

# International standardization of Cloud Computing

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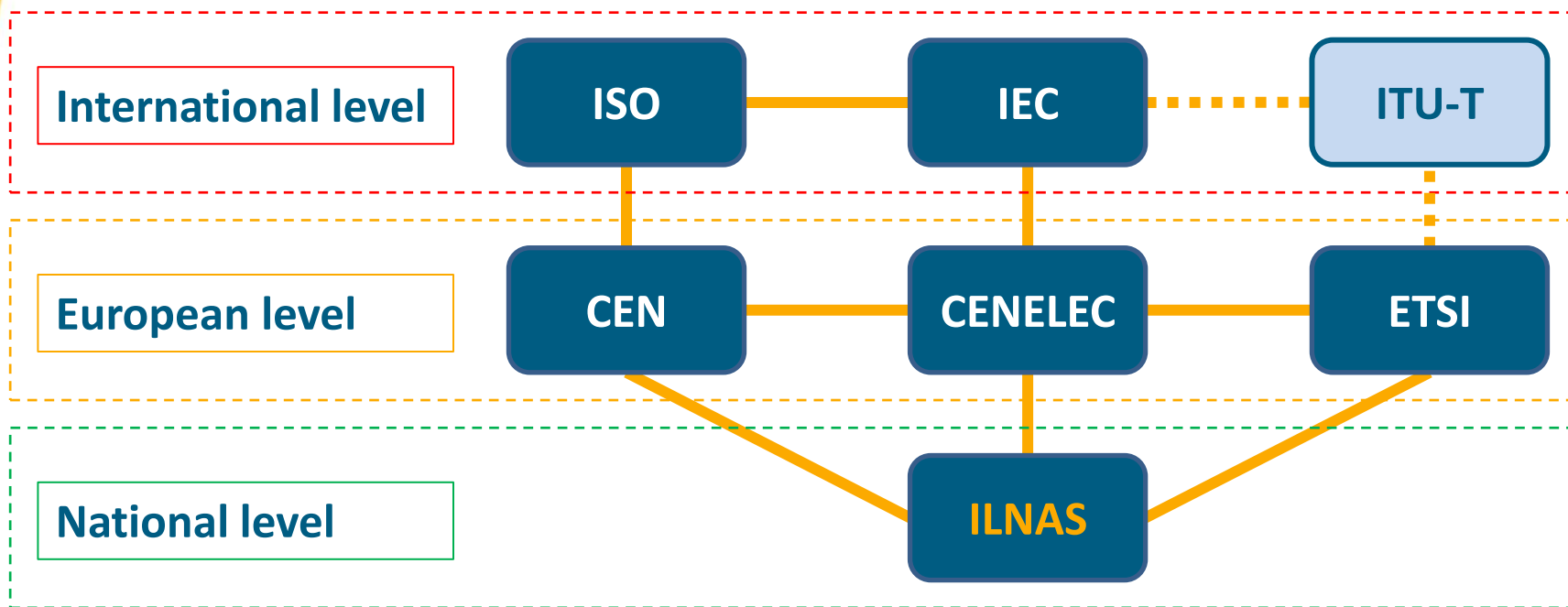
## Summary

- ▶ Standardization organizations
- ▶ Cloud computing in a nutshell
- ▶ ISO/IEC JTC 1/SC 38
- ▶ ITU-T: Study Group 13
- ▶ Other active organizations in cloud computing standardization

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## Interactions between the Standardization Organizations



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## Definition and overview (1/2)

▶ **Definition:**

- “Paradigm for enabling [ubiquitous, convenient, on-demand] network access to a shared pool of configurable **cloud resources** accessed through **services** that can be rapidly provisioned and released with minimal management effort or service provider interaction.”

*[ISO/IEC CD 17788, Cloud Computing -- Overview and Vocabulary]*

▶ **Key characteristics:**

- On-demand self-service
- Broad network access
- Resource pooling
- Rapid elasticity and scalability
- Measured services

## Definition and overview (2/2)

### ▶ Cloud services models:

- Software as a Service (SaaS)
- Platform as a Service (PaaS)
- Infrastructure as a Service (IaaS)

- *Communication as a Service (CaaS)*
- *Network as a Service (NaaS)*



ITU-T

### ▶ Cloud deployment models

- Private cloud
- Community cloud
- Public cloud
- Hybrid cloud

## Threats and requirements

### ▶ Threats for cloud users:

- **Lack of security Information** (data location, backup system, disaster recovery...)
- **Data loss and leakage** (encryption, authentication key...)
- **Loss of Account/Service management ID** (Attack phishing, fraud..)

### ▶ Requirements for services providers:

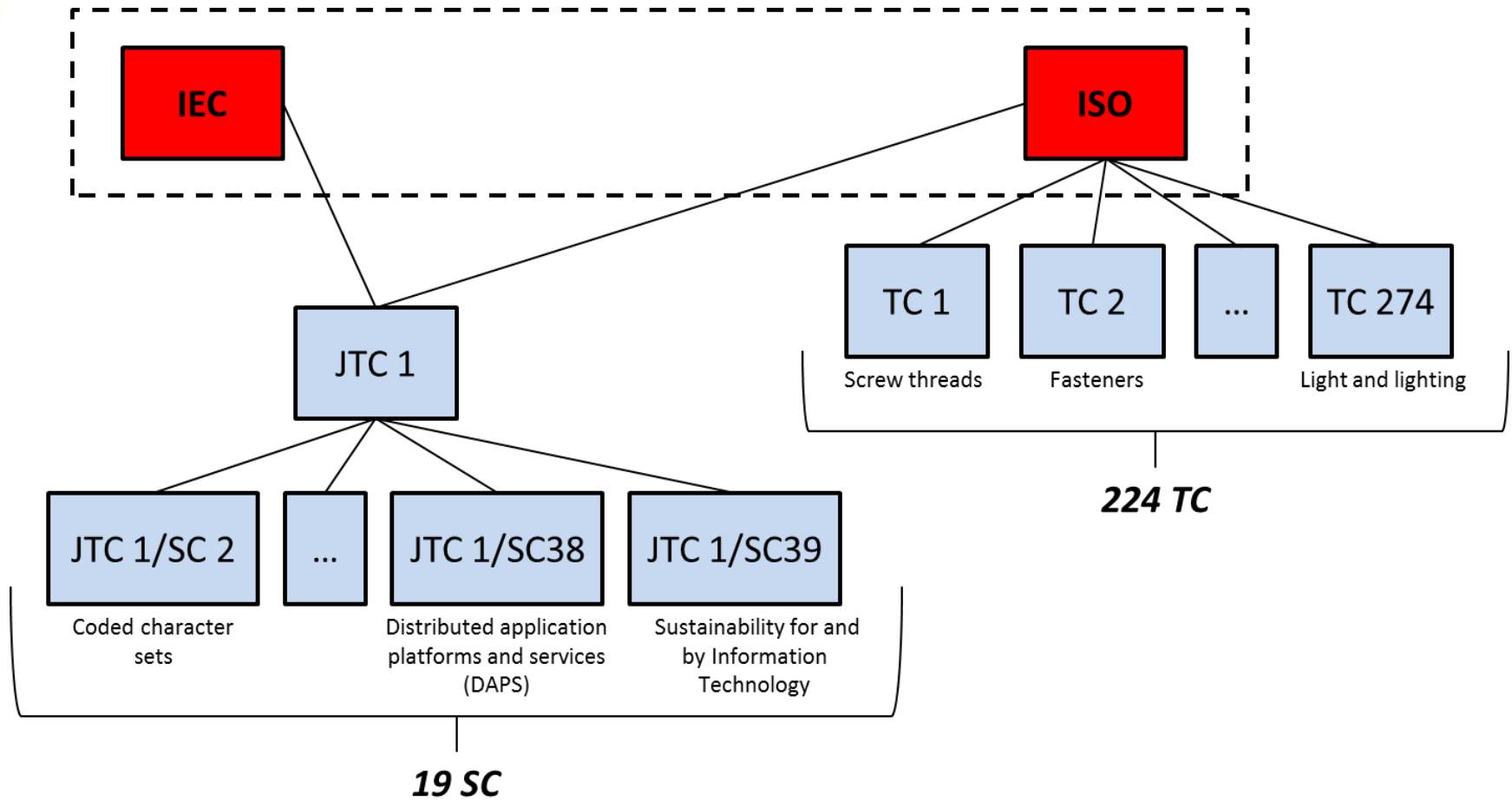
- **Trust in cloud providers:** high security level shall be provided
- **Confidentiality/integrity of data** against loss or leakage shall be required
- **Data Portability**, the capability to change Cloud Service Provider shall be provided



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## ISO/IEC JTC 1



## ISO/IEC JTC 1/SC 38: Distributed application platforms and services (DAPS)

### ▶ General information:

- Creation date: 2009
- Secretariat: ANSI (USA)
- Secretary: Ms. Marisa Peacock
- Chairperson: Dr. Donald Deutsch
- 25 participating countries (**Luxembourg**)
- 9 observing countries

### ▶ At the national level:

- Chairperson : Mr. Jürgen Blum (CETREL S.A.)

### ▶ Standardization work:

- 8 published standards (3 new standards published in 2012)
- 5 standards under development

## ISO/IEC JTC 1/SC 38 - Scope and structure

▶ Scope:

- Standardization for interoperable Distributed Application Platforms and Services including: Web Services, Service Oriented Architecture (SOA), **Cloud Computing**

▶ Structure:

- WG 1: Web services
- WG 2: Service Oriented Architecture (SOA)
- **WG 3: Cloud Computing**

## ISO/IEC JTC 1/SC 38/WG 3: Cloud Computing

▶ Scope:

- Identify, develop, and maintain JTC 1 deliverables initially in the field of **Cloud Computing Reference Architecture and Terms and Definitions**
- **Evaluation and development of new work**
- Support SC 38 goals and respond to requests pertaining to Cloud Computing initiated by SC 38, JTC 1 and external Liaison organizations
- Liaise and collaborate with SDOs and *consortia* related to Cloud Computing as appropriate

## ISO/IEC JTC 1/SC 38/WG 3 – Standardization Work

### ▶ Published standard

- ISO/IEC 17826:2012, Information technology -- Cloud Data Management Interface (CDMI)

### ▶ Projects under development:

- ISO/IEC CD 17788, Information Technology -- Cloud Computing -- Overview and Vocabulary
- ISO/IEC WD 17789, Information Technology -- Cloud Computing -- Reference Architecture

### ▶ New Work Item Proposal (NWIP)

- Information Technology -- Cloud Computing -- Cloud Service Level Agreement (SLA) framework and terminology
- Information Technology -- Cloud Computing -- Cloud Service Delivery Principles (SDP)

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## ITU-T/SG 13: Future networks including cloud computing, mobile and next-generation networks

### ▶ Scope:

- Studies relating to the requirements, architectures, capabilities and mechanisms of future networks including studies relating to service awareness, data awareness, environmental awareness and socio-economic awareness of future networks
- **Responsible for studies relating to cloud computing technologies such as virtualization, resource management, reliability and security**
- Responsible for studies relating to network aspects of IoT and network aspects of mobile telecommunication networks, including International Mobile Telecommunications (IMT) and IMT-Advanced, wireless Internet, mobility management, mobile multimedia network functions, internetworking and enhancements to existing ITU-T Recommendations on IMT
- Responsible for studies relating to NGN/IPTV enhancements, including requirements, capabilities, architectures and implementation scenarios, deployment models, and coordination across Study Groups



## ITU-T/SG 13: Future networks including cloud computing, mobile and next-generation networks

### ▶ Structure:

- WP 1: NGN-e and IMT
  
- **WP 2: Cloud Computing and Common Capabilities**
  - Q17/13: Cloud computing ecosystem, general requirements, and capabilities
  - Q18/13: Cloud functional architecture, infrastructure and networking
  - Q19/13: End-to-end Cloud computing service and resource management
  
- WP 3: SDN and Networks of Future

### ▶ Standardization work:

- 9 standards under development in the field of cloud computing

## ITU-T/SG 13/WP 2 – Standardization Work

### ▶ Projects under development:

#### ▶ Q17/13

- Y.3501, Cloud computing framework and high-level requirements
- Y.ccdef, Cloud computing definition and vocabulary
- Y.Cloud-SIDE-Reqts, High level requirements and capabilities for cloud enabled service environment
- Y.daas, Requirement and reference architecture of desktop as a service

#### ▶ Q18/13

- Y.3510, Cloud computing infrastructure requirements
- Y.ccic, Framework of inter-cloud for network and infrastructure
- Y.ccrs, Cloud computing reference architecture

#### ▶ Q19/13

- Y.3520, Cloud computing framework for end to end resource management
- Y.VNC, Resource control and management for virtual networks for cloud services (VNCs)

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## International and European Standardization Organizations

Standardization Organization	Scope
ISO/IEC JTC 1/SC 27 - IT Security techniques	Security aspects
ITU-T/SG 17 - Security	
ETSI - European Telecommunications Standards Institute	Cloud Services SLA

## ***Fora & Consortia***

<i><b>Fora &amp; Consortia</b></i>	<b>Scope</b>
DMTF – Distributed Management Task Force	APIs for managing cloud resources
SNIA - Storage Networking Industry Association	
OGF – Open Grid Forum	APIs for cloud storage
GICTF - Global Inter-Cloud Technology Forum	Inter-Cloud
TM Forum – TeleManagement Forum	Cloud Services E2E SLA
OASIS - Organization for the Advancement of Structured Information Standards	Identity in the Cloud
CSA - Cloud Security Alliance	Security aspects
NIST - National Institute of Standards and Technology	Definition, Ecosystem , Network, Access & Architectures
IETF - Network & Real Time Communication protocols	
IEEE - Institute of Electrical and Electronics Engineers	
ATIS	

## CONCLUSION

- Cloud Computing has become one of the key concept in the ICT sector
- Emerging market and ecosystem
- Many active standardization organizations/*fora & consortia*
- A need for standards to address threats and requirements
- A need for international standards to define a common language
- **A need for national experts to represent national stakeholders interests**

# Thank you for your attention

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