

Grid Status and Future

Go Iwai, KEK/CRC

Agenda

1. Quick look and summary in previous 5 years – Grid in Gakujutsu Sousei budget era
2. What's going to happen in next 5 years – Grid in Tokushin budget era

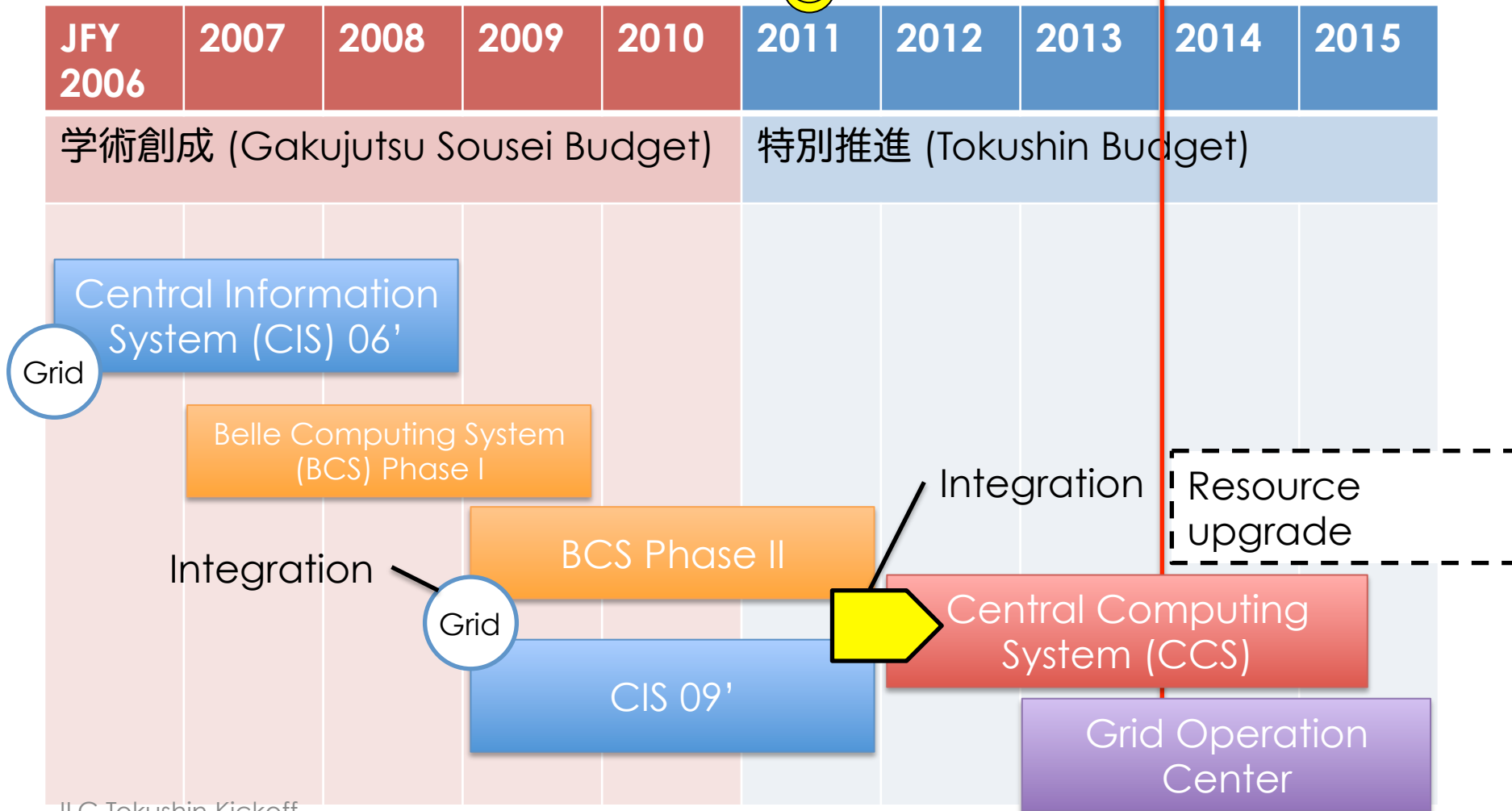
Last 5 Years

1. Quick look and summary in previous 5 years – Grid in Gakujutsu Sousei budget era
2. What's going to happen in next 5 years – Grid in Tokushin budget era

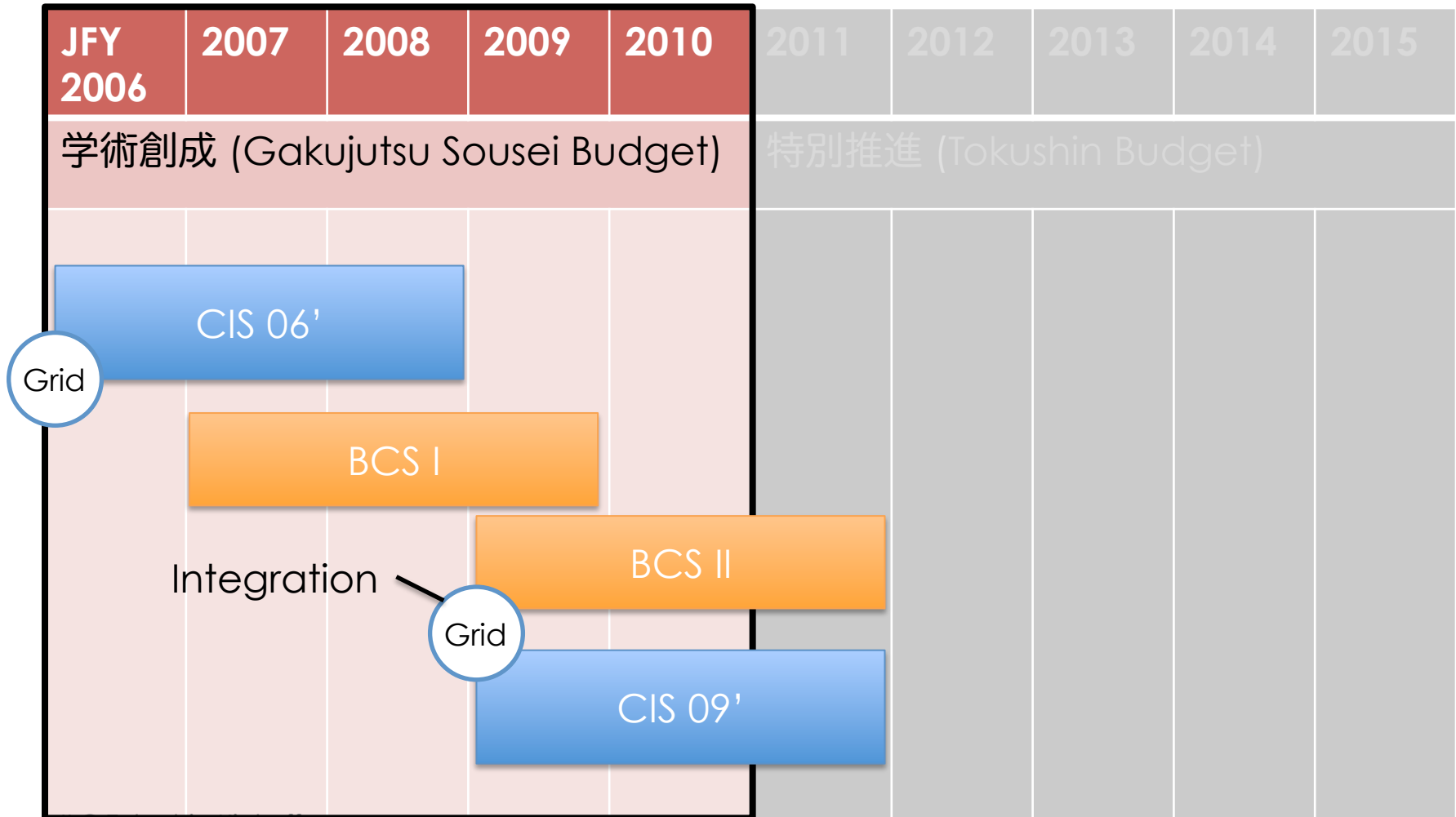
Timeline

Belle2 (happier? case)

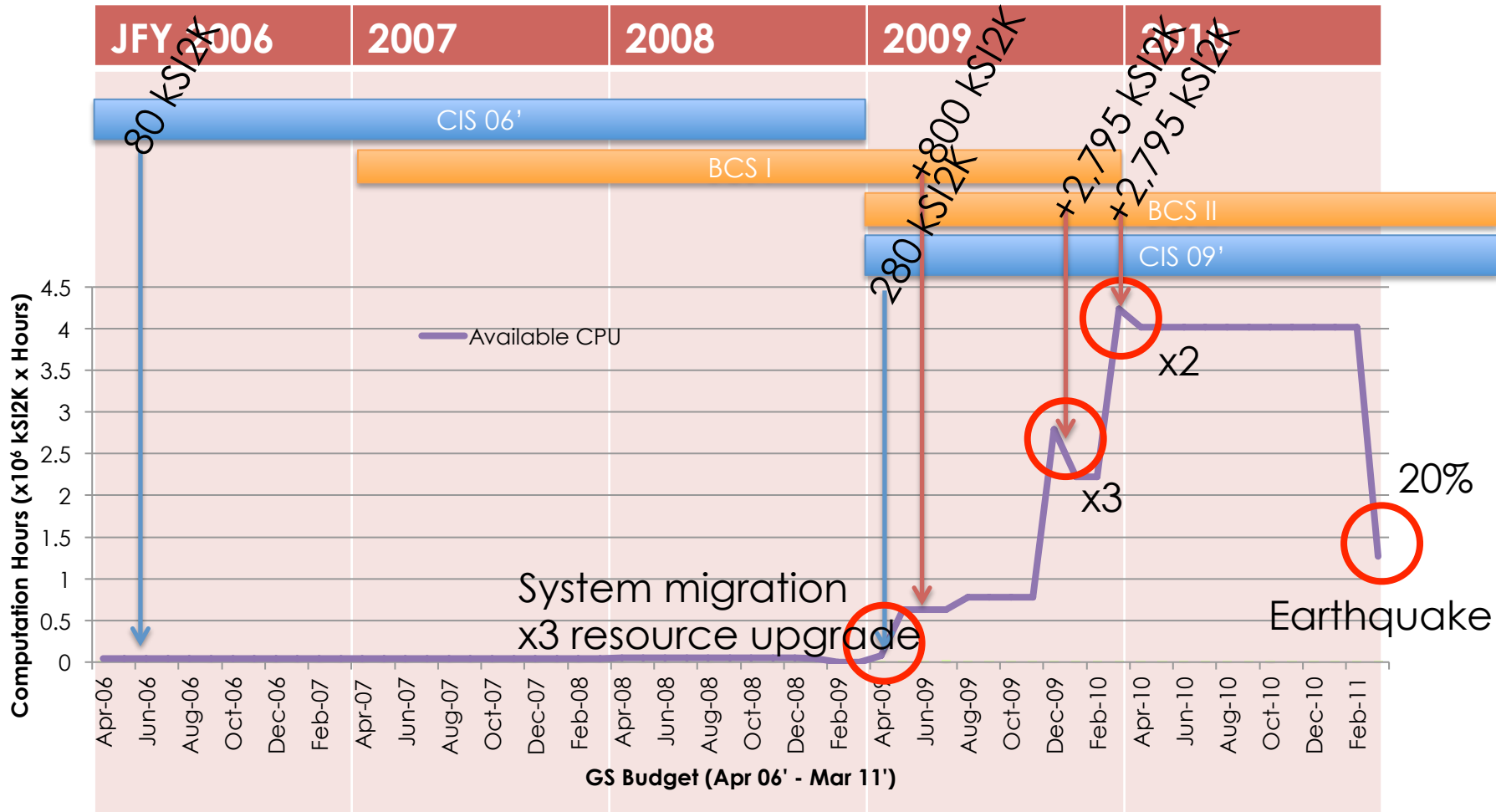
😊 We are here



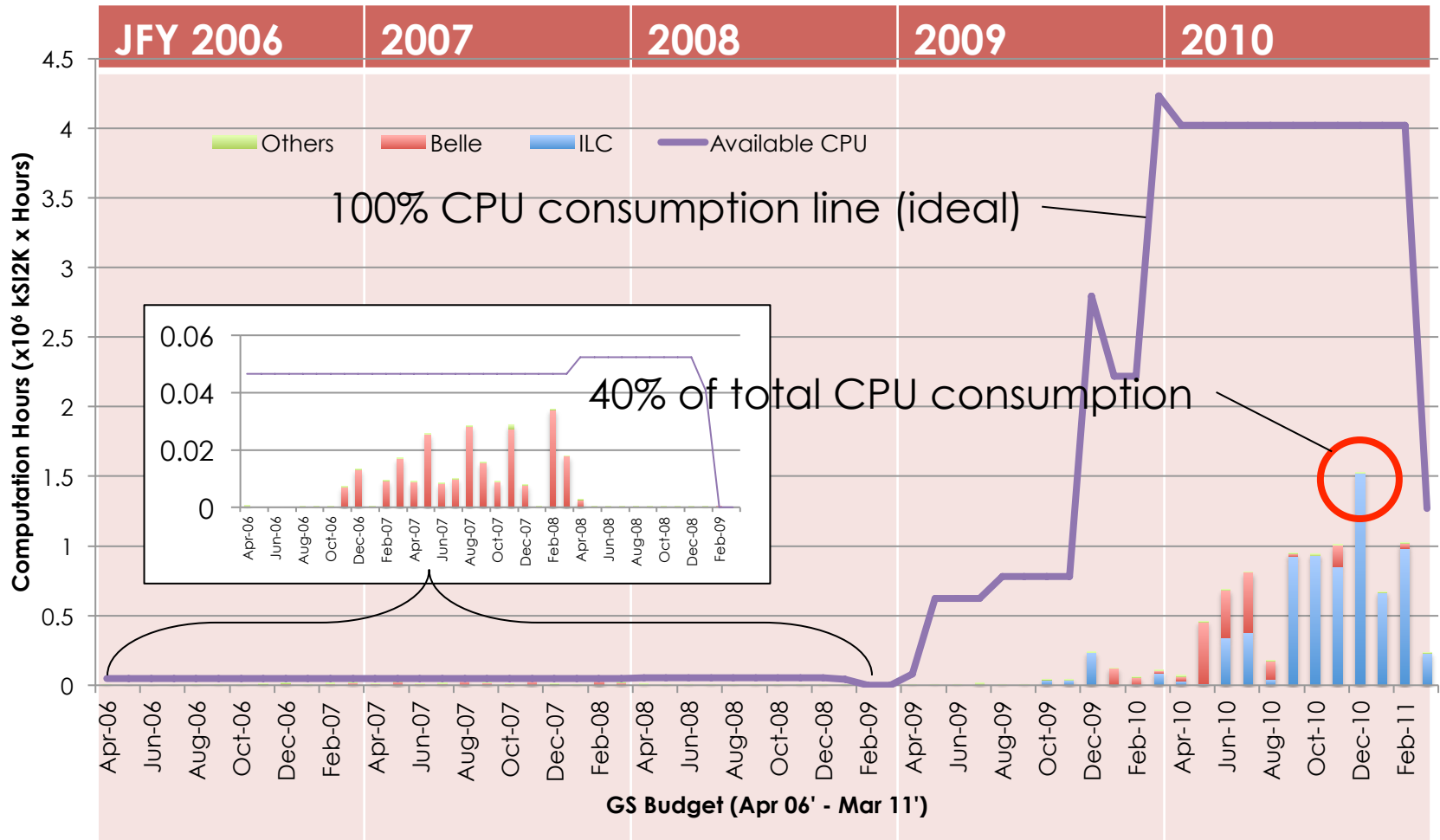
Look Back Previous 5 Years



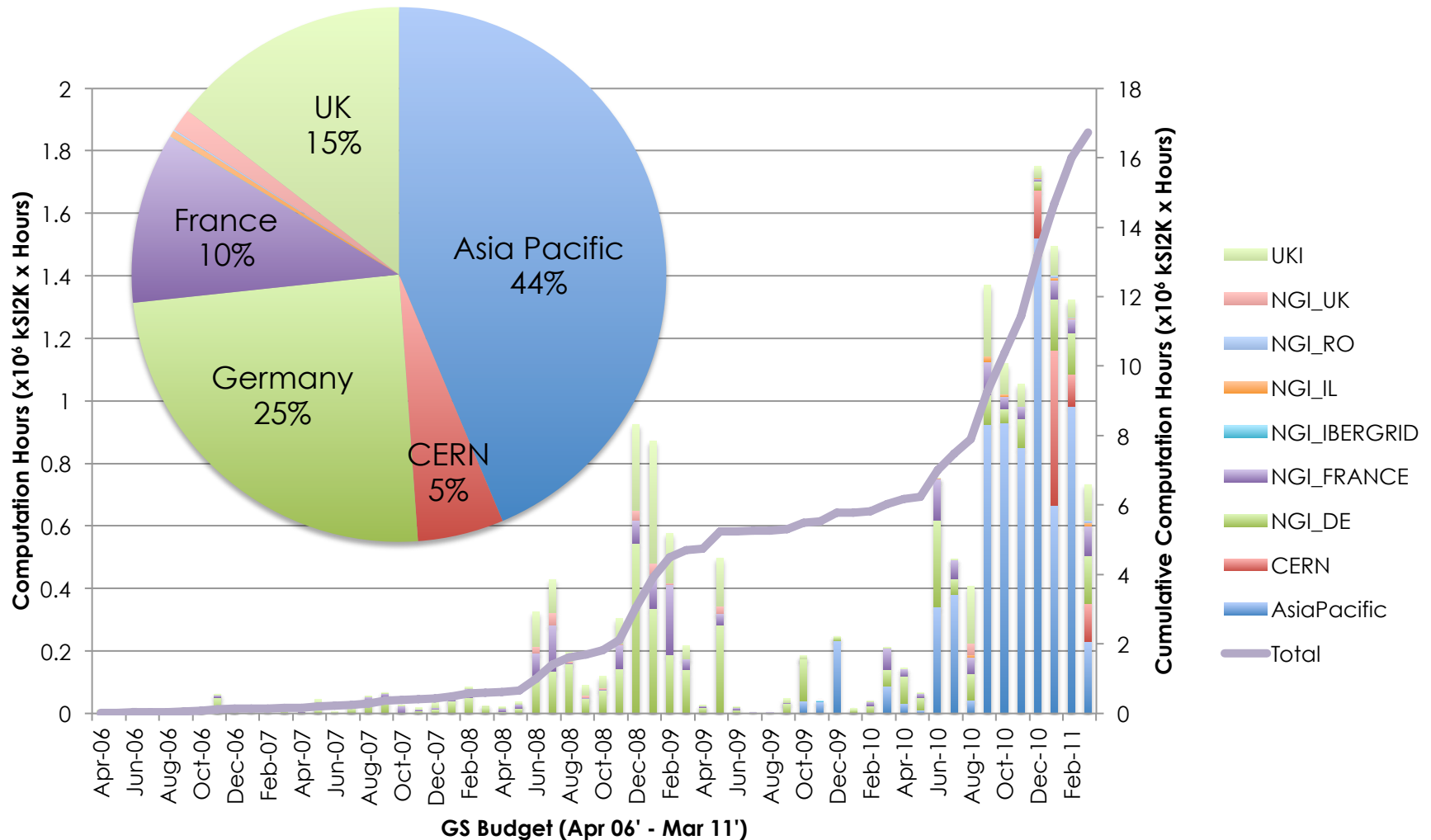
Resource Growth



Who works on?



Whole ILC VO infrastructure

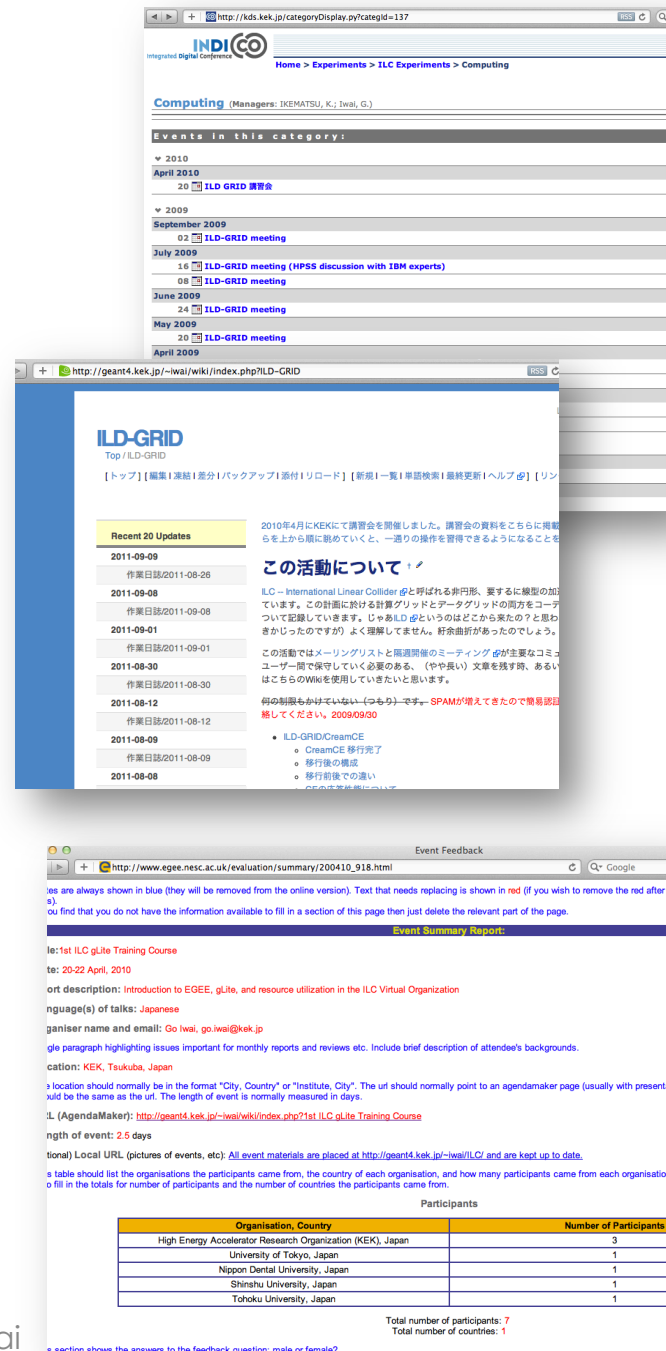


Others

- 20+ meetings
 - <http://kds.kek.jp/categoryDisplay.py?catId=137>
 - <http://geant4.kek.jp/~iwai/wiki/index.php?ILD-GRID>
- 1 training course at KEK on Apr 2010
 - [Event summary report](#)

ILC Tokushin Kickoff Meeting at Tohoku Univ. on 14 Sep 2011

Grid Status and Future - Go Iwai



What is achieved?

- VO infrastructure is really well-utilized
 - 40+% of CPU resources are used at KEK
- 20+ tight meeting make CIS an ILC optimized computing farm

Unfinished works – TODOs in next 5 years

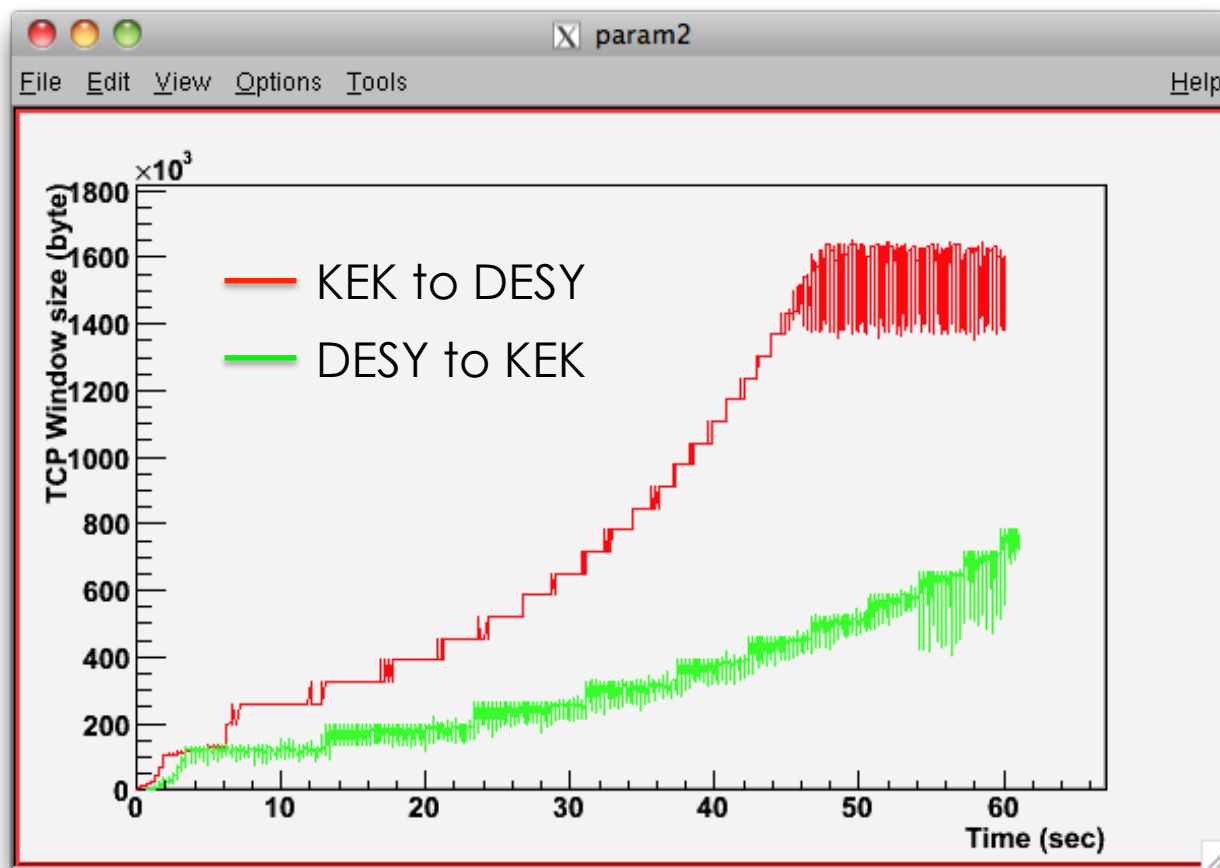
1. Bad transfer performance ☹️

Desktop to KEK-SE	24 MB/sec
KEK-SE to DESY-SE	0.68 MB/sec
DESY-SE to KEK-SE	2.3 MB/sec

Transfer took 463220 ms

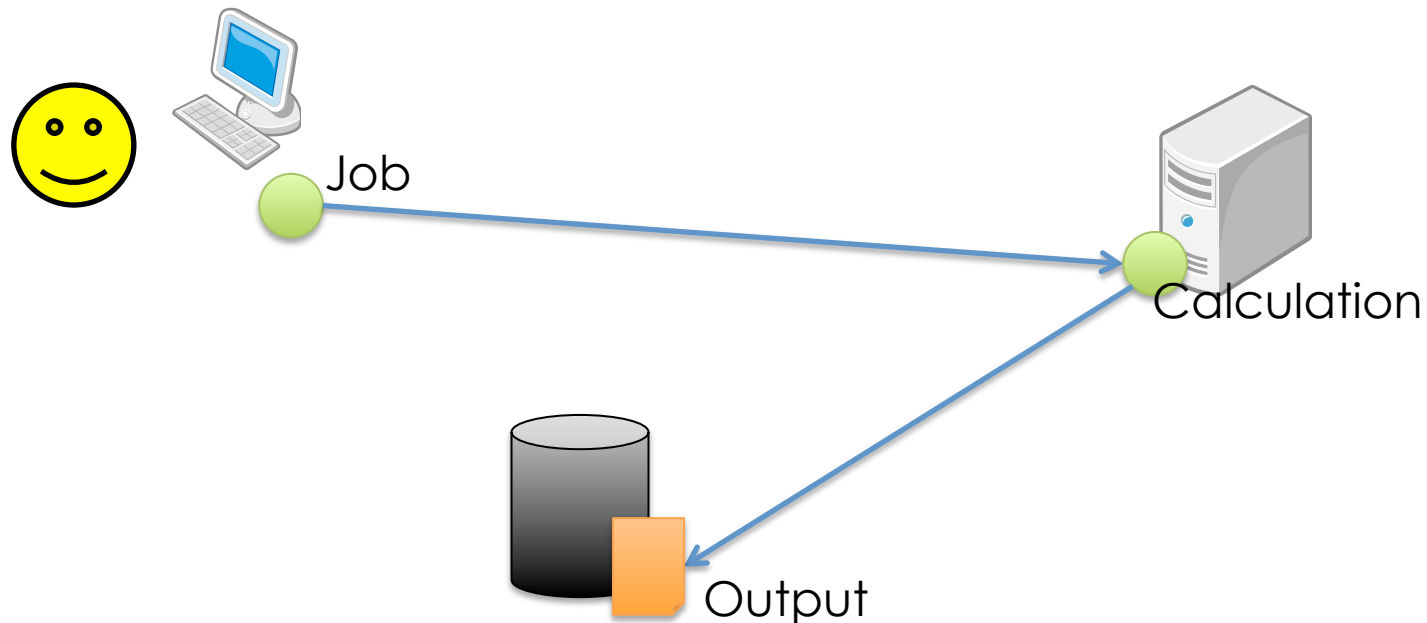
on 14 Sep 2011

- DESY to KEK is more important rather than KEK to DESY
 - A few MB/sec is not good enough but not too bad



- Mysterious asymmetric growth of TCP window size

2. Integration Grid Storage and Local Storage

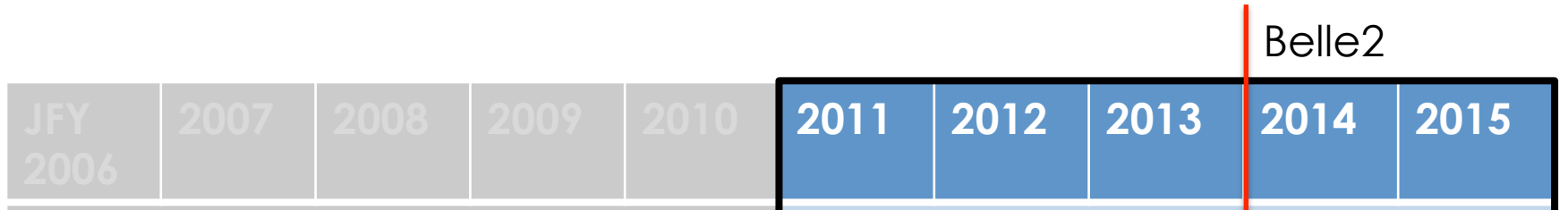


- Users can access output data but better to read and write via system call even on the desktop.
 - This will be realized in next CCS probably. (Don't hope too much...)

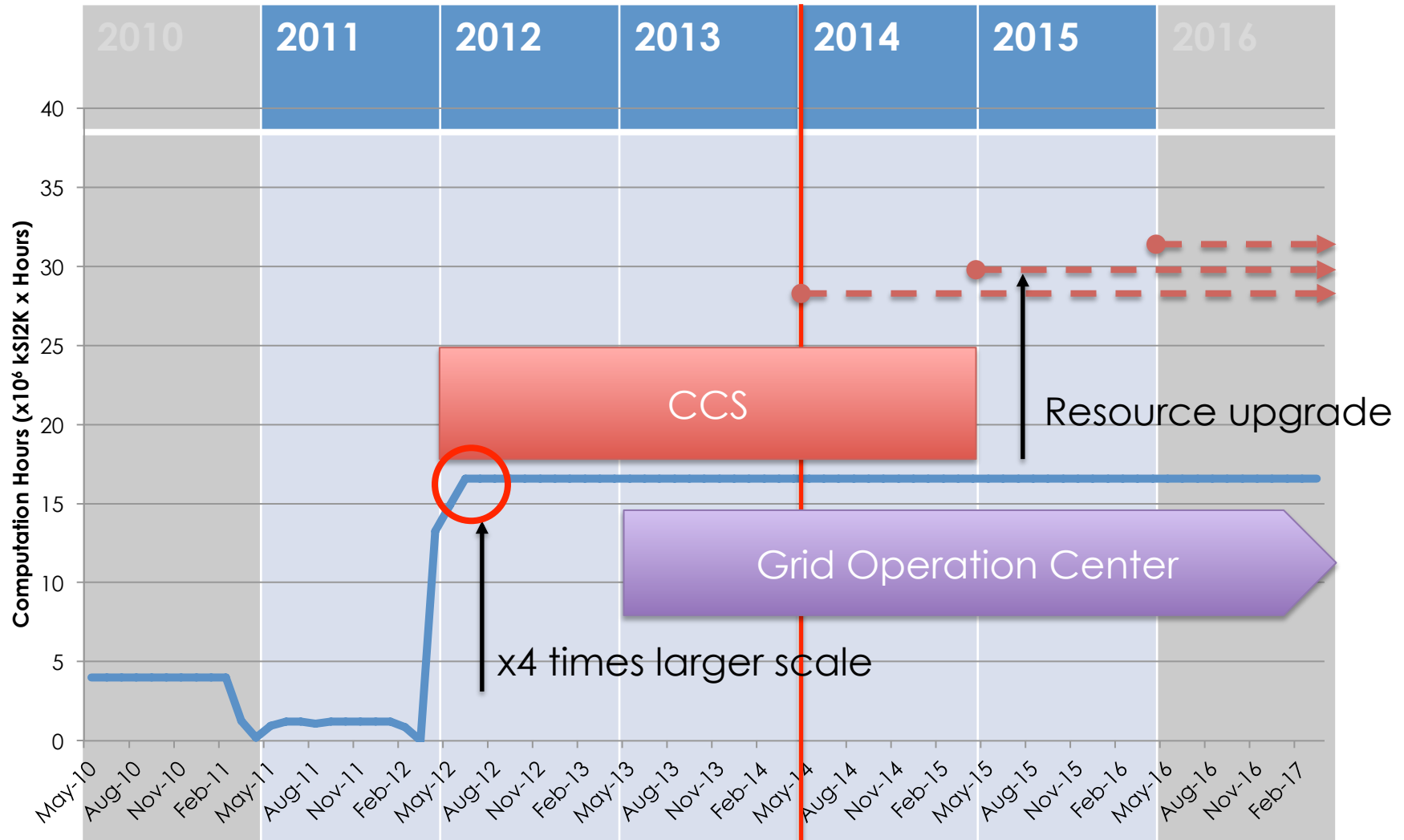
Next 5 Years

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Next CCS winner is...

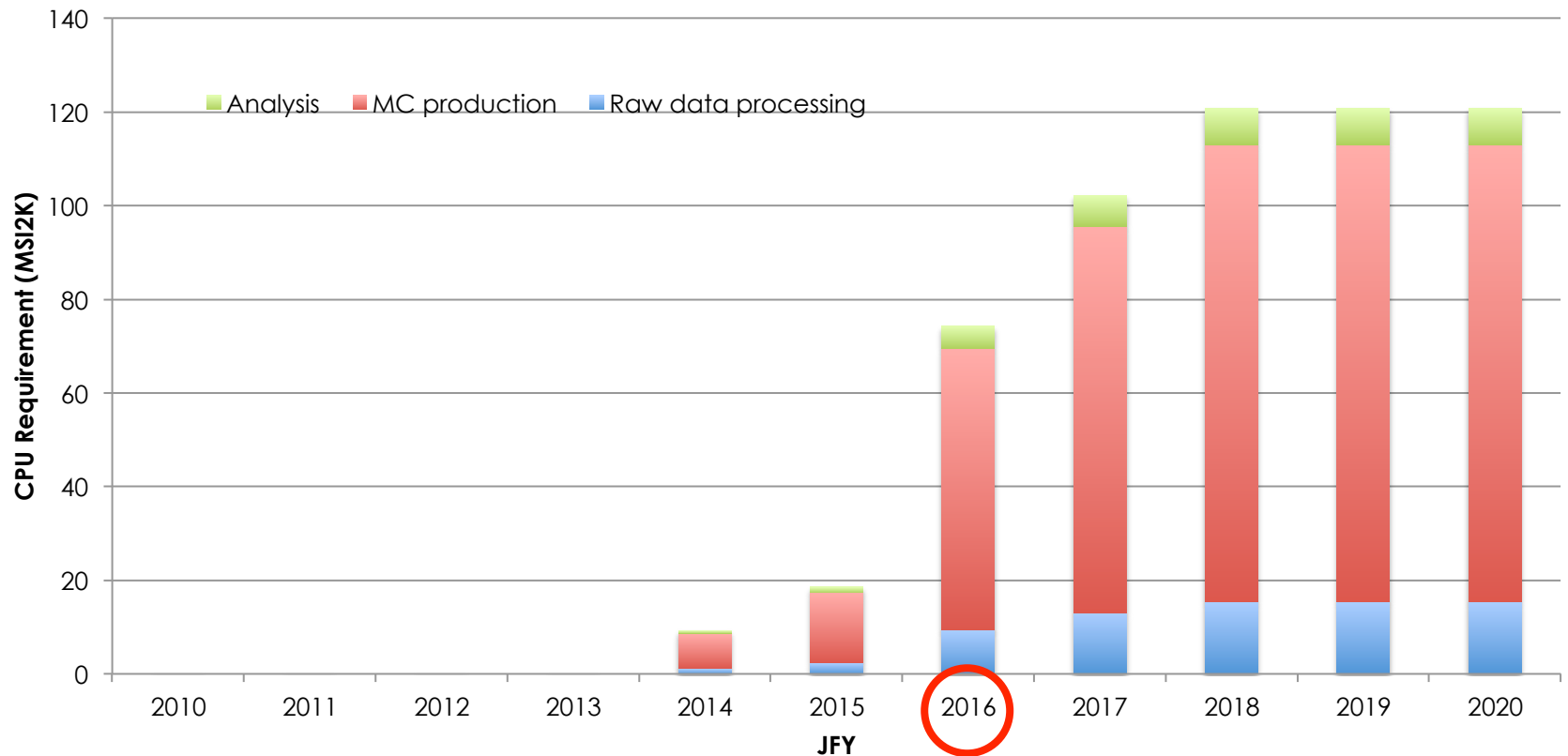


Expected computing resources: Local CPU facility fully integrate into the Grid



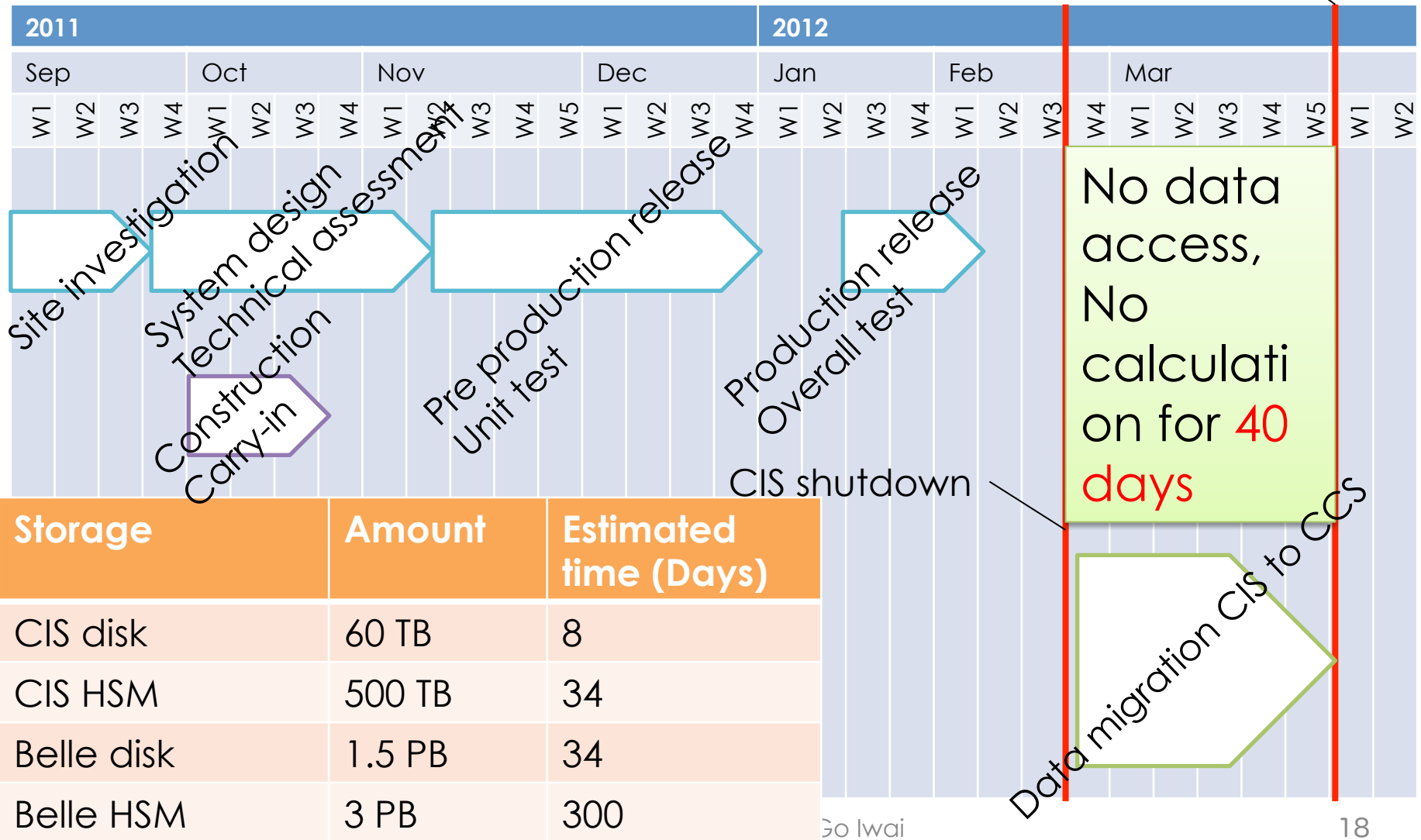
If Belle2 really starts in 2014...

Belle2 CPU Requirement



Rush in next 6 months

Fully Launch the CCS on 2nd April 2012



Storage	Amount	Estimated time (Days)
CIS disk	60 TB	8
CIS HSM	500 TB	34
Belle disk	1.5 PB	34
Belle HSM	3 PB	300

How can we survive in 40 days downtime?

```
[iwai@kek2-ui02 ~]$ lcg-infosites --vo ilc se
Avail Space(Kb) Used Space(Kb) Type SEs
-----
26335692043      12464307957      n.a globe-door.ifh.de
164088592        157977204        n.a griddpm01.ifca.es
...
59873651175     56107152355     n.a kek2-se.cc.kek.jp
...
```

- 60 of 120 TB in use as of 12th Sep 2011
- Site-internal transfer performance: 100 MB/sec (in the fastest case)
 - 1 week in case of 100 MB/sec transfer performance (over-optimistic)
 - 2 weeks in case of 50 MB/sec (fair estimation)
 - 2 months in case of 10MB/sec ☹
- Or use resources in other countries

ILC Tokushin Kickoff Meeting and Workshop on 14 Sep 2011
– This will be a good practice how real Grid works

What's going to happen JFY2012 –

- Belle2 probably starts to take data in JFY2014
 - Always delay but we have to be able to catch up data, deploy good-enough storage, and computing power before JFY2014
- Operating stably is more important than deploying good-enough resources
 - B2 Operation Center will be launched in JFY2013

Many thanks for your attentions!

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