Overview

detector components, site, schedule etc

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Prototype Detector Meeting
July 19, 2014

- working group alias for the project:
  - hkwg-prototype@suketto.icrr.u-tokyo.ac.jp
  - let me know if you want to register your email address

Meeting agenda

- (Overview by Shiozawa)
- Yano-san: Case study for EGADS 200ton tank
- Hayato-san: DAQ plan
- Comments by other institutes, countries
  - Interested parts
  - R&D status
  - Budget request plan, situation
- Discussions
  - Schedule
  - How to organize the project?

HK prototype project overview

- Grant-in-Aid ($2.3M/5year) R&D money for 5 years (2013-2017).

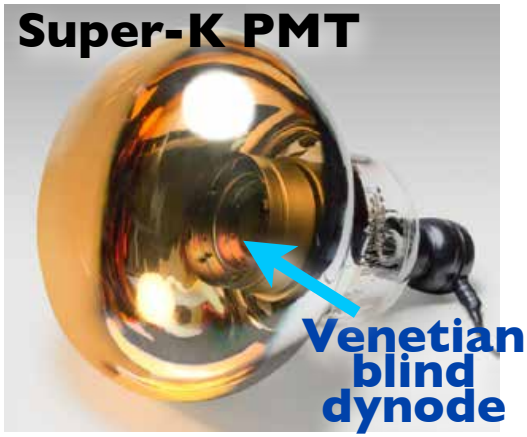
~1.2M$ for the prototype detector project.

- Test and Demonstration of HK detector components
  - New photo-sensors for HK inner detector
  - To make necessary feedback to the design and/or give green light to mass production
  - good opportunity to test other components, e.g. PMT cases, in-water electronics, sheet, DAQ system, analysis system etc
- This would provide a good opportunity to start your activities in the HK project. Your contributions are very welcome to
  - R&D of components
  - supply components
  - construction
  - calibration
  - operation
  - and data analyses
  - with reasonable cost (scale of R&D money)

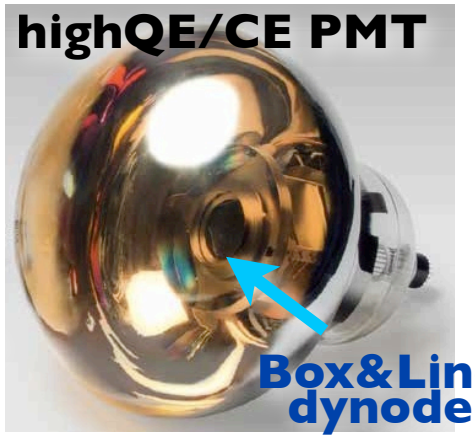
Photo-sensor R&D

R&D going on to get better performance and lower cost.

Established

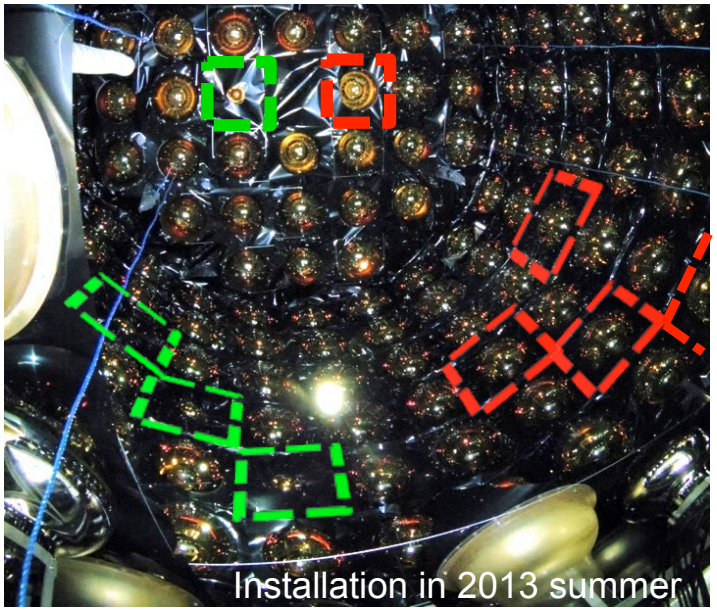


R&D



R&D

quantum eff. (QE)	22%	30%	30%
collection eff. (CE)	80%	93%	95%
timing resolution (FWHM)	5.5 nsec	2.7 nsec	1 nsec



- 50cmΦ Box&Line PMT and HPD prototypes have been delivered last March, start basic performance test
- 20cmΦ HPD and HQE Super-K PMT have been tested in 200 ton water tank
- R&D to be completed in 2016

detector components (1)

- Photo-sensors and accessories:
  - new design (50cmΦ HQE HPD or HQE PMT)
    - ICRR (Japan) plans to provide the sensors
    - R&D could be done together
  - new HK-OD PMTs??
  - light collection system?
  - PMT cover, mumetal cover (geomagnetic field) if necessary, deployment system
  - pre-calibration before installation
  - black sheet (new low reflectivity one?)

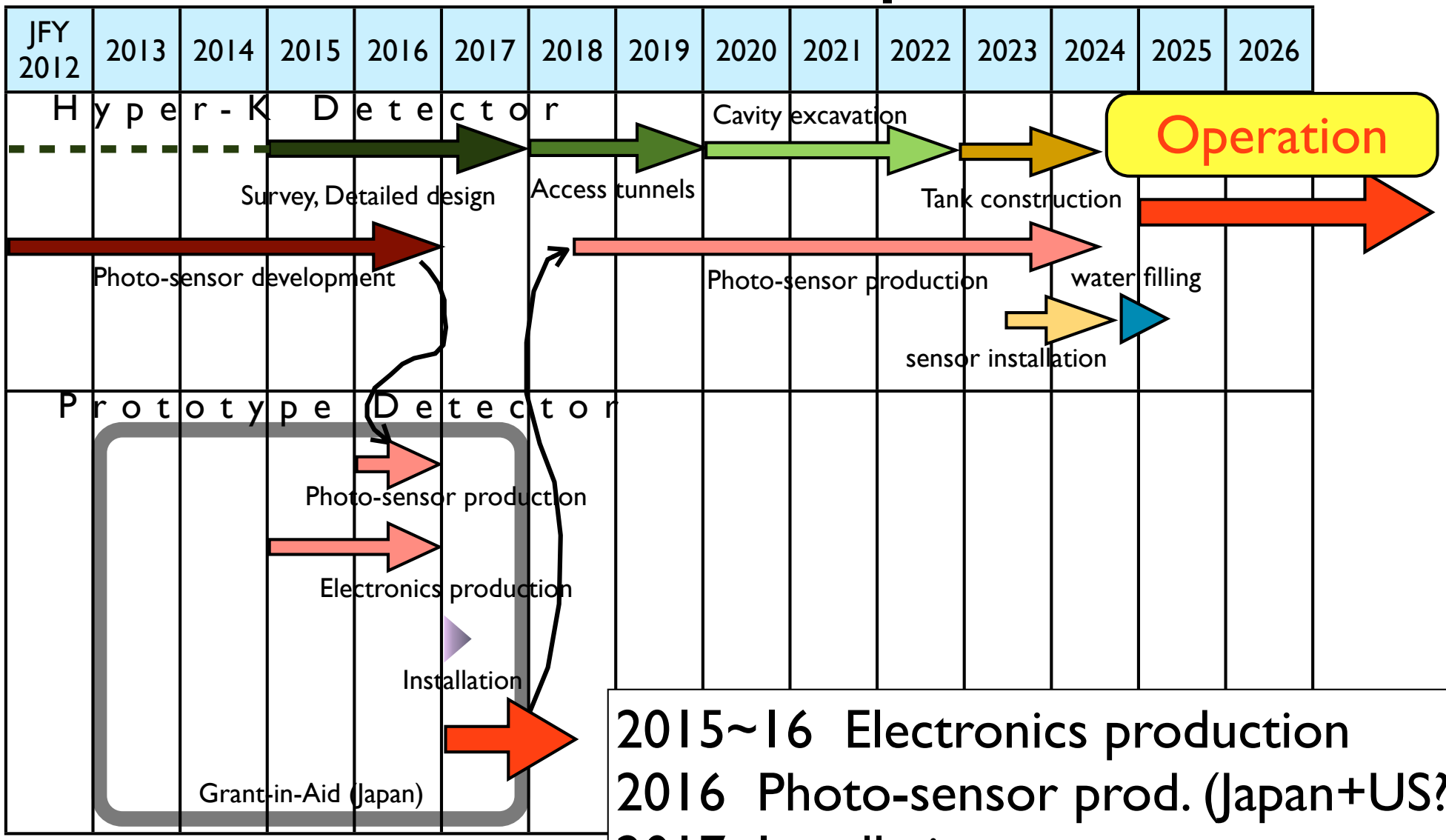
detector components (2)

- DAQ system (see Hayato-san's talk):
  - pre-amplifier for HPD
  - ADC/TDC
  - HV power supply
  - network I/F, network cables
  - signal/HV cables, connectors, water-proof connection, water-proof box
  - online computers and software
- Calibration system and strategy
- Analysis software

Site

- I'd like to propose to use EGADS 200ton tank as a baseline option
  - we have to keep EGADS functionality; Improvements to the detector is welcomed as long as downtime is minimized
  - Case study talk by Yano-san today
- 1KT tank at KEK
  - may need inspection of the old facility, at least need refurbishment of the rusted tank, water system has been removed
- Interests in a near detector at ~1km in Tokai
  - near detector should be approved and budget should be secured in a timely manner

Timeline Proposal



2015~16 Electronics production
2016 Photo-sensor prod. (Japan+US?)
2017 Installation
2017~ Operation