



# Protect your passive Infrastructure investment

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Fiber Optic Day – Let's Gigafy Romania  
2 Martie 2016

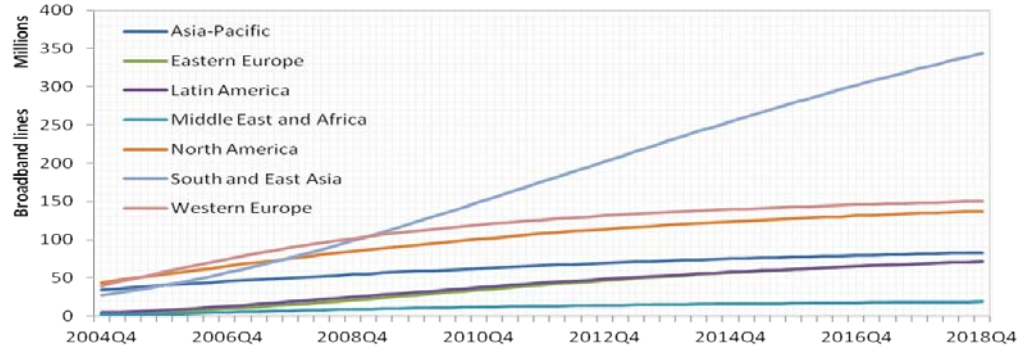


Convincing cabling solutions

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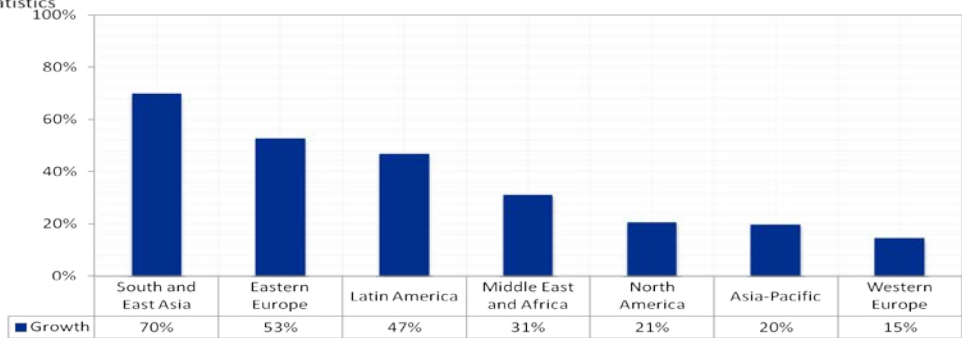
# Growth of FTTX

World broadband subscriber forecasts, to 2018



Source: point-topic.com, Global Broadband Statistics

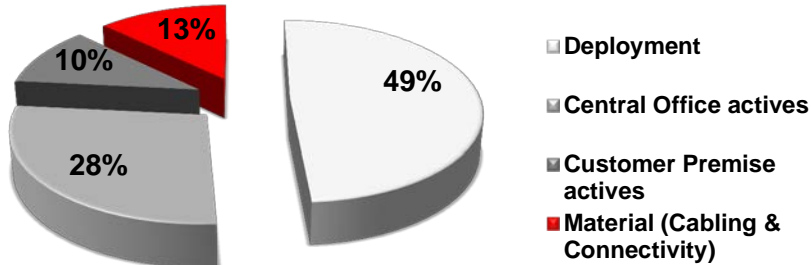
Broadband growth by region, year-end 2012 to year-end 2018



Note that regional estimates are based on the top 45 broadband countries only and so do not represent all countries in the region.

# Typical Capex allocation

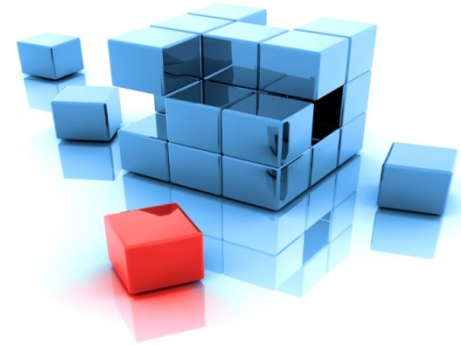
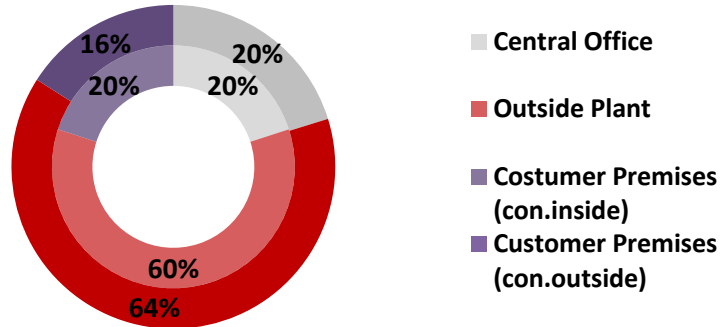
## Capex allocation for a greenfield deployment



Source: FTTH Council EU



## Capex allocation by solution area



# Passive infrastructure – The rollout circle



# Influence classes (passive Infrastructure OSP)



## Mechanical

- Vibration
- Weight/ load
- ...

## Human

- Vandalism
- Installation failure
- Planning failure
- ....



## Environmental

- Temperature
- Water
- Humidity
- UV rays
- chemicals

## Accidental

- Digging
- Traffic accidents
- ...



# How to protect / prevent ?

- **use reliable solutions/products with intuitive and easy handling**
  - to minimize installation mistakes & save installation time
  - to withstand against most influences
- **use flexible and modular solutions**
  - to expand and modify your network and enable planning flexibility
  - to upgrade your network to upcoming technologies
- **training of all stakeholders**
  - to ensure a proper planning
  - to ensure a proper installation
- **monitor business critical connections**
  - to identify failures very quickly
  - to minimize the downtime to a minimum



# Typical used OSP products

## Underground



## Above ground



## Aerial



# Reliability with closures

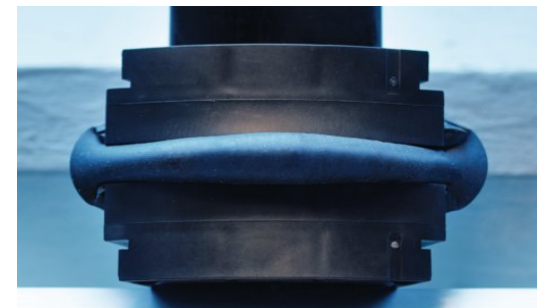


## Minimize installation mistakes

- SYNO Gel Sealing Technology requires no heat gun or open flame
- Simplifies the complete cable sealing & preparation process
- Dramatically reduces cable sealing process
- Re-usable sealing elements and cable strain relief parts

## Withstands several environmental influences

- Above IP68 (Water depth of more than 5m)
- Fungus resistant
- Longterm UV resistant
- Chemical resistance (salt acid, acid sulphur, insulating oil, etc.)
- Shock & Impact resistant
- Temperature resistant (-40°C up to 70°C)
- Built for decades to come (more than 30 years)





# Flexibility & Modularity with closure



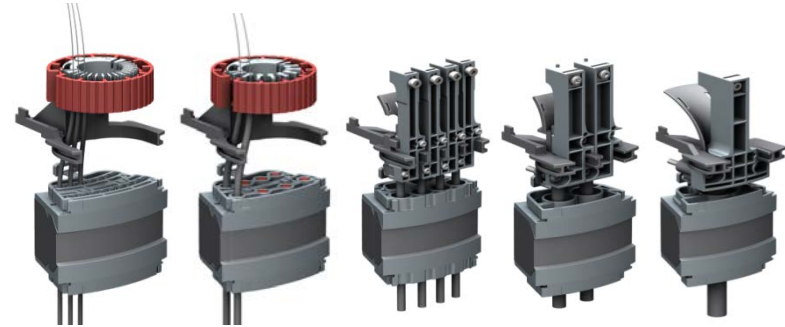
## Expand and modify

- Cable range from 2 – 28 mm
- 8 independent cable entry bays individually equipable
- Max cable capacity 8 – 128 cables
- Changeable gel & strain relief kits during operation without interrupting the operation

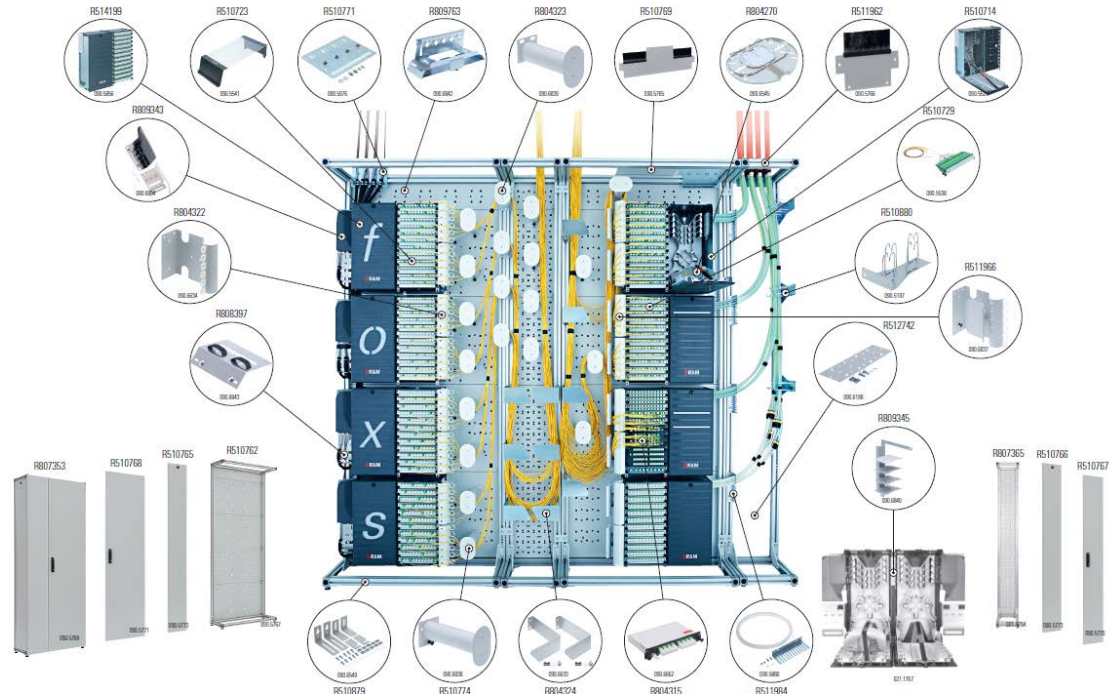


## Upgrade

- Every cable type and microduct can be mounted and sealed
- Suitable for P2P, P2MP or combined applications
- Add cables or microducts per sealing element without interrupting cables & ducts installed nearby



# Modular ODF systems



# ODF components to different applications



# Same system, one solution

- **Features:**

- Up to 144 fibers possible
- IP54 protected
- Individually equipable with SE, SC or Splitter trays



- **Features:**

- Up to 576 fibers possible
- IP68 protected
- Individually equipable with SE, SC or Splitter trays



# Training Certified Planers & Installers



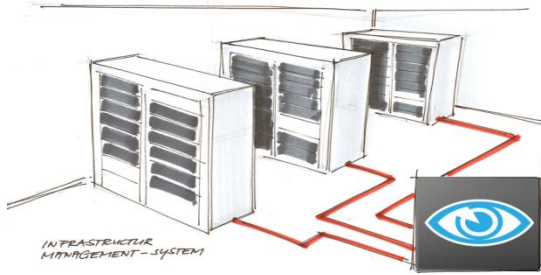
- The best way to prevent human failures (instalation and planning mistakes) is training
- ... but training is not training...
- To ensure proper and reproducible trainings, several elements/modules are needed:
  - ❑ consists always of a **theoretical** and **practical** part
  - ❑ **tailor made** in close dialogue with the network operators since every network is unique
  - ❑ **On-site training/** assistant from certified instructors to ensure a proper execution
  - ❑ All participants should receive a personalized certification card and is documented in a database for **traceability & requalifications**



# Monitoring examples

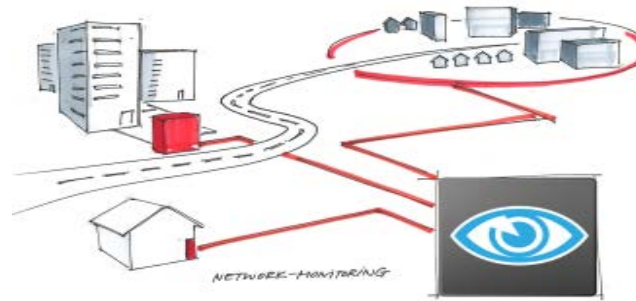


## Automated infrastructure management



- Administration of physical layer infrastructure
- Automatic update of physical infrastructure documentation
- Alerts when unauthorized changes are made

## Network/ Fiber monitoring



- Tracing & monitoring of fibers
- Unique subscriber identification by integrated reflectors in the connectivity itself

## Infrastructure monitoring & authorisation



- Monitoring of the different parameters influencing the passive infrastructure
- Access authorisation & monitoring

# Summary

- The highest invest of passive infrastructure goes to the area Outside Plant
- The passice infrastructure has to withstand several influences day by day and for decades to come
- Choose your infrastructure accordingly and keep the longterm use with a view to TCO in mind (*If you buy cheap you pay dearly !*)
- Minimize/eliminate influences by using upgradable, modular and verifiable, reliable solutions
- Training & Monitoring will help to avoid initial & consequential damages



# Thank you!

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