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GICTF promoting Inter-cloud computing standardization for Social Infrastructures

Mar 19, 2012

Vice Chair GICTF
Institute of Information Security (IISEC)
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GICTF

Agenda

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- Secure cloud computing for ***social infra-structures***
  - Inter-cloud computing and use cases
- Recent GICTF activities
  - Disseminating the outcomes of the national project ***"Highly Reliable Inter-Cloud Systems R&D project"***
  - Identify inter-cloud computing ***use cases and requirements*** with related communities
  - Recent GICTF deliverables for ***inter-cloud computing standardization*** with SDOs

Secure cloud computing is needed

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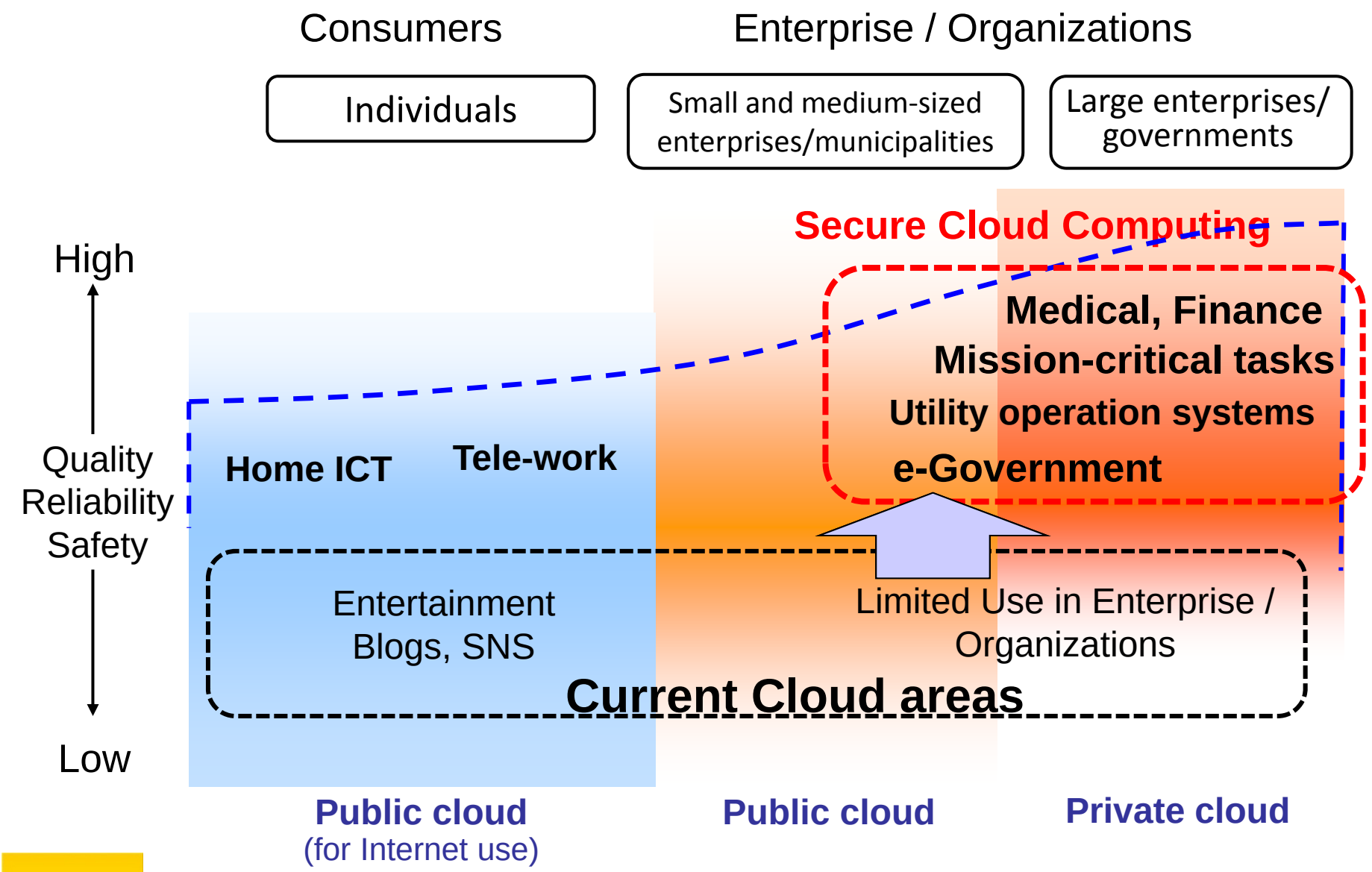

Inter-cloud Computing

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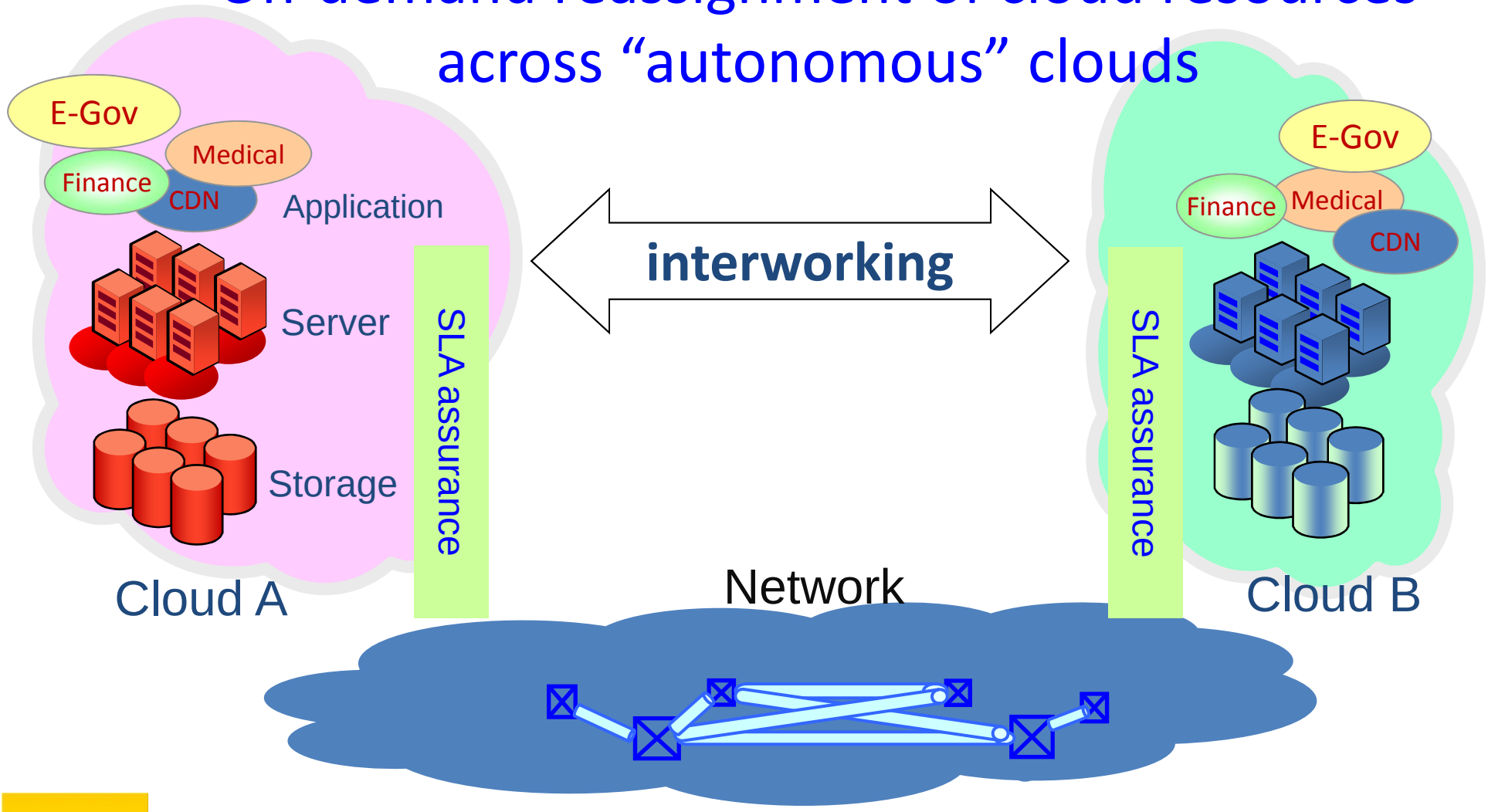
On-demand reassignment of cloud resources across “autonomous” clouds



Ex: Inter-Cloud for secure “Lifeline Services”

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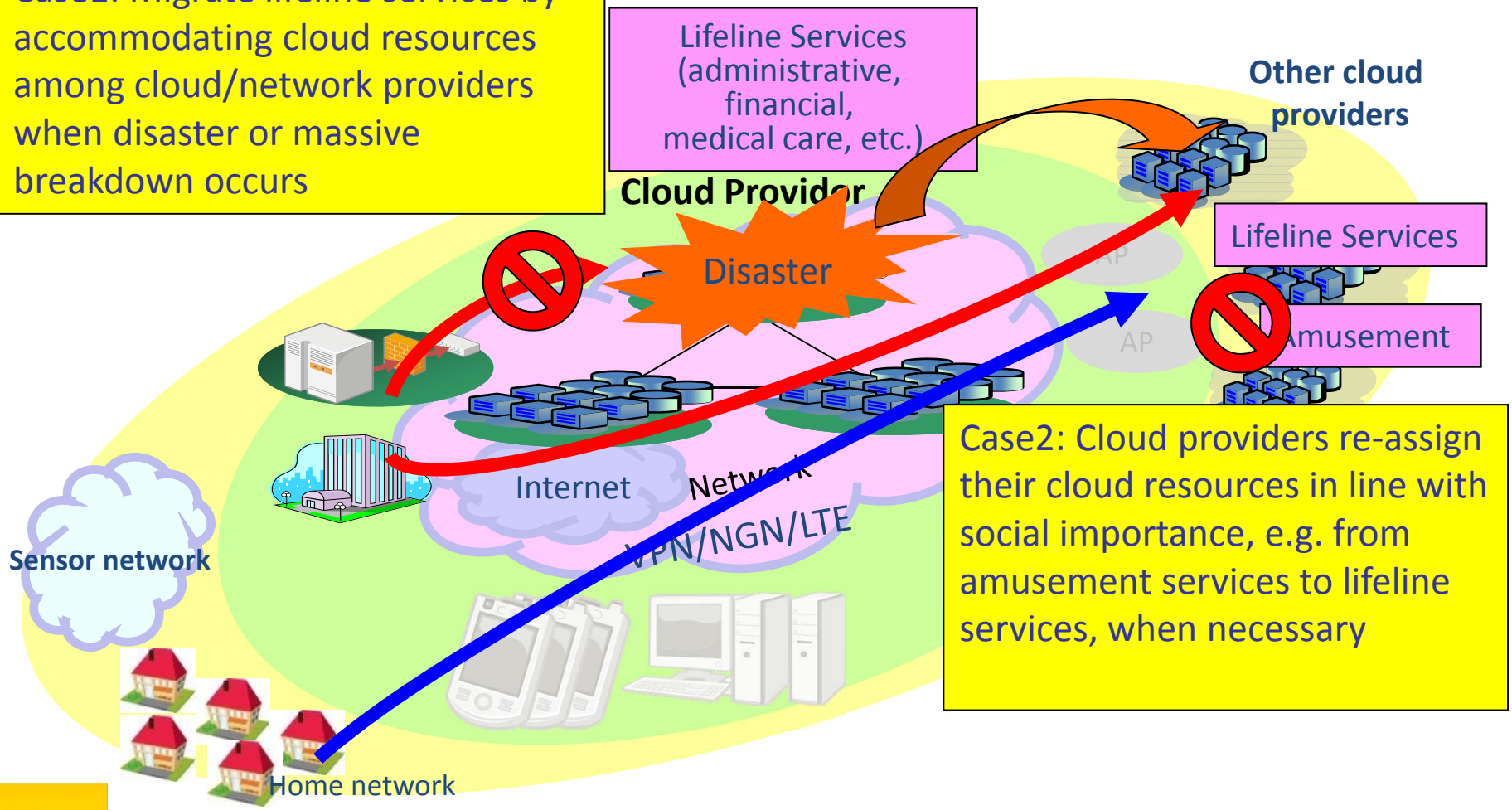
“Services continuity and/or disaster recovery” are crucial for lifeline services, as well as keeping cost-effectiveness of cloud systems

Case1: Migrate lifeline services by accommodating cloud resources among cloud/network providers when disaster or massive breakdown occurs



Case2: Cloud providers re-assign their cloud resources in line with social importance, e.g. from amusement services to lifeline services, when necessary

Ex: Inter-Cloud “Services Federation” in e-Gov

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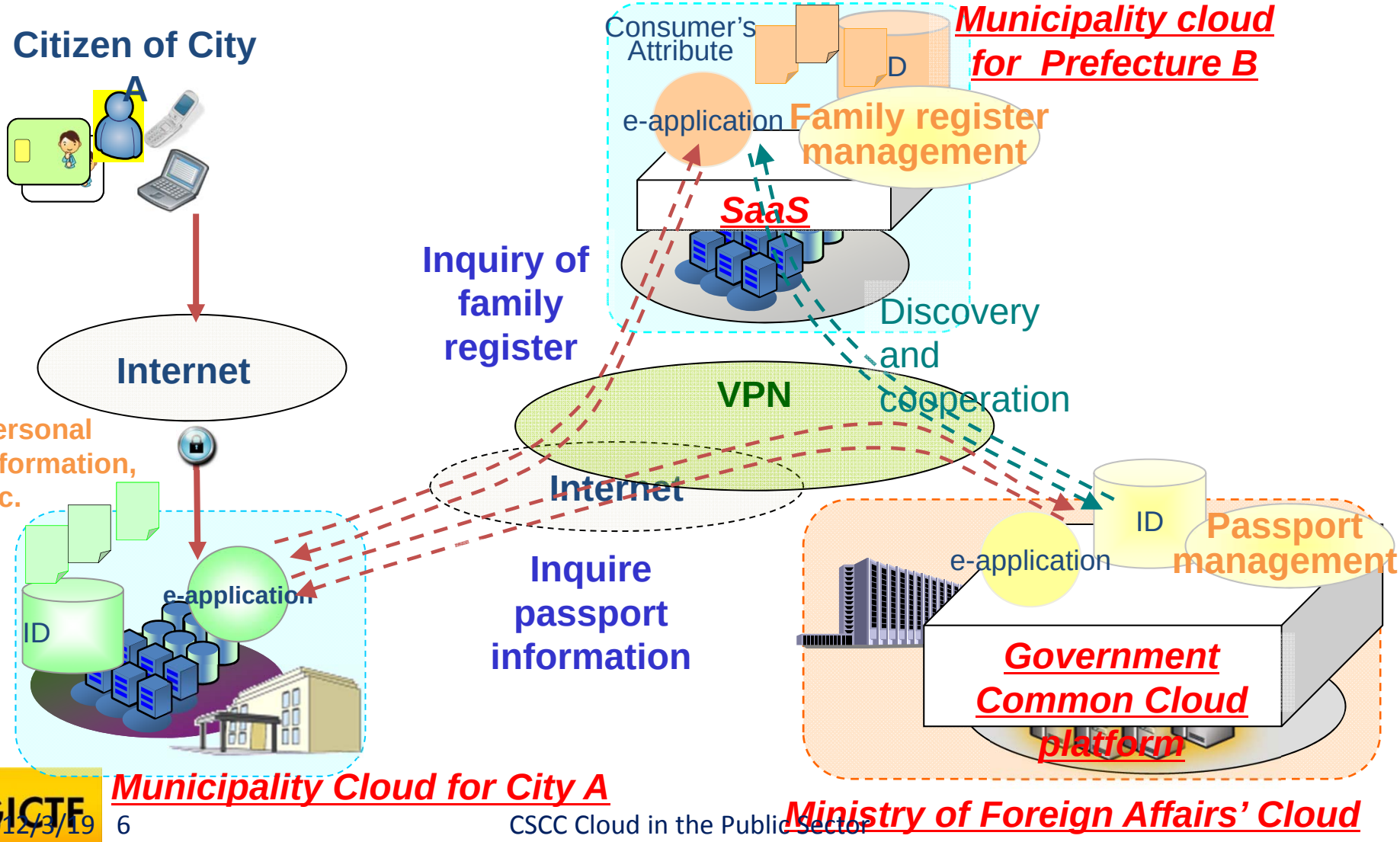
Multiple services on municipality clouds and/or central government clouds work together as “inter-cloud” to realize “online Passport issuing service”



Global Inter-Cloud Technology Forum (GICTF)

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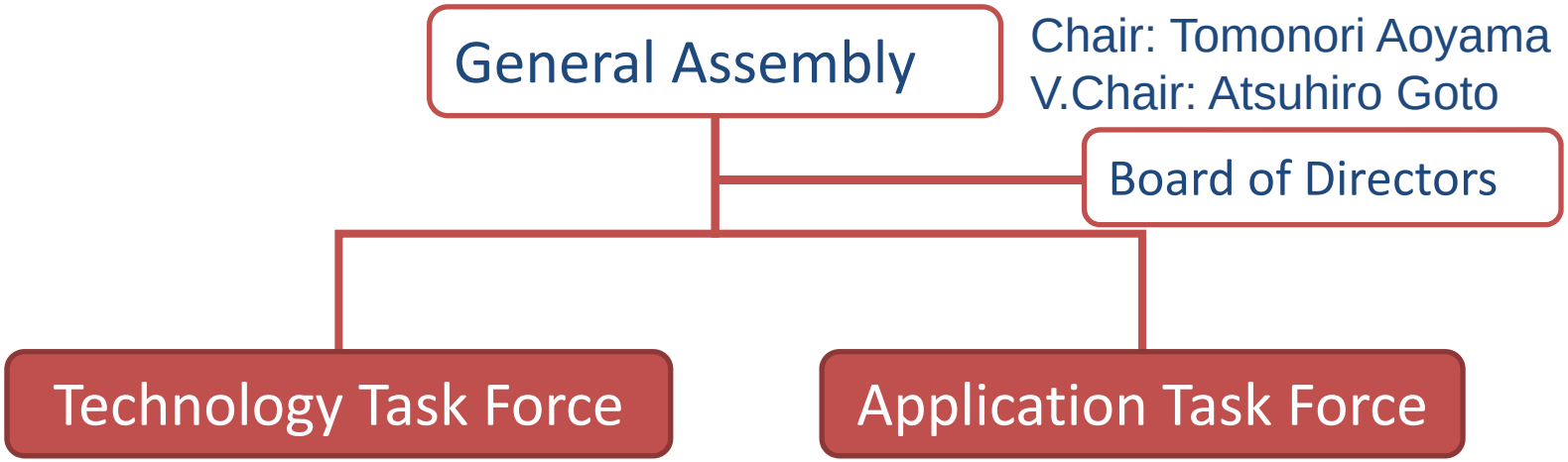

- Inter-cloud Interface WG
- Inter-cloud Networking WG
- Test-bed WG
- International Standardization Strategy WG

Membership (as of February 2012)

85 enterprises, national laboratories, and academia

Observer: MIC, METI

Global Inter-Cloud Technology Forum (GICTF)

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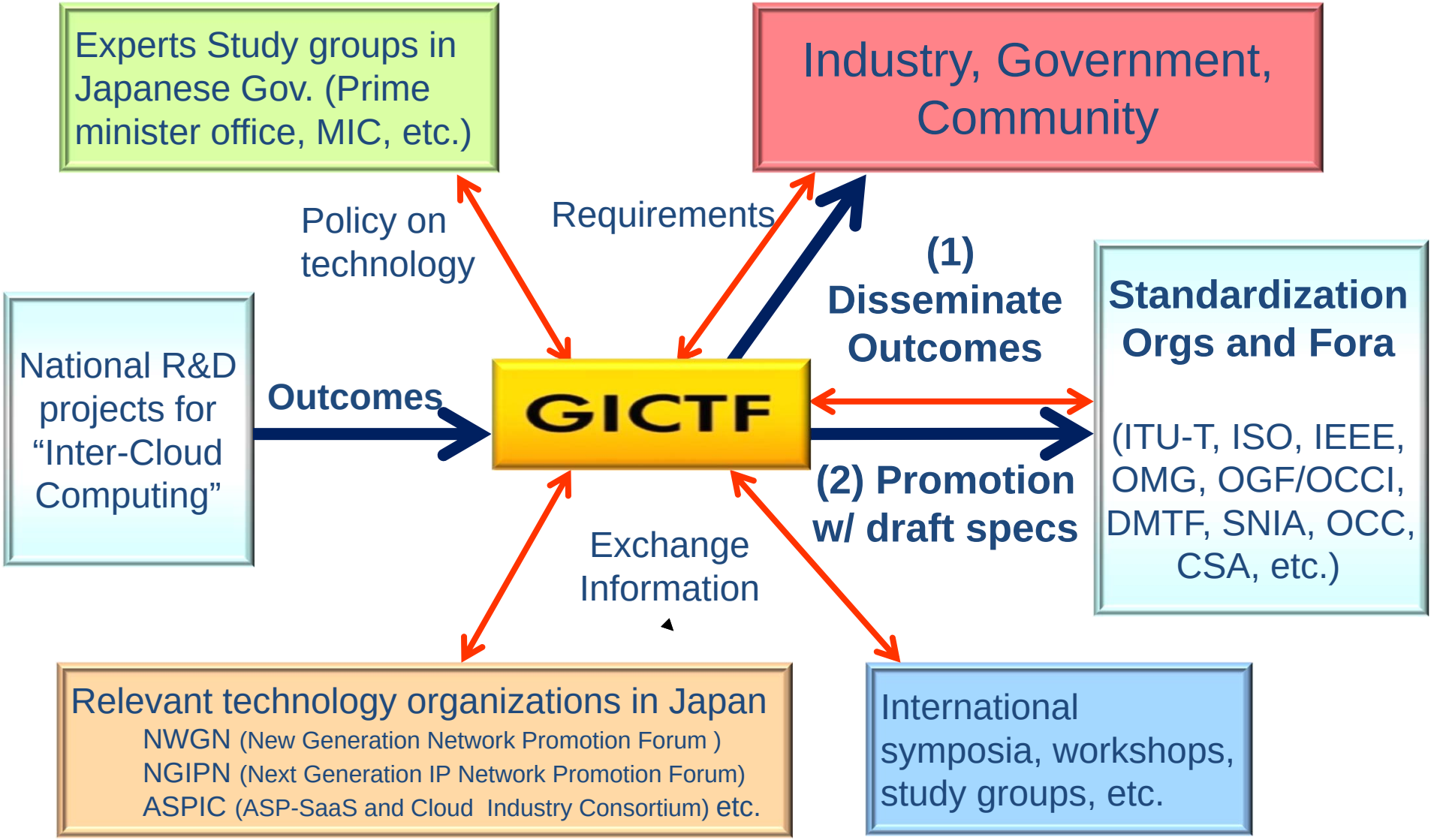

GICTF Activities (1)

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- Dissemination of national R&D project outcomes
  - Identify technical needs for secure “inter-cloud technology”
  - Raise awareness of users in industry, government, and communities
  - Promote open test-bed to evaluate the outcomes
- Collaborating National R&D Projects
  - “Highly Reliable Inter-Cloud Systems” <2009 - 2012: total 43M$>
  - and others

Highly Reliable Inter-Cloud Systems R&D project funded by Japanese government

<2009 - 2012: total 43M$>

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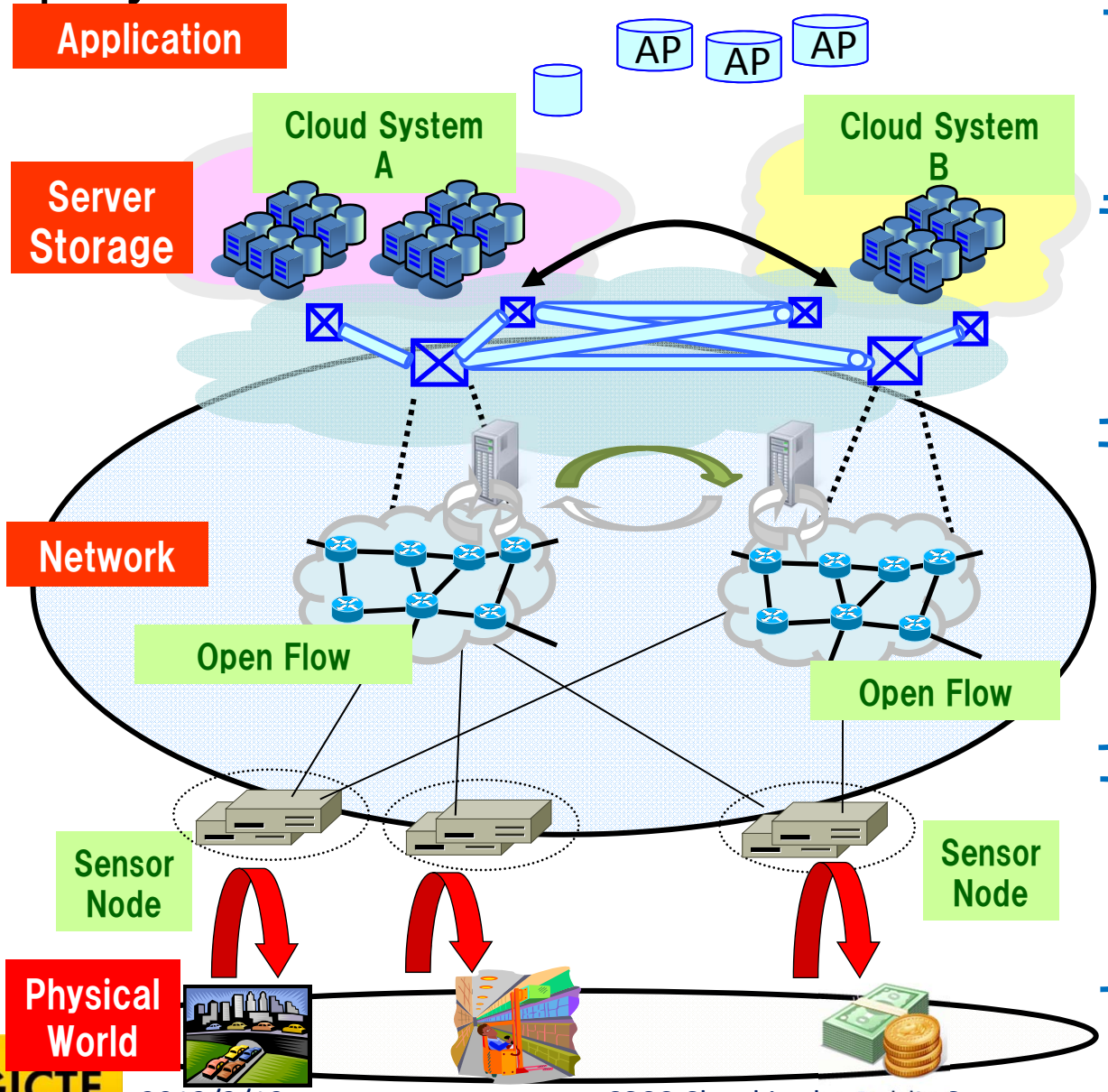

Cloud Resource Provisioning

Cloud Resource Federation and Reconfiguration

Dynamically Reconfigurable NW based on Open Flow

Real-time Sensor Node

Inter-cloud test bed planned in mid 2012

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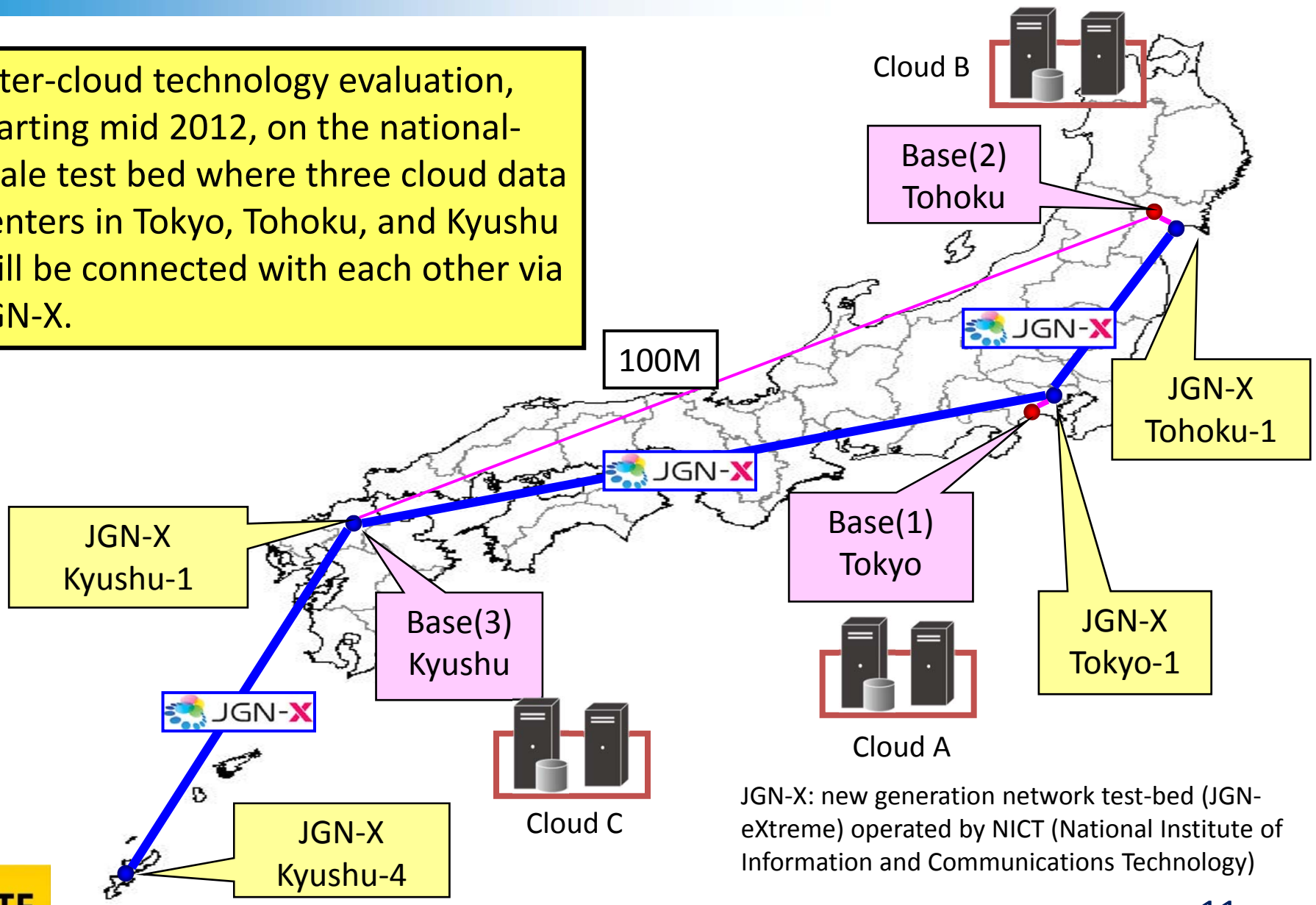
- Inter-cloud technology evaluation, starting mid 2012, on the national-scale test bed where three cloud data centers in Tokyo, Tohoku, and Kyushu will be connected with each other via JGN-X.



JGN-X: new generation network test-bed (JGN-eXtreme) operated by NICT (National Institute of Information and Communications Technology)

GICTF Activities (2)

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- Promote international standardization of “inter-cloud” interface through industry-academia-government collaboration and **cooperation with standards bodies**

GICTF Outcomes

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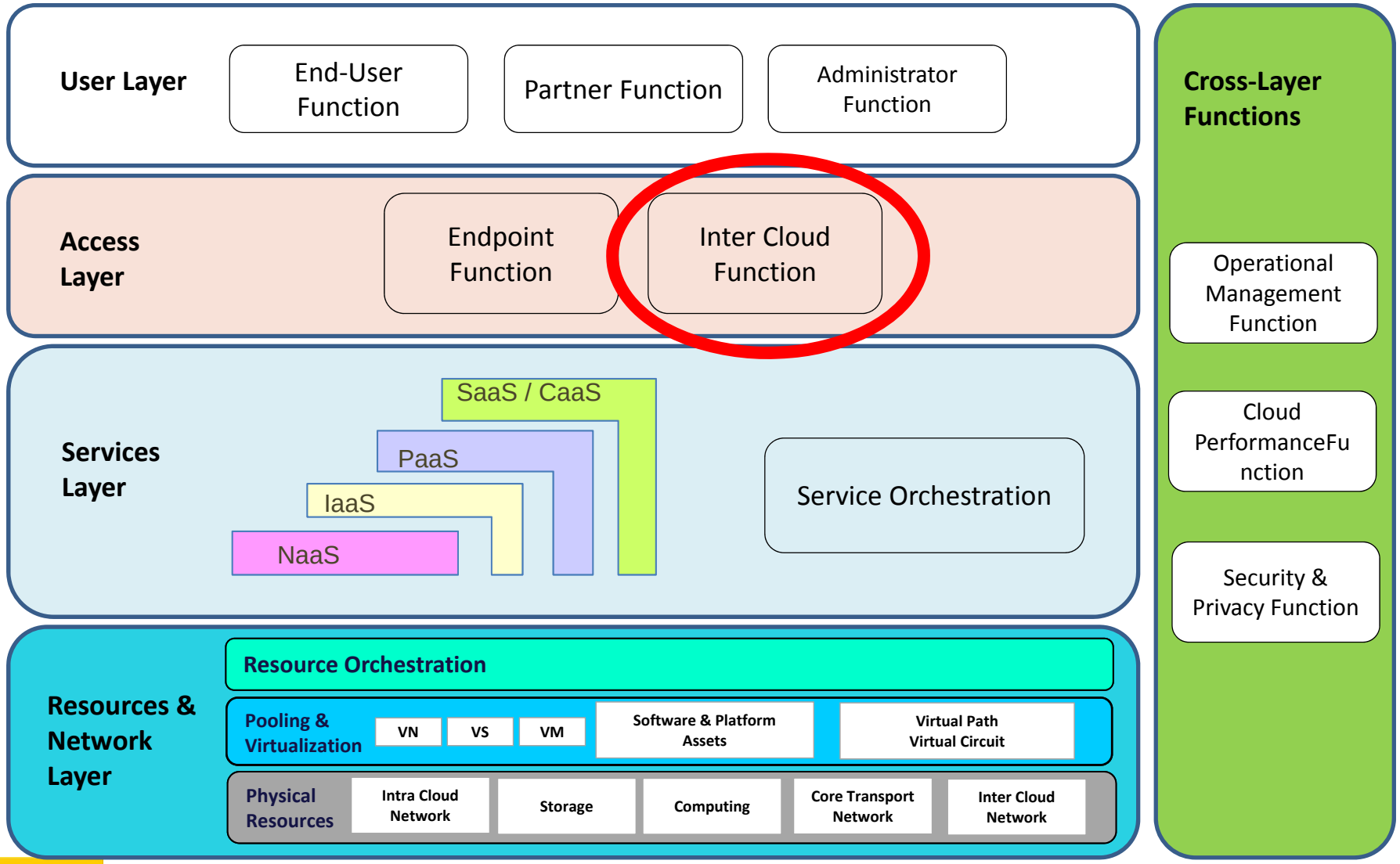
- Recent Major Deliverables
  - ***I. "Use case and functional requirements for Inter-Cloud Computing"*** E/Aug 2010
  - ***II. "Inter-Cloud interface specification on protocols"*** J/Dec 2011, E/Mar 2012
  - ***III. "Inter-Cloud interface specification on resources data model for network control"*** J/Dec 2011, E/Mar 2012
  - ***IV. "Technical requirements for Inter-Cloud Networking"*** J/Dec 2011 E/Aprl 2012
- Promote international standardization of "inter-cloud" interface through **cooperation with standards bodies**

Cloud Functional Architecture

First Cloud ICT architecture



Preview: Inter-cloud Interface Specification

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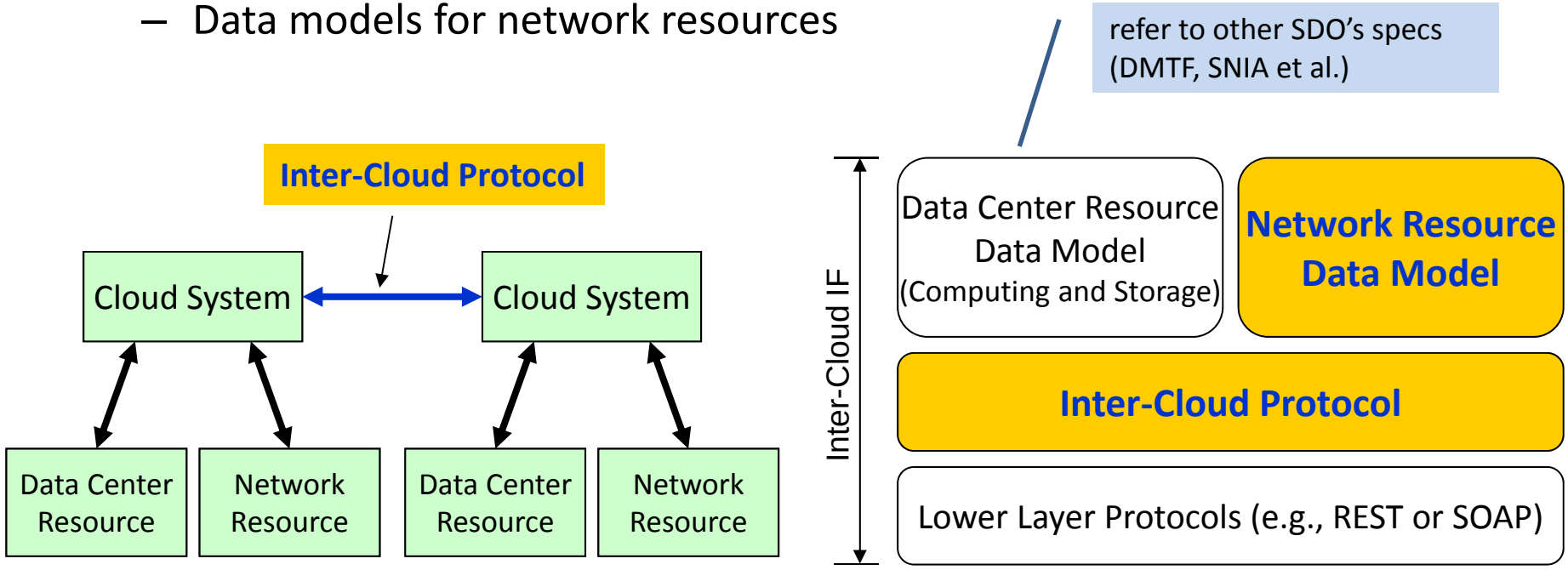
- The interface between two cloud systems operated by different providers
- Specs
  - Inter-cloud protocol: Information flows, message semantics with associated parameters
  - Data models for network resources



Cloud Standardization Status

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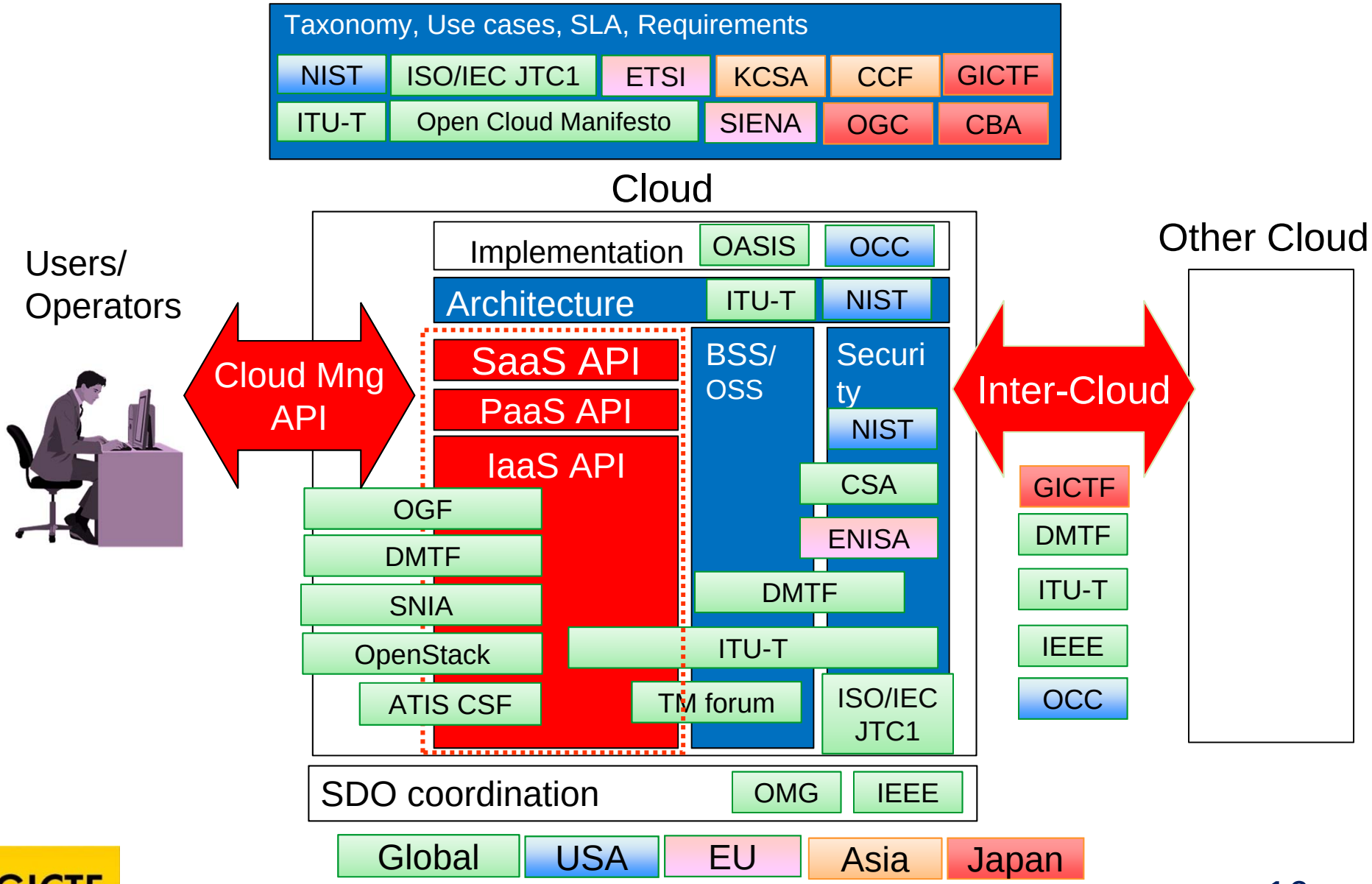

Wrap-ups

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- The ***future social infrastructures*** based on cloud computing and networking systems must be based on appropriate ***global standards***.
- GICTF has been and will be contributing to ***inter-cloud technologies*** development and standardization.
- ***Accelerating standardization*** is very important, by relevant SDOs
- ***Technology evaluation*** efforts are important by encouraging users to join the evaluation