Analysing SON from a deployment perspective - Why, When, and How

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Outline

> TNO Intro

> SON Deployment – Why?

> SON Deployment – When?

> SON Deployment – How?

> Summary and Conclusions

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TNO Introduction

TNO

- TNO: acronym for The Netherlands Organisation for Applied Scientific Research
- Established by Dutch government in Dutch Law of 1932
- TNO Mission:TNO connects people and knowledge to create innovations that boost the sustainable competitiveness of industry and well-being of society
- TNO caters to industry and government needs for specific R&D and consulting
- TNO is independent of public and private interests
- TNO activities include: Consultancy, Contract research, Testing and certification, Licences, Performing statutory assignments
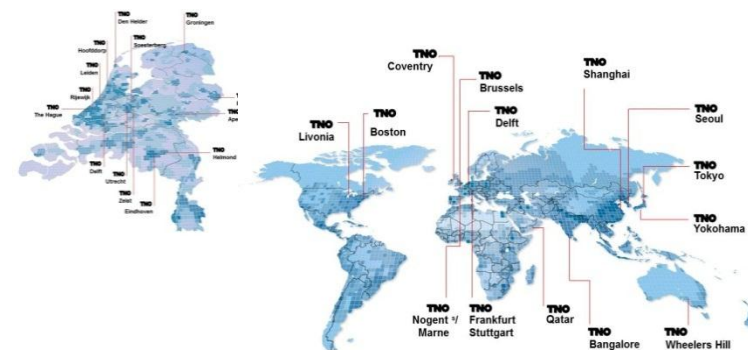
Business themes

Facts

- 4000+ staff
- € 564 million income in 2010
    - € 195 million public funding NL
    - € 364 million market income
- 350 staff in Telecoms
- Telecoms technology and business areas
    - E.g. NL LTE /EPC 800/1800Mhz study
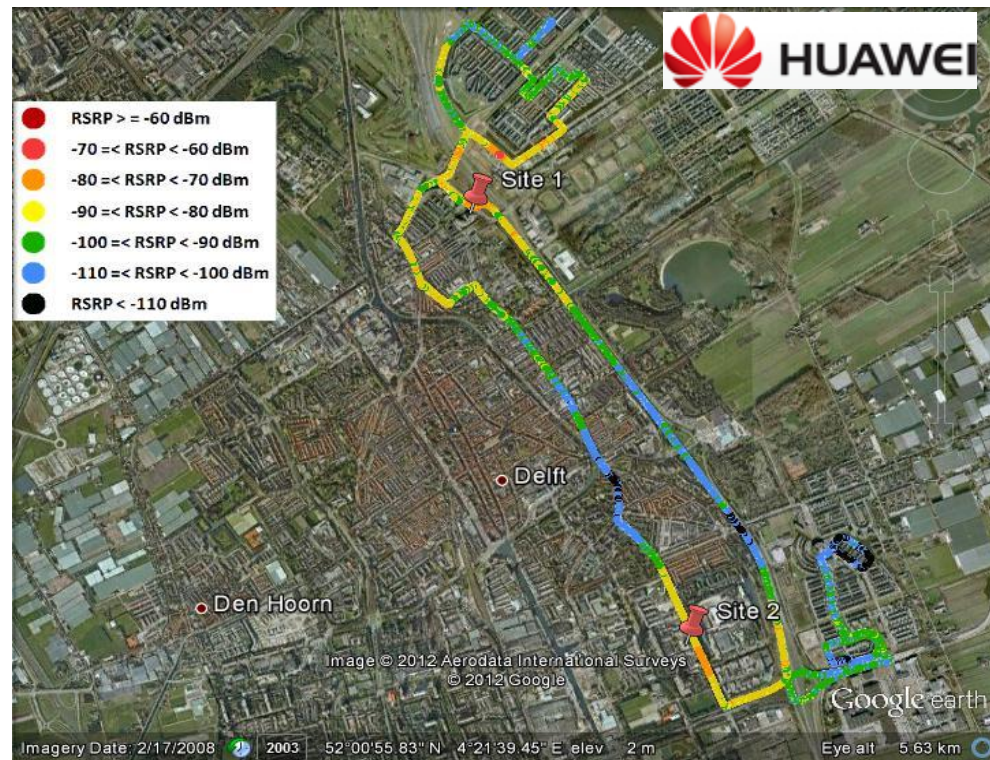- Telecom customers: Fixed, Mobile, Cable & Government

TNO offices: NL and international

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TNO Introduction – SON Expertise

- › LTE trial with Huawei – practical SON experience/testing.

- › Coordinator FP7 SOCRATES (2008-2010)
  - › www.fp7-socrates.eu, see D5.9

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TNO Introduction – SON Development

› FP7 SEMAFOUR (Sept. 2012 – Aug. 2015)

  › Successor of SOCRATES

› SON for multi-layer and multi-RAT

  deployment

  › Load sharing/balancing

  › Spectrum/interference
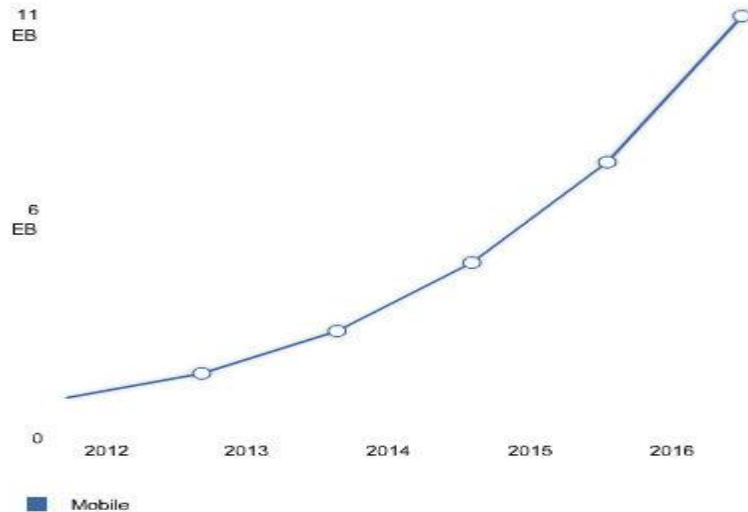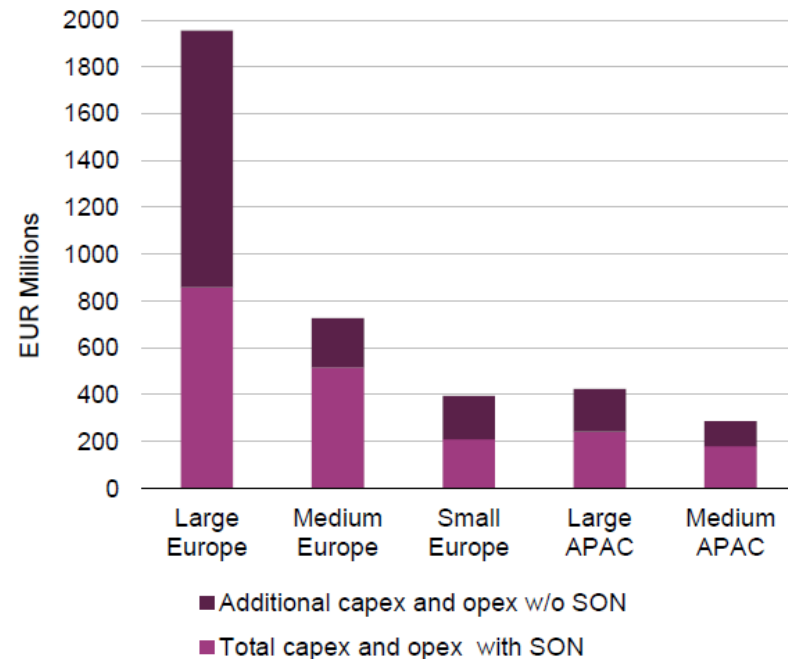
    management

  › Coordination & Policy

  › Etc.

SON Deployment – Why?

› Expected 9-fold mobile traffic increase worldwide (Source: Cisco VNI May 2012, see below) while revenues increase at much lower pace. This results in enormous pressure on CAPEX/OPEX.

› SON results in at least 25% CAPEX+OPEX savings over 3-year period in Europe/APAC (Source: Analysis Mason, "Hybrid SON RoI in realistic deployments of mixed 3G/4G networks", see below)
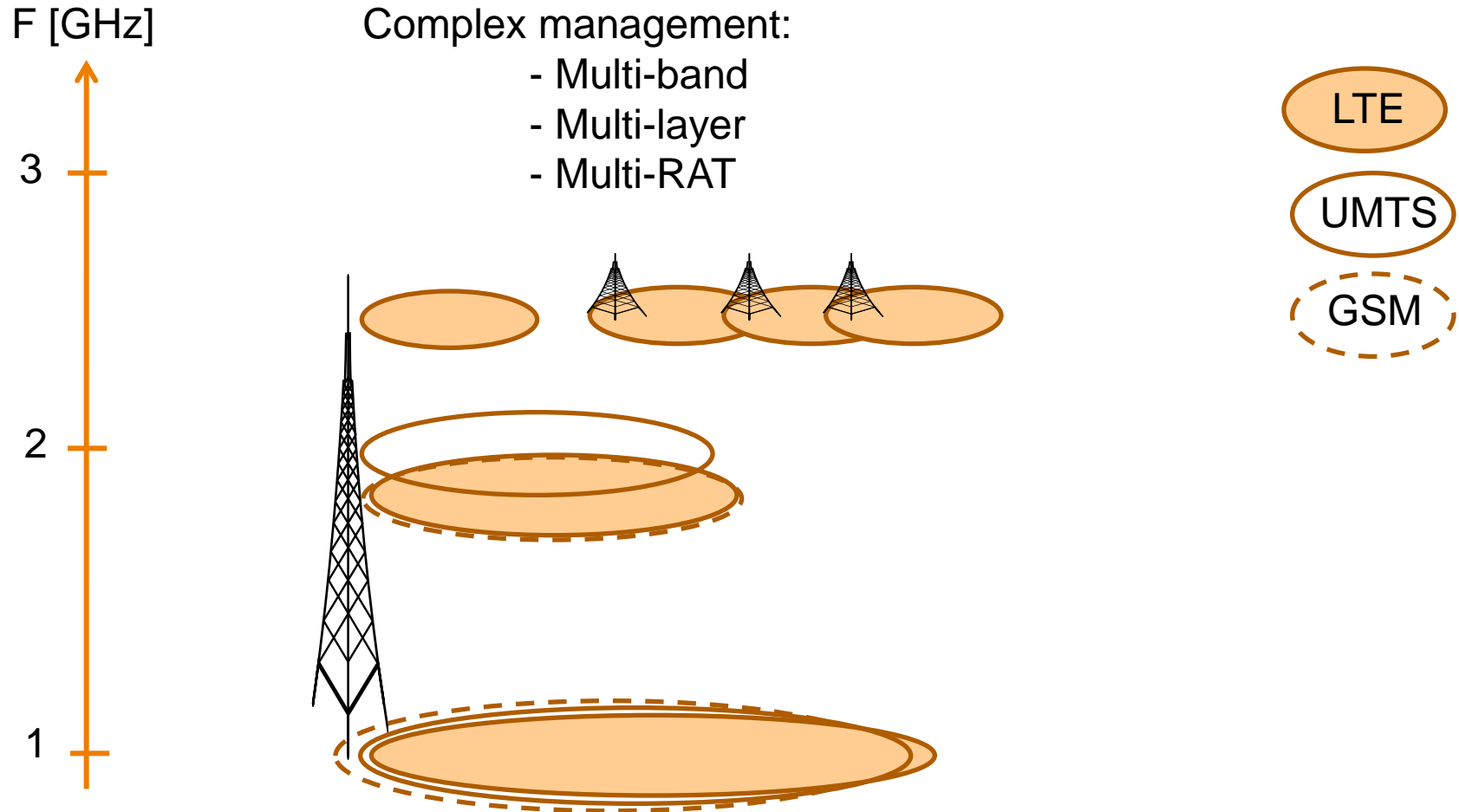

*Cisco VNI May 2012

SON Deployment – Why?

F [GHz]

Complex management:
- Multi-band
- Multi-layer
- Multi-RAT

LTE

UMTS

GSM

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SON Deployment – When?

› As soon as possible: self-configuration and self-healing.

  › Self-optimisation depending on network maturity and traffic

› For all deployed networks , not just LTE

  › Some SON solutions proprietary for UMTS and GSM

  › Inter-RAT SON for LTE inter-working with UMTS and GSM

› SON in GSM/UMTS slower and less extensive due to legacy networks _and terminals_

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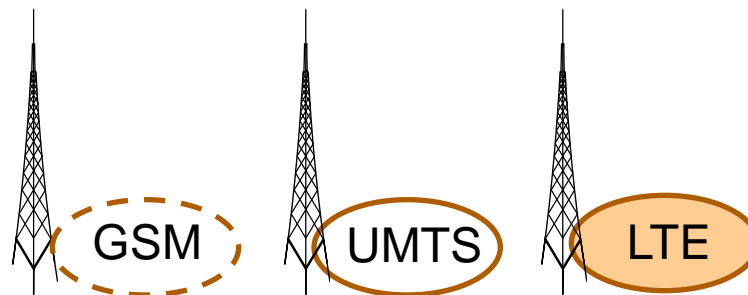
SON Deployment – How?

› Perform process audit where SON impact is expected

    › Examples: node installation, outage management, various optimisations, etc.

› Making the SON business case

    › SON technology status

    › SON potential/benefits

    › SON costs

› SON gradual introduction

    › Driven by the business case

    › In steps towards full automation

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SON Deployment – How?

Process Audit

Manual Effort

Software Tools

IT Support

Coverage

Capacity

Quality

> What is process impact on coverage, capacity, quality?

> What is the amount of manual effort in the process?

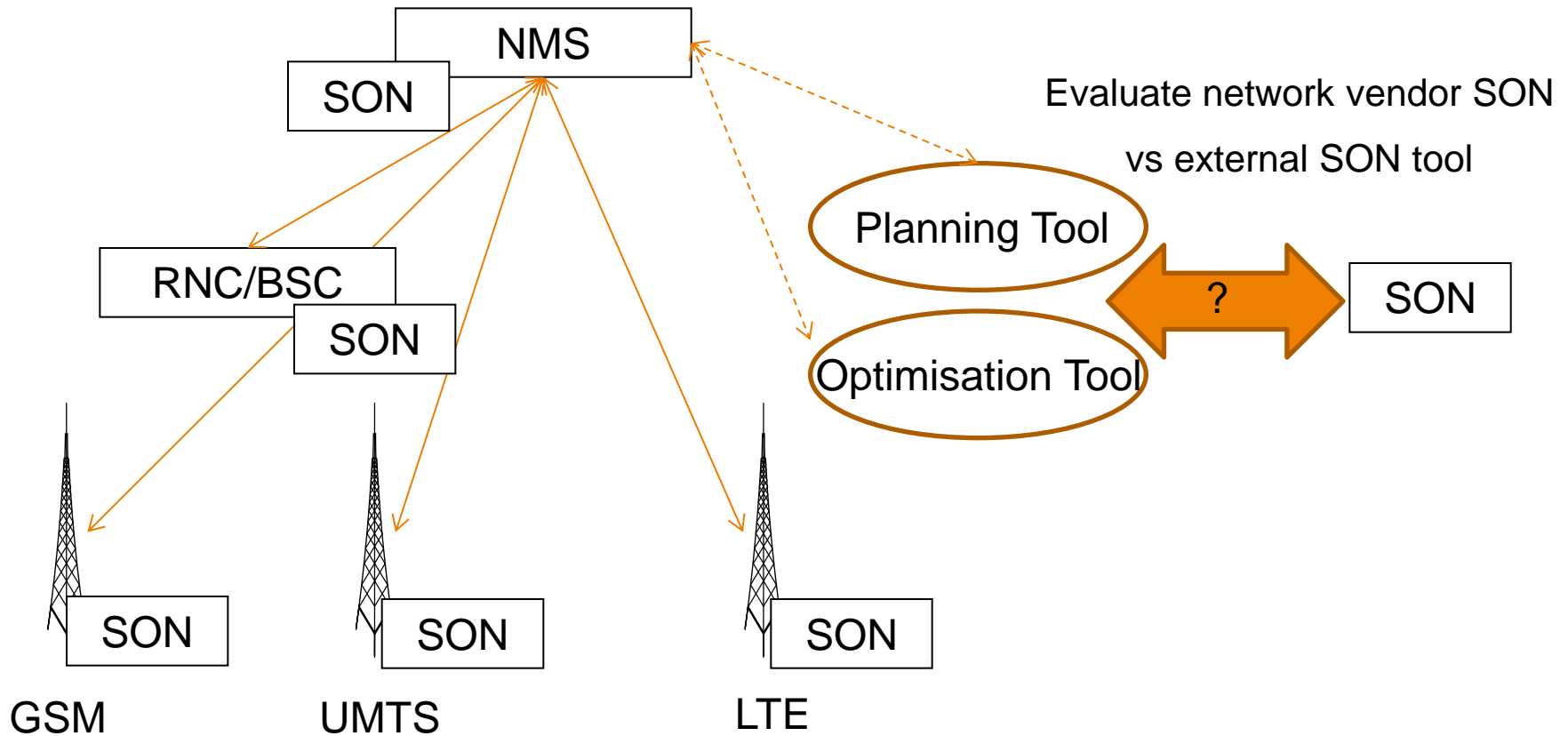> Which software tools are used? What is the IT support needed?

> Etc…

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SON Deployment – How?

SON Business Case

OPEX Reduction

CAPEX Reduction

$

SON Availability

› Select e.g. TOP 5 SON business cases to start the deployment

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SON Deployment – How?

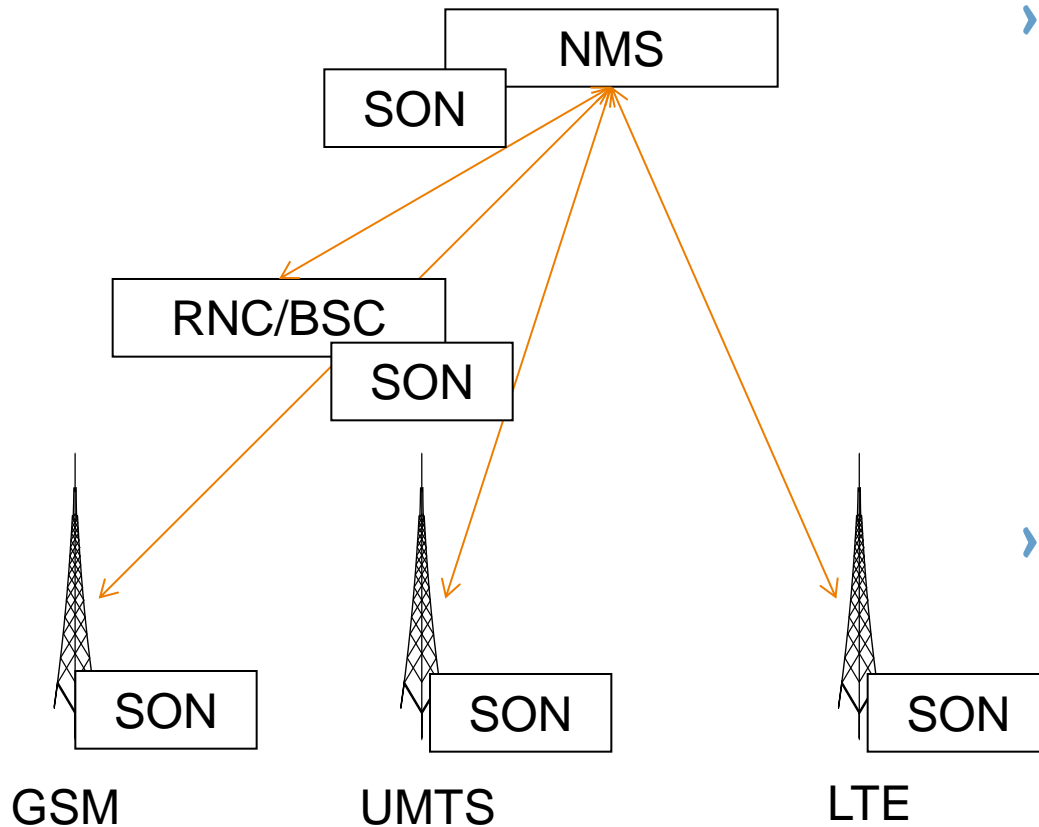"Self Organising Network", 3-4 October 2012, Cannes, France

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SON Deployment – How?

- › Gradual deployment:
  - › Start with small confined area. Extend as confidence grows
  - › Start with limited parameter range. Extend as confidence grows
  - › Start with human approval. Skip as confidence grows.
- › Necessary to have:
  - › Visibility on SON activity, parameter (in)stability, conflicts
  - › SON coordination/policy

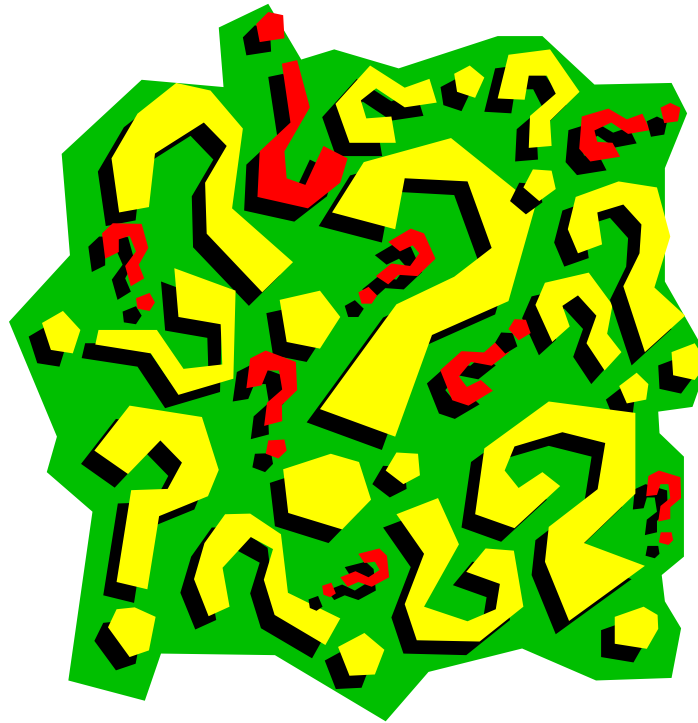"Self Organising Network", 3-4 October 2012, Cannes, France   04/10/2012

Summary

> SON deployment unavoidable as CAPEX/OPEX under pressure while traffic grows significantly

> SON deployed as soon as possible depending on network maturity, legacy status and traffic levels

> SON deployment roadmap: process audit, business case analysis, gradual installation

Recommendations

> Perform detailed process audit to estimate OPEX/CAPEX potential of SON

> SON deployment based on e.g. TOP 5 processes ranked according to benefit/cost ratio

> Gradual installation as SON is proven in practice. Extend deployed area, parameter ranges, and minimize human intervention.

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Questions

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