Status report from subgroups:
Data Analysis

N.Kanda

The Aim of 'Data Analysis' subgroup

(1) to search for GW events in LCGT data

(2) to analyze GW events to extract physics, astrophysics and astronomical outcomes

(3) to cooperate with other GW experiments on event search

Tasks (actually 'to do' items)

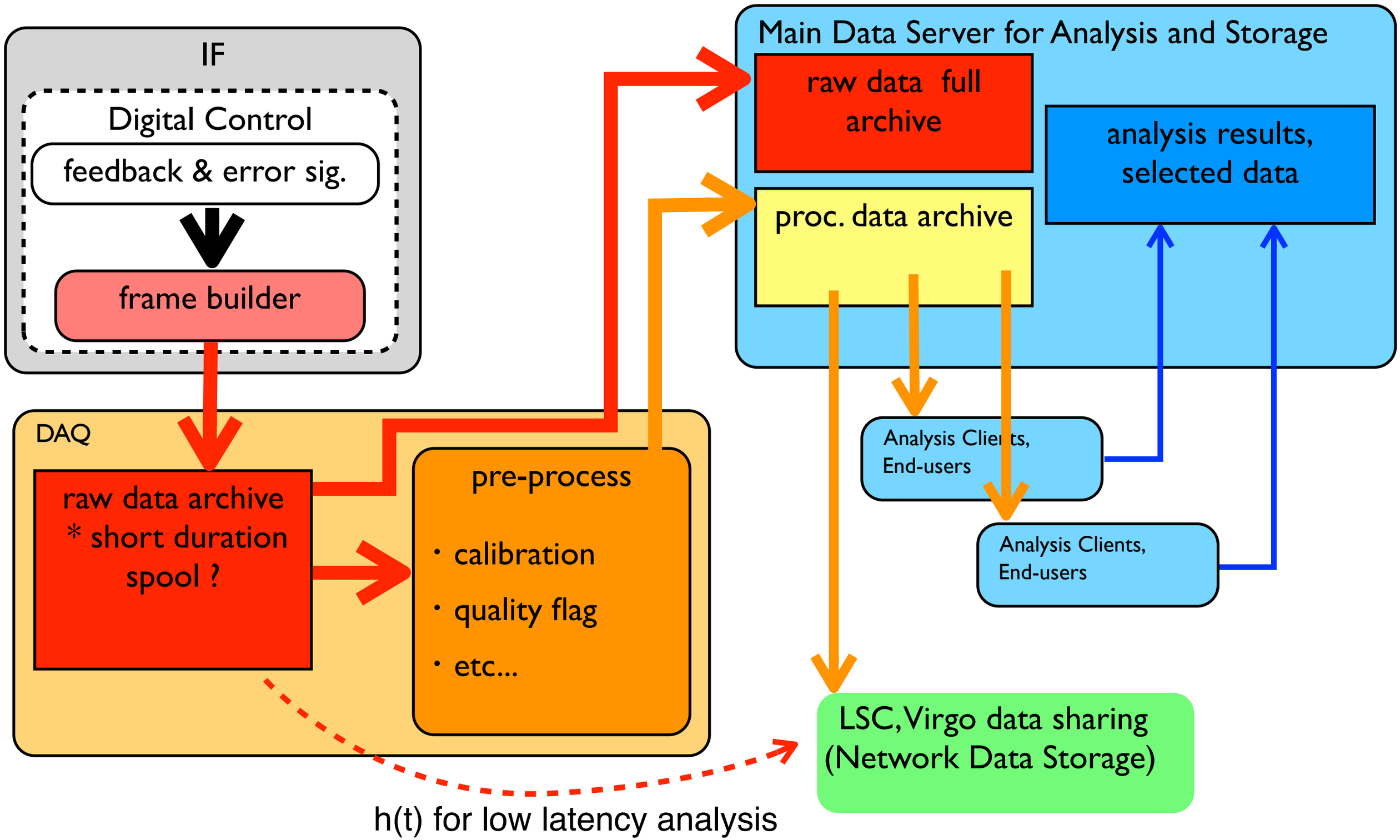
- **Construct a data storage and computing system**
- **Search and Analyze GW events**
- **Analysis with other collaborations**

road map of construction items of 'Data Analysis' subgroup

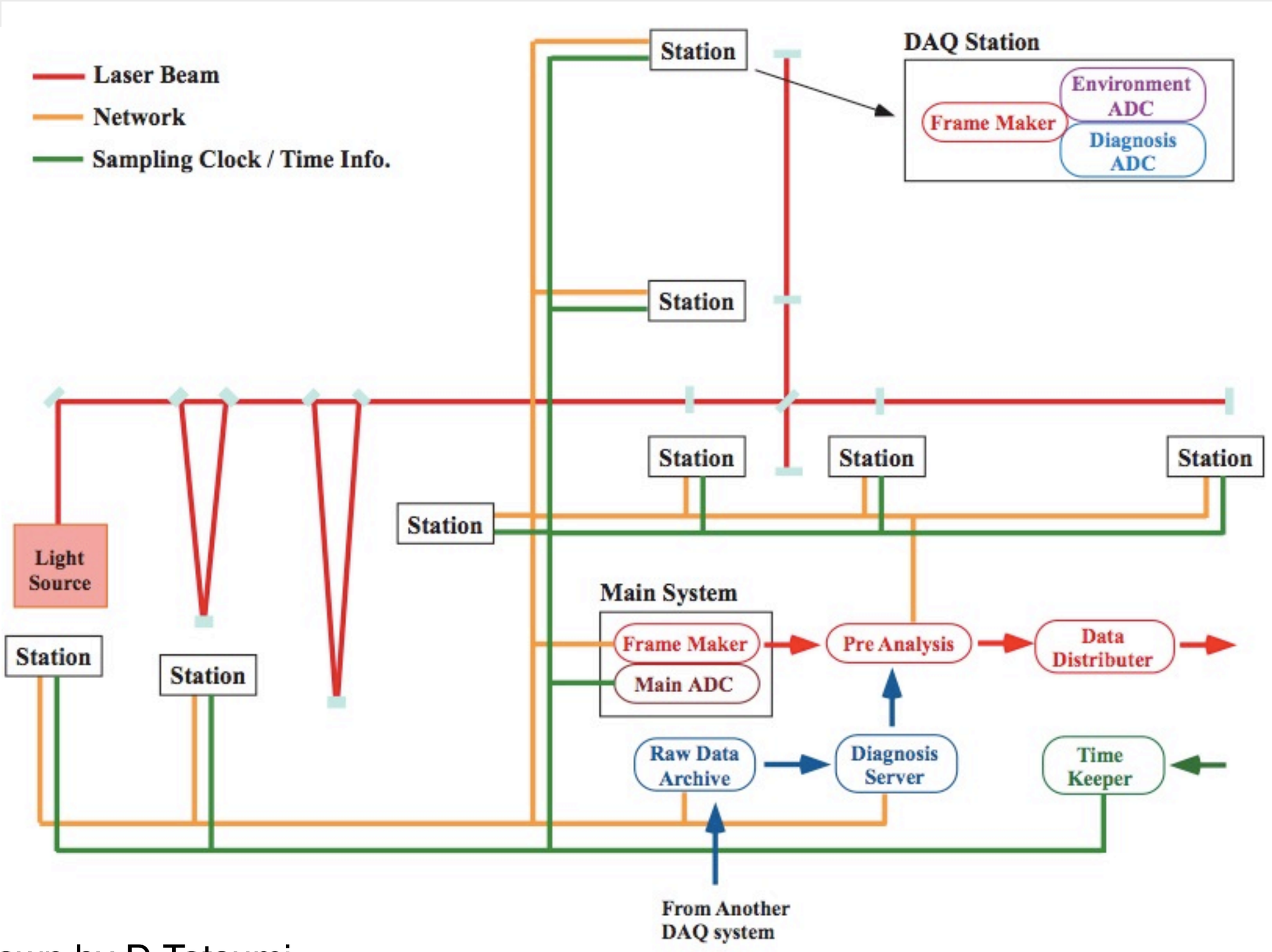
	LCGT 1st year	2nd year	3rd year	4th year	5th year	6th year	7th year
Target	Prepare Data Analysis for 4th year			System Test	Build up full data system	Analyze Continuously Followup with Other Obs.	
Hardware	small cluster mini-system		partial system		**full system**	+ cpu, storage, peripherals	
Software	Construct common environment Implement GW search			**whole data pipeline test**			

- We need to fix concrete design for Data Acquisition, Data Flow and Data Storage.
- We need to estimate and will keep the budget.

Overview of Data Flow & Computing



Design report v.3



drawn by D.Tatsumi

Data rate / total amount ?

(1) raw data

- ~ 70GB/hour
  (~ 600TB/year)

(2)proc data

(3)simulation

(4)Data sharing

according to design report version 3, by Tatsumi

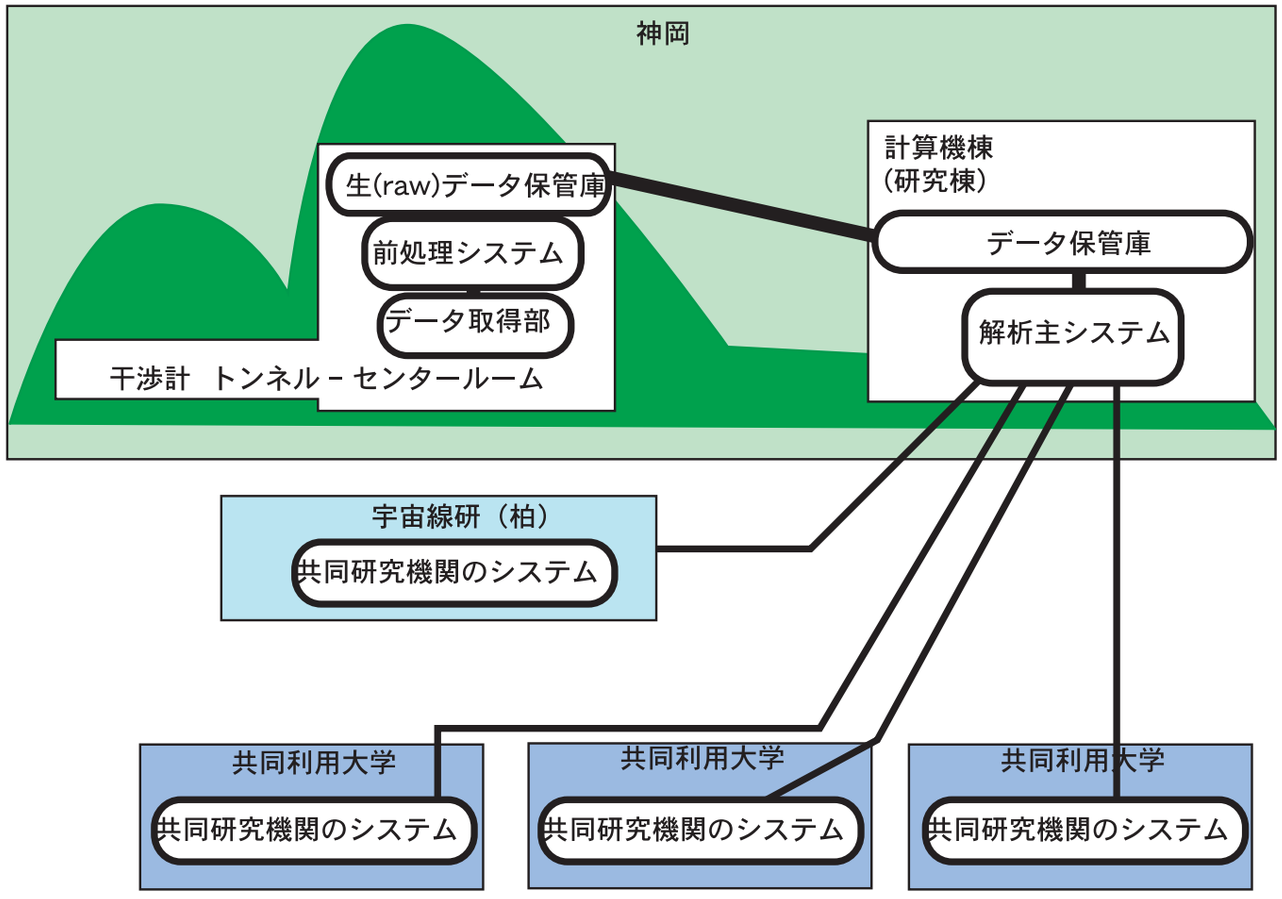
6. Raw Data Archive

Total amount of data to be archived is 3 TB per day. To keep last one month data, amount of 100 TB hard disk is needed.

	From Each Station	On Data Archive
Main	4 MB/sec x 1	14.1 GB/hour
Diagnosis	2 MB/sec x 8	56.3 GB/hour
Environment	2 kB/sec x 8	0.05 GB/hour
	20 MB/sec	70.4 GB/hour

- Total amount of size for several years observation will be **10 peta byte** order.

old plans


神岡
生(raw)データ保管庫
前処理システム
データ取得部
干渉計　トンネル－センタールーム
計算機棟
(研究棟)
データ保管庫
解析主システム
宇宙線研（柏）
共同研究機関のシステム
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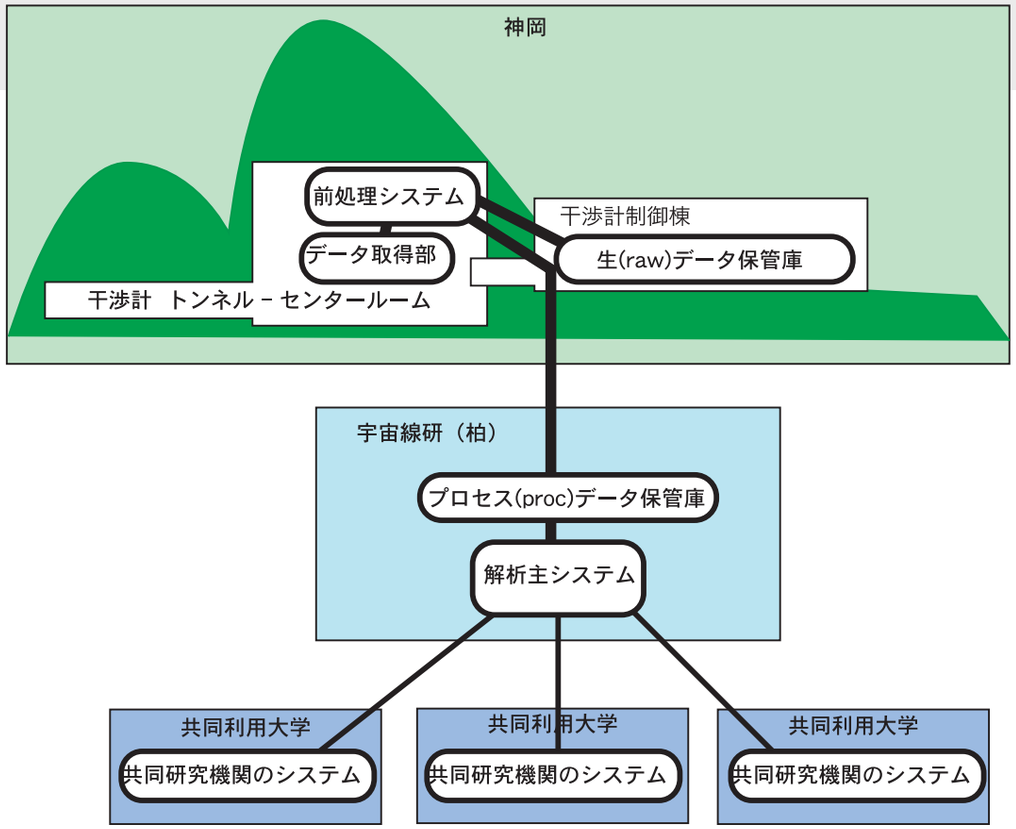
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宇宙線研（柏）
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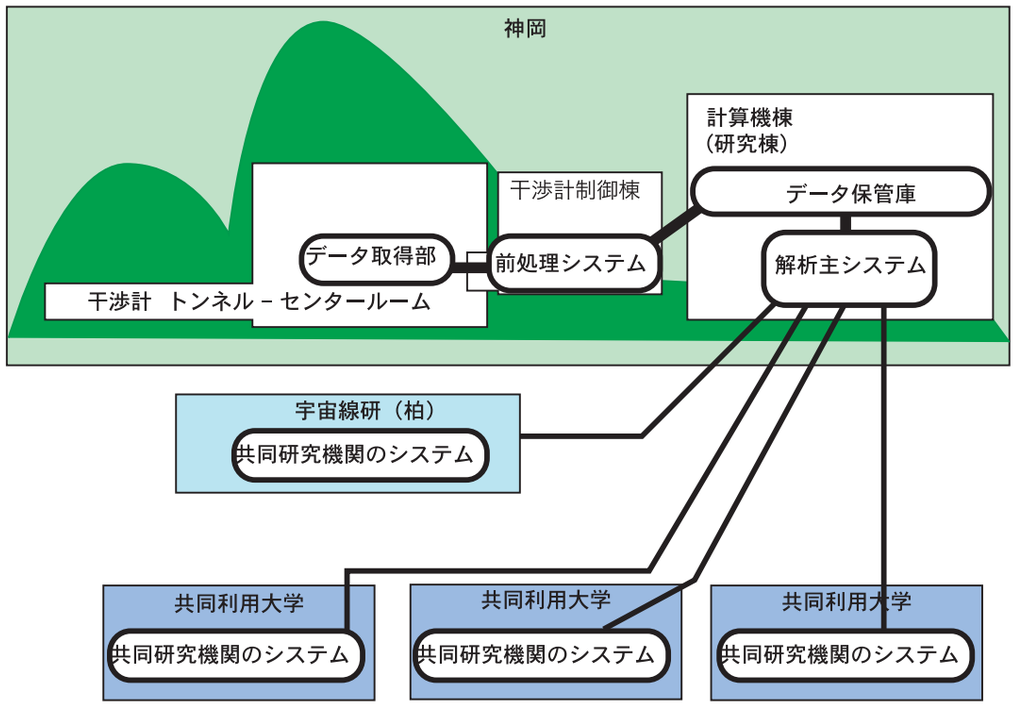
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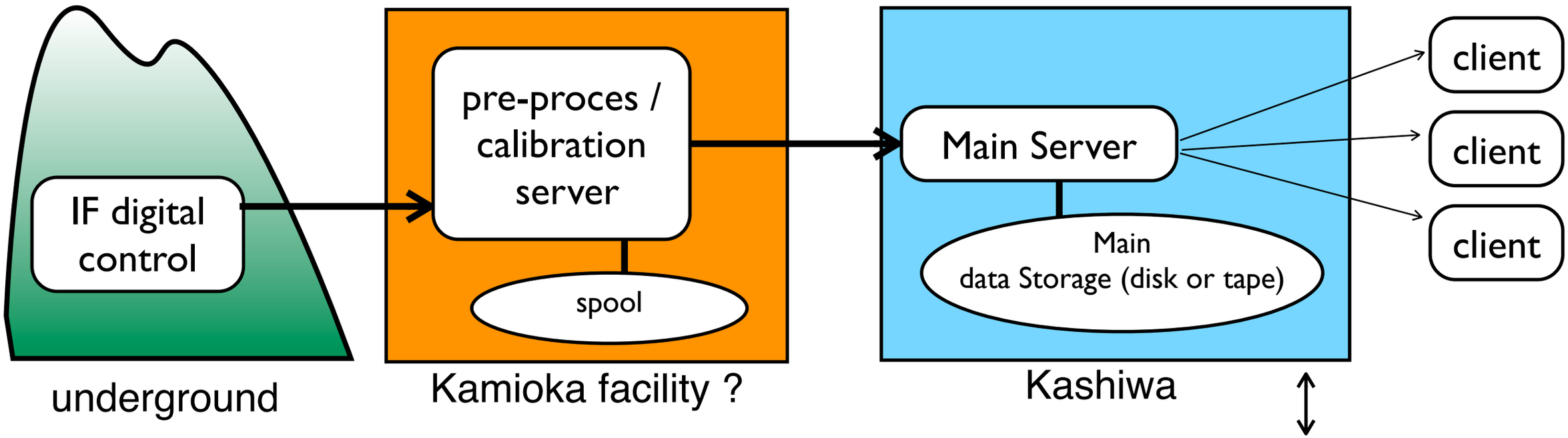
Recent Plan



Data Sharing

(1)Main Storage of data / Analysis main server will be placed at Kashiwa.

(2)Pre-process / calibration computer and small* data spool will be places at Kamioka.**

- * ~ How large is enough size ?
- ** Inside/Outside the mountain ?

Research : Data Flow (LIGO)

Research : Data Flow (Virgo)

(1)Similar to our latest plan

- data rate is also same to LCGT.

(2)Fast data transfer for h(t) using special protocol

(3)"not so much computing power is need on site"

(4)local storage ~120TB or like as

- for a few months data

  Note: If we would like to do data evaluation for on site instrumental works, 1 year or several months data should be kept on site for our convenience.

(5)They have their own pipeline for inspiral search on site.

Items to be fixed:

(1)Requirement for Front-end at Kamioka

(2)Calibration and pre-process (1st)

cf: We are considering with Virgo people about learning calibration process and data transfer to data sharing server. We may start collaborative work on ‘very low latency’ data sharing and search GW.

(3)Requirement for Main Site

(4)What will be need for end-user environment ?

Some topics from GWPAW 2011

(1) some prospects with LCGT or/both LIGO-Australia

- Sky coverage
- Sky localization (precision of arrival direction)

(2) new GW detection expectations

- Galactic Pulsar
- BH binary coalescence

(3)“low latency” studies

Next meeting will be at Hanover.
Japan expressed interest to host future GWPAW meetings at 2014 or around.