

ILC-EDR Kick-off Meeting
HLRF
Management Overview

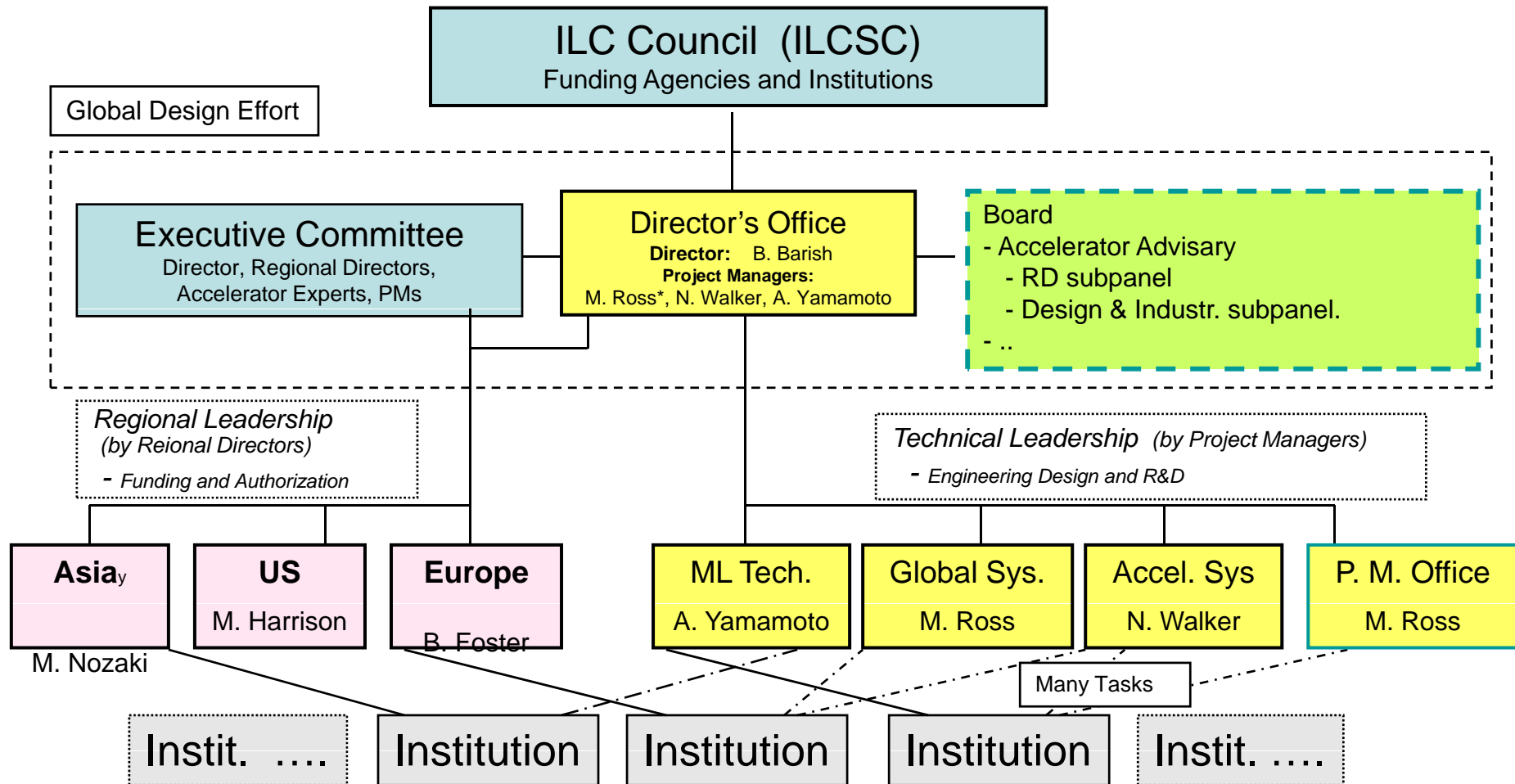
Oct. 1, 2007

Akira Yamamoto

ILC-EDR Kick-off Meeting, HLRF
To be held at SLAC, Oct., 1, 2007

ILC Project Management

as a proposal for the organization toward EDR



ILC Project Management and Sharing Responsibilities

- **Project Managers**

responsible for

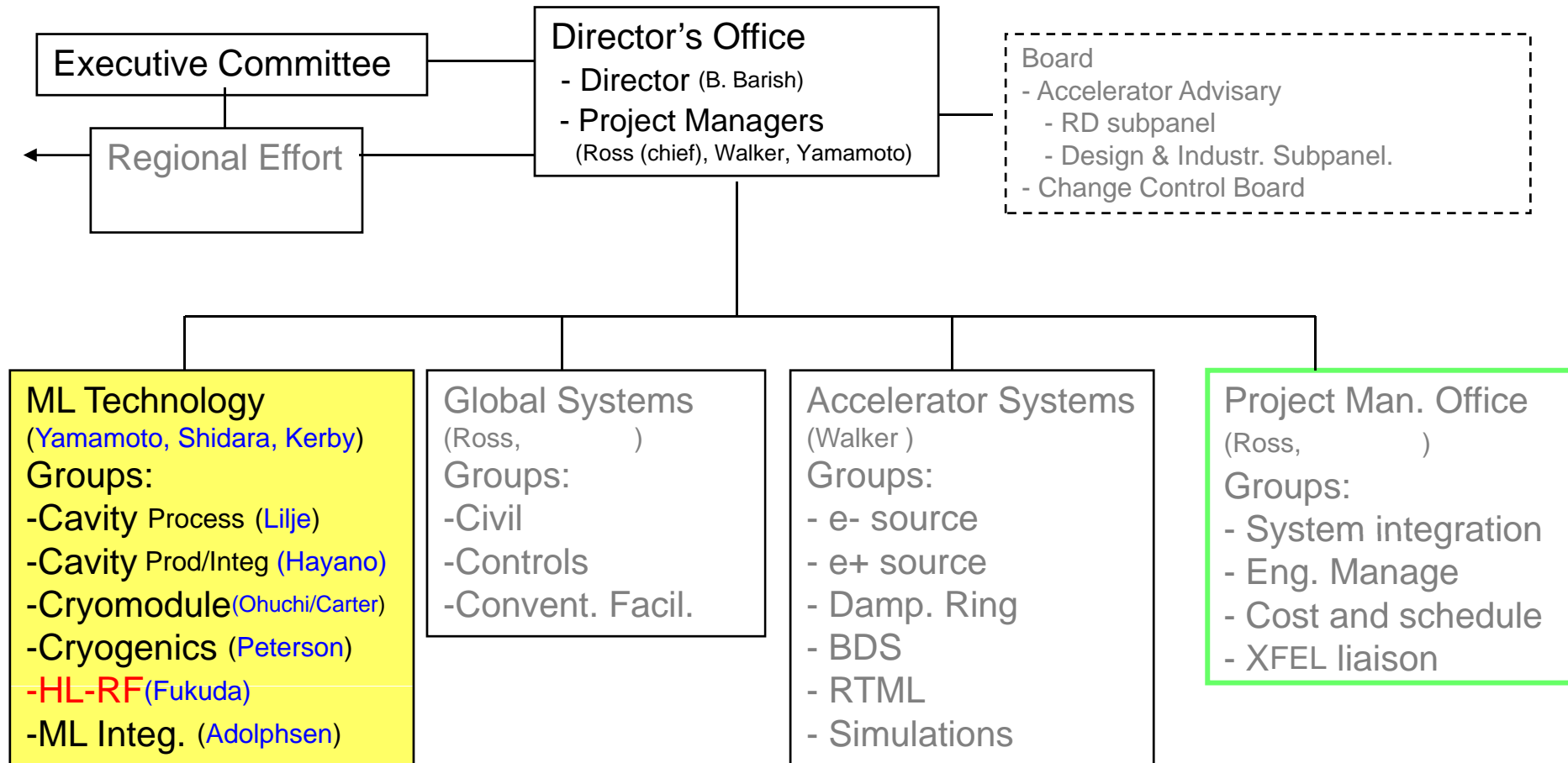
- Leading the world-wide technical development effort
 - efficiently and effectively
- Setting technical direction and executing the project toward realization of the ILC
 - **Day-to-day project execution** and communication

- **Regional Directors & Institutional Leaders**

responsible for

- Promoting, funding and authorizing the cooperation programs.
 - **Formally responsible for institutional activities**, funding and overseeing the technical progress,

Project Management Structure (baseline)



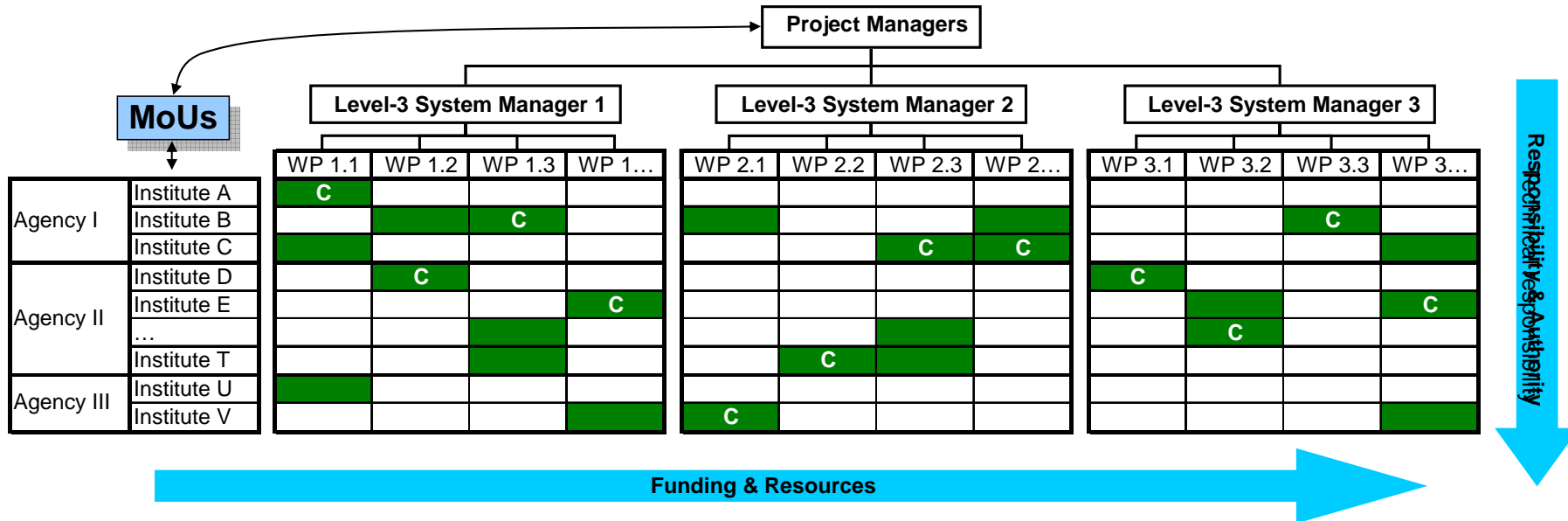
Project Management Structure

Area: Main Linac Technology (to be completed)

Regional/Intsitutional Effort:			Technical Effort (ML (SCRF) Technology):					
<ul style="list-style-type: none"> - Director-US: Mike Harrison - Director-EU: B. Foster - Director-AS: M. Nozaki 			<ul style="list-style-type: none"> - Project Manager: A. Yamamoto - Associate Managers: T. Shidara, J. Kerby, <p style="text-align: right;">* Group leader, ** Co-leader</p>					
Regions	Institute	Institute Leaders	Cavity (Process) L. Lilje*	Cavity (Prod./Int.) H. Hayano*	Cryomodule N. Ohuchi* -H. Carter**	Cryogenics T. Peterson	HLRF S. Fukuda*	ML Integr. C. Adolphsen
US	Cornell Fermilab SLAC ANL J-lab	H.Padamsee R. Kephart T.Raubenhaimer	H.Padamsee	C.Adolphsen	H.Carter	T.Peterson	O. Nezhevenko R. Larsen/ C.A.	C. Adolphsen
EU	DESY CERN Saclay Orsay INFN Spain	R.Brinkman J. Delahaye O. Napoly A.Variola C. Pagani	L.Lilje	C. Pagani	Parma Franco Pal.	Tavian	S. Choroba	
AS	KEK Korea Inst. IHEP India Inst.	K.Yokoya	Noguchi, Saito	Hayano	Tsuchiya/ Ohuchi	Hosoyama/ Nakai	Fukuda	

Technical Responsibilities :

(from RDR Chapter 7)



- Green indicates a commitment:
 - institute will deliver
- MoUs facilitate connection:
 - Project Management (authority and responsibility) and institutions (funding and resources).
- The 'C' → coordinating role in a WP
 - Each WP has one coordinator.

High Level RF Groups

Organization for EDR-tasks

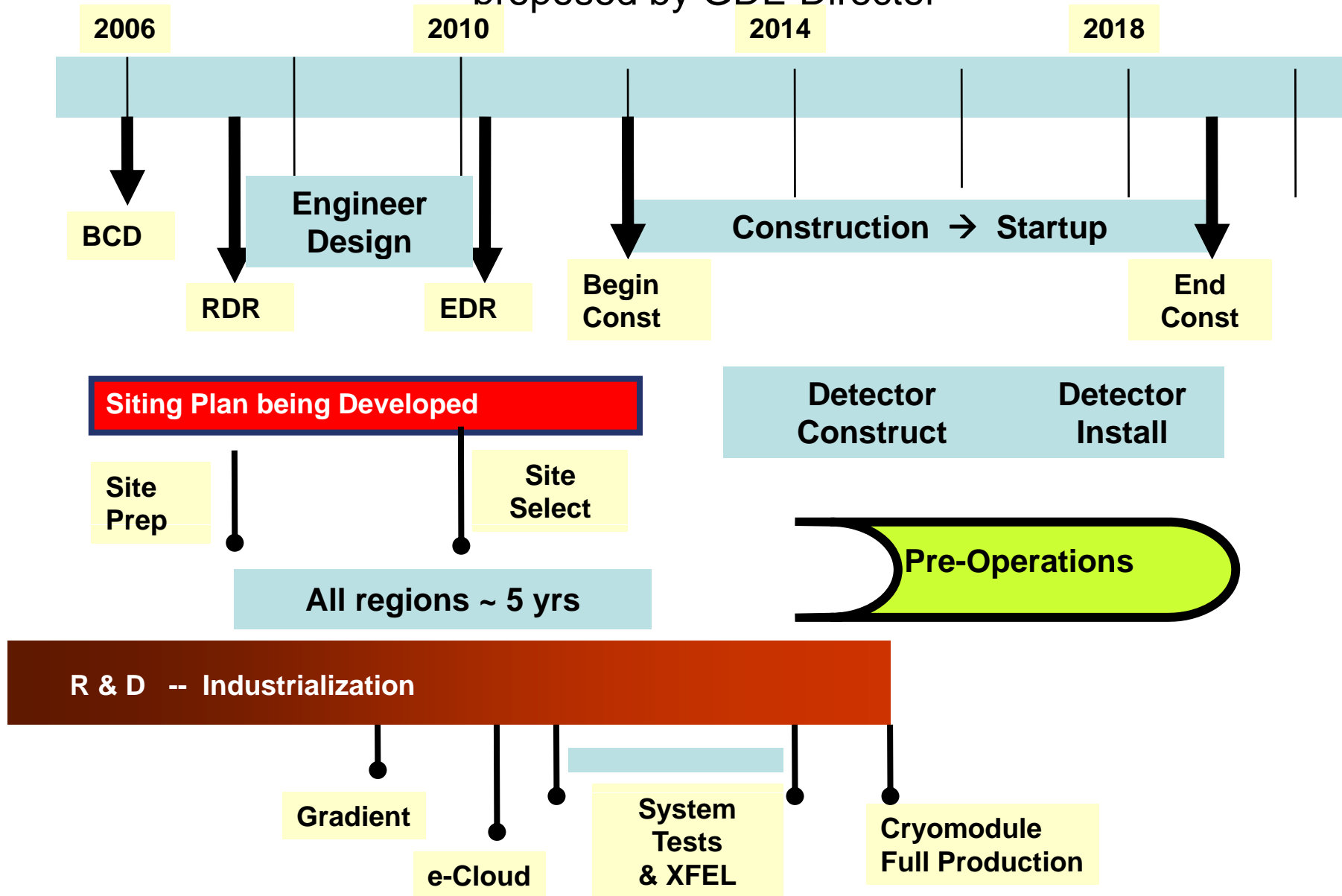
		Modulator	Klystron	PDS	Control	''
US	Cornell Fermilab SLAC ANL J-lab	C. Jensen R. Larsen C. Burkhart	C. Adolphsen E. Jongewaard	C. Nantista	O. Nezhevenko B. Chase R. Cassel	
EU	DESY CEA-Saclay -Olsay INFN Spain CERN	V. Vogel	S. Choroba	V. Katalev		
AS	KEK Korea Inst. IHEP India Inst.	M. Akemoto T. Shidara	S. Fukuda M. Yoshida H.S. Kim	S. Fukuda/S. Kazakov		

Technical efforts to EDR

- Complete the critical R&D
 - as identified by the (R & D Board and) , Prototype, DFM, Preproduction, and ..
- Establish the base-line design,
 - Verify the initial EDR base-line design parameters,
 - Technologies to be chosen and to be demonstrated through pre-mass-production
 - Learn industrialization
 - Obtain the maximum benefit from the realized project
- Proceed alternate design and development
 - As technology back-up to achieve the ILC design goal,
 - with “Plug-compatible” concept, and
 - for maximizing performance/cost (value-engineering)

Technically Driven Timeline

proposed by GDE Director



2007/08 EDR Milestones

- | | |
|-----------|---|
| 07-8: | Korea ILCSC: <ul style="list-style-type: none">» New EDR organization start, |
| 07-9, 10: | EDR Kick Off Meetings |
| 07-10: | Fermilab ILC-GDE meeting <ul style="list-style-type: none">» Establish initial Base-line for ED phase» EDR Work Packages to be discussed |
| 08-1,2 | EDR-R&D Meetings |
| 08-3 | Tohoku (Japan) GDE Meeting |

HLRF– EDR Tasks and Discussions in KOM

- Base-line Design and interface parameters to be verified,
 - Functional design parameters and interface to be unified,
 - What have to be achieved and what have to be maintained?,
 - What can be plug-compatibly improved?,
 - How the tasks can be shared among sub-groups?,
- Critical Goal:
 - Technology to achieve $E\text{-op} = 31.5 \text{ MV/m}$, reliably
 - Otherwise, need to reduce the gradient or adjust the machine design
 - Need a vital program of both R&D and demonstrations
- Important Work at HLRF tasks
 - System optimization for the best “value engineering”
 - R&D for Marx Generator, ACD-PDS, SBK,

Summary for Charges

- **Basic design parameters** and Interfaces to be verified,
- EDR design work and R&D (goal)
 - Basic R&D to be completed
 - Learning mass production
- Discussions towards
 - “unified design/specification” and/or “plug-compatible design/specification
- **Task sharing** and schedule
 - Work-package definition and assignment
 - Strategy for open discussions and information,

Appendix

For discussions

ML (SCRF) Technology Design Parameters

As of Sept. 27, 2007

To be integrated

Coupler

Power Req.	Operation	400 kW	For 1,300 us				
	Processing	100 kW	Up to 400 us				
		600 kW	> 400 us				
Processing time	Warm	--- hours,					
	Cold	--- hours					
Heat loads	2K						
	4 K						
	40/80 K						
Cavity vac. Integ.		2	# of windows				
			biss				
							R
RF properties	Qext	Yes/No	tunable				
	Tuning range	1- 10 E6	If tunable				
Physical prop.	Position	See cav. lentgh					
	Flange		compatible				
Instrumentation			Vac. level				
			Spark detection				
			Electron current				
			temperature				

Cryomodule

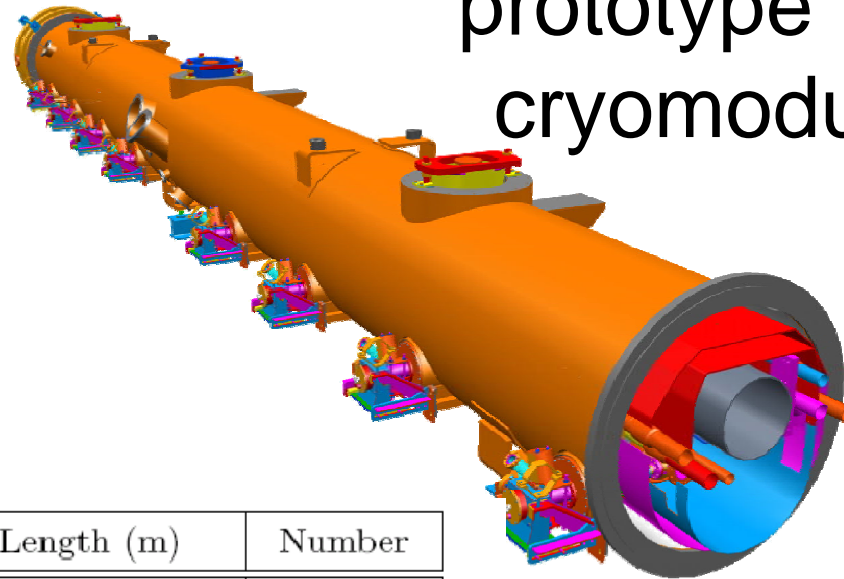
			8 cav+ 1 quad.	9 cav.	9 cav. + 2 q	6 cav. 6 q
Number			627	1188	6	4	
Heat load	2K						
	5K						
	50 - 80 K						
Phys. Prop.							
Vacuum Ves.	Lengh Out. Diameter Inner diameter						
	Connection flange to input coupler	Dimension Position Tolerance					
	Connection flanges to Next cryomodule	Dimension Tolerance					
He jacket	Length Outdiameter Inner diameter Support position						
Cooling pipes	Outer diameter Inner diameter Location Maximum pressure						
Thermal rad. S.	Number of shield	One or two					
Support post	Number of post						R
Quardupole mag.	Field gradien Lengt Number of correctors, Alignment, Tolerance, Vibration,						A

Cavities & Cryomodules

Producing Cavities



4th generation
prototype ILC
cryomodule



Subdivision	Length (m)	Number
Cavities (9 cells + ends)	1.326	14,560
Cryomodule (9 cavities or 8 cavities + quad)	12.652	1,680
RF unit (3 cryomodules)	37.956	560
Cryo-string of 4 RF units (3 RF units)	154.3 (116.4)	71 (6)
Cryogenic unit with 10 to 16 strings	1,546 to 2,472	10
Electron (positron) linac	10,917 (10,770)	1 (1)