



Call for Book Chapters for the Springer-Verlag Handbook:

“ADVANCES IN MOBILE CLOUD COMPUTING AND BIG DATA UNDER THE 5G ERA”

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Introduction

The ongoing growth of mobile communication networks, along with the launch of new mobile devices (e.g. smart phones and tablets) and the increased demand for additional data network traffic, pave the way to the need of a fully interconnected Information Society, supporting the ubiquitous provision of multiple services (e.g. multimedia and data services) to mobile users, located in urban and rural areas. In addition, the new trends of mobile networks that enable the interconnection of new types of devices along with their services (i.e. household appliances) rise the need for adopting new solutions and network architectures to support the provision of novel services and applications. Furthermore, the huge increase of the number of mobile devices with growing requirements for multiple services provision, open the way towards new communication standards that will be adopted by the year 2020 for the deployment of the future mobile networking systems. In this context, the fifth generation (5G) wireless communication systems are envisaged to lead to higher-level mobile users' experiences, significantly supporting increased connection rates (i.e. peak data rates of 10 Gb/s), while it will also contribute to host novel services and applications. With the emergence of ultra-fast 5G mobile networks and highly-featured smartphones, tablets, and wearable computing devices (e.g., with always growing sensing capabilities), the prerequisites will be met for bringing cloud computing to the mobile domain. While first commercial products are restricted to the sharing of files, contacts, etc. among different devices, more sophisticated applications still have to be developed. In addition, it is undoubtedly true that Big Data is as a result of the 2.5 quintillion bytes of data generated each day with pervasive, wearable as well as handheld devices composed by configurations such as machine-to-machine connectivity and the related applications hosting online/mobile social networks. The multi-source collection of data brings into the researchers attention issues that should be investigated like novel access mechanisms and multi-source Big Data Collecting techniques, as well as the distributed Big Data Storing methodologies and finally Intra/Inter Big Data processing.

The Overall Objective of the Book

This book aims to become a state-of-the-art reference, discussing progress made, as well as prompting future directions on the theories, practices, standards and strategies that are related to the Mobile Cloud computing (MCC) and Big Data and their association with the emerging 5G mobile networks. The book will target methodologies aiming to take Big Data

to the Cloud and the Mobile Cloud (through opportunistically formed networks), and be able to process Real-Time Streaming Events on-the-move. The need of high velocity processing and low latency response will be one of the major characteristics of the aims and objectives of the sections related in the book. Another aim is to discuss methods and practices to improve multi-source Big Data collecting techniques as well as the integration of resources' availability through the 3As (Anywhere, Anything, Anytime) paradigm using the 5G access technologies comprising of distributed Big Data storing methodologies and processing.

Topics:

Chapters should be written in a manner readable for both specialists and non-specialists.

Recommended topic areas include, but are **not limited to:**

- **Big Data and Internet of Things advances and challenges with impact on Cloud Computing**
 - *Analysis of the various aspects for Big Data storage services*
 - *Context-aware data intensive applications; Context modelling and context management*
 - *Event-driven architectures and services*
 - *Cloud data storage solutions for context-aware data intensive applications*
- **Self-aware Internet of Things**
 - *Software engineering for self-adaptive Internet of things*
 - *Automated tools for development, deployment and supervision of IoT devices and services*
 - *Self-matchmaking of IoT & Internet of services; Modelling environmental context and user behaviour*
 - *Semantic IoT and self-adaptation to context; Autonomous IoT clouds. Self-provisioning of IoT services*
 - *Control theory in IoT, and decision making mechanisms*
 - *Event-Condition-Action rules and prediction models applied to the IoT*
 - *Performance monitoring, diagnostics and self-healing in IoT*
 - *Autonomic security and dependency management; Robust and trustable IoT systems*
 - *Self-organizing network protocols and ad-hoc routing mechanisms*
 - *Autonomic experience in IoT applications such as smart home, transport, healthcare, retailer*
 - *Autonomicity and self-management in M2M communication systems and networks*
 - *Modeling, measurement, and simulation of multi-networks of autonomic IoT applications, such as energy sensing and management, vehicle control, mobile devices, and emergency management*
- **Internet of Things and the smart city vision**
 - *Spatial, temporal, and contextual city data representation, reasoning, search, exploration, services, analysis, and optimization*
 - *City data life cycles, including de-noising, cleansing, anonymization and privacy protection, fusion, interpretation, lifting, aggregation, and correlation; Ubiquitous and pervasive city systems*
 - *Scalable processing of distributed, networked, dynamic, or heterogeneous city data*
 - *Social aspects of information systems, such as citizens as sensors, urban dynamics, and citizen participation in public life and decision-making*
 - *Innovative applications in public safety, government, commerce, transportation, among others*
- **Foundations and Principles of Technologies for Big Data and IoT (emphasis on smart environments):**
 - *Pervasive Computing and Computational Technologies for Big Data and IoT*
 - *Internet of Things, Architecture, Components, RFID, NFC, Sensors and Actuator Technologies*
 - *Inter-operability and Inter-cooperative Protocols, Standards and Technologies, Multi-agents*
 - *Concurrency and Synchronisation, Wireless and Mobile Communications, Protocols and Standards*
 - *Data/Text Mining, Data Clustering, Graph Partitioning, Collective Decision Making*
 - *Multi-objective Optimisation Techniques in Dynamic Computational Environments*
- **Advanced Modelling of Emerging e-Infrastructures for Big Data and IoT (emphasis on smart environments):**
 - *Social Networks Analysis, Formal Concept Analysis, Temporal Analysis, Topic Maps*
 - *Ad-Hoc Networks, RF Modelling, Object and Context Representation, Ontology Management*
 - *Enabling Technologies; Service Architectures, Discovery, Retrieval, Scheduling, Allocation, Monitoring*
 - *Mobility Management, Traffic Models, Process Workflow, Resource and Device Management*
 - *Data Centres, Real-time and (Historical) Data Management, Data Growth, Storage, Implications*
 - *Context-Aware Infrastructures and Services, Smart Objects, Positioning Location-Based Services*
- **Advanced Applications of Big Data and IoT (emphasis on smart environments):**
 - *Applications, Services and Business Models, Strategies, Interaction Paradigms i.e. Smart Cities*
 - *Middleware, Languages, Components, Programs and Portals*
 - *Performance, Scalability, Robustness, Reliability Verification, Validation, Benchmarking*

- *Concepts and/or Frameworks of Applicable Future Technologies, Implications and Trends*
- **Network functions virtualization for MCC paradigm in 5G mobile networks**
 - *Protocols and wireless network technologies for MCC applications and virtualization in 5G context*
 - *MCC models, novel network infrastructures and approaches in 5G context*
 - *Management of MCC resources in 5G mobile networks*
- **Cognitive radio networks on MCC in 5G context**
- **MCC models, services, and applications in 5G mobile networks**
- **Virtualization techniques for MCC in 5G context**
- **Content-aware solution for MCC in 5G mobile networks**
- **Resource and service management, provision, and migration of MCC in 5G**
- **Mobile context-aware services for clouds in 5G mobile networks**
- **Collaboration, management and administration of MCC in 5G context**
- **Mobile cloud sensing service and crowdsourcing in 5G**
- **Mobile context-aware services and computing for clouds in 5G**
- **MCC data centers and storage technologies in 5G mobile networks**
- **Mobile-aware cloud databases and data retrievals in 5G**
- **Energy-efficient schemes of MCC in 5G context**
- **Location-based MCC applications in 5G context**
- **Security and privacy issues for MCC in 5G context**
- **Big data analytics on MCC in 5G context**
- **Urban sensing and crowd-sensing, and smart sensor networks in 5G**
- **Mobile social media and community services in 5G**
- **Machine-to-Machine (M2M) Big Data Processing and Controlling Networking at the Edge (Sensing and sensor signal processing, sensor networking protocols, energy harvesting and energy management)**
- **Middleware (System and network architectures, middleware for heterogeneous sensors, devices & protocols, QoS provisioning, security issues [data confidentiality, integrity, network resilience, etc.])**
- **Applications and case studies of M2M communications and IoT ecosystems**
- **Analytics and management (Data management and analytics: data-stream, sharing, mining etc, business intelligence from sensor data, social network analysis in IoT)**
- **M2M Infrastructure (Big Data Storage and processing, management and analysis, back-end (cloud based) infrastructure, distributed processing)**
- **Related applications (Novel application developments and case studies in energy, healthcare, logistics and transportation, manufacturing etc., test-beds and field trials etc.)**

Any other relevant topic with the MCC and Big Data paradigm is of primary interest and can be hosted as a chapter in the Book.

Sections of the above mentioned topics will be hosted under the following sections:

Section I — Introduction and Applications of MCC and Big Data paradigm in 5G access technologies

Section II — Architecture of MCC and Big Data paradigm in 5G access technologies

Section III— 5G and related technologies for MCC and Big Data paradigm

Section IV— MCC and Big Data paradigm in Smart Ambient Systems within 5G

Section V— MCC and Big Data smart resource management in 5G

Section VI— Resource and Power management in 5G networks utilising the MCC and Big Data paradigm

Section VII— Performance Evaluation of MCC and Big Data paradigm-related systems and applications using 5G technologies

Schedule & Deadlines

- **30th April 2015 extended to 31st May 2015**
Chapter proposal (max. 2-pages)/Intention to submit a chapter to cfcspringer2015@gmail.com and cc the Editors
 - **10th July 2015**
Full chapter submission (only the pdf) via **EasyChair** (<https://easychair.org/conferences/?conf=bookmobcloud-bigdata>)
- **20th Sept. 2015**
Review comments
- **30th Oct. 2015**
Submission of the revised version
- **15th Jan. 2016**
Final acceptance notification Final manuscript
- **25th Feb. 2016**
Final manuscript

Manuscript Preparation

- Please follow the manuscript formatting guidelines below and submit the original version (in **Microsoft word**) and or **LaTeX** format as per the guidelines (URL: [www.cs.unic.ac.cy/cmavrom/T1-book\(MC_bigData\).zip](http://www.cs.unic.ac.cy/cmavrom/T1-book(MC_bigData).zip)).
- Each final manuscript should be 18-25 pages long (**formatted**). Depending on the number of submissions, longer manuscripts will also be accepted.
- Please prepare your manuscript according to the following guidelines: <http://www.springer.com/gp/authors-editors/book-authors-editors/manuscript-preparation/5636#c3324>
 - Download the Consent-to-Publish (CTP) form and along with your chapter sign, scan and submit it simultaneously. The form can be found at: [http://www.cs.unic.ac.cy/cmavrom/CTP_MavMastDobre_BigData5G\(CTP_put_your_name_here\).pdf](http://www.cs.unic.ac.cy/cmavrom/CTP_MavMastDobre_BigData5G(CTP_put_your_name_here).pdf)
- Submit the proposal of your chapter(s) via e-mail: cfcbooksp@gmail.com and via **EasyChair**
 - (The submission Web site for IoT5GMob is
 - <https://easychair.org/conferences/?conf=bookmobcloud-bigdata>
 - Note that both (**email and via EasyChair**) submission methods should be used for cross confirmation.