DOCOMO Euro-Labs

ETSI Network Functions Virtualisation (NFV): Overview

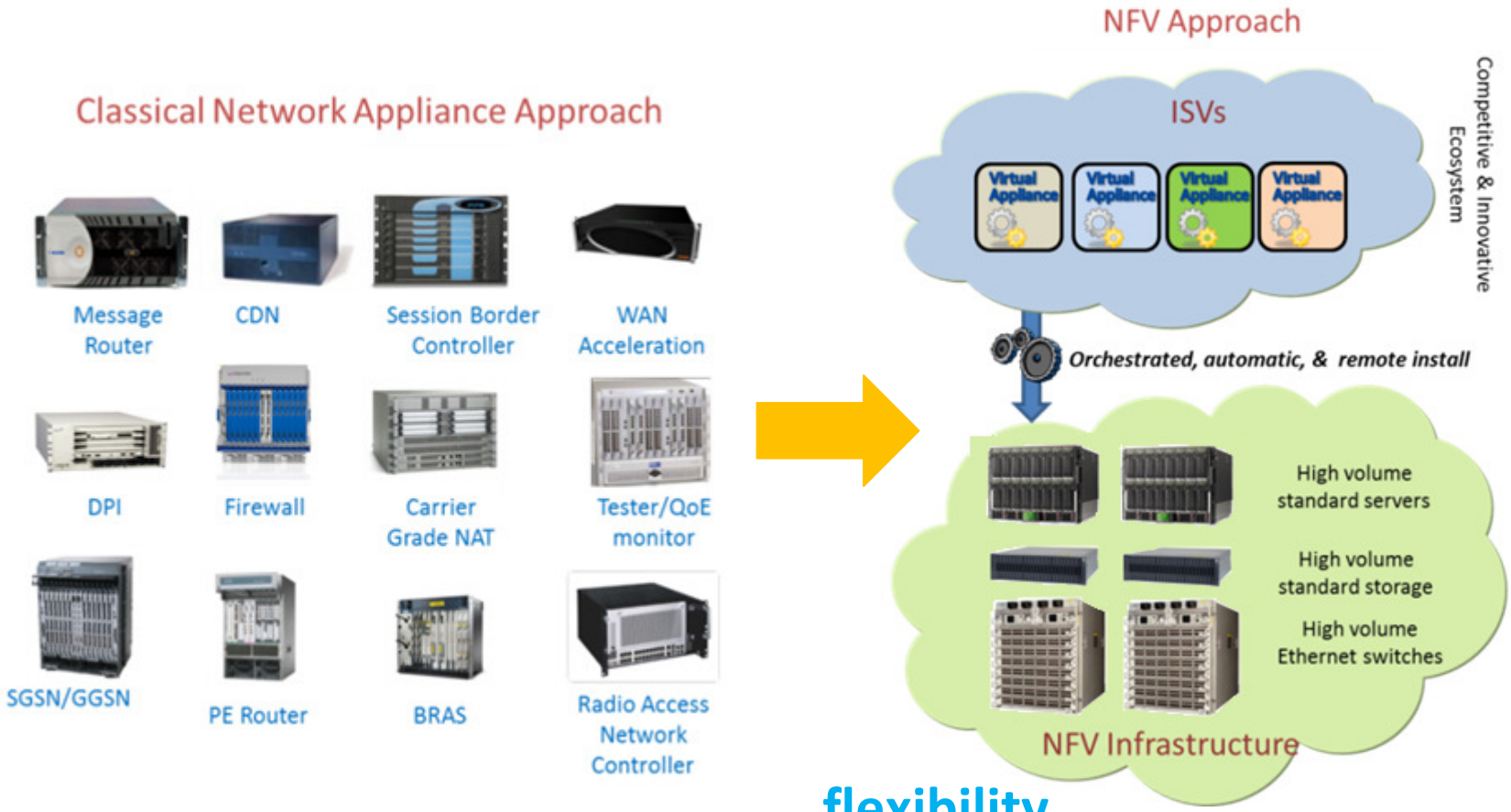
Joan Triay

Outline

- Target and Benefits of NFV
- ETSI NFV:
  - Objectives
  - Structure
  - Progress
- ISG Work Items
  - Use Cases
  - Architecture
- NFV Proof of Concepts
- Next Steps

Target and Benefits of NFV

DOCOMO Euro-Labs



flexibility

reduce TCO

operational efficiency

learning from IT

software innovation

faster time-to-market

ETSI NFV: Objectives and Goals

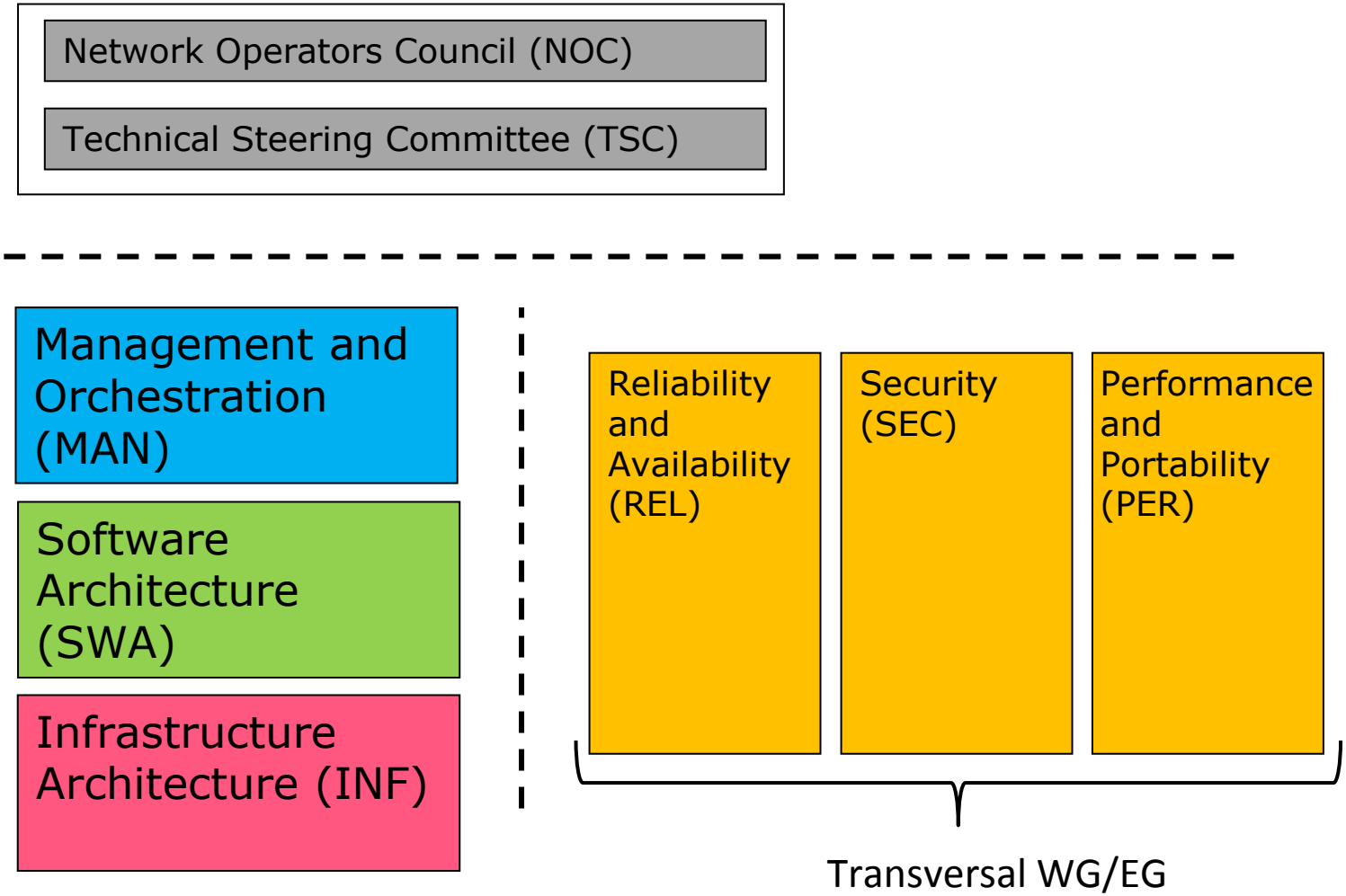
DOCOMO Euro-Labs

- Pre-standardization work previous to future technical specifications and standards in ad hoc Standards Development Organizations (SDOs).

- In the form of an ETSI Industry Specification Group (ISG).

- Objectives: define requirements, architecture and gap analysis for the virtualization of network functions.
  - Ensuring that overall network operator's platform will be simpler.
  - Achieving high performance and portability of virtualized network functions.
  - Guaranteeing appropriate levels of resilience to HW and SW failures.
  - Enabling the management and orchestration of VNFs.
  - And easing the integration of new virtualized appliances into existing management systems.

ETSI NFV: Structure



ETSI NFV: In Less Than One Year…

DOCOMO Euro-Labs

- Since creation of ETSI NFV (Jan. 2013, first plenary meeting):
  - 159 member companies (67 ETSI members + 92 participant members).
  - 15 active work items.
  - Plenary registrations: NFV#1 (165), NFV#2 (285), NFV#3 (242), NFV#4 (355).

- Progress made:
  - Internal and external consolidation of the NFV.
  - Proof of Concept framework – a call of interoperability demonstration of the NFV concepts.
  - First set of documents providing a holistic end-to-end view:
    - Use cases,
    - Requirements,
    - Architectural Framework, and
    - Terminology.

ETSI NFV: ISG Work Items

DOCOMO Euro-Labs

Use Cases

Initial fields of application and scope of technical challenges.

Requirements

High level business and technical requirements for an NFV framework, including service models.

Architectural Framework

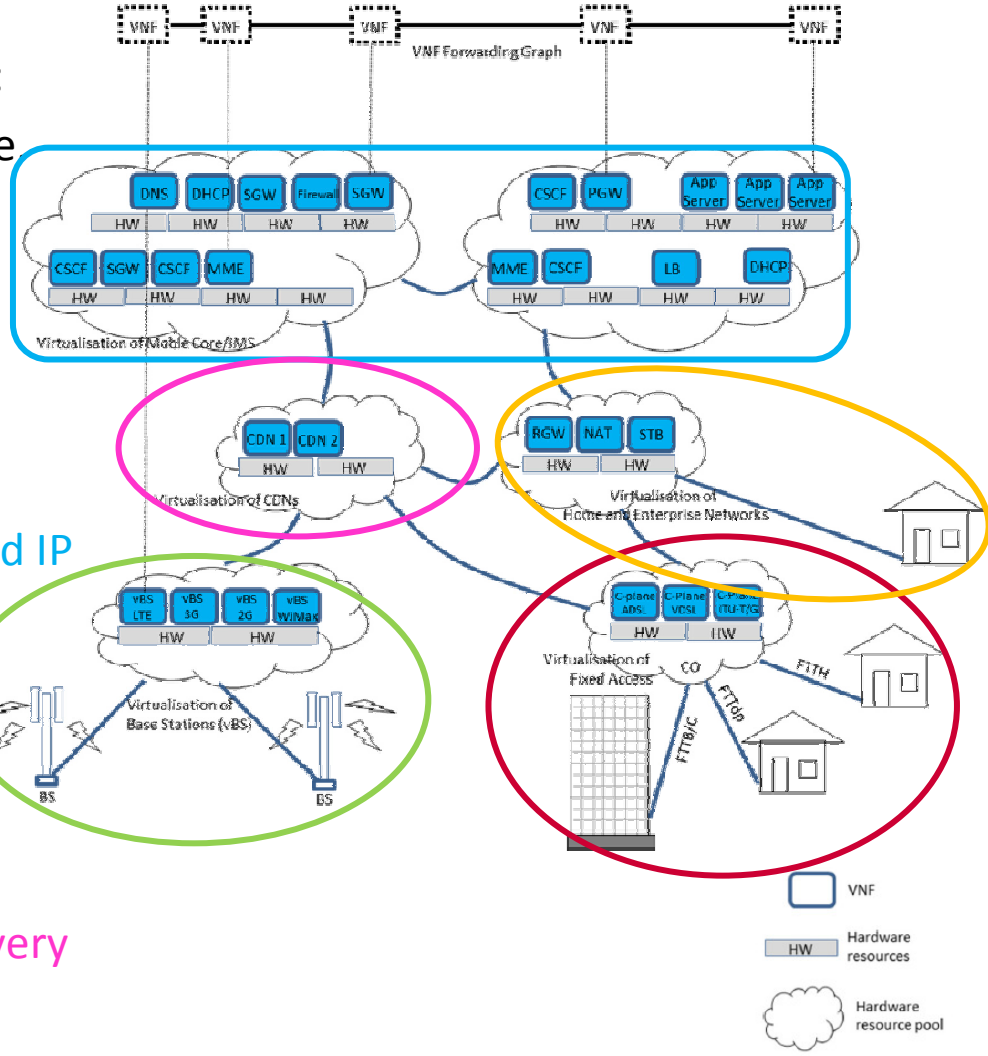
High level functional architectural and design philosophy for VNFs and underlying virtualization infrastructure.

Terminology

Common repository for terms used within ETSI NFV documents.

ISG Work Items: Use Cases

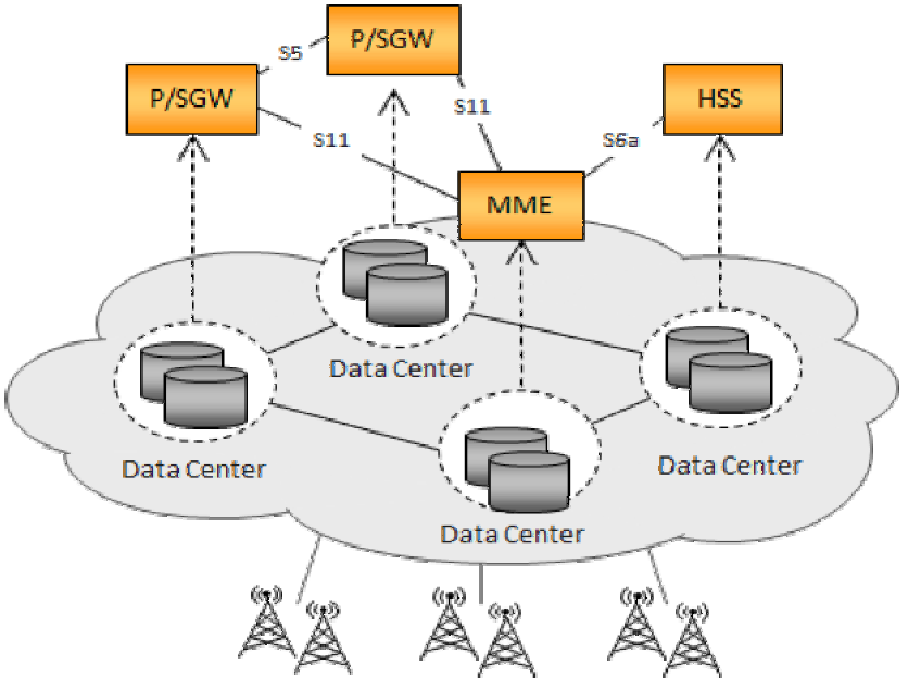
- Use Cases: Initial fields of application.
  - 4 main service-oriented use cases:
    - NFV Infrastructure as a Service
    - VNF as a Service.
    - Virtual Network Platform as a Service.
    - VNF Forwarding Graphs.
  - Specific targets:
    - Mobile core network (EPC) and IP Multimedia Subsystem (IMS).
    - Mobile base station.
    - Virtualization of the home environment.
    - Fixed access network.
    - Virtualization of Content Delivery Network (CDN).



DOCOMO Euro-Labs

- Virtualized EPC: Challenges/Opportunities

1. Independent network function scaling, e.g., data vs. control plane functions.

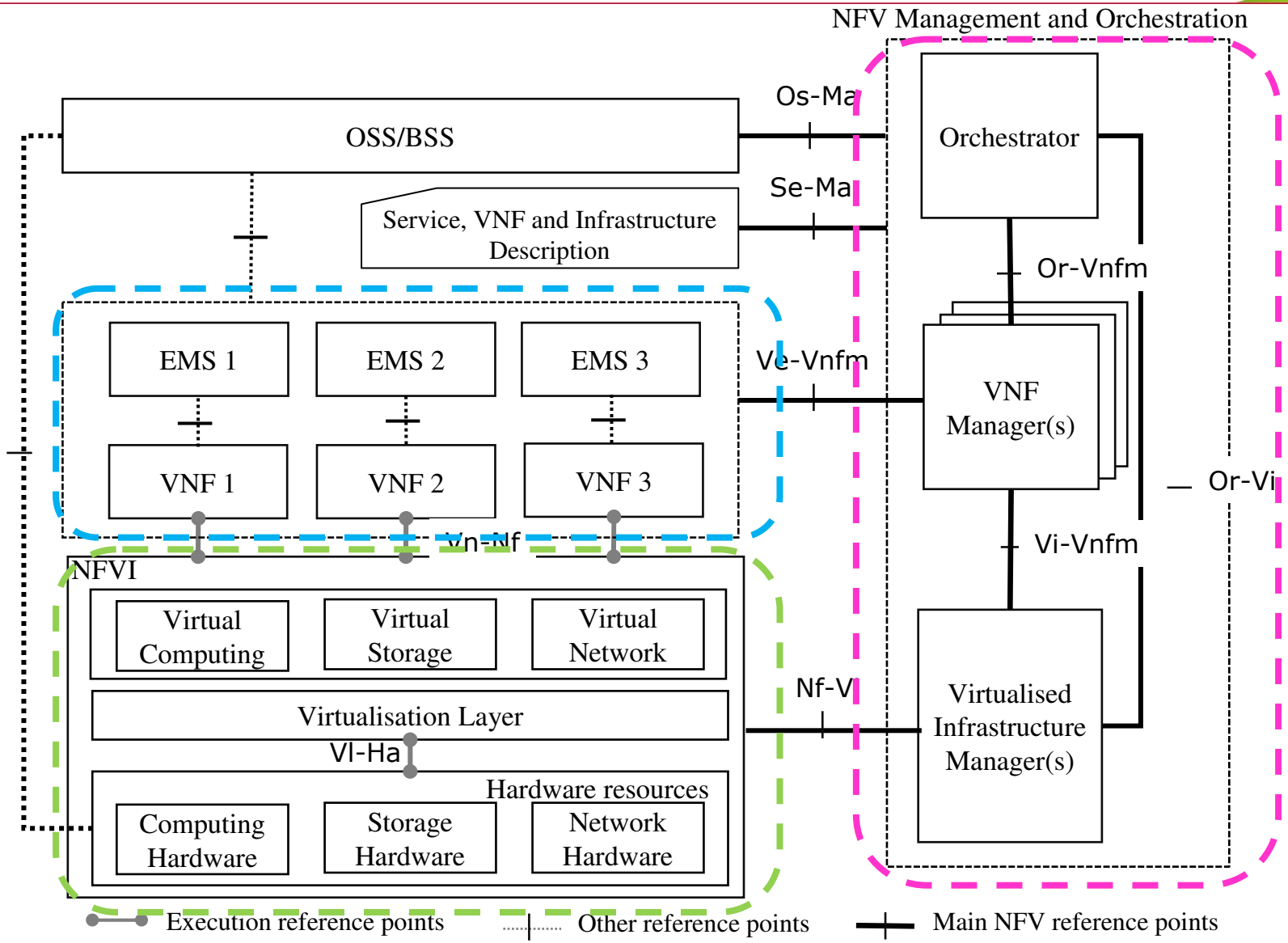


2. EPC deployment, e.g., single data center, over multiple DCs…

3. New resiliency schemes by utilizing VNF instance migration.

4. Alternative migration/co-existence paths: single vs. coexistence of separate mobile cores.

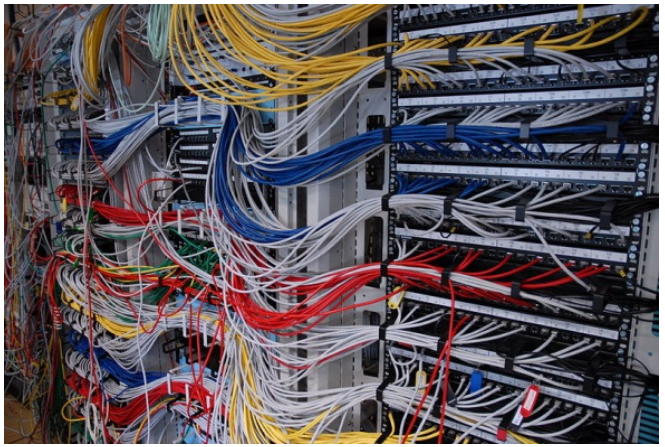
ISG Work Items: Architectural Framework



NFV Proof of Concepts (PoC)

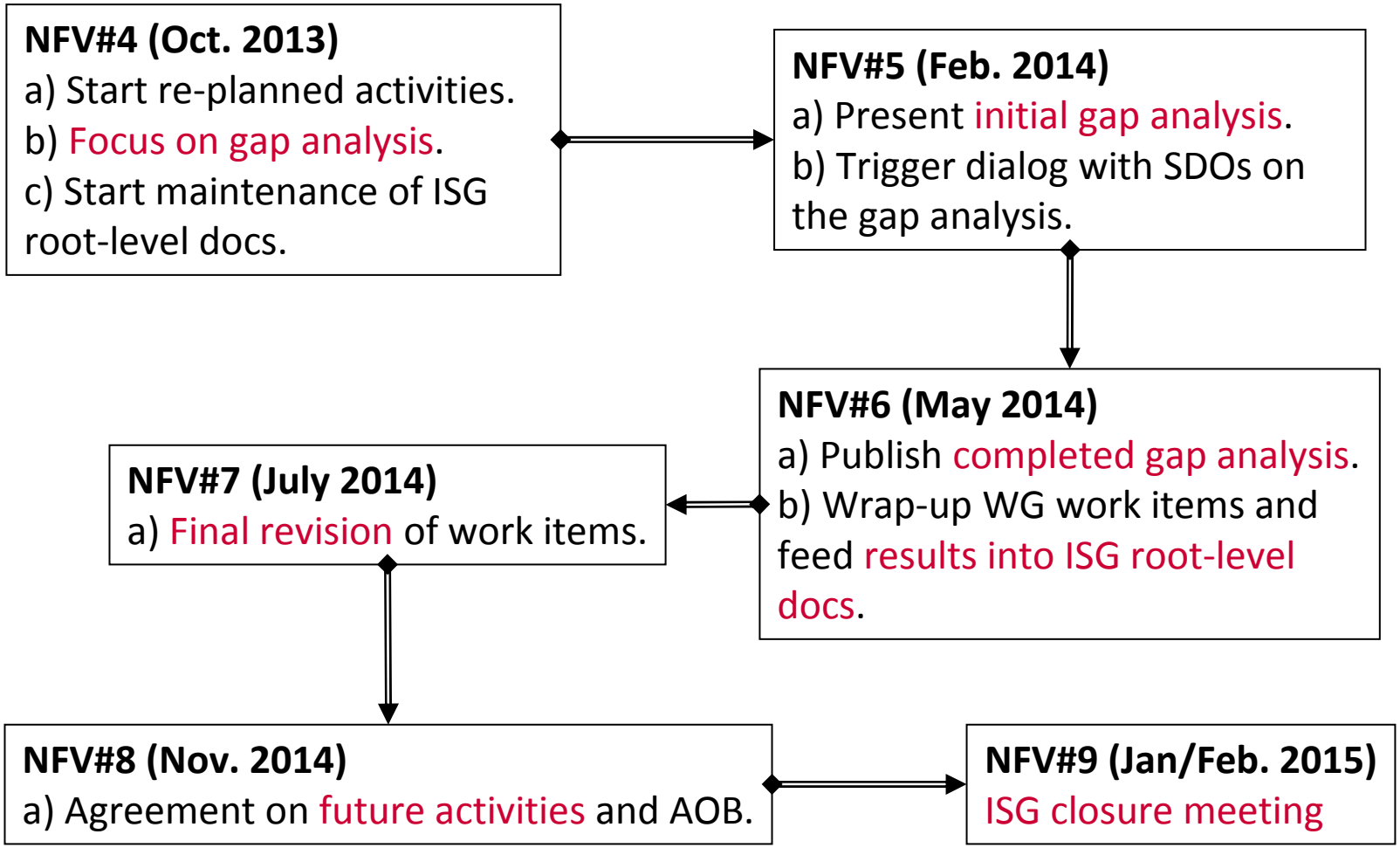
DOCOMO Euro-Labs

- Objectives:
  - Explore technical options.
  - Validate NFV approaches.
  - Facilitate gap analysis.
  - Encourage progress towards interoperability.
  - Encourage development of an open ecosystem.
  - Build commercial awareness.



- Multi-party: lightweight process and open to participation.
  - Simple PoC proposal process, with commitment to demonstration and reporting.
  - PoCs should address relevant goals published in ETSI NFV documents.
  - Two vendors/manufacturers + one network operator (ETSI NFV member).

ETSI NFV: Next Steps



DOCOMO Euro-Labs

- Gap analysis procedure:
  - Find the gap:

GAP = (What we want: Develop information flow/model for each reference point.) − (What we have: Identify applicable standards (de jure or de facto).)

  - Target: future standardization of reference points.
    - Internal functional blocks no focus of standardization, but necessary to determine the specs of the reference points.
    - Considering non-functional requirements too.
  - Each WG to look after non-overlapping reference points.
    - Any reference point to be internalized at NFV level (that is implementation option).

Summary

DOCOMO Euro-Labs

- Benefits of NFV: capex and opex reduction, flexibility, faster time-to-market,…

- ETSI NFV:
  - Pre-standardization.
  - Objective: define requirements, architecture and gap analysis for the virtualization of network functions.
  - Driven by network operator's interest.
  - 159 member companies (as of Nov. 2013).

- ETSI NFV ongoing work:
  - Just published end-to-end (root-level) documents.
  - Focus is now on proof-of-concepts and gap analysis.

Harmonize Social contribution beyond borders, across generations

Evolve Evolution of service and network

Advance Advance industries through convergence of service

Relate Creating joy through connections

Trust Support for safe, secure and comfortable living

HEART

Joan Triay

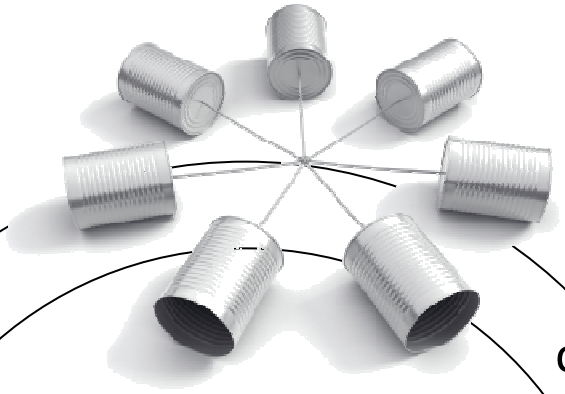
triay@docomolab-euro.com

DOCOMO Communications Laboratories Europe GmbH
Landsberger Strasse 312 – 80687 Munich, Germany
Phone: +49 (89) 56824-0 | www.docomolab-euro.com

ETSI NFV: How it Works

interest, business, ideas…

join, and get together…

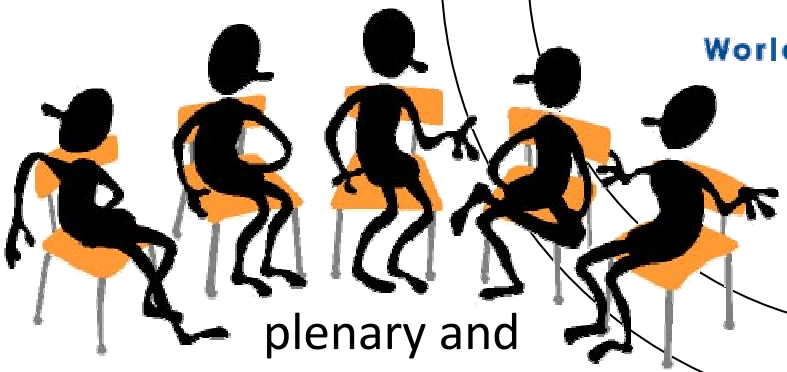


(bi)weekly conference calls

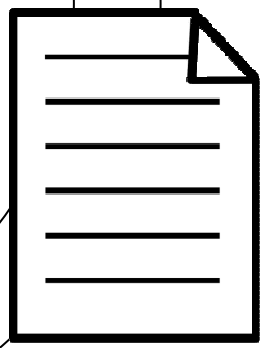
Network Functions Virtualisation ISG (NFV)

ETSI

World Class Standards



plenary and F2F meetings



document drafting