CLIENT | Leica Microsystems Lithography

Leica Microsystems Lithography

Leica Microsystems Lithography are leaders in the field of electron beam lithography machines for high resolution etching of substrates.

Business Problem

Leica produce highly complex machines for controlling electron beams. Their original system used at least 6 20MHz 68000 based VME cards to perform the pattern gathering, conversion and beam control in one part of the system. These cards were becoming obsolete and were too slow to cope with the advances in writing speed required by customers.

A scoping study identified 300MHz PowerPC cards as a suitable alternative providing a convenient upgrade path. An initial conversion of a processor board pair to a single Pattern Generator Processor (PGP) board was made. The remaining processors also required their code porting.

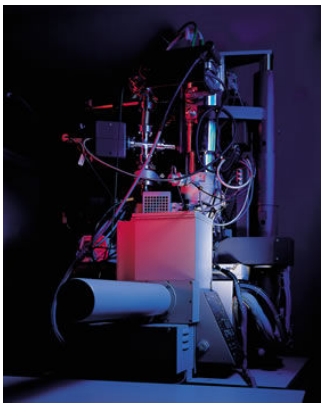
Tessella Solution

The first task at Leica was to convert the PGP code, initially built on a Sun workstation with VxWorks 5.2 to a Windows NT environment and VxWorks 5.4/Tornado II.

This highlighted a large number of differences between the two build environments, requiring new configuration management and build settings to be defined. The target of this phase was to produce a framework allowing you to "drop in" the new code and produce a system operating as before.

The next phase was to port the Master Microprocessor and Data Correction Processor code into the new framework whilst maintaining inter-operability with the old cards. This required careful handling of memory and data structures used for inter-processor communication.

Testing of the combined system was complicated by the availability of machines.



Further changes were made to move the location of some tasks to other processors to improve response times and alter which processors had access to certain hardware. This involved careful checking of the dependencies of other tasks in the system.

Other work to assist Leica's longer term aims included an appraisal of the system code and the recommendation of ways of improve the structure of the programs. This has led to improvements in support system code.

Results and Benefits

The lithography machine hardware is now mostly based on the new processor cards, providing useful headroom for the process of speeding the beam writing. This is vital for keeping up with competitors and maintaining the edge on optical lithography systems, which are faster but much less accurate.

The new processors are being rolled into other areas of the machines where the older cards are still in use, giving the whole system a modern hardware base for future enhancements.

Tessella plc 26 The Quadrant, Abingdon Science Park, Abingdon, Oxfordshire OX14 3YS, UK
T: +44 (0)1235 555511 | F: +44 (0)1235 553301 | E: info@tessella.com

Tessella Inc 233 Needham Street, Suite 300, Newton, MA 02464, USA
T: 1 617 454 1220 | F: 1 617 454 1001 | E: info@tessella.com

Tessella
Technology & Consulting

Tessella – successfully delivering IT and consulting services to world leaders in R&D, science and engineering.

For decades, Tessella has been successfully delivering IT and consulting services to world leaders in R&D, science, and engineering. Through the application of scientific methods and rigorous quality procedures, we enable clients in life sciences, energy, the public sector, and consumer industries to achieve a wide range of objectives, including, forecasting floods, developing fusion power, enhancing military sensor capability, increasing drug discovery and development efficiency, and reducing risk to health and the environment in the extraction and production of oil and gas. With offices in Europe and North America, global companies rely on Tessella for business critical assignments.