

Project Implementation, Resources

Project Planning: Goals, Elements, Timeline

Project Implementation Plan:

Resources

Role of ILCSC & FALC

Project Implementation Planning - Goals

It is important to distinguish between a Project Execution Plan and project implementation planning. The former is a detailed document which will be produced after the decision is taken to proceed with the ILC, a construction project team is in place, a project director is appointed and detailed planning is sufficiently well advanced. The immediate goal of this planning exercise is produce a Project Implementation Plan (PIP) on the time line of the TDR phase which seeks to:

- Provide project related information useful for the decision making process such as suggested governance & funding models
- Indicate how to proceed with very long lead time items such as industrialisation
- Outline items where the GDE has informed opinions e.g. project schedule

Project Implementation Planning – plan elements

Obviously anything the GDE puts forward at this point in time is in the form of suggestions and intended to provide a general framework for discussions. As such there is no requirement for a highly detailed proposal but a document which outlines issues and related GDE opinions is presumably useful. We note that many of the initial decisions regarding the ILC are of a political nature rather than technical.

Elements of the implementation plan will be:

- | | |
|-------------------------------------|-----------------------------|
| governance | in-kind contribution models |
| funding models | Host responsibilities |
| project schedule | Remaining R&D topics |
| Site selection: technical & process | Industrialisation |
| Project Management structure | |

Project Implementation Planning - timeline

The Project Implementation Plan will be presented to FALC as part of the proposal submission. We intend to obtain concurrence from the ILCSC before this step. Presumably this august body (the PAC) will be part of this concurrence process. This will require a draft release by the Summer of 2011 to allow for ILCSC & PAC input. Some sections will be available before this date.

We intend to present these sections as they become available to both ILCSC & FALC for comments.

Governance

This is an area where the GDE will have a lot of help. Other groups working on this topic are:



- EU working group in the Hi-Grade program (Foster Chair)
- ILCSC working group (Suzuki)
- LC Steering Group of the Americas (Tigner Chair)

In addition to:

- The Kalmus report (ECFA, 2003)
- The JLC Globalization Committee (KEK, 2002)

Brian discussed this topic at the last (two) PAC meeting(s). We intend to work with these groups to produce a coherent plan representing a general consensus from the GDE.

Governance - Timeline

- 1) FALC presentation - July 13th 2009 ✓
- 2) Albuquerque Sep 29 - Oct 3 - tentative conclusions on funding model - fractions per partner, size of common fund etc. ✓
- 3) EC face-to-face ~ Jan. Oxford - conclusion on funding models, preliminary conclusion on governance model options  PAC presentation
- 4) Beijing March/April 2010? - conclusion on governance model options  PAC presentation
- 5) Write preliminary governance/cost report and iterate May - June 2010
- 6) Present to and hope to get agreement from ICFA, ILCSC, PAC & FALC - June-July 2010?
- 7) Present at Paris ICHEP July 2010 - N.B. this is not a final report and no funding authority/government will be expected to sign off on it.

Funding Models

The GDE working group has produced (internal) observations and draft recommendations of this topic. Observations:

- 1) There are no currently existing regional models – therefore we should not propose one.
- 2) ~All models where the host state has a substantial scientific input have host state premiums ~ 50%. In practice, how the host state contribution is calculated varies; however cost of land should not be included in this; other things should be included.
- 3) No currently proposed new project is GDP based. Therefore we will not propose a GDP-related sharing.
- 4) The balance between in-kind and cash contributions is an issue – pp detectors succeed in this by having a substantial common fund and have an ethos of sharing & support. The experience from the projects we have monitored e.g. ITER, suggest that a common fund of 10% is insufficient for effective project management.
- 5) "Value estimate" methodology is the generally accepted basis for costing. We will also use this.
- 6) Contingency is not included in the baseline cost and will be an internal matter for each of the partners.

Funding Models

Recommendations:

- 1) Contributions should be based on a host + member states model with the host paying a premium of approximately 50%. The host contribution should not take account of the cost of any land acquisitions.
- 2) Member state contributions should not be based on GDP but on the number of interested states and their willingness and ability to contribute.
- 3) A common fund of $\geq 20\%$ should be the goal.
- 4) Cost estimates should be done using "value estimate" methodology and should not include explicit contingency.

We are thus seeking to establish a framework wherein detailed, political discussions can take place

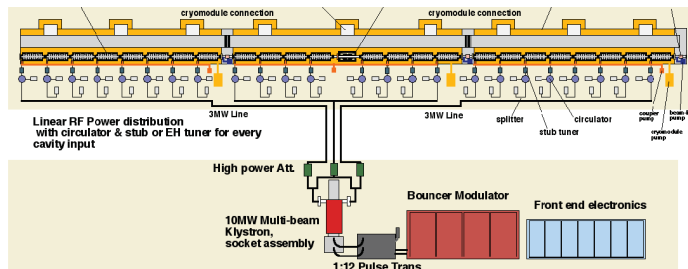
In-kind Contribution Models

A significant percentage of the non-civil construction costs will be provided in the form of in-kind contributions. While this is a political fact of life it is important to avoid contributions with inappropriate technical interfaces which render design changes difficult and result in integration problems. ITER suffers from this. The ILC is much more modular than ITER (not as modular as AUGER or SKA say) and hopefully would avoid many of the ITER problems in these areas.

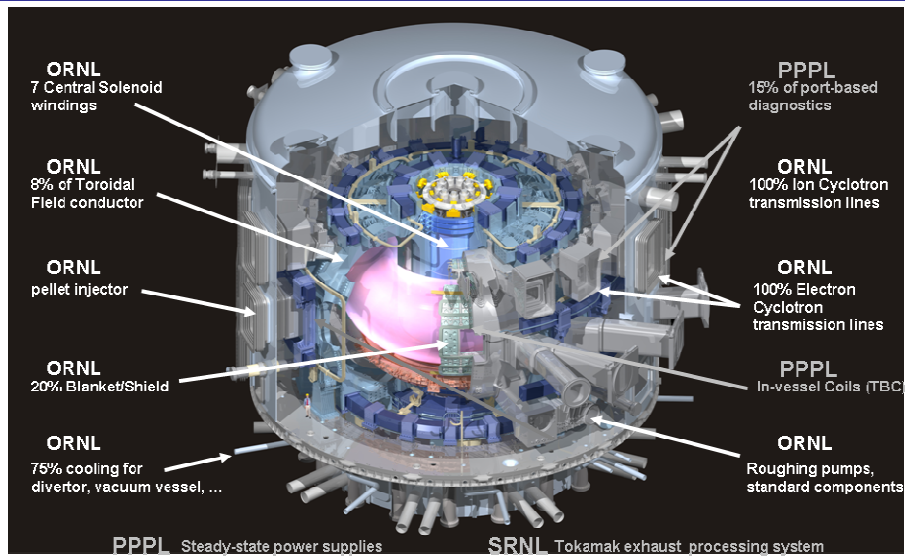
At the detail level then the global cryomodule (S1) is an example of this kind of integration.

In-kind Contribution Models

We will not seek to propose member state contribution packages by 2012. We will seek to determine appropriate technical interfaces. This will de facto determine the integration activities expected from the construction project and those which would be internal to the member state contributions (see plug compatibility)



U.S. ITER In-kind Contributions (9.09%)



Mike Harrison
Pohang PAC meeting
Nov 09

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Host responsibilities

There seems to be a tacit agreement on the role of a host state so this should not be too controversial. For example, land acquisition and services to the site boundary should not be a project cost. Similarly, civil construction and on-site utilities, which is part of the construction project, is generally accepted to be a host responsibility.

Host contributions beyond this would look more like a member state and be determined in a similar fashion.

The host state must also agree to certain legal and quasi-legal conditions e.g. international access. ITER provides an example of these kind of issues.

We plan to describe the major host requirements as a starting point and let the lawyers argue over the rest.

Mike Harrison
Pohang PAC meeting
Nov 09

Project Schedule

In the absence of any additional information then a project schedule based on an LHC-like installation effort for the main linac recommends itself. Some progress in this direction was made at the recent ALCPG09 workshop. This in turn would establish tunneling requirements. This input together with the 'traditional' start with the low energy systems will provide sufficient information to develop a nominal project schedule.

We intend to develop a (somewhat crude) high-level resource-loaded schedule based on the TDP II cost estimate. This will provide guidance as to the natural project funding profile and will be part of the PIP.

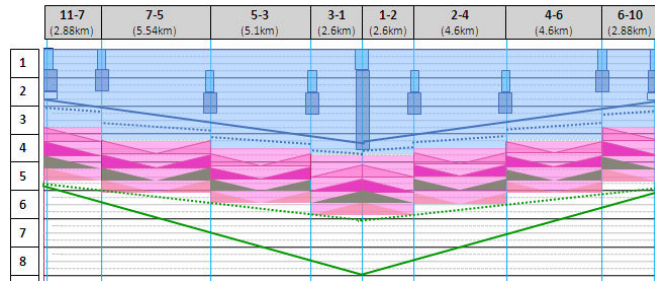
From CLIC workshop 2008 to ALCPG09 in Albuquerque



K. Foraz

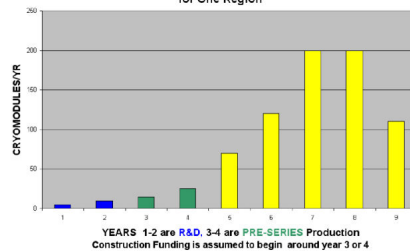
	CLIC		ILC	
	500GeV	3 TeV	Unlim. Resour.	Leveled resources
Nb of TBM	2		9	4
Nb of teams for elec. general services	4		24	8
Nb of teams for cooling and ventilation	4		12	4
Nb of teams for cabling	4		24	8
Nb of teams for machine installation	2		12	2
(years)	7,2	10,5	6	9,5

} 2 tunnels



K. Foraz

A Sample Cryomodule Production Schedule for One Region



Mike Harrison
Pohang PAC meeting
Nov 09

ilc
GDE

Project Management Structure

Detailed proposals for organisation charts and the like are not warranted at this time. That will depend on the ultimate project management team. A general outline of the management structure will be given.

Project tools: The project will have a work breakdown structure with schedule & common fund tracking. All collaborators are expected to use the same software tools.

Management roles & responsibilities - project team

- Baseline design & configuration management
- Interfaces
- Schedule
- Common fund costs
- Component design reviews

Management roles & responsibilities - member states

- In-kind hardware fabrication, cost & schedules
- Q/A
- Components designs

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Pohang PAC meeting
Nov 09



Site Requirements

The GDE will provide the major site requirements such as footprint, power, tunnel penetrations and so on.

We are trying to provide different technical solutions to enable different site topographies to be considered. We expect the final ILC design to be site dependent to some degree.

The site selection process will be specified by the ILCSC. We do expect to include it in the PIP.

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Pohang PAC meeting
Nov 09



Remaining R&D Activities

We do not expect all technical work to cease on Dec 31st 2012. The STF2 schedule runs to (at least) 2014. The Fermilab based string test is completed in 2012 but routine operations would only start in 2013. Cryomodule & cavity value engineering will remain a highly leveraged item and it is reasonable to assume that positron production will remain a topic of interest. The KEK B-factory (2013) will incorporate several (at least) of the CESR TA e-cloud mitigation techniques.

As part of the PIP we intend to describe the anticipated technical program for the subsequent several years.

Mike Harrison
Pohang PAC meeting
Nov 09

Major R&D Goals for TDP 1

SCRF

- High Gradient R&D - globally coordinated program to demonstrate gradient by 2010 with 50% yield
- Preview of new results from FLASH

ATF-2 at KEK

- Demonstrate Fast Kicker performance and Final Focus Design

Electron Cloud Mitigation - (CesrTA)

- Electron Cloud tests at Cornell to establish mitigation and verify one damping ring is sufficient.

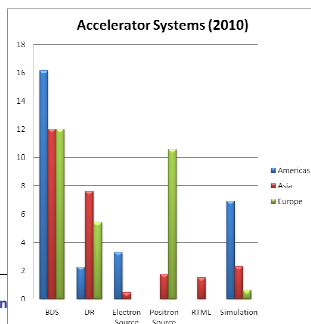
Accelerator Design and Integration (AD&I)

- Studies of possible cost reduction designs and strategies for consideration in a re-baseline in 2010

Resources (assume this is in the context of the PIP)

The GDE manpower resources will remain relatively constant through 2012.

No significant change in FTE's from the information given by Marc Ross at the last PAC.



ILC Research and Development Plan for the Technical Design Phase

Release 4
July 2009

ILC Global Design Effort
Director: Barry Barish

Prepared by the Technical Design Phase Project Management

Project Managers: Marc Ross
Nick Walker
Akira Yamamoto

R & D Plan Resource Table

- Resource total: 2009-2012

FTE	SCRF	CFS & Global	AS	Total
Americas	243	28	121	392
Asia	82	9	51	142
Europe	108	17	64	189
	433	55	236	724
MS (K\$)	SCRF	CFS & Global	AS	Total
Americas	18080	2993	6053	27126
Asia	23260	171	5260	28691
Europe	9890	921	530	11341
Total	51231	4085	11843	67158

- Not directly included:

- There are other Project-specific and general infrastructure resources that overlap with ILC TDP

Resources

Marc reported concerns in the areas of positrons and more critically conventional facilities. Since then we have managed to add people in both areas: CFS 2 FTE's Americas, 4 FTE's in Japan. Positrons ~ 1+ FTE Americas (planned FY10), ~ 1 FTE Japan.

The TDR will be written by the system groups after the re-baselining process is concluded. We have less resources than were available for the RDR (~ factor of 2) but more time. We will build on the RDR work & costs wherever possible.

The PIP will be more the responsibility of the EC (and ILCSC). Since we view the PIP as a relatively high level document each section should be brief (<10 pages). We have sufficient time and expertise.



Role of ILCSC & FALC

There is no well defined mechanism to say 'yes' to the ILC proposal (or no for that matter). FALC is the oversight entity that speaks for the agencies so we will have to assume that FALC is willing to take on this role. Until then most of the FALC interaction with the GDE is informational.

The ILCSC (and the PAC) will be responsible for any design reviews and cost estimate verification that take place. This is a similar to the process which took place in 2007 with the reference design.

The PIP will be formally submitted to both ILCSC & FALC at the conclusion of the TDP phase in 2012. We intend to engage both entities on certain parts of the contents before this time.

Mike Harrison
Pohang PAC meeting
Nov 09