



# 통합관제 중심의 서비스 관리 방안

IBM Software

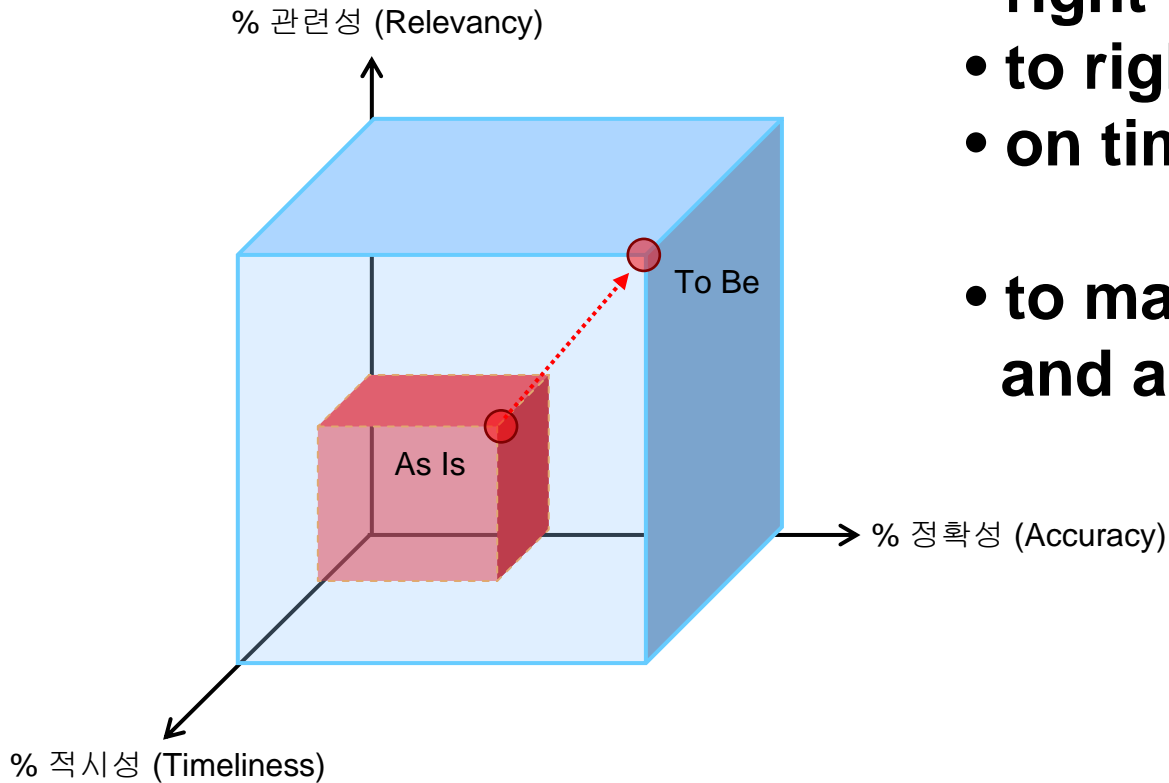
**Pulse2010**   
Pulse Comes to You

**Optimizing the World's Infrastructure**

## 목차

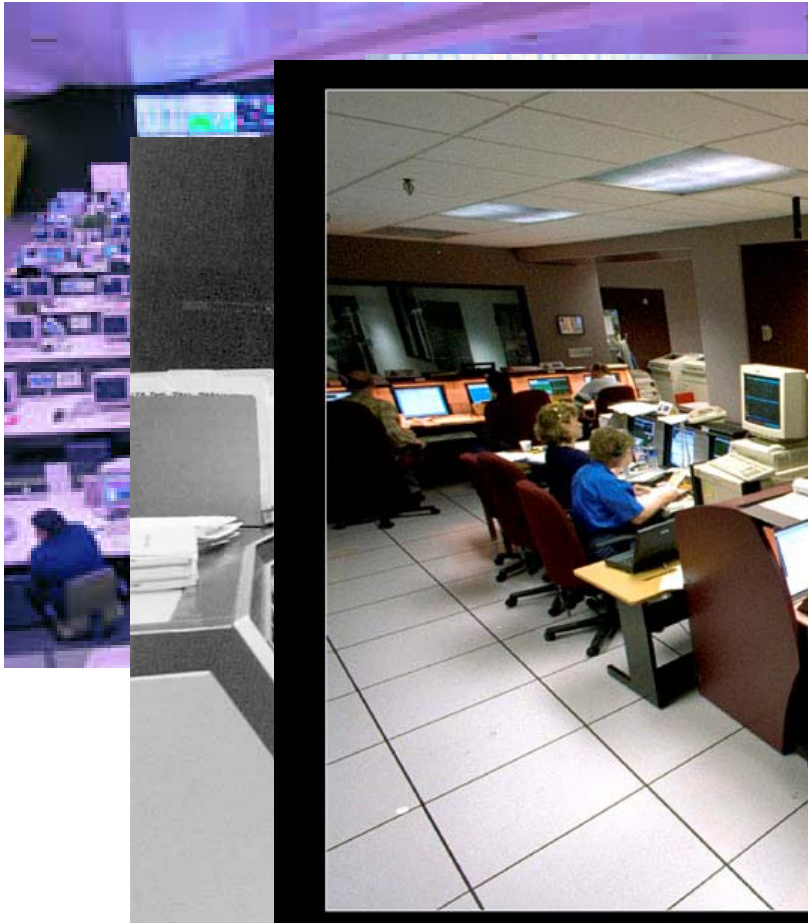
- 통합 관제의 목적
- 관제 팀의 역할
- 통합 관제 시스템 요건
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- 산업별 적용 예

# 통합 관제의 목적



- right information
- to right people
- on time
  
- to make correct decision and action

# 통합 관제 센터



Hubble Control Center, Goddard Space Flight Center

Image Credit: NASA, 1999

# 관제 팀의 역할



달인

VS.



의사 결정자



# 통합 관제 시스템 요건



## 효율적 투자 (Infrastructure & Security)

### *Optimize capital investments*

- **Optimize equipment** - Right size equipment, install temperature and humidity sensors and gateway controllers, evaluate alternative power generation systems such as solar and wind
- **Secure facilities** – Automatically monitor and manage for fuel theft, short fuel deliveries, copper theft and more

## 지휘 통제 (Command & Control)

### *Provide real-time data & control*

- **Instrumentation** – Transform traditional “dumb” equipment and infrastructure into intelligent data sources
- **Communication** – Bi-directional communication and control to the site from the field, NOC or anywhere
- **Automation** – Transition from manual, technician based control at a site to mechanized and even automated control anywhere

## 똑똑한 운영 (Smarter Operations)

### *Enable long-term sustainability*

- **Integrated operations** – Bring together site data with trouble ticket, energy consumption and work force management systems to provide an enterprise-level view
- **Intelligent dispatch** – Troubleshoot and isolate service degradations and/or failures to ensure single site visit resolution and even remedy many problems remotely

# 레퍼런스 아키텍처

## Integrated Service Management

Business Dashboards  
Analytics and Rule Engines

Work Force Management

Converged Asset Management

Correlation and Root Cause Analysis

Supplier Management

Trouble Management

Event Management

Performance Management

Data Collection & Instrumentation

## Managed Equipment



Power



Environmental



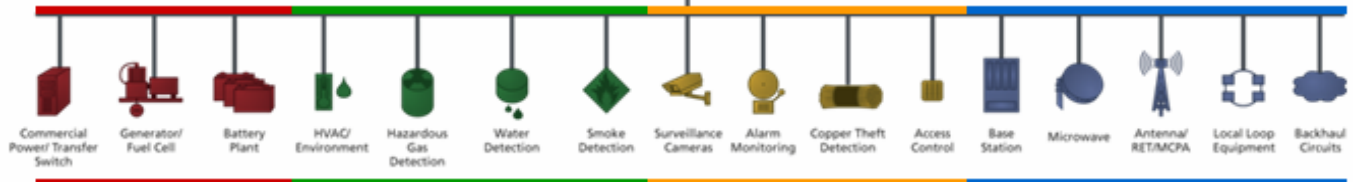
Security




Service



**Intelligent site connectivity & control** devices reside at *each* remote site in the network and connect to virtually any site element.





# 산업별 통합 관제 적용 예

-Telecom



# Challenges of AT&T Network Operation

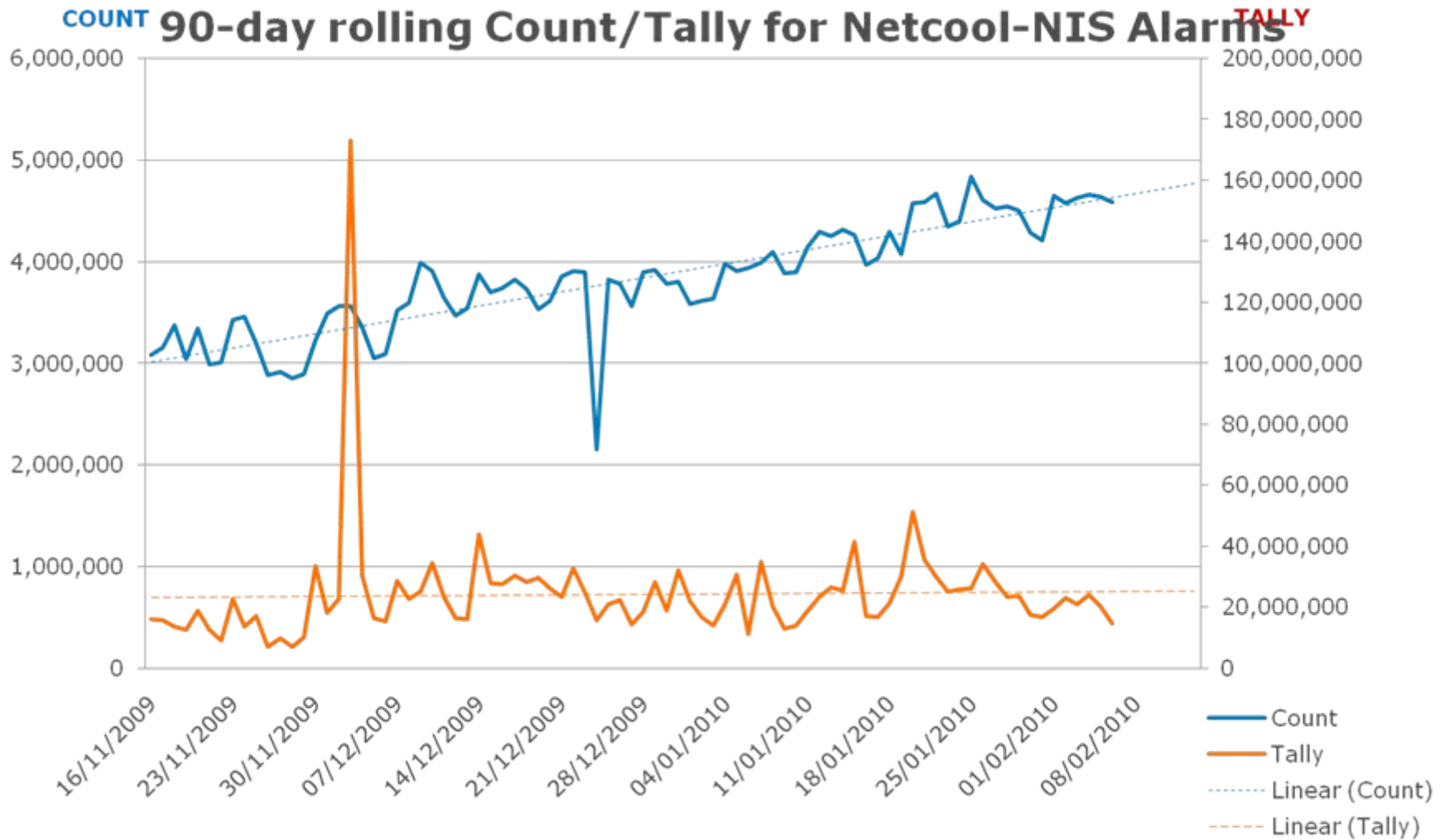
- Multi technology on the network: TDMA, CDPD, GSM/GPRS, EDGE, UMTS HSDPA
- In this competitive market, AT&T always has to introduce New Services to keep and attract subscribers
- The number of subscribers and services has grown rapidly
- Combining all the systems means combining all the alarms.

**While the network was evolving and growing, the complexity of managing it increased:**

- **Reduced headcount**
- **Reduced number of presented network faults**
- **Increased automation**



# 90 day rolling Count/Tally



# Architecture Background

- High volume of alarms across
- Support multiple silos per “region”.
- Faults are routed across silos for correlations.
- Numerous triggers and policies across silos.
- High volume of alarms across

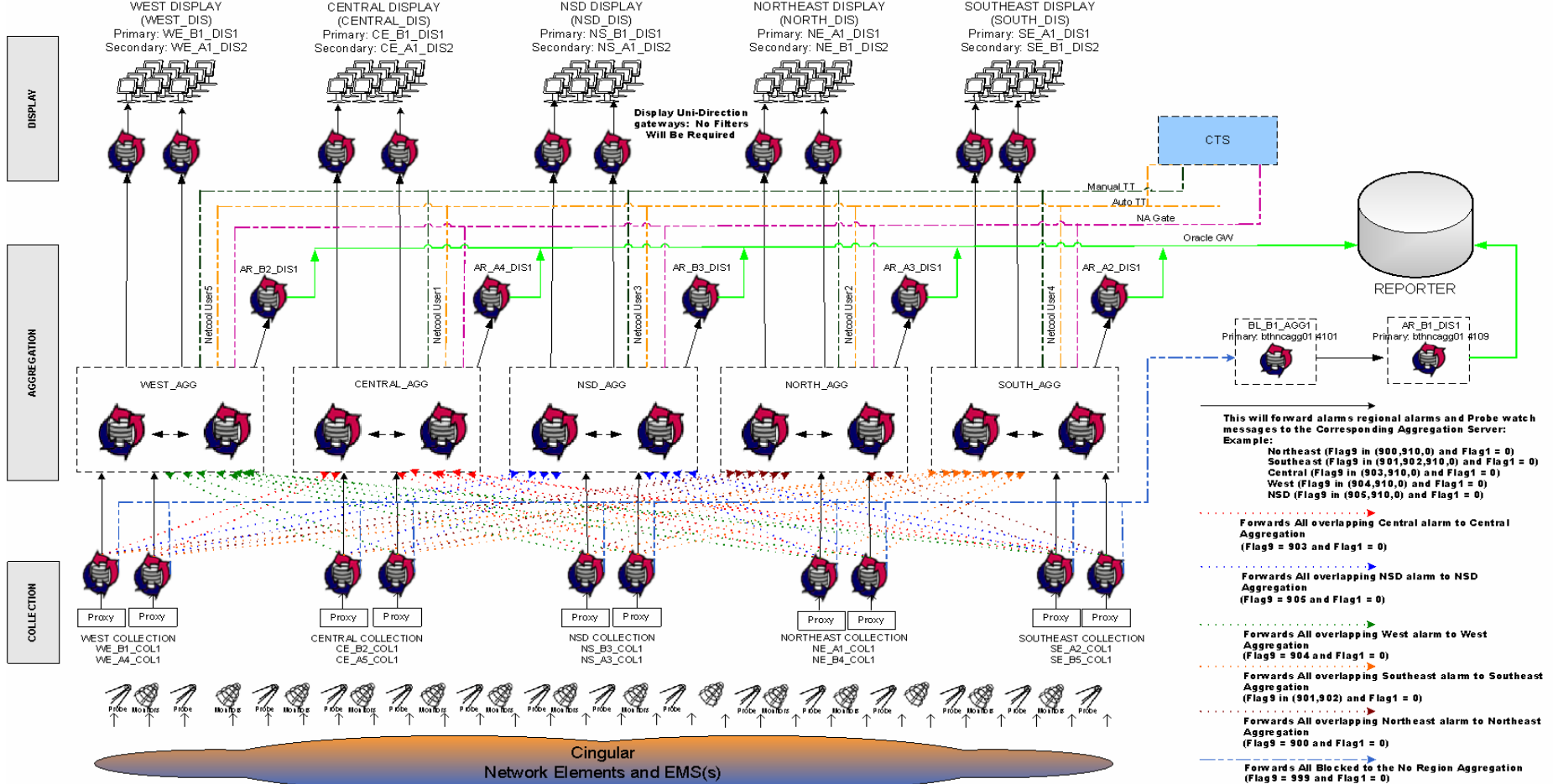
**While the network was evolving and growing, the complexity of managing it increased:**

- **Reduced headcount**
- **Reduced number of presented network faults**
- **Increased automation**



# Architecture Diagram

## Core Diagram: Collection, Aggregation, Display and ticketing



**WEST\_AGG**  
 Primary: WE\_B2\_AGG1  
 Host: bthncagg02.wnsnet.attws.com  
 Port: 4103  
 Backup: WE\_B3\_AGG2  
 Host: bthncagg03.wnsnet.attws.com  
 Port: 4104  
 Archive: AR\_B2\_DS11  
 Host: bthncagg02.wnsnet.attws.com  
 Port: 4109

**CENTRAL\_AGG**  
 Primary: CE\_A4\_AGG1  
 Host: alnncagg04.wnsnet.attws.com  
 Port: 4103  
 Backup: CE\_A2\_AGG2  
 Host: alnncagg02.wnsnet.attws.com  
 Port: 4104  
 Archive: AR\_A4\_DIS1  
 Host: alnncagg04.wnsnet.attws.com  
 Port: 4109

**NSD\_AGG**  
 Primary: NS\_B3\_AGG1  
 Host: alnncagg03.wnsnet.attws.com  
 Port: 4103  
 Backup: NS\_B2\_AGG2  
 Host: bthncagg02.wnsnet.attws.com  
 Port: 4104  
 Archive: AR\_B3\_DIS1  
 Host: bthncagg03.wnsnet.attws.com  
 Port: 4109

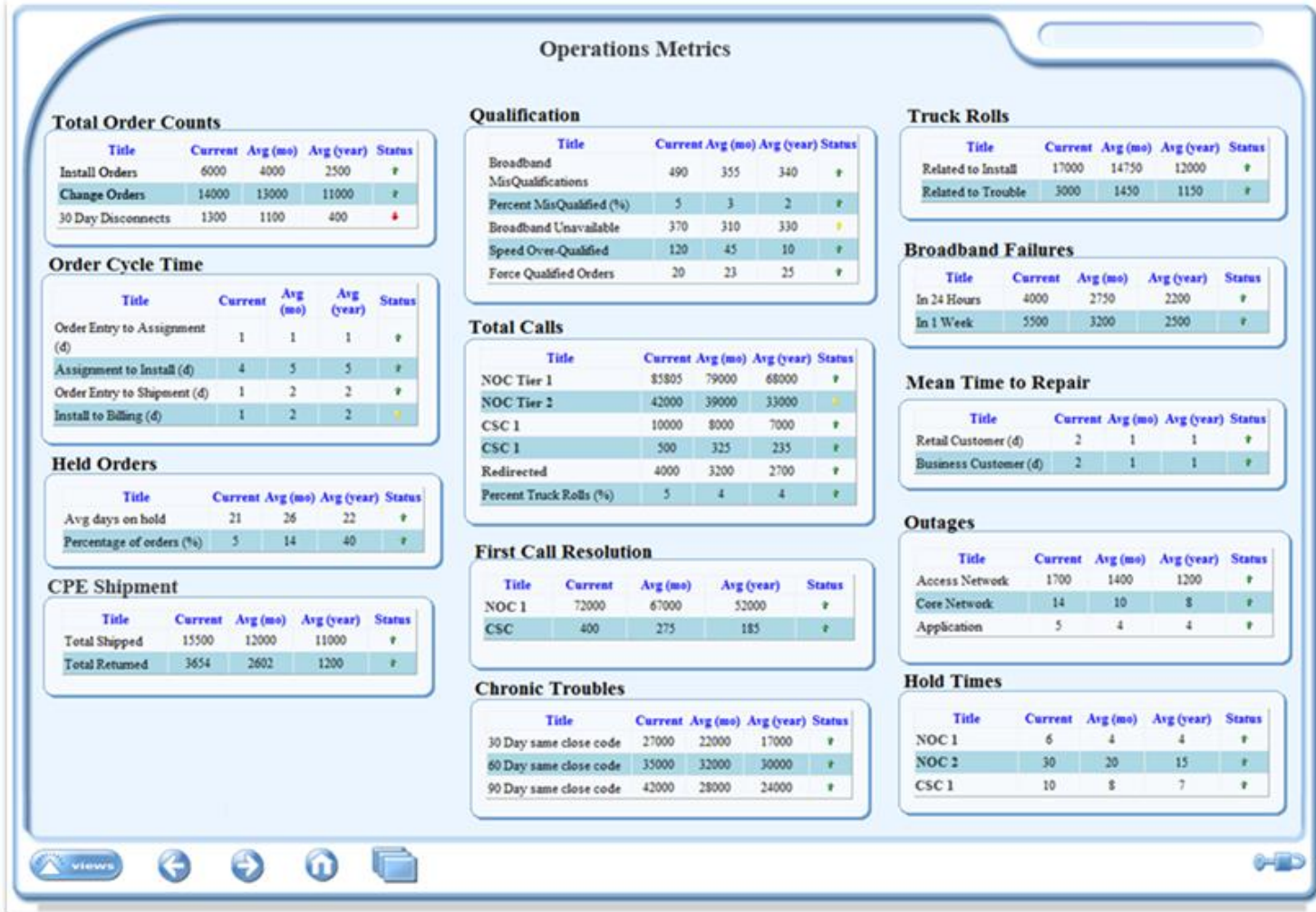
**NORTH\_AGG**  
 Primary: NE\_A3\_AGG1  
 Host: alnncagg03.wnsnet.attws.com  
 Port: 4103  
 Backup: NE\_A4\_AGG2  
 Host: alnncagg04.wnsnet.attws.com  
 Port: 4104  
 Archive: AR\_A3\_DIS1  
 Host: alnncagg03.wnsnet.attws.com  
 Port: 4109

**SOUTH\_AGG**  
 Primary: SE\_A2\_AGG1  
 Host: alnncagg02.wnsnet.attws.com  
 Port: 4103  
 Backup: SE\_A3\_AGG2  
 Host: alnncagg03.wnsnet.attws.com  
 Port: 4104  
 Archive: AR\_A2\_DIS1  
 Host: alnncagg02.wnsnet.attws.com  
 Port: 4109

**BL\_B1\_AGG1**  
 Host: bthncagg01.wnsnet.attws.com  
 Port: 4101  
**AR\_B1\_DIS1**  
 Host: bthncagg01.wnsnet.attws.com  
 Port: 4109

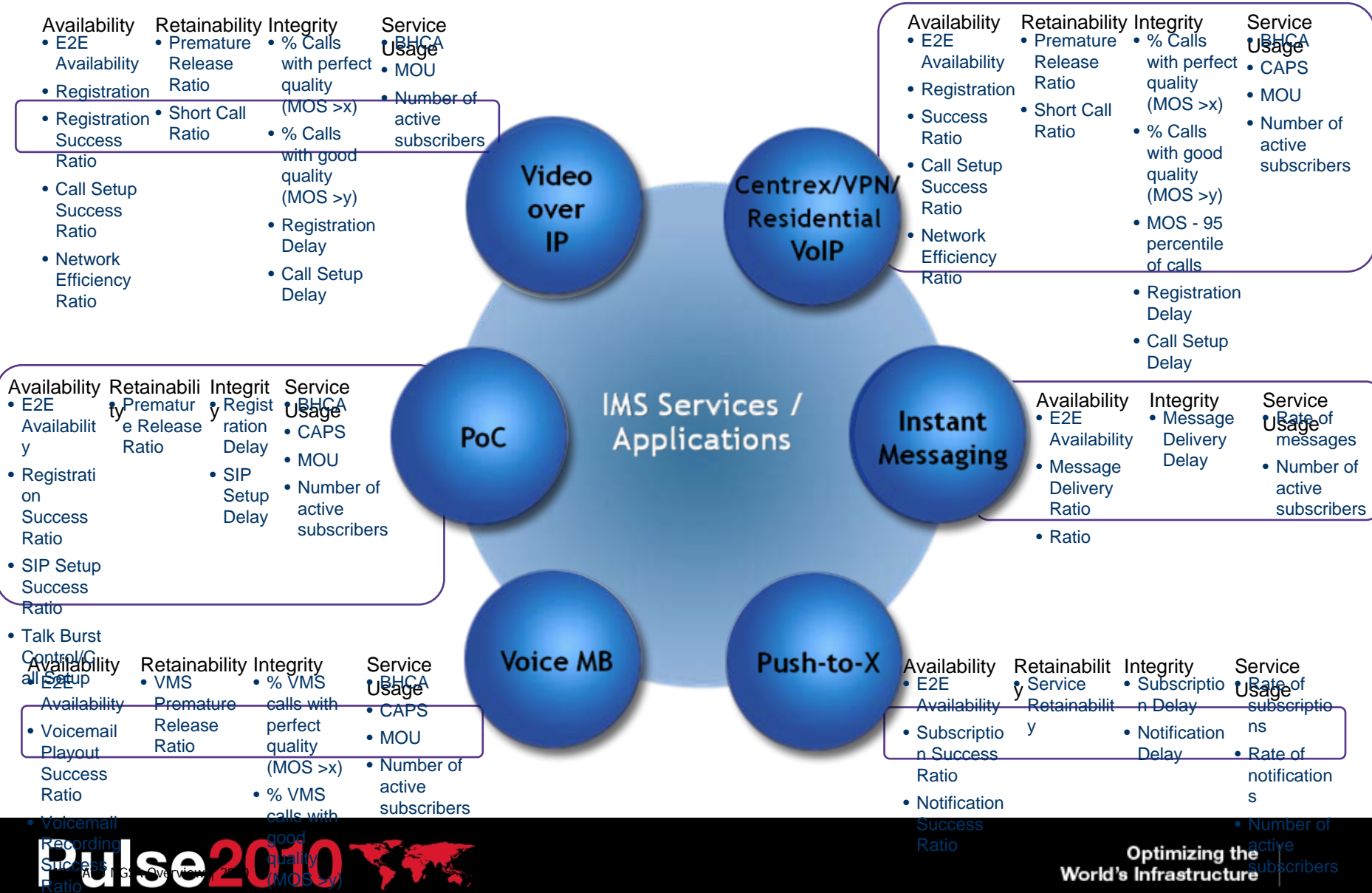
# Sample Operations Dashboard

Sample real-time service and operational metrics dashboard.



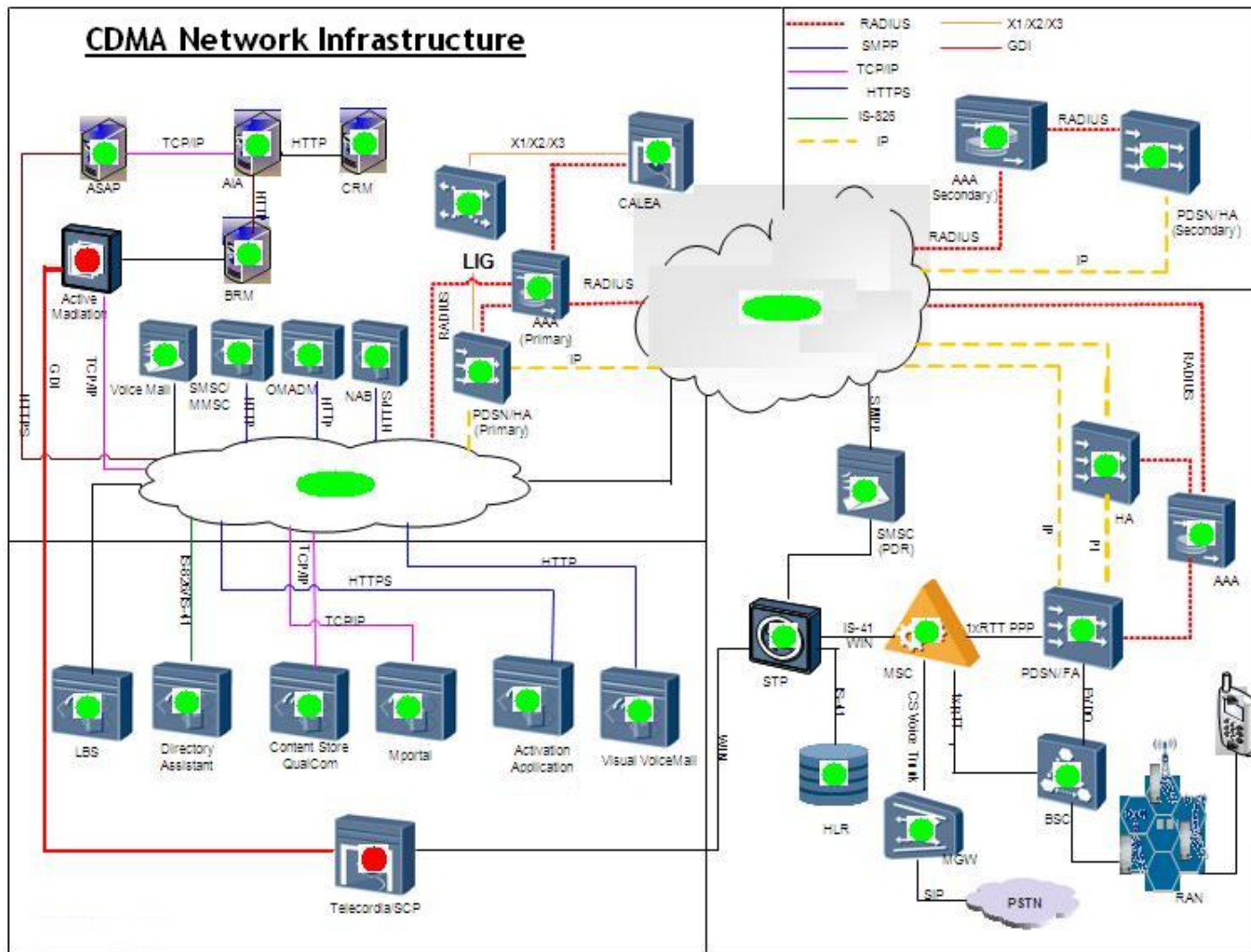


# SQM Service & Application KQIs





# Sample NOC Service Dashboard



# Sample Customer Care Service Dashboard

## Mobility Customer Care Service Dashboard

### Eastern US

Cell Service Status  
 = Service Down  
 = Performance Issues  
 = Service Good

Voice Network   
 Data Services   
 MMS   
 SMS   
 Voicemail

Radio Access   
 Provisioning   
 Billing   
 Sales Portal   
 911

### Western US

Cell Service Status  
 = Service Down  
 = Performance Issues  
 = Service Good

Voice Network   
 Data Services   
 MMS   
 SMS   
 Voicemail

Radio Access   
 Provisioning   
 Billing   
 Sales Portal   
 911

### Historical Service Reporting

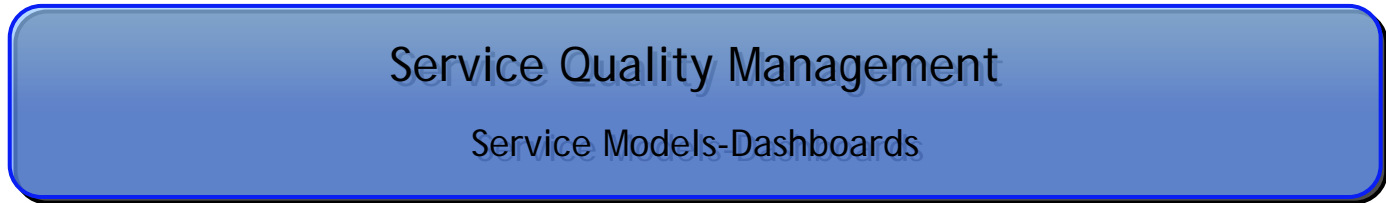
<u>Voice</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
<u>Data</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
<u>MMS</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
<u>SMS</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
<u>Voicemail</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
<u>Activation</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>

# Architecture – Path to Success!

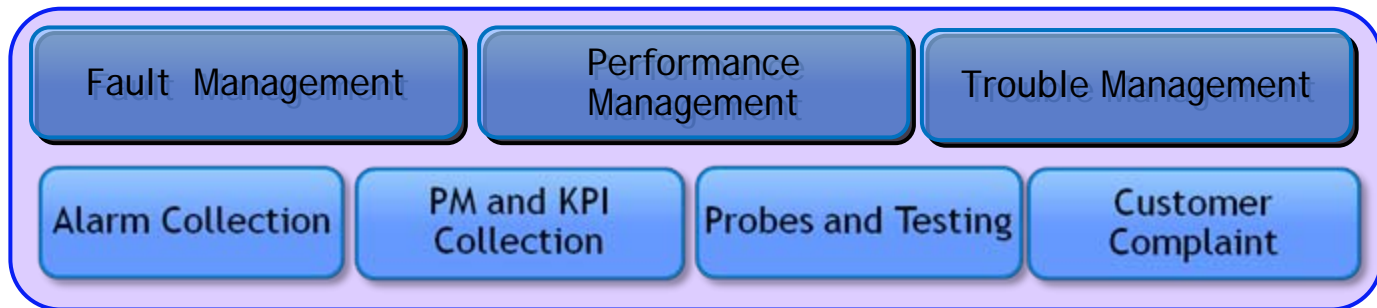
*Step 3:*  
SLA  
Management



*Step 2:*  
Service  
Quality  
Management

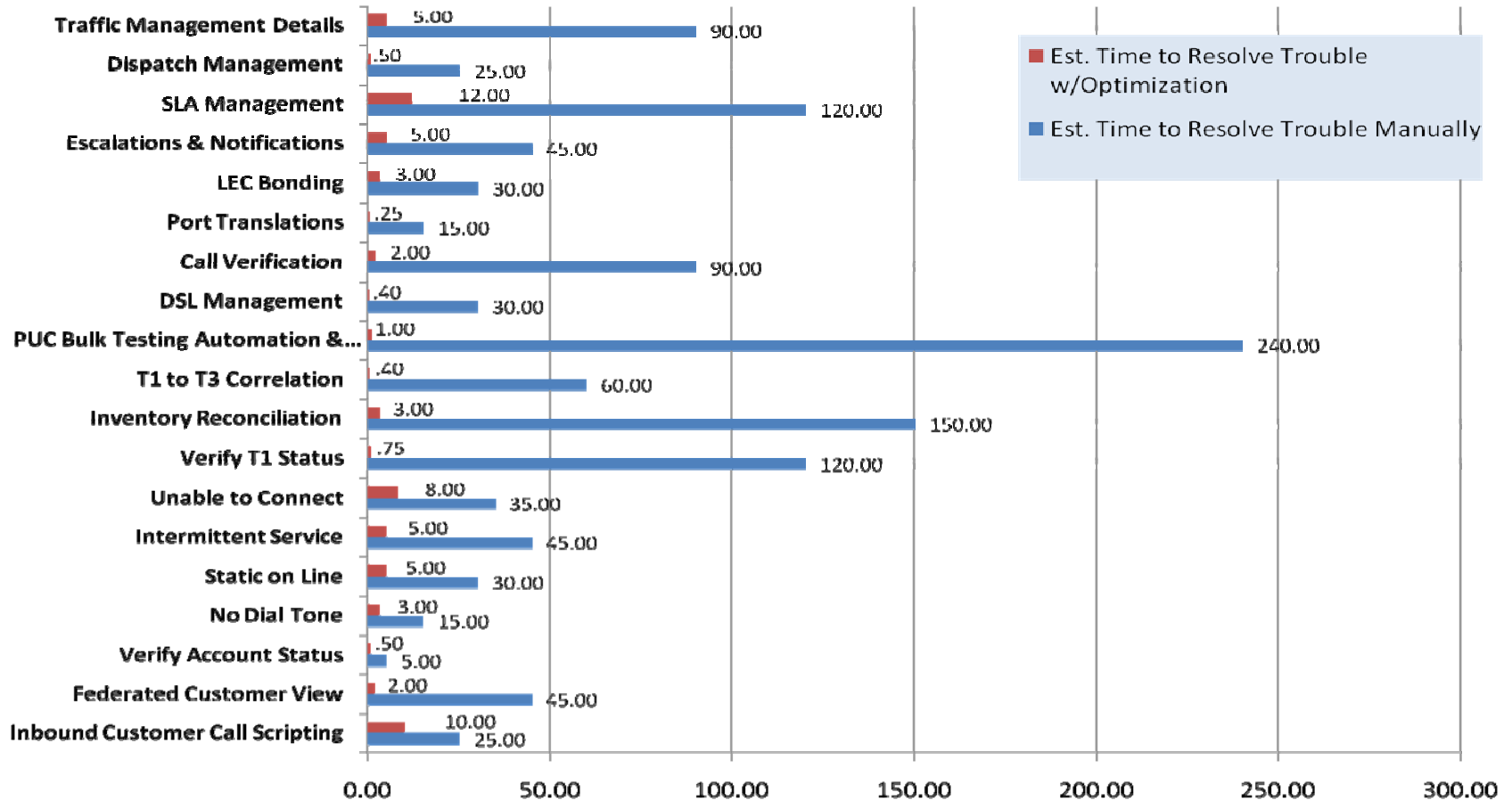



*Step 1:*  
Service  
Assurance  
Foundation



# MTTR Improvements

Sample customer MTTR improvements from real business automation implementations.





# 산업별 통합 관제 적용 예

**-Public & Industrial**



# 통합관제 ?



FFG 01

F 111

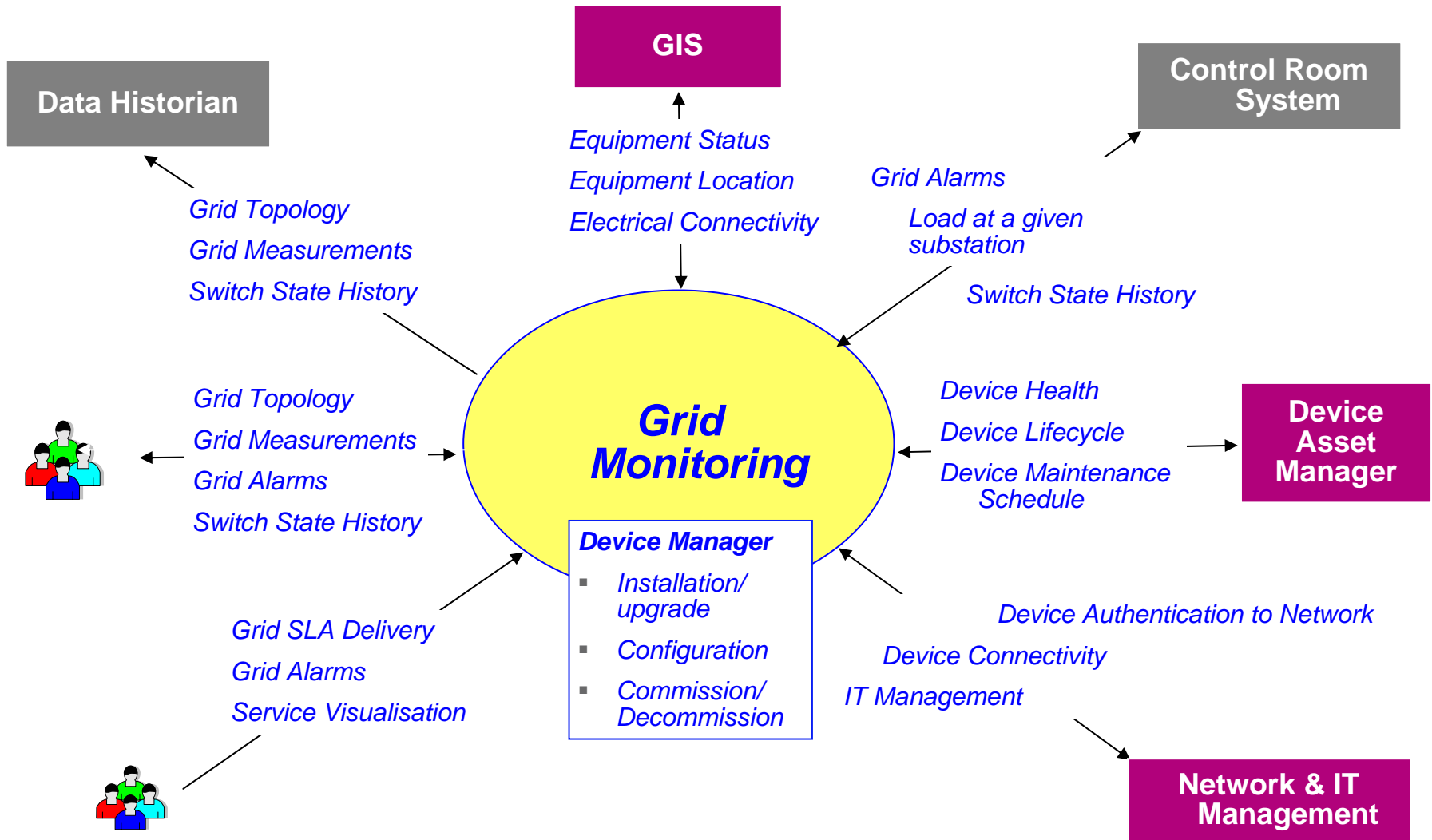


20 OCT 08





# System Context of Grid Monitoring Solution

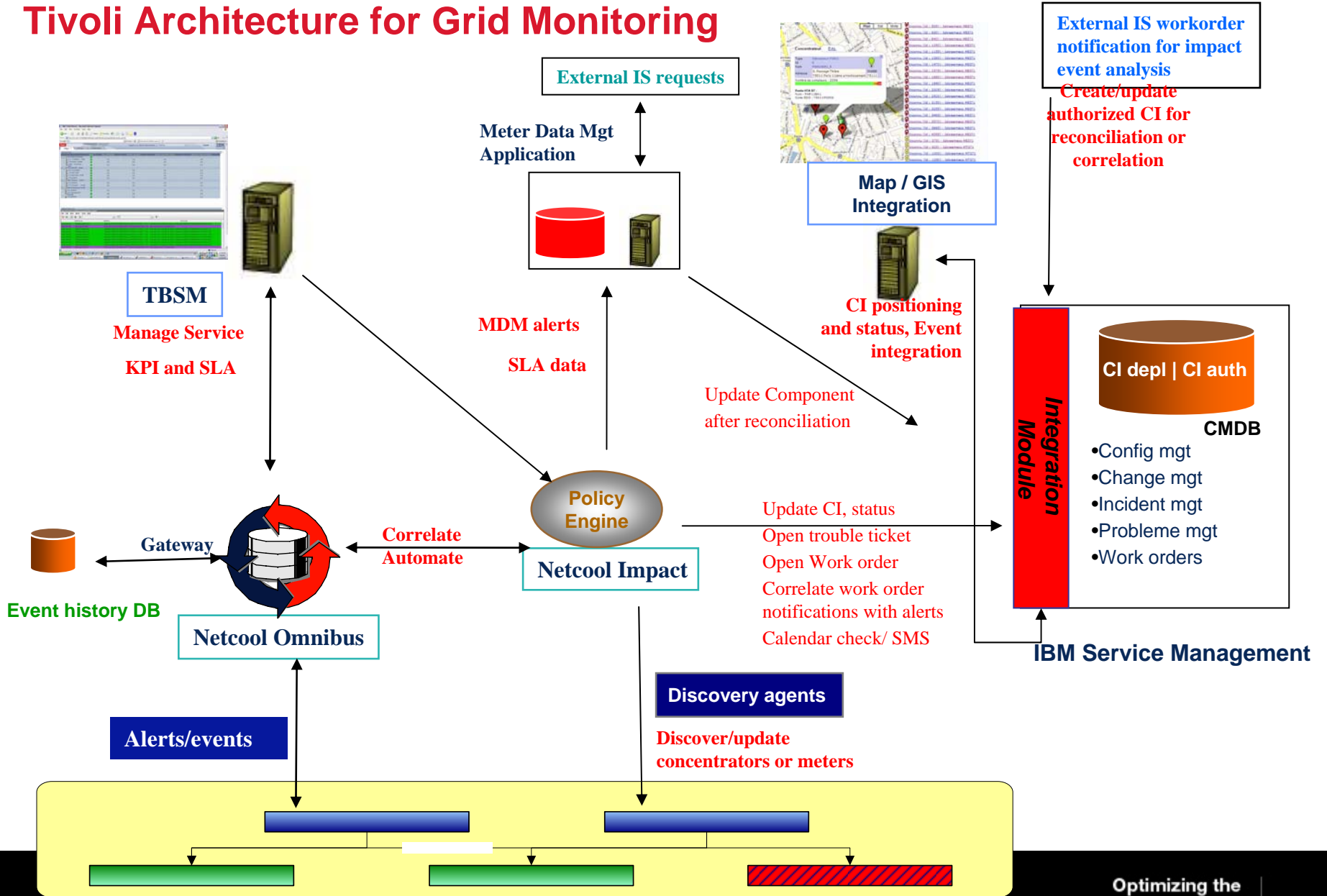


# Functional Requirements for Grid Monitoring

- Open and extendable mediation for alarms, metrics and topology data
  - Initially XML over HTTP or TCP for integration with initial vendor choice
  - Extending to OPC and DNP3 to bring in other major vendors
  - Packet decoding and data routing included in mediation layer (essential as alarm, metrics and topology changes are all sent using the same protocol and transport)
  - Use existing mediations where they are appropriate (e.g. for SNMP support)
- All analytics for real time and near real time reporting
  - Compatible with IBM industry solutions tiered analytics model
  - Alarms created by both simple thresholds and complex analytics
  - Real time requirement demands streaming analytics
  - Analytics may have a topology component which requires updating in near real time (or immediately in case of synchrophasor)
- Compatible with industry semantic models
  - Ensure metrics are tied to a unique resource name
  - Updatable from external model or from data provided in event stream
  - Service Model dependencies map to industry standard CIM
- Compatible with Enterprise architectures (IBM and non-IBM)
  - Gateway to Enterprise Message Bus regarded as standard interface
  - Optional addition of Impact to support point to point links to legacy Historians and SCADA systems, and to enterprise GIS

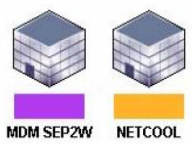
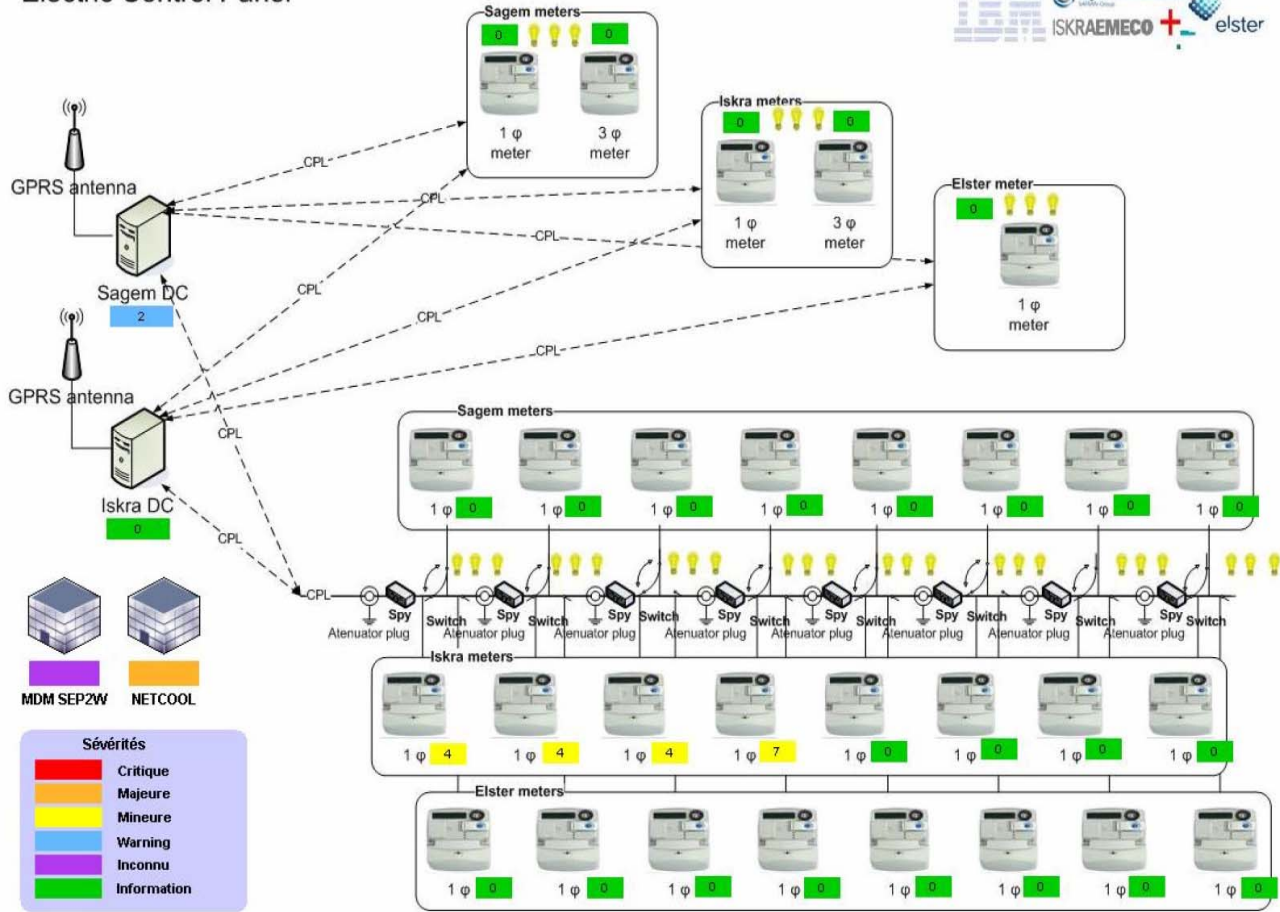
Provide supported interface to Maximo Enterprise Asset Management and Service Desk

# Tivoli Architecture for Grid Monitoring



MapView  
EDF\_MAP

### Electric Control Panel



Sévérités	
Red	Critique
Orange	Majeure
Yellow	Mineure
Light Blue	Warning
Purple	Inconnu
Green	Information

# SCADA Management & Monitoring

The screenshot displays the Micromuse Netcool Suite web interface within a Microsoft Internet Explorer browser window. The browser's address bar shows the URL: `http://172.18.1.54:8080/portal/media-type/html/group/Precision+Desktop/page/ncp_desktop_page.psm`. The interface includes a menu bar (File, Edit, View, Favorites, Tools, Help) and a toolbar with navigation and utility icons. The main content area is titled "NETCOOL Suite" and shows the user is logged in as "Netcool Administrator".

The interface is divided into several sections:

- Network View Tree:** A hierarchical tree on the left side showing the network structure. The tree is expanded to show "MPLS" > "IP RT Pair VPNs" > "yellow". Other visible nodes include "LARCH", "YEW", "BGP AS Collections", "Device Classes", "Device Types", "Global VLANs", "Core Nodes", "Layer 2 PseudoWires", and "VPLS BGP VPNs".
- Network View Map:** A central diagram titled "Network View Map" showing a "REMOTE TERMINAL UNIT" and a "FLOW CORRECTOR" connected to a "NATURAL GAS PRESSURE REDUCING AND MEASUREMENT SKID". The skid consists of six components: "PRESSURE TRANSMITTER", "METER", "SLAMSHUT VALVE", "CONTROL VALVE", "FILTER", and "TEMPERATURE TRANSMITTER". Blue arrows indicate data flow from the skid components to the terminal unit and flow corrector.
- Bottom Status:** A small text box at the bottom left of the map area indicates "8 node(s) in 'mpls' view".



# Web 2 oriented

The screenshot displays a web-based network management interface. On the left, there is a sidebar with the following sections:

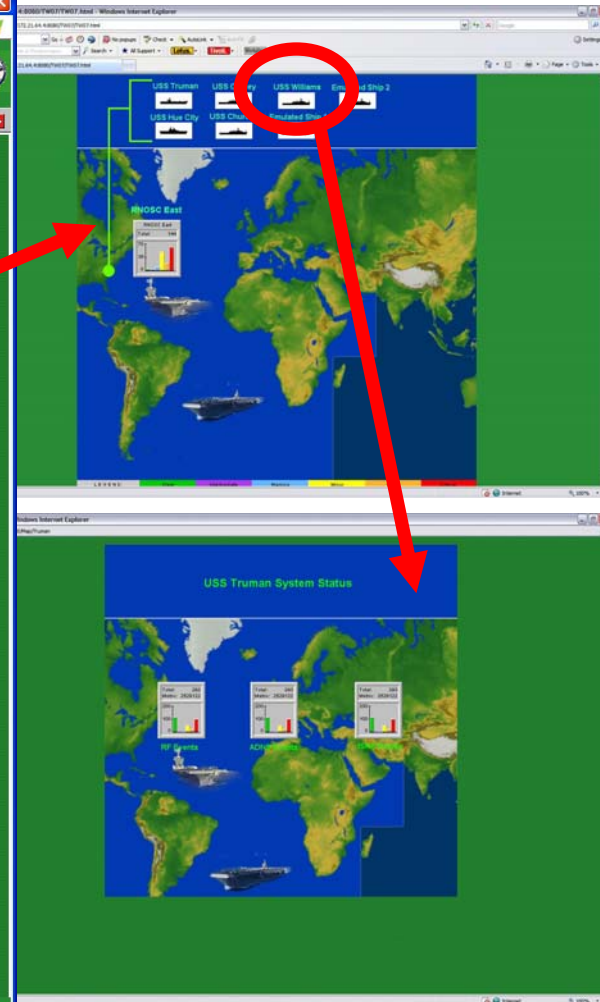
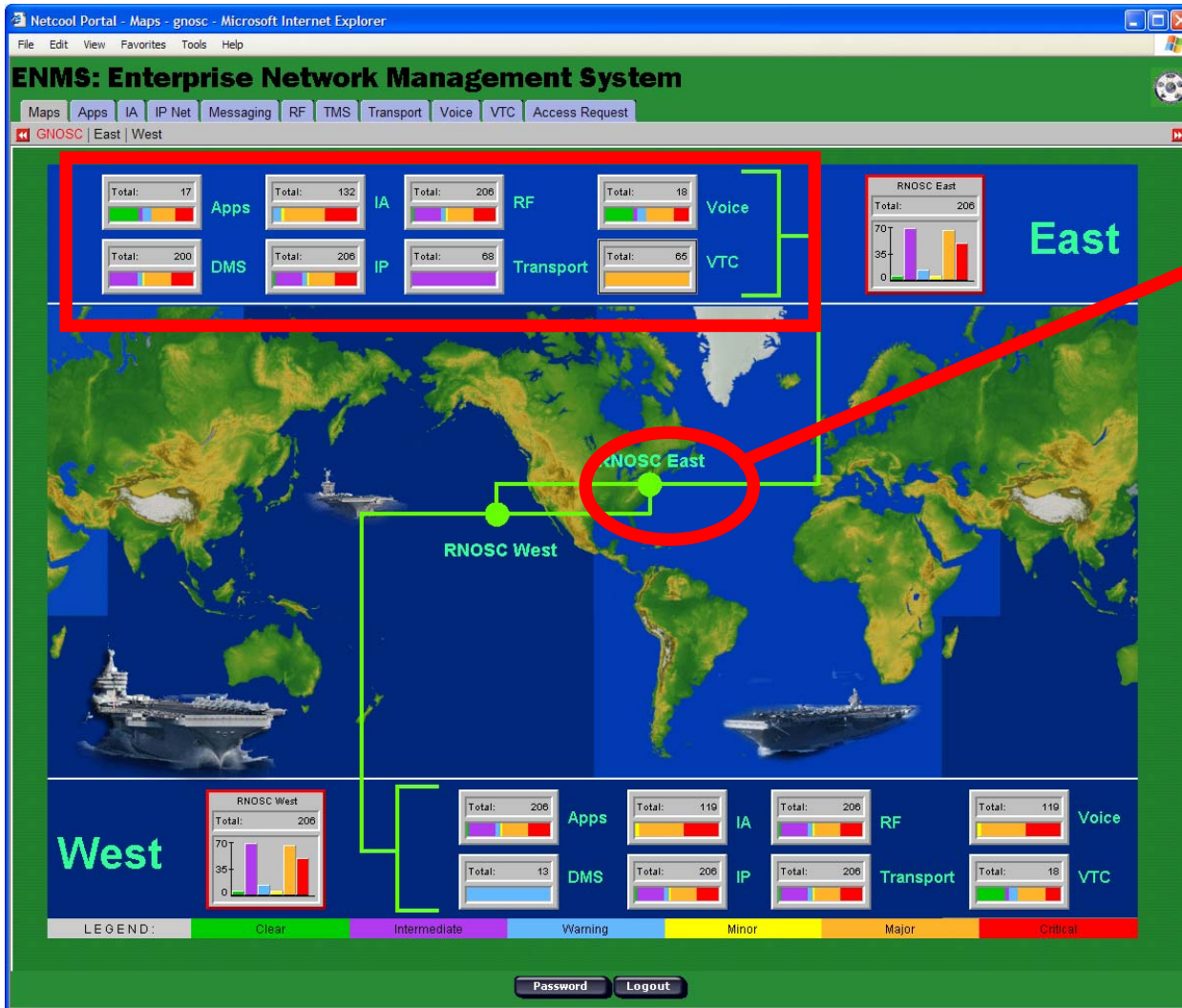
- Postes Non connectés Recherche**
- Carte Tableau**
- Filtre sur l'arbre**
  - Filtrer sur la région : [Aucun filtre]
  - ou
  - Filtrer sur le département : [Aucun filtre]
- Affichage**
  - Vue en grille
- Arbre Postes HTA BT / Concentrateurs**
  - 1 - PAR11LEP
  - 2 - PAR11AME
  - 3 - PAR11BA1
    - 5 - PAR11BA1\_5
    - 6 - PAR11BA1\_6
    - 7 - PAR11BA1\_7
  - 4 - ROI77ROU
    - 8 - ROI77ROU\_8
  - 5 - ROI77JON
  - 6 - FAB59PON
  - 7 - ORS59VEV


The main area shows a map of a Paris neighborhood with various data points represented by colored pins and icons. A blue arrow points from the sidebar to the map, labeled "Data load requests". A speech bubble at the top right says "Data display behaviour". A speech bubble at the bottom center says "Data management and display". A callout box on the right shows a bar chart with the text "256 compteurs" and "244". A list of links on the right side of the map includes:

- [ISK000000221 \(Id 11ème arrondissement\)](#)
- [ISK0000001679 \(Id 11ème arrondissement\)](#)
- [ISK0000001685 \(Id 11ème arrondissement\)](#)
- [ISK0000002073 \(Id 11ème arrondissement\)](#)
- [ISK0000002260 \(Id 11ème arrondissement\)](#)
- [ISK0000002267 \(Id 11ème arrondissement\)](#)
- [ISK0000002370 \(Id 11ème arrondissement\)](#)
- [ISK0000002669 \(Id 11ème arrondissement\)](#)
- [ISK0000002883 \(Id 11ème arrondissement\)](#)
- [ISK0000003002 \(Id 11ème arrondissement\)](#)



# US SPAWAR ENMS





# 산업별 통합 관제 적용 예

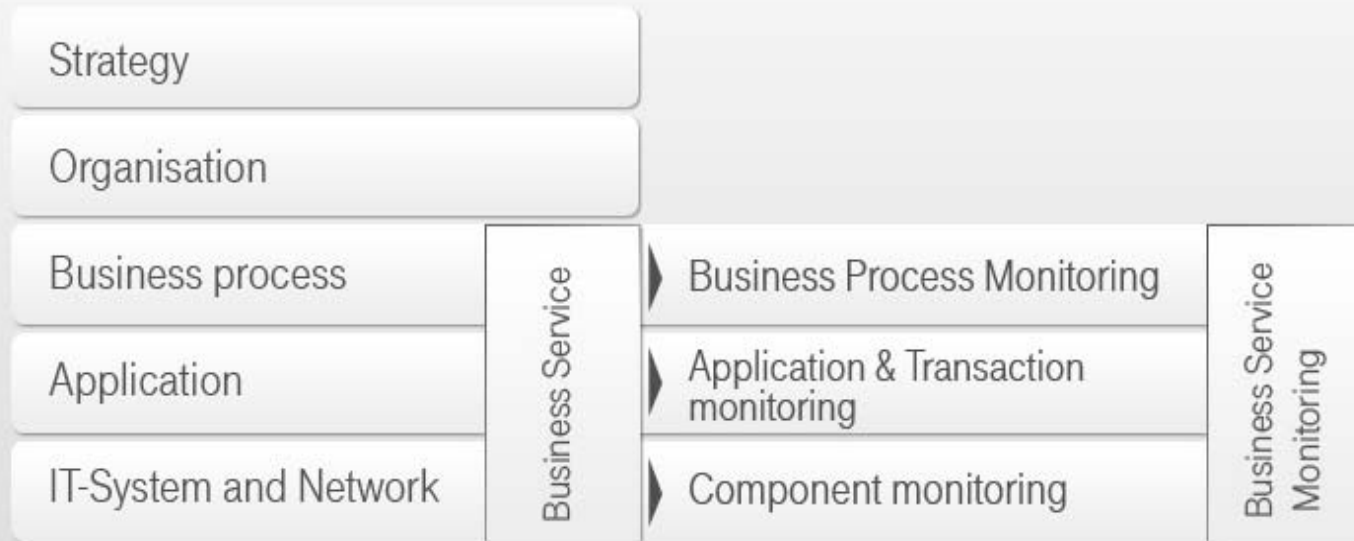
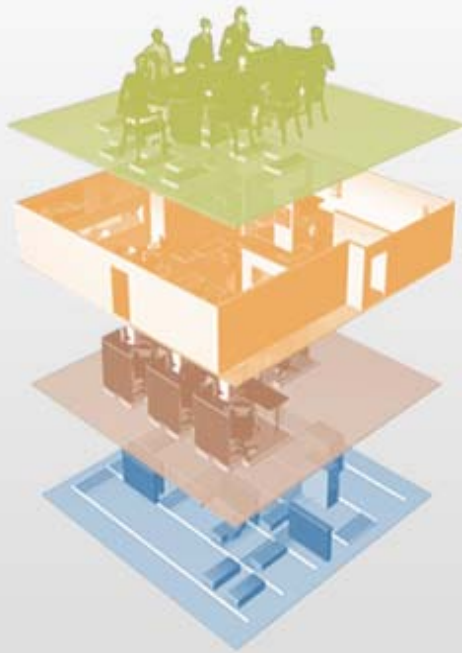
**-Enterprise**

# What's keeping CIO "Awake at Night"

1. **Better visibility** – of **critical applications and underlying infrastructure** -- across all stakeholders; spanning LoB, App Development and Infrastructure/Operations, relative to managing and delivering business services
2. Become more **preventative and predictive** – in management and delivery of the application environment
3. **Tear cost out** of managing and delivering the application environment...CIO responses (high growth category) from 2009 IBM Global Survey of ~2,600 customers:
  - 61% think business processes will be completely standardized and low cost in five years
  - 74% expect end-customers to continuously explore new channels (e.g. Cloud, SaaS) for application delivery
  - 76% foresee a strongly centralized infrastructure in five years
  - 56% use third party business or IT services more often to improve their business agility
  - CIOs spend about 14% of their time to take costs out of the ongoing technology environment

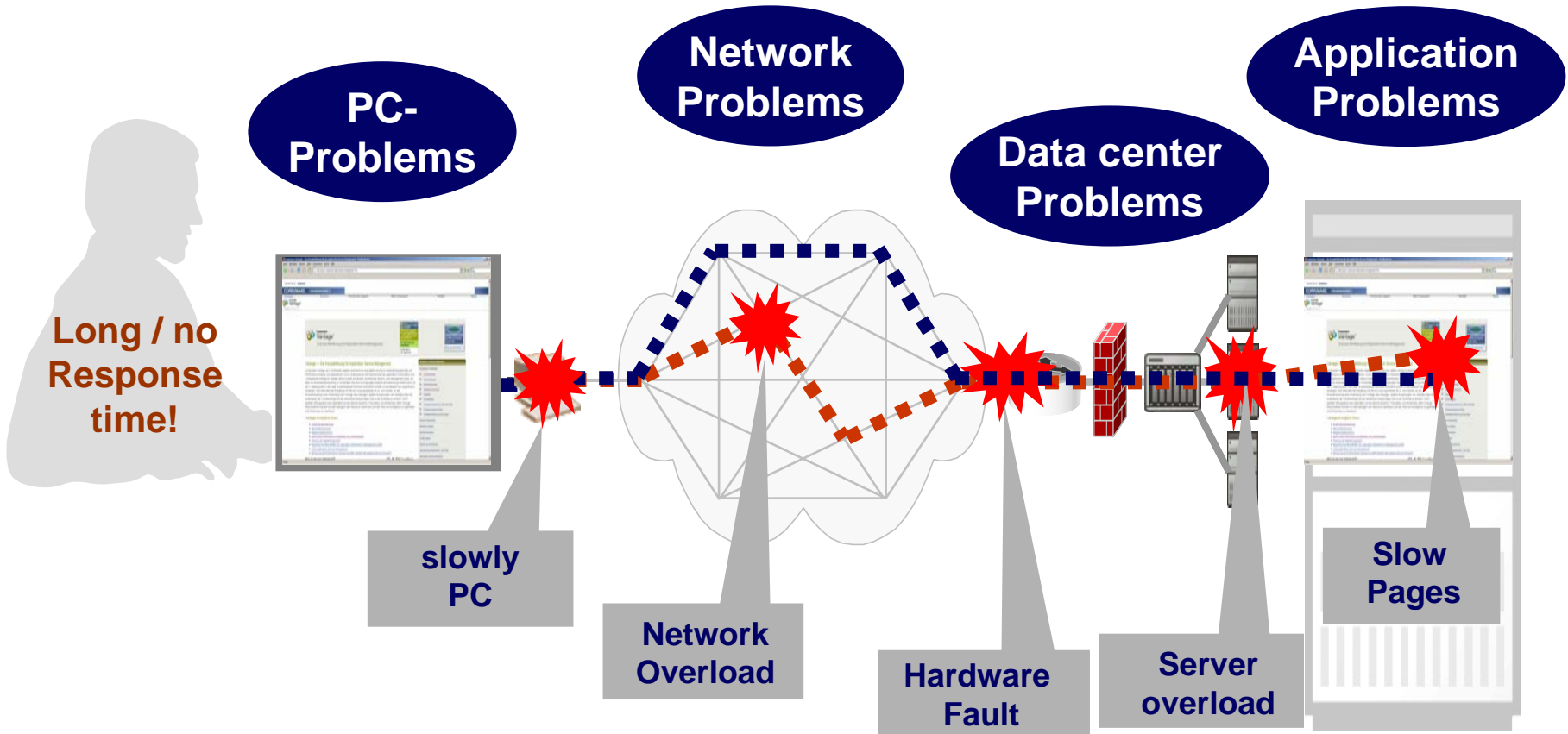
# Business Service Management Overview.

Core Competence customer



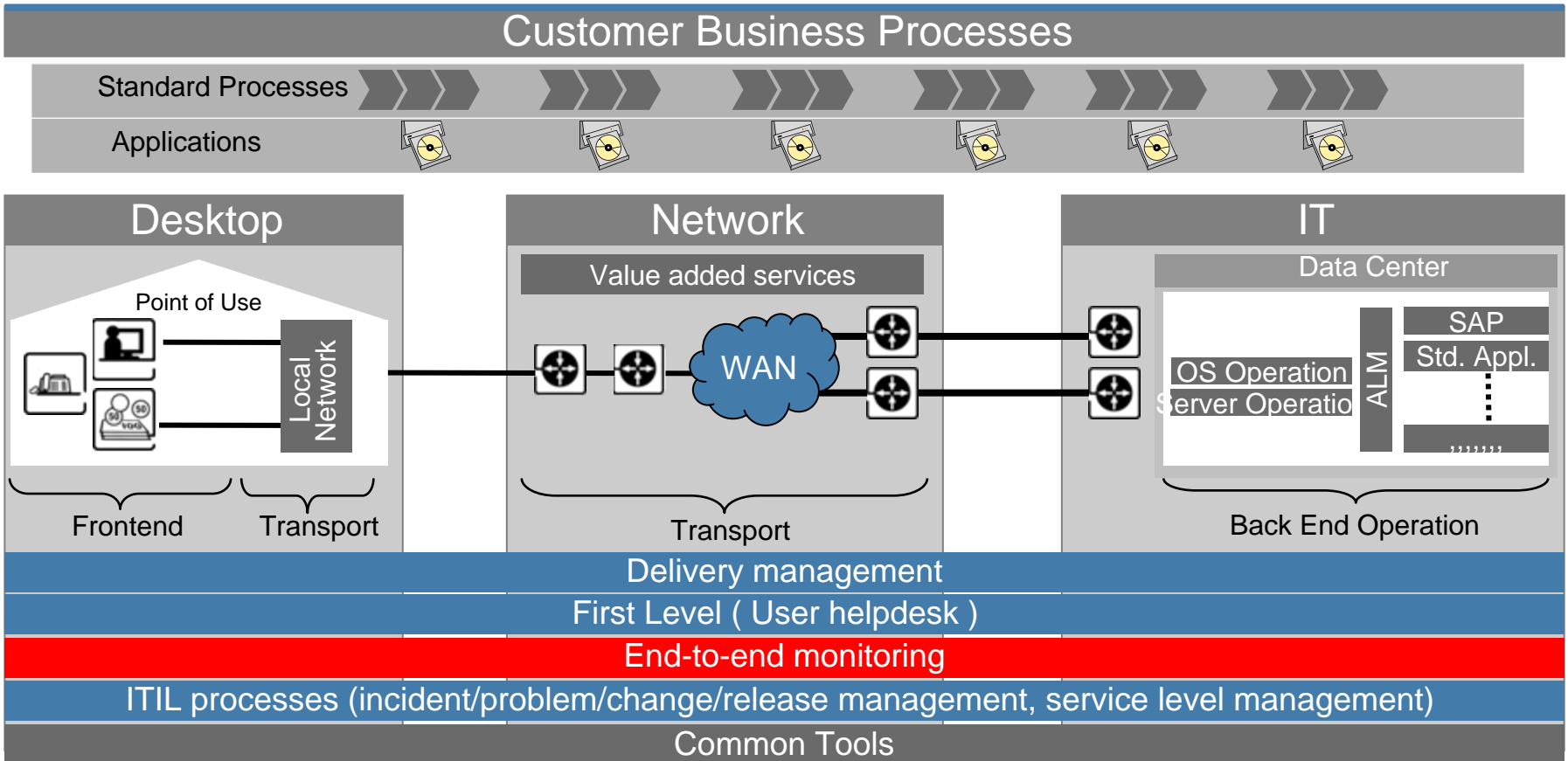
Core Competence T-Systems

# Business Service Monitoring. Situation.



# Business Service Monitoring

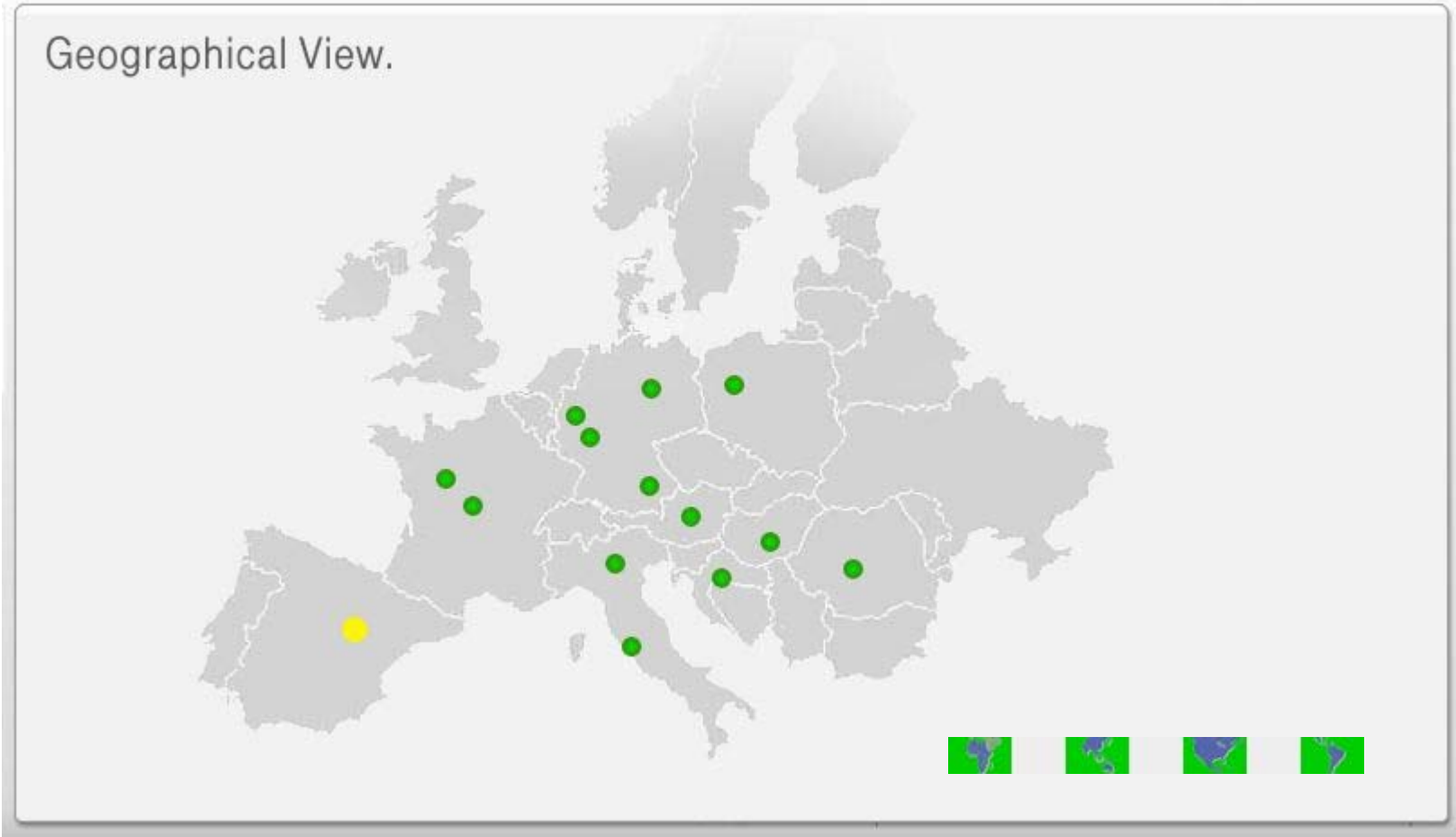
Integrated ICT means: one-stop shopping, e2e services & service delivery





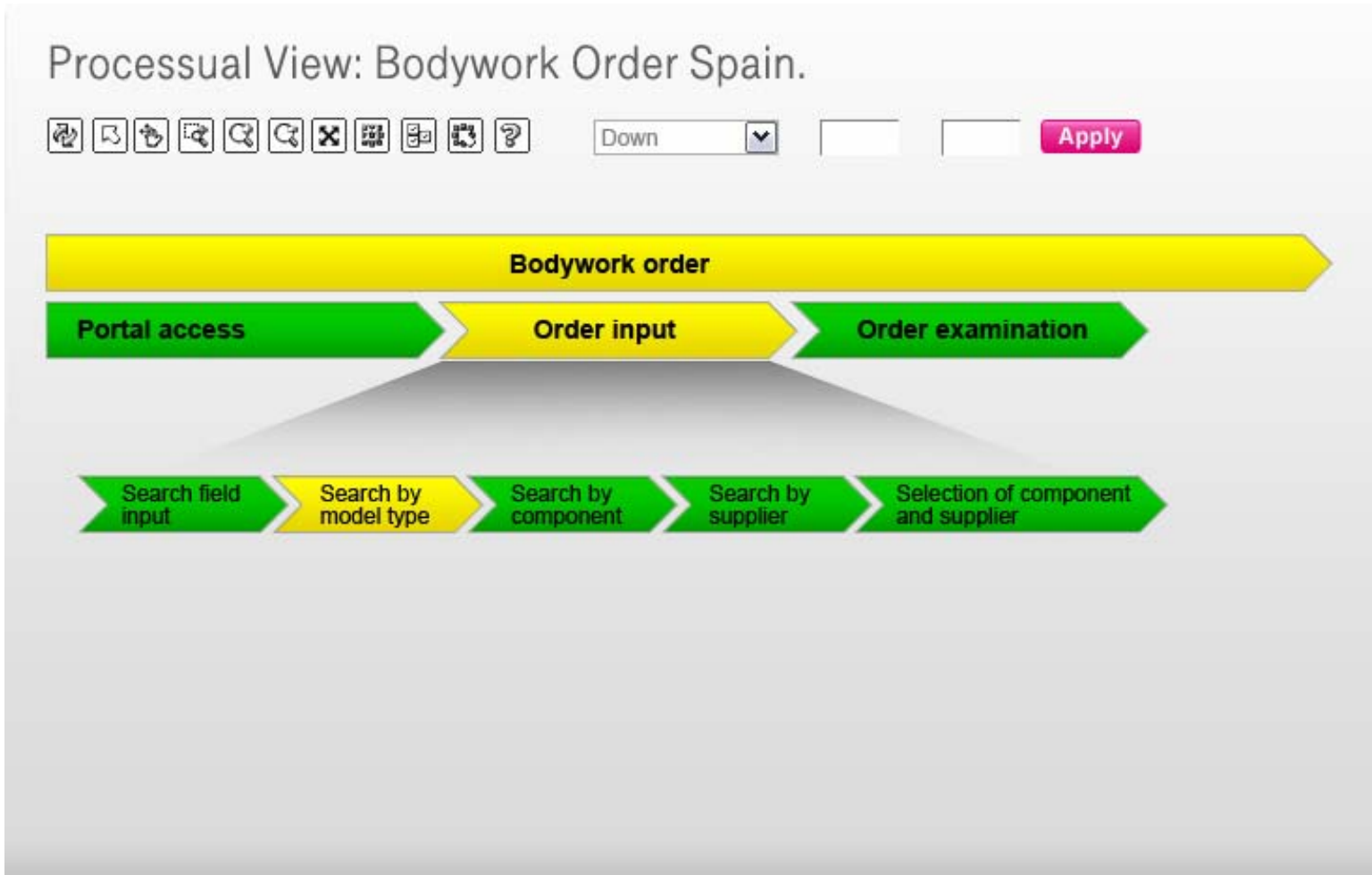
# Business Service Monitoring

## BSM Views. (1/4)



# Business Service Monitoring

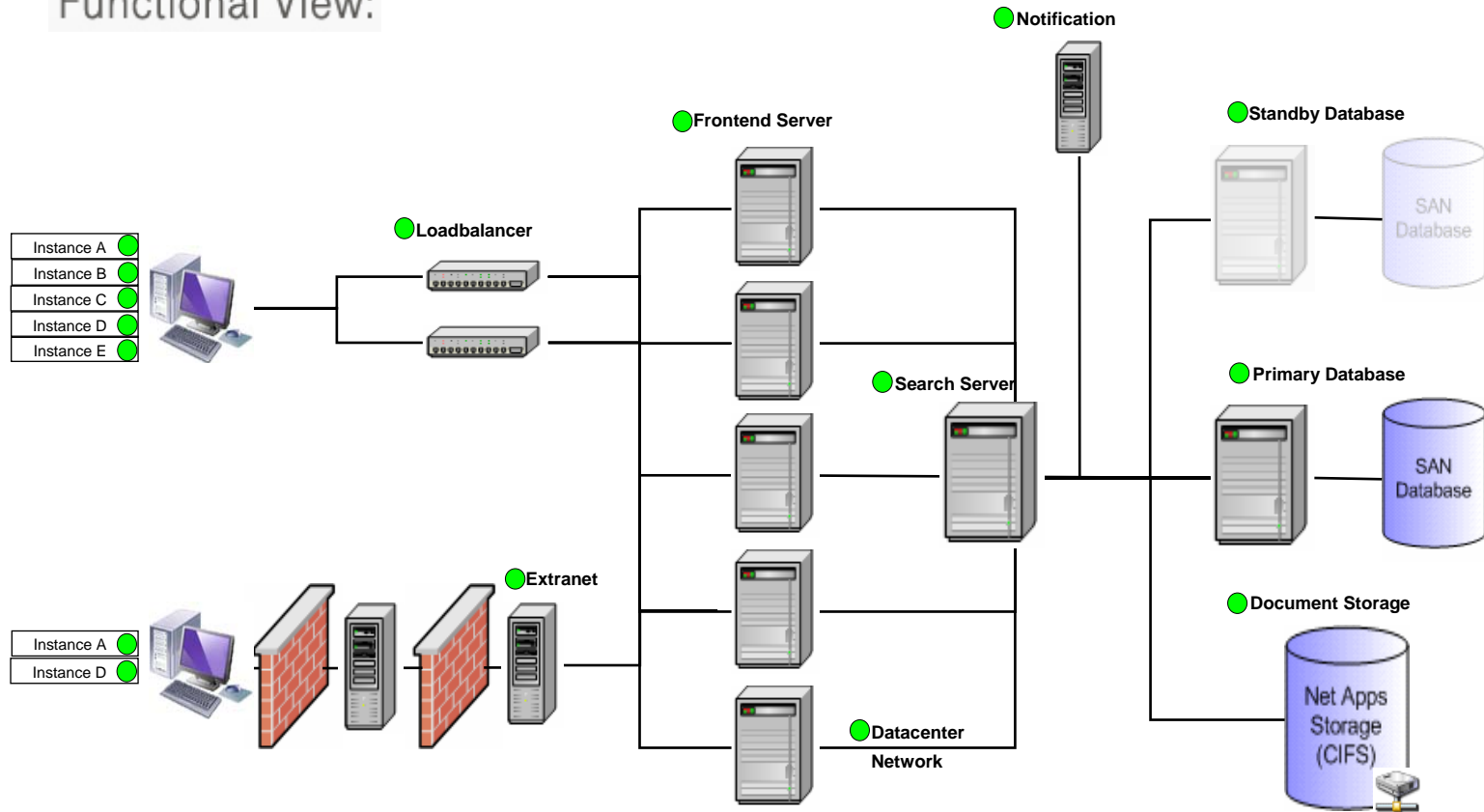
## BSM Views. (2/4)



# Business Service Monitoring

## BSM Views. (3/4)

Functional View:



# Business Service Monitoring BSM Views. (4/4)



# 기억하실 3가지 !

1. 통합 관제 = 정확한 정보 (Visibility) + 판단과 조치 (Command & Control)
2. 그러나, 데이터는 너무나 많고, 흩어져 있습니다. 사람은 적고,,,
3. 똑똑한 Command Center가 필요한 때입니다.



감사합니다 !