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ITR/P5-25: Scientific Computing for Real Time Data Processing and Archiving for ITER Operation

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The operation of the ITER tokamak imposes significant demands on the instrumentation and control (I&C) section of its 170 plant systems in terms of data acquisition, data processing and data transport via networks. The plant I&C systems must support the operational needs for machine protection, plasma operation and physics exploitation. The most stringent requirements are found in the more than 50 diagnostics measurement systems in terms of high performance data acquisition, data processing and real-time data streaming from distributed sources to the plasma control system as well as large amounts of raw data streaming to scientific archiving. While most of these requirements have been achieved individually the challenge for ITER will be the integration of these state-of-the-art technologies in a coherent design while maintaining all of the performance aspects simultaneously.

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