



COMARCH

How to improve customer experience with a self-organizing network

Lukasz Mendyk

OSS Product Manager, Comarch

Agenda

- Introduction
- Self-Organizing Network and Customer Experience
- What are the challenges?
- Cell Outage Compensation example
- Architecture
- How to employ „Plug & Play” for improving CE
- Leveraging „Self-Optimizing” SON function
- How to employ self-healing
- How to gain trust in automation
- Conclusions

Customer Experience

- According to Yankee Group's report „Delivering a World-Class Customer Experience” there are **4 dimensions of customer experience**:
 - Company and brand
 - Products and services
 - Channel
 - Delivery and operations
 - Does the product work anywhere, anytime?



Customer Experience - Self-Organizing Network

- **A congested network leads to poor customer experience**
- LTE is a „better network” - an anticipated remedy in mobile networks
- LTE – huge investments – a need to „kill two birds with one stone” – OPEX reduction
- **OPEX reduction by shifting from network management towards a Self-Organizing Network**
 - Automation is key
- **Self-Organizing Network goals:**
 - A direct goal – **cost reduction** by leveraging automation, reducing costs related to human work
 - **Customer Experience** – can this be the ultimate goal?

What are the challenges?

- Translating „better network” to „better customer experience”
- **Self-Organizing Network needs a „good driver” – proper metrics**
 - Improving technical parameters IS NOT a goal in itself
 - Improving Customer Experience IS
- SON – means „autonomy for network management”
- How to control SON so that it is in line with the business goal?
- Gaining trust in automation, tuning ability
- **Step-by step implementation**
- Multi-vendor, multi-domain support



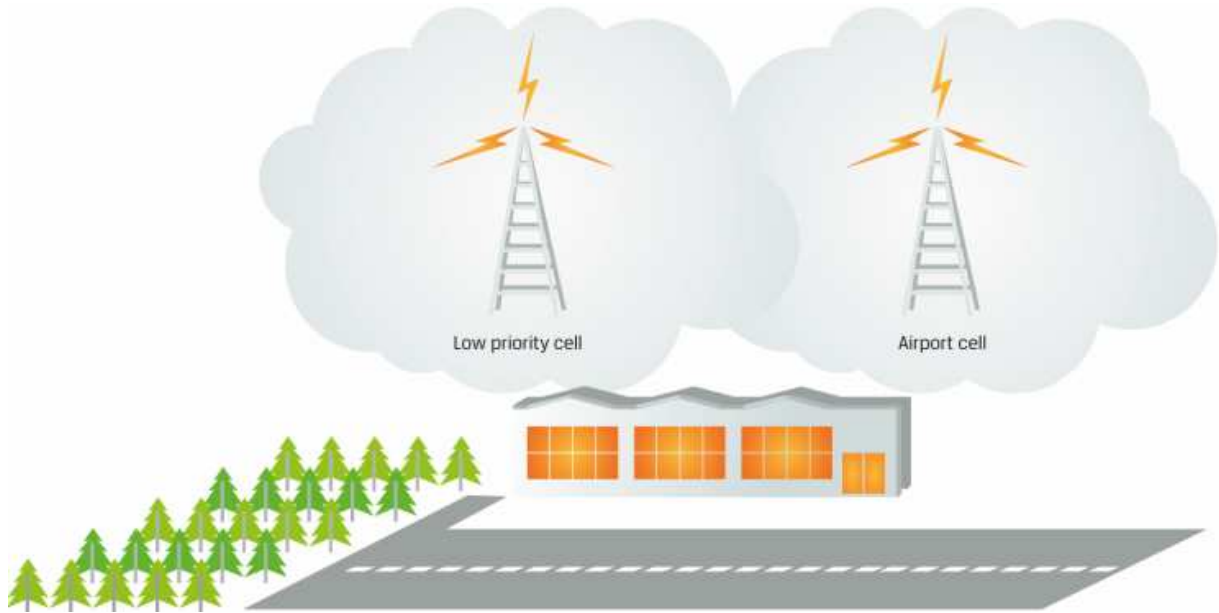
COMARCH

Using the right criteria - example

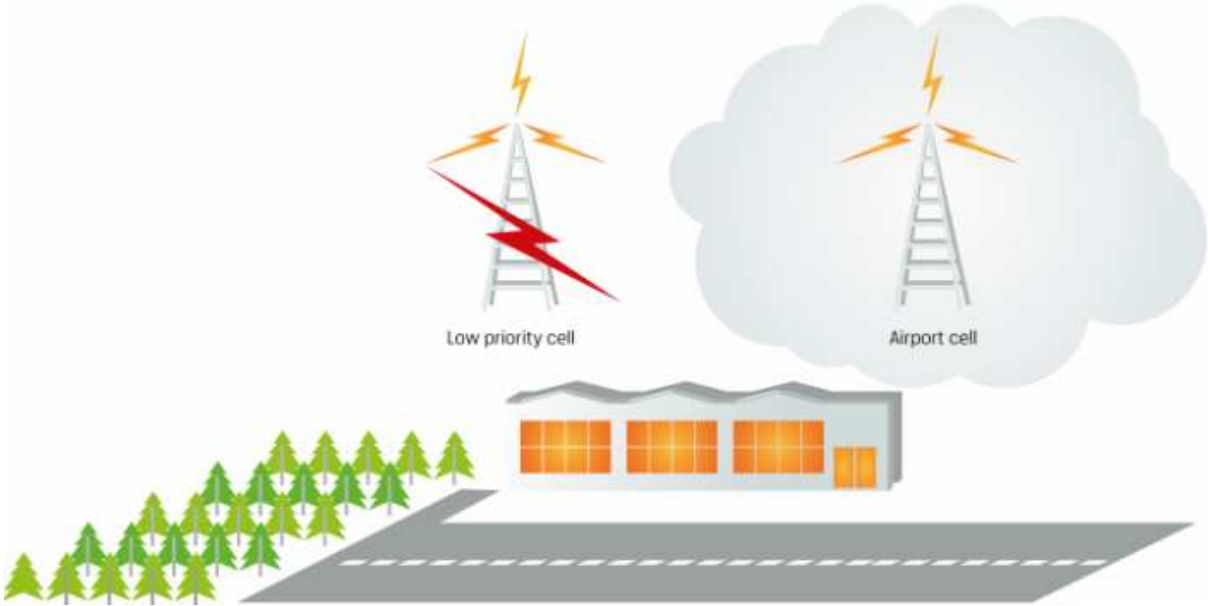
- „Better network” vs. „better customer experience”
- Technical parameter optimization may not be the right criterion
- The right approach is **optimization based on the final goal** (not intermediary ones) Let's see the obtained results based on different criteria
 - **Cell Outage Compensation – SON function – an example scenario**

EXAMPLE

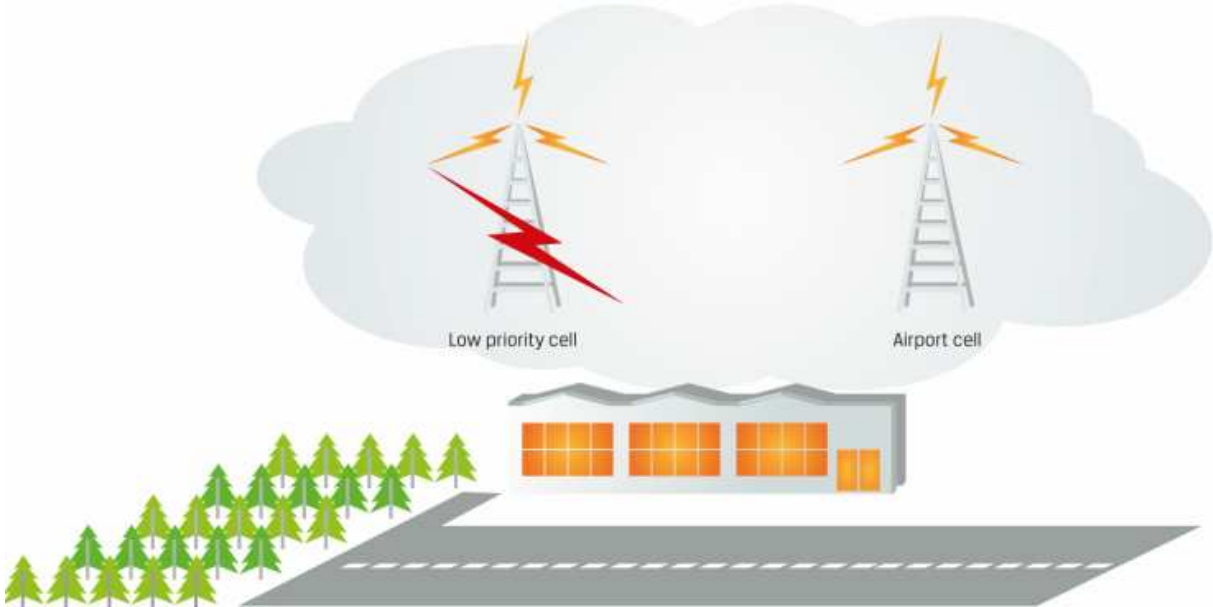
Cell Outage Compensation - example



Cell Outage Compensation - example



Cell Outage Compensation - example



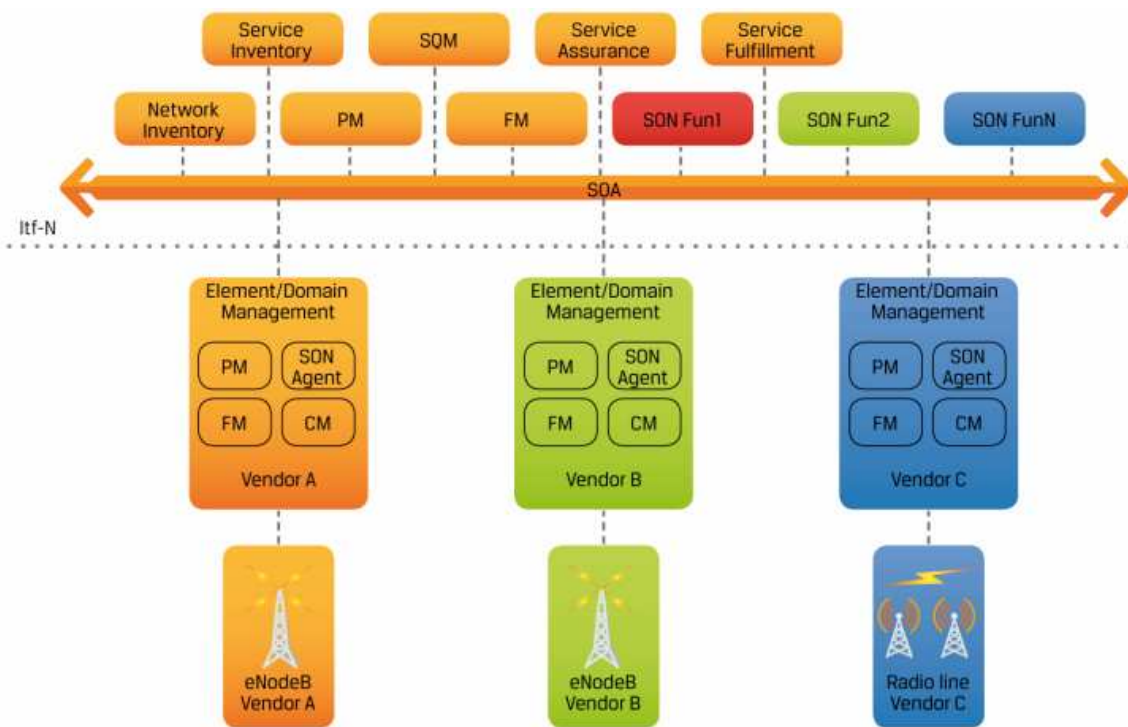
Cell Outage Compensation - example

- Compensation is based on the „borrowing resources” effect
- Network-centric implementation may cause the high priority cell (airport cell) service level to be degraded by the compensation mechanism
- A need for business goal control
- **What is the true goal of Cell Outage Compensation:**
 - NO – bringing the coverage back
 - YES – a **maximum service level which can be provided using limited resources**
- **Criteria:** summary service level after compensation must be „>” than the one just after an outage
- If not – the compensation scenario should be discarded

Lessons learned

- **SON must be driven by customer service criteria and metrics**
- Technical parameter optimization itself can't be a SON goal
- A holistic view of the network is needed to avoid a „local optimization” problem
- **A holistic view means**
 - both service and network (resource) view of the network
 - To translate service criteria onto network requirements
 - To calculate the impact of network optimization on services
 - horizontally the end-to-end view means a multi-domain, multi-vendor view of the network
 - To have a summary effect of network reconfiguration

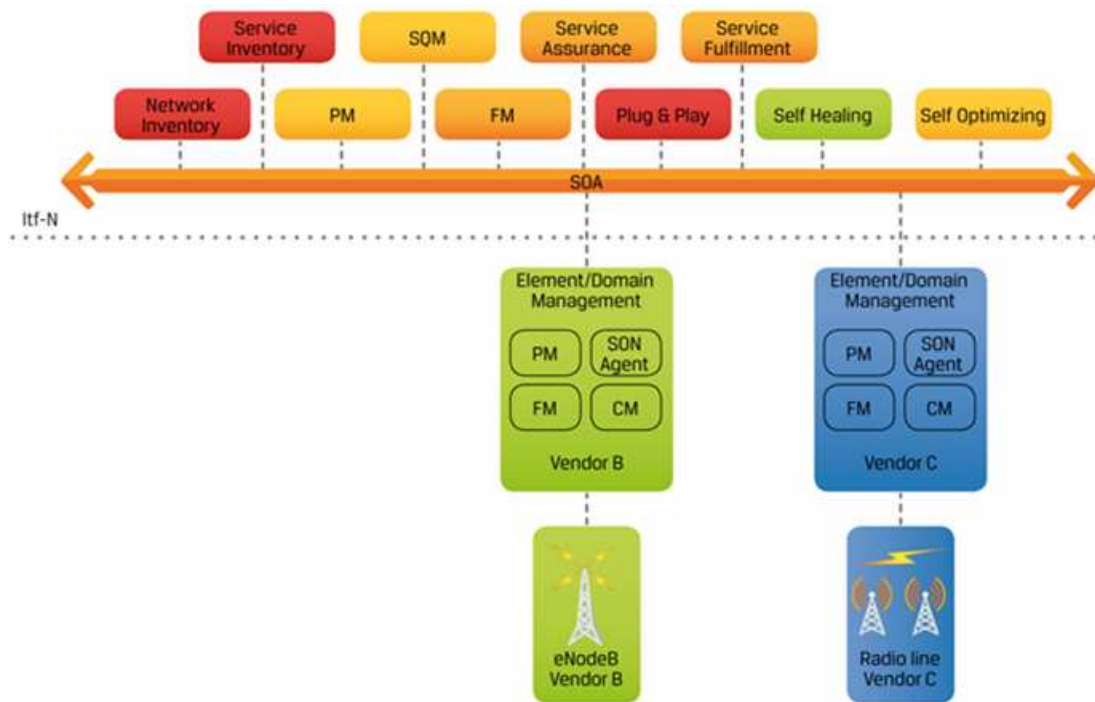
Self-Organizing Network – the architecture



Plug & Play and Customer Experience

- **Plug & Play – direct goals:**
 - new NEs should self-configure and self-optimize and be operational directly after being „plugged-in”
 - cost reduction
 - speeding up the process of network extension
- **Plug & Play – Customer Experience**
 - improving network support for customer services
 - quicker network extension – faster reaction to changing customer demands

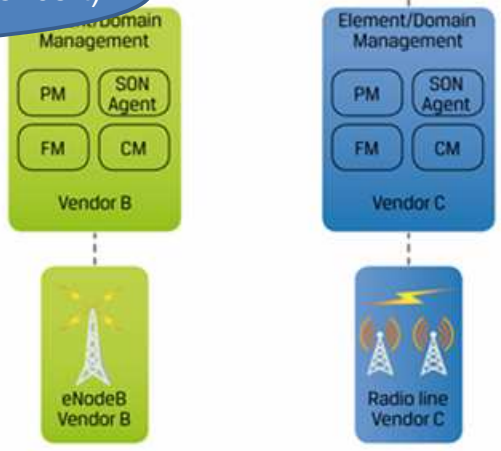
Plug & Play and Customer Experience



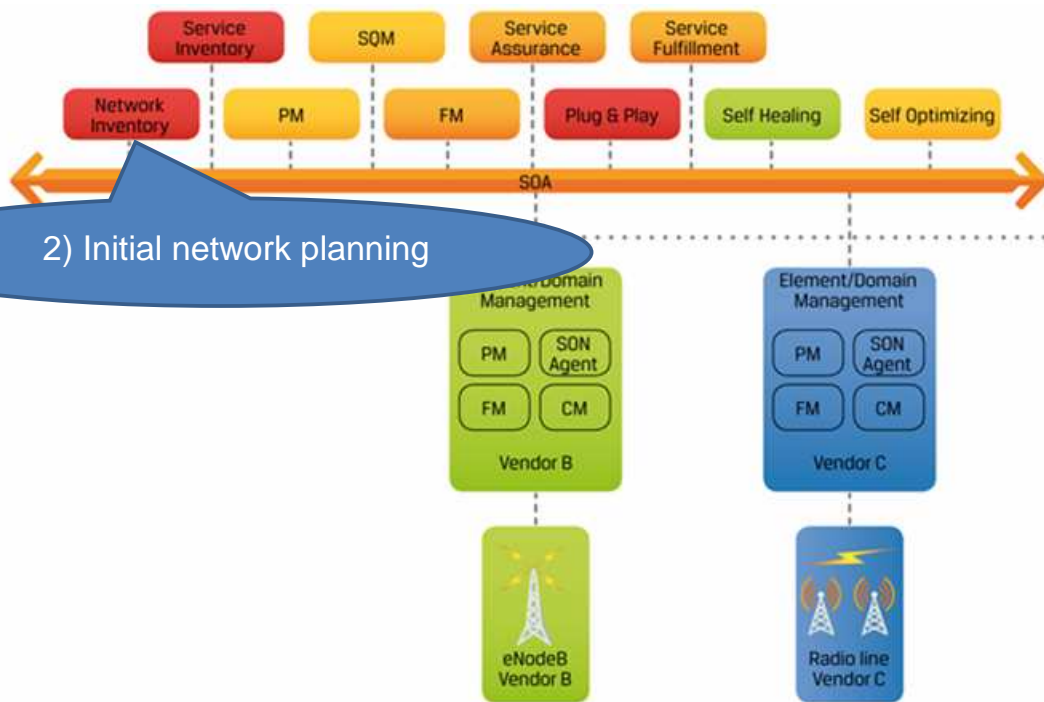
Plug & Play and Customer Experience



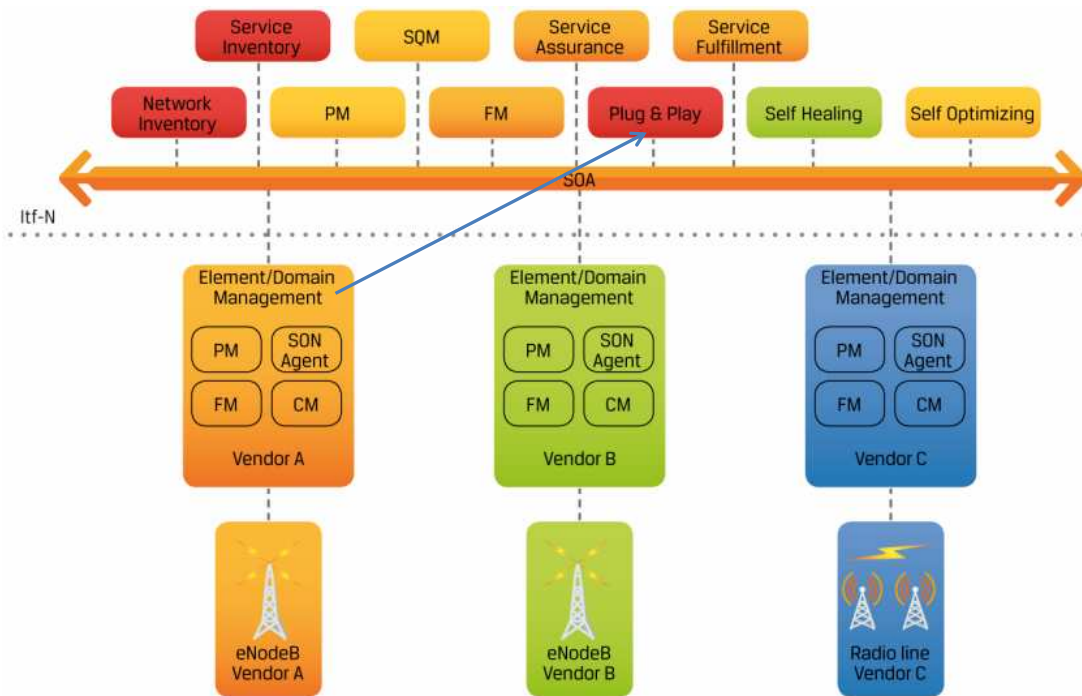
1) Define service criteria (a rock concert)



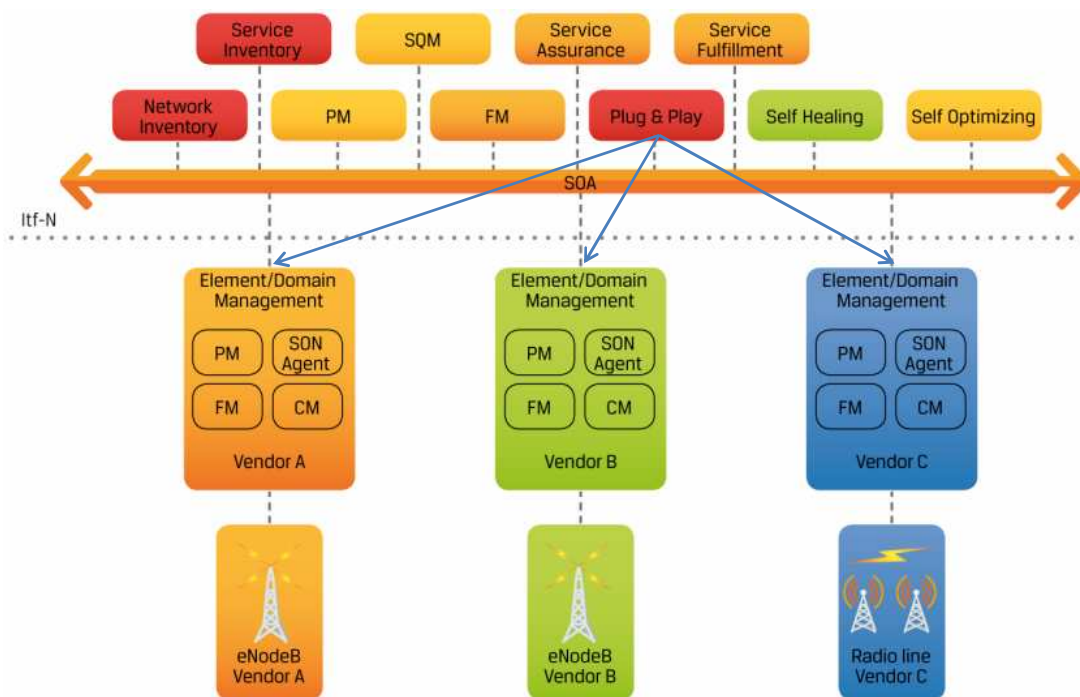
Plug & Play and Customer Experience



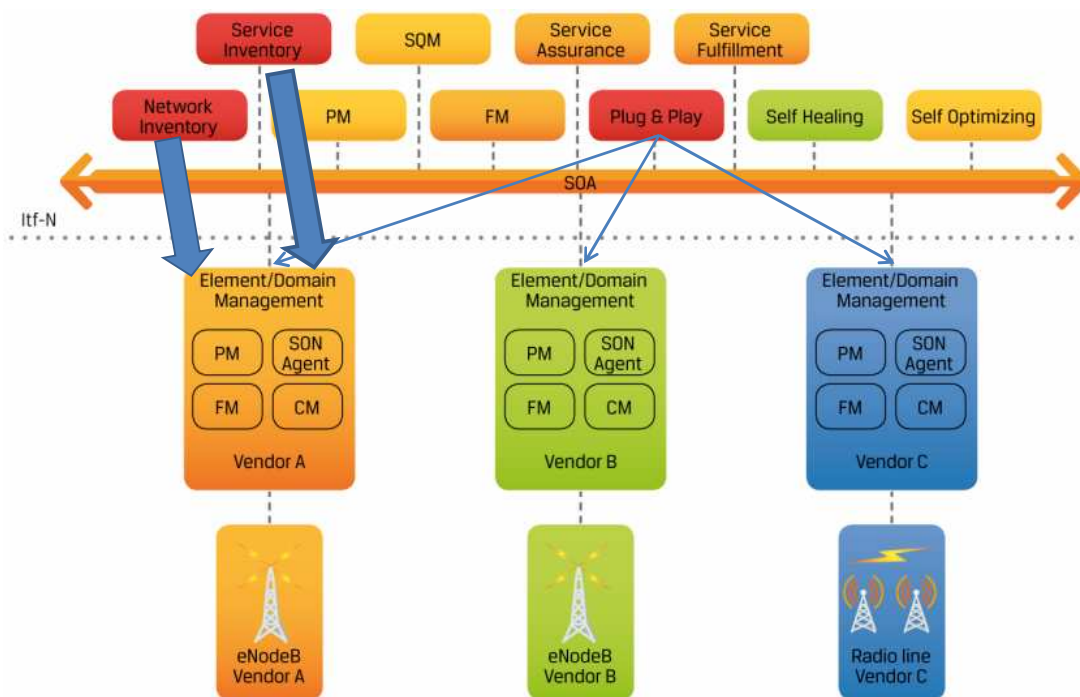
Plug & Play and Customer Experience



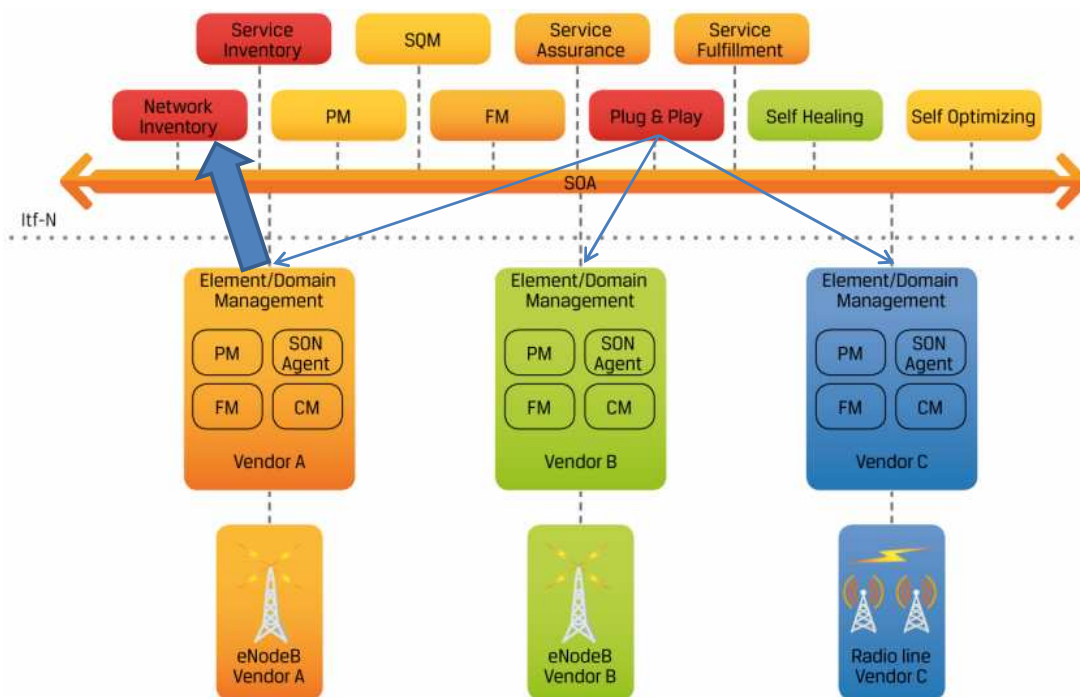
Plug & Play and Customer Experience



Plug & Play and Customer Experience



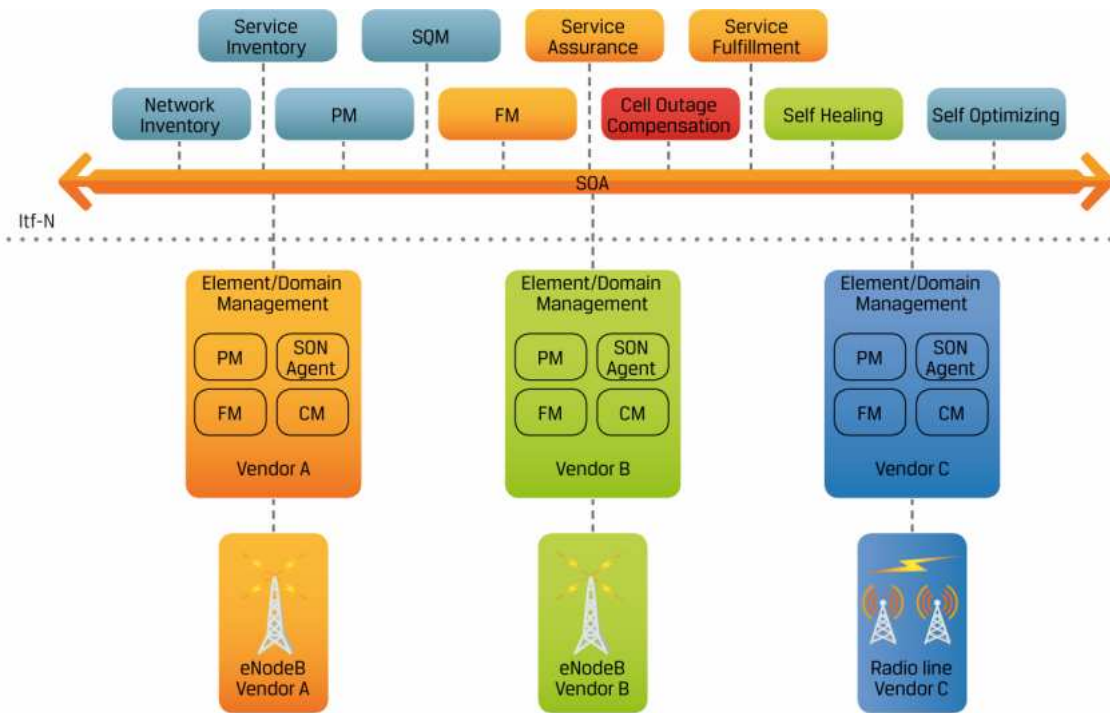
Plug & Play and Customer Experience



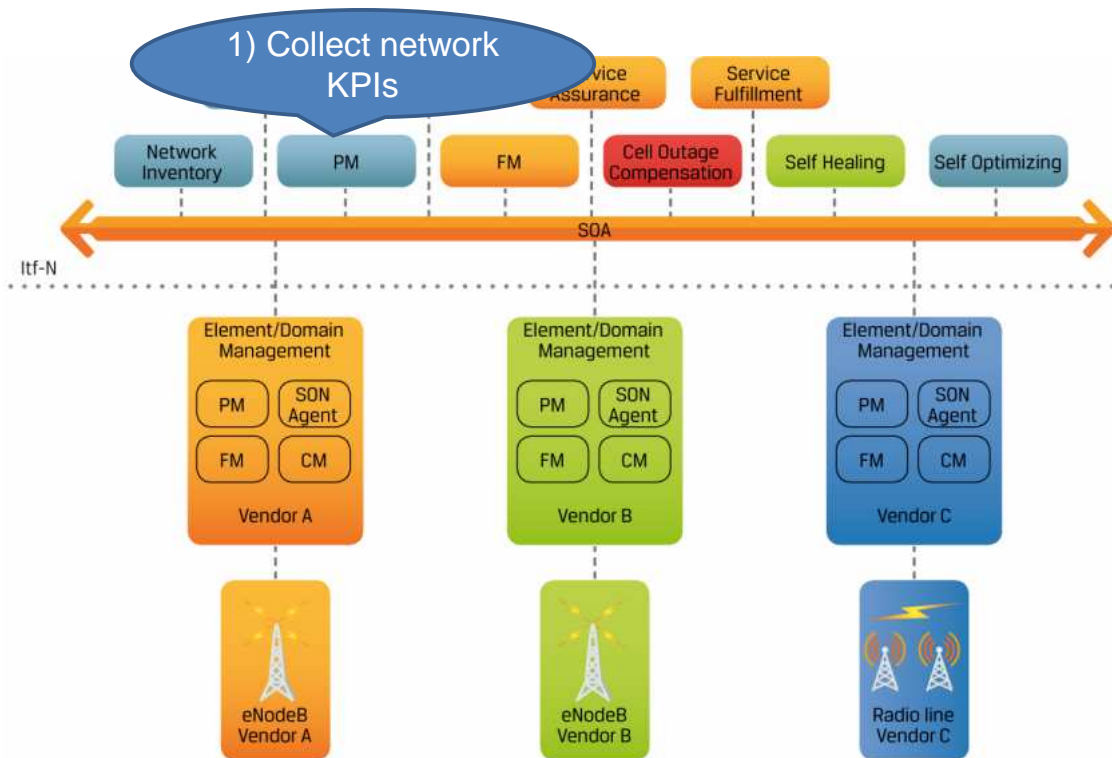
Self-Optimizing and Customer Experience

- **Self-Optimizing – direct goals:**
 - automating network configuration tuning process
 - no need for manual changes of technical parameters
 - cost reduction
- **Self-Optimizing– Customer Experience**
 - optimizing network support for customer services
 - automated network adjustments, according to changing customer service requirements

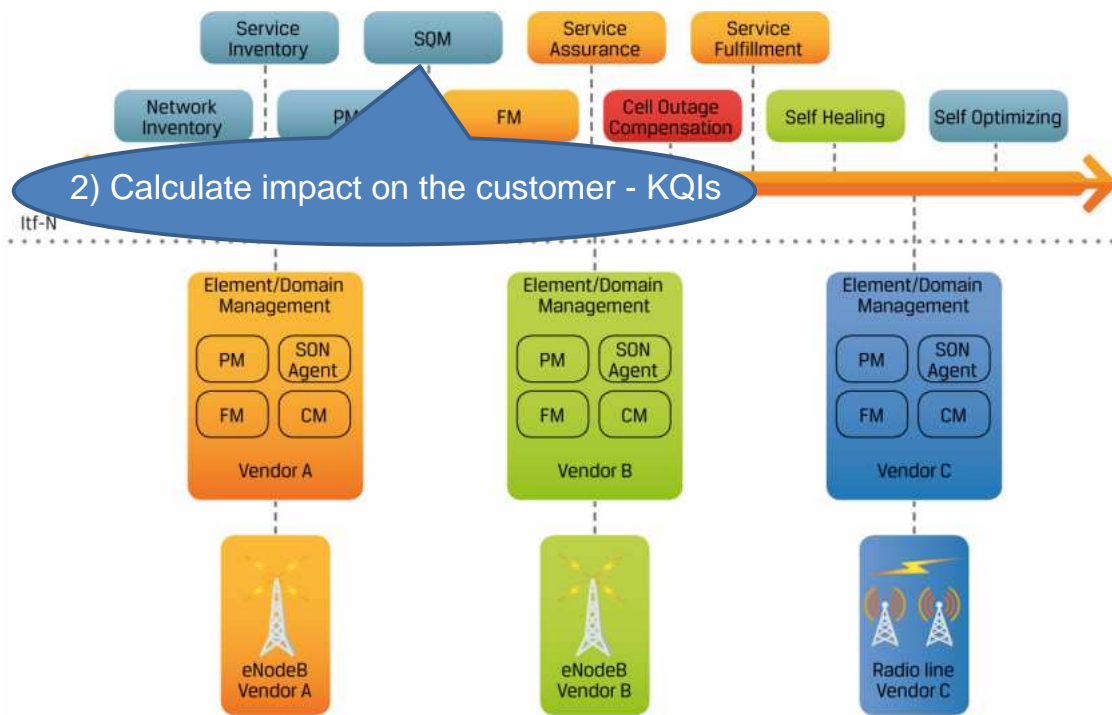
Self-Optimizing and Customer Experience



Self-Optimizing and Customer Experience

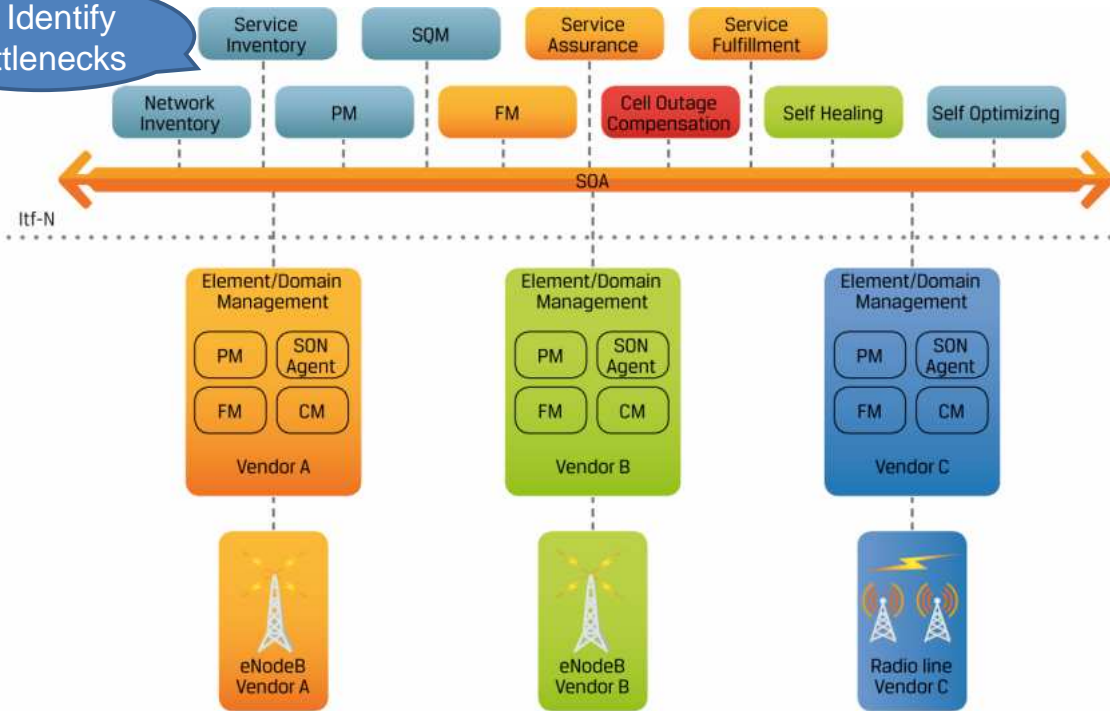


Self-Optimizing and Customer Experience

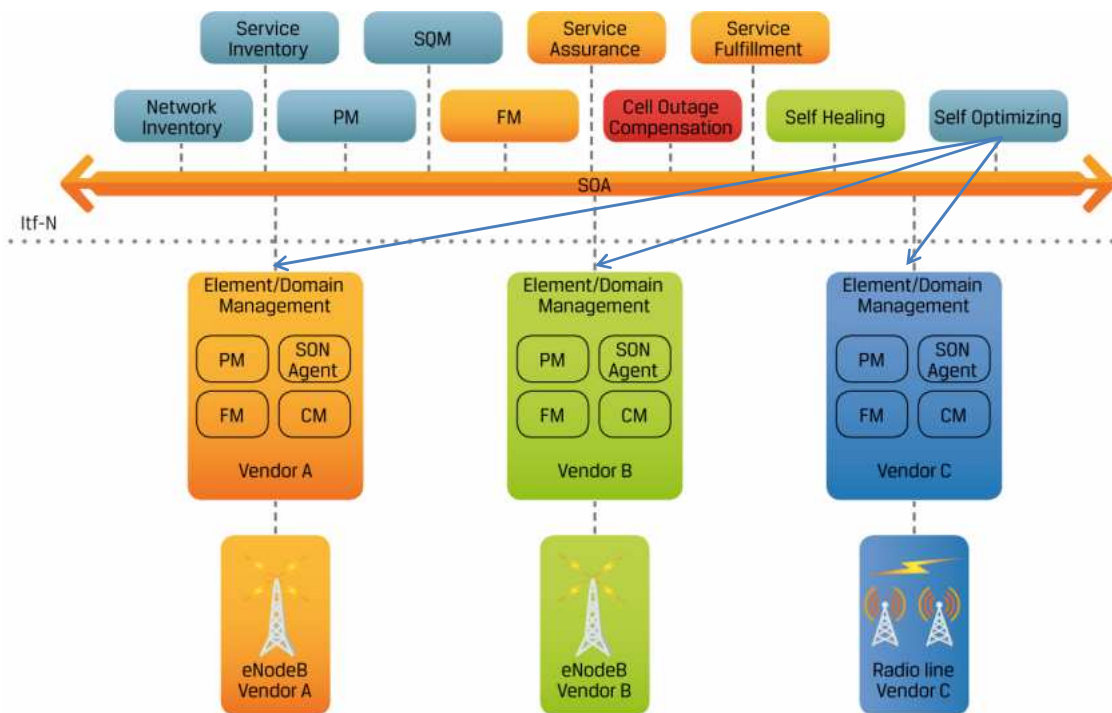


Self-Optimizing and Customer Experience

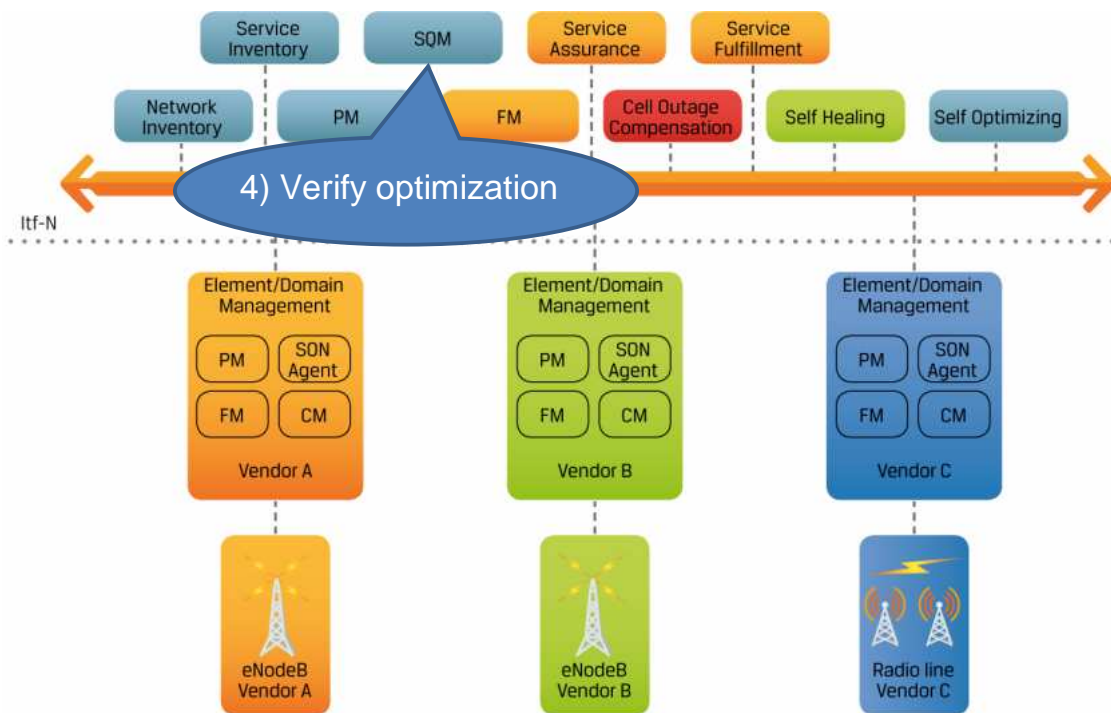
3) Identify bottlenecks



Self-Optimizing and Customer Experience



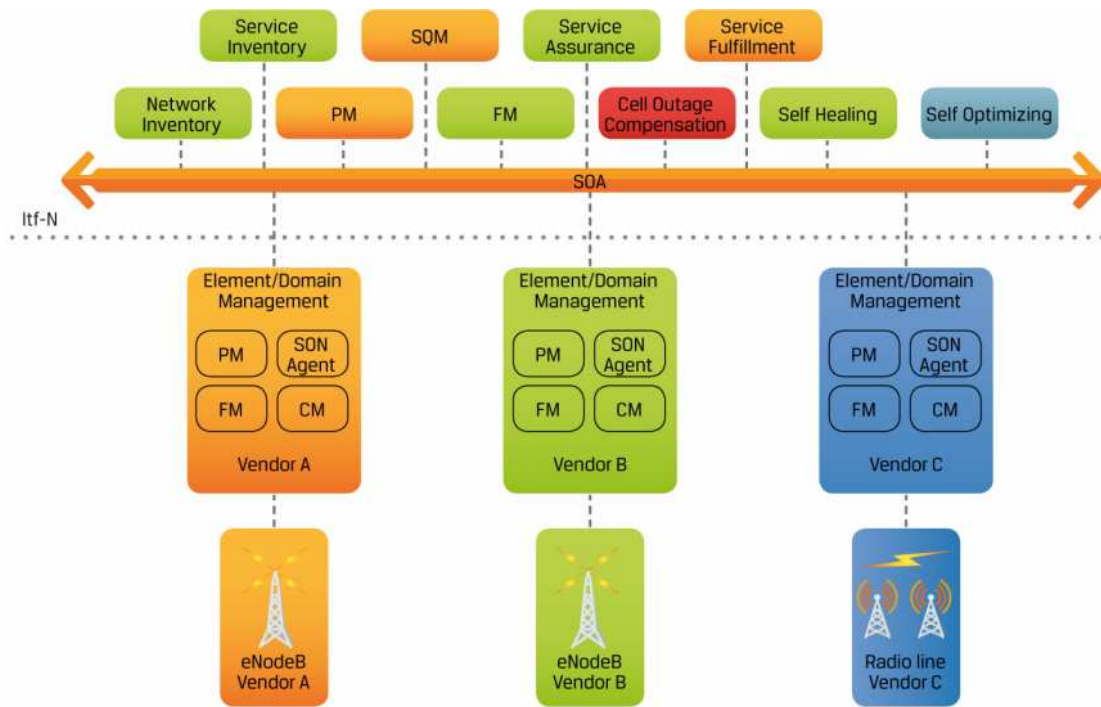
Self-Optimizing and Customer Experience



Self-healing and Customer Experience

- **Self-healing – direct goals:**
 - automating outage detection and problem resolution
 - no need for human intervention
 - cost reduction
- **Self-healing– Customer Experience**
 - Minimizing impact on customer services

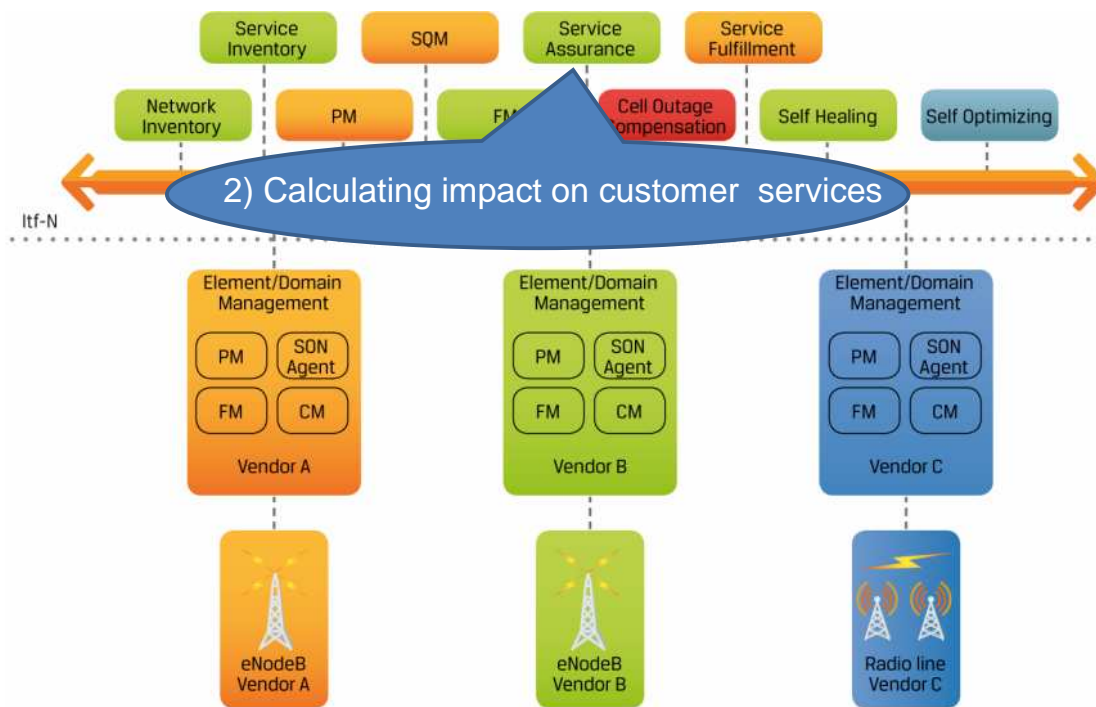
Self-healing and Customer Experience



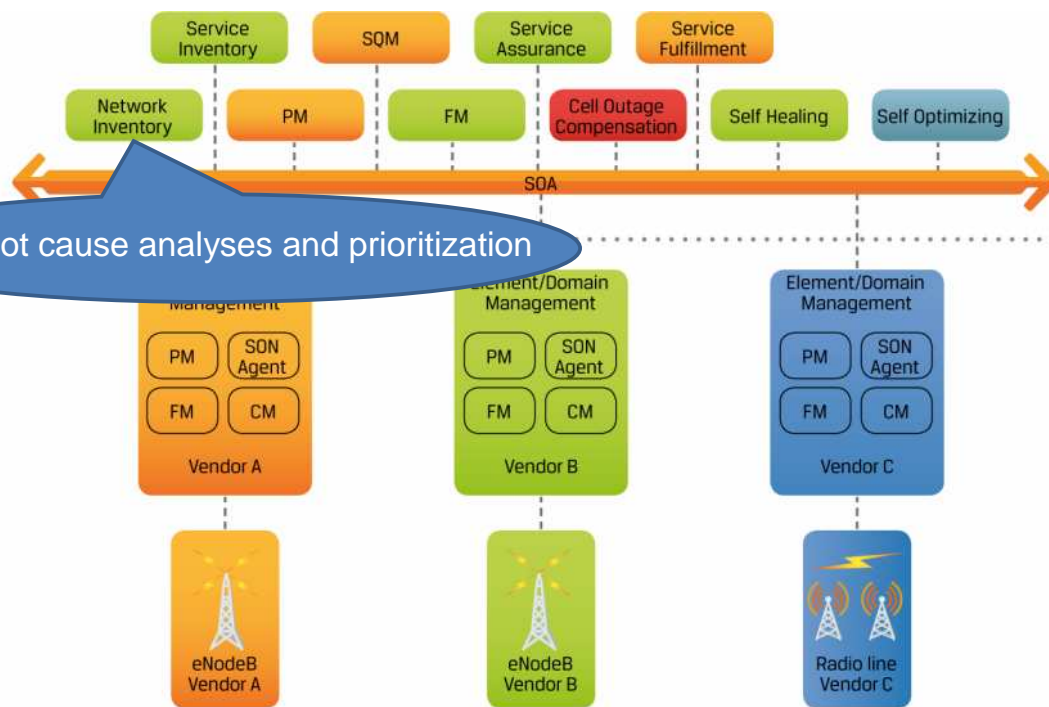
Self-healing and Customer Experience



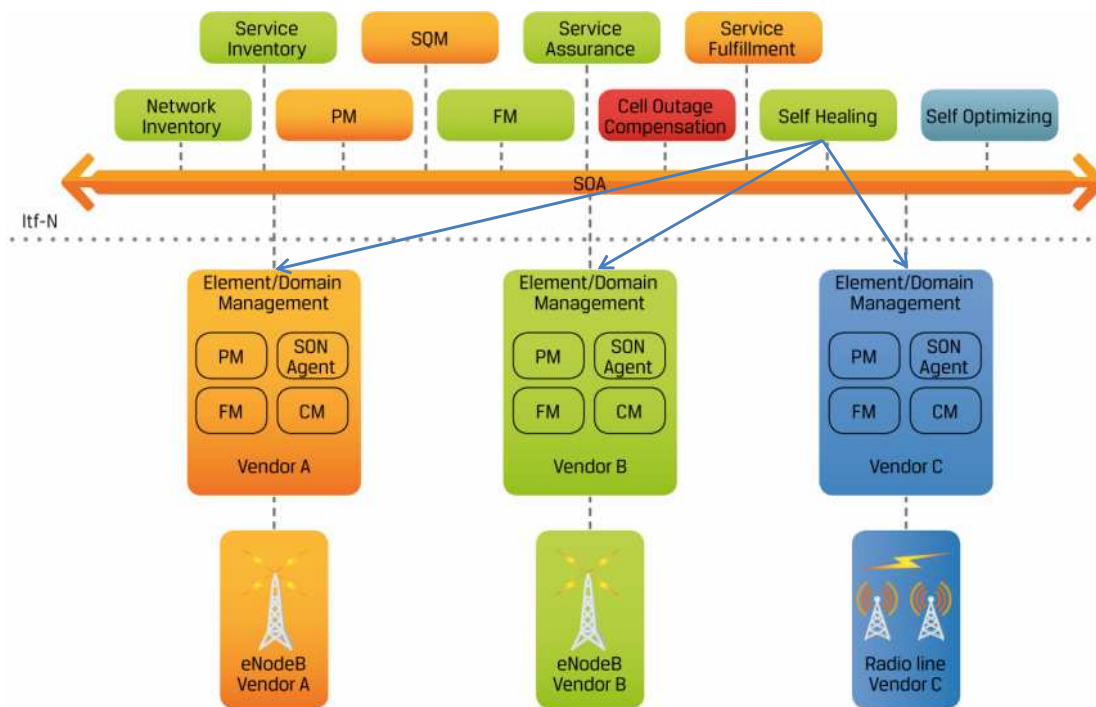
Self-healing and Customer Experience



Self-healing and Customer Experience



Self-healing and Customer Experience



How to gain trust in automation

- **Step-by-step implementation**
 - using the existing OSS systems in a novel way
- **Gaining trust**
 - manual, semi-automated, automated processes
 - measuring the effectiveness of automation routines
 - controlling automation via defined KPIs
 - tuning capabilities



How to gain trust in automation

- **A simple example for self-healing (self-diagnosing):**
 - root cause analysis (FM) at the beginning – just a hint for an operator to make a final decision
 - based on KPIs, if „hints” are always correct for the defined circumstances – an automated rule can trigger a defined correction action
 - using KPIs for verification if automated routines need manual corrections -> rule tuning
 - step-by-step replacement of manual processing of tasks with automated routines

Conclusions

- Self-Organizing Network - an **automation which can help improve customer experience**
- **Appropriate metrics and goals** for automated routines are essential
- Technical parameters vs. customer experience driven metrics
- **Comprehensive view of the network comprising both resources and services is crucial**
- **Leveraging the existing OSS ecosystem** guarantees step by step implementation and gaining trust in automation
- **Controlling and tuning automation via KPIs** is a necessity



COMARCH

Thank you
lukasz.mendyk@comarch.com

Copyright Comarch 2011