

The ILC European Action Plan

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Disclaimer

- The Action Plan uses a basic Cost Model and “well-motivated” Assumptions
- We have used the 500 GeV machine as a starting point
- **The Action Plan is not**
 - **Any form of European Commitment**
 - **Approved by any of the European Stakeholders nor the potential institutes involved**
 - **An indication of willingness by the European Stakeholders**

What is the European Action Plan ?

- KEK has presented an ILC Action Plan, once a green light has been given
 - Single-Lab & Single-Funding Agency-Plan
- Request to E-JADE via CERN
 - Produce a similar document for a potential European Involvement in the ILC
 - Taking into account KEK Action Plan & Nomura Report
- Obvious from day one
 - Impossible given timescale and overall political situation

Why impossible ?

- There is no “Europe”
- Europe is a complex matrix of labs, institutes and funding agencies
 - To have something similar as the KEK plan needs buy in from all the stakeholders
- This would require
 - Clear political signal from Japan
 - Clear commitment of all lab managements on their “interests”
 - Clear commitment from funding agencies

Our approach

- Use an “informed top-down” approach
- Ingredients
 - Survey past and current European Capabilities
 - Areas where Europe could contribute
 - Look at Contribution only on European level
 - Use various contribution levels from 10-33% of the non-CFS components for the accelerator
 - Study share of European groups in the detectors
- Use KEK Time-Line

The KEK timeline

- Pre-Preparatory Phase
 - Now
- Preparatory Phase – 4 years
 - Right after “green light”
- Construction Phase – 10 years
 - T_0 =Start of construction

Status in Europe

- Past
 - GDE
 - Detector efforts
- Present
 - See right
- Activities and expertise are summarized in Tables



Survey

X-FEL

	Germany DESY	France CEA Saclay	LAL	Italy INFN Milan	IFJ PAN	Poland WUT	NCBJ	Russia BINP	Spain CIEMAT
WPG-1 Linac									
WP-03 Cryomodules									
WP-04 SCRF Cavities									
WP-05 Power Couplers									
WP-06 HOM Couplers									
WP-07 Frequency Tuners									
WP-08 Cold Vacuum									
WP-09 Cavity String Assembly									
WP-11 SC Magnets									
WPG-5 Infrastructure									
WP-10 AMTF									
WP-13 Cryogenics									
WPG-6 Sites & Buildings									
WP-45 AMTF hall									

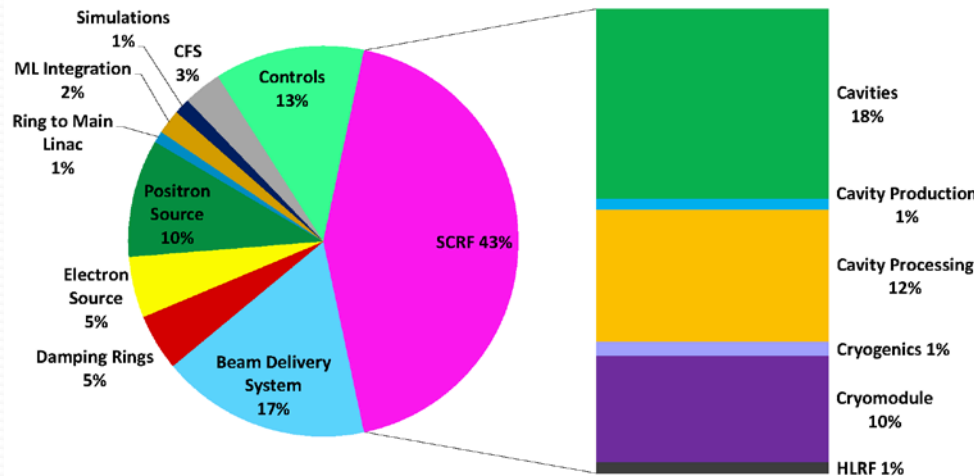
ATF₂

	CERN	France LAL	LAPP	Germany DESY	Spain IFIC	UK JAI	RHUL
Goal 1							
Very-low β							
Ultra-low β							
Halo control							
Wakefield/Intensity							
Instrumentation							
Ground motion							
Background							
Goal 2							
Stabilisation/Feedback							

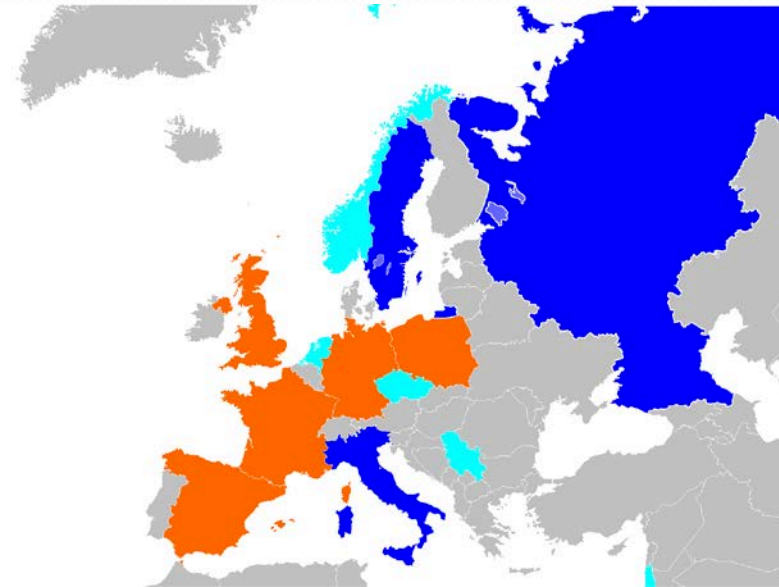
Survey

Past

Present



European FTE Contributions to the GDE

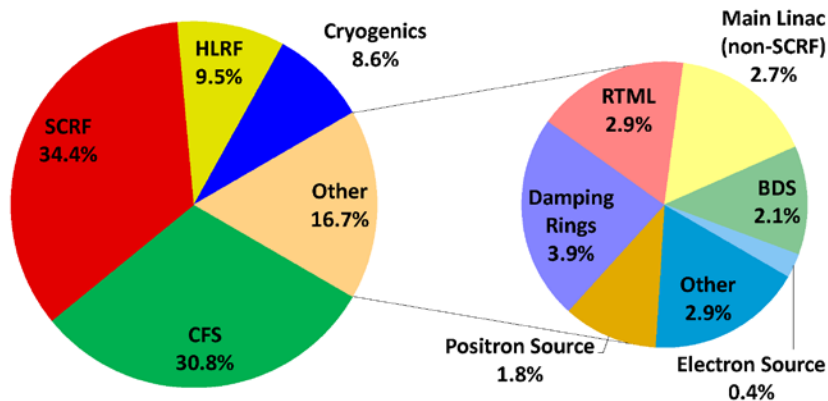


Countries with LC-relevant activities (cyan : detectors, blue: accelerators, orange: both)

ILC cost

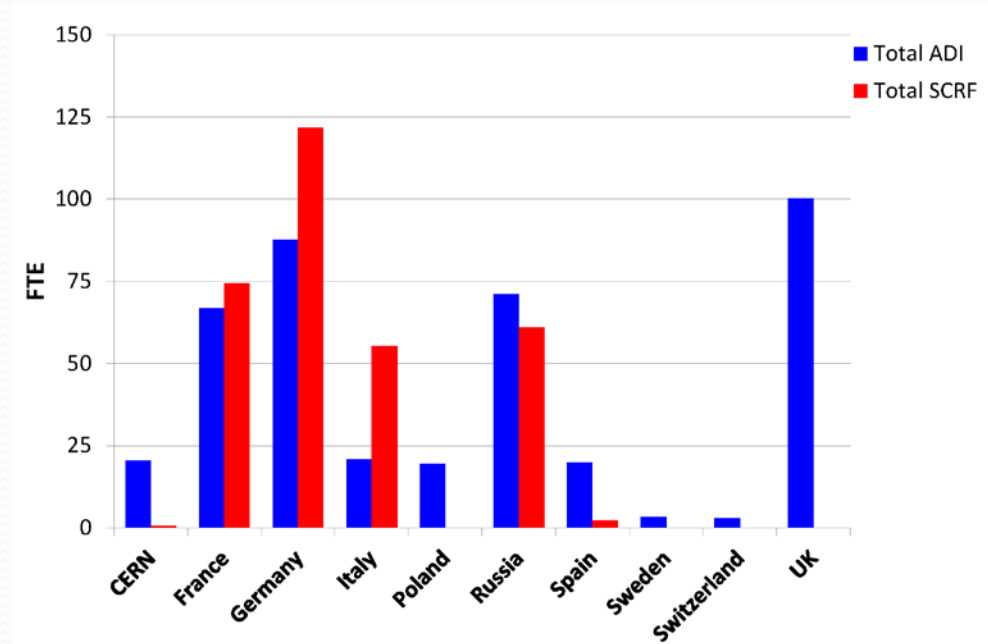
- ILC Cost is documented in the TDR
 - Dates back to 2012
 - Total cost ~8 Billion ILCU
 - 1 ILCU = 1 US-\$ (2012)
 - Non-CFS cost ~ 67 % of project

Primary cost drivers for the ILC



Cost vs. Cost

- We've been sticking to ILC costing as agreed for the TDR
 - Cost only, what you buy
 - FTE are handled separately
- For a real project
 - Contingency, escalation, overheads, man power
 - Different for each country



Cost Model studies

- Accelerator:
 - Europe delivers a sizeable fraction of the non-CFS components ranging from 10% to 33 %
- Detector:
 - Based on previous experiences of European participation in overseas experiments, European institutes approx. 1/3 of the detector collaborations
- **NOTE: These are just models, not approved and not a commitment**

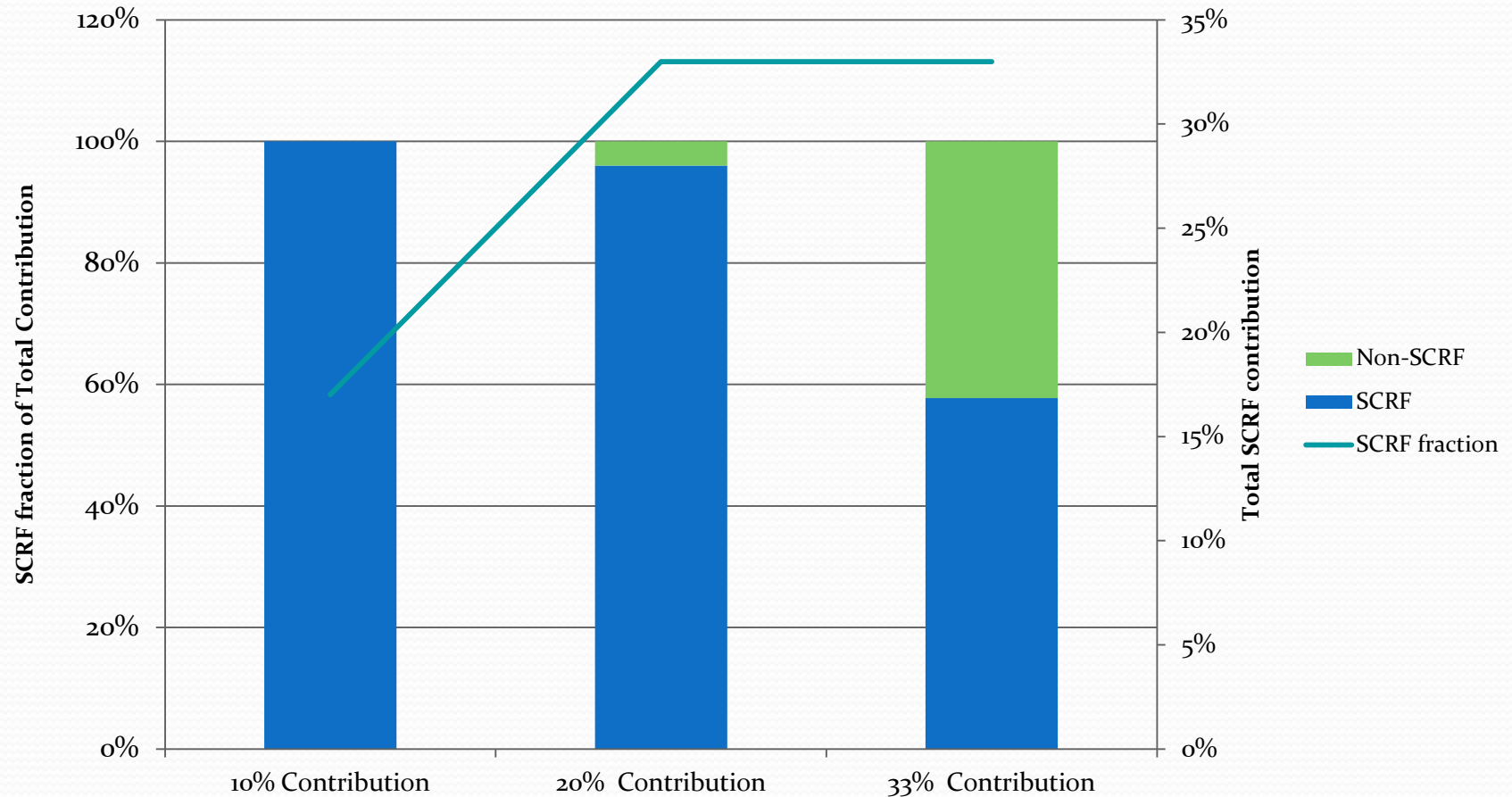
Accelerator – some details

- Contribution may range from
 - 10-33% of non-CFS costs
 - 7-23% of total ILC costs
- Staging
 - 250 GeV ~ 50% of Linac - 66 % of the total cost
 - 350 GeV ~ 70% of Linac - 80 % of the total cost

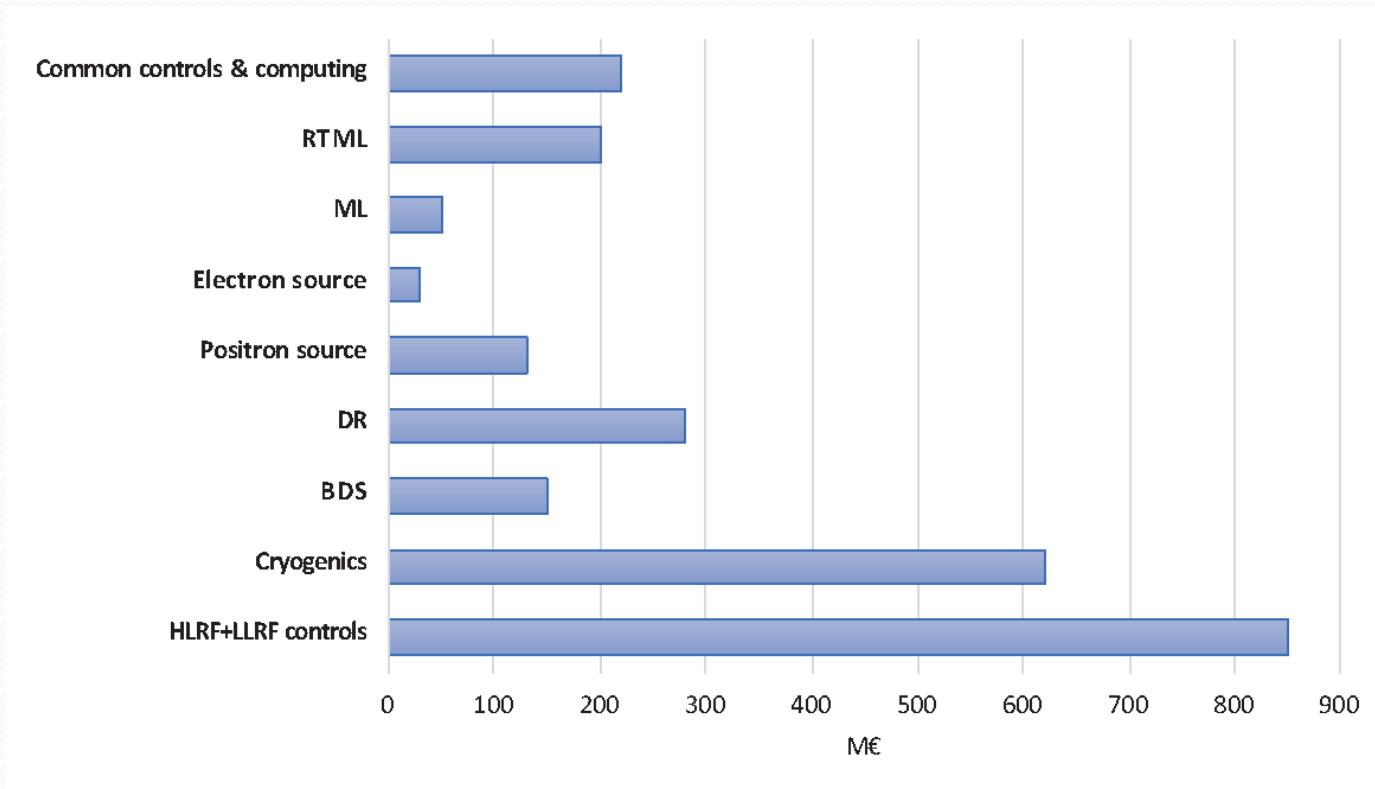
Accelerator : SCRF First ?

- SCRF is considered a key component
- SCRF First Model
 - Deliver as much SCRF as possible sacrificing other contributions
- Pro-Rata Model
 - Total Contribution changes, fractions remain the same
- In reality
 - Something in between driven by the stakeholder's interests and the available funding

How would this look



What are the non-SCRF items



Europe after the green light

- We've tried to summarize the activities in a preparation phase, both for Accelerator and Detectors
 - Technical preparation of the major European deliverables foreseen for the construction phase. This covers final technical specifications, final prototypes, etc.
 - Organization of a strong European design office for ILC that will liaise with other such offices
 - The third key activity in the preparation phase will be negotiations about the final European ILC contributions, about the organization of the project in the construction and operation phase, and about a future governance model for the ILC

Governance & European participation

- More than one way to do it ...
 - Classic: bilateral agreements between partners
 - LBNF/DUNE-Model: CERN established European Neutrino Platform to support European groups
 - European contribution is coordinated & managed by CERN
- Above our pay scale
 - Simple Assumption: CERN will play a leading role in the European participation

Cost Profile

- Assuming the cost model discussed before and taking the time scale used in the ILC Action Plan
- T_0 defined as Star of construction
- We need a few % of the total budget for preparatory phase



Plans

- Near Term
 - Finalize the document
 - Prepare a version as an input for the European Strategy
- Mid Term
 - Waiting for a real signal from Japan