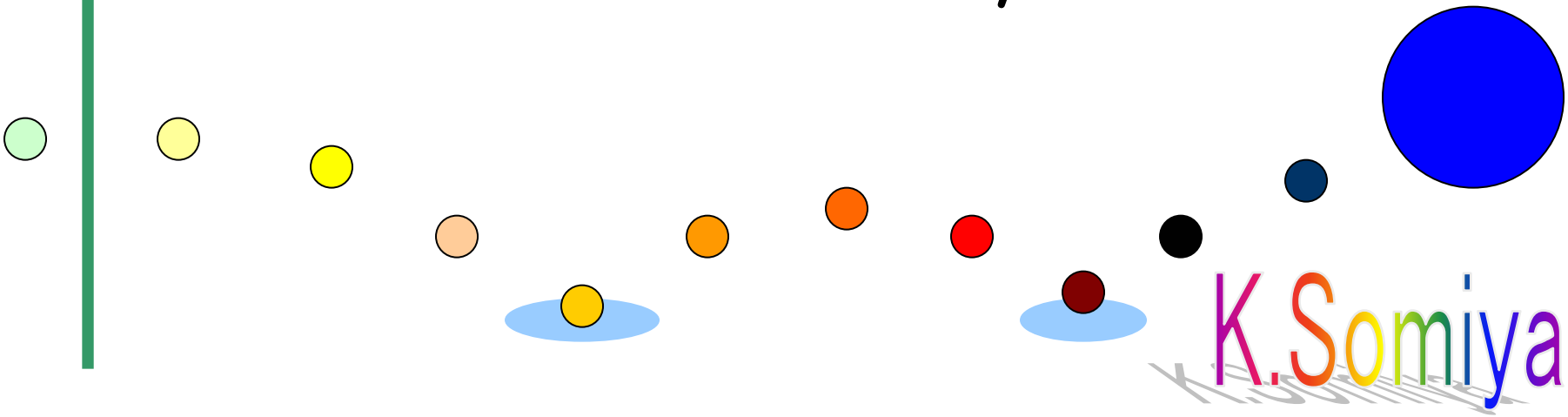
Interface Control Document

LCGT F2F meeting @ ICRR
Aug. 2011

Tokyo Inst of Technology
Kentaro Somiya



Contents of the talk

- Concept of interface control
- Prompt update system for ICD
- Allocation of tasks
- Trade-off study

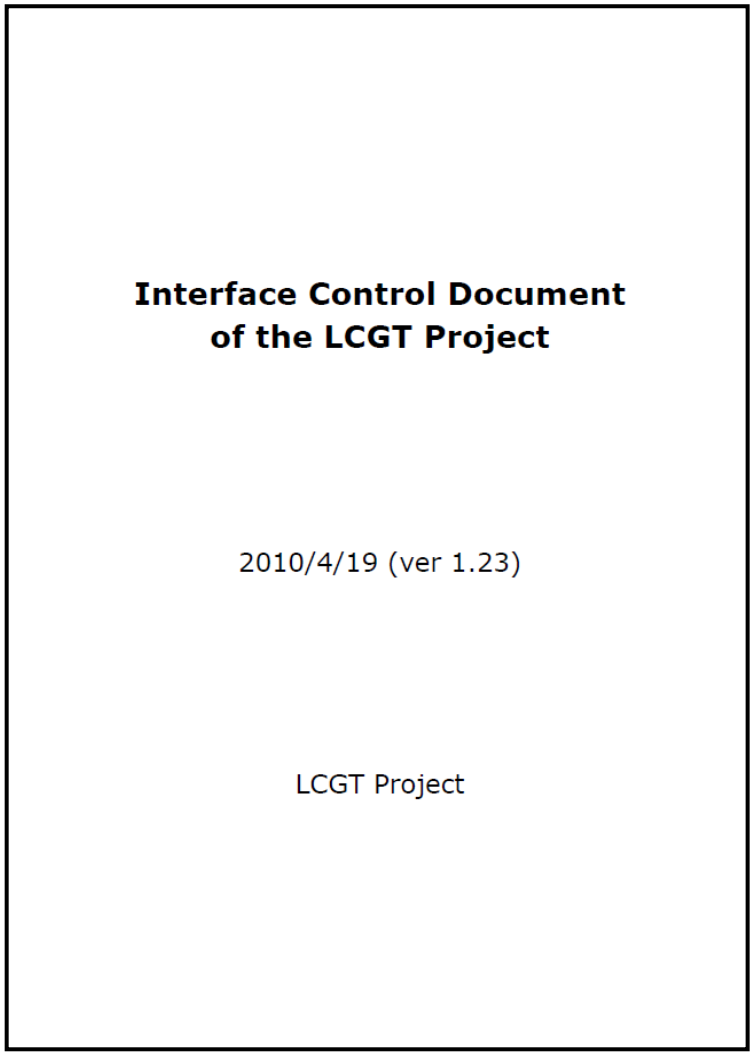
Without the interface control...

(1) Two people may think that the other guy will take care of a shared item.

(2) Some items could belong to none of the subsystems.

(3) Two people may assume different parameters for a shared item.

⇨ **Importance of interface control**



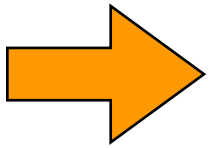
ICD: JGW-M0900018-v8

Role of ICD

- Define subsystems (components, tasks)
- Set requirements
- List up interface parameters

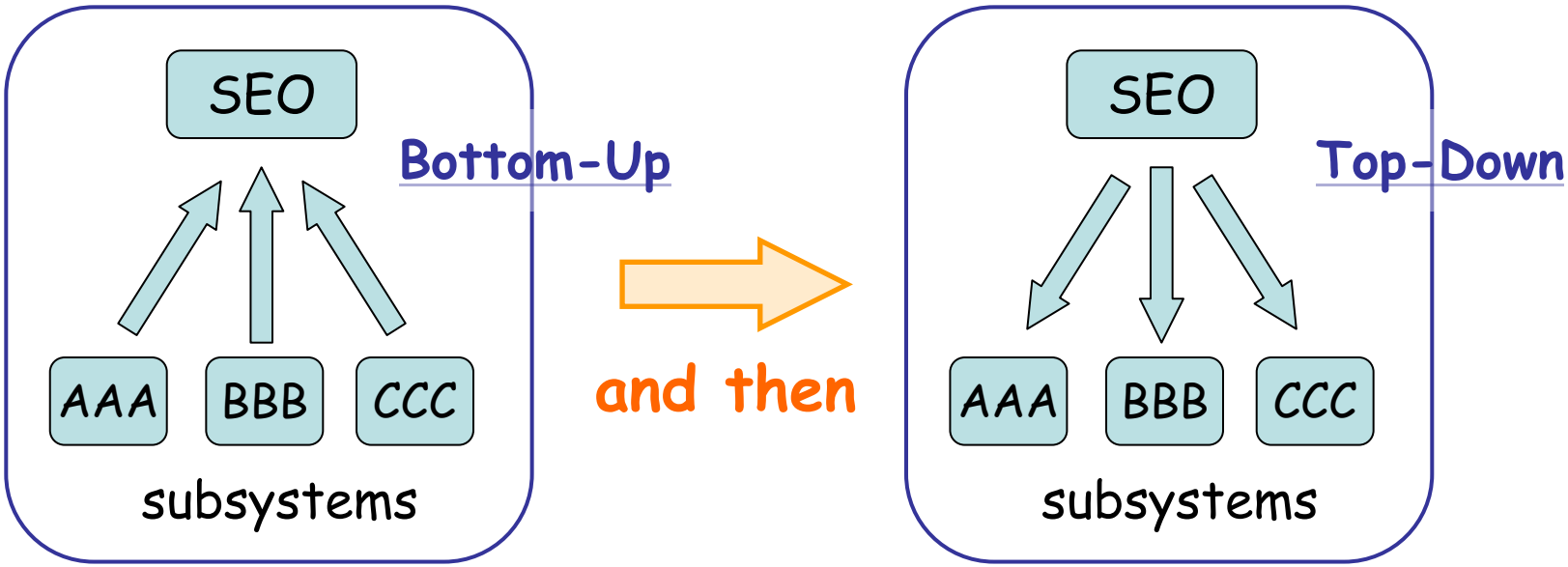
Problems of current ICD

- Too many pages for prompt update
- No consistency check



New ICD

New ICD (Interface Control Document)



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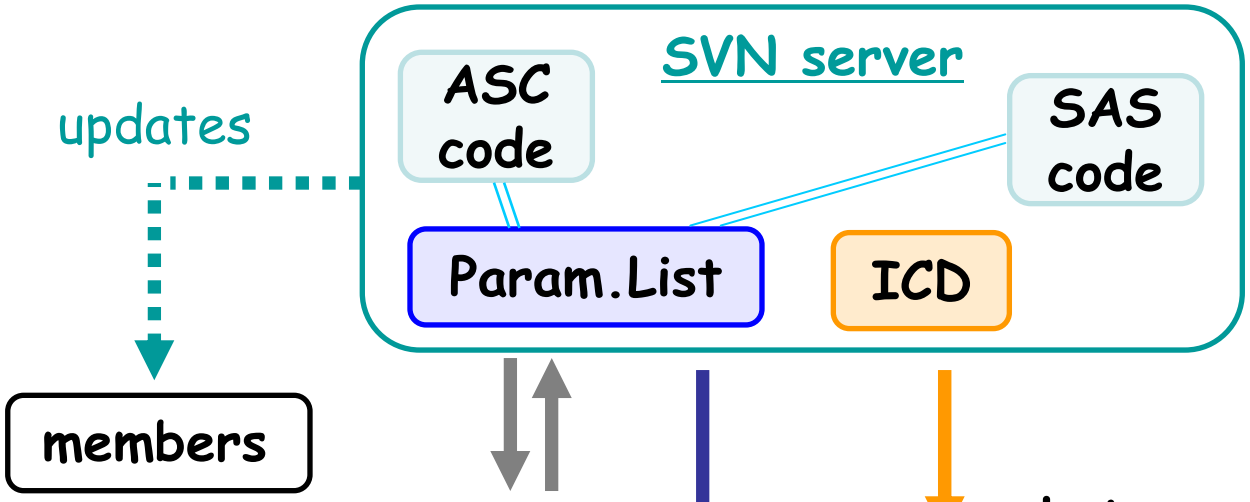
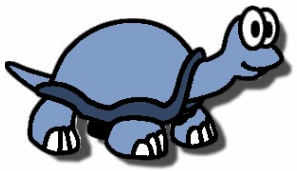
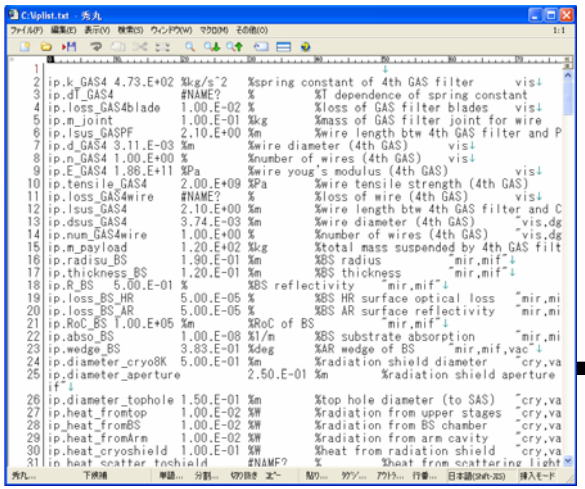
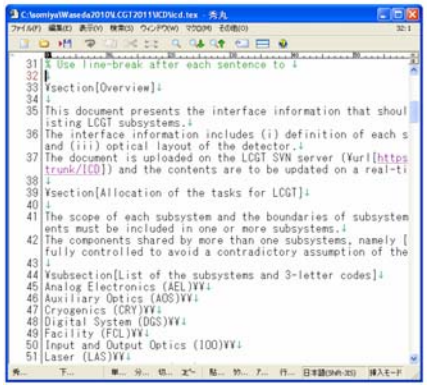
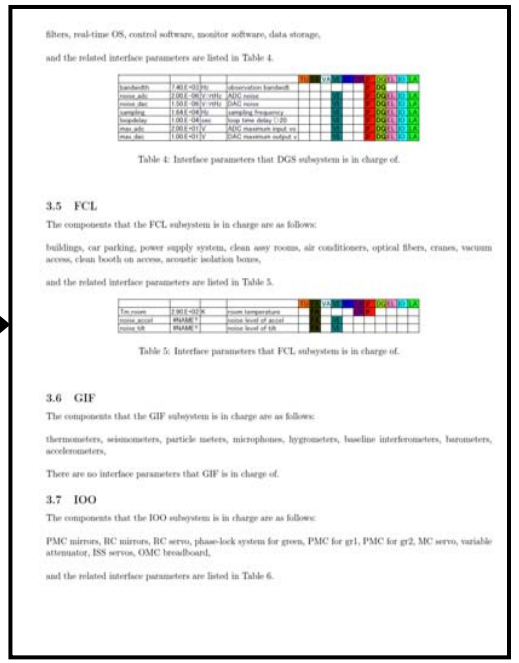




SVN = Apache Subversion







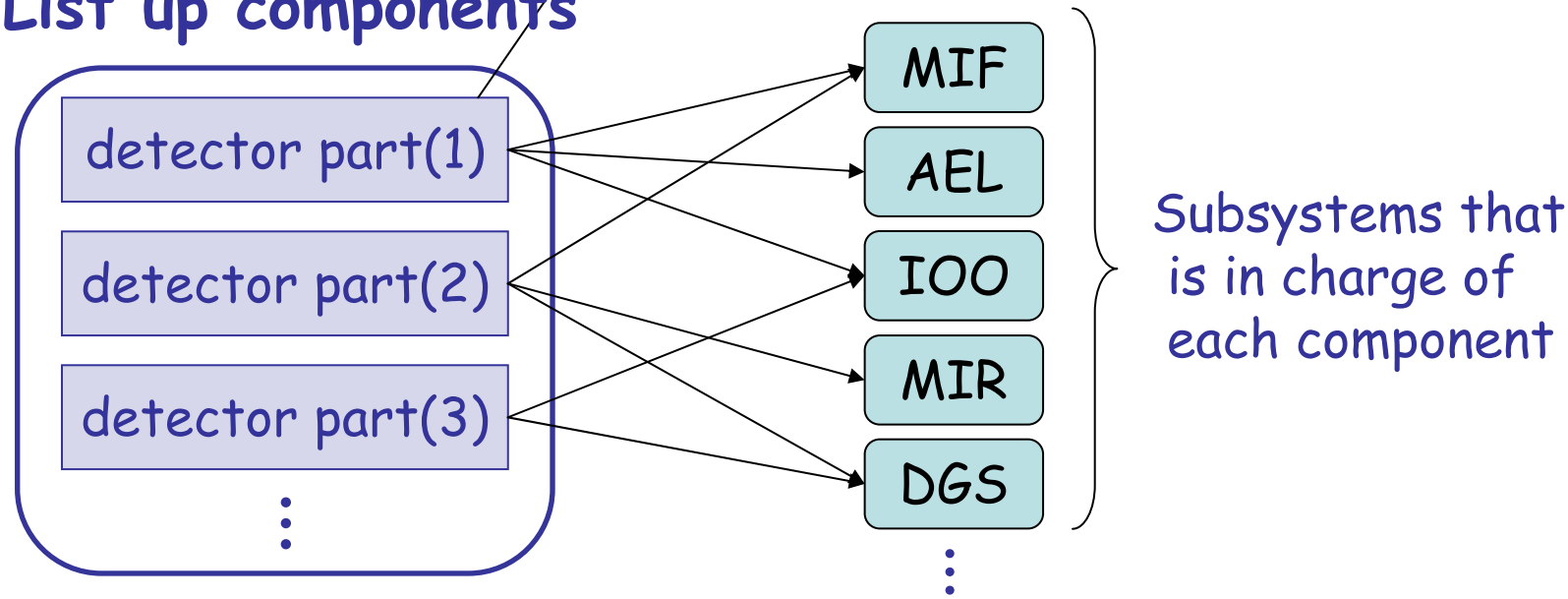
Allocation of tasks

Ex.)

2.6 Main interferometer and core optics

ITM (silica) [MIR],	ETM (silica) [MIR],	ITM (sapphire) [MIR],
ETM (sapphire) [MIR],	BS [MIR],	PRM [MIR],
PR2 [MIR],	PR3 [MIR],	SRM [MIR],
SR2 [MIR],	SR3 [MIR],	ASp pickoff mirror [MIR],
steering mirrors [AOS],	pico-motors for steering mirrors [AOS],	beam dampers [AOS],
PD for REFL (high/low) [AEL],	PD for POP (high/low) [AEL],	PD for ASp (high/low) [AEL],
PD for POX [AEL],	PD for POY [AEL],	PD for X-trans [AEL],
PD for Y-trans [AEL],	QPDs for REFL (high/low) [AEL],	QPDs for POP (high/low) [AEL],
QPDs for AS (high/low) [AEL],	lenses for REFL WFS [MIF],	lenses for POP WFS [MIF],
lenses for AS WFS [MIF],	oplev for core optics [AOS],	holes on baffles [AOS],
CCDs for trans (X,Y) [MIF],	CCDs for REFL [MIF],	attenuation mirror for REFL [MIF],
CARM demodulator [AEL],	DARM demodulator (RF) [AEL],	PRCL demodulator [AEL],
MICH demodulator [AEL],	SRCL demodulator [AEL],	CARM servo [MIF],
digital system for MIF [DGS],	in-vacuum mirror cleaning tools [AOS],	oscilloscopes [MIF],
network analyzer [MIF],	optical spectrum analyzer [MIF],	acoustic isolation boxes [FCL],
TCS (if necessary) [AOS],		

List up components

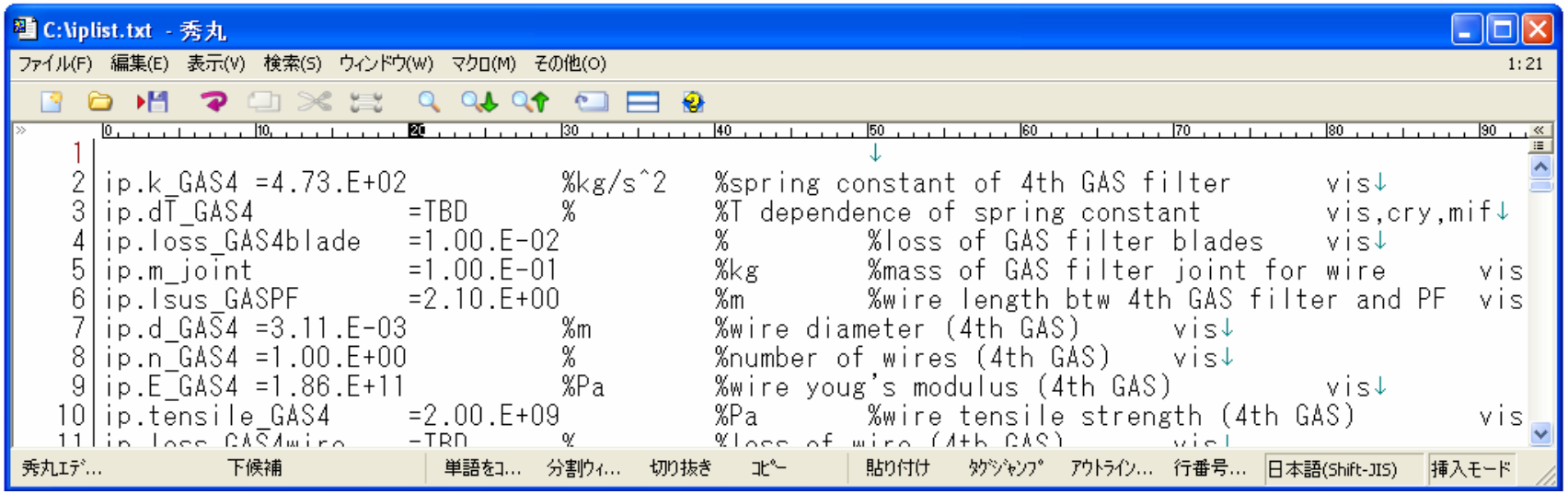


Allocation of tasks

- List-up process will be done by SEO
  (top-down; in order to avoid missing objects)
- Allocation of each component will be done
  by SEO + subsystems (mostly bottom-up)
- A subsystem that determines the requirement
  of each component
  (not the one that purchases the component)
- For example…

  AOS is in charge of the oplev, while AEL buys the QPDs and IOO buys the steering mirrors.

Parameter list



Name (tab) =value (tab) %unit (tab) %description (tab) *AAA,BBB,CCC*

This part can be directly used with a Matlab code.

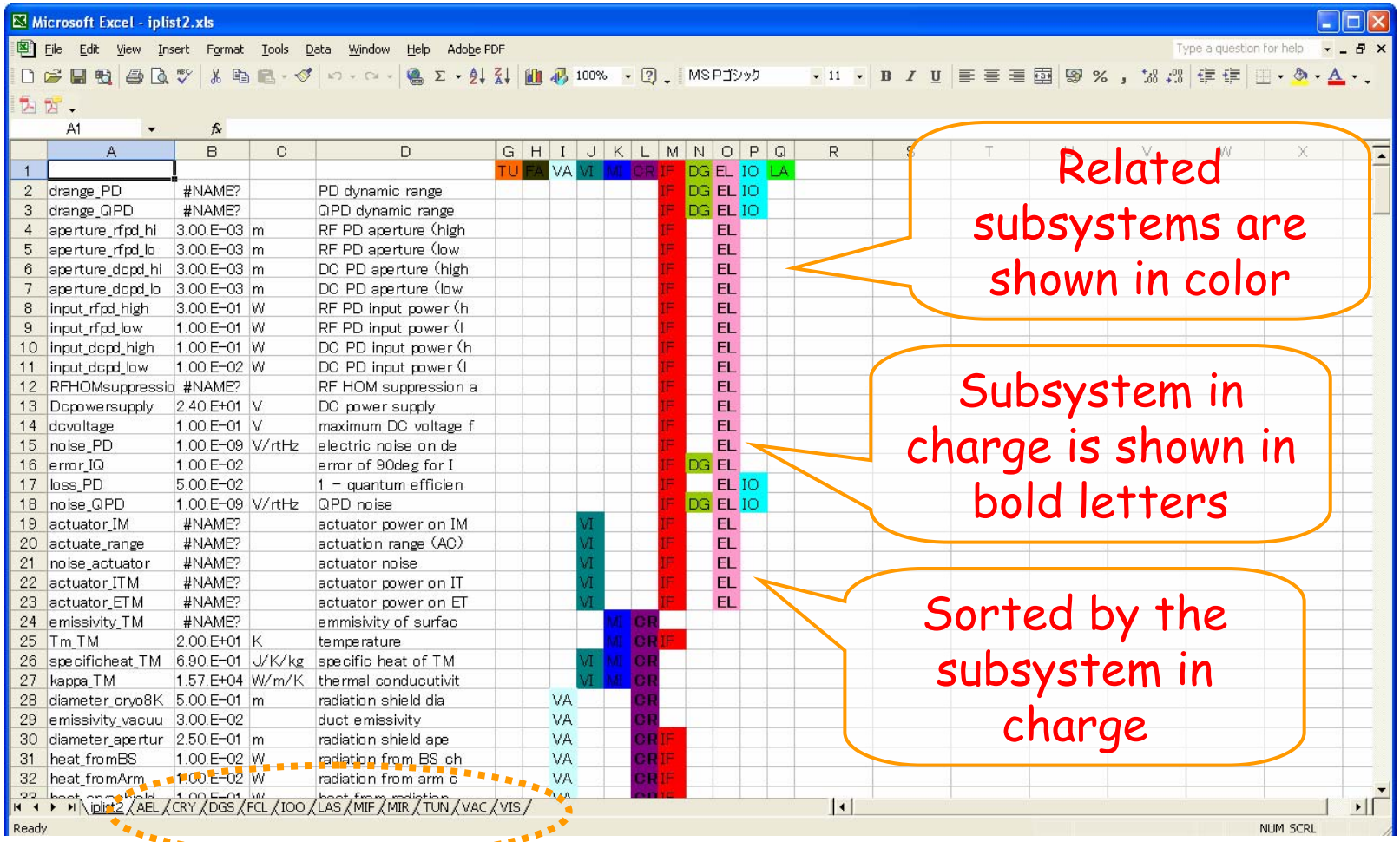
AAA: subsystem in charge
BBB+: related subsystems

- **The interface parameters have been discussed with all the subsystem chiefs (parameter meetings)**
- **Once a parameter is changed, the list will be updated and the chief will be informed via SVN**

Parameter list

VBA transforms the list to the table below.

(Visual Basic Application)



Discussions in the parameter meetings

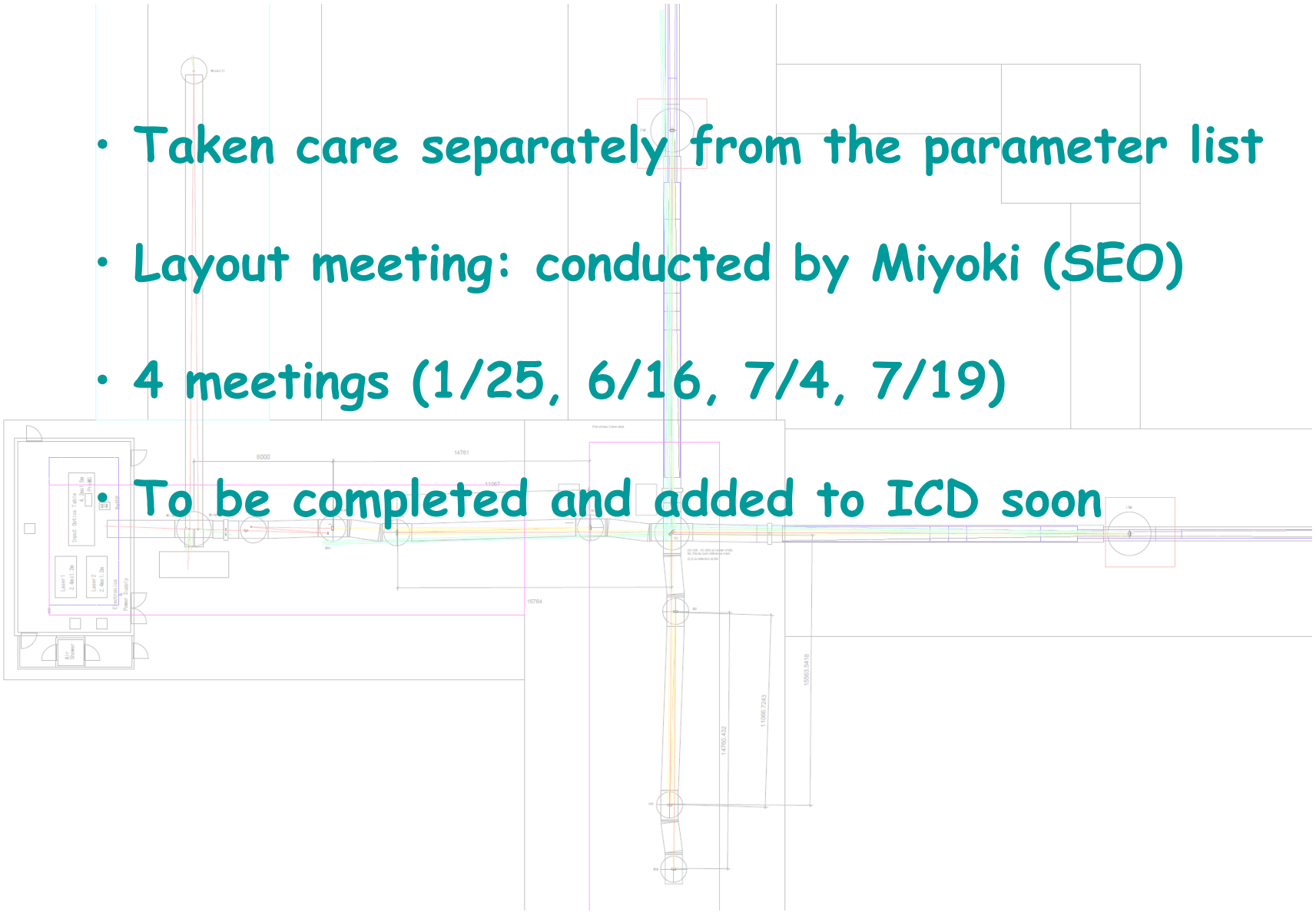
- Mirror spec (wedge, RoC error, absorption)
- Coating mechanical loss
- MIF control; UGF and feedforward gain
- Intermediate mass temperature
- Shield aperture and point scattering
- OMC design

... etc.

Some of them are not specified yet.

Optical layout

- Taken care separately from the parameter list
- Layout meeting: conducted by Miyoki (SEO)
- 4 meetings (1/25, 6/16, 7/4, 7/19)
- To be completed and added to ICD soon



How to proceed hereafter

- Cross-check the component list (SEO)
- Subsystem study meetings (led by Ando)
- Discuss the allocation with subsystems
- Complete the parameter list
- Add the optical layout
- Complete the ICD
- Add the link to Matlab codes