The WLCG Service

That was the year that was

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Worldwide LHC Computing Grid

Distributed Production Environment for Physics data Processing

Service Challenges

- Purpose
  - Understand what it takes to operate a real grid service – run for weeks/months at a time (not just limited to experiment Data Challenges)
  - Trigger and verify Tier1 & large Tier-2 planning and deployment –
    - tested with realistic usage patterns
  - Get the essential grid services ramped up to target levels of reliability, availability, scalability, end-to-end performance

- Four progressive steps from October 2004 thru September 2006
  - End 2004 - SC1 – data transfer to subset of Tier-1s
  - Spring 2005 – SC2 – include mass storage, all Tier-1s, some Tier-2s
  - 2nd half 2005 – SC3 – Tier-1s, >20 Tier-2s –first set of baseline services
  - **Jun-Sep 2006 – SC4 – pilot service**

→ Autumn 2006 – LHC service in continuous operation – ready for data taking in 2007

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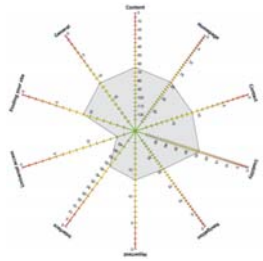
SC3 Services – Lessons (re-)Learnt

- It takes a **L O N G** time to put services into (full) production
- A lot of experience gained in ***running*** these services Grid-wide
- Merge of 'SC' and 'CERN' daily operations meeting has been good
- Still need to improve 'Grid operations' and 'Grid support'
- **A CERN 'Grid Operations Room' needs to be established**
- Need to be more rigorous about:
  - Announcing scheduled downtimes;
  - Reporting unscheduled ones;
  - Announcing experiment plans;
  - Reporting experiment results;
  - Attendance at 'V-meetings';
  - …
- A daily OPS 'meeting' should be foreseen for LHC preparation / commissioning

"Mumbai" SC4 Workshop Outline
(POW as presented to last LHCC review)



1. **Get data rates at all Tier1s up to MoU Values**
   - ☺ Recent re-run shows the way! (More on next slides…)

2. **Re-deploy Required Services at Sites to meet MoU Targets**
   - Lessons learnt from SC3 on Service Deployment (next)…
   - ➢ **Must include extensive testing by experiments under realistic production conditions!**
   - **The job is not over when the release is cut --- that is when it starts!**

3. **Uncover remaining Use Cases, define milestones & test**
   - Mumbai ("Tier1") and CERN ("Tier2") workshops setup for this…

☝ **Need strong collaborative spirit to deliver required level of services**
   - And survive the inevitable 'crises'…

SC4 – the Pilot LHC Service from June 2006

A stable service on which experiments can make a full demonstration of experiment offline chain

- DAQ → Tier-0 → Tier-1
  data recording, calibration, reconstruction
- Offline analysis - Tier-1 ←→ Tier-2 data exchange
  simulation, batch and end-user analysis

And sites can test their operational readiness

- Service metrics → MoU service levels
- Grid services
- Mass storage services, including magnetic tape

Extension to most Tier-2 sites

Evolution of SC3 rather than lots of new functionality

In parallel –

- Development and deployment of distributed database services (3D project)
- Testing and deployment of new mass storage services (SRM 2.1)

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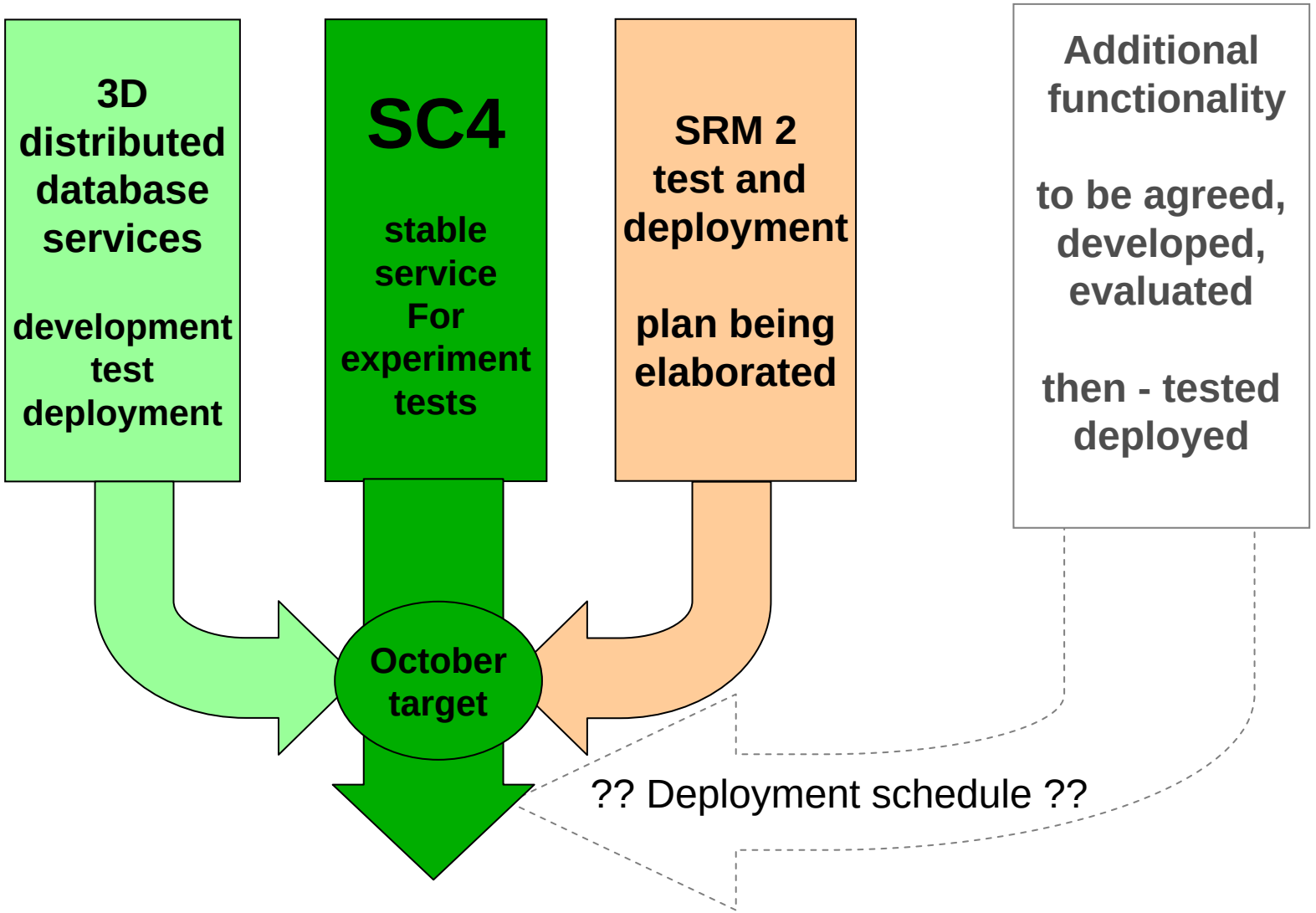
Medium Term Schedule



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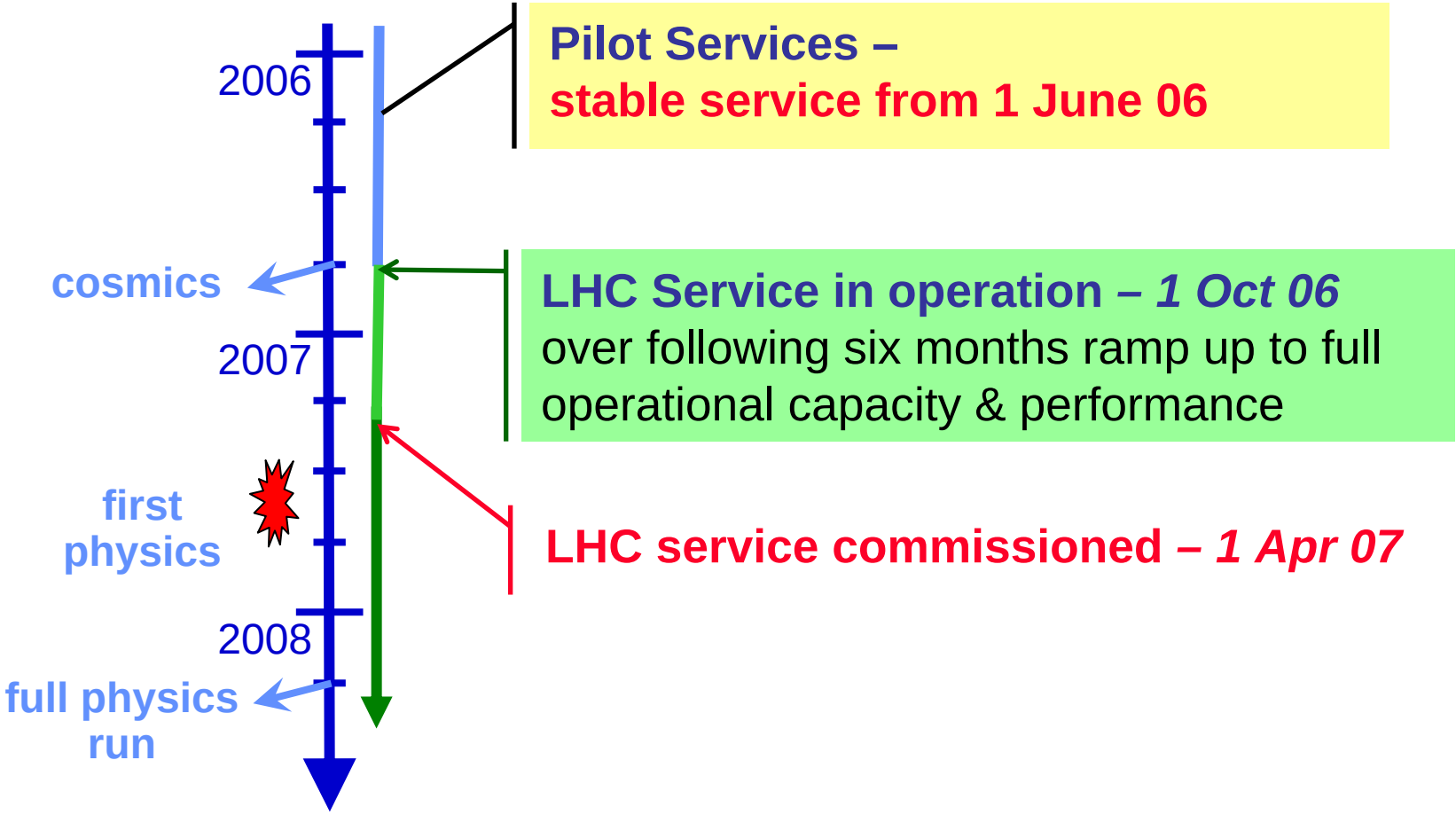
LCG Service Deadlines



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- The Service Challenge programme this year must show that we can run reliable services
- Grid reliability is the product of many components
  – middleware, grid operations, computer centres, ….
- Target for September
  - 90% site availability
  - 90% user job success
- Requires a major effort by everyone to monitor, measure, debug

Too modest?
Too ambitious?

First data will arrive next year

NOT an option to get things going later

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