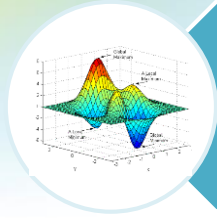


FOLLOW THE LIGHT

A new model rising: how optical micro-nodes and WSS-free micro-ROADMs are redefining metro networks

Yep... this is about disaggregation yes or not... 😊



Disaggregation vs integration: modular **optical micro-nodes** are the **global optimum** in the TCO curve

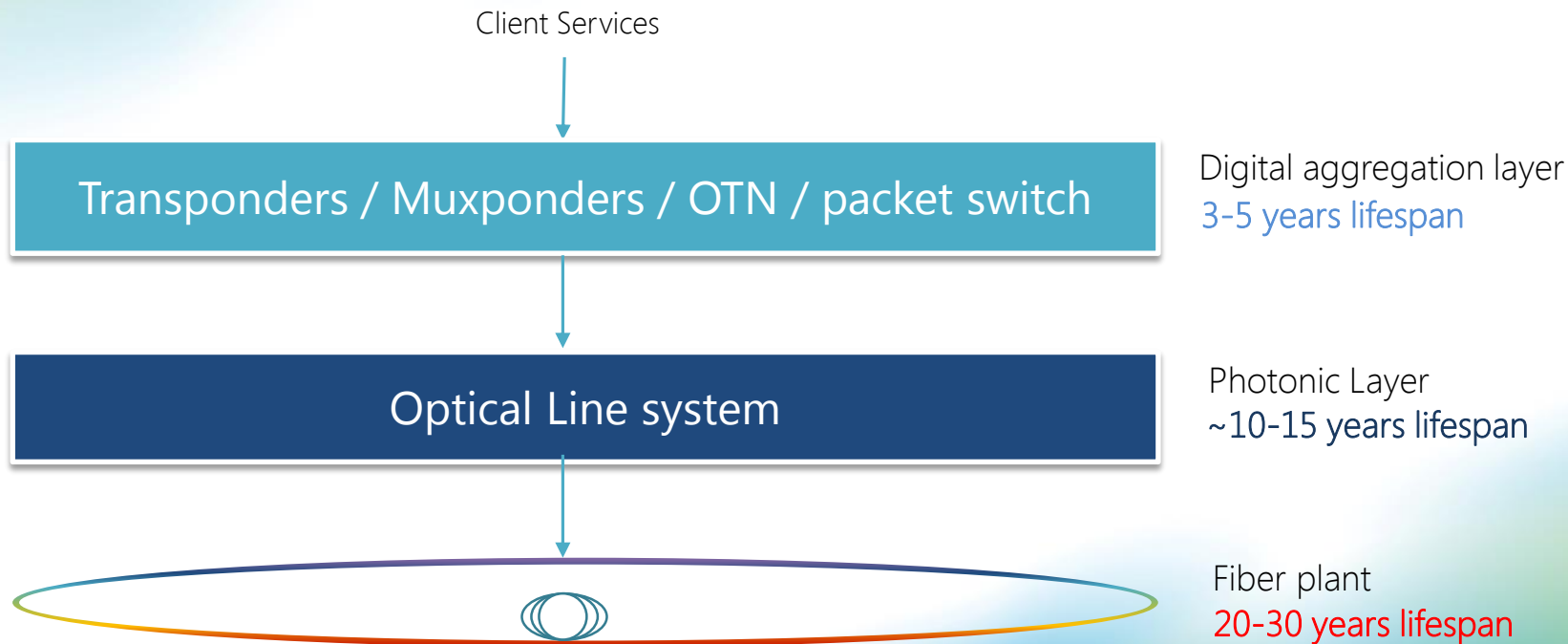


Optimum (low entropy) disaggregation can be enabled only by **break-through innovations** in each layer



The **A,B,C guide to modern metro networks** can now be finally written – simple, coherent, exhaustive

Investment cycles and the need for disaggregation



The integration vs disaggregation options so far...

The ONE-Box Solution



- Complex machines hardware and software wise
- Integration of multiple technologies advancing at different speeds
- Space and Power hungry. Difficult to scale in different form factors
- Lock-in in vendor implementation, high operational engineering effort

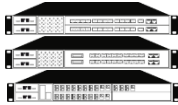
DIY disaggregation



- Huge integration effort on service provider aggravates time-to-market
- Proliferation of HW parts, stocks and complex operations
- Incoherent design rules by players coming from different fields
- No one accountable for end-to-end interworking

... and now: a new architectural vision

Modular optical
micro-nodes

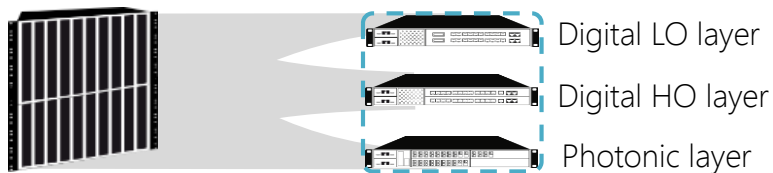


- Functional Block architecture operable via SDN automation
- Minimum footprint and power consumption
- Optimized in functionality and performance
- Fully open & interoperable open-system by design

Optical micro nodes – the rise of a new model

Functional Block Architecture

- ❑ Each Compact Modular Equipment is optimized in functionalities and performances.
- ❑ Its technology evolution is independent by life cycle of other functional blocks, and together operates as a single NE
- ❑ Interoperable with any existing transport infrastructure
- ❑ SDN native for easy end to end orchestration and



Maximize Performances And Network Scalability

Compact Modular Equipment

- ❑ 1RU Network Element fully redundant from interfaces to switching fabric
- ❑ 1RU ROADM WSS-free for cost effectiveness and flexibility
- ❑ Highest flexibility of port independency and configuration type from low speed E1 to ODU2 thanks to FLEXSET chip
- ❑ FLEXI I/O maximising scalability by re-assigning interfaces from client to line type



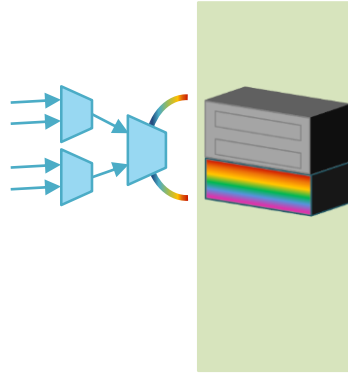
Dropping The Size, Increasing Functionalities

The impact on connectivity: removing all constraints

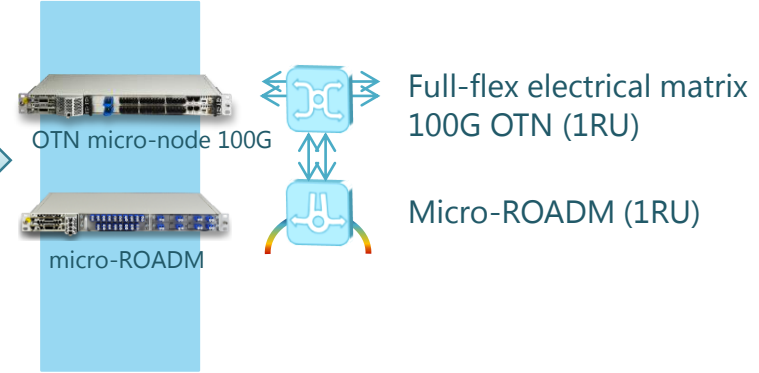
Traditional Solution

No central OTN and/or packet switch matrix

Variety of incoherent muxponder cards with partial switch capabilities.



Micro Nodes



Unrelated, nested matrices result in :

- Blocking connectivity
- Capacity waste
- Complex service set-up
- Large form factor

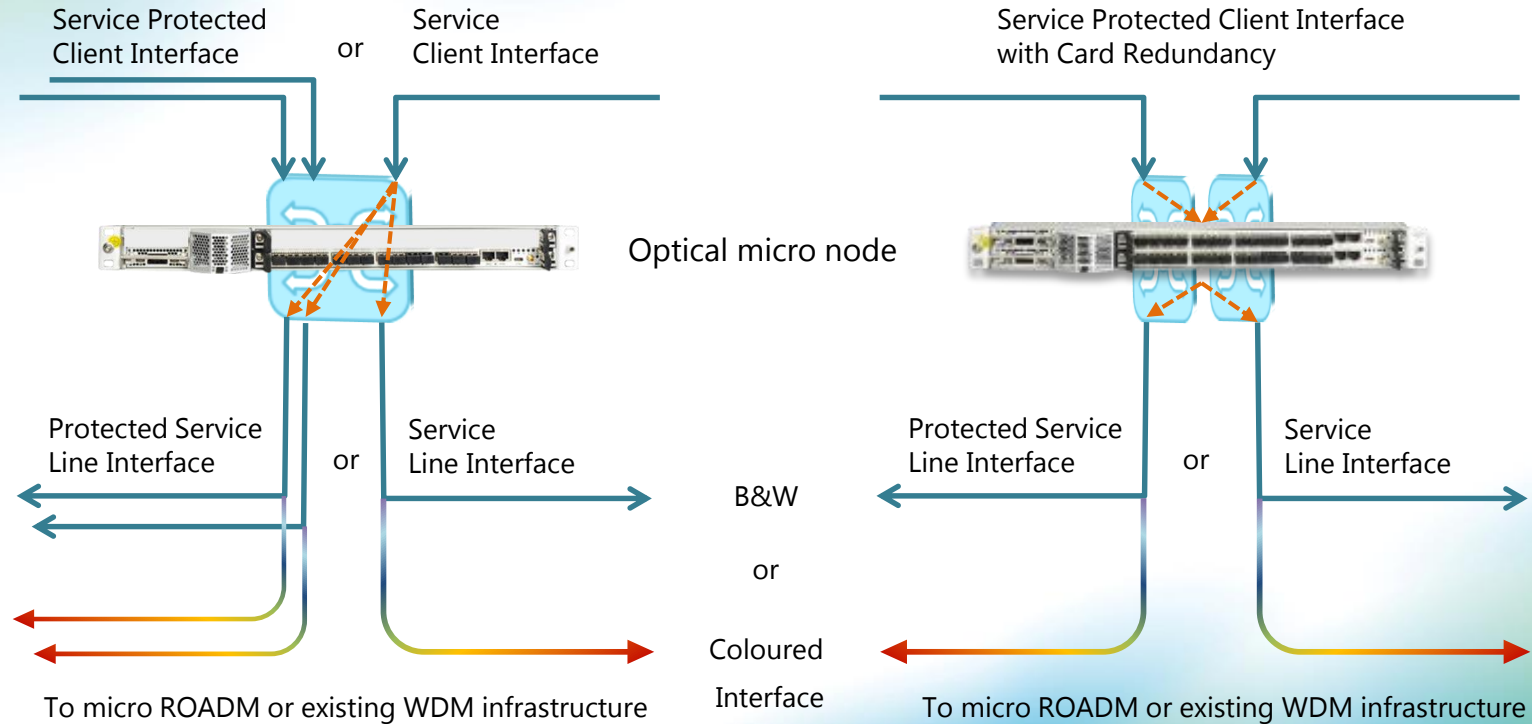
Optical modular micro-nodes give:

- Full **non-blocking** connectivity
- **100% capacity** utilization
- Modularity for '**scale as you grow**' approach
- Management as either single NE solution or as disaggregated layers

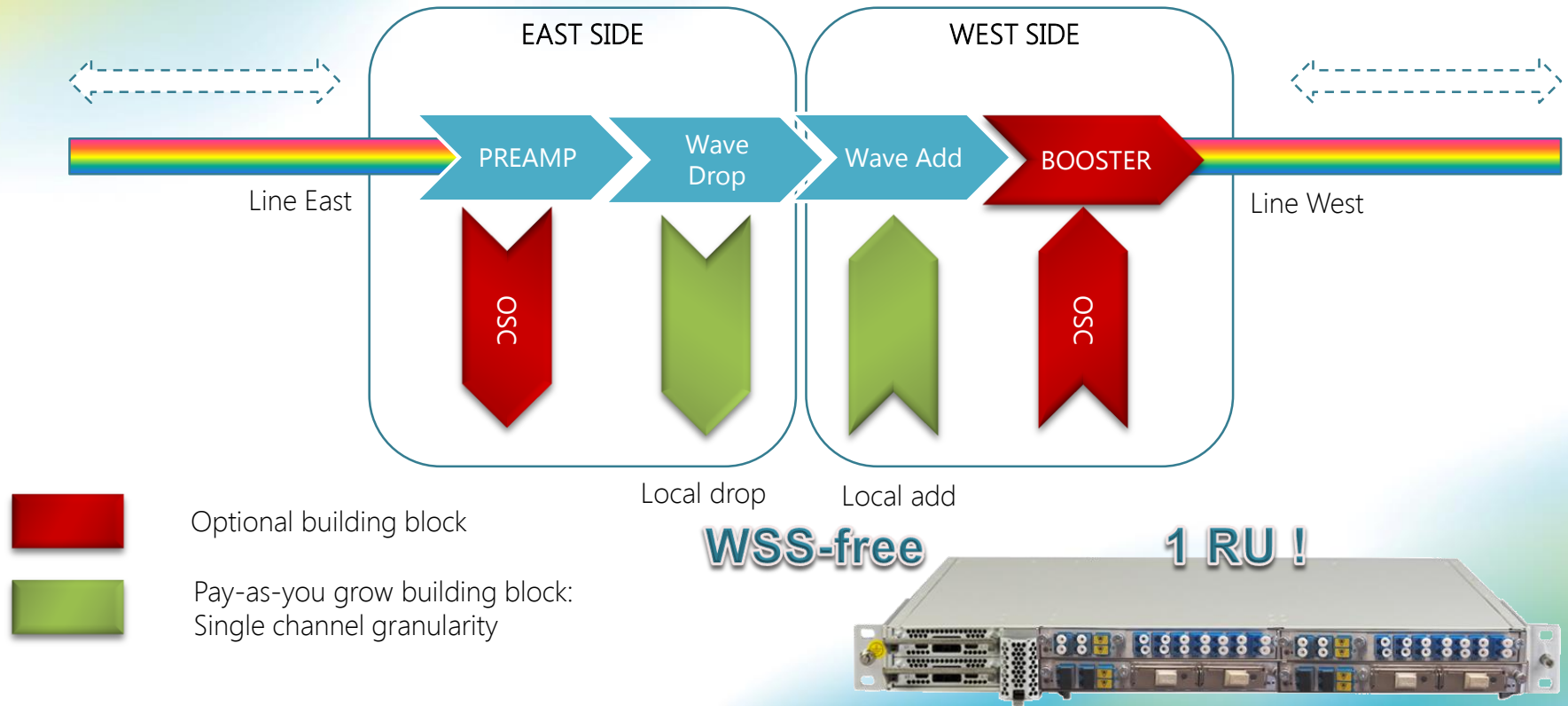
FROM

TO

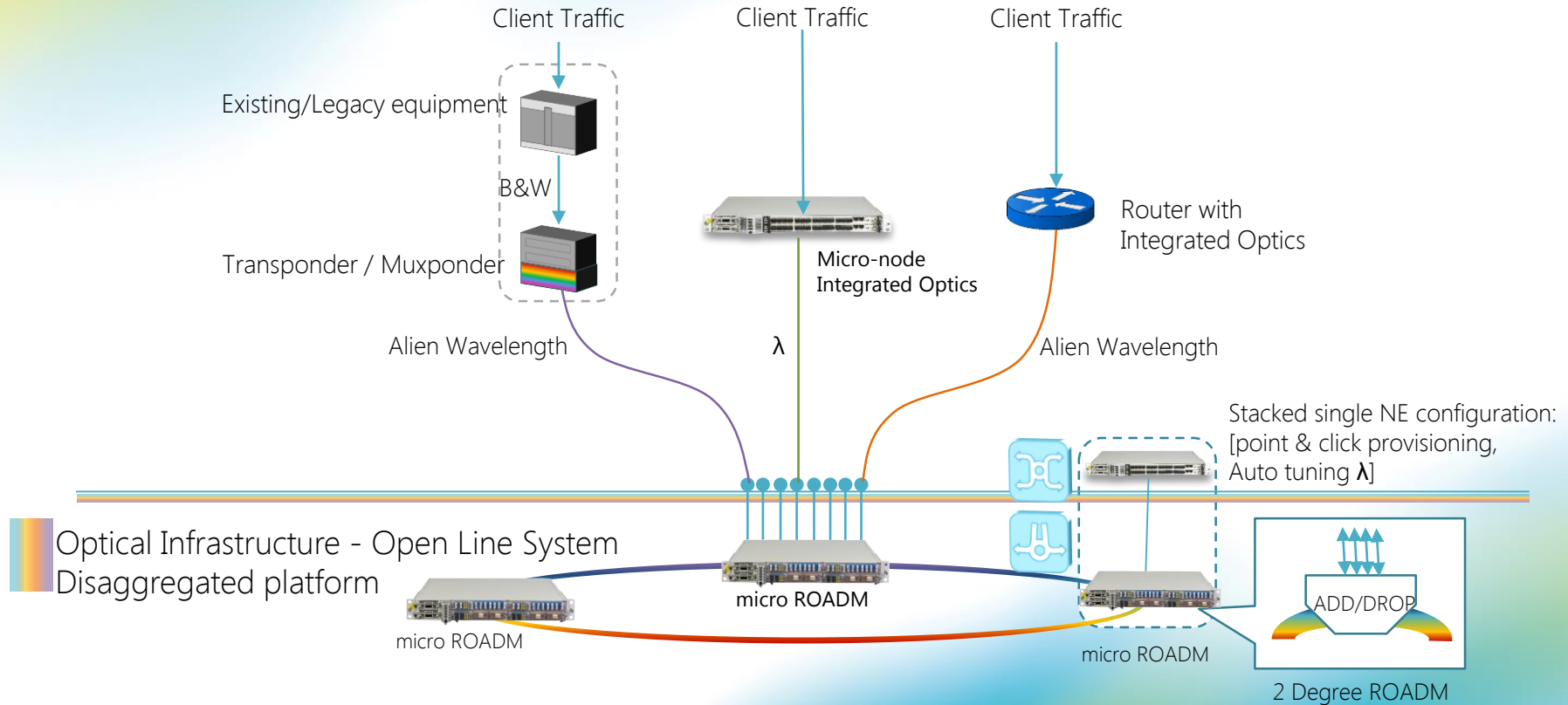
Digital layer: maximum flexibility for traffic aggregation



Photonic layer: **reconfigurability** at the right cost

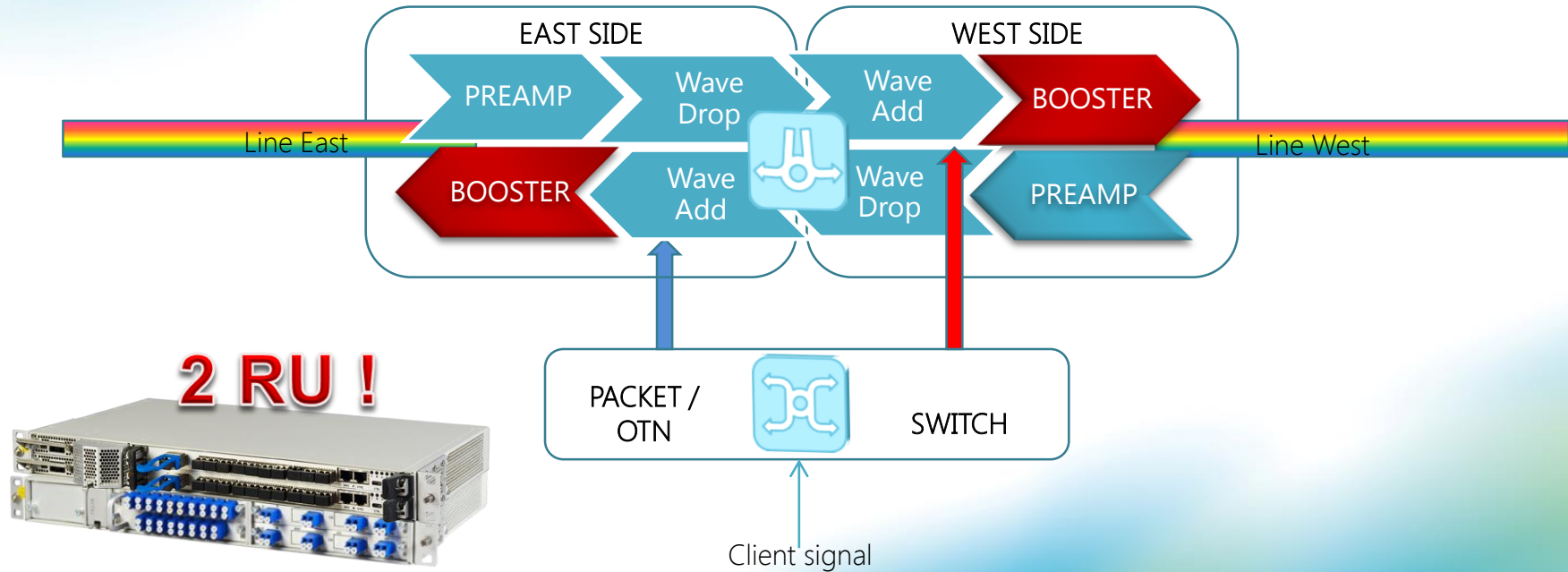


An open platform: disaggregate / stack as needed

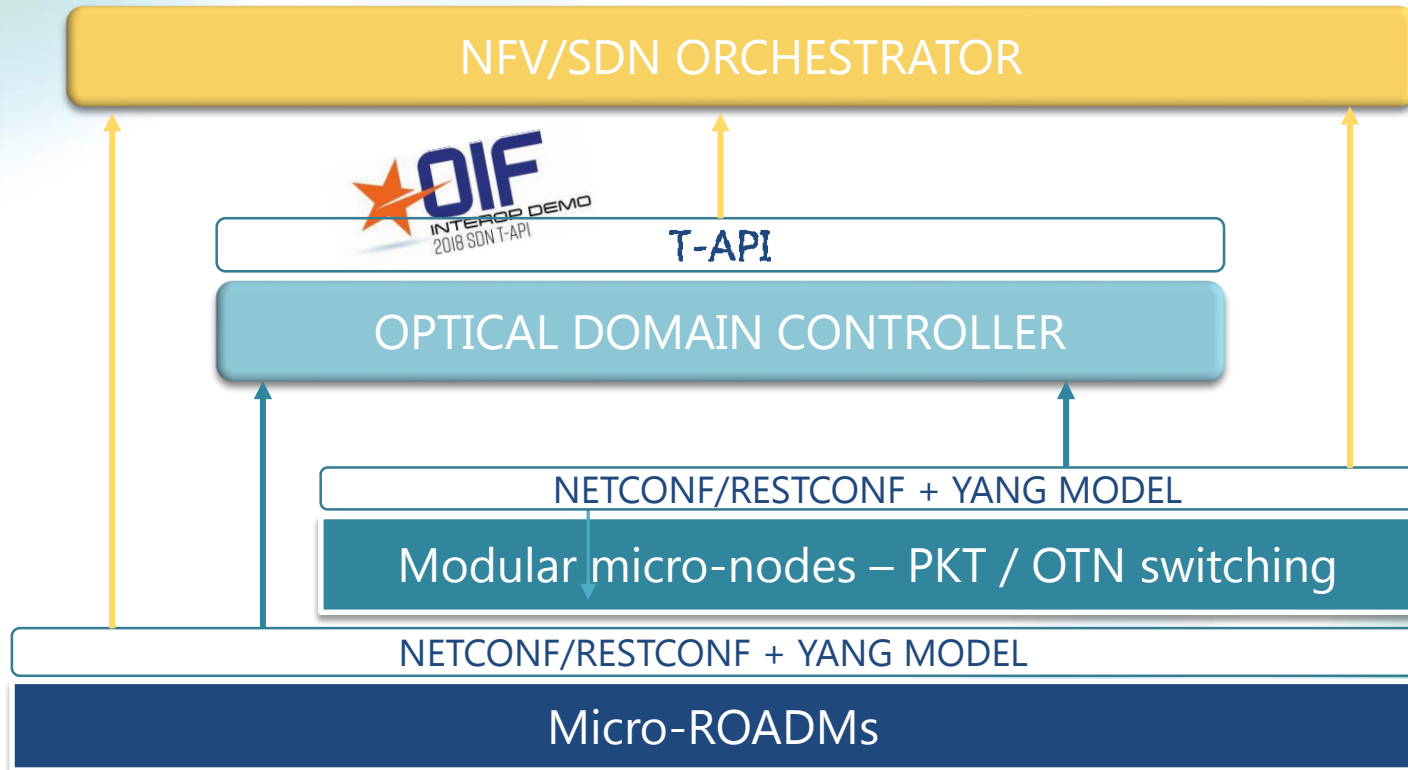


An open disaggregated platform... but stackable !

COMBINATION OF OTN SWITCH AND ROADM ALLOWS A METRO SCALABLE CDF ARCHITECTURE
(CONNECTIONLESS, DIRECTIONLESS, FLEX)



Programmability and automation through SDN



Powering our Vision into Reality



Protocol Innovation

Enhancing OTN
Patented Technology



Technology Innovation



sm^optics

FLEXSET



Architecture Innovation

Micro ROADM
WSS-FREE

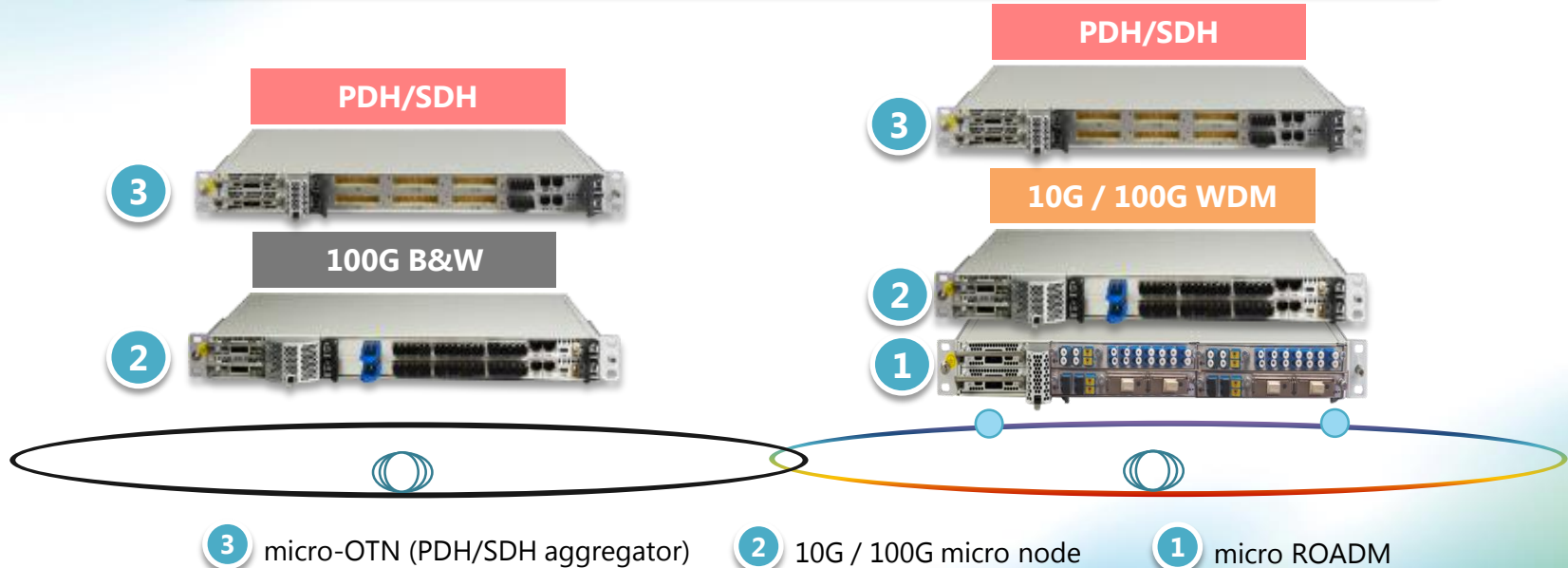


Software Innovation

SDN – NFV

The benefit of programmability

...Stack a 3rd (micro-OTN) and you decommission old SDH !



BUILD YOUR OPTICAL METRO WITH JUST 2 HW PARTS !

100G B&W vs ROADM is no more an architecture choice

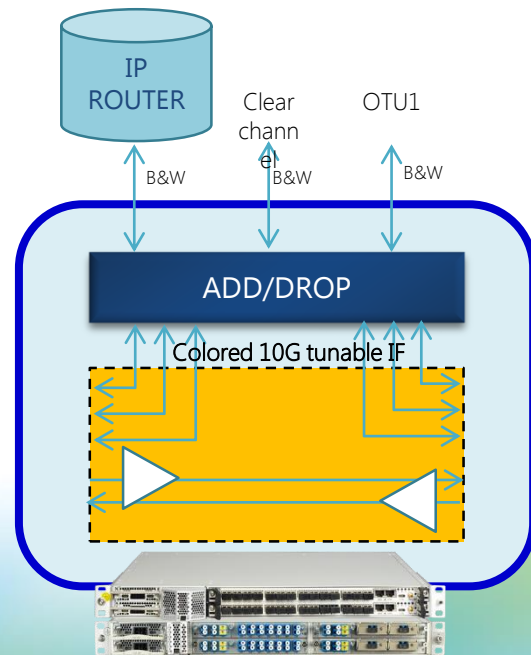
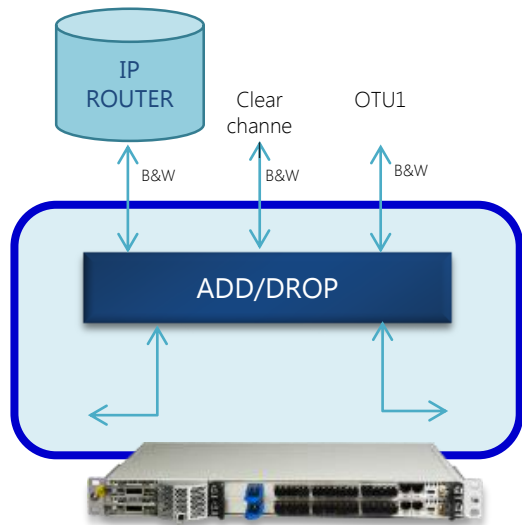
REAL NETWORK STUDY CASES – TYPICAL SCENARIO METRO ACCESS

LOOKING FOR THE MOST
ECONOMICAL SOLUTION
(100G B&W OR 10G ROADM ?)

For ~50% of rings 100G B&W is the
cheapest
For ~50% of rings micro-ROADM is
the cheapest

NOW ALL IN ONE-PLATFORM

No a-priori architecture decisions
Freedom on planning
Same parts everywhere
Easy management & operations

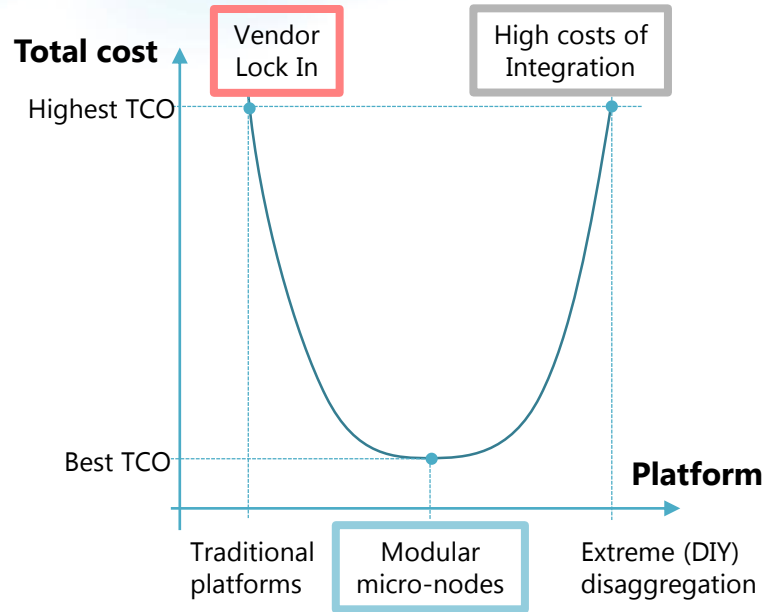


Hitting the global optimum in the TCO curve

INTEGRATED PLATFORMS

- Highest CAPEX
- Quickly obsolete
- Technology compromise
- Closed vendor legacy
- Single Point of Failure

ONE-BOX SOLUTION



MODULAR MICRO NODES

- Best TCO
- Limited to no integration costs
- Low entropy solution

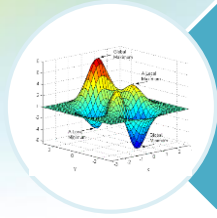
- Maximum flexibility (connectivity, scalability)
- Best-of-breed technology in each layer

EXTREME DISAGGREGATED PLATFORMS

- Highest OPEX
- Huge integration complexity
- Missing operations skill set
- Loss of end-end accountability
- Longest time-to-market
- Proliferation of common parts
- High cost of logistics

DIY SOLUTION

So... all in all...



Modular optical **micro-nodes** as a **rising new model** to hit the **TCO** curve global **optimum**

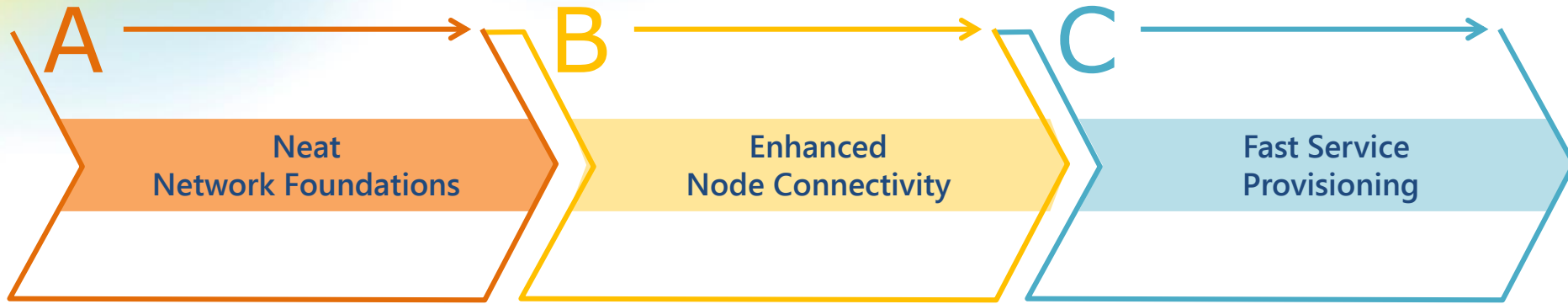


Disaggregation? Fine, but look for **true innovation** in each layer !



How about the **A,B,C** guide ?

The ABC of a modern Metro Network



Modernize the Metro-Access **network**: Decommissioning the Legacy PDH/SDH by migrating on a convergent OTN layer:

micro-OTN®

Delayer the network:
Elevating the metro to a single highly interconnected and compact platform:

Modular Micro Nodes

Unlock shared potential:
Using SDN to free the network potentials from any architectural constraint:

HomeLight

Not convinced ... ?

Come see our **portable micro-CO** @ booth #8

Network transformation **live demo...**

1RU 400Gb/1Tb OTN aggregation switch...

1RU WSS-free micro-ROADM...

...and much more !





www.SM-Optics.com



www.linkedin.com/company/sm-optics

THANK YOU

SM-Optics

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siae microelettronica group

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