International Linear Collider and High Gradient Superconducting RF-Cavities

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FP7 proposal…

submitted
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ILC-HiGrade

Proposal full title: ***International Linear Collider and High Gradient Superconducting RF-Cavities***

Proposal acronym: ***ILC-HiGrade***

Type of funding scheme: ***Combination of Collaborative Project and Coordination and Support Actions***

Work programme topics addressed: ***INFRA-2007-2.2.1.33***

Participants

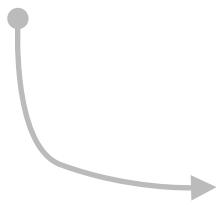
Participant no.	Participant organisation name	Country
1 (Coordinator)	Deutsches Elektronen-Synchrotron (DESY)	Germany
2	John Adams Institute for Accelerator Science (JAI)	UK
3	Commissariat á l'Enérgie Atomique (CEA)	France
4	European Organization for Nuclear Research (CERN)	Switzerland
5	CNRS - Laboratoire de l'accélerateur linéaire (LAL)	France
6	INFN – Laboratorio Acceleratori e Superconduttività Applicata (LASA)	Italy

Table 1b – List of other organisations involved in the Preparatory Phase

Organisation name	Country	Description of the Organisation / Specific role or contribution to the preparatory phase
ILC Global Design Effort	Global	The geographically dispersed organisation for the design of the International Linear Collider

Objectives

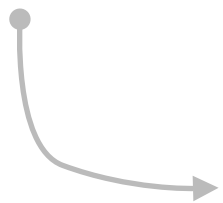
1) There is no doubt that the major technical challenge of the ILC in the preparatory phase is to ensure that the superconducting accelerating structures, currently produced in laboratory conditions in excess of the ILC specification, can be industrially produced with the required reproducibility and field gradient.



Test facility for high gradient cavity and proof of production process.

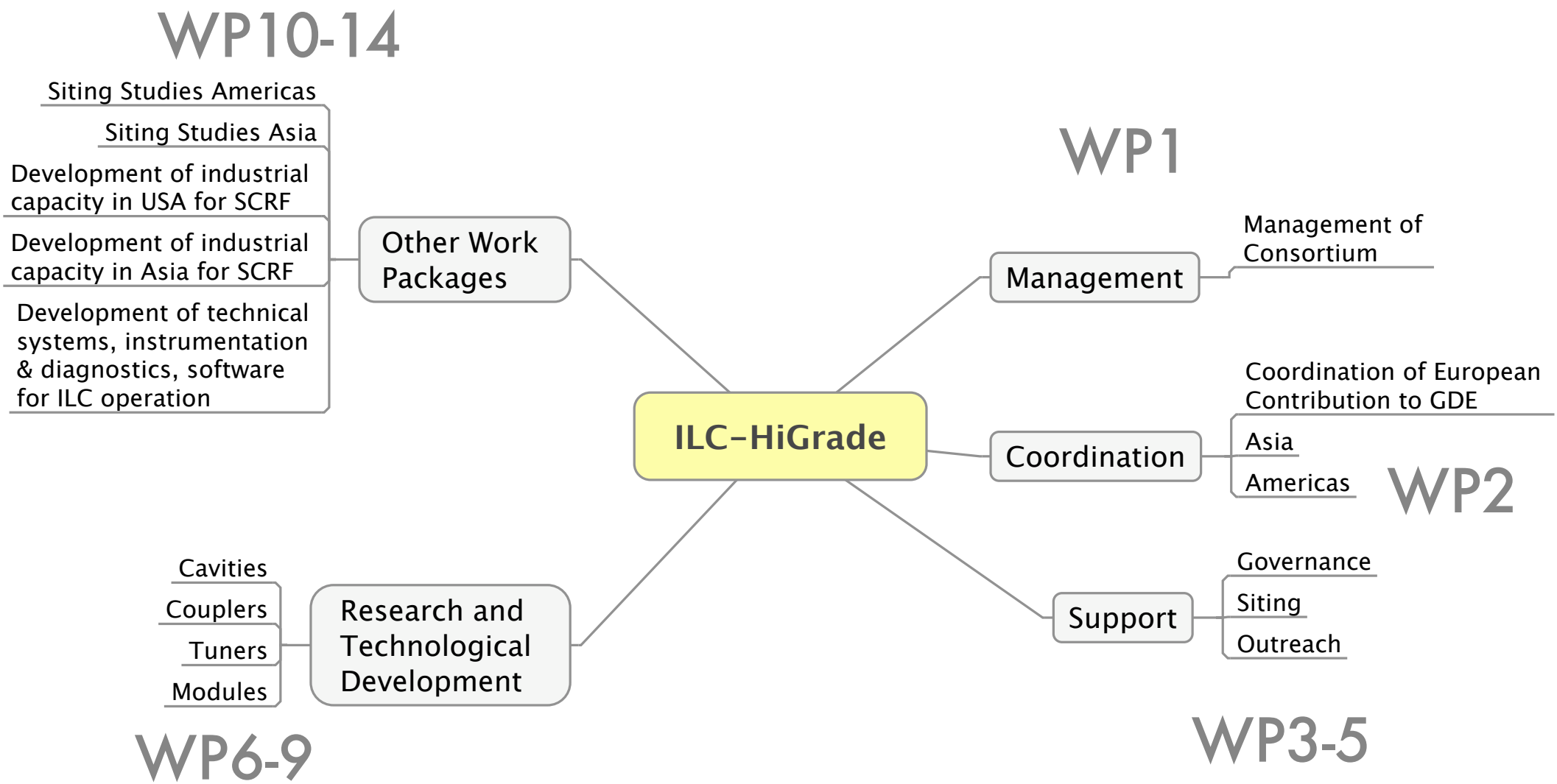
Objectives

2) The second main goal of the preparatory phase is the development of appropriate organisational infrastructure and governance structures to supervise the preparation of the ILC project for submission to stake-holding governments for approval. The ILC is a global project with a well developed international management structure…



Close collaboration with GDE

Overview Work Packages



Technical Framework

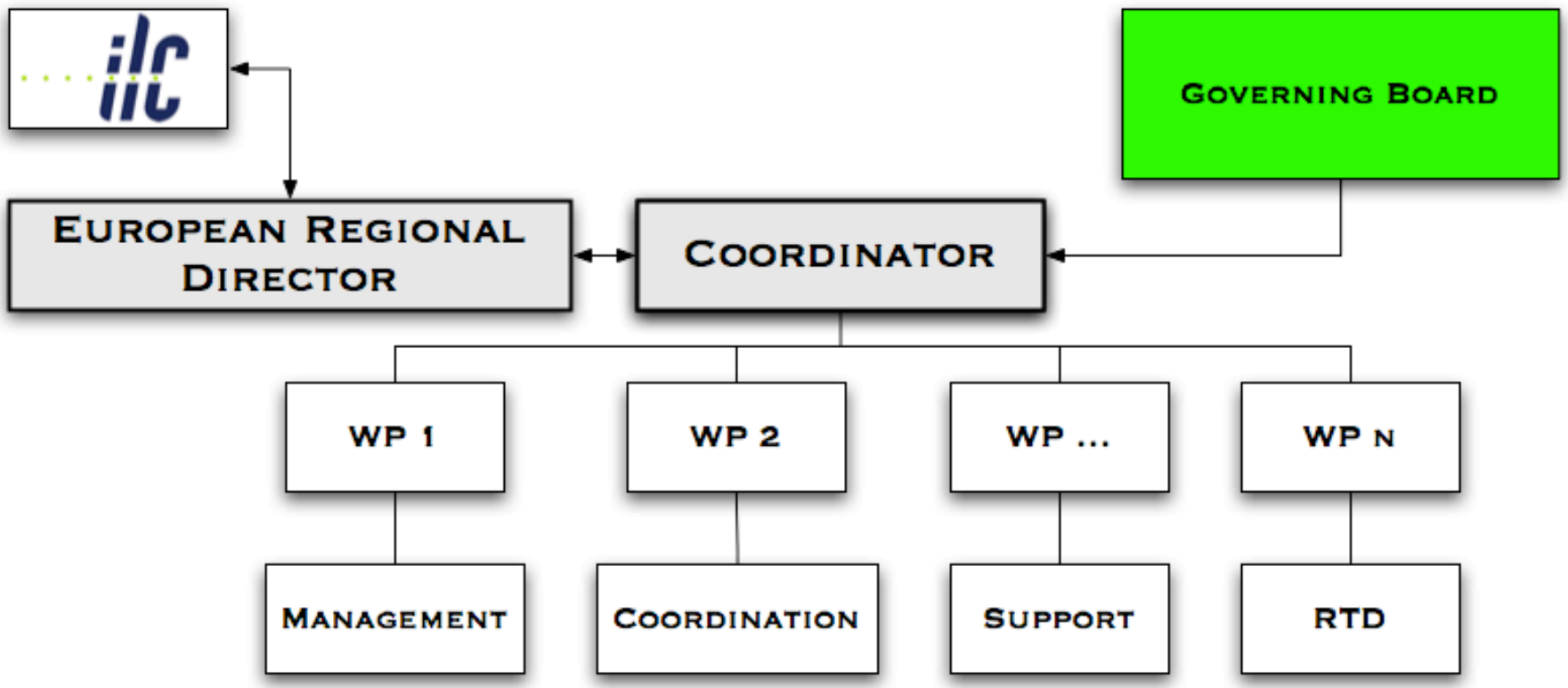
using existing infrastructure

- 30 fully dressed cavities, TESLA style
  - DESY orders cavities (incl. 150μm EP)
    - Treatment DESY and Saclay
  - LAL: couplers
  - INFN-LASA: tuners + He tank
- note: CERN to engage only later in ILC-SCRF after refurbishing infrastructure

Effect of 30 cavities

- By 2008 basic treatment will be established in world-wide activities (S0 task force)
- Improve yield @ highest gradient by
  - better process control
  - fine polishing (3-20 μm EP only)
  - rinsing and cleaning (sulphur etc.)
- Show that the current GDE S0 plan is viable – Europe is 1 of 3 such global efforts

Governance part



Proposal is fully endorsed by GDE

Staff effort

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	MGMT	COORD & SUPP			RTD					
Participant no. / short name	**WP1**	**WP2**	**WP3**	**WP4**	**WP5**	**WP6**	**WP7**	**WP8**	**WP9**	**Total person months**
DESY	**48**	24	72	**48**	24	**120**			**6**	342
JAI		**38**	**30**		**28**					96
CEA						20				20
CERN		24	24	6						54
LAL			18	6	24		**54**			102
LASA								**30**		30
Total	**48**	**86**	**144**	**60**	**76**	**140**	**54**	**30**	**6**	**644**

Funding

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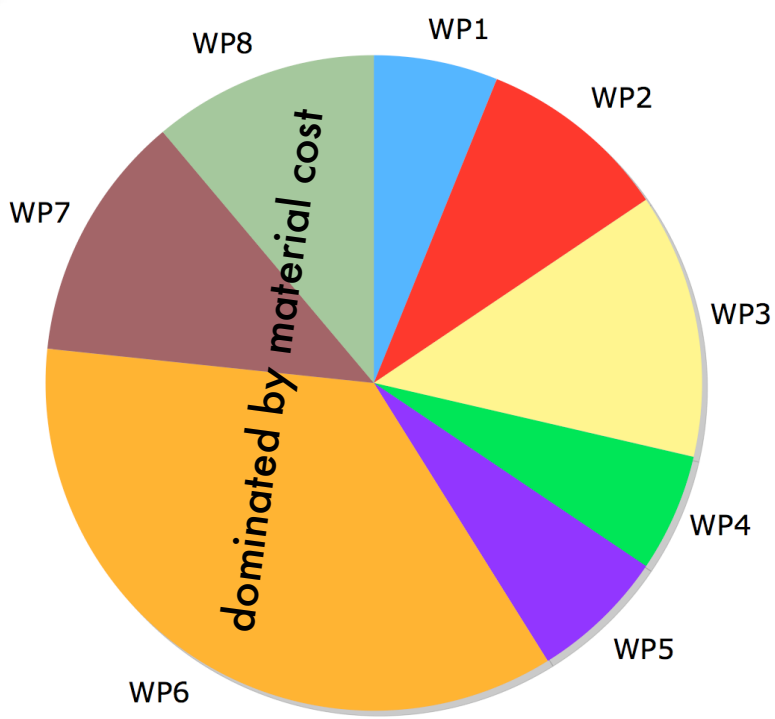
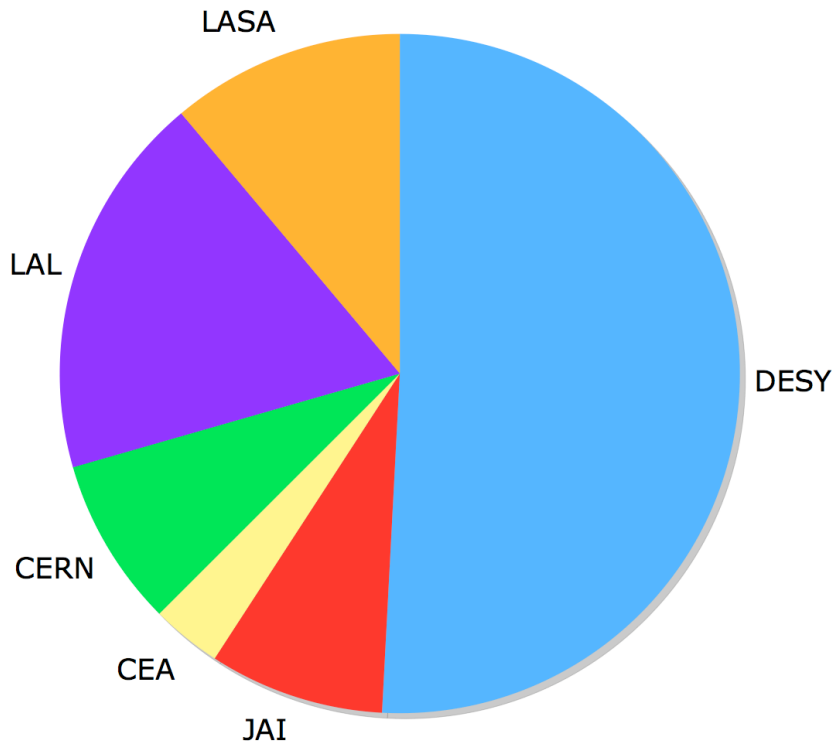
TotalCost 7,2 M€





Funding by Activity

DirectCost 5,2 M€

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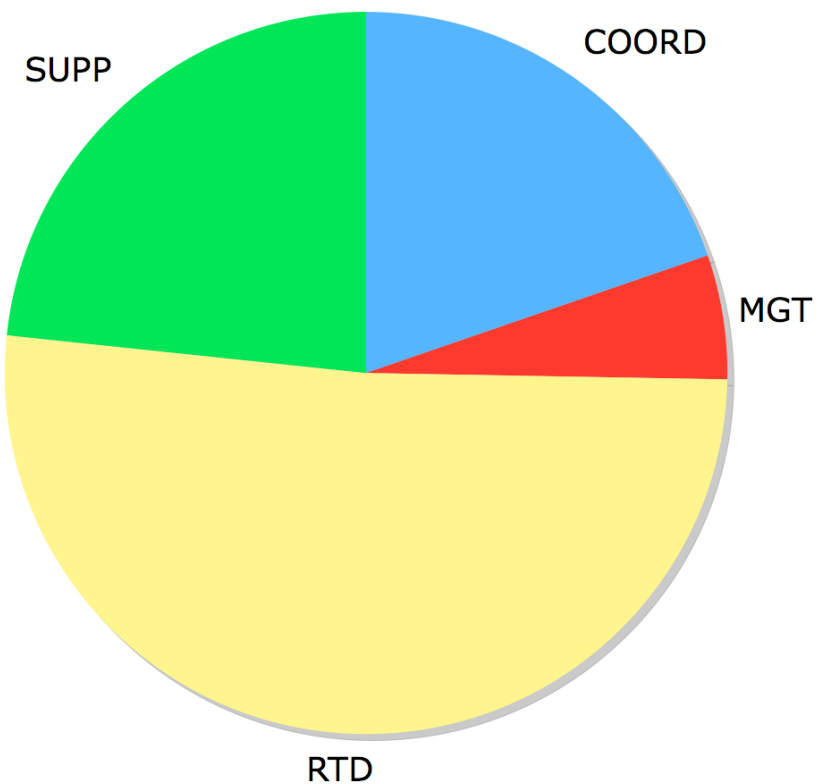
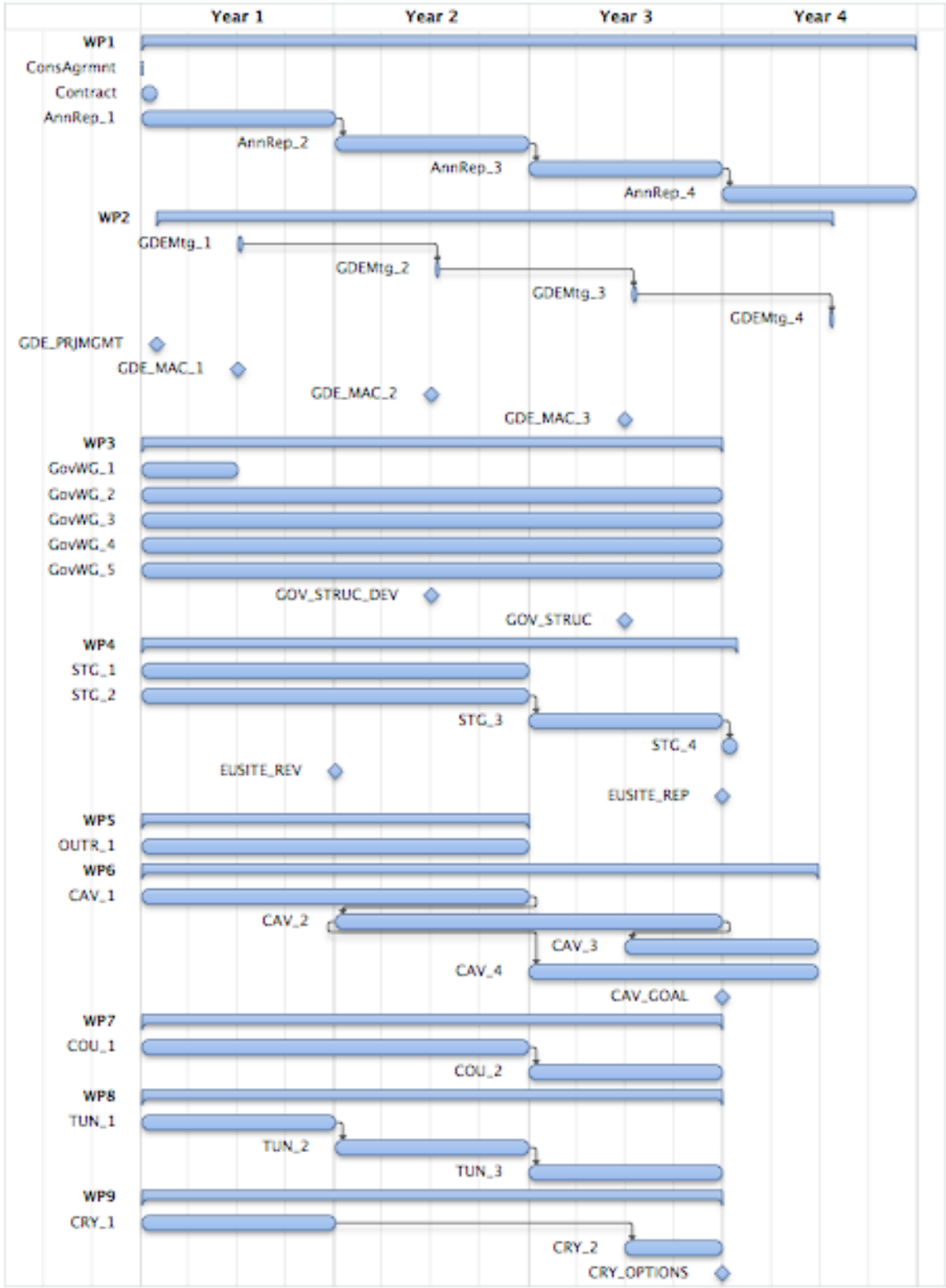


Milestones & Deliverables



Conclusion

- ILC-HiGrade
  - integral part of the global ILC activities to establish high gradients @ high yield
  - relevant to raise the ILC to the political levels in phase with the technological developments and the completion of the EDR