Detector
Research&Development

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Detector and R&D now integrated

- CDS more involved in early design decisions
- gets activities above critical mass
- best use of expertise

Organize subsystems into larger task groups

- Integration (Installation, 40m)
- Optics/Lasers (PSL (Nd:YAG, IOO, COC)
- Suspension/Isolation (SUS, SEI)
- Interferometer Sensing and Control or ISC (LSC, ASC)
- Physics Environmental Monitor (PEM)
- CDS

Completely integrated effort MIT-CIT

- planning and execution joint, specific responsibilities assigned
- groups distributed between two campuses

Detector: R&D

Current Detector R&D activities:

- **recombination/recycling of 40m**
  - **approach LIGO optical and sensing configuration, test lock acquisition/operation**
- system integration and control tests
  - develop and test LIGO CDS systems on 40m
- suspensions
  - develop and test LIGO-like suspension on 40m
- thermal noise research
  - substrate Q measurements, inference of thermal noise
- laser development
  - frequency-stabilize ~1 W Nd:YAG laser for initial lab use
- **phase noise research**
  - **solve sensing problems for LIGO configuration**
  - **precision test of Nd:YAG laser**
- **alignment research**
  - **test model and design for wavefront/centering system**
- **optics modeling**
  - **development of spatial modeling tools**
  - **models of optical performance of future ifos**

Flow of R&D into Implementation