

CMS Centres Worldwide: a New Collaborative Infrastructure

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The CMS Experiment at the LHC is establishing a global network of inter-connected “CMS Centres” for controls, operations and monitoring. These support: (1) CMS data quality monitoring, detector calibrations, and analysis; and (2) computing operations for the processing, storage and distribution of CMS data.

We describe the infrastructure, computing, software, and communications, systems required to create an effective and affordable CMS Centre. We present our highly successful operations experiences with the major CMS Centres at CERN, Fermilab, and DESY during the LHC first beam data-taking and cosmic ray commissioning work. The status of the various centres already operating or under construction in Asia, Europe, Russia, South America, and the USA is also described.

We emphasise the collaborative communications aspects. For example, virtual co-location of experts in CMS Centres Worldwide is achieved using high-quality permanently-running “telepresence” video links. Generic Web-based tools have been developed and deployed for monitoring, control, display management and outreach.

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