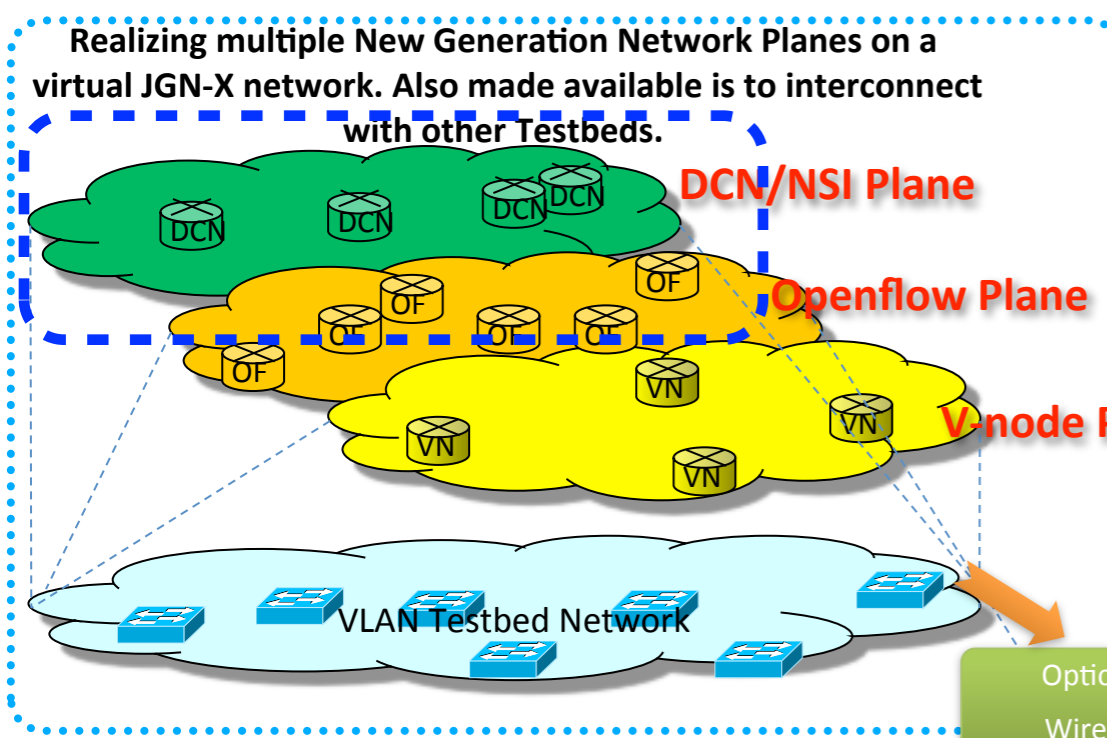


NSI in JGN-X

Jin Tanaka
NICT/KDDI

12th Annual Global LambdaGrid Workshop
Oct 12th 2012
Chicago, IL

JGN-X Testbed Network



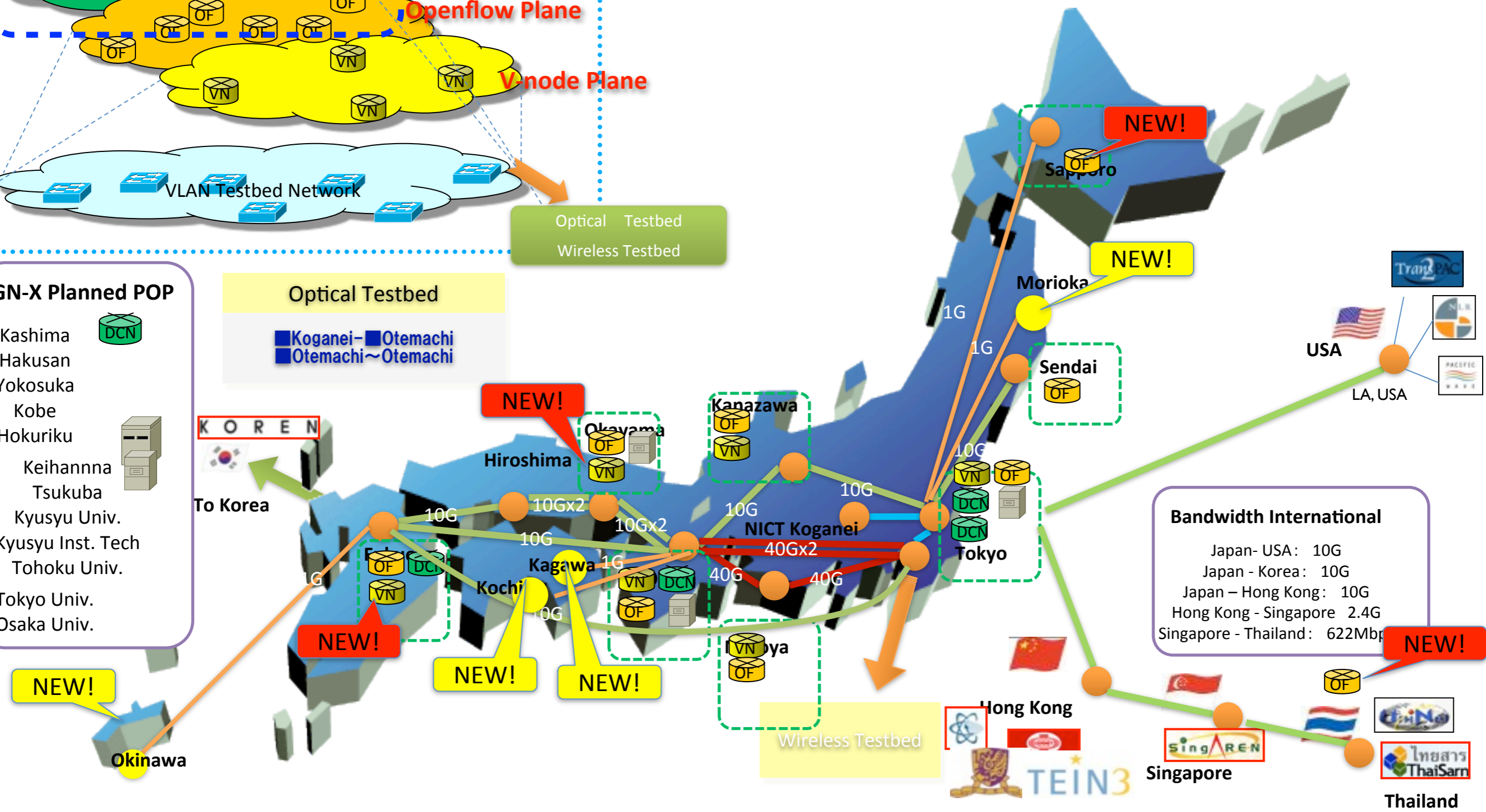
Ex

	40G		Virtual Node		DCN		StarBED
	10G		Openflow		Virtual Storage		
	1G						
	DF						

- JGN-X Planned POP**
- Kashima
 - Hakusan
 - Yokosuka
 - Kobe
 - Hokuriku
 - Keihanna
 - Tsukuba
 - Kyusyu Univ.
 - Kyusyu Inst. Tech
 - Tohoku Univ.
 - Tokyo Univ.
 - Osaka Univ.

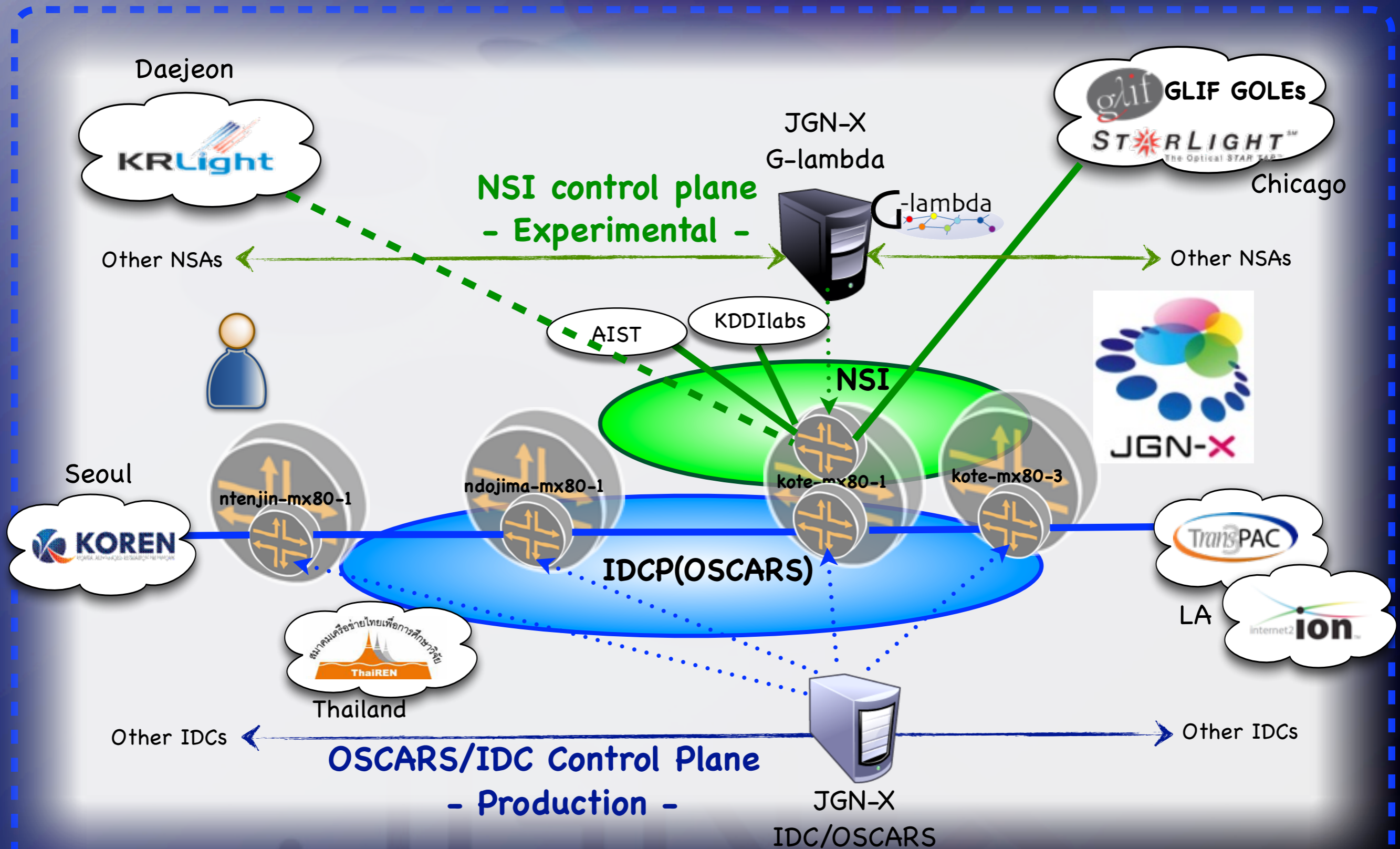
Optical Testbed

- Koganei - Otemachi
- Otemachi ~ Otemachi



Thailand

JGN-X Dynamic Circuit Systems



Lessons and Learned from NSI implementation in JGN-X

- Issues specific to JGN-X
 - Difficulty of coexistence between automated and manual control on single device
 - Need for provisioning multi-point connection to provision slice network
- Monitoring and performance
 - No simple monitoring way to verify a data-plane connection
 - No log information of data-plane switches on other domain
 - It has not been possible to confirm a high performance or QoS
 - ➔ Development of perfSONAR-driven measurement tools over multi-domain
- Bottleneck by staticed VLANs
 - There are still many section where need to static VLAN in Asian Pacific
 - ➔ VLAN translation and MPLS based path provisioning
- Gap on intra-domain/LAN and WAN technologies
 - Intra-domain/LAN is complicated, inter-domain/WAN is simple
 - It's still difficult to extend VLANs to end-user system in intra-domain
 - ➔ Integration of NRM and OpenFlow/SDN is key