

ALICE-J status and O² plan

Tatsuya Chujo

University of Tsukuba
(on behave of ALICE-J)

ALICE-Japan participation in O² project

May 23, 2016

Hiroshima U. Tokyo office, Tamachi, Tokyo



筑波大学
University of Tsukuba



Scientific Staff: 10, Technical staff: 1, Post-doc: 1
PhD: 10, Master: 12
Total: 34

CNS-Tokyo:

- Staff (1): T. Gunji
- Post-doc (1), Y. Watanabe
- PhD (4), Master (0)
- Physics Working Group: GA, DQ, HF, CF, LF



Univ. of Tsukuba (* Tsukuba Tech):

- Staff (5): Y. Miake, S. Esumi, T. Chujo, O. Busch, M. Inaba*
- Technical staff (1): S. Kato
- PhD (3), Master (4)
- Physics Working Group; JE, CF

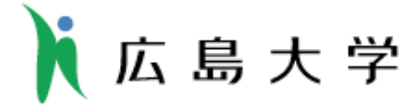


ALICE-J group and members (2)



Hiroshima U.:

- Staff (2): T. Sugitate, K. Shigaki
- PhD (3), Master (5)
- Physics Working Group: GA, DQ



Nagasaki Institute of Applied Science (NiSA):

- Staff (2): K. Oyama, H. Hamagaki
- PhD (0), Master (3)
- Physics Working Group: -



★ Future:

- Nara Women's University



- considering to join ALICE as a full member (Maya Shimomura)

- JAEA (Japan Atomic Energy Agency)



- considering to join ALICE as an associate member (Hiroyuki Sako)

► How we can contribute to O^2 in the next 5 years (2016 - 2020) before Run-3 starts?

- Coherence
- How we contribute strongly and efficiently
- New collaboration related to the future projects in Japan
 - ALICE, GSI-FAIR, J-PARC

CNS-Tokyo:

- GEM-TPC
 - Building X-ray and test systems for the full evaluation (GEM-SAMPA-CRU-GPU)
 - Learning GPU and FairMQ for TPC online tracking / distortion correction / vertexing
- TPC-RCU2
 - embedding Linux, bootstrap applications, remote firmware upgrade, detector control system

Univ. of Tsukuba:

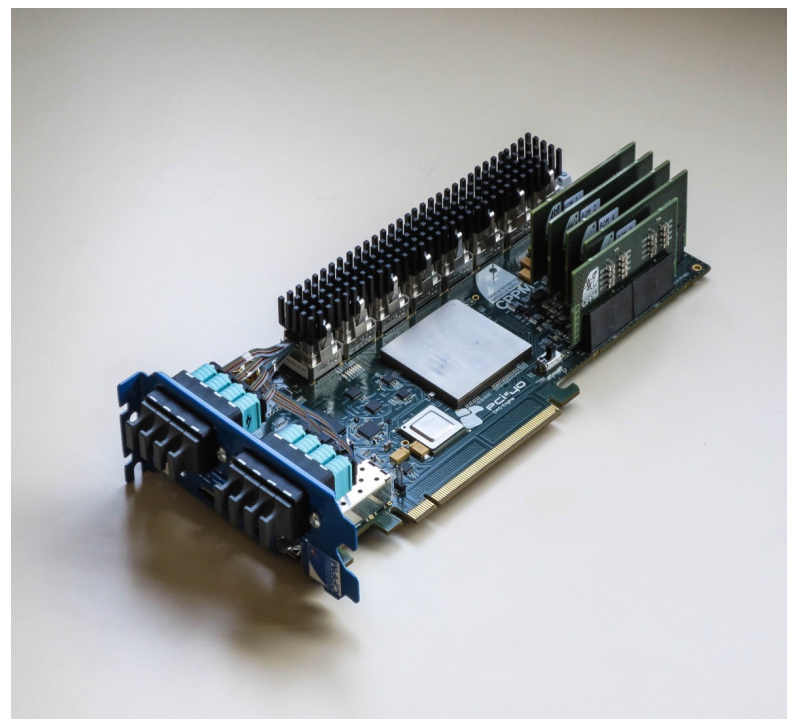
- EMCal/DCal (L1 jet/gamma FW development, monitoring, calibration)
- FoCal upgrade
- ALICE Grid Tire 2 center in Tsukuba (under construction)

Hiroshima U.:

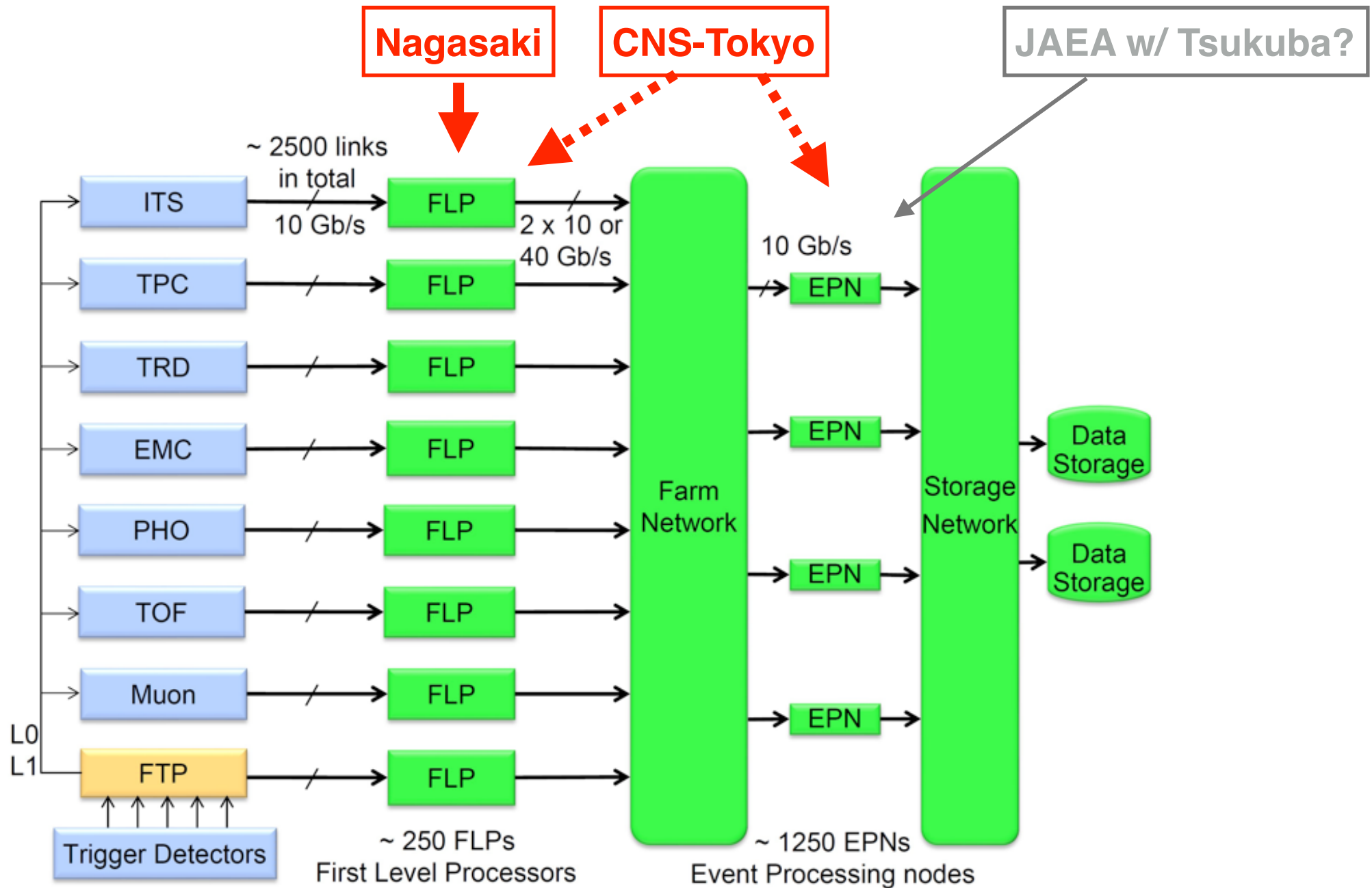
- PHOS (operation and calibration)
- ALICE Grid Tire 2 center in Hiroshima
- Muon Forward Tracker (MFT) upgrade (DCS, ALPIDE chip characterization)
- (FoCal, integration part)

Nagasaki Institute of Applied Science (NiSA):

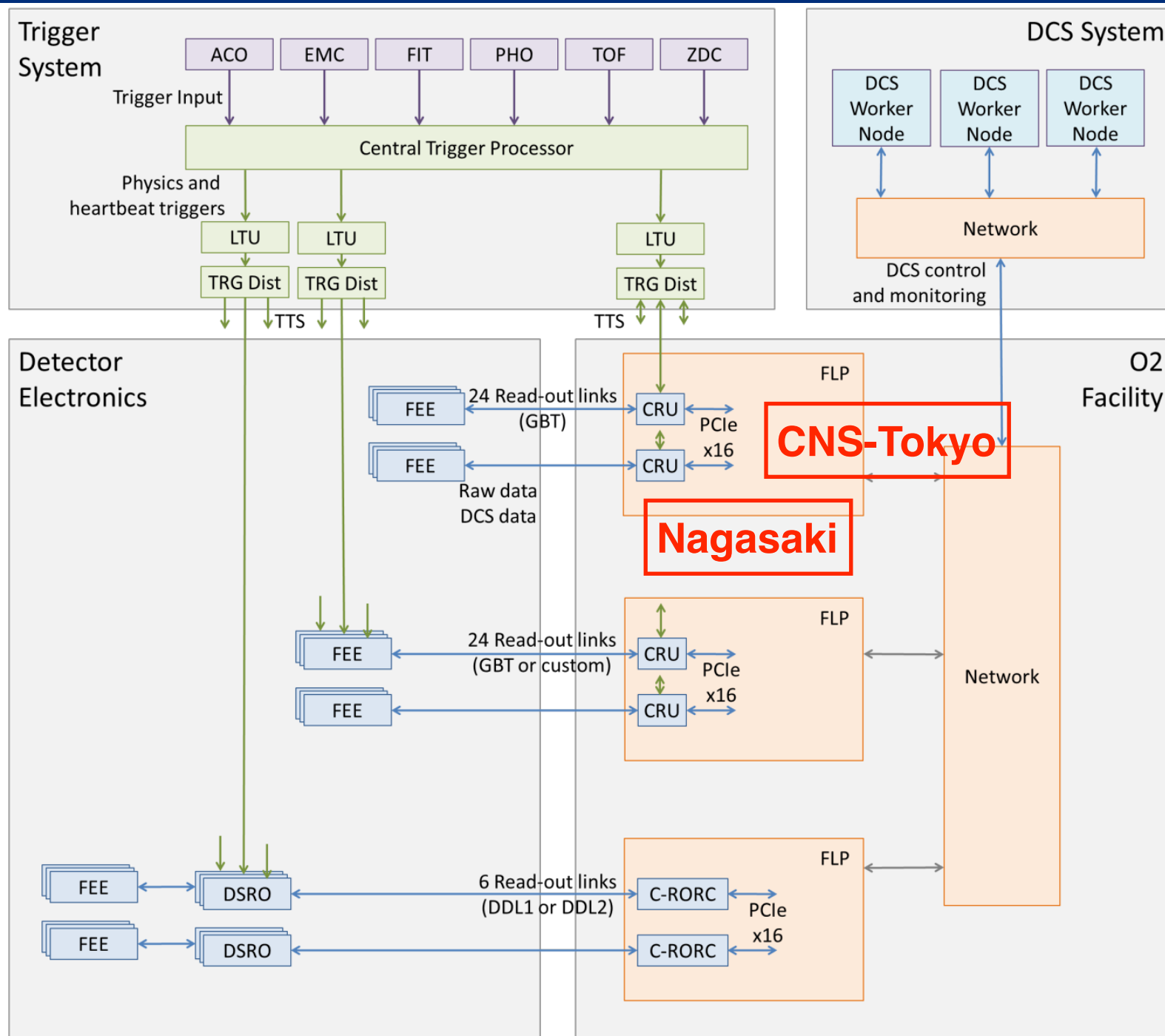
- TPC-CRU R&D (general coordinator)
- (FoCal, readout part)



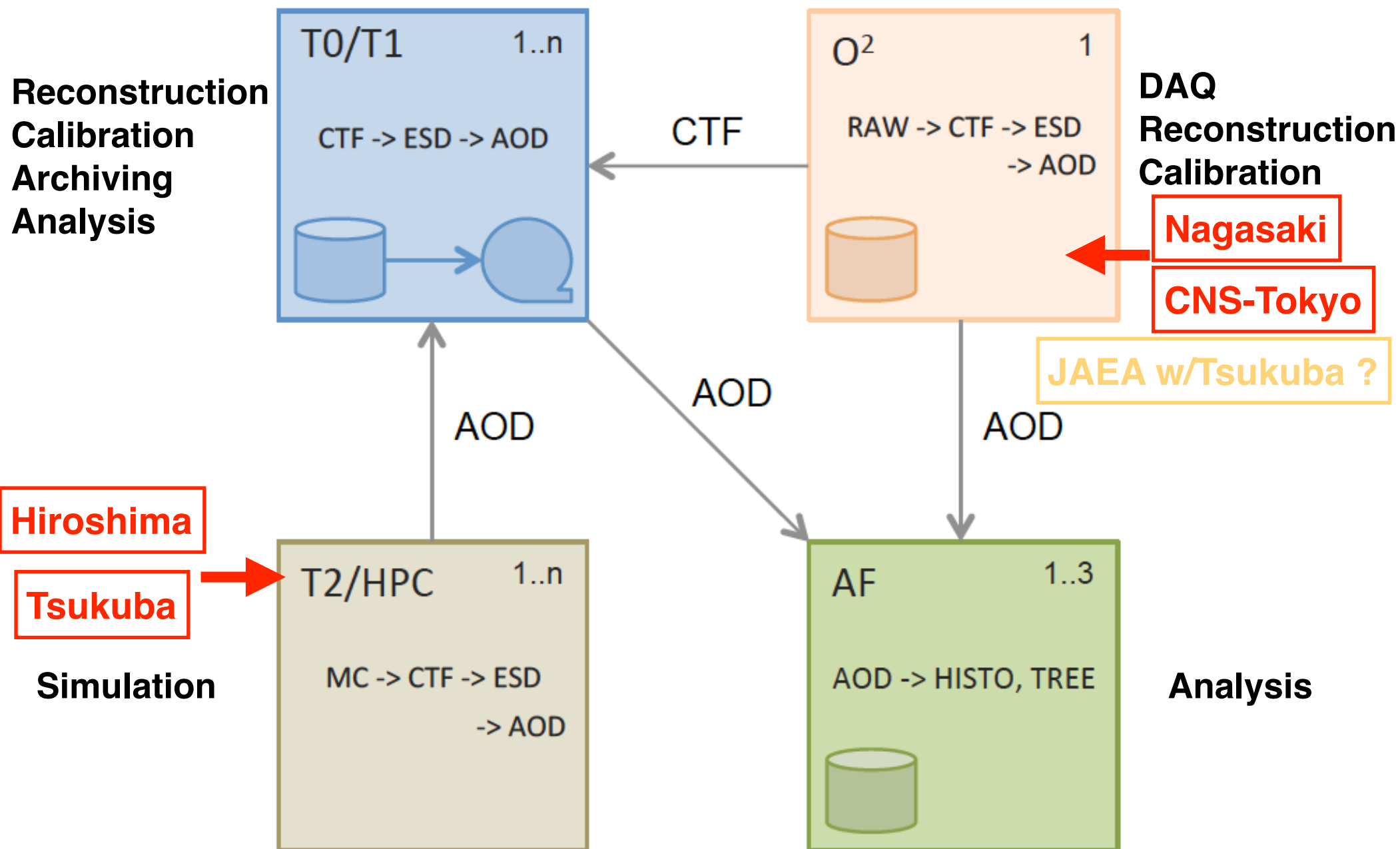
The ALICE O² Hardware Architecture



Detector read-out; O² interfaces



Roles of Tiers in Run-3



CNS-Tokyo:

- Online calibration or tracking by GPU
- Distribution middleware (FairMQ, nanomsg, etc)

Univ. of Tsukuba:

- ALICE Tire 2 center in Tsukuba w/ SINET-5
- Possible contribution to data compression part (EPN) in O2 with JAEA (one master student)
- possibility to use HPC in Tsukuba U. CC?

Hiroshima Univ.:

- ALICE Tire 2 center in Hiroshima w/ SINET-5

Nagasaki Institute of Applied Science (NiSA):

- CRU in O²

- 1) O² task distributions and organization**
- 2) Which parts/ tasks are missing most, or lack of manpower?**
- 3) Role of Tire1/2 and AF**
- 4) AF candidates**
- 5) detail of CR0/1 status and plan**
- 6) status of participants of ALICE members in O²**
- 7) O² near term plan**
- 8) O² long term plan**
- 9) Budget**
- 10) Which contributions are expected from Japan?**
- 11) Status and detailed plan of EPN and FPL activities, missing parts, manpower, possible contributions from ALICE-J**

Thank you!

Grants in Japan on ALICE (2)

Grant-in-Aid for Scientific Research	Years (JFY)	k yen	Principal
Scientific Research (B)	2015 – 2018	16,640	Kenta Shigaki
Scientific Research (S)	2014 – 2018	141,200	Toru Sugitate
Scientific Research (B)	2013 – 2016	15,200	Yasuo Miake
Scientific Research (B)	2013 – 2015	19,980	Tatsuya Chujo
Scientific Research (A)	2011 – 2013	47,970	Toru Sugitate
Scientific Research (B)	2011 – 2014	19,370	Kenta Shigaki
Scientific Research (A)	2010 – 2012	47,580	Hideki Hamagaki
Scientific Research (S)	2008 – 2012	85,020	Yasuo Miake
Young Scientists (B)	2008 – 2009	4,420	Taku Gunji
Research Activity Start-up	2007	1,350	Taku Gunji
Specially Promoted Research	2006 – 2010	403,910	Toru Sugitate
JSPS Fellows	2006 – 2008	3,400	Hisa Torii
Scientific Research (B)	2003 – 2005	16,300	Toru Sugitate

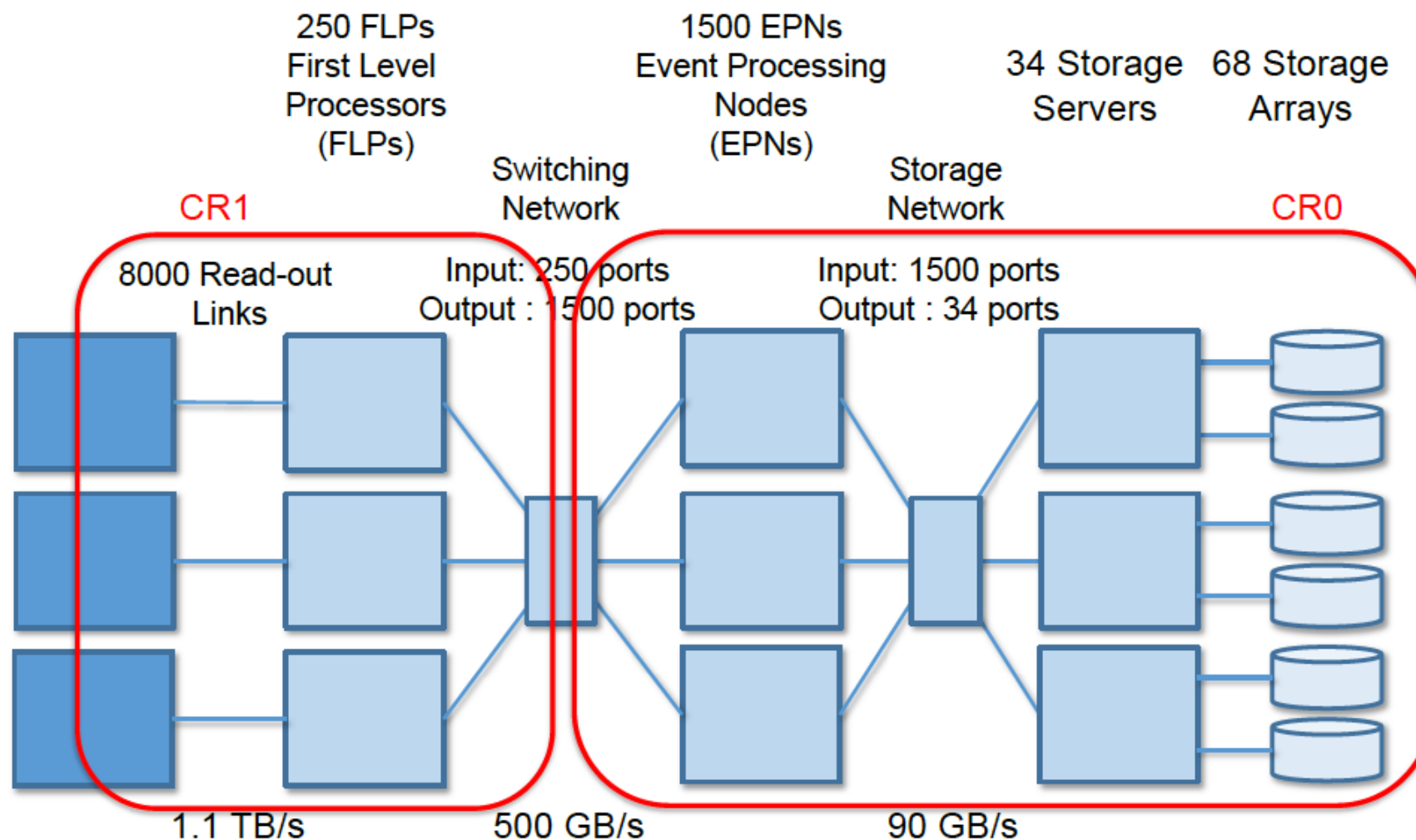
* Some new proposals (FY2016-) are waiting for approval.

Grants in Japan on ALICE (2)

Other Grants	Years (JFY)	k yen	Principal
Bilateral Research (JSPS-BFBR, Russia)	2015 – 2016	2,250 per Year	Toru Sugitate
Bilateral Research (JSPS-CNRS, France)	2013 – 2016	2,250 per Year	Tatsuya Chujo
French Japan Particle Physics Laboratory (FJPPL, TYL)	2010 – present	300 per Year	Yasuo Miake (2010-2013) Tatsuya Chujo (2014-2015)
Strategic Young Researcher Overseas Visits Program for Accelerating Brain Circulation	2010 – 2015	70,000 (2010-2012, total) 80,000 (2013-2015, total)	Hideki Hamagaki (2010 – 2012) Kenta Shigaki (2013 – 2015)
Graduate School Program for History of Universe	2007 – 2016	~ 15,000 per Year (2007-2013) 10,000 (2014-2016, total)	Yasuo Miake

* Submitted the new proposal from ALICE-J (including O²), “Program for Advancing Strategic International Networks to Accelerate the Circulation of Talented Researchers”, (starting from October 2016 to March 2019, 2.5 years), on May 2016.

Hardware O² facility



O² architecture



O²

Data of all interactions shipped from detector to online farm in trigger-less continuous mode

HI run 1.1 TByte/s



Data volume reduction by cluster finder
No event discarded

Average factor 2.2 (factor 2.5 for the TPC data)

500 GByte/s



Data volume reduction by online calib. and reco

All the events go to data storage

Average factor 5.5 (factor 8 for the TPC data)

90 GByte/s

Compressed Timeframes (CTF)



Data Storage: 1 year of compressed data

- Bandwidth: Write 90 GB/s Read 90 GB/s
- Capacity: 60 PB



Asynchronous event reconstruction with final calib
(delay of few hours)

Tiers 2

Tire 0

Tiers 1 and AF

20 GByte/s

