

# 1. TEIN, where are we?

- a. Network topology as of 30 June 2019
- b. Changes since Daejeon meeting – Feb. 2019
- c. Upcoming Changes
- d. Activity – procurement tender

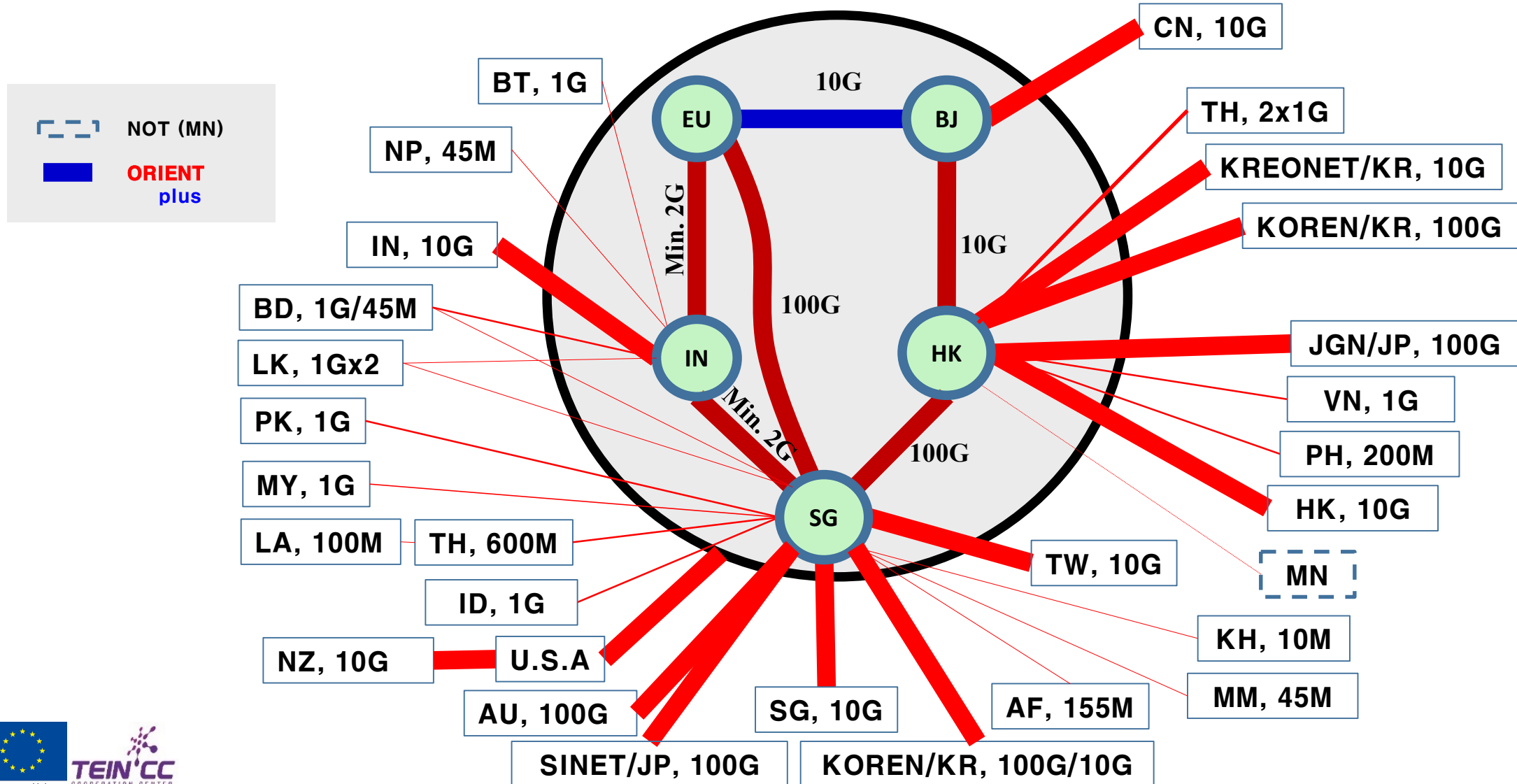
# 2. Data on the growth of Traffic volume, Bandwidths

- a. Traffic volume perspective
- b. Bandwidths perspective
- c. How to promote traffic growth?
- d. How to bridge bandwidths divide?

Patch Lee

TEIN\*CC

22 July 2019

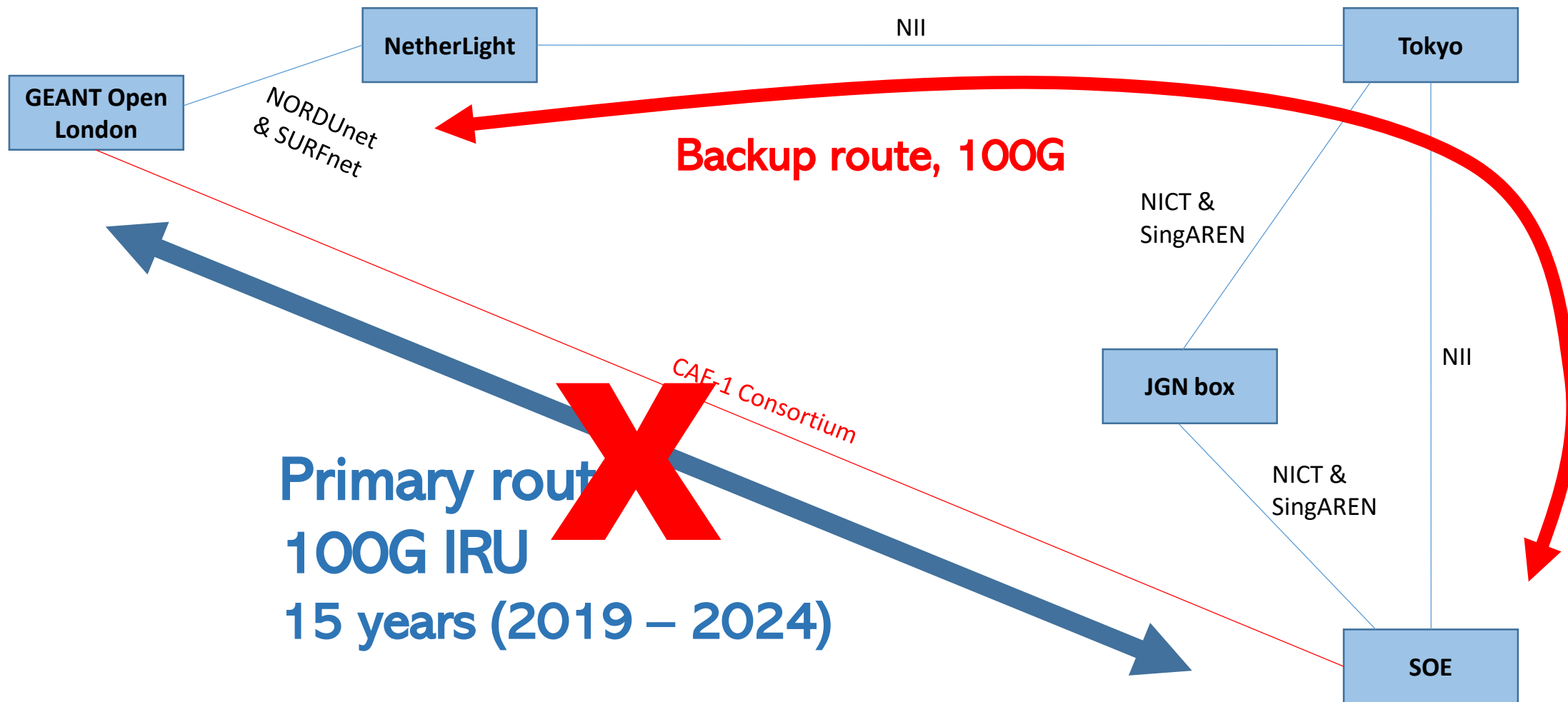


## b. Changes since Daejeon meeting – Feb. 2019

Type	Points/locations	Partner	Before	Present	Timeline	Etc.
Connectivity	KR-HK, KR-SG	KOREN	10/10G	<b>100/100G</b>	Feb. '19	-
	JP-SG	TEIN-JP	10G	<b>100G</b>	Feb. '19	
	BT-IN	DrukREN	-	<b>1G</b>	Feb. '19	Funded by NKN
	SG-LD	-	10G	<b>100G</b>	May '19	Six party collaboration
	BD-IN	BdREN	45M	<b>1G</b>	Apr. '19	45M,1G(1G funded by NKN)
	HK-JP	NICT	10G	<b>100G</b>	June '19	

1

# b. IRU 100G + back up route (Asia – Europe)



Type	Points/locations	Partner	Current	Planned	Timeline	Etc.
Connectivity	KR-HK	KREONET	10G	<b>100G</b>	July '19	-
	SG(SingAREN)-SG	SingAREN	10G	<b>100G</b>	Aug. '19	
	NP-IN	NREN	45M	<b>1G</b>	-	Funded by NKN
Equipment	TEIN SG, HK	100G module for future upgrades				

## □ IPLC procurement - AF, LA, PK & VN

Location	Planned range of Bandwidths
AF	1Gbps – 155Mbps
LA	100Mbps – 10Mbps
PK	10Gbps – 1Gbps
VN	1Gbps – 100Mbps

Activity	Timeline
Prior Information Notice	May 2019
Contract Notice Issued	19 June 2019
Deadline for Submission	~ 15 July 2019
Evaluation & Award Notice	~ 15 August 2019
Contract for Signature	~ 31 August 2019
Ready for Service	~ December 2019

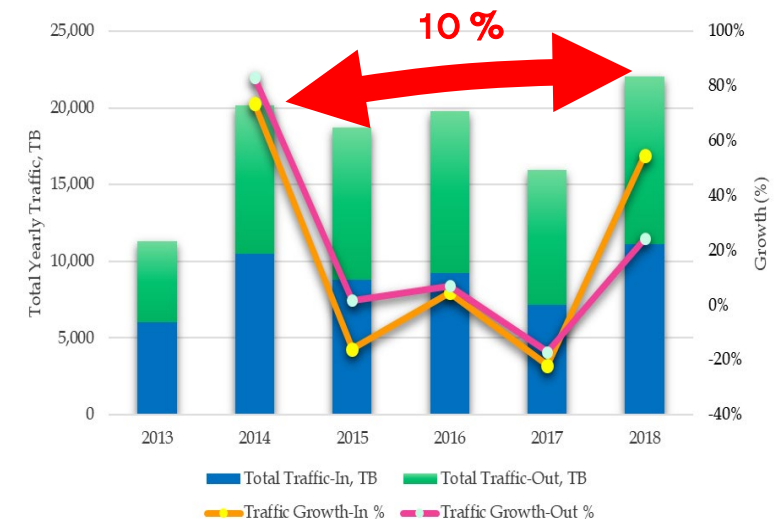
## 2. Data on the growth of Traffic volume, Bandwidths

- a. Traffic volume perspective
- b. Bandwidths perspective
- c. How to promote traffic growth?
- d. How to bridge bandwidths divide?

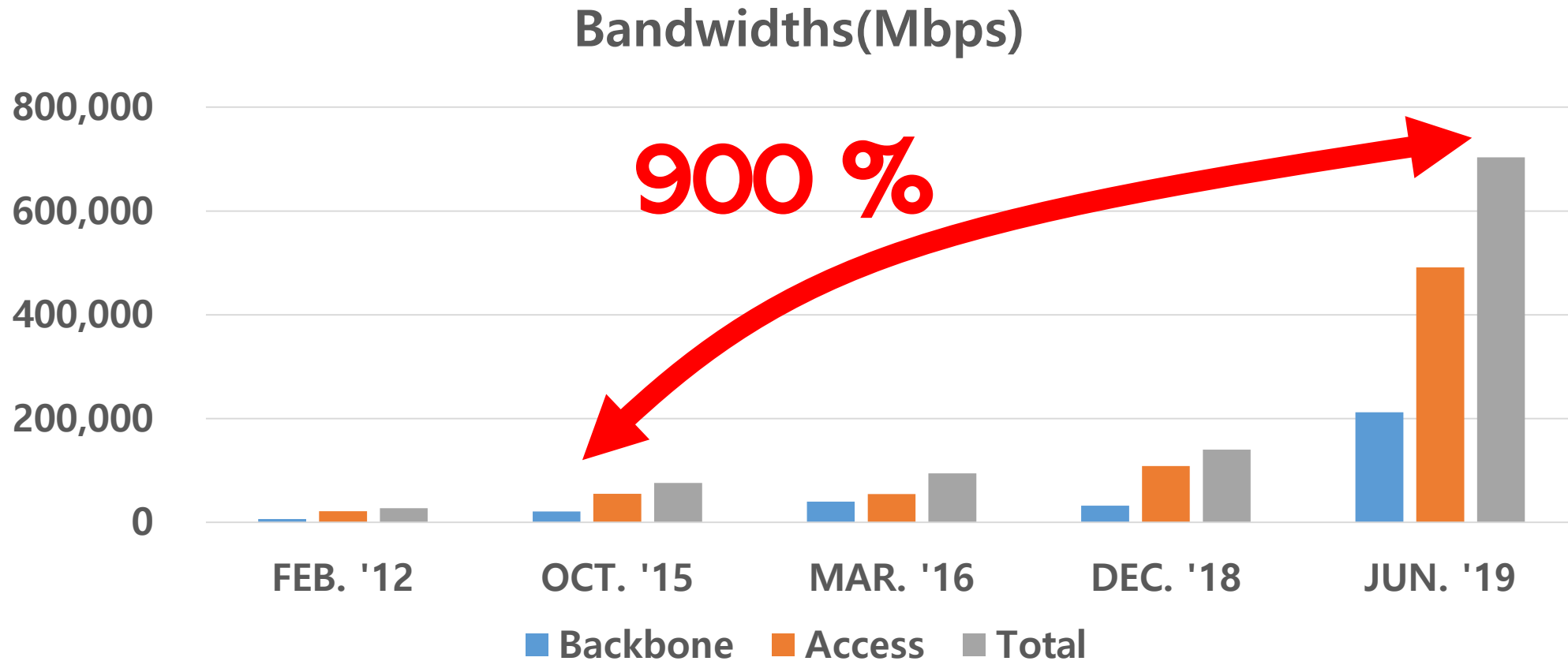
## R & E traffic is not growing at a fast enough rate

Research & Education traffic growth from 2013 until 2018 has been disappointing overall. There was a big jump in traffic in **2014** (inward **73.75%**, outward **83.13%**) compared to 2013 but after that it has gone through ups and downs. In 2018, the traffic stands marginally higher (inward **6.03%**, outward **12.33%**) compared to 2014. However, in a world where commodity traffic growth is almost exponential, **this close to zero growth**, which is sometimes even negative, is alarming and a serious issue that deserves closer attention by both the Asi@Connect and wider R&E community. [Ref: Chapter 4: Table 4-5]

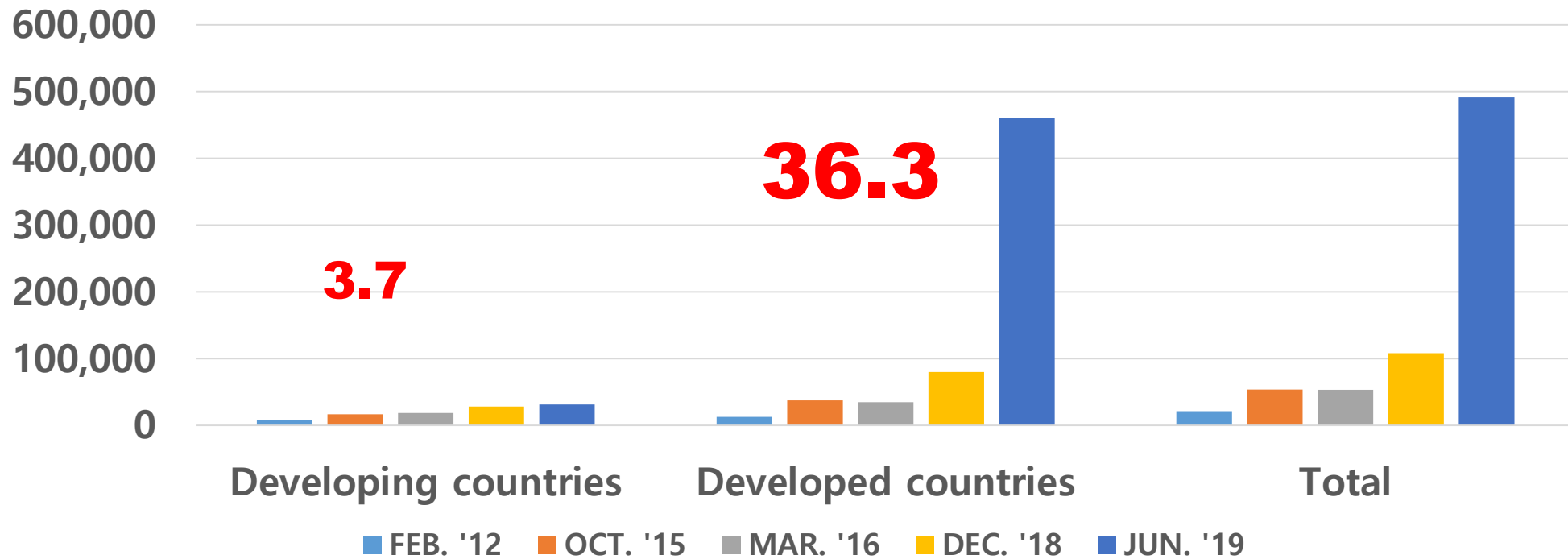
Year	Total Traffic-In, TB	Total Traffic-Out, TB	Traffic Growth-In %	Traffic Growth-Out %
2013	6040.06	5294.63		
2014	10494.49	9696.16	73.75%	83.13%
2015	8813.85	9870.58	-16.01%	1.80%
2016	9221.95	10566.37	4.63%	7.05%
2017	7190.81	8759.62	-22.03%	-17.10%
2018	11126.92	10892.19	54.74%	24.35%







Developing vs. Developed  
Access Bandwidths (Mbps)



## ✓ Increase network availability

### Link availability is not satisfactory

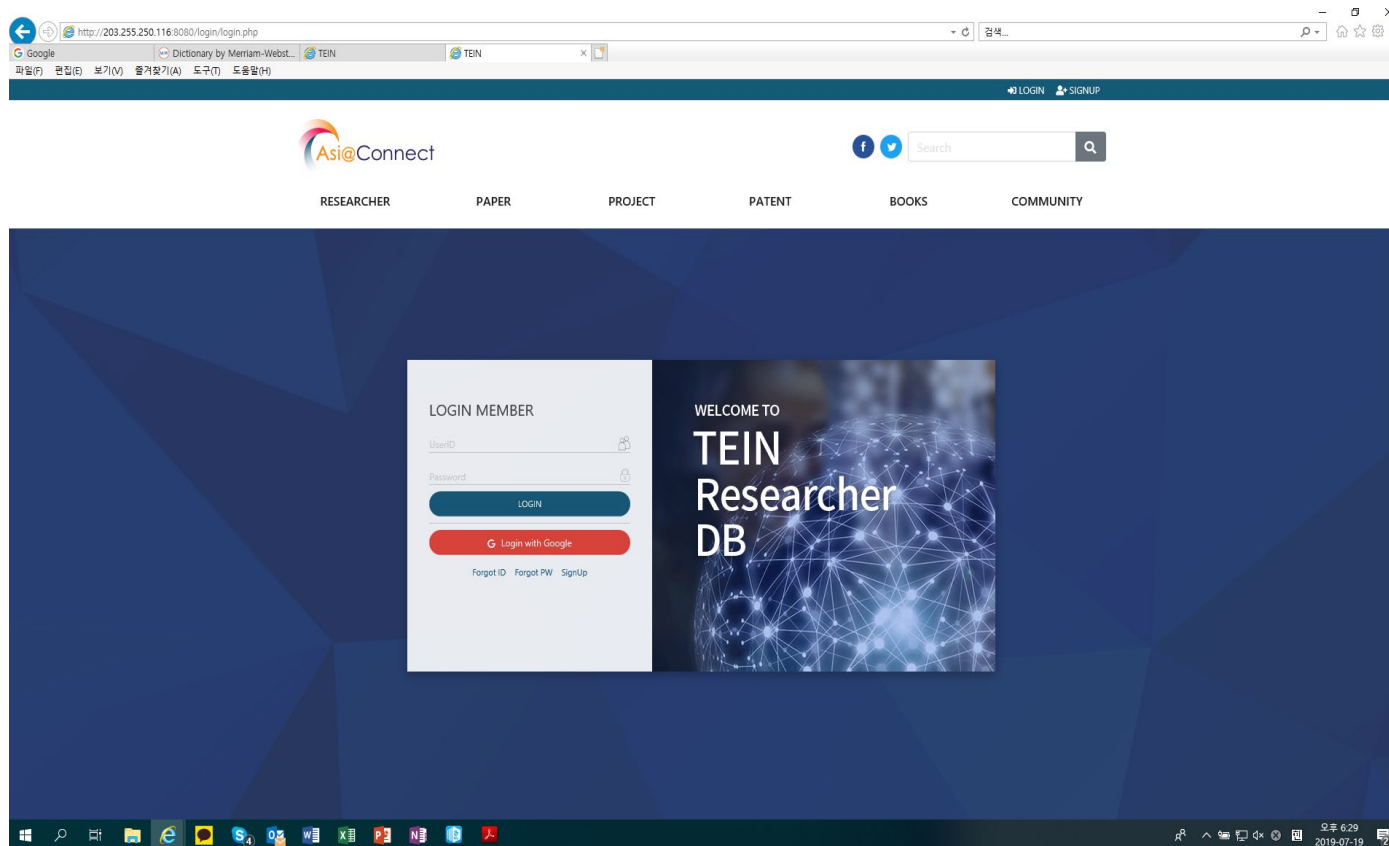
Having analyzed the levels of link availability, it was found that the availability is not satisfactory for many of the links. There are many access links where the availability is often below 99%. Only 68% and 65% of links in 2017 and 2018 respectively had availability of more than 99.5%. If the situation cannot be improved due to other factors, then countries having such unstable access links should have at least two different links using **two different routes following the example of ThaiREN.**

[Ref: Chapter 4: Figure 4-4/4-5]

[Source: NREN Compendium]

- ✓ **Increase participation into currently active and new applications**
  - Call for proposals – inception of new applications
  - Activities – ATCF (High Energy conference in Asia), EUMETSAT (Climate data)
  - Utilization of tools - Researcher DB(July '19), PMS(Dec. '19), TEIN website

- ✓ **Online platform on Asi@Connect for match-making by NRENs & members of NRENs (<http://people.tein.asia>)**



**Congratulations !!!  
- 1<sup>st</sup> enrollment**



**Roshan Ragel**

Professor Roshan Ragel serves as the Consultant at LEARN (Lanka Education and Research Network) and has been serving in the capacity to LEARN

more

1. Expansion of IRU into Access networks

2. IRU

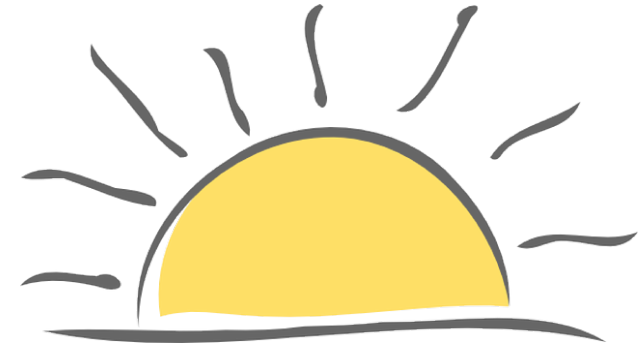
3. IRU

4. IRU

5. IRU

6. IRU

7. IRU



**5** years or less for cost recovery

**15** years of right of usage

**Potential collaborating parties : Asi@Connect partners, global R&E entities**  
**Interested Links : TEIN backbone, Access links of Developing NRENs**

<Budgetary quotes>

Points	Bandwidths	Terms	TCO(USD)
HK - SG	100Gbps	15 yrs	1M
PH - HK	10Gbps	10 yrs	750K
MY - SG	10Gbps	10 yrs	720K
TH - SG	10Gbps	10 yrs	910K

- ◆ **especially collaboration with economically developing countries**
  - ✓ **their financial commitment could ensure them to engage actively to increase the utilization of TEIN**

**Thank you!!!**