

Real-time front-end control code is extremely specialized and highly customized to each subsystem. **Developing the required expertise takes significant time and dedication.** We urge the project to invest in this capability as early as feasible.

Answer by O. Miyakawa

- We keep distributing the stand alone digital system to subsystems and requesting all subsystems to invest in developing real-time-front-end codes.

Distributed systems: 5 stand-alone systems

Pre-isolator test (VIS/ICRR), Data pre-processing (NAOJ/DetChar), Interferometer control (CLIO), R&D (U-Tokyo)

We recommend **postponing commercial computing hardware purchases as long as possible**, as this will provide more computing power for a given budget.

Answer by N.Kanda:

- We agree to this, and have scheduled it as late as possible.

Changes after the previous external review:

- National budget for data analysis and multi-messenger astronomy was approved. So, some part of data transfer system (low-latency transfer system) will be prepared before iKAGRA observation.
- We are planning to use the next-generation (2014-2019) computer system at ICRR, which will have sufficient performance for KAGRA. Kanda and Miyoki is members of the committee to determine its specifications.
- Data Analysis subgroup was divided into two subgroups: **DAS** (Data analysis, H.Tagoshi) and **DMG** (Data Management, N.Kanda)