Software engineer Richard Wilkinson is responsible for the Request Manager service for the CMS Data Management and Workload Management (DMWM) project. The Request Manager is the front end for new CMS data processing system, which allows users to request computing actions, such as re-reconstruction, Monte Carlo simulation, and data staging. The Request Manager uses web interfaces to interact with users, group coordinators, and data operations team members, to create, approve and assign requests.

The user defines the request: the configuration files to be used, the skims to be made, the software version, the input dataset, and so on. The request is stored in a database, and made browseable, awaiting approval and prioritization from the group coordinator. The data ops team sets the details of the processing: the splitting algorithms, the sites, the merging/splitting parameters, and so on. The request is then assigned to a production Work Queue, which oversees the processing. Communicating with the Request Manager is done via the REST model, which uses HTTP commands: GET, PUT, POST, and DELETE. The work queue sends updates and status messages to the Request Manager as the job progresses, until the job reaches a final state.

During 2010, Wilkinson took the Request Manager from being a standalone prototype to being the fully integrated and functional front end to the new WMAgent data processing system, supporting all known use cases for requestors, physics groups, and data processing operators. During a workshop in August in Bristol, UK, requests for 100,000 Monte Carlo events were submitted, accepted, and successfully processed. Deployment at CERN as an official CMS web service is in progress.

Wilkinson is also responsible for the detailed simulation of two major subsystems on CMS: the muon endcap cathode strip chambers (CSC), and the hadronic calorimeter (HCAL). Both of these simulations make extensive use of calibration and conditions data to model the electronics response, and both have been validated against collision data in 2010.

For the CSC simulation, work included updates to the zero suppression model, and collaboration with the UCLA group to translate their precise timing of the detector components into the simulation. He is editing the simulation section of the muon performance paper [**?**], and studying the ionization model within the simulation, in order to obtain better agreement with the observed charge distributions.

For the HCAL simulation, his work has included the simulation of HCAL upgrades, adding a simulation of photodiode ion feedback events, and im-

proving the running speed of the tower building algorithms in the high level trigger (HLT) by a factor of two.

Finally, Wilkinson develops and maintains the crucial first step for standalone muon reconstruction, the seeding algorithm, which looks for patterns of hits and assigns starting parameters to the track fits. His focus in 2010 has been improving the pattern recognition for the low energy forward muons characteristic of early running. He helped to eliminate a severe "ghost muon" problem in these events, partially caused by ganged readout channels in the forward muon detectors, while simultaneously improving reconstruction quality for all muons.