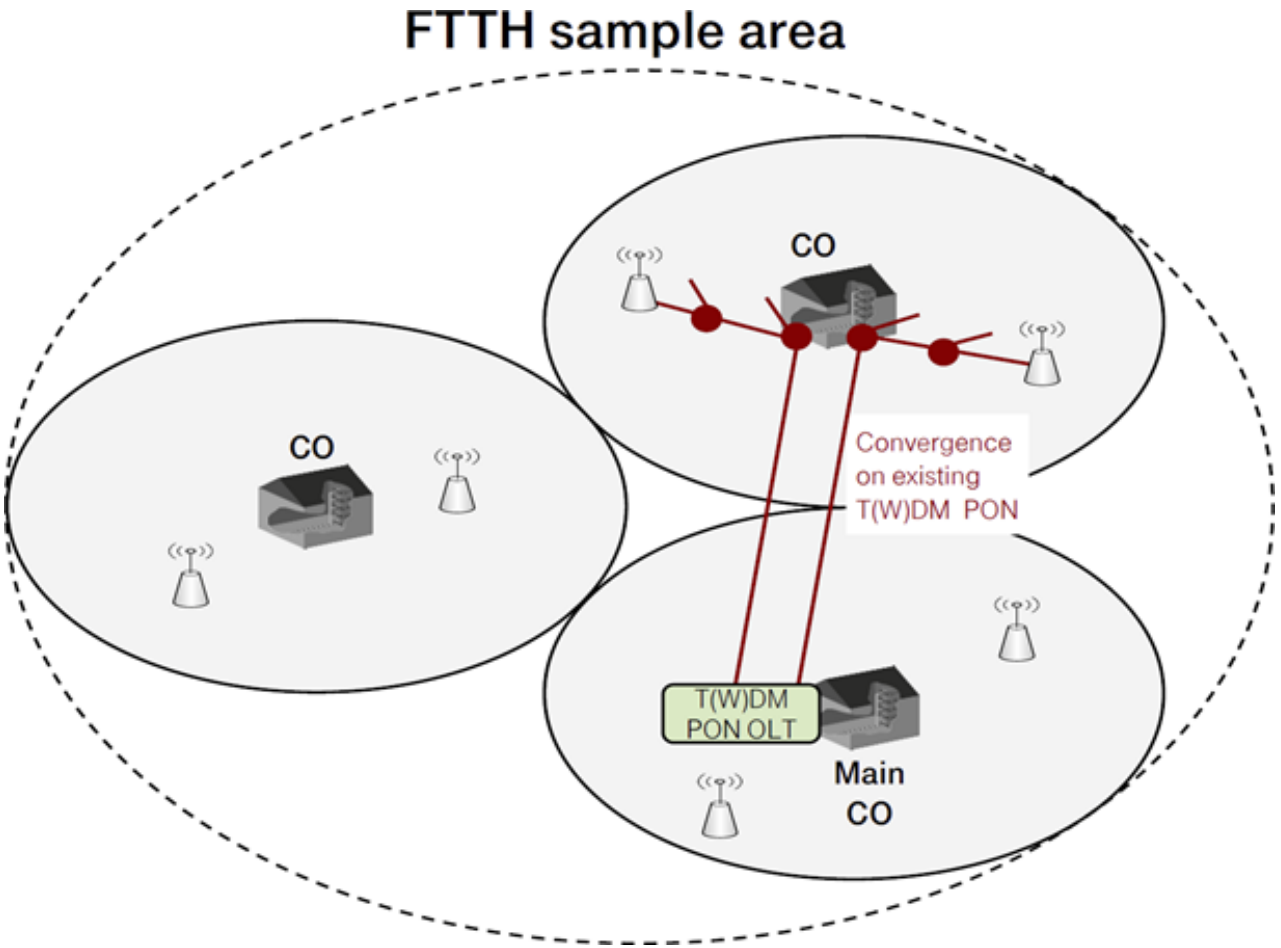
Fixed–mobile Convergence: Structural convergence

Access technology options

Dirk Breuer	*Deutsche Telekom Laboratories, Germany*
Tibor Cinkler	*Budapest University of Technology and Economics, Hungary*
Stéphane Gosselin	*Orange R&D, France*
Annie Gravey	*Telecom Bretagne, France*
Ali Hamidian	*Ericsson Research, Sweden*
Stefan Höst	*Lund University, Sweden*
Tahar Mamouni	*Orange R&D, France*
Péter Olaszi	*AITIA International, Inc., Hungary*
Stephan Pachnicke	*ADVA Optical Networking SE, Germany*
Björn Skubic	*Ericsson Research, Sweden*
Jose Torrijos Gijón	*Telefónica Investigación y Desarrollo, Spain*
Erik Weis, Frank Geilhardt, Thomas Monath, Sandro Krauß	*Deutsche Telekom Laboratories, Germany*

This ongoing work receives funding from the European Union's Seventh Framework Programme (FP7/2007-2013) under grant agreement n° 317762 "COMBO project"

Area deployment start scenario 2020



Deployment in FTTH areas

- Dedicated backhaul
  - Point-to-point CWDM or DWDM-PON
- Converged backhaul*
  - Convergence via GPON with limited CoMP scheme support
  - Convergence via NG-PON2 WDM overlay, aiming full CoMP support

* Either existing GPON with 1:32 split or hypothetically in 2020 existing mass-market products TWDM-PON with 1:128 split (e.g. 1:4 splitter in CO and 1:32 splitter in cabinet)

Start scenario and convergence options

Start scenario

TWDM: Fixed access FTTH
PS based fiber infrastructure
OLT

NG-PON2: Convergence of WDM-PtP (Main CO) and TWDM (Main CO) over same fibre infrastructure

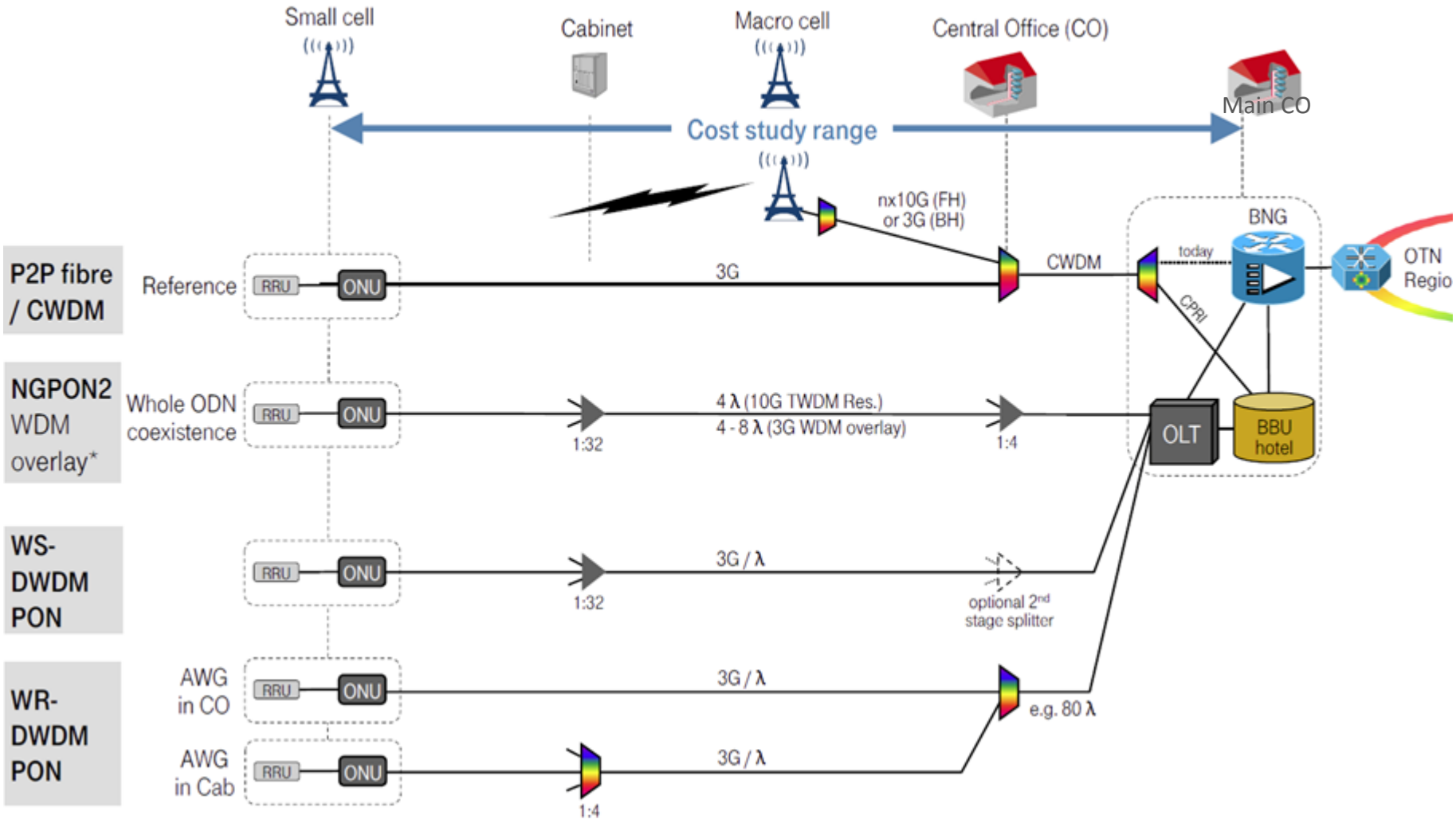
DWDM-PtP: Macro, Small cell, DSLAM
TWDM: Fixed access FTTH
PS-based fiber infrastructure
OLT

DWDM (Main CO) + TWDM (Main CO)

DWDM: Macro, Small cell, DSLAM
Fiber infrastructure
OLT

TWDM: Fixed access FTTH
PS-based fiber infrastructure
OLT

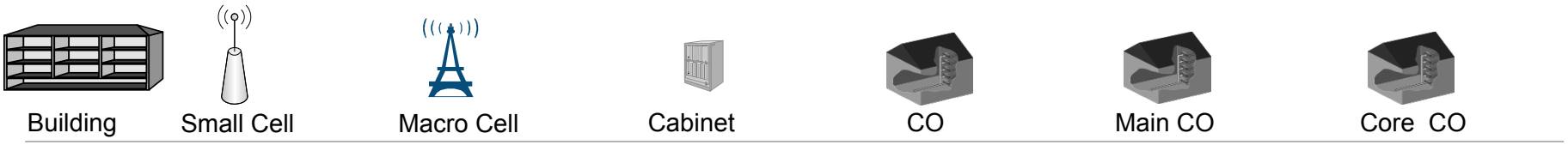
Access technologies



* NG-PON2 scenario with coexistence only on feeder fibre not shown here

WS-DWDM: Wavelength select – Dense WDM
WR-DWDM: Wavelength routed – Dense WDM
TWDM: Time and Wavelength Division Multiplexing
RRU: Remote Radio Unit
BNG: Broadband Network Gateway s

Alternative start scenario and convergence options



a) Existing infrastructure:
PS-fiber infrastructure with TDM-PON (CO)

TDM-PON: Fixed access FTTH
PS based fiber infrastructure
OLT

b) DWDM-PtP (Main CO)

TDM-PON: Fixed access FTTH
PS based fiber infrastructure
OLT
DWDM-PtP: TDM-PON OLT, Macro, Small cell, DSLAM
Fiber infrastructure
OLT

c) DWDM-PtP (Main CO) with reuse of TDM-PON fiber for DWDM-PtP

DWDM-PtP: Small cell, DSLAM
TDM-PON: Fixed access FTTH
PS based fiber infrastructure
OLT
DWDM-PtP: TDM-PON OLT, Macro, DSLAM
Fiber infrastructure
OLT

d) DWDM-PtP (Core CO)

TDM-PON: Fixed access FTTH
PS based fiber infrastructure
OLT
DWDM-PtP: TDM-PON OLT, Macro, Small cell, DSLAM
Fiber infrastructure
OLT

Presented by

Annie Gravey	*annie.gravey@telecom-bretagne.eu*
Péter Olaszi	*peter.olaszi@aitia.ai*
Björn Skubic	*bjorn.skubic@ericsson.com*

Dirk Breuer	*Deutsche Telekom Laboratories, Germany*
Tibor Cinkler	*Budapest University of Technology and Economics, Hungary*
Stéphane Gosselin	*Orange R&D, France*
Annie Gravey	*Telecom Bretagne, France*
Ali Hamidian	*Ericsson Research, Sweden*
Stefan Höst	*Lund University, Sweden*
Tahar Mamouni	*Orange R&D, France*
Péter Olaszi	*AITIA International, Inc., Hungary*
Stephan Pachnicke	*ADVA Optical Networking SE, Germany*
Björn Skubic	*Ericsson Research, Sweden*
Jose Torrijos Gijón	*Telefónica Investigación y Desarrollo, Spain*

This ongoing work receives funding from the European Union's Seventh Framework Programme (FP7/2007-2013) under grant agreement n° 317762 "COMBO project"