



R&D Programme (Tools)

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GDE

DESY



A Start – Ideal List

- input from technical leaders
 - **topics**
 - **lead institutes**
 - **status**
- R&D Board introduces priorities
 - **very high, high, moderate, low**
- list serves as a starting point for further discussion on Global R&D concerning
 - **coordination**
 - **funding**
 - **tracking**



1st MAC Input

- GDE MAC emphasizes
 - **the need for a global R&D plan**
 - with milestones
 - **coordinated use of resources in all regions**
 - US R&D programs centrally funded
 - other regions have a larger variety of funding mechanisms, which need to be made more transparent to guarantee overall success
 - lack of overall funding
 - **prioritized plan with means of tracking results**
 - MAC emphasizes SC RF to achieve the ambitious gradient goal of 35 MV/m
 - other areas have to be addressed as well



Since then...

- GDE R&D Board advised G Dugan in the US FY07 Fiscal program
 - **initial input from Ideal List where adequate**
 - **complemented by comments on**
 - interaction between R&D groups
 - parallel developments in different institutes
 - discussion on practical constraints
- GDE R&D Board advised UK LC-ABD
 - **cross correlation with Ideal list**
 - **comments**
 - role of topical vs focussed program
 - priorities
 - **complementarity**



...Launch of Task Forces...

- urgent areas
 - **Klystrons**
 - **S0/S1 on SC cavities/modules**
 - **S2 on SC system tests**
 - addressing important areas
 - **S3 Damping Rings**
 - **S4 Beam Delivery System**
 - **S5 Positron Source**
 - while maintaining an overview on
 - **controls**
 - **diagnostics, etc.**
- focus of activities



Role of Task Forces

- identify the burning R&D needs for the ILC in the particular area
- negotiate priorities for a solution compatible with the overall time planning of the ILC amongst all regions
- enable an agreement between all institutes involved to follow the prioritized approach in the R&D



Maintaining R&D Overview

- the original Ideal List contains ~500 R&D tasks
 - **provided valuable help**
 - **shortfalls were identified**
 - **static**
 - **cumbersome to correlate to other lists, e.g. funding plans**
 - **assignments of priorities change as design evolves**
- practicality of the tool
 - **attempts were started with CERN for a more professional implementation**
 - **requirements evolved faster than could be specified**



Snapshot of the Original List

	A	B	C	D	E	F	G
	Key	depending on	Short Title	Priorit	Institut	Institut	Institut
2	Accelerator		Accelerator				
3	CR	Accelerator	Cryogenic	moderate			
4	SC	Accelerator	SC Cavity				
60	SC_Preparation_Outside_Etch	SC_Preparation	Necessity of out side etch	moderate	DESY		
61	SC_Preparation_Hot_Water	SC_Preparation	Hot water rinse after chemical treatment	high			
	SC_Preparation_Dry_Ice	SC_Preparation	Dry-ice cleaning	moderate	DESY		
62							
63	SC_Preparation_Air_Bake	SC_Preparation	Air instead of vacuum bake	high	Saclay	DESY	
64	SC_Test	SC	SC Test				
	SC_Test_Acceptance_Reproducibility	SC_Test	Gradient reproducibility	very high	DESY	KEK	TJNAF
65							
	SC_Test_Acceptance_Spread	SC_Test	Gradient performance spread	very high	DESY	KEK	TJNAF
66							
67	SC_Test_Cryomodule	SC_Test	Cavity Performance in Cryomodules				
	SC_Test_Cryomodule_35	SC_Test_Cryomodule	35 MV/m operation in Modules	high	DESY	KEK	FNAL
68							
69	SC_Test_Cryomodule_35_beam	SC_Test_Cryomodule	35 MV/m operation in Modules with ILC-like	high	DESY	FNAL	
70							
71	SC_String_Assy	SC	String Assembly				
	SC_String_Assy_QC	SC_String_Assy	QC for string assembly	very high	DESY	FNAL	KEK
72							
	SC_String_Assy_Workflow	SC_String_Assy	Optimize workflow for string assembly	high	DESY		
73							
74	SC_String_Assy_Parts_Procedures	SC_String_Assy	Simplify procedures and reduce parts count	high			
75	SC_String_Assy_Auto	SC_String_Assy	String assembly (semi-)automation	high			

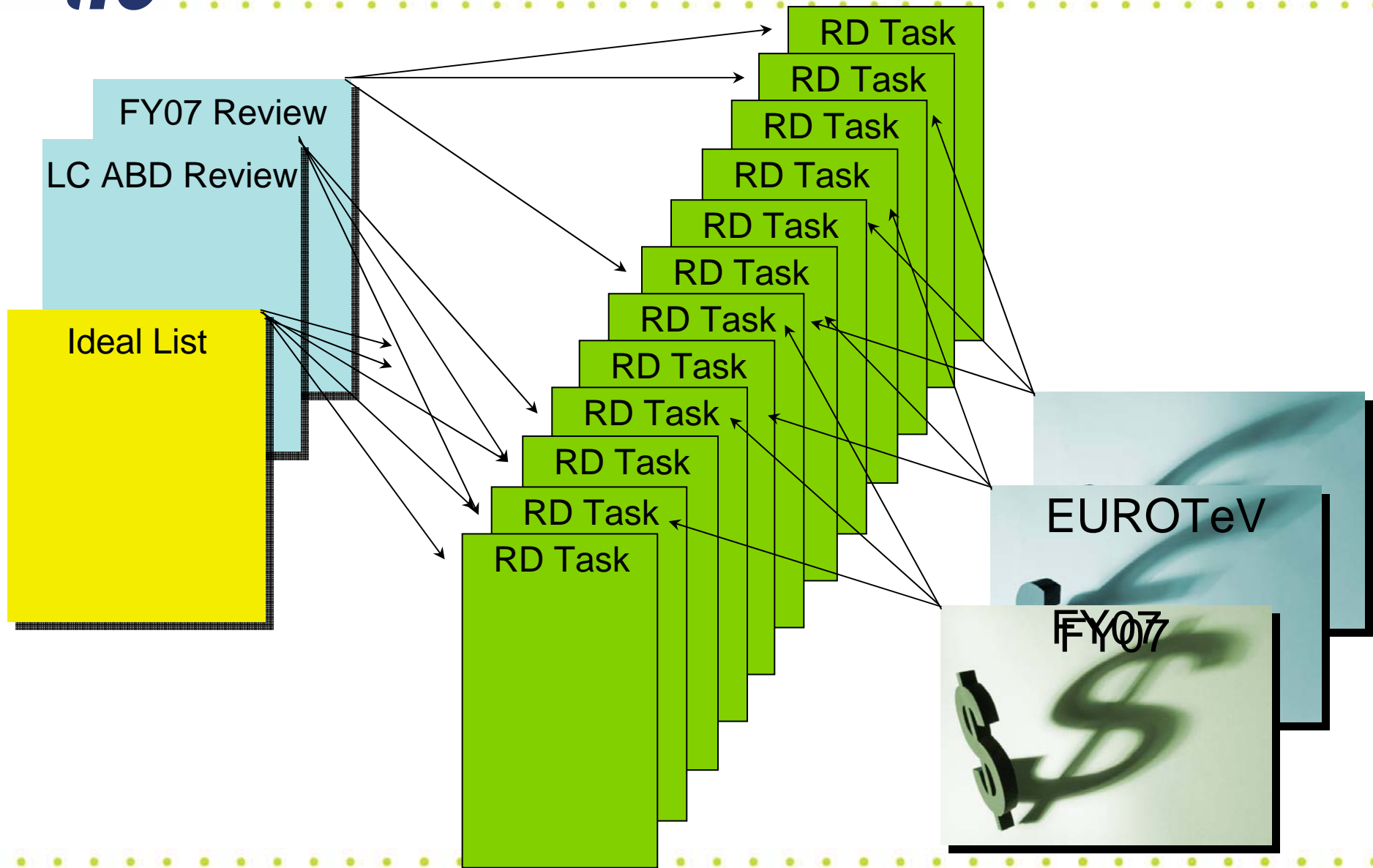


Use case: Proposal driven R&D

- in the absence of centralized global funding R&D board has
 - **to take stock of R&D proposals**
 - **to get informed about the status of (all related) R&D programs addressing the needs of the ILC**
 - **note: there is no "formal" mechanism to enforce such input. Nevertheless the R&D Board has been able to influence the process on numerous occasions**
 - **requires guidance from regional directors**
 - **to instigate new R&D**
- the tool has to provide the R&D board with various views onto the database
 - **US FY07, UK LC-ABD, EUROTeV, ...**



Funding View to R&D Tasks



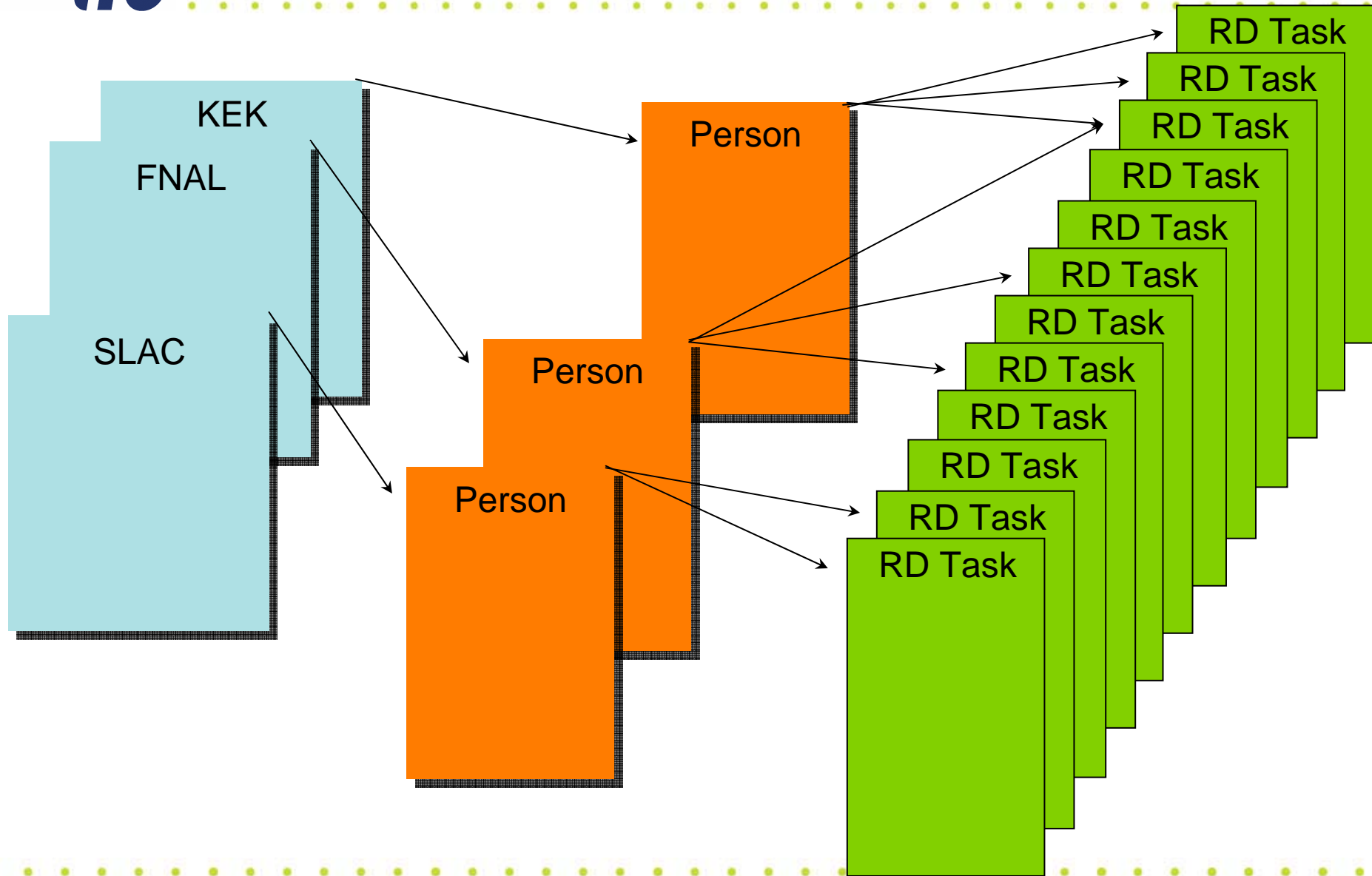


Use case: Resources

- in a globally dispersed ILC project
 - **maintain overview on**
 - **experts**
 - **existing resources**
 - **possible synergies with other projects**
- database has to provide views
 - **personnel**
 - **laboratory engagement**
 - **regional engagement**
 - ...



Resource View to R&D Tasks





R&D database

- has to support
 - **various reviews**
 - **various funding plans**
 - **time evolution of projects (completion, termination)**
 - **association of investigators/institutes to tasks**
- has to provide
 - **reports by**
 - **R&D area**
 - **institute, investigator, funding plan, ...**
- technically it has to be based on a relational DB model



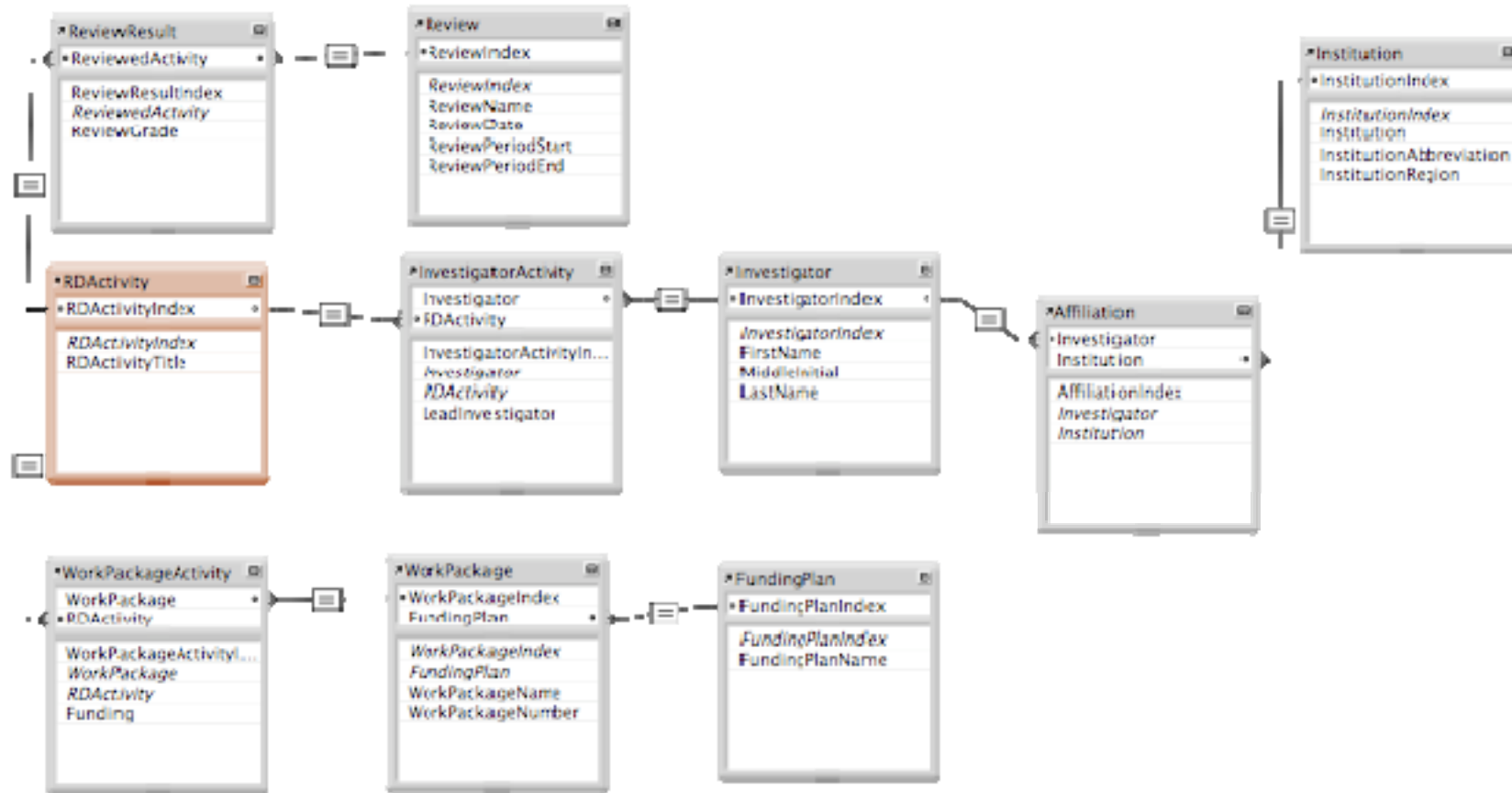
at the heart



the actual R&D activity



Some Relationships





Status

- early test version of relational database is existing
 - **needs optimization**
 - initially abstracted from Ideal list
 - updates
- will be used to generate reports
 - **initially internal to R&D board**
 - to consolidate
 - to optimize
 - **specific reports on demand**
 - reviews, funding plans
 - **subset of the information will be made publicly available**
 - initially static
 - possibly dynamic access



Conclusion on Tools

- initial tools to support the work of the R&D board have been readily available
- the use cases have considerably expanded
- demands can only be fulfilled with an implementation that takes the multitude of relations into account
 - **the specifications for a relational DB approach have been made**
 - **test implementations are existing**
 - **first release soon to come**