Summary and Outlook

Philip Burrows

John Adams Institute

Oxford University

The future for Eurotev effort?

ILC context

European funding context:

- **LHC**
- **CERN Council strategy group report**
- **ESFRI roadmap**
- **EU FP7 parameters**

Carrying forward our strengths

Outlook

Disclaimer

I was invited to be provocative, challenging, and to try to stimulate discussion

Where noted, suggestions and opinions are my own, not representative of Eurotev management or policy

Please give your feedback in discussion at the end!

The ILC context

What Happens after Beijing (Barish)

Public Release of Draft RDR and Preliminary Costing at Beijing

- **Cost Reviews, etc**
- **Finalize RDR by Summer 2007?**

Enter into Engineering Design Phase

- **Planning underway internally**

- **Design will evolve through value engineering and R&D program (value engineering; R&D results; etc)**
- **Cost of EDR will be consistent with RDR**

General Goal is to have Construction Proposal ready by 2010

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- **Cost Reviews, etc**
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Enter into Engineering Design Phase

- **Planning underway internally**
- **Probably some reorganization of GDE to include stronger project management and work package responsibility.**
- **Design will evolve through value engineering and R&D program (value engineering; R&D results; etc)**
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After Beijing (Foster)

3 main threads that must be satisfied by the GDE in the future:

1. we must produce the technical information required and agreed by the contracting governments as necessary to proceed to approval of the project;

2. we must ensure that the internal momentum of the GDE continues to grow and that the tasks the GDE sets itself allow scope for the enthusiasm and commitment of the international ILC community to continue to grow;

3. we must ensure that the world-wide R&D programme is coordinated to give the optimum return on the investment of the contracting governments.

R&D effort (Foster)

What increase in effort will be required to produce the R&D necessary to have a design that we are confident we can build?

Another very difficult question! Milestones from S task forces are roughly compatible with 2010 milestone without enormous increases in effort from current. But also lots of real engineering design & specification needed as well as R&D. Assume that factor of two increase will do the job - this needs further investigation and is probably an underestimate - but note A. Wolski's S3 talk earlier, which was ~ factor 2.

It does not seem likely that such an increase can proceed under the current paradigm of ad hoc assignment from major laboratories and relatively uncoordinated involvement across a broad range of R&D activities.

How to deliver (Foster)

Growing the RDR teams by a large factor seems difficult - problems of coordination, integration and management grow strongly to the extent that many teams are spread geographically. In addition, certainly in Europe, the possibility of a large increase in numbers dedicated to the project and donated from the laboratories seems unlikely.

Many of these problems can be ameliorated by dividing the tasks into work packages which can be bid for by consortia, which would be encouraged, or by individual labs or countries. This reduces the problems of coordination and avoids duplication in R&D. It also greatly eases the problem of increasing FTEs since people available for only small fractions of their time but with vital expertise can be efficiently utilised within the consortia and having succeeded in being allocated a work package, labs and other organisations will feel obliged to deliver, even at the expense of allocating more FTEs than they might originally have intended.

The Critical Role of “R&D” (Walker)

- **Develop state-of-the-art technologies [for ILC]**
- **Bring to maturity selected alternative designs which could reduce cost and/or increase performance**
- **Reduce risk in the baseline design**
- **Understand overall performance issues**

Key Messages from GDE

- **Strong emphasis on ‘E’ for EDR**
- **Coordination of ILC ‘R&D’ will become stronger, emphasis on ‘D’**
- **Future ILC GDE project management may be based around work packages that will be bid for competitively**
- **Presumably a lot will depend on how the funding agencies respond to the RDR:**

  eg. ‘proceed to the engineering design’: lots of ‘E’

  or ‘go back and make it cheaper’: lots more ‘R’

In an ideal world

- **We should be thinking seriously about forming the optimal global consortia to deliver ILC system designs for EDR**
- **Areas of strength in Europe are:**
  - **SCRF**
  - **beam delivery, interaction region, machine-detector interface**
  - **damping rings**
  - **positron source**
  - **instrumentation and diagnostics**
  - **beam dynamics and simulations …**
- **We should coordinate and balance 'engineering' and 'R&D' according to GDE project management and RDB**
- **We should be planning for funding requests to national govts + EU**

The European funding context

LHC (Elsen)

- **LHC – is the European flagship project and obligation**
- **Start-up 2007, full energy 2008**
- **Success is paramount for the field**
- **Funds are constrained till 2011 –**

  and beyond depending on chosen priorities

  - LHC upgrades?
- **Additional funds for ILC activities will depend entirely on extra sources:**

  National programmes

  EU funding

  O(M), not O(B)

ESFRI Roadmap + EU FP7

- **LHC (upgrades) and ILC on ESFRI roadmap and qualify for 'preparatory phase' funding in 1st FP7 call (106 M Euro)**

  EU contribution O(4 M Euro) per project

  proposals due May 2 2007

- **Emphasis of a proposal should be on 'preparatory' activities:**

  legal

  governance

  strategic

  financial

  prototypes

  engineering

  much of our work for GDE + Eurotev can qualify in these areas

Eurotev so far

Eurotev has been very successful in many ways:

- **Provided European focus for collaboration on major aspects of ILC machine**
- **Brought together universities and the large labs**
- **Allowed strengthening of effort via new funds + people**
- **R&D has prospered across a broad front**
- **Established presence + credibility for ILC project within European Commission**

Eurotev programme at ATF/ATF2

- **Laserwire transverse emittance measurement system**
- **FONT intra-train feedback prototype**
- **Alignment monitoring system (StaFF/MonaLisa)**
- **Cavity BPM prototypes**
- **Damping ring studies**
- **Implementation of Raimondi-Seryi FF optics design**
- **Beam dynamics, tuning knobs, orbit control**
- **Controls**
- **International collaboration**

Eurotev programme at SLAC/ESA

- **Polarised positron source demonstrator**
- **Collimator design + wakefield tests with beam**
- **BPM tests**
- **Deployment of prototype energy spectrometers**
- **Bunch length monitor tests**
- **Electromagnetic background tests for feedback BPM**

Carrying forward our strengths

The future

- **Need to focus ILC R&D efforts on:**

  reduced cost, reduced risk, improved performance

- **Need to focus more on engineering for EDR:**

  designs and final prototypes for ILC

- **Need to focus on ‘systems’, probably as part of large (hopefully global) consortia, and be strategic**

-> Choose key areas of current programme that are well matched to ILC requirements, satisfy FP7 criteria, and which will help position us for major contributions to ILC

Some obvious possibilities (FP7)

- **Preparatory phase call (2007):**

  Engineering/ILC prototypes:

  aspects of instrumentation + related controls

  aspects of BDS: collimators, crab cavity, feedback …

  positron source

  damping ring systems

  Leverage of opportunity at international test facilities

- **ICT call (2008): GAN**

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How to integrate with SCRF will require careful thought!

We may need to think creatively

Many synergies of current Eurotev R&D with other projects:

- **XFEL + VUVXFEL:**

  Metrology + stabilisation, controls, operations …

- **LHC upgrades:**

  Collimators, e-cloud, controls, operations …

- **CLIC:**

  Beam dynamics, active stabilisation, feedback …

-> Should be vigilant and prepared to participate where relevant!

Outlook

- **Eurotev has enabled us to pursue R&D that is vital for ILC and CLIC**
- **Project unlikely to continue in its present form**

  ILC project phase + EU funding have advanced
- **In our future bids we should aim to preserve Eurotev strengths**

  eg. strong university-lab collaborations,

  links with international labs and test facilities
- **Need to discuss + develop our plan for a strong bid to current 'preparatory phase' (+ future) FP7 call: deadline May 2 2007!**
- **Capitalise on FP7 opportunity to provide a platform for a strong and substantial European contribution to ILC EDR**