



# ICSOC

14<sup>th</sup> International Conference  
On Service Oriented Computing

Banff, 10-13 October 2016

PROGRAM





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## Towards a Shared Ledger Business Collaboration Language Based on Data-Aware Processes

Shared ledger technologies, as exemplified by Blockchain, provide a new framework for supporting business collaborations, that is based on having a shared, trusted, nonrepudiable data repository that includes programmable logic in the form of "smart contracts". The framework has the potential to dramatically transform business collaboration across numerous industry sectors, including finance, supply chain, food production, pharmaceuticals, and healthcare. Widespread adoption of this technology will be accelerated by the development of business-level languages for specifying smart contracts. This paper proposes that data-aware business processes, and in particular the Business Artifact paradigm, can provide a robust basis for shared ledger business collaboration languages. The fundamental rationale for adopting data-aware processes is that shared ledgers focus on both data and process in equal measure. The paper examines potential advantages of the artifact-based approach from two perspectives: conceptual modeling, and opportunities for formal reasoning (verification) of smart contract properties. Broad research challenges for the development, understanding, and usage of business-level languages for shared ledgers are highlighted. This talk is joint work with Vishal Batra, Yi-Min Chee, and Terry Heath (from IBM Research) and with Alin Deutsch and Victor Vianu (from UCSD).

**Rick Hull** is a Senior Research Scientist at the IBM T.J. Watson Research Center in Yorktown Heights, NY, a position he took in May, 2008. Hull has broad research and innovation interests in the areas of data and information management, workflow and business processes, web and converged services, and more recently, the application of BPM paradigms to Big Data analytics to enable large-scale repeatability, and the automation of highly manual business processes. Between 2008 and 2013 Hull led a team at IBM Research working on Business Artifacts and data-centric business process management. This work provided foundations for both the recent OMG Case Management Model and Notation (CMMN) standard and the IBM Case Management product. Prior to joining IBM Research, Hull spent 12 years at Bell Labs Research, a division of Lucent (then Alcatel-Lucent, and now Nokia); before that he was a professor of Computer Science at the University of Southern California. While at Bell Labs, Hull was instrumental in developing and transferring new technologies into Alcatel-Lucent's product line, including products for data integration and high-speed rules processing. Over the years, Hull's research has been supported in part by grants from NSF, DARPA, and AT&T. Hull is co-author of the book "Foundations of Databases" (Addison-Wesley, 1996); has published over 150 refereed articles in journals, conferences and books; and holds 12 U.S. patents. Hull was named Bell Labs Fellow in 2005 and ACM Fellow in 2007. He received a Corporate Award from IBM in 2015 for his contributions in the area of Case Management, and also an "Outstanding Accomplishment" from IBM Research for "Fundamental Contributions to Science or Technology" in the area of data-aware processes.



## Revisiting Service-Oriented Architecture for the IoT: A Middleware Perspective

The Internet of Things (IoT) is a promising concept toward pervasive computing and one of the major paradigm shifts that the computing era is facing today. In the IoT, everyday objects, the “Things”, get networked so that they can cooperate autonomously, and allow humans to interact with the physical world as simply as they do with the virtual world. However, the IoT paradigm raises tremendous challenges from the networking up to the application layers, in particular due to extreme heterogeneity, scale and dynamics that it introduces.

In this talk, I will explore how service-oriented architecture may be revisited to address challenges posed by the IoT for the development of distributed applications. Drawing from our past and ongoing work within the MIMOVE team at Inria Paris, I will in particular discuss the evolution of the supporting middleware solutions spanning the introduction of: probabilistic protocols to face scale, cross-paradigm interaction to face heterogeneity, and streaming-based interactions to support the inherent sensing functionality brought in by the IoT. I will further illustrate the proposed solutions in the context of citizen-centric urban systems oriented toward smarter cities, which leverage the many Things deployed in the environment, both fixed and mobile as carried by people.



**Dr. Valérie Issarny** holds a “Directrice de recherche” position at Inria, the French institute for research in Information and Communication Science and Technologies, where she led the ARLES research team until 2013, investigating distributed software systems leveraging wirelessly networked devices, with a special emphasis on service-oriented computing. Valérie in particular studies middleware solutions easing the development of distributed collaborative services, including mobile services deployed over smartphones and interacting with sensors and actuators. Since summer 2013, Valérie is the scientific coordinator of the Inria@SiliconValley program promoting and fostering collaboration between Inria and California universities. She is also coordinating the Inria CityLab program dedicated to smart cities and promoting citizen engagement; the program is developed in collaboration with CITRIS at University of California Berkeley and targets urban-scale experiment in Paris and California cities. Ongoing projects include Urban Civics on urban pollution monitoring through participatory sensing and crowd sourcing, and Appcivist on a middleware platform for democratic assembly and collective actions.

## Security and Privacy in the IoT

The Internet of Things (IoT) paradigm refers to the network of physical objects or "things" embedded with electronics, software, sensors, and connectivity to enable objects to exchange data with servers, centralized systems, and/or other connected devices based on a variety of communication infrastructures. IoT makes it possible to sense and control objects creating opportunities for more direct integration between the physical world and computer-based systems. IoT will usher automation in a large number of application domains, ranging from manufacturing and energy management (e.g. SmartGrid), to healthcare management and urban life (e.g. SmartCity). However, because of its fine-grained, continuous and pervasive data acquisition and control capabilities, IoT raises concerns about the security and privacy of data. Deploying existing data security solutions to IoT is not straightforward because of device heterogeneity, highly dynamic and possibly unprotected environments, and large scale.

In this talk, after outlining key challenges in data security and privacy, we present initial approaches to techniques and services for securing IoT data, including efficient and scalable encryption protocols, software protection techniques for small devices, and fine-grained data packet loss analysis for sensor networks.

**Elisa Bertino** is professor of computer science at Purdue University, and serves as Director of Purdue Cyber Center and Research Director of the Center for Information and Research in Information Assurance and Security (CERIAS). She is also an adjunct professor of Computer Science & Info Tech at RMIT. Prior to joining Purdue in 2004, she was a professor and department head at the Department of Computer Science and Communication of the University of Milan. She has been a visiting researcher at the IBM Research Laboratory (now Almaden) in San Jose, at the Microelectronics and Computer Technology Corporation, at Rutgers University, at Telcordia Technologies. Her recent research focuses on data security and privacy, digital identity management, policy systems, and security for drones and embedded systems. She is a Fellow of ACM and of IEEE. She received the IEEE Computer Society 2002 Technical Achievement Award, the IEEE Computer Society 2005 Kanai Award and the 2014 ACM SIGSAC outstanding contributions award. She is currently serving as EiC of IEEE Transactions on Dependable and Secure Computing.



## The ICSOC 2016 Workshop

The ICSOC 2016 Workshop will be held in conjunction with the 14th International Conference on Service Oriented Computing. It provides a venue for specialist groups to meet, to generate focused discussion on specific sub-areas within Service Oriented Computing and to engage in community-building activities. The workshop is also a discussion forum for researchers in topics related to main theme of the conference, either on specific research themes or in emerging areas of research.

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**CONFERENCE PROGRAM**

Time	Monday 10, 2016	Tuesday 11, 2016	Wednesday 12, 2016	Thursday 13, 2016
08:00 - 09:00	Registration			
08:30 - 09:00		Opening Session Room: KC 203		
09:00 - 10:30	PhD Symposium Room: KC 206	Workshops Room: KC 201	Keynote 1 Richard Hull Towards a Shared Ledger Business Collaboration Language based on Data-Aware Processes Room: KC 203	Keynote 2 Valerie Issarny Revisiting Service-oriented Architecture for the IoT: A Middleware Perspective Room: KC 203
10:30 - 11:00	Coffee Break Room: KC 200	Coffee Break Room: KC 200	Coffee Break Room: KC 200	Coffee Break Room: KC 200
11:00 - 12:30	PhD Symposium Room: KC 206	Workshops Room: KC 201	Service Analytics I Room: KC 201	Service/Process Foundation Room: KC 205
12:30 - 13:30	Lunch Room: Vistas	Lunch Room: Vistas	Lunch Room: Vistas	Lunch Room: Vistas
13:30 - 15:00	PhD Symposium Room: KC 206	Workshops Room: KC 201	Service Recommendation I Room: KC 201	Service Analytics (Industry) Room: KC 205
15:00 - 15:30	Coffee Break Room: KC 200	Coffee Break Room: KC 200	Coffee Break Room: KC 200	Coffee Break Room: KC 200
15:30 - 16:00		Service Recommendation II Room: KC 201	Service in Organization (Industry) Room: KC 205	
16:00 - 16:30		Workshops Room: KC 201	Coffee Break Room: KC 200	
16:30 - 17:00			Cloud and Internet of Services/Things II Room: KC 201	
17:00 - 17:30		Service Analytics II Room: KC 201	Cloud and Internet of Services/Things Room: KC 205	
17:30 - 18:00				
18:30 - 19:00			Pre-Dinner Reception Room: KC 200	
19:00 - 21:00	Reception Room: KC 101		Awards Dinner Room: KC 203	

# TUESDAY, 11

## Opening, Welcome Greeting

08:30  
↓  
09:00

KC 203

## Keynote I

Towards a Shared Ledger Business Collaboration  
Language based on Data-Aware Processes

**Richard Hull**

Session Chair: **Michael Sheng**, *University of Adelaide, Australia*

09:00  
↓  
10:30

KC 203

## Service Analytics I

Session Chair: **Hamid Motahari**, *IBM Research, USA*

*Automated Quality Assessment of Unstructured Resolution Text in IT  
Service Systems*

Agarwal, Shivali; Sridhara, Giriprasad; Dasgupta, Gaargi B

*A Skewness-based Framework for Mobile App Permission Recommendation  
and Risk Evaluation.*

Huang, Keman; Han, Jinjing; Chen, Shizhan; Feng, Zhiyong

*On Engineering Analytics for Elastic IoT Cloud Platforms.*

Truong, Hong-Linh; Copil, Georgiana; Dustdar, Schahram; Le, Duc-Hung;  
Moldovan, Daniel; Nastic, Stefan

11:00  
↓  
12:30

KC 201

## Service/Process Foundation

Session Chair: **Liang Zhang**, *Fudan University, China*

*Deriving Consistent GSM Schemas from DCR Graphs*

Eshuis, Rik; Debois, Soren; Slaats, Tijs; Hildebrandt, Thomas

*A Formal Guidance Approach for Correct Process Configuration*

*Boubaker, Souha; Mammam, Amel; Graiet, Mohamed; Gaaloul, Walid*

11:00  
↓  
12:30

KC 205

*Integrating POMDP and SARSA for Service Composition with Incomplete Information (SHORT)*

Wang, Hongbing; Zhang, Xingzhi; Yu, Qi

*Formal Specification and Verification Framework for Multi-domain Ubiquitous Environment (SHORT)*

Hilia, Mohamed; Chibani, Abdelghani; Djouani, Karim; Amirat, Yacine

## Service Recommendation I

Session Chair: **Flavio De Paoli**, *University of Milano-Bicocca, Italy*

*Meta-Path based Service Recommendation in Heterogeneous Information Networks*

Liang, Tingting; Chen, Liang; Wu, Jian; Dong, Hai; Bouguettaya, Athman

*A Robust Approach to Finding Trustworthy Influencers in Social E-Commerce Environments*

Liu, Guanfeng; Wang, Yan; Orgun, Mehmet A.

*Context-Aware Recommendation of Task Allocations in Service Systems*

Sindhgatta, Renuka; Ghose, Aditya

KC 201

13:30  
↓  
15:00

## Service Analytics (Industry)

Session Chair: **Taiga Nakamura**, *IBM Research, USA*

*A Data Services-Based Quality Analysis System for the Life Cycle of Tire Production*

Shi, Yuliang; Chen, Yu; Sun, Shibin; Liu, Lei; Cui, Lizhen

*Towards More Effective Solution Retrieval in IT Support Services Using Systems Log*

Zhu, Rongda; Deng, Yu; Sarkar, Soumitra; Maghraoui, Kaoutar El; Ramasamy, Harigovind V; Bivens, Alan

*Top-Down Pricing of IT Services Deals with Recommendation for Missing Values of Historical and Market Data*

Megahed, Aly; Gajananan, Kugamoorthy; Asthana, Shubhi; Becker, Valeria; Smith, Mark; Nakamura, Taiga

KC 205

13:30  
↓  
15:00

## Service Recommendation II

15:00  
↓  
16:00

KC 201

Session Chair: **Stefan Schulte**, TU Wien, Austria

*Semantic Pattern Mining Based Web Service Recommendation*

Naim, Hafida; Aznag, Mustapha; Durand, Nicolas; Quafafou, Mohamed

*Service Recommendation based on Social Balance Theory and Collaborative Filtering (SHORT)*

Qi, Lianyong

*Personalized API Recommendation via Implicit Preference Modeling (SHORT)*

Gao, Wei; Chen, Liang; Wu, Jian; Dong, Hai; Bouguettaya, Athman

## Service in Organization (Industry)

15:00  
↓  
16:00

KC 205

Session Chair: **Samir Tata**, Institute of Mines-Telecom

IBM Research-Almaden, USA

*A Discrete Constraint-based Method for Pipeline Build-up Aware Services Sales Forecasting*

Yin, Peifeng; Megahed, Aly; Nezhad, Hamid; Nakamura, Taiga

*Clustering and Labeling IT Maintenance Tickets*

Roy, Suman; Muni, Durga Prasad; Yeung Tack Yan, John-John; Budhiraja, Navin; Ceiler, Fabien

## Service Analytics II

16:30  
↓  
18:00

KC 201

Session Chair: **Naouel Moha**, University of Québec in Montréal, Canada

*Time-Aware Customer Preference Sensing and Satisfaction Prediction in a Dynamic Service Market*

Wang, Haifang; Wang, Zhongjie; Xu, Xiaofei

*User Interface Derivation based on Role-enriched Business Process Model*

Han, Lei; Zhao, Weiliang; Yang, Jian

*A Testing Approach for Hidden Concurrencies based on Process Execution Logs (SHORT)*

Böhmer, Kristof; Rinderle-Ma, Stefanie

*autoCEP: Automatic Learning of Predictive Rules for Complex Event Processing (SHORT)*

Mousheimish, Raef; Taher, Yehia; Zeitouni, Karine



## Cloud and Internet of Services/Things

Session Chair: **Hong-Linh Truong**, TU Wien, Austria

*FitScale: Scalability of Legacy Applications through Migration to Cloud*  
Hwang, Jinho; Vukovic, Maja; Anerousis, Nikos

*Monitoring-based Task Scheduling in Large-Scale SaaS Cloud*  
Zhang, Puheng; Lin, Chuang; Ma, Xiao; Ren, Fengyuan

*WiCare: A Synthesized Healthcare Service System Based on WiFi Signals (SHORT)*

Li, Hong; Yang, Wei; Xu, Yang; Wang, Jianxin; Huang, Liusheng

*Service Mining for Internet of Things (SHORT)*

Huang, Bing; Bouguettaya, Athman; Dong, Hai; Chen, Liang

KC 205

16:30  
↓  
18:00

## WEDNESDAY, 12

### Keynote II

Revisiting Service-oriented Architecture for the IoT:  
A Middleware Perspective

**Valérie Issarny**

*Session Chair: Eleni Stroulia, University of Alberta, Canada*

09:00  
↓  
10:30

KC 203

### Panel

Is Services Computing Essential for  
IOT and Cyber-physical Systems?

11:00  
↓  
12:30

KC 203

## Social Services

Session Chair: **Bernd Krämer**, FernUniversität in Hagen, Germany

*iSim: An Efficient Integrated Similarity based Collaborative Filtering Approach for Trust Prediction in Service-Oriented Social Networks*  
Liao, Mingding; Liu, Xiao; Gao, Xiaofeng; Zhong, Jiaofei; Chen, Guihai

*Expertise and Trust-aware Social Web Service Recommendation*  
Kalai, Ahlem; Zayani, Corinne Amel; Amous, Ikram; Sèdes, Florence

*Studying Social Collaboration Features and Patterns in Service Crowdsourcing (SHORT)*  
Yu, Hao; Wang, Zhongjie; Chi, Xu; Xu, Xiaofei

*Follow the Leader: A Social Network Approach for Service Communities (SHORT)*  
Labbaci, Hamza; Medjahed, Brahim; Aklouf, Youcef; Malik, Zaki

KC 201

13:30  
↓  
15:00

## DEMO – Flash Talk Session

Session Chair: **Mohamed Mohamed**, IBM Almaden, USA

*Demand-Driven SOA Simulation Platform Based on GIPSY for Context-Based Brokerage*  
Laleh, Touraj; Mokhov, Serguei; Paquet, Joey

*DeMOCAS: Domain Objects for Service-based Collective Adaptive Systems*  
Bucchiarone, Antonio; De Sanctis, Martina; Marconi, Annapaola; Martinelli, Alberto

*Anuvaad Pranaali: A RESTful API for Machine Translation*  
Wani, Nehal J; Suresh Purini; and Dipti Misra Sharma

*Integration of Heterogeneous Services and Things into Choreographies*  
Bouloukakis, Georgios; Georgantas, Nikolaos; Dutta, Siddhartha; Issarny, Valerie

*BPaaS: A Platform for Artifact-centric Business Process Customization in Cloud Computing*  
Gao, Min; Yin, Yuyu; Chen, Zaidie; Yan, Zhimin; Guo, Lipeng; Li, Binbin

*Testing Processes with Service Invocation: Advanced Logging in CPEE*  
Stertz, Florian; Rinderle-Ma, Stefanie; Hildebrandt, Tobias; Mangler, Juergen

KC 205

13:30  
↓  
15:00

*COOL: A Model-Driven and Automated System for Guided and Verifiable Cloud Solution Design*

Motahari-Nezhad, Hamid Reza; Yorov, Karen; Yin, Peifeng; Nakamura, Taiga; Trent, Scott; Shurek, Gil; Kushida, Takayuki; Subramanian, Uma

*A Service-Based System for Sentiment Analysis and Visualization of Twitter Data in Realtime*

Taher, Yehia; Haque, Rafiqul; Al-Shaer, Mohammad; van den Heuvel, Willem-Jan; Zeitouni, Karine; Araujo, Renata; Said, Mohand-Said; Dbouk, Mohamed

*XDAI-A: Framework for Enabling Cross-Device Integration of Android Apps*

Wolters, Dennis; Kirchhoff, Jonas; Gerth, Christian; Engels, Gregor

*Desire: Deep Semantic Understanding and Retrieval for Technical Support Services*

Gupta, Abhirut; Akula, Arjun; Dasgupta, Gargi; Aggarwal, Pooja; Mohapatra, Prateeti

*BlueSight: Automated Discovery Service for Cloud Migration of Enterprises*

Wu, Dannver; Hwang, Jinho; Vukovic, Maja; Anerousis, Nikos

*A Configurator Component for End-User Defined Mobile Data Collection Processes*

Schobel, Johannes; Pryss, Rüdiger; Schickler, Marc; Reichert, Manfred

## Cloud and Internet of Services/Things II

Session Chair: **Valerie Issarny**, Inria, France

*Cross-Device Integration of Android Apps*

Wolters, Dennis; Kirchhoff, Jonas; Gerth, Christian; Engels, Gregor

*Are REST Cloud Computing APIs Well-Designed? An Exploratory Study*

Petrillo, Fabio; Merle, Philippe; Moha, Naouel; Gueheneuc, Yann-Gael

*A Model-Driven Framework for Interoperable Cloud Resources Management*

Weerasiri, Denis; Barukh, Moshe Chai; Benatallah, Boualem; Jian, Cao

*Detecting Cloud (Anti)Patterns: OCCl perspective*

Brabra, Hayet; Mtibaa, Achraf; Sliman, Layth; Gaaloul, Walid; Benatallah, Boualem; Gargouri, Faiez

15:30



17:30

KC 201



## Demos

Session Chair: **Mohamed Mohamed**, IBM Almaden, USA

KC 205

15:30  
↓  
17:30

# THURSDAY, 13

## Keynote III

### Security and Privacy in the IoT Elisa Bertino

Session Chair: **Samir Tata**, *Institute Mines-Telecom, France*  
*IBM Research-Almaden, USA*

09:00  
↓  
10:30

KC 203

## Business Process Management

Session Chair: **Marouane Kessentini**, *University of Michigan, USA*

*Optimizing process model redesign*  
Kumar, Akhil; Indradat, Paronkasom

*QoS-Driven Management of Business Process Variants in Cloud Based Execution Environments*  
Ghosh, Rahul; Ghose, Aditya; Hegde, Aditya; Mukherjee, Tridib; Mos, Adrian

*Propagation of Event Content Modification in Business Processes*  
Wondoh, John; Grossmann, Georg; Stumptner, Markus

11:00  
↓  
12:30

KC 201

## Service Economy

Session Chair: **Hongbing Wang**, *Southeast University, China*

*Features of IT Service Markets: A Systematic Literature Review*  
Jazayeri, Bahar; Platenius, Marie Christin; Engels, Gregor; Kundisch, Dennis  
*Qualitative Economic Model based Long-term IaaS Composition*  
Mistry, Sajib; Bouguettaya, Athman; Dong, Hai; Erradi, Abdelkarim

*An Optimal and Iterative Pricing Model for Multiclass IaaS Cloud Service (SHORT)*  
Zhang, Shuo; Pan, Li; Yuan, Dong; Liu, Shijun; Wu, Lei

*A Study of the Energy Consumption of Databases and Cloud Patterns (SHORT)*  
Bani, Béchir; Khomh, Foutse; Guéhéneuc, Yann-Gaël

11:00  
↓  
12:30

KC 205

KC 201

13:30  
↓  
15:00

## Business Process Modeling

Session Chair: **Ruediger Pryss**, Ulm University, Germany

*Discovery of Multi-Perspective Declarative Process Models*

Schoenig, Stefan; Di Ciccio, Claudio; Maggi, Fabrizio Maria; Mendling, Jan

*Declarative Process Models: Different Ways to be Hierarchical*

De Masellis, Riccardo; Di Francescomarino, Chiara; Ghidini, Chiara; Maggi, Fabrizio Maria

*A Novel Heuristic Method for Improving the Fitness of Mined Business Process Models*

Sun, Yaguang; Bauer, Bernhard

*REST-enabled Decision Making in Business Process Choreographies*

Nikaj, Adriatik; Batoulis, Kimon; Weske, Mathias

## Service Management

Session Chair: **Mohamed Mohamed**, IBM Almaden, USA

*An Uncertain Assessment Compatible Incentive Mechanism for Eliciting Continual and Truthful Assessments of Cloud Services*

Qu, Lie; Wang, Yan; Orgun, Mehmet

*Bi-Level Identification of Web Service Defects*

Wang, Hanzhang; Kessentini, Marouane; Ouni, Ali

*Data-dependent QoS-based Service Selection (SHORT)*

Jain, Navati; Ding, Chen; Liu, Xumin

*A Mobile Service Engine Enabling Complex Data Collection Applications (SHORT)*

Schobel, Johannes; Pryss, Rüdiger; Wipp, Wolfgang; Schickler, Marc; Reichert, Manfred

KC 205

13:30



15:00

## Service Design (Industry)



Session Chair: **Walid Gaaloul**, Telecom SudParis, France

*Context as a Service: Realizing Internet of Things-Aware Processes for the Independent Living of the Elderly*

Yao, Lina; Benatallah, Boualem; Wang, Xianzhi; Tran, Nguyen Khoi; Lu, Qinghua

*Enriching API Descriptions by adding API Profiles through Semantic Annotation*

Lucky, Meherun Nesa; Cremaschi, Marco; Lodigiani, Barbara; Menolascina, Antonio; De Paoli, Flavio

*Service-oriented autonomic pervasive context*

Aygalinc, Colin; Gerbert-Gaillard, Eva; Vega, German; Lalanda, Philippe

## Service UIs, APIs and Mashups

Session Chair: **Winfried Lamersdorf**, University of Hamburg, Germany

*JSON Patch for turning a pull REST API into a push one*

Cao, Hanyang; Falleri, Jean-Rémy; Blanc, Xavier; Zhang, Li

*Prediction of Web Services Evolution*

Wang, Hanzhang; Kessentini, Marouane; Ouni, Ali

*Empirical Study on the Interface and Feature Evolutions of Mobile Apps (SHORT)*

Hao, Youqiang; Wang, Zhongjie; Xu, Xiaofei

*Service Package Recommendation for Mashup Development based on a Multi-level Relational Network (SHORT)*

Cao, Jian

15:30  
↓  
17:00

KC 205



## WORKSHOP PROGRAM

## MONDAY, 10

## Adaptive Service Oriented Systems

Session Chair: **Hongbing Wang**, Southeast University, China

*Decentralized Dynamic Adaptation for Service-based Collective Adaptive Systems*

Bucchiarone, Antonio; De Sanctis, Martina; Marconi, Annapaola

*A generic framework for quality-based autonomic adaptation within sensor-based systems*

Auger, Antoine; Exposito, Ernesto; Lochin, Emmanuel

*Service Virtualization for Self-Adaptation in Mobile Cyber-Physical Systems*

Taherkordi, Amir; Peter, Herrmann; Blech, Jan Olaf; Fernandez, Alvaro

KC 201

09:00  
↓  
10:30

## Adaptive Cloud Applications

Session Chair: **Hongbing Wang**, Southeast University, China

*A brokerage architecture: cloud service selection*

Malouche, Hela; Ben Halima, Youssef; Hajjami Ben Ghezala, Henda

*Using Formal model for Evaluation of Business Processes Elasticity in the Cloud*

Yataghene, Lydia

*EQL: Event Query Language for the Sharing of Internet-of-Things Infrastructure and Collaborative Applications Development*

Akpinar, Kutalmis; Hua, Kien A

KC 201

11:00  
↓  
12:30

## Engineering Service-Oriented Apps

13:30  
↓  
15:00

KC 201

Session Chair: **Hongbing Wang**, Southeast University, China

*Enhancing UML Class Diagram Abstraction with Page Rank Algorithm and Relationship Abstraction Rules*

Huang, Liang; Duan, Yucong; Zhou, Zhangbing; Hung, Patrick C. K.; Sun, Xiaobing

*Energy-Aware Composition for Service-Oriented Wireless Sensor Networks.*

Zhao, Deng; Zhou, Zhangbing; Duan, Yucong; Hung, Patrick C. K.

*Applying ITSM for creating a Business Operations Department's Service Catalog*

Diogo, Pedroso

## Adaptive Cloud Applications

15:30  
↓  
17:00

KC 201

Session Chair: **Hongbing Wang**, Southeast University, China

*Trust-based IoT Participatory Sensing for Hazard Detection and Response*

Guo, Jia; Chen, Ing-Ray; Tsai, Jeffrey; Al-Hamadi, Hamid

*Data Provenance Model for Internet of Things (IoT) Systems*

Olufowobi, Habeeb; Engel, Robert; Baracaldo, Nathalie; Luis Angel, Bathen;

Tata, Samir; Ludwig, Heiko

*Securing Data Provenance in Internet of Things (IoT) Systems*

Baracaldo, Nathalie; Bathen, Luis Angel; Ozugha, Roqeeb O.; Engel, Robert;

Tata, Samir; Ludwig, Heiko

# PhD Symposium

## Service Composition

Session Chair: **Yan Wang**, Macquarie University, Australia

*Context-Aware Automated Workflow Composition for Interactive Data Exploration*

Serrano, Diego

*User-Driven Composition of Web APIs: Bridging the Gap between Users' Requirements and Web APIs*

Lucky, Meherun Nesa

*A Migration Approach for Cloud Service Composition*

Li, Jing

KC 206

09:00



10:30

## Service Discovery and Integration

Session Chair: **Yan Wang**, Macquarie University, Australia

*Towards Rules-based Mapping Framework for RESTful Web Services*

Le, Khanh Duc Hoang

*Towards Quality Guided Data Integration on Multi-Cloud Settings*

Carvalho, Daniel Aguiar da Silva

*Searching the Web of Things: Resolving a Real Library of Babel*

Tran, Nguyen Khoi

KC 206

11:00



12:30

## Service Provision and Prediction

Session Chair: **Yan Wang**, Macquarie University, Australia

*Web Service QoS Prediction Based on Deep Learning*

Le, Van Thinh; Nguyen, Xuan Hau

*Revenue-Driven Service Provision for Mobile Hosts*

Wu, Hongyue; Deng, Shuiguang; Yin, Jianwei

KC 206

13:30



15:00

Reception  
(KC101)

**MONDAY, 10**  
19:00 – 22:00



Source: <https://www.banffcentre.ca/>



Conference Social Event

- Pre-dinner Reception (KC 200)
- Dinner and Award (KC 203)
- Music Performance during the dinner

**WEDNESDAY, 12**

18:30 – 19:00

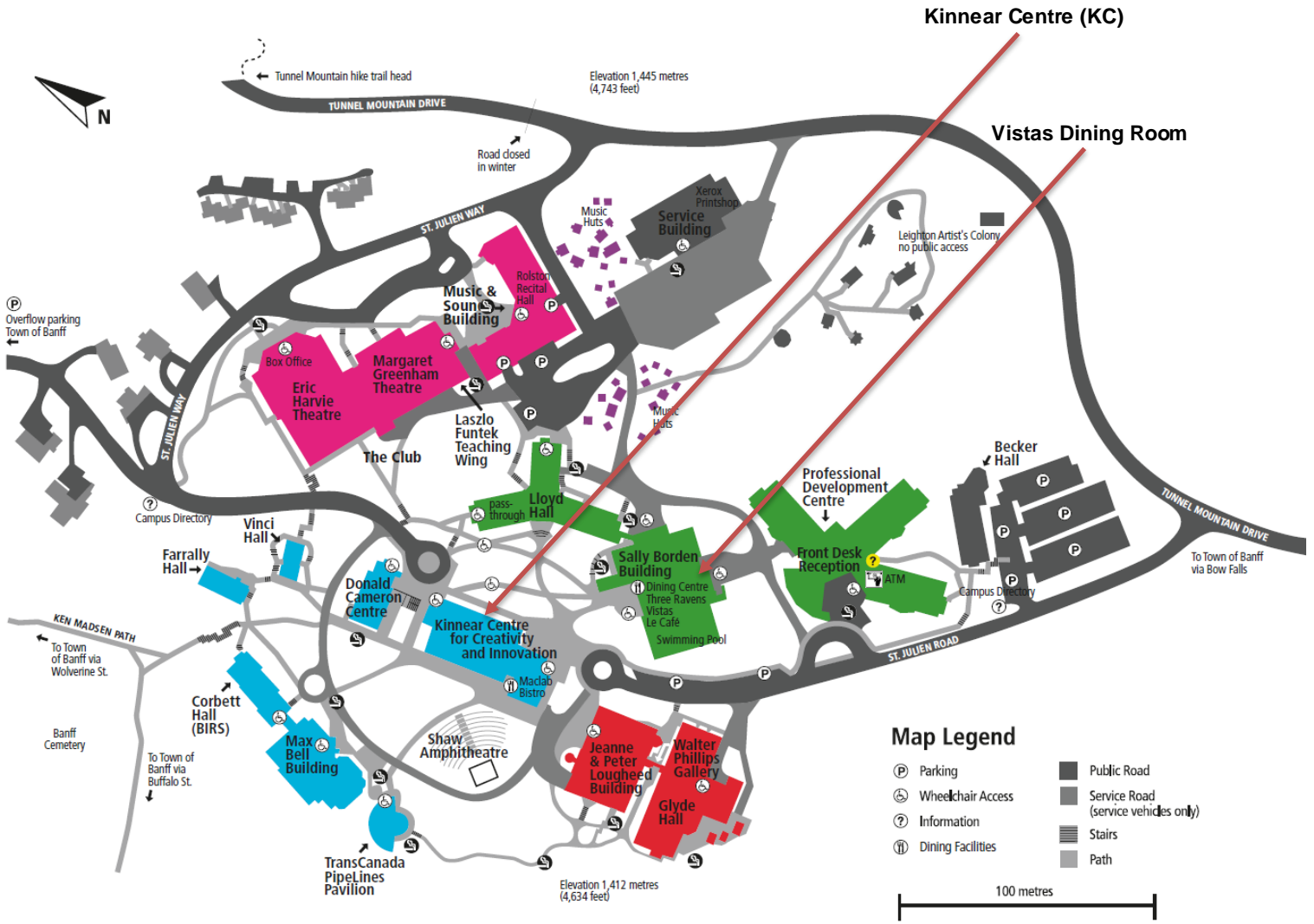
19:00 – 22:00



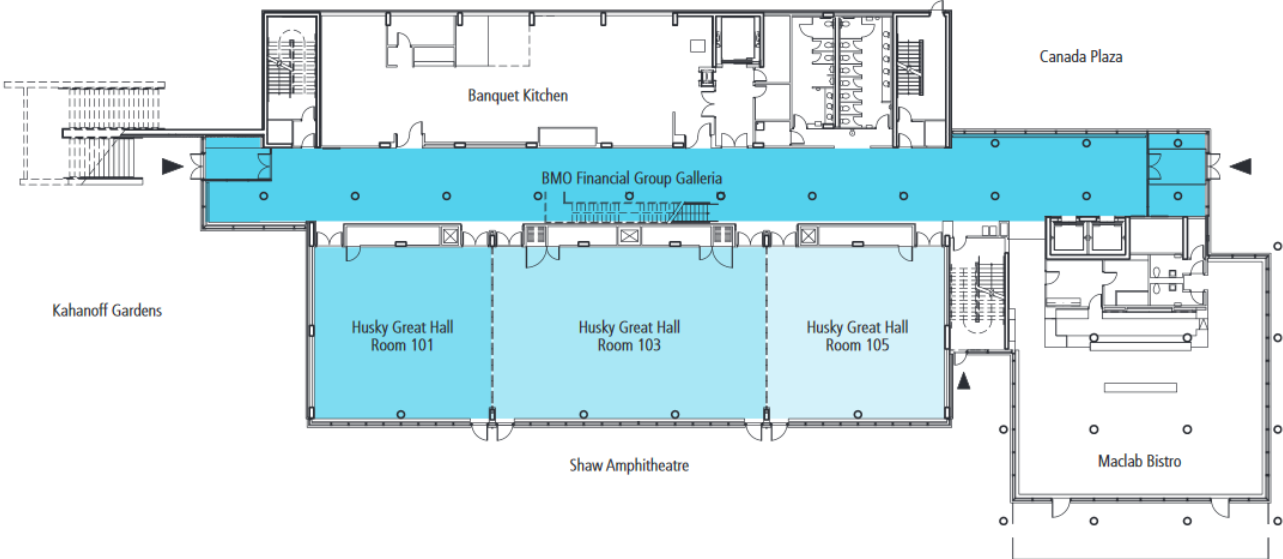
Source: Trip Advisor and <https://www.banffcentre.ca/>



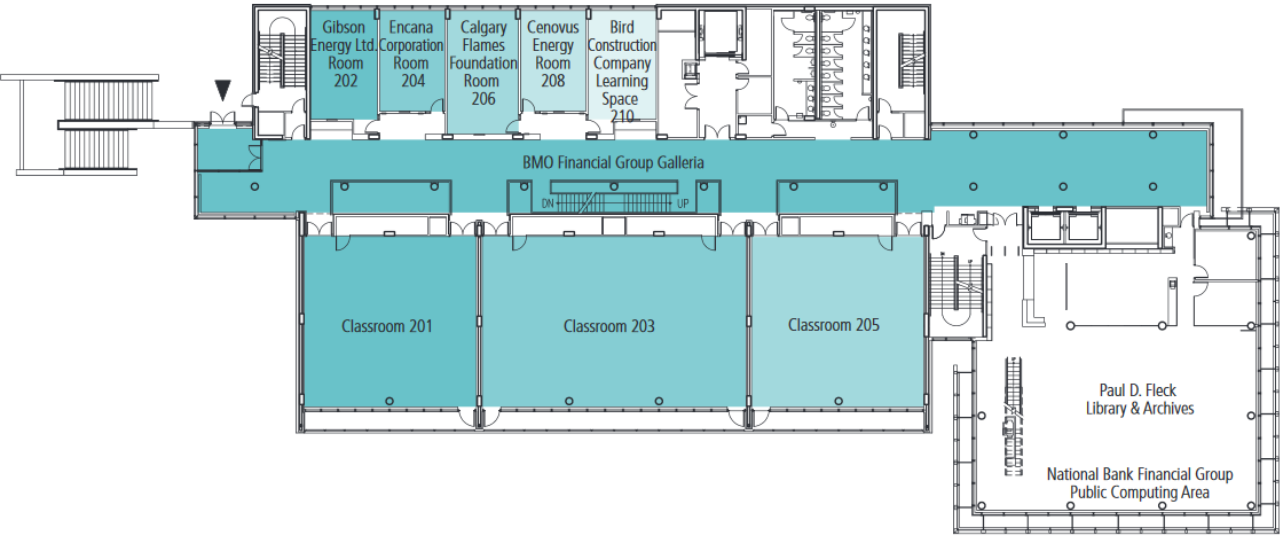
# Banff Center Campus Map



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Kinnear Centre (KC) – Second Floor