

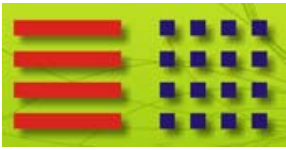


# DEPFET-IB Meeting



## Report of PL

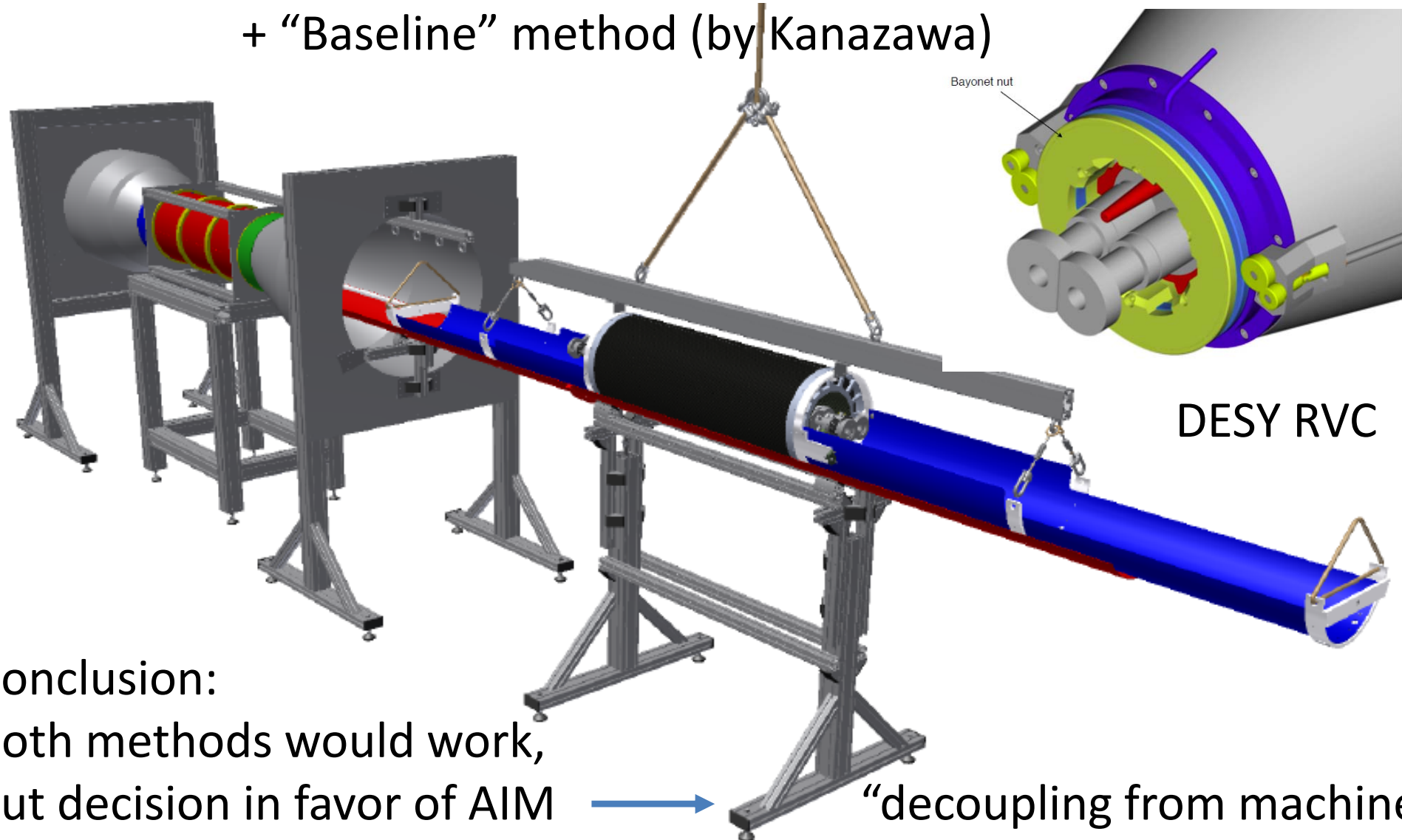
- Selected Topics from recent Meetings
- Interest of the Mainz Group (Prof. C. Sfienti) to join DEPFET (PXD) (presentation of the group by Concettina)
- DEPFET-Sensors for the KEK-PF Project
- Status of IBBelle (CO2) Financing
- PXD backup / upgrade plans
- Common Fund



# July B2GM: Decision on AIM



At KEK: Demonstrated AIM (“Alternative Installation Method”) including EDI “emergency de-installation” + “Baseline” method (by Kanazawa)



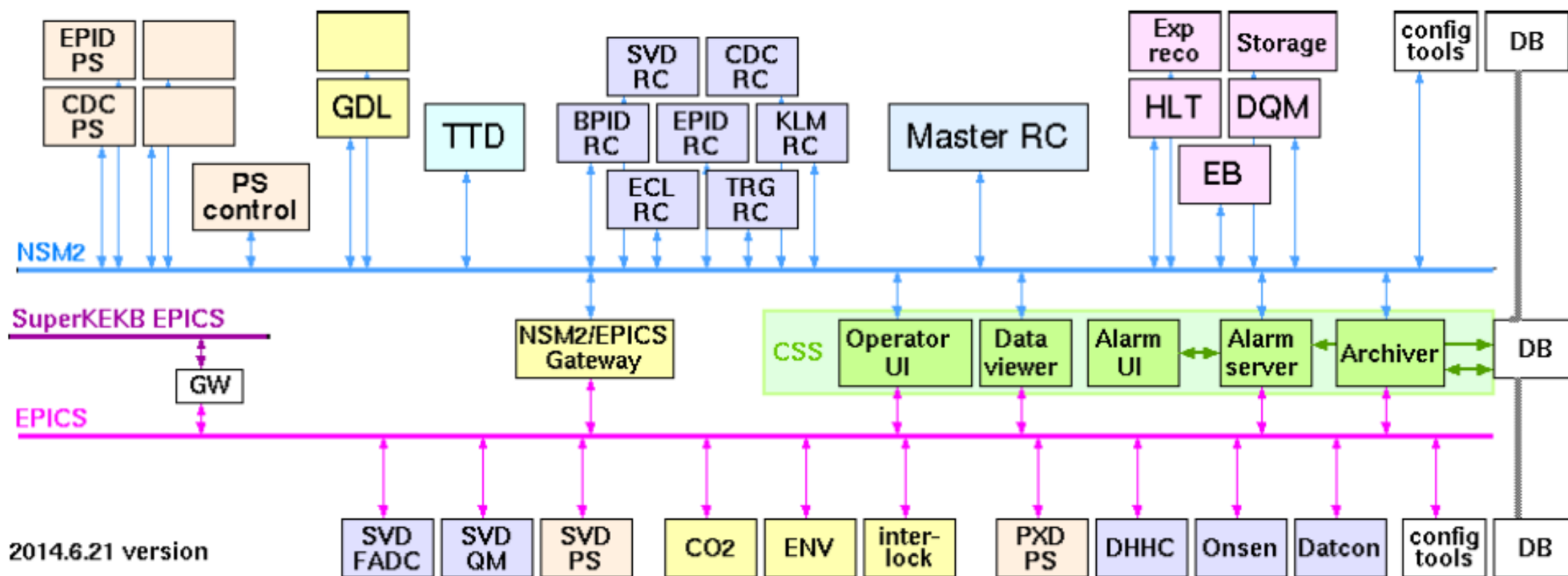
Conclusion:

Both methods would work,  
but decision in favor of AIM

→ “decoupling from machine”



# July B2GM: Decision on Slow Control



- NSM2: network shared memory v2.  
KEK proprietary communication protocol
- @Belle II: Split NSM2/EPICS system.
- CSS as common GUI
  - Including alarm UI, data archiving.

Common SC/DQM group for VXD

CSS (GUI) decided for Belle II,  
NSM2 (Run Ctrl) and  
EPICS (Slow Contr.)

- Start a pilot run with PXD9 2-3 wafers + 3-4 EMCM-likes (final metallization + thinning)
- Submit “final” ASICs by Feb. 2015 (thorough testing of EMCMs)
- Submit “final” Kapton design this year (back early 2015)
- Do thorough tests with final assembly ( + gated mode) (flip chip @ IZM, SMD @ Valencia to be certified)
- Prepare beam test (at DESY) with 2 sensors (ladders) together with final SVD ladders for the fall of 2015
- While all this is ongoing, we could continue metallization of the PXD9 production (-> discussion ongoing)

- Test Experiment at KEK-PF using PXD9 sensors  
(Soichi Wakatsuki, Naohiro Matsugaki is project leader)
- Use Belle II Sensors and DAQ up to and including DHH
- Same time scale as PXD
- Use sensors from the PXD production
- Use “left-over” sensors from PXD
- KEK prepares the mechanics (consulting MPI)
- Establish own DAQ system, starting from present DHH

- BMBF informed about planned cooperation with KEK-PF, cooperation welcomed by BMBF
- Addendum of DEPFET MoU formulated (few iterations) and agreed between all contributing institutions (Bonn, Heidelberg, HLL, MPI)
- Addendum distributed to IB on Aug. 25
- checked by Legal Department of MPG, “green light” given
- Confirmation email sent to BMBF
- Endorsement by DEPFET IB

# Sensor Count (I)

	0	1	2	3	4	5	sum
Chip1	10	9	2	2	1	6	30
Chip2	16	7	1	0	0	6	30
Chip3	16	4	3	2	0	5	30
Chip4	11	4	5	3	1	6	30
Chip5	12	4	4	2	2	6	30
Chip6	15	4	2	2	1	6	30

**0 – no severe defects**

**1 – single pixel**

**2 – single rows and columns**

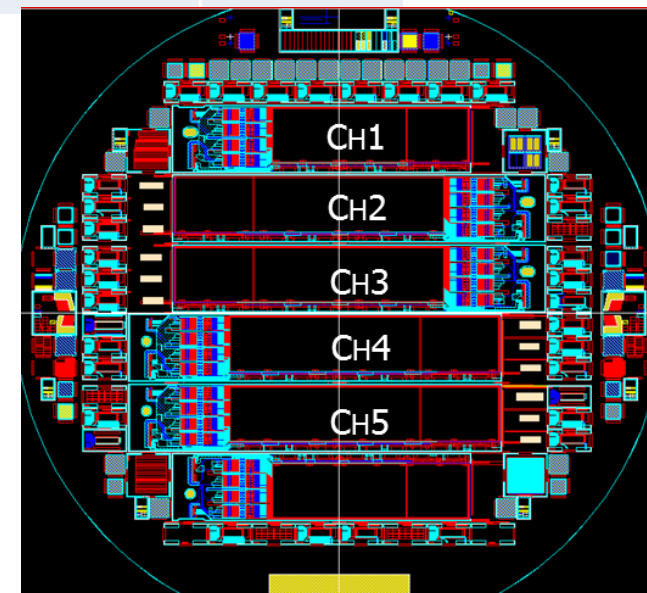
**3 – whole modul affected?**

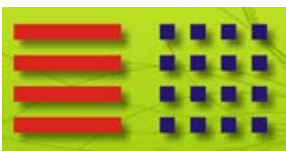
**4 – whole module killed**

**5 – to be clarified**

PXD9 wafer

yield > 50 %





## Sensor Count (II)



	Class 0/1	Class 2-5	Sum	Needed for PXD	
inner	36	20	56	16	
outer	70	43	113	24	
Sum	106	63	169	40	

We will process all the chips (169)  
40 of them are needed for the full PXD

Class 0/1: 106

-> endorsement by IB



Installation at CERN (ATLAS Experiment): the “twin” of IBBelle



Need to  
establish  
parts list



Production drawings for the **mechanics** exist, part lists as well, **but**

- Need to go through the drawings and tables to establish part list
- MPI working on this: Sven Vogt
- Status: Swagelok part list almost done, offers have come in

For the **control** side (PCLs etc), things are not too well documented:

- MPI working on this: Reinhard Sedlmeyer  
already two visits at CERN to establish status in situ
- First parts have been asked for quotes and are ordered through CERN

Process of getting quotes and do the ordering will take till the end of year

Meeting with Kimura-san, Bart Veraat, Lukasz Zwalinski at MPI  
Mon-Tue, Oct. 6-7



# IBBelle CO2 Plant: New Schedule



## Schedule for CO2 Cooling System

(modified)

		2nd Q 14	3rd Q 14	4th Q 14	1st Q 15	2nd Q 15	3rd Q 15	4th Q 15	1st Q 16	2nd Q 16
IBBelle	Part list									
	Tendering Orders									
	Construction									
	Commissioning									
	Transport to KEK									
	Installation at KEK									
Junction Box	Design									
	Construction									
	Test									
	Installation									
Manifolds	Design									
	Construction									
	Test									
	Installation									
Transfer lines	Design									
	Construction									
	Test									
	Installation									
Cold Air / N2	Design									
	Construction									
	Test									
System Integration	at MPI									
	at KEK									

Start KEK  
installation  
April 2016



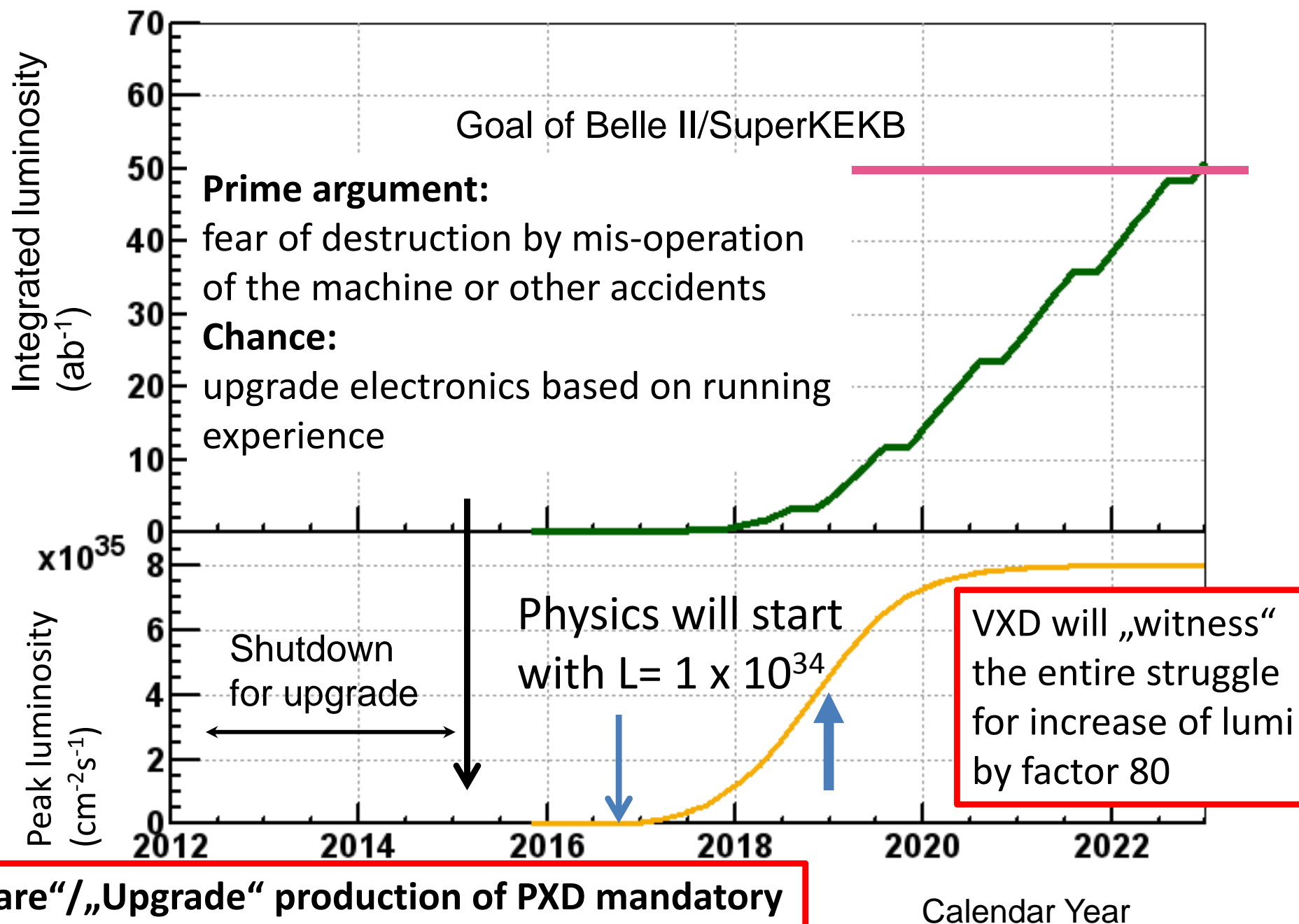
- Total cost of IBBelle: 480 kEur

- Contributing Institutions:

BMBF	185				
MPI	180				
DESY	50				
SVD	51	(INFN, KEK, Vienna, Krakow)			
		20	20	5	6
Prag	10				
HLL	5				
Total	481	all contributions to DEPFET CF			

Ordering through MPI (partly via CERN Team Account)

# Initiative for a PXD Upgrade Program



- Plan: complete spare / upgrade by the summer of 2019 (~ 5 years from now)
- Need 2 years of production of sensors + < 2.5 years for construction, optional development of new ASICs, and commissioning
  - > continue production of new sensors when the present production is finished
  - > invest and manpower needed during the coming funding period, (German universities: 2015-18)
- Development of ASICs (+DAQ H/W) should wait for significant experience in beam operation (start development in 2017)



- Estimated cost: 1.7 M€ sensors (MPI will cover 1.1 M€)  
-> further funding needed (600 kEur)
- German HEP Strategy Meeting on May 14-15 in Bad Honnef  
(Belle case presented by Norbert Wermes):

For ASIC development need additional 0.8 M€ (dominated by engineering power), leading to a total budget request of 1.4 M€

BMBF: look for some support within Belle II (or DEPFET Coll.)

- Spare proposed to Belle II EB  
(letter of support promised by Belle II management)
- Application to German BMBF due on Nov. 1, 2014

- DEPFET CF was created to rescue funds that could not be spent during grant period
- Contributions dominated by foreign institutions (esp. Prague), larger contrib. by MPI, TUM
- Spending (as laid down in the DEPFET MoU) as proposed by PL and agreed by DEPFET IB
- Several projects supported (ASIC submissions, Power Supplies, SOI, CO2 travel, DEPFET-Meetings, Grounding Initiative, AIM engineer, Pac Tech bumping, ...)
- Present balance: 245 kEur (+30 kEur earmarked for AIM engineer)





# VXD and Plan C4