

Estimate for the ILC machine

The Reference Design Report provides the first detailed technical snapshot of the ILC. One of the most important components in developing this reference design is to understand enough about the costs to provide a reliable indication of the project's scale. Equally important, this preliminary estimate will help guide the final engineering phase of the project. The estimate will be used to study options for further reducing costs, improving performance, and developing a prioritised global R&D programme. The costing will also provide important information on the relative value of the different components and thereby enable partners to assess their contributions.

This estimate gives a first evaluation of the ILC cost at this time. It serves as a preliminary basis for continuing ILC engineering, and these estimates will continue to evolve.

What did we estimate?

We estimated two quantities: the VALUE for items provided (in 2007 US dollars), and the LABOUR (in person-years). These quantities are independent of individual national costing methods but can be translated into any local currency or costing system. The total VALUE has two components: the value of shared components and the site-dependent value for hosting the machine.

What are shared components?

These are the high-technology components and other technical parts where there is global capability and we can make a single world estimate. For example, all regions can supply such technical components as water cooling and electrical distribution systems.

What does "site-dependent" mean?

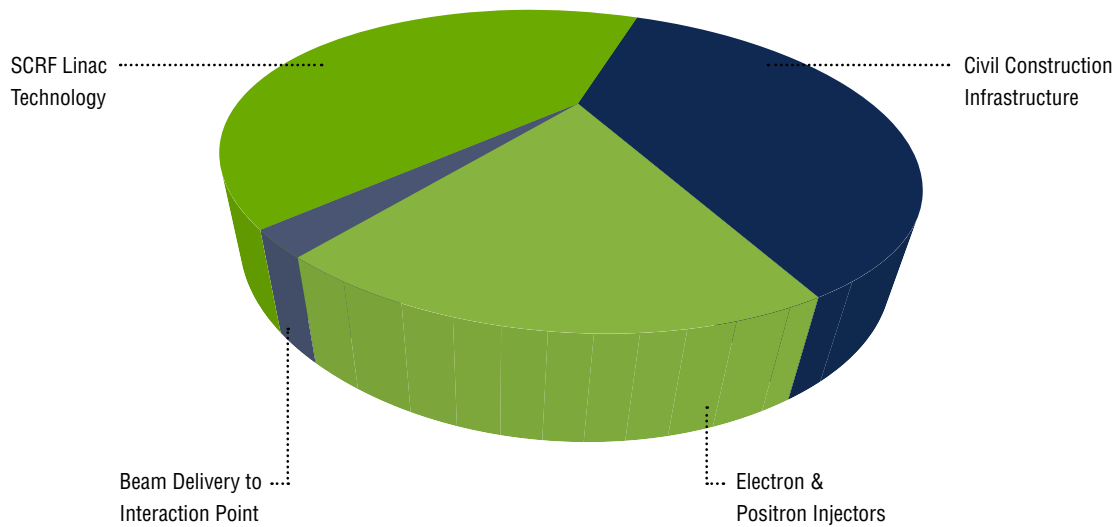
These are such things as tunnelling, where we make separate estimates for each region. The site-dependent elements include all the civil engineering, high-voltage electrical power needs, and water cooling needs. These are generally expected to be the items where the costs will be borne by the host country.

How did we arrive at the estimate?

We obtained our cost estimate by involving technical and costing experts in Europe, Asia, and the Americas. We used a value accounting process that is becoming standard for international scientific projects such as the ILC. Based on the detailed technical requirements of the ILC, we determined the values of components based on a worldwide call for tender to obtain the required quality at the lowest reasonable cost.

Both LABOUR and VALUE are universally-accepted estimates of the value for each technical component. These figures will be used by partner nations to apportion their contributions fairly. The VALUE and LABOUR estimates can be converted by individual funding agencies to determine costs in their own costing systems and in local currency units.

An approximate breakdown of the ILC estimate by main categories.



What are the numbers?

The following figures are the base VALUE and LABOUR quantities that can be translated into costs, by using a given national costing method:

SHARED VALUE =	4.87 Billion ILC VALUE UNITS
SITE-DEPENDENT VALUE =	1.78 Billion ILC VALUE UNITS
TOTAL VALUE = <i>(shared + site-dependent)</i>	6.65 Billion ILC VALUE UNITS
LABOUR =	22 million person-hours = 13,000 person-years (assuming 1700 person-hours per person-year)
1 ILC VALUE UNIT =	1 US Dollar (2007) = 0.83 Euros = 117 Yen

What does the estimate include and exclude?

The VALUE and LABOUR amounts include:

- construction of a 500 GeV machine and the essential elements to enable an optional future upgrade to 1 TeV;
- tooling-up industry, final engineering designs, and construction management;
- construction of all conventional facilities including tunnels, surface buildings, detector assembly buildings, underground experimental halls, and access shafts; and
- explicit labour including that for management and administrative personnel.

The VALUE and LABOUR amounts exclude:

- engineering, design or preparation activities that must be accomplished before project funding (such as R&D), proof-of-principle, and prototype tests;
- surface land acquisition or underground easement costs;
- detectors, which are assumed to be funded by a separate agreement;
- contingencies for risks; and
- escalation (inflation).