

PHYSICS CO-ORDINATOR'S REPORT

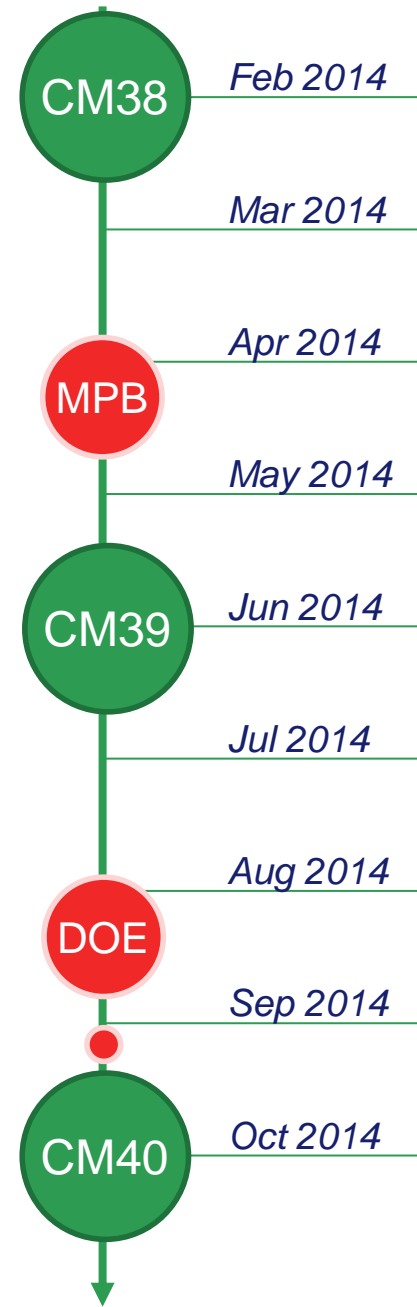
V. Blackmore

v.blackmore@imperial.ac.uk ←———— (Update address books)

MICE CM40

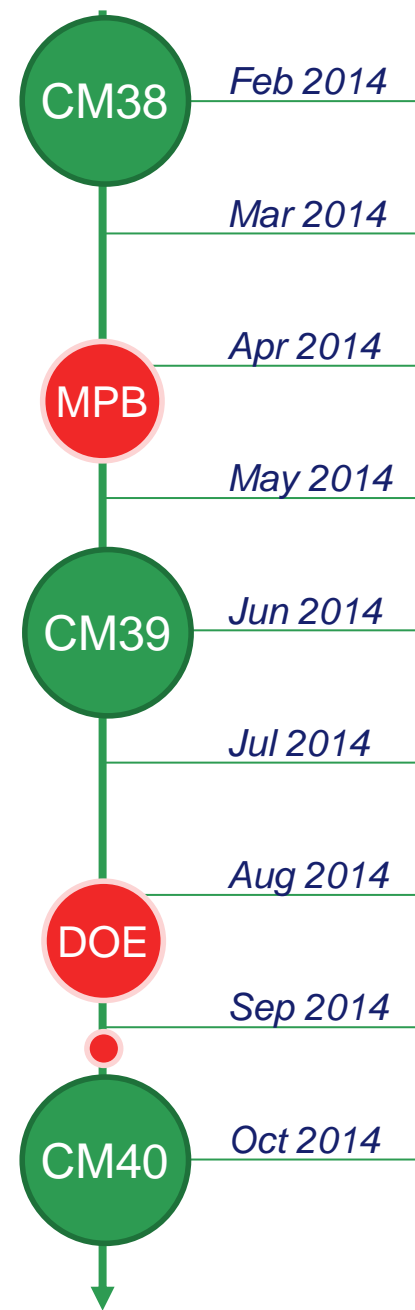
27th October, 2014

Recap



Recap

Step IV with FC1 studies begun
 Step V or VI? EMR analysis first presented
 Pion contamination (new data) SS field maps
 RF timing & Step V/VI dE/dx in Step IV
 Alignment
 G4BL models of Step I

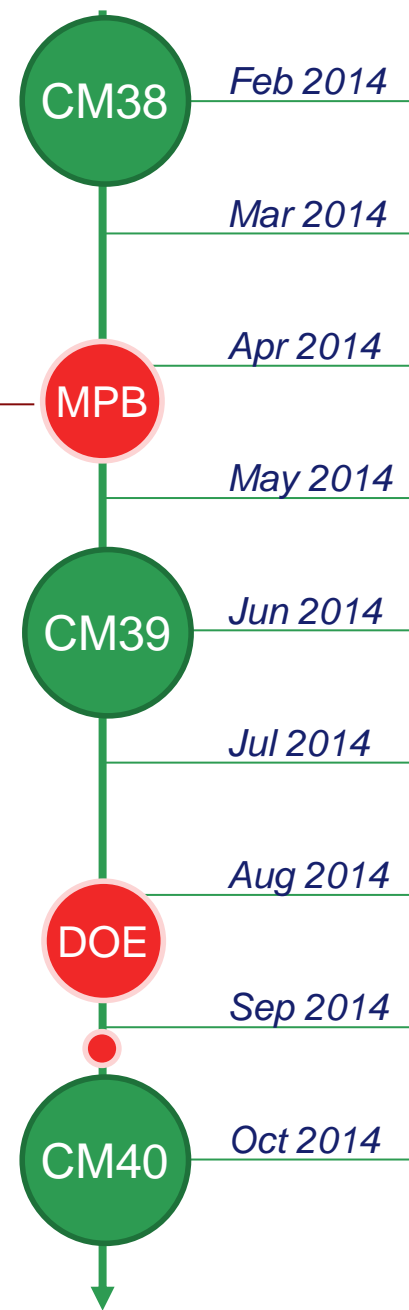


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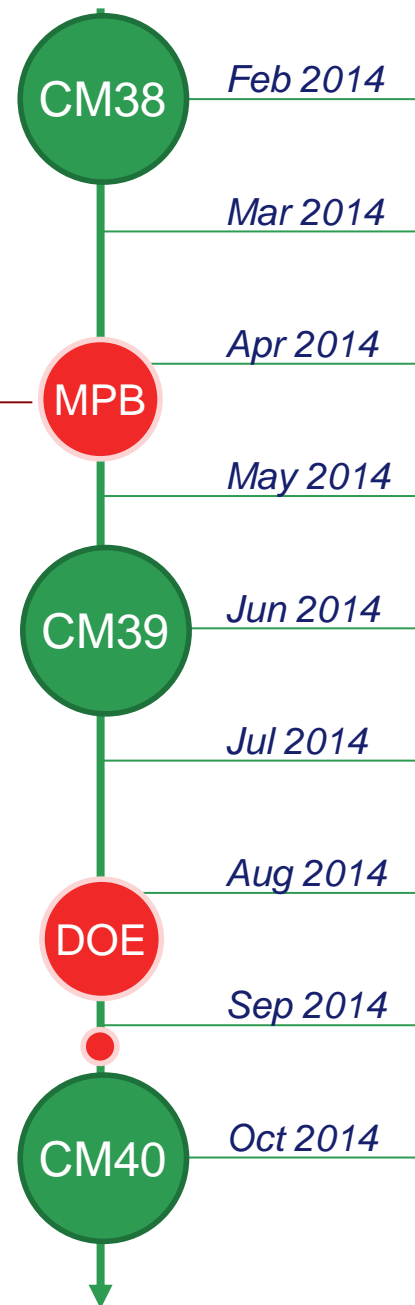
FC1 \approx OK IN STEP IV

STEP V ESSENTIAL, ~~STEP VI~~



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Feb 2014

Mar 2014

Apr 2014

May 2014

Jun 2014

Jul 2014

Aug 2014

Sep 2014

Oct 2014

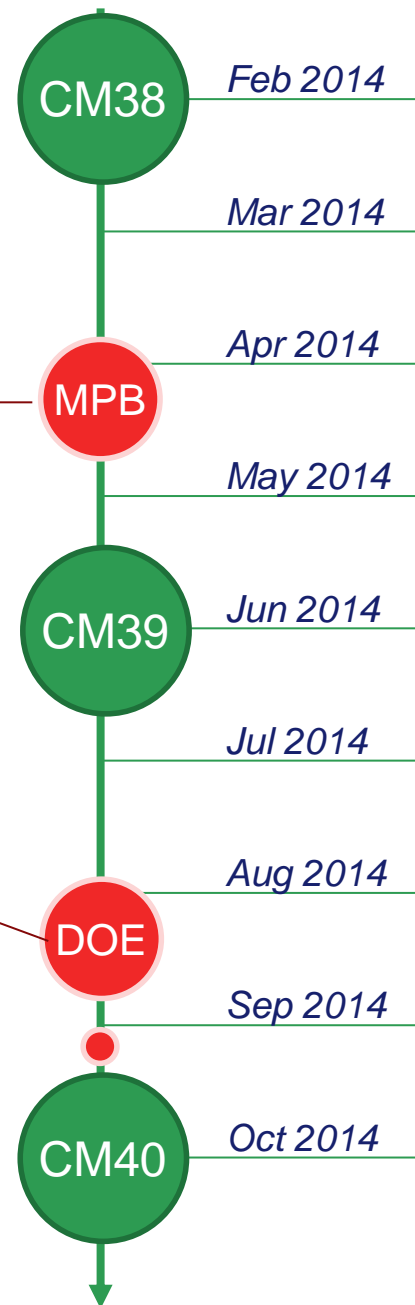
FC1 ≈ OK IN STEP IV

STEP V ESSENTIAL, ~~STEP VI~~

Reconstructed emittance
 Wedge absorbers FC1 mapped
 KL Monte Carlo FC1 in Step IV
 Beam library Polarisation
 Pion contamination Step V Monte Carlo
 EMR analysis Quadrupole alignment

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MUON COOLING DEMO BY 2017

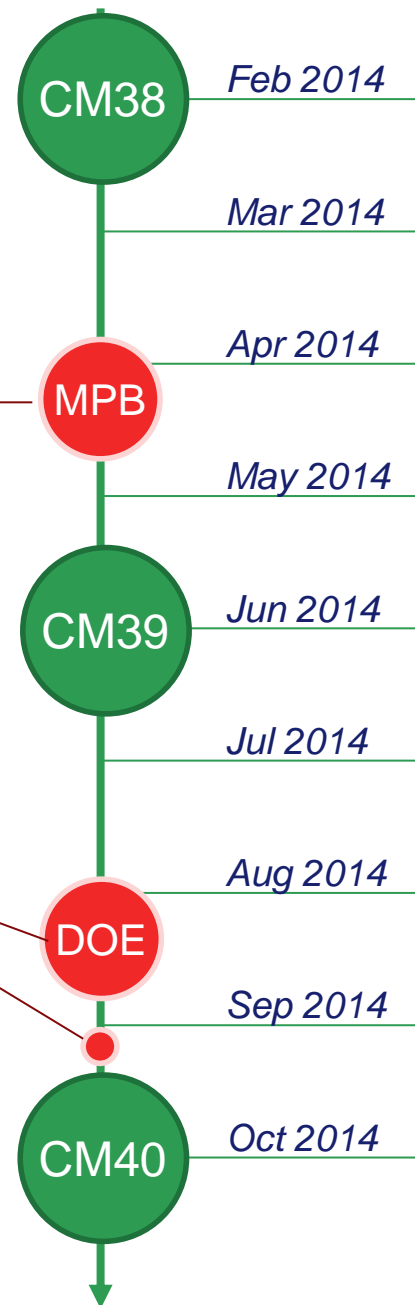
STEP V WITHOUT CC?



Step $\pi, 3\pi/2 \dots$

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STEP V WITHOUT CC?

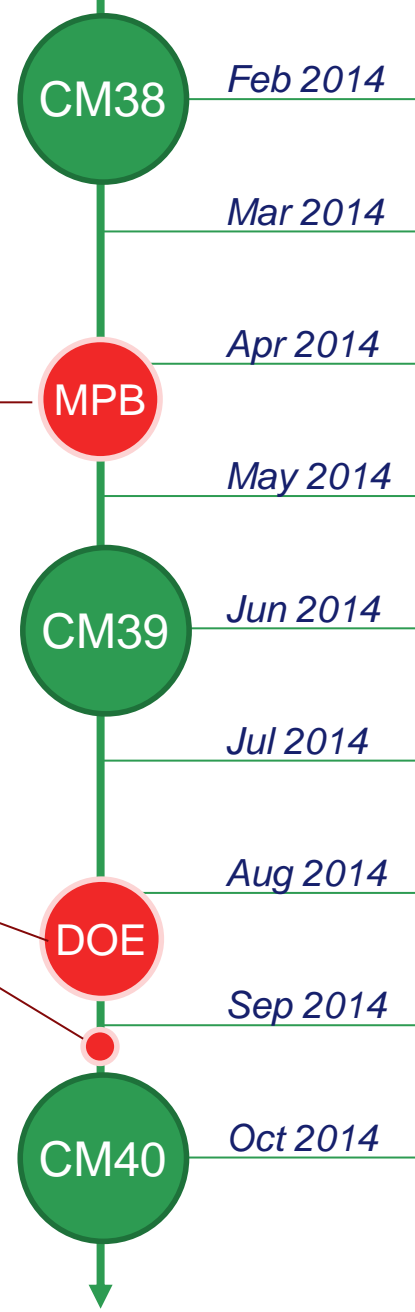
Step $3\pi/2$ initial design to DOE



Step $\pi, 3\pi/2...$

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MUON COOLING DEMO BY 2017

STEP V WITHOUT CC?

Step $3\pi/2$ initial design to DOE

Muon beam line → Step IV
 KL Monte Carlo **Step IV "Physics Block"**
 Pion contamination note FC2 mapped
 EMR note Magnetic alignment
 Polarisation Tracker alignment
Development of Final MICE Step
 Emittance Reconstruction



Step $\pi, 3\pi/2...$

*You can't keep a
good mouse down.*



CM40 Highlights

Taken over the majority
of Tuesday...

...but there are
important things to
discuss*

1. Papers
2. Step IV
3. The cooling
demonstration

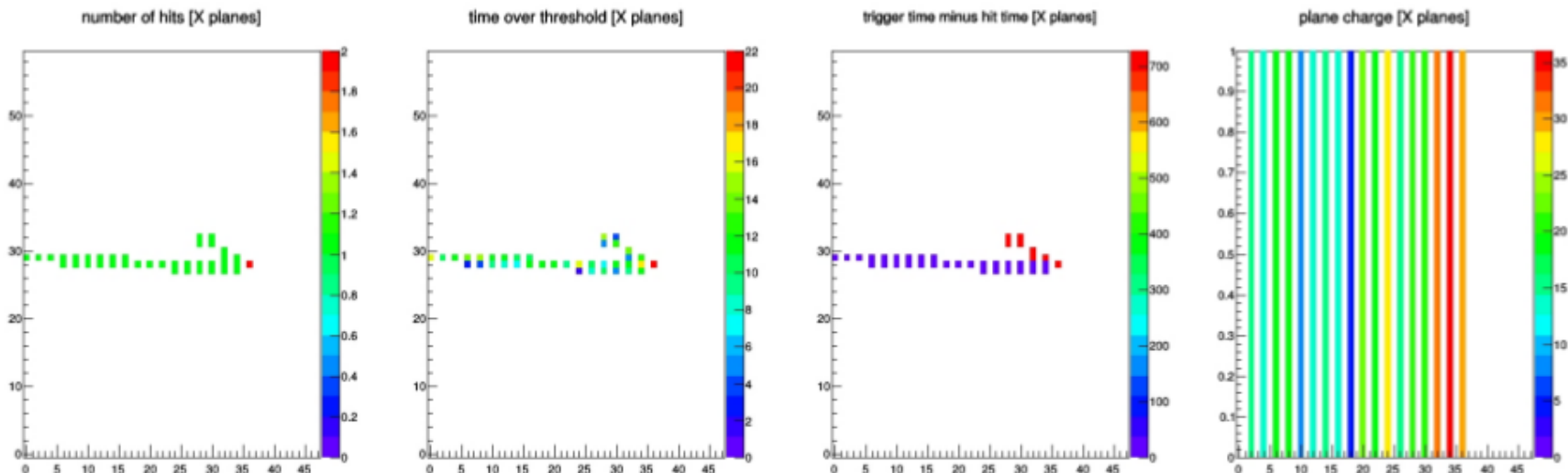
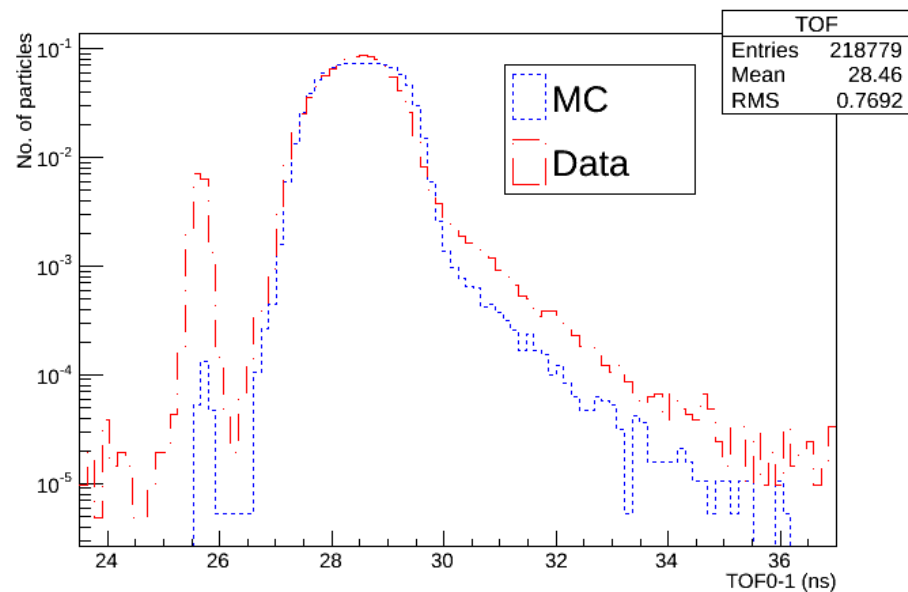
**despite all the discussions
yesterday!*



From the BBC's "Hidden Kingdom" series ([warning: this image may have been photoshopped](#))

Papers

- Three Step I papers in the pipeline
 - [Pion contamination \(Orestano\)](#)
 - [EMR commissioning \(Drielsma\)](#)
 - [Quadropole alignment \(Overton\)](#)
- + Step IV papers laid out
- + Cooling Demo description

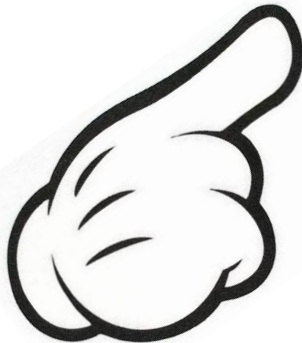


Step IV



- Bayes: Produced “cradle-to-grave” Step IV simulations
 - Test of our MC production routine (“the Physics Block challenge”)
 - ROOT files are here:






http://ppes8.physics.gla.ac.uk/~rbayes/MICE_6pi200_1/



Readiness for Step IV

- Can simulate Step IV:
- Beam from target → EMR:
- Can match beam into tracker: 
- Can select beam in tracker: 
- Can reconstruct muon tracks:
- Can calculate emittance:

- Uncertainties:
- Statistical:
- Systematics: 

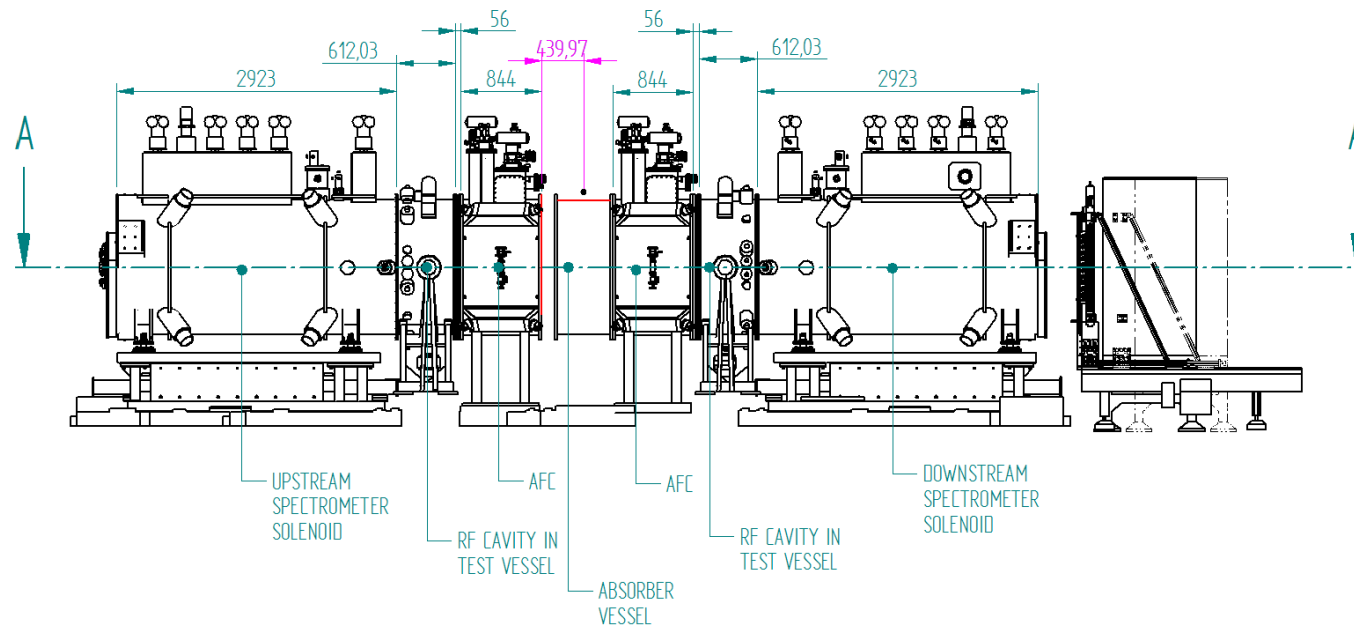
- Run plan for Step IV:
- User runs known: 
- Tough choices made: 



→ Discussed at this meeting – work is underway.

Demonstration of Ionisation Cooling

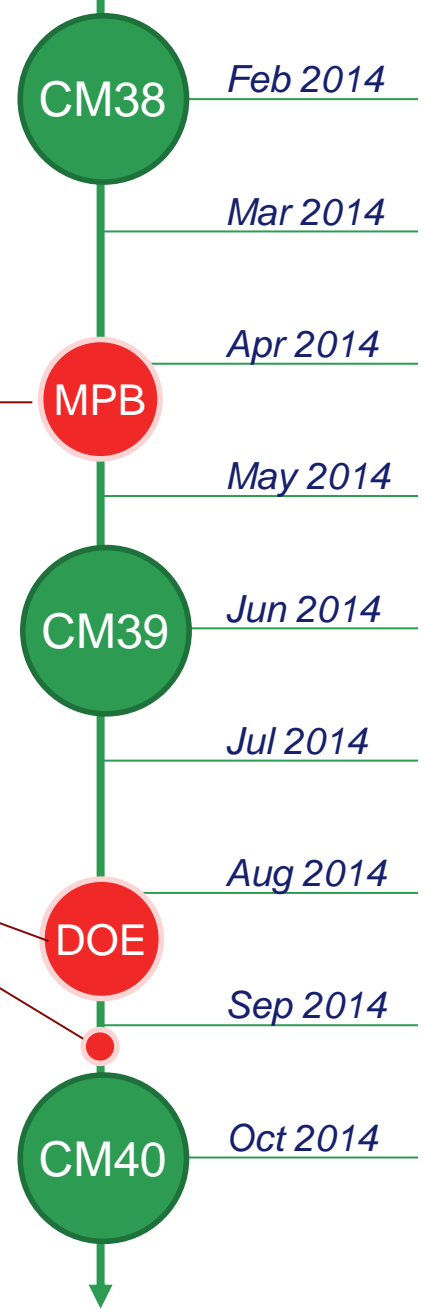
- Major discussion topic on Tuesday afternoon
 - Preview yesterday evening
- Past design history is [viewable on the issue tracker](#)
- Proven we can act quickly and think, producing two good, entirely new solutions in 10 weeks



Summary

A phenomenal amount of work

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