

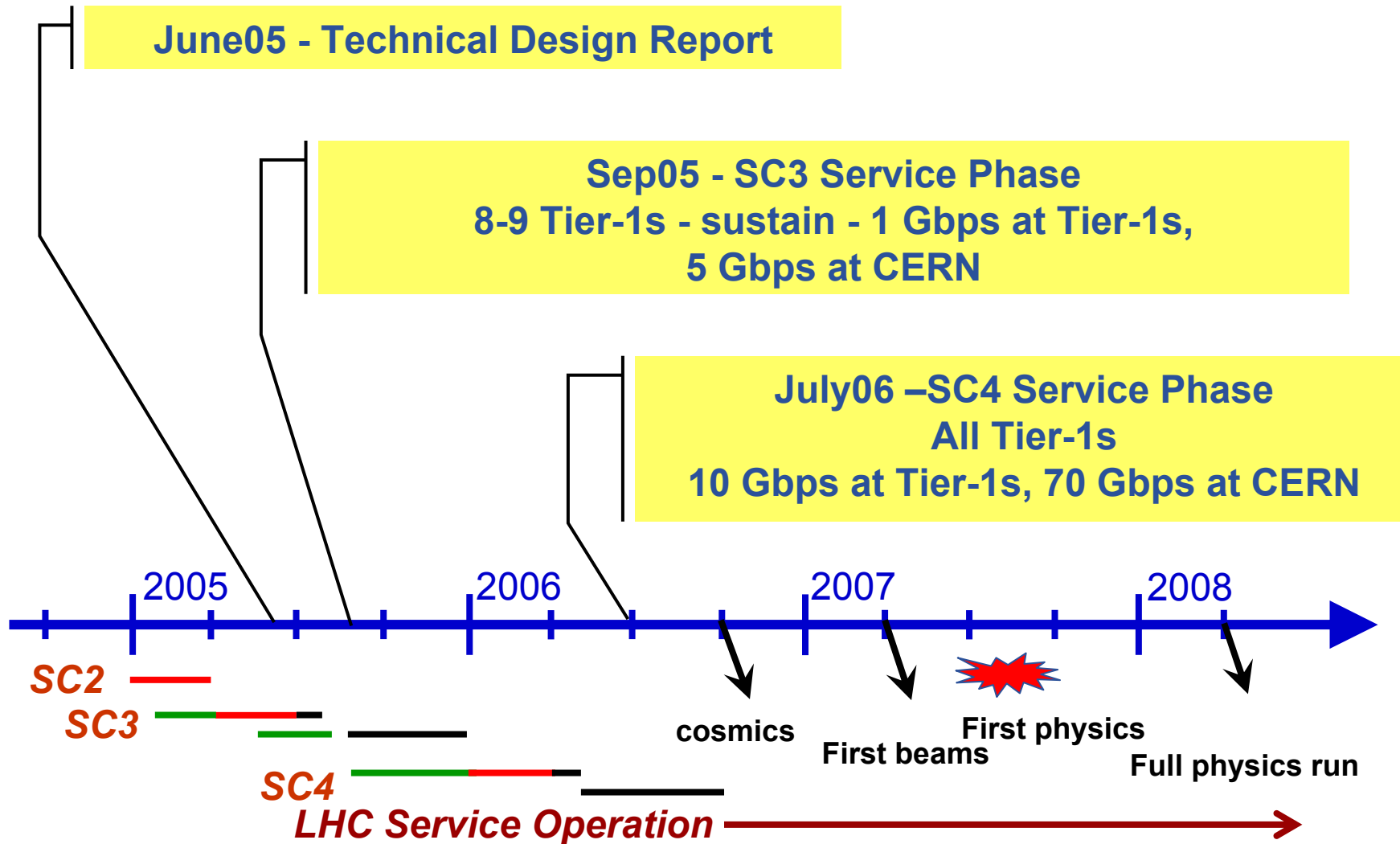


What is Middleware?

- **Software and associated services that lie between**
 - the basic services that we all agree on (?) (operating system, compilers, network, ..)
 - and the application – whether developed and supported in common by the applications area, or private to an experiment
 - **We need agreement now on which middleware and associated services are**
 - provided and supported by the project
 - operated long-term by the regional centre facility staff and grid operations
- as input to the TDRs**
- for deployment in the Service Challenges**



Key dates for Connectivity





Examples

- **Storage management software**
 - SRM interface – agree on subset of SRM options
 - MSS implementation at named key sites
 - Base disk pool manager for other sites
- **Reliable file transfer service**
 - Low-level service that underlies data placement services
 - Network aware, MSS implementation aware
- **File placement service**
 - Selects “best” site as destination of data
 - Are generalised algorithms realistic? – or should this be an experiment specific service?
- **Grid catalog(s)**
 - Global and local functionality
 - Minimum distribution/synchronisation requirements
 - Meta-data requirements
 - Minimise the number of catalogs that the service must support
- **Workload management**
 - Essential improvements required
- **Database services**
 - Leave this to the 3D project?
- **Grid monitoring tools and services**
- **VO management services**
- **Applications software installation service**



- **Identify –**
 - services that must be provided by the project
 - services that will be provided by the experiment
- **Define functionality that must be available at latest**
 - for July 2004 – SC3 service
 - for April 2006 – SC4 service
- **This should not be a design exercise**
 - we should only be covering the basic things for which we already have the experience
- **Realistic and pragmatic**
 - Existing software, practice and experience
 - Resources available for development –
and for long-term maintenance
 - Implications on regional centres, grid operations - that must provide the service
- **Minimal number of implementations**
 - But may be better to have more than one straightforward service than over-complex general services



- **Need to agree by April**
 - Input to TDRs
 - First implementations by July – so April is late
- **Could be an RTAG**
 - 2 people from each experiment
 - Few people from ARDA, GD, regional centres
- **Could be an ad hoc group**
- **But importance is to survey and report rapidly**