ITU-T Focus Group Cloud Computing

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Vice Chair

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ITU-T FG Cloud Management & Structure

- Management team: Chairman:
  - Victor Kutukov (Russia)
    - Vice-Chairman: Jamil Chawki (France Telecom Orange, France)
    - Vice-Chairman: Kangchan Lee (ETRI, Korea)
    - Vice-Chairman: Mingdong Li (ZTE, China)
    - Vice-Chairman: Monique Morrow (Cisco Systems, USA)
    - Vice-Chairman: Koji Nakao (KDDI, Japan)
    - Vice-Chairman: Olivier Colas (Microsoft Canada)
- Structure 2 Working Groups covering several Working Areas
  - **WG1: Cloud Computing benefits & requirements**

    WA 1-1 Cloud Definition, Ecosystem & Taxonomy

    WA 1-2 Uses cases Requirements & Architecture

    WA 1-3 Cloud security

    WA 1-4 Infrastructure & Network enabled Cloud

    WA 1-5 Cloud Services & Resource Management, Platforms and Middleware

    WA 1-6 Cloud computing benefits & first Requirements from ICT perspectives
  - **WG2: Gap Analysis and Roadmap on Cloud Standards development in ITU-T**

    WA 2-1 Overview of cloud computing SDOs activities

    WA 2-2 Gap analysis & Action plan for development of relevant ITU-T Cloud Standard

Overview

- **Objective**: to collect and document information and concepts that would be helpful for developing ITU-T Recommendations to support cloud computing services/applications from a telecommunication/ICT perspective.
- **Participants:** 15 actives organizations; 7 telecom operators, vendors, universities (SG 13 and SG 17 have Leadership also in FG Cloud)
- Focus Group Cloud lifetime – active **till December 2011**
- Midterm Report was delivered to Telecommunications Standards Advisory Group [TSAG] in Feb 2011
  - TSAG is management body of the ITU-T
- FG Cloud Computing [Output]
  - The overall outcome and New recommended activities distribution among the SGs will be decided during an ITU-T Cloud Workshop to be organized before the next TSAG meeting of January 2012

Activities & Partnerships

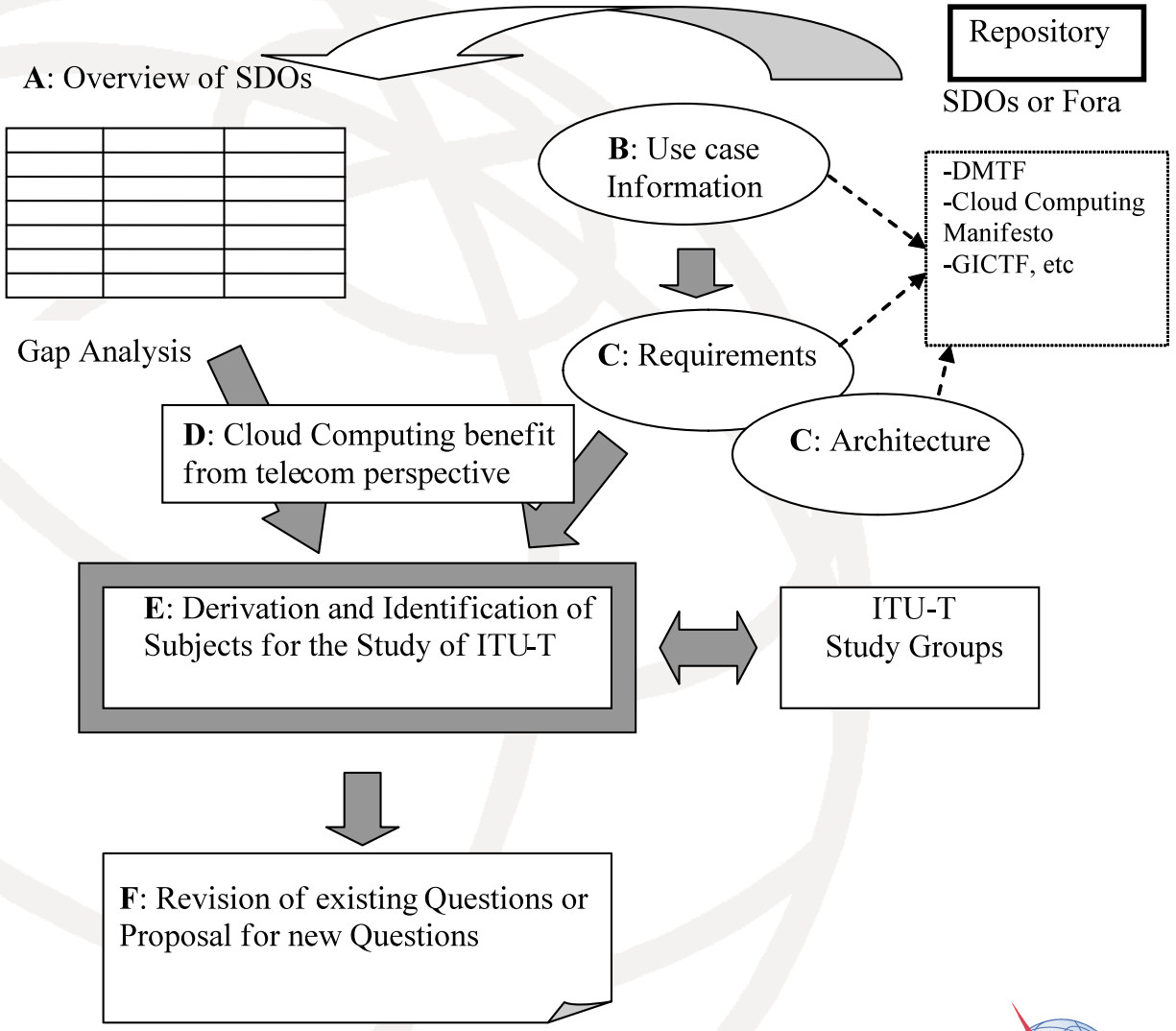
Meeting Schedule

- 1st Meeting – Geneva, Switzerland / 14-16 June 2010
  - 33 contributions
- 2nd Meeting – Geneva, Switzerland / 2-6 Sept 2010
  - 36 contributions
- 3rd Meeting – Lannion, France / 30 Nov - 3 Dec 2010
  - 56 contributions
- 4th Meeting - Nanjing, China / 10-13 Jan 2011
  - 48 contributions
- 1st Report to TSAG February 2011
- 5th Meeting – Geneva Switzerland / 5-8 April 2011
  - 65 contributions

ITU-T Cloud SDO Relationships

- ISO SC 38 DAPS
- Cloud computing Interoperability Forum (CCIF)
- Cloud Security Alliance (CSA)
- Distributed Management Task Force (DMTF)
- TMF cloud service management
- Open GRID Forum (OGF)
- Open Cloud Consortium (OCC)

Work Process



WGs / Output Documents

- **Introduction to the Cloud Ecosystem**

  Definitions, taxonomies, use cases, high level requirements and capabilities. Provide an introduction to the Cloud ecosystems, focusing on telecommunication ecosystems. The major changes include the addition of the value proposition, requirements and capabilities clauses

- **Functional Requirements and Reference Architecture**

  Functional requirement and reference architecture of cloud computing, which includes, functional entities and reference points

- **Overview of SDOs involved in Cloud Computing**

  Provide an overview of SDOs; to map the FG cloud working group and output documents to these SDOs ; to be as a base to produce a gap analysis that will result in a unique areas that can be under the ITU- purview, specifically from telecom perspective

- **Cloud Security, Threat & Requirements**

  Security Cloud is being discussed in CSA, DMTF, CloudAudit, NIST, GICTF, etc. After the observation of the existing activities, the FG Cloud tentatively identify security threats from view points of Cloud user and Cloud service provider.

- **Infrastructure and Network Enabled Cloud**

  Position existing network infrastructure capability as bundled offers combining Network and IT resources. Service providers can leverage network asset to address network availability and performance for secure end to end cloud services. Evolve network resource allocation and control to more dynamic in order to meet the needs to provision on-demand cloud services.

- **Benefits of Cloud Computing from Telecom/ICT Perspectives**

  Identify cloud benefits from telecom/ICT perspectives. Includes new input for cloud benefits from partner perspectives (in addition to service providers and users) and updated list of candidates study items to be included in the first FG cloud report to TSAG.

Identification of first Candidates for ITU-T study items

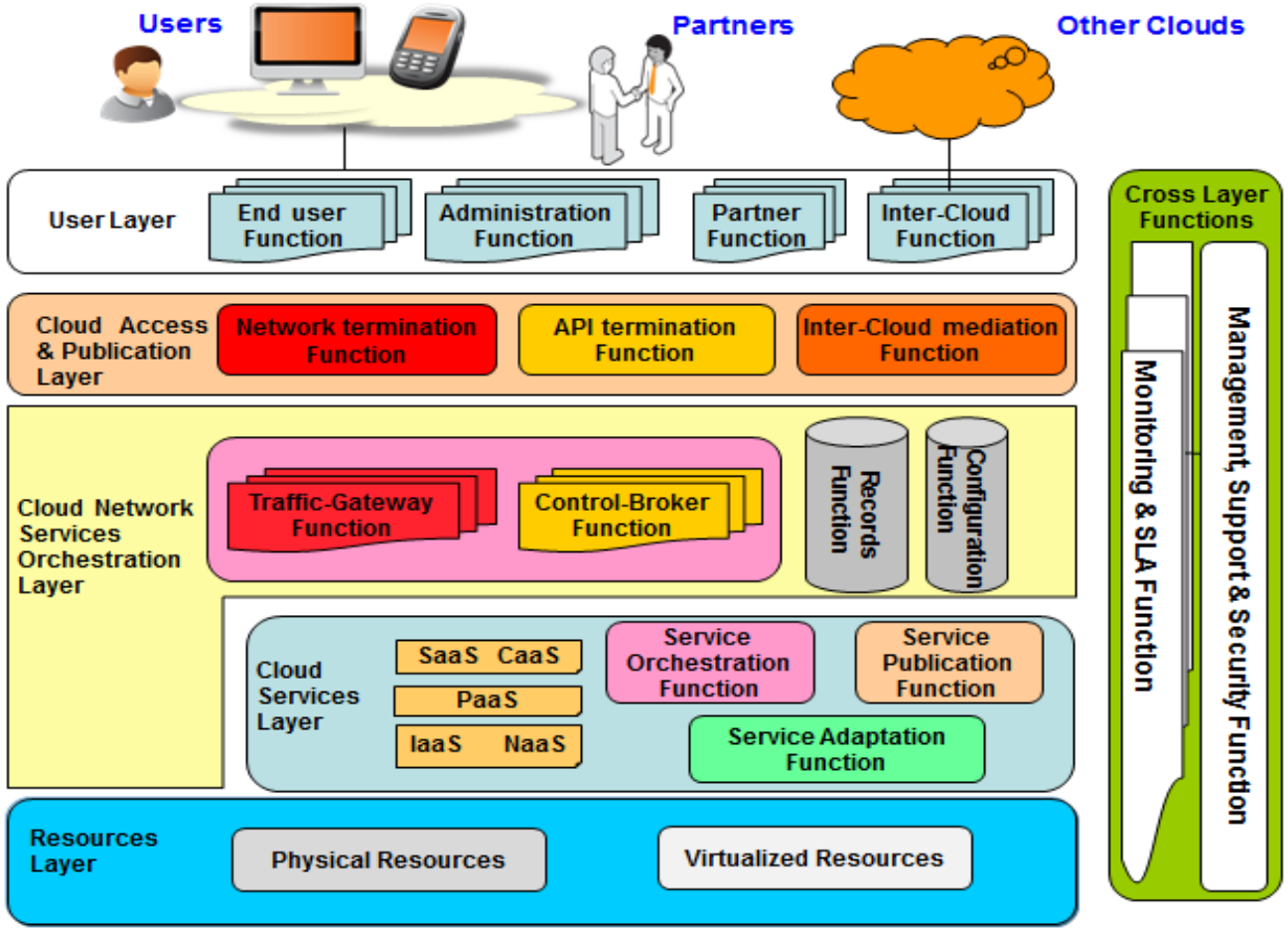
1. **Cloud Ecosystem:** telecommunication-centric use cases, requirements, business scenarios
2. **Security, audit & privacy:**
   - Security architecture/model and framework, Data location and Privacy protection
   - Security Management and Audit (including conformance to privacy laws and regulation)
3. **Cloud Architecture:** standards to guaranty a reference architecture for design, Build and Run for cloud services and resources and to avoid vertical vendor solutions lock-in.
4. **Cloud Networking :**
   - Elastic resource allocation for different cloud deployment models
   - Network Services (L4-L7) to meet on demand cloud services
5. **Inter-Cloud:** Procedures and interfaces are required for
   - Policy negotiation among multiple clouds based on the SLA of each provider
   - Discovering available cloud resources among multiple clouds
6. **Eco-friendly Cloud Computing**
   - Eco-Data centre for cloud computing, Power saving techniques
7. **Accessibility**
   - Virtual desktop terminal (DaaS); Accessibility for poorer and emerging countries, with multi-language support, Human access for seniors and people with disabilities
8. **Management and SLA:**
   - Real time provisioning and on demand usage activation,
   - Self management, metering and billing and operation policy

Why the ITU-T and Standards Overall

- Introduce Telecom cloud categories CaaS & NaaS
  - CaaS communication as a Service (Real Time communication)
  - NaaS Network as a Service (Transport/WAN and inter-cloud)
- Multiple Ecosystems – operators play in more than one
  - Private, Public, Hybrid, Telecom/Internet, Hosted, VNO
- Investment protection – more services with the same infrastructure?
- Inter-cloud, multi-vendor, multi-operator services
- Enterprises – need standards to source cloud services from more than one vendor
  - How do I migrate in-house workload to cloud without standards?
  - How do I change my CSP without overhaul?
- Service Providers – how I prevent vendor-lock-in?
  - Service Provider preference for holistic "systems approach"

Functional Cloud Reference Architecture

- First Functional architecture with new **network services orchestration layer**



(work in progress)

Next Steps

- To finalise 4 main specification documents to be shared with ITU-T SGs
  - 1- Eco-system: taxonomy, definition, use case, general requirement
  - 2- Requirements & Reference architecture
  - 3-Cloud Security
  - 4-Cloud SDO: Gap analysis

➢ FG will strengthen the partnership with other SDOs such as ISO, GICTF, DMTF, CSA, TMF, NIST..

References

Contributions, meeting agenda, and list of participants are available at
http://ifa.itu.int/t/fg/cloud/docs/1104-gva/in/

Access to documentation is restricted to TIES users or GUEST users having registered to FG Cloud mailing list. Documentation is sorted in 2 categories – Input (Cloud-I-nnnn) and Output (Cloud-O-nnnn)
http://www.itu.int/ITU-T/edh/faqs-guest.html

FG Cloud Web Site
http://www.itu.int/ITU-T/focusgroups/cloud/

Annex

ITU-T Positioning