

NGOSS in the Converged World

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Laboratories



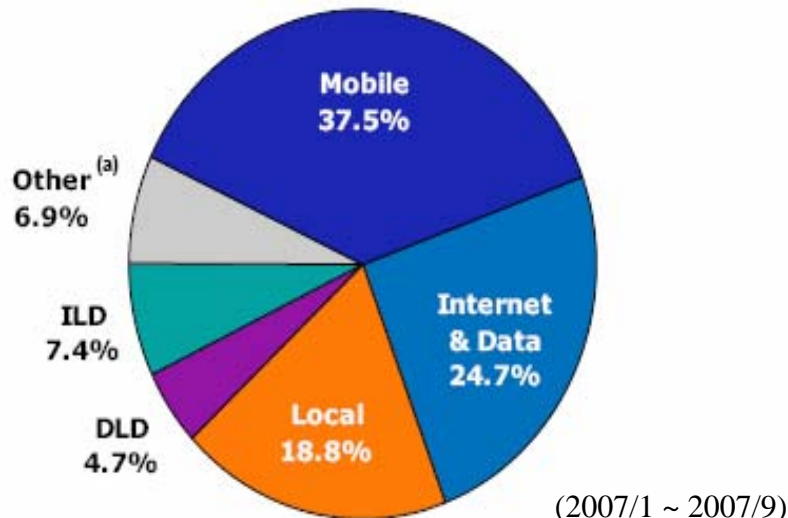
Outline

- ➡ About Chunghwa Telecom
- ➡ Coming Converged World
- ➡ New Generation OSS/BSS for Converged World
- ➡ CHT NGOSS Program

Chunghwa Telecom Overview

Market Leader in Mobile Communication, Internet and Data and Fixed-line Services

Revenue Breakdown



Total Revenue: NT\$148.5 bn

Source: Company data, MOTC, and NCC statistics

a) Other revenue includes revenues from handset sales of CHT and Senao, paging, satellite, and billing handling services, etc.

b) Includes 2G, 3G and PHS

c) Only includes 2G, 3G not included

Integrated Services Provider with Dominant Market Positions

- Mobile
 - #1 Mobile subscribers
 - 36.1% market share^(b) (8.7 mm subs)
 - #1 2G revenue
 - 34.9% market share^(c)
- Internet and Data
 - #1 ISP subscribers
 - 61.8% market share (4.07 mm subs)
 - #1 Broadband access (ADSL)
 - 82.7% market share (3.8 mm subs)
- Fixed-line
 - #1 Local subscribers
 - 97.4% share (13 mm subs)
 - #1 DLD minutes
 - 86.6% share by minutes
 - #1 ILD minutes
 - 62.1% share by minutes

Telecom Service Convergence

Opportunities to Change the Way We Live, Work, Learn, and Play



Multiple Screens Integration

Online Content

Multimedia Forum

High-Speed Internet

Project Collaboration

Multimedia Student Community

Video Conferencing

Multimedia Social Camp

Virtual Learning

FOX 5 NEWS 5 PM
 WEDNESDAY, MARCH 11, 2014

NEWS
 Sen. Jeremy C. Steyer P...
 Clash on Tammy B...
 Jarrett Troupe Resumes S...

ENTERTAINMENT
 'Odd Couple' Star Tony...
 Elton's Cannes Reprise...
 Jazz Drummer Chirp Ray...

WEATHER 5 Day Forecast
 Sun 70° 75°
 Mon 70° 77°
 Tues 67° 80°
 Wed 67° 80°
 Thurs 67° 80°
 Fri 67° 80°

FINANCE
 S&P 500 1091.49
 NASDAQ 1897.82
 DOW 1949.51
 As of 3:15 p.m.

5 at 5
 Customers 739

LIVE
 [Video of a group of people]

SELECT
 DELETE
 UPDATE
 INSERT
 NEW

SUBJECT	
NAME	DATE
John K. Fish	11/20/00
Billy T. Long	11/20/00
Karen V. Dear	11/18/00
Bob Grey	11/19/00
Lissa Proctor	11/18/00

[illegible]

Data

Voice

Video



At Work, At Home, On The Move

Convergence at CHT



中華電信
Chunghwa Telecom Co., Ltd.

Deliver IPTV to 1 million customers

Home health care

Home control and security

FTTx

FTTH/FTTB/FTTN

3.5G HSDPA

Residential application with IPv6

ISP

Personal

Mobile

3.5G

HOME

PSTN

Business

ADSL

Datacomm

VoBB application – IPPBX

M – enterprise

Converged services

入口網站 (Web Portal)

通訊錄 (Phonebook)

VOBB 電子名片 (Caller's Note)

位置資訊 (Location Info)

使用記錄 (User Log)

分享空間 (Sharing Space)

一點就通 (Click to Dial)

一點就傳 (Click to Send IM)

一點就發 (Click to Send SMS)

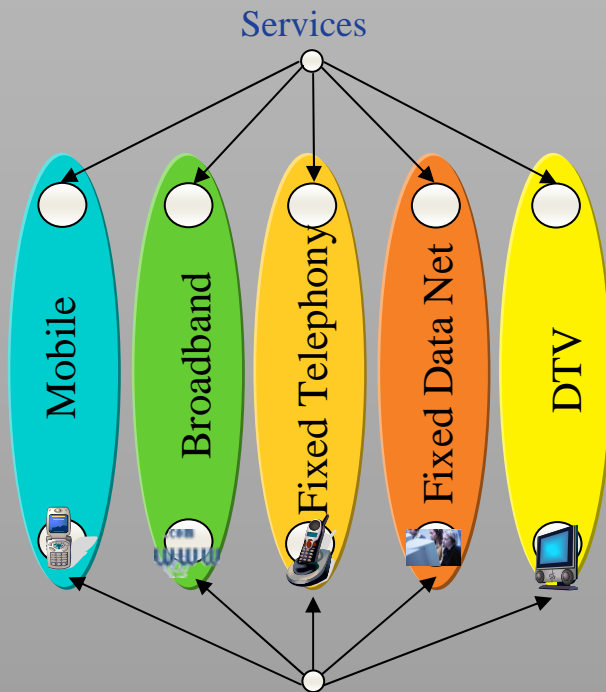


中華電信股份有限公司
Chunghwa Telecom Co., Ltd.

Network Evolution

Legacy

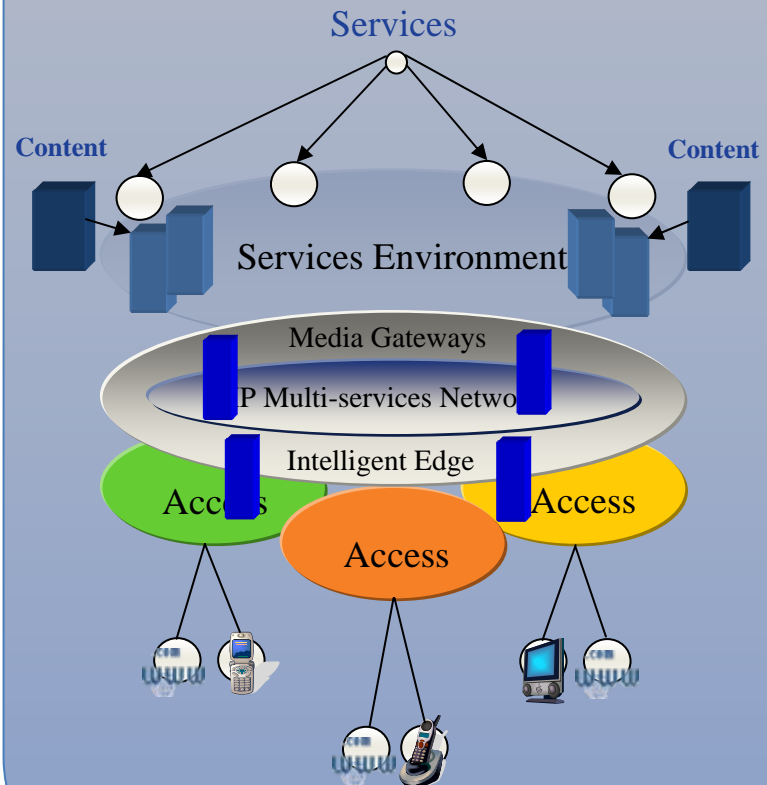
Vertical Networks (single service)



Transport, Switching & Access Networks

NGN

Horizontal Networks (multi-services)



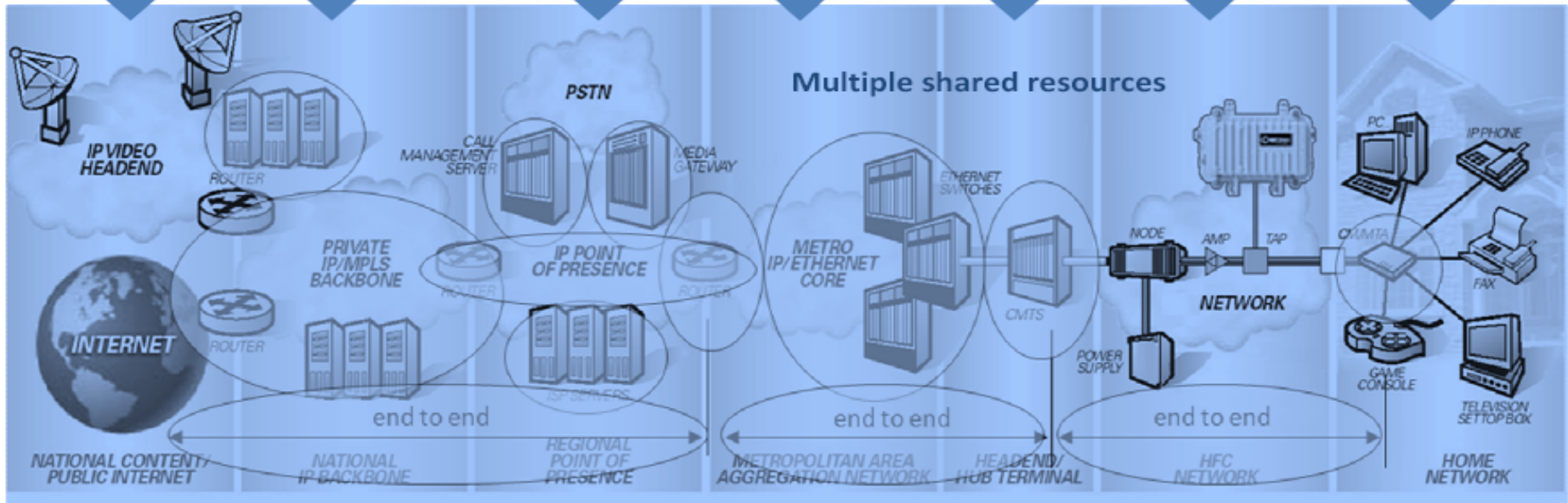
Device/ Infrastructure Evolution

Infrastructure

1. IP network expansion from network core → access plane
2. SDP, FMC, SOA and IMS

Converged Subscriber-Centric Environments

Multi-domain, multi-service and converged infrastructure



Facing Challenges

➔ Group Strategy

- + Merge, Alliance, Affiliated with Diversities...
- + Internal Adjustment

➔ Personalized Service

- + Communication → Information → Entertainment → Advertising
- + Web 2.0: Participation, Interaction, Sharing, Freedom

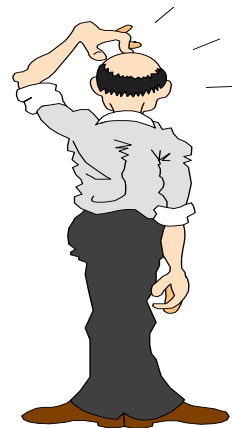
➔ Enterprise Service

- + ICT enabled bundle and blended services

➔ NGN/IMS Evolution

➔ Multiple Resources Management

- + Optical, Network Equipment, CPE, Content, IT Server, etc.



Speed, Flexibility, Adaptability to CHANGE



Carrier's Workflow Nowadays



**Thousands Workflows
Thousands Applications
Continuously Changed Workflows
→ Too Complex To Manage**

Carrier's Operations Nowadays

➡ OSS are built for **Different Service Types** or **Different Organizations**

- ➡ Many systems support the same AP

- ➡ Some are with low OSS function support level

➡ System **Interfaces** are too complicate to integrate

➡ OSS function areas and operational workflows **can not** be reconciled

Telecom Transformation

TOMORROW: Customer Centric Operational Model



TODAY: Network Centric Operational Model



service



Customer



Organization

Process



IT System



Network



Operations Trend

Service management:

- Repaid creations for new services
- Reduce cost and cycle time to translate ideas to market offerings
- Adapt swiftly to market changes and customer preferences

Network management

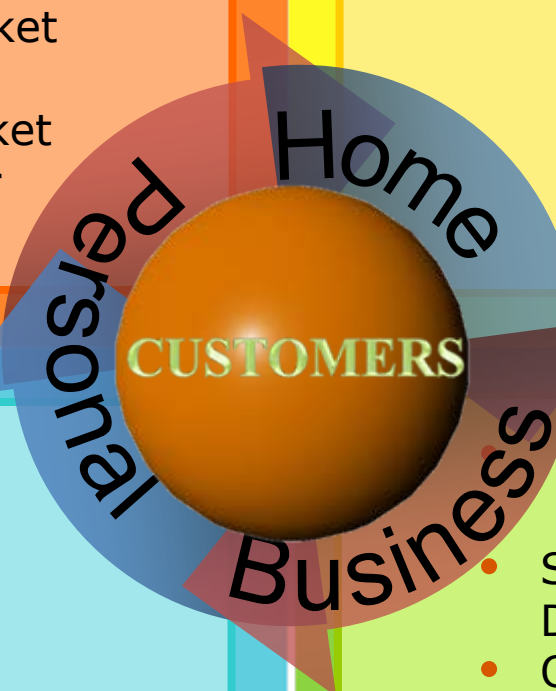
- Integrated Multi-domain & Multi-technology Management
 - Remote CPE Management
 - Proactive Monitoring
 - Cross-domain event correlation and root cause analysis

Billing management

- Real-time Charging
- Convergent Billing
- Pre/Post Payment
- Bundle Discount
- Revenue Assurance Management
- Electronic Bill Presentment and Payment

Quality management

- Service Problem Diagnosis and Resolution
- QoS Management
- QoE Management
- SLA Management



Fulfillment: Rapid Provision of New Services

The Challenge

Many Application
Many CPEs
Many Networks
Many Vendors

X

Many Creation Flows
Many Modification Flows
Many Deletion Flows

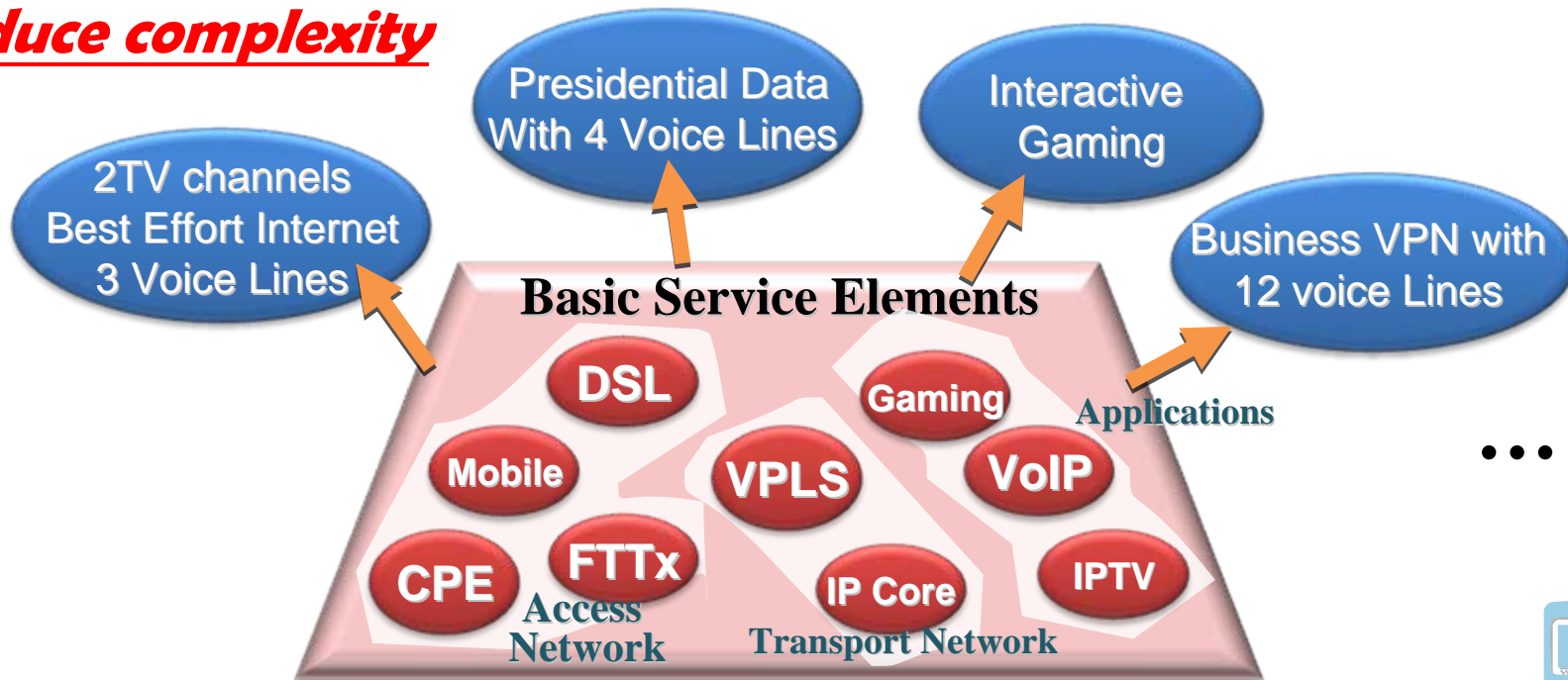
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Many Services
Many Bundles

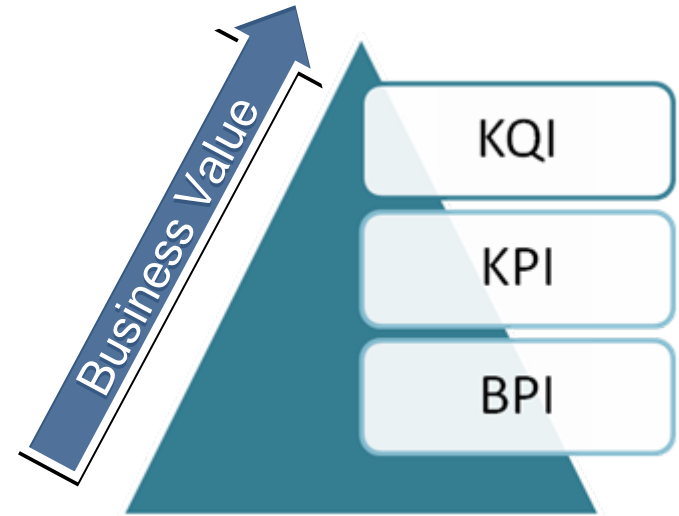
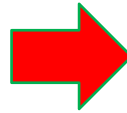
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- *A Massive Number of Fragile Custom Processes*
- *Maintenance Nightmare and Inhibit the Creation of new bundles*

Reduce complexity



Assurance: Guaranteed Service Quality



Service performance OAM
Service Availability
Site-site& user/subscriber reach ability
Application & server performance

Availability (P,PE,UNI)
Ingress/Egress traffic (UNI,VLAN,COS)
In Profile/Out profile traffic
Inter-site reach ability
Utilization forecast

Core network hardware
CPU, Memory, Buffers

Billing: Real-time & Bundling

Reduce / eliminate credit exposure

- Credit-bearer Model for content
- RT and NRT view of roaming receivables/payables
- Cost-controlled postpaid

Improved revenue assurance

- Eliminate multi-step processing, multiple leakage points
- Reduce operational cost of revenue assurance



Emphasis on bundling and promotions



Real-time operations are becoming the norm



Convergence is here to stay



More innovative revenue share models

Cater to the "NOW" generation

- Instant gratification, ephemeral loyalty
- Capture the moment of opportunity
- "communal" interactivity

Service the "service factory"

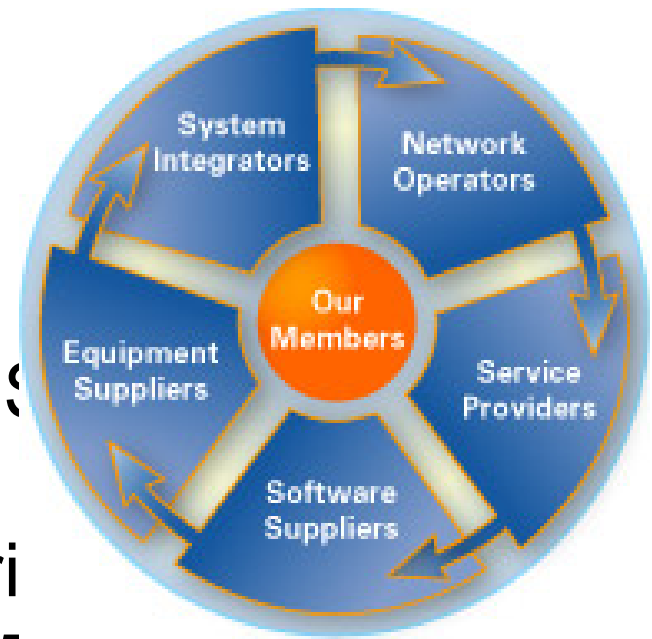
- The SDP/SDF – charging interrelationship
- IMS demands online charging

TeleManagement Forum

➡ Founded in 1988

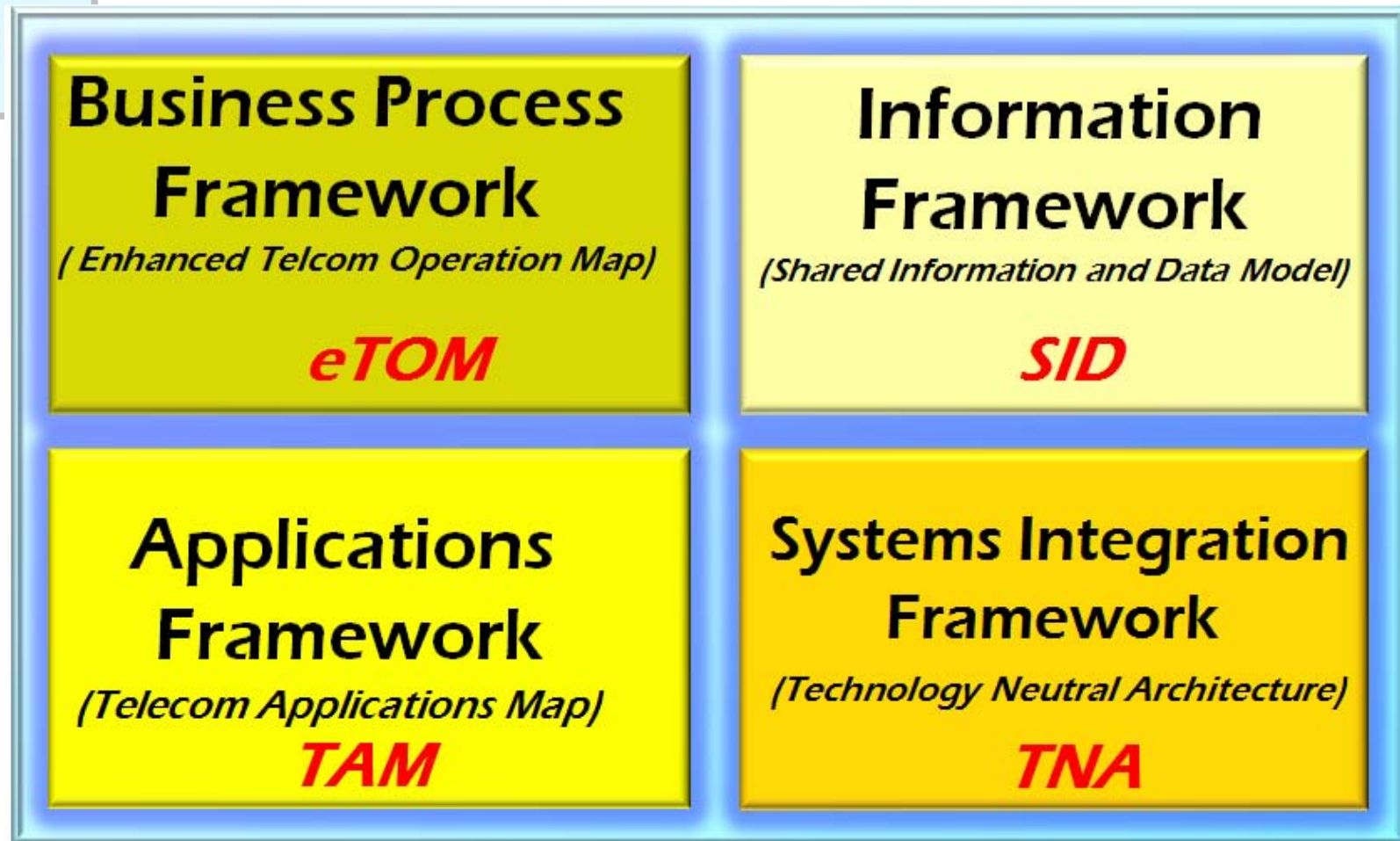
- Non-Profit Industry Body
- Headquarters: Morristown, NJ US
- Chairman: Keith Willetts
- Over 670 members in 71 Countries
- 80 Technical Working Teams & 500 participating resources

➡ Comprehensive list of our wide range of more than 600 member companies

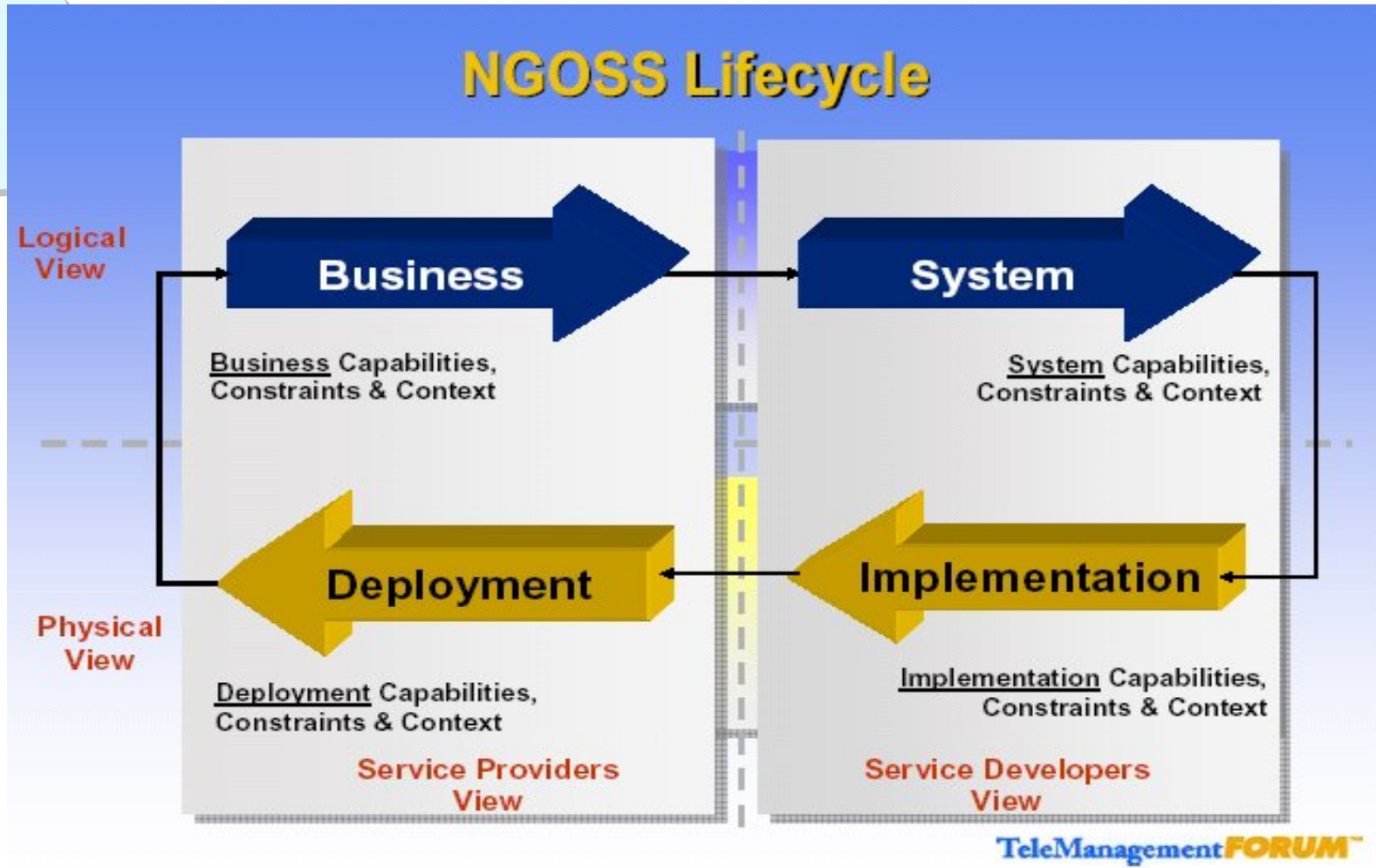


NGOSS Framework

NGOSS (New Generation Operations Systems & Software)

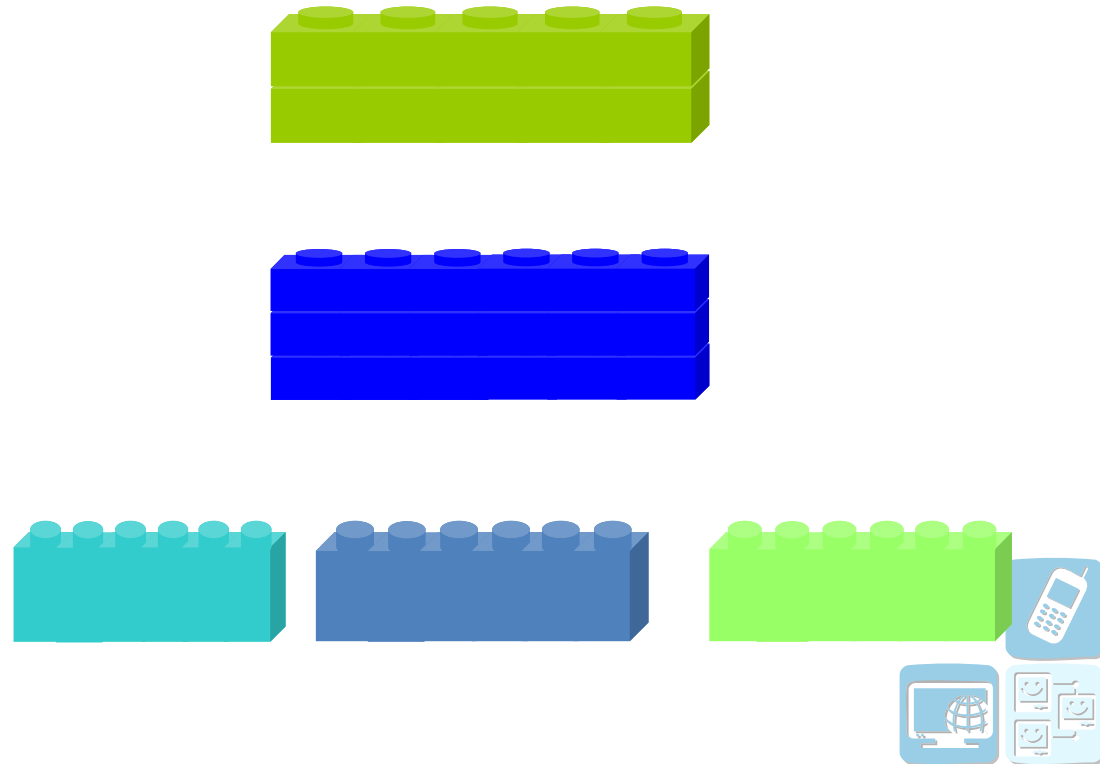
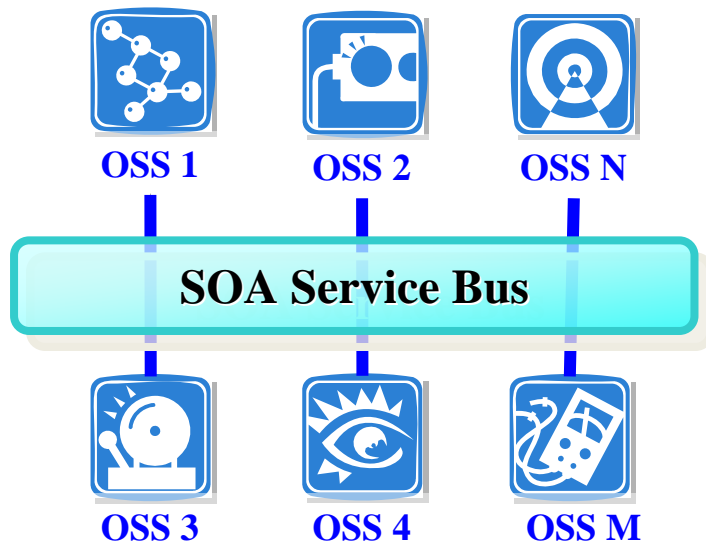


NGOSS Lifecycle



NGOSS Power

Agility, Flexibility to Change



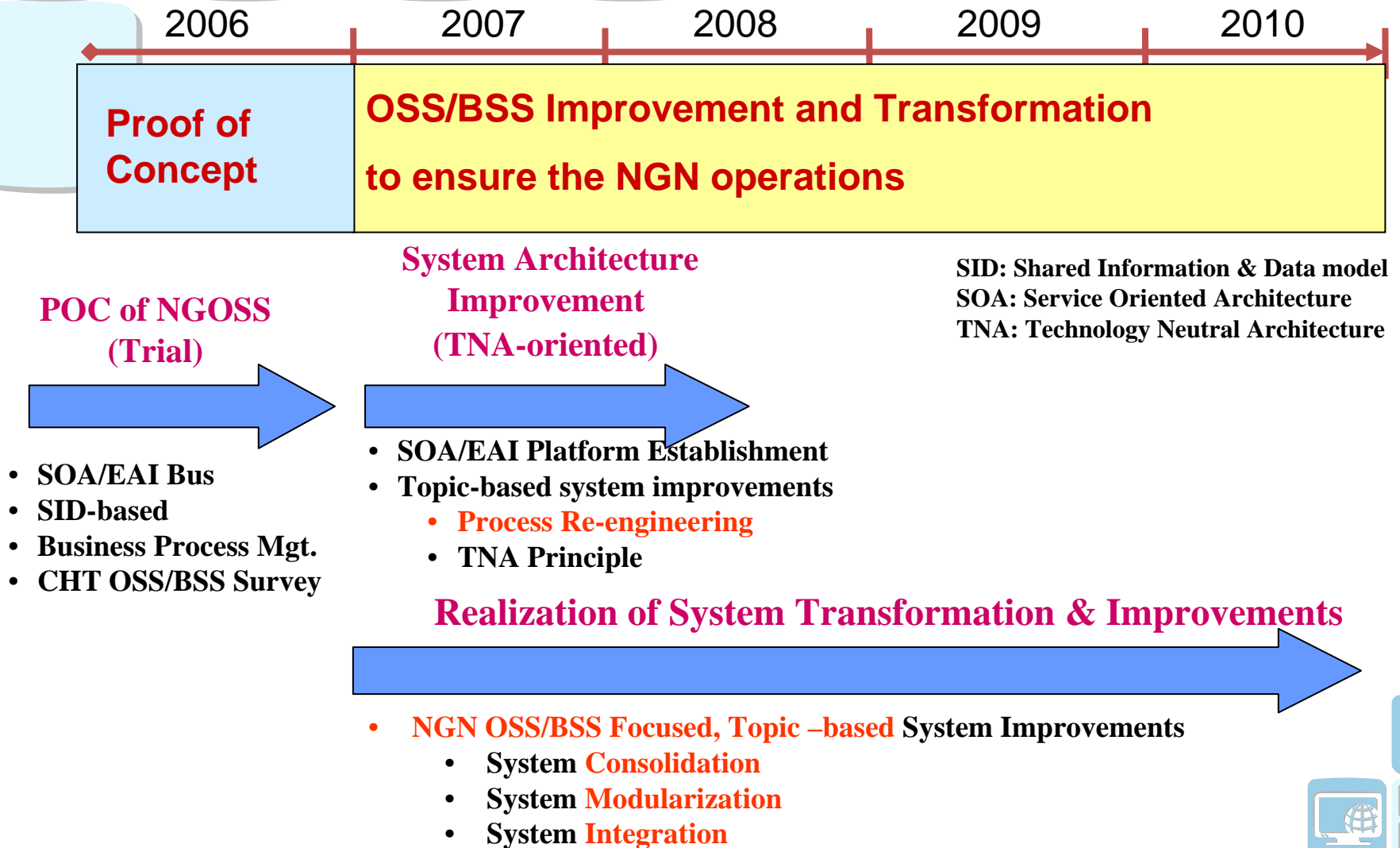
CHT OSS/BSS Evolution

➔ System Architecture Revolution to Improve Flexibility, and Speed to Change

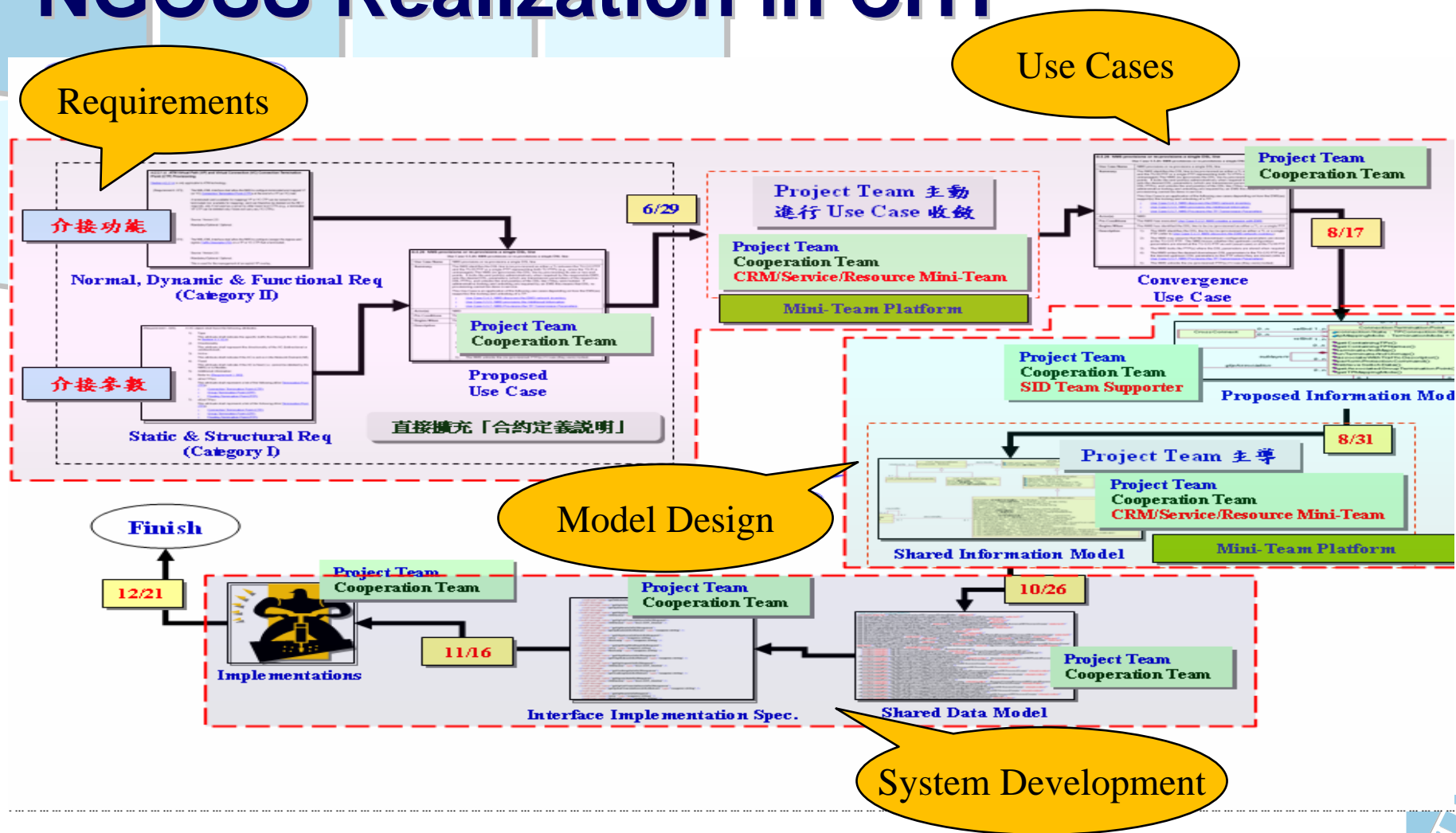
- + On a vivid and well-defined system framework
- + Message exchanges via a common BUS
- + System components are loosely coupled
- + Adopt Service Oriented Architecture (SOA)
- + Use Shared Information Data/Model
- + With Policy Enabled Behavior

➔ OSS/BSS Consolidation to Reduce OPEX

CHT NGOSS Program Chart



NGOSS Realization in CHT



eTOM [Process] → TAM [Application] → SID → TNA [System Realization]

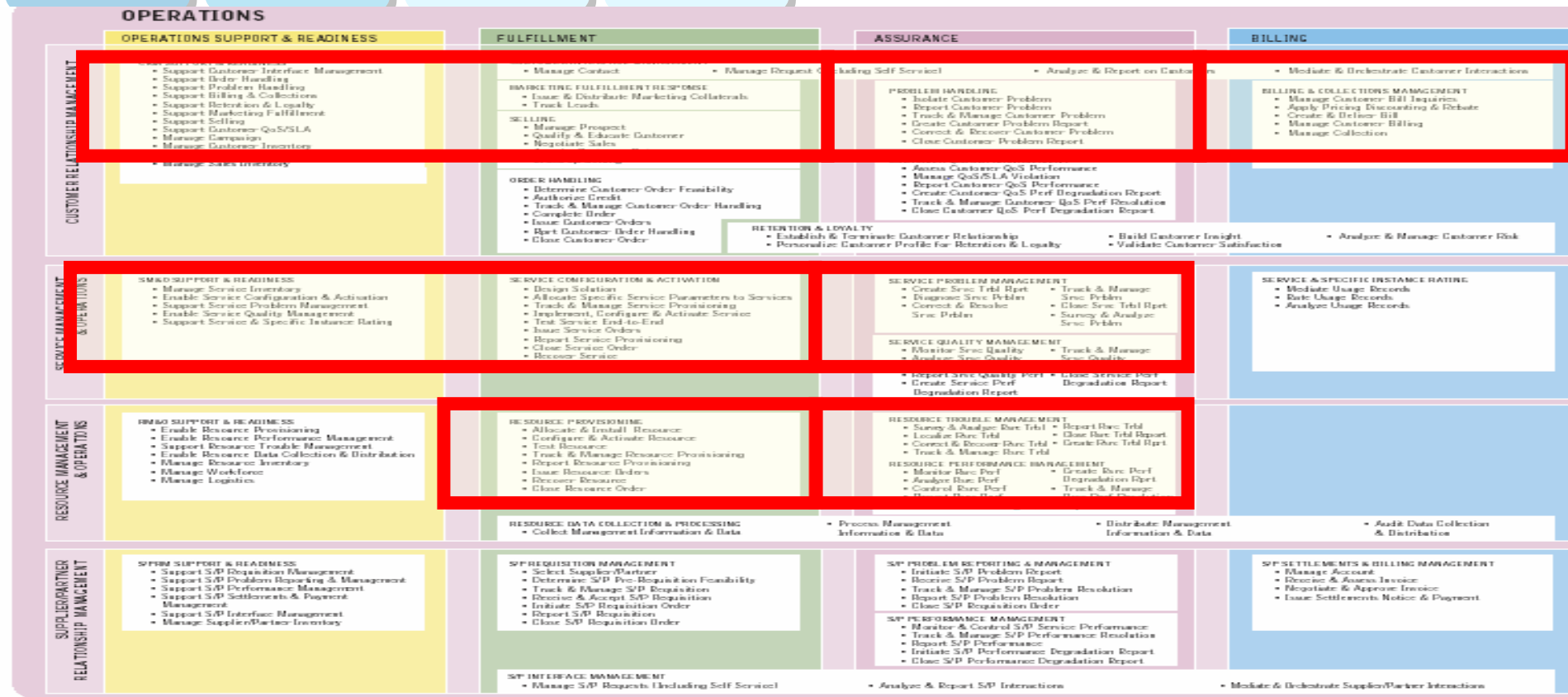
Requirement

Verified

Model

Implementation

CHT NGOSS Focused Topics





Catalyst Project 2008 One Stop EMC Service

2007 catalyst

2006 catalyst

TM Forum Management World 2008

18~22 May

Nice, France

amd docs

1m Tech
Mahindra
Formerly MBT and Axes Technologies

One Stop
Chunghwa Telecom Co., Ltd. 中華電信

Microsoft

TELUS
the future is friendly®

TATA

ITA CONSULTANCY SERVICES

 中華電信股份有限公司
Chunghwa Telecom Co., Ltd.

Nokia Siemens
Networks

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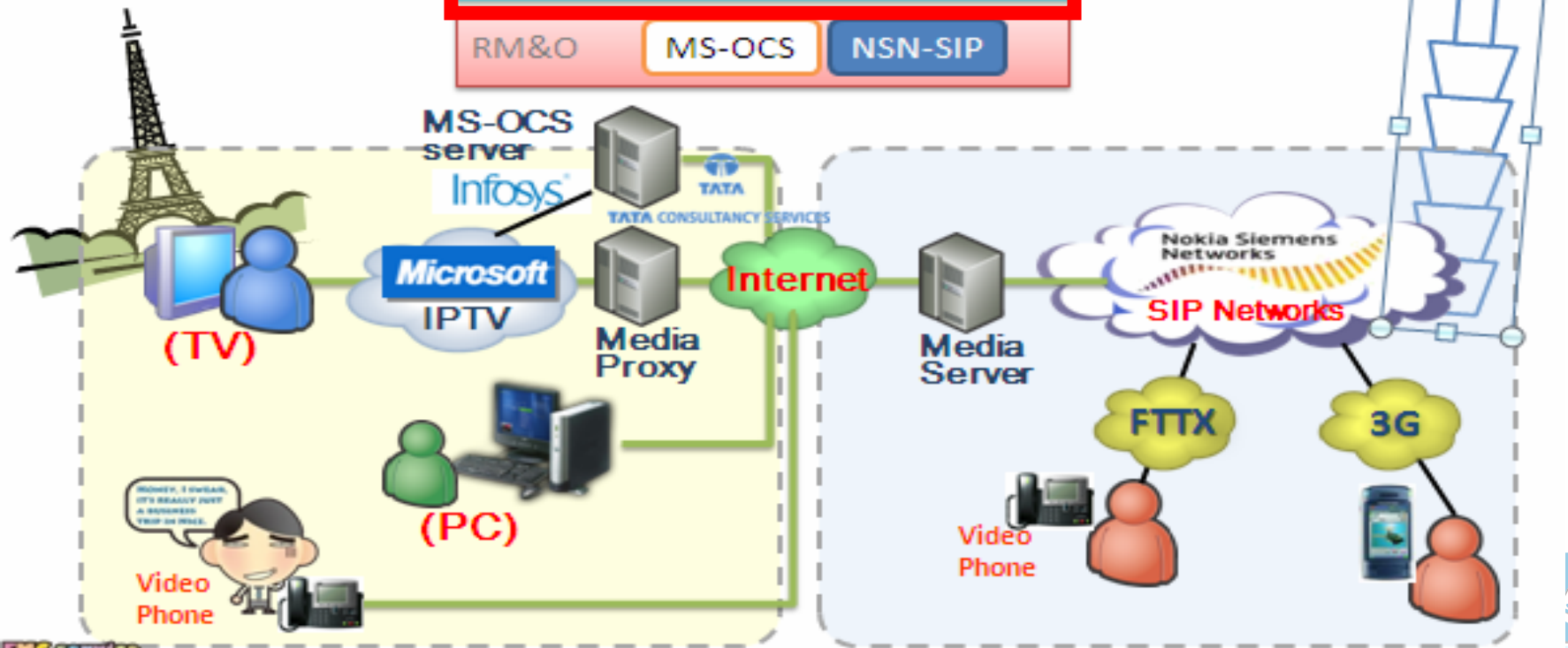
Infosys®

NGOS

FMC Services Proving Ground

OneStop FMC Service Catalyst Project

TMW, Nice 2008



FMC service
One Stop
Chunghwa Telecom Co., Ltd. 中華電信

Thank You

