energy efficient wireless communication technologies. Realizing these increased demands, the research on the Fifth Generation (5G) mobile communication technology has already been initiated by research institutes and industries worldwide. This paper gives a brief overview of some 5G technologies along with their possible challenges and the applications.

Ferdouse, Lilatul, Waled Ejaz, Kaamran Raahemifar, et al. "*Interference and Throughput Aware Resource Allocation for Multi-Class D2D in 5G Networks.*" *IET Communications*, 11, no. 8 (2017): 1241-1250

**ABSTRACT:** This study examines subcarrier and optimal power allocation in orthogonal frequency division multiple access based 5G device-to-device (D2D) networks. To improve spectrum efficiency, D2D users share same subcarriers with the legacy users using underlay approach. In this approach, it is challenging to design an efficient subcarrier and power allocation method for
D2D networks which guarantees the quality of service requirements of legacy users. Therefore, the key constraint is to check the interference condition among D2D and legacy users while allocating the same resources to D2D users. In this study, the authors propose a throughput efficient subcarrier allocation (TESA) and geometric water-filling based optimal power allocation (GWFOPA) method for multi-class cellular D2D systems. First, the TESA method selects subcarriers and allocates power equally for D2D users according to their service classes while maintaining interference and data rate constraints. Then, the GWFOPA method is applied to optimise power in a computationally effective way. The objective of TESA and GWFOPA method is to maximise the data rate of each class while maintaining interference constraint and fairness among the D2D users. Finally, the authors present simulation results to evaluate performance of TESA and GWFOPA in terms of throughput, user data rate, and fairness.


ABSTRACT: Purpose Proponents of 5G predict a huge market for 5G goods and services with millions of new jobs being created. The purpose of this paper is to make a realistic assessment of the 5G initiative, with a focus on Europe. Design/methodology/approach The paper reviews the technical, economic and policy literature to analyse the case for 5G in Europe. Findings The 5G initiative in Europe, as well as globally, has so far failed to assess objectively the future needs of its customers, whether consumer or business, to articulate a set of sound business cases. Originality/value There is little independent assessment of 5G in the academic literature. The paper makes an original contribution through questioning the dominant supply-driven industry perspective.


ABSTRACT: 5G machine type communication (MTC) networks will be formed of dense, heterogeneous clusters of wireless devices serving different application verticals, such as urban service enablers, body area networks, industrial and home automation and entertainment. They will use a large number of existing and emerging wireless technologies served by advanced 5G gateways or Internet of Things eNodeBs and controlled through software interfaces by control and application programs, reducing the need for on-site, manual reconfigurations. In this paper, we focus on the software interfaces that enable the control of 5G MTC networks and propose a functional split of upstream and downstream functions. We show similarities with application programming interface (API) development in object-oriented (OO) languages and with representation state transfer (RESTful) principles. We provide a reference implementation using RESTful functionality and an example control application that performs localization.
ABSTRACT: 5G machine type communication (MTC) networks will be formed of dense, heterogeneous clusters of wireless devices serving different application verticals, such as urban service enablers, body area networks, industrial and home automation and entertainment. They will use a large number of existing and emerging wireless technologies served by advanced 5G gateways or Internet of Things eNodeBs and controlled through software interfaces by control and application programs, reducing the need for on-site, manual reconfigurations. In this paper, we focus on the software interfaces that enable the control of 5G MTC networks and propose a functional split of upstream and downstream functions. We show similarities with application programming interface (API) development in object-oriented (OO) languages and with representation state transfer (RESTful) principles. We provide a reference implementation using RESTful functionality and an example control application that performs localization.

http://dx.doi.org/10.1109/MCE.2017.2684938.

ABSTRACT: Fifth-generation (5G) sounds like the successor to fourth-generation (4G) cellular telephone technology, and that is the intent. However, while the progression from second generation to third generation, to 4G, and now to 5G seems simple, the story is more nuanced. At the Consumer Electronics (CE) Society meeting in January 2017, I had a chance learn more about 5G (not to be confused with 5 GHz Wi-Fi) and another standard, Advanced Television Systems Committee (ATSC) 3.0, which is supposed to be the next standard for broadcast TV. The contrast between the approach taken with these standards and the way the Internet works offers a pragmatic framework for a deeper understanding of engineering, economics, and more. One hint that something is wrong in 5G land came when I was told that 5G was necessary for the Internet of Things (IoT). This is a strange claim considering how much we are already doing with IoT devices.

http://dx.doi.org/10.1016/j.telpol.2017.06.003.

ABSTRACT: Despite being still under development, it is envisaged that 5G networks will provide a 'fibre-like' experience to mobile users. As such, they are expected to accommodate services with very different requirements in terms of latency, bandwidth and reliability, among others, for the vertical sectors. However, the European Union has just approved the Telecommunications Single Market Regulation, which enshrines the network neutrality principle and guarantees that 'all traffic through the Internet is treated equally'. This article explores the potential conflict between net neutrality regulation and future 5G services, particularly regarding network virtualisation. We present a discussion on the challenges of building net neutrality upon judgements on whether traffic optimisation is objectively necessary. This proves complex in a technological environment that envisions network 'slices' created and priced on-demand according to the Quality of Service (QoS) required by specific applications at any given time. In addition, we argue that the 'anything-as-a-service' paradigm might turn into an important source of innovation for the future Internet infrastructure layer, and thus for the ecosystem as a whole. ".

https://doi.org/10.1016/j.telpol.2017.06.003.

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net neutrality regulation and future 5G services, particularly regarding network virtualisation. We present a discussion on the challenges of building net neutrality upon judgements on whether traffic optimisation is objectively necessary. This proves complex in a technological environment that envisions network 'slices' created and priced on-demand according to the Quality of Service (QoS) required by specific applications at any given time. In addition, we argue that the 'anything-as-a-service' paradigm might turn into an important source of innovation for the future Internet infrastructure layer, and thus for the ecosystem as a whole.

http://dx.doi.org/10.1109/ACCESS.2017.2711784.

ABSTRACT: In order to meet the intense user demands, the 5G networks are evolving, and will be available by 2020. The unfolding cellular technology has raised the energy consumption in mobile networks with the carbon footprint surging to alarming rates. This is causing an adverse effect on the environment and human health. Addressing these aspects, this paper presents a survey on techniques for making the next generation cellular networks GREEN. A number of technologies form a part of the 5G networks, in order to support the drastic user demands, and are receiving substantial attention from the perspective of green communication. These include device-to-device communication, spectrum sharing, ultra dense networks, massive MIMO, and the Internet of Things. Also, a prime concern in the current scenario is the battery life of the mobile terminals. For enhancing the battery life of the user terminals, a proposal is given in this paper, with spectrum sharing as its basis, to overcome the energy crunch. Major research challenges have been discussed, and the ongoing projects and standardization activities also stated in this paper.


ABSTRACT: Thanks to the of mobile devices, the multitude of information to be transferred and high data rate, a new generation of cellular networks referred to as 5G will be developed in near future. It is expected that 5G networks will provide fast and on-time accessibility of information at any time and place. For achieving these objectives, cellular networks have to be improved significantly. The purpose of the present study was to investigate the architecture of 5G networks which includes the followings: device-to-device communication (D2D), massive multiple input and multiple output (MIMO), millimeter wave communications, cognitive radio (CR), etc. Also, effective and efficient technologies such as Network Function Virtualization (NFV), Fast caching, Self-Interference Cancellation (SIC) and Downlink and Uplink Decoupling (DUD), etc. are discussed and investigated in this study so as to optimize the architectures which can meet the needs and expectations of users and operators in future. In this study, an attempt was made to examine different limitations which hinder the development of this network. Various challenges were identified and the possible solutions have been highlighted. At the end, possible and probable solutions have been explained. Moreover, methods and directions for further research on 5G networks have been suggested.

http://dx.doi.org/10.1109/CC.2017.7961374.

ABSTRACT: Due to 5G's stringent and uncertainty traffic requirements, open ecosystem would be one inevitable way to develop 5G. On the other hand, GPP based mobile communication becomes appealing recently attributed to its striking advantage in flexibility and re-configurability. In this paper, both the advantages and challenges of GPP platform are detailed analyzed. Furthermore, both GPP based software and hardware architectures for open 5G are presented and the performances of real-time signal processing and power consumption are also evaluated. The
evaluation results indicate that turbo and power consumption may be another challengeable problem should be further solved to meet the requirements of realistic deployments.

doi: 10.1109/MCOM.2017.1600936.
http://dx.doi.org/10.1109/MCOM.2017.1600936.
ABSTRACT: The upcoming 5G ecosystem is envisioned to build business-driven network slices to accommodate the different needs of divergent service types, applications, and services in support of vertical industries. In this article, we describe the network slicing concept by unveiling a novel network slicing architecture for integrated 5G communications. Further, we demonstrate its realization for the case of evolved LTE using state-of-the-art technologies. Finally, we elaborate on the LTE-specific requirements toward 5G, and point out existing challenges and open issues.

doi: 10.1007/s11277-017-4421-y.
https://doi.org/10.1007/s11277-017-4421-y.
ABSTRACT: 5G network technologies are generally expected to empower wireless communications to enable communication for anybody; of anything and anywhere, i.e. to finally fulfill the mobility promises made since the 2G introduction in the early 1990’s. A generally accepted technology vision is that new services and applications especially related to social networking, and machine-to-machine communications will be accelerated, underlining the shift to a more user centric application-driven connectivity, transparently deployed over various technologies and infrastructures by users and devices. A key challenge for realizing the vision is, however, "How will the technology system handle user data?" For the user centric and data centric 5G technologies to be accepted and function as a viable business model, user trust in their data privacy is paramount. Today personal data have become an economic asset belonging to the service providers whose business case often includes and is dependent on the use and selling of such data. The aim of the paper is to discuss user privacy concerns in today’s and tomorrow’s information society with a focus on economic aspects. The paper will further discuss the ‘privacy economy’ that will enable new business models focused on the economic value of private data.

ABSTRACT: A key concern with the Licensed-shared access (LSA) approach currently being developed by European regulators is that leaving incumbents and secondary users to agree to bilateral arrangements may be insufficient to incentivise an optimal level of sharing. We propose an efficient auction mechanism to incentivise incumbent users to offer shared access to the spectrum they use. The mechanism consists of two stages. In the first stage, LSA licences are auctioned. In the second stage, the incumbent is provided with a choice of either granting access under an LSA agreement to the winner of the auction or not. If the incumbent accepts, its existing licence fee is reduced, whereas, if it rejects, its existing licence fee is increased. The change in the licence fee is such that a rational incumbent always opts to share when it is efficient to do so, i.e. when the cost of sharing is below the value to the secondary user. We also explore how this simple mechanism can be extended to situations in which there is more than one incumbent in a band. Our proposed approach involves package (combinatorial) bidding and linear reference prices.

ABSTRACT: Despite 5G still being embryonic in its development, there is already a quest for


evidence to support decision-making in government and industry. Although there is still considerable technological, economic and behavioural uncertainty, exploration of how the potential rollout may take place both spatially and temporally is required for effective policy formulation. Consequently, the cost, coverage and rollout implications of 5G networks across Britain are explored by extrapolating 4G LTE and LTE-Advanced characteristics for the period 2020–2030. We focus on ubiquitous ultrafast broadband of 50 Mbps and test the impact of annual capital intensity, infrastructure sharing and reducing the end-user speed in rural areas to either 10 or 30 Mbps. For the business-as-usual scenario we find that 90% of the population is covered with 5G by 2027, but coverage is unlikely to reach the final 10% due to exponentially increasing costs. Moreover, varying annual capital intensity or deploying a shared small cell network can greatly influence the time taken to reach the 90% threshold, with these changes mostly benefiting rural areas. Importantly, simply by integrating new and existing spectrum, a network capable of achieving 10 Mbps per rural user is possible, which is comparable to the UK’s current fixed broadband Universal Service Obligation. We contribute to the literature by quantifying the effectiveness of the spatial and temporal rollout of 5G under different policy options. ".

doi: 10.1109/MWC.2017.1600343.
http://dx.doi.org/10.1109/MWC.2017.1600343.

ABSTRACT: The stringent requirements of a 1000x increase in data traffic and 1 ms round-trip latency have made limiting the potentially tremendous ensuing energy consumption one of the most challenging problems for the design of the upcoming 5G networks. To enable sustainable 5G networks, new technologies have been proposed to improve the system energy efficiency, and alternative energy sources are introduced to reduce our dependence on traditional fossil fuels. In particular, various 5G techniques target the reduction of the energy consumption without sacrificing the quality of service. Meanwhile, energy harvesting technologies, which enable communication transceivers to harvest energy from various renewable resources and ambient radio frequency signals for communication, have drawn significant interest from both academia and industry. In this article, we provide an overview of the latest research on both green 5G techniques and energy harvesting for communication. In addition, some technical challenges and potential research topics for realizing sustainable green 5G networks are also identified.

Bibliography on “accessibility and ICTs”

doi: 10.1016/j.chb.2017.05.014.
http://dx.doi.org/10.1016/j.chb.2017.05.014.

ABSTRACT: The explosive growth of mobile technology and developments in cloud computing have provided new and powerful possibilities for mobile learning (m-learning). M-learning, which is an influential trend in the educational process, promotes learning accessibility and flexibility for a substantial and valuable segment of society: students with dyslexia. Although there is a substantial amount of research that discusses the use of m-learning by students with dyslexia, there are many gaps that must still be addressed. One substantial issue pertains to the lack of an effective, multimodal, human–computer user interface m-learning tool that combines different input and output modes based on each student’s learning style. In this paper, the authors develop a novel, interactive, multimodal interfaced, cloud-based m-learning tool with which students can naturally interact based on their preferred learning styles. This multimodal interface tool enhances the learning capabilities of students with dyslexia by almost 30% by customizing their multimodal functionality to meet their learning needs. ".
http://dx.doi.org/10.1145/3075222.
ABSTRACT: Audio-only interfaces, facilitated through text-to-speech screen reading software, have been the primary mode of computer interaction for blind and low-vision computer users for more than four decades. During this time, the advances that have made visual interfaces faster and easier to use, from direct manipulation to skeuomorphic design, have not been paralleled in nonvisual computing environments. The screen reader-dependent community is left with no alternatives to engage with our rapidly advancing technological infrastructure. In this article, we describe our efforts to understand the problems that exist with audio-only interfaces. Based on observing screen reader use for 4 months at a computer training school for blind and low-vision adults, we identify three problem areas within audio-only interfaces: ephemerality, linear interaction, and unidirectional communication. We then evaluated a multimodal approach to computer interaction called the Tangible Desktop that addresses these problems by moving semantic information from the auditory to the tactile channel. Our evaluation demonstrated that among novice screen reader users, Tangible Desktop improved task completion times by an average of 6 minutes when compared to traditional audio-only computer systems.

http://dx.doi.org/10.1145/3075300.
ABSTRACT: We describe two experiments with a system designed to facilitate the use of mobile optical character recognition (OCR) by blind people. This system, implemented as an iOS app, enables two interaction modalities (autoshot and guidance). In the first study, augmented reality fiducials were used to track a smartphone's camera, whereas in the second study, the text area extent was detected using a dedicated text spotting and text line detection algorithm. Although the guidance modality was expected to be superior in terms of faster text access, this was shown to be true only when some conditions (involving the user interface and text detection modules) are met. Both studies also showed that our participants, after experimenting with the autoshot or guidance modality, appeared to have improved their skill at taking OCR-readable pictures even without use of such interaction modalities.

https://doi.org/10.1007/s10209-016-0504-x.
ABSTRACT: In Brazil, there are approximately 9.7 million inhabitants who are deaf or hard of hearing. Moreover, about 30% of the Brazilian deaf community is illiterate in Brazilian Portuguese due to difficulties to offer deaf children an inclusive environment based on bilingual education. Currently, the prevailing teaching practice depends heavily on verbal language and on written material, making the inclusion of the deaf a challenging task. This paper presents the author’s approach for tackling this problem and improving deaf students’ accessibility to written material in order to help them master Brazilian Portuguese as a second language. We describe an ongoing project aimed at developing an automatic Brazilian Portuguese-to-Libras translation system that presents the translated content via an animated virtual human, or avatar. The paper describes the methodology adopted to compile a source language corpus having the deaf student needs in central focus. It also describes the construction of a parallel Brazilian Portuguese/Brazilian Sign Language (Libras) corpus based on motion capture technology. The envisioned translation architecture includes the definition of an Intermediate Language to drive the signing avatar. The results of a preliminary assessment of signs intelligibility highlight the application potential.

Duplaga, Mariusz. "Digital Divide among People with Disabilities: Analysis of Data from a Nationwide Study for Determinants of Internet use and Activities Performed Online."

ABSTRACT: Introduction The Internet is both an opportunity as well as a challenge for people with disabilities. However, this segment of the population is usually indicated among social groups experiencing digital divide. The study is focused on the analysis of factors determining Internet usage and undertaking specific activities online among people with disabilities based on a nationwide study performed in 2013 in Poland. Methods Secondary analysis was performed on the data of persons who declared disability status in 2013 “Social Diagnosis” study. Multivariate logistic regression models were developed for the use of the Internet and performing three types of activities online. Results Among 3,556 respondents with disability 51.02% were females, 25.19% 65 years of age and over and 33.05% were Internet users. The predictors of Internet usage included the degree of disability, place of residence, level of education, marital status, occupational status, net income, use of health care service and the use of mobile phone. The odds ratio that a person with disability belonging to the oldest category will use the Internet was only 0.04 (95% CI 0.02-0.09), when compared to the youngest category. The odds that a person with disability from the highest category of education will use the Internet were 18 times higher than in the case of persons with only basic education (OR 18.17, 95% CI 11.70-28.21). Common predictors of online activities (accessing websites of public institutions, checking and sending emails, publishing own content on the Internet) included age category and net income. Conclusions People with disabilities in Poland are facing a significant digital divide. The factors determining the use of the Internet in this group are similar to those of the general population. On the other hand, people with disabilities who are active online, access diversified types of services including presentation of their own content online.


ABSTRACT: The paper addresses two significant and growing trends: knowledge work and population ageing. The population pyramid inversion brings important changes for society as a whole. These changes are associated with the inclusion of older persons in the workforce for knowledge work, which represents a challenge for adapting the work environment to meet all workers’ needs. In order to approach a more universal design of the work environment system, industrial designers need support from user-sensitive inclusive design studies. Moreover, there are plenty of guidelines and tools containing relevant information. However, there is the need to develop more appropriate tools oriented to industrial designers and that cover the initial phase of the design process. A study about and with users and designers have driven the research outcomes and direction. Through an iterative process, various prototypes versions have been developed through research and designers’ feedback. A range of contents and a theoretical framework, namely UCAP, have been developed in order to implement them in this inclusive workstation design guidance tool. This study provides an overview of how knowledge work is affected by the ageing of the population, the role of designers in helping to create inclusive workstations, and the need for developing a new tool to aid designers in this endeavour. A theoretical framework intended for use in the development of the inclusive workstation design guidance tool is proposed and developed. As a result, this study provides one step towards the universal design of the products and environments found in knowledge work for the benefit of not only designers but consumers, makers and buyers of such products, all of whom can benefit from these outcomes.


ABSTRACT: Many new assistive input systems developed to meet the needs of users with
functional impairments fail to make it out of the research laboratory and into regular use by the intended end users. This paper examines some of the reasons for this failure and focuses particularly on whether the developers of such systems are using the correct metrics and approaches for evaluating the functional and social attributes of the input systems they are designing. This paper further focuses on the importance of benchmarking new assistive input systems against baseline measures of useful interaction rates that take allowance of factors such as input success/recognition rate, error rate, correction effort and input time. By addressing each of these measures, a more complete understanding of whether an input system is practically and functionally acceptable can be obtained, and design guidance for developers is provided.

http://dx.doi.org/10.1145/3085957.
ABSTRACT: Video games are not just played for fun; they have become a handy instrument for the cognitive, emotional, and social development of children. However, several barriers prevent many children with disabilities from playing action-oriented video games, alone or with their peers. In particular, children with severe motor disabilities, who rely on one-switch interaction for accessing electronic devices, find fast-paced games that require rapid decision-making and timely responses, completely unplayable. This article contributes to lowering such barriers by presenting GNomon (Gaming NOMON), a software framework based on the NOMON mode of interaction that allows the creation of action-oriented single-switch video games. The article reports the results of two studies that evaluate the playability and rehabilitation suitability of GNomon-based video games. The playability of GNomon-based games is evaluated by assessing their learnability, effectiveness, errors, satisfaction, memorability, and enjoyability with a group of eight children with severe motor disabilities. The suitability for pediatric rehabilitation is determined by means of a focus group with a team of speech therapists, physiotherapists, and psychologists from a Local Health Agency in Turin, Italy. The results of the playability study are positive: All children had fun playing GNomon-based video games, and seven of eight were able to interact and play autonomously. The results of the rehabilitation-suitability study also entail that GNomon-based games can be exploited in training hand-eye coordination and maintenance of selective attention over time. The article finally offers critical hindsight and reflections and shows possible new future game concepts.

ABSTRACT: The use of information and communication technologies in educating children with autism spectrum disorders (ASD) is a dynamic field linking both special education and learning technologies research areas. This paper reports on the development of pre-vocational skills laboratory (PVS-Lab), a Web-based learning environment aiming to support students with ASD towards developing pre-vocational and employment skills. The first section addresses theoretical foundations and the design framework of PVS-Lab, as well as the structure and the functionality of the system. Following a particular intervention is presented including the analysis of the engagement of an autistic student with PVS-Lab and his tutors’ monitoring, based on a psychophysiological signal recording system. The paper concludes with the need to advance future research towards new learning environments that can help (a) students with autism to acquire pre-vocational skills, and (b) tutors to harness the potential of multiple forms of information (PVS-Lab system log files, psychophysiological data, video records and observation notes) towards designing effective individualized interventions.

ABSTRACT: Vulnerable (e.g., LGBTQ, homeless, disabled, racial/ethnic minority, and/or poor) youth disproportionately report challenges at school compared to their majority counterparts, but we are not always sure of the best ways to support these students. How might big data help to ameliorate experiences for vulnerable students who are not part of the majority (e.g., White, middle class, straight)? We review current ways that using big data can promote student engagement specific to school experiences where vulnerable youth share a disproportional amount of burden. We review extant uses of big data to track, involve, and monitor student progress and attendance. Additionally, we review the potential privacy implications and threats to students’ civil liberties. 

Bibliography on “big data”


ABSTRACT: The explosive growth in the number of devices connected to the Internet of Things (IoT) and the exponential increase in data consumption only reflect how the growth of big data perfectly overlaps with that of IoT. The management of big data in a continuously expanding network gives rise to non-trivial concerns regarding data collection efficiency, data processing, analytics, and security. To address these concerns, researchers have examined the challenges associated with the successful deployment of IoT. Despite the large number of studies on big data, analytics, and IoT, the convergence of these areas creates several opportunities for flourishing big data and analytics for IoT systems. In this paper, we explore the recent advances in big data analytics for IoT systems as well as the key requirements for managing big data and for enabling analytics in an IoT environment. We taxonomized the literature based on important parameters. We identify the opportunities resulting from the convergence of big data, analytics, and IoT as well as discuss the role of big data analytics in IoT applications. Finally, several open challenges are presented as future research directions.


ABSTRACT: Ever since the emergence of big data concept, researchers have started applying the concept to various fields and tried to assess the level of acceptance of it with renown models like technology acceptance model (TAM) and it variations. In this regard, this paper tries to look at the factors that associated with the usage of big data analytics, by synchronizing TAM with organizational learning capabilities (OLC) framework. These models are applied on the construct, intended usage of big data and also the mediation effect of the OLC constructs is assessed. The data for the study is collected from the students pertaining to information technology disciplines at University of Liverpool, online programme. Though, invitation to participate e-mails are sent to 1035 students, only 359 members responded back with filled questionnaires. This study uses structural equation modelling and multivariate regression using ordinary least squares estimation to test the proposed hypotheses using the latest statistical software R. It is proved from the analysis that compared to other models, model 4 (which is constructed by using the constructs of OLC and TAM frameworks) is able to explain 44% variation in the usage pattern of big data. In addition to this, the mediation test performed revealed that the interaction between OLC dimensions and TAM dimensions on intended usage of big data has no mediation effect. Thus, this work provided inputs to the research community to look into the relation between the constructs of OLC framework and the selection of big data technology.
https://doi.org/10.1016/j.techfore.2017.06.029.
ABSTRACT: As society continues its rapid change to a digitized individual, corporate, and government environment it is prudent for researchers to investigate the zeitgeist of the global citizenry. The technological changes brought about by big data analytics are changing the way we gather and view data. This big data analytics sentiment research examines how Chinese and American respondents may view big data collection and analytics differently. The paper follows with an analysis of reported attitudes toward possible viewpoints from each country on various big data analytics topics ranging from individual to business and governmental foci. Hofstede's cultural dimensions are used to inform and frame our research hypotheses. Findings suggest that Chinese and American perspectives differ on individual data values, with the Chinese being more open to data collection and analytic techniques targeted toward individuals. Furthermore, support is found that US respondents have a more favorable view of businesses' use of data analytics. Finally, there is a strong difference in the attitudes toward governmental use of data, where US respondents do not favor governmental big data analytics usage and the Chinese respondents indicated a greater acceptance of governmental data usage. These findings are helpful in better understanding appropriate technological change and adoption from a societal perspective. Specifically, this research provides insights for corporate business and government entities suggesting how they might adjust their approach to big data collection and management in order to better support and sustain their organization's services and products.

http://dx.doi.org/10.1186/s40537-017-0077-4.
ABSTRACT: In agriculture sector where farmers and agribusinesses have to make innumerable decisions every day and intricate complexities involves the various factors influencing them. An essential issue for agricultural planning intention is the accurate yield estimation for the numerous crops involved in the planning. Data mining techniques are necessary approach for
accomplishing practical and effective solutions for this problem. Agriculture has been an obvious target for big data. Environmental conditions, variability in soil, input levels, combinations and commodity prices have made it all the more relevant for farmers to use information and get help to make critical farming decisions. This paper focuses on the analysis of the agriculture data and finding optimal parameters to maximize the crop production using data mining techniques like PAM, CLARA, DBSCAN and Multiple Linear Regression. Mining the large amount of existing crop, soil and climatic data, and analysing new, non-experimental data optimizes the production and makes agriculture more resilient to climatic change.

doi: 10.1016/j.clsr.2017.05.022.
http://dx.doi.org/10.1016/j.clsr.2017.05.022.

ABSTRACT: Chinese officials are increasingly turning to a policy known as Informatisation, connecting industry online, to utilise technology to improve efficiency and tackle economic developmental problems in China. However, various recent laws have made foreign technology firms uneasy about perceptions of Rule of Law in China. Will these new laws, under China's stated policy of "Network Sovereignty" ("网络主权 " "wangluo zhuquan") affect China's ability to attract foreign technology firms, talent and importantly technology transfers? Will they slow China's technology and Smart City drive? This paper focuses on the question of whether international fears of China's new Cyber Security Law are justified. In Parts I and II, the paper analyses why China needs a cyber security regime. In Parts III and IV it examines the law itself.

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http://dx.doi.org/10.1016/j.eswa.2017.06.027.

ABSTRACT: In the era of "big data", recent developments in the area of information and communication technologies (ICT) are facilitating organizations to innovate and grow. These technological developments and wide adaptation of ubiquitous computing enable numerous opportunities for government and companies to reconsider healthcare prospects. Therefore, big data and smart healthcare systems are independently attracting extensive attention from both academia and industry. The combination of both big data and smart systems can expedite the prospects of the healthcare industry. However, a thorough study of big data and smart systems together in the healthcare context is still absent from the existing literature. The key contributions of this article include an organized evaluation of various big data and smart system technologies and a critical analysis of the state-of-the-art advanced healthcare systems. We describe the three-dimensional structure of a paradigm shift. We also extract three broad technical branches (3T) contributing to the promotion of healthcare systems. More specifically, we propose a big data enabled smart healthcare system framework (BSHSF) that offers theoretical representations of an intra and inter organizational business model in the healthcare
context. We also mention some examples reported in the literature, and then we contribute to pinpointing the potential opportunities and challenges of applying BSHSF to healthcare business environments. We also make five recommendations for effectively applying BSHSF to the healthcare industry. To the best of our knowledge, this is the first in-depth study about state-of-the-art big data and smart healthcare systems in parallel. The managerial implication of this article is that organizations can use the findings of our critical analysis to reinforce their strategic arrangement of smart systems and big data in the healthcare context, and hence better leverage them for sustainable organizational invention.


ABSTRACT: Emergence of smart things has revolutionized the conventional internet into a connected network of things, maturing the concept of Internet of Things (IoT). With the evolution of IoT, many attempts were made to realize the notion of smart cities. However, demands for processing enormous amount of data and platform incompatibilities of connected smart things hindered the actual implementation of smart cities. Keeping it in view, we proposed a Big Data analytics embedded smart city architecture, which is further integrated with the web via a smart gateway. Integration with the web provides a universal communication platform to overcome the platform incompatibilities of smart things. We introduced Big Data analytics to enhance data processing speed. Further, we evaluated authentic data sets to determine the threshold values for intelligent decision-making and to present the performance improvement gained in data processing. Finally, we presented a representational state transfer (RESTful) web of things (WoT) integrated smart building architecture (smart home) to reveal the performance improvements of the proposed smart city architecture in terms of network performance and energy management of smart buildings.


ABSTRACT: The General Data Protection Regulation (GDPR) contains various provisions with relevance to online price discrimination. This article, which analyses a number of essential elements on this junction, aims to provide a theory on whether, and, if so, how the GDPR affects price discrimination based on the processing of personal data. First, the contribution clarifies the concept of price discrimination, as well as its typology and relevance for big data settings. Subsequent to studying this topic in the context of the Commission's Digital Single Market strategy, the article tests the applicability of the GDPR to online price personalisation practices by applying criteria as ‘personal data’ and ‘automated processing’ to several discriminatory pricing cases and examples. Secondly, the contribution evaluates the possible lawfulness of price personalisation under the GDPR on the basis of consent, the necessity for pre-contractual or contractual measures, and the data controller's legitimate interests. The paper concludes by providing a capita selecta of rights and obligations pertinent to online discriminatory pricing, such as transparency obligations and the right to access, as well as the right to rectify the data on which price discrimination is based, and the right not to be subject to certain discriminatory pricing decisions.


ABSTRACT: We propose the TelcoFog architecture as a novel, secure, highly distributed, and ultra-dense fog computing infrastructure, which can be allocated at the extreme edge of a wired/wireless network for a telecom operator to provide multiple unified, cost-effective, and new
5G services, such as NFV, MEC, and services for third parties (e.g., smart cities, vertical industries, and IoT). The distributed and programmable fog technologies that are proposed in TelcoFog are expected to strengthen the position of the mobile network and cloud markets. TelcoFog, by design, is capable of integrating an ecosystem for network operators willing to provide NFV, MEC, and IoT services. TelcoFog’s key benefits are the dynamic deployment of new distributed low-latency services. The novel TelcoFog architecture consists of three main building blocks: a scalable TelcoFog node, which is seamlessly integrated in the telecom infrastructure; a TelcoFog controller, focused on service assurance and based on service data modeling using YANG, which is integrated in the management and orchestration architecture of the telecom operator; and TelcoFog services, which are able to run on top of the TelcoFog and telecom infrastructure. The TelcoFog architecture is validated through a proof of concept for IoT services.


ABSTRACT: Vulnerable (e.g., LGBTQ, homeless, disabled, racial/ethnic minority, and/or poor) youth disproportionally report challenges at school compared to their majority counterparts, but we are not always sure of the best ways to support these students. How might big data help to ameliorate experiences for vulnerable students who are not part of the majority (e.g., White, middle class, straight)? We review current ways that using big data can promote student engagement specific to school experiences where vulnerable youth share a disproportional amount of burden. We review extant uses of big data to track, involve, and monitor student progress and attendance. Additionally, we review the potential privacy implications and threats to students’ civil liberties. 


ABSTRACT: This article examines the impact of Big Data technology on Russian citizens' constitutional rights to a private life. There are several laws in the Russian Federation covering data privacy and protection, but these are proving inadequate to protect the citizens' rights in the face of the ever-increasing use of massive data sets and their analysis by Big Data tools. One particular problem in this regard is that datasets of anonymised records currently not covered under personal data laws (because they do not identify individuals) can, in fact, be used to identify data subjects (the individuals to whom the data refers) when combined and analysed using Big Data tools. Furthermore, existing sanctions for misuse of personal data are minor, and often fail to act as a deterrent when the commercial benefits of exploiting user data (e.g. through targeted advertising) are so much greater. From the point of view of companies handling Big Data, a general confusion over definitions and responsibilities is making compliance with the law difficult, leaving most to come up with their own forms of best practice, rather than being able to follow clear industry recommendations. The article examines existing laws and oversight bodies, discusses how the current provisions are inadequate to deal with new developments in Big Data, and proposes recommendations for amending and updating existing laws and policies. 

Bibliography on “broadband”

ABSTRACT: Purpose The purpose of this research is to quantifiably measure the relationship between technological advancement, economic growth and societal employment trends across the Brazil, Russia, India and China (BRIC) countries, while also describing various government initiatives and policy steps taken to promote technology development. Design/methodology/approach This paper examines the relationship between the United Nations’ International Telecommunication Union’s Information and Communication Technology (ICT) development Index (IDI), gross domestic product (GDP) and unemployment data. The paper also reviews the broadband and e-readiness components of each BRIC nation to further describe the policies in adoption of ICT. Findings This research concludes that there is in fact a significant positive correlation between technology (as measured by IDI) and economy (as measured by a nation’s GDP) and there is a significant negative correlation between technology (as measured by IDI) and a nation’s unemployment rate benefiting the society. Originality/value This research seeks to describe the impact of Information Communication Technology on economic and society indices in BRIC. Paper contributions include an empirical measurement and relationship between technological advancement, economic growth and employment trends across the BRIC countries, while also describing various government policy initiatives taken to promote technology.


ABSTRACT: In September 2016, the European Commission (EC) published its proposal for a directive establishing the European Electronic Communications Code (EECC) – with one key aim being the provision of sufficient incentives for infrastructure investments into high-speed communication networks. Based on a detailed review of the theoretical and empirical literature of the most relevant regulatory measures – that is, co-investment models as well as different types of access regulation – we provide a critical appraisal of the respective provisions in the EECC. We find that, although the EECC can generally be seen as a step into the right direction, the expected effects on investment incentives as well as substantial implementation challenges in combination with a high degree of complexity of the envisaged measures contain substantial potential for improvement.”

http://dx.doi.org/10.1145/3121442.

ABSTRACT: Scientists are demonstrating that lasers could be the future of space communication.

Rajabiun, Reza and Catherine Middleton. "Strategic Choice and Broadband Divergence in the Transition to Next Generation Networks: Evidence from Canada and the U.S."
Telecommunications Policy, In Press
https://doi.org/10.1016/j.telpol.2017.08.001.
ABSTRACT: This article investigates how infrastructure competition among broadband network infrastructure operators in Canada and the U.S. has influenced their incentives to increase fixed broadband connection speeds and invest in next generation fiber-to-the-premises (FTTP) technologies. The evolution of measured broadband speeds since the late 2000s documents growing differences in the incentives of dominant broadband operators to respond to demand for higher speed connectivity by increasing connectivity speeds they deliver to their customers. Dominant network operators in Canada have shown relatively stronger incentives than their counterparts in the U.S. to invest in and increase the capacity of legacy platforms. In the U.S. FTTP deployment incentives have been somewhat stronger, but network operators have been more reluctant to upgrade legacy technologies to deliver higher speeds. Diversity of strategic choices by large operators helps explain increasing regional and local broadband infrastructure gaps within the two countries. A high dividend payout financial strategy and increasing vertical integration appear to enhance the potential for overinvestment and inefficient duplication in legacy platforms by competing infrastructure providers.

http://dx.doi.org/10.1016/j.telpol.2017.06.001.
ABSTRACT: In this paper, we demonstrate that there is more to consumer experience than just broadband access speed. We identify and describe a complex and dynamic set of interactions that occur between different factors that collectively determine consumer experience. We suggest that the relationship between broadband speed and consumer experience follows an inverted U-shape. Access speed is necessary to provide consumers with a good experience, but it is not sufficient. Based on our findings, a more nuanced understanding of the market for broadband Internet access products is outlined and a foundation for deriving valuable policy implications is developed. ".

doi: 10.1016/j.telpol.2017.05.007.
http://dx.doi.org/10.1016/j.telpol.2017.05.007.
ABSTRACT: This paper analyses the transition from the voice and SMS era of mobile telephony to the data-only era, and the strategies that operators have adopted during this transition phase. Key drivers for the transition are Over the Top services (OTTs). The paper uses quarterly prices for prepaid user baskets across 44 African countries and introduces an alternative tool to measure and compare top-up bundles. Prepaid voice, prepaid data and top-ups are analysed, to demonstrate the various strategies operators in Africa have adopted, in response to revenue loss caused by OTTs, such as Facebook, WhatsApp and Skype. Case studies of dominant operators in South Africa, Kenya and Namibia are used to highlight which strategies have successfully defended or increased mobile operator revenues. The paper shows that embracing OTTs, and providing prepaid products that resemble flat-rate pricing (top-ups with limited validity), is the most successful strategy for mobile operators to retain revenues. The paper also shows how zero-rated OTTs can be used to gain market share for new entrants. We argue that regulators should resist the push for regulating OTTs, and instead facilitate the evolution to flat access pricing. ".
Bibliography on “child online protection”


ABSTRACT: Scientific studies on family factors related to the main cyberbullying roles are still scarce. The present study analyzed family climate and parent–adolescent communication in the four roles involved in cyberbullying: cybervictims, cyberbullies, cyberbully–victims, and non–involved adolescents. The study had two main objectives: (1) to analyze the differences in family climate (cohesion and conflict) and communication patterns with the mother and father (open, avoidance, and offensive) among the four roles, controlling the variables sex and academic grade; and (2) to determine the predictive weight of these family variables in the roles involved in cyberbullying. A battery of instruments was applied to 1062 adolescents from 12 to 18 years old. The results revealed that the cyberbully–victim profile had the lowest quality family climate and family communication patterns. In addition, family conflict predicted the role of cyberbullies, and non–open communication with the mother and avoidant communication with the father predicted the role of cybervictim. Finally, these family variables together (conflict and non–open and avoidant communication) predicted the role of cyberbully–victim.


ABSTRACT: This review attempts to provide an overview of parents' mobile device distractions while caring for their children and the implications of this distraction on parent-child relationships. This review was conducted on literature published through November 2016, 27 sources were identified. Overall the continual connection provided by phones combined with the social pressure to respond quickly to calls/messages is leading to increased use and reliance on mobile devices. This increases the potential for parents' mobile device use to disrupt parent-child interactions. Parents who use their phones during parent-child interactions are less sensitive and responsive both verbally and nonverbally to their children's bids for attention, potentially leading to lower quality parent-child interactions. Children engage in risky attention seeking behaviors, which may be connected to the increase in childhood injuries. Parents and children express concern over device use as well as its contribution to family conflicts. This review also discusses gaps in the existing literature and proposes directions for future research.


ABSTRACT: The use of social networking sites and instant messaging apps, despite playing a key role in building social relations, poses a risk, such as cybergossip. This research focused on the study and measurement of the cybergossip phenomenon and the psychometric properties of the Cybergossip-Q-Primary instrument. Cybergossip involvement in the development of cyberbehaviours performed in cyberbullying was analyzed. The European Cyberbullying Intervention Project Questionnaire (ECIPQ) was adapted to primary school-age children. The sample comprised 866 students (52.9% girls) with ages ranging from 10 to 13years (M=11.21, SD=0.90). Using both exploratory and confirmatory factor analyses, the fit of a one-dimensional structure for the cybergossip instrument and a two-dimensional structure for cyberbullying (cyberraggression and cybervictimization) were contrasted. A structural equations analysis revealed a significant relationship between cybergossip and cyberbullying. The results in relation to cybergossip, cyberraggression, cybervictimization, and the consequences of misinterpreting information are discussed. AB A pesar de que la utilización de redes sociales y de aplicaciones de mensajería instantánea juega un papel muy importante para establecer relaciones sociales,
supone riesgos como el cibercotilleo. Esta investigación se ha centrado en el estudio y medición de este fenómeno y de las propiedades psicométricas del cuestionario de cibercotilleo, Cybergossip-Q-Primary. Se analiza la implicación del cibercotilleo en la formación de los cibercomportamientos presentes en el ciberacoso. Se adaptó el Cuestionario del Proyecto Europeo de Intervención en el Ciberacoso a niños en edad escolar. La muestra constaba de 866 alumnos (el 52.9% niñas) en edades comprendidas entre los 10 y 13 años (M=11.21, DT=0.90). Mediante análisis factoriales exploratorio y confirmatorio se contrastó el ajuste de una estructura unidimensional en el instrumento de cibercotilleo y bifactorial en el de ciberacoso (ciberagresión y cibervictimización). El análisis de ecuaciones estructurales mostró una relación significativa entre el cibercotilleo y el ciberacoso. Se comentan los resultados relativos al cibercotilleo, la ciberagresión y la cibervictimización, así como las consecuencias que conlleva malinterpretar la información.

Bibliography on “climate change and ICTs”

doi: 10.1109/ACCESS.2017.2686092.
http://dx.doi.org/10.1109/ACCESS.2017.2686092.
ABSTRACT: Internet of Things (IoT) is an emerging concept, which aims to connect billions of devices with each other. The IoT devices sense, collect, and transmit important information from their surroundings. This exchange of very large amount of information amongst billions of devices creates a massive energy need. Green IoT envisions the concept of reducing the energy consumption of IoT devices and making the environment safe. Inspired by achieving a sustainable environment for IoT, we first give the overview of green IoT and the challenges that are faced due to excessive usage of energy hungry IoT devices. We then discuss and evaluate the strategies that can be used to minimize the energy consumption in IoT, such as designing energy efficient datacenters, energy efficient transmission of data from sensors, and design of energy efficient policies. Moreover, we critically analyze the green IoT strategies and propose five principles that can be adopted to achieve green IoT. Finally, we consider a case study of very important aspect of IoT, i.e., smart phones and we provide an easy and concise view for improving the current practices to make the IoT greener for the world in 2020 and beyond.

ABSTRACT: The demand for mobile connectivity is continuously increasing, and by 2020 Mobile and Wireless Communications will serve not only very dense populations of mobile phones and nomadic computers, but also the expected multiplicity of devices and sensors located in machines, vehicles, health systems and city infrastructures. Future Mobile Networks are then faced with many new scenarios and use cases, which will load the networks with different data traffic patterns, in new or shared spectrum bands, creating new specific requirements. This book addresses both the techniques to model, analyse and optimise the radio links and transmission systems in such scenarios, together with the most advanced radio access, resource management and mobile networking technologies. This text summarises the work performed by more than 500 researchers from more than 120 institutions in Europe, America and Asia, from both academia and industries, within the framework of the COST IC1004 Action on “Cooperative Radio Communications for Green and Smart Environments”. The book will have appeal to graduates and researchers in the Radio Communications area, and also to engineers working in the Wireless industry. .
doi: 10.1109/MWC.2017.8014286.
http://dx.doi.org/10.1109/MWC.2017.8014286.
ABSTRACT: The articles in this special section focus on the design of 5G mobile communication networks that deploy the development of green and sustainable networking and computing protocols.

doi: 10.1109/ACCESS.2017.2711784.
http://dx.doi.org/10.1109/ACCESS.2017.2711784.
ABSTRACT: In order to meet the intense user demands, the 5G networks are evolving, and will be available by 2020. The unfolding cellular technology has raised the energy consumption in mobile networks with the carbon footprint surging to alarming rates. This is causing an adverse effect on the environment and human health. Addressing these aspects, this paper presents a survey on techniques for making the next generation cellular networks GREEN. A number of technologies form a part of the 5G networks, in order to support the drastic user demands, and are receiving substantial attention from the perspective of green communication. These include device-to-device communication, spectrum sharing, ultra dense networks, massive MIMO, and the Internet of Things. Also, a prime concern in the current scenario is the battery life of the mobile terminals. For enhancing the battery life of the user terminals, a proposal is given in this paper, with spectrum sharing as its basis, to overcome the energy crunch. Major research challenges have been discussed, and the ongoing projects and standardization activities also stated in this paper.

ABSTRACT: The 5G wireless cellular networks are evolving, to meet the drastic subscriber demands in near future. This is accompanied with a rise in the energy consumption in cellular networks. Higher energy consumption result in a rise in the carbon dioxide emissions into the environment, and exposure to greater amount of harmful radiations. To indemnify the ecological and health concerns associated with the rise in CO2 levels, an important technology is GREEN communication. This paper presents a survey on various energy-efficient scenarios for green communication, involving device-to-device (D2D) communication, spectrum sharing, ultra-dense networks (UDNs), massive MIMO, millimeter wave networks and the Internet of Things (IoT). For improving the battery lifetime of user terminals in a network, a three-layer architecture is proposed, which emphasizes on transmitting information through relays, between a given pair of users. The susceptibility of security attack on relays is also enumerated. As security in the networks cannot be overlooked, secure power optimization is studied, and the possible security attack on users within the small cell access point (SCA) of the 5G networks is proposed. Some of the key research challenges in association to green communication and security have been discussed, and the ongoing projects and standardization activities also stated in the paper. ".

ABSTRACT: The link between information and communications technology and sustainability has been discussed by many authors, yet a macro-level analysis of the link coupled with an examination of the link between new technology areas, human development and the interaction between all of these measures has not been fully explored. In this paper, we hypothesize the link
between environmental sustainability, information and communication technology, and human
development. We find that information and communications technology and human development
have significant main and interactive effects on environmental sustainability. Our discussion
section proposes further research into these areas to understand some of the micro-level
interactions.

Meadowcroft, James, Jennie C. Stephens, Elizabeth J. Wilson, et al. "Social Dimensions of Smart
Grid: Regional Analysis in Canada and the United States. Introduction to Special Issue
of Renewable and Sustainable Energy Reviews." Renewable and Sustainable Energy
http://dx.doi.org/10.1016/j.rser.2017.06.106.
ABSTRACT: This special issue of Sustainable and Renewable Energy Reviews is focused on the
social and policy dimensions of smart grids, an emerging set of technologies and practices which
have the potential to transform dramatically electricity systems around the world. The six related
articles explore social and political dynamics associated with smart grid deployment in the United
States of America (USA) and Canada. Aspects examined in this special issue include the evolution
of smart grid policy in Ontario, media coverage of smart grid experiences in Canada and smart
grid approaches being taken in Québec. Other aspects covered include an analysis of smart grid
systems planning post-Superstorm Sandy (that hit the Northeastern coast of the USA in 2012),
the environmental framing of socio-political acceptance of the smart grid in British Columbia, and
news coverage of the smart grid in the USA and Canada. These articles were supported by
collaborative research from the National Science Foundation in the USA and the Social Sciences
and Humanities Research Council in Canada which involved three expert workshops held in
Canada in 2013, 2014 and 2015. The six articles were accepted after a vigorous review process
overseen by the guest editors of this special issue. The contents are in keeping with the aims and
scope of the journal which is to bring together under one roof the current advances in the ever
broadening field of sustainable energy. ".

Su, Hsin-Ning and Igam M. Moaniba. "Does Innovation Respond to Climate Change? Empirical
Evidence from Patents and Greenhouse Gas Emissions." Technological Forecasting and
Social Change, 122(2017): 49-62
http://dx.doi.org/10.1016/j.techfore.2017.04.017.
ABSTRACT: Mitigating the increasing effects of climate change requires extreme policy measures
such as reducing global carbon dioxide emissions, expensive abatement policies and the immense
costs associated with developing green technologies. While literature on environmental-
innovation has been focusing on how innovation contributes to alleviating climate-change impacts
by examining existing mitigation technologies and programs, this paper does so via a reverse
approach. It examines how innovation responds to climate change. By employing various
econometric methods on a panel dataset of 70 countries, patent count as a proxy for innovation,
and carbon dioxide and other greenhouse gas emissions as proxies for climate change, this study
finds that the number of climate-change-related-innovations is responding positively to increasing
levels of carbon dioxide emissions from gas and liquid fuels – mainly from coal and petroleum respectively; and negatively to increases in carbon dioxide emissions from solid fuel consumptions (mainly from coal) and other greenhouse gas emissions. It also finds that
government investment does not always influence decisions to develop and patent climate-
technologies. Empirical findings from this study contribute to the environmental-innovation
literature by providing extended knowledge on how innovation reacts to changes in major climate
change factors. Based on this, certain policy implications can be drawn such as diverting public
funds to areas where innovative activities contribute the most to combating climate change. ".

Wireless Communications, 24, no. 4 (2017): 72-80
doi: 10.1109/MWC.2017.1600343.
http://dx.doi.org/10.1109/MWC.2017.1600343.
ABSTRACT: The stringent requirements of a 1000x increase in data traffic and 1 ms round-trip latency have made limiting the potentially tremendous ensuing energy consumption one of the most challenging problems for the design of the upcoming 5G networks. To enable sustainable 5G networks, new technologies have been proposed to improve the system energy efficiency, and alternative energy sources are introduced to reduce our dependence on traditional fossil fuels. In particular, various 5G techniques target the reduction of the energy consumption without sacrificing the quality of service. Meanwhile, energy harvesting technologies, which enable communication transceivers to harvest energy from various renewable resources and ambient radio frequency signals for communication, have drawn significant interest from both academia and industry. In this article, we provide an overview of the latest research on both green 5G techniques and energy harvesting for communication. In addition, some technical challenges and potential research topics for realizing sustainable green 5G networks are also identified.

Bibliography on “cybersecurity”


ABSTRACT: This paper proposes a generic approach for designing vulnerability testing tools for web services, which includes the definition of the testing procedure and the tool components. Based on the proposed approach, we present the design of three innovative testing tools that implement three complementary techniques (improved penetration testing, attack signatures and interface monitoring, and runtime anomaly detection) for detecting injection vulnerabilities, thus offering an extensive support for different scenarios. A case study has been designed to demonstrate the tools for the particular case of SQL Injection vulnerabilities. The experimental evaluation demonstrates that the tools can effectively be used in different scenarios and that they outperform well-known commercial tools by achieving higher detection coverage and lower false-positive rates.


ABSTRACT: Smart cities are comprised of diverse and interconnected components constantly exchanging data and facilitating improved living for a nation’s population. Our view of a typical smart city consists of four key components, namely, Smart Grids, Building Automation Systems (BAS), Unmanned Aerial Vehicles (UAVs), Smart Vehicles; with enabling Internet of Things (IoT) sensors and the Cloud platform. The adversarial threats and criminal misuses in a smart city are increasingly heterogenous and significant, with provisioning of resilient and end-to-end security being a daunting task. When a cyber incident involving critical components of the smart city infrastructure occurs, appropriate measures can be taken to identify and enumerate concrete evidence to facilitate the forensic investigation process. Forensic preparedness and lessons learned from past forensic analysis can help protect the smart city against future incidents. This paper presents a holistic view of the security landscape of a smart city, identifying security threats and providing deep insight into digital investigation in the context of the smart city. ".


ABSTRACT: Smart cities are comprised of diverse and interconnected components constantly
exchanging data and facilitating improved living for a nation’s population. Our view of a typical smart city consists of four key components, namely, Smart Grids, Building Automation Systems (BAS), Unmanned Aerial Vehicles (UAVs), Smart Vehicles; with enabling Internet of Things (IoT) sensors and the Cloud platform. The adversarial threats and criminal misuses in a smart city are increasingly heterogenous and significant, with provisioning of resilient and end-to-end security being a daunting task. When a cyber incident involving critical components of the smart city infrastructure occurs, appropriate measures can be taken to identify and enumerate concrete evidence to facilitate the forensic investigation process. Forensic preparedness and lessons learned from past forensic analysis can help protect the smart city against future incidents. This paper presents a holistic view of the security landscape of a smart city, identifying security threats and providing deep insight into digital investigation in the context of the smart city.


ABSTRACT: The fallout from a data breach can be catastrophic. We have yet to understand the full impact of the massive Yahoo breach, but that doesn't mean that smaller and equally damaging breaches aren't taking place every single day. The fallout from a data breach can be catastrophic. And hackers have become better at developing smarter, better targeted and more automated tools that help them fly 'under the radar'. Security analysts need tools and processes that enable them to work much more efficiently, especially for real-time analysis. And the storing of alert-related packets allows specialists to look for so-far undetected breaches. The security industry needs to develop automated processes that automatically collect relevant 'suspicious' packet data and make it readily available for analysis, explains Jay Botelho of Savvius.


ABSTRACT: The Internet of Things (IoT) envisions pervasive, connected, and smart nodes interacting autonomously while offering all sorts of services. Wide distribution, openness and relatively high processing power of IoT objects made them an ideal target for cyber attacks. Moreover, as many of IoT nodes are collecting and processing private information, they are becoming a goldmine of data for malicious actors. Therefore, security and specifically the ability to detect compromised nodes, together with collecting and preserving evidences of an attack or malicious activities emerge as a priority in successful deployment of IoT networks. In this paper, we first introduce existing major security and forensics challenges within IoT domain and then briefly discuss about papers published in this special issue targeting identified challenges. ".


ABSTRACT: An announcement scheme is a system that facilitates vehicles to broadcast road-related information in vehicular ad hoc networks (VANETs) in order to improve road safety and efficiency. Here, the authors propose a new cryptographic primitive for public updating of reputation score based on the Boneh-Boyen-Shacham short group signature scheme. This allows private reputation score retrieval without a secure channel. Using this, the authors devise a privacy-aware announcement scheme using reputation systems which is reliable, auditable, and robust.

ABSTRACT: The Internet of Things (IoT) is becoming an important factor in many areas of our society. IoT brings intelligence to critical aspects like transportation, industry, payments, health and many others. The interaction between embedded devices and Cloud based web services is a common scenario of IoT deployment. From the security point of view, both users and smart devices must establish a secure communication channel and have a form of digital identity. Most of the times, the usage of IoT devices requires an already existing infrastructure which cannot be controlled by the device owner, for instance in a smart home. This scenario requires a security stack suitable for heterogeneous devices which can be integrated in already existing operating systems or IoT frameworks. This paper proposes a lightweight authorization stack for smart-home IoT applications, where a Cloud-connected device relays input commands to a user’s smart-phone for authorization. This architecture is user-device centric and addresses security issues in the context of an untrusted Cloud platform.

http://dx.doi.org/10.1016/j.jisa.2016.06.002.
ABSTRACT: The purpose of this research is to propose network research as an alternative approach in the behavioral security field. A case study was conducted in a large interior contractor to explore eight organizational networks, four of which focus on security behaviors. The researchers employed social network analysis methods, including quantitative and qualitative ones, to analyze the case study’s data and demonstrate the analytical capability of the network analysis approach in the behavioral security field. Key features of the security networks’ structures include high transitivity, hierarchy, and centralization, whereas reciprocity and density are lower than other organizational networks. Moreover, work-related interactions were found to impact security influence, among which giving IT advice increases significantly one’s influential status in security matters. Practical implications include suggestions about the use of network analysis methods as a tool for security managers to monitor their behavioral security networks and devise appropriate strategies. Potential research directions are also elaborated, which future research can employ and promote the novel and practical use of network analysis techniques. 

doi: 10.1007/s11036-017-0846-5.
https://doi.org/10.1007/s11036-017-0846-5.
ABSTRACT: Internet of Things (IoT) is an overall industry improvement that joins people, method, data, and things to make masterminded affiliations more critical and profitable than at whatever time in late memory. There are various issues in security of IOT yelling out for courses of action, for instance, RFID mark security, remote security, framework transmission security, security protection and the information that get ready security. The advances in some of the disseminated registering and the Internet of things (IOT) have given a promising opportunity to decide the troubles realized by the extending transportation issues and the author shows a novel multi-layered vehicular data cloud stage by using the basic appropriated processing and IOT propels. Two creative cloud advantages, a watchful ceasing cloud organization and vehicular data mining cloud organization, for vehicle ensure examination in the IoT situation are also given out. Troubles and direction for future work are also given. In this article, the author proposes Forum Alert Traffic Security (FATS) architecture in the Internet of Things (IOT) setting, which together studies development examination, security necessities, and action making arrangements for sight and sound applications.

ABSTRACT: Information is the most critical asset of modern organizations, and accordingly it is one of the resources most coveted by adversaries. When highly sensitive data is involved, an organization may resort to air gap isolation in which there is no networking connection between the inner network and the external world. While infiltrating an air-gapped network has been proven feasible in recent years, data exfiltration from an air-gapped network is still considered one of the most challenging phases of an advanced cyber-attack. In this article, we present "AirHopper," a bifurcated malware that bridges the air gap between an isolated network and nearby infected mobile phones using FM signals. While it is known that software can intentionally create radio emissions from a video card, this is the first time that mobile phones serve as the intended receivers of the maliciously crafted electromagnetic signals. We examine the attack model and its limitations and discuss implementation considerations such as modulation methods, signal collision, and signal reconstruction. We test AirHopper in an existing workplace at a typical office building and demonstrate how valuable data such as keylogging and files can be exfiltrated from physically isolated computers to mobile phones at a distance of 1--7 meters, with an effective bandwidth of 13--60 bytes per second.


ABSTRACT: In May of last year, the UK Government reported that two-thirds of the country's large businesses had been hit by a cyber-attack within the previous 12 months. Therefore it's no surprise that cyber-security is high on the agenda for the Government – highlighted by the recent £1.9bn investment into a five-year cyber-security strategy that was set into motion in February 2017 with the official opening of the National Cyber Security Centre. The UK Government recently reported that two-thirds of the country's large businesses had been hit by a cyber-attack within the previous year. So it's no surprise that cyber-security is high on the Government's agenda. Cyber-security needs to be baked into every corner of every government organisation. From finance administration to front-line workers, everyone needs to play a part in keeping government infrastructure safe and secure. Joe Kim of SolarWinds looks at some steps that government IT teams can take to help protect their organisations from determined cyber-criminals looking for a lucrative payday.


ABSTRACT: Preserving users' privacy is important for Web systems. In systems where transactions are managed by a single user, such as e-commerce systems, preserving privacy of the transactions is merely the capability of access control. However, in online social networks, where each transaction is managed by and has effect on others, preserving privacy is difficult. In many cases, the users' privacy constraints are distributed, expressed in a high-level manner, and would depend on information that only becomes available over interactions with others. Hence, when a content is being shared by a user, others who might be affected by the content should discuss and agree on how the content will be shared online so that none of their privacy constraints are violated. To enable this, we model users of the social networks as agents that represent their users' privacy constraints as semantic rules. Agents argue with each other on propositions that enable their privacy rules by generating facts and assumptions from their
ontology. Moreover, agents can seek help from others by requesting new information to enrich their ontology. Using assumption-based argumentation, agents decide whether a content should be shared or not. We evaluate the applicability of our approach on real-life privacy scenarios in comparison with user surveys.

doi: 0.1016/S1361-3723(17)30050-7.
ABSTRACT: Since the new European General Data Protection Regulation (GDPR) on the protection of personal data was voted in, businesses have been working towards the transition that will take place in May 2018. With just a year to comply, they are considering issues such as strengthened cyber-security, liability of data collection entities and new mandatory procedures. With the imminent arrival of the EU General Data Protection Regulation (GDPR), many businesses have been working towards the transition that will take place in May 2018. With just a year to comply, they are considering issues such as strengthened cyber-security, liability of data collection entities and new mandatory procedures. The GDPR will force firms to catch up with the threat of cyber-security in relation to strategy, legislation and operations. Businesses need to restore order to their operations, and this has many facets and challenges, as Jocelyn Krystlik of Stormshield explains.

http://dx.doi.org/10.1007/s10207-016-0336-y.
ABSTRACT: Modern mobile devices allow their users to download data from the network, such as documents or photos, to store local copies and to use them. Many real scenarios would benefit from this capability of mobile devices to easily and quickly share data among a set of users but, in case of critical data, the usage of these copies must be regulated by proper security policies. To this aim, we propose a framework for regulating the usage of data when they have been downloaded on mobile devices, i.e., they have been copied outside the producer’s domain. Our framework regulates the usage of the local copy by enforcing the Usage Control policy which has been embedded in the data by the producer. Such policy is written in UXACML, an extension of the XACML language for expressing Usage Control model-based policies, whose main feature is to include predicates which must be satisfied for the whole execution of the access to the data. Hence, the proposed framework goes beyond the traditional access control capabilities, being able to interrupt an ongoing access to the data as soon as the policy is no longer satisfied. This paper details the proposed approach, defines the architecture and the workflow of the main functionalities of the proposed framework, describes the implementation of a working prototype for Android devices, presents the related performance figures, and discusses the security of the prototype.

ABSTRACT: Boosting the concept of smart cities for implementing an intelligent management of traffic congestion while reducing cybersecurity concerns will not only be more efficient for reducing traffic congestion but also more resilient to cyber incidents. In this paper we proposed a framework that can act as a generalized firewall and work interactively with several critical infrastructures in a smart city to protect the respective operations from a variety of cyber threats. The objective is to develop several steps for a comprehensive traffic management framework in smart cities that facilitates the cooperation among drivers and between drivers and the traffic management authority. The transformative nature of the proposed study supports its applications to a variety of networked critical infrastructures, including electricity, gas, water, rails, and telecommunications, as they intend to respond effectively to a wide range of weather-
or human-related disruptions. The contributions of this paper include: Improving the traffic management performance in urban transportation systems, assessing and mitigating the cybersecurity risk in urban traffic management, and facilitating efficient and cyber-secure traffic management in metropolitan areas; Developing and testing an interactive simulation platform for evaluating the traffic management performance under various traffic conditions; Validating and demonstrating the applications in a practical urban transportation system; Disseminating the proposed study results to a wide range of concerned audiences via user-group meetings, detailed education forums, and a close collaboration with the local traffic management authority.

do: 10.1016/j.sna.2017.06.019.
https://doi.org/10.1016/j.sna.2017.06.019.
ABSTRACT: The Internet of Things (IoT) has been expanding in recent years with advancements in technologies, techniques and devices. This expansion has led to several different applications in the medical, civil, marine, military and domestic domains. Each of these domains have different requirements and challenges, with one common denominator: data security. Data security is an important aspect for any IoT network, however, in modern IoT systems simple data security may be not sufficient. This paper looks at a secure end-to-end IoT solution that allows wireless sensors/devices to connect to any PC in the world while guaranteeing data and network security. The scheme proposed in this paper can protect an IoT solution against several attacks like data breach, Denial of Service (DoS) and unauthorized access. Results obtained show that the technologies implemented, or used are superior in terms of time and energy consumption when compared to their counterparts in previously published works.

ABSTRACT: A recent forecast by Gartner reveals the sheer scale of the burgeoning Internet of Things (IoT). According to the analyst firm's predictions, more than 8.4 billion connected 'things' will be in use across the world this year alone – and this figure is expected to rise significantly over the next three years, reaching more than 20 billion by 2020.1 ".

https://doi.org/10.1016/j.scico.2017.06.006.
ABSTRACT: The heterogeneous, evolving and distributed nature of Cyber-Physical Systems (CPS) means that there is little chance of performing a top down development or anticipating all critical requirements such devices will need to satisfy individually and collectively. This paper describes an approach to verifying system requirements, when they become known, by performing an automated refinement check of its composed components abstracted from the actual implementation. This work was sponsored by the Charles Stark Draper Laboratories under the DARPA HACMS project. The views, opinions, and/or findings expressed are those of the authors and should not be interpreted as representing the official views or policies of the Department of Defense or the U.S. Government.

do: 10.1145/2890509.
http://dx.doi.org/10.1145/2890509.
ABSTRACT: Despite growing speculation about the role of human behavior in cyber-security of machines, concrete data-driven analysis and evidence have been lacking. Using Symantec’s WINE platform, we conduct a detailed study of 1.6 million machines over an 8-month period in order to
learn the relationship between user behavior and cyber attacks against their personal computers. We classify users into 4 categories (gamers, professionals, software developers, and others, plus a fifth category comprising everyone) and identify a total of 7 features that act as proxies for human behavior. For each of the 35 possible combinations (5 categories times 7 features), we studied the relationship between each of these seven features and one dependent variable, namely the number of attempted malware attacks detected by Symantec on the machine. Our results show that there is a strong relationship between several features and the number of attempted malware attacks. Had these hosts not been protected by Symantec’s anti-virus product or a similar product, they would likely have been infected. Surprisingly, our results show that software developers are more at risk of engaging in risky cyber-behavior than other categories.

http://dx.doi.org/10.1016/j.clsr.2017.05.022.
ABSTRACT: Chinese officials are increasingly turning to a policy known as Informatisation, connecting industry online, to utilise technology to improve efficiency and tackle economic developmental problems in China. However, various recent laws have made foreign technology firms uneasy about perceptions of Rule of Law in China. Will these new laws, under China’s stated policy of "Network Sovereignty” (“网络主权” “wangluo zhuquan”) affect China’s ability to attract foreign technology firms, talent and importantly technology transfers? Will they slow China’s technology and Smart City drive? This paper focuses on the question of whether international fears of China’s new Cyber Security Law are justified. In Parts I and II, the paper analyses why China needs a cyber security regime. In Parts III and IV it examines the law itself. ".

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ABSTRACT: Chinese officials are increasingly turning to a policy known as Informatisation, connecting industry online, to utilise technology to improve efficiency and tackle economic developmental problems in China. However, various recent laws have made foreign technology firms uneasy about perceptions of Rule of Law in China. Will these new laws, under China’s stated policy of "Network Sovereignty” (“网络主权” “wangluo zhuquan”) affect China’s ability to attract foreign technology firms, talent and importantly technology transfers? Will they slow China’s technology and Smart City drive? This paper focuses on the question of whether international fears of China’s new Cyber Security Law are justified. In Parts I and II, the paper analyses why China needs a cyber security regime. In Parts III and IV it examines the law itself.

http://dx.doi.org/10.1145/3096742.
ABSTRACT: How is computer security different in a high-performance computing (HPC) context from a typical IT context? On the surface, a tongue-in-cheek answer might be, "just the same, only faster." After all, HPC facilities are connected to networks the same way any other computer is, often run the same, typically Linux-based operating systems as are many other common computers, and have long been subject to many of the same styles of attacks, be they compromised credentials, system misconfiguration, or software flaws. Such attacks have ranged from the "wily hacker" who broke into U.S. Department of Energy (DOE) and U.S. Department of Defense (DOD) computing systems in the mid-1980s, to the "Stakkato" attacks against NCAR, DOE, and NSF-funded supercomputing centers in the mid-2000s, to the thousands of probes, scans, brute-force login attempts, and buffer overflow vulnerabilities that continue to plague high-performance computing facilities today.
https://doi.org/10.1016/j.future.2017.06.008.
ABSTRACT: Constrained Application Protocol (CoAP) has become the de-facto web standard for the IoT. Unlike traditional wireless sensor networks, Internet-connected smart thing deployments require security. CoAP mandates the use of the Datagram TLS (DTLS) protocol as the underlying secure communication protocol. In this paper we implement DTLS-protected secure CoAP for both resource-constrained IoT devices and a cloud backend and evaluate all three security modes (pre-shared key, raw-public key, and certificate-based) of CoAP in a real cloud-connected IoT setup. We extend SicsthSense—a cloud platform for the IoT—with secure CoAP capabilities, and compliment a DTLS implementation for resource-constrained IoT devices with raw-public key and certificate-based asymmetric cryptography. To the best of our knowledge, this is the first effort toward providing end-to-end secure communication between resource-constrained smart things and cloud back-ends which supports all three security modes of CoAP both on the client side and the server side. SecureSense—our End-to-End (E2E) secure communication architecture for the IoT—consists of all standard-based protocols, and implementation of these protocols are open source and BSD-licensed. The SecureSense evaluation benchmarks and open source and open license implementation make it possible for future IoT product and service providers to account for security overhead while using all standardized protocols and while ensuring interoperability among different vendors. The core contributions of this paper are: (i) a complete implementation for CoAP security modes for E2E IoT security, (ii) IoT security and communication protocols for a cloud platform for the IoT, and (iii) detailed experimental evaluation and benchmarking of E2E security between a network of smart things and a cloud platform.

http://dx.doi.org/10.1145/3092368.
ABSTRACT: Mobile money, also known as branchless banking, leverages ubiquitous cellular networks to bring much-needed financial services to the unbanked in the developing world. These services are often deployed as smartphone apps, and although marketed as secure, these applications are often not regulated as strictly as traditional banks, leaving doubt about the truth of such claims. In this article, we evaluate these claims and perform the first in-depth measurement analysis of branchless banking applications. We first perform an automated analysis of all 46 known Android mobile money apps across the 246 known mobile money providers from 2015. We then perform a comprehensive manual teardown of the registration, login, and transaction procedures of a diverse 15% of these apps. We uncover pervasive vulnerabilities spanning botched certification validation, do-it-yourself cryptography, and other forms of information leakage that allow an attacker to impersonate legitimate users, modify transactions, and steal financial records. These findings show that the majority of these apps fail to provide the protections needed by financial services. In an expanded re-evaluation one year later, we find that these systems have only marginally improved their security. Additionally, we document our experiences working in this sector for future researchers and provide recommendations to improve the security of this critical ecosystem. Finally, through inspection of providers’ terms of service, we also discover that liability for these problems unfairly rests on the shoulders of the customer, threatening to erode trust in branchless banking and hinder efforts for global financial inclusion.

https://doi.org/10.1016/j.jisa.2017.05.006.
ABSTRACT: This position paper is a reflective look at the state of Human-Centred Security & Privacy (HCSP) research and the paradigms that have informed and driven the research. It is important to reflect and examine, because, as Harrison et al. [1] argue, with respect to HCI, "the lack of clarity about the epistemological distinctions between paradigms is a limiting factor in the development of the field" (p. 1). We discuss the current state of play and then suggest possible explanations and suggestions for the way forward for our research field. This paper aims to prompt a discussion of the directions HCSP should take, and ways we could deploy to encourage maturation of the field.


ABSTRACT: IEC 62351 is an industry standard aimed at improving security in automation systems in the power system domain. It contains provisions to ensure the integrity, authenticity and confidentiality for different protocols used in power systems. In this article we look at the different parts of IEC 62351 and assess to what extent the standard manages to improve security in automation systems. We also point out some incongruities in the algorithms or parameters chosen in parts of the standard. Overall, we conclude that the standard can significantly improve security in power systems if applied comprehensively, but we also note that the need to preserve (partial) backwards-compatibility has led to some design choices that provide less security than could have been achieved with a more ambitious approach.


ABSTRACT: Purpose The viability of online anonymity is questioned in today’s online environment where many technologies enable tracking and identification of individuals. In light of the shortcomings of the government, industry and consumers in protecting anonymity, it is clear that a new perspective for ensuring anonymity is needed. Where current stakeholders have failed to protect anonymity, some proponents argue that economic models exist for valuation of anonymity. By placing a monetary value on anonymity through Rawls’ concept of primary goods, it is possible to create a marketplace for anonymity, therefore allowing users full control of how their personal data is used. This paper aims to explore the creation of a data marketplace, offering users the possibility of engaging with companies and other entities to sell and auction personal data. Importantly, participation in a marketplace does not sacrifice one’s anonymity, as there are different levels of anonymity in online systems. Design/methodology/approach The paper uses a conceptual framework based on the abstractions of anonymity and data valuation. Findings The manuscript constructs a conceptual foundation for exploring the development and deployment of a personal data marketplace. By suggesting features allowing individuals’ control of their personal data, and properly establishing monetary valuation of one’s personal data, it is argued that individuals will undertake a more proactive management of personal data. Originality/value An overview of the available services and products offering increased anonymity is explored, in turn, illustrating the beginnings of a market response for anonymity as a valuable good. By placing a monetary value on individuals’ anonymity, it is reasoned that individuals will more consciously protect their anonymity in ways where legislation and other practices (i.e. privacy policies, marketing opt-out) have failed.; Purpose The viability of online anonymity is questioned in today’s online environment where many technologies enable tracking and identification of individuals. In light of the shortcomings of the government, industry and consumers in protecting anonymity, it is clear that a new perspective for ensuring anonymity is needed. Where current stakeholders have failed to protect anonymity, some proponents argue that economic models exist for valuation of anonymity. By placing a monetary value on anonymity through Rawls’ concept of primary goods, it is possible to create a marketplace for anonymity, therefore allowing users full control of how their personal data is used. This paper
aims to explore the creation of a data marketplace, offering users the possibility of engaging with companies and other entities to sell and auction personal data. Importantly, participation in a marketplace does not sacrifice one’s anonymity, as there are different levels of anonymity in online systems. Design/methodology/approach The paper uses a conceptual framework based on the abstractions of anonymity and data valuation. Findings The manuscript constructs a conceptual foundation for exploring the development and deployment of a personal data marketplace. By suggesting features allowing individuals’ control of their personal data, and properly establishing monetary valuation of one’s personal data, it is argued that individuals will undertake a more proactive management of personal data. Originality/value An overview of the available services and products offering increased anonymity is explored, in turn, illustrating the beginnings of a market response for anonymity as a valuable good. By placing a monetary value on individuals’ anonymity, it is reasoned that individuals will more consciously protect their anonymity in ways where legislation and other practices (i.e. privacy policies, marketing opt-out) have failed.


https://doi.org/10.1007/s11277-017-4434-6.

ABSTRACT: We are currently living in the post-PC era where smartphones and other wireless handheld devices are changing our environment, making it more interactive, adaptive and informative. Termed as Internet of Things (IoT) evolving into Internet of Everything, the new ecosystem combines wireless sensor networks, cloud computing, analytical data, interactive technologies, as well as smart devices, to provision solutions in which the objects are embedded with network connectivity and an identifier to enhance object-to-object interactions. IoT innovation is advancing and provides diverse smart solutions or applications. From e-transport to e-health; smart living to e-manufacturing and many other e-solutions. In this environment, the rising trend of cyber attacks on systems infrastructure coupled with the system inherent vulnerabilities presents a source of concern not only to the vendors, but also to the consumer. These security concerns need to be addressed in order to ensure user confidence so as to promote wide acceptance and reap the potentials of IoT. From the perspectives of firmware, hardware and software infrastructure setups, this paper looks at some of the major IoT application and service domains, and analyze the cybersecurity challenges which are likely to drive IoT research in the near future.


doi: 10.1016/j.clsr.2017.05.004.

http://dx.doi.org/10.1016/j.clsr.2017.05.004.

ABSTRACT: Cybersecurity in medical devices has become a pressing issue in modern times. Technological progress has simultaneously benefited health care and created new risks. Through examining regulatory guidance, this article establishes that stakeholders have a shared responsibility to address cybersecurity threats that can affect such devices. Manufacturers and health care providers should consider identification, detection and prevention steps at the pre-market and post-market stages. End users and medical practitioners should practice good cyber hygiene to mitigate cybersecurity risks. Collectively, increased collaboration across all stakeholders is fundamental to ensure effective protection. ".


https://doi.org/10.1016/j.compeleceng.2017.06.020.

ABSTRACT: Technologies such as Internet of Things allow small devices to offer web-based services in an open and dynamic networking environments on a massive scale. End users or
service consumers face a hard decision over which service to choose among the available ones, as security holds a key in the decision making process. In this paper a base linguistic evaluation set is designed, based on which all the other fuzzy term sets that used for describing security attributes are unified and integrated for calculating an overall security value of the services. This work, to the best of our knowledge, is the first practical solution to offer direct comparisons and rankings of network services based on multiple security attributes such as confidentiality, availability, privacy and accountability. We analysed four major cloud service platforms to illustrate the proposed approach.

Bibliography on “digital divide”


ABSTRACT: This paper analyzes the digital development of 110 countries and its relationship with economic development. Using factor analysis, we combined seven ICT-related variables into a single measure of digital development. This measure was then used as the dependent variable in an OLS model that allows non-linear effects, with the GDP per capita of countries as the explanatory variable. Our findings are substantive in that the correlation between economic and digital development was found to be not linear, being much stronger in poorer countries, a finding not commonly seen in the literature. As a result, future studies that focus on the relationship between economic and digital developments may benefit from our findings, by postulating this type of relationship. In our model we were able to explain 83 % of the variation in the digital development of countries, compared to just 72 % if considering only a linear relationship.


ABSTRACT: Introduction The Internet is both an opportunity as well as a challenge for people with disabilities. However, this segment of the population is usually indicated among social groups experiencing digital divide. The study is focused on the analysis of factors determining Internet usage and undertaking specific activities online among people with disabilities based on a nationwide study performed in 2013 in Poland. Methods Secondary analysis was performed on the data of persons who declared disability status in 2013 "Social Diagnosis" study. Multivariate logistic regression models were developed for the use of the Internet and performing three types of activities online. Results Among 3,556 respondents with disability 51.02% were females, 25.19% 65 years of age and over and 33.05% were Internet users. The predictors of Internet usage included the degree of disability, place of residence, level of education, marital status, occupational status, net income, use of health care service and the use of mobile phone. The odds ratio that a person with disability belonging to the oldest category will use the Internet was only 0.04 (95% CI 0.02-0.09), when compared to the youngest category. The odds that a person with disability from the highest category of education will use the Internet were 18 times higher than in the case of persons with only basic education (OR 18.17, 95% CI 11.70-28.21). Common predictors of online activities (accessing websites of public institutions, checking and sending emails, publishing own content on the Internet) included age category and net income. Conclusions People with disabilities in Poland are facing a significant digital divide. The factors determining the use of the Internet in this group are similar to those of the general population.
On the other hand, people with disabilities who are active online, access diversified types of services including presentation of their own content online.

http://dx.doi.org/10.1016/j.tibtech.2017.06.007.
ABSTRACT: Life and medical science researchers increasingly rely on applications that lack a graphical interface. Scientists who are not trained in computer science face an enormous challenge analyzing high-throughput data. We present a training model for use of command-line tools when the learner has little to no prior knowledge of UNIX.

ABSTRACT: Recently, several digital divide scholars suggested that a shift is needed from a focus on binary Internet access (first-level digital divide) and Internet skills and use (second-level digital divide) to a third-level digital divide in which the tangible outcomes of Internet use are highlighted. A plethora of studies have been conducted to identify determinants of digital divides. Unfortunately, there is a lack of consistency in the terminology used. Moreover, terms are often not theoretically grounded. Therefore, we conducted a systematic literature review of digital divide determinants. The results show that the third-level digital divide was underexposed. The primary focus is on Internet use. More importantly, the identified determinants show that digital divide research is largely limited to sociodemographic and socioeconomic determinants.

https://doi.org/10.1016/j.tele.2017.08.004.
ABSTRACT: To fully leverage the availability of the internet services in Kenya, all the citizens need to be able to access and use the internet and related services. The availability of 4G networks, cyber cafés and fiber connectivity in most residential areas of Nairobi has allowed many Nairobi residents to be part of its information-based society. But, as with the other existing social inequalities in Nairobi, many people residing in the city’s low-income areas lack access to the internet. This has a negative impact on the residents’ prospects as the governments and businesses are increasingly delivering their services online. Using a pre-tested questionnaire, data were collected from five hundred and fifty respondents on their internet access and digital literacy skills among the residents of the Mathare Slum. From the survey, the study found existence of limited digital literacy skills and lack of internet access among the residents of the Mathare Slum. The study then used the Community Technology Centers (CTCs) intervention approach to narrowing the digital divide by setting up a CTC in the Mathare Slum to offer free community internet access and digital literacy skills training. Eight cohorts, each of eighteen residents, were offered free digital literacy training for five weeks and free unlimited internet access for four months. The study then evaluated the trainees’ internet usage continuance intentions after four months of continued use of the internet at the CTC. The results indicate that perceived enjoyment, perceived usefulness, internet self-efficacy, and confirmation of expectations all significantly influence the participants’ satisfaction with use of the internet. The results also show that continuance intentions of the participants from low income household to continue using internet beyond the CTC can be predicted by perceived service cost, satisfaction, internet self-efficacy and perceived usefulness. The study demonstrates the effectiveness of CTCs as an intervention approach and a replicable model that can be used to bridge the urban digital divide among low income urban communities for the development of an all-inclusive information-based society. Implications and recommendations for policy, practice and research are provided.
Bibliography on “digital economy”

ABSTRACT: Building effective digital economy infrastructure is currently a basic condition for improving international competitiveness of middle income countries that want to close their development gap and avoid the problem of a middle income trap. From the national perspective, investing in digital economy can be a tool which supports sustainable development and increases the speed of convergence process at regional level. In this context, comparative research on development of the digital economy, both at national and regional level, should be considered as an actual and important scientific task. Therefore, the main aim of the article is to assess and compare the development level of digital economy in Visegrad countries at regional level (NUTS 1). In the research, the digital economy is defined as a multiple-criteria phenomenon. As a result, in the empirical research, the TOPSIS method with application of generalized distance measure GDM was used. The data for diagnostic variables concerning digital infrastructure in the years 2012 and 2015 was provided by Eurostat. On the one hand, the analysis confirmed a relatively quick progress in building digital economy at regional level in Poland, the Czech Republic, Slovakia and Hungary. On the other hand, significant disparities between the analyzed regions can be seen, especially in case of Polish regions.

ABSTRACT: The G20 can ensure a secure, resilient, sustainable and responsible digital economy, especially in the financial sector, by removing vulnerabilities in Internet infrastructure, encouraging cross-border cooperation, providing guidance to telecommunications regulators and implementing norms regarding cyber-attacks.

ABSTRACT: Purpose The purpose of this paper is to develop a method to quantify the digital economy using a representative measurement approach and use it to analyze the USA, Germany, the Republic of Korea and Sweden. Design/methodology/approach The research approach of this paper is based on a developed methodology to identify firms of the digital economy by measuring the market capitalization of selected countries in comparison over time using financial databases. Findings Comparing the market capitalization of the digital economy, the USA lead both in absolute as well as in relative terms. The 11 firms with the largest market capitalization are all American. For Germany, the results show that policy measures should be undertaken to ameliorate competitiveness in the field. Research limitations/implications This current measurement only includes public firms. An interesting avenue for future research would be to transfer the approach to investigate private firms. Originality/value Previous research has focused on comparing information and communication technologies adoption and infrastructure as well as innovation hubs between countries. The authors are not aware of any paper to date which has compared market capitalization in the digital economy between countries using a representative sample. This paper offers a research approach to measure and compare the digital economy between countries. The methodology could be applied to other countries which seek to
benchmark their performance and derive policy measures to be able to compete with jurisdictions leading in the digital economy.; Purpose The purpose of this paper is to develop a method to quantify the digital economy using a representative measurement approach and use it to analyze the USA, Germany, the Republic of Korea and Sweden. Design/methodology/approach The research approach of this paper is based on a developed methodology to identify firms of the digital economy by measuring the market capitalization of selected countries in comparison over time using financial databases. Findings Comparing the market capitalization of the digital economy, the USA lead both in absolute as well as in relative terms. The 11 firms with the largest market capitalization are all American. For Germany, the results show that policy measures should be undertaken to ameliorate competitiveness in the field. Research limitations/implications This current measurement only includes public firms. An interesting avenue for future research would be to transfer the approach to investigate private firms. Originality/value Previous research has focused on comparing information and communication technologies adoption and infrastructure as well as innovation hubs between countries. The authors are not aware of any paper to date which has compared market capitalization in the digital economy between countries using a representative sample. This paper offers a research approach to measure and compare the digital economy between countries. The methodology could be applied to other countries which seek to benchmark their performance and derive policy measures to be able to compete with jurisdictions leading in the digital economy.

ABSTRACT: This case study is a blend of on-field study and research from secondary sources. The case study introduces the reader to the various cottage industries existing in Dharavi and attempts to burst the stereotypical myth of a slum being a place of misery, unemployment and squalor. The case then proceeds to bring out an understanding of the growth in the e-commerce sector in India through the marketplace model while enumerating the challenges faced by the cottage industries in Dharavi which prevented them from directly selling their products to the e-commerce websites. The story of a for-profit e-commerce web portal called Dharavi Market is brought out and its innovative business model, which has enabled in getting many craftsmen of Dharavi onto the e-commerce platform, is explained. Finally, the case highlights the company performance, describes the economic and social impacts of Dharavi Market on the craftsmen of the neighbourhood, brings out the limitations of the organization in accomplishing its objectives and contemplates the future prospects of this social enterprise.

http://dx.doi.org/10.1145/3092368.
ABSTRACT: Mobile money, also known as branchless banking, leverages ubiquitous cellular networks to bring much-needed financial services to the unbanked in the developing world. These services are often deployed as smartphone apps, and although marketed as secure, these applications are often not regulated as strictly as traditional banks, leaving doubt about the truth of such claims. In this article, we evaluate these claims and perform the first in-depth measurement analysis of branchless banking applications. We first perform an automated analysis of all 46 known Android mobile money apps across the 246 known mobile money providers from 2015. We then perform a comprehensive manual teardown of the registration, login, and transaction procedures of a diverse 15% of these apps. We uncover pervasive vulnerabilities spanning botched certification validation, do-it-yourself cryptography, and other forms of information leakage that allow an attacker to impersonate legitimate users, modify transactions, and steal financial records. These findings show that the majority of these apps fail to provide the protections needed by financial services. In an expanded re-evaluation one year later, we find that these systems have only marginally improved their security. Additionally, we
document our experiences working in this sector for future researchers and provide recommendations to improve the security of this critical ecosystem. Finally, through inspection of providers’ terms of service, we also discover that liability for these problems unfairly rests on the shoulders of the customer, threatening to erode trust in branchless banking and hinder efforts for global financial inclusion.

ABSTRACT: E-commerce is now one of the most significant activities carried out over the Internet. The research question and problem centred around as to what are the determinants of moderate growth of online retailing in UAE. The key determinants as variables addressed are transaction cost, lack of trust, lack of awareness, culture and local regulation. The last variable - local regulation - was identified by the respondents and experts during the pre-testing of the questionnaire. Both primary and secondary data were collected. Primary Initially a pilot survey was conducted with 35 respondents and subsequently 10 respondents were interviewed face to face to obtain feedback on the questionnaire and their suggestions for improvement data was collected from industrial exerts and customers of supermarkets, and on lines stores in UAE.  
Smartpls3.0 is used to analyse the data collected by building a partial least squares structural equation model (PLS-SEM). The SmartPLS3.0 tool was used to build and test the research framework and hypothesis. The relationships between the variables were obtained by performing partial least squares (PLS). To develop the trust among customers, the e commerce companies must improve the quality of their website and ensure they have genuine ratings to back them. Transaction costs include the policing costs and search costs which can be addressed by creating more awareness and by holding a wide variety of products. Regulations in favor of ecommerce retailers will motivate them to enter the market. It was also observed that the prevalence of mall culture is also one reason why there is no rapid growth in online retailing. The observations of this study will be of benefit to all stakeholders in e-commerce firms in UAE particularly consumers who intend to use online stores which would increase the growth rate of online retailing in the region. Companies providing payment solutions can leverage the finding of this research. The primary implications of this study would boost the moderate growth to speedier growth rate of online industry in the region.

Bibliography on “e-Government”

https://doi.org/10.1016/j.ijinfomgt.2017.03.008.  
ABSTRACT: The primary aim of this study is to examine the factors that predict end users’ intention to adopt mobile government (m-government) services in a developing country. The research is based upon a self-administered questionnaire survey of 120 current users’ in the United Arab Emirates (UAE), a leader in m-government development in the Arab world. The study employs advanced statistical techniques to test an extended the Technology Acceptance Model (TAM) by incorporating the determinants of trust, cost, social influence, variety of services, perceived usefulness in information technology and demographic profiles. The findings revealed that trust and social influence are positively associated with end users intention to adopt m-government services in the UAE. By identifying the predictors of users’ adoption of m-government, this study provides several theoretical and practical implications related to m-government service adoption.
ABSTRACT: This study presents a science mapping approach to analysing the thematic evolution of the e-Government field. We combine different bibliometric tools to analyse the evolution of the cognitive structure of this research topic, allowing us to discover the dynamics over different years and detecting the most prominent, productive, and highest-impact subfields. Science mapping provides a novel perspective to reveal the scientific frontiers and dynamic structure with visualization methods. Findings indicate symptoms of a research field in constant evolution that has not yet reached a stage of maturity, and specially, in the following areas of study: smart cities (provision of public services), e-Participation (political area) and technologies used and citizen's acceptance (technological tools).

ABSTRACT: Abstract E-Governance systems are socio-technical systems. The change affects socio-technical systems by shifting assemblies of constituent sub-systems. Using Multi-Level Perspective, MLP, technology transition literature has numerous instances explaining shifting of assemblies for socio-technical systems from stability, change, and transitions based on neo-Schumpeterian approach. Two approaches mainly characterize evolution and are 1) neo-Schumpeterian - variation, selection, and retention, and 2) naturalistic - novelty, emergence, and dissemination. Unique characteristic exists between society and E-Governance where one influences the other and acted upon by the other. E-Governance literature has relatively little attention as transition studies analyzing the interplay of developments at macro, meso and micro levels. Therefore, the author extended MLP to E-Governance systems by considering both approaches of evolution. It is essential to understand the context in which the interplay of developments takes place; moreover, transitions can have several trajectories or pathways. Therefore, the author selected case study with multiple E-Governance cases to represent various trajectories. The selected cases were from Central and state governments of India and represents domains citizen services, workflow automation of different magnitudes, and integration of departments. The case selection considered all three government scenarios. Governments implement E-Governance with a participating organization, the author during case selection ensured diverse participating organizations. In doing so, did analyze the interplay of developments in E-Governance and developed a multi-scalar MLP for E-Governance. Structuration and temporal dimensions along with spatial explain interoperations in E-Governance. By improving spatial dimension, actors can develop organizational capabilities to share information and increase knowledge management resulting in better interoperations within and among themselves. In doing so, actors can improve processes by developing activities that help in the better cumulation of the radical innovations as stable designs. In other words, process innovations assist to stabilize product innovations. The author from the selected cases noted a technology deterministic approach with the latest ICT innovations and traditional forms of organizing, with cases that exhibit new forms of organizing it is possible to obtain more insights to improve interoperability.

ABSTRACT: As society continues its rapid change to a digitized individual, corporate, and government environment it is prudent for researchers to investigate the zeitgeist of the global
citizenry. The technological changes brought about by big data analytics are changing the way we gather and view data. This big data analytics sentiment research examines how Chinese and American respondents may view big data collection and analytics differently. The paper follows with an analysis of reported attitudes toward possible viewpoints from each country on various big data analytics topics ranging from individual to business and governmental foci. Hofstede's cultural dimensions are used to inform and frame our research hypotheses. Findings suggest that Chinese and American perspectives differ on individual data values, with the Chinese being more open to data collection and analytic techniques targeted toward individuals. Furthermore, support is found that US respondents have a more favorable view of businesses' use of data analytics. Finally, there is a strong difference in the attitudes toward governmental use of data, where US respondents do not favor governmental big data analytics usage and the Chinese respondents indicated a greater acceptance of governmental data usage. These findings are helpful in better understanding appropriate technological change and adoption from a societal perspective. Specifically, this research provides insights for corporate business and government entities suggesting how they might adjust their approach to big data collection and management in order to better support and sustain their organization's services and products.


ABSTRACT: As society continues its rapid change to a digitized individual, corporate, and government environment it is prudent for researchers to investigate the zeitgeist of the global citizenry. The technological changes brought about by big data analytics are changing the way we gather and view data. This big data analytics sentiment research examines how Chinese and American respondents may view big data collection and analytics differently. The paper follows with an analysis of reported attitudes toward possible viewpoints from each country on various big data analytics topics ranging from individual to business and governmental foci. Hofstede's cultural dimensions are used to inform and frame our research hypotheses. Findings suggest that Chinese and American perspectives differ on individual data values, with the Chinese being more open to data collection and analytic techniques targeted toward individuals. Furthermore, support is found that US respondents have a more favorable view of businesses' use of data analytics. Finally, there is a strong difference in the attitudes toward governmental use of data, where US respondents do not favor governmental big data analytics usage and the Chinese respondents indicated a greater acceptance of governmental data usage. These findings are helpful in better understanding appropriate technological change and adoption from a societal perspective. Specifically, this research provides insights for corporate business and government entities suggesting how they might adjust their approach to big data collection and management in order to better support and sustain their organization's services and products.


ABSTRACT: With the inevitability and emergence of e-Government cloud around the world, there has been an increasing need for exploring the determinants and their mechanism of e-Government cloud adoption. In order to fill the existing knowledge gap, a grounded theory approach is adopted in this study for discussing the determinants of e-Government cloud adoption among government agencies in China. Choosing representative cases, we collect triangulate data and analysis the data using open coding, axial coding and selective coding. This study proposes a grounded theoretical model consists of sixteen sub-categories, five main categories and one core category (e-Government cloud adoption) and explore the factors' influence mechanism. The results show that technology driving, cloud provider support, environmental stimulus, organizational readiness and cloud trust play significant roles in e-
Government cloud adoption. In addition, technology driving and cloud provider support indirectly effect e-Government cloud adoption by cloud trust. Environmental stimulus and organizational readiness moderate the relationship between cloud trust and cloud adoption. These findings contribute to academic research and practical implications, advancing our understandings of e-Government cloud applications.


ABSTRACT: The release of government data in an open format is broadly expected to generate innovation and economic value. However, despite the emerging public notoriety of this issue, literature is still scarce regarding the commercial application of open government data. The main goal of this study is to understand how firms use open government data to create value. More specifically, we aim to identify what types of use are currently in place and which industries are more prominent in exploiting open government data. Building on the analysis of a dataset of 178 firms that use open government data across various industries in the U.S. we find twelve different atomic models. Additionally, our findings suggest that the way in which open government is used to create value is contingent to the firms' activities. Supported by robust empirical data, we anticipate that our research produces practical insights to entrepreneurs as well as firm managers in deriving value from public datasets, and equip government officials with relevant evidence for advocacy and policy-making.


ABSTRACT: It was the late 1970s. Former French presidents Charles de Gaulle and George Pompidou had recently died. The Arab oil embargo caused energy prices to quadruple for a time. Marseille remained gripped by drug lords. And France had to face the fact that its telephone network was one of the worst in the industrialized world. Fewer than 7 million telephone lines served 47 million French citizens, and the country's elite felt that the domination of U.S. firms in telephone equipment, computers, databases, and information networks threatened their national sovereignty. Or at least it damaged their cultural pride.


ABSTRACT: This paper addresses the issue of Japanese e-government benefits evaluation and stresses the need to develop a new measurement tool to evaluate e-government services from the perspective of the Japanese citizen and government service provider. While research has
used SERVQUAL, SERVPERF and Importance-Performance Analysis (IPA) as evaluation tools to measure quality of services, most of these tools are developed to evaluate quality of services from the perspective of the user (citizen) or service provider. In this paper, we propose a new evaluation tool, namely Satisfaction-Satisfaction Matrix (SSM), to gauge both the perceptions of the citizen and service provider concerning the performance of e-government services. The matrix not only acts as a useful tool to identify satisfaction responses, but also serves as a strategic decision making aid in the allocation of resources for improving e-government services.

Bibliography on “e-Health”


ABSTRACT: This paper focuses on telemedicine implementation, which can be used to extend modern medical knowledge to remote areas in developing countries. By examining doctor-patient interactions in the context of a telemedicine program in India, we posit how the behaviour of the actors interacting over virtual media is determined by interplay between two dominant institutional logics, namely logic of care and logic of choice. The paper draws on the tenets of institutional logics to extend the theoretical understanding about processes of engagement of actors with a new technology and explicates how the engagement evolves with the use of technology. The research emphasizes the essential role of considering the dynamics of logic of care and logic of choice in the design and implementation process.


ABSTRACT: Information Communication and Technology for Health (ICT4H) initiatives, such as telemedicine, can potentially bridge the gap between the health care services available in rural and urban areas. However most of such initiatives have not been able to sustain or obtain optimal results. Comprehending knowledge about what drives success in telemedicine initiatives would be highly valuable for practitioners, policymakers and academicians. In this study, through a qualitative analysis of doctor-patient interactions over a telemedicine initiative in India, we attempt to identify the mechanisms that can enable successful telemedicine interventions. Based on the perspective of critical realism, we explore the phenomenon through the lens of 'generative mechanisms'. Specifically, we identify three different mechanisms that underlie successful telemedicine, namely, (1) Mechanism of rich connectivity, which refers to the expanding scope of information flow between the nodes to include multiple aspects- clinical, managerial and technological; and both online and offline communication; (2) Mechanism of tutoring, which involves learning and skill development of the peripheral doctor; and (3) Mechanism of moulding, which concerns the moulding of naive patients to expert patients, both in technology use and self management of disease. In addition, the paper demonstrates the efficacy of critical realism as a philosophical perspective for providing substantive insights in the field of ICT4H initiatives.


ABSTRACT: In this paper we address the support of wearable mHealth applications in LTE and future 5G networks following a holistic approach that spans across the elements of a mobile
network. The communication requirements change from one application to another so we propose a measurement methodology to facilitate the selection of the user equipment to fulfil these requirements. We also discuss a new network architecture to support traffic prioritization, RAN programmability, low latency and group communications to over-the-top applications. Our proposal is validated using several realistic experimentation platforms and the results show that mHealth systems can benefit from our approach.

ABSTRACT: Telemonitoring and web-based interventions are increasingly used in primary-care practices in many countries for more effective management of patients with diabetes mellitus (DM). A new approach in treating patients with diabetes mellitus in family practices, based on ICT use and nurse practitioners, has been introduced and evaluated in this study. Method Fifteen Slovene family practices enrolled 120 DM patients treated only with a diet regime and/or tablets into the study. 58 of them were included into the interventional group, and the other 62 DM patients into the control group, within one-year-long interventional, randomised controlled trial. Patients in the control group had conventional care for DM according to Slovenian professional guidelines, while the patients in the interventional group were using also the eDiabetes application. Patients were randomised through a balanced randomisation process. Results Significant reductions of glycated haemoglobin (HbA1c) values were found after 6 and 12 months among patients using this eDiabetes application (p<0.05). Among these patients, a significant correlation was also found between self-monitored blood pressure and the final HbA1c values. Diabetic patients’ involvement in web-based intervention had only transient impact on their functional health status. Conclusion This eDiabetes application was confirmed to be an innovative approach for better self-management of DM type 2 patients not using insulin. Both a significant reduction of HbA1c values and a significant correlation between the average self-measured blood pressure and the final HbA1c values in the interventional group were found. Nurse practitioners - as diabetes care coordinators - could contribute to better adherence in diabetes e-care.

ABSTRACT: The mHealth trend, which uses mobile devices and associated technology for health interventions, offers unprecedented opportunity to transform the health services available to people across the globe. In particular, the mHealth transformation can be most disruptive in the developing countries, which is often characterized by a dysfunctional public health system. Despite this opportunity, the growth of mHealth in developing countries is rather slow and no existing studies have conducted an in-depth search to identify the reasons. We present a comprehensive report about the factors hindering the growth of mHealth in developing countries. Most importantly, we outline future strategies for making mHealth even more effective. We are also the first to conduct a case study on the public health system of Pakistan showing that mHealth can offer tremendous opportunities for a developing country with a severe scarcity of health infrastructure and resources. The findings of this paper will guide the development of policies and strategies for the sustainable adoption of mHealth not only in Pakistan but also for any developing country in general.

ABSTRACT: With the soaring interest in the Internet of Things (IoT), some healthcare providers...
are facilitating remote care delivery through the use of wearable devices. These devices are employed for continuous streaming of personal medical data (e.g., vitals, medications, allergies, etc.) into healthcare information systems for the purposes of health monitoring and efficient diagnosis. However, a challenge from the perspective of the physicians is the inability to reliably determine which data belongs to who in real-time. This challenge emanates from the fact that healthcare facilities have numerous users who own multiple devices; thereby creating an N x M data source heterogeneity and complexities for the streaming process. As part of this research, we seek to streamline the process by proposing a wearable IoT data streaming architecture that offers traceability of data routes from the originating source to the health information system. To overcome the complexities of mapping and matching device data to users, we put forward an enhanced Petri Nets service model that aids with a transparent data trace route generation, tracking and the possible detection of medical data compromises. The results from several empirical evaluations conducted in a real-world wearable IoT ecosystem prove that: 1) the proposed system’s choice of Petri Net is best suited for linkability, unlinkability, and transparency of the medical IoT data traceability, 2) under peak load conditions, the IoT architecture exhibits high scalability, and 3) distributed health information system threats such as denial of service, man-in-the-middle, spoofing, and masking can be effectively detected."


ABSTRACT: In the era of "big data", recent developments in the area of information and communication technologies (ICT) are facilitating organizations to innovate and grow. These technological developments and wide adaptation of ubiquitous computing enable numerous opportunities for government and companies to reconsider healthcare prospects. Therefore, big data and smart healthcare systems are independently attracting extensive attention from both academia and industry. The combination of both big data and smart systems can expedite the prospects of the healthcare industry. However, a thorough study of big data and smart systems together in the healthcare context is still absent from the existing literature. The key contributions of this article include an organized evaluation of various big data and smart system technologies and a critical analysis of the state-of-the-art advanced healthcare systems. We describe the three-dimensional structure of a paradigm shift. We also extract three broad technical branches (3T) contributing to the promotion of healthcare systems. More specifically, we propose a big data enabled smart healthcare system framework (BSHSF) that offers theoretical representations of an intra and inter organizational business model in the healthcare context. We also mention some examples reported in the literature, and then we contribute to pinpointing the potential opportunities and challenges of applying BSHSF to healthcare business environments. We also make five recommendations for effectively applying BSHSF to the healthcare industry. To the best of our knowledge, this is the first in-depth study about state-of-the-art big data and smart healthcare systems in parallel. The managerial implication of this article is that organizations can use the findings of our critical analysis to reinforce their strategic arrangement of smart systems and big data in the healthcare context, and hence better leverage them for sustainable organizational invention.


ABSTRACT: Cybersecurity in medical devices has become a pressing issue in modern times. Technological progress has simultaneously benefited health care and created new risks. Through examining regulatory guidance, this article establishes that stakeholders have a shared responsibility to address cybersecurity threats that can affect such devices. Manufacturers and health care providers should consider identification, detection and prevention steps at the pre-market and post-market stages. End users and medical practitioners should practice good cyber
hygiene to mitigate cybersecurity risks. Collectively, increased collaboration across all stakeholders is fundamental to ensure effective protection."

Bibliography on “ICT for development (ICT4D)"


ABSTRACT: Purpose The purpose of this research is to quantifiably measure the relationship between technological advancement, economic growth and societal employment trends across the Brazil, Russia, India and China (BRIC) countries, while also describing various government initiatives and policy steps taken to promote technology development. 
Design/methodology/approach This paper examines the relationship between the United Nations? International Telecommunication Union?s Information and Communication Technology (ICT) development Index (IDI), gross domestic product (GDP) and unemployment data. The paper also reviews the broadband and e-readiness components of each BRIC nation to further describe the policies in adoption of ICT. Findings This research concludes that there is in fact a significant positive correlation between technology (as measured by IDI) and economy (as measured by a nation?s GDP) and there is a significant negative correlation between technology (as measured by IDI) and a nation?s unemployment rate benefiting the society. Originality/value This research seeks to describe the impact of Information Communication Technology on economic and society indices in BRIC. Paper contributions include an empirical measurement and relationship between technological advancement, economic growth and employment trends across the BRIC countries, while also describing various government initiatives and policy steps taken to promote technology development. Design/methodology/approach This paper examines the relationship between the United Nations? International Telecommunication Union?s Information and Communication Technology (ICT) development Index (IDI), gross domestic product (GDP) and unemployment data. The paper also reviews the broadband and e-readiness components of each BRIC nation to further describe the policies in adoption of ICT. Findings This research concludes that there is in fact a significant positive correlation between technology (as measured by IDI) and economy (as measured by a nation?s GDP) and there is a significant negative correlation between technology (as measured by IDI) and a nation?s unemployment rate benefiting the society. Originality/value This research seeks to describe the impact of Information Communication Technology on economic and society indices in BRIC. Paper contributions include an empirical measurement and relationship between technological advancement, economic growth and employment trends across the BRIC countries, while also describing various government initiatives and policy steps taken to promote technology.

http://dx.doi.org/10.1016/j.telpol.2017.05.010.

ABSTRACT: Radio is the most widely used medium for disseminating information to rural audiences across Africa. Even in very poor communities, radio penetration is vast; it is estimated there are over 800 million radios in Sub-Saharan Africa. The paper summarizes evidence on food insecurity in Sub-Saharan Africa and strategies to provide information on innovative agricultural practices to smallholder farmers. The research in this paper is then discussed within the context of research on information and communication technologies (ICTS) for development. Next, the
paper presents the ICT-enhanced participatory radio campaign approach and ICT innovations introduced by Farm Radio International, a Canadian nongovernmental organization. The paper analyzes two participatory radio campaigns that use both listening groups and ICTs to engage African farmers. Research on these radio campaigns in six African countries is reported to examine how the participatory approach impacted listenership, knowledge and initial adoption of agricultural techniques and practices presented in the radio campaigns. The authors conclude that the findings of research on these projects could be highly relevant for increasing awareness and adoption of agricultural practices in Sub-Saharan Africa. They also appear promising for other development sectors and for other developing regions. 

https://doi.org/10.1016/j.techfore.2017.06.028.
ABSTRACT: Smart specialization (SS) is a policy concept that has gained significant momentum in Europe despite a frail theoretical background and implementation difficulties. These challenges become critical in the case of less-developed economies that often lack regional autonomy, a strong STI base, and local capabilities to identify and sustain such SS strategies. Combining elements from evolutionary economics and the export-led literature, I propose a framework that anchors the role of SS in the national innovation policy of such laggards, as a complementary avenue for improving competitiveness and growth. Moreover, to assist policy makers in lagging regions or countries, I advance a diagnostic tool to identify potential areas for SS, and also address the systemic and the regional-sectoral bottlenecks in these domains. I exemplify the use of this tool in the case of Bulgaria by using a large battery of quantitative and qualitative indicators from publicly available data. This type of investigation may be useful for other less-developed economies to kick-start this process and identify prima facie SS candidates.

doi: 10.1109/ACCESS.2017.2710800.
http://dx.doi.org/10.1109/ACCESS.2017.2710800.
ABSTRACT: The mHealth trend, which uses mobile devices and associated technology for health interventions, offers unprecedented opportunity to transform the health services available to people across the globe. In particular, the mHealth transformation can be most disruptive in the developing countries, which is often characterized by a dysfunctional public health system. Despite this opportunity, the growth of mHealth in developing countries is rather slow and no existing studies have conducted an in-depth search to identify the reasons. We present a comprehensive report about the factors hindering the growth of mHealth in developing countries. Most importantly, we outline future strategies for making mHealth even more effective. We are also the first to conduct a case study on the public health system of Pakistan showing that mHealth can offer tremendous opportunities for a developing country with a severe scarcity of health infrastructure and resources. The findings of this paper will guide the development of policies and strategies for the sustainable adoption of mHealth not only in Pakistan but also for any developing country in general.

doi: 10.1016/j.telpol.2017.05.007.
http://dx.doi.org/10.1016/j.telpol.2017.05.007.
ABSTRACT: This paper analyses the transition from the voice and SMS era of mobile telephony to the data-only era, and the strategies that operators have adopted during this transition phase. Key drivers for the transition are Over the Top services (OTTs). The paper uses quarterly prices for prepaid user baskets across 44 African countries and introduces an alternative tool to measure and compare top-up bundles. Prepaid voice, prepaid data and top-ups are analysed, to demonstrate the various strategies operators in Africa have adopted, in response to revenue loss
caused by OTTs, such as Facebook, WhatsApp and Skype. Case studies of dominant operators in South Africa, Kenya and Namibia are used to highlight which strategies have successfully defended or increased mobile operator revenues. The paper shows that embracing OTTs, and providing prepaid products that resemble flat-rate pricing (top-ups with limited validity), is the most successful strategy for mobile operators to retain revenues. The paper also shows how zero-rated OTTs can be used to gain market share for new entrants. We argue that regulators should resist the push for regulating OTTs, and instead facilitate the evolution to flat access pricing. ".

ABSTRACT: This paper evaluates the potential benefits, drawbacks and ethical risks of cloud computing for African countries in the context of information communication technologies for development (ICT4D). The paper argues that the capability approach, incorporating development ethics, provides a useful framework for considering the ethics of cloud computing in Africa. Coupled with global and intercultural ethics perspectives, both provide a rich human-centred view of the technology’s benefits, drawbacks and ethical risks. Focussing on the transformational benefits and features of cloud computing for small and medium enterprises (SMEs) and the health sector, the paper highlights potential ethical risks that are cause for concern. The paper concludes that while cloud computing has considerable potential for advancing development through the enhancement of capabilities, there remain huge challenges in its efficient, effective and ethical use. As a result, ethical risks related to equity, ownership, dependency, privacy, trust and security that reflect ‘unfreedoms’ and ‘capability deprivations’ may consequently have an impact on the technology’s potential as an information communication technology for development. ".

Bibliography on “intelligent transportation systems (ITS)”

doi: 10.1109/MCOM.2017.1601161.
http://dx.doi.org/10.1109/MCOM.2017.1601161.
ABSTRACT: Vehicles have embedded software dedicated to diverse functionality ranging from driving assistance to entertainment. Vehicle manufacturers often need to perform updates on software installed on vehicles. Software updates can either be pushed by the manufacturer to install fixes, or be requested by vehicle owners to upgrade some functionality. We propose an architecture for distributing software updates on vehicles based on SDN and cloud computing. We show that using SDN, the emergent networking paradigm, which provides on-demand network programmability, adds substantial flexibility for deploying software updates on vehicles. We propose solutions for how vehicular networks can be modeled as connectivity graphs that can be used as input for the SDN architecture. After constructing graphs, we present an SDN-based solution where different frequency bands are assigned to different graph edges to improve the network performance.

Brooks, Rodney. "Robotic Cars Won’t Understand Us, and we Won’t Cut them Much Slack." IEEE Spectrum, 54, no. 8 (2017): 34-51
doi: 10.1109/MSPEC.2017.8000288.
http://dx.doi.org/10.1109/MSPEC.2017.8000288.
ABSTRACT: The engineers who built routers for the fledgling ARPANET in 1969 never dreamed that networking technology would upend journalism. Nor did anyone guess that cellular
communication would make people ignore one another at the dinner table. Early users of email had no idea of spam. Henry Ford did not foresee the traffic jam. Technology has unintended consequences. Sometimes they are large and tumultuous. It is often well worth the trouble of trying to figure them out ahead of time.

doi: 10.1109/TSMC.2016.2586500.
http://dx.doi.org/10.1109/TSMC.2016.2586500.
ABSTRACT: Traffic congestion is a critical concern in most cities. Inefficient traffic control wastes time and fuel, and causes harmful carbon emissions, road accidents, and many economic problems. This paper proposes a cooperative traffic control framework for optimizing the global throughput and travel time for multiple intersections. Adjacent intersections are considered in analyzing their joint passing rates and attempting to maximize the number of vehicles traveling through a road network. The proposed framework provides fairness for each road segment and realizes the green wave concept for arterial roads. This paper extends previous studies by considering the passing rates of continuous road segments and coordinating traffic signals of multiple intersections. The simulation results show that the approach outperforms existing schemes in that it achieves a high global throughput, reduces the average waiting time, lowers the total travel time, and decreases average CO₂ emissions. To verify the feasibility of the proposed framework, a wireless access in vehicular environments/dedicated short-range communications-based prototype for lane-level dynamic traffic control is designed and implemented.

ABSTRACT: An announcement scheme is a system that facilitates vehicles to broadcast road-related information in vehicular ad hoc networks (VANETs) in order to improve road safety and efficiency. Here, the authors propose a new cryptographic primitive for public updating of reputation score based on the Boneh-Boyen-Shacham short group signature scheme. This allows private reputation score retrieval without a secure channel. Using this, the authors devise a privacy-aware announcement scheme using reputation systems which is reliable, auditable, and robust.

https://doi.org/10.1016/j.trd.2017.06.008.
ABSTRACT: Investments in intelligent transportation systems (ITS) are beginning to take place in the context of smart city initiatives in many cities. Energy efficiency and emissions reduction are becoming essential rationales for such investments. It is important, therefore, to understand under what conditions investments in ITS in the context of smart cities produce energy savings. We reviewed existing literature, conducted case studies and interviews, and found that the smart cities context has transformed traditional ITS into "smart mobility" with three major characteristics: people-centric, data-driven, and powered by bottom-up innovations. We argue that there are four main steps for smart mobility solutions to achieve energy savings and that several institutional, technical, and physical conditions are required at each step. Energy savings are achieved when users change their behavior and result in less travel, modal shift, and reduction of per-km energy consumption in the short term. Smart mobility solutions also enable other energy saving policies or initiatives, which would otherwise not be feasible. In the long term, users’ lifestyles could change and lead to further energy savings. For cities in developing
countries with lower motorization, less-developed infrastructure, less financial resources, and less institutional and technical capacity, our recommendations to achieve benefits from smart mobility investments are: (1) involve all public and private players in a collaborative and transparent setting; (2) develop the technical capacity to procure and monitor information services; and (3) focus on basic infrastructure, including a coherent road network and basic traffic management measures.

doi: 10.1109/TIV.2017.2716839.
[http://dx.doi.org/10.1109/TIV.2017.2716839](http://dx.doi.org/10.1109/TIV.2017.2716839).

**ABSTRACT:** Information obtainable from intelligent transportation systems (ITS) provides the possibility of improving safety and efficiency of vehicles at different levels. In particular, such information also has the potential to be utilized for the prediction of driving conditions and traffic flow, which allows Hybrid Electric Vehicles (HEVs) to run their powertrain components in corresponding optimum operating regions. This paper proposes to improve the performance of one of the most promising real-time powertrain control strategies, called adaptive equivalent consumption minimization strategy (AECMS), using predicted driving conditions. In this paper, three real-time powertrain control strategies are proposed for HEVs, each of which introduces an adjustment factor for the cost of using electrical energy (equivalent factor) in AECMS. These factors are proportional to the predicted energy requirements of the vehicle, regenerative braking energy, and the cost of battery charging and discharging in a finite time window. Simulation results using detailed vehicle powertrain models illustrate that the proposed control strategies improve the performance of AECMS in terms of fuel economy, number of engine transients (ON/OFF), and charge sustainability of the battery.

doi: 10.1109/TIV.2017.2716839.
[http://dx.doi.org/10.1109/TIV.2017.2716839](http://dx.doi.org/10.1109/TIV.2017.2716839).

**ABSTRACT:** Information obtainable from intelligent transportation systems (ITS) provides the possibility of improving safety and efficiency of vehicles at different levels. In particular, such information also has the potential to be utilized for the prediction of driving conditions and traffic flow, which allows Hybrid Electric Vehicles (HEVs) to run their powertrain components in corresponding optimum operating regions. This paper proposes to improve the performance of one of the most promising real-time powertrain control strategies, called adaptive equivalent consumption minimization strategy (AECMS), using predicted driving conditions. In this paper, three real-time powertrain control strategies are proposed for HEVs, each of which introduces an adjustment factor for the cost of using electrical energy (equivalent factor) in AECMS. These factors are proportional to the predicted energy requirements of the vehicle, regenerative braking energy, and the cost of battery charging and discharging in a finite time window. Simulation results using detailed vehicle powertrain models illustrate that the proposed control strategies improve the performance of AECMS in terms of fuel economy, number of engine transients (ON/OFF), and charge sustainability of the battery.

doi: 10.1109/TVT.2016.2582721.
[http://dx.doi.org/10.1109/TVT.2016.2582721](http://dx.doi.org/10.1109/TVT.2016.2582721).

**ABSTRACT:** Plug-in hybrid electric vehicles (PHEVs) offer an immediate solution for emissions reduction and fuel displacement within the current infrastructure. Targeting PHEV powertrain optimization, a plethora of energy management strategies (EMSs) have been proposed. Although these algorithms present various levels of complexity and accuracy, they find a limitation in
terms of availability of future trip information, which generally prevents exploitation of the full PHEV potential in real-life cycles. This paper presents a comprehensive analysis of EMS evolution toward blended mode (BM) and optimal control, providing a thorough survey of the latest progress in optimization-based algorithms. This is performed in the context of connected vehicles and highlights certain contributions that intelligent transportation systems (ITSs), traffic information, and cloud computing can provide to enhance PHEV energy management. The study is culminated with an analysis of future trends in terms of optimization algorithm development, optimization criteria, PHEV integration in the smart grid, and vehicles as part of the fleet.

doi: 10.1109/ACCESS.2017.2717999.
http://dx.doi.org/10.1109/ACCESS.2017.2717999.

ABSTRACT: A vehicular ad hoc network (VANET) serves as an application of the intelligent transportation system that improves traffic safety as well as efficiency. Vehicles in a VANET broadcast traffic and safety-related information used by road safety applications, such as an emergency electronic brake light. The broadcast of these messages in an open-access environment makes security and privacy critical and challenging issues in the VANET. A misuse of this information may lead to a traffic accident and loss of human lives at worse and, therefore, vehicle authentication is a necessary requirement. During authentication, a vehicle’s privacy-related data, such as identity and location information, must be kept private. This paper presents an approach for privacy-preserving authentication in a VANET. Our hybrid approach combines the useful features of both the pseudonym-based approaches and the group signature-based approaches to preclude their respective drawbacks. The proposed approach neither requires a vehicle to manage a certificate revocation list, nor indulges vehicles in any group management. The proposed approach utilizes efficient and lightweight pseudonyms that are not only used for message authentication, but also serve as a trapdoor in order to provide conditional anonymity. We present various attack scenarios that show the resilience of the proposed approach against various security and privacy threats. We also provide analysis of computational and communication overhead to show the efficiency of the proposed technique. We carry out extensive simulations in order to present a detailed network performance analysis. The results show the feasibility of our proposed approach in terms of end-to-end delay and packet delivery ratio.

http://dx.doi.org/10.1016/j.procs.2017.06.101.

ABSTRACT: A Vehicular Adhoc Network (VANET) is a generic communications conceptualization that can be applied to Intelligent Transportation Systems (ITS) and its main goal is to allow exchange of information between moving vehicles, fixed infrastructures, pedestrians with personal devices, and all other electronic devices able to connect to a VANET environment. Information exchange between different stakeholders brings a relevant potential to the development of applications to help users in different areas such as traffic safety and efficiency, infotainment and personal comfort. However, due to the expected heterogeneity (different processing power and storage capabilities, communications technologies and mobility patterns) and large scale on the number of devices involved, application interoperability in VANET contexts can be a challenging problem. Non-agnostic standard communications architectures for ITS systems have some deploying limitations and lack important specific implementation details. This paper presents an agnostic VANET architecture (it permits the use of several communication technologies in an open and modular framework), which is an adaption of present standards approach, to be deployed on ITS systems as a mean to overcome their main limitations. ".

ABSTRACT: As an important component of the intelligent transportation system, internet-of-vehicles technology has attracted considerable attention. The dissemination of event-driven emergency messages with high reliability and low delay is vital to ensure traffic safety and improve traffic efficiency in urban environment. In this study, the authors propose a reliable emergency message dissemination protocol taking into account the urban road characteristics and scalability requirements, which consists of a layout-aware ready-to-broadcast-emergency-message and clear-to-broadcast-emergency-message handshake mechanism and a redundant relay node adaptation mechanism. Finally, the simulation results confirm the feasibility and effectiveness of the proposed scheme.

Bibliography on “internet governance”

doi: 10.1109/MIC.2017.2911433.
http://dx.doi.org/10.1109/MIC.2017.2911433.
ABSTRACT: The difference between a good and bad Internet of Things depends on society's ability to construct effective IoT governance models. This article proposes the formulation of principles as a means to unify the multiple bodies and organizations involved in the IoT governance ecosystem.

http://dx.doi.org/10.1145/3126489.
ABSTRACT: Digital technologies have unleashed profound forces changing and reshaping rule making in the democracies of the information society. Today, we are witnessing a transformative period for law and governance in the digital age. Elected representative government and democratically chosen rules vie for authority with new players who have emerged from the network environment. At the same time, network technologies have unraveled basic foundational prerequisites for the rule of law in democracy like privacy, freedom of association, and government oversight. The digital age, thus, calls for the emergence of a Digitocracy—a new set of more complex governance mechanisms assuring public accountability for online power held by state and nonstate actors through the creation of new checks and balances among a more diverse group of players than democracy's traditional grouping of a representative legislature, executive branch, and judiciary.

Bibliography on “internet of things (IoT)”

https://doi.org/10.1016/j.comnet.2017.06.013.
ABSTRACT: The explosive growth in the number of devices connected to the Internet of Things (IoT) and the exponential increase in data consumption only reflect how the growth of big data perfectly overlaps with that of IoT. The management of big data in a continuously expanding network gives rise to non-trivial concerns regarding data collection efficiency, data processing, analytics, and security. To address these concerns, researchers have examined the challenges associated with the successful deployment of IoT. Despite the large number of studies on big data, analytics, and IoT, the convergence of these areas creates several opportunities for
flourishing big data and analytics for IoT systems. In this paper, we explore the recent advances in big data analytics for IoT systems as well as the key requirements for managing big data and for enabling analytics in an IoT environment. We taxonomized the literature based on important parameters. We identify the opportunities resulting from the convergence of big data, analytics, and IoT as well as discuss the role of big data analytics in IoT applications. Finally, several open challenges are presented as future research directions.

doi: 10.1109/MIC.2017.2911433.
http://dx.doi.org/10.1109/MIC.2017.2911433.
ABSTRACT: The difference between a good and bad Internet of Things depends on society’s ability to construct effective IoT governance models. This article proposes the formulation of principles as a means to unify the multiple bodies and organizations involved in the IoT governance ecosystem.

doi: 10.1109/ACCESS.2017.2686092.
http://dx.doi.org/10.1109/ACCESS.2017.2686092.
ABSTRACT: Internet of Things (IoT) is an emerging concept, which aims to connect billions of devices with each other. The IoT devices sense, collect, and transmit important information from their surroundings. This exchange of very large amount of information amongst billions of devices creates a massive energy need. Green IoT envisions the concept of reducing the energy consumption of IoT devices and making the environment safe. Inspired by achieving a sustainable environment for IoT, we first give the overview of green IoT and the challenges that are faced due to excessive usage of energy hungry IoT devices. We then discuss and evaluate the strategies that can be used to minimize the energy consumption in IoT, such as designing energy efficient datacenters, energy efficient transmission of data from sensors, and design of energy efficient policies. Moreover, we critically analyze the green IoT strategies and propose five principles that can be adopted to achieve green IoT. Finally, we consider a case study of very important aspect of IoT, i.e., smart phones and we provide an easy and concise view for improving the current practices to make the IoT greener for the world in 2020 and beyond.

https://doi.org/10.1007/s00779-017-1010-8.
ABSTRACT: Over the past few years, the semantics community has developed several ontologies to describe concepts and relationships for internet of things (IoT) applications. A key problem is that most of the IoT-related semantic descriptions are not as widely adopted as expected. One of the main concerns of users and developers is that semantic techniques increase the complexity and processing time, and therefore, they are unsuitable for dynamic and responsive environments such as the IoT. To address this concern, we propose IoT-Lite, an instantiation of the semantic sensor network ontology to describe key IoT concepts allowing interoperability and discovery of sensory data in heterogeneous IoT platforms by a lightweight semantics. We propose 10 rules for good and scalable semantic model design and follow them to create IoT-Lite. We also demonstrate the scalability of IoT-Lite by providing some experimental analysis and assess IoT-Lite against another solution in terms of round trip time performance for query-response times. We have linked IoT-Lite with stream annotation ontology, to allow queries over stream data annotations, and we have also added dynamic semantics in the form of MathML annotations to IoT-Lite. Dynamic semantics allows the annotation of spatio-temporal values, reducing storage requirements and therefore the response time for queries. Dynamic semantics stores mathematical formulas to recover estimated values when actual values are missing.
https://doi.org/10.1016/j.future.2017.05.048.
ABSTRACT: The Internet of Things (IoT) is becoming an important factor in many areas of our society. IoT brings intelligence to critical aspects like transportation, industry, payments, health and many others. The interaction between embedded devices and Cloud based web services is a common scenario of IoT deployment. From the security point of view, both users and smart devices must establish a secure communication channel and have a form of digital identity. Most of the times, the usage of IoT devices requires an already existing infrastructure which cannot be controlled by the device owner, for instance in a smart home. This scenario requires a security stack suitable for heterogeneous devices which can be integrated in already existing operating systems or IoT frameworks. This paper proposes a lightweight authorization stack for smart-home IoT applications, where a Cloud-connected device relays input commands to a user's smart-phone for authorization. This architecture is user-device centric and addresses security issues in the context of an untrusted Cloud platform.

https://doi.org/10.1016/j.future.2017.05.034.
ABSTRACT: A Smart City is a cyber–physical system improving urban behavior and capabilities by providing ICT-based functionalities. An infrastructure for Smart City has to be geographically and functionally extensible, as it requires both to grow up with the physical environment and to meet the increasing in needs and demands of city users/inhabitants. In this paper, we propose iSapiens, an IoT-based platform for the development of general cyber–physical systems suitable for the design and implementation of smart city services and applications. As distinguishing features, the iSapiens platform implements the edge computing paradigm through both the exploitation of the agent metaphor and a distributed network of computing nodes directly scattered in the urban environment. The platform promotes the dynamic deployment of new computing nodes as well as software agents for addressing geographical and functional extensibility. iSapiens provides a set of abstractions suitable to hide the heterogeneity of the physical sensing/actuator devices embedded in the system, and to support the development of complex applications. The paper also furnishes a set of methodological guidelines exploitable for the design and implementation of smart city applications by properly using iSapiens. As a significant case study, the design and implementation of a real Smart Street in the city of Cosenza (Italy) are shown, which provides decentralized urban intelligence services to citizens.

ABSTRACT: The Internet of Things (IoT) envisions pervasive, connected, and smart nodes interacting autonomously while offering all sorts of services. Wide distribution, openness and relatively high processing power of IoT objects made them an ideal target for cyber attacks. Moreover, as many of IoT nodes are collecting and processing private information, they are becoming a goldmine of data for malicious actors. Therefore, security and specifically the ability to detect compromised nodes, together with collecting and preserving evidences of an attack or malicious activities emerge as a priority in successful deployment of IoT networks. In this paper, we first introduce existing major security and forensics challenges within IoT domain and then briefly discuss about papers published in this special issue targeting identified challenges."

ABSTRACT: 5G machine type communication (MTC) networks will be formed of dense, heterogeneous clusters of wireless devices serving different application verticals, such as urban service enablers, body area networks, industrial and home automation and entertainment. They will use a large number of existing and emerging wireless technologies served by advanced 5G gateways or Internet of Things eNodeBs and controlled through software interfaces by control and application programs, reducing the need for on-site, manual reconfigurations. In this paper, we focus on the software interfaces that enable the control of 5G MTC networks and propose a functional split of upstream and downstream functions. We show similarities with application programming interface (API) development in object-oriented (OO) languages and with representation state transfer (RESTful) principles. We provide a reference implementation using RESTful functionality and an example control application that performs localization.

doi: 10.1109/MCE.2017.2684938.
http://dx.doi.org/10.1109/MCE.2017.2684938.
ABSTRACT: Fifth-generation (5G) sounds like the successor to fourth-generation (4G) cellular telephone technology, and that is the intent. However, while the progression from second generation to third generation, to 4G, and now to 5G seems simple, the story is more nuanced. At the Consumer Electronics (CE) Society meeting in January 2017, I had a chance learn more about 5G (not to be confused with 5 Ghz Wi-Fi) and another standard, Advanced Television Systems Committee (ATSC) 3.0, which is supposed to be the next standard for broadcast TV. The contrast between the approach taken with these standards and the way the Internet works offers a pragmatic framework for a deeper understanding of engineering, economics, and more. One hint that something is wrong in 5G land came when I was told that 5G was necessary for the Internet of Things (IoT). This is a strange claim considering how much we are already doing with IoT devices.

ABSTRACT: The 5G wireless cellular networks are evolving, to meet the drastic subscriber demands in near future. This is accompanied with a rise in the energy consumption in cellular networks. Higher energy consumption result in a rise in the carbon dioxide emissions into the environment, and exposure to greater amount of harmful radiations. To indemnify the ecological and health concerns associated with the rise in CO2 levels, an important technology is GREEN communication. This paper presents a survey on various energy-efficient scenarios for green communication, involving device-to-device (D2D) communication, spectrum sharing, ultra-dense networks (UDNs), massive MIMO, millimeter wave networks and the Internet of Things (IoT). For improving the battery lifetime of user terminals in a network, a three-layer architecture is proposed, which emphasizes on transmitting information through relays, between a given pair of users. The susceptibility of security attack on relays is also enumerated. As security in the networks cannot be overlooked, secure power optimization is studied, and the possible security attack on users within the small cell access point (SCA) of the 5G networks is proposed. Some of the key research challenges in association to green communication and security have been discussed, and the ongoing projects and standardization activities also stated in the paper. ".

doi: 10.1007/s11036-017-0846-5.
https://doi.org/10.1007/s11036-017-0846-5.
ABSTRACT: Internet of Things (IoT) is an overall industry improvement that joins people,
method, data, and things to make masterminded affiliations more critical and profitable than at whatever time in late memory. There are various issues in security of IOT yelling out for courses of action, for instance, RFID mark security, remote security, framework transmission security, security protection and the information that get ready security. The advances in some of the disseminated registering and the Internet of things (IOT) have given a promising opportunity to decide the troubles realized by the extending transportation issues and the author shows a novel multi-layered vehicular data cloud stage by using the basic appropriated processing and IOT propels. Two creative cloud advantages, a watchful ceasing cloud organization and vehicular data mining cloud organization, for vehicle ensure examination in the IoT situation are also given out. Troubles and direction for future work are also given. In this article, the author proposes Forum Alert Traffic Security (FATS) architecture in the Internet of Things (IOT) setting, which together studies development examination, security necessities, and action making arrangements for sight and sound applications.

ABSTRACT: Thanks to the of mobile devices, the multitude of information to be transferred and high data rate, a new generation of cellular networks referred to as 5G will be developed in near future. It is expected that 5G networks will provide fast and on-time accessibility of information at any time and place. For achieving these objectives, cellular networks have to be improved significantly. The purpose of the present study was to investigate the architecture of 5G networks which includes the followings: device-to-device communication (D2D), massive multiple input and multiple output (MIMO), millimeter wave communications, cognitive radio (CR), etc. Also, effective and efficient technologies such as Network Function Virtualization (NFV), Fast caching, Self-Interference Cancellation (SIC) and Downlink and Uplink Decoupling (DUD), etc. are discussed and investigated in this study so as to optimize the architectures which can meet the needs and expectations of users and operators in future. In this study, an attempt was made to examine different limitations which hinder the development of this network. Various challenges were identified and the possible solutions have been highlighted. At the end, possible and probable solutions have been explained. Moreover, methods and directions for further research on 5G networks have been suggested.

ABSTRACT: The Internet of Things (IoT) provides a global communication network between millions of devices connected to the internet. Similarly, the emergence of heterogeneous wireless networks provides a medium to the IoT communication paradigm. In order to enable an energy-friendly communication in an IoT environment, such as smart home, office, city, etc. we propose an energy-aware communication systems for IoT environments. The proposed scheme works in several phases such as identification of high energy require appliances, deployment of sensors, scheduling, etc. Moreover, the data from the IoT devices are collected through sensors. The data is tested using the Hadoop ecosystem for future planning and efficient usage of the energy in an IoT environment. The proposed architecture is tested in a different scenario against the Wireless Sensor Network (WSN) based IoT architecture in the context of energy consumption. The proposed architecture performs efficiently than WSN in a number of scenarios. Similarly, the efficiency and processing time of the Hadoop system is computed which shows better results. ".

ABSTRACT: With the current availability of an extreme diversity of data sources and services, emerging from the Internet of Things and Cloud domains, the challenge is shifted towards identifying intelligent, abstracted and adaptive ways of correlating and combining the various levels of information. The purpose of this work is to demonstrate such a combination, on one hand at the service level, through integrating smart cities platforms for user level data, and on the other hand at Complex Event Processing, Storage and Analytics capabilities together with Twitter data. The final goal is to identify events of interest to the user such as Large Crowd Concentration (LCC) in a given area, in order to enrich application level information with related event identification that can enable more sophisticated actions on behalf of that user. The identification is based on observation of Twitter activity peaks compared to historical data on a dynamic time and location of interest. The approach is validated through a two-month experiment in the city of Madrid, identifying LCCs in sporting events around two sports venues and analyzing various approaches with relation to the needed thresholds definition."

http://dx.doi.org/10.1016/j.pmcj.2017.06.020.

ABSTRACT: With the soaring interest in the Internet of Things (IoT), some healthcare providers are facilitating remote care delivery through the use of wearable devices. These devices are employed for continuous streaming of personal medical data (e.g., vitals, medications, allergies, etc.) into healthcare information systems for the purposes of health monitoring and efficient diagnosis. However, a challenge from the perspective of the physicians is the inability to reliably determine which data belongs to who in real-time. This challenge emanates from the fact that healthcare facilities have numerous users who own multiple devices; thereby creating an N x M data source heterogeneity and complexities for the streaming process. As part of this research, we seek to streamline the process by proposing a wearable IoT data streaming architecture that offers traceability of data routes from the originating source to the health information system. To overcome the complexities of mapping and matching device data to users, we put forward an enhanced Petri Nets service model that aids with a transparent data trace route generation, tracking and the possible detection of medical data compromises. The results from several empirical evaluations conducted in a real-world wearable IoT ecosystem prove that: 1) the proposed system’s choice of Petri Net is best suited for linkability, unlinkability, and transparency of the medical IoT data traceability, 2) under peak load conditions, the IoT architecture exhibits high scalability, and 3) distributed health information system threats such as denial of service, man-in-the-middle, spoofing, and masking can be effectively detected."

doi: 10.1016/j.sna.2017.06.019.
https://doi.org/10.1016/j.sna.2017.06.019.

ABSTRACT: The Internet of Things (IoT) has been expanding in recent years with advancements in technologies, techniques and devices. This expansion has led to several different applications in the medical, civil, marine, military and domestic domains. Each of these domains have different requirements and challenges, with one common denominator: data security. Data security is an important aspect for any IoT network, however, in modern IoT systems simple data security may be not sufficient. This paper looks at a secure end-to-end IoT solution that allows wireless sensors/devices to connect to any PC in the world while guaranteeing data and network security. The scheme proposed in this paper can protect an IoT solution against several attacks like data breach, Denial of Service (DoS) and unauthorized access. Results obtained show that the technologies implemented, or used are superior in terms of time and energy consumption when compared to their counterparts in previously published works.

ABSTRACT: A recent forecast by Gartner reveals the sheer scale of the burgeoning Internet of Things (IoT). According to the analyst firm's predictions, more than 8.4 billion connected 'things' will be in use across the world this year alone – and this figure is expected to rise significantly over the next three years, reaching more than 20 billion by 2020.1


ABSTRACT: The heterogeneous, evolving and distributed nature of Cyber-Physical Systems (CPS) means that there is little chance of performing a top down development or anticipating all critical requirements such devices will need to satisfy individually and collectively. This paper describes an approach to verifying system requirements, when they become known, by performing an automated refinement check of its composed components abstracted from the actual implementation. This work was sponsored by the Charles Stark Draper Laboratories under the DARPA HACMS project. The views, opinions, and/or findings expressed are those of the authors and should not be interpreted as representing the official views or policies of the Department of Defense or the U.S. Government.


ABSTRACT: Chinese officials are increasingly turning to a policy known as Informatisation, connecting industry online, to utilise technology to improve efficiency and tackle economic developmental problems in China. However, various recent laws have made foreign technology firms uneasy about perceptions of Rule of Law in China. Will these new laws, under China's stated policy of “Network Sovereignty” (“网络主权” “wangluo zhuquan”) affect China's ability to attract foreign technology firms, talent and importantly technology transfers? Will they slow China’s technology and Smart City drive? This paper focuses on the question of whether international fears of China’s new Cyber Security Law are justified. In Parts I and II, the paper analyses why China needs a cyber security regime. In Parts III and IV it examines the law itself.


ABSTRACT: Constrained Application Protocol (CoAP) has become the de-facto web standard for the IoT. Unlike traditional wireless sensor networks, Internet-connected smart thing deployments require security. CoAP mandates the use of the Datagram TLS (DTLS) protocol as the underlying secure communication protocol. In this paper we implement DTLS-protected secure CoAP for both resource-constrained IoT devices and a cloud backend and evaluate all three security modes (pre-shared key, raw-public key, and certificate-based) of CoAP in a real cloud-connected IoT setup. We extend SicsthSense—a cloud platform for the IoT—with secure CoAP capabilities, and compliment a DTLS implementation for resource-constrained IoT devices with raw-public key and certificate-based asymmetric cryptography. To the best of our knowledge, this is the first effort
toward providing end-to-end secure communication between resource-constrained smart things and cloud back-ends which supports all three security modes of CoAP both on the client side and the server side. SecureSense–our End-to-End (E2E) secure communication architecture for the IoT–consists of all standard-based protocols, and implementation of these protocols are open source and BSD-licensed. The SecureSense evaluation benchmarks and open source and open license implementation make it possible for future IoT product and service providers to account for security overhead while using all standardized protocols and while ensuring interoperability among different vendors. The core contributions of this paper are: (i) a complete implementation for CoAP security modes for E2E IoT security, (ii) IoT security and communication protocols for a cloud platform for the IoT, and (iii) detailed experimental evaluation and benchmarking of E2E security between a network of smart things and a cloud platform.

ABSTRACT: Are you ready for what’s coming? As senior managers look to connect products, processes, and services to the growing field of the Internet of Things (IoT), this is an important preliminary question. Leveraging the IoT for firm benefit involves revisiting certain ideas that may have gone unquestioned for a long time. In this article, we begin by reviewing the complexity of the IoT, the complexities of an increasingly interconnected environment, and the increasing need to develop partnerships in order to create innovative solutions. We then offer practical insights from a case in which three actors with reciprocal specialties cooperated to create an IoT solution in the form of a connected appliance. While a shared spirit of optimism prevailed throughout the endeavor, reaching the finish line meant jumping a few hurdles along the way. Finally, we describe a number of fundamental issues related to business models, partnership strategy, data ownership, and technology diffusion that every enterprise should address before diving headfirst into the Internet of Things.

ABSTRACT: Emergence of smart things has revolutionized the conventional internet into a connected network of things, maturing the concept of Internet of Things (IoT). With the evolution of IoT, many attempts were made to realize the notion of smart cities. However, demands for processing enormous amount of data and platform incompatibilities of connected smart things hindered the actual implementation of smart cities. Keeping it in view, we proposed a Big Data analytics embedded smart city architecture, which is further integrated with the web via a smart gateway. Integration with the web provides a universal communication platform to overcome the platform incompatibilities of smart things. We introduced Big Data analytics to enhance data processing speed. Further, we evaluated authentic data sets to determine the threshold values for intelligent decision-making and to present the performance improvement gained in data processing. Finally, we presented a representational state transfer (RESTful) web of things (WoT) integrated smart building architecture (smart home) to reveal the performance improvements of the proposed smart city architecture in terms of network performance and energy management of smart buildings.

ABSTRACT: The Internet of Things (IoT) enables the integration of data from virtual and physical worlds. 1 It involves smart objects that can understand and react to their environment in a variety of industrial, commercial and household settings. 2 As the IoT expands the number of connected
devices, there is the potential to allow cyber-attackers into the physical world in which we live, as they seize on security holes in these new systems. New security issues arise through the heterogeneity of IoT applications and devices and their large-scale deployment. The Internet of Things (IoT) enables the integration of data from virtual and physical worlds. But as the IoT expands it becomes more vulnerable to cyber-attackers. New security issues arise through the heterogeneity of IoT applications and devices and their large-scale deployment. Mark Taylor, Denis Reilly and Brett Lempereur of Liverpool John Moores University present a multi-tiered security approach for IoT devices that incorporates physical proximity controls, geo-location checking, instruction encryption, embedded controls and exception reporting.


ABSTRACT: We are currently living in the post-PC era where smartphones and other wireless handheld devices are changing our environment, making it more interactive, adaptive and informative. Termed as Internet of Things (IoT) evolving into Internet of Everything, the new ecosystem combines wireless sensor networks, cloud computing, analytical data, interactive technologies, as well as smart devices, to provision solutions in which the objects are embedded with network connectivity and an identifier to enhance object-to-object interactions. IoT innovation is advancing and provides diverse smart solutions or applications. From e-transport to e-health; smart living to e-manufacturing and many other e-solutions. In this environment, the rising trend of cyber attacks on systems infrastructure coupled with the system inherent vulnerabilities presents a source of concern not only to the vendors, but also to the consumer. These security concerns need to be addressed in order to ensure user confidence so as to promote wide acceptance and reap the potentials of IoT. From the perspectives of firmware, hardware and software infrastructure setups, this paper looks at some of the major IoT application and service domains, and analyze the cybersecurity challenges which are likely to drive IoT research in the near future.


ABSTRACT: Interoperability remains a major burden to the developers of Internet of Things systems. It is due to IoT devices are extremely heterogeneous according to basic communication protocols, data formats, and technologies. Furthermore, due to the absence of worldwide satisfactory standards, Interoperability tools remains imperfect. In this paper, we have proposed Semantic Interoperability Model for Big-data in IoT (SIBM-IoT) to deliver semantic interoperability among heterogeneous IoT devices in health care domain. This model is used to recommend medicine with side effects for different symptoms collected from heterogeneous IoT sensors. Two datasets are taken for the analysis of big-data. One dataset contains diseases with drug details and the second dataset contains medicines with side effects. Information between physician and patient are semantically annotated and transferred in a meaningful way. A Lightweight Model for Semantic annotation of Big-data using heterogeneous devices in IoT is proposed to provide annotations for big data. Resource Description Framework (RDF) is a semantic web framework that is recycled to communicate things using Triples to make it semantically significant. RDF annotated patients’ data and made it semantically interoperable. SPARQL query is used to extract records from RDF graph. Tableau, Gruff-6.2.0, and Mysql tools are used in simulation in this article.

ABSTRACT: The emerging fog paradigm has been attracting increasing interest from both academia and industry, due to the low-latency, resilient, and cost-effective services it can provide. Many fog applications, such as video mining and event monitoring, rely on data stream processing and analytics, which are very popular in the cloud, but have not been comprehensively investigated in the context of fog architecture. In this article, we present the general models and architecture of fog data streaming, by analyzing the common properties of several typical applications. We also analyze the design space of fog streaming with the consideration of four essential dimensions (system, data, human, and optimization), where both new design challenges and the issues that arise from leveraging existing techniques are investigated, such as cloud stream processing, computer networks, and mobile computing.

https://doi.org/10.1016/j.compeleceng.2017.06.020.
ABSTRACT: Technologies such as Internet of Things allow small devices to offer web-based services in an open and dynamic networking environments on a massive scale. End users or service consumers face a hard decision over which service to choose among the available ones, as security holds a key in the decision making process. In this paper a base linguistic evaluation set is designed, based on which all the other fuzzy term sets that used for describing security attributes are uniformed and integrated for calculating an overall security value of the services. This work, to the best of our knowledge, is the first practical solution to offer direct comparisons and rankings of network services based on multiple security attributes such as confidentiality, availability, privacy and accountability. We analysed four major cloud service platforms to illustrate the proposed approach.

doi: 10.1016/j.compeleceng.2017.05.036.
http://dx.doi.org/10.1016/j.compeleceng.2017.05.036.
ABSTRACT: Innovation holds the guarantee of opening new doors for enhancing the nature of our lives. Likewise, a worldwide data and correspondence system superstructure is developing as the Internet transforms into the Internet of Things. The Internet of Things will address an impressive number of current difficulties in all application spaces, and will add to economic development. The most critical application spaces of the pervasiveness of Internet of Things-based innovations are exhibited, including the case of the shrewd urban communities presently being studied, which will improve the standard of ordinary lives. As a prologue to this issue of general economic systems research, which is themed around mechanical biology, the paper intends to discuss the foundation of modern nature, while highlighting the role of, and commitments from, financial matters from the point of view of information security. The performance is verified by experiment. ".

Bibliography on “regulatory/statistical report”


"Asia Pacific Telecommunications Insight - SEPTEMBER 2017." London, United Kingdom,
https://search.proquest.com/docview/1919009437?accountid=4183
ABSTRACT: We have made some positive revisions to the mobile forecast in this quarter to account for the latest data from Q117. We note that the market continues to perform largely in line with our forecasts. TPG Telecom’s aggressive bid to become the fourth national mobile carrier in the country over the next three years will bode well for mobile sector competition. Furthermore, we note that MTR cuts effective from January 2016 have impacted ARPs, with operators clearly focusing on data services to recoup lost revenues. This is apparent due to the respective shutdown of their 2G networks to gain capacity, with Telstra leading in late-2016 before being joined by its rivals in 2017. The fixed market is dominated by the National Broadband Network, which passed 4mn premises in February 2017. Greater flexibility in terms of technology, with the addition of satellite and cable and the move towards vectoring and fibre to the node has helped uptake. On the content side, all operators are looking to add premium services but they face strong competition from independent providers such as Netflix.


https://search.proquest.com/docview/1928889101?accountid=41838
ABSTRACT: We have made minor adjustments to our forecast but our core view remains unchanged in the Q417 update. The market continues to show potential for positive growth in terms of organic subscribers and 3G/4G advanced data uptake. Market penetration hovers around 80% while a large number of inactive SIMs remain on operator balance sheets. Although the merger of Robi Axiata and AirTel Bangladesh had a positive effect on Bangladesh’s mobile market, Citycell’s difficulty to find an international investor highlights the effects of poor market regulation and high investment costs. The withdrawal of the smallest and weakest players could strengthen overall market performance. The main downside risk is that demand for wireline services will be depressed further, precluding the emergence of a national broadband network.

https://search.proquest.com/docview/1911312412?accountid=41838
ABSTRACT: We have made some minor forecast adjustments but our core look remains unchanged. The mobile market will be under pressure this year as SIM deactivations continue to impose significant losses. The medium-term outlook remains stable with positive prospects for the 3G/4G uptake over the next five years. The gradually improving economic climate in Brazil will support the service monetisation efforts of operators in the market, although underlying political risks deriving from corruption allegations related to the Temer administration will pose some downside risks in terms of policy continuity within the telecoms sector. In the mobile market we expect negative voice subscription growth in the coming quarters mainly as a result of operators deactivating inactive SIMs. In contrast, we believe growing 3G/4G access, on the back of operators prioritising LTE expansion, will be a key growth driver in the overall mobile market as we expect LTE subscriptions to follow the same uptake trend as 3G access in the market.

https://search.proquest.com/docview/1916828166?accountid=41838
ABSTRACT: Bell Canada completed its acquisition of MTS in March 2017, several months after Shaw acquired Wind Mobile. While there are limited M&A opportunities, the market remains fragmented based on legacy regional operating concession footprints which may demand further deals. Operators should look more to service innovation to squeeze more revenues from customers. Telus' investments in IT solutions and services such as Telecare; Bell's investments in high-speed internet; and Rogers' investments in media, reinforce the notion that the dominance of the 'Big Three' will be hard to break. Certainly, there is little scope for new entrants to make an impact except at the local level.


https://search.proquest.com/docview/1911312306?accountid=41838
ABSTRACT: We have made some minor forecast revisions in this quarterly update. We are optimistic about 3G growth but retain our view that the Côte d'Ivoire market remains in a state of flux, with the recent consolidation efforts and the launch of new technologies. Orange and MTN have introduced 4G services and the revocation of the licences of the smaller players leaves market leaders Orange, MTN and Maroc Telecom free to create a more rational competitive landscape. The efforts to launch a fourth national provider by issuing a licence to Libyan LPTIC will make the market more competitive but a new player may struggle to take share from the three established pan-regional players. The strong macroeconomic outlook, as well as demand for advanced services such as mobile money, makes the country a bright spot in the region for telecoms operators.

https://search.proquest.com/docview/1911313173?accountid=41838
ABSTRACT: Decline on the Croatian mobile market has finally stalled, with subscriber growth returning to positive territory for three quarters in the row, potentially indicating that seasonal SIM-discounting related to the tourist industry is now a thing of the past. We highlight that the additional competitive momentum provided by the launch of Tele2's 4G network in 2016 augurs well for mobile sector growth prospects over the medium term. Tele2 has traditionally competed heavily on pricing with rivals responding quickly with price cuts and new service packages. Nevertheless, 4G uptake will be a crucial driver over the five years to 2021.

https://search.proquest.com/docview/1915396655?accountid=41838
ABSTRACT: High market saturation means that there is little organic growth left in the market, which is why we see mobile growth gradually declining until the end of our forecast. Meanwhile, operators are focussing on attracting customers from competitors. 3 Denmark reports that 44% of subscribers have switched service providers in the last three years, reflecting increased efforts by operators to grow through service innovation such as bundling and the withdrawal of low-value prepaid options.

https://search.proquest.com/docview/1924091742?accountid=41838.


https://search.proquest.com/docview/1916645284?accountid=41838
ABSTRACT: The mobile market in Ghana still has growth potential and displayed stable signs of organic subscriber uptake in 2016, performing in line with our forecast. While MTN sustained a substantial net subscriber loss in Q117 because of a reclassification of subscribers - which resulted in 3.4mn disconnections - we anticipate that the market will return to growth. The broadband internet market is underserved as customers’ expectations of speed and reliability are not yet matched with suitable offers they can afford. Projects such as the Google-backed CSquared open access network and nascent fibre-to-the-home deployments from MTN and Vodafone should foster the sector. Leading mobile operator MTN Ghana launched 4G services in June 2016 and we maintain the view that monetisation of this network will occur over time as the majority of consumers will opt for more affordable and more widely available 3G services in the short term. We expect that competition will heat up further in the 3G/4G segment as MTN invests in new 4G and 3G base stations, while Vodafone is believed to be close to launching 4G. If the Tigo/Airtel merger goes ahead, the enlarged company will begin to capitalise on its shared resources and technological innovation.

https://search.proquest.com/docview/1914651342?accountid=41838
ABSTRACT: The constantly changing telecoms market is undergoing a profound metamorphosis on numerous levels. Traditional business models are no longer sufficient to meet consumers’ needs and expectations and technological improvements render large parts of the infrastructure and service ecosystem obsolete. While ‘accesses’ and ‘connections’ will still be an important part of the competitive landscape, it is service diversity and convergence that will determine which players will survive in the new epoch; physical networks are best left to specialised players better placed to monetise investments in these capital-intensive assets. Content (Netflix), devices (Apple, Samsung), financial/commerce-orientated services (Amazon, Alibaba, PayPal, M-Pesa), content distribution (Level 3) and the Internet of Things (Alphabet/Google) are - and will continue to be - the key areas of focus over 2017-2021.


https://search.proquest.com/docview/1914651407?accountid=41838
ABSTRACT: MENA’s telecoms markets are at very different levels of development, from the saturated and data-intensive markets of the GCC to the emerging markets in North Africa and war-torn states fringing the region. Subscription and revenue growth will be uneven, as more mature markets face fewer opportunities for subscription growth, while the emerging markets present the biggest opportunity for long-term growth. 4G migration offers new revenue diversification opportunities for mobile and broadband players: in developing markets, such opportunities will be hard to unlock owing to low consumer spending power and a lack of relevant content and services; however, the developed markets harbour large and relatively untapped enterprise and connected home user bases, and players such as Zain, Ooredoo and Etisalat are moving quickly to exploit these opportunities.

https://search.proquest.com/docview/1914651165?accountid=41838
ABSTRACT: Our Q317 forecasts are unchanged from Q217. We believe that 3G/4G subscriptions will grow with increased smartphone take-up, despite an overall decline in dedicated mobile subscriptions. The regulator ANRT’s decision to remove the ban on VoIP services in Q416 will create a more dynamic data-oriented VAS market, as it becomes imperative for operators to offset declining voice revenues with stronger usage of data services. Mobile tariffs rose in Q316 and if the market can sustain this, future growth should be based on innovation and services rather than price alone, creating a more stable sector.

https://search.proquest.com/docview/1911884670?accountid=41838
ABSTRACT: We have not made major forecast revisions in the latest report update. The mobile market recovered well from the 2014/15 SIM registration drive, suggesting strong organic growth potential. Furthermore, 3G and 4G uptake is strong and our new forecasts envision stronger uptake of mobile data services out to 2021. We highlight that Mobilink’s acquisition of Warid in August 2016 will put significant pressure on competitors, especially CMPak (Zong), which has few strategic options other than to proceed with a USD1bn investment in its mobile-only business. The deal would not create an excessively powerful player, but price competition is expected and the negative impact on ARPU’s can only be offset by increased uptake of premium services. This will be difficult in the prepaid-centric market, but the merger will at least motivate reviews of current business strategies. Telenor had spent over USD390mn in acquiring spectrum in the 850MHz band whereas Mobilink just acquired new spectrum in the 1.8GHz airwaves in Q217 for USD295mn to boost its 4G LTE services. We are of the opinion that both market titans are gearing up for severe competition in the 4G LTE advanced data segment going forward.

https://search.proquest.com/docview/1923079231?accountid=41838
ABSTRACT: Peru shows signs of mobile saturation as the market suffers net losses this quarter. Only minor players Bitel and Entel gained in subscribers. While Virgin Mobile remains a very minor player, Bitel's investments in LTE and Entel's prospective investments in fibre and wireline broadband services suggest they will keep eroding Telefónica and Claro's market share. With a heavily prepaid saturated market, operators are increasingly focusing on non-voice services for revenue growth and thus compete to expand their 4G LTE networks.

https://search.proquest.com/docview/1923824971?accountid=41838
ABSTRACT: The Philippine telecoms market would benefit from increased competition at the
services level and both Sky Cable's broadband network roll-out and the regulator's decision to claw back spectrum from PLDT and Globe for a third mobile operator are steps in the right direction. However, breaking PLDT/Globe's dominance will not happen easily or quickly and we believe successful candidates would need deep pockets and consistent regulatory support in order to thrive. The lack of an investment-positive regulatory regime is the biggest barrier to change.

https://search.proquest.com/docview/1911884732?accountid=41838
ABSTRACT: We have not made significant adjustments this quarter as the Polish market continues to perform in line with our forecast. We hold the view that the deployment of next-generation infrastructure is driving usage of premium non-voice services as well as complex, multi-screen converged services in Poland. UPC, in particular, is capitalising on this trend and has agreed to buy Multimedia Polska with the aim of extending its geographic footprint and ramping up its multi-play services business. Orange, Netia and Cyfrowy Polsat are benefiting from these services as well to varying degrees. We believe Multimedia will be revenue and ARPU-dilutive in the medium term, but it will give UPC an edge over its peers in terms of reach. The new anti-terror laws have made the SIM registration process compulsory and the country has shed a number of inactive or unregistered prepaid SIMs in 2016 and Q117.

https://search.proquest.com/docview/1912336128?accountid=41838
ABSTRACT: Organic subscription-led growth is no longer possible in the saturated Romanian mobile market. Operators will instead deepen their relationships with their existing customers, maximising monetisation prospects. A paucity of high-speed wireline broadband networks has driven 3G/4G uptake, but premium service usage is low, souring investor appetites. Demand for converged services is growing, but ANCOM's refusal to allow third parties to access cable operators' networks will impair further development.

https://search.proquest.com/docview/1916824025?accountid=41838
ABSTRACT: Although we have made minor forecast adjustments to the outlook for the Spanish mobile sector in this latest quarterly update, our core view remains unchanged. We are of the opinion that organic growth in the mobile segment will be elusive but that uptake of advanced 3G/4G will continue. Additionally, M2M and smart services will support some degree of mobile growth. Furthermore, as the market is approaching saturation, operators are embarking on deepening their strategies, which means retaining customers and upselling them more advanced services such as LTE and fibre. Telefonica made the bold move of selling a 40% stake in Telxius, its infrastructure company, to private equity firm KKR to reduce its debt and move towards becoming a digital company.

https://search.proquest.com/docview/1916007292?accountid=41838
ABSTRACT: Customer deepening strategies will be operators' new focus in Sub-Saharan Africa (SSA), with mobile being the only viable alternative to wireline broadband. Mobile financial services (MFS) will secure loyalty at the lower end of the market, while e-commerce, music and gaming will secure the middle tier. Video is next to be pursued, but operators should consider partnerships rather than acquisitions as consumer spending power precludes strong growth in premium offerings.

https://search.proquest.com/docview/1929521227?accountid=41838
ABSTRACT: Our forecast for Sudan and South Sudan remain unchanged in this Q417 update, with concomitant implications on our growth outlook for both markets. In Sudan, SIM deactivation efforts by the regulator dampened the short-term growth prospects of the mobile voice market in 2016. However, the market reversed the negative growth trend in Q117 with subscriber growth driven by discounted SIMs entering the market and efforts from operators to extend services to underserved areas. We expect 3G/4G access to be a key growth driver of the overall mobile market, on the back of operators such as Zain and Sudani deploying LTE. We do not anticipate negative growth in the wireline market throughout our forecast period. In the South Sudanese market, we expect the persisting macroeconomic as well as political crisis to continue limiting subscription growth in the overall mobile market. The mobile market ended March 2017 with a -23.3% y-o-y growth rate, indicating chronic systemic issues in the country. The mobile market in South Sudan is not expected to return to growth until 2019 at the earliest as we expect the flexibility of stand-alone services.


ABSTRACT: We retain our view that the Taiwanese telecommunications market is highly competitive and home to a tech-savvy population, propelling the market with high usage of advanced mobile and wireline services. The market continues to perform in line with our forecasts and there have been no major changes to the five-year outlook. We note that the three major operators command close to 90% of the mobile market and we believe pressure for smaller operators to merge or be acquired will intensify in 2017 as unlimited mobile data plans are still the norm in Taiwan and this strategy to encourage subscribers to increase data consumption will continue to eat into ARPU into the medium term.
subscription levels outpacing prepaid numbers in H216, operators will continue to enjoy steady revenue streams going forward.


https://search.proquest.com/docview/1915396308?accountid=41838
ABSTRACT: The 3G/4G sector will drive mobile market development over 2017-2021 as operators aim to capitalise on demand for advanced services. Using the 1800MHz band will contain costs and potentially make 4G a more viable proposition than 3G. There is also the opportunity for new players to enter the market such as wireline player Vega. Meanwhile, VimpelCom's reinvention as a services-first provider will leverage these trends. However, macroeconomic weakness weighs heavy on hryvnia, the national currency, making it weaker against global currencies, such as the dollar. This could keep non-hryvnia denominated ARPU levels low and deter new investors.

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https://search.proquest.com/docview/1914326054?accountid=41838
ABSTRACT: Before an expected bout of consolidation, likely to involve Sprint and T-Mobile, there has been strong competition in the mobile market, led by the latter's Un-Carrier strategy. All operators offer unlimited data plans to meet the consumer demand for online video. This has had an impact on ARPU and profitability, none more so than for AT&T and Verizon, which do not have sufficient network advantage to demand high prices. Q117 was the first time in several years that connected devices did not do enough to offset post-paid losses, leading to overall net losses.

https://search.proquest.com/docview/1911884688?accountid=41838
ABSTRACT: Vietnam's government finally licensed 4G services in Q416 and the first services were launched within weeks. VNPT-ViNaphone and Viettel began rolling out their services in Q217, with services priced lower than 3G offerings. This suggests they are keen not to repeat mistakes made with the older technology, where uptake was initially muted due to high pricing, and that their profitability will be under threat. The 'equitisation' of MobiFone has attracted international interest, but investors will be aware that the prospects for meaningful returns on investment are poor and only the least risk-averse will commit to this, one of Asia's least appealing markets.


https://search.proquest.com/docview/1920104488?accountid=41838
ABSTRACT: We have not made significant forecast revisions for the Q3 2017 update as the Zambia and Zimbabwe markets continue to perform in line with our forecasts. In Zimbabwe, we expect mobile subscription growth to remain in positive territory throughout our forecast period, driven by increasing price competition and network expansion to previously underserved areas of the country. However, the incidence of multiple SIM ownership will increase as operators vie for
market share with aggressive promotions. Additional competition would also have a positive impact on market growth. In Zambia, mobile subscriptions will grow positively out to 2021. Advanced mobile data services provide a useful opportunity for the operators to diversify their revenue streams away from traditional voice services. Both Zimbabwe and Zambia's mobile markets are set to benefit from tower-sharing arrangements which will enable operators to cut costs and to expand to underserved areas, which would consequently boost mobile growth.

Bibliography on “satellite communications”

ABSTRACT: Since their dawning, space communications have been among the strongest driving applications for the development of error correcting codes. Indeed, space-to-Earth telemetry (TM) links have extensively exploited advanced coding schemes, from convolutional codes to Reed-Solomon codes (also in concatenated form) and, more recently, from turbo codes to low-density parity-check (LDPC) codes. The efficiency of these schemes has been extensively proved in several papers and reports. The situation is a bit different for Earth-to-space telecommand (TC) links. Space TCs must reliably convey control information as well as software patches from Earth control centers to scientific payload instruments and engineering equipment onboard (O/B) spacecraft. The success of a mission may be compromised because of an error corrupting a TC message: a detected error causing no execution or, even worse, an undetected error causing a wrong execution. This imposes strict constraints on the maximum acceptable detected and undetected error rates.

ABSTRACT: The history described in this article starts in the 1920s, when one of the founders of Polish radiolocation, Professor Janusz Groszkowski from the Warsaw University of Technology, started his research in radio-communications technology. Professor Groszkowski received his PhD in 1928 for his work entitled "The Compensation Method for Controlling Wave Stability" [1]. He had already published a revolutionary discussion in Polish in 1925 on "Cathode Waves and Their Use in Radiotelegraphy", which has since been translated into many languages; the first translation, entitled "Les Lampes a plusieures electrodes et leurs applications en radiotechnique", was published in Paris in 1927. In the 1930s, he continued his research in this area, and in 1935 he established the State Telecommunications Institute in Poland, now known as PIT (the present name is PIT-RADWAR). Since then, tremendous progress in Poland in the development of applied technology in radio-communications has been observed. Many intentioned technologies invented by Professor Groszkowski were later applied in radars, the main two being the first oxide-coated cathode applied in magnetron (1937) [8] and the first metal magnetron with inner resonant circuits and an oxide cathode (1939) [9].

ABSTRACT: Imagine this: It's early morning, and you're sleeping alone in your bed. Suddenly your ankle vibrates, and a voice blurs out from beneath the sheets: "This is the monitoring center. You are not in your inclusion zone. Do you have permission to be outside this area?" That's what happened to a man named Jeffrey B. when his GPS-equipped ankle bracelet went berserk. The California Department of Corrections and Rehabilitation had strapped a tracking
anklet on Jeffrey for good reason. He had pleaded guilty to 26 counts of peeping into windows and video recording young women while they were undressing. After three years in prison, Jeffrey was released. Local county officials decided, however, that because he had broken a previous five-year probation order, they would attach a second GPS monitor, which they controlled. He then had to live with a tracking device on each ankle. Having two anklets, though inconvenient, ultimately helped Jeffrey. Although the county anklet was squawking about a violation, the state anklet was silent. Suspicious county parole officers had Jeffrey arrested, but given the inconsistency, the district attorney quickly dismissed the charge. The vendor of the county’s equipment admitted later to a “system error.”


ABSTRACT: A review of the research conducted until present on the subject of Global Navigation Satellite System (GNSS) hardware-induced phase and code biases is here provided. Biases in GNSS positioning occur because of imperfections and/or physical limitations in the GNSS hardware. The biases are a result of small delays between events that ideally should be simultaneous in the transmission of the signal from a satellite or in the reception of the signal in a GNSS receiver. Consequently, these biases will also be present in the GNSS code and phase measurements and may there affect the accuracy of positions and other quantities derived from the observations. For instance, biases affect the ability to resolve the integer ambiguities in Precise Point Positioning (PPP), and in relative carrier phase positioning when measurements from multiple GNSSs are used. In addition, code biases affect ionospheric modeling when the Total Electron Content is estimated from GNSS measurements. The paper illustrates how satellite phase biases inhibit the resolution of the phase ambiguity to an integer in PPP, while receiver phase biases affect multi-GNSS positioning. It is also discussed how biases in the receiver channels affect relative GLONASS positioning with baselines of mixed receiver types. In addition, the importance of code biases between signals modulated onto different carriers as is required for modeling the ionosphere from GNSS measurements is discussed. The origin of biases is discussed along with their effect on GNSS positioning, and descriptions of how biases can be estimated or in other ways handled in the positioning process are provided.


ABSTRACT: The advent of new High Throughput Satellites (HTS) will add to the swell of LEO and MEO bandwidth supply. As capacity will likely reach unprecedented levels, can the industry expect a surplus? And would this render bandwidth management less vital? Market players break down the demands and trends, revealing that bandwidth management solutions will see greater importance.


http://dx.doi.org/10.1145/3121436.

ABSTRACT: Technology that falsifies navigation data presents significant dangers to public and private organizations.


http://dx.doi.org/10.1109/MAES.2017.150245.

ABSTRACT: The QB50 Mission is a network of 36 CubeSats built by universities all over the world
to perform first-class science in the largely unexplored thermosphere around Earth. 28 QB50 CubeSats will be launched to the International Space Station via NanoRacks LLC and deployed from the NanoRacks CubeSat Deployer (NRSD) during Q2 of 2017. The remaining CubeSats will be deployed via an Indian Polar Satellite Launch Vehicle (PSLV) launcher rocket as secondary payloads during Q2 of 2017 as well. LituanicaSAT-2 will be deployed with the latter group of satellites. This network of small satellites will have by no means a small mission: to carry out long-term measurements of key parameters and constituents in yet largely unexplored lower thermosphere and ionosphere. While in orbit, the satellites will slowly descend to lower and lower layers of thermosphere due to atmospheric drag, revealing the spatial and temporal distributions of the parameters measured [1].

http://dx.doi.org/10.1145/3121442.
ABSTRACT: Scientists are demonstrating that lasers could be the future of space communication.

doi: 10.1109/TAES.2017.2671619.
http://dx.doi.org/10.1109/TAES.2017.2671619.
ABSTRACT: The optical orbit determination is one of the most important ways for noncooperative object tracking. One of the main problems with noncooperative object tracking is its recognition through different nights. In this study, the conditions that ensure the recognition of a geostationary satellite inside a cluster were assessed through a hard real case study. This study was developed through a three-phase approach. The first phase was the observation campaign for the images acquisition. The second phase was the image's astrometric reduction for the data collection and the third phase was the orbit determination and data analyses. To evaluate the recognition ability, the residuals between the celestial coordinates obtained from the propagated orbit, which was carried out from the fitting between first night data and the environment gravity model through a least squares approach, and the measures collected during the second night were assessed. This approach, which is totally independent from the satellite cooperation actions, can be extended to the space debris recognition during different nights.

Stuani Pereira, Vinícius Amadeu and Paulo de Oliveira Camargo. "Brazilian Active GNSS Networks as Systems for Monitoring the Ionosphere." GPS Solutions, 21, no. 3 (2017): 1013-1025
ABSTRACT: This research shows the viability of using Global Navigation Satellite System (GNSS) stations from Brazilian active networks in monitoring the ionosphere. Various indexes of ionospheric irregularities and scintillation of GNSS signals, estimated in real-time and post-processed from GNSS data, are explored for this purpose. This way, an increase in the spatial resolution of ionospheric information is provided, allowing the generation of maps of scintillation and irregularities in observing the spatial and temporal behavior of the layer's activity cycle, since the number of ionosondes, imagers, and radars is insufficient for monitoring the irregularities in Brazil. Experiments to evaluate the estimates of the indexes are performed for periods of high and low variability of electrons. Three Brazilian networks are used: the Brazilian Network for Continuous Monitoring (RBMC), the GNSS Active Network of Sao Paulo State (GNSS-SP), and CIGALA/CALIBRA. The results are compared with data from ionosondes and PolaRxS-PRO Septentrio receivers, proving compatible with moderate to high correlations. An analysis of the seasonal variation during the peak of solar cycle 24 is carried out. The maps allow identifying the displacement of ionospheric irregularities along the magnetic equator over Brazil, from northeast to southwest, starting at 7:00 pm and ending at 2:00 am local time. Real-time monitoring is carried out for the summer solstice in the southern hemisphere, and results are consistent with those from the post-processed mode. The indexes and maps can be applied to the analysis of GNSS positioning. Real-time ionospheric information can be used in important practical
applications because the displacement monitoring of irregularities allows prior knowledge of whether there will be a deterioration of positioning accuracy in a certain region.

http://dx.doi.org/10.1016/j.isa.2017.05.002.
ABSTRACT: Spoofing interference has caused serious security problems in global navigation satellite systems (GNSS), so identifying spoofing signals from genuine signals is the key task of GNSS. For the spoofing detection, a novel feature extraction method using axial integrated Wigner bispectrum (AIWB) is investigated in this paper. Compared with diagonal sliced Wigner bispectrum (SWB), this method not only reduces the dimension of the Wigner bispectrum, but also utilizes much more signal information. We use singular values of AIWB as the feature vector of the signal, and use support vector machine (SVM) to realize the identification of spoofing signals. Compared with SWB and bispectrum, the simulation results demonstrate that AIWB has lower Equal Error Rate (EER), especially in relatively low SNRs, and has better recognition performance due to its lower mean misclassification rate and smaller variation.

doi: 10.1109/TAES.2017.2673998.
http://dx.doi.org/10.1109/TAES.2017.2673998.
ABSTRACT: This paper presents a generalized theoretical framework for carrier tracking of global navigation satellite systems signals by constructing a state space representation for the carrier tracking loop and applying control system design techniques to derive state feedback and state estimator gain matrices. Both phase-locked loop and frequency-locked loop are studied using this approach. Their performances are evaluated using the closed-form expressions in the presence of thermal noise, oscillator noise, and receiver platform dynamics. The proposed approach unified the phase tracking and frequency tracking within the same theoretical framework, thereby facilitating a systematic analysis of the effects of tracking loop design parameters under weak signal and highly dynamic signal environments.

doi: 10.1109/TAES.2017.2674198.
http://dx.doi.org/10.1109/TAES.2017.2674198.
ABSTRACT: This paper presents the performance analysis and the optimizations of the generalized phase locked loop (PLL) and the generalized frequency locked loop (FLL). Using the minimum mean square error (MMSE) criterion as a performance measure, the optimal solutions for the generalized PLL and FLL designs under various scenarios: strong and weak signal strength, low and high dynamic, and good and poor oscillator quality are investigated. An adaptive PLL based on automatically adjustment of the integration time and loop parameters in an optimized manner is proposed. An adaptive FLL that operates with the optimal loop parameters is also presented. Simulation results demonstrate the effectiveness of the proposed generalized closed-loop tracking architecture and validate the proposed adaptive tracking schemes.
Bibliography on “semantic web”

https://doi.org/10.1007/s00779-017-1010-8.
ABSTRACT: Over the past few years, the semantics community has developed several ontologies to describe concepts and relationships for internet of things (IoT) applications. A key problem is that most of the IoT-related semantic descriptions are not as widely adopted as expected. One of the main concerns of users and developers is that semantic techniques increase the complexity and processing time, and therefore, they are unsuitable for dynamic and responsive environments such as the IoT. To address this concern, we propose IoT-Lite, an instantiation of the semantic sensor network ontology to describe key IoT concepts allowing interoperability and discovery of sensory data in heterogeneous IoT platforms by a lightweight semantics. We propose 10 rules for good and scalable semantic model design and follow them to create IoT-Lite. We also demonstrate the scalability of IoT-Lite by providing some experimental analysis and assess IoT-Lite against another solution in terms of round trip time performance for query-response times. We have linked IoT-Lite with stream annotation ontology, to allow queries over stream data annotations, and we have also added dynamic semantics in the form of MathML annotations to IoT-Lite. Dynamic semantics allows the annotation of spatio-temporal values, reducing storage requirements and therefore the response time for queries. Dynamic semantics stores mathematical formulas to recover estimated values when actual values are missing.

https://doi.org/10.1007/s10586-017-0908-2.
ABSTRACT: Human knowledge curators are intrinsically better than their digital counterparts at providing relevant answers to queries. That is mainly due to the fact that an experienced biological brain will account for relevant community expertise as well as exploit the underlying connections between knowledge pieces when offering suggestions pertinent to a specific question, whereas most automated database managers will not. We address this problem by proposing an architecture for the autonomic curation of crowdsourced knowledge, that is underpinned by semantic technologies. The architecture is instantiated in the career data domain, thus yielding Aviator, a collaborative platform capable of producing complete, intuitive and relevant answers to career related queries, in a time effective manner. In addition to providing numeric and use case based evidence to support these research claims, this extended work also contains a detailed architectural analysis of Aviator to outline its suitability for automatically curating knowledge to a high standard of quality.

https://doi.org/10.1016/j.websem.2017.06.001.
ABSTRACT: With the advent of the fourth industrial revolution, several enterprises worldwide have started to evolve their production processes with new automation and data exchange policies by means of the adoption of emergent technologies, i.e. knowledge graphs, sensor networks, big data, and cloud computing. While several domains have been already involved in this revolution, others, such as the fast-fashion industries, have started to move the first steps in that direction since few months. In this article we describe the first outcomes of a project, i.e. Refactoring Imperial Selling Data (RISED), which aims at using Semantic Web technologies so as to simplify the management and the enrichment of a huge set of data that are continuously collected by Imperial Fashion, one of the most important fast-fashion companies in Italy. In particular, we introduce the process adopted for the development of a unifying model (i.e. an
OWL 2 DL ontology) for the description of all the Imperial Fashion data and we propose some mechanisms for converting the original data stored in existing databases according to the new ontology. Finally, we introduce some prototypical visual tools that use the converted data for addressing some of the questions that have been raised by Imperial Fashion employees during several informal meetings we had about the project RISED.

Bibliography on “smart cities”

http://dx.doi.org/10.1016/j.diin.2017.06.015.

ABSTRACT: Smart cities are comprised of diverse and interconnected components constantly exchanging data and facilitating improved living for a nation's population. Our view of a typical smart city consists of four key components, namely, Smart Grids, Building Automation Systems (BAS), Unmanned Aerial Vehicles (UAVs), Smart Vehicles; with enabling Internet of Things (IoT) sensors and the Cloud platform. The adversarial threats and criminal misuses in a smart city are increasingly heterogenous and significant, with provisioning of resilient and end-to-end security being a daunting task. When a cyber incident involving critical components of the smart city infrastructure occurs, appropriate measures can be taken to identify and enumerate concrete evidence to facilitate the forensic investigation process. Forensic preparedness and lessons learned from past forensic analysis can help protect the smart city against future incidents. This paper presents a holistic view of the security landscape of a smart city, identifying security threats and providing deep insight into digital investigation in the context of the smart city.

https://doi.org/10.1016/j.diin.2017.06.015.

ABSTRACT: Smart cities are comprised of diverse and interconnected components constantly exchanging data and facilitating improved living for a nation's population. Our view of a typical smart city consists of four key components, namely, Smart Grids, Building Automation Systems (BAS), Unmanned Aerial Vehicles (UAVs), Smart Vehicles; with enabling Internet of Things (IoT) sensors and the Cloud platform. The adversarial threats and criminal misuses in a smart city are increasingly heterogenous and significant, with provisioning of resilient and end-to-end security being a daunting task. When a cyber incident involving critical components of the smart city infrastructure occurs, appropriate measures can be taken to identify and enumerate concrete evidence to facilitate the forensic investigation process. Forensic preparedness and lessons learned from past forensic analysis can help protect the smart city against future incidents. This paper presents a holistic view of the security landscape of a smart city, identifying security threats and providing deep insight into digital investigation in the context of the smart city.


ABSTRACT: The US Department of Transportation's (USDOT) Smart City Challenge was very effective at starting a national dialogue about how cities can leverage the inevitable boom in the Internet of Things and advanced information technologies to address our transportation challenges. Although USDOT's challenge focused primarily on transportation, the "Smart City" also addresses other issues that impact the community such as climate change, healthcare, education, energy, water, wastewater, public safety, and inclusive infrastructure. Seventy-eight cities (including Tampa, FL, USA, where the author worked on the city's Smart City Challenge proposal) presented bold, innovative concepts including connected/autonomous vehicles,
multimodal transportation apps, smart parking, automated transit bus platooning, fleet electrification, all kinds of sensors, and even high-tech gondolas. The City of Columbus, OH, USA, ultimately won the challenge, but other cities are continuing their work to bring these proposals to fruition. This article proposes a set of guidelines for local agencies to consider while developing a regional smart city strategy.

Cardona, Narcis. **Cooperative Radio Communications for Green Smart Environments.** Aalborg: River Publishers, 2016  
ABSTRACT: The demand for mobile connectivity is continuously increasing, and by 2020 Mobile and Wireless Communications will serve not only very dense populations of mobile phones and nomadic computers, but also the expected multiplicity of devices and sensors located in machines, vehicles, health systems and city infrastructures. Future Mobile Networks are then faced with many new scenarios and use cases, which will load the networks with different data traffic patterns, in new or shared spectrum bands, creating new specific requirements. This book addresses both the techniques to model, analyse and optimise the radio links and transmission systems in such scenarios, together with the most advanced radio access, resource management and mobile networking technologies. This text summarises the work performed by more than 500 researchers from more than 120 institutions in Europe, America and Asia, from both academia and industries, within the framework of the COST IC1004 Action on "Cooperative Radio Communications for Green and Smart Environments". The book will have appeal to graduates and researchers in the Radio Communications area, and also to engineers working in the Wireless industry.

https://doi.org/10.1016/j.trd.2017.06.008.  
ABSTRACT: Investments in intelligent transportation systems (ITS) are beginning to take place in the context of smart city initiatives in many cities. Energy efficiency and emissions reduction are becoming essential rationales for such investments. It is important, therefore, to understand under what conditions investments in ITS in the context of smart cities produce energy savings. We reviewed existing literature, conducted case studies and interviews, and found that the smart cities context has transformed traditional ITS into "smart mobility" with three major characteristics: people-centric, data-driven, and powered by bottom-up innovations. We argue that there are four main steps for smart mobility solutions to achieve energy savings and that several institutional, technical, and physical conditions are required at each step. Energy savings are achieved when users change their behavior and result in less travel, modal shift, and reduction of per-km energy consumption in the short term. Smart mobility solutions also enable other energy saving policies or initiatives, which would otherwise not be feasible. In the long term, users’ lifestyles could change and lead to further energy savings. For cities in developing countries with lower motorization, less-developed infrastructure, less financial resources, and less institutional and technical capacity, our recommendations to achieve benefits from smart mobility investments are: (1) involve all public and private players in a collaborative and transparent setting; (2) develop the technical capacity to procure and monitor information services; and (3) focus on basic infrastructure, including a coherent road network and basic traffic management measures.

https://doi.org/10.1016/j.future.2017.05.034.  
ABSTRACT: A Smart City is a cyber–physical system improving urban behavior and capabilities by providing ICT-based functionalities. An infrastructure for Smart City has to be geographically and
functionally extensible, as it requires both to grow up with the physical environment and to meet the increasing in needs and demands of city users/inhabitants. In this paper, we propose iSapiens, an IoT-based platform for the development of general cyber–physical systems suitable for the design and implementation of smart city services and applications. As distinguishing features, the iSapiens platform implements the edge computing paradigm through both the exploitation of the agent metaphor and a distributed network of computing nodes directly scattered in the urban environment. The platform promotes the dynamic deployment of new computing nodes as well as software agents for addressing geographical and functional extensibility. iSapiens provides a set of abstractions suitable to hide the heterogeneity of the physical sensing/actuator devices embedded in the system, and to support the development of complex applications. The paper also furnishes a set of methodological guidelines exploitable for the design and implementation of smart city applications by properly using iSapiens. As a significant case study, the design and implementation of a real Smart Street in the city of Cosenza (Italy) are shown, which provides decentralized urban intelligence services to citizens.

https://doi.org/10.1016/j.jclepro.2017.06.191.
ABSTRACT: The aim of this letter is to raise some critical concerns and gaps in the booming literature on Smart Cities; concerns that we think deserve greater attention from scientists, policy makers and urban planners. Using an urban ecology lens, we provide some reflections that need to forgo any wider-scale implementation of the Smart City-model with the goal to enhance urban sustainability. We discuss that the Smart City literature must better include analysis around social sustainability issues for city dwellers. Focus here should start on health issues and more critical analysis about whom the Smart City is for. Also, the literature must address issues of resilience and cyber security, including how Smart City solutions may affect the autonomy of urban governance, personal integrity and how it may affect the resilience of infrastructures that provide inhabitants with basic needs, such as food, energy and water security. A third major gap in this literature is how smart city developments may change human-nature relations. Focus here should start on how Smart City technologies may hinder or support children’s learning towards a stronger psychological connection with nature. Discussions are also needed on how the Smart City model may affect pro-environmental behavior more broadly.

http://dx.doi.org/10.1016/j.scs.2017.06.021.
ABSTRACT: The need to develop policies that improve energy and environmental sustainability as well as technological innovation is the basis for the increase of the smartness of cities around the world. In the European Union, protocols were developed to measure the smartness of cities through indicators. These indicators however are tailored for large cities and do not fit the case of small cities in a satisfactory way. The paper develops a methodology for assessing smartness through indicators that is applicable to small and medium-size cities. The choice of the indicators is consistent with the ISO 37120 standard and it is inspired by the environmental indicators used in the Sustainable Energy Action Plan of the EU. The proposed methodology could be seen as an expansion of Governance strategies already partially adopted by many cities. The methodology is applied to 3 municipalities of northern Italy and the results obtained are discussed in the paper.

doi: 10.1016/j.ccs.2017.06.005.
http://dx.doi.org/10.1016/j.ccs.2017.06.005.
ABSTRACT: This article investigates the use of participatory technologies for augmenting urban governance by giving citizens and local communities a voice in the city making process. We present a series of situated and temporary pop-up interventions deployed in public spaces that demonstrate the use of participatory technologies for engaging citizens in localised conversations. Through two field studies of digitally augmented pop-up interventions we discuss the value of various digital and analogue engagement channels and their effectiveness for allowing people to submit their views on various city making initiatives. We outline our design process and discuss the impacts of using multiple engagement channels to engage with a broader cross-section of society in the city making process. The article concludes on challenges and opportunities for digital placemaking strategies, and how such strategies can contribute to wider smart city initiatives.


ABSTRACT: En faisant leur entrée plus localement, et en fournissant une énergie renouvelable, mais également au cœur d'une modification sociétale induite par l'évolution des modes d'apprentissage, de conception et de production qui encouragent l'entrepreneuriat et remettent en question l'organisation du mass-market, et donc celle des entreprises.

At the core of the environmental transition, photonics is reinventing our lives: smart, sustainable cities (the production of renewable energy and optimization of energy consumption, above all by the telecommunications infrastructure), factories of the future (precise and cleaner processes that consume fewer raw materials), etc. Photonic inventions (enhanced virtual reality and optical sensors) push in the same direction - toward the production of ecofriendly products in environmentally friendly factories.


ABSTRACT: This paper develops a critical understanding of the smart city by investigating the values and ideas that underpin this concept and how they are translated into practice. It suggests that, despite private companies and municipalities promoting the smart city as a revolutionary utopia, this utopia is, on the contrary, an expression of the neoliberal ideology. The case study of the Italian city of Genoa shows that the smart city utopia acts as a generator of a collective imaginary while promoting the interests of business elites and diverting the attention away from urgent urban problems, such as urbanization. The neoliberal ideology influences the framing of these problems by favoring business-led technological solutions rather than political and long-term urban planning. The study suggests that this business-led utopia has important implications in terms of accountability of the actors involved.


ABSTRACT: The Internet of Things (IoT) provides a global communication network between millions of devices connected to the internet. Similarly, the emergence of heterogeneous wireless networks provides a medium to the IoT communication paradigm. In order to enable an energy-friendly communication in an IoT environment, such as smart home, office, city, etc. we propose an energy-aware communication systems for IoT environments. The proposed scheme works in several phases such as identification of high energy require appliances, deployment of sensors, scheduling, etc. Moreover, the data from the IoT devices are collected through sensors. The data is tested using the Hadoop ecosystem for future planning and efficient usage of the energy in an IoT environment. The proposed architecture is tested in a different scenario against the Wireless Sensor Network (WSN) based IoT architecture in the context of energy consumption. The
ABSTRACT: Over the past few years the concept of Smart cities has emerged to transform urban areas into connected and well informed spaces. Services that make smart cities "smart" are curated by using data streams of smart cities i.e., inhabitants' location information, digital engagement, transportation, environment and local government data. Accumulating and processing of these data streams raise security and privacy concerns at individual and community levels. Sizeable attempts have been made to ensure the security and privacy of inhabitants’ data. However, the security and privacy issues of smart cities are not only confined to inhabitants; service providers and local governments have their own reservations — service provider trust, reliability of the sensed data, and data ownership, to name a few. In this research we identified a comprehensive list of stakeholders and modelled their involvement in smart cities by using the Onion Model approach. Based on the model we present a security and privacy-aware framework for service provisioning in smart cities, namely the 'Smart Secure Service Provisioning' (SSServProv) Framework. Unlike previous attempts, our framework provides end-to-end security and privacy features for trustable data acquisition, transmission, processing and legitimate service provisioning. The proposed framework ensures inhabitants’ privacy, and also guarantees integrity of services. It also ensures that public data is never misused by malicious service providers. To demonstrate the efficacy of SSServProv we developed and tested core functionalities of authentication, authorisation and lightweight secure communication protocol for data acquisition and service provisioning. For various smart cities service provisioning scenarios we verified these protocols by an automated security verification tool called Scyther.


ABSTRACT: With the current availability of an extreme diversity of data sources and services, emerging from the Internet of Things and Cloud domains, the challenge is shifted towards identifying intelligent, abstracted and adaptive ways of correlating and combining the various levels of information. The purpose of this work is to demonstrate such a combination, on one hand at the service level, through integrating smart cities platforms for user level data, and on the other hand at Complex Event Processing, Storage and Analytics capabilities together with Twitter data. The final goal is to identify events of interest to the user such as Large Crowd Concentration (LCC) in a given area, in order to enrich application level information with related event identification that can enable more sophisticated actions on behalf of that user. The identification is based on observation of Twitter activity peaks compared to historical data on a dynamic time and location of interest. The approach is validated through a two-month experiment in the city of Madrid, identifying LCCs in sporting events around two sports venues and analyzing various approaches with relation to the needed thresholds definition.


ABSTRACT: Nowadays, cities across the world are one after another trying to become so called Smart Cities. In this paper we propose several ideas on how to define the concept of Smart City, including our own. However, our main focus will be on the question of the safety and security in
such cities in the future. Our study of the Smart City program shows the lack of importance which is being given to this topic. Because of that, we are inspired to introduce our definition of a Safe City. Along with the topics of safety and security, we also provide the reader with an insight into the importance and use of the modelling and simulations in a Safe City.


ABSTRACT: Boosting the concept of smart cities for implementing an intelligent management of traffic congestion while reducing cybersecurity concerns will not only be more efficient for reducing traffic congestion but also more resilient to cyber incidents. In this paper we proposed a framework that can act as a generalized firewall and work interactively with several critical infrastructures in a smart city to protect the respective operations from a variety of cyber threats. The objective is to develop several steps for a comprehensive traffic management framework in smart cities that facilitates the cooperation among drivers and between drivers and the traffic management authority. The transformative nature of the proposed study supports its applications to a variety of networked critical infrastructures, including electricity, gas, water, rail, and telecommunications, as they intend to respond effectively to a wide range of weather- or human-related disruptions. The contributions of this paper include: Improving the traffic management performance in urban transportation systems, assessing and mitigating the cybersecurity risk in urban traffic management, and facilitating efficient and cyber-secure traffic management in metropolitan areas; Developing and testing an interactive simulation platform for evaluating the traffic management performance under various traffic conditions; Validating and demonstrating the applications in a practical urban transportation system; Disseminating the proposed study results to a wide range of concerned audiences via user-group meetings, detailed education forums, and a close collaboration with the local traffic management authority.


ABSTRACT: Chinese officials are increasingly turning to a policy known as Informatisation, connecting industry online, to utilise technology to improve efficiency and tackle economic developmental problems in China. However, various recent laws have made foreign technology firms uneasy about perceptions of Rule of Law in China. Will these new laws, under China's stated policy of "Network Sovereignty" ("网络主权" "wangluo zhuquan") affect China's ability to attract foreign technology firms, talent and importantly technology transfers? Will they slow China's technology and Smart City drive? This paper focuses on the question of whether international fears of China's new Cyber Security Law are justified. In Parts I and II, the paper analyses why China needs a cyber security regime. In Parts III and IV it examines the law itself.


ABSTRACT: Defining sustainable cities is not straightforward. The main issues involved in urban sustainability are buildings, energy, food, green areas and landscape, mobility, urban planning, water and waste; and their improvement is promoted through different strategies. However, a quantitative method, such as life cycle thinking (LCT), is essential to evaluating these strategies. This paper reviews LCT studies related to urban issues to identify the main research gaps in the evaluation of these improvement strategies. The review identifies the main sustainability strategies associated with each urban issue and compiles articles that deal with these strategies through LCT, including environmental life cycle assessment (LCA), life cycle costing (LCC), social LCA (S-LCA) and life cycle sustainability assessment (LCSA), as well as integrated analyses with
combined tools. Water, waste and buildings are the urban issues that accounted for a larger amount of studies. In contrast, a limited number of papers assessed urban planning and energy (excluding energy in buildings). Strong interrelations among urban issues were identified, most of them including water. In terms of methods, 79% of the studies exclusively applied life cycle tools (i.e., LCA, LCC, S-LCA or LCSA). Within this group, the environmental dimension was the focus of 84% of the papers. Single environmental indicators (e.g., global warming) were common in 20% of the analyses, highlighting the need to integrate more impact categories to prevent trade-offs. In the field of social and sustainability assessment, there is a need for methodological advances that foster their application in urban areas. Further research should cover the thematic and methodological gaps identified in this paper, such as developing models that assess complex urban issues, generating comprehensive LCT studies and promoting multi-indicators. Life cycle tools might benefit from revising the methodology with stakeholders to optimize the understanding and communication of life cycle results for policy- and decision-making processes.

Silva, Bhagya Nathali, Murad Khan, and Kijun Han. "Integration of Big Data Analytics Embedded Smart City Architecture with RESTful Web of Things for Efficient Service Provision and Energy Management." Future Generation Computer Systems, In Press(2017) doi: 10.1016/j.future.2017.06.024. http://dx.doi.org/10.1016/j.future.2017.06.024. ABSTRACT: Emergence of smart things has revolutionized the conventional internet into a connected network of things, maturing the concept of Internet of Things (IoT). With the evolution of IoT, many attempts were made to realize the notion of smart cities. However, demands for processing enormous amount of data and platform incompatibilities of connected smart things hindered the actual implementation of smart cities. Keeping it in view, we proposed a Big Data analytics embedded smart city architecture, which is further integrated with the web via a smart gateway. Integration with the web provides a universal communication platform to overcome the platform incompatibilities of smart things. We introduced Big Data analytics to enhance data processing speed. Further, we evaluated authentic data sets to determine the threshold values for intelligent decision-making and to present the performance improvement gained in data processing. Finally, we presented a representational state transfer (RESTful) web of things (WoT) integrated smart building architecture (smart home) to reveal the performance improvements of the proposed smart city architecture in terms of network performance and energy management of smart buildings.

Vilalta, R., V. Lopez, A. Giorgetti, et al. "TelcoFog: A Unified Flexible Fog and Cloud Computing Architecture for 5G Networks." IEEE Communications Magazine, 55, no. 8 (2017): 36-43 doi: 10.1109/MCOM.2017.1600838. http://dx.doi.org/10.1109/MCOM.2017.1600838. ABSTRACT: We propose the TelcoFog architecture as a novel, secure, highly distributed, and ultra-dense fog computing infrastructure, which can be allocated at the extreme edge of a wired/wireless network for a telecom operator to provide multiple unified, cost-effective, and new 5G services, such as NFV, MEC, and services for third parties (e.g., smart cities, vertical industries, and IoT). The distributed and programmable fog technologies that are proposed in TelcoFog are expected to strengthen the position of the mobile network and cloud markets. TelcoFog, by design, is capable of integrating an ecosystem for network operators willing to provide NFV, MEC, and IoT services. TelcoFog’s key benefits are the dynamic deployment of new distributed low-latency services. The novel TelcoFog architecture consists of three main building blocks: a scalable TelcoFog node, which is seamlessly integrated in the telecom infrastructure; a TelcoFog controller, focused on service assurance and based on service data modeling using YANG, which is integrated in the management and orchestration architecture of the telecom operator; and TelcoFog services, which are able to run on top of the TelcoFog and telecom infrastructure. The TelcoFog architecture is validated through a proof of concept for IoT services.
Bibliography on “social media”

http://dx.doi.org/10.1145/3057278.
ABSTRACT: Users with demographic profiles in social networks offer the potential to understand the social principles that underpin our highly connected world, from individuals, to groups, to societies. In this article, we harness the power of network and data sciences to model the interplay between user demographics and social behavior and further study to what extent users’ demographic profiles can be inferred from their mobile communication patterns. By modeling over 7 million users and 1 billion mobile communication records, we find that during the active dating period (i.e., 18–35 years old), users are active in broadening social connections with males and females alike, while after reaching 35 years of age people tend to keep small, closed, and same-gender social circles. Further, we formalize the demographic prediction problem of inferring users’ gender and age simultaneously. We propose a factor graph-based WhoAmI method to address the problem by leveraging not only the correlations between network features and users’ gender/age, but also the interrelations between gender and age. In addition, we identify a new problem—coupled network demographic prediction across multiple mobile operators—and present a coupled variant of the WhoAmI method to address its unique challenges. Our extensive experiments demonstrate the effectiveness, scalability, and applicability of the WhoAmI methods. Finally, our study finds a greater than 80% potential predictability for inferring users’ gender from phone call behavior and 73% for users’ age from text messaging interactions.

http://dx.doi.org/10.1145/3056539.

Karikari, Serwaa, Kofi Osei-Frimpong, and Nana Owusu-Frimpong. "Evaluating Individual Level Antecedents and Consequences of Social Media use in Ghana." Technological Forecasting and Social Change
https://doi.org/10.1016/j.techfore.2017.06.023.
ABSTRACT: Social media use has increased tremendously over the last few years, generating immense interest in the phenomenon in both research and practice. Hence, this study takes a quantitative (survey design) approach to empirically examine the user (consumer) level factors that influence social media use, their consequences, and the moderating effects of consumer demographic variables (age and gender). The findings suggest that while external pressure from a consumer’s referent group influence their social media use, the consumer’s personal values does not. Moreover, social media use generates bridging social capital and subjective wellbeing among consumers. The empirical analysis also shows that consumer demographic variables (age and gender) do not have any significant differences in their use of social media. We shed light on the relative effects of these antecedents on social media use from a holistic perspective employing the social presence theory. This study also contributes to the augmentation and displacement hypotheses of computer-mediated communication and tends to support the augmentation hypothesis. The results will also be useful for firms by employing techniques that would arouse interest and curiosity to attract the attention of social media users.

http://dx.doi.org/10.1145/3003434.
ABSTRACT: Preserving users’ privacy is important for Web systems. In systems where transactions are managed by a single user, such as e-commerce systems, preserving privacy of the transactions is merely the capability of access control. However, in online social networks, where each transaction is managed by and has effect on others, preserving privacy is difficult. In many cases, the users’ privacy constraints are distributed, expressed in a high-level manner, and would depend on information that only becomes available over interactions with others. Hence, when a content is being shared by a user, others who might be affected by the content should discuss and agree on how the content will be shared online so that none of their privacy constraints are violated. To enable this, we model users of the social networks as agents that represent their users’ privacy constraints as semantic rules. Agents argue with each other on propositions that enable their privacy rules by generating facts and assumptions from their ontology. Moreover, agents can seek help from others by requesting new information to enrich their ontology. Using assumption-based argumentation, agents decide whether a content should be shared or not. We evaluate the applicability of our approach on real-life privacy scenarios in comparison with user surveys.


ABSTRACT: With the current availability of an extreme diversity of data sources and services, emerging from the Internet of Things and Cloud domains, the challenge is shifted towards identifying intelligent, abstracted and adaptive ways of correlating and combining the various levels of information. The purpose of this work is to demonstrate such a combination, on one hand at the service level, through integrating smart cities platforms for user level data, and on the other hand at Complex Event Processing, Storage and Analytics capabilities together with Twitter data. The final goal is to identify events of interest to the user such as Large Crowd Concentration (LCC) in a given area, in order to enrich application level information with related event identification that can enable more sophisticated actions on behalf of that user. The identification is based on observation of Twitter activity peaks compared to historical data on a dynamic time and location of interest. The approach is validated through a two-month experiment in the city of Madrid, identifying LCCs in sporting events around two sports venues and analyzing various approaches with relation to the needed thresholds definition. ".


ABSTRACT: Most of existing network-based decision-support systems, such as recommender systems, require knowing users’ social context and, thus, the strength of their interactions. However, previous studies related to the usage and estimation of tie strength either assume that this parameter is given or use a computational model of their own. The amount, variety and domain specific information required to apply these models makes the reproducing and reusing of existing results extremely costly or utterly impossible. In our research, we show empirically the relative importance of different social variables for the computation of the tie strength and propose a computational model independent of the Social Networks’ domain. Our experiments are based on a dataset obtained from a survey that involved more than 100 participants and comprised more than 500 social ties. The dataset is the first publicly available dataset to explicitly include tie strength measures. ".

ABSTRACT: Although social sustainability involves processes that promote well-being, it is often neglected in the sustainability debate. Social networking sites (SNSs) such as Facebook are now pervasive venues for constant interpersonal communication and interaction, as well as general social connectedness. The debate between cyberoptimists and cyberpessimists about the implications of SNS use for well-being persists. The present study adopts a social sustainability perspective and seeks to further elucidate two competing hypotheses; thus, subjective well-being is included as a driver and an outcome of SNS use and social network characteristics. We conducted a survey of 678 Facebook users across various age categories and then applied a two-step approach to analyze the data. The results reveal that although the structural parameters seem to widely support the social enhancement hypothesis, a more differentiated analysis shows that highly extraverted individuals spend more time on Facebook when they are unhappy. Furthermore, the more time that such extraverts spend on Facebook, the more they believe that it improves their overall well-being. This finding is further supported by our identification of a four-class structure in which a clear distinction of users emerges based on age, gender, and extraversion.


ABSTRACT: Social networking services (e.g., Facebook and Twitter) are playing a significant role of interacting with customers. In particular, most of businesses are trying to exploit such social networking services for more profit, since it has dramatically become an information carrier for customers who are disseminating latest information about products and services. Thus, this study examines how information shared by companies is distributed and what the important factors in understanding information dissemination are. More importantly, this study classifies the types of tweets posted by a company and then to investigate the effect of these types of tweets on diffusion. By using content analysis, this study defined three types, which are i) information provision (IF), ii) advertisement (AD), and iii) both (IFAD), with 8 specific concepts. These results indicate that the differences are significant for all three types of information content. It shows that companies can spread information more quickly by providing the IFAD type rather than the AD type.


ABSTRACT: Understanding how information technology (IT) resources create value in Management education requires new and more powerful theories. This research examines the impact of IT resources on Management education using the case method. We theorize that traditional education technologies enable instructors to engage students to increase learning performance, which in turn leads to greater student satisfaction, and that social media applications can amplify these relationships. The empirical analysis, partial least squares path modeling performed on survey and secondary data from 94 Spanish students in a Management course, supports our theory.


ABSTRACT: Online social media offer great potential for research participant recruitment and data
collection. We conducted synchronous (real-time) online focus groups (OFGs) through Facebook with the target population of young adult substance users to inform development of Facebook health behavior change interventions. In this paper we report methods and lessons learned for future studies. In the context of two research studies participants were recruited through Facebook and assigned to one of five 90-min private Facebook OFGs. Study 1 recruited for two OFGs with young adult sexual and/or gender minority (SGM) smokers (range: 9 to 18 participants per group); Study 2 recruited for three groups of young adult smokers who also engage in risky drinking (range: 5 to 11 participants per group). Over a period of 11 (Study 1) and 22 days (Study 2), respectively, we recruited, assessed eligibility, collected baseline data, and assigned a diverse sample of participants from all over the US to Facebook groups. For Study 1, 27 of 35 (77%) participants invited attended the OFGs and 25 of 32 (78%) for Study 2.

Participants in Study 1 contributed an average of 30.9 (SD=8.9) comments with an average word count of 20.1 (SD=21.7) words, and 36.0 (SD=12.3) comments with 11.9 (SD=13.5) words on average in Study 2. Participants generally provided positive feedback on the study procedures. Facebook can be a feasible and efficient medium to conduct synchronous OFGs with young adults. This data collection strategy has the potential to inform health behavior change intervention development.

Bibliography on “spectrum management/spectrum sharing”


ABSTRACT: In this study, a non-preemptive M/G/1 queueing model of a spectrum handoff scheme for cognitive wireless networks is proposed. Because spectrum handoff gives secondary users an opportunity to carry on their transmissions, it is crucially important to determine the actions of primary users. In our queueing model, prioritized data traffic is utilized to meet the requirements of the secondary users. These users’ packets are categorized into three different priority classes: urgent, real-time, and non-real time. Urgent data packets have the highest priority, while non-real time data packets have the lowest priority. Riverbed (OPNET) Modeler simulation software was used to simulate both reactive and proactive decision spectrum handoff schemes. The simulation results were consistent with the analytical results obtained under different load and traffic conditions. This study also revealed that the cumulative number of handoffs can be drastically decreased by exploiting priority classes and utilizing a decent spectrum handoff strategy, such as a reactive or proactive decision-based strategy.

doi: 10.1016/j.telpol.2017.05.005.
http://dx.doi.org/10.1016/j.telpol.2017.05.005.

ABSTRACT: The WRC-15 was the peak of African participation and contributions in the ITU-R with the first African to chair a WRC. However, there have been different elements within the international radio regulations that did have a restrictive influence on the African international spectrum policy during WRC-15. In particular, the discussion within ITU-R Region 1 highlighted different requirements between the African countries and other countries in Region 1 and also within the African continent per se with some of the African countries’ proposals not progressing. Moreover, a majority of the African countries opposed global IMT identification in the lower UHF band (470–694 MHz) although most of them have limited broadcasting needs. Having said that, the examination of the interaction between the international spectrum management regime and Africa’s international spectrum policy has revealed some elements of restriction. Firstly, the a
priori planning concept could be considered as a restriction over any change to the spectrum use in the UHF band. Secondly, it seems that harmonisation within Region 1 is mostly interpreted as the harmonisation of Africa with Europe considering that the current ITU-R three regions system does not reflect in practice regional spectrum use. Thirdly, IMT identification is not necessary for Africa, which has already the potential to act alone independently of the other Region 1 countries and not necessarily in alignment with the RR. Fourthly, reaching a unified position is quite difficult for the African continent considering the different interests of the African sub-regional groups with large countries influencing such a position. Overall, our main message is that it is not a condition anymore for the African countries to look at the ITU-R for the way to go. ".

https://doi.org/10.1007/s11235-017-0276-5.

*ABSTRACT:* The exponential increase of mobile traffic will continue to be a reality in the next years. To support it, some actions should be taken: the current frequency bands can be refarmed, the number of base stations can be increased, the technologies can evolve etc. Even with all of these, the spectrum in use will not be enough. Therefore, it will be necessary to allocate more spectrum, so the new expected traffic can properly flow. However, the spectrum is a scarce resource. Hence, from a spectrum management point of view, it is not suitable to allocate a huge amount of spectrum without planning. One question arises: how much spectrum is necessary to support all this new traffic that will emerge? This paper answers this question.

https://doi.org/10.1016/j.comnet.2017.06.003.

*ABSTRACT:* The scarcity of the radio spectrum has motivated a search for more optimal and efficient spectrum management methods. One of these methods is spectrum sharing, which multiplies the number of devices that can use this resource without causing harmful interference to licensees. Spectrum sharing requires spectrum scanning to gain awareness of the spectrum occupancy patterns and decide how to allocate access to this resource. This process has been traditionally done by sensing the channel to determine its state, occupied or empty, and then using frequentist inference to estimate the channel occupancy. However, frequentist inference does not handle uncertainty and does not take into account the probabilities of false alarm and detection when estimating the channel occupancy rate. On the other hand, Bayesian inference can handle uncertainty by considering the impact of these parameters on spectrum sensing results. Additionally, it is possible to include previous knowledge into the construction of Bayesian models to learn and make decision under uncertainty. In this paper, we propose a spectrum scanning method, Bayesian inference, to estimate the channel occupancy rate. One advantage of this method is that it takes into consideration the probabilities of false alarm and detection of the spectrum sensor. This feature makes the estimation of the channel occupancy rate more accurate.


*ABSTRACT:* A key concern with the Licensed-shared access (LSA) approach currently being developed by European regulators is that leaving incumbents and secondary users to agree to bilateral arrangements may be insufficient to incentivise an optimal level of sharing. We propose an efficient auction mechanism to incentivise incumbent users to offer shared access to the spectrum they use. The mechanism consists of two stages. In the first stage, LSA licences are auctioned. In the second stage, the incumbent is provided with a choice of either granting access under an LSA agreement to the winner of the auction or not. If the incumbent accepts, its existing licence fee is reduced, whereas, if it rejects, its existing licence fee is increased. The
change in the licence fee is such that a rational incumbent always opts to share when it is efficient to do so, i.e. when the cost of sharing is below the value to the secondary user. We also explore how this simple mechanism can be extended to situations in which there is more than one incumbent in a band. Our proposed approach involves package (combinatorial) bidding and linear reference prices.


ABSTRACT: This article review lessons learned from the uses of radio-frequency (RF) spectrum at national and international scales. Its main purpose is to stimulate debate on how to allow new wireless systems to operate, and to reduce the chronic apparent shortage of RF spectrum. The article aims at a better understanding of the mechanisms behind spectrum management and their pertinence to the public interest. The main contributions if the article are: • Considering RF spectrum management as a construct that structures radio services and, at the same time, distributes wealth and power; • Highlighting major doctrines of RF spectrum management; • Promoting spectrum management directly by its users; • Promoting cooperation and transparency. The several parts of the paper include the evolution of spectrum exploitation, and a foreseeable future by taking a closer look at major dilemmas and challenges. The paper ends with general comments and conclusions.

Bibliography on “telecommunication/ICT markets”


ABSTRACT: Purpose The purpose of this research is to quantifiably measure the relationship between technological advancement, economic growth and societal employment trends across the Brazil, Russia, India and China (BRIC) countries, while also describing various government initiatives and policy steps taken to promote technology development.

Design/methodology/approach This paper examines the relationship between the United Nations? International Telecommunication Union?s Information and Communication Technology (ICT) development Index (IDI), gross domestic product (GDP) and unemployment data. The paper also reviews the broadband and e-readiness components of each BRIC nation to further describe the policies in adoption of ICT. Findings This research concludes that there is in fact a significant positive correlation between technology (as measured by IDI) and economy (as measured by a nation?s GDP) and there is a significant negative correlation between technology (as measured by IDI) and a nation?s unemployment rate benefiting the society. Originality/value This research seeks to describe the impact of Information Communication Technology on economic and society indices in BRIC. Paper contributions include an empirical measurement and relationship between technological advancement, economic growth and employment trends across the BRIC countries, while also describing various government policy initiatives taken to promote technology development. Purpose The purpose of this research is to quantifiably measure the relationship between technological advancement, economic growth and societal employment trends across the Brazil, Russia, India and China (BRIC) countries, while also describing various government initiatives and policy steps taken to promote technology development. Design/methodology/approach This paper examines the relationship between the United Nations? International Telecommunication Union?s Information and Communication Technology (ICT) development Index (IDI), gross domestic product (GDP) and unemployment data. The paper also reviews the broadband and e-readiness components of each BRIC nation to further describe the policies in adoption of ICT. Findings This research concludes that there is in fact a significant positive correlation between technology (as
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ABSTRACT: Since 2006, the Tunisian National Regulatory Authority has been imposing multiannual mobile-to-mobile termination rates, first on the duopoly of Tunisie Télécom and Tunisiana, and then on all three providers once Orange Tunisie entered the market in 2010. This research studies the interplay between interconnection rates for mobile call termination and the retail price competition for prepaid SIM cards, predominantly chosen by Tunisian consumers. We show that the duopoly was practicing "price alignment" for off-net calls, and that subsequently, the third provider entering the market sparked a decisive initial price drop associated with the non-reciprocal rate it enjoyed. However, the price war, which benefited consumers, only occurred when the Regulatory Body eliminated differential tariffs between on and off-net calls in the retail market. It follows that, everything else being equal, an interconnection rate drop alone will not lead to a decrease in retail prices. "

ABSTRACT: Purpose Proponents of 5G predict a huge market for 5G goods and services with millions of new jobs being created. The purpose of this paper is to make a realistic assessment of the 5G initiative, with a focus on Europe. Design/methodology/approach The paper reviews the technical, economic and policy literature to analyse the case for 5G in Europe. Findings The 5G initiative in Europe, as well as globally, has so far failed to assess objectively the future needs of its customers, whether consumer or business, to articulate a set of sound business cases. Originality/value There is little independent assessment of 5G in the academic literature. The paper makes an original contribution through questioning the dominant supply-driven industry perspective.; Purpose Proponents of 5G predict a huge market for 5G goods and services with millions of new jobs being created. The purpose of this paper is to make a realistic assessment of the 5G initiative, with a focus on Europe. Design/methodology/approach The paper reviews the technical, economic and policy literature to analyse the case for 5G in Europe. Findings The 5G initiative in Europe, as well as globally, has so far failed to assess objectively the future needs of its customers, whether consumer or business, to articulate a set of sound business cases. Originality/value There is little independent assessment of 5G in the academic literature. The paper makes an original contribution through questioning the dominant supply-driven industry perspective.

ABSTRACT: Fifth-generation (5G) sounds like the successor to fourth-generation (4G) cellular telephone technology, and that is the intent. However, while the progression from second generation to third generation, to 4G, and now to 5G seems simple, the story is more nuanced. At the Consumer Electronics (CE) Society meeting in January 2017, I had a chance learn more about 5G (not to be confused with 5 GHz Wi-Fi) and another standard, Advanced Television
Systems Committee (ATSC) 3.0, which is supposed to be the next standard for broadcast TV. The contrast between the approach taken with these standards and the way the Internet works offers a pragmatic framework for a deeper understanding of engineering, economics, and more. One hint that something is wrong in 5G land came when I was told that 5G was necessary for the Internet of Things (IoT). This is a strange claim considering how much we are already doing with IoT devices.

http://dx.doi.org/10.1016/j.tepol.2017.07.005.
ABSTRACT: This study analyses the effects of regulation and political stability on the allocation of mobile telecommunication investments in the African continent between 2001 and 2011. To better understand the dynamics of investment in telecommunications, a framework was developed to assess factors that determine investments in the telecom industry at the country and industry level, particularly institutions, market size/demand level, market structure and investing cost. The results show that investments in the mobile telecommunications industry are dependent on regulation and liberalization; however, no statistical evidence was found for the effect of political stability as measured by the democratic process. Furthermore, the study has shown that market structure factors, especially competition, market size and the cost of investing in a country, are important in determining the allocation of mobile telecommunications investments among African countries. ".

http://dx.doi.org/10.1016/j.tepol.2017.05.007.
ABSTRACT: This paper analyses the transition from the voice and SMS era of mobile telephony to the data-only era, and the strategies that operators have adopted during this transition phase. Key drivers for the transition are Over the Top services (OTTs). The paper uses quarterly prices for prepaid user baskets across 44 African countries and introduces an alternative tool to measure and compare top-up bundles. Prepaid voice, prepaid data and top-ups are analysed, to demonstrate the various strategies operators in Africa have adopted, in response to revenue loss caused by OTTs, such as Facebook, WhatsApp and Skype. Case studies of dominant operators in South Africa, Kenya and Namibia are used to highlight which strategies have successfully defended or increased mobile operator revenues. The paper shows that embracing OTTs, and providing prepaid products that resemble flat-rate pricing (top-ups with limited validity), is the most successful strategy for mobile operators to retain revenues. The paper also shows how zero-rated OTTs can be used to gain market share for new entrants. We argue that regulators should resist the push for regulating OTTs, and instead facilitate the evolution to flat access pricing. ".

Bibliography on “telecommunications policy and law”

ABSTRACT: Since 2006, the Tunisian National Regulatory Authority has been imposing multiannual mobile-to-mobile termination rates, first on the duopoly of Tunisie Télécom and Tunisiana, and then on all three providers once Orange Tunisie entered the market in 2010. This
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Briglauer, Wolfgang, Carlo Cambini, Thomas Fetzer, et al. "The European Electronic Communications Code: A Critical Appraisal with a Focus on Incentivizing Investment in Next Generation Broadband Networks." *Telecommunications Policy*, In Press(2017) doi: 10.1016/j.telpol.2017.07.011. http://dx.doi.org/10.1016/j.telpol.2017.07.011. ABSTRACT: In September 2016, the European Commission (EC) published its proposal for a directive establishing the European Electronic Communications Code (EECC) – with one key aim being the provision of sufficient incentives for infrastructure investments into high-speed communication networks. Based on a detailed review of the theoretical and empirical literature of the most relevant regulatory measures – that is, co-investment models as well as different types of access regulation – we provide a critical appraisal of the respective provisions in the EECC. We find that, although the EECC can generally be seen as a step into the right direction, the expected effects on investment incentives as well as substantial implementation challenges in combination with a high degree of complexity of the envisaged measures contain substantial potential for improvement."

El-Moghazi, Mohamed, Jason Whalley, and James Irvine. "World Radiocommunication Conference – 2015: Reflections on Africa International Spectrum Policy." *Telecommunications Policy*, In Press(2017) doi: 10.1016/j.telpol.2017.05.005. http://dx.doi.org/10.1016/j.telpol.2017.05.005. ABSTRACT: The WRC-15 was the peak of African participation and contributions in the ITU-R with the first African to chair a WRC. However, there have been different elements within the international radio regulations that did have a restrictive influence on the African international spectrum policy during WRC-15. In particular, the discussion within ITU-R Region 1 highlighted different requirements between the African countries and other countries in Region 1 and also within the African continent per se with some of the African countries’ proposals not progressing. Moreover, a majority of the African countries opposed global IMT identification in the lower UHF band (470–694 MHz) although most of them have limited broadcasting needs. Having said that, the examination of the interaction between the international spectrum management regime and Africa’s international spectrum policy has revealed some elements of restriction. Firstly, the a priori planning concept could be considered as a restriction over any change to the spectrum use in the UHF band. Secondly, it seems that harmonisation within Region 1 is mostly interpreted as the harmonisation of Africa with Europe considering that the current ITU-R three regions system does not reflect in practice regional spectrum use. Thirdly, IMT identification is not necessary for Africa, which has already the potential to act alone independently of the other Region 1 countries and not necessarily in alignment with the RR. Fourthly, reaching a unified position is quite difficult for the African continent considering the different interests of the African sub-regional groups with large countries influencing such a position. Overall, our main message is that it is not a condition anymore for the African countries to look at the ITU-R for the way to go."

focus on physical human–robot interaction, i.e. on the prevention of harm. Current robot
technology nonetheless challenges other aspects in the legal domain. The main issues comprise
privacy, data protection, liability, autonomy, dignity, and ethics. The paper first discusses the
need to take into account other interdisciplinary aspects of robot technology to offer complete
legal coverage to citizens. As the European Union starts using impact assessment methodology
for completing new technologies regulations, a new methodology based on it to approach the
insertion of personal care robots will be discussed. Then, after framing the discussion with a use
case, analysis of the involved legal challenges will be conducted. Some concrete scenarios will
contribute to easing the explanatory analysis. 

Frias, Zoraida and Jorge Pérez Martínez. "5G Networks: Will Technology and Policy Collide?"
http://dx.doi.org/10.1016/j.telpol.2017.06.003.
ABSTRACT: Despite being still under development, it is envisaged that 5G networks will provide a
'fibre-like' experience to mobile users. As such, they are expected to accommodate services with
very different requirements in terms of latency, bandwidth and reliability, among others, for the
vertical sectors. However, the European Union has just approved the Telecommunications Single
Market Regulation, which enshrines the network neutrality principle and guarantees that 'all
traffic through the Internet is treated equally'. This article explores the potential conflict between
net neutrality regulation and future 5G services, particularly regarding network virtualisation. We
present a discussion on the challenges of building net neutrality upon judgements on whether
traffic optimisation is objectively necessary. This proves complex in a technological environment
that envisions network 'slices' created and priced on-demand according to the Quality of Service
(QoS) required by specific applications at any given time. In addition, we argue that the
'anything-as-a-service' paradigm might turn into an important source of innovation for the future
Internet infrastructure layer, and thus for the ecosystem as a whole. 

Parasol, Max. "The Impact of China's 2016 Cyber Security Law on Foreign Technology Firms,
and on China's Big Data and Smart City Dreams." Computer Law & Security Review, In
Press(2017)
doi: 10.1016/j.clsr.2017.05.022.
http://dx.doi.org/10.1016/j.clsr.2017.05.022.
ABSTRACT: Chinese officials are increasingly turning to a policy known as Informatisation,
connecting industry online, to utilise technology to improve efficiency and tackle economic
developmental problems in China. However, various recent laws have made foreign technology
firms uneasy about perceptions of Rule of Law in China. Will these new laws, under China's stated
policy of "Network Sovereignty" ("网络主权" "wangluo zhuquan") affect China's ability to attract
foreign technology firms, talent and importantly technology transfers? Will they slow China’s technology and Smart City drive? This paper focuses on the question of whether international fears of China’s new Cyber Security Law are justified. In Parts I and II, the paper analyses why China needs a cyber security regime. In Parts III and IV it examines the law itself.


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ABSTRACT: Digital technologies have unleashed profound forces changing and reshaping rule making in the democracies of the information society. Today, we are witnessing a transformative period for law and governance in the digital age. Elected representative government and democratically chosen rules vie for authority with new players who have emerged from the network environment. At the same time, network technologies have unraveled basic foundational prerequisites for the rule of law in democracy like privacy, freedom of association, and government oversight. The digital age, thus, calls for the emergence of a Digitocracy—a new set of more complex governance mechanisms assuring public accountability for online power held by state and nonstate actors through the creation of new checks and balances among a more diverse group of players than democracy’s traditional grouping of a representative legislature, executive branch, and judiciary.


ABSTRACT: The General Data Protection Regulation (GDPR) contains various provisions with relevance to online price discrimination. This article, which analyses a number of essential elements on this junction, aims to provide a theory on whether, and, if so, how the GDPR affects price discrimination based on the processing of personal data. First, the contribution clarifies the concept of price discrimination, as well as its typology and relevance for big data settings. Subsequent to studying this topic in the context of the Commission's Digital Single Market strategy, the article tests the applicability of the GDPR to online price personalisation practices by applying criteria as ‘personal data’ and ‘automated processing’ to several discriminatory pricing cases and examples. Secondly, the contribution evaluates the possible lawfulness of price personalisation under the GDPR on the basis of consent, the necessity for pre-contractual or contractual measures, and the data controller's legitimate interests. The paper concludes by providing a capita selecta of rights and obligations pertinent to online discriminatory pricing, such as transparency obligations and the right to access, as well as the right to rectify the data on which price discrimination is based, and the right not to be subject to certain discriminatory pricing decisions.
doi: 10.1016/j.clsr.2017.05.003.
http://dx.doi.org/10.1016/j.clsr.2017.05.003.

ABSTRACT: As a follow up to the Digital Rights judgment of 8 April 2014 in which the Grand Chamber invalidated the data retention directive, the Administrative Court of Appeal in Stockholm and the Court of Appeal in London both referred questions to the Court of Justice for a preliminary ruling. On 21 December 2016, the Grand Chamber rendered a landmark judgment in which it interpreted Article 15(1) of e-privacy directive 2002/58/EC dated 12 July 2002 in light of Article 7 on the right to privacy, Article 8 on the protection of personal data, Article 11 on freedom of expression and Article 52(1) on the principle of proportionality of the Charter of Fundamental Rights. The Grand Chamber ruled that EU law does not allow a general and indiscriminate retention of all traffic and location data. It also ruled that access of competent national authorities to retained data must be restricted solely to fighting serious crime and subject to prior review by a court or an independent administrative authority.


ABSTRACT: Purpose The purpose of this paper is to expose the necessity of introducing some degree of flexibility in the definition of wholesale access price of FTTx, in the EU competition regulatory framework, and incorporating new regulatory actions to boost investment substitutability to ensure that NRAs accomplish dynamic and/or static efficiency targets. Design/methodology/approach Given the European historical context, the current preponderance of cable and the strong heterogeneity in NGA networks rollout across Europe, a policy-oriented analysis defines a set of recommendations useful for member states whose NGA networks market is in a more advanced state of development. Findings Flexibility is necessary in jurisdictions holding a highly competitive NGA wholesale market at the three previously described levels to avoid that strong dynamic efficiency is passed-through into excessive retail prices which may decrease static efficiency in greater proportion, thereby generating a deadweight loss. Originality/value The novel measures pointed out are part of the on-going debate concerning the revision of the European regulatory framework for NGA networks.

http://dx.doi.org/10.1016/j.clsr.2017.03.025.

ABSTRACT: This article examines the impact of Big Data technology on Russian citizens' constitutional rights to a private life. There are several laws in the Russian Federation covering
data privacy and protection, but these are proving inadequate to protect the citizens' rights in the face of the ever-increasing use of massive data sets and their analysis by Big Data tools. One particular problem in this regard is that datasets of anonymised records currently not covered under personal data laws (because they do not identify individuals) can, in fact, be used to identify data subjects (the individuals to whom the data refers) when combined and analysed using Big Data tools. Furthermore, existing sanctions for misuse of personal data are minor, and often fail to act as a deterrent when the commercial benefits of exploiting user data (e.g. through targeted advertising) are so much greater. From the point of view of companies handling Big Data, a general confusion over definitions and responsibilities is making compliance with the law difficult, leaving most to come up with their own forms of best practice, rather than being able to follow clear industry recommendations. The article examines existing laws and oversight bodies, discusses how the current provisions are inadequate to deal with new developments in Big Data, and proposes recommendations for amending and updating existing laws and policies."