8th Central and Eastern European Software Engineering Conference in Russia – CEE-SECR 2012
November 1-2, Moscow

Cloud Computing and the Cloud Standards Customer Council

Richard Mark Soley, Ph.D.
A Story from My Hometown

- Great Baltimore Fire of 1904
- Response from Philadelphia, Washington, New York, Virginia, Atlantic City… hundreds of firefighters
- Burned two days, 140 acres
Standards Are Important

- Sometimes they have life-or-death consequences

- Successful standards start, maintain and build ecosystems & businesses

- Standards are product differentiators:
  - Marks of quality
  - Expertise (certification, validation)
  - Interoperability, Portability & Reuse
Heterogeneity is Permanent

- Programming languages
  - ~3 million COBOL programmers
  - ~1.6 million VB programmers
  - ~1.1 million C/C++ programmers

- Operating systems
  - Unix, MVS, VMS, MacOS, Windows (all 8!), PalmOS…
  - Windows 3.1: it’s still out there!
  - Embedded devices (mobile, set-top, etc.)

- Networks
  - Ethernet, ATM, IP, SS7, Firewire, USB
  - Bluetooth, 802.11b, HomeRF
The integration picture is always changing

Executive decisions, mergers & acquisitions have a way of surprising us...
Bringing Down Cost of Adaptation
OMG’s Mission Since 1989

- Develop an architecture, using appropriate technology, for modeling & distributed application integration, guaranteeing:
  - reusability of components
  - interoperability & portability
  - basis in commercially available software
- Specifications freely available
- Implementations exist
- Member-controlled not-for-profit
Who Are OMG?

ACORD  Hitachi  NIST  Siemens
Adaptive  IBM  No Magic  SINTEF
Boeing  Johns Hopkins U.  Northrop Grumman  Technologic Arts
CA  IKV  OASIS  Toshiba
Citigroup  Lockheed Martin  Oracle  Toyota
CSC  Microsoft  OSD  Unisys
Fraunhofer  MITRE  PM-ISE  Visumpoint
Fujitsu  National Archives  Progress Software  WebRatio
Harris  NEC  Red Hat  XBRL
Hewlett Packard  NEHTA  SAP  Zurcher Kantonalbank
Liaison Relationships

ISO
OASIS
IEEE
THE Open Group
W3C
The World Wide Web Consortium
AIIM
STAR
INCOSE

International Council on Systems Engineering
OMG’s Best-Known Successes

- Common Object Request Broker Architecture
  - CORBA® (and the DDS™ Publish/Subscribe model) remains the only language- and platform-neutral interoperability standard

- Unified Modeling Language
  - UML® the world’s mostly widely adopted standard modeling language

- Common Warehouse Metamodel
  - CWM™, the integration of the last two data warehousing initiatives

- Business Process Modeling Notation
  - BPMN™ widely adopted for business analysis

- Meta-Object Facility
  - MOF™, the language-defining language

- XML Metadata Interchange
  - XMI™, the XML-UML standard
Going “Up The Stack”

- OMG’s history has been to address the “technology stack” from the bottom up:
  - Object orientation
  - Distributed middleware
  - Modeling
  - Vertical market models
  - Business management: process & rules
OMG’s Breadth of Standards

Besides key modeling, distributed computing & realtime/embedded standards, OMG develops standards in:

- Healthcare
- Financial Services
- Telecommunications
- Government
- Military Logistics
- Manufacturing
- Robotics
- Systems Engineering
- Military Comms
- Smart Energy
- Device Safety
- etc…..
Some Examples

- Cloud computing
  - Cofounded cloudstandards.org; focused on portable deployment to support many business models

- Enterprise Architecture
  - DoDAF/MODAF architecture frameworks
  - Languages for interoperability

- Military systems
  - Both communications and C4I command/control

- Civil Government
  - Electronic records management
  - Skills management (Japanese-led)

- Robotics, Healthcare, Manufacturing, etc.

- Software Quality
Cloud Standards Mess
The Cloud Decision

Key idea: get the decision down to a simple “rent vs. buy” calculation

- Get standards in place rapidly and we win
  - Portable, interoperable services
  - Cybersecurity built in
  - Supporting a fast-growing market for services with standardized SLA’s

- Provide the foundation for innovation

Standards are the greatest force for innovation in the world.
Getting it Wrong

Cloudy With a Chance of Meatballs

Written by Judi Barrett
and Drawn by Ron Barrett

Celebrating 25 Years!
A Joint Resource

- Cloud-standards.org is a joint resource to find out what’s going on in the industry, available from vendors and among end-users about cloud computing standards:
  - What standards exist or are under development
  - What products implement those standards
  - Who has used those products
  - How well they have worked (success & failure stories)
Cloud Standards Collaboration

- The leading Standards Development Organizations (SDO’s) are collaborating to coordinate and communicate standards for Cloud computing and storage; working group established this year

- Many SDO’s are already collaborating, more are welcome

- Committed to development of a joint resource on cloud computing strategies, standards and implementations

- Different SDO’s are bringing together different but complementary abilities: storage, execution models, deployment models, service level agreements, security, authentication, privacy
Cloud Standards Clarity

- DMTF
- OMG
- TM Forum
- SNIA
- CSA
- Open Cloud Consortium
- OASIS
- Cloud Computing Interoperability Forum
Standardization Areas

- Security (e.g. authentication, authorization)
- Interfaces to IaaS (e.g., compute, storage)
- PaaS & deployment model formats for Cloud applications
  - Resource descriptions (Required, Available)
  - Service & SLA models
- Management Frameworks
  - Governance and Policy Enforcement
  - Regulatory agreements (e.g. Data location and security)
  - SLA formats (e.g. Performance, Availability)
- Portable component descriptions (e.g. VM’s)
- Data exchange formats (to and from Clouds)
- Cloud Taxonomies and Reference Models
OMG’s Focus

- **Variation of Capital versus Expense Models**

- **Product Agnostic Description**
  - UML profile for Cloud provides the same value as the soaML provides for SOA
  - Service Level Agreement modeling supports portable SLA
  - Initial specification through provisioning
  - Multi-cloud vendor support

- **Integrated, and trusted Cloud Cyber Security**
  - Cloud-specific Threats and Attack patterns
  - Advanced Forensic specifications
  - Non-signature as well as signature-based
  - Inter-cloud trusted protocol(s)
  - Leveraging OMG Systems Assurance efforts
But what is *your* focus?

Cloud computing end-users haven’t had their say about could computing standards:

- What do we need?
- When do we need it?
- What are the priorities?
Making Cloud Standards Customer Driven
We are reaching a breaking point …

Today’s IT infrastructure is under tremendous pressure and is finding it difficult to keep up…

**85% idle**

In distributed computing environments, up to 85 percent of computing capacity sits idle

**70%** per US$1

70 percent is spent on maintaining current IT infrastructures versus adding new capabilities

**80%**

Percentage of executives who report a security breach and aren’t confident they can prevent future breaches

**78%**

Percentage of CIOs who want to improve the way they use and manage their data
Open Standards: Invention? Or Reinvention?

reinventing standards OR using existing standards
vendor-driven standards OR customer-driven standards
proprietary clouds OR open, interoperable clouds

Or is it somewhere in between…?
Context for cloud standards

Cloud computing is a model for **enabling cost effective business outcomes through the use of shared application and computing services**. The value .... if possible .... is better economics in the execution of business processes.

There is a **lack of a customer driven prioritization** and focus within the cloud standards development process.

Hype around cloud has created a flurry of standards and open source activity leading to **market confusion**.

As important as **current standards development efforts are**, they are **not enough**.
The reality of cloud standards

<table>
<thead>
<tr>
<th></th>
<th>DMTF</th>
<th>The Open Group</th>
<th>OASIS Standard</th>
<th>ETSI</th>
<th>CSA</th>
<th>Cloud Security Alliance</th>
<th>Open Grid Forum</th>
<th>TmForum</th>
<th>SNIA</th>
<th>OMG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>API</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Virtualization</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Management</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Storage</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>SLA</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Network</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Security</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Dozens of new communities and organizations have formed around cloud standards including industries and governments (e.g. China CESI).
Cloud Standards Customer Council

On April 7, 2011 industry leaders from across the world formed the *first customer led consortium* designed to shape the face of open standards based cloud computing.

- Drive user requirements into standards development process.
- Establish the criteria for open standards based cloud computing.
- Deliver content in the form of best practices, case studies, use cases, requirements, gap analysis and recommendations for cloud standards.

**Structure**

- **Participation** – Primarily C-Level executive, VP of Development, IT management, Enterprise architects, cloud strategy
- **Meetings** – Monthly virtual meetings. Quarterly face-to-face co-located at OMG events. Participation through forums and subgroups.
- **Oversight** – Managed by OMG
- **Leadership** – Founding members and elected end-user members form steering committee
- **Standards Development** – This group will not produce standards but will provide guidance to existing standards development organizations

**Deliverables**

- **Web Presence** – Community, Webcasts, Case studies, blog, vendor showcase, whitepapers, case studies awards.
- **Candidate Deliverables** – ready to use content in the form of use cases, case studies, requirements, gap analysis and recommendations for cloud standards, and training.
- **Awareness** – Drumbeat of awareness utilizing events, press, books, analysts partnerships and media.
CSCC members have formed 17 working groups. Members have presented their work in progress, which includes developing mission statements and action plans for deliverables.

- Business Patterns in the Cloud
- Cloud Interoperability
- Education
- Financial Services
- Government
- Healthcare
- IaaS: Evolution from infrastructure to workload management
- Legal
- Media
- PaaS: Landscape and boundary
- Practical Guide to Cloud Computing Working Group
- Reference Architecture
- Retail
- SaaS: Industry Vertical (Retail, Finance, Telco)
- Security
- Social Business Standards for Cloud
- Telecommunication
Who’s Listening? Setting Priorities & Requirements for Standards
One of the first major deliverables from the CSCC was the “Practical Guide to Cloud Computing.” The full guide is available now.

Why was the Practical Guide to Cloud Computing Developed?

Cloud adoption is a journey, not a series of disconnected decisions. The goal of the Guide is to provide guidance to IT and Business decision makers looking at adoption of cloud computing. It identifies key elements to consider and pitfalls to avoid.

What’s Covered in the Practical Guide to Cloud Computing?

• Discusses “what does cloud computing adoption really mean?”
• What needs to happen to successfully adopt cloud computing technology to move the business forward?
• Key sections cover:
  • A Rational for Cloud Computing
  • Cloud Computing Vision
  • Keys to a Successful Implementation of Cloud Computing
  • Roadmap for Cloud Computing
  • Gaps and Next Steps
• Also includes a glossary and references
The CSCC Practical Guide to cloud computing details a prescriptive nine step plan for success:

1. Assemble your team
2. Develop business case and an enterprise cloud strategy
3. Select cloud deployment model(s)
4. Select cloud service model(s)
5. Determine who will develop, test and deploy the cloud services
6. Develop a proof-of-concept (POC) before moving to production
7. Integrate with existing enterprise services
8. Develop and manage SLAs
9. Manage the cloud environment

10 Steps to Evaluate Cloud SLAs

1. Understand roles and responsibilities
2. Evaluate business level policies
3. Understand service and deployment model differences
4. Identify critical performance objectives
5. Evaluate security and privacy requirements
6. Identify service management requirements
7. Prepare for service failure management
8. Understand the disaster recovery plan
9. Define an effective management process
10. Understand the exit process

http://www.cloud-council.org/04102012.htm
CSCC Annual Case Study Competition

The goal of the Cloud Computing Case Study Competition is to highlight business success stories and lessons learned to provide proof points and insights for other organizations considering or pursuing cloud computing adoption.

- Business success stories and lessons learned
- Provide proof points and insights for other organizations considering or pursuing cloud implementations
- Projects must be complete with demonstrated business results
- Judges selected from WG leaders, steering committee, and partners will judge entries based upon:
  - Complexity of the business problem addressed
  - ROI/Business Value
  - Level of the cross-organizational collaboration (Business/Technical)
  - Cloud deployment and delivery methods and supporting technology

In addition to one overall winner, organizations will be recognized in various industries, based upon the range of submissions.
CSCC Membership

Membership has grown 5X since OMG’s April 2011 announcement - Over 400 companies
Summary

- **Fast growing community**
  - From 45 at launch to more than 400 members and growing

- **Valuable Resources Already in Place**
  - CSCC website contains use cases, case studies, whitepapers, and webcasts

- **Practical Guide to Cloud Computing**
  - Available free to anyone

- **Practical Guide to Developing a Cloud SLA**
  - Available free to anyone

- **Practical Guide to Cloud Security**
  - Available soon, free to anyone

- Focused on ensuring buyers of cloud services understand, easily implement and get maximum value from cloud computing revolution
Where’s the Intersection Between Cloud Computing & Modeling?

- Frankly, all over the place:
  - The key piece missing in cloud computing standards is *how do we model cloud deployment*
    - Application programming interfaces
    - Shared libraries
    - Communications between cloud instances
    - Service level agreements

- But don’t forget the “other direction”
  - Modeling from any client, regardless of how small (mobile phones!)
  - Integrated cloud services, from validation to integration to simulation
  - Shared model development
  - Model presentation and remote simulation
  - Business model activation from any device

- What about “standards reuse”? 
Thank you for your time!

Questions?
Richard Mark Soley, Ph.D.
+1-781-444 0404
soley@omg.org