Smart City

- Smart-city is a future city that melts information and communication technology (ICT) into a city.

- It provides intelligent services, that is, smart services, and allows the users to use the smart-city services anytime, anywhere and with any accessing devices (3A).
There was a very significant conference for the smart-city in European Union Parliament in May 2013.

Thereafter, EU launched a big and very significant smart-city project for European Countries, China, Taiwan, Middle East nations and India launched their smart-city projects as well.

It is anticipated that they produce good results of the projects in near future.
Pre-cloud computing for smart cities

* Distributed Parallel Computing
* Grid Computing: Open Grid Forum (Grid Forum Korea)
* E-Science
Many services based on cloud computing.

It had been preached that ubiquitous cities and smart cities can be a very very important big market for Cloud computing.
Cloud Computing Conferences

- Establishing IEEE conference on cloud computing in 2009.
The Technical Committee on Services Computing (TC-SVC) of IEEE Computer Society Sponsors

2009 IEEE International Conference on Cloud Computing (CLOUD 2009)

http://tab.computer.org/tesc and http://thecloudcomputing.org

CALL FOR PARTICIPATION

CLOUD 2009 PART 1

Co-located with IEEE ICWS 2009
July 6-10, 2009, Los Angeles, CA, USA


Cloud Computing has become a scalable services delivery platform in the field of Services
Joint SERVICES-II, SCC 2009, and CLOUD-II 2009 Panels

Panel 1:
SaaS: The Second Decade (Congress2009-1004)
17:40-19:00, 9/23/2009, Wednesday, Palm and Olive

Moderator: Ephraim Feig, Innovations to Markets, Inc., USA
Panelists:
Sridhar Iyengar, IBM T.J. Watson Research Centre, USA
Yong-woo LEE, University of Seoul, Korea
J. Leon Zhao, City University of Hong Kong, Hong Kong

Abstract:
The first decade of SaaS saw some notable successes and many more failures. What can we learn from the first decade that will help make SaaS more successful in the second decade? Will Cloud Computing be a driver for SaaS? Who are the new players, and what can we expect from the usual contenders? Are there new technological advances that give SaaS added advantage? Have the economic and business conditions changed so as to give SaaS a boost?

About the moderator:
Dr. Ephraim Feig is President of Innovations-to-Market. He was a Senior Director of Motorola (2006-2009) and Chief Technology Officer and Chief Marketing Officer of Kinterra, Inc. (2000-2006) and a researcher and R&D manager at IBM (1980-2000). He was elected IEEE Fellow for contributions to signal processing, holds 27 US patents, and has published more than 100 technical articles. Dr. Feig has served as an adjunct professor at several universities, including Columbia University, The City College of New York and New York Polytechnic Institute. He is a founding member of the IEEE Computer Society Technical Committee on Services Computing and this year’s Program Chair of IEEE SCC. He serves on advisory boards at CUNY, UCSD and USD, and is on the board of directors of the San Diego Symphony Orchestra.
IEEE 2009 International Conference on Cloud Computing (CLOUD-II 2009), September 21-25, 2009, Bangalore, India

About CLOUD-II 2009


“Changes we can lead” is the theme of CLOUD 2009.

CLOUD 2009 is the identified hot-topic conference by the 2009 World Congress on Services (SERVICES 2009). The two well-established theme conferences identified by SERVICES 2009 are the 2009 IEEE International Conference on Web Services (ICWS 2009) in July 2009 in USA and the 2009 IEEE International Conference on Services Computing (SCC 2009) in September 2009 in India.

Cloud Computing has become a scalable services delivery platform in the field of Services Computing. The technical foundations of Cloud Computing include Service-Oriented Architecture (SOA) and Virtualizations of hardware and software. The goal of Cloud Computing is to share resources among the cloud service consumers, cloud partners, and cloud vendors in the cloud value chain. The resource sharing at various levels results in various cloud offerings such as infrastructure cloud (e.g. hardware, IT infrastructure management), software cloud (e.g. SaaS focusing on middleware as a service, or traditional CRM as a service), application cloud (e.g. Application as a Service, UML modeling tools as a service, social network as a service), and business cloud (e.g. business process as a service).

In the fast growing Services Computing community, we have launched a series of events to promote and
About the panelists:

Sridhar Iyengar, an IBM Distinguished Engineer, leads the technical strategy for Software Tools & Methods at the IBM T.J. Watson Research Centre. Sridhar is also a member of the IBM Software Group Architecture Board Steering Committee helping drive software tools direction across IBM. His work focuses on the use of models, metadata and architectural frameworks that can be used to create an integrated software tools platform that makes it easy for systems integrators (specifically IBM's GBS) and customers to develop, optimize and deliver custom and packaged applications across the life cycle starting with Business Architecture thru BPM and Software design and implementation. Sridhar serves on the OMG Board of Directors and is working on the development and integration of Architecture, Business and IT Modeling standards.

Yong-woo LEE has been a professor at the school of ECE, the University of Seoul, Korea since 1999. He received his Ph.D. degree in Computer Science from the Dept. of Computer Science at the University of Edinburgh, UK. Before joining the University of Seoul, he was a senior research scientist at KIST (Korea Institute of Science and Technology) under the Ministry of Science and Technology, Korea, during 1982-1998. He also worked as a principal researcher at KERIS (Korea Education and Research Information Service) under the Ministry of Education, Korea, during 1998-1999 and as an international engineer at Schlumberger Technical Services Inc. during 1981. Currently he is the president of the Korean National Standard Committee for ISO JTC1/SC22, supported by the Ministry of Industry and Resource, Korea. He is also the chairman of the Academic Activity Board of Directors at KSII (Korean Society of Internet Information). He has been the member of Board of Chairs for Grid computing in Korea since 2002. He served many international conferences as the general chair. As the president of the Ubiquitous (Smart) City Consortium, he has been leading the five million U-city project funded and operated by Seoul Metropolitan Government of Korea since 2005 and receive the Korea Best Award, from the “Korea Herald” Newspaper in 2007. His current research interests include ubiquitous computing, cloud computing, grid computing, ubiquitous-city middleware, utilities and applications and high speed Internet and applications.

J. Leon Zhao is Head and Chair Professor in Information Systems, City University of Hong Kong. He was Eller Professor in the Department of Management Information Systems, University of Arizona before January 2009. He also taught previously at HKUST and College of William and Mary, respectively. He holds Ph.D. and M.S. degrees from the Haas School of Business, UC Berkeley, M.S. degree from UC Davis, and B.S. degree from Beijing Institute of Agricultural Mechanization. His research is on information technology and management, with a particular focus on workflow technology and applications in knowledge innovation, e-learning, supply chain management, organizational performance management, and services computing. Leon’s research has been supported by NSF, SAP, and other sponsors. He received an IBM Faculty Award in 2005 for his work in business process management and services computing. Leon has been associate editor of Information Systems Research, IEEE Transactions on Services Computing, Decision Support Systems, Electronic Commerce Research and Applications, International Journal of Business Process Integration and Management, International Journal of Web and Grid Services, and International Journal of Web Services Research and is on the editorial board of Journal of Database Management. He has co-edited nine special issues in various IS journals. Leon has been chair or program chair for numerous conferences. He has also served on many program committees in international conferences.
Establishing (European) Cloud computing conference (IARIA) in 2010.

Now Tenth anniversary!
The First International Conference on Cloud Computing, GRIDs, and Virtualization

CLOUD COMPUTING 2010
November 21-26, 2010 - Lisbon, Portugal

Committees

CLOUD COMPUTING Advisory Chairs

Academia
- Tiziana Margaria, University of Potsdam, Germany
- Daniel S. Katz, University of Chicago & Argonne National Laboratory, USA
- Yong Woo Lee, University of Seoul, Korea
- Kerry Taylor, CSIRO ICT Centre, Australia
- Wolf Zimmermann, University of Halle, Germany

Industry
- Geng Lin, Cisco Systems, Inc., USA
- Wolfgang Gentzsch, EU Project DEISA, Board of Directors of OGF, Germany
- Tony Shan, Keane Inc., USA
- David Bernstein, Huawei, USA

Research Institutes
- Jorge Ejarque, Barcelona Supercomputing Center, Spain
- Dieter Krantzmueller, LMU & LRZ - Munich, Germany
Early Generation

- Cloud computing to manage big data of smart cities.

Public data
서울시 IT 콤플렉스

Seoul ICT Complex for Cloud Computing
Seoul ICT Complex for Cloud Computing
1. Government Integrated Data Center

Information systems of government agencies integrated and managed together

- Separately managed information systems are consolidated by establishing NCIA

Seamless & Flawless Operation Achieved

- Stable integrated IT management for 24 / 7
- Monthly system failure time: 67min ➔ 1.15min

IT Management Improved

- 67% of employees licensed for ITIL (IT Infra. Lib.)
- Number of systems managed per person: 1.8 ➔ 13

Security Environment Consolidated

- 8-layer protection / 4-step analysis against intrusion
- Cyber attack / intrusion detection system equipped
- Dual system for natural disaster relief

※ NCIA: National Computing & Information Agency
2. Government Information Sharing

- To minimize required documents and office visits by expanding Gov’t information sharing to the entire public sector and financial institutions
  - change from register & provider-centered, to customer-tailored Gov’t info. Sharing
  - prevent misuse of critical information and promote Gov’t info. sharing among agencies

**Expansion of Gov’t info. sharing**

- Expanding types of information inquires.: 92 types → 120 types (2012)
  - Number of agencies sharing information:
    - public: 313(administrative org.), 124(public org.)
    - private: 18

**Enhanced Transparency**

- Developing ‘One Screen Service’ to show only needed info. of citizens to public officials
- Developing Gov’t info. relay system to improve the management of Gov’t info. relay service
The evolution of Government

**Government 1.0**
- Government-oriented
- Efficiency
- Government initiated
- One-way
- Personal Visit

**Government 2.0**
- Citizen-oriented
- Democracy
- Limited disclosure and participation
- Two-way
- Internet

**Government 3.0**
- Individual-oriented
- Greater Democracy
- Active disclosure, participation
- Proactive, Customized
- Mobile internet smartphone
Web 3.0 & Government 3.0

Cloud computing to provide intelligent services for smart cities.

Stream Reasoning
Intelligence is one of the key factors to city management, such as infrastructure management, smart traffic management, smart ecological environment management, smart energy management, etc.

The dramatic advances in information and communication technology (ICT) enable a smart-city to solve challenging issues for sustainable urban development.

*Seoul Metropolitan IT complex cloud computing data center.*
Context Based Processing

[Diagram showing components and interactions involving Context Manager, Service Broker, Collaboration Manager, Resource Manager, Service Discoverer (Smart-Matchmaker), and other elements related to context-aware computing and service discovery and execution.]
Ontology based Smart Processing

Automatic Computing (Service Discovery & Execution).
Current generation

- Cloud computing to provide IoT devices with unlimited computing power and resources.
Cloud Computing

Essential for smart devices in IoT/IoE.
New Seoul Network for U-City & Smart City in 2010

- 공원녹지관리사업소
- 교통방송본부
- 서울종합방재센터
- 건설안전관리본부
- 시의회

- 마포
- 용산
- 시청별관
- 전산정보관리소
- 송파

- 영등포
- 영등포
- 봉천
- 노원
- 중랑
- 중구
- 성동
- 강동

- 성북
- 도봉
- 공원녹지관리사업소

- 인터넷
- 지방행정정보망

- e-SNOC
- EMS

- 시청본관
- 시청별관
- 영등포
- 전산정보관리소
- 송파

- 1G/10G
- 1G/10G
- 2G/20G
- 1G

- BD6808(GbE)
- Alpine3808(GbE)
IoT
iStockphoto/chris_lemmens
Current generation

- Real-time Cloud computing
Real-Time Processing

Map()
- Divide sensor data to their regions

Reduce()
- Convert sensor data
- Infer sensor data
- Query the building on fire

1. Collect the sensor data
2. Send the low sensor data
3. Receive the divided sensor data
4. Send the divided sensor data
5. Receive the inferred data
6. Send the inferred data
Real-Time Processing
Mobile computing

◆ 5th Generation: 50 Gigabps speed.
◆ Giga Korea.
◆ 2019 in Korea.
Smart cities with the 4th industrial revolution based on cloud computing, big data processing, IoT, intelligent processing, real-time processing, 5G mobile communication, super-connection, convergence, etc.
Smart cities with the 4\textsuperscript{th} industrial revolution.
Smart cities with the 4th industrial revolution.
Thank You!