ORCHESTRA

Optical peRformanCe monitoring enabling dynamic networks using a Holistic cross-layEr, Self-configurable Truly flexible appRoAch

H2020-ICT- 645360

D7.1 – Factsheet and project presentation

February 2015

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28.02.2015	Panagiotis Kokkinos	Draft	0.2	Writing the corresponding deliverable, including the factsheet and the project presentation, which have been reviewer by all partners
28.02.2015	Kostas Christodoul opoulos	Draft	0.3	Updating document
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Contributors

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Glossary of Acronyms

Acronym	Definition
D	Deliverable
DoW	Description of Work
EC	European Commission
PM	Project Manager
PO	Project Officer
WP	Work Package

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1. Executive Summary

This deliverable reports on the generation of the ORCHESTRA project factsheet as well as a short project presentation. The reported documents are essential instruments for the dissemination of the project particularly at this early stage. Both the factsheet and the short presentation are also publicly available on the ORCHESTRA website www.orchestraproject.eu.

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2. ORCHESTRA Factsheet

The ORCHESTRA factsheet aims to provide a concise overview of the project vision, objectives, technological approach and use cases as well as to summarize the main project facts such as contact details, duration and EC financial support.

The ORCHESTRA factsheet consists of the following sections:

1. Header (first page): where the project's logo, full title, European Commission flag logo and partners' logos are displayed.

2. Main body (first page): where project's vision and objectives are presented.

3. "At-a-glance" section (first page): summarizing project facts, such as acronym, title, funding, grand agreement no, start date, duration, coordinator, contact, website and keywords.

4. Footer (first page)

5. Header (second page): where the project's logo, full title and European Commission flag logo are displayed.

6. Main body (second page): where project's technological approach and use cases are presented.

7. Footer (second page): where partners' logo are displayed.

The ORCHESTRA factsheet is presented in what follows and is publicly available at: www.orchestraproject.eu

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Optical peRformanCe monitoring enabling dynamic networks using a Holistic cross-layEr, Self-configurable Truly flexible appRoAch

Vision

An optical network has to be observable before it can become controllable and be subject to optimization.

The vision of the ORCHESTRA project is to close the loop between the physical layer and the network control plane, by using information provided by the coherent transceivers that can be extended, almost for free, to operate as software-defined optical performance monitors (soft-OPMs). This will enable a real cross-layer optimization, providing true network dynamicity and unprecedented efficiency.

PROJECT ACRONYM: ORCHESTRA

PROJECT TITLE: Optical peRformanCe monitoring enabling dynamic networks using a Holistic cross-layEr, Self-configurable Truly flexible appRoAch

FUNDING: H2020-ICT-2014

GRANT AGREEMENT NO: 645360

EU FINANCIAL CONTRIBUTION: 2.6 million Euros

START DATE: February 1, 2015

DURATION: 36 months

COORDINATOR: Emmanouel Varvarigos, CTI

CONTACT: orchestra@cti.gr

WEBSITE: www.orchestraproject.eu

KEYWORDS: Optical communications, network technologies / internetworking, optical monitoring, physical layer impairments, dynamic network operation, DSP algorithms, OAM handler, control and monitor infrastructure, cross-layer optimization, failure and fault localization
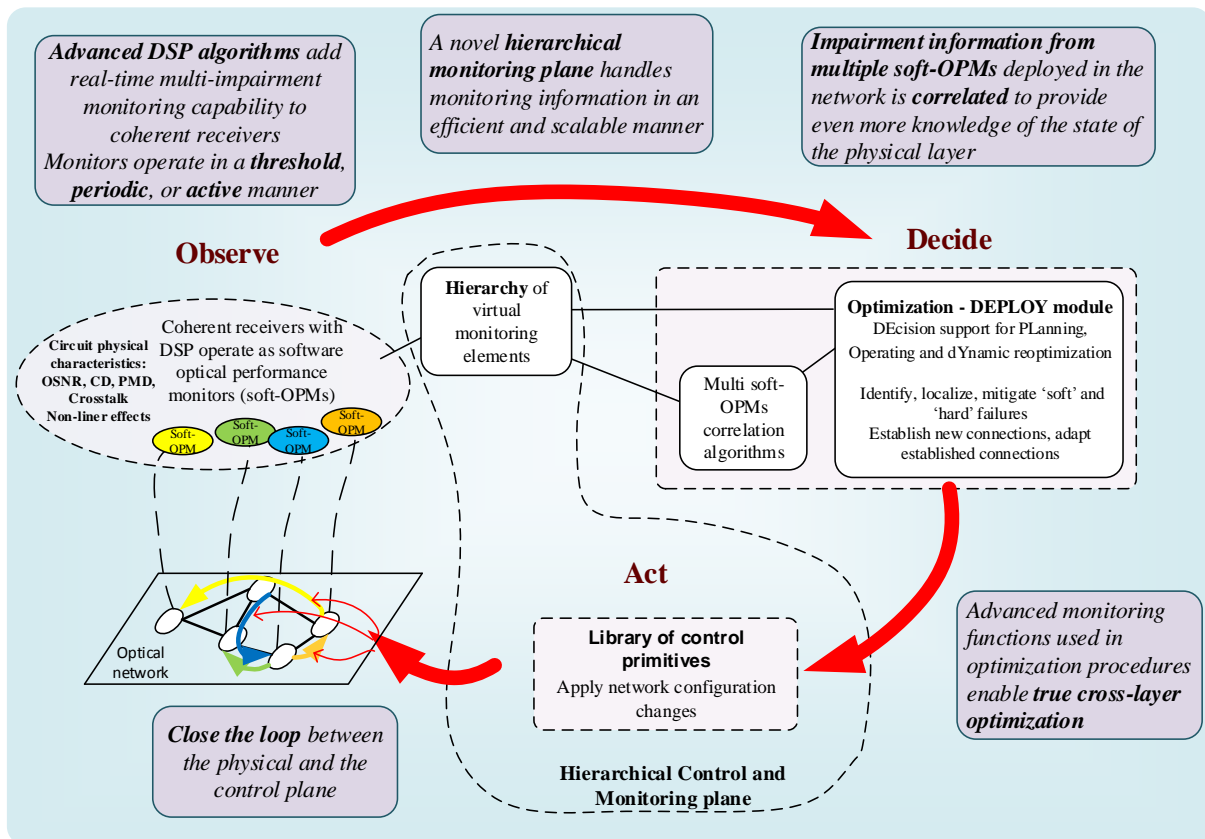
Objectives

1. Develop an advanced DSP-based physical-layer multi-impairment monitoring algorithm suite

2. Develop a holistic approach to Quality of Transmission (QoT) determination in all network lightpaths using information from distributed software-defined optical performance monitors (soft-OPMs) and advanced correlation algorithms

3. Develop a hierarchical control and monitoring infrastructure providing active and passive monitoring capabilities with rapid and effective reactions to degradations and failures

4. Develop dynamic optimization procedures for fault management and network re-optimization

5. Lower the barriers of resource sharing among operators' domains through the efficient monitoring of alien lightpaths and accurate physical layer SLAs

6. Demonstrate dynamic and highly efficient flexible network operation enabled by software-defined optical performance monitoring

ORCHESTRA vision: "An optical network has to be observable before it can become controllable and be subject to optimization"
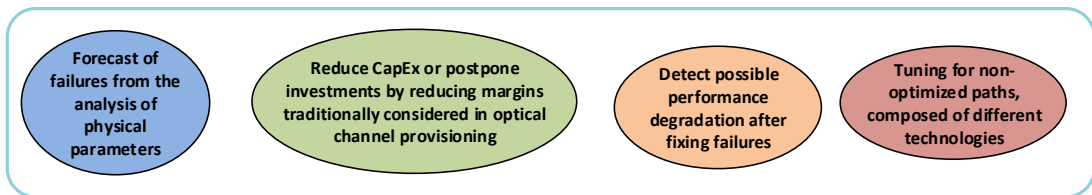
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3.   ORCHESTRA Project Presentation

The ORCHESTRA project presentation goes one step further from the factsheet providing more details on the project.

The ORCHESTRA project presentation consists of the following sections:

1. Front page, featuring the project logo, full title and other project details (call identifier, topic, grand agreement number, project start, duration, budget). An European Commission flag is also included to indicate European Commission financial support.

2. "Consortium", presenting the project partners.

3. "Motivation", indicating the corresponding call's objectives addressed in the project.

4. "Vision", elaborating on the project's vision.

5. "Objectives", summarizing the main project objectives.

6. "The Big Picture", the project's technological approach.

7. "Overall Approach", the project's working packages structure and context.

8. "Building Block: Flexible TRx and DSP", elaborating on project's basic building blocks.

9. "Building Block: Network Optimization", elaborating on project's basic building blocks.

10. "Building Block: Control & Monitoring", elaborating on project's basic building blocks.

11. "Demos", describing lab experiments and field trials that will be performed.

12. "Partner Roles", mapping the partners on project's main tasks.

13. "Contact", summarizing ORCHESTRA project main contact details and presenting all partners' logos.

The ORCHESTRA project presentation is presented in what follows and is publicly available at: www.orchestraproject.eu.

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Project Presentation

Call identifier: H2020-ICT-2014-1
Topic: ICT-06-2014
Smart optical and wireless network technologies

Grant Agreement no: 645360
Project Start: February 1, 2015
Duration: 36 months
Budget: 2.6 million Euros
www.orchestraproject.eu

Consortium

- COMPUTER TECHNOLOGY INSTITUTE & PRESS DIOPHANTUS (**CTI**)

- TELECOM ITALIA (**TILAB**)

- INSTITUTE OF COMMUNICATION AND COMPUTER SYSTEMS (**ICCS/NTUA**)

- ALCATEL - LUCENT BELL LABS France (**ALBLF**)

- SCUOLA SUPERIORE DI STUDI UNIVERSITARIE DI PERFEZIONAMENTO SANT'ANNA (**SSSA**)

- NEXTWORKS (**NXW**)

ORCHESTRA vision: "An optical network has to be observable before it can become controllable and be subject to optimization"

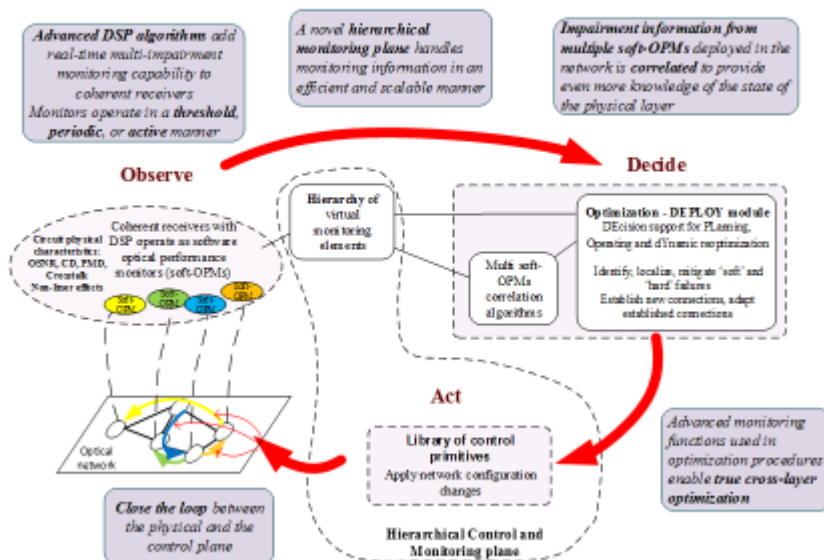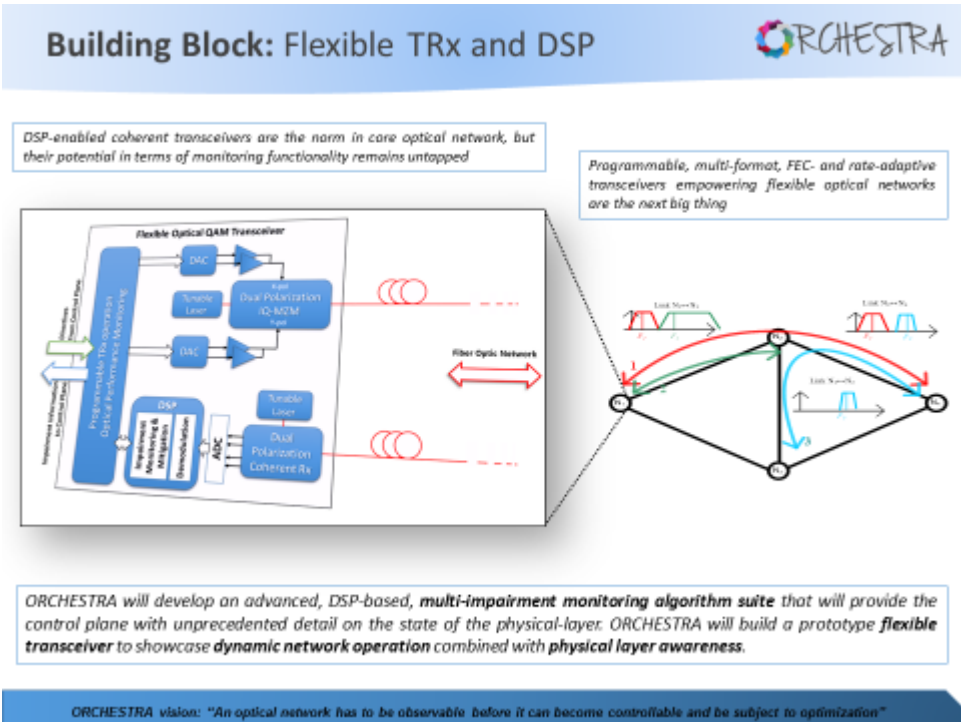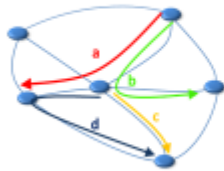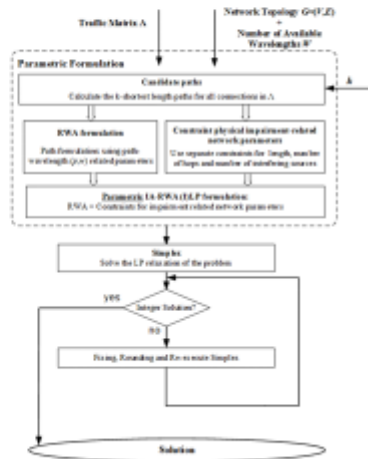| ORCHESTRA	ORCHESTRA_D7.1
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Motivation

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"ICT 6 – 2014: Smart optical and wireless network technologies"

1. "Address the lack of dynamic control and management of optical network resources within and across operator's domains for lower cost and more flexible use of resources"
   - ☒ The physical layer is accounted with worst case assumptions and gross margins
   - ☒ Physical layer monitoring information is not exploited in optimization processes
   - ☒ Failures are treated as black or white
   - ☑ We need to close the loop between physical layer and the control plane: interacting with the physical layer enables a dynamically controlled network that is used in a more flexible and efficient way

2. "Address the limitations of current optical transmission technologies"
   - ☒ Increasing the nominal transmission rate can go wasted if operation margins are too gross
   - ☑ Reducing the margins benefits current and future transmission technologies

ORCHESTRA vision: "An optical network has to be observable before it can become controllable and be subject to optimization"

Vision

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An optical network has to be observable before it can become controllable and be subject to optimization

- ORCHESTRA proposes to close the control loop by enabling physical layer observability

- **Observability** relies on the coherent receivers that are extended, almost for free, to operate as software defined impairment optical performance monitors (soft-OPM)

- Physical layer information of single or multiple soft-OPMs is used to take better optimization **decisions**

- Re-**acting** dynamically on the network to increase its efficiency

Observe — Decide — Act — ORCHESTRA

ORCHESTRA vision: "An optical network has to be observable before it can become controllable and be subject to optimization"

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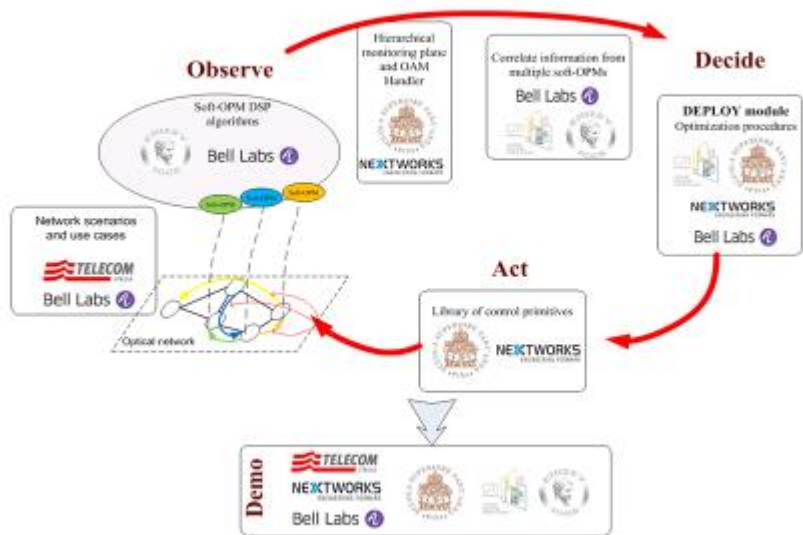| ORCHESTRA	ORCHESTRA_D7.1
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