BDS
Way forward

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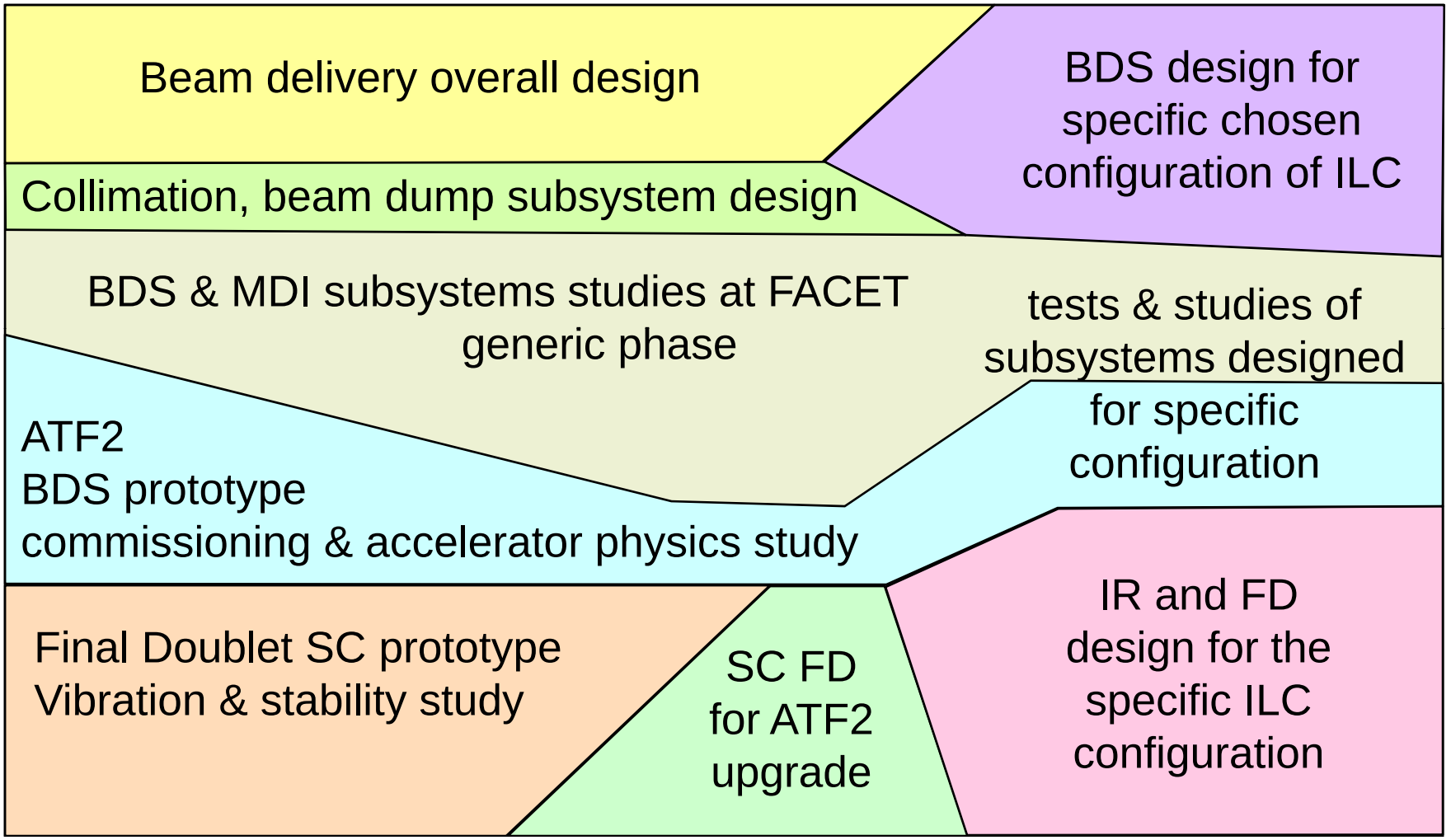
Materials for discussion
TILC-08

BDS planning strategy

- **Do not proceed with:**
  - **Design, or engineering of near-standard systems (e.g. beamline vacuum or magnets), or detailed consideration of requirements for CFS**
- **Do focus on:**
  - **Science, with emphasis on advanced ideas, which promise breakthroughs in performance/cost, reaching higher E, reduction of length, e.g.:**
    - **BDS for CLIC, $\gamma\gamma$ design & system tests, crystal collimation, …**
  - **Critical areas of design**
    - **IR & detector integration, FD, ATF2, …**
  - **Areas where new collaborators are joining**
    - **Recent work at SLAC with BARC, India, on beam dump design**
- **Explore synergies**
  - **LHC crab cavity design, …**
- **Expect to revise strategy:**
  - **When LHC results will allow determining the specific configuration of ILC**

Beam Delivery 5yr plan, ATR



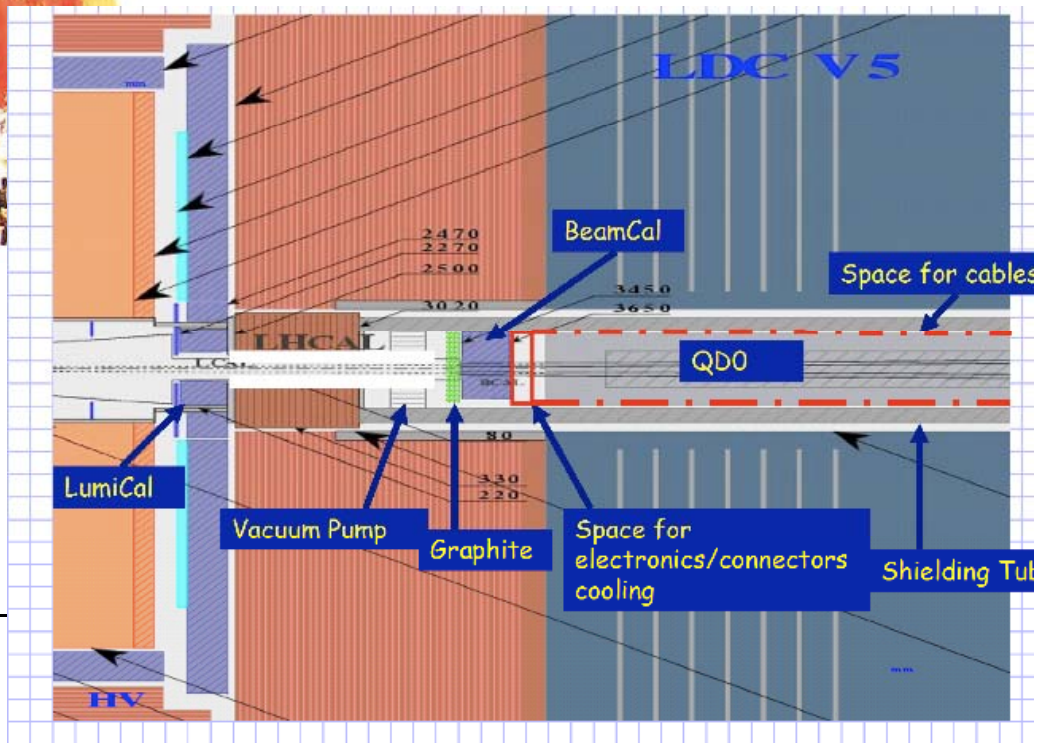
Interaction region detector-machine integration

Discussion of IR Beam Space Real Estate

Highly Complex physics/engineering issues

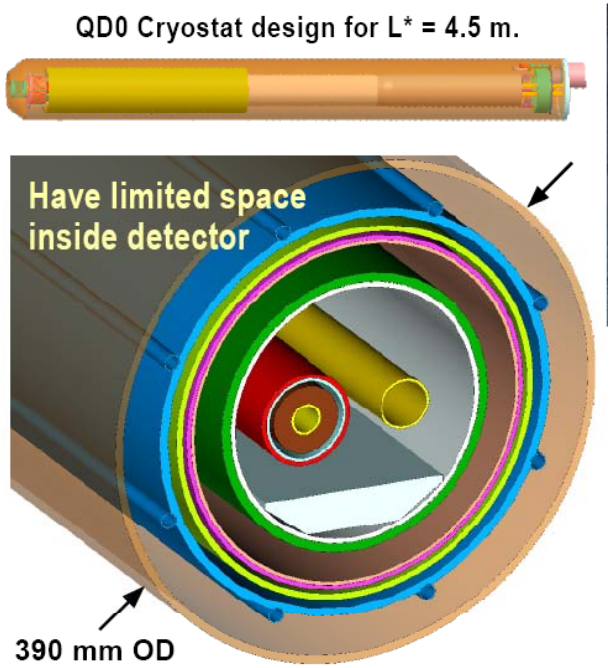
Totally integrated design between machine & detector

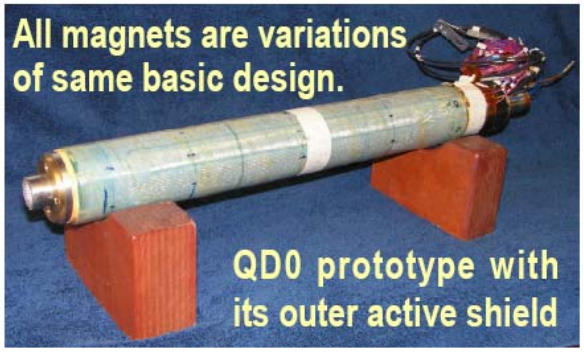
Critically important for detector design

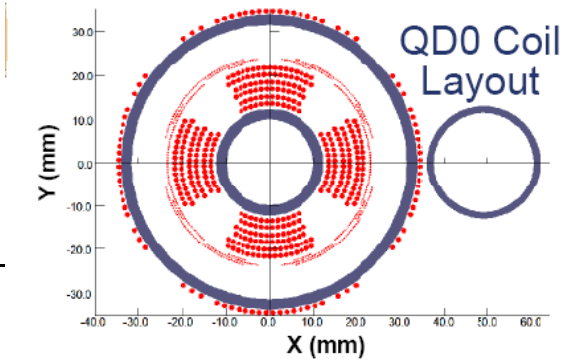


Final Doublet

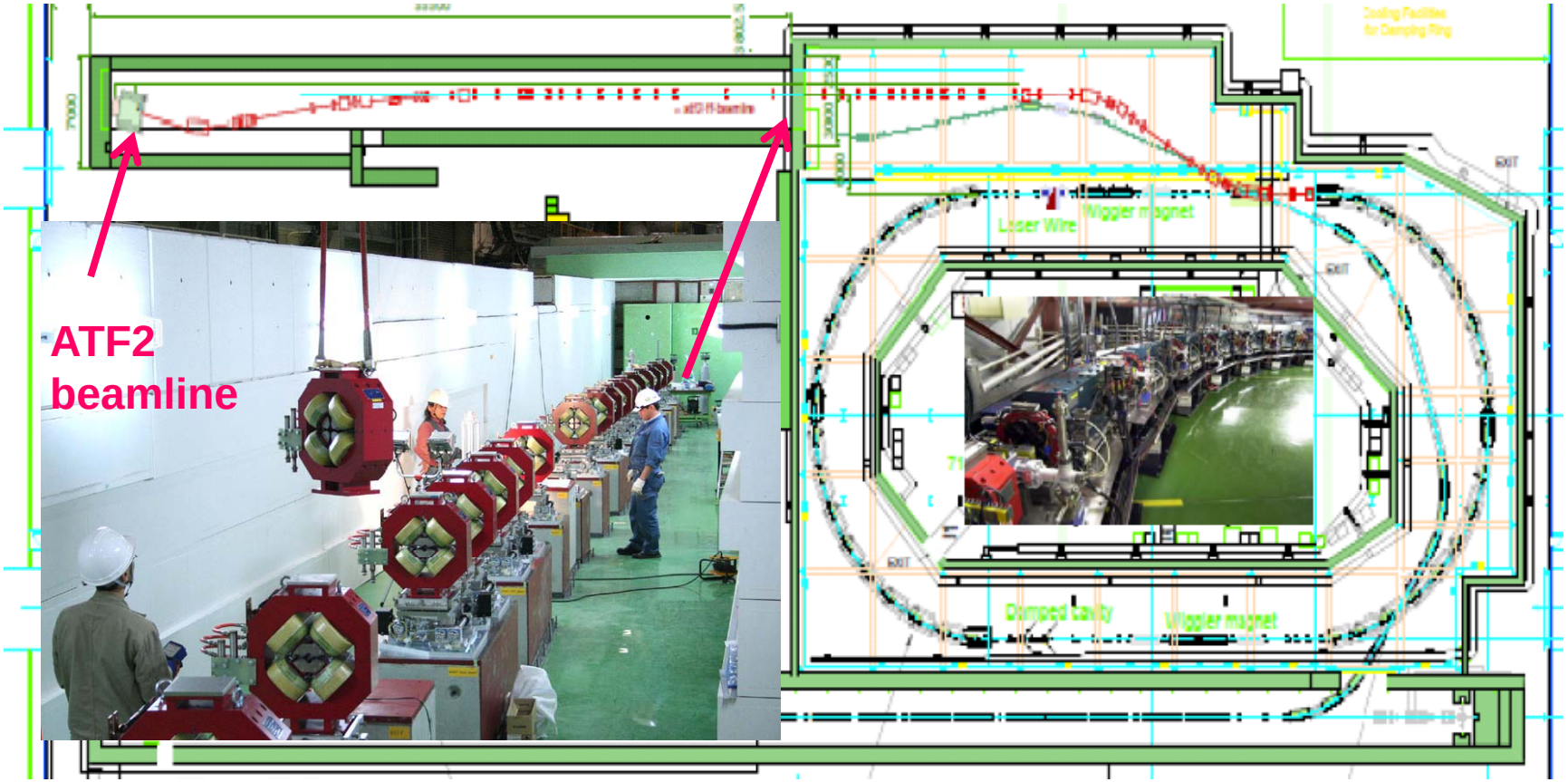
- **Design: address tight space constraints, the need for versatile beam orbit and aberration correction, challenging mechanical stability**
- **Full length prototype: address performance and system level integration**







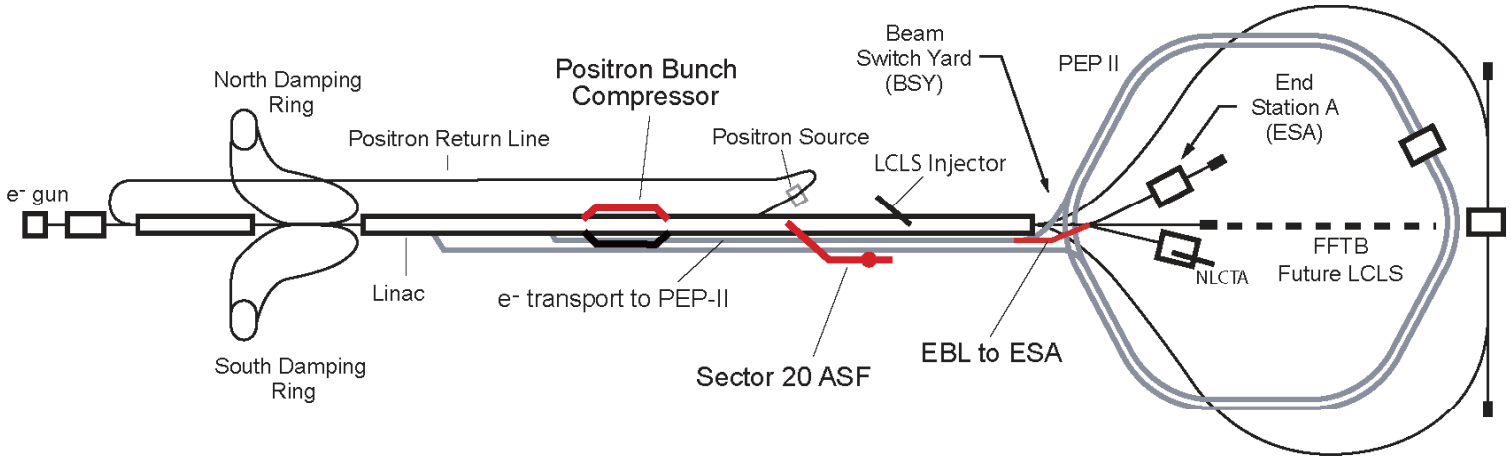
ATF2: Beam delivery model



Built for ILC. Advanced accelerator study and beam handling applicable to any single path beamlines such as LCLS, XFEL.

ATF collaboration: >200 scientists. ATF MOU: 20 institutions worldwide

BDS & MDI at FACET



- **Proposed FACET includes ESA area primarily dedicated for BDS/MDI subsystem tests**
  - **Energy spectrometers and collimation system tests**
  - **Beam diagnostics**
  - **Detector component studies**
  - **System test of e=>γ conversion for γγ option**
  - **Study forward region detector and GAMCAL …**

Americas

Benefits for US of BDS R&D

- **Direct: maintain leadership in key areas of US expertise, needed to reach the energy frontier**
- **Indirect: synergy with US science**
  - **ATF2: advanced accelerator study and beam handling applicable to any single path beamlines such as LCLS, XFEL…**
  - **Instrumentation, high availability power supplies, etc., are applicable to many future projects such as NSLS-2, LCLS…**
  - **Interaction region integration and FD design: synergy with LHC IR upgrade and Super-B IR**
  - **Collimation research: synergy with LHC, already engaged in design of LHC II-stage collimation system**
  - **Crab cavity design: already engaged in LHC crab.cav. study**
  - **FACET and ESA research: reach out to laser and plasma science communities, engaging them in our scientific quest, thus increasing scientific value of ILC**