

EDR planning discussion

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BDS

assisting

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Detector liaison

**Suggested
“generic” work
packages (GWP)
for EDR Beam
Delivery at Level 4**

ATF2 construction, commissioning & operation

Accelerator and physics requirements and design integration

Interaction Region and IR integration

Crab cavity system

BDS Beam Dump system

BDS Collimation system

BDS magnet & PS

BDS instrumentation

BDS Vacuum system

- **GWP.2 ATF2 construction, commiss. & operation**
 - Includes ATF and ATF2 work related to BDS. The work-package, the ATF2, is of special kind, because it contains similar branches as BDS area itself and is in large parallel to BDS structure.
- **GWP.3 Acc. & det. ph. reqts. and design integration**
 - This work package is a crucial place where system optimization and interfaces to CFS and detector will be done. On the following level, this work will include sub-work-packages for Optics, tolerances, tuning & feedback (apertures & magnet types standardization; setting specifications for all sub-systems); Backgrounds, other detector requirements (field homogeneity, IR apertures, alignment, etc.); CFS interfaces & optimization (air, water T, stability, vibration, tunnel & cavern sizes, penetrations, etc.); Installation model for BDS (magnet sizes, shafts, elevators, detector & machine interference, etc.); Design study of alternatives (0&2mrad designs, gamma-gamma, e-e-, entrance intratrain feedback; etc.).
- **GWP.4 Interaction Region and IR integration**
 - This work package is the one very tightly connected to detector hardware design. It includes, on the sub-WP level, the IR system engineering and integration, IR magnet design and its prototypes, IR cryogenics, IR shielding design, Detector moving system, stability study of IR magnets, alternative magnet solutions for IR, etc. Leaders of this sub-work-package will work closely with representatives of two emerging detector proto-collaboration to create an optimal IR design.

- **GWP.5 Crab cavity system**
 - The Crab cavity system work package will include optimization of RF design of cavity & couplers, development of phase stable RF power system, designing the cryostat for crab cavity, prototyping the crab cavity and couplers, studying the phase stability with two cells, prepare crab cavity beam tests and performing them.
- **GWP.6 Beam dump system**
 - The Beam Dump system work package will include designing window & remote replacement mechanism, engineering of the beam dump radiation water system, engineering the beam dump shielding, designing the beam dump vessel, performing irradiation tests of dump window prototype, optimizing physical design of beam dump, prototyping beam dump window, building the window remote replacement front-end.
- **GWP.7 Collimation system**
 - The collimation system work-package will include optical, physical and engineering design of collimators, performing beam damage tests of collimators, verifying collimator wakefields in beam measurements.

- **GWP.8 BDS magnets and power supplies**
 - The Magnet and Power Supply work-package will include conceptual design of DC magnets and more detailed design of pulsed magnets, design of BDS specialties the muon walls, magnet movers, and beam sweepers, septa and kickers, design and prototyping of low field dipoles, design and optimization of DC and pulsed power supply system, development and possible prototyping of HS power supply module, in particular the bipolar one.
- **GWP.9 BDS instrumentation**
 - The BDS Instrumentation work-package would mostly focus on defining specifications, sizes, apertures, interfaces, etc. The Development part will focus on E-spectrometers, feedback hardware, laser wires and large aperture BPMs.
- **GWP.10 BDS vacuum system**
 - The Vacuum System work-package would include developing the general layouts with locations of ports, bellows, valves, gauges; the conceptual schemes of RF shields, chambers in moderately complicated areas such as laser wires and Y-s (BSY); and more detailed schemes of chambers in very complicated areas such as IR. The work will also include optimization of vacuum chamber aperture, pressure; physical design of vacuum system in terms of SR, beam-gas, desorption and impedances; engineering integrated design of vacuum system; and detailed design of IR vacuum chamber.

- Charge for BDS GWP chairs and deputies
 - interact with BDS manager to form the detailed work-packages for EDR phase and to form the teams
 - perform the coordinating role of the work
 - in particular, run EDR meetings (schedule on next page),
starting from beginning of November
 - personally drive the design work

BDS EDR Meetings:

- **ATF2 construction, commissioning & operation**
 - Ongoing weekly, late evening SLAC time. Cycle through different time?
- **Acc. & physics requirements and design integration**
 - Primarily: late afternoon UK, ~8am SLAC. Bi-weekly. Cycle ~monthly: UK morning
- **Interaction Region and IR integration**
 - Bi-weekly and cycle through morning & late afternoon of SLAC time
- **Crab cavity system**
 - Ongoing monthly, late afternoon UK, ~9am SLAC. => Bi-weekly, & focus on EDR
- **BDS beam dump system**
 - Cycle: am UK & India, pm SLAC – pm UK & India, am SLAC. Bi-weekly.
- **BDS Collimation system**
 - Primarily: late afternoon UK, ~8am SLAC. Bi-weekly
- **BDS magnet & PS**
 - Cycle: late afternoon SLAC - morning in Japan; evening SLAC morning in Moscow
- **BDS instrumentation**
 - Primarily: late afternoon UK, ~8am SLAC. Bi-weekly
- **BDS Vacuum system**
 - Primarily: morning in UK, late afternoon in Japan
- **BDS WP coordination & management meeting**
 - Cycle: morning-evening in SLAC

EOIs as of October 12, 2007

http://www.slac.stanford.edu/~seryi/edr/EOI_received_sorted/

GWP02&03&04&09_BDS_EDR_EOI_FONT_UK.doc
GWP02&03&09_BDS_EDR_EOI_Kolomensky.doc
GWP02&03&09_BDS_EDR_EOI_MONALISA_UK.doc
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GWP02_ATFExtractionEmittanceEOI_PT.doc
GWP02_ATFFlightSimulatorEOI_PT.doc
GWP02_ATFInjectorTuningEOI_PT.doc
GWP02_ATFJitterStudyEOI_PT.doc
GWP02_ATFOrbitStudyEOI_PT.doc
GWP02_ATFTuningStrategyEOI_PT.doc
GWP02_ATFTuningToolsEOI_PT.doc
GWP02_BDS_EDR_EOI.CFS.doc
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GWP02_BDS_EDR_EOI.commissioning.doc
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GWP02_BDS_EDR_EOI.tuning.strategy.doc
GWP02_BDS_EDR_EOI.tuning.tools.doc
GWP02_BDS_EDR_EOI.vacuum.doc
GWP02_BDS_EDR_EOI_lw2.doc
GWP02_BDS_EDR_EOI_lw3.doc
GWP02_BDS_EDR_EOI_Korea.doc
GWP02_BDS_EDR_EOI_Sanuki.doc
GWP02_BDS_EOI_AccPhys_GAB_UK.doc
GWP02_BDS_EOI_SpinDyn_UK.doc
GWP02_BDS_EOI_laserwire_UK.doc
GWP02_IROpticsDesignEOI_PT.doc
GWP02_IRVibrationDesignEOI_PT.doc
GWP03&09_BDS_EDR_EOI_Alignment_UK.doc
GWP03_BDS1TeV_EOI_PT.doc
GWP03_BDSApertureStandardizationEOI_PT.doc
GWP03_BDSExtLineEOI_PT.doc
GWP03_BDSFieldStabilityEOI_PT.doc
GWP03_BDSHighLumiEOI_PT.doc
GWP03_BDSIROrbitEOI_PT.doc
GWP03_BDSIRWFEIOI_PT.doc
GWP03_BDSLStarEOI_PT.doc
GWP03_BDSMagnetStandardizationEOI_PT.doc
GWP03_BDSOpticsEOI_PT.doc
GWP03_BDSTuningEOI_PT.doc
GWP03_BDS_EDR_EOI_sanami.doc
GWP04&07_BDS_EDR_EOI_Levchenko.doc
GWP04&08_BDS_EDR_EOI-Romanov.doc
GWP04_BDS_EDR_EOI-Kostromin.doc
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GWP04_BDS_EDR_EOI.background.doc
GWP04_BDS_EDR_EOI_Extr.doc
GWP04_BDS_EDR_EOI_IRQ_DS_cor.doc
GWP04_BDS_EDR_EOI_lw_R1.doc
GWP04_BDS_EDR_EOI_PM_14mr_quads.doc
GWP05_BDS_EDR_EOI - Crab system R1_UK.doc
GWP05_BDS_EDR_EOI_FNAL_Crabs.doc
GWP05_BDS_EDR_EOI_crab_cavity_modeling.doc
GWP06_BDS_EDR_EOI_Dumps_UK.doc
GWP07_BDS_EDR_EOI_Coll.doc
GWP07_BDS_EDR_EOI_collimators_UK.doc
GWP07_CollWakeComputerEOI_PT.doc
GWP07_CollWakeTheoryEOI_PT.doc
GWP08_2008-09-10 BDS Magnet Power System Design EOI Draft 2.doc
GWP08_BDS_EDR_EOI-JINR-1-2.doc
GWP09_BDS_EDR_EOI-JINR-2-1.doc
GWP09_BDS_EDR_EOI.shintake_ILC.doc
GWP09_BDS_EDR_EOI_EO_UK.doc
GWP09_BDS_EDR_EOI_FNALInstr_mw.doc
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GWP10_BDS_EDR_EOI_suetsugu.doc
GWP10_BDS_EOI_Vacuum_UK.doc

Does not include expressions of interests discussed at SLAC, BNL, FNAL, for ongoing work planned via ART

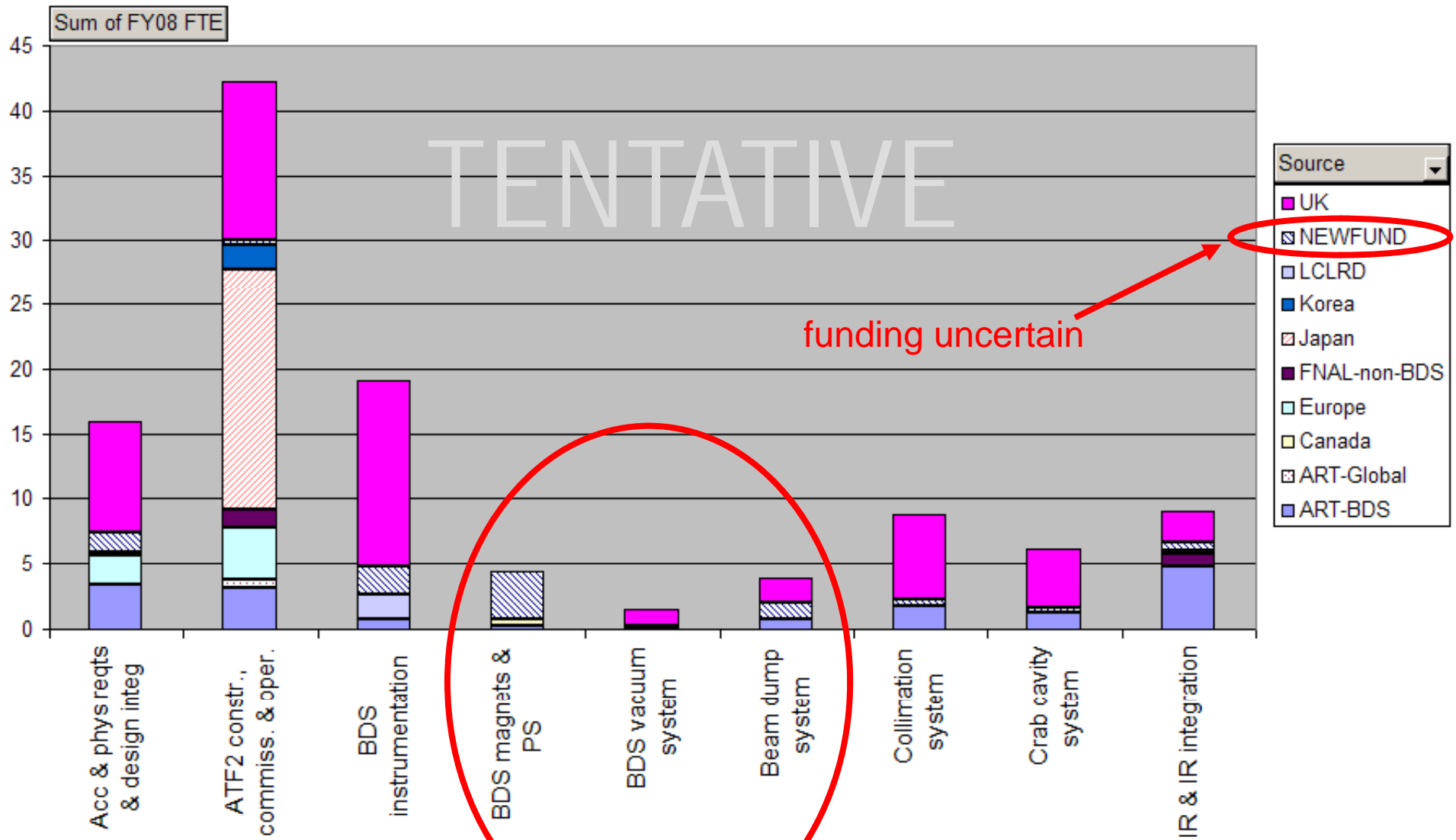
The ART funded work is included in the charts shown on next pages

WP allocation

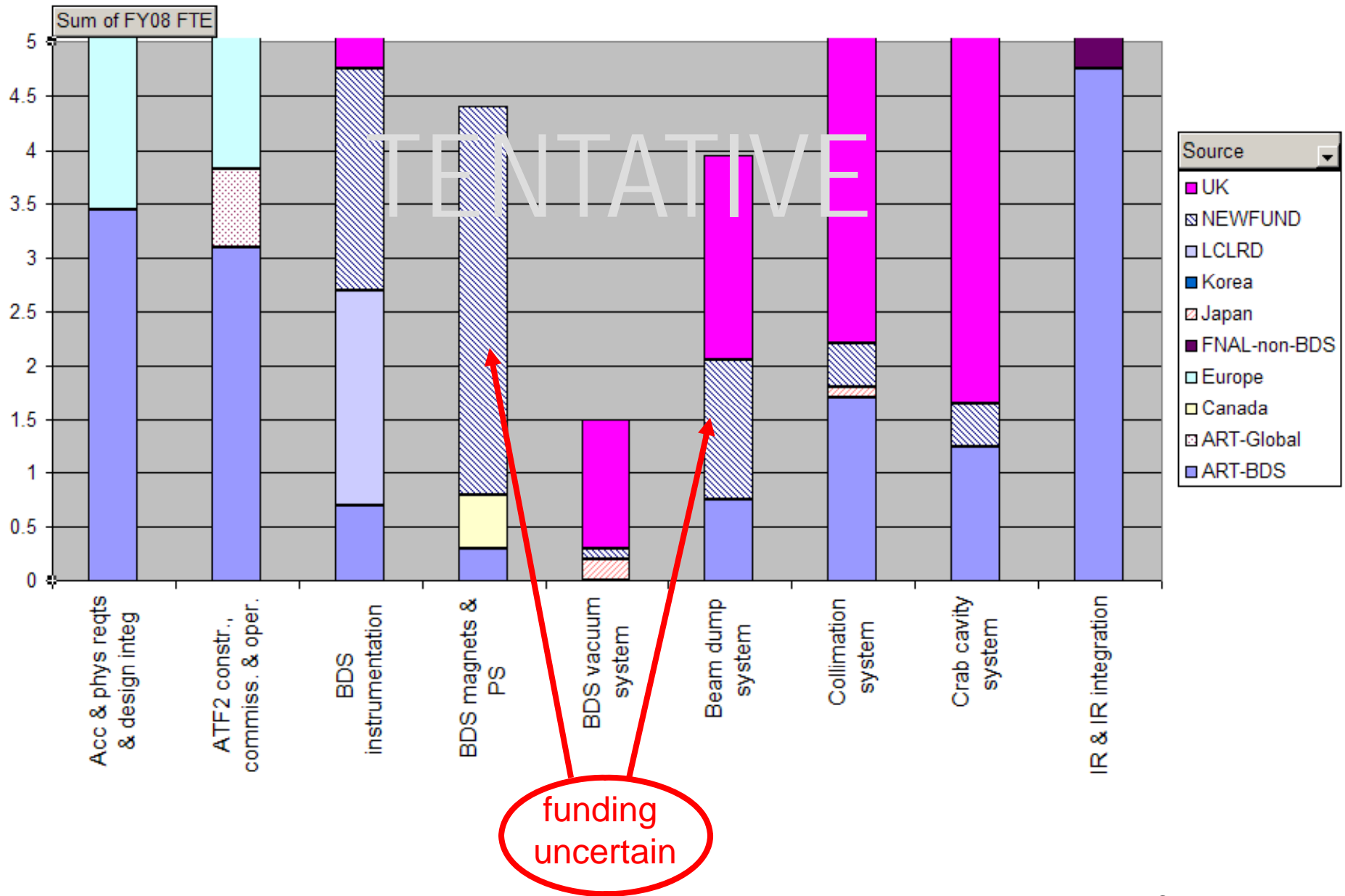
- There is no universal rule
- In some cases some labs are expressing interest
- In most cases, connections already exist, and one need to work to adjust them to EDR phase
- In other cases, need to search for interested labs

- The Beam dump, Magnets & PS, and Vacuum systems are under-subscribed / under-funded GWPs

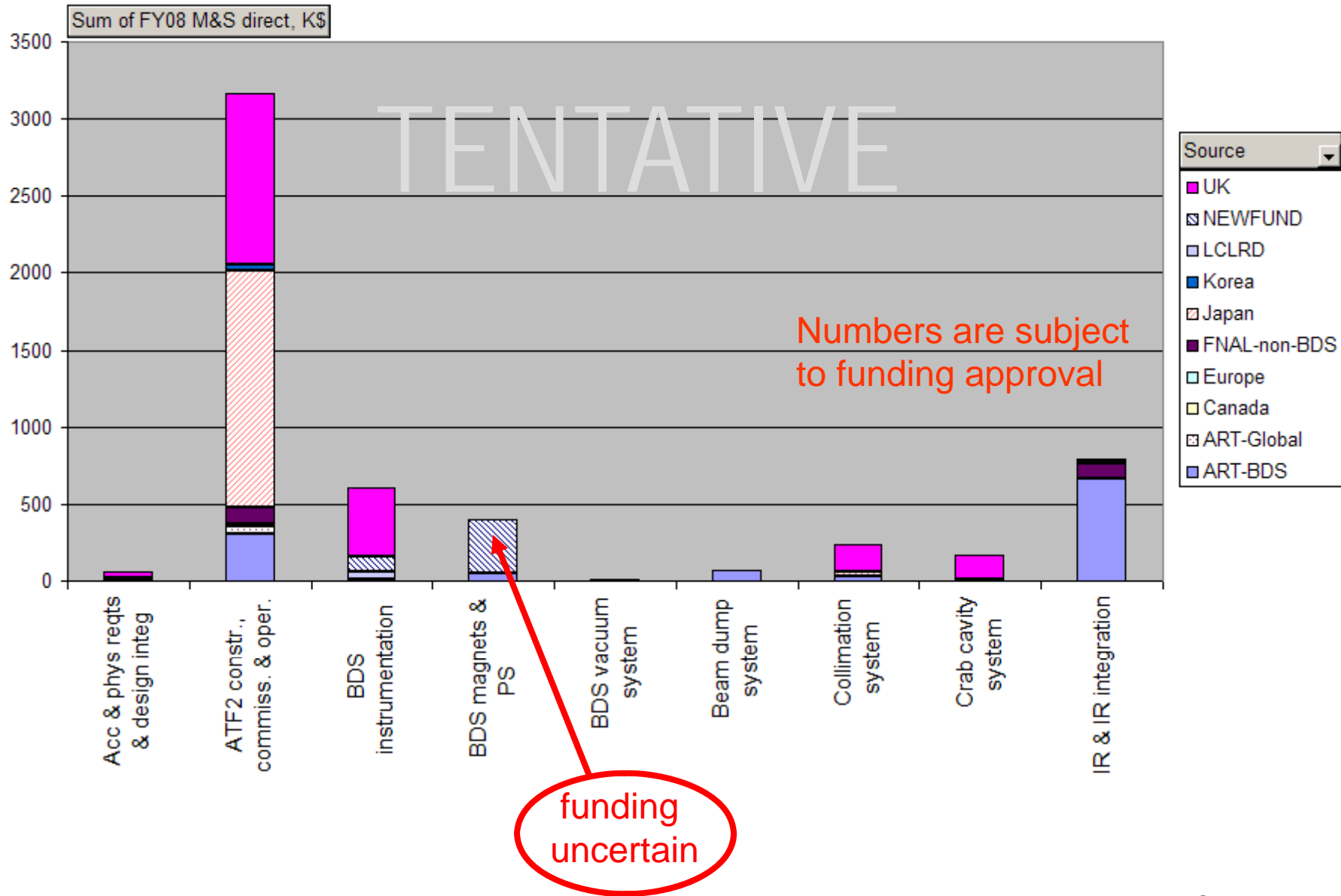
Distribution of resources on GWP



Distribution of resources on GWP



Distribution of resources on GWP



- Let's discuss each GWP one by one ...