TTI Teams Up with R&D For Rapid Delivery of Critical Grid Computing System

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Exemplifying the agility called for in TTI's *Strategic Business Framework*, a rapidly deployed team of TTI and R&D resources implemented a high-speed grid compute farm used in R&D's testing of a new treatment for PAH, a rare and potentially fatal disease. The grid, a software-controlled assembly of 100 servers coordinated to work in tandem, drastically increases processing efficiency and can cut the time required to perform PK-PD testing of potential treatments from weeks to a matter of hours.

In early April, R&D and it's Research & Development (R&D) technology group were in the throes of testing a number of drugs for approval in the U.K. Included among these was sildenafil citrate, which was being analyzed for possible treatment against several ailments, including pulmonary arterial hypertension (PAH). PAH is a rare and potentially fatal disease characterized by abnormally high blood pressures in the lung's arteries. In its treatment research, R&D uses a set of complex, processor-intense algorithms to identify precise drug formulations that inhibit targeted diseases. Previously this analysis was performed on a relatively small Sun System-based grid. The need for stronger computers to speed the new drug application (NDA) process and obtain quicker approvals is an ongoing R&D priority.

R&D came to TTI for help, and the collaborative race was on to rapidly deploy a processing resource that would reduce the testing time. Focusing on R&D's business need, a technology team comprised of R&D and TTI resources developed and implemented a 100-node grid compute farm in Hartford. The system utilizes Intel *Blade* hardware, the *Linux* operating system, platform *LSF* and *Multicluster* compute grid software. It collectively delivers the power of 200 CPUs in support of NONMEM, the commonly-used pharmacokinetic analysis application developed at the University of California San Francisco.

A diverse team of TTI colleagues was involved in the effort. The grid farm was implemented in less than two months – markedly ahead of it's June 1 delivery target. And the preliminary results were startling: initial usage indicates an increase of 2,400 percent for throughput of some NONMEM-based algorithms (i.e., the algorithms run in 2% of the original time)

"The project was a real win all around, bringing together an immediate and compelling business need with an equally compelling solution," says Peter Dodd, head of TTI's Global Engineering and Program Delivery (*Build*) organization. "The grid solution was a success in terms of value, performance increase and time-to-implement. It was a 60-day project that provided immediate value, and it is foundational for our strategic direction in utility computing for R&D and for Pfizer."

TTI's quick response and the dramatic reduction in NONMEM compute time are hits with the customer as well. "TTI's implementation was amazing," says Nan Smith, VP in R&D Clinical Sciences. "The grid adds tremendously to our decision-making process. We're thrilled with the system."

"The combination of the grid and the next version of e-pharmacology will set us apart from our competitors," says James Noe, executive director, Clinical Pharmacology in Sandwich. "It provides an IT infrastructure for PK-PD modeling and simulation that is well ahead of the best elsewhere and, more importantly, it greatly facilitates our application of innovative PK-PD M&S to drug development programs and hence the development of new medicines."

Rapid Response Teamwork

Critical to speed and success of the implementation was the precise coordination of a broad coalition of TTI and R&D collaborators. Early in the process the team members' roles and responsibilities were clearly defined. The collective was structured around a Client Steering Committee and an internal TTI Steering Committee, along with program manager, project manager and service development lead roles. Instrumental on the R&D side were Mike DeBari, senior research applications developer, and Joyce Huffman, who both worked closely with the business to make sure the new system met their needs. Ian Penny, manager in TTI's Global Engineering group and a member of Pfizer's Architecture & Engineering Council, was a key technical coordinator.

"This is a great example of how TTI rallied across organizational lines to deliver a service that clearly has value for our customer, R&D," says Anne Overbach, former TTI site head for Hartford and New London and now in R&D. "It was a unified team effort utilizing people from multiple disciplines and showed just how agile TTI can be in delivering new services."

Along with the R&D resources, important participants in the grid implementation included representatives from TTI's Global Programming Development and Engineering, the Americas Data Center team, Hartford site resources, Global Network Services, Finance, Global Sourcing and Vendor Management, Customer Relationship Management, Service Delivery Management and Global Compliance and Standards.

"The grid effort shows TTI at its best," says TTI's Ron Becker, director of Engineering Platforms. "It took an effective partnership of many different teams from the *Plan, Build* and *Run* organizations to deliver this advanced level of computing power to Pfizer scientists. Global Sourcing also did a great job rapidly securing the necessary equipment and software – their response was immediate."

Sildenafil has been granted preliminary ("orphan") approval from European regulators for PAH treatment and is currently in phase III product testing at Pfizer. Current utilization of the grid compute farm is still ramping up, but it is expected to be used on an wide variety of treatment research efforts and have a significant impact on new product time-to-market reductions.

"This is only the first step on our roadmap with R&D going forward," says Tom Nickels. "In the future we will focus on making the process even faster, which will speed time to market for clinical studies and enable Research scientists to perform calculations that would otherwise be intractable."

For further information on the grid compute farm implementation, contact <u>Jim Cochran</u> at 212.999.8888. ###