Welcome to the Smart Lab

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Chemists at the University of Southampton will soon be monitoring their experiments from a more comfortable place than a lab stool. In the final stage of a pioneering IBM project to wire their lab for remote control the researchers will be able to keep an eye on reactions they have left running in the lab via a smart phone from the comfort of the bar.

This 'e-science' project is made possible by IBM's revolutionary WebSphere MQ 'middleware', special software which enables unrelated computer systems to talk to one another securely in real time. Sensors in the lab gather data on temperature, light levels, motion in the room, power status and door opening/closing and relay this to an IBM 'message broker'. This in turn makes the data available to anyone authorised to see it and can be presented as a dashboard of critical data on the web or on a smart phone. The system is also easy to update with new sensors at any time.

"In the next phase it will be possible to click a button on a web page or on a smart phone to turn something on or off in the lab," says IBM's Manager of Pervasive Messaging Technologies, Dr Andy Stanford-Clark. "The system might need to ask a question – I'm going to start this experiment, is that OK? Then wait for the human who set it up to confirm that it's really OK to start. Our aim is get to a state where aspects of the research lab are automated enough to be able to run the lab 'lights out' – no graduate students in sight!"

Dr Jeremy Frey, Reader in Southampton's Department of Chemistry, is a keen promoter of the project. "It's a powerful tool with lots of potential

uses," he says, "and we have already proved that it really works remotely. One of our postgraduate students, Jamie Robinson, was speaking about this monitoring project at a conference in Paris. As he showed the audience a live web demo of the telemetry data he noticed that the lab temperature was five degrees above normal. So he phoned the University and the technicians told him that the air conditioning had broken down and that they were desperately trying to fix it – but they couldn't work out how he knew that if he was in Paris!"

A new display opening this week at London's Science Museum celebrates IBM's achievements in winning the Royal Academy of Engineering MacRobert Award for IBM WebSphere MQ, which has myriad other applications that include: secure bank transactions, cashpoint withdrawals, on-line bookings and monitoring a range of everyday business operations.

Source: Royal Academy of Engineering