



BA-IFERC-CSCの現状

IFERC事業長: 中島徳嘉

- IFERC-CSC
- Helios operationの状況
- RT (Request Tracker)の状況
- Networkの状況
- 第1-2サイクルの結果
- 第3サイクルの採択結果
- 第2サイクルJA 10 %枠の追加公募
- 第3サイクルJA 10 %枠の公募
- Heliosの増強予定

High Performance Computing system in IFERC-CSC

- High performance computing system (named Helios/Roku-chan) was installed in the IFERC-CSC, Rokkasho, Japan, by the end of Dec. 2011 and the IFERC-CSC started the initial operation of Helios from Jan. 2012.



- Performance of IFERC-CSC HPC (HELIOS)

Node 4410
 Core 70560 (=4410 x 16)
 Memory/node 64GB

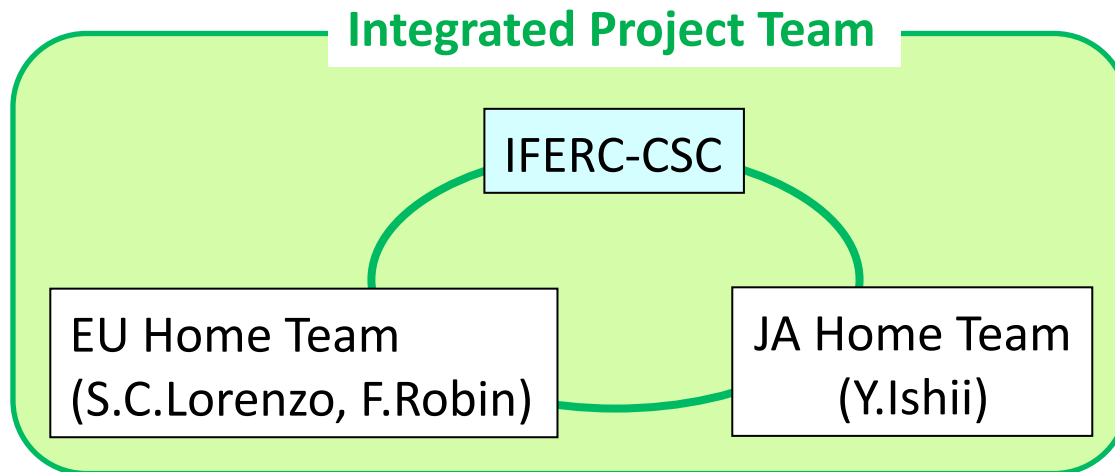
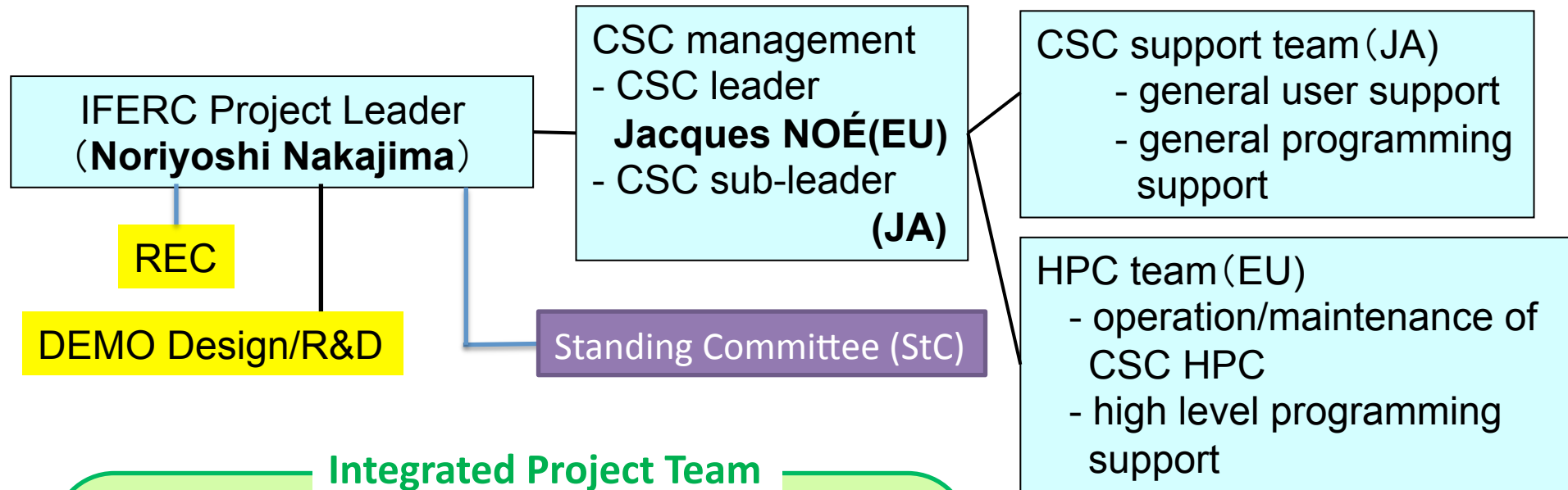
Linpack benchmark 1.237Pflops

Supercomputer ranking TOP500
 Nov. 2013 24th



Organization of IFERC-CSC

- The CSC team in the IFERC project conducts operation/maintenance and user support



- Each Home Team supports the IFERC-CSC
JA home team will be an interface with JA scientists and will hold some meetings for an exchange of opinions.

Outline of Resource Allocation



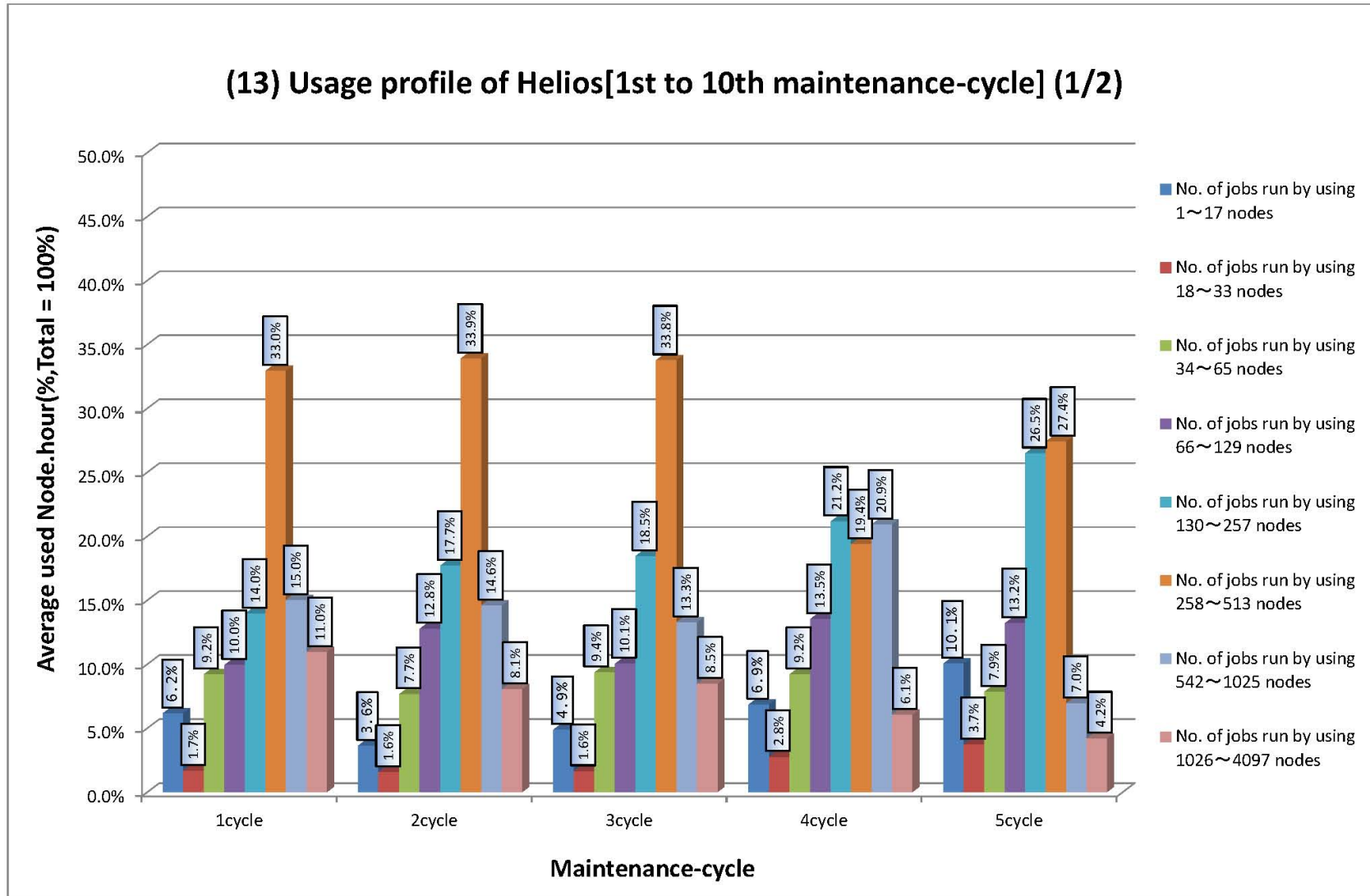
【international selection quota】 Standing Committee (StC), which consists of JA and EU scientists, allocates 80% of computer resource of Helios based on international evaluation process for submitted research projects.

- ❑ A submitted research project is evaluated two referees. One of them is a member of StC and the other one is a member outside.
- ❑ Evaluation criteria
 - (1) Scientific excellence including innovation potential (40%, threshold: 2)
 - (2) Relevance to fusion development (ITER & BA) (40%, threshold: 2)
 - (3) EU/JA collaborative aspects (10%)
 - (4) Efficient usage of the super computer (10%, threshold: 2)

【JA quota • EU quota】 20% of Helios computer resource is separated to JA 10% and EU 10%. 10% computer resource of JA quota is allocated to JA scientists based on evaluation process for submitted research projects by JA StC members and an outside committee.

Usage profile of Helios in each maintenance cycle (1/2)

1st cycle: 2012/11/15 – 11/27, 2nd: 11/27 – 12/14, 3rd: 12/21 – 2013/1/29, 4th: 1/29 – 2/26, 5th: 2/26 – 4/12



2012/11/15 – 2013/1/29; 258-513 nodes

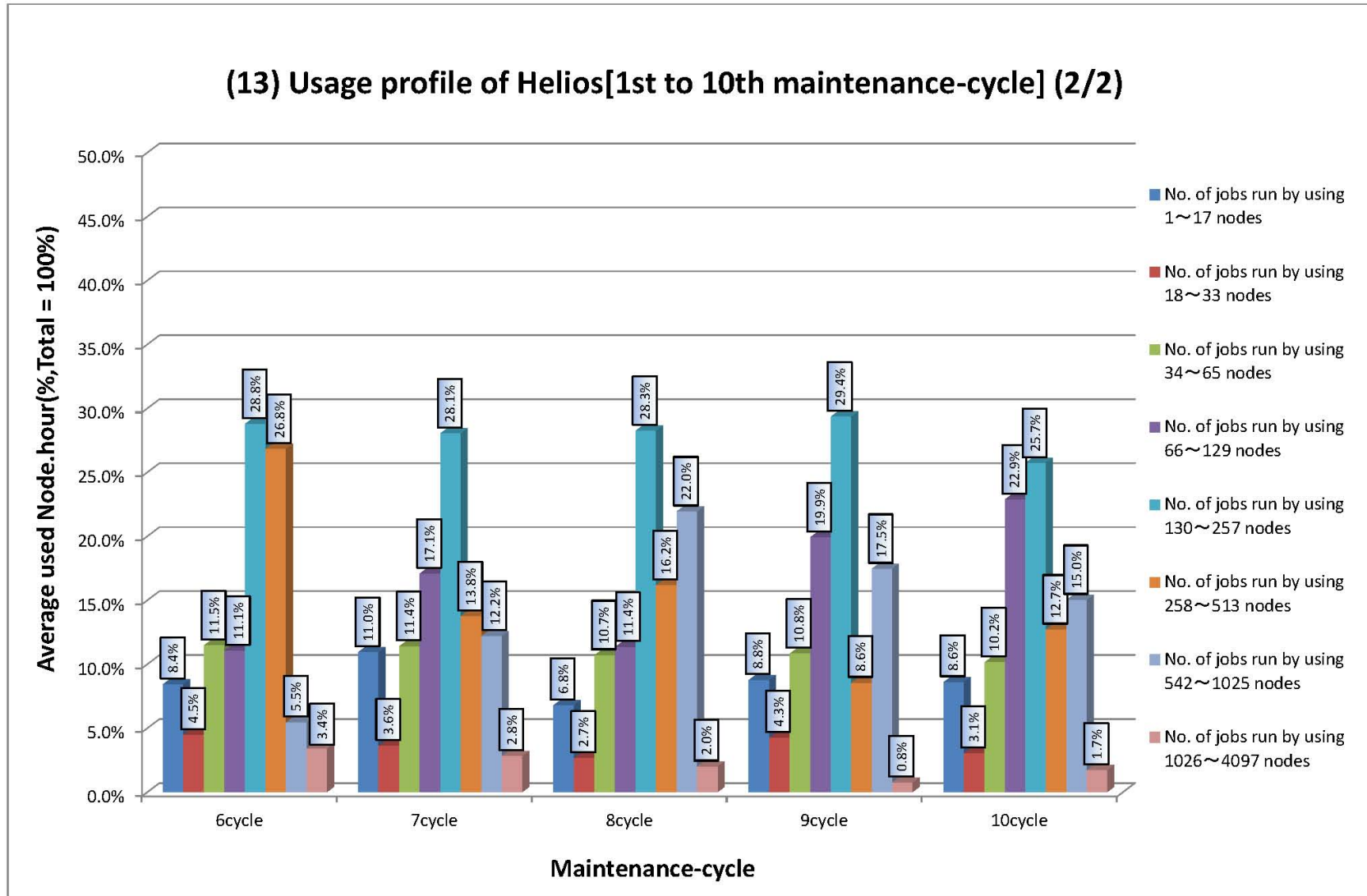
130-257 nodes

258-513 nodes

Usage profile of Helios in each maintenance cycle (2/2)

6th cycle: 2013/4/18 – 5/28, 7th: 5/28 – 6/25, 8th: 6/25 – 7/30, 9th: 7/30 – 9/13, 10th: 9/24 – 10/28

(13) Usage profile of Helios[1st to 10th maintenance-cycle] (2/2)

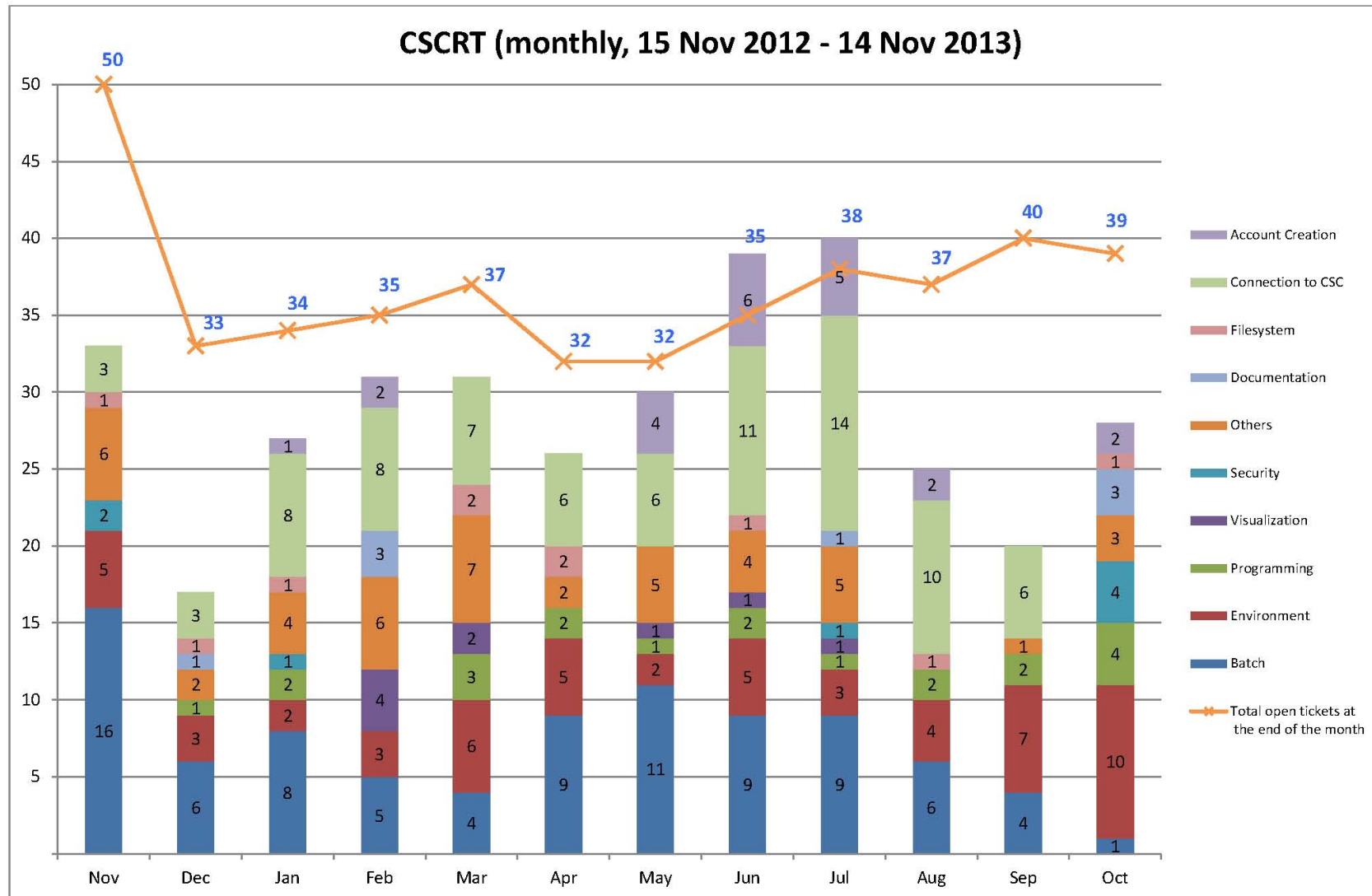


130-257 nodes

with
14

542-1025 nodes

Status of Request Tracker (RT)



RTs to be answered by High Level Programming Support are still open.

Status of Large Job Session and Visualization

Large Job Session (LJS)

- Large Job Session (LJS) has been divided in to two parts; exclusive part (single job) and non-exclusive part (multiple jobs), in order to use Helios more efficiently.
- The exclusive part is used for checking the system.
- The non-exclusive part is used for a large productive job with small jobs.
- The condition of large jobs is good.

Visualization

- The nodes of the visualization server are divided into two partitions; a part of viz-portal and an interactive part, in order for JA users to use visualization server by using a specific software.
- 16 nodes for viz-portal
- 16 nodes for interactive use with AVS, IDL, and MATLAB (installation is ongoing.)

Networkの状況

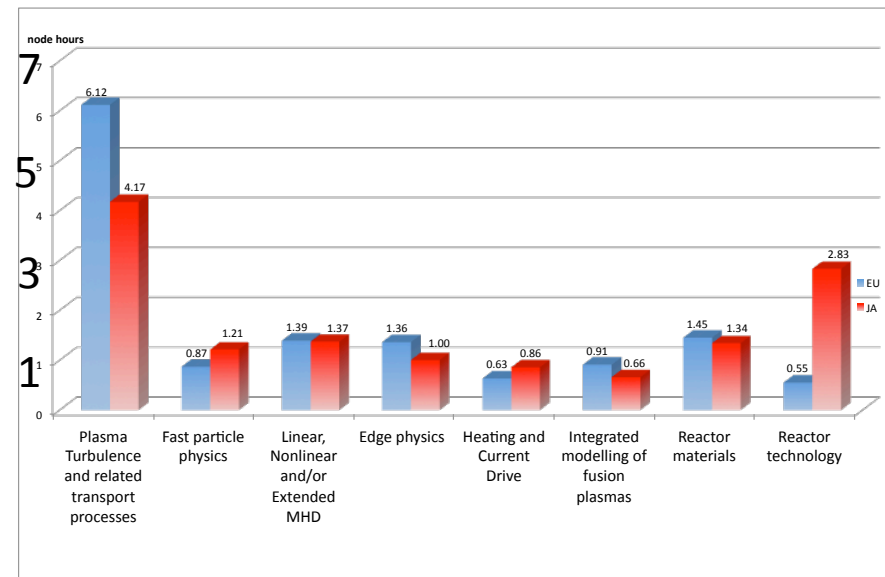
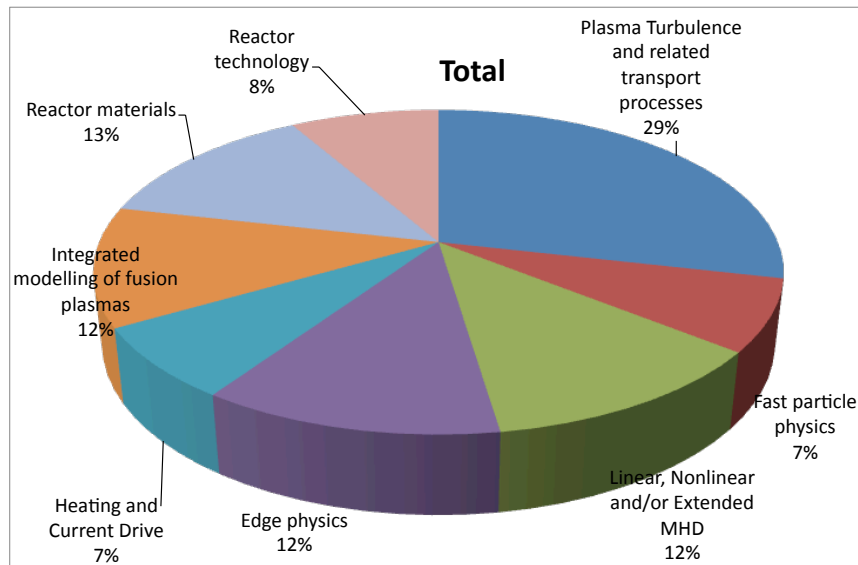
- From 2012/10, 10 Gbps link has been established between Rokkasho and Hirosaki DC.
 - From 2013/03/31, 10 Gbps link (SINET 4) dedicated to ITER and LHC has been established between Washington and Osaka with 10 Gbps link (GEANT) between Washington and Geneva.
 - From the next fiscal year,
-
- Traffic monitoring is continued at IFERC Core L3 switch.
 - PerfSONAR will be used to check routing, bandwidth, and latency.
 - Technique of a fast parallel data transfer will be pursued.
 - Collaboration with NII will start.

Results of proposals (1st cycle)

Regular simulation projects in the 1st cycle: 2012/04/09 – 2012/11/14

Selected proposals: 58 (JA: 25, EU: 33)

Allocated cpu time (M node hours)



Standing Committee has roles to select the projects, and allocate cpu time.
(The system is equivalently shared by EU/JA.)

CSC support team and HPC team have roles to perform user support and programming support

Results of projects (1st cycle)

EU/JA	number of conference/WS/ meeting/seminar/symposium	number of paper published/submitted	ratio
EU	36/6/16/1/4	24/17	63.1
JA	36/14/11/1/4	15/9	37.9
total	72/20/27/2/8	39/26	

category	MHD	Turb	Fast	Edge	H&C	Integ	Materials	Tech
EU presen	14/1/0/0/0	11/5/6/0/0	6/0/0/0/0	9/2/2/1/0	5/0/0/0/0	2/0/0/0/0	2/0/1/0/3	4/0/2/0/3
EU papers	5/4	7/7	3/5	4/6	1/4	6/0	6/5	5/4
JA presen	9/5/2/1/2	17/9/5/0/0	9/5/3/1/2	6/0/0/0/0	5/0/0/0/0	8/5/2/1/2	4/5/2/1/4	4/0/0/0/0
JA papers	2/0	6/4	3/1	4/3	0	6/2	4/0	0/3
total presen	23/6/2/1/2	28/14/11/0/0	15/5/3/1/2	15/2/2/1/0	10/0/0/0/0	10/5/2/1/2	6/5/3/1/7	8/0/2/0/3
total papers	7/4	13/11	6/6	8/9	1/4	12/2	10/5	5/7

- Despite a period of adaptation and some technical issues, the system became more stable and the usage increased through out the 1st cycle, leading to a number of key results, with 39 papers published and 26 submitted for publication.
- EU and JA have comparable activities.
- All activities showed many results with particular emphasis on turbulence, plasma edge, materials and integrated modelling.

Results of proposals (2nd cycle)

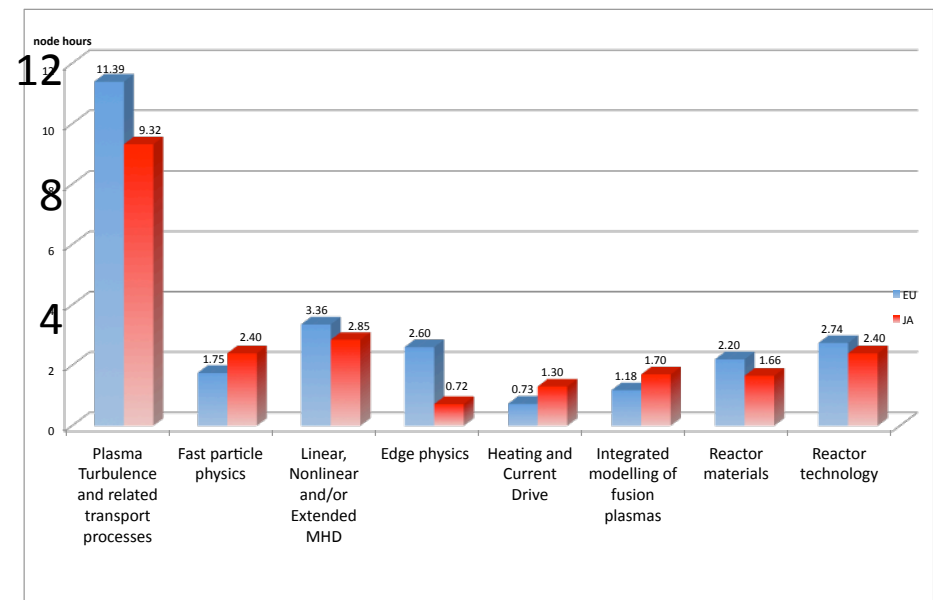
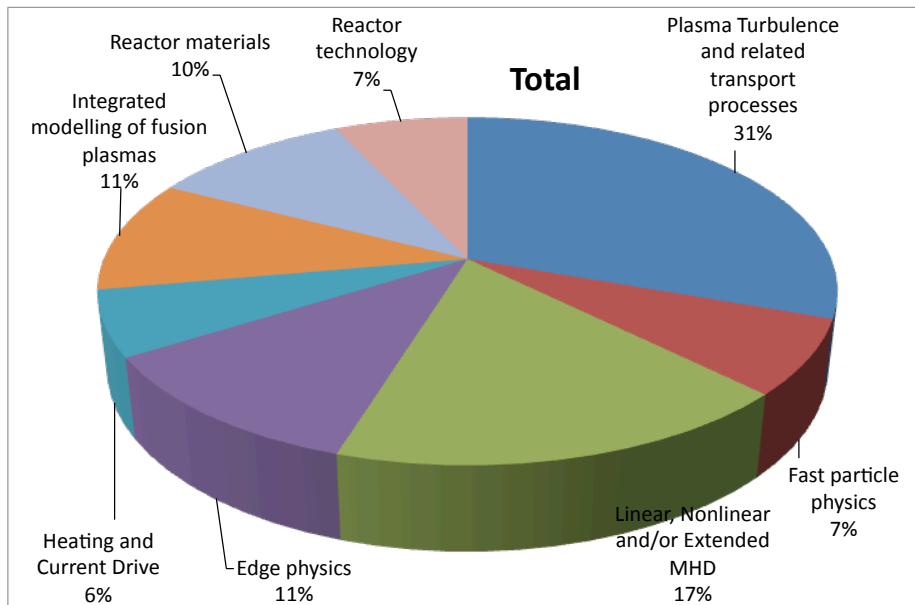
Regular simulation projects in the 2nd cycle: 2012/11/15 – 2013/11/14
 proposed projects: 82 (EU : 51, JA : 30, IO : 1) (around 270 users)

EU : 51 = 32 (continuation) + 19 (new)

JA : 30 = 24 (continuation) + 6 (new)

selected: 74 (JA : 29, EU : 44, IO : 1)

Allocated cpu time (M node hours)



- 74 selected (35.41 M Node Hours) (over allocation of 25%)
- **New proposals and MHD proposals increase.**
- EU 10% : 22、JA 10% : 16

Results of projects (1st – 2nd cycles)

- The system became more stable and the usage increased through out the 1st – 2nd cycles, leading to a number of key results, with 111 papers published (93) or accepted (18) with 61 conference proceedings and 28 papers submitted to journals.
- 404 presentations: 204 in conferences, 72 in meetings, 29 in symposiums, 83 in workshops, and 16 in seminars.
- Data base is created based on the users' information.
- Analysis of the database will be done soon.

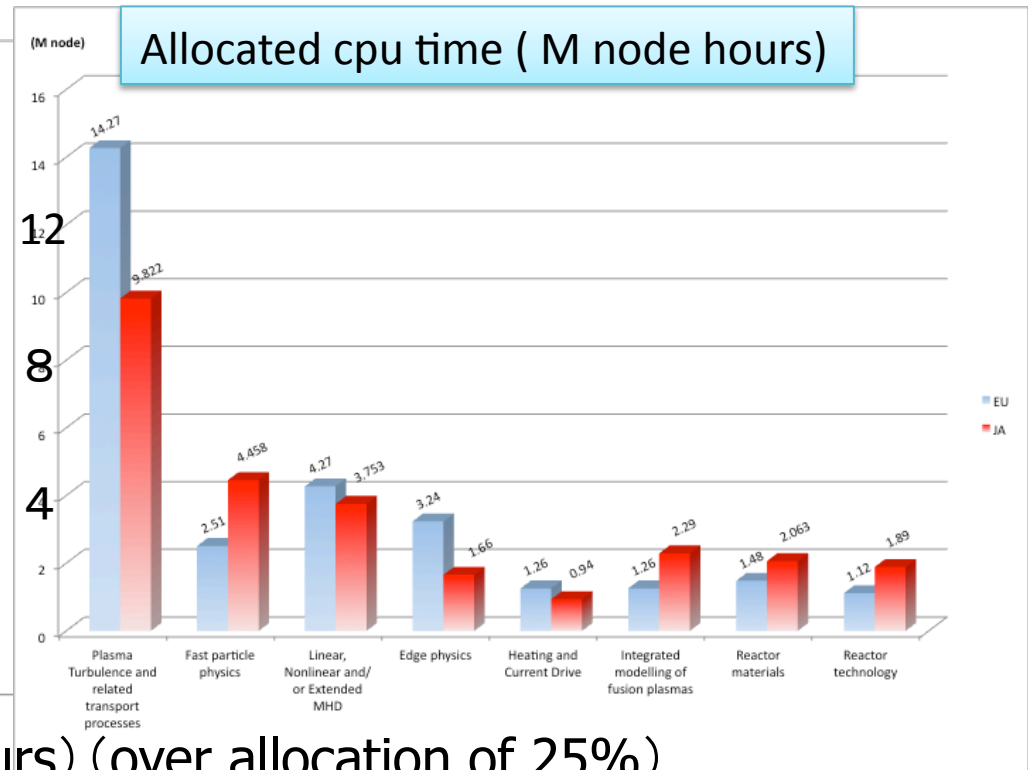
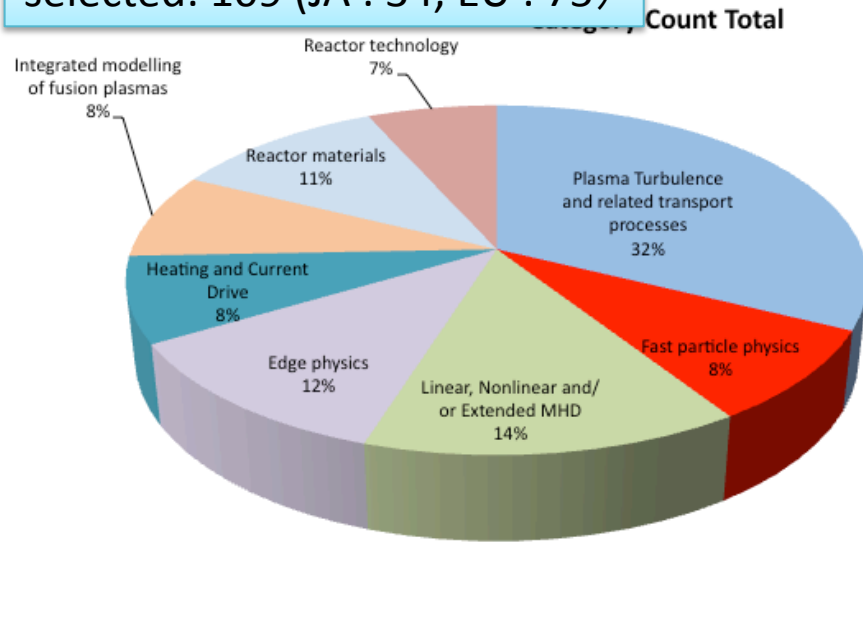
Results of proposals (3rd cycle)

Regular simulation projects in the 3rd cycle: 2013/11/15 – 2014/11/14
 proposed projects: 122 (EU : 87, JA : 35) (around 360 users)

EU : 87 = 41 (continuation) + 46 (new)

JA : 35 = 28 (continuation) + 7 (new)

selected: 109 (JA : 34, EU : 75)



- 109 selected (36.73 M Node Hours) (over allocation of 25%)
- New EU proposals increase due to shutdown of HPC-FF.

Additional Call for proposals of 2nd cycle of JA 10 % resource

- 本追加募集では、審査が終了した(日本枠第2サイクル)研究プロジェクトに対して、逐次、計算資源を配分します。配分可能な計算資源が無くなり次第、応募締め切り前でも募集を締め切ります。
- 詳細は下記URLに掲載しましたので、下記ホームページを御覧の上、応募して頂きますようお願いいたします。
- http://www.naka.jaea.go.jp/etc/bosyuu/IFERC-CSC_25_2nd_2/index.html
- 日本枠の応募締め切り : 2014年1月31日(金)
- 利用申込書の送付先 : CSC-JA@jaea.go.jp
- 問い合わせ先
e-mail : CSC-JA@jaea.go.jp
電話 : 0175-71-6697

Call for proposals of 3rd cycle of JA 10 % resource

- 本公募では、2014年4月から2015年3月までの期間(日本枠第3サイクル)における日本枠でのIFERC-CSC HPCを利用した研究プロジェクトの公募を行います。
- 詳細は下記URLに掲載しましたので、下記ホームページを御覧の上、応募して頂きますようお願いいたします。
- http://www.naka.jaea.go.jp/etc/bosyuu/IFERC-CSC_26_3rd/26_3rd.html
- 日本枠の応募締め切り : 2014年1月6日(月)
- 利用申込書の送付先 : CSC-JA@jaea.go.jp
- 問い合わせ先
e-mail : CSC-JA@jaea.go.jp
電話 : 0175-71-6697

Enhanced system of Helios

- Intel CPU complemented by Intel Xeon Phi processors (Many Integrated Core) will be introduced as an enhanced system.
- 1 node: 2 Sandy Bridge (48 GB) + 2 Intel Xeon Phi processors (KNC generation with 60 cores and 8 GB)
- 180 nodes, around 400 TF.
- Installation will be completed within the coming January.
- The acceptance test will be done near the end of January.
- The node hours will be equivalently allocated to EU/JA IAs like EU/JA 10 % partition of the Helios original system.
- Internal process of each IA is ongoing.
- Some training sessions will be prepared;
2/11-12 at Rokkasho, 2/17-18 at NIFS (tentative)