



Project Implementation Plan

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Outline

- What is a PIP?
- What is our PIP?:
 - **Project structure**
 - **Component acquisition**
 - **Financial models**
 - **Industrialization**
 - **Governance**
- Summary & outlook



What is a PIP?

- Example

CFN PEP

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What is a PIP?

- Example

CFN PEP

Appendix A – Project Data Sheet

Appendix B – Acquisition Strategy

Appendix C – Risk Management Plan

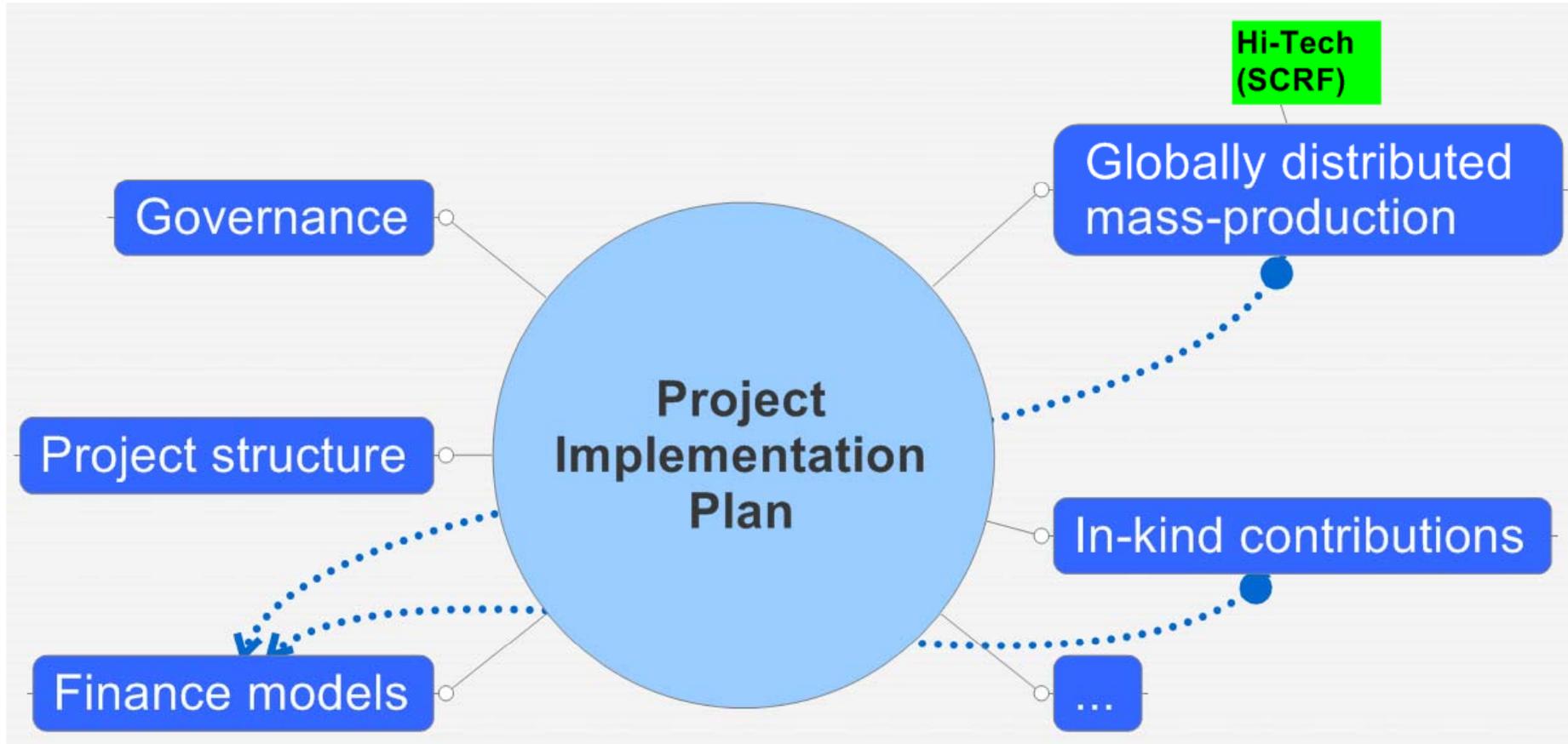
Appendix D – Project Quality Assurance Program (PQAP)

Appendix E – Baseline Change Proposal (BCP) Form

Appendix F – Work Breakdown Structure



Our PIP





Project Management & Structure

- Project management already outlined in earlier talks. Day-to-day steering of PIP overall will be in hands of PMs, with oversight from EC & Director.
- Structure of the project has obvious broad outlines, such as SCRF, BDS. Definition will be in terms of a detailed WBS – many elements of this already in place and basis for RDR and baseline costing.



Project Management & Structure

- There are many aspects of structure:
 - **Organization, reporting, QA, change control, documentation, safety/environment.....**
- Many of these – such as reporting, change control, documentation, substantially developed in RDR but require evolution with new tools such as EDMS. Others, such as safety/environment have to be developed further but really require definitive site.



Project Schedule

- Schedule can be developed to some extent in absence of specific site, but cost in duplication of work. There will always be considerable uncertainty until site known.



Component Acquisition

- World-wide plan is necessary. Substantial in-kind contribution to project design and construction is likely and to be encouraged.
 - **not limited to SCRF ‘high tech’ – many governments likely to wish to give their contribution through provision of equipment**
 - **strongly connected to finance plan and thereby also to governance**
 - **strongly connected to R&D, through the definition of interfaces and modularity**



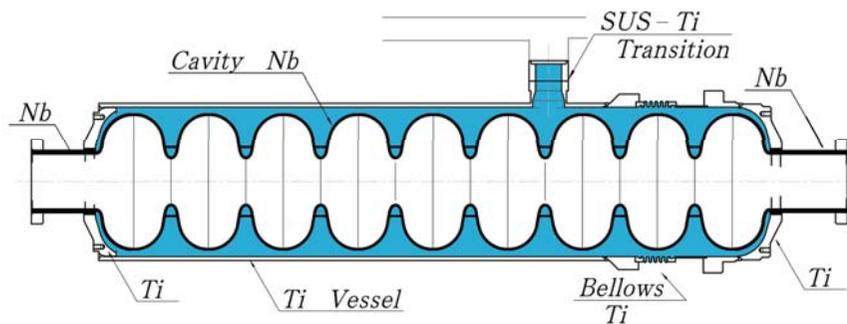
Component Acquisition

- There are examples of substantial in-kind contributions to accelerators – the “HERA model”, and the construction of LHC. However ILC in-kind contribution likely to be much larger fraction than these and substantially more decentralised - therefore provides new management challenges – c.f. ITER.
- Remember that all detectors e.g. ATLAS & CMS work by “in-kind” contributions so that much can be learned from their organisation.



Component Acquisition

- “Plug compatibility” will have major influence on efficacy of “in-kind”, particularly for high-tech and SCRF. Many complications and design features need to be sorted out.



Item	Can be flexible	Plug-compatible
Cavity shape	TeSLA/L/RE	
Length		Required
Beam pipe dia		Required
Flange		Required
Tuner	Yes	
Coupler flange		Required
He -in-line joint		Required
Input coupler	TBD	TBD



Finance Models

- Clearly substantial overlap with model of “in-kind” provision and also with governance. “If you pay, you get a say.”
- Need maximum flexibility for all countries/organisations to contribute how they wish. Should there be minimum contributions for “full membership”, equivalent to GDP share of total? Do additional contributions above this buy something extra? “Associates” pay less – cf LHC model?



Finance Models

- Necessity however for substantial cash to be available to project management, e.g. ITER has 10% of total project budget available in cash.
- Tendering models –
 - “**juste-retour**” (ESA)
 - or “**best value**”
 - or modified “**best value**” with element of “**juste retour**” (CERN).
- Interaction/tension between tendering and “in-kind”.



Finance Models

- Intellectual property ownership?
- Loans to smooth out funding peaks?
- Remember that the construction, operation and decommissioning phases of the project will likely have different financial models.
- All these questions must be developed in close association with governments.



Site Development

- There are limits on what can be done until site choice made. Equally, cannot afford to wait for that.
- Much of the CFS design can go forward in terms of minimising tunnel lengths, surface buildings etc. in rather generic way. Detailed optimisations at few % level should be deferred until the specific site known. In particular true for regulatory/safety impact.
- Need to plan in PIP for transition between generic and site specific development.



Governance

- Don't reinvent the wheel!
- A great deal of work in this area has been done in the past, a lot of it on ILC.
- There were reports published around 2003 by all three regions. In Europe, George Kalmus chaired a group which came out with a rather comprehensive report.
- These vanished without trace. The most important lesson to learn is that governments must be involved as actively as possible.



Terms of reference

- Flexible and under discussion:
- “Discuss, evolve and agree concepts for a model for founding and running an international linear collider laboratory, involving governments as far as possible. Integrate plans for siting and a financial model. Produce a report detailing a set of fundamental principles, with specific models and possible alternatives.”
- Basically, discuss, contrast the various options for how to run an ILC project during its various stages from construction to decommissioning. Learn from other similar projects. Make recommendations. Produce a final report.



Terms of reference

- Lots of other related activities, both internal to ILC and in other projects: ITER, ALMA, SKA etc etc. Look for best practice and learn from each other.
- Involve the funding authorities, governments, and the EU in this throughout and try to get them to sign on and take responsibility for implementing them.



The working groups

- Complicated. It is clear that we need a central GDE group studying this. This has been set up by EC and consists of: BF (chair), B. Barish, M. Harrison, E. Paterson, S. Yamada. First meeting last month set homework assignments to look at the other cognate projects, discussed ToR etc.
- Group can be extended either for particular meetings or by co-option.



The working groups

- However, there are *other* working groups. ILC-HiGrade project is EU FP7 “preparatory phase”. EU concerned to ensure that projects are helped to succeed. PP has ground rules that $> 50\%$ of funding should be applied to administrative methods appropriate to getting project under way – e.g. governance. To use the other 50% for technical issues like producing high-gradient cavities, utilising the synergy with European X-FEL, we must have a specific European Governance study.



HiGrade governance membership

- Membership BF (chair) J-P Delahaye, E. Elsen, (R. Petronzio), F. Richard, S. Stapnes, A. Wagner, G. Wormser
- Cross-members with GDE group (both chaired by BF) and ILCSC siting group – (see next slide) - should ensure coherence and avoid duplication of effort.
- Also representation from European Strategy Group (SS) run by CERN Council.

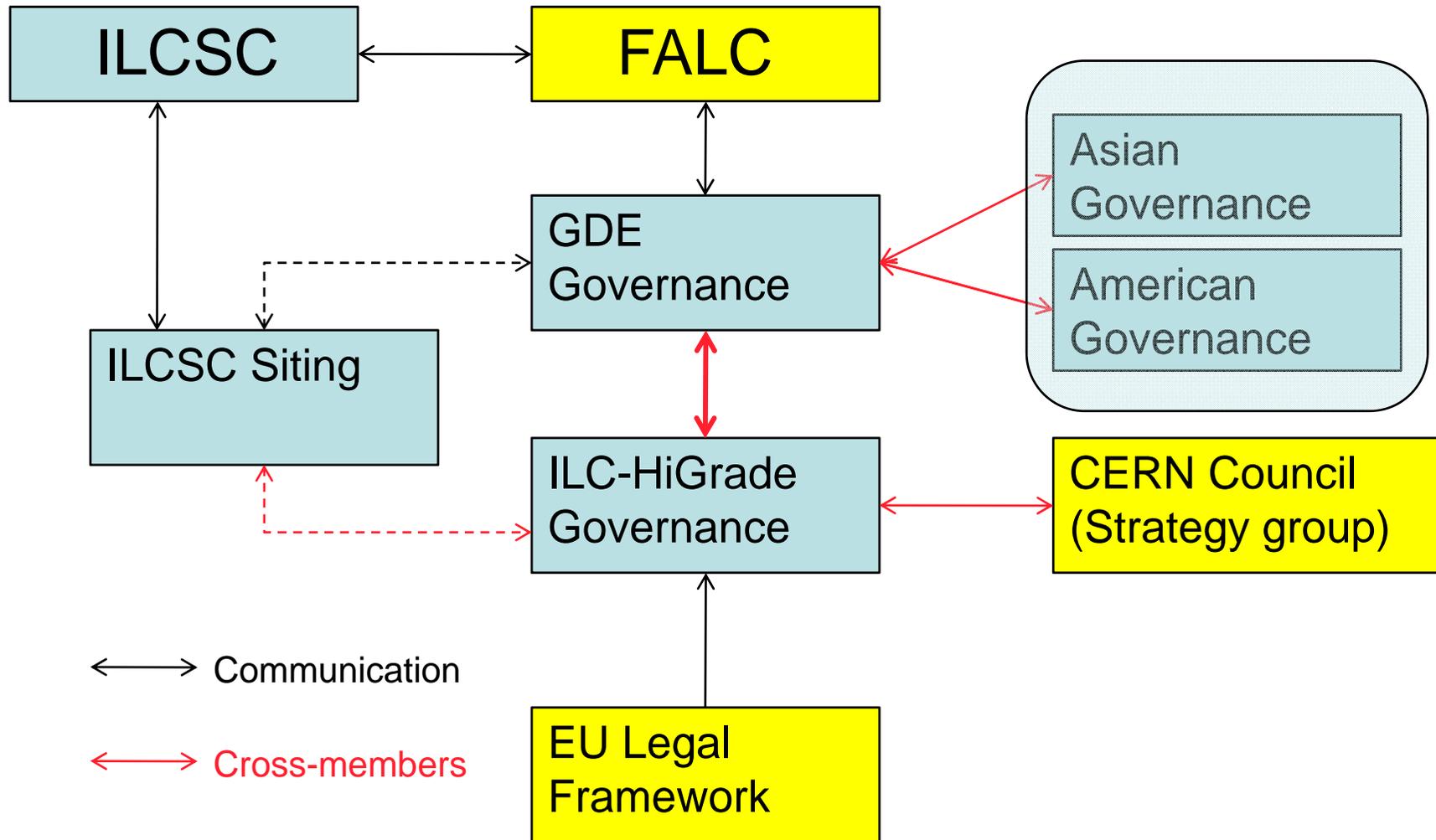


Siting working group

- Clear connections between governance and siting discussions. ILCSC as set up a site selection working group consisting of P. Oddone, A. Suzuki & A. Wagner.
- Needs to be good connection between ILCSC group and GDE groups. AW is cross-member on ILC-HiGrade.



Who talks to whom...





Role of FALC

- Although FALC recently changed name to expand remit beyond ILC, ILC has a special place inside FALC deliberations.
- We are by far the most advanced new project and represent the settled will of international community for the next major advance in pp.
- In contrast to major projects in past – HERA, Tevatron, LEP, LHC – and future – SuperB, CLIC – ILC has no host laboratory to incubate its development.



Role of FALC

- FALC crucial for project / fiscal/resource advice
 - ILCSC for scientific, technical and performance advice
 - FALC for resource advice and planning
- FALC R&D plan reviewed and endorsed by FALC RG (Gives legitimacy to global plan when dealing with individual agencies countries and agencies)
 - Enables understanding of where and how ILC R&D support in any country fits into the global picture



Role of FALC

- Guidance needed in developing funding models and an implementation plan
 - Governance; funding; siting; industrialization etc. How to put together a realistic plan for partner countries
 - Plan must be customized to satisfy requirements of host country and agency
 - Plan must contain sufficient partner role in management, priorities and decision making to satisfy global partners



Role of FALC

- Governance document - there is no point in presenting something that will be dead on arrival in 2012. Thus we need an iterative approach with the GDE & FALC, with comments & guidance at each step during the TDP phase
- Arrival of new FALC chair – P. Coulombe – represents opportunity. B. Barish and EC delegation met him earlier this month for full afternoon. Very useful and frank exchange of views; to be continued at ICFA Seminar.



Role of Governments

- One mechanism of getting government buy-in is via FALC – we will exploit this.
- This may not be enough, and it may not work – the level of influence of FALC members varies greatly. We will also continue with bilateral meetings – the Director and the Regional Directors have it as part of their role to keep their region's governments informed and up to date on ILC and the prospects for the future.

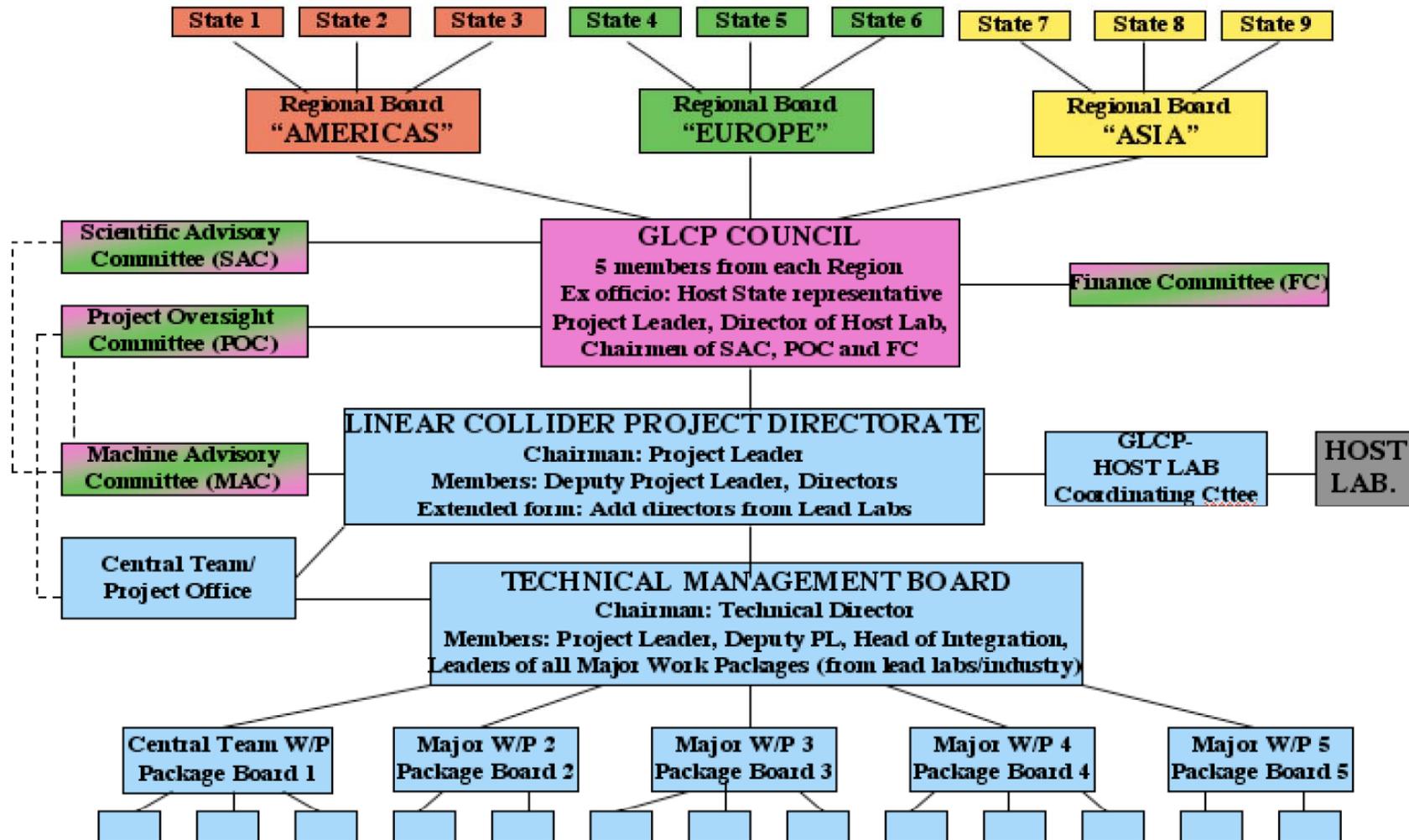


Where are we?

- Just beginning, but looking at some specifics.
- The previous European and Asian governance documents make interesting reading and have been discussed in the working groups.
- Take e.g. specific recommendations of Kalmus.



“Kalmus” Governance scheme





Some obvious questions

- Kalmus ruled out a green-field site. We need to reconsider that.
- The governance structure is arbitrary and better choices might be possible.
- Consideration needs to be given to and lessons learned from another supra-national organisation who could host ILC – JINR.
- Because of the new timescales, CERN site no longer ruled out.
- Many other areas could be usefully re-examined.



Summary

- Many aspects of the PIP are well underway from work inside the RDR framework and subsequently – but much remains to be decided and much to be done.
- The problem of governance is complex and difficult and must be done in a multidimensional space. The tools with which we are addressing it are similarly complex.
- We are getting on with the job but we need to get government or at least FALC involvement.