

# Progress on the Lol

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*Thanks to: Hiro Aihara, Mark Oreglia*

# Reminder of scope (Yamada Oct. 3 2007)

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**‘Loi should contain:**

**information on proposed detector, its overall philosophy, its sub-detectors and alternatives, and how these will work in concert to address the ILC physics questions’**

# Reminder of scope (Yamada Oct. 3 2007)

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**‘Evaluation of detector performance should be based on physics benchmarks ... some same for all Lols ... some chosen to emphasise the particular strengths of the proposed detector’**

# Reminder of scope (Yamada Oct. 3 2007)

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**‘discussion of integration issues with the machine ...**

**state of technological developments for the components ...**

**alternative technological options ...**

**further R&D should be identified ... with timelines and milestones ...**

**a preliminary cost estimate’**

# Reminder of scope (Yamada Oct. 3 2007)

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**‘In addition, should present:  
structure of group ...  
resource needs and evolution in time  
...**

**enable the reader to judge the capacity  
and seriousness of the groups to carry  
out the work until the EDR’**

# Additional questions (IDAG June 22 2008)

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1. Sensitivity of different detector components to machine background as characterized in the MDI panel.
2. Calibration and alignment schemes.
3. Status of an engineering model describing the support structures and the dead zones in the detector simulation
4. Plans for getting the necessary R&D results to transform the design concept into a well-defined detector proposal.
5. Push-pull ability with respect to technical aspects (assembly areas needed, detector transport and connections) and maintaining the detector performance for a stable and time-efficient operation.
6. A short statement about the energy coverage, identifying the deterioration of the performances when going to energies higher than 500 GeV and the considered possible detector upgrades.
7. How was the detector optimized: for example the identification of the major parameters which drive the total detector cost and its sensitivity to variations of these parameters.

# **IDAG Mandate** (Yamada June 24 2008)

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- 1. Are the physics aims of the detector convincing for an experiment at ILC?**
- 2. Is the detector concept suited and powerful enough for the desired physics aims and the expected accelerator environment? Namely, is the arrangement of the employed detector components adequate?**
- 3. Do the mechanism for the push-pull operation, related alignment and calibration methods enable the desired switching process?**
- 4. Is the detector feasible? Namely, is the required R&D for the selected technologies advancing fast enough so that they can be completed during the design phase? Are the estimated cost and the way to obtain it reasonable when examined at the time of LOI?**
- 5. Is the group powerful enough to accomplish the required design work through the technical design phase?**

# Executive summary

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**YIKES!**



# Lol Framework

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- 1. Introduction (5)**
- 2. Global issues (10)**
- 3. Subsystems (45)**
- 4. Physics performance and benchmarking (25)**
- 5. Cost estimate (5)**
- 6. R&D issues (5)**

# Lol Framework

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## 1. Introduction

**ILC physics menu**

**ILC environment**

**SiD rationale**

# Lol Framework

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## 1. Introduction

**Jaros**

**ILC physics menu**

**ILC environment**

**SiD rationale**

# Lol Framework

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## 2. Global issues

**SiD assembly**

**Push-pull**

# Lol Framework

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## 2. Global issues

**SiD assembly**

**Push-pull**

**Breidenbach**

# Lol Framework

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## 3. Subsystems

Overview

Beamline

Tracking system

Forward detectors

Calorimeters

Muon system

Magnet

DAQ + electronics

# Lol Framework – ‘responsibles’

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## 3. Subsystems

Overview

Beamline

Moffeit/Woods

Tracking system

Demarteau et al

Forward detectors

Maruyama/Markiewicz

Calorimeters

White/Frey

Muon system

Band/Fisk

Magnet

Krempetz

DAQ + electronics

Haller

# Lol Framework

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## 4. Physics performance and benchmarking

**Simulation**

**Benchmark reactions**

**Performance of SiD**



# Lol Framework

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## 4. Physics performance and benchmarking

**Barklow/Nomerotski**

**Simulation**

**Benchmark reactions**

**Performance of SiD**

# Lol Framework

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**5. Cost estimate**

**6. R&D issues**

# Lol Framework

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**5. Cost estimate**

**Breidenbach**

**6. R&D issues**

**White/Brau**

# Since Boulder Meeting

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- **Editors meeting regularly**
- **Defined framework just described**
- **Agreed on APS latex format**

<http://hep.uchicago.edu/~oreglia/SiDLOI/sidloi.pdf>

- **Assigned responsibles for each section**
- **Zeroth pass at assembling some of starting material**

# Current Status

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1. Introduction ✓
  2. Global issues ✓
  3. Subsystems
  4. Physics performance and benchmarking ✓
  5. Cost estimate ✓
  6. R&D issues
- ✓ = something exists

# Current Status

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1. Introduction ✓
2. Global issues ✓
3. Subsystems **DUE TODAY**
4. Physics performance and benchmarking ✓
5. Cost estimate ✓
6. R&D issues

# Subsystem section template

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## 1. Definition of subsystem/subgroup

### 1.1 Name of the subsystem

### 1.2 Contact person(s) for LOI writing (!very important !)

### 1.3 Geometrical definition: Where it is located. Dimensions

### 1.4 Function

### 1.5 Requirements/specifications

Typical physics benchmark(s) that your system is most relevant.

## 2. Description of the subsystem

### 2.1 Concept

### 2.2 Baseline design

### 2.3 Expected performance

### 2.4 Illustrations/Drawings that you *definitely* want to include in LOI

### 2.5 Options

## 3. R&D roadmap

### 3.1 Issues

### 3.2 Milestones (Before 2012, and after 2012)

### 3.3 Resources needed

## 4. Cost estimation

## 5. Q&A : anticipated questions from IDAG and answers to them (in available)

## 6. Organization of the subsystem group

### 6.1. Institutions involved

# Lol Timeline

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- **November 15:** 1<sup>st</sup> draft subsystem reports  
feedback to subsystems
- **December 15:** 1<sup>st</sup> draft physics/benchmarking chapter  
identify and fill gaps, iterate etc.
- **January 15:** revised subsystem sections  
focussed collaboration meeting early Feb?
- **February 15:** complete draft for collaboration review
- **March 15:** final draft ready
- **March 31:** submit to Research Director



# Editorial comments

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- **Have not done any detailed editing yet**
  - **want to have most of raw material first**
- **Will need to harmonise style, deal with overlaps ...**
- **Will need to draw out/delineate clear answers to IDAG questions**
- **Thanks for contributions to date!**
- **We need your cooperation in order to stay on track ...**