NIST and Standards for Cloud Computing

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NIST Definition of Cloud Computing

"Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction."

Overview

- Program goal, concept and rationale
- Program timeline
- Collaborations
- Progress
- Summary

NIST Cloud Computing Program Goal

- Accelerate the federal government's secure adoption of cloud computing
  - Build a USG Cloud Computing Standards Roadmap which focuses on the highest priority USG cloud computing security, interoperability and portability requirements
  - Lead efforts to develop standards and guidelines in close consultation and collaboration with standards bodies, the private sector, and other stakeholders

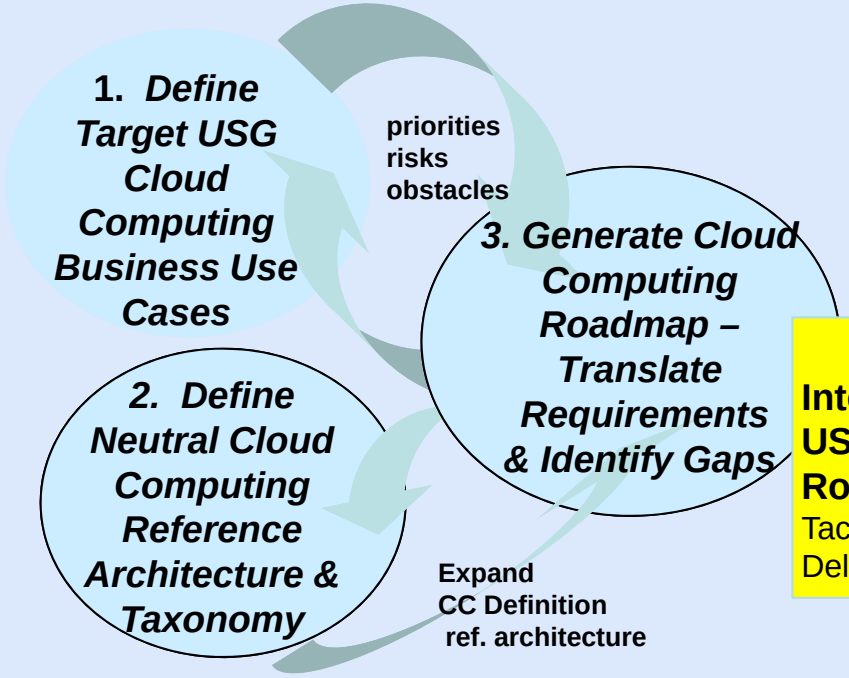
Why NIST?

- US government agencies need Cloud Computing **standards & guidance** to accelerate effective adoption
- Private sector and U.S. government agencies must **work together** to identify highest priority USG Cloud Computing security, interoperability, & portability requirements & gaps
- **Neutral, objective** party is instrumental in encouraging innovation & “a level playing field” for U.S. industry

NIST Cloud Computing Program Concept & Rationale

Strategic Program

How to build a USG Cloud Computing Standards Roadmap



Interagency Report: USG Standards Roadmap – list of Tactical Priorities & Deliverables

Concurrent & Iterative 3-step process that drives tactical efforts

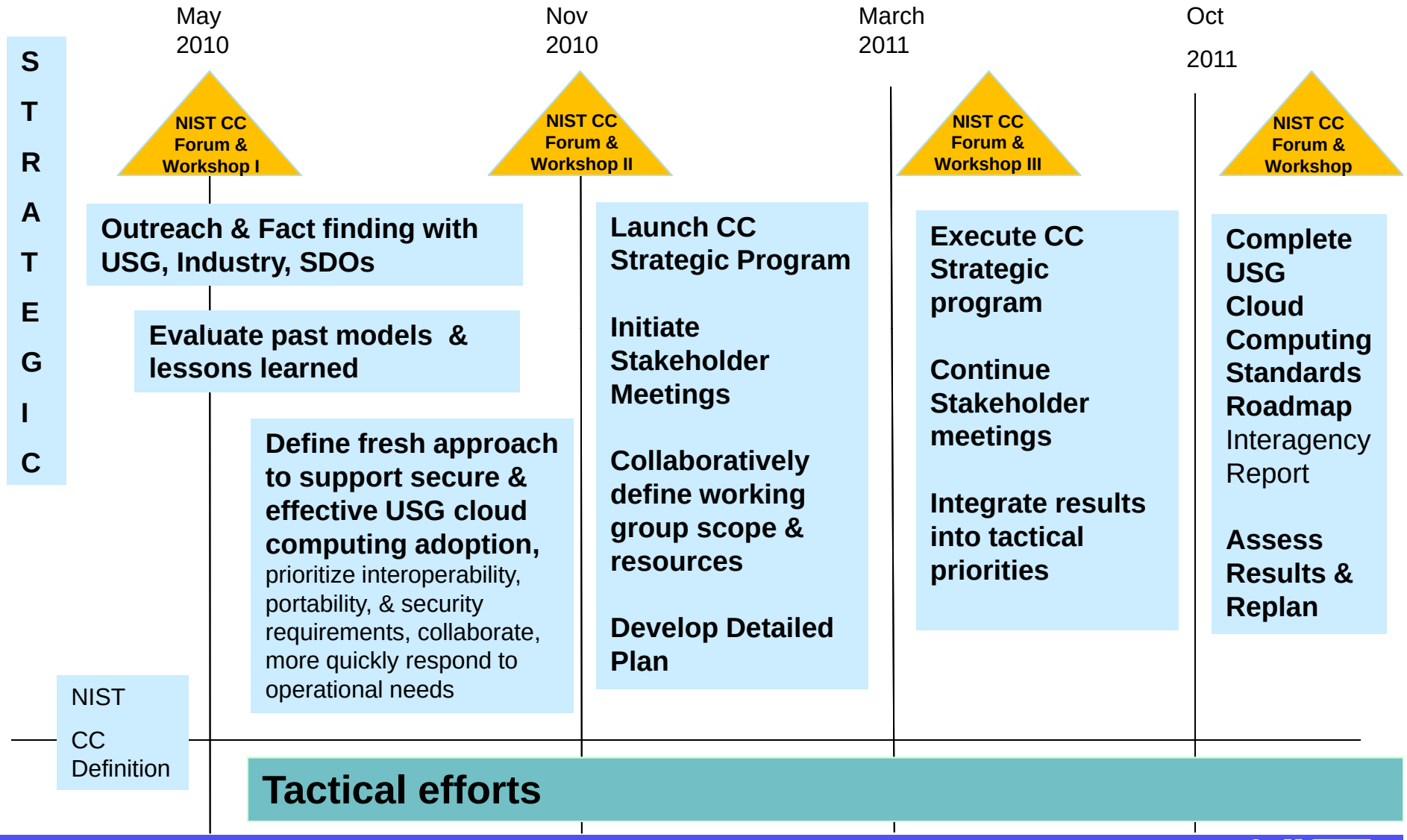
Tactical Program

NIST CC efforts

- **SDO submissions & support**
- **Guidance –** Special Publications; technical advisor to Fed CIO Council
- **Standards Acceleration to Jumpstart the Adoption of Cloud Computing (SAJACC)** -- through qualitative testing of specifications against interoperability, security, and portability requirements
- **Complex Computing Simulation & Modeling** – Koala IaaS resource allocation algorithms

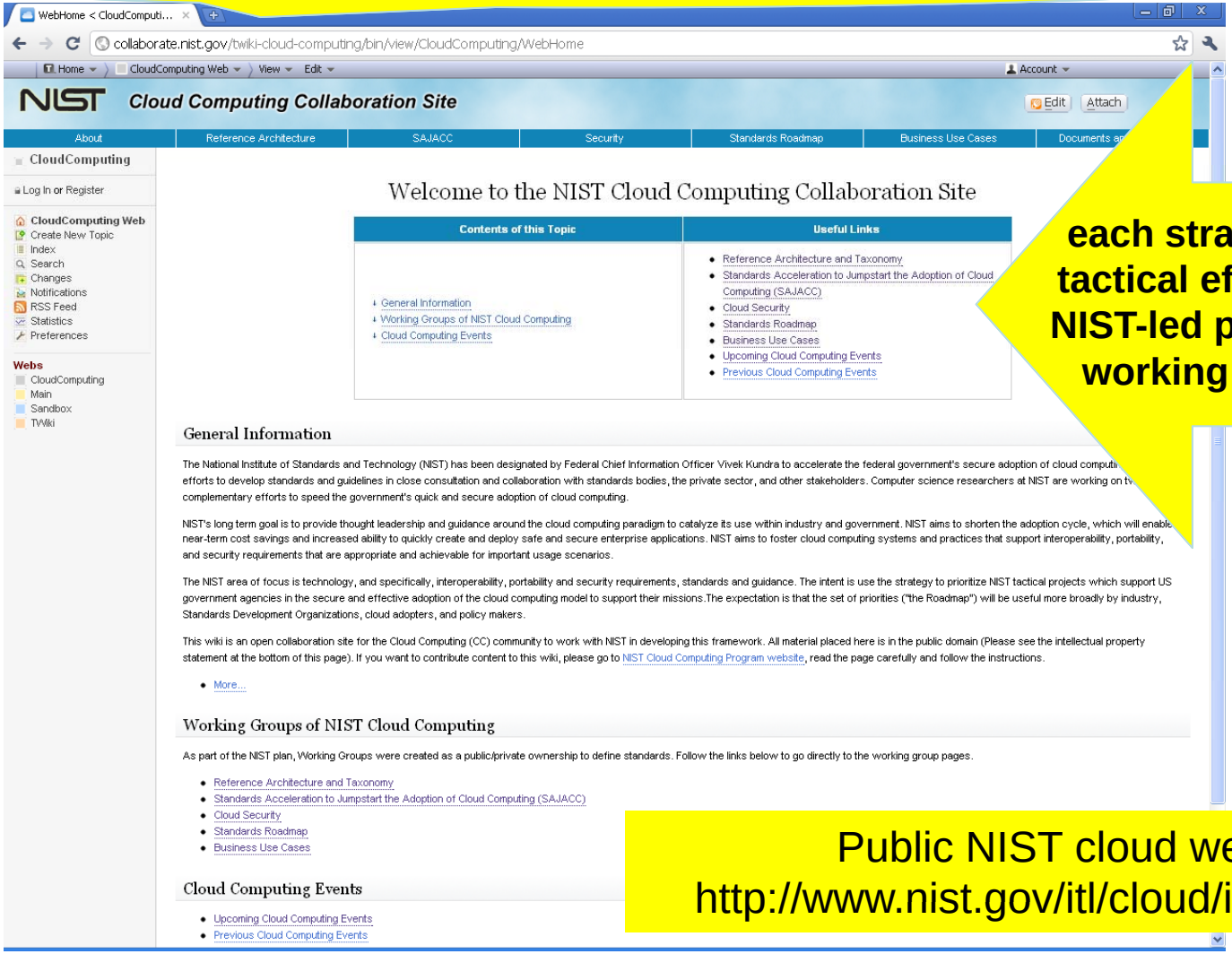
Beneficial bi-product: Identify priorities for hand-off to other stakeholders – policy makers, prototypes, pilots, R&D organizations

NIST Cloud Computing Program Timeline



NIST Cloud Computing Collaboration Site

http://collaborate.nist.gov/twiki-cloud-computing/bin/view/CloudComputing/WebHome



each strategic & tactical effort is a NIST-led project & working group

Public NIST cloud web site url
http://www.nist.gov/itl/cloud/index.cfm

NIST Cloud Computing Program Highlights

May 2010 through January 2011

- **Cloud Computing Forums & Workshops (May & Nov. 2010)**
  - **300-500 attendees with broad industry, SDO, government & international community program participants**
- **Voluntary Working Groups with industry, SDOs, USG, academia (launched Nov. 5, 2010)**
  - **USG Target Business Use Cases**
  - **Reference Architecture & Taxonomy**
  - **Standards Roadmap**
  - **SAJACC**
  - **Cloud Security**
  - **300+ registered members per working group**
  - **40-50 active in weekly teleconference meetings**

NIST Cloud Computing Program Highlights

May 2010 through January 2011

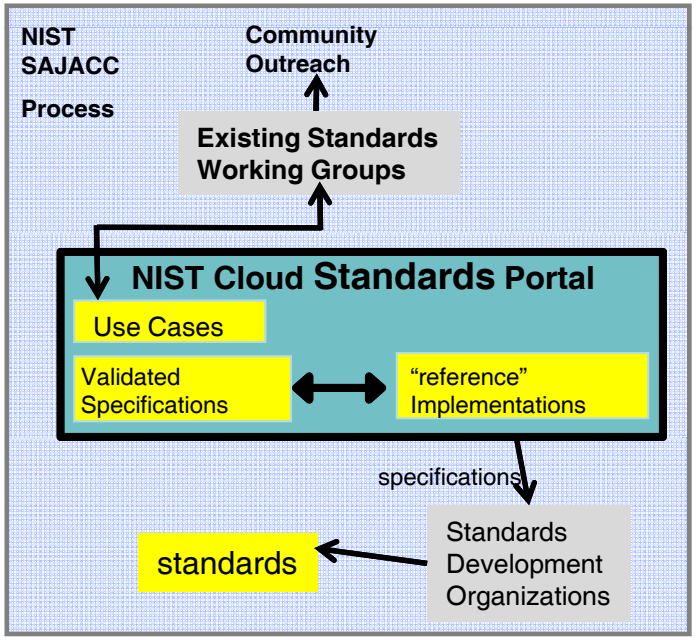
- **Reference Architecture**
  - **Surveyed and completed initial analysis of eight cloud reference architecture models proposed by known cloud organizations, providers and federal agencies**
  - **Developed reference architecture & taxonomy concepts to facilitate working group efforts**

NIST Cloud Computing Program Highlights

May 2010 through January 2011

- **Standards Development Organizations Participation**
  - (e.g., ISO/ANSI, IEEE, and OMG)

- **Standards Acceleration to Jumpstart Adoption of Cloud Computing (SAJACC)**
  - Launched portal September 2010
  - Developed 24 Interoperability, Security, & Portability requirements as draft use cases; made publically available November 2010



NIST Cloud Computing Program Highlights

May 2010 through January 2011

- **NIST Special Publications**
  - Final *Guide to Security for Full Virtualization Technologies*, January 2011
  - DRAFT *Guidelines on Security and Privacy Issues in Public Cloud Computing*, January 2011
  - DRAFT *NIST Definition of Cloud Computing*, January 2011
  - DRAFT *NIST Cloud Computing Synopsis & Recommendations*, March 2011

General Cloud Computing Challenge for all Stakeholders

- The Cloud Computing "space" & community is so broad that it isn't feasible to cover all relevant work & collaboration opportunities

- NIST Response
  - Use a 3-step strategy to focus resources, consider those standards & guidance priorities which are, in the eyes of USG adopters & industry, most critical
  - Leverage the contributions of stakeholders with the NIST efforts (operational & technical expertise)

NIST Role & Measures of Success

Role:

- **Contributor,** completing standards & guidance work to meaningfully contribute to the advancement of Cloud Computing technology, innovation, & standards
- **Catalyst,** bringing U.S. government agencies together with private sector stakeholders, to identify USG Cloud Computing security, interoperability, & portability requirements, & focusing our work on these priorities
- **Neutral objective party** to encourage innovation & "a level playing field" for U.S. industry

Measures of effectiveness – extent to which

- NIST contributions are adopted & used

- Stakeholders voluntarily participate in NIST led working groups, forums, & actively contribute to objectives & deliverables

Questions?