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Bibliography on “5G mobile”

http://dx.doi.org/10.1049/iet-ifs.2015.0545.
ABSTRACT: Recently, privacy preserving data mining has been studied widely. Association rule mining can cause potential threat toward privacy of data. So, association rule hiding techniques are employed to avoid the risk of sensitive knowledge leakage. Many researches have been done on association rule hiding, but most of them focus on proposing algorithms with least side effect for static databases (with no new data entrance), while now the authors confront with streaming data which are continuous data. Furthermore, in the age of big data, it is necessary to optimise existing methods to be executable for large volume of data. In this study, data anonymisation is used to fit the proposed model for big data mining. Besides, special features of big data such as velocity make it necessary to consider each rule as a sensitive association rule with an appropriate membership degree. Furthermore, parallelisation techniques which are embedded in the proposed model, can help to speed up data mining process.

doi: 10.1109/ACCESS.2017.2779170.
http://dx.doi.org/10.1109/ACCESS.2017.2779170.
ABSTRACT: It is widely acknowledged that the forthcoming 5G architecture will be highly heterogeneous and deployed with high degree of density. These changes over the current 4G bring many challenges on how to achieve an efficient operation from the network management perspective. In this paper, we introduce revolutionary vision of the future 5G wireless networks, in which operating the wireless networks is no longer limited by hardware or even software. Specifically, by the idea of virtualizing the wireless networks, which has recently gained increasing attention, we introduce the everything-as-a-service (XaaS) taxonomy to light the way towards designing the service-oriented wireless networks. The concepts and challenges along with the research opportunities for realizing XaaS in wireless networks are overviewed and discussed.

ABSTRACT: Mobile social networks and device-to-device (D2D) communications have emerged as promising techniques to support better local advanced services in 5G networks. Nevertheless, the integration of mobile social networks and D2D communications into 5G networks poses pivotal challenges such as how to exploit the social relationships of mobile users (MUs) and manage the interference and resources (i.e., spectrum and energy) in order to improve the performance of D2D communications. To this end, we propose a social-aware energy efficiency optimization solution for D2D communications in 5G networks. In particular, we first analyze and evaluate the influence of social relationships on the performance of D2D communications, which enable us to formulate the energy efficiency optimization (EEO) problem while carefully considering both the social relationships and physical interference between all the MUs. The EEO problem is then
solved for optimal channel mode selection and optimal transmission powers allocated to each MU to maximize the energy efficiency, by utilizing adaptive genetic algorithm. Numerical results show that compared with social-unaware methods, our proposed solution can achieve significant improvement in terms of energy efficiency and system throughput while preserving the quality of service (QoS) for all users by taking into account the spectrum efficiency and transmission power constraints.

Iannacci, Jacopo. "Internet of Things (IoT); Internet of Everything (IoE); Tactile Internet; 5G – A (Not so Evanescent) Unifying Vision Empowered by EH-MEMS (Energy Harvesting MEMS) and RF-MEMS (Radio Frequency MEMS)." Sensors and Actuators A: Physical, 272(2018): 187-198
https://doi.org/10.1016/j.sna.2018.01.038.
ABSTRACT: This work aims to build inclusive vision of the Internet of Things (IoT), Internet of Everything (IoE), Tactile Internet and 5G, leveraging on MEMS technology, with focus on Energy Harvesters (EH-MEMS) and Radio Frequency passives (RF-MEMS). The IoT is described, stressing the pervasivity of sensing/actuating functions. High-level performances 5G will have to score are reported. Unifying vision of the mentioned paradigms is then built. The IoT evolves into the IoE by overtaking the concept of thing. Further step to Tactile Internet requires significant reduction in latency, it being enabled by 5G. The discussion then moves closer to the hardware components level. Sets of specifications driven by IoT and 5G applications are derived. Concerning the former, the attention is concentrated on typical power requirements imposed by remote wireless sensing nodes. Regarding the latter, a set of reference specifications RF passives will have to meet in order to enable 5G is developed. Once quantitative targets are set, a brief state of the art of EH-MEMS and RF-MEMS solutions is developed, targeting the IoT and 5G, respectively. In both scenarios, it will be demonstrated that MEMS are able to address the requirements previously listed, concerning EH from various sources and RF passive components. In conclusion, the frame of reference depicted in this work outlines a relevant potential borne by EH-MEMS and RF-MEMS solutions within the unified scenario of IoT, IoE, Tactile Internet and 5G, making the forecast of future relentless growth of MEMS-based devices, more plausible and likely to take place.

ABSTRACT: In recent years China not only caught up with countries leading the field of wireless mobile technologies but has kept a pace following years of innovation, as mobile technologies like TD-SCDMA and TD-LTE in China have been recognized as international standards by the International Telecommunication Union (ITU). Through case studies of the technological innovation systems (TISs) of 3G (TD-SCDMA), 4G (TD-LTE) and 5G in China, this work advances our understanding of the relationship between technology innovation and TISs, as well as that between the TIS and industry sustainability in the IT field. An innovation system function-based framework is applied to structure the data collection and analyse the results. Extensive documentary research and semi-structured interviews are conducted in this study. The key point of the reasoned argument of our conclusion is that a well-functioned TIS not only facilitates technology development and diffusion, but also promotes the sustainability of the IT industry by pushing forward socio-technical transformation. ".

doi: 10.1109/TMC.2017.2737011.
http://dx.doi.org/10.1109/TMC.2017.2737011.
ABSTRACT: Deployment and demand traces are a crucial tool to study today's LTE systems, as well as their evolution toward 5G. In this paper, we use a set of real-world, crowdsourced traces,
coming from the WeFi and OpenSignal apps, to investigate how present-day networks are deployed, and the load they serve. Given this information, we present a way to generate synthetic deployment and demand profiles, retaining the same features of their real-world counterparts. We further discuss a methodology using traces (both real-world and synthetic) to assess (i) to which extent the current deployment is adequate to the current and future demand, and (ii) the effectiveness of the existing strategies to improve network capacity. Applying our methodology to real-world traces, we find that present-day LTE deployments consist of multiple, entangled, medium- to large-sized cells. Furthermore, although today’s LTE networks are overprovisioned when compared to the present traffic demand, they will need substantial capacity improvements in order to face the load increase forecasted between now and 2020.

doi: 10.1109/ACCESS.2017.2762471.
http://dx.doi.org/10.1109/ACCESS.2017.2762471.
ABSTRACT: Advanced public safety communication (PSC) services call for fast, reliable and low-latency communication technologies, capable of supporting diverse communication modes (aerial, unmanned, vehicular, and peer-to-peer), fast channel dynamics, and ad hoc or mesh structures. For this reason, PSC has been identified as one of the key potential uses cases for the next generation of communication systems, the so-called 5G. In this scenario, the millimeter wave (mmWave) bands and other frequencies above 6 GHz are particularly interesting, since they are largely untapped and offer vastly more spectrum than current cellular allocations in the highly congested bands below 6 GHz, thus enabling orders of magnitude greater data rates and reduced latency. For example, new PSC networks in the mmWave bands could support high-definition video, virtual reality, and other broadband data to large numbers of first responders. Surveillance drones or ambulances could also be provided high-speed connectivity along with machine-type communication for remotely controlled robotic devices entering dangerous areas. However, the way towards this ambitious goal is hindered by a number of open research challenges. In this paper, after a brief introduction to PSC services and requirements, we illustrate the potential of the frequencies above 6 GHz for PSC and discuss the open problems that need to be solved in order to pave this way. Finally, we describe the main components of a test platform for mmWave systems that is functional to the study of such complex scenarios and that we plan to develop as an invaluable tool for realizing mmWave PSC networks.

doi: 10.1109/MCOM.2017.1700451.
http://dx.doi.org/10.1109/MCOM.2017.1700451.
ABSTRACT: Wireless networks comprising unmanned aerial vehicles can offer limited connectivity in a cost-effective manner to disaster-struck regions where terrestrial infrastructure might have been damaged. While these drones offer advantages such as rapid deployment to far-flung areas, their operations may be rendered ineffective by the absence of an adequate energy management strategy. This article considers the multi-faceted applications of these platforms and the challenges thereof in the networks of the future. In addition to providing an overview of the work done by researchers in determining the features of the air-to-ground channel, the article explores the use of drones in fields as diverse as military surveillance and network rehabilitation for disaster-struck areas. It also presents a case study that envisages a scenario in which drones operate alongside conventional wireless infrastructure, thereby allowing a greater number of users to establish a line-of-sight link for communication. This study investigates a power allocation strategy for the microwave base station and the small base stations operating at 28 GHz frequency band. The self-adaptive power control strategy for drones is dependent on the maximum allowable interference threshold and minimum data rate requirements. This study highlights the importance of incorporating the drones in the multi-tier heterogeneous network to extend the network coverage and capacity.
Bibliography on “accessibility and ICTs”

http://doi.acm.org/10.1145/3178564.
ABSTRACT: In this forum we celebrate research that helps to successfully bring the benefits of computing technologies to children, older adults, people with disabilities, and other populations that are often ignored in the design of mass-marketed products. --- Juan Pablo Hourcade, Editor.

doi: 10.1371/journal.pone.0193013.
ABSTRACT: With recent aging demographic trends, the needs for enhancing geo-spatial analysis capabilities and monitoring the status of accessibilities of its citizens with healthcare services have increased. The accessibility to healthcare is determined not only by geographic distances to service locations, but also includes travel time, available modes of transportation, and departure time. Having access to the latest and accurate information regarding the healthcare accessibility allows the municipal government to plan for improvements, including expansion of healthcare infrastructure, effective labor distribution, alternative healthcare options for the regions with low accessibilities, and redesigning the public transportation routes and schedules. This paper proposes a new method named, Seoul Enhanced 2-Step Floating Catchment Area (SE2SFCA), which is customized for the city of Seoul, where population density is higher and the average distance between healthcare-service locations tends to be shorter than the typical North American or European cities. The proposed method of SE2SFCA is found to be realistic and effective in determining the weak accessibility regions. It resolves the over-estimation issues of the past, arising from the assignment of high healthcare accessibility for the regions with large hospitals and high density of population and hospitals.

doi: 10.1109/ACCESS.2017.2762471.
http://dx.doi.org/10.1109/ACCESS.2017.2762471.
ABSTRACT: Advanced public safety communication (PSC) services call for fast, reliable and low-latency communication technologies, capable of supporting diverse communication modes (aerial, unmanned, vehicular, and peer-to-peer), fast channel dynamics, and ad hoc or mesh structures. For this reason, PSC has been identified as one of the key potential uses cases for the next generation of communication systems, the so-called 5G. In this scenario, the millimeter wave (mmWave) bands and other frequencies above 6 GHz are particularly interesting, since they are largely untapped and offer vastly more spectrum than current cellular allocations in the highly congested bands below 6 GHz, thus enabling orders of magnitude greater data rates and reduced latency. For example, new PSC networks in the mmWave bands could support high-definition video, virtual reality, and other broadband data to large numbers of first responders. Surveillance drones or ambulances could also be provided high-speed connectivity along with machine-type communication for remotely controlled robotic devices entering dangerous areas. However, the way towards this ambitious goal is hindered by a number of open research challenges. In this paper, after a brief introduction to PSC services and requirements, we illustrate the potential of the frequencies above 6 GHz for PSC and discuss the open problems that need to be solved in order to pave this way. Finally, we describe the main components of a test platform for mmWave
systems that is functional to the study of such complex scenarios and that we plan to develop as an invaluable tool for realizing mmWave PSC networks.

Bibliography on “big data”

ABSTRACT: Smart cities make use of a variety of technologies, protocols, and devices to support and improve the quality of everyday activities of their inhabitants. An important aspect for the development of smart cities are innovative public policies, represented by requirements, actions, and plans aimed at reaching a specific goal for improving the society's welfare. With the advent of Big Data, the definition of such policies could be improved and reach an unprecedented effectiveness on several dimensions, e.g. social or economic. On the other hand, however, the safeguard of the privacy of its citizens is part of the quality of life of a smart city. In this paper, we focus on balancing quality of life and privacy protection in smart cities by providing a new Big Data-assisted public policy making process implementing privacy-by-design. The proposed approach is based on a Big Data Analytics as a Service approach, which is driven by a Privacy Compliance Assessment derived from the European Union’s GDPR, and discussed in the context of a public health policy making process. ".

https://doi.org/10.1016/j.spl.2018.02.022.
ABSTRACT: Big data are often presented as a strategic opportunity for the design of new public policies, improving the quality and effectiveness of public services and using resources more efficiently. The paper discusses such opportunities and identifies a few open questions.

ABSTRACT: Big data is aggressive in its production, and with the merger of Cloud computing and IoT, the huge volumes of data generated are increasingly challenging the storage capacity of data centres. This has led to a growing data-capacity gap in big data storage. Unfortunately, the limitations faced by current storage technologies have severely handicapped their potential to meet the storage demand of big data. Consequently, storage technologies with higher storage density, throughput and lifetime have been researched to overcome this gap. In this paper, we first introduce the working principles of three such emerging storage technologies, and justify their inclusion in the study based on the tremendous advances received by them in the recent past. These storage technologies include Optical data storage, DNA data storage & Holographic data storage. We then evaluate the recent advances received in storage density, throughput and lifetime of these emerging storage technologies, and compare them with the trends and advances in prevailing storage technologies. We finally discuss the implications of their adoption, evaluate their prospects, and highlight the challenges faced by them to bridge the data-capacity gap in big data storage.

ABSTRACT: Academic studies exploiting novel data sources are scarce. Typically, data is generated by commercial businesses or government organizations with no mandate and little motivation to share their assets with academic partners---partial exceptions include social messaging data and some sources of open data. The mobilization of citizen sensors at a massive scale has allowed for the development of impressive infrastructures. However, data availability is driving applications---problems are prioritized because data is available rather than because they are inherently important or interesting. The U.K. is addressing this through investments by the Economic and Social Research Council in its Big Data Network. A group of Administrative Data Research Centres are tasked with improving access to data sets in central government, while a group of Business and Local Government Centres are tasked with improving access to commercial and regional sources. This initiative is described. It is illustrated by examples from health care, transport, and infrastructure. In all of these cases, the integration of data is a key consideration. For social science problems relevant to policy or academic studies, it is unlikely all the answers will be found in a single novel data source, but rather a combination of sources is required. Through such synthesis great leaps are possible by exploiting models that have been constructed and refined over extended periods of time e.g., microsimulation, spatial interaction models, agents, discrete choice, and input-output models. Although interesting and valuable new methods are appearing, any suggestion that a new box of magic tricks labeled "Big Data Analytics" that sits easily on top of massive new datasets can radically and instantly transform our long-term understanding of society is naive and dangerous. Furthermore, the privacy and confidentiality of personal data is a great concern to both the individuals concerned and the data owners.


ABSTRACT: Efficient management and analysis of large volumes of data is a demanding task of increasing scientific and industrial importance, as the ubiquitous generation of information governs more and more aspects of human life. In this article, we introduce FML-kNN, a novel distributed processing framework for Big Data that performs probabilistic classification and regression, implemented in Apache Flink. The framework's core is consisted of a k-nearest neighbor joins algorithm which, contrary to similar approaches, is executed in a single distributed session and is able to operate on very large volumes of data of variable granularity and dimensionality. We assess FML-kNN's performance and scalability in a detailed experimental evaluation, in which it is compared to similar methods implemented in Apache Hadoop, Spark, and Flink distributed processing engines. The results indicate an overall superiority of our framework in all the performed comparisons. Further, we apply FML-kNN in two motivating use cases for water demand management, against real-world domestic water consumption data. In particular, we focus on forecasting water consumption using 1-h smart meter data, and extracting consumer characteristics from water use data in the shower. We further discuss on the obtained results, demonstrating the framework's potential in useful knowledge extraction.


ABSTRACT: The development of information and communication technology has led to the rapid growth of medical data encountered by various players in healthcare industry. This evolution from a paper-based database to electronic records demonstrates the continuous advancement of medical information systems. Medical institutions are paying more attention to this issue and attempting to figure out the applications of big data. However, most of them have struggled to find pathways to apply big data adequately. Using hybrid methodologies and examining Taiwan's healthcare industry, this research aims to assess, forecast and summarize the major applications...
of medical big data, and establish strategic pathways for medical institutions to follow regarding different dimensions of applications. First, a review of literature related to the utility of medical big data and interviews with relevant stakeholders were conducted. Content analysis was subsequently done to extract the key applications, and DEMATEL was used to find out their Net Relation Map (NRM). With the Innovation Importance-Resistance Analysis (IRA), this study carried out IRA-NRM analysis to cultivate the strategy of medical big data development. This research concluded a IRA-NRM framework of 4 application categories and 16 factors. Suggestions for medical institutions regarding the use of medical big data are also provided.

ABSTRACT: The current development and growth in the arena of Internet of Things (IoT) are providing a great potential in the route of the novel epoch of healthcare. The vision of the healthcare is expansively favored, as it advances the excellence of life and health of humans, involving several health regulations. The incessant increase of the multifaceted IoT devices in health is broadly tested by challenges such as powering the IoT terminal nodes used for health monitoring, real-time data processing and smart decision and event management. In this paper, we propose a healthcare architecture which is based analysis of energy harvesting for health monitoring sensors and the realization of Big Data analytics in healthcare. The rationale of proposed architecture is twofold: (1) comprehensive conceptual framework for energy harvesting for health monitoring sensors, and (2) data processing and decision management for healthcare. The proposed architecture is three-layered architecture, that comprised (1) energy harvesting and data generation, data pre-processing, and data processing and application. We also verified the consistent data sets on Hadoop server to validate the proposed architecture based on threshold limit value (TLV). The study reveals that the proposed architecture offer valuable imminent into the field of smart health.

ABSTRACT: The expansion of the services of the Semantic Web and the evolution of cloud computing technologies have significantly enhanced the capability of preserving and publishing information in standard open web formats, such that data can be both human-readable and machine-processable. This situation meets the challenge in the current big data era to effectively store, retrieve, and analyze resource description framework (RDF) data in swarms. This paper presents an overview of the existing challenges, evolving opportunities, and current developments towards managing big RDF data in clouds and provides guidance and substantial lessons learned from research in big data management. In particular, it highlights the basic principles of RDF data management, which allow researchers to know the most recent stage in developing RDF graphs and its achievement. Additionally, the research provides comparative studies among current storage systems and query processing approaches in understanding their efficiency. The paper also provides a vision for long-term future research directions by providing highlights on future challenges and opportunities in RDF domain.

http://dx.doi.org/10.1016/j.bdr.2018.02.001.
ABSTRACT: In the healthcare sector, information is the most important aspect, and the human body in particular is the major source of data production: as a result, the new challenge for world healthcare is to take advantage of these huge amounts of data de-structured among themselves.
In order to benefit from this advantage, technology offers a solution called Big Data Analysis that allows the management of large amounts of data of a different nature and coming from different sources of a "computerized" healthcare, as there are considerable changes made by the input of digital technology in all major health areas. Clinical intelligence consists of all the analytical methods made possible through the use of computer tools, in all the processes and disciplines of extraction and transformation of crude clinical data into significant insights, new purposes and knowledge that provide greater clinical efficacy and best health pronouncements about past performance, current operations and future events. It can therefore be stated that clinical intelligence, through patient data analysis, will become a standard operating procedure that will address all aspects of care delivery. The purpose of this paper is to present clinical intelligence approaches through Data Mining and Process Mining, showing the differences between these two methodologies applied to perform “real process” extraction to be compared with the procedures in the corporate compliance template (the so called "Model 231") by "conformance checking". 


**ABSTRACT:** While attention has always been prized above money, few people have had the means to attract it to themselves. But the new digital economy has provided everyone with a loudspeaker; thus efforts at getting noticed have rapidly escalated in global society. The attention economy focuses on the mechanisms that mediate the allocation of this scarce entity. Social networks and big data play a role in determining what is noticed and acted upon.


**ABSTRACT:** We use the term “big data” with the understanding that the real game changer is the connection and digitization of everything. Every portfolio is affected: finance, transport, housing, food, environment, industry, health, welfare, defense, education, science, and more. The authors in this symposium will focus on a few of these areas to exemplify the main ideas and issues.


**ABSTRACT:** Sensors and systems within rapidly expanding smart cities produce citizen-centered big data which have potential value to support citizen-centered urban governance decision-making. There exists a wealth of extant conceptual studies, however, further operational studies are needed to establish a specific path towards implementation of such data to governance decision-making with analytical algorithms that are appropriate for each step of the path. This paper proposes a framework for the use of citizen-centered big data analysis to drive governance intelligence in smart cities from two perspectives: urban governance issues and data-analysis algorithms. The framework consists of three layers: 1) A data-merging layer, which builds a citizen-centered panoramic data set for each citizen by merging citizen-related big data from multiple sources in collaborative urban governance via similarity calculation and conflict resolution; 2) a knowledge-discovery layer, which plots the citizen profile and citizen persona at both individual and group levels in terms of urban public service delivery and citizen participation via simple statistical analysis techniques, machine learning, and econometrics methods; and 3) a decision-making layer, which uses ontology models to standardize urban governance-related attributes, personas, and associations to support governance decision-making via data mining and Bayesian Net techniques. Finally, the proposed framework is validated in a case study on blood donation governance in China. This research highlights the value of citizen-centered big data, pushes data-to-decision research from conceptual to operational, synthesizes previously
published frameworks for citizen-centered big data analysis in smart cities, and enhances the mutual supplement cross multiple disciplines."


ABSTRACT: Background Electronic Healthcare Records (EHRs) are created to capture summaries of care and contact made to healthcare services. EHRs offer a means to analyse admissions to hospitals for epidemiological research. In the United Kingdom (UK), England, Scotland and Wales maintain separate data stores, which are administered and managed exclusively by devolved Government. This independence results in harmonisation challenges, not least lack of uniformity, making it difficult to evaluate care, diagnoses and treatment across the UK. To overcome this lack of uniformity, it is important to develop methods to integrate EHRs to provide a multi-nation dataset of health. Objective To develop and describe a method which integrates the EHRs of Armed Forces personnel in England, Scotland and Wales based on variable commonality to produce a multi-nation dataset of secondary health care. Methods An Armed Forces cohort was used to extract and integrate three EHR datasets, using commonality as the linkage point. This was achieved by evaluating and combining variables which shared the same characteristics. EHRs representing Accident and Emergency (A&E), Admitted Patient Care (APC) and Outpatient care were combined to create a patient-level history spanning three nations. Patient-level EHRs were examined to ascertain admission differences, common diagnoses and record completeness. Results A total of 6,336 Armed Forces personnel were matched, of which 5,460 personnel had 7,510 A&E visits, 9,316 APC episodes and 45,005 Outpatient appointments. We observed full completeness for diagnoses in APC, whereas Outpatient admissions were sparsely coded; with 88% of diagnoses coded as "Unknown/unspecified cause of morbidity". In addition, A&E records were sporadically coded; we found five coding systems for identifying reason for admission. Conclusion At present, EHRs are designed to monitor the cost of treatment, enable administrative oversight, and are not currently suited to epidemiological research. However, only small changes may be needed to take advantage of what should be a highly cost-effective means of delivering important research for the benefit of the NHS.


ABSTRACT: There is currently no development process standard for big data projects. With the increasing number of such projects, the authors designed a new software engineering lifecycle process for big data projects, primarily based on ISO/IEC standard 15288:2008.


ABSTRACT: Uncertainty brought about by the separation of information flow and product flow has become a critical obstacle to e-commerce development. From the perspective of presence and uncertainty, we attempt to determine whether live chat usage can influence consumer purchase decision and how live chat can be used to do so. Logit regression models are adopted to analyze data collected from an online store in Taobao.com. We find that: (1) live chat usage is positively associated with consumer purchase decisions; and (2) the behavior of sellers when using live chat can affect consumer purchase decision.

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


ABSTRACT: In recent years, virtual learning environments are gaining more and more momentum, considering both the technologies deployed in their support and the sheer number of terminals directly or indirectly interacting with them. This essentially means that every day, more and more smart devices play an active role in this exemplary Web of Things scenario. This digital revolution, affecting education, appears clearly intertwined with the earliest forecasts of the Internet of Things, envisioning around 50 billions heterogeneous devices and gadgets to be active by 2020, considering also the deployment of the fog computing paradigm, which moves part of the computational power to the edge of the network. Moreover, these interconnected objects are expected to produce more and more significant streams of data, themselves generated at unprecedented rates, sometimes to be analyzed almost in real time. Concerning educational environments, this translates to a new type of big data stream, which can be labeled as educational big data streams. Here, pieces of information coming from different sources (such as communications between students and instructors, as well as students’ tests, etc.) require accurate analysis and mining techniques in order to retrieve fruitful and well-timed insights from them. This article presents an overview of the current state of the art of virtual learning environments and their limitations; then, it explains the main ideas behind the paradigms of big data streams and of fog computing, in order to introduce an e-learning architecture integrating both of them. Such an action aims to enhance the ability of virtual learning environments to be closer to the needs of all the actors in an educational scenario, as demonstrated by a preliminary implementation of the envisioned architecture. We believe that the proposed big stream and fog-based educational framework may pave the way towards a better understanding of students’ educational behaviors and foster new research directions in the field.


ABSTRACT: The early digital economy during the dot-com days of internet commerce successfully faced its first big data challenges of click-stream analysis with map-reduce technology. Since then the digital economy has been becoming much more pervasive. As the digital economy evolves, looking to benefit from its burgeoning big data assets, an important technical-business challenge is emerging: How to acquire, store, access, and exploit the data at a cost that is lower than the incremental revenue or GDP that its exploitation generates. Especially now that efficiency increases, which lasted for 50 years thanks to improvements in semiconductor manufacturing, is slowing and coming to an end.

**ABSTRACT:** Purpose The rising proportion of internet users in Sub-Saharan Africa and the lack of analytical techniques, as decision support systems, in choosing among alternative internet service providers (ISPs) by consumers underpin this study. The purpose of this paper is to propose an approach for evaluating high-speed internet service offered by ISPs in a sub-Saharan African country. Design/methodology/approach Using a sample size of 150, pairwise comparisons of two ISPs along five criteria of cost, usability, support, reliability and speed were performed by ten person groups of university students working in various organizations in Ghana and undertaking an online Six Sigma Course. Geometric means were employed to aggregate the scores in 15 groups, and these scores were then normalized and used as input into an analytical hierarchy process grid. Findings The results show that consumers of internet services highly emphasize the cost attribute of internet provision in their decision making. On the other hand, it was realized that consumers least emphasize the support provided by ISPs in their decision making among alternative ISPs. Originality/value This study has sought to provide an analytical framework for assessing the quality of service provided by alternative ISPs in a developing economy's context. The evaluating criteria in this framework also reveal the key consumer requirements in internet service provision in a developing economy's environment. This, to a large extent, will inform the marketing strategies of existing ISPs in Ghana as well as prospective ones intending to enter the Ghanaian market. Besides, the National Communication Authority, a regulator of communication services provision in Ghana, will be informed about the performances of the ISPs along five performance criteria. This is expected to aid in their regulatory functions.


**ABSTRACT:** We estimated a mixed logit model using data on the broadband technologies chosen by 94,388 subscribers of a single European broadband operator on a monthly basis between January and December 2014. We found that consumers have similar valuation of DSL connection...
speeds in the range between 1 and 8 Mbps. Moreover, in January 2014, the valuation of FttH connections with a speed of 100 Mbps was not much higher than of DSL connections with a speed of 1 to 8 Mbps, but it has increased quickly over time and became significantly higher at the end of the period in December 2014. The small initial difference in the valuation of DSL and FttH connections may be because consumers’ basic Internet requirements such as browsing, emailing, reading news, shopping, and even watching videos online could be satisfied with a connection speed below 8 Mbps. We also found that consumers face significant switching costs when changing broadband tariff plans, which are substantially higher when switching from DSL to FttH technology. According to counterfactual simulations based on our model, switching costs between technologies are the main factor which slows down consumer transition from DSL to FttH. 

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ABSTRACT: Advanced public safety communication (PSC) services call for fast, reliable and low-latency communication technologies, capable of supporting diverse communication modes (aerial, unmanned, vehicular, and peer-to-peer), fast channel dynamics, and ad hoc or mesh structures. For this reason, PSC has been identified as one of the key potential uses cases for the next generation of communication systems, the so-called 5G. In this scenario, the millimeter wave (mmWave) bands and other frequencies above 6 GHz are particularly interesting, since they are largely untapped and offer vastly more spectrum than current cellular allocations in the highly congested bands below 6 GHz, thus enabling orders of magnitude greater data rates and reduced latency. For example, new PSC networks in the mmWave bands could support high-definition video, virtual reality, and other broadband data to large numbers of first responders. Surveillance drones or ambulances could also be provided high-speed connectivity along with machine-type communication for remotely controlled robotic devices entering dangerous areas. However, the way towards this ambitious goal is hindered by a number of open research challenges. In this paper, after a brief introduction to PSC services and requirements, we illustrate the potential of the frequencies above 6 GHz for PSC and discuss the open problems that need to be solved in order to pave this way. Finally, we describe the main components of a test platform for mmWave systems that is functional to the study of such complex scenarios and that we plan to develop as an invaluable tool for realizing mmWave PSC networks.

Rajabiun, Reza and Catherine Middleton. "Strategic Choice and Broadband Divergence in the Transition to Next Generation Networks: Evidence from Canada and the U.S."
https://doi.org/10.1016/j.telpol.2017.08.001.

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

ABSTRACT: Current mobile service providers are offering Gigabit Internet access over LTE-Advanced networks. Traditional services, such as live video streaming, over wired networks are feasible on these networks. However different aspects should be taken into account due to the fast changing network conditions as well as the constrained resources of the mobile phones, in order to provide a good subjective video quality in terms of Mean Opinion Score (MOS). Our goal is to estimate and predict this subjective metric without information or reference from the original video, known as Non Reference approach. This approach is important for the Service Provider from a practical point of view, because it can keep the customer satisfaction at good levels. We analyze different estimation techniques running over a set of monitored variables throughout the whole streaming system, from the streaming server to the mobile phone. We have gathered variables related to bit stream, basic video quality metrics as well as Quality of Services variables. These variables are used to estimate MOS in a reliable and robust way. We compare three techniques such as Artificial Neural Networks (ANN), Factor Analysis (FA) and Multinomial Linear Regression, at different time scales and with Full Reference and Non Reference approaches. We carry out a performance evaluation of these techniques, concluding that the behavior of MOS estimation based on FA is more accurate, unless we had a lossless scenario related to Guaranteed Bit Rate services, where ANN performs better. The subjective video quality has been evaluated through surveys. Finally, we evaluate the accuracy of the estimated MOS against well known publicly available video quality algorithms following the recommendations given by Video Quality Experts Group (VQEG).


ABSTRACT: The paper presents a design of a broadband high-efficiency class-E power amplifier (PA) for the advanced efficiency enhancement architectures applications. A sequential load pull methodology to design broadband class-E power amplifiers using a packaged gallium nitride power transistor is presented. Two different broadband matching synthesis techniques have been proposed using lumped elements have been presented and implemented in the manuscript. A fourth-order low-pass impedance transformation topology is designed as the output matching network to provide the optimum load reflection coefficients in the targeted bandwidth (1.8–2.7 GHz). A combination of input and output matching network has been proposed in the manuscript to satisfy the given fractional bandwidth requirements. For practical validation, a Wolfspeed (Cree) CGH40025 package transistor has been used. Under continuous wave test condition the fabricated PA showed more than 50% power added efficiency (PAE) with up to 29 W output power for 40% fractional bandwidth from 1.8–2.7 GHz. Furthermore, the proposed broadband Class E PA is deployed in efficiency enhancement architecture like delta-sigma modulation based transmitters. The PA shows more than 48% PAE all over the frequency band when driven with a delta-sigma modulated LTE downlink signal while maintaining high signal quality and PA reliability.


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

Tadayoni, Reza, Anders Henten, and Jannick Sørensen. "Mobile Communications – on Standards, Classifications and Generations." Telecommunications Policy, In Press doi: 10.1016/j.telpol.2018.01.001. https://doi.org/10.1016/j.telpol.2018.01.001. ABSTRACT: The research question addressed in this paper is concerned with the manners in which the general technological progress in mobile communications is characterized and the reasons for the differences in these modes of manifestation. The relevance of this research question is that the different manifestation modes create a degree of confusion in communications and discussions on mobile technologies. At the same time, it should be recognized that different manners of categorizing technologies illustrate the fact that categorizations are based on different purposes of the classification exercises. Also, the paper discusses the role of the International Telecommunication Union (ITU) in the processes of mobile standardization. In common parlance, progress in mobile technologies is mostly referred to as generations. In ITU, the classification terminology is that of International Mobile Telecommunication (IMT) standards. In the specialized standards body with a central position in the standardization of core mobile technologies, namely 3GPP (3rd Generation Partnership Project), the terminology of ‘releases’ is used. In order to address the research question, the paper uses an analytical framework based on the differences and relationships between the concepts of standards, classifications and generations.

Bibliography on “broadband”

Frimpon, Michael F. and Ebenezer Adaku. "A Comparison of High-Speed Internet Service in Ghana: An Analytical Hierarchy Approach." Info Technology & People, 31, no. 1 (2018): 181-198 doi: 10.1108/ITP-06-2016-0143. https://doi.org/10.1108/ITP-06-2016-0143. ABSTRACT: Purpose The rising proportion of internet users in Sub-Saharan Africa and the lack of analytical techniques, as decision support systems, in choosing among alternative internet service providers (ISPs) by consumers underpin this study. The purpose of this paper is to propose an approach for evaluating high-speed internet service offered by ISPs in a sub-Saharan African country. Design/methodology/approach Using a sample size of 150, pairwise comparisons of two ISPs along five criteria of cost, usability, support, reliability and speed were performed by ten person groups of university students working in various organizations in Ghana and undertaking an online Six Sigma Course. Geometric means were employed to aggregate the scores in 15 groups, and these scores were then normalized and used as input into an analytical hierarchy process grid. Findings The results show that consumers of internet services highly emphasize the cost attribute of internet provision in their decision making. On the other hand, it was realized that consumers least emphasize the support provided by ISPs in their decision making among alternative ISPs. Originality/value This study has sought to provide an analytical framework for assessing the quality of service provided by alternative ISPs in a developing economy’s context. The evaluating criteria in this framework also reveal the key consumer requirements in internet service provision in a developing economy’s environment. This, to a large extent, will inform the marketing strategies of existing ISPs in Ghana as well as prospective ones intending to enter the Ghanaian market. Besides, the National Communication Authority, a regulator of communication services provision in Ghana, will be informed about the performances
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ABSTRACT: We estimated a mixed logit model using data on the broadband technologies chosen by 94,388 subscribers of a single European broadband operator on a monthly basis between January and December 2014. We found that consumers have similar valuation of DSL connection speeds in the range between 1 and 8 Mbps. Moreover, in January 2014, the valuation of FttH connections with a speed of 100 Mbps was not much higher than of DSL connections with a speed of 1 to 8 Mbps, but it has increased quickly over time and became significantly higher at the end of the period in December 2014. The small initial difference in the valuation of DSL and FttH connections may be because consumers’ basic Internet requirements such as browsing, emailing, reading news, shopping, and even watching videos online could be satisfied with a connection speed below 8 Mbps. We also found that consumers face significant switching costs when changing broadband tariff plans, which are substantially higher when switching from DSL to FttH technology. According to counterfactual simulations based on our model, switching costs between technologies are the main factor which slows down consumer transition from DSL to FttH.


ABSTRACT: Advanced public safety communication (PSC) services call for fast, reliable and low-latency communication technologies, capable of supporting diverse communication modes (aerial, unmanned, vehicular, and peer-to-peer), fast channel dynamics, and ad hoc or mesh structures. For this reason, PSC has been identified as one of the key potential uses cases for the next generation of communication systems, the so-called 5G. In this scenario, the millimeter wave (mmWave) bands and other frequencies above 6 GHz are particularly interesting, since they are largely untapped and offer vastly more spectrum than current cellular allocations in the highly congested bands below 6 GHz, thus enabling orders of magnitude greater data rates and reduced latency. For example, new PSC networks in the mmWave bands could support high-definition video, virtual reality, and other broadband data to large numbers of first responders. Surveillance
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ABSTRACT: This article investigates how infrastructure competition among broadband network infrastructure operators in Canada and the U.S. has influenced their incentives to increase fixed broadband connection speeds and invest in next generation fiber-to-the-premises (FTTP) technologies. The evolution of measured broadband speeds since the late 2000s documents growing differences in the incentives of dominant broadband operators to respond to demand for higher speed connectivity by increasing connectivity speeds they deliver to their customers. Dominant network operators in Canada have shown relatively stronger incentives than their counterparts in the U.S. to invest in and increase the capacity of legacy platforms. In the U.S. FTTP deployment incentives have been somewhat stronger, but network operators have been more reluctant to upgrade legacy technologies to deliver higher speeds. Diversity of strategic choices by large operators helps explain increasing regional and local broadband infrastructure gaps within the two countries. A high dividend payout financial strategy and increasing vertical integration appear to enhance the potential for overinvestment and inefficient duplication in legacy platforms by competing infrastructure providers.

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doi: 10.1109/ACCESS.2017.2789248.
http://dx.doi.org/10.1109/ACCESS.2017.2789248.

ABSTRACT: The paper presents a design of a broadband high-efficiency class-E power amplifier (PA) for the advanced efficiency enhancement architectures applications. A sequential load pull methodology to design broadband class-E power amplifiers using a packaged gallium nitride power transistor is presented. Two different broadband matching synthesis techniques have been proposed using lumped elements have been presented and implemented in the manuscript. A fourth-order low-pass impedance transformation topology is designed as the output matching network to provide the optimum load reflection coefficients in the targeted bandwidth (1.8–2.7 GHz). A combination of input and output matching network has been proposed in the manuscript to satisfy the given fractional bandwidth requirements. For practical validation, a Wolfspeed (Cree) CGH40025 package transistor has been used. Under continuous wave test condition the fabricated PA showed more than 50% power added efficiency (PAE) with up to 29 W output power for 40% fractional bandwidth from 1.8–2.7 GHz. Furthermore, the proposed broadband Class E PA is deployed in efficiency enhancement architecture like delta-sigma modulation based transmitters. The PA shows more than 48% PAE all over the frequency band when driven with a delta-sigma modulated LTE downlink signal while maintaining high signal quality and PA reliability.

https://doi.org/10.1016/j.telpol.2017.06.001.

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

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ABSTRACT: The research question addressed in this paper is concerned with the manners in which the general technological progress in mobile communications is characterized and the reasons for the differences in these modes of manifestation. The relevance of this research question is that the different manifestation modes create a degree of confusion in communications and discussions on mobile technologies. At the same time, it should be recognized that different manners of categorizing technologies illustrate the fact that categorizations are based on different purposes of the classification exercises. Also, the paper discusses the role of the International Telecommunication Union (ITU) in the processes of mobile standardization. In common parlance, progress in mobile technologies is mostly referred to as generations. In ITU, the classification terminology is that of International Mobile Telecommunication (IMT) standards. In the specialized standards body with a central position in the standardization of core mobile technologies, namely 3GPP (3rd Generation Partnership Project), the terminology of 'releases' is used. In order to address the research question, the paper uses an analytical framework based on the differences and relationships between the concepts of standards, classifications and generations.
Bibliography on “child online protection”


**ABSTRACT:** In recent years, discussions have sparked about the risks and opportunities that digital technologies may have for adolescents. Some researchers argue that the best way to increase online opportunities and avoid online risks is to increase adolescents’ digital skills. For this reason, the first goal of this study was to examine how adolescents’ digital skills are related to their online opportunities and online risks behaviours. A second goal was to examine the influence of two ways of parental mediation (active and restrictive) on the level of teenagers’ digital skills, and subsequently their online opportunities and online risks. Finally, we intended to establish the validity and the structure of the Digital Literacy Scale. Using data from a cross-sectional survey of 1,446 Spanish secondary school pupils, we found that more digitally skilled adolescents take more opportunities, and experience more risks. Digital literacy mediates the relationship between restrictive (but not of active) parental mediation and online risks and opportunities. Furthermore, the Digital Literacy Scale was shown to be valid in terms of construct validity. The findings suggest that digital literacy remains essential as it lets teenagers take more opportunities, and that parents should opt for other ways of mediation rather than restrictive mediation. 

Bibliography on “climate change and ICTs”


**ABSTRACT:** Accessibility, availability, re-use and re-distribution of scientific data are prerequisites to build climate services across Europe. From this perspective the Institute of Biometeorology of the National Research Council (IBIMET-CNR), aiming at contributing to the sharing and integration of research data, has developed a research data infrastructure to support the scientific activities conducted in several national and international research projects. The proposed architecture uses open-source tools to ensure sustainability in the development and deployment of Web applications with geographic features and data analysis functionalities. The spatial data infrastructure components are organized in typical client–server architecture and interact from the data provider download data process to representation of the results to end users. The availability of structured raw data as customized information paves the way for building climate service purveyors to support adaptation, mitigation and risk management at different scales. This work is a bottom-up collaborative initiative between different IBIMET-CNR research units (e.g. geomatics and information and communication technology – ICT; agricultural sustainability; international cooperation in least developed countries – LDCs) that embrace the same approach for sharing and re-use of research data and informatics solutions based on co-design, co-development and co-evaluation among different actors to support the production and application of climate services. During the development phase of Web applications, different users (internal and external) were involved in the whole process so as to better define user needs and suggest the implementation of specific custom functionalities. Indeed, the services are addressed to researchers, academics, public institutions and agencies – practitioners who can...
access data and findings from recent research in the field of applied meteorology and climatology.

ABSTRACT: Mobile applications consume device energy for their operations, and the fast rate of battery depletion on mobile devices poses a major usability hurdle. After the display, data communication is the second-biggest consumer of mobile device energy. At the same time, software applications that run on mobile devices represent a fast-growing product segment. Typically, these applications serve as front-end display mechanisms, which fetch data from remote servers and display the information to the user in an appropriate format—incurring significant data communication overheads in the process. In this work, we propose methods to reduce energy overheads in mobile devices due to data communication by leveraging data caching technology. A review of existing caching mechanisms revealed that they are primarily designed for optimizing response time performance and cannot be easily ported to mobile devices for energy savings. Further, architectural differences between traditional client-server and mobile communications infrastructures make the use of existing caching technologies unsuitable in mobile devices. In this article, we propose a set of two new caching approaches specifically designed with the constraints of mobile devices in mind: (a) a response caching approach and (b) an object caching approach. Our experiments show that, even for a small cache size of 250MB, object caching can reduce energy consumption on average by 45% compared to the no-cache case, and response caching can reduce energy consumption by 20% compared to the no-cache case. The benefits increase with larger cache sizes. These results demonstrate the efficacy of our proposed method and raise the possibility of significantly extending mobile device battery life.

ABSTRACT: In order to measure technological change and environmental efficiency precisely, and further to improve the technology and environmental efficiency of road transportation industry in "big data" context, a Hicks-Moorsteen Index model based on DEA is proposed in this study, and then is employed to assess the performance of road transportation industry. The empirical study concludes that: (a) all of the total factors productivity growth, technological progress and environmental efficiency of the road transportation sectors in the eastern, western and central regions all averagely increased. (b) The growth rates of mix efficiency of the road transportation sectors in the three regions were the highest among the various efficiency changes. (c) While the performances of technological progress in western and central region outperform that in eastern region, the performance of environmental efficiency change outperform those in western and central regions. This paper suggests the diffused utilization of optimal production technology should be superior to the pace of technological innovation in western and central regions, and road transportation industry in China should be sensitive to the influence of government policy such as "supply side reform".

ABSTRACT: Reading former Vice President Al Gore’s An Inconvenient Truth in college awakened me to the widespread threat of climate change. Spurred to action, I joined a lab to develop alternative energy technologies. The result was an undergraduate project studying magnetic materials, which are important for electric vehicles and wind turbines. It got me hooked on research and left me wanting to make a bigger impact. I wanted my work to lead straight to solutions—but in the process, I veered off course.
Bibliography on “cybersecurity”

https://doi.org/10.1007/s11235-017-0345-9.

**ABSTRACT:** Internet technology is very pervasive today. The number of devices connected to the Internet, those with a digital identity, is increasing day by day. With the developments in the technology, Internet of Things (IoT) become important part of human life. However, it is not well defined and secure. Now, various security issues are considered as major problem for a full-fledged IoT environment. There exists a lot of security challenges with the proposed architectures and the technologies which make the backbone of the Internet of Things. Some efficient and promising security mechanisms have been developed to secure the IoT environment, however, there is a lot to do. The challenges are ever increasing and the solutions have to be ever improving. Therefore, aim of this paper is to discuss the history, background, statistics of IoT and security based analysis of IoT architecture. In addition, we will provide taxonomy of security challenges in IoT environment and taxonomy of various defense mechanisms. We conclude our paper discussing various research challenges that still exist in the literature, which provides better understanding of the problem, current solution space, and future research directions to defend IoT against different attacks.


**ABSTRACT:** While cloud computing is fairly mature, there are underpinning data privacy and confidentiality issues that have yet to be resolved by existing security solutions such as cross domain access control policies. The latter necessitates the sharing of attributes with a Trusted Third Party (TTP), which in turn raises data privacy concerns. In this paper, we present a Privacy Aware Cross Tenant Access Control (PaCTAC) protocol for cross domain cloud users, based on reusable garbled circuit. We also propose the concept of a privacy aware Cloud Policy Decision Point (CPDP) that can be offered by cloud service providers. CPDP plays the role of a trusted third-party among its different tenants. We then formally specify PaCTAC to demonstrate its security.


**ABSTRACT:** Purpose To define Cyber Security and Cyber Security Governance in simplified terms in order to explain to the Boards of Directors and Executive Management their responsibilities and accountabilities in this regard. Design/methodology/approach The primary research methodology utilized in this paper is Desk Research. A literature study is followed by some discussion in terms of the contribution made. Findings Not applicable Originality/value The simplification of terminology to be used in the governance of Cyber Security, together with assistance to the guiding of Boards of Directors regarding their duties and responsibilities as far as Cyber Security is concerned.; Purpose To define Cyber Security and Cyber Security Governance in simplified terms in order to explain to the Boards of Directors and Executive Management their responsibilities and accountabilities in this regard. Design/methodology/approach The primary research methodology utilized in this paper is Desk Research. A literature study is followed by some discussion in terms of the contribution made. Findings Not applicable Originality/value The simplification of terminology to be used in the
governance of Cyber Security, together with assistance to the guiding of Boards of Directors regarding their duties and responsibilities as far as Cyber Security is concerned.

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http://dx.doi.org/10.1109/MSP.2018.1331023.

**ABSTRACT:** Legislation surrounding digital privacy has seen quite an upheaval in recent years. The introduction of the General Data Protection Regulation (GDPR) in the EU, and new resolutions within the United Nations Human Rights Council (UNHRC) have recognized the urgency to include recommendations on the use of encryption to protect the digital identities of citizens. In this work, we meander through the main events in history which have shaped the legislative landscape that encompasses the use of encryption, paying particular attention to recent (post-Snowden) developments.

https://doi.org/10.1016/j.cose.2017.11.014.

**ABSTRACT:** Transition to the Internet of Things (IoT) is progressing without realization. In light of this securing traditional systems is still a challenging role requiring a mixture of solutions which may negatively impact, or simply, not scale to a desired operational level. Rule and signature based intruder detection remains prominent in commercial deployments, while the use of machine learning for anomaly detection has been an active research area. Behavior detection means have also benefited from the widespread use of mobile and wireless applications. For the use of smart defense systems we propose that we must widen our perspective to not only security, but also to the domains of artificial intelligence and the IoT in better understanding the challenges that lie ahead in hope of achieving autonomous defense. We investigate how intruder detection fits within these domains, particularly as intelligent agents. How current approaches of intruder detection fulfill their role as intelligent agents, the needs of autonomous action regarding compromised nodes that are intelligent, distributed and data driven. The requirements of detection agents among IoT security are vulnerabilities, challenges and their applicable methodologies. In answering aforementioned questions, a survey of recent research work is presented in avoiding refitting old solutions into new roles. This survey is aimed toward security researchers or academics, IoT developers and information officers concerned with the covered areas. Contributions made within this review are the review of literature of traditional and distributed approaches to intruder detection, modeled as intelligent agents for an IoT perspective; defining a common reference of key terms between fields of intruder detection, artificial intelligence and the IoT, identification of key defense cycle requirements for defensive agents, relevant manufacturing and security challenges; and considerations to future development. As the turn of the decade draws nearer we anticipate 2020 as the turning point where deployments become common, not merely just a topic of conversation but where the need for collective, intelligent detection agents work across all layers of the IoT becomes a reality. ".


**ABSTRACT:** Phishing is an online identity theft in which an attacker tries to steal user’s personal information, resulting in financial loss of individuals as well as organisations. Nowadays, mobile devices especially smartphones are increasingly being used by the users due to a wide range of functionalities they provide. These devices are very compact and provide functionalities similar to those of desktop computers due to which attackers are now targeting the mobile device users. However, detection of mobile phishing attack is a different problem from desktop phishing due to the dissimilar architectures of both. Moreover, identification of mobile phishing attack with high accuracy is an important research issue as not much amount of work has been done in this field. Many anti-phishing solutions for mobile devices have been proposed till date but still there is a
lack of a full fledged solution. The primary objective of this paper is to do a detailed analysis on mobile phishing – attacking techniques and defense mechanisms. We present this paper in four folds. First, we discuss in detail about mobile phishing attack, its history, motivation of attackers, and security concerns of smartphones. Second, we analyze various mobile phishing attacks and provide a taxonomy of the same. Third, we provide taxonomy of numerous recently proposed solutions that detect and defend users from mobile phishing attacks. Fourth, we discuss different issues and challenges faced by researchers while dealing with mobile phishing attacks. In addition, we have also discussed datasets and evaluation matrices used by researchers for evaluating their approaches. 


ABSTRACT: This paper offers a history of the concept of social engineering in cybersecurity and argues that while the term began its life in the study of politics, and only later gained usage within the domain of cybersecurity, these are applications of the same fundamental ideas: epistemic asymmetry, technocratic dominance, and teleological replacement. The paper further argues that the term’s usages in both areas remain conceptually and semantically interrelated. Moreover, ignorance of this interrelation continues to handicap our ability to identify and rebuff social engineering attacks in cyberspace. The paper’s conceptual history begins in the nineteenth-century in the writings of the economists John Gray and Thorstein Veblen. An analysis of scholarly articles shows the concept’s proliferation throughout the early to mid-twentieth century within the social sciences and beyond. The paper then traces the concept’s migration into cybersecurity through the 1960s–1980s utilizing both scholarly publications and memoir accounts – including interviews with then-active participants in the hacker community. Finally, it reveals a conceptual array of contemporary connotations through an analysis of 134 definitions of the term found in academic articles written about cybersecurity from 1990 to 2017.


ABSTRACT: The authors propose a resource management process for information security management systems to more transparently plan and assign costs of controls. The process relies on and is compliant with international standards of the ISO/IEC 27000 family and can be implemented by all organizations regardless of type, size, or nature.


ABSTRACT: Data provenance is information used in reasoning about the present state of a data object, providing details such as the inputs used, transformations it underwent, entities responsible, and any other information that had an impact on its evolution. With a plethora of uses consisting of but not limited to provision of trust, gauging of quality, detecting intrusion and system changes, solving attribution problems, regulations compliance and in legal proceedings etc., provenance information needs to be secured. On the other hand use of tampered provenance information could lead to erroneous judgments and serious implications in many situations. The difference in sensitivity levels of provenance and the underlying data coupled with its DAG (Directed Acyclic Graph) structure leads to the need for a tailored security model. To date, proposed secure provenance schemes such as the Onion scheme, PKLC scheme, Mutual agreement scheme, rely on transitive trust; consecutive participating entities do not collude to attack the provenance chain. Furthermore, these schemes suffer from attacks such as ownership and lone attacks on provenance records. We propose a secure provenance scheme that uses the auditor as a witness to the chain build process whereby a verification tree is incrementally built.
by the auditor which serves as his view of the chain. Our scheme removes the transitive trust dependency hence collusion attacks by consecutive participating entities are successfully detected. Additionally, our scheme captures the DAG structure of provenance information and achieves secure provenance requirements; integrity, availability and confidentiality. Security analysis and empirical results show that the scheme provides better security guarantees than the previously proposed schemes with reasonable overheads involved that can be outweighed by the protection capabilities provided and removal of transitive trust which may not be feasible.”

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ABSTRACT: Modern Supervisory Control and Data Acquisition (SCADA) systems are essential for monitoring and managing electric power generation, transmission and distribution. In the age of the Internet of Things, SCADA has evolved into big, complex and distributed systems that are prone to conventional in addition to new threats. Many security methods can be applied to such systems, taking in mind that both high efficiency, real time intrusion identification and low overhead are required.

ABSTRACT: The importance of social networks is growing with the fast development of social network technologies and the steady growth in their user communities. Given that the collection of data from social networks is essential for academic research and commercial applications, the prevention of leakage of sensitive information has become very crucial. The majority of anonymization techniques are focused on the threats associated with publishing one social network dataset. As most Internet users participate in more than one social network, a user’s records are likely to appear in two published social network datasets. The level of anonymity of each dataset may present only a small security risk; however, there is no guarantee that a combination of the two datasets has the same level of anonymity. An attack on the privacy of an individual using two published datasets containing his/her records is called a composition attack. The composition attack was recently investigated as a threat to two relational datasets; however, it has not yet been considered as a potential danger to two datasets containing social network data. The novel contribution of this paper is that the composition attack is applied to anonymized social network data. A new algorithm for the composition attack is proposed and its usability is demonstrated with experiments using pairs of synthetic scale-free networks substituting real social networks.”

doi: 10.1016/j.clsr.2017.05.022.
https://doi.org/10.1016/j.clsr.2017.05.022.
ABSTRACT: Chinese officials are increasingly turning to a policy known as Informatisation, connecting industry online, to utilise technology to improve efficiency and tackle economic developmental problems in China. However, various recent laws have made foreign technology firms uneasy about perceptions of Rule of Law in China. Will these new laws, under China’s stated policy of ”Network Sovereignty” (“网络主权” “wangluo zhuquan”) affect China’s ability to attract foreign technology firms, talent and importantly technology transfers? Will they slow China’s technology and Smart City drive? This paper focuses on the question of whether international fears of China’s new Cyber Security Law are justified. In Parts I and II, the paper analyses why China needs a cyber security regime. In Parts III and IV it examines the law itself. ".
ABSTRACT: In this article, we describe a new type of attack on IoT devices, which exploits their ad hoc networking capabilities via the Zigbee wireless protocol, and thus cannot be monitored or stopped by standard Internet-based protective mechanisms. We developed and verified the attack using the Philips Hue smart lamps as a platform, by exploiting a major bug in the implementation of the Zigbee Light Link protocol, and a weakness in the firmware update process. By plugging in a single infected lamp anywhere in the city, an attacker can create a chain reaction in which a worm can jump from any lamp to all its physical neighbors, and thus stealthily infect the whole city if the density of smart lamps in it is high enough. This makes it possible to turn all the city’s smart lights on or off, to brick them, or to use them to disrupt nearby Wi-Fi transmissions.

ABSTRACT: With the significant improvement in deployment of Internet of Things (IoT) into the smart grid infrastructure, the demand for cyber security is rapidly growing. The Energy Internet (EI) also known as the integrated internet-based smart grid and energy resources inherits all the security vulnerabilities of the existing smart grid. The security structure of the smart grid has become inadequate in meeting the security needs of energy domains in the 21st century. In this paper, we propose a cyber security framework capable of providing adequate security and privacy, and supporting efficient energy management in the EI. The proposed framework uses an identity-based security mechanism (I-ICAAAAN), a secure communication protocol and an Intelligent Security System for Energy Management (ISSEM) to certify security and privacy in the EI. Nash Equilibrium solution of game theory is applied for the evaluation of our proposed ISSEM based on security events allocation. The formal verification and theoretical analysis show that our proposed framework provides security and privacy improvement for IoT-based EI. ".

ABSTRACT: In the forthcoming Smart City scenario, Service Providers will require users to authenticate themselves and authorize their mobile applications to access their remote accounts. In this scenario, OAuth 2.0 has been widely adopted as a de facto authentication and authorization protocol. However, the current OAuth 2.0 protocol specification does not consider the user privacy issue and presents several vulnerabilities that can jeopardize users’ privacy rights. Therefore, in this paper we propose an OAuth 2.0 based protocol for Smart City mobile applications that addresses the user privacy issue by integrating a pseudonym-based signature scheme and a signature delegation scheme into the OAuth 2.0 protocol flow. The proposed solution allows users to self-generate user-specific and app-specific pseudonyms on-demand and ensure privacy-enhanced user authentication at the Service Provider side. The proposed protocol has been validated with Proverif and its performance has been evaluated in terms of time and space complexity. Results show that the proposed protocol can provide users with efficient and effective means to authenticate towards service providers while preventing user tracking and impersonation from malicious entities located in the network side or in the users’ mobile device. ".

ABSTRACT: The General Data Protection Regulation (GDPR) will come into force in the European Union (EU) in May 2018 to meet current challenges related to personal data protection and to harmonise data protection across the EU. Although the GDPR is anticipated to benefit companies by offering consistency in data protection activities and liabilities across the EU countries and by enabling more integrated EU-wide data protection policies, it poses new challenges to companies. They are not necessarily prepared for the changes and may lack awareness of the upcoming requirements and the GDPR’s coercive measures. The implementation of the GDPR requirements demands substantial financial and human resources, as well as training of employees; hence, companies need guidance to support them in this transition. The purposes of this study were to compare the current Data Protection Directive 95/46/EC with the GDPR by systematically analysing their differences and to identify the GDPR’s practical implications, specifically for companies that provide services based on personal data. This study aimed to identify and discuss the changes introduced by the GDPR that would have the most practical relevance to these companies and possibly affect their data management and usage practices. Therefore, a review and a thematic analysis and synthesis of the article-level changes were carried out. Through the analysis, the key practical implications of the changes were identified and classified. As a synthesis of the results, a framework was developed, presenting 12 aspects of these implications and the corresponding guidance on how to prepare for the new requirements. These aspects cover business strategies and practices, as well as organisational and technical measures.

ABSTRACT: Ensuring privacy in recommender systems for smart cities remains a research challenge, and in this paper we study collaborative filtering recommender systems for privacy-aware smart cities. Specifically, we use the rating matrix to establish connections between a privacy-aware smart city and k -coRating, a novel privacy-preserving rating data publishing model. First, we model privacy concerns in a smart city as the problem of privacy-preserving collaborative filtering recommendation. Then, we introduce k -coRating to address privacy concerns in published rating matrices, by filling the null ratings with predicted scores. This allows us to mask the original ratings to preserve k -anonymity-like data privacy, and enhance data utility (quantified using prediction accuracy in this paper). We show that the optimal k -coRated mapping is an NP-hard problem and design an efficient greedy algorithm to achieve k -coRating. We then demonstrate the utility of our approach empirically.

Bibliography on “digital divide”

ABSTRACT: Digital inequalities research has documented a set of practices related to people’s Internet use that questions the binary division between Internet users and non-users. In particular, among older adults, a considerably large group of individuals has been identified as not using the Internet by themselves; rather, they ask members of their personal networks to do things online for them—they “use” the Internet by proxy. Since previous research shows that children and grandchildren are important sources of help when it comes to Internet use, the current paper indicates that the notion of intergenerational solidarity is a sound conceptual basis for understanding the relationship between social support networks and proxy Internet use
among Internet non-users. Notably, the concept of functional solidarity as a dimension of intergenerational solidarity is advanced, as this relates to the frequency of the intergenerational exchange of resources and services encompassing various types of assistance and support offered between two generations. Empirically, this paper investigates how the two types of social support networks and their characteristics are associated with proxy Internet use. The results from multivariate analyses of survey data from a nation-wide representative sample show that when comparing emotional support and socializing networks, only the latter is associated with proxy Internet use: Internet non-users who have (grand-)children in their socializing support network are more likely to engage in proxy Internet use. The results also indicate that non-users who are younger, more educated, have children, and live in urban areas are more inclined to engage in proxy Internet use, regardless of the type of social support. The findings indicate the importance of empirical investigation related to different aspects of functional solidarity, as the effects on proxy Internet use depend on the type of social support."


ABSTRACT: This paper examines the impact of countries' distance between their Internet usage and the world' average of the Internet usage intensity on their integration into the world market of trade in commercial services. Using an unbalanced panel dataset of 175 countries over the annual period 2000–2013, the empirical analysis indicates that the narrowing of the Internet-related distance would improve countries' integration into the world trade in commercial services market. Furthermore, it helps those countries that are geographically far from the world market to compensate for the adverse effect of this geographical distance on their integration into the world market of trade in commercial services."


ABSTRACT: Purpose Community wireless networking has become a growing trend in both metropolitan and rural areas around the world. However, few studies have sought to understand what motivates people to use community wireless networks and the unintended effects that those technologies have on communities, particularly for rural users. The purpose of this paper is to explore the benefits and usage of an asynchronous wireless internet system in a rural village of Cambodia to examine the issues and challenges in the acceptance of a new technology in a less-developed country.

Bibliography on "digital economy"


ABSTRACT: Purpose The purpose of this paper is to assess the correlations between mobile banking and inclusive development (poverty and inequality) in 93 developing countries for the year 2011. Design/methodology/approach Mobile banking entails the following: mobile phones used to pay bills? and ?mobile phones used to receive/send money?, while the modifying policy indicator includes the human development index (HDI). The data are decomposed into seven sub-panels based on two fundamental characteristics: regions (Latin America, Asia and the

**ABSTRACT:** Purpose The purpose of this paper is to examine how information and communication technology (ICT) influences openness to improve the conditions of doing business in sub-Saharan Africa. Design/methodology/approach The data were collected for the period 2000-2012. ICT is proxied with internet and mobile phone penetration rates whereas openness is measured in terms of financial and trade globalisation. Ten indicators of doing business are used, namely: cost of business start-up procedures; procedure to enforce a contract; start-up procedures to register a business; time required to build a warehouse; time required to enforce a contract; time required to register a property; time required to start a business; time to export; time to prepare and pay taxes; and time to resolve an insolvency. The empirical evidence is based on generalised method of moments with forward orthogonal deviations. Findings While the authors find substantial evidence that ICT complements openness to improve conditions for entrepreneurship, the effects are contingent on the dynamics of openness, ICT and entrepreneurship. Theoretical and practical policy implications are discussed. Originality/value The inquiry is based on two contemporary development concerns: the need for policy to leverage on the ICT penetration potential in the sub-region and the relevance of entrepreneurship in addressing associated issues of population growth such as unemployment.; Purpose The purpose of this paper is to examine how information and communication technology (ICT) influences openness to improve the conditions of doing business in sub-Saharan Africa. Design/methodology/approach The data were collected...

**ABSTRACT:** Purpose Given that smartphones are widely used as a key means for mobile commerce, the purpose of this paper is to provide in-depth understanding of determinants of the utilitarian value that customers seek to obtain from using smartphone-based mobile commerce. Drawing on the technology acceptance model (TAM), the study proposes that usefulness and ease of use are two typical factors representing utilitarian value and verifies their impacts on smartphone-based m-commerce use. Moreover, the paper expands the TAM by considering mobile-specific characteristics (i.e. service ubiquity and location-based service (LBS)) and a self-service technology (SST) characteristic (i.e. user control) as determinants of utilitarian value.

**Design/methodology/approach** The study entailed conducting a survey, and analyses were conducted based on a total of 379 responses from undergraduate and graduate students who had experience using smartphones for mobile commerce. The analyses used structural equation modeling to test the research model and hypotheses. Findings First, in the context of the various technologies-involved m-commerce, TAM serves as a theoretical lens to predict user behavior. Second, usefulness is greatly increased by service ubiquity, LBS, and user control. Third, ease of use is enhanced by service ubiquity and user control. Finally, ease of use is a determinant of usefulness. Originality/value The findings imply that mobile-specific and SST characteristics are the key determinants of utilitarian value in performance-oriented mobile commerce, and utilitarian value is a key determinant of smartphone-based mobile commerce use.


**ABSTRACT:** This study explores the development of a new form of social commerce in emerging markets from three interlocking aspects, namely, social (trust and familiarity), technical (governing form factor and technological utility), and socio-technical (perceived ease of use, perceived usefulness and word of mouth). As social commerce is proliferating and evolving across many emerging markets, we explore how these above-stated constructs manifest themselves in these markets. Our findings show the importance of governing form factors such as mobile system in the development of social commerce in emerging markets. Furthermore, familiarity and
trust play a major role in mediating exchange between sellers and buyers and its positive effects in buyers’ perceived usefulness of each social commerce platform. Finally, Word of Mouth plays a vital role in building trust and helps in increasing buyer propensity and intention to search for products on these social commerce platforms. 


ABSTRACT: Purpose A multitude of factors influence the information technology outsourcing (ITO) decision. Organizations must systematically evaluate these factors prior to making the ITO decision. The purpose of this paper is to provide an in-depth analysis toward understanding the critical factors in affecting ITO decision in the context of e-banking services.


ABSTRACT: While attention has always been prized above money, few people have had the means to attract it to themselves. But the new digital economy has provided everyone with a loudspeaker; thus efforts at getting noticed have rapidly escalated in global society. The attention economy focuses on the mechanisms that mediate the allocation of this scarce entity. Social networks and big data play a role in determining what is noticed and acted upon.


ABSTRACT: Purpose The purpose of this paper is threefold: first, to study the influence of self-brand image congruity and value congruity on consumer engagement in online brand communities (OBCs); second to test whether gender moderates this effect; and third, it also examines the role of consumer engagement as a driver of brand loyalty. Design/methodology/approach Using an online questionnaire, 443 responses were collected from consumers who are members of at least one OBC on Facebook. Structural equation modeling was used to analyze the data. Findings The results revealed that both self-brand image congruity and value congruity significantly affect consumer engagement. A positive effect of consumer engagement on brand loyalty was also attained. Third, the results revealed that gender did not moderate the examined relationships. Practical implications This research integrates and broadens existing explanations of different congruity effects on consumer engagement. This study thus suggests the value of developing their OBCs to exhibit congruence with customers? self-image and value, which in turn, will contribute to the development of brand loyalty. Originality/value This research applies congruity theory to examine the impact of self-brand image- and value congruity on consumer engagement in OBCs. Through the establishment of this novel theoretical link, this study furthers insight into the domain of social media marketing;
their OBCs to exhibit congruence with customers? self-image and value, which in turn, will contribute to the development of brand loyalty. Originality/value This research applies congruity theory to examine the impact of self-brand image- and value congruity on consumer engagement in OBCs. Through the establishment of this novel theoretical link, this study furthers insight into the domain of social media marketing.

Islam, Md Mazharul, Essam M. Habes, and Md Mahmudul Alam. "The Usage and Social Capital of Mobile Phones and their Effect on the Performance of Microenterprise: An Empirical Study." Technological Forecasting and Social Change, In Press (2018) doi: 10.1016/j.techfore.2018.01.029. https://doi.org/10.1016/j.techfore.2018.01.029. ABSTRACT: This study aims to uncover the impact of the information and communication capabilities of mobile phone use on the performance of microenterprises in Bangladesh. Data were collected from microenterprise owners through face-to-face interviews and a series of statistical analyses were used to assess the effects of mobile phone use. The results of the study show a significant direct relationship between mobile phone use, social capital, and the performance of microenterprises. Further investigation revealed that social capital and non-financial business performance variables are involved in the mediation process between the financial performance of microenterprises and the use of mobile phones. The novelty of this research lies in being the first to establish a high-level statistical relationship between the use of the mobile phone, its mediating factors, and the financial performance of microenterprises.

Lv, Zhepeng, Yue Jin, and Jinghua Huang. "How do Sellers use Live Chat to Influence Consumer Purchase Decision in China?" Electronic Commerce Research and Applications, 28 (2018): 102-113 doi: 10.1016/j.elecap.2018.01.003. https://doi.org/10.1016/j.elecap.2018.01.003. ABSTRACT: Uncertainty brought about by the separation of information flow and product flow has become a critical obstacle to e-commerce development. From the perspective of presence and uncertainty, we attempt to determine whether live chat usage can influence consumer purchase decision and how live chat can be used to do so. Logit regression models are adopted to analyze data collected from an online store in Taobao.com. We find that: (1) live chat usage is positively associated with consumer purchase decisions; and (2) the behavior of sellers when using live chat can affect consumer purchase decision.

Metallo, Concetta, Rocco Agrifoglio, Francesco Schiavone, et al. "Understanding Business Model in the Internet of Things Industry." Technological Forecasting and Social Change, In Press doi: 10.1016/j.techfore.2018.01.020. https://doi.org/10.1016/j.techfore.2018.01.020. ABSTRACT: This research presents the results of an exploratory study of how organisations operating in the Internet of Things (IoT) industry are building and innovating their business model (BM). Using an explorative sequential approach through the multiple-case study method, we apply the "Canvas BM" framework to explore the BM of three companies operating in IoT industry, namely Intel, Solair, and Apio. The paper finds the most important building blocks - key activities, key resources, and value proposition - and most critical related factors enabling IoT-oriented organisations to create and capture value. Furthermore, our results also suggest that the main difference in the processes of BM building and innovation depend on the different capabilities and competencies possessed by organisations. This study therefore advances the theoretical understanding of the critical factors for the value creation process in the IoT industry's organisations and offers interesting implications for management theory and practice.

faced its first big data challenges of click-stream analysis with map-reduce technology. Since then the digital economy has been becoming much more pervasive. As the digital economy evolves, looking to benefit from its burgeoning big data assets, an important technical-business challenge is emerging: How to acquire, store, access, and exploit the data at a cost that is lower than the incremental revenue or GDP that its exploitation generates. Especially now that efficiency increases, which lasted for 50 years thanks to improvements in semiconductor manufacturing, is slowing and coming to an end.

https://doi.org/10.1016/j.techfore.2017.10.017.
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: With the rapid advent of e-commerce in China, the technological innovation of third-party payment has experienced explosive growth. This important technological innovation, initiated by emerging Internet companies, is helping the traditional financial industry’s payment business—represented by commercial banks—expand in both depth and breadth. Meanwhile, there is also a large degree of substitution, competition and crowding out among these banks in terms of the traditional financial industry’s basic payment and settlement functions, potential customers, deposit and loan services and traditional intermediary business. This paper explores the impact (episodic and long-term steady-state) of the technological innovation of payment on commercial banks. It also considers the impact of technological innovation on industrial evolution to clarify whether technological innovation offsets the advantages of traditional industries or promotes industrial development. This study adopts the Vector Auto-Regression (VAR) impulse response model to analyze the impact of Internet Third-Party Payment (TPP) on the traditional financial industry from 2007 to 2014. The empirical results suggest that in China, third-party payments have had a significant positive correlation with the value creation capabilities of traditional financial industries, and that this relationship tends to remain in a steady state in the long term. Based on these findings, this paper confirms that the technological innovation of methods of payment in emerging economies, such as China, has promoted the development of the financial industry and accelerated the process of industrial evolution. We conclude the paper with feasible policy suggestions.
http://doi.acm.org/10.1145/3173550.
ABSTRACT: Digital Platforms in the computing "cloud" are fundamental features of the digital revolution, entangled with what we term "intelligent tools." An abundance of computing power enabling generation and analysis of data on a scale never before imagined permits the reorganization/transportation of services and manufacturing. Here, we expand two central issues raised in our 2016 article "The Rise of the Platform Economy." First, will the increased movement of work to digital platforms provide real and rising incomes with reasonable levels of equality? The productivity possibilities of the digital era are just coming into view. The consequences will be a matter of policy and corporate strategy. Much will depend on how intelligent tools, including big data analytics, artificial intelligence, robotics, and sensors will coalesce into systems that appear to be nearly autonomous. The goal of firms could be to simply displace work and remove human intelligence from work tasks. Alternatively, it is possible for intelligent tools to help augment intelligence and capabilities, supporting rather than displacing workforce abilities. Moreover, as communities, is it possible to choose the kind of society that will result from the digital "platform economy." Digital technology does not, in and of itself, dictate a single answer. The increasing diffusion of intelligent tools has already exposed tension between public governance and private governance of platforms. The significance is that a platform’s operation sets the rules and parameters of participant action. Digital platforms are regulatory structures and, thus, governance systems. Policy cannot just adapt to the emergence of the digital economy and society. Policy choices are indeed part of the technological trajectories themselves.

Bibliography on “e-Government”

doi: 10.1109/ISCSIC.2017.34
http://dx.doi.org/10.1109/ISCSIC.2017.34
ABSTRACT: Most of the country in last few years using the e-government service. This service of e-government serves citizen, in general, using world wide web. It gives permission to the government to analyse, process and give a report on data efficiency to evolve to a decision. Because of the technology became a smart, we should improve e-government services. To achieve realising the power of data, integration in government service, seamless service experience, and citizen engagement, we transform e-government service to the smart government service. Now the whole world is to ward to using the smart government with smart technology. The smart government is an upgrade of e-government that enables the citizen to access to service easily with smart technology. The smart government produce to the citizen, business, health, and economical to use the government service easily and fast. In this paper will present the smart government features, discuss the importance of smart government, why move to the smart government? and how can make citizen interact with the government services?.

doi: 10.1109/ICEMIS.2017.8273047
http://dx.doi.org/10.1109/ICEMIS.2017.8273047
ABSTRACT: Internet of Things (IoT) has drawn great attention in industry, academia, and research As the IoT technology still in beginning of its implementation in all industries and so much research are ongoing to study and develop business model to grasp the opportunities
brought by IoT. A research market conducted by Gartner expects that around 25 billion IoT devices or sensors to be connected by 2020. As expected IoT technology will enter every aspect of our life. Therefore, the main objective of this paper is to provide an exploration of how businesses will be affected by IoT introduction and listing the opportunities brought IoT technology and what challenges are facing its implementation.

http://dx.doi.org/10.1109/ICTSS.2017.8288887
ABSTRACT: Based on the increasing need for integrated services, the role of information technology in our daily lives has become inevitable. This includes the management of the neighborhood, both horizontally (landed houses) or vertically (apartments). This system helps manage operational activity in a residential neighborhood as well as apartments, covers the transmission of information, billing notification and payments, management of the occupants, the maintenance of public facilities and housing/unit, filing/petition of documents, and security. Furthermore, it will also act as a fundamental systems to be implemented towards M-Government applications package. This system is built from a concept of service in citizen centric E-Government systems, which will establish a multiplatform (both web and mobile) information services within the residential / apartment accessible and executed anytime, anywhere. As a prototype, this system will be implemented at RW 04 Sub-District of Coblong, Dago, Bandung.

do: 10.1109/ICITSI.2017.8267928
http://dx.doi.org/10.1109/ICITSI.2017.8267928
ABSTRACT: e-Government assessment and good governance assessment has been conducted by several national assessments in Indonesia. The results showed that correlation between e-government implementation and good governance achievement is not very strong. e-Government is defined as a set of online application services to the citizen, while good governance is defined as the references to trusted services in guiding political and socio-economic relationships. This paper proposes an e-government implementation embedded good governance practices in providing trusted public services, while success stories of e-government requires an enterprise architecture (EA) model as a comprehensive approach to achieve good government governance (GGG). The paper is organized into three part. (1) Reviewing e-government and good governance assessments correlation. (2) Elaborates a high-level framework in applying EA to e-government implementation and good governance achievement with Service Oriented Architecture (SOA) is proposed to be the main technological approach. (3) Discussion an EA model with a high-level framework of proposed compared to e-government service based framework. The analysis results show that the proposed model provides practicality to achieve GGG by employing service based framework in e-government implementation and methodology offered by the Open Group Architecture Framework (TOGAF) as EA approach.

do: 10.1016/j.tele.2018.01.004.
https://doi.org/10.1016/j.tele.2018.01.004.
ABSTRACT: The main objective of the work is to identify the key factors that must be considered by the Government when designing the web service portals used by its employees. To achieve these objectives, empirical work was then carried out to collect primary information, using the Delphi method and obtaining the opinion of 31 specialists who are experts in quality management in the university environment. The results of the study show that four dimensions must be considered to measure the quality of electronic services. These dimensions are: quality of information, technical efficiency, privacy and communication with the employee."

ABSTRACT: This editorial opens by introducing Internet Plus Government, a new government initiative emerging after the US presidential election in 2008. Comparing to the more descriptive definitions of e-government, supporters of 'Internet Plus Government' emphasize the transformative and normative aspect of the newest generation of Information and Communication Technology (ICTs). They argue that the new initiative designates how government should operate and in turn implies how state-citizen relationships are transformed. To understand the core of this initiative and whether it offers new opportunities to solve public problems, we conducted analyses of research articles published in the e-governance area between 2008 and 2017. Our analysis suggests that the Internet Plus Government initiative has enriched the government information infrastructure. That is, it has enabled the accumulation and use of huge volumes of data for better decision making. The advancement of open data, the wide use of social media, and the potential of data analytics have also generated pressure to address challenging questions and issues in e-democracy. E-democracy involves the use of digital networks by which government solicits or receives the views of citizens, businesses and other organizations "on matters ranging from full-scale legislative change to the tweaking of the management of services and programs" (Perri 6, 2004) However, the analysis leads us to deliberate on whether Internet Plus Government initiatives worldwide have actually achieved their goal. After introducing papers included in this special issue, we present challenges to be addressed before Internet Plus Government initiatives realize their potential towards better public governance."

**ABSTRACT:** The means through which governments deliver services and the way they operate may be considerably enhanced through cloud computing. It can help to address e-government implementation challenges and revolutionize e-government systems in terms of cost savings and the professional use of resources. The aim of this paper is to analyze the importance and performance of the factors that influence the fitness of cloud computing for e-government implementation. This paper integrates the task technology fit model with the diffusion of innovation theory to address this issue. Yemeni public institutions were identified as sources for data collection and 292 information technology employees participated as sample respondents for a structured questionnaire. Security, compatibility, relative advantage, and tasks were the variables found to affect the fitness of cloud computing for e-government activities. However, no impact was seen from the standpoints of trialability and complexity of the technology. In terms of assessing the fitness of cloud computing for e-government services, a greater understanding among policy formulators was sought through the importance-performance matrix analysis (IPMA). The results of IPMA can help identifying areas for strategic focus to assess cloud computing as an alternative technology to implement e-government services.


**ABSTRACT:** This study addresses whether e-government influences the level of corruption control in a cross-country view. To that end, it examines the influence of e-government service maturity on corruption control considering international-level political, economic, and cultural differences. The path analysis on the relationships among various global indicators reveals that e-government service maturity contributes to controlling corruption, and national culture moderates the anti-corruption effect of e-government. Cross-country disparities in political, economic, and cultural conditions influence the variation in the impact of e-government on corruption control. While convincing evidence that affluent democracies can control corruption more effectively than other countries is presented, an examination of cultural moderation finds that national cultures characterized as having unequal power distribution and uncertainty avoidance have a decreased anti-corruption effect of e-government.


**ABSTRACT:** Purpose This study aims to identify the challenges in current government organizations while providing services that require a collaborative effort. It also identifies the ways through which government organizations can address the collaboration challenges in ways such as those adopted by leading information technology organizations. Finally, this research also aims to identify the obstacles in government organizations, which could prevent them from successfully adopting new technologies.


**ABSTRACT:** Purpose The main aim of this study is to do a comparison of Open Government Data (OGD) frameworks in Iran, Lebanon and Jordan and underscore the prospects and challenges in OGD implementation. Design/methodology/approach Basing itself on two OGD models offered by Kalampokis and his colleagues (Kalampokis et al., 2011) and Sieber and Johnson (2015) and the
typology of ?good? and ?bad? data based on factors such as ?usability?, ?findability? and ?understandability?, the study uses a documentary analysis for generating evidences by scanning the websites linked with OGD across the three countries. Following a qualitative methodology, countries shall be classified in terms of these models and the typology depending upon their OGD nature and scope. Findings OGD adoption in Iran, Lebanon and Jordan is at a nascent stage, and the OGD nature is of the ?bad? type. These countries have merely ?aggregated data? over their Web interfaces which are incomplete, outdated and do not permit analytics. Besides, there are a number of challenges which need to be overcome for proper OGD adherence. Nevertheless, there are a lot of prospects for harnessing OGD for improved citizen?government interaction by creating a culture of transparency, collaboration and accountability. Practical implications The study holds immense significance for government bodies to appreciate the potential of OGD which would go a long way to add social and economic value to propel the country?s growth. Originality/value No study has been conducted so far which compares Iran, Lebanon and Jordan in terms of their OGD policies; this is the main contribution of the study. Also, conceding the significance of the three countries in terms of their socio-economic indices, academic research is warranted in relation to these countries.; Purpose The main aim of this study is to do a comparison of Open Government Data (OGD) frameworks in Iran, Lebanon and Jordan and underscore the prospects and challenges in OGD implementation. Design/methodology/approach Basing itself on two OGD models offered by Kalampokis and his colleagues (Kalampokis et al., 2011) and Sieber and Johnson (2015) and the typology of ?good? and ?bad? data based on factors such as ?usability?, ?findability? and ?understandability?, the study uses a documentary analysis for generating evidences by scanning the websites linked with OGD across the three countries. Following a qualitative methodology, countries shall be classified in terms of these models and the typology depending upon their OGD nature and scope. Findings OGD adoption in Iran, Lebanon and Jordan is at a nascent stage, and the OGD nature is of the ?bad? type. These countries have merely ?aggregated data? over their Web interfaces which are incomplete, outdated and do not permit analytics. Besides, there are a number of challenges which need to be overcome for proper OGD adherence. Nevertheless, there are a lot of prospects for harnessing OGD for improved citizen?government interaction by creating a culture of transparency, collaboration and accountability. Practical implications The study holds immense significance for government bodies to appreciate the potential of OGD which would go a long way to add social and economic value to propel the country?s growth. Originality/value No study has been conducted so far which compares Iran, Lebanon and Jordan in terms of their OGD policies; this is the main contribution of the study. Also, conceding the significance of the three countries in terms of their socio-economic indices, academic research is warranted in relation to these countries.

https://doi.org/10.1016/j.cpr.2018.01.008.

ABSTRACT: Family carers of people who have long term illness often experience physical and mental health morbidities, and burden. While there is good evidence to suggest that carers benefit from psychosocial interventions, these have primarily been delivered via face-to-face individual or group-formats. eHealth interventions offer a novel, accessible and self-paced approach to care delivery. Whether these are effective for carers' wellbeing has been little explored. This paper reports the first comprehensive systematic review in this area. A total of 78 studies, describing 62 discrete interventions, were identified. Interventions commonly aimed to promote carers' knowledge, self-efficacy, caregiving appraisal, and reduce global health morbidities. Interventions were offered to carers of people with a wide range of long term illness; dementia has been the most researched area, as reported in 40% of studies. Clinical and methodological heterogeneity in interventions precluded meta-analyses, and so data were analysed narratively. The most popular approach has comprised psychoeducational interventions delivered via an enriched online environment with supplementary modes of communication, such as network support with professionals and peers. Overall, carers appreciate the flexibility and
self-paced nature of eHealth interventions, with high rates of satisfaction and acceptability. More studies using robust designs are needed to extend the evidence base.

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doi: 10.1109/IAC.2017.8280656
http://dx.doi.org/10.1109/IAC.2017.8280656
ABSTRACT: The utilization of information technology in the government environment is very important to improve accountability, transparency, effectiveness, efficiency, and responsibilities to public service and organize clean and fair government. Because of technology improvements, there aren’t any excuses for slow processing of jobs and duties. Everyone at any position wants things to be done in the shortest time. Therefore, attempts to apply instant, fast and convenient processing methods became a common aim. Papua is one of the Provinces that have developed and implemented E-Government. This study aims to describe, analyze and interpret the conditions of E-Government Sites in Papua Province Government, Jayapura City, Jayapura District, Merauke District and Jayawijaya District using Transparency, Service, Efficiency, Economy, Aspiration, Display, Update, and Stages of Achieving E-Government Goals by World Bank Group. E-Government implementation in Papua still far below the ideal standard. In terms of complexity and time, the E-Government service of local government in Papua Province has reached Interaction stage. While the results of measuring the level of performance and effectiveness of E-Government shows that the service has not provided significant benefits to visitors.

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).

doi: 10.1109/ICE.2017.8279931
http://dx.doi.org/10.1109/ICE.2017.8279931
ABSTRACT: This paper investigates user satisfaction evaluation of Malaysian e-government education services. Although different frameworks and methods have been used to evaluate the quality of online services e.g., SERVQUAL, SERVPERF and other practitioner-orientated tools, in this paper we propose the usefulness of importance-performance analysis (IPA). A major benefit of IPA is that it allows both importance and performance to be measured using a two-dimensional grid. More specifically, IPA is used to evaluate education online services in Malaysia from the user (citizen) perspective and to identify areas of strategic importance which can help to improve future online services in Malaysia. The paper raises the issue that despite the increased uptake of
e-government in Malaysia, there is the need for more practical evaluation tools to gauge the perceptions of citizens in their use of e-government, particularly from an educational context.


ABSTRACT: Open government data (OGD) are valued by many countries and governments worldwide because of its important political, economic, and social benefits. Based on the resource-based theory, we construct a research model from the aspects of tangible, intangible, and human resources, as well as organizational culture to explore the factors that influence open government data capacity (OGDC). Results indicate that data variables, basic resources, organizational arrangement and technical capacity are directly related to the OGDC of government agencies; power distance negatively moderates the relationship between organizational structure and OGDC; uncertainty avoidance moderates the relationship among basic resources, organizational arrangement and OGDC. On this basis, we put forward relevant suggestions for the following development of OGD.

Bibliography on “e-Health”


ABSTRACT: Progress in Information and Communication Technologies (ICTs) is shaping more and more the healthcare domain. ICTs adoption provides new opportunities, as well as discloses novel and unforeseen application scenarios. As a result, the overall health sector is potentially benefited, as the quality of medical services is expected to be enhanced and healthcare costs are reduced, in spite of the increasing demand due to the aging population. Notwithstanding the above, the scientific literature appears to be still quite scattered and fragmented, also due to the interaction of scientific communities with different background, skills, and approaches. A number of specific terms have become of widespread use (e.g., regarding ICTs-based healthcare paradigms as well as at health-related data formats), but without commonly-agreed definitions. While scientific surveys and reviews have also been proposed, none of them aims at providing a holistic view of how today ICTs are able to support healthcare. This is the more and more an issue, as the integrated application of most if not all the main ICTs pillars is the most agreed upon trend, according to the Industry 4.0 paradigm about ongoing and future industrial revolution. In this paper we aim at shedding light on how ICTs and healthcare are related, identifying the most popular ICTs-based healthcare paradigms, together with the main ICTs backing them. Studying more than 300 papers, we survey outcomes of literature analyses and results from research activities carried out in this field. We characterize the main ICTs-based healthcare paradigms stemmed out in recent years fostered by the evolution of ICTs. Dissecting the scientific literature, we also identify the technological pillars underpinning the novel applications fueled by these technological advancements. Guided by the scientific literature, we review a number of application scenarios gaining momentum thanks to the beneficial impact of ICTs. As the evolution of ICTs enables to gather huge and invaluable data from numerous and highly varied sources in easier ways, here we also focus on the shapes that this healthcare-related data may take. This survey provides an up-to-date picture of the novel healthcare applications enabled by the ICTs advancements, with a focus on their specific hottest research challenges. It helps the interested readership (from both technological and medical fields) not to lose orientation in the complex landscapes possibly generated when advanced ICTs are adopted in application scenarios dictated by the critical healthcare domain.
doi: 10.1109/ICEMIS.2017.8273047
http://dx.doi.org/10.1109/ICEMIS.2017.8273047
ABSTRACT: Internet of Things (IoT) has drawn great attention in industry, academia, and research. As the IoT technology is still in the beginning of its implementation in all industries and so much research is ongoing to study and develop business models to grasp the opportunities brought by IoT. A research market conducted by Gartner expects that around 25 billion IoT devices or sensors to be connected by 2020. As expected IoT technology will enter every aspect of our life. Therefore, the main objective of this paper is to provide an exploration of how businesses will be affected by IoT introduction and listing the opportunities brought by IoT technology and what challenges are facing its implementation.

https://doi.org/10.1016/j.techfore.2018.01.033.
ABSTRACT: The development of information and communication technology has led to the rapid growth of medical data encountered by various players in the healthcare industry. This evolution from a paper-based database to electronic records demonstrates the continuous advancement of medical information systems. Medical institutions are paying more attention to this issue and attempting to figure out the applications of big data. However, most of them have struggled to find pathways to apply big data adequately. Using hybrid methodologies and examining Taiwan's healthcare industry, this research aims to assess, forecast, and summarize the major applications of medical big data, and establish strategic pathways for medical institutions to follow regarding different dimensions of applications. First, a review of literature related to the utility of medical big data and interviews with relevant stakeholders were conducted. Content analysis was subsequently done to extract the key applications, and DEMATEL was used to find out their Net Relation Map (NRM). With the Innovation Importance-Resistance Analysis (IRA), this study carried out IRA-NRM analysis to cultivate the strategy of medical big data development. This research concluded an IRA-NRM framework of 4 application categories and 16 factors. Suggestions for medical institutions regarding the use of medical big data are also provided.

https://doi.org/10.1016/j.icte.2018.01.009.
ABSTRACT: As information and communication technologies are transforming traditional cities into smart cities, the Internet of Things (IoT) makes smart cities efficient and responsive. In retrospect, for medical technologists to enter and establish themselves in the new healthcare industry, it is imperative that we look beyond traditional forms of technological innovations. Hence, IoT is an avenue for consideration. It is hoped that IoT-based healthcare devices will be able to provide the early detection of potential exacerbations and inform patients and medical professionals such that they can be treated promptly. In regard to smart healthcare within smart cities, this paper presents a study where an optoelectronic controller chip was designed to control the micro light emitting diode (LED) matrix used in retinal prosthesis. An individually addressable low-power micro LED array is designed and the results are reported. The chip is fabricated using the German foundry X-FAB 0.35-μm complementary metal oxide semiconductor (CMOS) technology and the total die area is 4 mm². It is envisaged that the presented design and technology could potentially be used for a number of applications in healthcare and consumer electronics.

ABSTRACT: In the healthcare sector, information is the most important aspect, and the human body in particular is the major source of data production: as a result, the new challenge for world healthcare is to take advantage of these huge amounts of data de-structured among themselves. In order to benefit from this advantage, technology offers a solution called Big Data Analysis that allows the management of large amounts of data of a different nature and coming from different sources of a “computerized” healthcare, as there are considerable changes made by the input of digital technology in all major health areas. Clinical intelligence consists of all the analytical methods made possible through the use of computer tools, in all the processes and disciplines of extraction and transformation of crude clinical data into significant insights, new purposes and knowledge that provide greater clinical efficacy and best health pronouncements about past performance, current operations and future events. It can therefore be stated that clinical intelligence, through patient data analysis, will become a standard operating procedure that will address all aspects of care delivery. The purpose of this paper is to present clinical intelligence approaches through Data Mining and Process Mining, showing the differences between these two methodologies applied to perform “real process” extraction to be compared with the procedures in the corporate compliance template (the so called ”Model 231”) by “conformance checking”..


ABSTRACT: With recent aging demographic trends, the needs for enhancing geo-spatial analysis capabilities and monitoring the status of accessibilities of its citizens with healthcare services have increased. The accessibility to healthcare is determined not only by geographic distances to service locations, but also includes travel time, available modes of transportation, and departure time. Having access to the latest and accurate information regarding the healthcare accessibility allows the municipal government to plan for improvements, including expansion of healthcare infrastructure, effective labor distribution, alternative healthcare options for the regions with low accessibilities, and redesigning the public transportation routes and schedules. This paper proposes a new method named, Seoul Enhanced 2-Step Floating Catchment Area (SE2SFCA), which is customized for the city of Seoul, where population density is higher and the average distance between healthcare-service locations tends to be shorter than the typical North American or European cities. The proposed method of SE2SFCA is found to be realistic and effective in determining the weak accessibility regions. It resolves the over-estimation issues of the past, arising from the assignment of high healthcare accessibility for the regions with large hospitals and high density of population and hospitals.


ABSTRACT: Background Electronic Healthcare Records (EHRs) are created to capture summaries of care and contact made to healthcare services. EHRs offer a means to analyse admissions to hospitals for epidemiological research. In the United Kingdom (UK), England, Scotland and Wales maintain separate data stores, which are administered and managed exclusively by devolved Government. This independence results in harmonisation challenges, not least lack of uniformity, making it difficult to evaluate care, diagnoses and treatment across the UK. To overcome this lack of uniformity, it is important to develop methods to integrate EHRs to provide a multi-nation dataset of health. Objective To develop and describe a method which integrates the EHRs of Armed Forces personnel in England, Scotland and Wales based on variable commonality to produce a multi-nation dataset of secondary health care. Methods An Armed Forces cohort was used to extract and integrate three EHR datasets, using commonality as the linkage point. This was achieved by evaluating and combining variables which shared the same characteristics. EHRs
representing Accident and Emergency (A&E), Admitted Patient Care (APC) and Outpatient care were combined to create a patient-level history spanning three nations. Patient-level EHRs were examined to ascertain admission differences, common diagnoses and record completeness. Results A total of 6,336 Armed Forces personnel were matched, of which 5,460 personnel had 7,510 A&E visits, 9,316 APC episodes and 45,005 Outpatient appointments. We observed full completeness for diagnoses in APC, whereas Outpatient admissions were sparsely coded; with 88% of diagnoses coded as "Unknown/unspecified cause of morbidity". In addition, A&E records were sporadically coded; we found five coding systems for identifying reason for admission. Conclusion At present, EHRs are designed to monitor the cost of treatment, enable administrative oversight, and are not currently suited to epidemiological research. However, only small changes may be needed to take advantage of what should be a highly cost-effective means of delivering important research for the benefit of the NHS.

http://dx.doi.org/10.1109/ACCESS.2017.2765702.
ABSTRACT: Polysomnography (PSG) is considered the gold standard in the diagnosis of obstructive sleep apnea (OSA). The diagnosis of OSA requires an overnight sleep experiment in a laboratory. However, due to limitations in relation to the number of labs and beds available, patients often need to wait a long time before being diagnosed and eventually treated. In addition, the unfamiliar environment and restricted mobility when a patient is being tested with a polysomnogram may disturb their sleep, resulting in an incomplete or corrupted test. Therefore, it is posed that a PSG conducted in the patient’s home would be more reliable and convenient. The Internet of Things (IoT) plays a vital role in the e-Health system. In this paper, we implement an IoT-based wireless polysomnography system for sleep monitoring, which utilizes a battery-powered, miniature, wireless, portable, and multipurpose recorder. A Java-based PSG recording program in the personal computer is designed to save several bio-signals and transfer them into the European data format. These PSG records can be used to determine a patient’s sleep stages and diagnose OSA. This system is portable, lightweight, and has low power-consumption. To demonstrate the feasibility of the proposed PSG system, a comparison was made between the standard PSG-Alice 5 Diagnostic Sleep System and the proposed system. Several healthy volunteer patients participated in the PSG experiment and were monitored by both the standard PSG-Alice 5 Diagnostic Sleep System and the proposed system simultaneously, under the supervision of specialists at the Sleep Laboratory in Taipei Veteran General Hospital. A comparison of the results of the time-domain waveform and sleep stage of the two systems shows that the proposed system is reliable and can be applied in practice. The proposed system can facilitate the long-term tracing and research of personal sleep monitoring at home.

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."


ABSTRACT: Aging population ratios are rising significantly. Health monitoring systems (HMS) in smart environments have evolved rapidly to become a viable alternative to traditional healthcare solutions. The aim of HMS is to not only reduce costs but to also provide timely e-health services to individuals wishing to maintain their independence. In this way, elderly people can avoid, for as long as possible, any interaction with healthcare institutions (e.g. nursing homes and hospitals), which in turn reduces pressure on the health system. To fully realise this vision of seamless e-health services supporting people in need of them, a number of challenges that need further investigation still exist. To this end, we provide an overview of the current state of the art for smart health monitoring systems. We review HMS in smart environments from a general perspective and with a particular focus on systems for the elderly and dependent people. We look at the challenges for these systems from the perspective of developing the technology itself, system requirements, system design and modelling. We present a consolidated picture of the most important functions and services offered by HMS for monitoring and detecting human behaviour including its concepts, approaches, and processing techniques. Moreover, we provide an extensive, in-depth analysis and evaluation of the existing research findings in the area of e-health systems. Finally, we present challenges and open issues facing the smart HMS field and we make recommendations on how to improve future systems.


ABSTRACT: The remarkable upsurge of social media has dramatic impacts on health care research and practice. Social media are reshaping health information management in a variety of ways, ranging from providing cost-effective ways to improve clinician-patient communication and exchange health-related information and experience, to enabling the discovery of new medical knowledge and information. Despite some demonstrated initial success, social media use and analytics for improving health as a research field is still at its infancy. Information systems researchers can potentially play a key role in advancing the field. This study proposes a conceptual framework for social media-based health information management by drawing on multi-disciplinary research. With the guidance of the framework, this paper presents related research challenges, identifies important yet under-explored research issues, and discusses promising directions for future research."

Bibliography on “emergency communication”


ABSTRACT: Satellite Communications can be used when other communication systems are either destroyed or overloaded. Observation satellites and Delay/Disruption Tolerant Networks are technologies that can be interconnected to provide emergency communication for disaster recovery operations. DTNs use a store-carry-forward mechanism to forward messages through
intermediary nodes to the destination node. The reliability of relaying messages through multi-hop nodes poses a significant problem in DTNs due to lack of consistent connectivity. These network characteristics make DTNs to heavily rely on the cooperation of neighbouring nodes for the successful delivery of packets. However, the presence of malicious or selfish nodes will have a great impact on the network performance. In this paper, we design a decentralised trust management scheme (DTMS) to filter out malicious nodes in DTNs. First, the number of forwarding evidence are combined with the energy consumption rate of the nodes to formulate direct trust. Then, a recommendation trust is computed from the indirect trust, recommendation credibility and recommendation familiarity. Recommendation credibility and familiarity improve the overall recommendation trust by filtering out dishonest recommendations. A comparative analysis of DTMS is performed against a Cooperative Watchdog Scheme (CWS), Recommendation Based Trust Model (RBTM) and Spray & Wait protocol. The results show that DTMS can effectively deal with malicious behaviours in DTNs including trust related attacks.


ABSTRACT: In May 2016, an enormous wildfire threatened the city of Fort McMurray, Alberta and forced the evacuation of all of the city's residents. Outpourings of support teemed in from all across Canada and over the world, prompting the largest charitable response in Canadian Red Cross history. This paper examines Albertans' response to the wildfire by exploring caring and helping behaviors as well as the role of social media in facilitating these remarkable charitable efforts. The paper uses mixed methods including an analysis of the most popular Tweets related to the wildfire and an Alberta survey collected months after the disaster. The analysis of tweets reveals that care, concern, and invitations to help were prominent in social media discourse about the wildfire. The analysis of survey data demonstrates that those who followed news about the wildfire on social media express higher overall levels of care and concern for those affected, which led to helping those impacted by the wildfire. The findings provide important insights about the role of social media in disaster relief and recovery as well as citizens' civic engagement.


ABSTRACT: Introduction According to the World Health Organization (WHO), over 130 million people are in constant need of humanitarian assistance due to natural disasters, disease outbreaks, and conflicts, among other factors. These health crises can compromise the resilience of healthcare systems, which are essential for achieving the health objectives of the sustainable development goals (SDGs) of the United Nations (UN). During a humanitarian health crisis, rapid and informed decision making is required. This is often challenging due to information scarcity, limited resources, and strict time constraints. Moreover, the traditional approach to digital health development, which involves a substantial requirement analysis, a feasibility study, and deployment of technology, is ill-suited for many crisis contexts. The emergence of Web 2.0 technologies and social media platforms in the past decade, such as Twitter, has created a new paradigm of massive information and misinformation, in which new technologies need to be developed to aid rapid decision making during humanitarian health crises. Objective Humanitarian health crises increasingly require the analysis of massive amounts of information produced by different sources, such as social media content, and, hence, they are a prime case for the use of artificial intelligence (AI) techniques to help identify relevant information and make it actionable. To identify challenges and opportunities for using AI in humanitarian health crises, we reviewed the literature on the use of AI techniques to process social media. Methodology We performed a narrative literature review aimed at identifying examples of the use of AI in humanitarian health crises. Our search strategy was designed to get a broad overview of the
different applications of AI in a humanitarian health crisis and their challenges. A total of 1,459 articles were screened, and 24 articles were included in the final analysis. Results Successful case studies of AI applications in a humanitarian health crisis have been reported, such as for outbreak detection. A commonly shared concern in the reviewed literature is the technical challenge of analyzing large amounts of data in real time. Data interoperability, which is essential to data sharing, is also a barrier with regard to the integration of online and traditional data sources. Human and organizational aspects that might be key factors for the adoption of AI and social media remain understudied. There is also a publication bias toward high-income countries, as we identified few examples in low-income countries. Further, we did not identify any examples of certain types of major crisis, such armed conflicts, in which misinformation might be more common. Conclusions The feasibility of using AI to extract valuable information during a humanitarian health crisis is proven in many cases. There is a lack of research on how to integrate the use of AI into the work-flow and large-scale deployments of humanitarian aid during a health crisis.


http://dx.doi.org/10.1109/MCOM.2017.1700451

ABSTRACT: Wireless networks comprising unmanned aerial vehicles can offer limited connectivity in a cost-effective manner to disaster-struck regions where terrestrial infrastructure might have been damaged. While these drones offer advantages such as rapid deployment to far-flung areas, their operations may be rendered ineffective by the absence of an adequate energy management strategy. This article considers the multi-faceted applications of these platforms and the challenges thereof in the networks of the future. In addition to providing an overview of the work done by researchers in determining the features of the air-to-ground channel, the article explores the use of drones in fields as diverse as military surveillance and network rehabilitation for disaster-struck areas. It also presents a case study that envisages a scenario in which drones operate alongside conventional wireless infrastructure, thereby allowing a greater number of users to establish a line-of-sight link for communication. This study investigates a power allocation strategy for the microwave base station and the small base stations operating at 28 GHz frequency band. The self-adaptive power control strategy for drones is dependent on the maximum allowable interference threshold and minimum data rate requirements. This study highlights the importance of incorporating the drones in the multi-tier heterogeneous network to extend the network coverage and capacity.

Bibliography on “gender”


doi: 10.1109/LACCI.2017.8285682

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ABSTRACT: Gender discrimination is a widely analyzed problem, which seems to affect different countries and cultures over time. Nowadays, we are witnesses of the social inequality reflected by the salary difference between women and men for the same employment. Since the incorporation of women into the labor market in the 1980s, the wage gap between males and females has been a subject of study. One of the traditional arguments has been linked to the feminized occupations associated with sex stereotypes, as well as, low wage, birth, and discrimination in the labor categories. In the present work, we apply clustering algorithms to the PHOGUE dataset to analyze salary difference between males and females in Spain and England.
doi: 10.1109/ICE.2017.8280039
http://dx.doi.org/10.1109/ICE.2017.8280039
ABSTRACT: This work attempts to identify gender differences on the peer assessment process within Project-Based Learning (PBL). It involved the study of perceptions on teamwork and grade results from a total of 330 students distributed by seven successive PBL editions of the Industrial Engineering and Management program. This program can be considered gender balanced, with 51% females and 49% males. The data analyzed focused on peer assessment results and on the final marks. The analysis revealed a positive correlation between the peer assessment grades and the final grades. A gender difference was found on peer grades as well as on final grades, favoring female. The individual merit was put forward in an attempt to justify the differences found, but conclusive evidence should be supported with further investigation.

https://doi.org/10.1016/j.jdeveco.2018.01.009
ABSTRACT: Social networks are an important mechanism for diffusing information when institutions are missing, but there may be distributional consequences from targeting only central nodes in a network. After implementing a social network census, one of three village-level treatments determined which treated nodes in the village received information about composting: random assignment, nodes with the highest degree, or nodes with high betweenness. We then look at how information diffuses through the network. We find information diffusion declines with social distance, suggesting frictions in the diffusion of information. Aggregate knowledge about the technology did not differ across targeting strategies, but targeting nodes using betweenness measures in village-level networks excludes less-connected nodes from new information. Women farmers are less likely to receive information when betweenness centrality is used in targeting, suggesting there are important gender differences, not only in the relationship between social distance and diffusion, but also in the social learning process. ".

ABSTRACT: Abstract Worry is frequently observed in undergraduates, especially in female students who usually show a lower adjustment to college life than male ones. The current study explored gender differences in worry and its associated cognitive features in a large sample of Italian university students and assessed whether different mechanisms may occur in the path from Intolerance of Uncertainty (IU) to worry according to gender. A sample made up of 243 male and 406 female undergraduates entered the study. Comparisons on measures assessing worry, IU, Positive Beliefs about Worry (PBW), Negative Problem Orientation (NPO), and Cognitive Avoidance (CA) were performed. Furthermore, two moderated mediation models (one for each sample) wherein IU was the independent variable, worry the dependent variable, PBW, NPO, and CA parallel mediators, were tested. Females showed higher levels of worry, NPO, and CA than males, but effects were small. Whilst PBW and NPO, but not CA, mediated the relationship between IU and worry in both samples, IU moderated the mediations only in females. Overall, results suggest the existence of a differential interplay between worry and associated cognitive features according to gender in Italian undergraduates.

https://doi.org/10.1016/j.chb.2018.02.003.
ABSTRACT: This study examined adolescents’ sexting experiences, with an emphasis on the prevalence of sending and receiving sexts from romantic partners, friends/peers, online friends, and strangers. We also examined the quality of sexting experiences and individual and psychosocial factors associated with sending sexts. In total, 1653 Swedish adolescents aged 12 to 16 (M age = 14.16) completed a questionnaire. We found that 20-32% reported having received sexts and 4-16% having sent sexts. These rates typically differed depending on who the participants received sext from or sent sext to. Girls experienced more pressure to send sexts, and had more negative sexting experiences. Multiple logistic regressions showed significant relationships between online risk-taking, age, pubertal timing, family income, family and friend support, and sending sexts. The strength of these relationships differed by gender and by who the sext was sent to. This study highlights the importance of viewing adolescents’ sexting as a complex and gendered online phenomenon.

https://doi.org/10.1016/j.jsis.2018.01.001.

ABSTRACT: This article contributes to a growing literature on women in IT occupations. Against a national and international context of women’s longstanding and continued under-representation in senior professional roles in IT, our study at organizational level tells the story of women’s career experiences in a specific UK-based IT company in relation to its culture, processes and practices. Utilising a concept from the gender literature – Acker’s (2006) ‘inequality regimes’ – the study bridges the gap between the gender and IS literature and feminist theorising in order to shed light on the lack of gender diversity in IT. The article specifically shows how components of organizational inequality regimes, namely, ‘organizing processes’, ‘legitimacy’ and ‘visibility’ of inequalities combine and interact to produce and maintain gender inequality in the IT workplace. The implications of this in the sector more generally are discussed.

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http://dx.doi.org/10.1109/ICE.2017.8280040

ABSTRACT: Electrical/Electronic Engineering courses are often regarded as male courses. In this paper it is presented a study conducted in two Portuguese and two Brazilian high education institutions (six courses) where the goal was to analyze if gender affects students' perceptions and satisfaction regarding Electrical/Electronic Engineering courses. The analysis was based on 654 questionnaires rating 44 items (among the six groups: Teacher Involvement Perception, Student Interest, Student-Teacher interaction, Course organization and functioning, Infrastructures, and Overall satisfaction). The investigation was performed by year, from the first to the third year (1st cycle) and considering the six programs. Based on students’ perceptions, some items showed differences that were significant, namely the ones regarding how teachers and students interact and how teachers challenge students.


ABSTRACT: Social media research focuses predominantly on the link between attitude, behaviour and intention, and rarely takes value systems into account. Values are expected, through intervening variables, to affect intention directly or indirectly. Starting from the Theory of Trying, the aim of this study is to investigate how value systems affect digital natives’ intention to interact with social media. By using Fuzzy Set Qualitative Comparative Analysis (fsQCA), an empirical analysis involving data from 116 social media users is carried out to examine how global and domain-specific values, attitude towards trying and gender affect the intention to
interact. The results of a configurational analysis show that gender appears to affect many of the configurations leading to the outcome of interest. There are two configurations in which, regardless of gender, global values, domain-specific values and attitude towards trying cause the outcome. The findings indicate that there is no single condition necessary to ensure the outcome, but there are several different configurations of the conditions lead to outcome of interest."

https://doi.org/10.1016/j.jbusres.2018.01.043.
ABSTRACT: We draw on a phenomenological model of institutional theory to explore how sub-national policies shape corporate board gender diversity of publicly traded firms. Using a sample of S&P 1500 firms in 49 U.S. states from 2003 to 2014, we find that firms headquartered in states with progressive policies that protect women from discrimination and provide greater availability of emergency contraception and public funding for abortions have greater shares of women directors in their board of directors. Our findings hold after a series of robustness checks and offer implications for theory, policy, and practice."

doi: 10.1109/ACCESS.2017.2744680.
http://dx.doi.org/10.1109/ACCESS.2017.2744680.
ABSTRACT: The underrepresentation of women in engineering remains a problem till this day, where women made up 4% of its registered professional engineers in South Africa in 2014. The experience of women engineers in industry and women students in engineering courses can play a significant role in their decision to remain in engineering or pursue a different career path. The investigation of gender dynamics in small groups of engineering students, specifically focusing on the participation and role allocation of women students, can shed light on the experiences of women students in the engineering education environment. This paper shows that, although women engineering students are still in the minority in engineering courses, many are active participants in groups and fulfill leadership roles in those groups.

https://doi.org/10.1016/j.eap.2018.01.005.
ABSTRACT: In politics, broadly stated ambitions such that a service should be available to all are fairly commonplace. However, evaluation access to service in a broader sense is often difficult and expensive. In this study we use a field experiment to investigate if the reception from the business development community differs contingent on the gender of the client. In the experiment, identical email requests were sent to actors in the enterprise promotion system. The result is that response frequency and time were independent of the gender of the sender. However, the male sender was more often given an explicit invitation to book a time slot. To delve further into the responses, we use sentiment analysis, a 'big data' method, to analyse the replies. The analysis reveal that replies to the female sender is more positive. Our conclusion is that even if there are some gender differences we would not consider it to be a systematic discrimination. However, the unconsciousness from public servants should be included in training to increase awareness of this issue.

https://doi.org/10.1016/j.chb.2018.02.017.
ABSTRACT: Instructional animation research has been extensive but the results are inconsistent.
Amongst a number of possible factors to explain these inconclusive results (e.g., the negative influence of transient information), the influence of spatial ability and gender are less explored. This paper reports three experiments that compared the effectiveness of learning a hand-manipulative task (Lego construction) under various conditions with direct examination of the relationship between gender, spatial ability and instructional visualisation. Regression analyses revealed that only one objective measure related to spatial ability (Corsi test) predicted overall test performance, whereas the Card Rotations Test and the Mental Rotations Test did not. However, there was a number of significant gender–spatial ability interactions showing that the spatial ability predictors of male performance were different from those of females. Furthermore a number of subjective measures of spatial ability and experience with instructional animations and static pictures were found to be significant predictors. The results suggest that gender and the type of spatial ability measures used both have a significant impact on gauging the effectiveness of instructional animations. Spatial ability measures should be tailored to gender and the specific nature of the learning domains to yield more consistent research results.

Bibliography on “ICT for development (ICT4D)”


ABSTRACT: Purpose The purpose of this paper is to assess the correlations between mobile banking and inclusive development (poverty and inequality) in 93 developing countries for the year 2011. Design/methodology/approach Mobile banking entails the following: ?mobile phones used to pay bills? and ?mobile phones used to receive/send money?, while the modifying policy indicator includes the human development index (HDI). The data are decomposed into seven sub-panels based on two fundamental characteristics: regions (Latin America, Asia and the Pacific, Central and Eastern Europe, and Middle East and North Africa) and income levels (upper middle income, lower middle income and low income). Findings The results show that at certain thresholds of the HDI, mobile banking is positively linked to inclusive development. The following specific findings are established. First, the increased use of mobile phones to pay bills is negatively correlated with: poverty in lower-middle-income countries (LMIC), upper-middle-income countries (UMIC) and Latin American (LA) countries, respectively, at HDI thresholds of 0.725, 0.727 and 0.778 and inequality in UMIC and LA with HDI thresholds of, respectively, 0.665 and 0.736 and 0.726, respectively. Practical implications The findings are discussed in the light of current policy challenges in the transition from the UN?s Millennium Development Goals to Sustainable Development Goals. Originality/value The authors have exploited the only macroeconomic data on mobile banking currently available.; Purpose The purpose of this paper is to assess the correlations between mobile banking and inclusive development (poverty and inequality) in 93 developing countries for the year 2011. Design/methodology/approach Mobile banking entails the following: ?mobile phones used to pay bills? and ?mobile phones used to receive/send money?, while the modifying policy indicator includes the human development index (HDI). The data are decomposed into seven sub-panels based on two fundamental characteristics: regions (Latin America, Asia and the Pacific, Central and Eastern Europe, and Middle East and North Africa) and income levels (upper middle income, lower middle income and low income). Findings The results show that at certain thresholds of the HDI, mobile banking is positively linked to inclusive development. The following specific findings are established. First, the increased use of mobile phones to pay bills is negatively correlated with: poverty in lower-middle-income countries (LMIC), upper-middle-income countries (UMIC) and Latin American (LA) countries, respectively, at HDI thresholds of 0.725, 0.727 and 0.778 and
inequality in UMIC and LA with HDI thresholds of, respectively, 0.646 and 0.761. Second, the increased use of mobile phones to send/receive money is negatively correlated with: poverty in LMIC, UMIC and Central and Eastern European (CEE) countries with corresponding HDI thresholds of 0.631, 0.750 and 0.750 and inequality in UMIC, CEE and LA at HDI thresholds of 0.665, 0.736 and 0.726, respectively. Practical implications The findings are discussed in the light of current policy challenges in the transition from the UN's Millennium Development Goals to Sustainable Development Goals. Originality/value The authors have exploited the only macroeconomic data on mobile banking currently available.


ABSTRACT: Purpose The purpose of this paper is to examine how information and communication technology (ICT) influences openness to improve the conditions of doing business in sub-Saharan Africa. Design/methodology/approach The data were collected for the period 2000-2012. ICT is proxied with internet and mobile phone penetration rates whereas openness is measured in terms of financial and trade globalisation. Ten indicators of doing business are used, namely: cost of business start-up procedures; procedure to enforce a contract; start-up procedures to register a business; time required to build a warehouse; time required to enforce a contract; time required to register a property; time required to start a business; time to export; time to prepare and pay taxes; and time to resolve an insolvency. The empirical evidence is based on generalised method of moments with forward orthogonal deviations. Findings While the authors find substantial evidence that ICT complements openness to improve conditions for entrepreneurship, the effects are contingent on the dynamics of openness, ICT and entrepreneurship. Theoretical and practical policy implications are discussed. Originality/value The inquiry is based on two contemporary development concerns: the need for policy to leverage on the ICT penetration potential in the sub-region and the relevance of entrepreneurship in addressing associated issues of population growth such as unemployment.; Purpose The purpose of this paper is to examine how information and communication technology (ICT) influences openness to improve the conditions of doing business in sub-Saharan Africa. Design/methodology/approach The data were collected for the period 2000-2012. ICT is proxied with internet and mobile phone penetration rates whereas openness is measured in terms of financial and trade globalisation. Ten indicators of doing business are used, namely: cost of business start-up procedures; procedure to enforce a contract; start-up procedures to register a business; time required to build a warehouse; time required to enforce a contract; time required to register a property; time required to start a business; time to export; time to prepare and pay taxes; and time to resolve an insolvency. The empirical evidence is based on generalised method of moments with forward orthogonal deviations. Findings While the authors find substantial evidence that ICT complements openness to improve conditions for entrepreneurship, the effects are contingent on the dynamics of openness, ICT and entrepreneurship. Theoretical and practical policy implications are discussed. Originality/value The inquiry is based on two contemporary development concerns: the need for policy to leverage on the ICT penetration potential in the sub-region and the relevance of entrepreneurship in addressing associated issues of population growth such as unemployment.


ABSTRACT: This paper analyses the impact of information and communications technology (ICT) on the productivity growth in Korea with the dynamic general equilibrium (DGE) model including investment-specific technological change. According to the balanced growth path analysis, ICT investment-specific technological change accounts for 18.8% to labor productivity growth in 1995–2005, then 14.3% in 2006–2015, and the decline in the rate of ICT investment-specific technological change has contributed to the slow productivity growth since the mid-2000s. In
cyclical fluctuations, ICT investment-specific technological shocks were significant in output variance in 1996–2005, but neutral technological shocks and non-ICT investment specific shocks became dominant in 2006–2015. In sum, it can be concluded that the impacts of ICT investment-specific technology have diminished in the growth path and cyclical fluctuations. The result that increased (decreased) ICT investment intensity with faster (slower) ICT investment-specific technological change lead to higher (lower) productivity growth indicates that Korea has been a case against the productivity paradox, and sustained technological progress in ICT and expansion of ICT usage could have boosted the productivity growth. Therefore, this study implies that facilitating ICT progress and ICT usage outside of the already well-performing ICT manufacturing can help Korean economy raise the productivity growth rate. ".

https://doi.org/10.1108/ITP-06-2016-0143.

ABSTRACT: Purpose The rising proportion of internet users in Sub-Saharan Africa and the lack of analytical techniques, as decision support systems, in choosing among alternative internet service providers (ISPs) by consumers underpin this study. The purpose of this paper is to propose an approach for evaluating high-speed internet service offered by ISPs in a sub-Saharan African country. Design/methodology/approach Using a sample size of 150, pairwise comparisons of two ISPs along five criteria of cost, usability, support, reliability and speed were performed by ten person groups of university students working in various organizations in Ghana and undertaking an online Six Sigma Course. Geometric means were employed to aggregate the scores in 15 groups, and these scores were then normalized and used as input into an analytical hierarchy process grid. Findings The results show that consumers of internet services highly emphasize the cost attribute of internet provision in their decision making. On the other hand, it was realized that consumers least emphasize the support provided by ISPs in their decision making among alternative ISPs. Originality/value This study has sought to provide an analytical framework for assessing the quality of service provided by alternative ISPs in a developing economy’s context. The evaluating criteria in this framework also reveal the key consumer requirements in internet service provision in a developing economy’s environment. This, to a large extent, will inform the marketing strategies of existing ISPs in Ghana as well as prospective ones intending to enter the Ghanaian market. Besides, the National Communication Authority, a regulator of communication services provision in Ghana, will be informed about the performances of the ISPs along five performance criteria. This is expected to aid in their regulatory functions.; Purpose The rising proportion of internet users in Sub-Saharan Africa and the lack of analytical techniques, as decision support systems, in choosing among alternative internet service providers (ISPs) by consumers underpin this study. The purpose of this paper is to propose an approach for evaluating high-speed internet service offered by ISPs in a sub-Saharan African country. Design/methodology/approach Using a sample size of 150, pairwise comparisons of two ISPs along five criteria of cost, usability, support, reliability and speed were performed by ten person groups of university students working in various organizations in Ghana and undertaking an online Six Sigma Course. Geometric means were employed to aggregate the scores in 15 groups, and these scores were then normalized and used as input into an analytical hierarchy process grid. Findings The results show that consumers of internet services highly emphasize the cost attribute of internet provision in their decision making. On the other hand, it was realized that consumers least emphasize the support provided by ISPs in their decision making among alternative ISPs. Originality/value This study has sought to provide an analytical framework for assessing the quality of service provided by alternative ISPs in a developing economy’s context. The evaluating criteria in this framework also reveal the key consumer requirements in internet service provision in a developing economy’s environment. This, to a large extent, will inform the marketing strategies of existing ISPs in Ghana as well as prospective ones intending to enter the Ghanaian market. Besides, the National Communication Authority, a regulator of communication services provision in Ghana, will be informed about the performances of the ISPs along five performance criteria. This is expected to aid in their regulatory functions.
https://doi.org/10.1016/j.telpol.2017.08.004.
ABSTRACT: This paper examines the impact of countries' distance between their Internet usage and the world average of the Internet usage intensity on their integration into the world market of trade in commercial services. Using an unbalanced panel dataset of 175 countries over the annual period 2000–2013, the empirical analysis indicates that the narrowing of the Internet-related distance would improve countries' integration into the world trade in commercial services market. Furthermore, it helps those countries that are geographically far from the world market to compensate for the adverse effect of this geographical distance on their integration into the world market of trade in commercial services.

https://doi.org/10.1016/j.techfore.2018.01.029.
ABSTRACT: This study aims to uncover the impact of the information and communication capabilities of mobile phone use on the performance of microenterprises in Bangladesh. Data were collected from microenterprise owners through face-to-face interviews and a series of statistical analyses were used to assess the effects of mobile phone use. The results of the study show a significant direct relationship between mobile phone use, social capital, and the performance of microenterprises. Further investigation revealed that social capital and non-financial business performance variables are involved in the mediation process between the financial performance of microenterprises and the use of mobile phones. The novelty of this research lies in being the first to establish a high-level statistical relationship between the use of the mobile phone, its mediating factors, and the financial performance of microenterprises.

https://doi.org/10.1108/ITP-07-2016-0157.
ABSTRACT: Purpose Community wireless networking has become a growing trend in both metropolitan and rural areas around the world. However, few studies have sought to understand what motivates people to use community wireless networks and the unintended effects that those technologies have on communities, particularly for rural users. The purpose of this paper is to explore the benefits and usage of an asynchronous wireless internet system in a rural village of Cambodia to examine the issues and challenges in the acceptance of a new technology in a less-developed country.

doi: 10.1108/JEIM-09-2016-0158.
https://doi.org/10.1108/JEIM-09-2016-0158.
ABSTRACT: Purpose The adoption of Information and Communication Technology (ICT) in small and medium enterprises (SMEs) has some peculiarities that may depend on the combined effect of size and the competitive environment. The purpose of this paper is to use a contingency approach to explore how SMEs develop organizational capabilities through ICT investments in response to environmental conditions.
https://doi.org/10.1016/j.clr.2017.06.006.
ABSTRACT: The consent model of privacy protection assumes that individuals control their personal information and are able to assess the risks associated with data sharing. The model is attractive for policy-makers and automakers because it has the effect of glossing over the conceptual ambiguities that are latent in definitions of privacy. Instead of formulating a substantive and normative position on what constitutes a reasonable expectation of privacy in the circumstance, individuals are said to have control over their data. Organizations have obligations to respect rights to notice, access and consent regarding the collection, use and disclosure of personal data once that data has been shared. The policy goal becomes how to provide individuals with control over their personal data in the consent model of privacy protection. This paper argues that the privacy issues raised by vehicular ad hoc networks make this approach increasingly untenable. It is argued that substantive rules that establish a basic set of privacy norms regarding the collection, use and disclosure of data are necessary. This can be realized in part via a privacy code of practice for the connected vehicle. This paper first explores the relationship between privacy, consent and personal information in relation to the connected car. This is followed by a description of vehicular ad hoc networks and a survey of the technical proposals aimed at securing data. The privacy issues that will likely remain unsolved by enhancing individual consent are then discussed. The last section provides some direction on how a code of practice can assist in determining when individual consent will need to be enhanced and when alternatives to consent will need to be implemented. 

ABSTRACT: In the next generation of road-based transportation systems, where vehicles exchange information and coordinate their actions, a major challenge will be to ensure that the interaction rules are safe and lead to progress. In this paper we address the problem of automatically verifying the correctness of such distributed vehicular coordination protocols. We propose a novel modeling approach for communicating mobile entities based on the concept of satisfiability modulo theories (SMT). We apply this method to an intersection collision avoidance protocol and show how the method can be used to investigate the settings under which such a protocol achieves safety and progress.

ABSTRACT: The car-following model is an important micro-traffic model for simulating car-following behaviour in traffic engineering and research studies. Conventional car-following models are always presented using mathematical equations reflecting ideal traffic conditions. In the big data era, data-driven models become a popular trend. In this study, a data-driven car-following model based on the rough set theory is proposed to consider information hidden in a field data set. On the basis of field data obtained from measurement devices such as the next generation simulation (NGSIM) trajectory data set, and using the methods of the rough set theory, an optimal decision rule set is established. Redundant attributes and redundant attribute values are removed for simplifying the car-following behaviour decision problem. Attribute significance and weights are computed for selecting matching rules. A car-following behaviour decision algorithm is designed to choose appropriate rules to determine the follower’s velocity according to current observations. Simulations illustrate that the proposed data-driven car-following model can simulate the micro-traffic behaviour of followers well.
doi: 10.1016/j.pmcj.2018.01.004.
https://doi.org/10.1016/j.pmcj.2018.01.004.
ABSTRACT: Considering the huge number of vehicles on the roads, Vehicular Ad-hoc Networks (VANETs) are envisioned to foster a variety of new applications ranging from road safety enhancement to mobile entertainment. These new VANET applications all face a critical challenge which is to ensure the identity and location privacy of vehicles’ owners who participate in such ad-hoc network. In this paper, we propose a highly efficient randomized authentication protocol that leverages homomorphic encryption to allow each individual vehicle to self-generate any number of authenticated identities to achieve full anonymity in VANETs. The proposed protocol prevents vehicles from being tracked by any single party including peer vehicles, service providers, authentication servers, and other infrastructure. Meanwhile, our protocol also provides traceability in case of any dispute. We have conducted both security analysis and experimental study which demonstrates the superiority of our protocol compared to other existing works.

ABSTRACT: Rich and complete data play a fundamental role in intelligent traffic management and control applications. A great volume of missing data is found in the intelligent transportation system. In this paper, the authors introduce an ensemble strategy to handle the missing values. The proposed strategy is a general framework that different models, whether linear, neural networks, or other, can be applied. In this strategy, missing values are first computed by the forward and backward models, and their results are combined to recover the incomplete raw data. Then, the models are iterated for several times to enhance the accuracy. Three commonly used imputation models are tested in the proposed strategy using the data from real world. The results indicate that the proposed strategy can significantly improve the accuracy of the imputation with different missing types and during different traffic states. Moreover, the increase of the iteration is capable to improve the performance of the models.

doi: 10.1109/ACCESS.2017.2732727.
http://dx.doi.org/10.1109/ACCESS.2017.2732727.
ABSTRACT: The vehicular ad hoc network (VANET) is one of the promising and encouraging technologies, and it is going to attract great attention in the near future. VANET has turned into a main module of the intelligent transport system. It is a self-controlled, wheeled network (also called network on wheels), and a wider and stimulating class of mobile ad hoc network (MANET). VANETs raise many innovative challenges because of their high-class and unique features, such as high-node mobility, dynamic topology changes, wireless links breakage, network constancy, and network scalability. A well-organized routing protocol is one of the most challenging matters of such networks. In this paper, we propose an intelligent naive Bayesian probabilistic estimation practice for traffic flow to form a stable clustering in VANET, briefly named ANTSC. The proposed scheme aims to improve routing by employing awareness of the current traffic flow as well as considering the blend of several factors, such as speed difference, direction, connectivity level, and node distance from its neighbors by using the intelligent technique. The proposed technique has proven to be more strong, stable, robust, and scalable than existing ones.

ABSTRACT: In this paper, we propose a reliable method to determine the coming direction of an infrared signal, where the direction of the signal sent by the vehicle relative to the receiver is determined by amplitude comparison. We utilize a simple symmetric structure comprising four identical planar receiving modules, each with a specific tilt angle relative to the receiving plane, to construct the receiver. The coming direction of the signal is extracted by comparing the signal strengths received by these four receiving modules. With the aid of a simple geometric relation, the trajectory of a vehicle is tracked, i.e., its positions are located, from the coming direction of the signal originated from this vehicle when it travels through the communication area of the system. For several vehicles simultaneously appearing in the communication area, the vehicles can be distinguished in the frequency domain from different frequencies sent by different vehicles. Our signal-direction discriminator proposed in this paper is able to locate the position of the vehicle in a communication area of 6 m in width and 20 m in length. In the lateral direction, this area sufficiently covers a typical traffic lane; in the longitudinal direction, it meets the general requirements of shorter than 20 m for common short-range vehicle-to-infrastructure communication systems, such as electronic-toll-collection applications.


ABSTRACT: Since Vehicular ad hoc networks (VANETs) are vulnerable to various kinds of attacks, there is a need to fulfill the security requirements like message privacy, integrity, and authentication. The authentication technique is said to be efficient if it detects compromised nodes accurately with less complexity, reduced authentication delay, and keying overhead. In this paper, a trust-based authentication scheme for cluster-based VANETs is proposed. The vehicles are clustered, and the trust degree of each node is estimated. The trust degree is a combination of direct trust degree and indirect trust degree. Based on this estimated trust degree, cluster heads are selected. Then, each vehicle is monitored by a set of verifiers, and the messages are digitally signed by the sender and encrypted using a public/private key as distributed by a trusted authority and decrypted by the destination. This verifies the identity of sender as well as receiver thus providing authentication to the scheme. By simulation results, we prove that the proposed technique provides high security with less overhead and delay.

Bibliography on “internet of things (IoT)”


ABSTRACT: Internet technology is very pervasive today. The number of devices connected to the Internet, those with a digital identity, is increasing day by day. With the developments in the technology, Internet of Things (IoT) become important part of human life. However, it is not well defined and secure. Now, various security issues are considered as major problem for a full-fledged IoT environment. There exists a lot of security challenges with the proposed architectures and the technologies which make the backbone of the Internet of Things. Some efficient and promising security mechanisms have been developed to secure the IoT environment, however, there is a lot to do. The challenges are ever increasing and the solutions have to be ever improving. Therefore, aim of this paper is to discuss the history, background, statistics of IoT and security based analysis of IoT architecture. In addition, we will provide taxonomy of security challenges in IoT environment and taxonomy of various defense mechanisms. We conclude our
paper discussing various research challenges that still exist in the literature, which provides better understanding of the problem, current solution space, and future research directions to defend IoT against different attacks.

doi: 10.1109/ICEMIS.2017.8273047
http://dx.doi.org/10.1109/ICEMIS.2017.8273047
ABSTRACT: Internet of Things (IoT) has drawn great attention in industry, academia, and research As the IoT technology still in beginning of its implementation in all industries and so much research are ongoing to study and develop business model to grasp the opportunities brought by IoT. A research market conducted by Gartner expects that around 25 billion IoT devices or sensors to be connected by 2020. As expected IoT technology will enter every aspect of our life. Therefore, the main objective of this paper is to provide an exploration of how businesses will be affected by IoT introduction and listing the opportunities brought IoT technology and what challenges are facing its implementation.

https://doi.org/10.1016/j.cose.2017.11.014.
ABSTRACT: Transition to the Internet of Things (IoT) is progressing without realization. In light of this securing traditional systems is still a challenging role requiring a mixture of solutions which may negatively impact, or simply, not scale to a desired operational level. Rule and signature based intruder detection remains prominent in commercial deployments, while the use of machine learning for anomaly detection has been an active research area. Behavior detection means have also benefited from the widespread use of mobile and wireless applications. For the use of smart defense systems we propose that we must widen our perspective to not only security, but also to the domains of artificial intelligence and the IoT in better understanding the challenges that lie ahead in hope of achieving autonomous defense. We investigate how intruder detection fits within these domains, particularly as intelligent agents. How current approaches of intruder detection fulfill their role as intelligent agents, the needs of autonomous action regarding compromised nodes that are intelligent, distributed and data driven. The requirements of detection agents among IoT security are vulnerabilities, challenges and their applicable methodologies. In answering aforementioned questions, a survey of recent research work is presented in avoiding refitting old solutions into new roles. This survey is aimed toward security researchers or academics, IoT developers and information officers concerned with the covered areas. Contributions made within this review are the review of literature of traditional and distributed approaches to intruder detection, modeled as intelligent agents for an IoT perspective; defining a common reference of key terms between fields of intruder detection, artificial intelligence and the IoT, identification of key defense cycle requirements for defensive agents, relevant manufacturing and security challenges; and considerations to future development. As the turn of the decade draws nearer we anticipate 2020 as the turning point where deployments become common, not merely just a topic of conversation but where the need for collective, intelligent detection agents work across all layers of the IoT becomes a reality. ".

ABSTRACT: The current development and growth in the arena of Internet of Things (IoT) are providing a great potential in the route of the novel epoch of healthcare. The vision of the healthcare is expansively favored, as it advances the excellence of life and health of humans, involving several health regulations. The incessant increase of the multifaceted IoT devices in health is broadly tested by challenges such as powering the IoT terminal nodes used for health
monitoring, real-time data processing and smart decision and event management. In this paper, we propose a healthcare architecture which is based analysis of energy harvesting for health monitoring sensors and the realization of Big Data analytics in healthcare. The rationale of proposed architecture is twofold: (1) comprehensive conceptual framework for energy harvesting for health monitoring sensors, and (2) data processing and decision management for healthcare. The proposed architecture is three-layered architecture, that comprised (1) energy harvesting and data generation, data pre-processing, and data processing and application. We also verified the consistent data sets on Hadoop server to validate the proposed architecture based on threshold limit value (TLV). The study reveals that the proposed architecture offer valuable imminent into the field of smart health.

Iannacci, Jacopo. "Internet of Things (IoT); Internet of Everything (IoE); Tactile Internet; 5G – A (Not so Evanescent) Unifying Vision Empowered by EH-MEMS (Energy Harvesting MEMS) and RF-MEMS (Radio Frequency MEMS)." Sensors and Actuators A: Physical, 272(2018): 187-198
https://doi.org/10.1016/j.sna.2018.01.038.
ABSTRACT: This work aims to build inclusive vision of the Internet of Things (IoT), Internet of Everything (IoE), Tactile Internet and 5G, leveraging on MEMS technology, with focus on Energy Harvesters (EH-MEMS) and Radio Frequency passives (RF-MEMS). The IoT is described, stressing the pervasivity of sensing/actuating functions. High-level performances 5G will have to score are reported. Unifying vision of the mentioned paradigms is then built. The IoT evolves into the IoE by overtaking the concept of thing. Further step to Tactile Internet requires significant reduction in latency, it being enabled by 5G. The discussion then moves closer to the hardware components level. Sets of specifications driven by IoT and 5G applications are derived. Concerning the former, the attention is concentrated on typical power requirements imposed by remote wireless sensing nodes. Regarding the latter, a set of reference specifications RF passives will have to meet in order to enable 5G is developed. Once quantitative targets are set, a brief state of the art of EH-MEMS and RF-MEMS solutions is developed, targeting the IoT and 5G, respectively. In both scenarios, it will be demonstrated that MEMS are able to address the requirements previously listed, concerning EH from various sources and RF passive components. In conclusion, the frame of reference depicted in this work outlines a relevant potential borne by EH-MEMS and RF-MEMS solutions within the unified scenario of IoT, IoE, Tactile Internet and 5G, making the forecast of future relentless growth of MEMS-based devices, more plausible and likely to take place.

doi: 10.1016/j.pmcj.2018.01.005.
https://doi.org/10.1016/j.pmcj.2018.01.005.
ABSTRACT: Cellular internet-of-things (CIoT) systems are recently developed by the third-generation partnership project (3GPP) to support internet-of-things (IoT) services over the conventional mobile-communication infrastructures. The CIoT systems allow a large number of IoT devices to be connected through the random-access procedure, but the concurrent accesses of the massive devices make this procedure heavily competitive. In this article, we present an effective time-division random-access scheme built upon the coverage levels (CLs), where each CIoT device is assigned a CL and categorized based on its radio-channel quality. In our scheme, the random-access loads of device groups having different CLs are distributed into different time periods, which greatly relaxes instantaneous contention and improves random-access performance. To assess the performance of our scheme, we also introduce a mathematical model that expresses and analyzes the states and behaviors of CIoT devices using the Markov chain. Mathematical analysis and simulation results show that our scheme significantly outperforms the conventional scheme (without time-division control) in terms of collision probability, succeeding access rate, and access-blocking probability.
doi: 10.1109/ACCESS.2017.2765702.
http://dx.doi.org/10.1109/ACCESS.2017.2765702.

ABSTRACT: Polysomnography (PSG) is considered the gold standard in the diagnosis of obstructive sleep apnea (OSA). The diagnosis of OSA requires an overnight sleep experiment in a laboratory. However, due to limitations in relation to the number of labs and beds available, patients often need to wait a long time before being diagnosed and eventually treated. In addition, the unfamiliar environment and restricted mobility when a patient is being tested with a polysomnogram may disturb their sleep, resulting in an incomplete or corrupted test. Therefore, it is posited that a PSG conducted in the patient's home would be more reliable and convenient. The Internet of Things (IoT) plays a vital role in the e-Health system. In this paper, we implement an IoT-based wireless polysomnography system for sleep monitoring, which utilizes a battery-powered, miniature, wireless, portable, and multipurpose recorder. A Java-based PSG recording program in the personal computer is designed to save several bio-signals and transfer them into the European data format. These PSG records can be used to determine a patient's sleep stages and diagnose OSA. This system is portable, lightweight, and has low power-consumption. To demonstrate the feasibility of the proposed PSG system, a comparison was made between the standard PSG-Alice 5 Diagnostic Sleep System and the proposed system. Several healthy volunteer patients participated in the PSG experiment and were monitored by both the standard PSG-Alice 5 Diagnostic Sleep System and the proposed system simultaneously, under the supervision of specialists at the Sleep Laboratory in Taipei Veteran General Hospital. A comparison of the results of the time-domain waveform and sleep stage of the two systems shows that the proposed system is reliable and can be applied in practice. The proposed system can facilitate the long-term tracing and research of personal sleep monitoring at home.

https://doi.org/10.1016/j.techfore.2018.01.022.

ABSTRACT: The Internet of Things is a new technological paradigm that aims to connect anything and anyone at any time and any place, giving rise to innovative new applications and services. In doing so, it offers a number of opportunities and challenges that users and organisations need to tackle. In this paper we systematically review the business literature related to the Internet of Things and provide a critical account of the latest state of play. More specifically, we adopt two perspectives: that of the user and that of the organisation. After outlining the methodological approach adopted, we consider the definitions of the Internet of Things. Then, in turn, we discuss the relevant business literature from each perspective. The paper concludes with a synthesis of the emerging themes and potential avenues for future research.

http://doi.acm.org/10.1145/3132732.

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: This research presents the results of an exploratory study of how organisations operating in the Internet of Things (IoT) industry are building and innovating their business model (BM). Using an explorative sequential approach through the multiple-case study method, we apply the "Canvas BM" framework to explore the BM of three companies operating in IoT industry, namely Intel, Solar, and Apio. The paper finds the most important building blocks - key activities, key resources, and value proposition - and most critical related factors enabling IoT-oriented organisations to create and capture value. Furthermore, our results also suggest that the main difference in the processes of BM building and innovation depend on the different capabilities and competencies possessed by organisations. This study therefore advances the theoretical understanding of the critical factors for the value creation process in the IoT industry's organisations and offers interesting implications for management theory and practice.

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

ABSTRACT: In recent years, virtual learning environments are gaining more and more momentum, considering both the technologies deployed in their support and the sheer number of terminals directly or indirectly interacting with them. This essentially means that every day, more and more smart devices play an active role in this exemplary Web of Things scenario. This digital revolution, affecting education, appears clearly intertwined with the earliest forecasts of the Internet of Things, envisioning around 50 billions heterogeneous devices and gadgets to be active by 2020, considering also the deployment of the fog computing paradigm, which moves part of the computational power to the edge of the network. Moreover, these interconnected objects are expected to produce more and more significant streams of data, themselves generated at unprecedented rates, sometimes to be analyzed almost in real time. Concerning educational environments, this translates to a new type of big data stream, which can be labeled as educational big data streams. Here, pieces of information coming from different sources (such as communications between students and instructors, as well as students’ tests, etc.) require
accurate analysis and mining techniques in order to retrieve fruitful and well-timed insights from them. This article presents an overview of the current state of the art of virtual learning environments and their limitations; then, it explains the main ideas behind the paradigms of big data streams and of fog computing, in order to introduce an e-learning architecture integrating both of them. Such an action aims to enhance the ability of virtual learning environments to be closer to the needs of all the actors in an educational scenario, as demonstrated by a preliminary implementation of the envisioned architecture. We believe that the proposed big stream and fog-based educational framework may pave the way towards a better understanding of students’ educational behaviors and foster new research directions in the field.


ABSTRACT: In this article, we describe a new type of attack on IoT devices, which exploits their ad hoc networking capabilities via the Zigbee wireless protocol, and thus cannot be monitored or stopped by standard Internet-based protective mechanisms. We developed and verified the attack using the Philips Hue smart lamps as a platform, by exploiting a major bug in the implementation of the Zigbee Light Link protocol, and a weakness in the firmware update process. By plugging in a single infected lamp anywhere in the city, an attacker can create a chain reaction in which a worm can jump from any lamp to all its physical neighbors, and thus stealthily infect the whole city if the density of smart lamps in it is high enough. This makes it possible to turn all the city’s smart lights on or off, to brick them, or to use them to disrupt nearby Wi-Fi transmissions.


ABSTRACT: With the significant improvement in deployment of Internet of Things (IoT) into the smart grid infrastructure, the demand for cyber security is rapidly growing. The Energy Internet (EI) also known as the integrated internet-based smart grid and energy resources inherits all the security vulnerabilities of the existing smart grid. The security structure of the smart grid has become inadequate in meeting the security needs of energy domains in the 21st century. In this paper, we propose a cyber security framework capable of providing adequate security and privacy, and supporting efficient energy management in the EI. The proposed framework uses an identity-based security mechanism (I-ICAAAN), a secure communication protocol and an Intelligent Security System for Energy Management (ISSEM) to certify security and privacy in the EI. Nash Equilibrium solution of game theory is applied for the evaluation of our proposed ISSEM based on security events allocation. The formal verification and theoretical analysis show that our proposed framework provides security and privacy improvement for IoT-based EI.


ABSTRACT: The recent expansion of the Internet of Things (IoT) and the consequent explosion in the volume of data produced by smart devices have led to the outsourcing of data to designated data centers. However, to manage these huge data stores, centralized data centers, such as cloud storage cannot afford auspicious way. There are many challenges that must be addressed in the traditional network architecture due to the rapid growth in the diversity and number of devices connected to the internet, which is not designed to provide high availability, real-time data delivery, scalability, security, resilience, and low latency. To address these issues, this paper proposes a novel blockchain-based distributed cloud architecture with a software defined networking (SDN) enable controller fog nodes at the edge of the network to meet the required design principles. The proposed model is a distributed cloud architecture based on blockchain
technology, which provides low-cost, secure, and on-demand access to the most competitive computing infrastructures in an IoT network. By creating a distributed cloud infrastructure, the proposed model enables cost-effective high-performance computing. Furthermore, to bring computing resources to the edge of the IoT network and allow low latency access to large amounts of data in a secure manner, we provide a secure distributed fog node architecture that uses SDN and blockchain techniques. Fog nodes are distributed fog computing entities that allow the deployment of fog services, and are formed by multiple computing resources at the edge of the IoT network. We evaluated the performance of our proposed architecture and compared it with the existing models using various performance measures. The results of our evaluation show that performance is improved by reducing the induced delay, reducing the response time, increasing throughput, and the ability to detect real-time attacks in the IoT network with low performance overheads.


ABSTRACT: Transforming infrastructures, buildings and services with the sensed data from the Internet of Things (IoT) technique has drawn wide attention. Enormous video data from city surveillance cameras poses huge challenges of transmission, storage and analysis, which necessitates new video compression technologies. The fusion of video data generated from smart city could be used to support city management and urban policy. Based on the specific characteristics of surveillance video, which are successive pictures have very strong correlations and each picture can be divided into background and foreground, this work proposes a block-level background modeling (BBM) algorithm to support long-term reference structure for efficient surveillance video coding. A rate–distortion optimization for surveillance source (SRDO) algorithm is also developed to improve the coding performance. Experimental results show that the proposed BBM and SRDO can significantly improve the compression performance, which can effectively support diverse video applications in smart city.

Bibliography on “regulatory/statistical report”


ABSTRACT: Based on Q317 data from the operators we have downgraded our forecast for total mobile and 3G/4G growth. Our outlook for fibre broadband remains positive as Proximus has begun rolling out FTTH networks in selected cities, following the announcement of a EUR3bn (USD3.1bn) investment project, Fibre for Belgium, in December 2016. In the mobile market we expect continued growth of post-paid subscriptions and an ongoing move towards advanced services such as 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.
**Bulgaria Telecommunications Report - Q2 2018.** London, United Kingdom: Business Monitor International, 2018

https://search.proquest.com/docview/1989038249?accountid=41838

ABSTRACT: Growth prospects in the mobile market will be driven by uptake of advanced 3G/4G services as carriers expand their nationwide high-speed data coverage. Bulgaria is witnessing a strong surge in advanced data usage, with data revenues and ARPs tracking upwards and mobile voice services revenues stagnating. This is a trend we expect to become more pronounced over the next five years. Mobile substitution continues to drive wireline subscriptions downwards but the variety of bundled services available, and demand for higher-speed services and pay-TV is boosting fixed broadband growth. Mandatory use of open source software will enable rapid proliferation of - and heightened participation of local technology companies in - e-Government services. However, downside risks include the potential for platform fragmentation, higher TCOs arising from technological change and the prospect of weaker security.

**Czech Republic. Industry Report : Telecommunications 1st Quarter 2018.** London, United Kingdom: The Economist Intelligence Unit Limited, 2018


**Egypt. Industry Report : Telecommunications 1st Quarter 2018.** London, United Kingdom: The Economist Intelligence Unit Limited, 2018


**Emerging Europe Telecommunications Insight - MARCH 2018.** London, United Kingdom: Business Monitor International, 2018


**France. Industry Report : Telecommunications 1st Quarter 2018.** London, United Kingdom: The Economist Intelligence Unit Limited, 2018


**Hungary Telecommunications Report - Q2 2018.** London, United Kingdom: Business Monitor International, 2018

https://search.proquest.com/docview/1990956722?accountid=41838

ABSTRACT: The Hungarian mobile market is highly saturated and has very little organic growth left. 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. This also explains the decline of 3G subscriptions vis-à-vis 4G, and BMI estimates that 3G subscriptions will decline to just 169,000 by 2027. Digi’s acquisition of Invitel creates a much-needed strong third national converged services provider and the expansion will boost consumer choice as well as the digital economy.

**Indonesia. Industry Report : Telecommunications 1st Quarter 2018.** London, United Kingdom: The Economist Intelligence Unit Limited, 2018


**Japan. Industry Report : Telecommunications 1st Quarter 2018.** London, United Kingdom: The Economist Intelligence Unit Limited, 2018


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


**Qatar Telecommunications Report - Q2 2018.** London, United Kingdom: Business Monitor International, 2018

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Monthly Reading List prepared by ITU Library
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ABSTRACT: Despite mobile subscriptions having declined over the last two years, Qatar remains an attractive market for telecoms. With high disposable incomes and a strong influx of migrants driving growth in the high and low-value ends of the market, we believe growth will come from advanced and converged services. Both operators are investing heavily in advanced LTE-A mobile broadband services, as well as developing their 5G platforms. In the wireline sector, there will be limited growth thanks to prospective investments in fibre and fixed broadband services, although fixed voice services will continue to decline.


Bibliography on “satellite communications”

doi: 10.1109/JSAC.2018.2804098.
http://dx.doi.org/10.1109/JSAC.2018.2804098.

ABSTRACT: Satellite Communications can be used when other communication systems are either destroyed or overloaded. Observation satellites and Delay/Disruption Tolerant Networks are technologies that can be interconnected to provide emergency communication for disaster recovery operations. DTNs use a store-carry-forward mechanism to forward messages through intermediary nodes to the destination node. The reliability of relaying messages through multi-hop nodes poses a significant problem in DTNs due to lack of consistent connectivity. These network characteristics make DTNs to heavily rely on the cooperation of neighbouring nodes for the successful delivery of packets. However, the presence of malicious or selfish nodes will have a great impact on the network performance. In this paper, we design a decentralised trust management scheme (DTMS) to filter out malicious nodes in DTNs. First, the number of forwarding evidence are combined with the energy consumption rate of the nodes to formulate direct trust. Then, a recommendation trust is computed from the indirect trust, recommendation credibility and recommendation familiarity. Recommendation credibility and familiarity improve the overall recommendation trust by filtering out dishonest recommendations. A comparative analysis of DTMS is performed against a Cooperative Watchdog Scheme (CWS), Recommendation Based Trust Model (RBTM) and Spray & Wait protocol. The results show that DTMS can effectively deal with malicious behaviours in DTNs including trust related attacks.

ABSTRACT: In this paper we consider satellite orbits in central force field with quadratic drag using two formalisms. The first using polar coordinates in which the satellite angular momentum plays a dominant role. The second is in Levi-Civita coordinates in which the energy plays a central role. We then merge these two formalisms by introducing polar coordinates in Levi-Civita space and derive a new equation for satellite orbits which unifies these two paradigms. In this equation energy and angular momentum appear on equal footing and thus characterize the orbit by its two invariants. Using this formalism we show that equatorial orbits around oblate spheroids...
can be expressed analytically in terms of Elliptic functions. In the second part of the paper we derive in Levi-Civita coordinates a linearized equation for the relative motion of two spacecrafts whose trajectories are in the same plane. We carry out also a numerical verification of these equations.


ABSTRACT: In the process of exploring pre-earthquake thermal anomalies using satellite infrared data, Blackett et al. (2011) found that the previously reported anomalies before the 2001 Mw 7.7 Gujarat earthquake, in India, were related to positive biases caused by data gaps due to cloud cover and mosaicing of neighboring orbits of MODIS satellite data. They supposed that such effects could also be responsible for other cases. We noted a strip-shaped TIR anomaly on March 17th, 2010, 28 days before the Ms. 7.1 Yushu earthquake (Qin et al., 2011). Here we again investigate multi-year infrared satellite data in different bands to discriminate whether the anomaly is associated with the earthquake, or is only bias caused by the data gaps. From the water vapor images, we find lots of clouds that have TIR anomalies. However, on the cloudiness background, there is an obvious strip-shaped gap matching the tectonic faults almost perfectly. In particular, the animation loops of hourly water vapor images show that the cloud kept moving from west to east, while they never covered the strip-shaped gap. We consider that the cloud with this special spatial pattern should have implied the abnormal signals associated with the seismogenic process. Based on current physical models, the satellite IR anomalies both on TIR and water vapor bands can qualitatively be explained using synthetic mechanisms.


ABSTRACT: Purpose Grounded on the value-based adoption model and innovation diffusion theory, this study examined consumer purchase decisions of mobile Global Positioning System (GPS) navigation apps. In addition, this study also investigated the moderating role that perceived availability of free substitutes (PAFS) plays in the relationship between perceived value and purchase intention. The paper aims to discuss these issues. Design/methodology/approach Data collected from 219 mobile users were analyzed against the research model using the partial least squares approach. Findings The results showed that compatibility, relative advantage, perceived enjoyment, perceived cost (positively), and complexity (negatively) influenced these users' value perceptions and purchase decisions. Furthermore, PAFS significantly weakened the positive relationship between perceived value and purchase intentions. Practical implications Based on these findings, the authors provide practical suggestions for mobile app developers to increase mobile app sales. This study also helps advance knowledge of mobile internet marketing. Originality/value This study is a pioneering effort in explaining consumer purchase intentions in the context of mobile GPS navigation app.; Purpose Grounded on the value-based adoption model and innovation diffusion theory, this study examined consumer purchase decisions of mobile Global Positioning System (GPS) navigation apps. In addition, this study also investigated the moderating role that perceived availability of free substitutes (PAFS) plays in the relationship between perceived value and purchase intention. The paper aims to discuss these issues. Design/methodology/approach Data collected from 219 mobile users were analyzed against the research model using the partial least squares approach. Findings The results showed that compatibility, relative advantage, perceived enjoyment, perceived cost (positively), and complexity (negatively) influenced these users' value perceptions and purchase decisions. Furthermore, PAFS significantly weakened the positive relationship between perceived value and purchase intentions. Practical implications Based on these findings, the authors provide practical suggestions for mobile app developers to increase mobile app sales. This study also helps
advance knowledge of mobile internet marketing. Originality/value This study is a pioneering effort in explaining consumer purchase intentions in the context of mobile GPS navigation app.

Bibliography on “semantic web”

ABSTRACT: The expansion of the services of the Semantic Web and the evolution of cloud computing technologies have significantly enhanced the capability of preserving and publishing information in standard open web formats, such that data can be both human-readable and machine-processable. This situation meets the challenge in the current big data era to effectively store, retrieve, and analyze resource description framework (RDF) data in swarms. This paper presents an overview of the existing challenges, evolving opportunities, and current developments towards managing big RDF data in clouds and provides guidance and substantial lessons learned from research in big data management. In particular, it highlights the basic principles of RDF data management, which allow researchers to know the most recent stage in developing RDF graphs and its achievement. Additionally, the research provides comparative studies among current storage systems and query processing approaches in understanding their efficiency. The paper also provides a vision for long-term future research directions by providing highlights on future challenges and opportunities in RDF domain.

ABSTRACT: Big Data architectures allow to flexibly store and process heterogeneous data, from multiple sources, in their original format. The structure of those data, commonly supplied by means of REST APIs, is continuously evolving. Thus data analysts need to adapt their analytical processes after each API release. This gets more challenging when performing an integrated or historical analysis. To cope with such complexity, in this paper, we present the Big Data Integration ontology, the core construct to govern the data integration process under schema evolution by systematically annotating it with information regarding the schema of the sources. We present a query rewriting algorithm that, using the annotated ontology, converts queries posed over the ontology to queries over the sources. To cope with syntactic evolution in the sources, we present an algorithm that semi-automatically adapts the ontology upon new releases. This guarantees ontology-mediated queries to correctly retrieve data from the most recent schema version as well as correctness in historical queries. A functional and performance evaluation on real-world APIs is performed to validate our approach.

ABSTRACT: Compliance with privacy policies imposes requirements on organizations and their information systems. Maintaining auditable privacy logs is one of the key mechanisms employed to ensure compliance, but the logs and their auditing reports are designed and implemented on an application by application basis. This paper develops a Linked Data model and ontologies to facilitate the sharing of logs that support privacy auditing and information accountability among multiple applications and participants. The L2TAP modular ontologies accommodate a variety of privacy scenarios and policies. SCIP is the key module that synthesizes contextual integrity
concepts and enables query based solutions that facilitate privacy auditing. Other L2TAP modules describe logs, participants, and log events, all identified by web accessible URIs and include relevant provenance information to support accountability. A health self-management scenario is used to illustrate how privacy preferences, accountability obligations, and access to personal information can be published and accessed as linked data by multiple participants, including the internal and external auditors. We contribute query based algorithmic solutions for two fundamental privacy auditing processes that analyze L2TAP logs: obligation derivation and compliance checking. The query based solutions that we develop require SPARQL implementations with limited RDFS reasoning power, and are therefore widely supported by commercial and open source systems. We also provide experimental validation of the scalability of our query based solution for compliance checking over L2TAP logs.

Bibliography on “smart cities”

ABSTRACT: Smart cities make use of a variety of technologies, protocols, and devices to support and improve the quality of everyday activities of their inhabitants. An important aspect for the development of smart cities are innovative public policies, represented by requirements, actions, and plans aimed at reaching a specific goal for improving the society's welfare. With the advent of Big Data, the definition of such policies could be improved and reach an unprecedented effectiveness on several dimensions, e.g. social or economic. On the other hand, however, the safeguard of the privacy of its citizens is part of the quality of life of a smart city. In this paper, we focus on balancing quality of life and privacy protection in smart cities by providing a new Big Data-assisted public policy making process implementing privacy-by-design. The proposed approach is based on a Big Data Analytics as a Service approach, which is driven by a Privacy Compliance Assessment derived from the European Union’s GDPR, and discussed in the context of a public health policy making process.

ABSTRACT: IntroductionElectric bikes (e-bikes) may help in transport decarbonisation in European cities. To fully assess the market potential of e-bikes, further research is needed to understand users’ preferences and the range of factors that can contribute to people to shift from car use to low carbon vehicles such as e-bikes. This paper is built on the Be4Schools R&D project implemented in the smart city of Águeda in Portugal. It comprised the former study in the country that examined the willingness of students (aged 15-21 years) to use e-bikes for daily trips to school and that gathered their preferences towards specific ICT related attributes. MethodsThe methodology comprised a mobility survey and a stated-choice experiment (SC). The SC experiment gathered 2232 observations for modelling which were able to provide the relevant attribute information trade-off between car travel, route and e-bike features (with or without specific ICT equipment). An extensive econometric analysis using was performed to assess the nature and extent of students' heterogeneity of preferences which also considered gender issues. The study aimed to contribute to the regional economic cluster on powered two-wheels' industry & innovation. Results The absence of cycling infrastructures (segregated from main road) and the absence of cycle lanes in the road infrastructure were ranked as the first, second and third most important barriers, by 25.4% and 24.8% of the students, respectively. The
importance of a dedicated cycling route to school (segregated from main traffic) revealed to be critical as the odds of choosing an e-bike was found to be 6.5 times higher in comparison with the "no cycling infrastructure" option, ceteris paribus. This finding is aligned with the fact that cyclists would need to be exposed to high levels of motorized traffic in main roads and to increased perceived risks. The market potential of e-bikes is likely to be higher if ICT features can be added to e-bikes as the odds of choosing an e-bike when it comes with the preferred ICT devices is 1.7 times higher than the opposed situation (e-bike without additional ICT devices).

Conclusions
Research results are interesting for mobility policies and industry as the possible integration of ICT equipment in e-bikes may speed up the market uptake of this technology in smart cities. On the other hand, cycling infrastructures seem to be critical elements for increasing the demand for both conventional and e-bikes in the smart city of Águeda.

https://doi.org/10.1016/j.ictex.2018.01.009.
ABSTRACT: As information and communication technologies are transforming traditional cities into smart cities, the Internet of Things (IoT) makes smart cities efficient and responsive. In retrospect, for medical technologists to enter and establish themselves in the new healthcare industry, it is imperative that we look beyond traditional forms of technological innovations. Hence, IoT is an avenue for consideration. It is hoped that IoT-based healthcare devices will be able to provide the early detection of potential exacerbations and inform patients and medical professionals such that they can be treated promptly. In regard to smart healthcare within smart cities, this paper presents a study where an optoelectronic controller chip was designed to control the micro light emitting diode (LED) matrix used in retinal prosthesis. An individually addressable low-power micro LED array is designed and the results are reported. The chip is fabricated using the German foundry X-FAB 0.35-μm complementary metal oxide semiconductor (CMOS) technology and the total die area is 4 mm². It is envisaged that the presented design and technology could potentially be used for a number of applications in healthcare and consumer electronics.

https://doi.org/10.1016/j.telpol.2018.01.003.
ABSTRACT: Sensors and systems within rapidly expanding smart cities produce citizen-centered big data which have potential value to support citizen-centered urban governance decision-making. There exists a wealth of extant conceptual studies, however, further operational studies are needed to establish a specific path towards implementation of such data to governance decision-making with analytical algorithms that are appropriate for each step of the path. This paper proposes a framework for the use of citizen-centered big data analysis to drive governance intelligence in smart cities from two perspectives: urban governance issues and data-analysis algorithms. The framework consists of three layers: 1) A data-merging layer, which builds a citizen-centered panoramic data set for each citizen by merging citizen-related big data from multiple sources in collaborative urban governance via similarity calculation and conflict resolution; 2) a knowledge-discovery layer, which plots the citizen profile and citizen persona at both individual and group levels in terms of urban public service delivery and citizen participation via simple statistical analysis techniques, machine learning, and econometrics methods; and 3) a decision-making layer, which uses ontology models to standardize urban governance-related attributes, personas, and associations to support governance decision-making via data mining and Bayesian Net techniques. Finally, the proposed framework is validated in a case study on blood donation governance in China. This research highlights the value of citizen-centered big data, pushes data-to-decision research from conceptual to operational, synthesizes previously published frameworks for citizen-centered big data analysis in smart cities, and enhances the mutual supplement cross multiple disciplinaries.

**ABSTRACT:** Smart cities attract considerable attention from academics and urban planners mainly in the context of urban development policies. Based on technological innovations, smart cities are complex ecosystems that have the potential to improve urban livability, workability and sustainability through a network of people, processes and data. However, according to academics and urban planners the smart city concept favors technological products and solutions over end users and their quality of life. This perspective calls for an integrated analysis approach that considers the smart city as an organic whole, which encompasses objective and subjective quality of life domains (QOL). This paper aimed to evaluate the perception of quality of life in a smart city and to analyze the main elements of citizens’ satisfaction with their home city. The research analyzed the city of Curitiba, in Southern Brazil, claimed to be a livable, green, and inclusive city and one of the ten smartest cities in the world. Interviews with 400 residents identified four main QOL domains: socio-structural relationships, environmental well-being, material well-being and community integration. The respondents’ overall perception revealed their low satisfaction with the main elements that characterize Curitiba as a smart city. This finding calls for a better understanding of the planning and management of smart cities in conjunction with the QOL elements and their effects on citizens. The research provides some contributions to understand the interconnected facets of QOL domains in the Smart Cities context. From a smart city perspective, the research concludes that success within the domain of smart living can be achieved by providing the four factors revealed by the analysis. According to our results, meeting these criteria of success would improve citizen’s quality of life, creating a stronger community within the city. Finally, the study provides relevant information for social researchers and urban planners by identifying factors that influence QOL perceptions and providing elements for political and academic debate.

https://doi.org/10.1016/j.techfore.2018.01.005.

**ABSTRACT:** Smart cities are increasingly advocated by governments and the private sector as the primary means to deliver urban sustainability. Particularly in Europe and North America, the smart city is envisioned as a place where digital technologies are deployed to ‘solve’ urban sustainability problems. Such visions have been broadly critiqued in the urban studies literature for reflecting techno-utopian, neoliberal approaches to urban development that exert corporate control over cities, but there has been little empirical verification of these critiques. More recently, a disparate and interdisciplinary body of literature has emerged documenting the impacts of smart city initiatives in practice. This paper provides a state-of-the-art, empirically informed analysis of smart-sustainability, which considers established critiques of smart city policy and visions alongside the increasing body of evidence concerning the actual experiences of smart city initiatives. Through a systematic review of the smart city literature pertaining to Europe and North America, we identify and test five tensions between the smart city and the goals of sustainable urban development. These tensions involve: (1) reinforcing neoliberal economic growth; (2) focusing on more affluent populations; (3) disempowering and marginalising citizens; (4) neglecting environmental protection; and, (5) failing to challenge prevailing consumerist cultures. On the basis of these findings we propose how digital technologists, urban developers, municipalities and citizens might address these tensions. A key finding is that the potential to empower and include citizens represents the key to unlocking forms of smart-sustainable urban development that emphasise environmental protection and social equity, rather than merely reinforcing neoliberal forms of urban development.
doi: 10.1016/j.clsr.2017.05.022.
https://doi.org/10.1016/j.clsr.2017.05.022.

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

https://doi.org/10.1016/j.cose.2018.01.014.

ABSTRACT: In the forthcoming Smart City scenario, Service Providers will require users to authenticate themselves and authorize their mobile applications to access their remote accounts. In this scenario, OAuth 2.0 has been widely adopted as a de facto authentication and authorization protocol. However, the current OAuth 2.0 protocol specification does not consider the user privacy issue and presents several vulnerabilities that can jeopardize users' privacy rights. Therefore, in this paper we propose an OAuth 2.0 based protocol for Smart City mobile applications that addresses the user privacy issue by integrating a pseudonym-based signature scheme and a signature delegation scheme into the OAuth 2.0 protocol flow. The proposed solution allows users to self-generate user-specific and app-specific pseudonyms on-demand and ensure privacy-enhanced user authentication at the Service Provider side. The proposed protocol has been validated with Proverif and its performance has been evaluated in terms of time and space complexity. Results show that the proposed protocol can provide users with efficient and effective means to authenticate towards service providers while preventing user tracking and impersonation from malicious entities located in the network side or in the users’ mobile device.


ABSTRACT: Transforming infrastructures, buildings and services with the sensed data from the Internet of Things (IoT) technique has drawn wide attention. Enormous video data from city surveillance cameras poses huge challenges of transmission, storage and analysis, which necessitates new video compression technologies. The fusion of video data generated from smart city could be used to support city management and urban policy. Based on the specific characteristics of surveillance video, which are successive pictures have very strong correlations and each picture can be divided into background and foreground, this work proposes a block-level background modeling (BBM) algorithm to support long-term reference structure for efficient surveillance video coding. A rate–distortion optimization for surveillance source (SRDO) algorithm is also developed to improve the coding performance. Experimental results show that the proposed BBM and SRDO can significantly improve the compression performance, which can effectively support diverse video applications in smart city.

ABSTRACT: The popular smart city concept, for some, is viewed as a vision, manifesto or promise aiming to constitute the 21st century’s sustainable and ideal city form, while for others it is just a hype. This paper places smart city practices from the UK under the microscope to investigate their contributions in achieving sustainable urban outcomes. Panel data analysis methods were employed to investigate changes in carbon dioxide emissions level of 15 UK cities with differential level of city smartness over the period of 2005–2013. The findings reveal that the link between city smartness and carbon dioxide emissions is not linear, and the impact of city smartness on carbon dioxide emissions does not change over time. This finding calls for better aligning smart city strategies to lead to concrete sustainable outcomes. The paper concludes by highlighting the importance of prospective investigations to accurately scrutinise existing smart city projects’ outcomes, and emphasising the necessity of developing smart city agendas that deliver sustainable outcomes.


ABSTRACT: Ensuring privacy in recommender systems for smart cities remains a research challenge, and in this paper we study collaborative filtering recommender systems for privacy-aware smart cities. Specifically, we use the rating matrix to establish connections between a privacy-aware smart city and k -coRating, a novel privacy-preserving rating data publishing model. First, we model privacy concerns in a smart city as the problem of privacy-preserving collaborative filtering recommendation. Then, we introduce k -coRating to address privacy concerns in published rating matrices, by filling the null ratings with predicted scores. This allows us to mask the original ratings to preserve k -anonymity-like data privacy, and enhance data utility (quantified using prediction accuracy in this paper). We show that the optimal k -coRated mapping is an NP-hard problem and design an efficient greedy algorithm to achieve k -coRating. We then demonstrate the utility of our approach empirically.

Bibliography on “social media”


ABSTRACT: Online Social Networks (OSNs) are very popular and users share various information in these networks. To protect these resources from unauthorized access, these frameworks must support flexible access control mechanisms. Semantic technology provides new opportunities for this purpose. This paper proposes a Prioritized Ontology-Based Access Control (POBAC) model for protecting users' information in OSNs. In POBAC, Description Logic (DL) is used for modeling of security-related information in social networks as an ontology and MKNF+ rules are used for specification of system's and users' access control policies. Using MKNF+, we can utilize non-monotonic inference (i.e., closed-world reasoning) in the access control procedure. Furthermore, users are able to define their access control rules, exceptions, and default policies. The potential conflict among different access control rules defined by users and the system is another problem, which is resolved in POBAC by considering priority levels for rules in a logical manner. Logical foundation of the model dedicates accuracy, expressiveness, and inference (of implicit access rules from the explicit ones) to the model and thus decreases the risk of sharing information in OSNs. The expressive power of the model is demonstrated through a case study.
https://doi.org/10.1016/j.jdeveco.2018.01.009.

ABSTRACT: Social networks are an important mechanism for diffusing information when institutions are missing, but there may be distributional consequences from targeting only central nodes in a network. After implementing a social network census, one of three village-level treatments determined which treated nodes in the village received information about composting: random assignment, nodes with the highest degree, or nodes with high betweenness. We then look at how information diffuses through the network. We find information diffusion declines with social distance, suggesting frictions in the diffusion of information. Aggregate knowledge about the technology did not differ across targeting strategies, but targeting nodes using betweenness measures in village-level networks excludes less-connected nodes from new information. Women farmers are less likely to receive information when betweenness centrality is used in targeting, suggesting there are important gender differences, not only in the relationship between social distance and diffusion, but also in the social learning process. 

https://doi.org/10.1080/1369118X.2018.1428651.

ABSTRACT: In May 2016, an enormous wildfire threatened the city of Fort McMurray, Alberta and forced the evacuation of all of the city’s residents. Outpourings of support teemed in from all across Canada and over the world, prompting the largest charitable response in Canadian Red Cross history. This paper examines Albertans’ response to the wildfire by exploring caring and helping behaviors as well as the role of social media in facilitating these remarkable charitable efforts. The paper uses mixed methods including an analysis of the most popular Tweets related to the wildfire and an Alberta survey collected months after the disaster. The analysis of tweets reveals that care, concern, and invitations to help were prominent in social media discourse about the wildfire. The analysis of survey data demonstrates that those who followed news about the wildfire on social media express higher overall levels of care and concern for those affected, which led to helping those impacted by the wildfire. The findings provide important insights about the role of social media in disaster relief and recovery as well as citizens’ civic engagement.

https://doi.org/10.1108/ITP-06-2016-0135.

ABSTRACT: Purpose The purpose of this paper is to explore the influence of five dimensions of similarity (i.e. condition similarity, context similarity, catalyst similarity, consequence similarity and connection similarity) on Facebook social networks development. Design/methodology/approach A questionnaire-based survey was conducted with 245 Romanian college students. SmartPLS 3 statistical software for partial least squares structural equation modeling was chosen as the most adequate technique for the assessment of models with both composites and reflective constructs. Findings More than 52 percent of the variance in social network development was explained by the advanced similarity model. Each dimension had a positive effect on Facebook social networks development, the highest influences being exerted by condition similarity, context similarity and consequence similarity. Research limitations/implications The current approach is substantively based on the homophily paradigm in explaining social network development. Future research would benefit from comparing and contrasting complementary theories (e.g. the rational self-interest paradigm, the social exchange or dependency theories) with the current findings. Also, the research is tributary to a convenience-based sample of Romanian college students which limits the generalization of the
results to other cultural contexts and, thus, invites further research initiatives to test the model in different settings. Social implications Similarity attributes and mechanisms consistently determine the dynamics of online social networks, a fact which should be investigated in depth in terms of the impact of new technologies among young people. Originality/value This study is among the first research initiatives to approach similarity structures and processes within an integrative framework and to conduct the empirical analysis beyond US-centric samples.; Purpose The purpose of this paper is to explore the influence of five dimensions of similarity (i.e. condition similarity, context similarity, catalyst similarity, consequence similarity and connection similarity) on Facebook social networks development. Design/methodology/approach A questionnaire-based survey was conducted with 245 Romanian college students. SmartPLS 3 statistical software for partial least squares structural equation modeling was chosen as the most adequate technique for the assessment of models with both composites and reflective constructs. Findings More than 52 percent of the variance in social network development was explained by the advanced similarity model. Each dimension had a positive effect on Facebook social networks development, the highest influences being exerted by condition similarity, context similarity and consequence similarity. Research limitations/implications The current approach is substantively based on the homophily paradigm in explaining social network development. Future research would benefit from comparing and contrasting complementary theories (e.g. the rational self-interest paradigm, the social exchange or dependency theories) with the current findings. Also, the research is tributary to a convenience-based sample of Romanian college students which limits the generalization of the results to other cultural contexts and, thus, invites further research initiatives to test the model in different settings. Social implications Similarity attributes and mechanisms consistently determine the dynamics of online social networks, a fact which should be investigated in depth in terms of the impact of new technologies among young people. Originality/value This study is among the first research initiatives to approach similarity structures and processes within an integrative framework and to conduct the empirical analysis beyond US-centric samples.

https://doi.org/10.1016/j.ijmedinf.2018.01.015.

ABSTRACT: Introduction According to the World Health Organization (WHO), over 130 million people are in constant need of humanitarian assistance due to natural disasters, disease outbreaks, and conflicts, among other factors. These health crises can compromise the resilience of healthcare systems, which are essential for achieving the health objectives of the sustainable development goals (SDGs) of the United Nations (UN). During a humanitarian health crisis, rapid and informed decision making is required. This is often challenging due to information scarcity, limited resources, and strict time constraints. Moreover, the traditional approach to digital health development, which involves a substantial requirement analysis, a feasibility study, and deployment of technology, is ill-suited for many crisis contexts. The emergence of Web 2.0 technologies and social media platforms in the past decade, such as Twitter, has created a new paradigm of massive information and misinformation, in which new technologies need to be developed to aid rapid decision making during humanitarian health crises. Objective Humanitarian health crises increasingly require the analysis of massive amounts of information produced by different sources, such as social media content, and, hence, they are a prime case for the use of artificial intelligence (AI) techniques to help identify relevant information and make it actionable. To identify challenges and opportunities for using AI in humanitarian health crises, we reviewed the literature on the use of AI techniques to process social media. Methodology We performed a narrative literature review aimed at identifying examples of the use of AI in humanitarian health crises. Our search strategy was designed to get a broad overview of the different applications of AI in a humanitarian health crisis and their challenges. A total of 1,459 articles were screened, and 24 articles were included in the final analysis. Results Successful case studies of AI applications in a humanitarian health crisis have been reported, such as for outbreak detection. A commonly shared concern in the reviewed literature is the technical challenge of analyzing large amounts of data in real time. Data interoperability, which is essential
to data sharing, is also a barrier with regard to the integration of online and traditional data sources. Human and organizational aspects that might be key factors for the adoption of AI and social media remain understudied. There is also a publication bias toward high-income countries, as we identified few examples in low-income countries. Further, we did not identify any examples of certain types of major crisis, such as armed conflicts, in which misinformation might be more common. Conclusions The feasibility of using AI to extract valuable information during a humanitarian health crisis is proven in many cases. There is a lack of research on how to integrate the use of AI into the work-flow and large-scale deployments of humanitarian aid during a health crisis.

ABSTRACT: This study explores the development of a new form of social commerce in emerging markets from three interlocking aspects, namely, social (trust and familiarity), technical (governing form factor and technological utility), and socio-technical (perceived ease of use, perceived usefulness and word of mouth). As social commerce is proliferating and evolving across many emerging markets, we explore how these above-stated constructs manifest themselves in these markets. Our findings show the importance of governing form factors such as mobile system in the development of social commerce in emerging markets. Furthermore, familiarity and trust play a major role in mediating exchange between sellers and buyers and its positive effects in buyers’ perceived usefulness of each social commerce platform. Finally, Word of Mouth plays a vital role in building trust and helps in increasing buyer propensity and intention to search for products on these social commerce platforms."

ABSTRACT: Among the general population, students are especially sensitive to social media and smartphones because of their pervasiveness. Several studies have shown that there is a negative correlation between social media and academic performance since they can lead to behaviors that hurt students' careers, e.g., addictedness. However, these studies either focus on smartphones and social media addictedness or rely on surveys, which only provide approximate estimates. We propose to bridge this gap by i) parametrizing social media usage and academic performance, and ii) combining smartphones and time diaries to keep track of users’ activities and their smartphone interaction. We apply our solution on the 72 students participating in the SmartUnitn project, which investigates students’ time management and their academic performance. By analyzing the logs of social media apps on students' smartphones and by comparing them to students’ credits and grades, we can provide a quantitative and qualitative estimate of negative and positive correlations. Our results show the negative impact of social media usage, distinguishing different influence patterns of social media on academic activities and also underline the need to control the smartphone usage in academic settings."

ABSTRACT: Journalists have for considerable time been criticized for living in their own bubbles, a phenomenon industry commentators have referred to as groupthink, while in scholarship the tendency of individuals to connect with people who are like them is termed homophily. This age-old process has come under scrutiny in recent times due to the arrival of social network sites, which have been viewed as both working against but also leading to more homophily. In journalism scholarship, these processes are still little understood, however. Focusing on the social network site Twitter and drawing on a large-scale analysis of more than 600,000 tweets sent by
2908 Australian journalists during one year, this study shows that journalists continue to live in bubbles in their online interactions with each other. Most journalists were more likely to interact with journalists who have the same gender, work in the same organization, on the same beat or in the same location. However, the study also demonstrates some notable exceptions as well as the importance of differentiating between types of interaction.

https://doi.org/10.1108/IntR-08-2016-0248.

ABSTRACT: Purpose To better understand executive communication on social media, the purpose of this paper is to examine the pattern of messages posted by chief executive officers (CEOs) on Twitter and their retweetability (rate of reposting by other users). Design/methodology/approach The study data comprises 1,068 original tweets randomly selected from all Fortune 1000 CEOs? tweets in 2014. The impact of the contextual factors (industry background, activeness, and Twitter age) and content factors (content types, supplementary information, and linguistic features) on retweetability was examined through regression analyses. Findings CEOs tweet to share information and insights, to promote their companies or products, to update work or life status, and to interact with the public. Original insights, promotional messages, and seasonal greetings were most likely to be retweeted. CEOs? backgrounds, usage of hashtags, and certainty of language were also positively associated with retweetability. Practical implications CEOs may enhance their online social influence through demonstrating leadership by sharing insights about their organization or industry and posting topical messages (e.g. season?s greetings). Furthermore, CEOs could use hashtags strategically to initiate or participate in discussions and promote their personal visibility. Originality/value This study is one of the first to evaluate how leaders of the largest companies in the USA communicate on Twitter. It contributes to a theoretical understanding of the factors underlying online influence ? the influence of the status of the online communicator vs the message content on information forwarding.; Purpose To better understand executive communication on social media, the purpose of this paper is to examine the pattern of messages posted by chief executive officers (CEOs) on Twitter and their retweetability (rate of reposting by other users). Design/methodology/approach The study data comprises 1,068 original tweets randomly selected from all Fortune 1000 CEOs? tweets in 2014. The impact of the contextual factors (industry background, activeness, and Twitter age) and content factors (content types, supplementary information, and linguistic features) on retweetability was examined through regression analyses. Findings CEOs tweet to share information and insights, to promote their companies or products, to update work or life status, and to interact with the public. Original insights, promotional messages, and seasonal greetings were most likely to be retweeted. CEOs? backgrounds, usage of hashtags, and certainty of language were also positively associated with retweetability. Practical implications CEOs may enhance their online social influence through demonstrating leadership by sharing insights about their organization or industry and posting topical messages (e.g. season?s greetings). Furthermore, CEOs could use hashtags strategically to initiate or participate in discussions and promote their personal visibility. Originality/value This study is one of the first to evaluate how leaders of the largest companies in the USA communicate on Twitter. It contributes to a theoretical understanding of the factors underlying online influence ? the influence of the status of the online communicator vs the message content on information forwarding.


ABSTRACT: The importance of social networks is growing with the fast development of social network technologies and the steady growth in their user communities. Given that the collection of data from social networks is essential for academic research and commercial applications, the prevention of leakage of sensitive information has become very crucial. The majority of
anonymization techniques are focused on the threats associated with publishing one social network dataset. As most Internet users participate in more than one social network, a user’s records are likely to appear in two published social network datasets. The level of anonymity of each dataset may present only a small security risk; however, there is no guarantee that a combination of the two datasets has the same level of anonymity. An attack on the privacy of an individual using two published datasets containing his/her records is called a composition attack. The composition attack was recently investigated as a threat to two relational datasets; however, it has not yet been considered as a potential danger to two datasets containing social network data. The novel contribution of this paper is that the composition attack is applied to anonymized social network data. A new algorithm for the composition attack is proposed and its usability is demonstrated with experiments using pairs of synthetic scale-free networks substituting real social networks.

ABSTRACT: Social media research focuses predominantly on the link between attitude, behaviour and intention, and rarely takes value systems into account. Values are expected, through intervening variables, to affect intention directly or indirectly. Starting from the Theory of Trying, the aim of this study is to investigate how value systems affect digital natives’ intention to interact with social media. By using Fuzzy Set Qualitative Comparative Analysis (fsQCA), an empirical analysis involving data from 116 social media users is carried out to examine how global and domain-specific values, attitude towards trying and gender affect the intention to interact. The results of a configurational analysis show that gender appears to affect many of the configurations leading to the outcome of interest. There are two configurations in which, regardless of gender, global values, domain-specific values and attitude towards trying cause the outcome. The findings indicate that there is no single condition necessary to ensure the outcome, but there are several different configurations of the conditions lead to outcome of interest.

van Haperen, Sander, Walter Nicholls, and Justus Uitermark. "Building Protest Online: Engagement with the Digitally Networked #not1more Protest Campaign on Twitter." *Social Movement Studies*(2018): 1-16
http://dx.doi.org/10.1080/14742837.2018.1434499.
ABSTRACT: This article examines engagement with digitally networked, politically contentious actions. Maintaining engagement over time is a key challenge for social movements attempting to network digitally. This article argues that proximity serves as a condition to address this challenge, because it configures the personal networks upon which transmission depends. This is a paradox of digital activism: it has the capacity to transcend barriers; however, proximity is essential for sustaining relations over time. Examining Twitter data from the #not1more protest campaign against immigrant deportations in the United States, quantitative and social network analyses show a differentiated development of engagement, which results in a particular geographical configuration with the following attributes. First, there is a robust and connected backbone of core organizers and activists located in particular major cities. Second, local groups engage with the campaign with direct actions in other cities. Third, a large and transitory contingent of geographically dispersed users direct attention to the campaign. We conclude by elaborating how this geographically differentiated configuration helps to sustain engagement with digitally networked action.

ABSTRACT: As technological advancements continue to evolve, consumer use and purchase
behavior also change in response to the emergence of new tools such as social media. Given that more marketers have shifted their focus toward engaging customers in the development of their marketing mix via social media platforms, such as Twitter and Facebook, finding important factors that drive consumer use and purchase behavior in this environment is of practical and academic importance. Use behavior contributes to fundamental user base, whereas purchase behavior generates firm revenue. For firms, finding a common factor that influences both behaviors would help increase marketing effectiveness. Based on a literature review, this study identifies social identity as the common factor in the social media context. Furthermore, existing research suggests that social identity has multiple dimensions including cognitive, affective, and evaluative. However, whether these three dimensions exert the same influences on these two important behaviors is not clear yet. The present study attempts to fill this research gap and examine the various effects of cognitive, affective, and evaluative dimensions on use and purchase behaviors. The result shows that these three dimensions have various effects on focal behaviors. The findings indicate that affective dimension has an effect on use behavior, while the cognitive and evaluative dimensions have an influence on purchase behavior. Evaluative identity has a stronger influence than its cognitive counterpart. The three dimensions are distinct and non-substitutable by other parts. Implications are elaborated in the discussion section.


ABSTRACT: The remarkable upsurge of social media has dramatic impacts on health care research and practice. Social media are reshaping health information management in a variety of ways, ranging from providing cost-effective ways to improve clinician-patient communication and exchange health-related information and experience, to enabling the discovery of new medical knowledge and information. Despite some demonstrated initial success, social media use and analytics for improving health as a research field is still at its infancy. Information systems researchers can potentially play a key role in advancing the field. This study proposes a conceptual framework for social media-based health information management by drawing on multi-disciplinary research. With the guidance of the framework, this paper presents related research challenges, identifies important yet under-explored research issues, and discusses promising directions for future research.

Bibliography on “spectrum management/spectrum sharing”


ABSTRACT: Fractional Frequency Reuse (FFR) and Coordinated MultiPoint (CoMP) processing are two of the conventional methods to mitigate the Inter-Cell Interference (ICI) and to improve the average Signal-to-Interference-plus-Noise Ratio (SINR). However, FFR is associated with low system spectral efficiency and CoMP does not take any action to mitigate the inter-cluster interference. In this article, we study the challenges and problems of the current interference management techniques and explain why the clustering and spectrum allocation must be studied jointly. Then, in the context of Cloud Radio Access Network (C-RAN), we propose a joint virtual clustering and spectrum allocation scheme, called Cloud-CFFR, to address such problems. With respect to both FFR and CoMP, Cloud-CFFR decreases the complexity, delay, and ICI while increasing the system spectral efficiency. Since the system performance in cell-edge regions relies on the cooperation of different Virtual Base Stations (VBSs), there is no service interruption in handling handovers; moreover, in order to address the unanticipated change in capacity
demand, a flexible spectrum management technique is proposed which dynamically changes the subband boundaries based on the number of active users in the clusters. Simulation results confirm the validity of our analysis and show the benefits of this novel uplink solution compared to the traditional schemes.

doi: 10.1109/TAES.2017.2735659.
http://dx.doi.org/10.1109/TAES.2017.2735659.
ABSTRACT: Access to the electromagnetic spectrum is an ever-growing challenge for radar. Future radar will be required to mitigate RF interference from other RF sources, relocate to new frequency bands while maintaining quality of service, and share frequency bands with other RF systems. The spectrum sensing, multioptimization (SS-MO) technique was recently investigated as a possible solution to these challenges. Prior results have indicated significant improvement in the signal-to-interference plus noise ratio at the cost of a high computational complexity. However, the optimization computational cost must be manageable in real time to address the dynamically changing spectral environment. In this paper, a bioinspired filtering technique is investigated to reduce the computational complexity of SS-MO. The proposed technique is analogous to the processing of the thalamus in the human brain in that the number of samples input to SS-MO is significantly decreased, thus, resulting in a reduction in computational complexity. The performance and computational complexity of SS-MO and the proposed technique are investigated. Both techniques are used to process a variety of measured spectral data. The results indicate a significant decrease in computational complexity for the proposed approach while maintaining performance of the SS-MO technique.

ABSTRACT: Traditional regulatory methods for spectrum licensing have been recently identified as one of the causes for under-utilization of the valuable radio spectrum. Governmental regulatory agencies such as the Federal Communications Commission (FCC) are seeking ways to remove stringent regulatory barriers and facilitate broader access to the spectrum resources. The goal of such new FCC-backed efforts is to allow for an improved and ubiquitous sharing of the precious radio spectrum between commercial service providers. In this paper, an interdisciplinary framework for spectrum management is proposed in which the government, using its regulatory power, can motivate spectrum sharing among the service providers in order to gain a net social benefit. In this framework, a noncooperative game is used to analyze how to foster more sharing of the radio spectrum via the use of regulatory power. The providers are incentivized with subsidized spectrum bands from the regulators. In return, the providers will be asked to provide coverage to the users that are not subscribed to them so as to maintain their subsidy incentives from the government. In a simplification of the model, the providers’ perfect equilibrium strategies are found numerically, and the existence of perfect equilibrium for the government’s strategy is discussed. Our numerical results using real base station locations from two cellular providers show that through subsidization, the government can provide small service providers a fair chance to compete with the large providers, thereby avoiding monopolization in the market.

Bibliography on “telecommunication/ICT markets”

ABSTRACT: The telecommunication sector in Mexico was highly concentrated until 2013. The sector was mostly composed by a dominant player, a rationed market (low density of services), a poor institutional design, high tariffs, and weak regulation agents. The Herfindahl-Hirschman (HHI) index was 5333 for mobile telephone and 7,029 for fixed telephone services—among the highest scores in the world. In order to promote competition in the sector, Congress approved a reform in 2013 to establish a new regulator empowered to impose asymmetrical rules in the case of the predominance of a single firm. A declaration of preponderance of the dominant player was issued, promoting free interconnection rates and the mandatory sharing of its passive and active infrastructure with the rest of the firms in the industry. The new institutional design led to increased competition in the sector, decreasing the mobile and fixed telephone prices while increasing the coverage and penetration of these services. In this article, an applied general equilibrium model for the Mexican economy is employed to assess the impact of the Telecommunication Reform in Mexico in the telephone sector, consumer welfare, and income distribution. The model is static, encompassing 10 types of consumers (rural and urban and the five income quintiles) and 40 sectors (of which four are disaggregate telecommunications industries). It assumes fixed wages and capital rental prices as well as idle resources. The main results indicate that the effects of the reform are not minor; the drop in telephone prices would reduce the general consumer price index by almost 2%, and the value added would increase by more than 3%, benefiting mainly households in the highest income quintiles.


ABSTRACT: Remote areas with sparse population, disaster areas in the aftermath, and refugee camps all require communication that is not forthcoming from commercial vendors. Numerous communication system options are available, but with widely varying cost and efficacy. The goal of this work is to discuss a framework in which to consider appropriate telecommunications technology. The framework approaches sustainable development as a business, under the assumption that social/technical/environmental sustainability requires economic sustainability. The framework incorporates well known and accepted business canvas as a roadmap. Information and Communication Technology (ICT) interventions are then considered in terms of their value proposition, markets, and perhaps most important for the realm of sustainable development, the key partners. To illustrate how the framework applies, we consider three case studies and then apply the resultant principles to the consideration of these ICT projects. The case studies are chosen for their diversity. Furthermore, after verifying the decision framework, recommendations are made for three ongoing intervention projects in limited-resource settings.


ABSTRACT: This paper examines the impact of countries' distance between their Internet usage and the world's average of the Internet usage intensity on their integration into the world market of trade in commercial services. Using an unbalanced panel dataset of 175 countries over the annual period 2000–2013, the empirical analysis indicates that the narrowing of the Internet-related distance would improve countries' integration into the world trade in commercial services market. Furthermore, it helps those countries that are geographically far from the world market to compensate for the adverse effect of this geographical distance on their integration into the world market of trade in commercial services.

ABSTRACT: Purpose The purpose of this paper is to develop guidelines of what award winning companies, leading practice in integrated reporting (IR) disclose in their integrated reports about material issues and their materiality determination processes. Also, to provide insight into what they disclose about their perception of materiality. Design/methodology/approach A content analysis was conducted to investigate what the top 10 South African companies of the 2015 Ernst and Young Excellence in Integrated Reporting Awards disclosed in their 2014 and 2015 integrated reports about their materiality determination processes, material issues and what materiality means to them. Thematic analyses were conducted in developing guidelines. Findings All except one company applied the International Integrated Reporting Framework. The materiality determination processes, material issues and companies? descriptions of materiality are diverse. Material issues most companies identified relate to employees, social and environmental issues, customers and sustainable performance. Practical implications The proposed guidelines will provide useful strategies for organisations embarking on the IR journey about what issues could be considered as material and therefore included in integrated reports. It also proposes activities companies can undertake to identify, evaluate and prioritise material issues and execute their materiality determination process. Originality/value This paper is the first to develop guidelines of material matters and materiality determination processes. It also adds to existing literature on IR practice and the application of materiality.

Bibliography on “telecommunication/ICT policy and law”

https://doi.org/10.1016/j.clsr.2017.06.006.
ABSTRACT: The consent model of privacy protection assumes that individuals control their personal information and are able to assess the risks associated with data sharing. The model is attractive for policy-makers and automakers because it has the effect of glossing over the conceptual ambiguities that are latent in definitions of privacy. Instead of formulating a substantive and normative position on what constitutes a reasonable expectation of privacy in the circumstance, individuals are said to have control over their data. Organizations have obligations to respect rights to notice, access and consent regarding the collection, use and disclosure of personal data once that data has been shared. The policy goal becomes how to provide individuals with control over their personal data in the consent model of privacy protection. This
paper argues that the privacy issues raised by vehicular ad hoc networks make this approach increasingly untenable. It is argued that substantive rules that establish a basic set of privacy norms regarding the collection, use and disclosure of data are necessary. This can be realized in part via a privacy code of practice for the connected vehicle. This paper first explores the relationship between privacy, consent and personal information in relation to the connected car. This is followed by a description of vehicular ad hoc networks and a survey of the technical proposals aimed at securing data. The privacy issues that will likely remain unsolved by enhancing individual consent are then discussed. The last section provides some direction on how a code of practice can assist in determining when individual consent will need to be enhanced and when alternatives to consent will need to be implemented. ".


ABSTRACT: The telecommunication sector in Mexico was highly concentrated until 2013. The sector was mostly composed by a dominant player, a rationed market (low density of services), a poor institutional design, high tariffs, and weak regulation agents. The Herfindahl–Hirschman (HHI) index was 5333 for mobile telephone and 7,029 for fixed telephone services—among the highest scores in the world. In order to promote competition in the sector, Congress approved a reform in 2013 to establish a new regulator empowered to impose asymmetrical rules in the case of the predominance of a single firm. A declaration of preponderance of the dominant player was issued, promoting free interconnection rates and the mandatory sharing of its passive and active infrastructure with the rest of the firms in the industry. The new institutional design led to increased competition in the sector, decreasing the mobile and fixed telephone prices while increasing the coverage and penetration of these services. In this article, an applied general equilibrium model for the Mexican economy is employed to assess the impact of the Telecommunication Reform in Mexico in the telephone sector, consumer welfare, and income distribution. The model is static, encompassing 10 types of consumers (rural and urban and the five income quintiles) and 40 sectors (of which four are disaggregate telecommunications industries). It assumes fixed wages and capital rental prices as well as idle resources. The main results indicate that the effects of the reform are not minor; the drop in telephone prices would reduce the general consumer price index by almost 2%, and the value added would increase by more than 3%, benefiting mainly households in the highest income quantiles. ".


ABSTRACT: Legislation surrounding digital privacy has seen quite an upheaval in recent years. The introduction of the General Data Protection Regulation (GDPR) in the EU, and new resolutions within the United Nations Human Rights Council (UNHRC) have recognized the urgency to include recommendations on the use of encryption to protect the digital identities of citizens. In this work, we meander through the main events in history which have shaped the legislative landscape that encompasses the use of encryption, paying particular attention to recent (post-Snowden) developments.


ABSTRACT: Access by law enforcement authorities to personal data initially collected by private parties for commercial or operational purposes is very common, as shown by the transparency reports of new technology companies on law enforcement requests. From a data protection perspective, the scenario of law enforcement access is not necessarily well taken into account. The adoption of the new data protection framework offers the opportunity to assess whether the
new 'police' Directive, which regulates the processing of personal data for law enforcement purposes, offers sufficient safeguards to individuals. To make this assessment, provisions contained in Directive 2016/680 are tested against the standards established by the ECJ in Digital Rights Ireland and Tele2 Sverige on the retention of data and their further access and use by police authorities. The analysis reveals that Directive 2016/680 does not contain the safeguards identified in the case law. The paper further assesses the role and efficiency of the principle of purpose limitation as a safeguard against repurposing in a law enforcement context. Last, solutions to overcome the shortcomings of Directive 2016/680 are examined in conclusion.

http://doi.acm.org/10.1145/3163907.
ABSTRACT: In this column, I explore the various means by which lawyers can be helped by computer scientists to stop the (inevitable) collateral damage to innovation when the unstoppable force of legislation hits the irresistible innovation of the Internet. I will explore some current controversies (fake news, Net neutrality, platform regulation) from an international perspective. The conclusion is familiar: lawyers and computer scientists need each other to prevent a disastrous retrenchment toward splintered national-regional intranets. To avoid that, we need to be intellectually pragmatic in pursuing what may be a mutually disagreeable aim: minimal legislative reform to achieve co-regulation using the most independent expert advice. The alternatives are to allow libertarian advocates to so enrage politicians that severe overregulation results.

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

https://doi.org/10.1016/j.clsr.2017.05.015.
ABSTRACT: The General Data Protection Regulation (GDPR) will come into force in the European Union (EU) in May 2018 to meet current challenges related to personal data protection and to harmonise data protection across the EU. Although the GDPR is anticipated to benefit companies by offering consistency in data protection activities and liabilities across the EU countries and by enabling more integrated EU-wide data protection policies, it poses new challenges to companies. They are not necessarily prepared for the changes and may lack awareness of the upcoming requirements and the GDPR's coercive measures. The implementation of the GDPR requirements demands substantial financial and human resources, as well as training of employees; hence, companies need guidance to support them in this transition. The purposes of this study were to compare the current Data Protection Directive 95/46/EC with the GDPR by systematically analysing their differences and to identify the GDPR's practical implications, specifically for companies that provide services based on personal data. This study aimed to identify and discuss
the changes introduced by the GDPR that would have the most practical relevance to these companies and possibly affect their data management and usage practices. Therefore, a review and a thematic analysis and synthesis of the article-level changes were carried out. Through the analysis, the key practical implications of the changes were identified and classified. As a synthesis of the results, a framework was developed, presenting 12 aspects of these implications and the corresponding guidance on how to prepare for the new requirements. These aspects cover business strategies and practices, as well as organisational and technical measures.


http://doi.acm.org/10.1145/3173550.

ABSTRACT: Digital Platforms in the computing "cloud" are fundamental features of the digital revolution, entangled with what we term "intelligent tools." An abundance of computing power enabling generation and analysis of data on a scale never before imagined permits the reorganization/transformation of services and manufacturing. Here, we expand two central issues raised in our 2016 article "The Rise of the Platform Economy." First, will the increased movement of work to digital platforms provide real and rising incomes with reasonable levels of equality? The productivity possibilities of the digital era are just coming into view. The consequences will be a matter of policy and corporate strategy. Much will depend on how intelligent tools, including big data analytics, artificial intelligence, robotics, and sensors will coalesce into systems that appear to be nearly autonomous. The goal of firms could be to simply displace work and remove human intelligence from work tasks. Alternatively, it is possible for intelligent tools to help augment intelligence and capabilities, supporting rather than displacing workforce abilities. Moreover, as communities, is it possible to choose the kind of society that will result from the digital "platform economy." Digital technology does not, in and of itself, dictate a single answer. The increasing diffusion of intelligent tools has already exposed tension between public governance and private governance of platforms. The significance is that a platform's operation sets the rules and parameters of participant action. Digital platforms are regulatory structures and, thus, governance systems. Policy cannot just adapt to the emergence of the digital economy and society. Policy choices are indeed part of the technological trajectories themselves.