



# smOptics and Photonics Challenges in Telecommunication

Giorgio PARLADORI, Research Program Director, SM OPTICS  
Roma, 2 Dicembre 2015, Confindustria - Sala A. Pininfarina

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# People

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Being a R&D Company People is a key factor for success

The team has a long history with a strong international experience

Telettra → Alcatel → Alcatel-Lucent → smOptics

We are investing to reinforce the Optics Lab, that will be the core of our innovation

# Past achievements of the team

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- 1994 - The birth of the first platform for the multi-service optical transmission
- 1998 - Transmission evolving towards packet transport for data services
- 2002 – First multi-service provisioning platform (MSPP) platform with packet switching and its evolution



# The Company

## Entrepreneurial actors

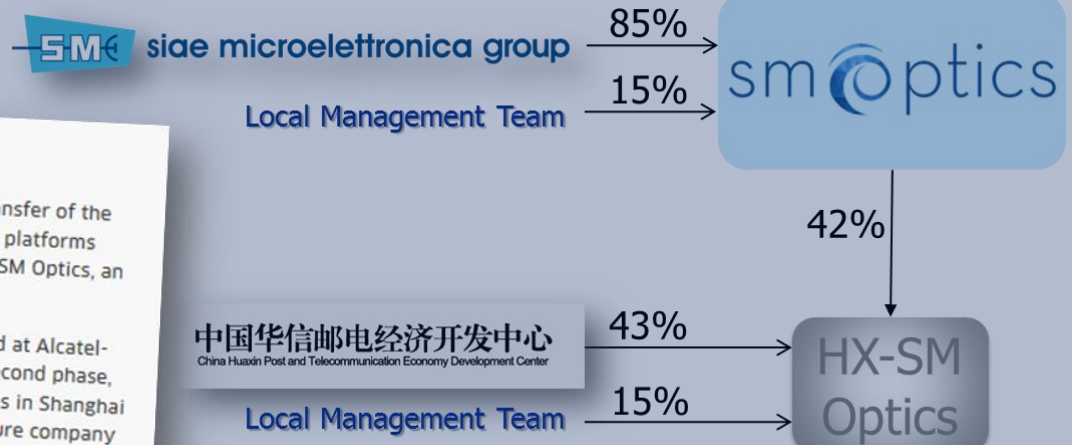
Vimercate and Cologno Monzese, Italy, November 26, 2014

Alcatel-Lucent (Euronext Paris and NYSE: ALU) and SM Optics have announced the transfer of the research and development activity responsible for optical multi-service node (OMSN) platforms including the 1850 TSS product family and related network management systems to SM Optics, an Italy-based SIAE MICROELETTRONICA company.

As part of the transfer, 256 specialized R&D engineers and technicians currently based at Alcatel-Lucent's site in Vimercate, Italy, will be integrated into the SM Optics team, and in a second phase, 110 specialized R&D engineers and technicians currently based at Alcatel-Lucent's sites in Shanghai and Chengdu, China, will be integrated in another SIAE MICROELETTRONICA joint venture company in China. Under the terms of the agreement, Alcatel-Lucent will maintain responsibility for product strategy, manufacturing, and market-facing activities related to the technologies concerned.

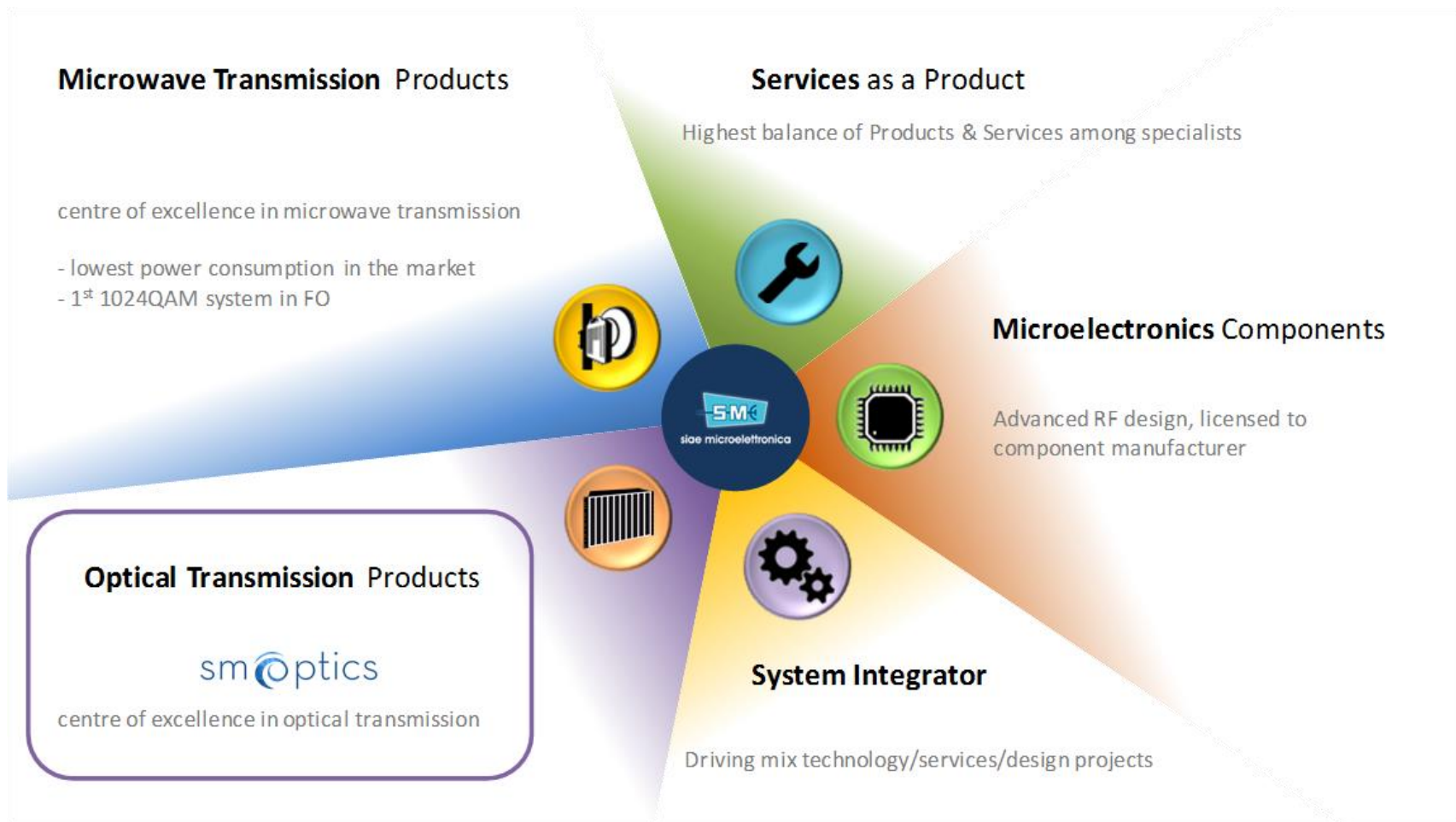
Commenting on the agreement, Roberto Loiola, CEO and Managing Director of Alcatel-Lucent Italia, said, "Through this transfer of R&D operations to SM Optics, Alcatel-Lucent will be able to maintain its full support for customers, leveraging the valuable experience and specialist expertise of the teams involved while ensuring future employment opportunities for those involved. At the same time, Alcatel-Lucent in Italy will focus on the strategic development of next-generation networking and access technologies, including WDM and wireless transmission."

Romano Valussi, a board member of SM Optics added "We are delighted with the agreement reached with Alcatel-Lucent, a major partner in the industry. The agreement enables the new company to maintain and enhance Alcatel-Lucent's huge installed base. In addition, thanks to the R&D agreement, we will reinforce our end to end capability which is a core strength of SIAE MICROELETTRONICA."



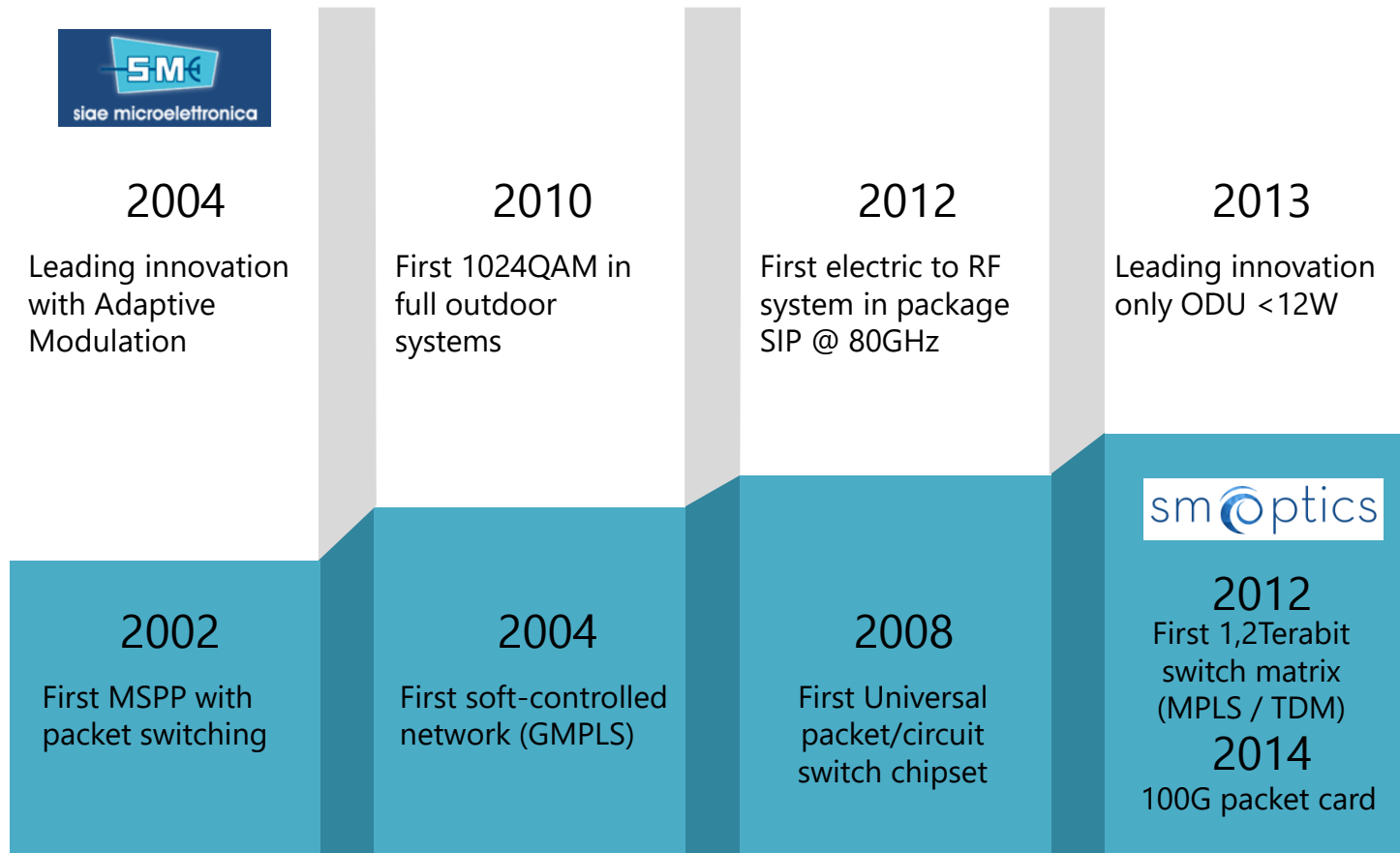
# smOptics

## within SIAE Microelettronica Group



# SIAE and smOptics

## Combining research excellence



# smOptics

## Business Model (5 years)

### SM-OPTICS 'PILLARS'

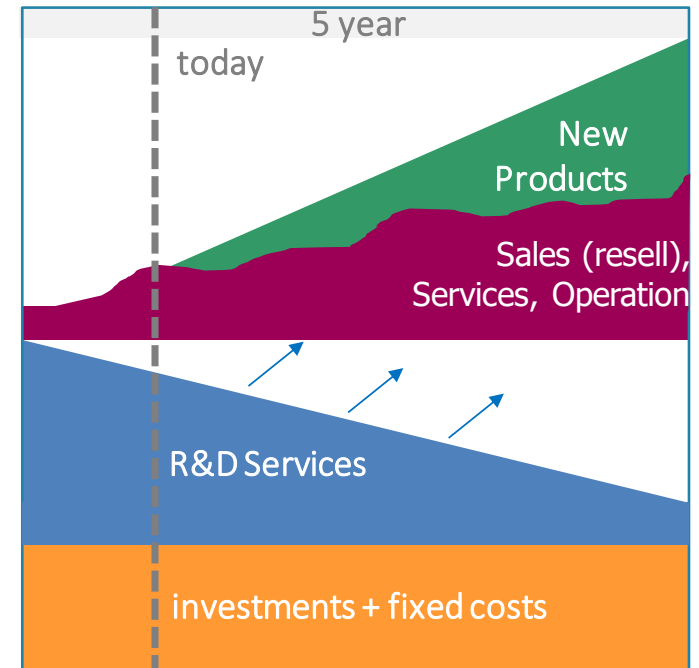


Investments in experienced R&D, with acquisition of Alcatel-Lucent Optics R&D (outsourced to SIAE).

Reseller agreement in place with Alcatel-Lucent for PTN/OMSN product lines.

With strong R&D in cooperation with european education research centers, leaders in optical domain.

smOptics IS MEMBER OF:





# The Country

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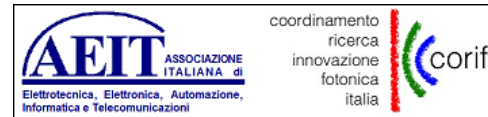
## EU:

- Photonics is one of the Key Enabling Technologies of H2020 Program

## National Institution:

- Ultrabroadband  
(estimated cost 12B€, shared between public and private)
- MISE
- MIUR
- Region: S3 Region strategy

## Initiatives:



- Coordinamento Ricerca Innovazione Fotonica Italia CORIFI



- The Integrated Photonic Technologies Center (INPHONET)



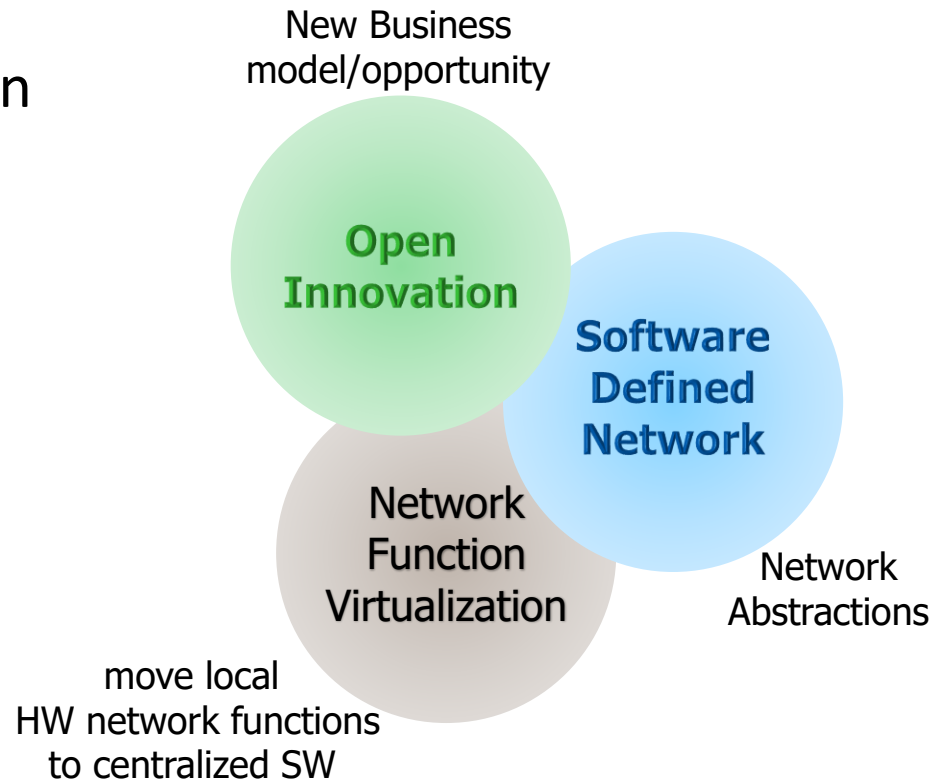
- Polifab - centro per la micro- e nano-fabbricazione del Politecnico di Milano

# Telecom Network Evolution

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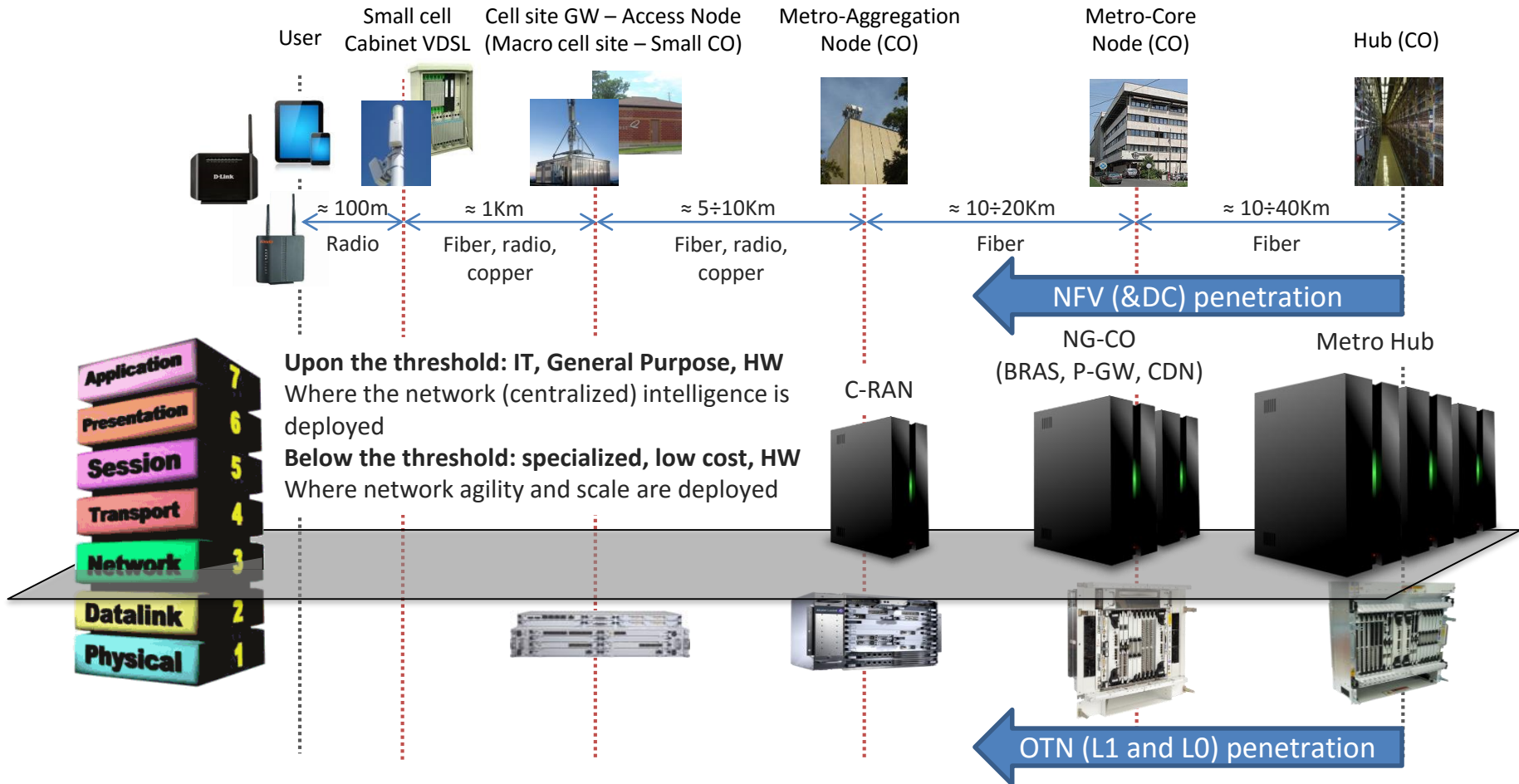
- In this moment in time we are observing a significant evolution of telecommunication:

- **NFV**  
Network Function Virtualization
- **SDN**  
Soft Defined Network



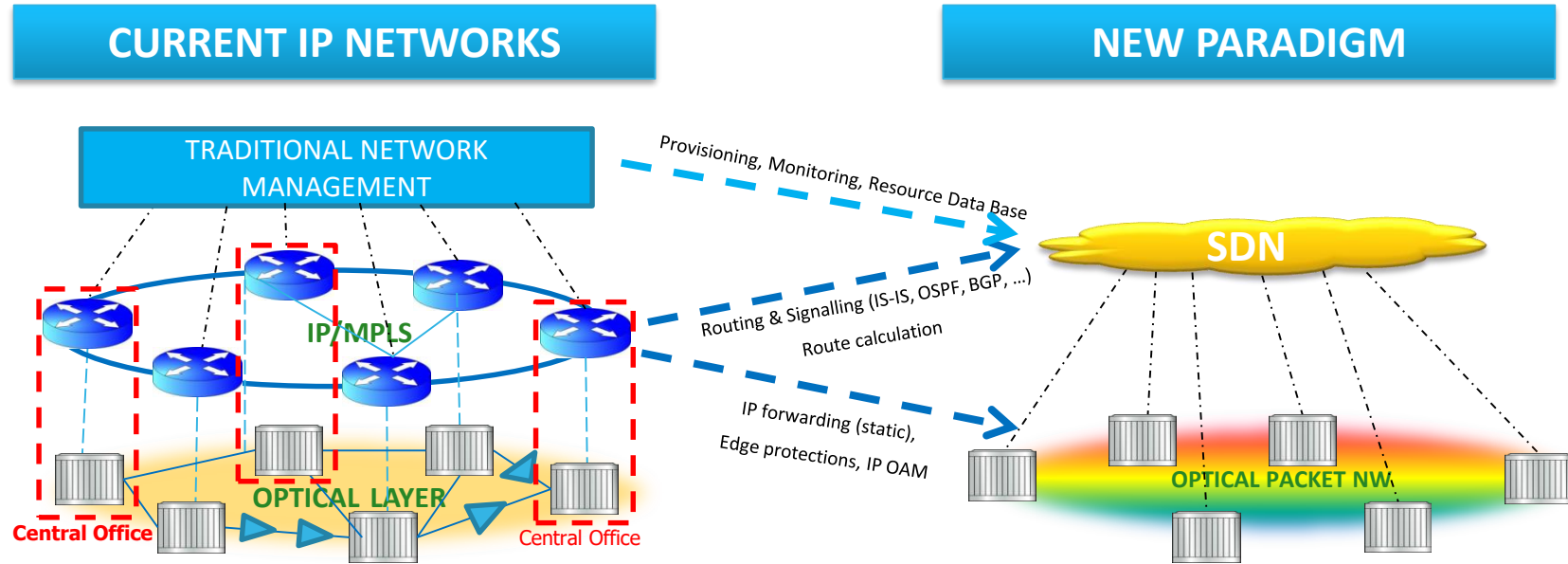
# Telecom Network Evolution

## Fix-Mobile, IT-Telecom Convergence



# Telecom Network Evolution

## Vision of the Network Architecture



1. COMPLEX SW + VENDOR SPECIFIC HW IN ALL NETWORK SITES
2. EXPENSIVE, UNCOORDINATED, MULTI-LAYER PUZZLE

1. INTELLIGENCE CENTRALIZED ON STANDARD HW OR CLOUD
2. IP TRANSPORT INTEGRATED IN OPTICAL PACKET NETWORK

**SIMPLIFY THE NETWORK AND AUTOMATE OPERATIONS**

# Photonic Challenges Drivers

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## Performances

- Throughput
- Power Consumption

## Flexibility

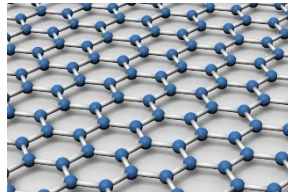
- Resource Allocation
- Protection

# Photonic Challenges in Telecommunication

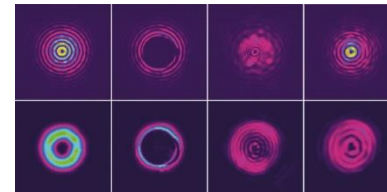
## Research Areas:

- *Fundamental research, e.g.*

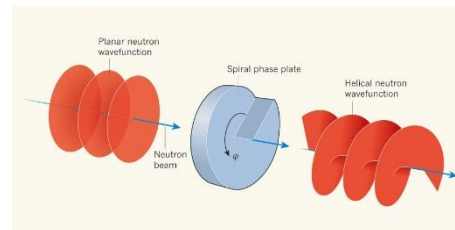
graphene,



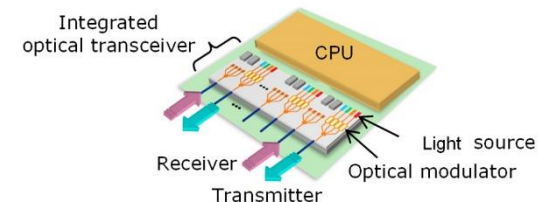
quantum communication



- *New way of light property exploitation (e.g. MDM OAM)*



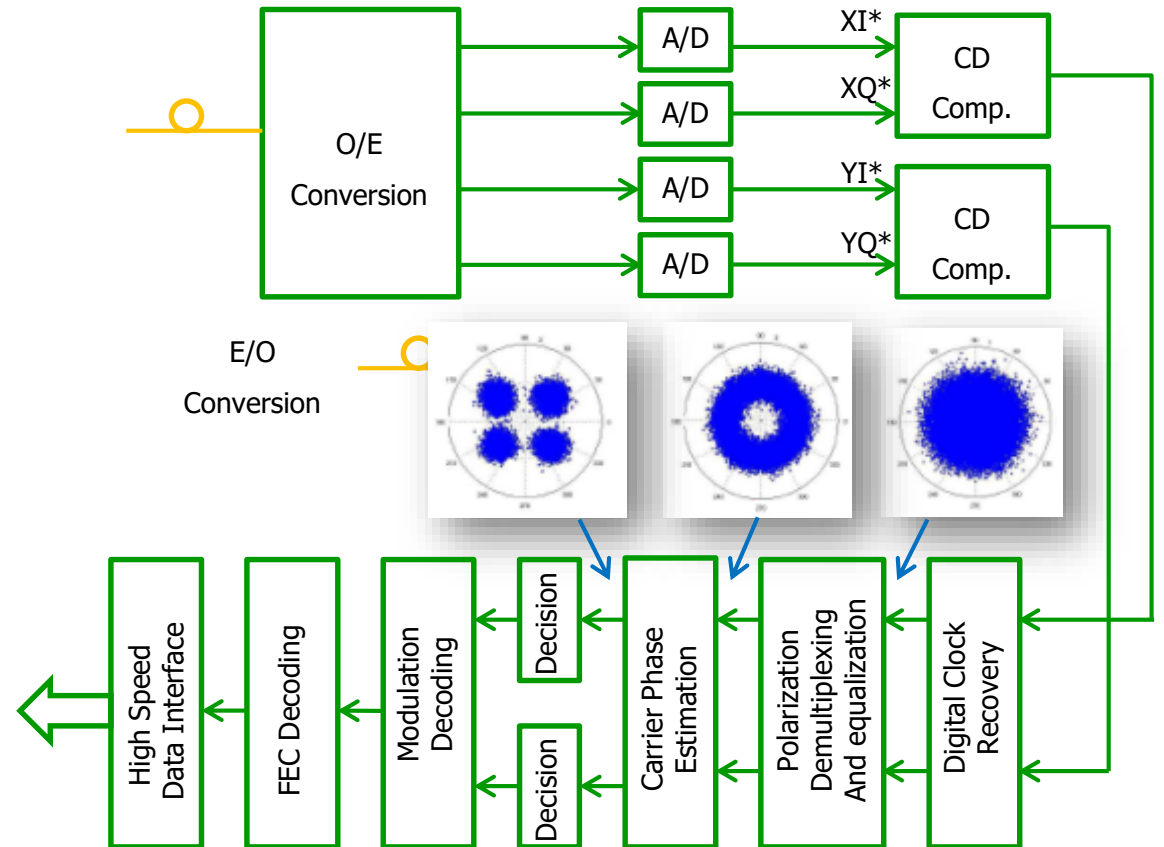
- *Optics and microelectronics convergence (i.e silicon photonics)*



# Photonic Challenges in Telecommunication

## Research Areas:

- *Signal Processing*  
i.e. availability of A/D-D/A technology allowing to use *DSP techniques to process the light*. This enables us to reuse all the experience already accumulated for Line and Radio transmission.



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# Thank you!

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# People

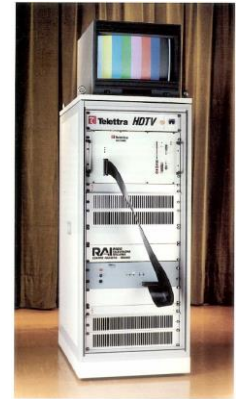
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About myself:

My Professional career started in 1985 and has been mainly developed in the field of Signal processing.



Telettra/RAI  
HDTV codec



Since 2000 I'm working in the field of telecommunication.



**Best Product**

*My career in Photonics is starting now...*

# People

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Being a R&D Company People is the key factor for success

The team comes from a long history.

Telettra → Alcatel → Alcatel-Lucent → smOptics

We are investing to reinforce an Optics Lab., that will be the core of our innovation

Importance to build motivated team

There are many opportunity for talent to have success abroad...  
but why not to stay in Italy and change things?

OUR OFFERING

TODAY

FUTURE

Product

Resell Agreement

OMSN and PTN portfolio for specifically identified markets

NEW PRODUCT

5G backhauling; broadband; New IP - SDN centric

Services

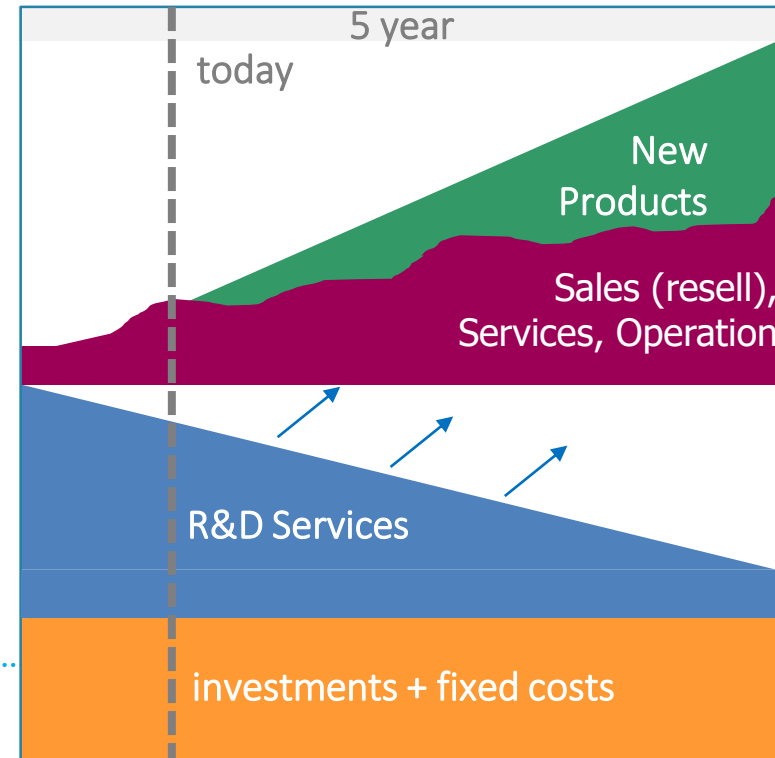
Value Add Services

Network design, optimization network transformation and integration (OSS/BSS)

Operation

Network Maintenance

Maintenance and Assistance of optical multiservice network



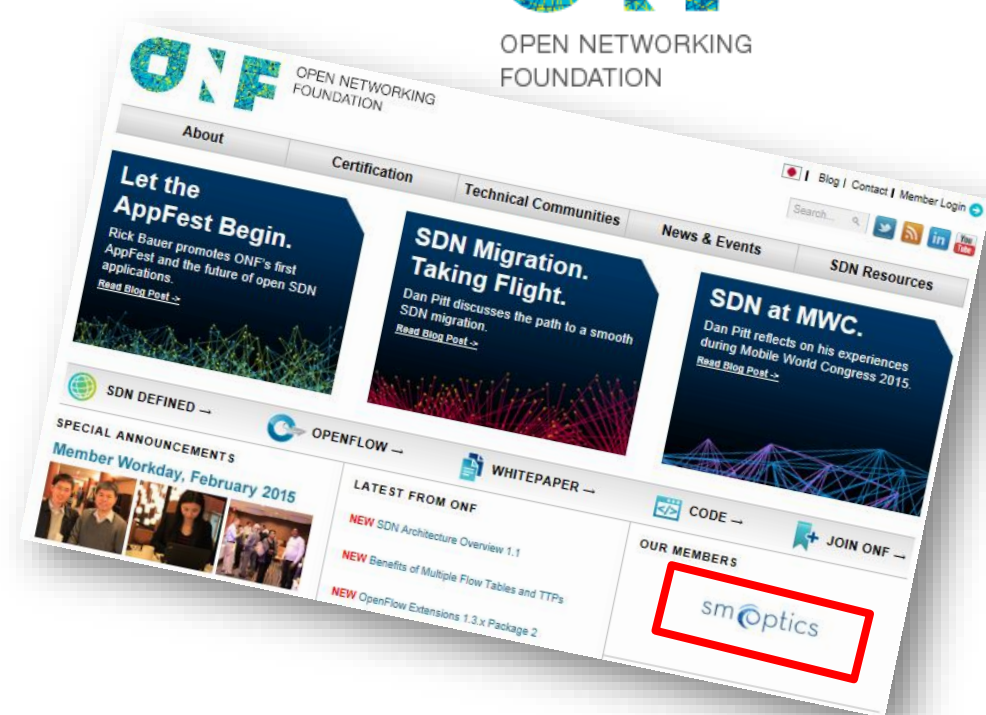
# SM-OPTICS - ONF

- Network can be abstracted (and operations simplified).
- Applications are key points: for example planning tool can be an application working on a 'view' of the real network.
- Applications can be as well downloaded 'on demand' to the network.

SM-OPTICS IS MEMBER OF:



OPEN NETWORKING  
FOUNDATION



# The Company

## Sm Optics

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- We believe in the possible revival of Optical compartment in Italy
- We work to build new solutions for Optical Telecommunication
- We hope to impact on Italian telecom market addressing the UBB opportunity
- We believe in the cooperation with University and Research Institution as fundamental step to innovate and create value for the Country
- We are investing in young people

# The Company

## Entrepreneurial actors

