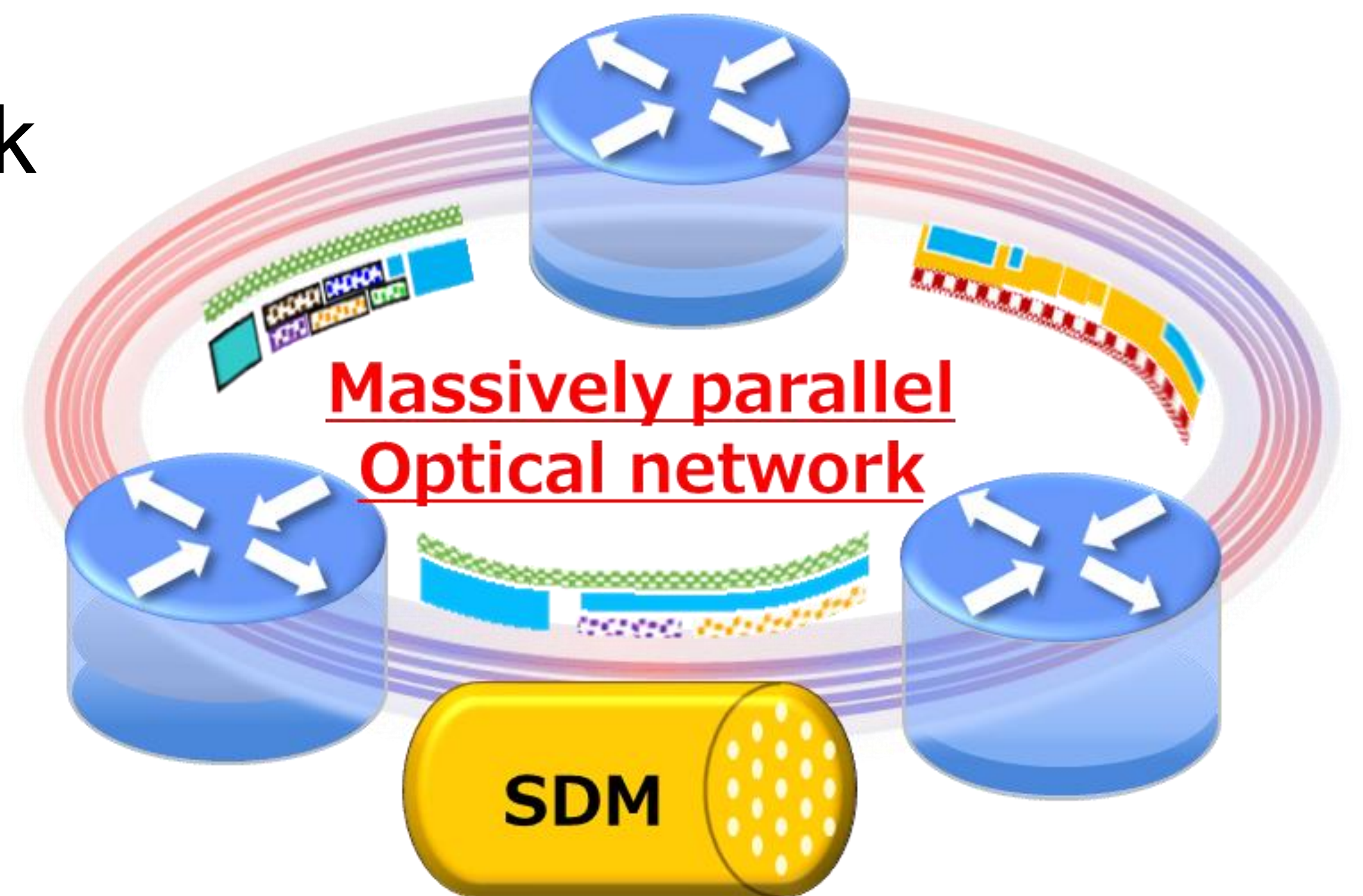


Project overview

Aim: to establish a novel optical network supporting future large-scale/diverse traffic streams.

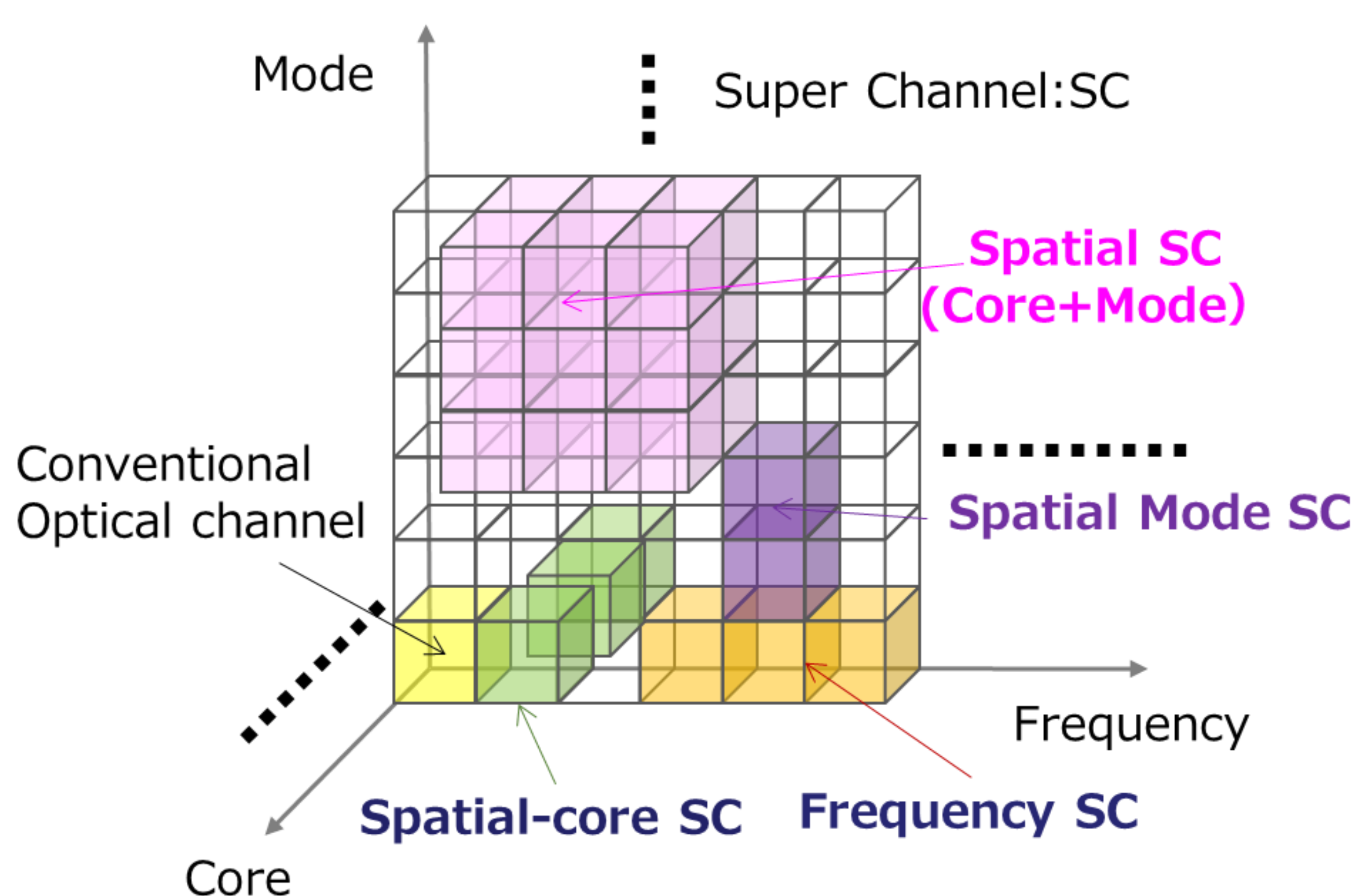
This work: to develop fundamental technologies with massively-parallel processing for low-consumption, open, and versatile optical transport networks.



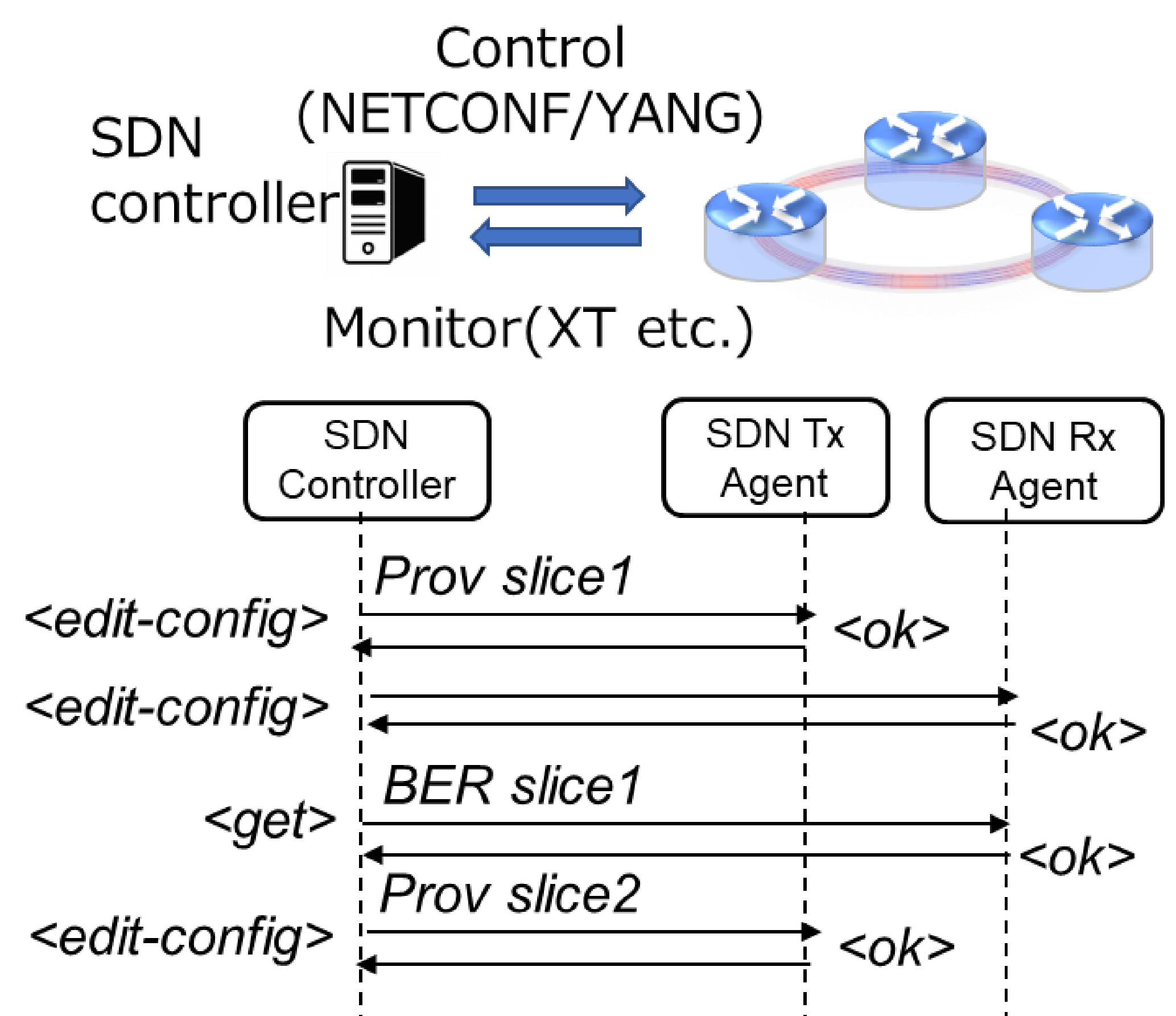
Design and control for massively parallel optical networks

In this project, we will develop

- (1) Efficient slice (optical channel) design technology for three axes, which are the conventional frequency axis and two space-multiplexed axes (mode and core),
- (2) Control technology using open API for complex slices with three degrees of freedom (frequency, core and mode).



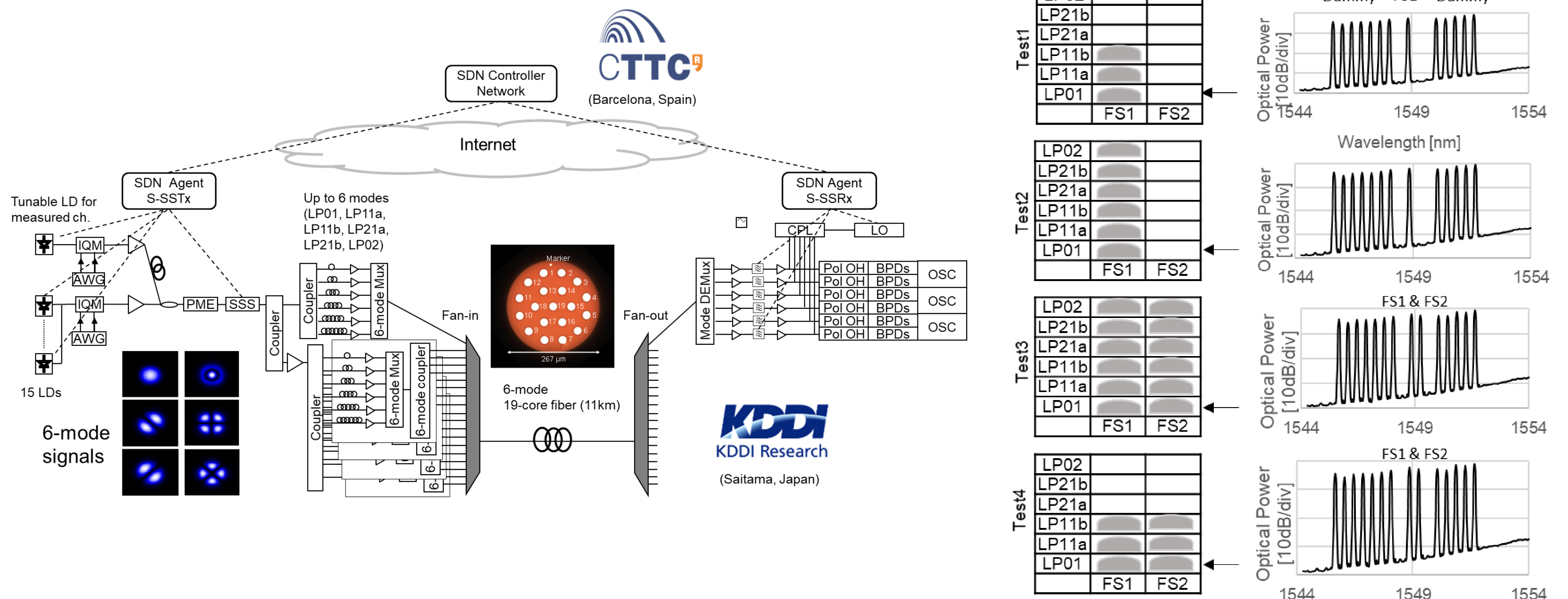
Slice design technology



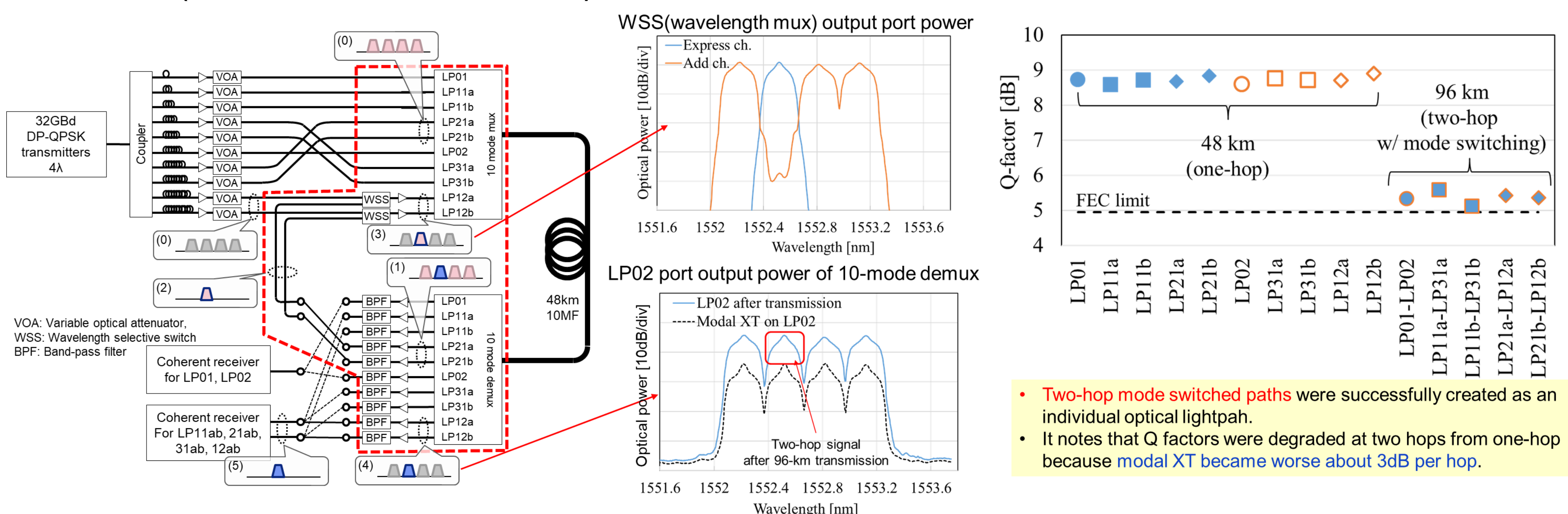
Slice control technology

Demonstrations of design and control technology for massively parallel optical networks

Demonstration of SDN-enabled scaling up/down of SDM super-channels using spatial modes with adaptive MIMO equalization and modulation format assignment (OFC2019, M4J.7)



Demonstration of mode ROADM in weakly-coupled 10-mode-division multiplexed network (ECOC2019, W.2.E.3)



Summary: We successfully demonstrated SDN-enabled sliceable multi-dimensional optical network with open API-based control and the fundamental switching operation of the mode ROADM for both mode and wavelength.