Imperial College London

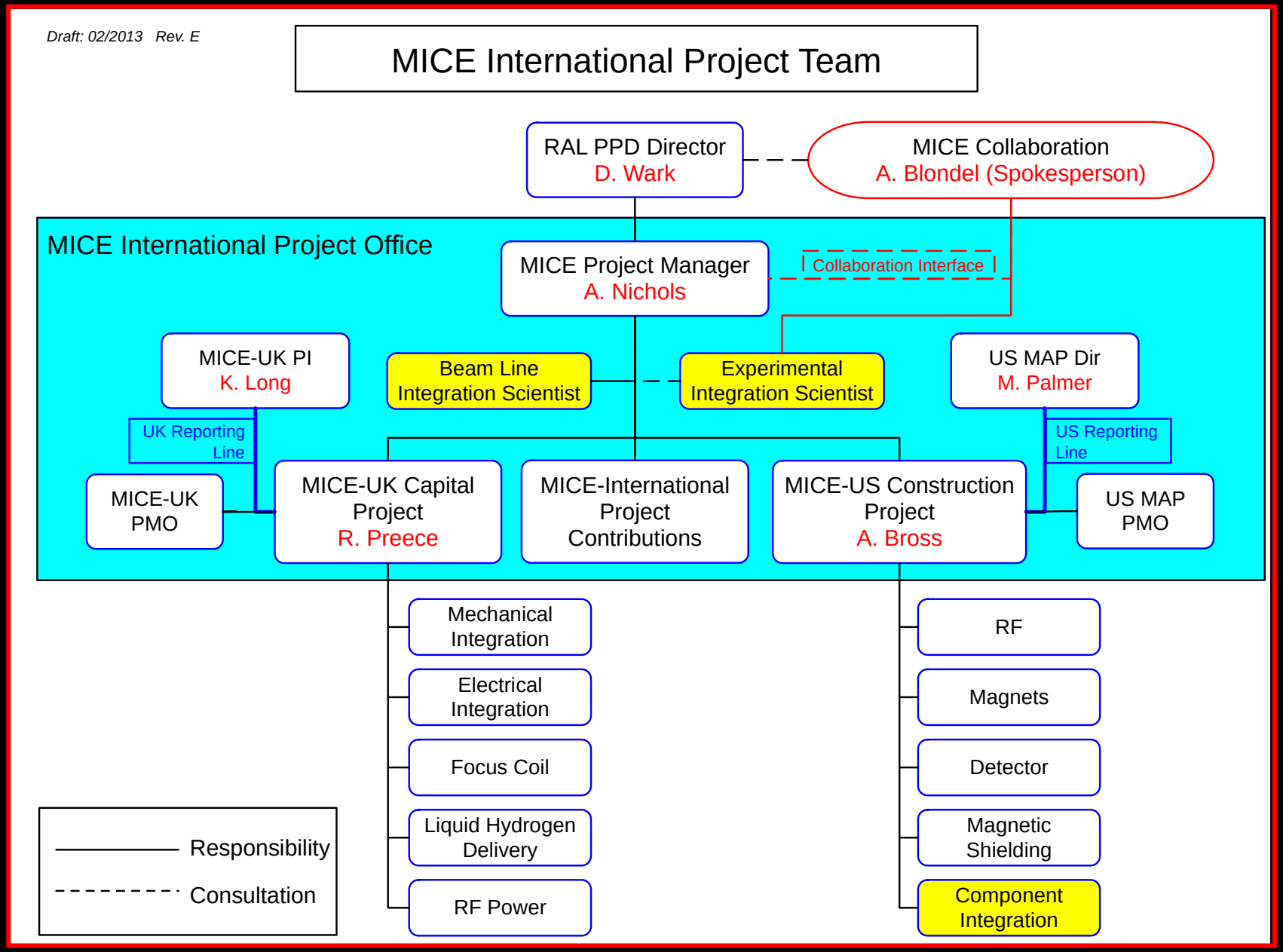
K. Long,
13 November, 2013

Management of the MICE construction effort and interface to operations and analysis

Evolution of management of MICE project:

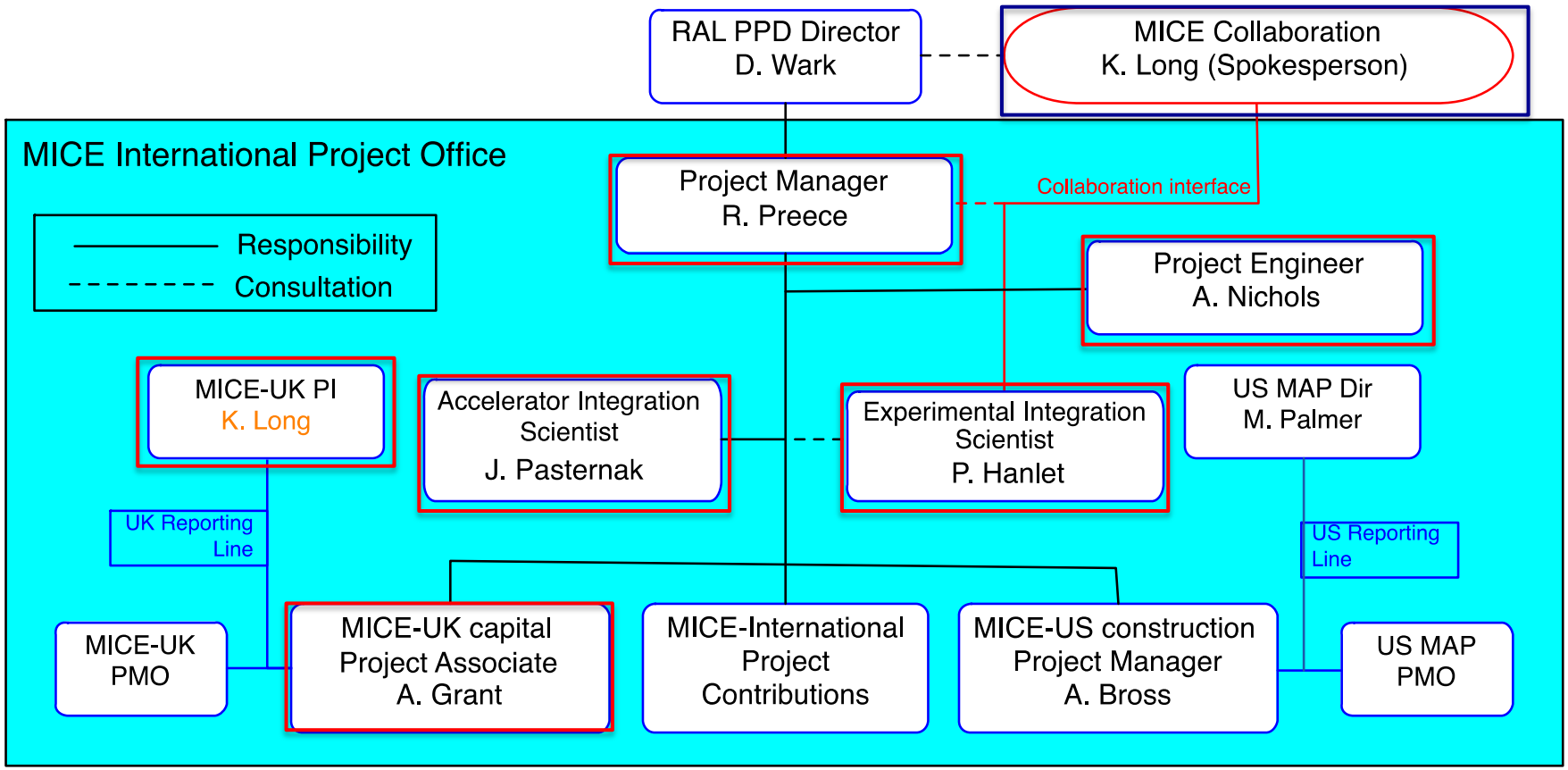
- MICE construction project:
  - Host laboratory:
    - Substantial construction project across two sites (RAL & DL):
      - Project Engineer; full time job;
    - Substantial planning/management/reporting job:
      - Project Manager; full time job
    - MICE International Project Office:
      - Updated to address needs of the construction project
- MICE experiment: operations and analysis
  - MICE Experiment Management Office:
    - Opportunity:
      - Construction project the responsibility of the MIPO, experimental collaboration "freed up" to ensure proper development of experimental/scientific side of project
    - MEMO organogram:
      - Being discussed within the collaboration; work in progress
        - » Reviewed by MICE Executive Board at its last meeting (08Nov13)

Organogram of construction project:



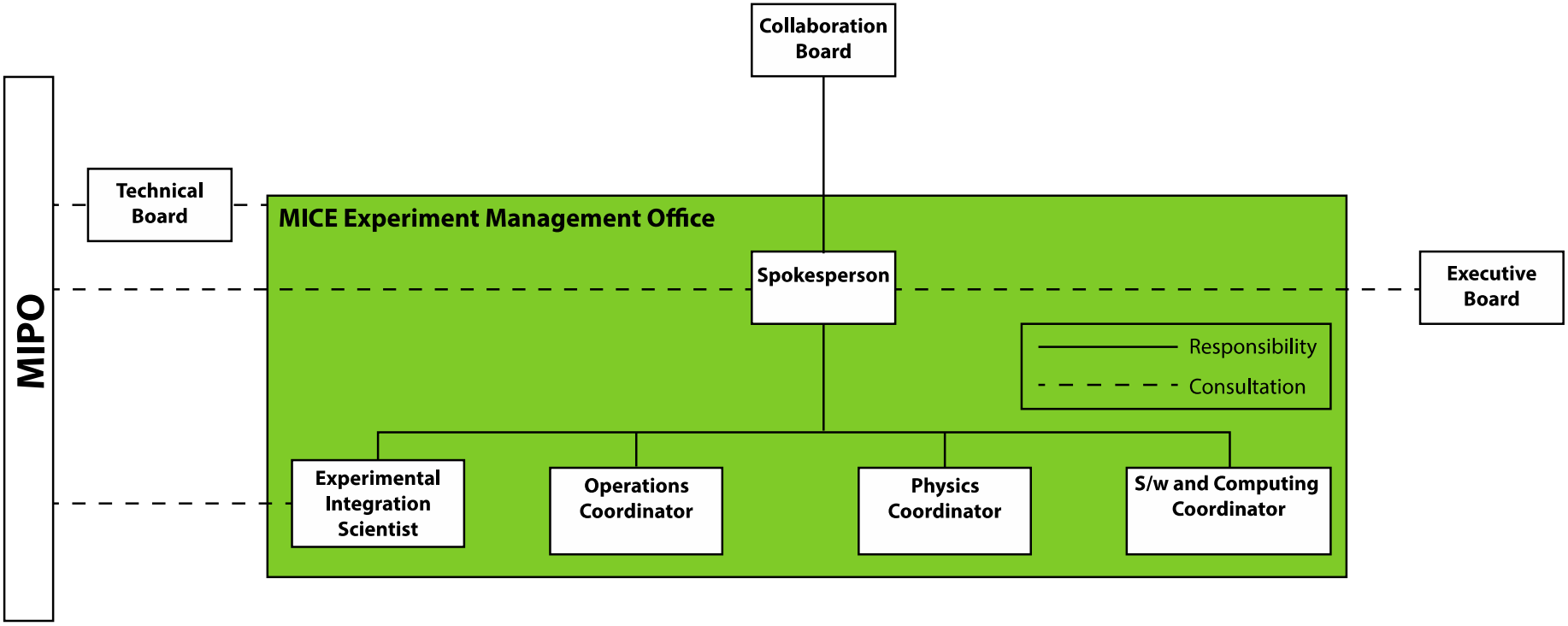
Version Date: 20 November 2013 Rev. L

MICE International Project Team



Version date 11 November 2013 Rev C

MICE Experiment Management Team



MIPO; MEMO; interface:

MICE International Project Office (MIPO)	
Project Manager	R. Preece
Project Engineer	A. Nichols
Accelerator Integration Scientist	J. Pasternak
Experimental Integration Scientist	P. Hanlet
MICE-UK capital Project Associate	A. Grant
MICE-US construction Project Manager	A. Bross
MICE-UK Principal Investigator	K. Long (acting)
US MAP Director	M. Palmer
MICE Experiment Management Office (MEMO)	
MICE Spokesperson	K. Long
Experimental Integration Scientist	P. Hanlet
Operations Coordinator	TBC
Analysis Coordinator	TBC
Software and Computing Coordinator	C. Rogers

Management of the MICE construction, maintenance, operations and analysis activities

1 Preamble

This note describes the management of the MICE construction project and the MICE operations, maintenance and analysis activities. The construction project is the responsibility of the MICE International Project Office (MIPO), which is chaired by the Project Manager (section 2). The operations, maintenance and analysis activities are the responsibility of the MICE Experiment Management Office (MEMO) which is chaired by the Spokesperson (section 3). Coordination of the construction, operations and maintenance activities is ensured by cross membership of the MIPO and MEMO (section 4). Both the MIPO and the MEMO may co-opt as required to ensure that appropriate expertise is available to ensure good decision making. Responsibilities for the safe execution of the construction project and the safe maintenance and operation of the experiment are defined. The body of this note defines the principal roles in the MIPO and the MEMO. The individuals fulfilling the roles are listed in the appendix. Appointments will be made for a period of two years and may be renewed. It is taken as read that the Deputy Spokesperson may deputise as appropriate for the Spokesman. This note, or its appendix, will be re-issued from time to time to reflect changes in personnel, organisation or function.

2 MICE International Project Office

The terms of reference of the MICE International Project Office (MIPO) are defined in [1]. The organogram for the MIPO is shown in figure 1. The work-breakdown structure for the construction project may be found in [2]. The top-level roles within the MIPO are:

Project Manager: The Project Manager is responsible for managing the MICE construction project. The construction project is taken as encompassing the construction or procurement of all components of the MICE Muon Beam, MICE experiment and the associated infrastructure, the integration of these components and their installation in the MICE Hall (R5.2) at RAL. The Project Manager is responsible for the preparation of the resource-loaded schedule, the risk analysis and the development and implementation of risk-mitigation strategies. He/she coordinates the preparation of reports as required by the various stakeholders, including: the Resource Loaded Schedule Review Panel, the MICE Project Board, the Funding Agency Committee, the MICE Collaboration Board and the MICE Executive Board. The Project Manager reports to the Director of the Particle Physics Department;

Project Engineer: The Project Engineer is responsible for executing the agreed programme in the MICE Hall and on the premises of the STFC Rutherford Appleton Laboratory. He/she is Group Leader in Matters of Safety (GLIMOS). In this role he/she has responsibility for safety in the construction, maintenance and operations projects at RAL. Responsibility for safety is delegated from the Director of PPD to whom the Project Engineer reports directly on matters of safety;

Accelerator Integration Scientist: The Accelerator Integration Scientist is responsible for ensuring that all components and systems that make up the MICE facility from the MICE target on ISIS, through the MICE Muon Beam, the spectrometer solenoids and the MICE cooling cell to the beam stop are integrated effectively. He/she is responsible for ensuring the functional integration of the experiment and that appropriate interlocks exist to obviate the risk that settings unsafe for personnel or equipment are inadvertently implemented. His/her remit includes consideration of the operation of the apparatus such that beams of appropriate composition, momentum and emittance are transported through the experiment;

Experimental Integration Scientist: The Experimental Integration Scientist is responsible for ensuring that the requirements of the instrumentation and of the experiment in operation are effectively conveyed to the Project Manager and the MIPO. His/her remit includes consideration of the configurations in which the experiment is to be operated and the requirements of the individual detector, controls and monitoring and data-acquisition systems;

MICE-UK capital Project Associate: The MICE-UK capital Project Associate is responsible for financial planning, schedule management and risk analysis in the MICE-UK capital project. He/she supports the Project Manager in all aspects of managing the work-packages that are the responsibility of the MICE-UK collaboration. The MICE-UK capital Project Associate is supported by the MICE-UK Project Management Office (MICE-UK PMO);

MICE-US construction Project Manager: The MICE-US construction Project Manager is responsible for financial planning, schedule management and risk analysis in the MICE-US construction project. He/she supports the Project Manager in all aspects of managing the work-packages that are the responsibility of the MICE-US collaboration. The MICE-US construction Project Manager is supported by the US MAP Project Management Office (US MAP PMO);

MICE-UK PI: The MICE-UK PI is appointed by STFC in consultation with the MICE-UK collaboration and is responsible for delivering the MICE-UK project in accordance with the requirements of the STFC; and

US Muon Accelerator Program (MAP) Director: The US MAP Directory is appointed by the DOE in consultation with FNAL and the US MAP collaboration and is responsible for delivering the MAP programme, of which MICE is part, in accordance with the requirements of FNAL and the DOE.

With the successful commissioning of the Electron Muon Ranger (EMR) at RAL, the principal capital contributions to the project are the UK and US responsibilities. Additional contributions, other than those from the UK and the US, are recognised in the box labelled "MICE-international project contributions". The MICE constitution [3] provides for a Technical Board (see figure 2) provides technical advice to the Project Manager, the MIPO and the MEMO.

3 MICE Experiment Management Office

The MICE Experiment Management Office (MEMO) is responsible for the delivery of the scientific programme of the experiment as defined by the Spokesperson in consultation with the Executive Board and the Collaboration Board. As such, the MEMO is responsible for:

1. Coordination of the maintenance and operation of the experiment to ensure the data required to deliver the scientific programme is taken in a timely and efficient manner;
2. Ensuring the smooth operation of the MICE Muon Beam and associated instrumentation, the MICE cooling cell, the MICE sprectrometers and the experiment's instrumentation;
3. Management of the physics analysis of the data from the experiment to ensure timely publication of results; and
4. Coordination of the analysis and simulation activities, including the determination of alignment and calibration constants to allow the timely analysis of data

The organogram for the MIPO is shown in figure 2. The work-breakdown structure for the operations, analysis, software and computing work packages may be found in in [4]. The top-level roles within the MEMO are:

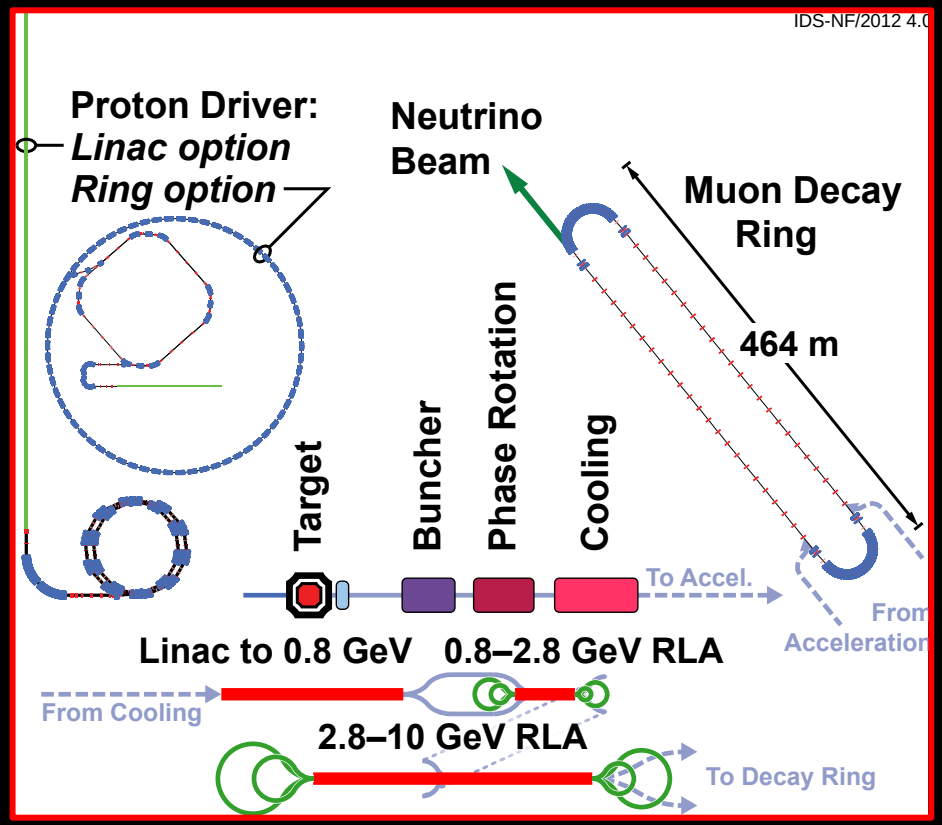
Spokesperson: The MICE constitution [3] states that the "Spokesperson is responsible to the Collaboration Board for the execution of the MICE project";

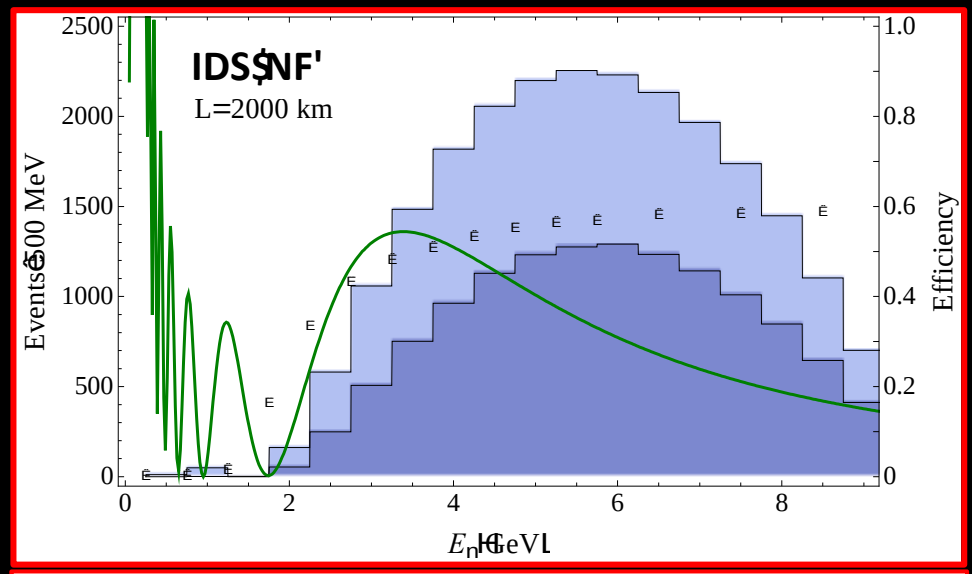
Experimental Integration Scientist: The role of the Experimental Integration Scientist was defined in section 2. Within the MEMO, the Experimental Integration Scientist is responsible to carry the maintenance and

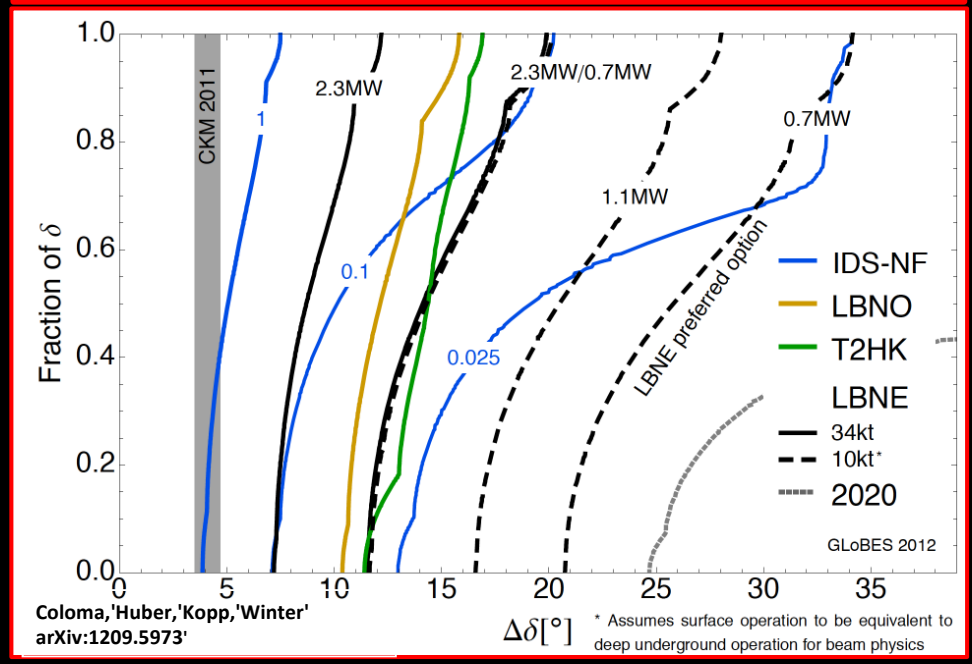
Evolution:

- Collaboration charter:
  - Drafted 2003
  - MIPO/MEMO invented recently
    - Not reflected in Charter
  - MICE CB has asked MICE EB to instigate a review

MICE *the* enabler:







- **Also:**
  - **Route to multi-TeV lepton-antilepton collissions**

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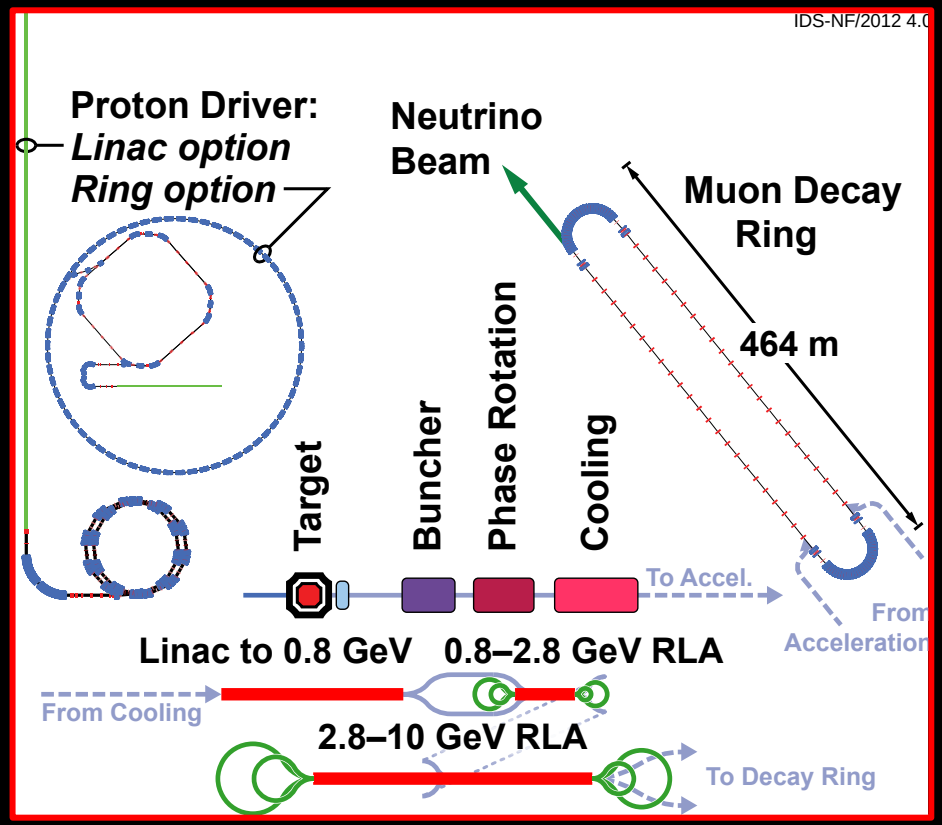

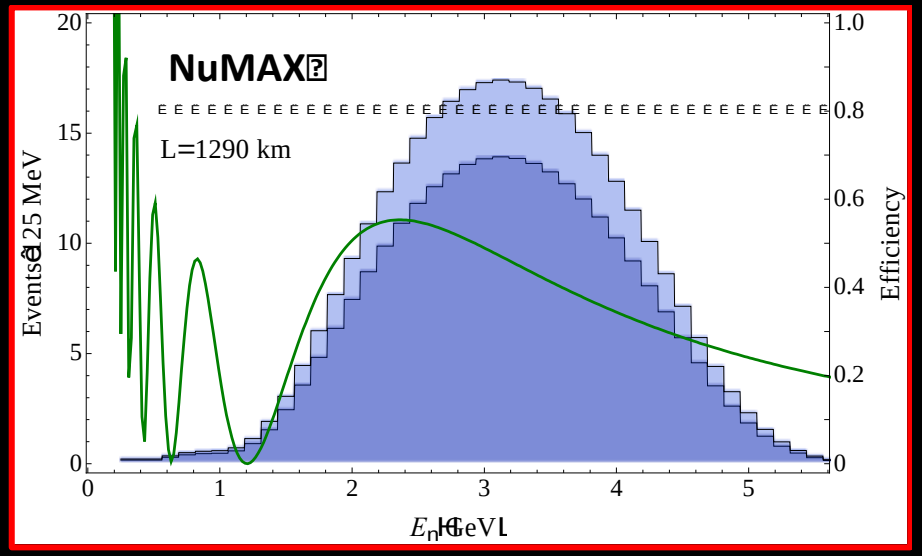

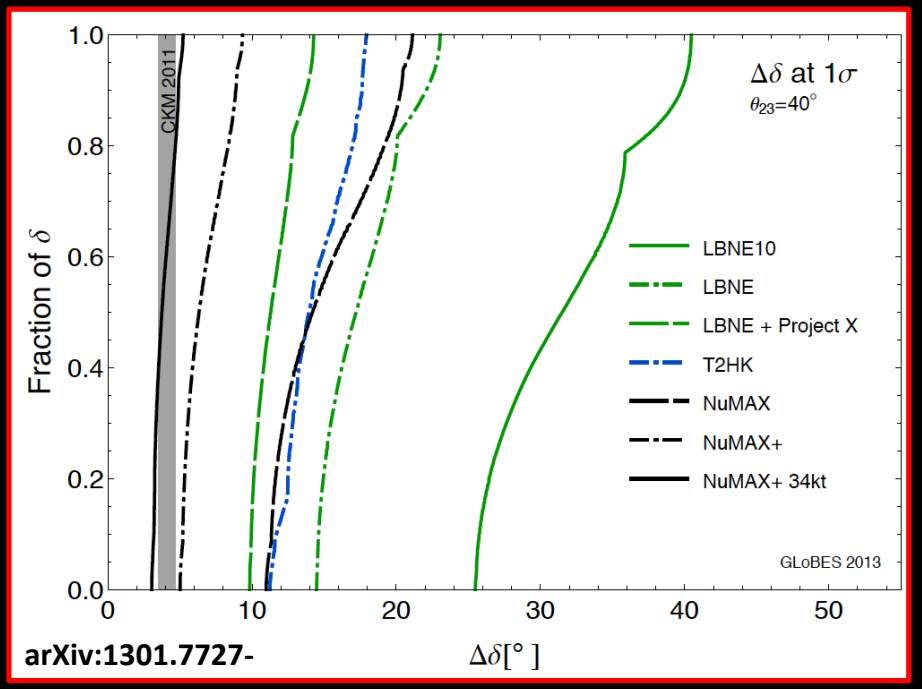

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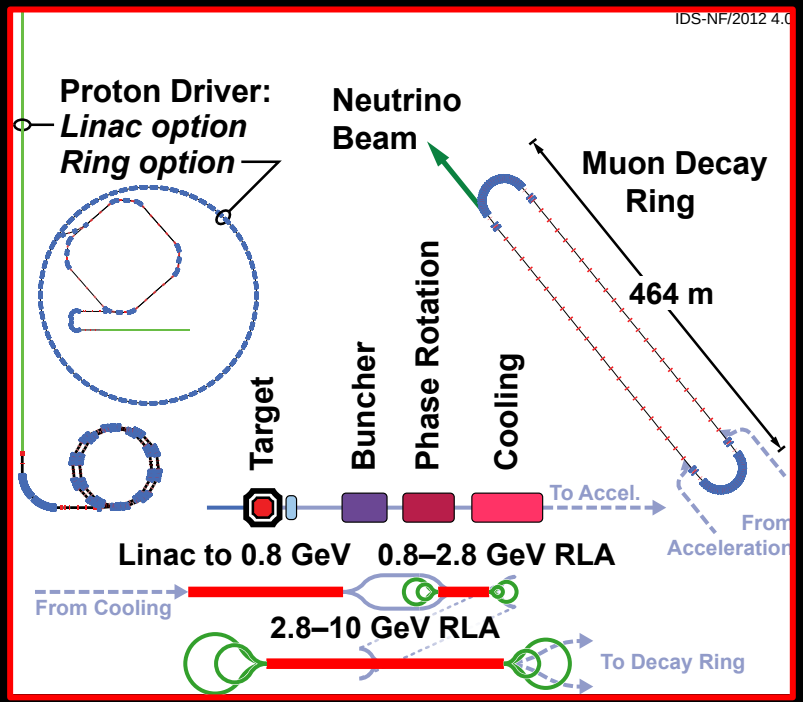

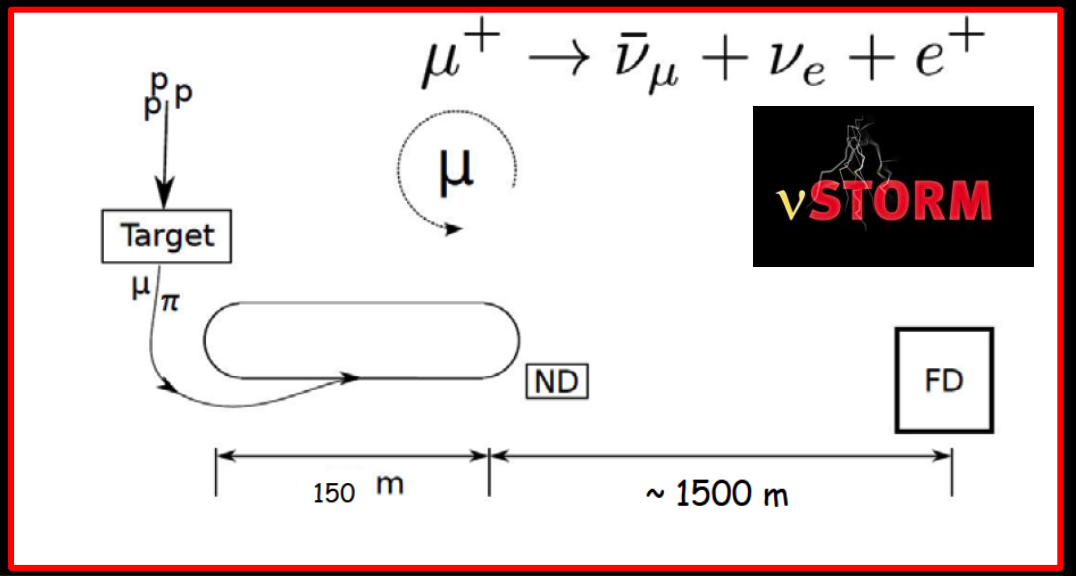

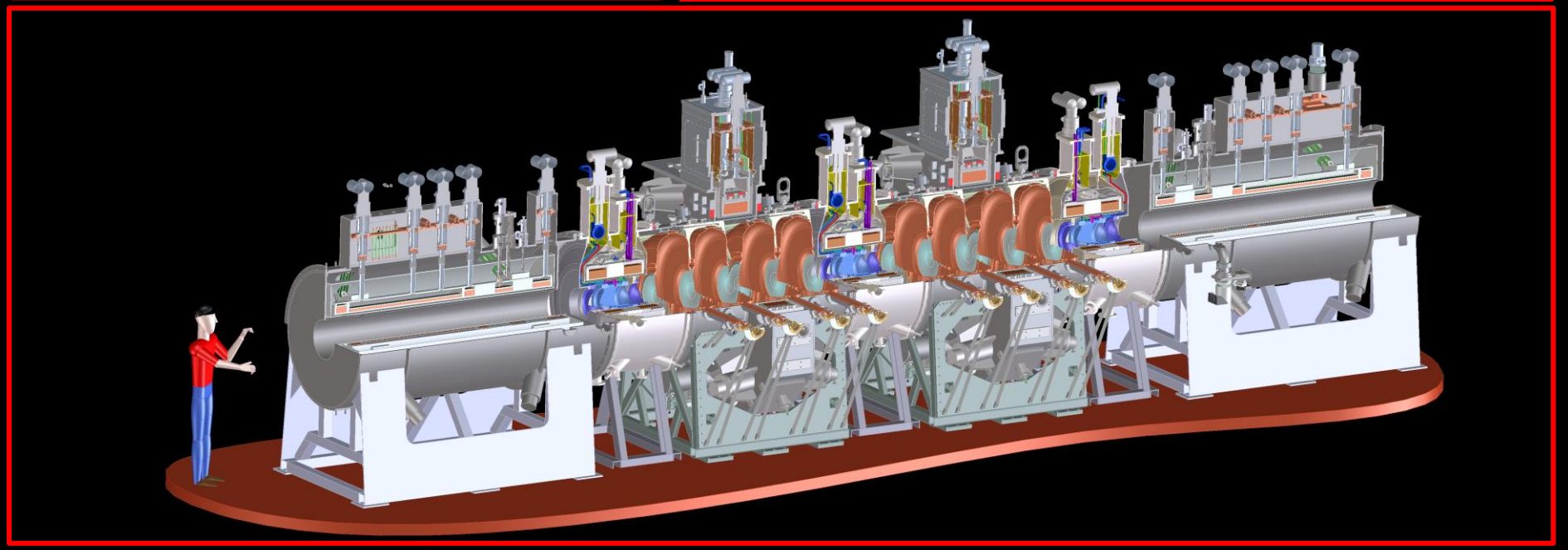

- **Timely implementation of MICE important to the field!**

Preface to budget/schedule presentations from UK and US PIs:

- US leveling; based on budget assumptions presented to the RLSR Panel in May13:
  - Changes delivery dates for some components;
  - Includes contingency and appropriate float;
    - More robust going forward:
      - Principal issue:
        - » Impact and management of R&D risks

- UK analysis of spend profile which will include explicitly called out working margin and contingency:
  - Document(s) [cost, schedule, risk] in preparation:
    - Requires another iteration to take into account full outcome of US levelling;
      - Principal issue:
        - » Management of contingency

- So, cost/schedule analysis still “a work in progress”:
  - But, more advanced on both sides than in May13;
  - Now seek to rebaseline full project (Step IV; Step V or VI) by ~March 2014