ITU library reading list for November 2017

ITU Library makes a monthly selection of online articles/reports/e-books selected from its electronic subscriptions to journals and databases - on topics of interest to ITU Staff and work.

All lists are also stored on our library guide: http://libraryguides.itu.int/library/reading

Please suggest topics you wish to add to our bibliographies (library@itu.int)

Table of Contents

Bibliography on “5G mobile” .................................................................................................................... 2
Bibliography on “accessibility and ICTs” ................................................................................................. 7
Bibliography on “big data” ........................................................................................................................ 8
Bibliography on “broadband” ..................................................................................................................... 13
Bibliography on “child online protection” ............................................................................................. 14
Bibliography on “climate change and ICTs” ........................................................................................... 14
Bibliography on “cybersecurity” ............................................................................................................... 15
Bibliography on “digital divide” ............................................................................................................... 18
Bibliography on “digital economy” ......................................................................................................... 18
Bibliography on “e-Government” ........................................................................................................... 20
Bibliography on “e-Health” .................................................................................................................... 24
Bibliography on “emergency communication” ...................................................................................... 28
Bibliography on “gender” ....................................................................................................................... 30
Bibliography on “ICT for development (ICT4D)” .................................................................................. 33
Bibliography on “internet of things (IoT)” ............................................................................................ 35
Bibliography on “internet governance” .................................................................................................. 36
Bibliography on “internet of things (IoT)” ............................................................................................ 37
Bibliography on “regulatory/statistical report” .................................................................................... 43
Bibliography on “satellite communication” .......................................................................................... 47
Bibliography on “semantic web” ............................................................................................................ 50
Bibliography on “smart cities” .............................................................................................................. 52
Bibliography on “social media” ............................................................................................................ 56
doi: 10.1109/MWC.2017.1700085.
http://dx.doi.org/10.1109/MWC.2017.1700085.

**ABSTRACT:** Research and development of technologies that address the challenges of predicted growth in mobile connections and traffic volume is well known. A major challenge is the cost of meeting the objective, in terms of both infrastructure and deployment. Today, lack of dynamic control across wireless network resources is leading to unbalanced spectrum loads and a perceived capacity bottleneck. The solutions proposed by SPEED-5G through extended dynamic spectrum access (eDSA) address traffic allocation over heterogeneous wireless technologies, better load balancing across available spectrum bands, and capacity boosting through aggregation of available resources while ensuring fair coexistence. The objective of this article is to present a new framework for MAC and RRM layers for supporting eDSA and requirements of the next-generation networks.

doi: 10.1109/ACCESS.2017.2751422.
http://dx.doi.org/10.1109/ACCESS.2017.2751422.

**ABSTRACT:** In this paper, we design a mobility-aware user association strategy for millimeter-wave (mmW) networks to overcome the limitations of the conventional received power (RSS)-based association strategies in a mobile 5G scenario. More in detail, first the design of a mobility-aware strategy for user association in 5G mmW networks is posed as a constrained optimization problem. Then, it is showed that the proposed strategy exhibits several attractive features: a) it is able to track the dynamic changes in the network topology and in the channel conditions induced by the user mobility; b) it takes into account the distribution of the loads among the small base stations (sBSs), thus overcoming to associate an UE to an already congested sBS. This, in turn, affects positively the overall fairness of the network; c) it overcomes overly frequent handovers between sBSs, and thus the need of frequent re-association; d) it takes into account the peculiar aspects of the mmW communications, such as directionality, sensitivity to blockage, and NLoS propagation effects; and e) it is fully distributed, i.e., each mobile user associates to an sBS independently of each other, stemming from local information only. Furthermore, it is showed that the exhaustive search for the solution of the posed optimization problem is computationally unfeasible. Consequently, within this paper, an efficient algorithm exhibiting a polynomial-time complexity is proposed. Finally, the numerical results validate the benefits of adopting the proposed mobility-aware and fully distributed association rule. In particular, it is quantified the very significant performance enhancement of the proposed association with respect to the conventional RSS-based one.

doi: 10.1109/MCOMSTD.2017.1700023.
http://dx.doi.org/10.1109/MCOMSTD.2017.1700023.

**ABSTRACT:** Nowadays, at least two billion people are experiencing a complete lack of wireless...
cellular network coverage. These users live in rural areas and low-income regions, where network operators are not keen to invest, mainly due to high capital expenditure and operational expenditure costs, as well as the scarcity of electricity from the grid. We tackle this challenge by proposing a 5G network explicitly designed to serve rural and low-income areas. Our solution investigates the possibility of mounting remote radio heads on top of unmanned aerial vehicles, as well as large cells (LCs) to increase the coverage range. In addition, 5G nodes are powered by solar panels and batteries. Preliminary results, obtained over three representative case studies located in Italy, Cook Islands, and Zimbabwe, show that providing connectivity in rural and low-income areas by means of the proposed 5G architecture is feasible. At the same time, we also show that the monthly subscription fee paid by the users can be kept sufficiently low, that is, less than €1/month in low-income areas, and around €11/month in rural regions.


doi: 10.1109/TWC.2017.2734080.
http://dx.doi.org/10.1109/TWC.2017.2734080.

ABSTRACT: Emerging cellular technologies such as those proposed for use in 5G communications will accommodate a wide range of usage scenarios with diverse link requirements. This will necessitate operation over a versatile set of wireless channels ranging from indoor to outdoor, from line-of-sight (LOS) to non-LOS, and from circularly symmetric scattering to environments which promote the clustering of scattered multipath waves. Unfortunately, many of the conventional fading models lack the flexibility to account for such disparate signal propagation mechanisms. To bridge the gap between theory and practical channels, we consider $\kappa-\mu$ shadowed fading, which contains as special cases the majority of the linear fading models proposed in the open literature. In particular, we propose an analytic framework to evaluate the average of an arbitrary function of the signal-to-noise-plus-interference ratio (SINR) over $\kappa-\mu$ shadowed fading channels by using an orthogonal expansion with tools from stochastic geometry. Using the proposed method, we evaluate the spectral efficiency, moments of the SINR, and outage probability of a $K$-tier heterogeneous cellular network with $K$ classes of base stations (BSs), differing in terms of the transmit power, BS density, shadowing, and fading characteristics. Building upon these results, we provide important new insights into the network performance of these emerging wireless applications while considering a diverse range of fading conditions and link qualitie-


doi: 10.1007/s11277-017-4647-8.
https://doi.org/10.1007/s11277-017-4647-8.

ABSTRACT: The Internet of Things (IoT) is the communications paradigm that can provide the potential of ultimate communication. The IoT paradigm describes communication not only human to human (H2H) but also machine to machine (M2M) without the need of human interference. In this paper, we examine, review and present the current IoT technologies starting from the physical layer to the application and data layer. Additionally, we focus on future IoT key enabling technologies like the new fifth generation (5G) networks and Semantic Web. Finally, we present main IoT application domains like smart cities, transportation, logistics, and healthcare.


doi: 10.1109/MCOM.2017.1700086.
http://dx.doi.org/10.1109/MCOM.2017.1700086.

ABSTRACT: Cognitive radio is a promising technology that answers the spectrum scarcity problem arising from the growth of usage of wireless networks and mobile services. Cognitive radio network edge computing will enhance the CRN capabilities and, along with some
adjustments in its operation, will be a key technology for 5G heterogeneous network deployment. This article presents current requirements and challenges in CRN, and a review of the limited research work on the CRN cloud, which will take off CRN capabilities and 5G network requirements and challenges. The article proposes a cognitive radio edge computing access server deployment for network service chaining at the access layer level.

doi: 10.1109/ACCESS.2017.2750238.
http://dx.doi.org/10.1109/ACCESS.2017.2750238.
ABSTRACT: One of the notable aspects of public safety applications in 5G networks is location awareness, which is a feature of contemporary technology that impart details about a user's geographical location to another user or application. Mobile users take their cell phones and other gadgets with them almost everywhere. Thus, integrating location awareness in mobile applications gives users a much more real experience. Therefore, this paper presents an algorithm to predict user location in 5G networks by using received signal strength measurements. Initially, the relative coordinates of users are computed using Isomap. Then the relative coordinates of users are transformed by Procrustes analysis. In order to evaluate the performance of the proposed algorithm, the Cramer–Rao lower bound is derived, which is the lower bound on error variance. It can be concluded from our results that the proposed approach outperforms those found in the existing literature.

ABSTRACT: The future generation networks (5G) are expected to achieve high data rates, reduced latency, increased spectral efficiency and energy efficiency of the system. Since the available spectrum is a scarce resource, its efficient utilization is the prime focus of the next generation networks. Spectrum Sharing is a key aspect that is gaining significant attention as it can prove to be beneficial in meeting the above requirements. In this paper we present an exhaustive survey of spectrum sharing for future generation networks. We discuss the different techniques and methods of spectrum sharing based on which a general architecture has been presented. Next, we discuss spectrum sensing, network selection and channel allocation, power optimization in spectrum sharing as well as the security issues associated. Based on the survey a four layer architecture has been proposed depicting the complete spectrum sharing scenario from spectrum sensing till the security issues. Modern technologies such as Massive MIMO, SWIPT, spectrum harvesting, spectrum relaying have been incorporated in the architecture for optimizing the power during spectrum sharing. A detailed analysis of security attacks has also been presented in the paper. Two application scenarios have been discussed where in spectrum sharing can offer huge advantages to meet the high bandwidth requirements. The paper also includes a list of the current projects that are being conducted by various research groups and institutions on spectrum sharing, for the next generation networks.

ABSTRACT: Underlaying Device-to-Device (D2D) communications can increase the spectral efficiency of cellular networks when sharing part of the spectrum with cellular users. This requires radio resource allocation policies capable to limit and control the interference between D2D and cellular communications. Many of the proposed policies are centralized, and require the base station to decide which resources should be allocated to each D2D transmission. Centralized schemes can efficiently control interference levels, but their feasibility can be compromised by
their complexity and signaling overhead. To address this constraint, this paper proposes DiRAT, a distributed radio resource allocation scheme for D2D communications underlaying cellular networks. With DiRAT, the D2D nodes locally select their radio resources from a pool created by the cellular network in order to control the interference generated to the primary cellular users. DiRAT includes a control mechanism to ensure that the user QoS requirements are satisfied. This study demonstrates that DiRAT can increase the network capacity while avoiding or limiting the degradation of the performance of the primary cellular users. DiRAT also significantly reduces the complexity and overhead compared to existing centralized and distributed schemes.

http://dx.doi.org/10.1109/TSM.2017.2757879.
ABSTRACT: A great deal is being written about the next generation mobile standards, "5G." As with the early stages of previous generations, it is hard to clearly see the direction forward. The intersection of technological obstacles, economic realities, and political forces produces a path that is not only difficult to predict but curiously interesting in retrospect. Even with this history we press on and predict—it is our way. Even with all the publications on 5G and its many technical challenges there is a dearth of information on the radio frequency (RF) filters required. This is somewhat surprising as filters have become a major part of the radio in a mobile phone. State of the art smartphones now contain more than 60 filters and command the largest share of the RF wallet. The key starting point is the proposed new RF bands that will be used for 5G. The FCC has recently proposed band sections between 3.5–6 GHz, 27–40 GHz, and 64–71 GHz. As anyone familiar with radios in these areas knows, each band commands its own set of issues and solutions. The span of filter solutions for 5G will be more diverse than in the current mobile technology bands.

http://dx.doi.org/10.1109/COMST.2017.2745201.
ABSTRACT: Driven by the visions of Internet of Things and 5G communications, recent years have seen a paradigm shift in mobile computing, from the centralized mobile cloud computing toward mobile edge computing (MEC). The main feature of MEC is to push mobile computing, network control and storage to the network edges (e.g., base stations and access points) so as to enable computation-intensive and latency-critical applications at the resource-limited mobile devices. MEC promises dramatic reduction in latency and mobile energy consumption, tackling the key challenges for materializing 5G vision. The promised gains of MEC have motivated extensive efforts in both academia and industry on developing the technology. A main thrust of MEC research is to seamlessly merge the two disciplines of wireless communications and mobile computing, resulting in a wide-range of new designs ranging from techniques for computation offloading to network architectures. This paper provides a comprehensive survey of the state-of-the-art MEC research with a focus on joint radio-and-computational resource management. We also discuss a set of issues, challenges, and future research directions for MEC research, including MEC system deployment, cache-enabled MEC, mobility management for MEC, green MEC, as well as privacy-aware MEC. Advancements in these directions will facilitate the transformation of MEC from theory to practice. Finally, we introduce recent standardization efforts on MEC as well as some typical MEC application scenarios.

http://dx.doi.org/10.1109/ACCESS.2017.2760924.
ABSTRACT: This paper presents the findings of a steerable higher order mode \((\text{TE} {}^\text{\{mathrm y\}} {}^\text{\{\delta \delta \}} {}^\text{\{3\}})\) dielectric resonator antenna with parasitic elements. The beam steering was
successfully achieved by switching the termination capacitor on the parasitic element. In this light, all of the dielectric resonator antennas (DRAs) have the same dielectric permittivity similar to that of ten and excited by a $50\Omega$ microstrip with a narrow aperture. The effect of the mutual coupling on the radiation pattern and the reflection coefficient, as well as the array factor, was investigated clearly using MATLAB version 2014b and ANSYS HFSS version 16. As the result, the antenna beam of the proposed DRA array managed to steer from $-32^\circ$ to $+32^\circ$ at 15 GHz. Furthermore, the measured antenna array showed the maximum gain of 9.25 dBi and the reflection coefficients which are less than $-10$ dB with the bandwidth more than 1.3 GHz, which is viewed as desirable for device-to-device communication in 5G Internet of Things applications.

doi: 10.1109/ACCESS.2017.2715318.
http://dx.doi.org/10.1109/ACCESS.2017.2715318.

ABSTRACT: With the emergence of the fifth generation (5G) wireless networks, not only is the increase in mobile broadband targeted, but also the support of various novel use cases, such as industrial automation, autonomous vehicles, e-health, and Internet of Things together with their requirements leading to highly heterogeneous wireless networks. This requires a re-design of the network architecture to ensure the coexistence of these use cases and guarantee user experience and service requirements. Therefore, 5G networks will be highly flexible and support online learning and autonomous decision making capabilities in a centralized and distributed manner to ensure highly efficient management of wireless and network resources. In this paper, the main features enabling flexibility and autonomy in 5G networks are discussed together with potential applications in different layers of the wireless network.

doi: 10.1109/ACCESS.2017.2764181.
http://dx.doi.org/10.1109/ACCESS.2017.2764181.

ABSTRACT: The Tactile Internet presently constitutes a vision of an Internet over which, in addition to current communications modalities, a sense of touch can be transported. In that case, people would no longer need to be physically near the systems they operate, but could control them remotely. The main problem that needs to be solved to realize the Tactile Internet is summarized by the “1 ms challenge.” If the response time of a system is below 1 ms, the end-user will not be able to tell the difference between controlling a system locally or from another location. This paper offers a summary of the requirements for haptic communications, followed by an overview of challenges in realizing the Tactile Internet. In addition, possible solutions to these challenges are proposed and discussed. For example, the development of the fifth generation mobile communication networks will provide a good foundation upon which a Tactile Internet could be built. This paper also describes the design of a modular testbed needed for testing of a wide variety of haptic system applications.

doi: 10.1109/MCOM.2017.1700022.
http://dx.doi.org/10.1109/MCOM.2017.1700022.

ABSTRACT: Renewable EH technology is expected to be pervasively utilized in 5G mobile networks to support sustainable network developments and operations. However, the renewable energy supply is inherently random and intermittent, which could lead to energy outage, energy overflow, QoS degradation, and so on. Accordingly, how to enhance renewable energy sustainability is a critical issue for green networking. To this end, an energy-sustainable traffic steering framework is proposed in this article, where the traffic load is dynamically adjusted to match energy distributions in both the spatial and temporal domains by means of interand intra-tier steering, caching, and pushing. Case studies are carried out, which demonstrate that the proposed framework can reduce on-grid energy demand while satisfying QoS requirements. Research topics and challenges of energy-sustainable traffic steering are also discussed.
Bibliography on “accessibility and ICTs”

http://doi.acm.org/10.1145/3140543.
ABSTRACT: Connected Communities (CCs) are socio-technical systems that rely on an information and communication technology (ICT) infrastructure to integrate people and organizations (companies, schools, hospitals, universities, local and national government agencies) willing to share information and perform joint decision-making to create sustainable and equitable work and living environments. We discuss a research agenda considering CCs from three distinct but complementary points of view: CC metaphors, models, and services.

http://doi.acm.org/10.1145/3133327.
ABSTRACT: Mobility in urban environments is an undisputed key factor that can affect citizens’ well-being and quality of life. This is particularly relevant for those people with disabilities or with reduced mobility who have to face the presence of barriers in urban areas. In this scenario, the availability of information about such architectural elements (together with facilities) can greatly support citizens’ mobility by enhancing their independence and their abilities in conducting daily outdoor activities. With this in mind, we have designed and developed mobile Pervasive Accessibility Social Sensing (mPASS), a system that provides users with personalized paths, computed on the basis of their own preferences and needs, with a customizable and accessible interface. The system collects data from crowdsourcing and crowdsensing to map urban and architectural accessibility by providing reliable information coming from different data sources with different levels of trustworthiness. In this context, reliability can be ensured by properly managing crowdsourced and crowdsensed data, combined when possible with authoritative datasets, provided by disability rights organizations and local authorities. To demonstrate this claim, in this article we present our trustworthiness model and discuss results we have obtained by simulations.

https://doi.org/10.1016/j.jksuci.2017.11.005.
ABSTRACT: Abstract Internet has been source of knowledge for decades. The pool of information cannot be sustained in absence of the network of networks. Internet has many useful applications in commercial, social and educational areas. In today’s scenario, e-learning is also one of the useful applications in the world of Internet. The medium of e-learning has achieved advancement in various fields such as adaptive e-learning systems. The branch of computer science with psycholinguistics has done tremendous job in providing technical solutions to learners. However, learning disorders on the platform of e-learning still require lots of research. Therefore, this paper provides a personalized assessment model for alphabet learning with learning objects for children’s who face dyslexia. The cognitive inclination of dyslexic learner has been determined using assessment model. This paper studies the cognitive potential of dyslexic learner and has built a personalized e-learning platform to alleviate their alphabetical problems."
Bibliography on “big data”

ABSTRACT: This study seeks to analyze the trends in research studies in the past decade which have utilized Google Trends, a new source of big data, to examine how the scope of research has expanded. Our purpose is to conduct a comprehensive and objective research into how the public use of Big Data from web searches has affected research, and furthermore, to discuss the implications of Google Trends in terms of Big Data utilization and application. To this end, we conducted a network analysis on 657 research papers that used Google Trends. We also identified the important nodes of the networks and reviewed the research directions of representative papers. The study reveals that Google Trends is used to analyze various variables in a wide range of areas, including IT, communications, medicine, health, business and economics. In addition, this study shows that research using Google Trends has increased dramatically in the last decade, and in the process, the focus of research has shifted to forecasting changes, whereas in the past the focus had been on merely describing and diagnosing research trends, such as surveillance and monitoring. This study also demonstrates that in recent years, there has been an expansion in analysis in linkage with other social Big Data sources, as researchers attempt to overcome the limitations of using only search information. Our study will provide various insights for researchers who utilize Google Trends as well as researchers who rely on various other sources of Big Data in their efforts to compare research trends and identify new areas for research.

ABSTRACT: Resilience planning and emergency management require policymakers and agency leaders to make difficult decisions regarding which at-risk populations should be given priority in the allocation of limited resources. Our work focuses on benchmarking neighborhood resilience by developing a unified, multi-factor index of local and regional resilience capacity: the Resilience to Emergencies and Disasters Index (REDI). The strength of the REDI methodology is the integration of measures of physical, natural, and social systems – operationalized through the collection and analysis of large-scale, heterogeneous, and high resolution urban data – to classify and rank the relative resilience capacity embedded in localized urban systems. Feature selection methodologies are discussed to justify the selection of included indicator variables. Hurricane Sandy is used to validate the REDI scores by measuring the recovery periods for neighborhoods directly impacted by the storm. Using over 12,000,000 records for New York City’s 311 service request system, we develop a proxy for neighborhood activity, both pre- and post-event. Hurricane Sandy had a significant and immediate impact on neighborhoods classified as least resilient based on the calculated REDI scores, while the most resilient neighborhoods were shown to better withstand disruption to normal activity patterns and more quickly recover to pre-event functional capacity. ".

ABSTRACT: The huge amount of data generated by devices, vehicles, buildings, the power grid, and many other connected things, coupled with increased rates of data transmission, constitute the big data challenge. Among many areas associated with the Internet of Things, smart grid and electric vehicles have their share of this challenge by being both producers and consumers (ie., prosumers) of big data. Electric vehicles can significantly help smart cities to become greener by
reducing emissions of the transportation sector and play an important role in green smart cities. In this article, we first survey the data analytics techniques used for handling the big data of smart grid and electric vehicles. The data generated by electric vehicles come from sources that vary from sensors to trip logs. Once this vast amount of data are analyzed using big data techniques, they can be used to develop policies for siting charging stations, developing smart charging algorithms, solving energy efficiency issues, evaluating the capacity of power distribution systems to handle extra charging loads, and finally, determining the market value for the services provided by electric vehicles (i.e., vehicle-to-grid opportunities). This article provides a comprehensive overview of the data analytics landscape on the electric vehicle integration to green smart cities. It serves as a roadmap to the future data analytics needs and solutions for electric vehicle integration to smart cities.

ABSTRACT: Social media have been widely embraced by governments for information dissemination and engagement but less is known about their value as information sources. Crowdsourced content from social media can improve inclusivity in policy development but it is not always clear how it can form part of policy evidence. The paper builds on the conceptual framework of crowd capabilities to examine the value of social media data in evidence-based policy. Acquisition and assimilation – the two elements of crowd capabilities – drive our exploratory case analysis in the context of agricultural policies in the UK. The study combined qualitative data from interviews and workshops with an analysis of networks of farmers on Twitter. Policy makers were broadly positive about the immediacy, cost-effectiveness and diversity of useful input that can be sourced from online sources. Limitations were identified in terms of representation and inclusion of participants in large datasets that are sourced from open platforms. We compare social media data to traditional sources of evidence and further reflect on the new capabilities that can support the needs of policy makers in this endeavor.

ABSTRACT: Internet of Things (IoT) provides to everyone new types of services in order to improve everyday life. Through this new technology, other recently developed technologies such as Big Data, Cloud Computing, and Monitoring could take part. In this work, we survey the four aforementioned technologies in order to find out their common operations, and combine their functionality, in order to have beneficial scenarios of their use. Despite the boarder concept of a smart city, we will try to investigate new systems for collecting and managing sensors’ data in a smart building which operates in IoT environment. As a bases technology for the proposed sensor management system, a cloud server would be used, collecting the data that produced from each sensor in the smart building. These data are easy to be managed and controlled from distance, by a remote (mobile) device operating on a network set up in IoT technology. As a result, the proposed solutions for collecting and managing sensors’ data in a smart building could lead us in an energy efficient smart building, and thus in a Green Smart Building. ”.

http://dx.doi.org/10.1109/ACCESS.2017.2762238.
ABSTRACT: In mobile crowd-sensing systems, the value of crowd-sensed big data can be increased by incentivizing the users appropriately. Since data acquisition is participatory, crowd-
sensing systems face the challenge of data trustworthiness and truthfulness assurance in the presence of adversaries whose motivation can be either manipulating sensed data or collaborating unfaithfully with the motivation of maximizing their income. This paper proposes a game theoretic methodology to ensure trustworthiness in user recruitment in mobile crowd-sensing systems. The proposed methodology is a platform-centric framework that consists of three phases: user recruitment, collaborative decision making on trust scores, and badge rewarding. In the proposed framework, users are incentivized by running sub-game perfect equilibrium and gamification techniques. Through simulations, we show that approximately 50% and a minimum of 15% improvement can be achieved by the proposed methodology in terms of platform and user utility, respectively, when compared with fully distributed and user-centric trustworthy crowd-sensing.

http://doi.acm.org/10.1145/3108936.

ABSTRACT: The Internet of Things (IoT) is increasingly becoming a worldwide network of interconnected things that are uniquely addressable, via standard communication protocols. The use of IoT for continuous monitoring of public health is being rapidly adopted by various countries while generating a massive volume of heterogeneous, multisource, dynamic, and sparse high-velocity data. Handling such an enormous amount of high-speed medical data while integrating, collecting, processing, analyzing, and extracting knowledge constitutes a challenging task. On the other hand, most of the existing IoT devices do not cooperate with one another by using the same medium of communication. For this reason, it is a challenging task to develop healthcare applications for IoT that fulfill all user needs through real-time monitoring of health parameters. Therefore, to address such issues, this article proposed a Hadoop-based intelligent care system (HICS) that demonstrates IoT-based collaborative contextual Big Data sharing among all of the devices in a healthcare system. In particular, the proposed system involves a network architecture with enhanced processing features for data collection generated by millions of connected devices. In the proposed system, various sensors, such as wearable devices, are attached to the human body and measure health parameters and transmit them to a primary mobile device (PMD). The collected data are then forwarded to intelligent building (IB) using the Internet where the data are thoroughly analyzed to identify abnormal and serious health conditions. Intelligent building consists of (1) a Big Data collection unit (used for data collection, filtration, and load balancing); (2) a Hadoop processing unit (HPU) (composed of Hadoop distributed file system (HDFS) and MapReduce); and (3) an analysis and decision unit. The HPU, analysis, and decision unit are equipped with a medical expert system, which reads the sensor data and performs actions in the case of an emergency situation. To demonstrate the feasibility and efficiency of the proposed system, we use publicly available medical sensory datasets and real-time sensor traffic while identifying the serious health conditions of patients by using thresholds, statistical methods, and machine-learning techniques. The results show that the proposed system is very efficient and able to process high-speed WBAN sensory data in real time.


ABSTRACT: The recent development in the technology brings the concept of Smart City that is achieved through real-time city related intelligent decisions by analyzing the data harvested from various smart systems in the city using millions of sensors and devices connected over the Internet, termed as Internet of Things (IoT). These devices generate the overwhelming volume of high-speed streaming data, termed as Big Data. However, the generation of city data at a remote location and then transmitting it to central city servers for analysis purpose raises the concerns of security and privacy. On the other hand, providing security to such Big Data streaming requires a
high-speed security system that can work in a real-time environment without providing any delay that may slow down the overall performance of the Smart City System. To overcome these challenges, in this paper, we proposed an efficient and real-time Smart City security system by providing strong intrusion detection at intelligent city building (ICB) and also a security protocol to protect the communication between the remote smart system (RSS)/User and the city analysis building, i.e., ICB. The proposed communication security protocol consists of various phases, i.e., registration phase, session key exchange phase, session key revocation phase, and data transmission phases from RSS to ICB as well as from User to ICB. Vast security analyses are performed to evaluate the credibility of the system. The proposed system is also evaluated on efficiency in terms of computation cost and throughput of overall functions used in the system. The system’s evaluation and the comparative study with existing system show that the presented system is secure, more efficient, and able to work in a real-time, high-speed Smart City environment.

ABSTRACT: One of the most relevant and widely studied structural properties of networks is their community structure. Detecting communities is of great importance in social networks where systems are often represented as graphs. With the advent of web-based social networks like Twitter, Facebook and LinkedIn, community detection became even more difficult due to the massive network size, which can reach up to hundreds of millions of vertices and edges. This large graph structured data cannot be processed without using distributed algorithms due to memory constraints of one machine and also the need to achieve high performance. In this paper, we present a novel hybrid (shared + distributed memory) parallel algorithm to efficiently detect high quality communities in massive social networks. For our simulations, we use synthetic graphs ranging from 100K to 16M vertices to show the scalability and quality performance of our algorithm. We also use two massive real world networks: (a) section of Twitter-2010 network having ≈41M vertices and ≈1.4B edges (b) UK-2007 (.uk web domain) having ≈105M vertices and ≈3.3B edges. Simulation results on MPI setup with 8 compute nodes having 16 cores each show that, up to ≈6X speedup is achieved for synthetic graphs in detecting communities without compromising the quality of the results. ".

ABSTRACT: There is a strong interest among academics and practitioners in studying branding issues in the big data era. In this article, we examine the sentiments toward a brand, via brand authenticity, to identify the reasons for positive or negative sentiments on social media. Moreover, in order to increase precision, we investigate sentiment polarity on a five-point scale. From a database containing 2,282,912 English tweets with the keyword ‘Starbucks’, we use a set of 2204 coded tweets both for analyzing brand authenticity and sentiment polarity. First, we examine the tweets qualitatively to gain insights about brand authenticity sentiments. Then we analyze the data quantitatively to establish a framework in which we predict both the brand authenticity dimensions and their sentiment polarity. Through three qualitative studies, we discuss several tweets from the dataset that can be classified under the quality commitment, heritage, uniqueness, and symbolism categories. Using latent semantic analysis (LSA), we extract the common words in each category. We verify the robustness of previous findings with an in-lab experiment. Results from the support vector machine (SVM), as the quantitative research method, illustrate the effectiveness of the proposed procedure of brand authenticity sentiment analysis. It shows high accuracy for both the brand authenticity dimensions’ predictions and their sentiment polarity. We then discuss the theoretical and managerial implications of the studies. ".

11 | P a g e
Monthly Reading List prepared by ITU Library
Library@itu.int

ABSTRACT: Big data has arrived. Myriad applications, systems generate data of humongous volumes, variety and velocity which traditional computing systems and databases are unable to manage. The proliferation of sensors in every possible device is also becoming one of the major generators of Big data. Of particular interest in this article is how context aware computing systems which derive context from data and act accordingly, deal with such huge amounts of data. Big industry players namely Google, Yahoo, and Amazon are already developing context aware applications using user data from emails, chat messages, browsing and shopping histories etc. For instance, Gmail reminds us of our flight schedule by understanding flight booking related content in our emails. Similarly, Amazon understands user preference and recommends items of interest to shop and so on. In this paper, we survey context aware computing systems from a Big data perspective. We first propose a taxonomy of existing work on the basis of sensing platforms and then discuss the latest developments in this field of Big data context aware systems focusing on how such systems deal with various Big data challenges. We conclude the paper with an insight on open research issues involving designing and developing context aware Big data generating systems. ".


ABSTRACT: Big data is an important driver of disruptive innovation that may increase organizations' competitive advantage. To create innovative data combinations and decrease investments, big data is often shared among organizations, crossing organizational boundaries. However, these big data collaborations need to balance disruptive innovation and compliance to a strict data protection regime in the EU. This paper investigates how inter-organizational big data collaborations arrange and govern their activities in the context of this dilemma. We conceptualize big data as inter-organizational systems and build on IS and Organization Theory literature to develop four archetypical governance arrangements: Market, Hierarchy, Bazaar and Network. Subsequently, these arrangements are investigated in four big data collaboration use cases. The contributions of this study to literature are threefold. First, we conceptualize the organization behind big data collaborations as IOS governance. Second, we show that the choice for an inter-organizational governance arrangement highly depends on the institutional pressure from regulation and the type of data that is shared. In this way, we contribute to the limited body of research on the antecedents of IOS governance. Last, we highlight with four use cases how the principles of big data, specifically data maximization, clash with the principles of EU data protection regulation. Practically, our study provides guidelines for IT and innovation managers how to arrange and govern the sharing of data among multiple organizations.

https://doi.org/10.1016/j.compenvurbsys.2017.10.004.

ABSTRACT: The emergence of urban big data is transforming the existing research paradigms in urban studies. New theories and analytical methods are required to meet the methodological challenges. This paper empirically compares a data-driven approach and an urban-system-model approach through a case study of modelling the commuting patterns in Beijing. For the data-driven approach, the novel location-based-services (LBS) data are explored to identify the employment-residence location of the service users. For the modelling approach, a spatial equilibrium model is calibrated for base year 2010 and is used to simulate the commuting patterns for Beijing 2015 based on exogenous development projections. The results of the two
approaches are then compared against the benchmark statistics for Beijing 2015. The comparison shows that the LBS data perform better in detecting residence locations than employment locations. The model prediction fits better with the benchmark, while the errors of the LBS data tend to vary significantly across space. For amplifying the LBS sample data to represent the full population, uniform scale factor thus should be avoided. In addition, the ineffectiveness of representing short-distance commuting for the LBS data is revealed by the comparison with the model predicted flows. In light of the strength and weakness of the respective approach, the prospect of a collaborative use of big data and urban system models is explored in the conclusion."


ABSTRACT: To date, health care industry has not fully grasped the potential benefits to be gained from big data analytics. While the constantly growing body of academic research on big data analytics is mostly technology oriented, a better understanding of the strategic implications of big data is urgently needed. To address this lack, this study examines the historical development, architectural design and component functionalities of big data analytics. From content analysis of 26 big data implementation cases in healthcare, we were able to identify five big data analytics capabilities: analytical capability for patterns of care, unstructured data analytical capability, decision support capability, predictive capability, and traceability. We also mapped the benefits driven by big data analytics in terms of information technology (IT) infrastructure, operational, organizational, managerial and strategic areas. In addition, we recommend five strategies for healthcare organizations that are considering to adopt big data analytics technologies. Our findings will help healthcare organizations understand the big data analytics capabilities and potential benefits and support them seeking to formulate more effective data-driven analytics strategies."

http://dx.doi.org/10.1109/MCOM.2017.1700142.

ABSTRACT: Integrating sensors and cloud computing, sensor-cloud is a very powerful system for users to obtain big data in green city. In this article, toward big data in green city, we first review the latest work concerning big data and sensor-cloud, respectively. Further, we introduce three types of sensor-cloud (i.e., PSC, ASC, and SSC) for green city. Specifically, about PSC, participatory sensing is incorporated into sensor-cloud for sensing big data. In terms of ASC, an agent is incorporated into sensor-cloud for transmitting big data. For SSC, a social network is incorporated into sensor-cloud for sharing big data. Finally, the open research issues with respect to big data and sensor-cloud are discussed, respectively. We hope this article can serve as enlightening guidance for future research regarding big data in green city.

Bibliography on “broadband”

https://doi.org/10.1016/j.tepol.2017.10.003.

ABSTRACT: Applying institutional theory to look at the Program 74 (a universal service policy) in Vietnam, this paper concludes that the Vietnamese universal service policy was strongly affected by formal institutional factors (the international agreements and the directives of the Communist
Party of Vietnam - CPV), in which the international agreements played a leading role and the CPV's directives played a guarantee role. The formulation and implementation of the universal service policy in Vietnam were mainly concentrated on action at levels 2 and 3 (formal and informal institutional arrangement, and formal institutional environment). The paper recommends that nations favouring a top-down approach not based on a market-oriented regime should deregulate and emphasize the role of provincial governments as well as encourage private sectors/social organizations and rural users to be more involved in the formulation and implementation of universal service policies. Moreover, the government should set up and force the contractual relations between governmental entities and telecom providers.

### Bibliography on “child online protection”


**ABSTRACT:** The article presents the results of research on the knowledge and routines of ICT teachers in a technical e-safety context. Primary, lower secondary and high school teachers can have a significant impact on the e-safety of children and youngsters by raising their awareness of the risks associated with the use of technologies. Technical e-safety has roughly been acknowledged as an area where interpersonal relationships are not prioritised. A qualitative analysis of open-coded in-depth interviews with ICT teachers using the Grounded Theory method identified determinants that influence teachers’ knowledge and routines and a model of formation was developed. Firstly, there are external and internal influences. Another factor is teachers’ attitudes to e-safety rules that should support safe behaviour. Thirdly, teachers have barriers to protection in their minds and these could hinder their safe behaviour. Previous negative experiences have also been identified as another significant factor that affects a teacher’s e-safety habits. The developed theory describes causal and intervening relationships between the given categories. The developed theory will serve as a basis for proposing steps to improve ICT teachers’ knowledge of e-safety and ways teacher education might be adapted to achieve that. ".

### Bibliography on “climate change and ICTs”


**ABSTRACT:** As energy consumption is becoming critical in Cloud data centers, Cloud providers are adopting energy-efficient virtual machines management systems. These systems essentially rely on “what-if” analysis to determine what the consequence of their actions would be and to choose the best one according to a number of metrics. However, modeling energy consumption of simple operations such as starting a new VM or live-migrating is complicated by the fact that multiple phenomena occur. It is therefore important to identify which factors influence energy consumption before proposing any new model. We claim in this paper that one critical parameter is the host configuration, characterized by the number of VMs it is currently executing. Based on this observation, we present an energy model that provides energy estimation associated with VM management operations, such as VMs placement, VM start up and VM migration. The average relative estimation error is lower than 10% using the transactional web benchmark TPC-W,
making it a good candidate for driving the actions of future energy-aware cloud management systems. 

doi: 10.1109/MCOM.2017.1700142.
http://dx.doi.org/10.1109/MCOM.2017.1700142.
ABSTRACT: Integrating sensors and cloud computing, sensor-cloud is a very powerful system for users to obtain big data in green city. In this article, toward big data in green city, we first review the latest work concerning big data and sensor-cloud, respectively. Further, we introduce three types of sensor-cloud (i.e., PSC, ASC, and SSC) for green city. Specifically, about PSC, participatory sensing is incorporated into sensor-cloud for sensing big data. In terms of ASC, an agent is incorporated into sensor-cloud for transmitting big data. For SSC, a social network is incorporated into sensor-cloud for sharing big data. Finally, the open research issues with respect to big data and sensor-cloud are discussed, respectively. We hope this article can serve as enlightening guidance for future research regarding big data in green city.

Bibliography on “cybersecurity”

https://doi.org/10.1016/j.clsr.2017.05.016.
ABSTRACT: Along with the development and prevalence of Internet technology, a new financing model – equity crowd-funding – has been rising rapidly in recent years. Against this background, it becomes an important global topic in the field of securities law about how to balance both policy agendas of investor protection and capital formation. By referring to the JOBS Act in the US as a typical example, it is suggested in this article that modern securities law is making an active response to the demand of equity crowd-funding development. Besides expanding the application space of small issues exemption rules, securities law is also going beyond the traditional conceptual division between public and private offerings by introducing a brand-new system of equity crowd-funding exemption. 

ABSTRACT: Web applications and cloud services are rapidly emerging as the inevitable technology for communication between organizations. Cloud-based solutions are currently deployed to provide improvement in the existing business processes and services. The major challenge involved in cloud is data security that is stored and transferred. Cloud infrastructure requires an extensive authentication mechanism to protect data as well as to ensure that the right person is accessing the right information. In this paper, token based fine grained authentication for cloud web services with the help of adapted Security Assertion Markup Language (SAML) technology is proposed. The entire set of communications between Identity Provider, Service Provider and Cloud Server is encrypted to enhance the security. The combination of SAML and single use access token based verification provides improved security to cloud web services. The proposed adapted SAML authentication mechanism ensures flexibility and scalability of the environment by the provision of adding multiple numbers of trusted sources and web services. 


ABSTRACT: Cities are becoming smarter and smarter. While the rapid progress in smart city technologies is changing cities and the lifestyle of the people, it creates also huge attack surfaces for potential cyber attacks. The potential vulnerabilities of smart city products and imminent attacks on smart city infrastructure and services will have significant consequences that can cause substantial economic and noneconomic losses, even chaos, to the cities and the people. In this paper we study alternative economic solutions ranging from incentive mechanisms to market-based solutions to motivate governments, smart product vendors, and vulnerability researchers and finders to improve the cybersecurity of smart cities and e-government. These solutions can be integrated into policy instruments in defending smart cities and e-governments against cyber attacks. 


ABSTRACT: The purpose of the present study is to empirically investigate whether national culture has an impact on cybersecurity development. We used methods of correlation and hierarchical regression to analyse two sets of indices; the global cybersecurity index of 2015 and Hofstede cultural dimension index. The research discovered that there exist a significant correlation between cybersecurity development and the cultural dimensions as defined by Hofstede cultural theory. Five cultural dimensions were used in the study; power distance, masculinity/femininity, individualism/collectivism, uncertainty avoidance, long term/short term orientation, and the research found out that individualism and long term orientation were significantly correlated with cybersecurity development. These findings have strategic implications in helping government and decision makers fashion out relevant policies and programmes while taking into cognisance the cultural factors in the improvement of the cyberwellness profile and the development of strategic cybersecurity. Implications and recommendations for future work are further discussed.


ABSTRACT: The recent development in the technology brings the concept of Smart City that is achieved through real-time city related intelligent decisions by analyzing the data harvested from various smart systems in the city using millions of sensors and devices connected over the Internet, termed as Internet of Things (IoT). These devices generate the overwhelming volume of high-speed streaming data, termed as Big Data. However, the generation of city data at a remote location and then transmitting it to central city servers for analysis purpose raises the concerns of security and privacy. On the other hand, providing security to such Big Data streaming requires a high-speed security system that can work in a real-time environment without providing any delay that may slow down the overall performance of the Smart City System. To overthrown these challenges, in this paper, we proposed an efficient and real-time Smart City security system by providing strong intrusion detection at intelligent city building (ICB) and also a security protocol to protect the communication between the remote smart system(RSS)/User and the city analysis building, i.e., ICB. The proposed communication security protocol consists of various phases, i.e., registration phase, session key exchange phase, session key revocation phase, and data transmission phases from RSS to ICB as well as from User to ICB. Vast security analyses are performed to evaluate the credibility of the system. The proposed system is also evaluated on efficiency in terms of computation cost and throughput of overall functions used in the system. The system’s evaluation and the comparative study with existing system show that the prosed
system is secure, more efficient, and able to work in a real-time, high-speed Smart City environment.

https://doi.org/10.1016/j.techfore.2017.11.005.
ABSTRACT: The objectives of this paper are (1) to have a detailed, practical discussion of Industry 4.0, and (2) to suggest policy implications to transition toward Industry 4.0 in Korea. Companies should consider Industry 4.0 very seriously as they develop their future initiatives since traditional manufacturing business models do not fit with the emerging technologies of Industry 4.0. Some issues should be addressed with care: IT security, reliability and stability needed for critical machine-to-machine communication; a need to maintain the integrity of production processes, avoid IT snags, and protect industrial knowhow; and the lack of adequate skill-sets, general reluctance to change by stakeholders, and loss of many jobs to automatic processes and IT-controlled processes. To successfully transform Korean industry toward Industry 4.0, it is necessary to (1) refine and elaborate the strategies enacted by the central government to build economic and social systems that can flexibly respond to changes, (2) establish some kind of operational system to maximize the effectiveness of initiatives and policies, (3) develop concrete and workable action plans to transition toward economic and social systems that can accommodate innovative changes, and (4) establish infrastructure to lead all initiatives. ".

ABSTRACT: Today's cyber attacks require a new line of security defenses. The static approach of traditional security based on heuristic and signature does not match the dynamic nature of new generation of threats that are known to be evasive, resilient and complex. Organizations need to gather and share real-time cyber threat information and to transform it to threat intelligence in order to prevent attacks or at least execute timely disaster recovery. Threat Intelligence (TI) means evidence-based knowledge representing threats that can inform decisions. There is a general awareness for the need of threat intelligence while vendors today are rushing to provide a diverse array of threat intelligence products, specifically focusing on Technical Threat Intelligence (TTI). Although threat intelligence is being increasingly adopted, there is little consensus on what it actually is, or how to use it. Without any real understanding of this need, organizations risk investing large amounts of time and money without solving existing security problems. Our paper aims to classify and make distinction among existing threat intelligence types. We focus particularly on the TTI issues, emerging researches, trends and standards. Our paper also explains why there is a reluctance among organizations to share threat intelligence. We provide sharing strategies based on trust and anonymity, so participating organizations can do away with the risks of business leak. We also show in this paper why having a standardized representation of threat information can improve the quality of TTI, thus providing better automated analytics solutions on large volumes of TTI which are often non-uniform and redundant. Finally, we evaluate most popular open source/free threat intelligence tools, and compare their features with those of a new AlliaCERT TI tool. ".

ABSTRACT: In large-scale Internet of Things (IoT) systems, huge volumes of data are collected from anywhere at any time, which may invade people’s privacy, especially when the systems are used in medical or daily living environments. Preserving privacy is an important issue, and higher privacy demands usually tend to require weaker identity. However, previous research has
indicated that strong security tends to demand strong identity, especially in authentication processes. Thus, defining a good tradeoff between privacy and security remains a challenging problem. This motivates us to develop a privacy-preserving and accountable authentication protocol for IoT end-devices with weaker identity, which integrates an adapted construction of short group signatures and Shamir’s secret sharing scheme. We analyze the security properties of our protocol in the context of six typical attacks and verify the formal security using the Proverif tool. Experiments using our implementation in MacBook Pro and Intel Edison development platforms show that our authentication protocol is feasible in practice.

https://doi.org/10.1016/j.ijepes.2017.10.004.

ABSTRACT: Modern cyber-physical smart power grids are becoming increasingly dependent on the associated cyber networks for performing various monitoring and control functions, which inevitably leads to increased cyber vulnerabilities. It is thus a pressing task to develop effective methods for comprehensively evaluating the overall adequacy of power systems considering the probable cyber vulnerabilities. This paper is focused on quantifying the impact of substation cyber vulnerabilities on power supply adequacy. The temporal occurrence pattern of cyber attacks is statistically analyzed based on the human dynamics theory. Also, the attack/defense interactions of intelligent attackers and defenders are modeled by static and Markov games in different attack scenarios. A novel power system adequacy evaluation framework is proposed by incorporating both physical failures and cybersecurity risks. Simulation studies are performed on a typical IEEE reliability test system, and the influences of critical factors related to cybersecurity are carefully investigated. These quantitative studies show that implementing effective cyber security measures and making informed decisions about the allocation of limited resources are beneficial to enhancing the overall adequacy of contemporary cyber-physical power systems.

Bibliography on “digital divide”


ABSTRACT: The percent of 4th-grade students whose teachers have received training on how to integrate computers into their classroom instruction has remained flat since 2009, according to a new Education Week Research Center analysis of survey data from the National Center for Education Statistics. The devices sat unused for more than a year. [...] recently, the district didn't have consistent Wi-Fi. The maker corner of Martini's high school science room is a jumble of salvaged PVC pipe, glass jars, and scrap wood, plus some Lego robotics kits he found sitting unused in the middle school. [...] the entire district is organized to take maximum advantage of every professional learning opportunity it can find.

Bibliography on “digital economy”


ABSTRACT: Innovation can be viewed as a adoption and dissemination of something new in a given context. E-commerce is thus an innovation when it is introduced to a new environment in
an emerging market or when adopted by a new class of user industries. As a techno-managerial innovation, it requires business adaption, organizational learning, and supportive environment that could lead to wide diffusion and transformational impact. Several global forces drive the adoption of e-commerce such as global competition, trade liberalization, and increasingly, ICT advances and Internet diffusion. National factors, such as governance, education, and infrastructure, then shape and differentiate the speed of adoption across enterprises within a country, the breadth and depth of use within an enterprise, and ultimately the impact on the firm and the nation. Understanding the national environment, the policy, technological and infrastructural contexts, and the common drivers and barriers to adoption and effective use within firms should provide a guide to promoting e-commerce as a techno-managerial innovation, and realizing its full potential for the nation.

ABSTRACT: The article covers an analysis of metrics used to measure digitalization activities. Five main levels are analyzed - moving from the metrics of the digital economy to society, industry, enterprise, and clients. The study is based on leading public and commercial metrics used for the evaluation of the digital progress. The similarities and differences between key performance indicators on each level are discussed, forming a set of conclusions on the scope and maturity of various measurement systems and potential improvement options.

https://doi.org/10.1016/j.telpol.2017.10.004.
ABSTRACT: The increased economic importance of digital services has profoundly changed the power structure in telecommunications and media markets. Although these services sometimes directly compete with traditional telecommunications services, the regulatory obligations for both players differ significantly. This article discusses three important areas deemed relevant in order to define a coherent regulatory framework and to account for the specific peculiarities of digital markets: First, challenges associated with assessing market power in digital markets. Second, challenges in harmonizing different regulatory obligations for digital services, and third, the vital role of data and data protection in the context of data-driven business models.

ABSTRACT: An assessment of the degree of the development of the digital economy in Poland in comparison to chosen European countries is the main purpose of the paper. The methodology of the conducted research is based on the analysis of secondary sources and applying statistical methods. In order to make the comparison in methodically correct manner, synthetic measures of the development of the e-economy were used in the form of two indexes: NRI (Networked Readiness Index) and DESI (Digital Economy and Society Index). On the basis of available statistical data, four European countries were confronted with Poland. Results of the analysis indicate a relatively unfavorable situation of Poland.

doi: 10.1787/9789264268821-en
http://dx.doi.org/10.1787/9789264268821-en
ABSTRACT: With some 200 indicators, the 2017 edition of the OECD Science, Technology and Industry (STI) Scoreboard shows how the digital transformation affects science, innovation, the
economy, and the way people work and live. It aims to help governments design more effective science, innovation and industry policies in the fast-changing digital era. The charts and underlying data in this publication are available for download and over half the indicators contain additional data expanding the time and/or country coverage of the print edition.


ABSTRACT: This paper empirically examines the role of industry characteristics portrayed by information intensity of value chain or product in the relationship between the stages of E-commerce development and revenue growth for a large representative sample of small and medium-sized enterprises (SMEs) and other entrepreneurs who operate in the United Kingdom. The results indicate that SMEs characterised by (A) high information intensity of value chain or product of industry that (B) have their own business website, a third-party website and/or a social profile, on average more often report increases in revenue growth versus their counterparts in either (A) other industries or that (B) do not have the E-commerce development. However, the likelihood of improved performance does not vary significantly among SMEs which are at different development stages of E-commerce. This finding holds regardless of whether the business is in a high value chain information intensive industry or a product information intensive industry. In short, business performance appears to improve as entrepreneurial organizations adopt information technology to facilitate greater market communication and increased exposure to online shoppers. Furthermore, this is irrespective of the level of sophistication of the interface, the design of the E-commerce technology and the high information intensity types of the industry. To conclude, this paper presents some discussions and recommendations for entrepreneurial research and practice that are implied by the results. ".


ABSTRACT: The objectives of this paper are (1) to have a detailed, practical discussion of Industry 4.0, and (2) to suggest policy implications to transition toward Industry 4.0 in Korea. Companies should consider Industry 4.0 very seriously as they develop their future initiatives since traditional manufacturing business models do not fit with the emerging technologies of Industry 4.0. Some issues should be addressed with care: IT security, reliability and stability needed for critical machine-to-machine communication; a need to maintain the integrity of production processes, avoid IT snags, and protect industrial knowhow; and the lack of adequate skill-sets, general reluctance to change by stakeholders, and loss of many jobs to automatic processes and IT-controlled processes. To successfully transform Korean industry toward Industry 4.0, it is necessary to (1) refine and elaborate the strategies enacted by the central government to build economic and social systems that can flexibly respond to changes, (2) establish some kind of operational system to maximize the effectiveness of initiatives and policies, (3) develop concrete and workable action plans to transition toward economic and social systems that can accommodate innovative changes, and (4) establish infrastructure to lead all initiatives. ".

Bibliography on “e-Government”

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).

http://dx.doi.org/10.23919/IConAC.2017.8082032.
ABSTRACT: Information Systems (IS) are widely used in government organizations, to improve people daily activities. However, a number of information systems failures in developing countries is increased in spite of high resources allocation. That is because information systems projects have hidden complexity and the main goal of these projects to change current business processes. This paper presents several challenges faced by developing countries such as financial issues and lack of knowledge to deal with new technologies, which cause information systems in different organizations fail. ITPOSMO model developed by Richard Heeks is used to identify failures in different organizations. There are several steps followed in this paper: defining the system's requirements and assessment of existing successful and unsuccessful information systems' failures in various regions.

https://doi.org/10.1016/j.giq.2017.11.004.
ABSTRACT: The public sector's adoption of Information and Communication Technologies is often seen as a way of increasing efficiency. However, developing public e-Services involves a series of organisational and social complexities. In this paper, we examine the organisational issues of implementing an ERP system, which was designed and developed within the context of Lagos State's e-Services project. By doing so, we showcase the impact of organisational cultural perceptions and working practices of individuals. Our findings illustrate the strong role of cultural dimensions, particularly those pertaining to religion and multi-ethnicity. Our study provides insights to international organisations and governments alike towards project policy formulation within the context of ICT-based initiatives and reforms that aim to bring forward developmental progress.

Fröhlich, K. "Evaluating the Effects of e-Government Initiatives on Citizen-Centric Goals at Selected Namibian Government Ministry." 1-9, 2017
doi: 10.23919/ISTAFRICA.2017.8102361
http://dx.doi.org/10.23919/ISTAFRICA.2017.8102361
ABSTRACT: New Public Management (NPM) has seen a drive towards the adoption and use of technology in government. However, many governments find it difficult to attain citizen-centric electronic government (e-Government) services. e-Government initiatives often exclude citizens in its aim of promoting inclusiveness. Due to cultural and social differences, it is important to understand issues related to e-Government at contextual levels. This study analyses Namibia's e-Government initiatives and different technologies used. The aim is to establish how the use of these technologies is attributing to citizen-centric goals. The study is limited to a selected case study of a Ministry in the Namibian government. Accordingly, a qualitative case study approach was used for data collection and analysis. Findings from this study are expected to inform the government as it moves towards an information society as noted in the country's vision 2030.
ABSTRACT: E-government is increasingly being implemented in all areas of government administration. It is increasing efficiency and transparency and bringing convenience and safety to citizens’ lives, and consequently improving the quality of life. E-government is a transformation of government processes, transactions, and policy making and implementation that are efficiently carried out through information and communication technologies to provide better and efficient services to the citizens while reducing waste and corruption and increasing accountability, transparency, and trust. This paper discusses the efforts of Korean government to transforming with transparency, competency, service-oriented government.

ABSTRACT: Cities are becoming smarter and smarter. While the rapid progress in smart city technologies is changing cities and the lifestyle of the people, it creates also huge attack surfaces for potential cyber attacks. The potential vulnerabilities of smart city products and imminent attacks on smart city infrastructure and services will have significant consequences that can cause substantial economic and noneconomic losses, even chaos, to the cities and the people. In this paper we study alternative economic solutions ranging from incentive mechanisms to market-based solutions to motivate governments, smart product vendors, and vulnerability researchers and finders to improve the cybersecurity of smart cities and e-government. These solutions can be integrated into policy instruments in defending smart cities and e-governments against cyber attacks. ".

doi: 10.23919/ISTAFRICA.2017.8102313
http://dx.doi.org/10.23919/ISTAFRICA.2017.8102313
ABSTRACT: In the past decades, African governments have made significance progress in trying to implement e-Government systems. These efforts have not only focused on the question of digitalization, but also on reorganization of public services and participation processes. The increased demand for e-Government systems in Kenya led to Strathmore Research and Consortium Centre (SRCC) developing and implementing an online revenue collection system for Taita Taveta County. The systems consist of two separate systems that are integrated; an online system dubbed "CountyPro” that processes Business Permits and a Point of Sale (PoS) system used to charge for market and vehicle parking fees. This study assesses challenges that have been encountered when implementing the e-Government system. Qualitative and quantitative data collection methods were used to collect data. from various users of the system. Analysis from data collected shows that 72% of system users contribute to failure of e-Government system as they are resistant to change.

ABSTRACT: E-government involves the use of information and communication technologies (ICT) by government agencies to provide information and services to residents, businesses, and various arms of government. It can provide speedy, inexpensive, trustworthy, and reliable delivery of government services to households and businesses. The State of Kuwait is in an intermediate stage of implementing e-government services (e-services). An understanding of its residents' perspectives can help the government better plan the future rollout of e-services and e-government portal factors, as well as provide useful insights to governments of other countries.
The authors conducted identified 37 e-services (classified into seven broad factors) and 26 features important to user acceptance of online sites. Factors were identified in prior research as characterizing the categories of services typically offered by e-government portals. The authors hypothesized that the importance of the seven e-services factors to Kuwaiti residents would positively relate to the importance of the portal success factors. The goal of this research was to identify which portal success factors would likely encourage use of the e-services factors that are important to Kuwaiti residents. This study provides several useful implications for Kuwaiti government officials, other countries, and e-government researchers. Each of the four portal factors - Quality, Appeal, Control and Savings, and Personalization - was positively associated with the importance of at least one or more of the e-services factors, indicating their individual relevance to the design of the portal. Two categories - government resources and resident feedback services - were unrelated to any of the portal factors. The findings demonstrate that the State of Kuwait may need to improve involvement of its residents in the development of national policies. Including the voice of the residents through the portal, and acting on that feedback, may improve support for government initiatives as well as build trust in the government. This study sought to improve e-participation in Kuwait and other developing countries. The findings suggest to governments that by selectively improving the quality, appeal, efficiency, and personalization of the e-government portal, it may be possible to achieve public buy-in and increased usage of specific e-services.

doi: 10.1787/9789264283282-en
http://dx.doi.org/10.1787/9789264283282-en
ABSTRACT: This review analyses the monitoring and evaluation system of Colombia’s Online Government Strategy and provides recommendations for developing an impact assessment methodology for digital government. It looks at the background, evolution and current status of the Strategy, and draws insights from the first implementation of a transitional methodology. The findings will help Colombia build the tools and capacities needed to effectively and sustainably implement its digital government strategy.

doi: 10.1787/9789264268821-en
http://dx.doi.org/10.1787/9789264268821-en
ABSTRACT: With some 200 indicators, the 2017 edition of the OECD Science, Technology and Industry (STI) Scoreboard shows how the digital transformation affects science, innovation, the economy, and the way people work and live. It aims to help governments design more effective science, innovation and industry policies in the fast-changing digital era. The charts and underlying data in this publication are available for download and over half the indicators contain additional data expanding the time and/or country coverage of the print edition.

doi: 10.1109/FiCloud.2017.41
http://dx.doi.org/10.1109/FiCloud.2017.41
ABSTRACT: The purpose of the present study is to empirically investigate whether national culture has an impact on cybersecurity development. We used methods of correlation and hierarchical regression to analyse two sets of indices; the global cybersecurity index of 2015 and Hofstede cultural dimension index. The research discovered that there exist a significant correlation between cybersecurity development and the cultural dimensions as defined by Hofstede cultural theory. Five cultural dimensions were used in the study; power distance, masculinity/femininity, individualism/collectivism, uncertainty avoidance, long term/short term orientation, and the research found that individualism and long term orientation were significantly correlated with cybersecurity development. These findings have strategic implications in helping government and decision makers fashion out relevant policies and
programmes while taking into cognisance the cultural factors in the improvement of the cyberwellness profile and the development of strategic cybersecurity. Implications and recommendations for future work are further discussed.


doi: 10.1109/AFRCON.2017.8095533

ABSTRACT: E-government is a powerful tool that can strengthen the performance of government and public administration. In this paper, we seek to develop an improved understanding of the level and status of e-government implementation in Lesotho and how that may aid decision makers in planning and designing e-government implementations. To this end, the study employed the Human-Organisation-Technology (HOT) Fit framework which is a socio-technical model that considers e-government systems from a human, organisational and technology perspective. The study focuses on the case of the Lesotho Company Registry System that has been implemented by the Lesotho Ministry of Trade and Industry. The study findings indicate that e-government implementation for the system is at the early transactional stage of e-government development. The evaluation of e-government also showed that the organisation and technology perspectives reflected more challenges in the implementation of e-government when compared to the human factors.


https://doi.org/10.1016/j.ijinfomgt.2017.11.003.

ABSTRACT: E-government holds enormous potential for improving the administrative efficiency of public institutions, encouraging democratic governance, and building trust between citizens/private sector and governments. However, most e-government initiatives to date have failed to attain their full potential, because they are increasingly plagued by usability issues. Consequently, there have been increasing calls for evaluating the usability of e-government websites, as they are widely considered to be the primary platform for government interaction with citizens. This study, therefore, seeks to contribute to extant knowledge by evaluating the usability of e-government websites from Sub-Saharan Africa (SSA). This is particularly important as little is known about the usability of e-government websites in the region, and worst still, it is the least advanced region in terms of e-government development. This study evaluated a total of 279 e-government websites from 31 SSA countries. The findings showed that most e-government websites in SSA were characterised by poor usability. The average usability score for the websites was 36.2%, with the most usable website having a score of only 64.8%. The study also showed that the usability of e-government websites was positively associated with the E-Government Development Index (EGDI) and the E-Participation Index (EPI).

Bibliography on “e-Health”


ABSTRACT: Inflammatory bowel disease (IBD) is a chronic and relapsing disorder with significant medical, social and financial impacts. IBD patients require continuous follow-up, and healthcare resource use in this context increases over time. In the last decade, telemedicine has influenced the treatment of chronic diseases like IBD via the application of information and communication technologies to provide healthcare services remotely. Telemedicine and its various applications (telemanagement, teleconsulting and tele-education) enable closer follow-up and provide education resources that promote patient empowerment, encouraging treatment optimisation over the entire course of the disease. We describe the impact of using telemedicine on IBD health outcomes and discuss the limitations of implementing these systems in the real-life management of IBD patients.


ABSTRACT: Electronic health records (EHRs), digitization of patients' health record, offer many advantages over traditional ways of keeping patients' records, such as easing data management and facilitating quick access and real-time treatment. EHRs are a rich source of information for research (e.g. in data analytics), but there is a risk that the published data (or its leakage) can compromise patient privacy. The k-anonymity model is a widely used privacy model to study privacy breaches, but this model only studies privacy against identity disclosure. Other extensions to mitigate existing limitations in k-anonymity model include p-sensitive k-anonymity model, p+-sensitive k-anonymity model, and (p, α)-sensitive k-anonymity model. In this paper, we point out that these existing models are inadequate in preserving the privacy of end users. Specifically, we identify situations where p+-sensitive k-anonymity model is unable to preserve the privacy of individuals when an adversary can identify similarities among the categories of sensitive values. We term such attack as Categorical Similarity Attack (CSA). Thus, we propose a balanced p+-sensitive k-anonymity model, as an extension of the p+-sensitive k-anonymity model. We then formally analyze the proposed model using High-Level Petri Nets (HLPN) and verify its properties using SMT-lib and Z3 solver. We then evaluate the utility of release data using standard metrics and show that our model outperforms its counterparts in terms of privacy vs. utility tradeoff.


ABSTRACT: As with most other industries, healthcare has seen significant benefits from digital transformation (DX), with the adoption of new technologies helping to deliver secure, high-quality patient care and drive greater business efficiency. Electronic health records (EHR), digital imaging, e-prescription services and enterprise resource planning systems are among the digital services that have been integrated into the extensive IT systems of many healthcare organisations. As with most other industries, healthcare has seen significant benefits from digital transformation, as well as the impact of the burgeoning Internet of Things (IoT). Healthcare providers have more access to patient data and applications than ever before. However, the increased complexity of the IT networks that power today's healthcare organisations, as well as the sheer volume of data traversing these, has added to the challenge of ensuring network and data security, as Eileen Haggerty of Netscout explains.


ABSTRACT: In the past few years, social media has changed the way people seek and share
health information. However, despite its significant advantages, social media still faces many challenges in user adoption and participation regarding health information. This study focuses on the factors that affect users' intentions to seek and share health information on social media. A net valence model was developed based on social support theory and prior e-service adoption research. Two studies, one in China and the other in Italy, were conducted to test the model. The results show that the proposed net valence model can effectively explain users' intentions to seek and share health information on social media. The results also show important cultural differences. An extensive literature review reveals that this study is among the first to investigate the non–healthcare professionals' intentions to seek and share health information in the context of social media using cross-culture samples.

were skills development, improved quality of services, improved relationships with other professionals and patients, saving time and money. The disadvantages mentioned were the increase in workload and the reduction of opportunities for external training. Discussion Implementation and use of ICTs have been facilitated by individual and organizational factors specific to the Malian context. The benefits of ICTs that were mentioned were of a medical and economic nature. These results are consistent with previous studies. The main drawbacks were of a professional nature and should be taken into account in the implementation of ICT projects. In addition, accessibility to ICTs or telehealth could promote the recruitment and retention of health professionals in rural areas. This assumption is consistent with the literature where some studies have documented this indirect relationship of telehealth that influences recruitment and retention factors. Conclusion Telehealth is recognized as an indispensable tool in clinical practice. It could also contribute to the recruitment and retention of health professionals. The various advantages of telehealth influence job satisfaction, which in turn can have an effect on recruitment and retention of health personnel.

https://doi.org/10.1016/j.pmcj.2017.11.001. 
ABSTRACT: Existing e-health monitoring systems mainly operate in isolation from the requirements of modern healthcare institutions. They do not include optimized techniques which learn the patient’s behavior for predicting future important changes. We propose a new context-aware e-health monitoring system targeted at the elderly and isolated persons living alone. It monitors daily living activities and evaluates dependency based on geriatric scales used by health professionals. Its adaptive framework collects only relevant contextual data for evaluating health status. By monitoring the achievement of daily activities, the system learns the behavior of the monitored person. It is then able to detect risky behavioral changes by using our novel forecasting approach based on the extension of the Grey model GM(1, 1). In order to evaluate our system, we use a Markovian model built for generating long term realistic scenarios. By simulation, we compare the performances of our system to traditional monitoring approaches with various synthetically generated scenarios and profiles. Results show that with minimal sensing and data collection, our system accurately evaluates a person’s dependency, predicts its health condition, and detects abnormal situations while preserving system resources.

https://doi.org/10.1016/j.healthpol.2017.11.005. 
ABSTRACT: Within the framework of a broader e-health strategy launched a decade ago, in 2015 Switzerland passed a new federal law on patients’ electronic health records (EHR). The reform requires hospitals to adopt interoperable EHRs to facilitate data sharing and cooperation among healthcare providers, ultimately contributing to improvements in quality of care and efficiency in the health system. Adoption is voluntary for ambulatories and private practices, that may however be pushed towards EHRs by patients. The latter have complete discretion in the choice of the health information to share. Moreover, careful attention is given to data security issues. Despite good intentions, the high institutional and organisational fragmentation of the Swiss healthcare system, as well as the lack of full agreement with stakeholders on some critical points of the reform, slowed the process of adoption of the law. In particular, pilot projects made clear that the participation of ambulatories is doomed to be low unless appropriate incentives are put in place. Moreover, most stakeholders point at the strategy proposed to finance technical implementation and management of EHRs as a major drawback. After two years of intense preparatory work, the law entered into force in April 2017. 

Sims, Julian M. "Communities of Practice: Telemedicine and Online Medical Communities." Technological Forecasting and Social Change, 126, no. Supplement C (2018): 53-63
ABSTRACT: E-health and telemedicine have had limited success across the European Union (EU), but using online collaborative technologies to support a community of practice may enable a sustainable healthcare community. In this paper we introduce a virtual medical community that enables geographically-dispersed medical experts to collaborate and share their knowledge in order to improve health care provision. This research confirms that media richness is not required for sustainable communities of practice, that there is greater effectiveness in knowledge sharing when virtual medical communities develop into communities of practice, and that communities of practice are sustainable when shared knowledge enhances medical practice. 

ABSTRACT: To date, health care industry has not fully grasped the potential benefits to be gained from big data analytics. While the constantly growing body of academic research on big data analytics is mostly technology oriented, a better understanding of the strategic implications of big data is urgently needed. To address this lack, this study examines the historical development, architectural design and component functionalities of big data analytics. From content analysis of 26 big data implementation cases in healthcare, we were able to identify five big data analytics capabilities: analytical capability for patterns of care, unstructured data analytical capability, decision support capability, predictive capability, and traceability. We also mapped the benefits driven by big data analytics in terms of information technology (IT) infrastructure, operational, organizational, managerial and strategic areas. In addition, we recommend five strategies for healthcare organizations that are considering to adopt big data analytics technologies. Our findings will help healthcare organizations understand the big data analytics capabilities and potential benefits and support them seeking to formulate more effective data-driven analytics strategies. 

Bibliography on “emergency communication”

https://doi.org/10.1016/j.ypmed.2017.11.014.
ABSTRACT: Previous studies indicated that narrative health messages are more effective than non-narrative messages in influencing health outcomes. However, this body of evidence does not account for differences in health domain, and little is known about the effectiveness of this message execution strategy during public health emergencies. In this study, we examined the relative effectiveness of the two formats in influencing knowledge and perceived response efficacy related to prevention of pandemic influenza, and determined whether effects of message format vary across population sub-groups. Data for the study come from an experiment fielded in 2013 that involved a nationally representative sample of 627 American adults. Participants were randomly assigned to view either a narrative (n=322) or a non-narrative (n=305) video clip containing closely matched information about knowledge and preventive actions related to pandemic influenza, and completed pre- and post-viewing questions assessing knowledge and perceived response efficacy related to the prevention of pandemic influenza. Results indicated that participants in the non-narrative condition reported greater knowledge and rated pandemic influenza prevention measures as more effective compared with those in the narrative condition. Message format effects did not vary across population sub-groups; post-viewing scores of
knowledge and perceptions related to pandemic influenza were consistently higher in the non-
narrative condition compared with the narrative condition across five socio-demographic groups:
age, gender, education, race/ethnicity and income. We concluded that didactic, non-narrative
messages may be more effective than narrative messages to influence knowledge and
perceptions during public health emergencies. ”.

Kim, Jooho and Makarand Hastak. "Social Network Analysis: Characteristics of Online Social
Networks After a Disaster." International Journal of Information Management, 38, no. 1
(2018): 86-96
https://doi.org/10.1016/j.ijinfomgt.2017.08.003.
ABSTRACT: Social media, such as Twitter and Facebook, plays a critical role in disaster
management by propagating emergency information to a disaster-affected community. It ranks
as the fourth most popular source for accessing emergency information. Many studies have
explored social media data to understand the networks and extract critical information to develop
a pre- and post-disaster mitigation plan. The 2016 flood in Louisiana damaged more than 60,000
homes and was the worst U.S. disaster after Hurricane Sandy in 2012. Parishes in Louisiana
actively used their social media to share information with the disaster-affected community – e.g.,
flood inundation map, locations of emergency shelters, medical services, and debris removal
operation. This study applies social network analysis to convert emergency social network data
into knowledge. We explore patterns created by the aggregated interactions of online users on
Facebook during disaster responses. It provides insights to understand the critical role of social
media use for emergency information propagation. The study results show social networks
consist of three entities: individuals, emergency agencies, and organizations. The core of a social
network consists of numerous individuals. They are actively engaged to share information,
communicate with the city of Baton Rouge, and update information. Emergency agencies and
organizations are on the periphery of the social network, connecting a community with other
communities. The results of this study will help emergency agencies develop their social media
operation strategies for a disaster mitigation plan. ”.

Kontokosta, Constantine E. and Awais Malik. "The Resilience to Emergencies and Disasters
Index: Applying Big Data to Benchmark and Validate Neighborhood Resilience
ABSTRACT: Resilience planning and emergency management require policymakers and agency
leaders to make difficult decisions regarding which at-risk populations should be given priority in
the allocation of limited resources. Our work focuses on benchmarking neighborhood resilience by
developing a unified, multi-factor index of local and regional resilience capacity: the Resilience to
Emergencies and Disasters Index (REDI). The strength of the REDI methodology is the
integration of measures of physical, natural, and social systems – operationalized through the
collection and analysis of large-scale, heterogeneous, and high resolution urban data – to classify
and rank the relative resilience capacity embedded in localized urban systems. Feature selection
methodologies are discussed to justify the selection of included indicator variables. Hurricane
Sandy is used to validate the REDI scores by measuring the recovery periods for neighborhoods
directly impacted by the storm. Using over 12,000,000 records for New York City’s 311 service
request system, we develop a proxy for neighborhood activity, both pre- and post-event.
Hurricane Sandy had a significant and immediate impact on neighborhoods classified as least
resilient based on the calculated REDI scores, while the most resilient neighborhoods were shown
to better withstand disruption to normal activity patterns and more quickly recover to pre-event
functional capacity. ”.

ABSTRACT: This paper explores the representation of men and women in Sindhi language textbooks from Year 1 to 5 in Sindh, Pakistan. Pictorial representations and accompanying text from these books were analysed using thematic coding. The pictorial and textual analysis confirm the salient features of patriarchal ideology being reproduced through the textbooks. The pictures and text portray women as secondary citizens in the society – those who are inferior to men and cannot access the public sphere or do anything, independent of male supervision. We argue that patriarchy prevails through the textbooks as women's familial roles are mostly depicted as engaged in household tasks and performing their assigned roles. The findings from this research can be used to develop pedagogic practices for gender equality in Pakistan.


ABSTRACT: According to a study conducted by Weber (2012), both males and females performed equally in STEM subjects, used STEM-based resources, and participated in after-school activities to an equal degree; however, males perceived that they had higher capabilities in STEM subjects than did females. Administered through a school's guidance/career office or via online survey, these tests can measure aptitude, interests, skills, and/or personality, and will compare each student’s results with a database to generate plausible career choices or guidelines (ACCU Conference, 2002-2012). Allow students to choose whether they would like to work in a collaborative group or independently. Since competition may not appeal to all students, make it optional (McCarthy, 2009). STEM Teacher Learning (STEMteacherlearning.com) provides state-of-the-art STEM professional development and continuing education (CEUs) for Technology and Engineering Education teachers.


ABSTRACT: Although Uganda is not short of policies and strategies to promote gender equality, women’s political and social agency remains significantly low. Reasons are rooted in two main challenges: persisting structural barriers; and low levels of education among women. Both are most prevalent in the country’s conflict-affected sub-regions. Against this backdrop, we explore and critically reflect on the interplay of education, gender and peacebuilding. We showcase how gender-responsive approaches in education at the macro-level have traditionally been based on initiatives that embrace gender equality by means of a "just add women and stir approach” thereby side-lining history, cultural sensitivity and context.


ABSTRACT: While the field of engineering as a whole is largely male-dominated, biomedical engineering (BME) is one area poised to overturn this trend. Women in the United States were awarded only 20% of all engineering B.S. degrees in 2015; in BME, however, 40.9% of the degree recipients were women. This stands in stark contrast to the more traditional fields of
mechanical and electrical engineering, where women were awarded just 13.2% and 12.5% of B.S. degrees, respectively. This trend toward more female participation in BME continues at both the M.S. and Ph.D. degree levels. In fact, in 2015, BME had the highest percentage of female engineering M.S. degree recipients in the United States of all engineering disciplines, according to the American Society for Engineering Education (Figure 1).

ABSTRACT: One argument for increasing female representation in management is the expectation that female managers will be particularly beneficial for female employees through, e.g., role modeling, mentoring or providing other incentives to enhance female productivity. We explore this issue by analyzing the association between women’s wages and the gender of their immediate managers using Swedish matched employee-employer data from 2010. Contrary to the expected positive association, we find that wages are overall 3% lower for female employees with a female instead of male manager. However, dividing the sample by managerial position and controlling for the sorting of employees with respect to, e.g., non-cognitive traits, work tasks, family commitment and establishment gender composition, the negative association is found only for female employees working for lower-level managers, not for women with a manager at the highest rank. One possible explanation could be a difference in decision-making power if lower-level female managers have more limited resources for their subordinates compared to lower-level male managers.

ABSTRACT: This study investigates the extent to which a gender gap exists in the citation rates of management researchers. Based on a cross-sectional sample of 26,783 publications and 65,436 authorships, we illuminate possible differences in women’s and men’s average citation impact per paper, adjusting for covariation attributable to geographical setting, institutional reputation, self-citations, collaborative patterns and journal prestige. We find a marginal difference in citation impact in favor of women management scholars. Women are also slightly more likely than men to author articles among the top-10% most cited in their field. Yet given the sensitivity of our results to uncertainties in the data, these variations should not be overgeneralized. In the large picture, differences in citation rates appear to be a negligible factor in the reproduction of gender inequalities in management research.

ABSTRACT: Despite evidence that there are no significant differences in leadership ability among women and men in public relations, women are still largely absent from leadership and senior management positions. Furthermore, very few studies about leadership in public relations have considered the affect gender has on leadership enactment and success. Therefore, this secondary analysis examined the state of women and gender scholarship about leadership in public relations as part of a larger study about the state of women in the communication discipline. Specifically, our research found that the majority of the research about leadership and gender highlights women’s lackluster leadership presence, factors contributing to women’s lack of presence, leadership styles and preferences, and leadership and management roles of women. This manuscript provides recommendations for improving women’s presence in leadership roles, particularly in providing a roadmap for future research opportunities. These include
considerations for methodological approaches, leadership approaches and roles research, types of leadership, cultural change, and education.

doi: 10.1109/TE.2017.2696904.
http://dx.doi.org/10.1109/TE.2017.2696904.
ABSTRACT: Students’ ratings of teaching quality on course units in a computer science program and an environmental engineering program at a large Swedish university were obtained using the Course Experience Questionnaire; 8888 sets of ratings were obtained from men and 4280 sets were obtained from women over ten academic years. These student ratings from the two programs showed certain differences; in particular, teachers tended to receive higher ratings in subjects that were less typical for their gender than in subjects that were more typical for their gender. There were differences in the ratings given to male and female teachers, differences in the ratings given by male and female students, and interactions between these two effects. There was no systematic trend for students to give different ratings to teachers of the same gender as themselves than to teachers of the other gender. Nevertheless, without exception, even the statistically significant effects were small in magnitude and unlikely to be of theoretical or practical importance. It is concluded that the causes of differences in the career progression of male and female teachers in engineering education need to be sought elsewhere.

http://doi.acm.org/10.1145/3149921.
ABSTRACT: In order to enhance participation in computer science for girls of color, this study examines the outcomes of a rigorous out-of-school culturally relevant computer science intervention designed to engage underrepresented students in computing. Findings demonstrated that within-race gender differences exist in early interest in computing. Female students of color demonstrated significantly lower engagement and interest in computing, suggesting that being a member of a marginalized gender group plays a unique role and has a multiplying (negative) effect. Further, there were still significant gender differences in computing engagement after participation in one summer of the computer science intervention. Promising outcomes were revealed among a group of students who chose to enroll in the optional Advanced Placement CS A preparatory course; there were no gender differences in enrollment and completion of the course. In examining longitudinal outcomes, gender is a significant predictor of majoring in computer science in college, with male students much more likely to major in computer science than female students. These findings have important implications for addressing the gender gap in computing, including understanding how the intersection of race and gender presents unique barriers and challenges for women of color in computing, and that interventions to broaden participation in computing must address the unique experiences of women of color.

https://doi.org/10.1016/j.ijedudev.2017.10.023.
ABSTRACT: This study investigated regional and gender differences in academic achievement in Ethiopia, and examined whether these differences can be explained in terms of unequal educational opportunities (EO). Educational opportunity was operationalized in a broad sense based on a regional differentiation in terms of socio-economic and school environment factors. The study results are based on a multilevel analysis of the 2014 and 2015 national standardized exam for grade 12 students (n=194503 and n=205719). Whereas the Central (high EO) regions outperformed the other regions (Cohen’s d=0.85) as expected, there were some inconsistencies
in the comparison between Established (mid EO) regions and Emerging (low EO) regions. Coincidentally, the two Emerging regions that were unexpectedly performing at the level of the Established regions were also the two regions in which there was no evidence for a gender gap in achievement. For other regions, including the Central regions, evidence for a gender gap sometimes as large as the regional gap was identified, with boys having on average higher scores than girls (Cohen’s d=[0.02, 0.92] with an average of 0.50). Plausible explanations and further policy recommendations are discussed."


ABSTRACT: LinkedIn is the largest professional social network site in the world, designed for professional networking, job seeking, and recruitment. The current study explores visual self-presentation in LinkedIn user portraits. LinkedIn portraits serve alongside explicit data posted in users’ profiles as a tool for professional self-presentation, yet they have hardly been studied. In the absence of scientific recommendations, non-academic websites offer recommendations for the optimal portrait. In this study, we aimed, first, to identify the common features of LinkedIn portraits and to determine whether they adhere to the popular recommendations found on the Internet. Second, we offered grounded hypotheses suggesting that LinkedIn portraits, and other features of LinkedIn accounts, would show gender and occupational differences. Using a representative city in the United States, 480 LinkedIn portraits and accounts were selected and analyzed. Results indicate that LinkedIn portraits display common features and tend to adhere to popular recommendations. Women were more likely than men to signal emotions, whereas men were more likely to signal status. No occupational differences were detected. The findings suggest that two opposing forces shape self-presentation in LinkedIn portraits. Specifically, social norms, corporate culture, and popular advice drive users to display standard business-like portraits, while gender-related self-expression inspires users to display their uniqueness and attractiveness. These pioneering findings can inform scholars and practitioners on impression management processes in professional online settings.

Bibliography on “ICT for development (ICT4D)”

https://doi.org/10.1016/j.tele.2017.06.008.

ABSTRACT: This study assess the impact of ICT diffusion on corruption by using instrumental variables method on a panel data set of 175 countries over the period 1996–2014. We check for the stability of the ICT-corruption nexus for different levels of economic development. Our results show that ICT diffusion clearly acts as an effective tool to control corruption. The study also reports that as the countries develop economically they improve their corruption level. Moreover, as per the per capita GDP, estimation outcomes suggest that both trade openness and better institutions are associated with lower corruption levels. However, results show robust support to suggest that as the general price level increases, bribery increases. This effect is more pronounced for the developing countries than for developed ones, which may witness higher inflation rates and therefore a higher cost of living. Drawn on our results, our study addresses important insights and policy implications mainly for developing countries."

ABSTRACT: Bringing value to end consumers is one of the main challenges for businesses in emerging markets. This paper examines the role of information technology (IT) advancements in frugal innovation and in influencing new business models to bring frugal innovations within reach of the poor. A thorough review of theoretical concepts of business models and their applicability to the Bottom-of-the-Pyramid (BoP) literature and frugal innovation is given. IT has three characteristics that have influenced both business models and frugal innovation. First IT reduces transaction costs, sensor prices have decreased, and IT's externalities have increased the economic and social value from one innovation. By discussing the case of a high-technology low cost weather sensor system deployed in sub-Saharan Africa, this paper demonstrates how IT has introduced new frugal innovations, and influenced new business models. The success of the weather station diffusion has been due to the value of the weather data generated, the adaptive business model, and the co-creation approach throughout the station and business model design. IT has played a strong part in diffusing new innovations in Africa, but also has the potential to exclude certain groups. Future research should explore how IT and frugal innovation can lead to inclusion.


ABSTRACT: This study explores the link between the consumption of Information and Communications Technologies (ICTs) and development in Africa. It operationalizes development in terms of the human development index (HDI) and includes as utility services, the mobile phone, fixed phone, broadband internet and wireless internet. The data on utility services came from the online database of the International Telecommunication Union; while those on the HDI originated in the UN Development Programme. The results from logarithmically transformed bivariate (r² between 0.50 and 0.60) and multiple regression analyses (R² = 0.72) confirmed the hypothesized positive link between ICT and development.


ABSTRACT: With some 200 indicators, the 2017 edition of the OECD Science, Technology and Industry (STI) Scoreboard shows how the digital transformation affects science, innovation, the economy, and the way people work and live. It aims to help governments design more effective science, innovation and industry policies in the fast-changing digital era. The charts and underlying data in this publication are available for download and over half the indicators contain additional data expanding the time and/or country coverage of the print edition.


ABSTRACT: Smart city initiatives have been researched primarily in the developed country context. In developing countries, however, emerging technologies are enabling progress on urban functionality, productivity, and livability. A deeper understanding of facilitative policy conditions unique to developing countries would be useful to both theory and practice. This study presents empirically grounded insights about the policy implications of smart city development in developing countries, based on surveys of experts from the public and private sectors in 10 Vietnam cities. The study makes three contributions. First, it provides new evidence that pursuing smart city development (SCD) is not a mere alternative but a crucial strategic imperative. While facing persistent problems, Vietnam’s cities exhibit significant and rapidly improving readiness for
Second, the study provides new insights into related policy issues and challenges, including the positive link between e-government development and control of corruption, the risk of bias toward operational management over institutional reform, and the lack of a clear development strategy. Finally, the study proposes a model for guiding smart city initiatives in developing countries.

**Bibliography on “intelligent transportation systems (ITS)”**


**ABSTRACT:** In this research, a real-time positioning method, which utilises crowdsourced positioning data obtained from smartphone GPS is developed. Such vehicle location information obtained from crowdsourcing and smartphones in public transport could replace traditional automatic vehicle location systems. However, the location information from smartphone GPS is more erroneous. The proposed methodology serves as an alternative to existing positioning methods to improve the vehicle positioning accuracy. The developed enhanced particle filter algorithm takes smartphone GPS positioning data [from multiple passengers in a single transit vehicle (e.g. bus)] as input data. This `crowdsourced` data can then be utilised to calculate the vehicles' positioning information with better accuracy using the developed enhanced particle filter algorithm. The developed algorithm was tested using data collected on 14 different bus routes in urban and suburban areas of Mumbai, India, and it was identified that the algorithm is effective in reducing the average error up to 21.3% from a regular smartphone GPS and 10% from extended Kalman filter algorithm and was able to curtail positioning error within 8.672 m (average over 14 routes).


**ABSTRACT:** Internet of Things (IoT) has been widely used in various application domains including smart city, environment monitoring and intelligent transportation systems. Thousands of interconnected IoT devices produce an enormous volume of data termed as big data. However, privacy protection has become one of the biggest problems with the progress of big data. Personal privacy is usually challenged by the development of technology. In this paper, we focus on privacy protection for location trajectory data, which is collected in intelligent transportation system. First, we demonstrate that the moving preference of individuals can be exploited to perform re-identification attacks, which may cause serious damage to the identity privacy of users. To address this re-identification problem, we present a new trajectory anonymity model, in which the degree of correlation between parking locations and individuals is precisely characterized by a concept of Location Frequency-inverse user frequency (LF-IUF, for short). We then propose an anonymizing method to replace parking locations by a $k$-correlation region. Our method provides a novel anonymity solution for publishing trajectory data, which achieves a better trade off between privacy and utility. Finally, we run a set of experiments on real-world data sets, and demonstrate the effectiveness of our method.

ABSTRACT: Providing efficient anonymous authentication in vehicular ad hoc networks (VANETs) is a challenging issue. Identity-based signature schemes have been used to provide privacy-preserving authentication effectively for VANETs. In such scenario, mutual authentication between vehicles is critical to ensure only legitimate vehicles can involve in the inter-vehicle communication, and how to resist denial-of-service attack should be carefully addressed due to the regionally central signature verification in vehicle-roadside communications. In this paper, we propose a conditional privacy-preserving mutual authentication framework with denial-of-service attack resistance called MADAR. The authentication framework combines different identity-based signature schemes and distinguishes inner-region and cross-region authentications to increase efficiency. Beyond the privacy preservation and non-repudiation achieved by the existing framework, our authentication framework provides asymmetric inter-vehicle mutual authentication and strength Alterable computational DoS-attack resistance. We have formally proved the privacy preservation, unlinkability, mutual authenticity, and correctness of pseudonym with ProVerif, and analyzed other security objectives. The performance evaluations are conducted and the results demonstrate that our framework can achieve these security objectives with moderate computation and communication overheads.


ABSTRACT: Self-driving cars and self-driving technology are tested on public roads in several countries on a large scale. With this development not only technical, but also legal questions arise. This article will give a brief overview of the legal developments in multiple jurisdictions – California (USA), United Kingdom, and the Netherlands – and will highlight several legal questions regarding the testing and deployment of self-driving cars. Policymakers are confronted with the question how the testing of self-driving cars can be regulated. The discussed jurisdictions all choose a different approach. Different legal instruments – binding regulation, non-binding regulation, granting exemptions – are used to regulate the testing of self-driving cars. Are these instruments suitable for the objectives the jurisdictions want to achieve? As technology matures, self-driving cars will at some point become available to the general public. Regarding this post-testing phase, two pressing problems arise: how to deal with the absence of a human driver and how does this affect liability and insurance? The Vienna Convention on Road Traffic 1968 and the Geneva Convention on Road Traffic 1949, as well as national traffic laws, are based on the notion that only a human can drive a car. To what extent a different interpretation of the term ‘driver’ in traffic laws and international Conventions can accommodate the deployment of self-driving cars without a human driver present will be discussed in this article. When the self-driving car becomes reality, current liability regimes can fall short. Liability for car accidents might shift from the driver or owner to the manufacturer of the car. This could have a negative effect on the development of self-driving cars. In this context, it will also be discussed to what extent insurance can affect this development. ".

Bibliography on “internet governance”


ABSTRACT: This research endeavors to address the question of how to enhance project performance through exploring the relationships among information technology (IT) governance, project governance and project performance. The research utilizes an empirical survey
methodology. The survey of 533 working professionals in various industries renders 282 usable responses or a response rate of 53.91%. The results suggest that both IT governance and project governance have a positive impact on project performance. Moreover, we found that three dimensions of IT governance (i.e., strategy setting, value delivery, and performance management) are positively associated with project performance while all three dimensions of project governance (i.e., portfolio direction, project sponsorship as well as project effectiveness & efficiency, and disclosure & reporting) are positively associated with project performance. Additionally, the alignment between IT governance and project governance is also found to be positively associated with project performance. These findings provide evidence to project management professionals in regard to IT governance and project governance being part of the operational strategy in facilitating the success of projects. It also demonstrates the importance of the alignment strategy between IT governance and project governance in enhancing project performance.

Bibliography on “internet of things (IoT)”

http://doi.acm.org/10.1145/3137572.
ABSTRACT: This work aims at investigating and quantifying the Urban Transport System (UTS) resilience enhancement enabled by the adoption of emerging technology such as Internet of Everything (IoE) and the new trend of the Connected Community (CC). A conceptual extension of Functional Resonance Analysis Method (FRAM) and its formalization have been proposed and used to model UTS complexity. The scope is to identify the system functions and their interdependencies with a particular focus on those that have a relation and impact on people and communities. Network analysis techniques have been applied to the FRAM model to identify and estimate the most critical community-related functions. The notion of Variability Rate (VR) has been defined as the amount of output variability generated by an upstream function that can be tolerated/absorbed by a downstream function, without significantly increasing of its subsequent output variability. A fuzzy-based quantification of the VR based on expert judgment has been developed when quantitative data are not available. Our approach has been applied to a critical scenario as flash flooding considering two cases: when UTS has CC and IoE implemented or not. However, the method can be applied in different scenarios and critical infrastructures. The results show a remarkable VR enhancement if CC and IoE are deployed.

ABSTRACT: The Internet of Things (IoT) comprises several communication network technology standards and most of them are currently operating in silos. However, to achieve the IoT paradigm’s main goal, which is to deliver efficient and high-quality smart services, interoperation among various IoT standards is necessary. Therefore, interoperability and quality of service (QoS) provisioning are two of the main requirements for current and future standards operating within the IoT ecosystem. To understand how current standards can or cannot meet these requirements, first, we analyze high-level technical standards for some application domains within the IoT ecosystem. Second, with a focus on some common communication network standards, we present the QoS requirements of smart services in the IoT. Finally, we highlight the mechanisms employed by these standards in enabling interoperability and QoS in the IoT environment. ".

ABSTRACT: The Internet of Things (IoT) is the communications paradigm that can provide the potential of ultimate communication. The IoT paradigm describes communication not only human to human (H2H) but also machine to machine (M2M) without the need of human interference. In this paper, we examine, review and present the current IoT technologies starting from the physical layer to the application and data layer. Additionally, we focus on future IoT key enabling technologies like the new fifth generation (5G) networks and Semantic Web. Finally, we present main IoT application domains like smart cities, transportation, logistics, and healthcare.


ABSTRACT: Internet of Things (IoT) is a novel paradigm attracting significant attention in the modern wireless telecommunications field. However, in some scenarios, the performance of IoT network is limited by energy-constrained devices. In order to improve the energy efficiency of such IoT devices, researchers have proposed several approaches based on duty cycle operation (switching devices between sleeping and active mode). However, current solutions adopting duty cycle (i.e., the fraction of time in which a node is active) have three issues: (i) they assign the same duty cycle ratio to all the nodes without balancing energy consumption; or (ii) they distribute different duty cycle ratios without considering the energy consumption during network construction phase; or (iii) their network structure models are based on concentric corona, instead of clustering structure. In this paper, we propose EnergIoT, a hierarchical clustering approach based on duty cycle ratio to maximize network lifetime of battery-powered IoT devices. In particular, we assign different duty cycle ratios to devices according to their distance from the sink, since different duty cycle ratios balance the energy consumption among devices at different layers. Furthermore, we calculate the energy consumption of IoT devices, considering both network construction phase and data processing phase. We evaluate EnergIoT through extensive simulation analyses on the OMNet++ platform. The result shows that EnergIoT is not only feasible but also efficient. Moreover, EnergIoT improves the network lifetime by 32%, compared to the uniform duty cycle approach, without sacrificing the network performance (i.e., end-to-end delay).


ABSTRACT: Internet and Web technologies have changed our lives in ways we are not yet fully aware of. In the near future, Internet will interconnect more than 50 billion things in the real world, nodes will sense billions of features and properties of interest, and things will be represented by web-based, bi-directional services with highly dynamic content and real-time data. This is the new era of the Internet and the Web of Things. Since the emergence of such paradigms implies the evolution and integration of the systems with which they interact, it is essential to develop abstract models for representing and simulating the Web of Things in order to establish new approaches. This article describes a Web of Things model based on a structured XML representation. We also present a simulator whose ultimate goal is to encapsulate the expected dynamics of the Web of Things for the future development of information retrieval (IR) systems. The simulator generates a real-time collection of XML documents containing spatio-temporal contexts and textual and sensed information of highly dynamic dimensions. The simulator is characterized by its flexibility and versatility for representing real-world scenarios.
and offers a unique perspective for information retrieval. In this article, we evaluate and test the simulator in terms of its performance variables for computing resource consumption and present our experimentation with the simulator on three real scenarios by considering the generation variables for the IR document collection.


ABSTRACT: The Internet of Things (IoT) is overpopulated by a large number of objects and millions of services and interactions. Therefore, the ability to search for the right object to provide a specific service is important. The merger of the IoT and social networking, the Social Internet of Things (SIoT), has made this possible. The main idea in the SIoT is that every object in the IoT can use its friends’ or friends-of-friends’ relationships to search for a specific service. However, this is usually a slow process because each node (object) is required to manage a large number of friends. This paper addresses the issue of link selection of friends and analyzes five strategies in the literature. Then it proposes a link selection strategy using the Genetic Algorithm (GA) to find the near optimal solution. The results show an improvement over the examined strategies in terms of several parameters.


ABSTRACT: Internet of Things (IoT) provides to everyone new types of services in order to improve everyday life. Through this new technology, other recently developed technologies such as Big Data, Cloud Computing, and Monitoring could take part. In this work, we survey the four aforementioned technologies in order to find out their common operations, and combine their functionality, in order to have beneficial scenarios of their use. Despite the boarder concept of a smart city, we will try to investigate new systems for collecting and managing sensors’ data in a smart building which operates in IoT environment. As a bases technology for the proposed sensor management system, a cloud server would be used, collecting the data that produced from each sensor in the smart building. These data are easy to be managed and controlled from distance, by a remote (mobile) device operating on a network set up in IoT technology. As a result, the proposed solutions for collecting and managing sensors’ data in a smart building could lead us in an energy efficient smart building, and thus in a Green Smart Building.


ABSTRACT: In mobile crowd-sensing systems, the value of crowd-sensed big data can be increased by incentivizing the users appropriately. Since data acquisition is participatory, crowd-sensing systems face the challenge of data trustworthiness and truthfulness assurance in the presence of adversaries whose motivation can be either manipulating sensed data or collaborating unfaithfully with the motivation of maximizing their income. This paper proposes a game theoretic methodology to ensure trustworthiness in user recruitment in mobile crowd-sensing systems. The proposed methodology is a platform-centric framework that consists of three phases: user recruitment, collaborative decision making on trust scores, and badge rewarding. In the proposed framework, users are incentivized by running sub-game perfect equilibrium and gamification techniques. Through simulations, we show that approximately 50% and a minimum of 15% improvement can be achieved by the proposed methodology in terms of
platform and user utility, respectively, when compared with fully distributed and user-centric trustworthy crowd-sensing.


**ABSTRACT:** The evolution of the Internet of things and the continuing increase in the number of sensors connected to the Internet impose big challenges regarding the management of the resulting deluge of data and network latency. Uploading sensor data over the web does not add value. Therefore, an efficient knowledge extraction technique is badly needed to reduce the amount of data transfer and to help simplify the process of knowledge management. Homoscedasticity and statistical features extraction are introduced in this paper as novelty detection enabling techniques, which help extract the important events in sensor data in real time when used with neural classifiers. Experiments have been conducted on a fog computing platform. System performance has been also evaluated on an occupancy data set and showed promising results.


**ABSTRACT:** The Internet of Things (IoT) is increasingly becoming a worldwide network of interconnected things that are uniquely addressable, via standard communication protocols. The use of IoT for continuous monitoring of public health is being rapidly adopted by various countries while generating a massive volume of heterogeneous, multisource, dynamic, and sparse high-velocity data. Handling such an enormous amount of high-speed medical data while integrating, collecting, processing, analyzing, and extracting knowledge constitutes a challenging task. On the other hand, most of the existing IoT devices do not cooperate with one another by using the same medium of communication. For this reason, it is a challenging task to develop healthcare applications for IoT that fulfill all user needs through real-time monitoring of health parameters. Therefore, to address such issues, this article proposed a Hadoop-based intelligent care system (HICS) that demonstrates IoT-based collaborative contextual Big Data sharing among all of the devices in a healthcare system. In particular, the proposed system involves a network architecture with enhanced processing features for data collection generated by millions of connected devices. In the proposed system, various sensors, such as wearable devices, are attached to the human body and measure health parameters and transmit them to a primary mobile device (PMD). The collected data are then forwarded to intelligent building (IB) using the Internet where the data are thoroughly analyzed to identify abnormal and serious health conditions. Intelligent building consists of (1) a Big Data collection unit (used for data collection, filtration, and load balancing); (2) a Hadoop processing unit (HPU) (composed of Hadoop distributed file system (HDFS) and MapReduce); and (3) an analysis and decision unit. The HPU, analysis, and decision unit are equipped with a medical expert system, which reads the sensor data and performs actions in the case of an emergency situation. To demonstrate the feasibility and efficiency of the proposed system, we use publicly available medical sensory datasets and real-time sensor traffic while identifying the serious health conditions of patients by using thresholds, statistical methods, and machine-learning techniques. The results show that the proposed system is very efficient and able to process high-speed WBAN sensory data in real time.


**ABSTRACT:** The recent development in the technology brings the concept of Smart City that is
achieved through real-time city related intelligent decisions by analyzing the data harvested from various smart systems in the city using millions of sensors and devices connected over the Internet, termed as Internet of Things (IoT). These devices generate the overwhelming volume of high-speed streaming data, termed as Big Data. However, the generation of city data at a remote location and transmitting it to central city servers for analysis purpose raises the concerns of security and privacy. On the other hand, providing security to such Big Data streaming requires a high-speed security system that can work in a real-time environment without providing any delay that may slow down the overall performance of the Smart City System. To overthrow these challenges, in this paper, we proposed an efficient and real-time Smart City security system by providing strong intrusion detection at intelligent city building (ICB) and also a security protocol to protect the communication between the remote smart system(RSS)/User and the city analysis building, i.e., ICB. The proposed communication security protocol consists of various phases, i.e., registration phase, session key exchange phase, session key revocation phase, and data transmission phases from RSS to ICB as well as from User to ICB. Vast security analyses are performed to evaluate the credibility of the system. The proposed system is also evaluated on efficiency in terms of computation cost and throughput of overall functions used in the system. The system’s evaluation and the comparative study with existing system show that the prosed system is secure, more efficient, and able to work in a real-time, high-speed Smart City environment.

doi: 10.1109/MSPEC.2017.8093798.
http://dx.doi.org/10.1109/MSPEC.2017.8093798.

ABSTRACT: ON 21 OCTOBER OF LAST YEAR, a variety of major websites—including those of Twitter, PayPal, Spotify, Netflix, The New York Times, and The Wall Street Journal—stopped working. The cause was a distributed denial-of-service attack, not on these websites themselves but on the provider they and many others used to support the Domain Name System, or DNS, which translates the name of the site into its numerical address on the Internet. The DNS provider in this case was a company called Dyn, whose servers were barraged by so many fake requests for DNS lookups that they couldn't answer the real ones.


ABSTRACT: Big data has arrived. Myriad applications, systems generate data of humongous volumes, variety and velocity which traditional computing systems and databases are unable to manage. The proliferation of sensors in every possible device is also becoming one of the major generators of Big data. Of particular interest in this article is how context aware computing systems which derive context from data and act accordingly, deal with such huge amounts of data. Big industry players namely Google, Yahoo, and Amazon are already developing context aware applications using user data from emails, chat messages, browsing and shopping histories etc. For instance, GMail reminds us of our flight schedule by understanding flight booking related content in our emails. Similarly, Amazon understands user preference and recommends items of interest to shop and so on. In this paper, we survey context aware computing systems from a Big data perspective. We first propose a taxonomy of existing work on the basis of sensing platforms and then discuss the latest developments in this field of Big data context aware systems focusing on how such systems deal with various Big data challenges. We conclude the paper with an insight on open research issues involving designing and developing context aware Big data generating systems. ".

doi: 10.1109/ACCESS.2017.2767641.
ABSTRACT: Internet of Things (IoT) has been widely used in various application domains including smart city, environment monitoring and intelligent transportation systems. Thousands of interconnected IoT devices produce an enormous volume of data termed as big data. However, privacy protection has become one of the biggest problems with the progress of big data. Personal privacy is usually challenged by the development of technology. In this paper, we focus on privacy protection for location trajectory data, which is collected in intelligent transportation system. First, we demonstrate that the moving preference of individuals can be exploited to perform re-identification attacks, which may cause serious damage to the identity privacy of users. To address this re-identification problem, we present a new trajectory anonymity model, in which the degree of correlation between parking locations and individuals is precisely characterized by a concept of Location Frequency-inverse user frequency (LF-IUF, for short). We then propose an anonymizing method to replace parking locations by a k-correlation region. Our method provides a novel anonymity solution for publishing trajectory data, which achieves a better trade off between privacy and utility. Finally, we run a set of experiments on real-world data sets, and demonstrate the effectiveness of our method.


ABSTRACT: Advances in wireless Internet and mobile communications devices have driven significant development in the Internet of Things (IoT), bringing a stream of innovative technologies and services. This study explores the technology innovation and intelligence for IoT (internet of things) based eyewear technology. This study proposes a two-stage patent analysis based on the quality function development (QFD) method which adopts customer requirement and technology viewpoints to explore key technologies. This methodology can recognize the specific technologies with development potential in the eyewear industry, and identify holders of key relevant patents. This study finds that consumers value functions including motion tracking, reminders, eye state detection, and non-eye disease detection. Key technologies with development potential for satisfying customer demand include eyewear, communications protocols, and sensors. Thus, embedding micron-scale sensors directly into contact lenses to monitor user physiological data can satisfy customer demand and is considered as emerging technology in the smart eyewear industry. Furthermore, patent portfolios of these technologies vary among different countries and regions, with the US and EU focusing on eye tracking, motion tracking, and identity verification, while China focuses on eye fatigue detection, distance measurement, and wireless frequency technologies. Visualizations of overall research results can benefit eyewear-related patent holders, eyewear manufacturers and smart wearable manufacturers to build their patent portfolio strategies on the basis of regional or country considerations.


ABSTRACT: In large-scale Internet of Things (IoT) systems, huge volumes of data are collected from anywhere at any time, which may invade people’s privacy, especially when the systems are used in medical or daily living environments. Preserving privacy is an important issue, and higher privacy demands usually tend to require weaker identity. However, previous research has indicated that strong security tends to demand strong identity, especially in authentication processes. Thus, defining a good tradeoff between privacy and security remains a challenging problem. This motivates us to develop a privacy-preserving and accountable authentication protocol for IoT end-devices with weaker identity, which integrates an adapted construction of short group signatures and Shamir’s secret sharing scheme. We analyze the security properties of our protocol in the context of six typical attacks and verify the formal security using the
Proverif tool. Experiments using our implementation in MacBook Pro and Intel Edison development platforms show that our authentication protocol is feasible in practice. ".

Bibliography on “regulatory/statistical report”


https://search.proquest.com/docview/1961568479?accountid=41838
ABSTRACT: We have made minor forecast adjustments to account for the latest YE2016 data in the latest Q317 quarterly report update. The market performs in line with our estimations as the mobile segment nears saturation with 140% penetration and organic subscriber growth cooling off. Nevertheless, we are of the opinion that the regulator's new investor and competition friendly policies will deliver further innovation and technological uptake in the market. The regulator looks to auction more spectrums and attract new wireless and wireline carriers in the coming quarters. As the mobile subscription growth has stalled, and the ability for operators to embrace converged services could not come at a better time. This will justify investment in 3G/4G infrastructure and prevent the wireline segment from stagnating. Convergence offers new revenue diversification opportunities, but is also ARPU-dilutive; operators must become more creative at the service level.


https://search.proquest.com/docview/1955747011?accountid=41838
ABSTRACT: Based on data from the operators we have downgraded our outlook for 3G/4G growth, but our outlook for fibre broadband remains positive. Belgium will finally have fibre broadband in the mobile sector as Proximus announced investing EUR3bn (USD3.1bn) to accelerate the roll-out of FTTH networks. In the mobile market, we expect the focus to move towards advanced services such as post-paid, LTE and bundling with operators looking to upsell customers and retain them on lucrative plans. Opportunities still exist as many users remain on basic services, but work remains to be done to ensure competition.

https://search.proquest.com/docview/1953257176?accountid=41838
ABSTRACT: Cameroon and Gabon’s improving economies, rising income and disposable spending powers along with dynamic mobile markets and progressive regulatory regimes mark them out as investment destinations with only moderate levels of risk, though there are underlying political tensions in both countries. Gabon’s mobile market is saturated and consolidation is underway; price competition may also now intensify and operators therefore need to focus on the range and price of their services to retain customers in a market with limited opportunity for organic growth. In Cameroon, regulator ART is actively encouraging investment in backbone fibre that would allow operators to lower operating costs and invest in advanced services. Cameroon’s mobile market contains significant organic growth prospects over the medium term, with the SIM deactivation drive resulting in a mobile penetration rate below 80% by end-June 2017, suggesting strong prospects out to 2021.
https://search.proquest.com/docview/1957469823?accountid=41838
ABSTRACT: Industry Trend Analysis - Drugmakers To Push Patient And Physician Communications Through Apps.


https://search.proquest.com/docview/1955749109?accountid=41838
ABSTRACT: The Greek telecoms market is impacted by the overall negative macroeconomic situation in the country. Despite high penetration rates, the mobile market will still expand until the end of our forecast period, with growth plateauing by 2021. Operators struggle to migrate users to premium services because of a lack of purchasing power, while they are also wary about investing too heavily in next-generation networks if they are unable to secure high dividends on investments. A number of new investments will support the overall innovative prospects in both the wireless and fixed segments as operators look to sustain their revenue streams. Therefore our outlook accounts for strong growth in 3G/4G sector and broadband.

https://search.proquest.com/docview/1957469804?accountid=41838
ABSTRACT: The Hungarian mobile market contracted in 2016 and is saturated with network coverage at 100%, meaning that there is little organic growth potential. Mobile market growth will come from selling premium services and high-speed data packages to existing clients as suggested by strong operator expenditure in boosting network capabilities. Digi's acquisition of Invitel in Q317 creates a much-needed strong third national converged services provider and the expansion will boost consumer choice as well as the digital economy. The deal also aligns with our view that 2017 will see increased M&A activity amongst smaller players in the fragmented CEE telecoms markets.

https://search.proquest.com/docview/1967953657?accountid=41838
ABSTRACT: The telecommunications market continues to perform in line with our forecast and it is clear that the mobile market has passed the saturation point. Recent auction for 3.6 GHz frequency raises hopes for 5G network development. Operators' focus has been on premium and advanced services driven by the positive macroeconomic outlook in recent quarters, this is likely to pay off and BMI forecasts relatively strong growth for mobile ARPU's. Migration to post-paid, LTE, VDSL/fibre and converged services are the core strategies for operators as they look to improve their monetisation prospects.

"Middle East & Africa Telecommunications Insight - JANUARY 2018." London, United Kingdom: Business Monitor International, 2018

https://search.proquest.com/docview/1953256895?accountid=41838
ABSTRACT: The joint venture between Vodafone and Ziggo marks the importance of convergence in the Dutch telecoms market, as traditional growth opportunities are limited. KPN has also embraced convergence, and now T-Mobile, which acquired Vodafone's legacy fixed network.
Meanwhile, a proposed legislation that could prohibit or reverse takeovers in the telecoms industry, under the guise of national security and the protection of key infrastructure, could block any further M&A activity in the market. The development of 5G and the Internet of Things are future drivers of market development.

https://search.proquest.com/docview/1957974543?accountid=41838  
ABSTRACT: Peru’s mobile market has experienced net gains this quarter, with minor players Bitel and Entel gaining the most subscribers. While MVNOs remain a very minor player, new MVNO policies and 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/1957975615?accountid=41838  
ABSTRACT: 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 could increase completion in a market that is effectively a duopoly. 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. Despite the lack of competition, BMI has a positive view of 3G/4G growth and now expects this segment to account for 80% of the market by 2021.


https://search.proquest.com/docview/1961996484?accountid=41838  
ABSTRACT: We have made no major revisions to the South African telecoms market outlook for Q118. Our core view remains unchanged as the market continues to perform in line with our forecasts. Mobile and wireline data services offer the best growth opportunities in the market. However, price competition may also now intensify and operators therefore need to focus on the range and price of their services to retain customers in a market with limited opportunities for organic growth. The key determinant of how the broadband market develops is the government and how it executes its plan to allocate all high-value LTE spectrum to a national wholesale operator. Only a robust access regime can ensure success and the regulator is yet to convince that it can manage this aspect of the service paradigm. Increased Industry Risk would be seen as the state would tighten its grip on key resources, given that it lacks the expertise to fully exploit opportunities.

https://search.proquest.com/docview/1953256931?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/1953256755?accountid=41838  
ABSTRACT: The successful uptake of the recently-launched 4G services in Algeria and Tunisia demonstrate the great potential for advanced mobile services in North Africa. Even if these markets will remain centred around voice services, expensive wireline broadband services caused by stagnant markets imply low-cost mobile broadband is likely to be a main growth driver for the next five years. However, given the weak macroeconomic outlook, players will keep resorting to price competition, squeezing returns on investment.

https://search.proquest.com/docview/1957466138?accountid=41838  
ABSTRACT: Post-paid and LTE subscription growth in Q117 were robust and we are therefore bullish on 3G/4G subscriptions driving growth and usage within the overall mobile market and improving ARPU in local currency. Depending on the tariff structures offered by the operators, growth in post-paid subscriptions in recent quarters could lead to a relatively faster deactivation of (multiple) prepaid subscriptions. We expect revenues to stabilise in spite of volatility in prepaid subscriptions.


https://search.proquest.com/docview/1958943848?accountid=41838  
ABSTRACT: Following years of fast mobile growth in Uruguay, exceptionally high mobile penetration rates will impede significant organic growth. Growth will be focussed on the 3G/4G
mobile segment, thanks to high disposable incomes and young demographics that favour uptake of new technologies. Antel's investments will remain the main determinant of growth in the wireline segment, but will be focussed on broadband as we forecast fixed lines to start steadily declining from 2018.

https://search.proquest.com/docview/1967953482?accountid=41838
ABSTRACT: Demand for all telecoms services is in decline as consumers' disposable incomes are impacted by rampant hyper-inflation. Conatel has rescinded its ban on price hikes as operators complained that falling real-term revenues affected their ability to invest in new broadband infrastructure and reach rural subscribers. Even demand for low-cost pay-TV services is in decline, a sure sign that the political and economic crises are having a direct impact on the market. We still believe Venezuela offers strong investment potential, but that it will not become apparent unless a more business-friendly and pragmatic government comes to power.

OECD "Main Science and Technology Indicators, Volume 2017 Issue 1." : Organisation for Economic Co-operation and Development, 2017
doi: 10.1787/msti-v2017-1-en
http://dx.doi.org/10.1787/msti-v2017-1-en
ABSTRACT: This biannual publication provides a set of indicators that reflect the level and structure of the efforts undertaken by OECD member countries and seven non-member economies (Argentina, China, Romania, Russian Federation, Singapore, South Africa, Chinese Taipei) in the field of science and technology. These data include final or provisional results as well as forecasts established by government authorities. The indicators cover the resources devoted to research and development, patent families, technology balance of payments and international trade in R&D-intensive industries. Also presented are the underlying economic series used to calculate these indicators. Series are presented for a reference year and for the last six years for which data are available.

doi: 10.1787/9789264268821-en
http://dx.doi.org/10.1787/9789264268821-en
ABSTRACT: With some 200 indicators, the 2017 edition of the OECD Science, Technology and Industry (STI) Scoreboard shows how the digital transformation affects science, innovation, the economy, and the way people work and live. It aims to help governments design more effective science, innovation and industry policies in the fast-changing digital era. The charts and underlying data in this publication are available for download and over half the indicators contain additional data expanding the time and/or country coverage of the print edition.

Bibliography on “satellite communication”

ABSTRACT: In this paper, calculation of monthly average hourly diffuse photosynthetically active radiation (PAR) using satellite data is proposed. Diffuse PAR was analyzed at four stations in Thailand. A radiative transfer model was used for calculating the diffuse PAR for cloudless sky conditions. Differences between the diffuse PAR under all sky conditions obtained from the
ground-based measurements and those from the model are representative of cloud effects. Two models are developed, one describing diffuse PAR only as a function of solar zenith angle, and the second one as a multiple linear regression with solar zenith angle and satellite reflectivity acting linearly and aerosol optical depth acting in logarithmic functions. When tested with an independent data set, the multiple regression model performed best with a higher coefficient of variance $R^2$ (0.78 vs. 0.70), lower root mean square difference (RMSD) (12.92% vs. 13.05%) and the same mean bias difference (MBD) of $-2.20\%$. Results from the multiple regression model are used to map diffuse PAR throughout the country as monthly averages of hourly data.


**ABSTRACT:** Multiple access interference (MAI) is one of the unstable sources of the two-way satellite time and frequency transfer (TWSTFT), and causes an estimation error of the signal arrival time. To suppress MAI, the successive interference cancellation (SIC) procedure is implemented on the software-defined receiver. It generates MAIs and subtracts them from the received signal to become an interference-free signal. By performing TWSTFT with SIC, the short-term stability of the UTC(TL)-UTC(KRIS) was improved so that the time deviations were reduced from $0.67\ r^{1/2}$ to $0.48\ r^{1/2}\ ns$, and the long-term measurement results were consistent with those obtained by the conventional receiver.


**ABSTRACT:** Grids are commonly used as histograms to process spatial data in order to detect frequent patterns, predict destinations, or to infer popular places. However, they have not been previously used for GPS trajectory similarity searches or retrieval in general. Instead, slower and more complicated algorithms based on individual point-pair comparison have been used. We demonstrate how a grid representation can be used to compute four different route measures: novelty, noteworthiness, similarity, and inclusion. The measures may be used in several applications such as identifying taxi fraud, automatically updating GPS navigation software, optimizing traffic, and identifying commuting patterns. We compare our proposed route similarity measure, C-SIM, to eight popular alternatives including Edit Distance on Real sequence (EDR) and Frechet distance. The proposed measure is simple to implement and we give a fast, linear time algorithm for the task. It works well under noise, changes in sampling rate, and point shifting. We demonstrate that by using the grid, a route similarity ranking can be computed in real-time on the Mopsi2014 route dataset, which consists of over 6,000 routes. This ranking is an extension of the most similar route search and contains an ordered list of all similar routes from the database. The real-time search is due to indexing the cell database and comes at the cost of spending 80% more memory space for the index. The methods are implemented inside the Mopsi2 route module.


**ABSTRACT:** Celestial bodies like the Moon and asteroids contain materials and precious metals, which are valuable for human activity on Earth and beyond. Space mining has been mainly relegated to the realm of science fiction, and was not treated seriously by the international community. The private industry is starting to assemble towards space mining, and success on this front would have major impact on all nations. We present in this paper a review of current space mining ventures, and the international legislation, which could stand in their way - or aid
them in their mission. Following that, we present the results of a role-playing simulation in which the role of several important nations was played by students of international relations. The results of the simulation are used as a basis for forecasting the potential initial responses of the nations of the world to a successful space mining operation in the future.

ABSTRACT: Abstract The European Space Agency (ESA) has twenty-two Member States with a variety of governance structures and strategic priorities regarding their space activities. The objective of this paper is to provide an up-to-date overview and a holistic assessment of the national space governance structures and strategic priorities of the eleven smaller Member States (based on annual ESA contributions). A link is made between the governance structure and the main strategic objectives. The specific needs and interests of small and new Member States in the frame of European Space Integration are addressed. The first part of the paper focuses on the national space governance structures in the eleven smaller ESA Member States. The governance models of these Member States are identified including the responsible ministries and the entities entrusted with the implementation of space strategy/policy and programmes of the country. The second part of this paper focuses on the content and analysis of the national space strategies and indicates the main priorities and trends in the eleven smaller ESA Member States. The priorities are categorised with regards to technology domains, the role of space in the areas of sustainability and the motivators for space investments. In a third and final part, attention is given to the specific needs and interests of the smaller Member States in the frame of European space integration. ESA instruments are tailored to facilitate the needs and interests of the eleven smaller and/or new Member States.

ABSTRACT: Abstract Long term variations of the middle atmospheric thermal structure in the upper stratosphere and lower mesosphere (20–90km) have been studied over Ahmedabad (23.1°N, 72.3°E, 55m amsl), India using SABER (Sounding of the Atmosphere using Broadband Emission Radiometry) onboard TIMED (Thermosphere, Ionosphere, Mesosphere, Energetics and Dynamics) observations during year 2002 to year 2014. For the same period, three different atmospheric models show over-estimation of temperature (∼10K) near the stratopause and in the upper mesosphere, and a signature of under-estimation is seen above mesopause when compared against SABER measured temperature profiles. Estimation of monthly temperature anomalies reveals a semiannual and ter-annual oscillation moving downward from the mesosphere to the stratosphere during January to December. Moreover, Lomb Scargle periodogram (LSP) and Wavelet transform techniques are employed to characterize the semi-annual, annual and quasi-biennial oscillations to diagnose the wave dynamics in the stratosphere-mesosphere system. Results suggested that semi-annual, annual and quasi-biennial oscillations are exist in stratosphere, whereas, semi-annual and annual oscillations are observed in mesosphere. In lower mesosphere, LSP analyses revealed conspicuous absence of annual oscillations in altitude range of ∼55–65km, and semi-annual oscillations are not existing in 35–45km. Four monthly oscillations are also reported in the altitude range of about 45–65km. The temporal localization of oscillations using wavelet analysis shows strong annual oscillation during year 2004–2006 and 2009–2011."
Bibliography on “semantic web”

Abdou, Mohamed, Sayed AbdelGaber, and Marwa Farhan. "A Semi-Automated Framework for Semantically Annotating Web Content." Future Generation Computer Systems, In Press doi: 10.1016/j.future.2017.11.008. https://doi.org/10.1016/j.future.2017.11.008. ABSTRACT: Today’s web is growing very fast and having a strong online presence is becoming critical for businesses. In contrast, websites in search results using traditional Search Engine Optimization (SEO) techniques became less effective in achieving the desired visibility. To overcome the limitations of traditional SEO, some recent trends are adopting the technologies of Semantic Web to annotate web content with Semantic Markup that can be understood by search engines. However, the balance between the accuracy of annotations and the automation level still under investigation. This research proposes a semi-automated framework that provides a high level of accurate annotations with minimum user interaction, based on Schema.org; a well-accepted ontology for ordinary things in life. The proposed framework aims to analyze the contents of web documents and extract the unique keywords and key phrases that best describe that content. Then, annotate those keywords and key phrases with the appropriate Schema.org vocabularies. This will reflect on the understanding level of the search engines to the web contents and accordingly a better visibility in the search results.

Albarghothi, Ali, Feras Khater, and Khaled Shaalan. "Arabic Question Answering using Ontology." Procedia Computer Science, 117, no. Supplement C (2017): 183-191 doi: 10.1016/j.procs.2017.10.108. https://doi.org/10.1016/j.procs.2017.10.108. ABSTRACT: Currently, with the massive amount of data that is being posted on the web at a rapid pace, users regularly have inquiries and they expect to find out short and precise answers. Semantic web and ontology technologies are becoming the essential components to represent domain-specific data that can be utilized in Question Answering System (QAS). In this paper, we introduce an Arabic QAS based on the domain knowledge or ontology in order to answer natural language inquiries. Prior to the implementation, it was crucial to perform some Natural Language Processing (NLP) tasks that assisted in analyzing the questions such as normalization, tokenizing, removing the stop words, stemming and tagging. Furthermore, we present how to develop the ontology through the Protégé tool, how to translate the inquiries into triple patterns and build the SPARQL queries which are the mechanism to retrieve the answer from Resource Description Framework (RDF) data. As far as Arabic is concerned, Arabic Question Answering (QA) is still limited and did not reach the similar level of English QA because of challenges on the Arabic language, for example, complexity in morphology derivational and inflectional, and words suffer from the scare of vowels. In addition, Arabic language orthography does not use capital letters or the like, which affect on Named Entity Recognitions. Hence, it is an opportunity to focus on Arabic QA using ontology toward getting a clear concept of this semantic-based approach. The result of the experimental results demonstrates the feasibility of constructing a QAS based on ontology. The proposed model has achieved promising results with accuracy of 81%, which provides an important indication for further in-depth study and analysis."

Alruqimi, Mohammed and Noura Aknin. "Bridging the Gap between the Social and Semantic Web: Extracting Domain-Specific Ontology from Folksonomy." Journal of King Saud University - Computer and Information Sciences, In Press(2017) doi: 10.1016/j.jksuci.2017.10.005. https://doi.org/10.1016/j.jksuci.2017.10.005. ABSTRACT: Folksonomies have become very popular as means to organize large sets of resources shared over the Social Web. The bottom-up nature of folksonomies has proved to be an interesting alternative to the current effort at semantic web ontologies since folksonomies provide a rich terminology generated by large user-communities. Besides, ontologies extracted from folksonomies can represent the intelligence collective of social communities. Such ontologies also represent a core element of a new feature of the Web, the Internet of Things. Many research studies have captured semantics in folksonomies, some of which have developed ontologies from
folksonomy. However, the formal specific-domain ontology consisting of domain-dependent relations has not been researched yet. This paper introduces an algorithm for deriving a domain-specific ontology from folksonomy tags. The proposed algorithm starts by collecting a domain-specific terminology; next, discovering a pre-defined set of conceptual relationships among the domain terminologies. The evaluation of the algorithm, using a dataset extracted from BibSonomy, demonstrated that the algorithm could effectively learn domain ontologies consisting of domain concepts linked by meaningful and high accurate relationships. Furthermore, the proposed algorithm can help reduce common issues related to tag ambiguity and synonymous tags.


ABSTRACT: Abstract Internet has been source of knowledge for decades. The pool of information cannot be sustained in absence of the network of networks. Internet has many useful applications in commercial, social and educational areas. In today’s scenario, e-learning is also one of the useful applications in the world of Internet. The medium of e-learning has achieved advancement in various fields such as adaptive e-learning systems. The branch of computer science with psycholinguistics has done tremendous job in providing technical solutions to learners. However, learning disorders on the platform of e-learning still require lots of research. Therefore, this paper provides a personalized assessment model for alphabet learning with learning objects for children’s who face dyslexia. The cognitive inclination of dyslexic learner has been determined using assessment model. This paper studies the cognitive potential of dyslexic learner and has built a personalized e-learning platform to alleviate their alphabetical problems.

Bibliography on “smart cities”


ABSTRACT: The proliferation of smart city policies worldwide in recent years has seen digital infrastructure, urban data and software design play increasingly central roles in the contemporary governance of the city. This article addresses the role of urban data platforms in supporting the delivery of smart city initiatives by city governments, with a view to establishing a typology for effective strategic investments in urban data interfaces aligned to governance objectives. Drawing on a range of different interfaces and approaches, the article discusses the proliferation of urban data platforms through a set of distinct functions and typologies. The discussion aims to position urban data platforms as key sites for the development of new governance models for smart cities, and forums in which decision-makers, researchers, urbanists and technologists seek to test the potentials and pitfalls of data-driven methodologies in addressing a range of contemporary urban challenges.


ABSTRACT: The Internet of Things (IoT) comprises several communication network technology standards and most of them are currently operating in silos. However, to achieve the IoT paradigm’s main goal, which is to deliver efficient and high-quality smart services, interoperability among various IoT standards is necessary. Therefore, interoperability and quality of service (QoS) provisioning are two of the main requirements for current and future standards operating within the IoT ecosystem. To understand how current standards can or cannot meet these requirements, first, we analyze high-level technical standards for some application domains within the IoT ecosystem. Second, with a focus on some common communication network standards, we present the QoS requirements of smart services in the IoT. Finally, we highlight the mechanisms employed by these standards in enabling interoperability and QoS in the IoT environment.


ABSTRACT: Connected Communities (CCs) are socio-technical systems that rely on an
Information and communication technology (ICT) infrastructure to integrate people and organizations (companies, schools, hospitals, universities, local and national government agencies) willing to share information and perform joint decision-making to create sustainable and equitable work and living environments. We discuss a research agenda considering CCs from three distinct but complementary points of view: CC metaphors, models, and services.


**ABSTRACT:** The huge amount of data generated by devices, vehicles, buildings, the power grid, and many other connected things, coupled with increased rates of data transmission, constitute the big data challenge. Among many areas associated with the Internet of Things, smart grid and electric vehicles have their share of this challenge by being both producers and consumers (i.e., prosumers) of big data. Electric vehicles can significantly help smart cities to become greener by reducing emissions of the transportation sector and play an important role in green smart cities.

In this article, we first survey the data analytics techniques used for handling the big data of smart grid and electric vehicles. The data generated by electric vehicles come from sources that vary from sensors to trip logs. Once this vast amount of data are analyzed using big data techniques, they can be used to develop policies for siting charging stations, developing smart charging algorithms, solving energy efficiency issues, evaluating the capacity of power distribution systems to handle extra charging loads, and finally, determining the market value for the services provided by electric vehicles (i.e., vehicle-to-grid opportunities). This article provides a comprehensive overview of the data analytics landscape on the electric vehicle integration to green smart cities. It serves as a roadmap to the future data analytics needs and solutions for electric vehicle integration to smart cities.


**ABSTRACT:** Cities are becoming smarter and smarter. While the rapid progress in smart city technologies is changing cities and the lifestyle of the people, it creates also huge attack surfaces for potential cyber attacks. The potential vulnerabilities of smart city products and imminent attacks on smart city infrastructure and services will have significant consequences that can cause substantial economic and noneconomic losses, even chaos, to the cities and the people. In this paper we study alternative economic solutions ranging from incentive mechanisms to market-based solutions to motivate governments, smart product vendors, and vulnerability researchers and finders to improve the cybersecurity of smart cities and e-government. These solutions can be integrated into policy instruments in defending smart cities and e-governments against cyber attacks.


**ABSTRACT:** Internet of Things (IoT) provides to everyone new types of services in order to improve everyday life. Through this new technology, other recently developed technologies such as Big Data, Cloud Computing, and Monitoring could take part. In this work, we survey the four aforementioned technologies in order to find out their common operations, and combine their functionality, in order to have beneficial scenarios of their use. Despite the boarder concept of a smart city, we will try to investigate new systems for collecting and managing sensors’ data in a smart building which operates in IoT environment. As a bases technology for the proposed sensor management system, a cloud server would be used, collecting the data that produced from each sensor in the smart building. These data are easy to be managed and controlled from distance,
by a remote (mobile) device operating on a network set up in IoT technology. As a result, the proposed solutions for collecting and managing sensors’ data in a smart building could lead us in an energy efficient smart building, and thus in a Green Smart Building.


ABSTRACT: The recent development in the technology brings the concept of Smart City that is achieved through real-time city related intelligent decisions by analyzing the data harvested from various smart systems in the city using millions of sensors and devices connected over the Internet, termed as Internet of Things (IoT). These devices generate the overwhelming volume of high-speed streaming data, termed as Big Data. However, the generation of city data at a remote location and then transmitting it to central city servers for analysis purpose raises the concerns of security and privacy. On the other hand, providing security to such Big Data streaming requires a high-speed security system that can work in a real-time environment without providing any delay that may slow down the overall performance of the Smart City System. To overthrown these challenges, in this paper, we proposed an efficient and real-time Smart City security system by providing strong intrusion detection at intelligent city building (ICB) and also a security protocol to protect the communication between the remote smart system(RSS)/User and the city analysis building, i.e., ICB. The proposed communication security protocol consists of various phases, i.e., registration phase, session key exchange phase, session key revocation phase, and data transmission phases from RSS to ICB as well as from User to ICB. Vast security analyses are performed to evaluate the credibility of the system. The proposed system is also evaluated on efficiency in terms of computation cost and throughput of overall functions used in the system. The system’s evaluation and the comparative study with existing system show that the prosed system is secure, more efficient, and able to work in a real-time, high-speed Smart City environment.


ABSTRACT: This article presents a structural modeling analysis of the performance determinants of urban attractiveness, in terms of resident population and international tourism demand, in 40 global cities. The analysis focuses on the impacts of a diverse set of innovative drivers of urban value creation and sustainable solutions for city development (urban functions), which are collectively subsumed under the heading of ‘sustainable smart city’. Recognizing that the dynamics and growth processes related to these urban functions may have different impacts on different types of stakeholders, potentially leading to the emergence of serious conflicts between guests/visitors and residents, we aim to derive model-based implications for urban and tourism management in the cities concerned in order to move towards the sustainable future city as ‘a place 4 all’. The results of our latent growth curve model confirm the existence of different impacts of urban functions on visitors’ and residents’ attractiveness. Cultural dynamics appears to be a major determinant for attracting new residents and supporting a strong international tourism industry. From an economic perspective, purely economic strength (in terms of absolute growth) appears to enhance city attractiveness for residents, while the dynamics observed in research and development activities influences the quality of employment instead of being a direct driver of population growth. While the social aspects of sustainability (framed under the concept of livability) and the urban environment typically exert higher impacts on urban attractiveness, accessibility appears mostly relevant for visitors. Our analysis suggests an uneasy balance between livability, environment, and population and visitor volume and growth.

**ABSTRACT:** This paper presents the ENERSI platform, an energy information system that provides advanced energy services by means of integrating energy related data from multiple domains and formats using Semantic Web technologies. The platform services can provide qualified information at different scales – from building to district, city and region – to different kind of users – such as building owners, city planner, energy agencies, architects, contractors and consultants – to take decisions aimed at improving the building energy performance in their respective decision-making realms.


**ABSTRACT:** Planning a visit to Expo Milano 2015 or simply touring in Milan are activities that require a certain amount of a priori knowledge of the city. In this paper, we present the process of building such comprehensive knowledge bases that contain descriptions of events and activities, places and sights, transportation facilities as well as social activities, collected from numerous static, near- and real-time local and global data providers, including hyper local sources such as the Expo Milano 2015 official services and several social media platforms. Entities in the 3cixty KB are deduplicated, interlinked and enriched using semantic technologies. The 3cixty KB is empowering the ExplorMI 360 multi-device application, which has been officially endorsed by the E015 Technical Management Board and has gained the patronage of Expo Milano in 2015, thus has offered a unique testing scenario for the 20 million visitors along the 6 months of the exhibit. In 2016–2017, new knowledge bases have been created for the cities of London, Madeira and Singapore, as well as for the entire French Cote d’Azur area. The 3cixty KB is accessible at [https://kb.3cixty.com/sparql](https://kb.3cixty.com/sparql) while ExplorMI 360 at [https://www.3cixty.com](https://www.3cixty.com) and in the Google Play Store and Apple App Store.

https://doi.org/10.1016/j.tepol.2017.10.005.

**ABSTRACT:** Smart city initiatives have been researched primarily in the developed country context. In developing countries, however, emerging technologies are enabling progress on urban functionality, productivity, and livability. A deeper understanding of facilitative policy conditions unique to developing countries would be useful to both theory and practice. This study presents empirically grounded insights about the policy implications of smart city development in developing countries, based on surveys of experts from the public and private sectors in 10 Vietnam cities. The study makes three contributions. First, it provides new evidence that pursuing smart city development (SCD) is not a mere alternative but a crucial strategic imperative. While facing persistent problems, Vietnam’s cities exhibit significant and rapidly improving readiness for SCD. Second, the study provides new insights into related policy issues and challenges, including the positive link between e-government development and control of corruption, the risk of bias toward operational management over institutional reform, and the lack of a clear development strategy. Finally, the study proposes a model for guiding smart city initiatives in developing countries.

https://doi.org/10.1016/j.giq.2017.05.001.

**ABSTRACT:** The adoption of information and communication technology (ICT) applications for the...
development of innovative, sustainable, and smart cities has become a new model for municipal cooperation between government and corporations. Smart cities contribute to social stability and economic prosperity by encouraging and enabling corporations to invest their resources and expertise in the cities, and by providing more prosperity and contentment for their citizens. Smart city services provide citizens with an improved living environment and increase their overall quality of life. Since the citizens are the users of the services, it is vitally important that their ideas and perspectives are taken into account during the planning and management of such services. This study surveyed citizens in Taiwanese cities that had all participated in the Intelligent Community Forum smart city campaigns at least once. The findings reveal that citizens are willing to accept and use ICT-based smart city services if the services are designed with innovative concepts that secure their privacy and offer a high quality of services. The more they use the services, the higher the quality of life achieved. The only factor that does not influence citizens' acceptance and usage of ICT-based smart city services is their city engagement. The study contributes to the academic literature and also provides practical pointers for cities and technology suppliers embarking on smart city initiatives. 


ABSTRACT: Integrating sensors and cloud computing, sensor-cloud is a very powerful system for users to obtain big data in green city. In this article, toward big data in green city, we first review the latest work concerning big data and sensor-cloud, respectively. Further, we introduce three types of sensor-cloud (i.e., PSC, ASC, and SSC) for green city. Specifically, about PSC, participatory sensing is incorporated into sensor-cloud for sensing big data. In terms of ASC, an agent is incorporated into sensor-cloud for transmitting big data. For SSC, a social network is incorporated into sensor-cloud for sharing big data. Finally, the open research issues with respect to big data and sensor-cloud are discussed, respectively. We hope this article can serve as enlightening guidance for future research regarding big data in green city.

Bibliography on “social media”


ABSTRACT: The influence of advertising on social networks and its effect on young people’s self-image has been studied. This study first explored the frequency of published videos reposted on social networks using different Application Programming Interfaces as search engines. The study also implemented self-valuation surveys assessed by experts and distributed among mental health professionals who assessed the influence of these social networks. Finally, the survey was designed regarding social networks and body assessment and distributed among Córdoba university students (N=328). The majority of health professionals concluded that there is an elevated influence of social networks on eating disorders, assessing advertising as a risk factor with a value of 4.60 out of 5. Young people’s perceptions of their body image indicate that women’s degree of satisfaction is highly correlated with the frequency of their connections to social networks, with the body image those women present and with the effect of advertising. Conversely, this high correlation and influence does not exist in men. 

ABSTRACT: This paper presents an important concept of Internet of People, a social network analysis approach to perform Big Data Analytics. The paper describes the development, management implications and analysis. To illustrate six points in the management issues, an in-house development of a SocialNetwork API with six functions has been demonstrated. The proposed method is focused on processing the contacts who click like or comment on the author's posts, as well as the queries and visualization. Results can be extracted and presented in data visualization. Six functions in the SocialNetwork API have evaluation tests, including a large scale of 50,000 simulations completed within 60,000 s. Results support our case of Big Data processing for social network analysis can be equivalent to CRM, ERP and MIS. Additionally, there are no costs involved. Related topics have been discussed in details. Our research contributions have been consolidated since our work have met research challenges for social network analysis and six management implications.


ABSTRACT: Research shows that effective marketing and R&D interface is pivotal in a company's new product development performance and future competitiveness. The increased popularity of social media promised to enhance interaction, collaboration, and networking between the two functions. However, there is limited knowledge regarding the key activities, infrastructure requirements, and potential benefits of social media in the marketing and R&D interface. This study aims to advance the current understanding of social media engagement strategies, which facilitates improved marketing and R&D interfaces and ultimately NPD performance for manufacturing companies. Based on a multiple-case study in two manufacturing companies, this study first presents the role of social media in facilitating improved marketing and R&D interface within a B2B context. Second, it presents the adoption process of the social media engagement strategy for an evolving marketing and R&D interface. The adoption process is divided into three phases, namely coordination, cooperation, and coproduction, to provide detailed insights regarding full-scale social media engagement. Taken together, the study provides novel insights into industrial marketing management literature by exemplifying the role of social media and proposing a systematic social engagement strategy for improved marketing and R&D interface in the manufacturing industry.


ABSTRACT: Online social networks, such as Facebook and Sina Weibo, have become the most popular platforms for information sharing and social activities. Spammers have utilized social networks as a new way to spread spam information using fake accounts. Many detection methods have been proposed to solve this problem, and have been proved to be successful to some extent. However, as the spammers' strategies for evading detection evolve, many existing methods lose their efficacy. A major limitation of previous approaches is that they are using the features from a static time point to detect spammers, without considering temporal factors. In this study, we approach the challenge of spammer detection by leveraging the temporal evolution patterns of users. We propose a dynamic metric to measure the change in users' activities and design new features to quantify users' evolution patterns. Then we develop a framework by combining unsupervised and supervised learning to distinguish between spammers and legitimate users. We test our method on a real world dataset with a large number of users. The evaluation results show that our approach can efficiently distinguish the difference between spammers and legitimate users regarding temporal evolution patterns. It also demonstrates the high level of similarity in the spammers' temporal evolution patterns. Compared with other detection methods, our method can achieve better performance. To the best of our knowledge, our study is the first
to provide a generic and efficient framework to depict the evolutional pattern of users. It can handle the problem of spammers updating their strategies to evade detection and is a valuable reference for this research field.

https://doi.org/10.1016/j.chb.2017.10.033.
ABSTRACT: Two experiments examined the effects of different sources (celebrity versus peer consumer) of celebrity-brand-related user-generated content (UGC) embedded in a social networking site (SNS). Consistent with the basic premises of warranting theory (stronger effects of other-endorsement than self-endorsement) and social identity theory (more positive effects of ingroup than outgroup), Experiment 1 demonstrated more positive effects of celebrity brand endorsements posted on a peer consumer's (other; in-group identity) Facebook profile page on source credibility perception and parasocial interaction with the celebrity than celebrity brand endorsements posted on the celebrity's own (self; out-group identity) Facebook profile page. Social identification mediated the effects of the Facebook profile source on parasocial interaction with the celebrity. Experiment 2 indicated that a movie star's Facebook presence contributed to a more positive attitude toward the celebrity. A peer Facebook user's movie endorsement UGC resulted in greater advertising believability, more positive attitude toward, and more positive emotional reactions toward system-generated content (SGC) sponsored Facebook advertising than the movie star's self-promotion on his own Facebook page. In addition, movie involvement moderated the relationship between the Facebook profile source and advertising effectiveness.

https://doi.org/10.1016/j.ijinfomgt.2017.08.003.
ABSTRACT: Social media, such as Twitter and Facebook, plays a critical role in disaster management by propagating emergency information to a disaster-affected community. It ranks as the fourth most popular source for accessing emergency information. Many studies have explored social media data to understand the networks and extract critical information to develop a pre- and post-disaster mitigation plan. The 2016 flood in Louisiana damaged more than 60,000 homes and was the worst U.S. disaster after Hurricane Sandy in 2012. Parishes in Louisiana actively used their social media to share information with the disaster-affected community – e.g., flood inundation map, locations of emergency shelters, medical services, and debris removal operation. This study applies social network analysis to convert emergency social network data into knowledge. We explore patterns created by the aggregated interactions of online users on Facebook during disaster responses. It provides insights to understand the critical role of social media use for emergency information propagation. The study results show social networks consist of three entities: individuals, emergency agencies, and organizations. The core of a social network consists of numerous individuals. They are actively engaged to share information, communicate with the city of Baton Rouge, and update information. Emergency agencies and organizations are on the periphery of the social network, connecting a community with other communities. The results of this study will help emergency agencies develop their social media operation strategies for a disaster mitigation plan.

ABSTRACT: How do social media differ from traditional media in their coverage of disruptive technological change? We explore how two entrants transforming the personal transportation and
accommodation sectors are covered in social and traditional media. Using content analysis, we conclude that these two forms of media differ substantially. Traditional media is focused on how the two entrants affect society and their respective sectors at large, whilst social media instead function as accelerators for the entrants as they receive predominantly positive coverage. Therefore, our findings suggest that the rise of social media may accelerate the growth of disruptive innovations which can, in turn, reduce the window for response.

ABSTRACT: In the past few years, social media has changed the way people seek and share health information. However, despite its significant advantages, social media still faces many challenges in user adoption and participation regarding health information. This study focuses on the factors that affect users' intentions to seek and share health information on social media. A net valence model was developed based on social support theory and prior e-service adoption research. Two studies, one in China and the other in Italy, were conducted to test the model. The results show that the proposed net valence model can effectively explain users' intentions to seek and share health information on social media. The results also show important cultural differences. An extensive literature review reveals that this study is among the first to investigate the non–healthcare professionals' intentions to seek and share health information in the context of social media using cross-culture samples."

ABSTRACT: Social media have been widely embraced by governments for information dissemination and engagement but less is known about their value as information sources. Crowdsourced content from social media can improve inclusivity in policy development but it is not always clear how it can form part of policy evidence. The paper builds on the conceptual framework of crowd capabilities to examine the value of social media data in evidence-based policy. Acquisition and assimilation – the two elements of crowd capabilities – drive our exploratory case analysis in the context of agricultural policies in the UK. The study combined qualitative data from interviews and workshops with an analysis of networks of farmers on Twitter. Policy makers were broadly positive about the immediacy, cost-effectiveness and diversity of useful input that can be sourced from online sources. Limitations were identified in terms of representation and inclusion of participants in large datasets that are sourced from open platforms. We compare social media data to traditional sources of evidence and further reflect on the new capabilities that can support the needs of policy makers in this endeavor.

https://doi.org/10.1016/j.bdr.2017.10.003.
ABSTRACT: One of the most relevant and widely studied structural properties of networks is their community structure. Detecting communities is of great importance in social networks where systems are often represented as graphs. With the advent of web-based social networks like Twitter, Facebook and LinkedIn, community detection became even more difficult due to the massive network size, which can reach up to hundreds of millions of vertices and edges. This large graph structured data cannot be processed without using distributed algorithms due to memory constraints of one machine and also the need to achieve high performance. In this paper, we present a novel hybrid (shared + distributed memory) parallel algorithm to efficiently detect high quality communities in massive social networks. For our simulations, we use synthetic
graphs ranging from 100K to 16M vertices to show the scalability and quality performance of our algorithm. We also use two massive real world networks: (a) section of Twitter-2010 network having ≈41M vertices and ≈1.4B edges (b) UK-2007 (.uk web domain) having ≈105M vertices and ≈3.3B edges. Simulation results on MPI setup with 8 compute nodes having 16 cores each show that, upto ≈6X speedup is achieved for synthetic graphs in detecting communities without compromising the quality of the results.


ABSTRACT: There is a strong interest among academics and practitioners in studying branding issues in the big data era. In this article, we examine the sentiments toward a brand, via brand authenticity, to identify the reasons for positive or negative sentiments on social media. Moreover, in order to increase precision, we investigate sentiment polarity on a five-point scale. From a database containing 2,282,912 English tweets with the keyword 'Starbucks', we use a set of 2204 coded tweets both for analyzing brand authenticity and sentiment polarity. First, we examine the tweets qualitatively to gain insights about brand authenticity sentiments. Then we analyze the data quantitatively to establish a framework in which we predict both the brand authenticity dimensions and their sentiment polarity. Through three qualitative studies, we discuss several tweets from the dataset that can be classified under the quality commitment, heritage, uniqueness, and symbolism categories. Using latent semantic analysis (LSA), we extract the common words in each category. We verify the robustness of previous findings with an in-lab experiment. Results from the support vector machine (SVM), as the quantitative research method, illustrate the effectiveness of the proposed procedure of brand authenticity sentiment analysis. It shows high accuracy for both the brand authenticity dimensions' predictions and their sentiment polarity. We then discuss the theoretical and managerial implications of the studies.


ABSTRACT: E-health and telemedicine have had limited success across the European Union (EU), but using online collaborative technologies to support a community of practice may enable a sustainable healthcare community. In this paper we introduce a virtual medical community that enables geographically-dispersed medical experts to collaborate and share their knowledge in order to improve health care provision. This research confirms that media richness is not required for sustainable communities of practice, that there is greater effectiveness in knowledge sharing when virtual medical communities develop into communities of practice, and that communities of practice are sustainable when shared knowledge enhances medical practice.


ABSTRACT: Rapid advancement of social media tremendously facilitates and accelerates the information diffusion among users around the world. How and to what extent will the information on social media achieve widespread diffusion across the world? How can we quantify the interaction between users from different geolocations in the diffusion process? How will the spatial patterns of information diffusion change over time? To address these questions, a dynamic social gravity model (SGM) is proposed to quantify the dynamic spatial interaction behavior among social media users in information diffusion. The dynamic SGM includes three factors that are theoretically significant to the spatial diffusion of information: geographic distance, cultural proximity, and linguistic similarity. Temporal dimension is also taken into account to reflect the dynamic nature of users’ interaction behavior.
account to help detect recency effect, and ground-truth data is integrated into the model to help measure the diffusion power. Furthermore, SocialWave, a visual analytic system, is developed to support both spatial and temporal investigative tasks. SocialWave provides a temporal visualization that allows users to quickly identify the overall temporal diffusion patterns, which reflect the spatial characteristics of the diffusion network. When a meaningful temporal pattern is identified, SocialWave utilizes a new occlusion-free spatial visualization, which integrates a node-link diagram into a circular cartogram for further analysis. Moreover, we propose a set of rich user interactions that enable in-depth, multi-faceted analysis of the diffusion on social media. The effectiveness and efficiency of the mathematical model and visualization system are evaluated with two datasets on social media, namely, Ebola Epidemics and Ferguson Unrest.

ABSTRACT: The Internet and social media are pervasive and transformative forces in contemporary China. The Internet, Social Media, and a Changing China explores the changing relationship between China’s Internet and social media and its society, politics, legal system, and foreign relations.

Bibliography on “spectrum management/spectrum sharing”

doi: 10.1109/MWC.2017.1700085.
http://dx.doi.org/10.1109/MWC.2017.1700085.
ABSTRACT: Research and development of technologies that address the challenges of predicted growth in mobile connections and traffic volume is well known. A major challenge is the cost of meeting the objective, in terms of both infrastructure and deployment. Today, lack of dynamic control across wireless network resources is leading to unbalanced spectrum loads and a perceived capacity bottleneck. The solutions proposed by SPEED-5G through extended dynamic spectrum access (eDSA) address traffic allocation over heterogeneous wireless technologies, better load balancing across available spectrum bands, and capacity boosting through aggregation of available resources while ensuring fair coexistence. The objective of this article is to present a new framework for MAC and RRM layers for supporting eDSA and requirements of the next-generation networks.

ABSTRACT: We present a novel interference free dual-hop cooperative spectrum sharing protocol in cognitive radio networks exploiting spatial modulation (SM) at both primary transmitter (PT) and secondary transmitter (ST). A ST equipped with multi-antenna acts as a half-duplex decode-and-forward relay for the primary system. During phase-1, SM is invoked at PT, while ST keeps silent. The information bit stream of PT is mapped into two different sets: the M-ary phase shift keying (M-PSK)/M-ary quadrature amplitude modulation (M-QAM) bits and the antenna index. The ST then exploits iterative-maximum ratio combining (i-MRC) technique to de-map the block of information bits, transmitted by PT. During phase-2, ST forwards the primary data by activating only one antenna based on its own secondary data exploiting the concept of SM. The PT's data is then retrieved at the primary receiver (PR) and the secondary receiver (SR) recover its own desired data by detecting only the transmit antenna indices of ST using i-MRC. As a
result, mutual interference between primary and secondary systems is avoided and interference cancellation techniques at the PR and SR are no longer needed. In the proposed protocol, the primary user does not need to lease its spectrum or time slots to the secondary user in exchange for cooperation. Moreover, power of ST does not need to be distributed for primary and secondary transmission simultaneously during phase-2. The simulation and analytical results are presented to show effectiveness of the proposed protocol compared to conventional spectrum leasing and superposition coding based overlay protocols.

https://doi.org/10.1016/j.matpr.2017.06.369.
ABSTRACT: This paper evaluates the throughput performance and outage probability of a secondary user (SU) in a decode-and-forward (DF) relaying network based on wireless energy harvesting under cognitive radio constraint. The energy constrained relay node first harvests energy through radio-frequency (RF) signals from the source node. Next, the relay node uses the harvested energy to forward the decoded source information to the destination node. The power transmitted by source and relay node is constrained by the tolerable interference threshold of the primary unit receiver. The source node transfers energy and information to the relay node through power splitting-based relaying (PSR). In PSR, the relay splits the received power for energy harvesting and information processing. The interference caused by a primary unit transmitter at the SU relay and destination nodes is also considered. Considering wireless energy harvesting constraint at the relay node, we analyse the achievable throughput and outage performance of a cognitive DF relaying network. We study the impact of different system parameters such as power splitting ratio, primary transmitter power and tolerable interference threshold of PU receiver on the throughput and outage performance of SU.

ABSTRACT: The future generation networks (5 G) are expected to achieve high data rates, reduced latency, increased spectral efficiency and energy efficiency of the system. Since the available spectrum is a scarce resource, its efficient utilization is the prime focus of the next generation networks. Spectrum Sharing is a key aspect that is gaining significant attention as it can prove to be beneficial in meeting the above requirements. In this paper we present an exhaustive survey of spectrum sharing for future generation networks. We discuss the different techniques and methods of spectrum sharing based on which a general architecture has been presented. Next, we discuss spectrum sensing, network selection and channel allocation, power optimization in spectrum sharing as well as the security issues associated. Based on the survey a four layer architecture has been proposed depicting the complete spectrum sharing scenario from spectrum sensing till the security issues. Modern technologies such as Massive MIMO, SWIPT, spectrum harvesting, spectrum relaying have been incorporated in the architecture for optimizing the power during spectrum sharing. A detailed analysis of security attacks has also been presented in the paper. Two application scenarios have been discussed where in spectrum sharing can offer huge advantages to meet the high bandwidth requirements. The paper also includes a list of the current projects that are being conducted by various research groups and institutions on spectrum sharing, for the next generation networks.

**ABSTRACT:** Utility sector reform spread across the developing world in the 1980s and 1990s. In Egypt, as in many cases, the pace and nature of reform has been challenged by a state-owned national incumbent. However, in the Egyptian telecommunications sector, rapid growth in the cellular market has overtaken the archaic fixed-line system. Hence, the national monopoly provider, Telecom Egypt (TE), has been stripped of its market power as the market diversified. The implemented public sector reform and privatization placed efficiency pressures on TE resulting in improved outcomes for a range of stakeholders, consumers, workers, and the government, including reduced prices, increased access, and improved service quality. This experience offers lessons for policy makers and researchers about liberalization in the face of entrenched state interests. However, there are nuances in the findings relating to market type, that is, fixed-line versus cellular, residential versus non-residential, and national versus international. Despite attempted improvements, direct competition in its retail market has led to deterioration in TE's financial performance, although this has been partially offset by its monopoly supply of an essential input and a degree of protection provided by the regulator sympathetic to TE. The evidence from this case study supports the concept of a staggered introduction of competition. However, protecting inefficient market insiders, be it firms or workers, is always at the expense of potentially more efficient outsiders. 


**ABSTRACT:** The increased economic importance of digital services has profoundly changed the power structure in telecommunications and media markets. Although these services sometimes directly compete with traditional telecommunications services, the regulatory obligations for both players differ significantly. This article discusses three important areas deemed relevant in order to define a coherent regulatory framework and to account for the specific peculiarities of digital markets: First, challenges associated with assessing market power in digital markets. Second, challenges in harmonizing different regulatory obligations for digital services, and third, the vital role of data and data protection in the context of data-driven business models.


**ABSTRACT:** As the telecommunication market in China becomes increasingly mature, operators have begun to focus their primary effort on user management; within this focus, determining the proper tariff package for users and offering them relevant recommendations are key issues to resolve. This paper introduces a matching model that links tariff packages and users' usage behavior (e.g., the total minutes used, data usage, etc.) based on the market segmenting theory. Microsoft Visual Fox Pro 9.0 is selected as the development tool to implement the matching model, while the tariff packages and user behavior data for a city branch of China Mobile are used to validate the model. 


**ABSTRACT:** THE CONSUMER TECHNOLOGY ASSOCIATION estimated that residents of the United
States bought 183 million smartphones in 2016. There are already as many TVs in this country as there are people. That’s a lot of electronics, and these numbers are just going up. On balance, all this technology is probably making our lives better. But there’s a downside, too: The stuff often malfunctions. Unlike the 30-year-old mixer on your kitchen counter that refuses to die, new technology—especially the smart devices with fancy, embedded electronics—breaks more quickly. That trend, confirmed by a recent study by the German government, applies not just to delicate products like smartphones and tablets but also to equipment we would expect to last for a long time—like televisions, washing machines, and even tractors.

Bibliography on “telecommunication/ICT policy and law”


ABSTRACT: Utility sector reform spread across the developing world in the 1980s and 1990s. In Egypt, as in many cases, the pace and nature of reform has been challenged by a state-owned national incumbent. However, in the Egyptian telecommunications sector, rapid growth in the cellular market has overtaken the archaic fixed-line system. Hence, the national monopoly provider, Telecom Egypt (TE), has been stripped of its market power as the market diversified. The implemented public sector reform and privatization placed efficiency pressures on TE resulting in improved outcomes for a range of stakeholders, consumers, workers, and the government, including reduced prices, increased access, and improved service quality. This experience offers lessons for policy makers and researchers about liberalization in the face of entrenched state interests. However, there are nuances in the findings relating to market type, that is, fixed-line versus cellular, residential versus non-residential, and national versus international. Despite attempted improvements, direct competition in its retail market has led to deterioration in TE’s financial performance, although this has been partially offset by its monopoly supply of an essential input and a degree of protection provided by the regulator sympathetic to TE. The evidence from this case study supports the concept of a staggered introduction of competition. However, protecting inefficient market insiders, be it firms or workers, is always at the expense of potentially more efficient outsiders.


ABSTRACT: Swift developments in the emerging field of blockchain technology have facilitated the birth of 'smart contracts': computerised transaction protocols which autonomously execute the terms of a contract. Smart contracts are disintermediated and generally transparent in nature, offering the promise of increased commercial efficiency, lower transaction and legal costs, and anonymous transacting. The business world is actively investigating the use of blockchain technology for various commercial purposes. Whilst questions surround the security and reliability of this technology, and the negative impact it may have upon traditional intermediaries, there are equally significant concerns that smart contracts will encounter considerable difficulty adapting to current legal frameworks regulating contracts across jurisdictions. This article considers the potential issues with legal and practical enforceability that arise from the use of smart contracts within both civil and common law jurisdictions.

ABSTRACT: Personal data protection regimes across jurisdictions have been faced with new challenges due to certain legislative gaps created by technological advancements and social media eco-systems that place data at the center of connected societies. Realizing this, in April 2016, EU officials adopted Regulation 2016/679 On Protection of Natural Persons with Regard to Processing and Free Movement of Personal Data. At the very same time, the Turkish counterpart finally enforced its Law on protection of such data. This article provides a threefold analysis of the newly introduced reform in relation to the EU rules on data protection and the recently adopted Turkish law, focusing on the citizen, business and governance aspects of the two regimes. Main issues related to cross border transfer of such data are also analysed, considering that in today's digital world it is almost impossible to do business without cross border movement/exchange of data. Since the transfer of personal data to recipients outside the EU/Turkey is normally prohibited unless certain imperative conditions are met, understanding of the lawful data transfer mechanisms in both jurisdictions is essential. Objectives of the article are to examine the two data protection regimes with regard to the new adjustments and assess the extent of consistency between the Turkish law and the reformed EU data protection rules. As being one of the first studies in this context, the article refers to the relevant case law in both regimes. The results of this analysis should be of a particular interest as it comprises a comparative analysis of the legal environment of data protection in the EU and Turkey.

https://doi.org/10.1016/j.clsr.2017.05.016.
ABSTRACT: Along with the development and prevalence of Internet technology, a new financing model – equity crowd-funding – has been rising rapidly in recent years. Against this background, it becomes an important global topic in the field of securities law about how to balance both policy agendas of investor protection and capital formation. By referring to the JOBS Act in the US as a typical example, it is suggested in this article that modern securities law is making an active response to the demand of equity crowd-funding development. Besides expanding the application space of small issues exemption rules, securities law is also going beyond the traditional conceptual division between public and private offerings by introducing a brand-new system of equity crowd-funding exemption.

https://doi.org/10.1016/j.telpol.2017.10.004.
ABSTRACT: The increased economic importance of digital services has profoundly changed the power structure in telecommunications and media markets. Although these services sometimes directly compete with traditional telecommunications services, the regulatory obligations for both players differ significantly. This article discusses three important areas deemed relevant in order to define a coherent regulatory framework and to account for the specific peculiarities of digital markets: First, challenges associated with assessing market power in digital markets. Second, challenges in harmonizing different regulatory obligations for digital services, and third, the vital role of data and data protection in the context of data-driven business models.

ABSTRACT: Big data is an important driver of disruptive innovation that may increase organizations’ competitive advantage. To create innovative data combinations and decrease investments, big data is often shared among organizations, crossing organizational boundaries. However, these big data collaborations need to balance disruptive innovation and compliance to a
strict data protection regime in the EU. This paper investigates how inter-organizational big data collaborations arrange and govern their activities in the context of this dilemma. We conceptualize big data as inter-organizational systems and build on IS and Organization Theory literature to develop four archetypical governance arrangements: Market, Hierarchy, Bazaar and Network. Subsequently, these arrangements are investigated in four big data collaboration use cases. The contributions of this study to literature are threefold. First, we conceptualize the organization behind big data collaborations as IOS governance. Second, we show that the choice for an inter-organizational governance arrangement highly depends on the institutional pressure from regulation and the type of data that is shared. In this way, we contribute to the limited body of research on the antecedents of IOS governance. Last, we highlight with four use cases how the principles of big data, specifically data maximization, clash with the principles of EU data protection regulation. Practically, our study provides guidelines for IT and innovation managers how to arrange and govern the sharing of data among multiple organizations.


ABSTRACT: This article conjectures that the legacy industry-specific regulation that has governed the telecommunications sector for a long time is in basic conflict with the dynamics and product innovations that characterize the modern information and communications technology (ICT) sector. Reasons for the failure of legacy regulation to promote product innovations are explained and proposals for alternatives, such as deregulation and regulatory reform are discussed. Both regulation and competition policy are more difficult for ICT than for other sectors. Therefore both, regulation and competition policy may need reforms in order to deal with new problems. The most drastic and most realistic alternative to legacy-type regulation remains deregulation and a move to competition policy. Symmetric regulation, smart regulation, quasi-Coasean approaches and subsidies all have some limited applicability to specific situations, but are all associated with complications that have to be resolved, while competition policy is a comprehensive alternative. Last-mile access and gatekeeper access are analyzed as two main areas of legacy regulation, which are in danger of being exported to other ICT areas. Such exports may negatively affect the dynamics of the ICT industry. Rather than being exported, legacy regulations should be reduced in order to enhance product innovations. ".
