

SWORD
UPGRADE YOUR BUSINESS

Collaboration Workspace

Sword CTSpace wins Computerworld Honors Award

Sword CTSpace and NNE Help Combat the Diabetes Pandemic and Smallpox Bioterrorism Threat.

Summary

According to the World Health Organization, “Diabetes is a major threat to global public health that is rapidly getting worse, and the biggest impact is on adults of working age in developing countries. At least 171 million people worldwide have diabetes. This figure is likely to more than double by 2030 to reach 366 million.” Sword CTSpace, a provider of Internet-based collaboration and Business Process Management solutions, and NNE, an engineering and construction services subsidiary of Novo Nordisk A/S, are reducing the time-to-market for insulin and smallpox vaccine production facilities around the globe.

Introductory Overview

In one generation, the prevalence of diabetes has increased six-fold worldwide. Today, almost 6% of the world’s adult population live with diabetes. Moreover, diabetes accounts for 3.8 million deaths per year globally. NNE’s major client, Novo Nordisk, boasts a business model that is driven by the Triple Bottom Line: a commitment to economic success, environmental soundness, and social responsibility to employees and customers. That corporate ethos serves as a directive for Novo Nordisk suppliers like NNE, which in turn, has produced the broadest diabetes product portfolio in the industry. For NNE and Sword CTSpace, this translates into bringing an insulin production facility on stream in the shortest possible timeframe in an ecologically friendly fashion.

In 2000, NNE president Hans Ole Voigt announced a “Big Hairy Audacious Goal” that, if reached, would forever change the standards for fast-track project execution of biopharmaceutical facilities. Voigt set the seemingly impossible goal of becoming the first engineering firm to build biotechnological and pharmaceutical plants in 12 months or less, from order to occupancy. This timeframe, a stunning reduction from the 36 months typical of its competitors, would be certain to make NNE synonymous with fast-track building and thereby helping their customers deliver life saving drugs and vaccines to needy recipients sooner.

To meet its objective, NNE needed to select the right enabling digital technology: high value collaboration workspaces that enable the secure online exchange of messages, data, content and business processes across enterprise boundaries. The selected solution must allow multiple organizations to store program and project information for archive and analysis, yet be intuitive enough to use with little or no training. Finally, the technology must include state-of-the-art business intelligence and search capabilities



Award Information:

Computerworld Honors Program

Honors organizations that use technology to benefit society

NNE’s Challenges:

Build pharmaceutical plants in 12 months or less

Enable client to speed delivery of lifesaving drugs

Break down fast-track projects into discrete modules and processes

Efficiently and safely distribute documents to design teams around the world

Enable project managers to easily solicit comments on documents from partners and clients

while providing the ability to search and aggregate information across limitless documents and transactions. After an extensive vendor selection process based on the above criteria, NNE settled on Sword CTSpace.

NNE uses modular engineering practices and Sword CTSpace's product - Collaboration Workspaces (CW) to great effect. NNE systematically breaks down its fast-track projects into discrete, recognizable modules both from a process perspective and a physical perspective. The company's modular design process divides huge construction projects into small segments that can be expedited as required using repeatable, best practice solutions. Just as important, NNE's modular engineering breaks down physical plants into plug-and-play sections that can be independently manufactured and tested offsite.

The onsite arrival of the modules is tightly orchestrated to accommodate their designed placement in the facility. Individual modules are so self-contained that the final, onsite assembly process involves only the mating of simple interfaces via pipes, wires, drains, etc. This approach takes advantage of the deeper and more flexible resources available beyond the worksite. And it avoids many of the constraints typically imposed by construction sites - such as limited access to qualified test personnel and quality assurance resources - that add time to a project. Modular engineering also means future expansion can be planned during the initial construction, and implemented later in the same efficient way. Thanks to fast-track engineering, NNE can begin construction in earnest before the final process design is complete. As the functional modules are being manufactured, concrete is being poured; meanwhile, NNE engineers are concurrently designing the facility's control systems.

In the record-breaking time of 11 months, NNE built a new vaccine production facility for the biopharmaceutical company Bavarian Nordic A/S. The new facility moved from the detail design phase in August 2004 to full operation in July 2005. The speed of the fast-track project has been essential to Bavarian Nordic, who is participating in the US Government's program to develop and acquire a safe smallpox vaccine to thwart bioterrorism.

Benefits

Has your project helped those it was designed to help? "Yes"

What new advantage or opportunity does your project provide to people?

"CW has proven to be the ideal tool to help us collaborate with our partners and bring new pharmaceutical products to market faster than ever before," says Bo Memhave, NNE business director and CIO. "By creating reusable processes, we can build collaboration solutions on demand, and CW's easy-to-use Windows interface makes it easy to bring in new partners with little or no training." NNE uses CW to efficiently and safely distribute documents from its United Kingdom data center to design teams across time zones and around the world. CW workflows enable project managers to solicit comments on documents from partners and clients and to assess project status.

"In the old days," says Memhave, "you'd send out a lot of information in all directions and hope it got to the right people at the right time, and to none of the wrong people. With CW, by contrast, the project manager just checks the task list for one, single view of how we're doing. And the information is totally secure." NNE also takes advantage of CW's open and published API. "We customize the software to simplify ongoing project support and administration," says Memhave. "For example, if you lose your password, we've configured CW so you can go directly to our website, press one button, and immediately receive a new password. Our goal is to eliminate wasted time whenever possible." Another example: NNE can add new projects to CW as easily as filling in some form fields and pressing a button. "It generates a whole new workspace entirely in CW and rolls in our standard layouts in just a few seconds," says Memhave.



Results:

Expedited project execution

Built new production facility in a record breaking 11 months, more than 60 percent faster

Helped client bring lifesaving drugs to needy recipients faster

Accelerated client's time to revenue

Improved collaboration with partners

Created reusable processes to improve efficiencies on future projects

Has your project fundamentally changed how tasks are performed?

Yes

How do you see your project's innovation benefiting other applications, organizations, or global communities?

"In many ways, CW makes it possible for us to do what we do," says NNE CIO, Bo Memhave. "It's an excellent tool that really gives us the advantages we need, and enables us to take on the kind of projects we want to take on." CW gives NNE an up-to-the-minute design and construction overview of what needs to be done, and ties together all the individual phases and participants. Everyone on an NNE project can access the documents necessary to perform their jobs via CW, but when it comes to input, the company manages the process with dedicated "document supporters." "We don't want hundreds of engineers inundating CW with information," says Memhave. NNE document supporters act as gatekeepers, filtering the information to be published. That's because, according to Memhave, "Every minor calculation is not relevant, and if anyone could post anything, the result might be more detrimental than beneficial."

"Our customers are happy to pay for document support service because they know our gatekeepers will classify documents appropriately," says Memhave. The gatekeeper function is especially critical when there are numerous subcontractors on each job, some of whom may not be familiar with NNE's way of doing business. "It just saves everybody an enormous headache," says Memhave.

Document supporters rely on the software's digital binder feature, which enables them to create a special repository (binder) for bringing together related documents, such as a series of build plans related to a specific area of the building, or a specific discipline. It's then possible to restrict individual subcontractors to particular CW binders so the subs know where to find the information they need but can't wander into areas that don't concern them.

The Importance of Technology

How did the technology you used contribute to this project and why was it important?

One of the areas in which biopharmaceutical plant project execution must be as fast and flawless as possible is in the exchange of project documentation and related data. In the design-build phases of a pharmaceutical plant, the quantity of documentation and data that must be exchanged, updated, and distributed by project managers can seem incalculably large. Represented as paper-based documents, the quantity and complexity of the document and data management task for global design-build multi-collaborator projects is stunningly complex. The fact that a Boeing 747, with a cargo capacity of more than 140 tons, is not large enough to carry hard copies of all the documentation needed to build and maintain the jumbo jet is indicative of the scope of the problem faced in most capital-intensive projects.

Merely shifting the tens of thousands of documents and reams of data needed for multi-collaborator projects from paper to digital formats, however, only creates another set of problems. The mix of applications used by project participants to create, manage and store digital documents and data typically runs into the dozens, with CW application having its own format and data requirements. This makes it difficult if not impossible for every project participant to be able to see, much less modify, project documentation and data. The result is a veritable tower of Babel of conflicting and incompatible formats that can erase any efficiency the project may obtain by through digitization and other technological attempts at improvement.

Further complicating this task is the fact that the requirements for data and documentation usage are constantly evolving throughout the lifecycle of the project. A given set of documents and related data can be expected to be both heavily modified throughout the course of a project, and also have multiple uses – and users – as the project unfolds. Thus, for example, documents and data must be updated to meet on-going project changes, modified in a slightly different format for regulatory review, and be further modified to support maintenance or end-of-life project status. Keeping track of all these changes – and ensuring that accuracy and accountability are maintained despite a project's shifting priorities and goals – makes the data and documentation management side of project management a potentially weak link in overall project execution. These problems highlight the fact that the project owner is not the only one with an automation problem: the rest of the stakeholders in the value chain are also vulnerable to the inefficiencies in data and document management.

The business process management requirements of biopharmaceutical project execution are closely related to lifecycle and value chain issues. The constantly evolving nature of biopharmaceutical project work means that the key business processes – and the role individual users have in their success – need to be closely managed and tracked. This is particularly germane to project documentation and related data: changes, modifications and approvals have to be routed to an ever-shifting set of individuals, depending on the project's status. A process management system that provides the context for action related to specific documents and data – and which supports the fusion of business process and content – is essential to improving overall project efficiency.

The final level of complexity comes with the need to share data and processes with existing enterprise applications, including ERP and other resource planning systems. Many of these systems already store and manage key project information, particularly with respect to financial and capital equipment-related data, although the ability of these applications to provide the level of project execution support is limited. CW fills a key whitespace overlooked in ERP and PLM applications.

Originality

What are the exceptional aspects of your project?

The modular concept is based on breaking down the entire project into a modular structure of decoupled, physical, functional modules, which can be handled in parallel throughout the project. Each process module should be independent and self-supporting from a constructional point of view. Other reasons for keeping the modular integrity intact are communication and structure. The analog and digital structure behind a modular building project can be compared to a huge chest of drawers. Each drawer contains the complete specifications for a standard biotech process unit, such as requirement specifications, diagrams, functional specifications, detailed design specifications, various protocols, etc. This way, there are only a few central/general documents describing installation requirements, automation backbone requirements, protocols, etc. This modular or process unit structure makes it very easy to keep the project on schedule, vis-à-vis budget and time, as it provides clear definitions, which are easy to communicate because you talk about one specific module at the time. Using the Ball-in-Court functionality of CW eliminates general statements, such as “we are behind schedule” and are replaced with specific statements “module X or Y is behind schedule, and needs to catch up”.

How is it original?

Sword CTSpace addresses an automation gap that has a particularly significant impact on the ability of pharma and biotech firms to make the best use of the information resources at their disposal. What is needed is an alignment of business-critical information with the essential processes that define a company’s business success – now commonly referred to as “content-process fusion,” a term coined by the Gartner Group. By bringing content and processes together, enterprises are able to tap the unrealized value of information and improve their process execution.

Sword CTSpace believes that the lack of support for content-process fusion in the applications portfolios of pharma and biotech firms that engage in global, multi-collaborator, manufacturing projects represents a major opportunity for innovation. The inefficiencies in running multi-collaborator projects in the absence of comprehensive process, documentation and collaborative management automation can add significantly to project costs and time delays, as well as limit overall success. A more comprehensive approach, one that both identifies and fills the content-process fusion gaps in existing enterprise systems by leveraging available data and processes from those systems, can have a significant effect on the operational efficiency and profitability of global design-manufacturing projects.

The upside potential for improving project execution can be significant, particularly with regards to improving the data, document, and process management side of project execution. Research shows that pharma and biotech firms that take a comprehensive approach toward these issues can realize

benefits in a number of key areas, from improved process management and coordination and project accuracy to faster overall project execution and time to completion. Additional savings can be had from lower costs for project logistics, better regulatory compliance, lower training and knowledge-transfer costs, and lower overall system, data and document management costs. These savings can accrue throughout the project value chain.

Is it the first, the only, the best or the most effective application of its kind?

Most effective

Success

Has your project achieved or exceeded its goals?

Exceeded

Is it fully operational?

Yes

How many people benefit from it?

100,000+

What is an example of how the project has benefited a specific individual, enterprise or organization?

“Thanks to NNE’s expedited project execution, Bavarian Nordic now has an operational vaccine facility that can produce 40 to 60 million doses of IMVAMUNE™ (the company’s MVA smallpox vaccine) per year”, says Dr. René Djurup, Executive Vice President and Chief Technical Officer of Bavarian Nordic. With a construction time of 11 months from the start of Detailed Design to the end of Operational Qualification, NNE has set a new industry standard for fast-track project execution. Normally, it takes 24 to 32 months to build a new vaccine production facility. “We were able to build this facility faster because of an unusually close cooperation with the client and a very strong project management team which was backed up by the broader high performance team that NNE had assigned to the project”, says Hans Ole Voigt, President of NNE.

How quickly has your targeted audience of users embraced your innovation?

Or, how rapidly do you predict they will?

Sword CTSpace is the world’s only truly global on-demand business process management and collaboration company. The client roster of over 200 multinational organizations includes Shell, Balfour Beatty, BP, BNP Paribas, Centrica, Odebrecht and STRABAG. Customers benefit from a low cost, low risk and easy-to-use solution available on a 24x7 basis to improve efficiencies. With CW, there is no software to install and time-to-market is calibrated in hours not months.

Difficulty

What were the most important obstacles that had to be overcome in order for your work to be successful?

The need for close collaboration is a key success factor for these capital-intensive projects. An extraordinary mix of documents and their related data must be shared among a wide range of users, from internal project engineers to outside engineering firms and contractors to government regulators. The different internal and external users need these documents and data to be as up to date and accessible as possible: in the fast-paced, high-cost world of pharmaceutical plant construction, bad data and out-of-date documents can make the difference between routine success and costly failure.

Often the most innovative projects encounter the greatest resistance when they are originally proposed. If you had to fight for approval or funding, please provide a summary of the objections you faced and how you overcame them.

There is a natural resistance to placing sensitive data/content outside the organization's firewall. Yet, in actuality, vendors like CTSpace are held to higher security and service level standards than in-house IT operations.

About the Computerworld Honors Program

Founded by International Data Group (IDG) in 1988, the Computerworld Honors Program is governed by the not-for-profit Computerworld Information Technology Awards Foundation. Now in its 19th year, Computerworld Honors is the longest-running global program to honor individuals and organizations that use information technology to benefit society,

CTSpace and NNE, along with all 2007 honorees, were commemorated during the 19th Annual Laureates Medal Ceremony & Gala Awards Evening in June in Washington, D.C. Additional information about the program and a Global Archive of past laureate case studies and oral histories can be found at the Computerworld Honors website: www.cwhonors.org

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