

ITU-TRCSL Symposium on Cloud Computing

(28-30 July 2015 Colombo Sri Lanka)

Architecture, Management, Cloud Interoperability, Security



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Outline

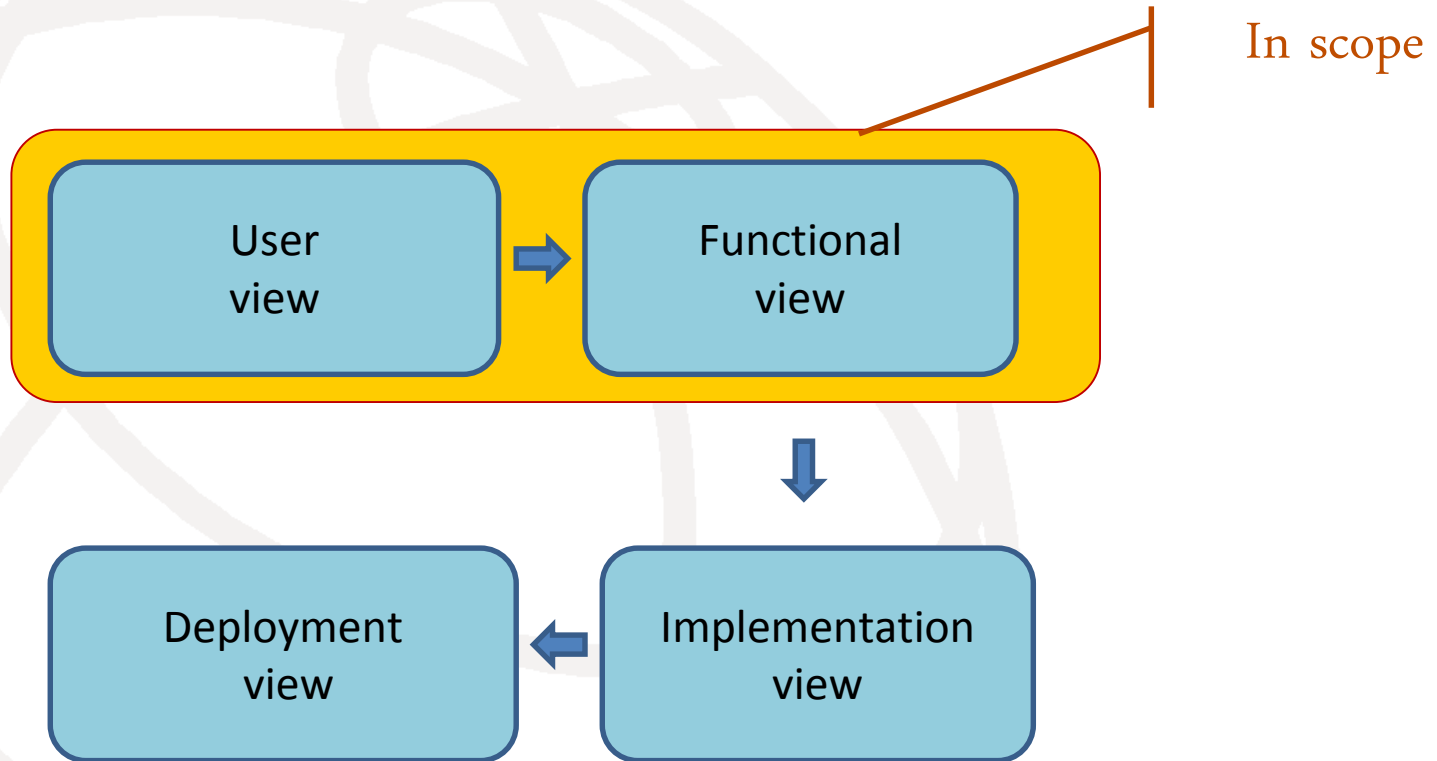
1. Cloud Functional Reference Architecture
2. Inter-Cloud and Cloud Management
3. Security of Cloud Computing



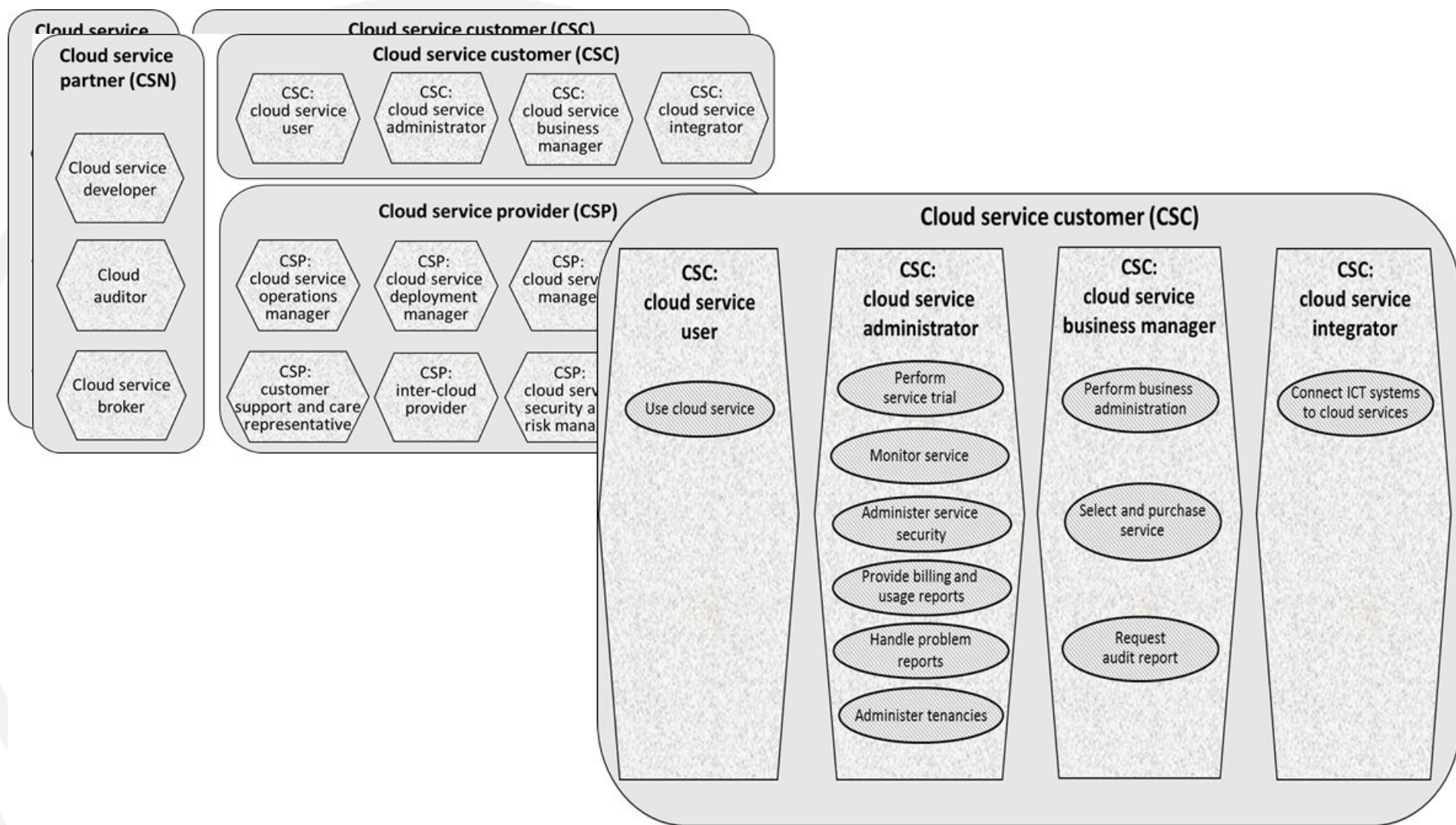
1

Cloud Functional Reference Architecture

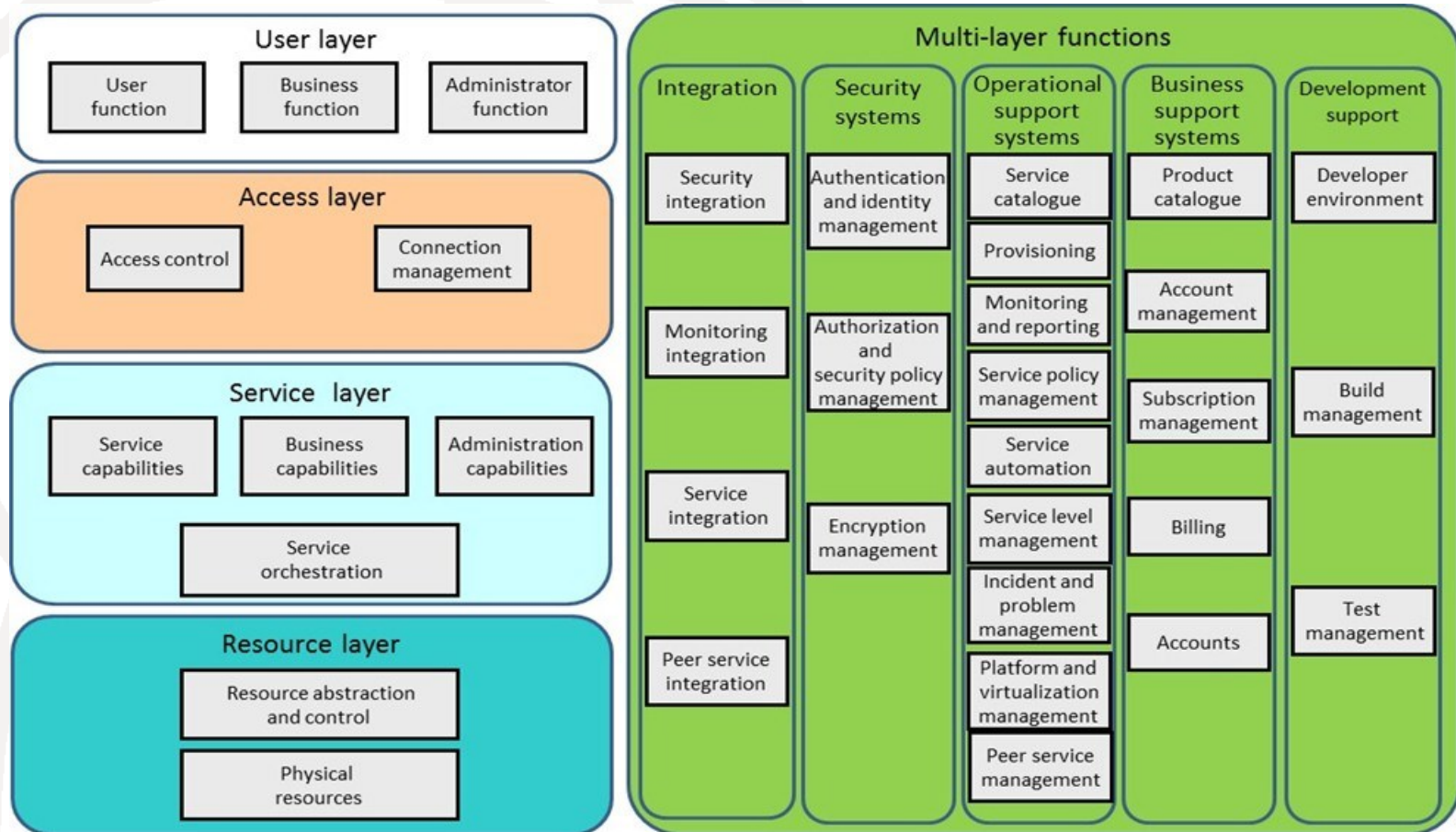
CCRA architectural views (Y.3502)



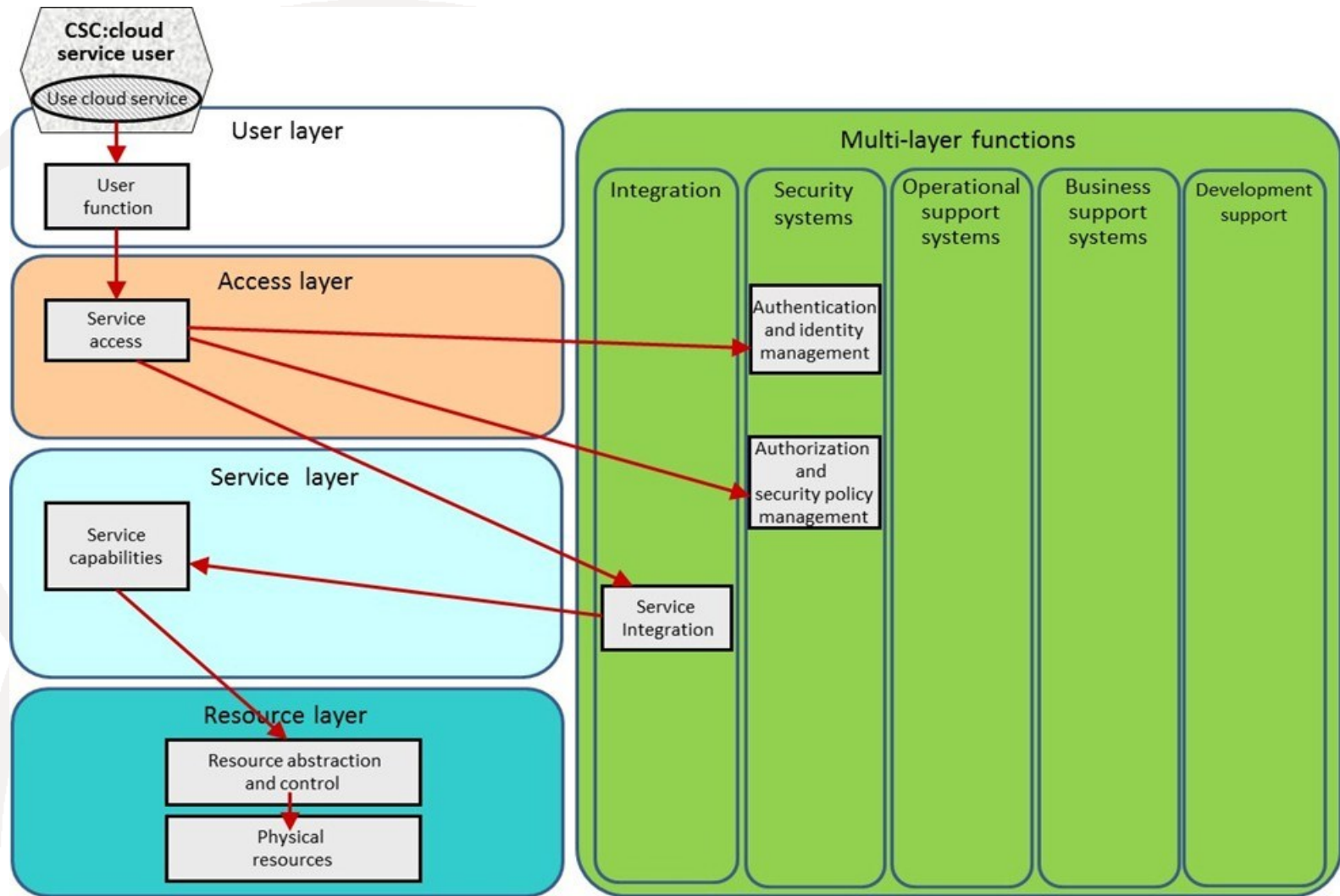
CCRA user view (activities)



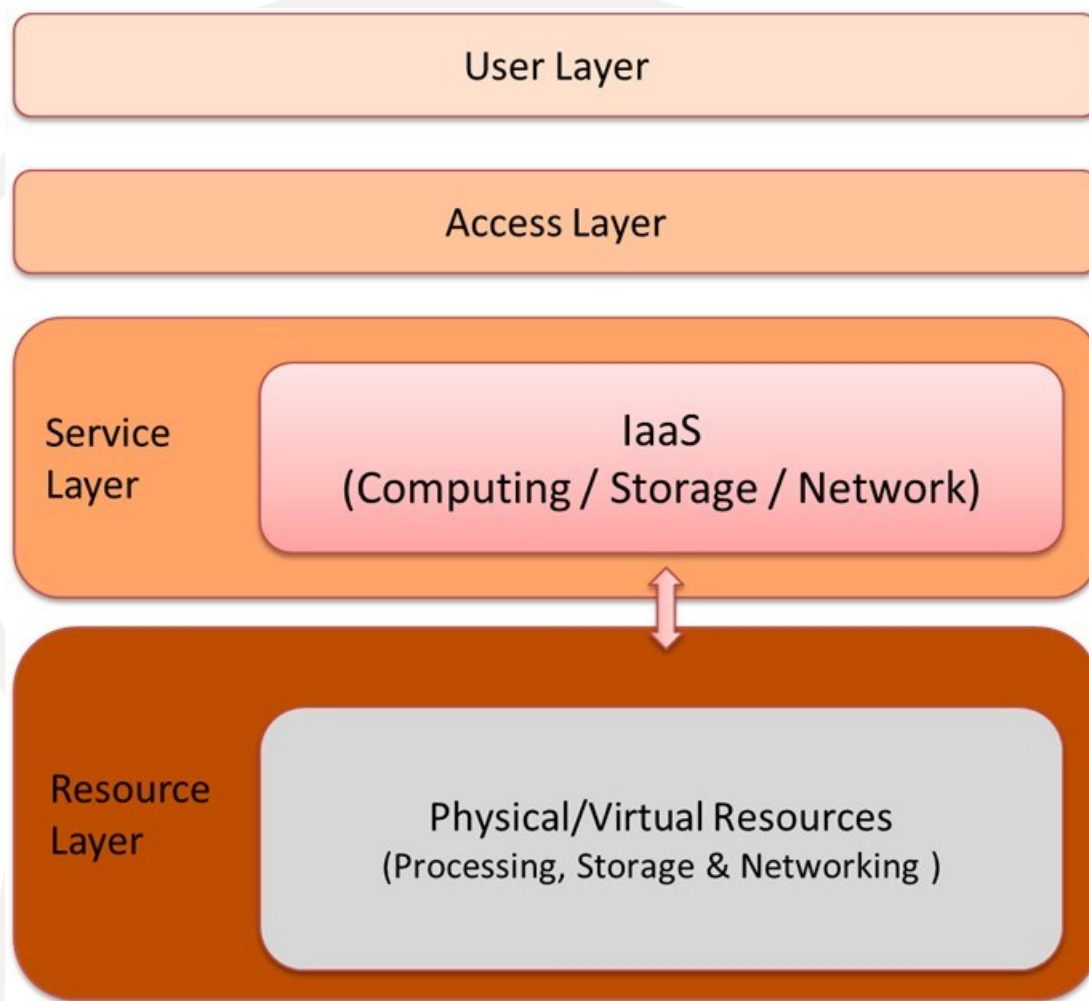
CCRA functional view- functional architecture/ -components



User/ Functional View Relationship



Infrastructure as a Service (Y.3513)



■ **computing service functions** allow CSC to provision and use processing resources.

■ **storage service functions** allow CSC to use storage resources..

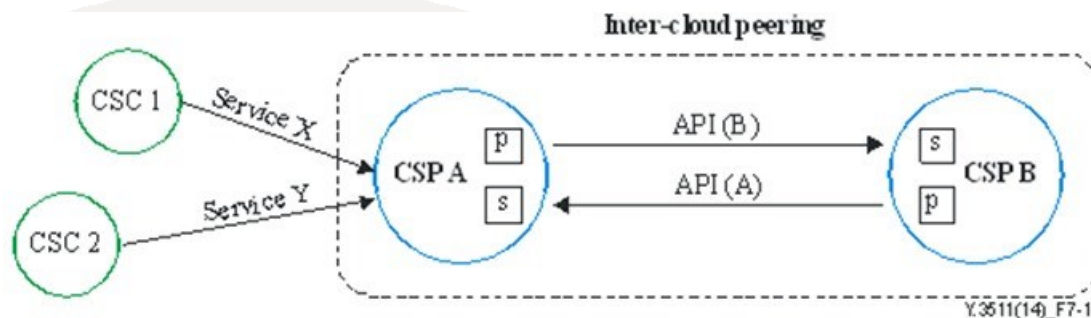
■ **network service functions** allow CSC to use networking resources.

A background graphic consisting of several overlapping, light gray circles of varying sizes, creating a complex, web-like pattern.

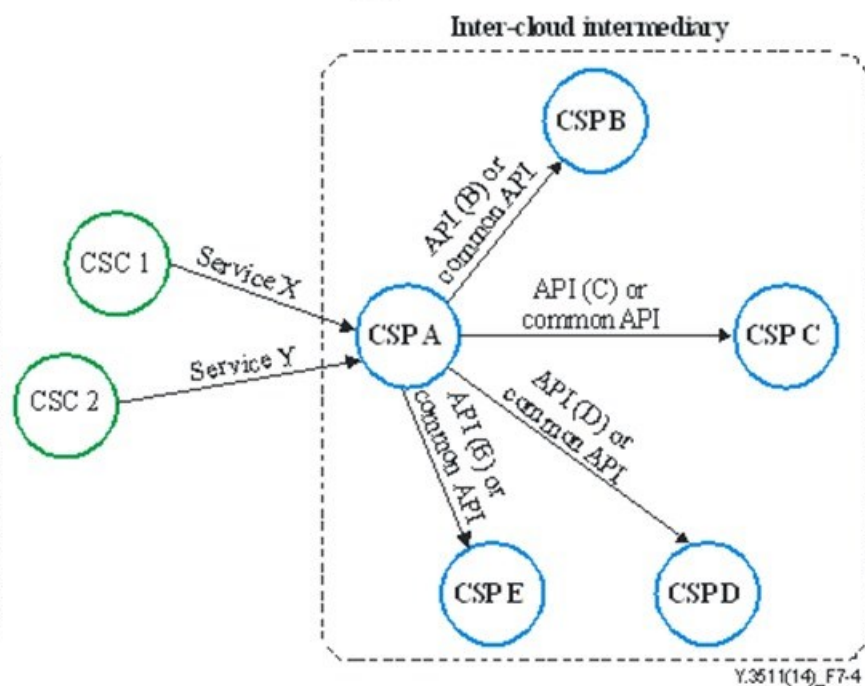
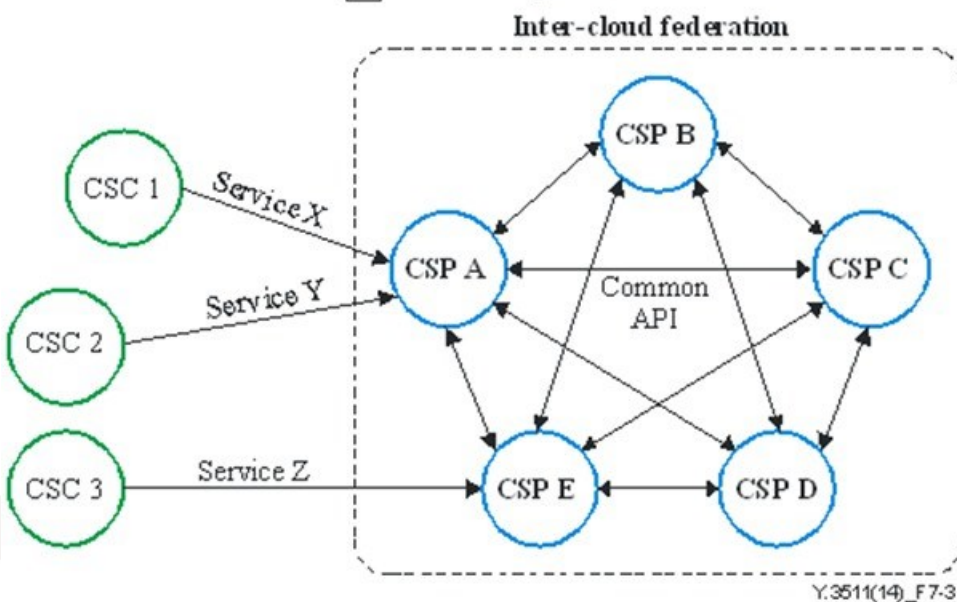
2

Inter-Cloud and Cloud Management

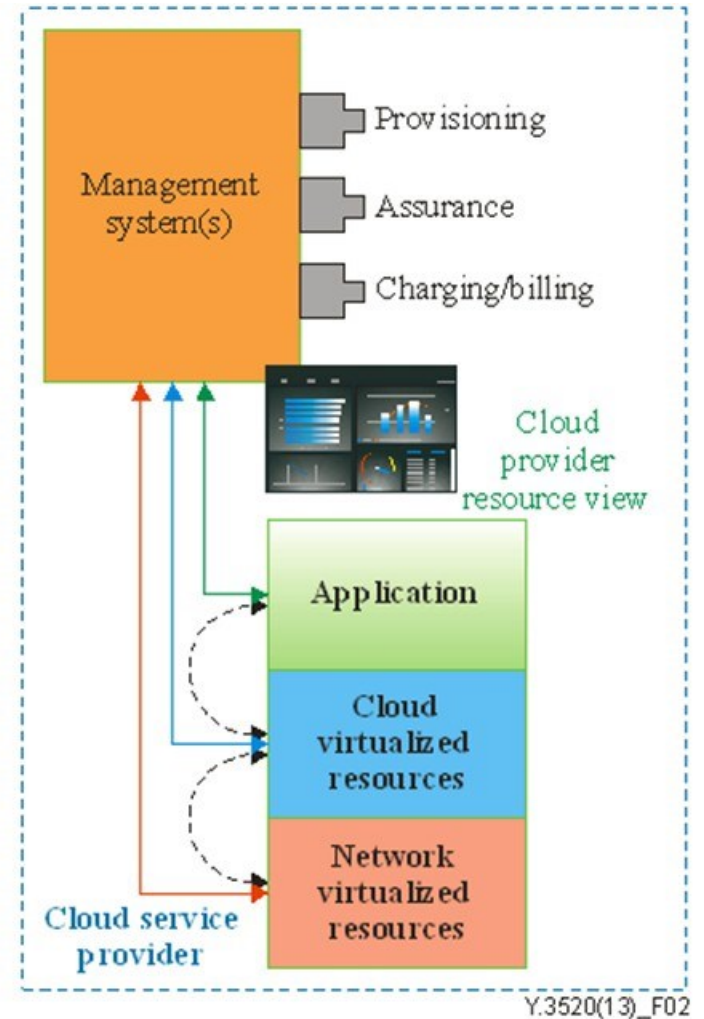
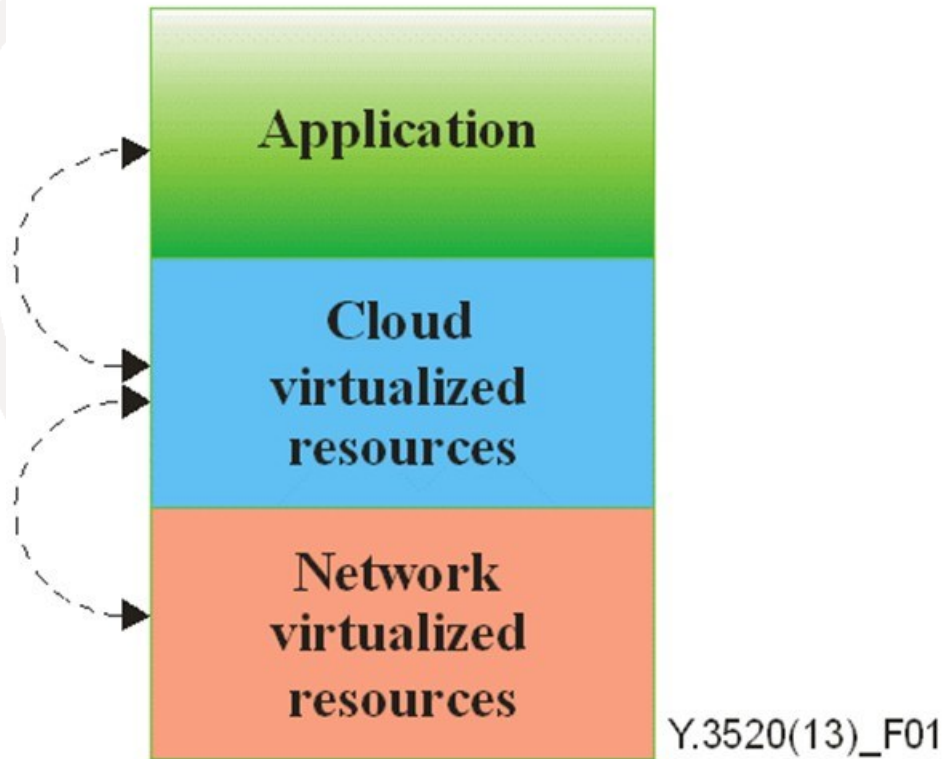
Inter Cloud Computing (Y.3511)



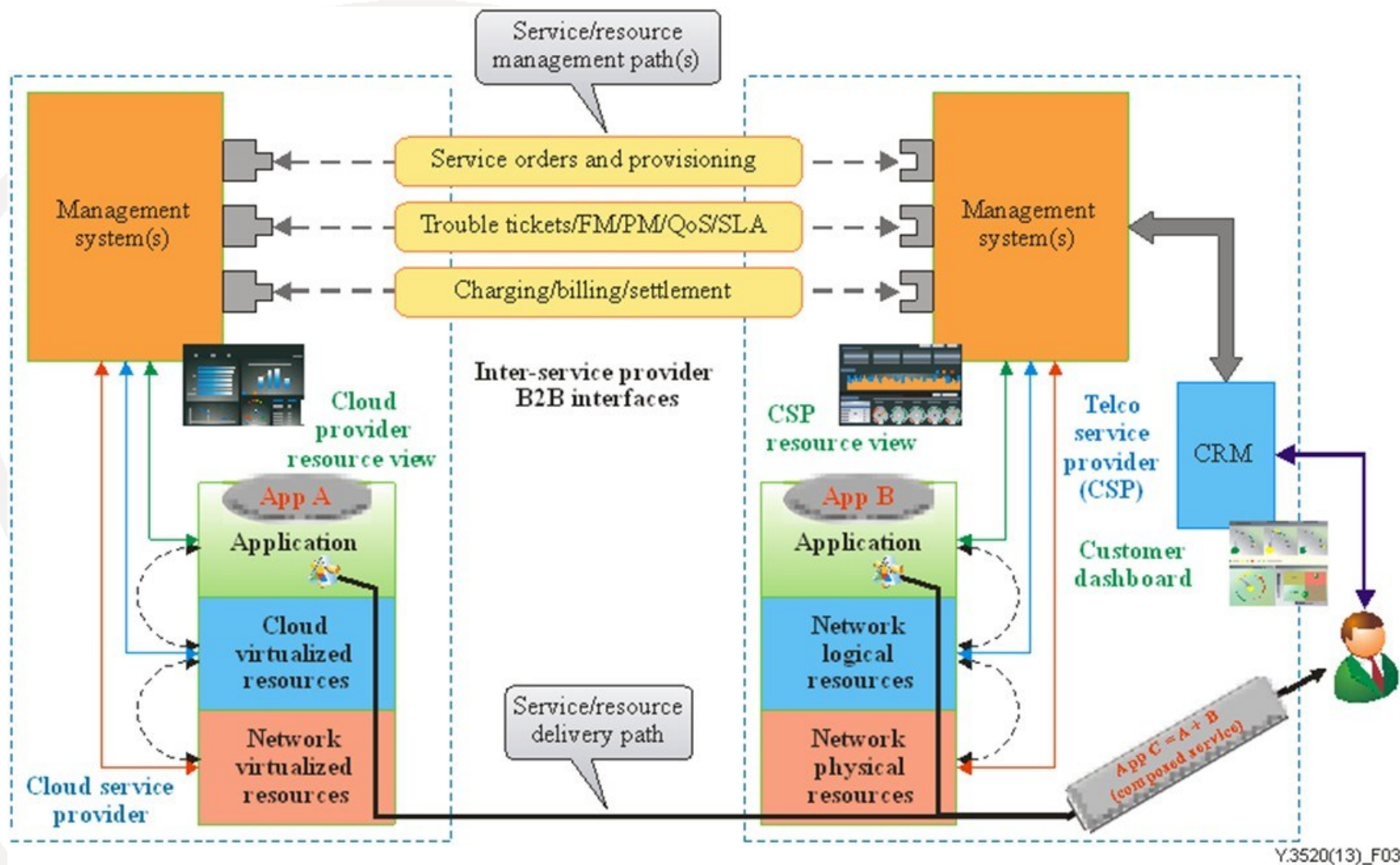
p Primary CSP
s Secondary CSP



Multi Cloud Management



Inter Cloud Computing (Y.3511)





3

Security of Cloud Computing

SG17 Structure

| | |
|---|--|
| WP1: Fundamental security | Q1: Telecommunication/ICT security coordination |
| | Q2: Security architecture and framework |
| | Q3: Telecommunication information security management |
| WP2: Network and information security | Q4: Cybersecurity |
| | Q5: Countering spam by technical means |
| WP3: Identity management and cloud computing security | Q8: Cloud computing security |
| | Q10: Identity management architecture and mechanisms |
| WP4: Application security | Q6: Security aspects of ubiquitous telecommunication services |
| | Q7: Secure application services |
| | Q9: Telebiometrics |
| WP5: Formal languages | Q11: Generic technologies to support secure applications |
| | Q12: Formal languages for telecommunication software and testing |

Cloud Security related Questions

1. Security architecture/model and framework

2. Security management and audit technology **Q3/17**

3. BCP/disaster recovery and storage security

4. Data and privacy protection

5. Account/identity management **Q10/17**

6. Network monitoring and incidence response **Q4/17**

7. Network security

8. Interoperability security

9. Service portability **Q8/17**

Management

CyberSecurity

(Main)cloud

IdM/Bio

Cloud Security Work Items

X.1601: Security framework for cloud computing

Published
in 2014.1

X.cc-control: Information technology – Security techniques – Code of practice for information security controls for cloud computing services based on ISO/IEC 27002

Common
text with
ISO/IEC

X.sfcse: Security functional requirements for SaaS application environment

X.goscc: Guideline of operational security for cloud computing

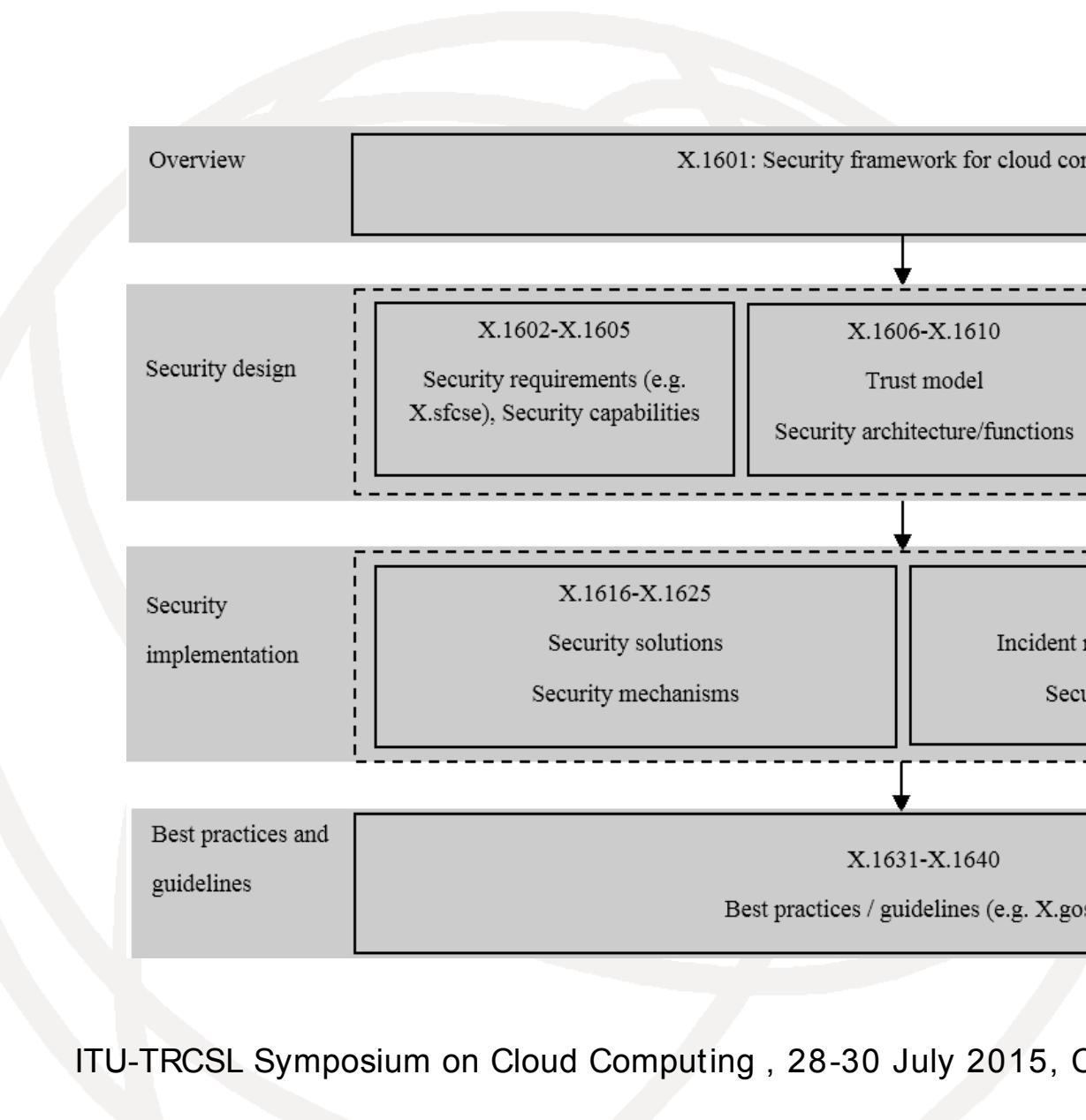
X.Idmcc: Requirement of IdM in cloud computing

X.CSCdataSec: Guidelines for cloud service customer data security

Established
work item
in 2014-09
SG17
meeting

The diagram illustrates the ITU-T X.1600 series structure for cloud computing security, organized into four main horizontal sections connected by downward arrows:

- Overview:** X.1601: Security framework for cloud computing
- Security design:**
 - X.1602-X.1605: Security requirements (e.g. X.sfcse), Security capabilities
 - X.1606-X.1610: Trust model, Security architecture/functions
- Security implementation:**
 - X.1616-X.1625: Security solutions, Security mechanisms
 - Incident response, Security
- Best practices and guidelines:** X.1631-X.1640: Best practices / guidelines (e.g. X.goc)



Conclusion

1. Cloud Functional Reference Architecture
 - Chart of functionalities and their dependency
 - Layers and transversal aspects
2. Inter-Cloud and Cloud Management
 - 3 modes of federation
 - Cross-management
3. Security of Cloud Computing
 - major standard: X.1601
 - new standard: ISO/IEC JTC1 27017

Thank you!

