

# THE EUROPEAN SPACE AGENCY CULTIVATES INTERNATIONAL DEVELOPMENT WITH SERENA DIMENSIONS

## CHALLENGE

Implement a common approach to software engineering that can be administered across different projects and development teams.

## SOLUTION

Serena Dimensions

## RESULTS/ROI

- Improved visibility into development efforts and changes, facilitating proper management
- Establishment of repeatable processes
- Central repository for all software development
- Accumulation of critical knowledge captured via extensive tracking

## EXECUTIVE SUMMARY

The European Space Agency (ESA), whose role it is to promote peaceful cooperation among European states in space research and technology, needed to implement a common approach to software engineering that could be administered across different projects and development teams. The ESA's complex development needs and heavy reliance on contractors made it particularly important to enforce a common process-based configuration management system. The agency wanted to establish repeatable processes that could be improved over time to support its diverse, best-in-class environment.

The ESA selected the Serena® Dimensions™ solution to automate organizational, development and software configuration management (SCM) processes. Equipped with a powerful and flexible process engine, Dimensions provides the ESA with an active view of development efforts, tracking changes, providing critical status reports, and facilitating proper management throughout development lifecycles. The system empowers the ESA to manage evolutionary changes effectively and to capitalize on critical knowledge gained during the course of projects. In addition, Dimensions functions as a central repository housing all the software delivered to the ESA by contractors and internal development teams.

## BEST-IN-CLASS ENVIRONMENT SUPPORTS COOPERATIVE RESEARCH AND DEVELOPMENT

Today, virtually all administrative, operational, and launch facets of a space organization depend on their software running correctly. Reliability and quality are of top priority in the development of software applications for the space enterprise.

Therefore, the implementation of a process-based configuration management (CM) technology, which delivers a potent antidote against bugs and allows the necessary safeguarding of software assets, is an important step. Process-based CM works by allowing organizations to effectively manage the large volume of software changes that are implemented daily across multiple hardware platforms internally or in conjunction with contractors and partners. Process-based CM institutes formal processes, guiding and accelerating the way software is developed by integrating the functions of process workflow with change, version, and issue management. The result is a smooth running organization.

The European Space Agency has established a best-in-class environment to further its mission via this strategic approach by using Serena's process-based configuration management system, Dimensions.

The role of the ESA is to promote peaceful cooperation among European States in space research and technology for scientific purposes and for operational space applications systems. The Informatics Division of the Directorate of Administration, located near Rome, Italy, was given responsibility for the development and maintenance of all Management Information Systems two years ago.

As a result of this mandate, the Division defined and established a systems development infrastructure that would enhance the Agency's administrative operations. The different development teams at ESA would be required to implement a common approach to software engineering based on repeatable and improvable processes across projects, including the development of ESA's administrative systems, their electronic office automation system, the ESA web site, intranet and extranet restricted-access site, and on-line information services such as ESA tenders system or ESA official documents distribution systems. To achieve this goal, it was necessary to introduce at the Informatics Department an advanced process-based CM technology to automate the organizational, development and software configuration management (SCM) processes.

In this context, processes relating to critical issues were defined within the development organization including working practices for implementing process configuration management, formal assignments of roles and responsibilities across the software lifecycle, and activities required to achieve compliance with ISO 9000 and other standards regulating the development of MIS-based applications.

The ESA assessed which process-based CM solution would best satisfy the requirements of the organization in fostering a repeatable team-based development infrastructure across projects. The Agency conducted a study of

leading SCM tools in the marketplace. The conclusions of this study and the favorable product review by a major analyst group pointed to Serena Dimensions as the system of choice to meet ESA's increasingly complex development needs and standards.

"It made sense to bring this solution into our organization because we understood that it could serve as a corporate system to manage the delivery of our applications," says Serge Moulin, Information Systems Engineer at ESA. "Furthermore, we determined that it would empower software engineers within the Agency to coordinate their concurrent and parallel work via a common set of processes automated by the tool."

Equipped with a powerful and flexible process engine, Serena Dimensions provides an active view of development efforts and allows the proper management of software changes in complex heterogeneous environments via the integration of issue and change, version, build, and process management. As a result, software engineers can successfully implement parallel development and distributed engineering.

"The applications placed under Dimensions control are essential to the smooth running of ESA," states Joe Sandor, Project Manager at MacDonald Dettwiler & Associates Ltd., a firm, which is assisting the Agency in the development of its systems development infrastructure. "For instance, these applications involve complex administration systems established to manage financial, personnel, documentation, and web-based systems, among many others."

Typically, such applications undergo evolutionary changes. "Dimensions enables us to manage these changes effectively, which are implemented either internally or externally by selected contractors. This allows the Informatics Department to respond effectively and in a timely manner to the evolving demands of the Agency," says Moulin.

Moulin explains that the Agency policy is to contract out most development work, "For this reason, it is particularly important for us and for our contractors to have a common process-based CM system in order to implement effective configuration management and to interact effectively."

In such a set-up, Dimensions functions as a central repository housing all the software delivered to the Agency by the different contractors or by internal development teams. Information is maintained using Dimensions about the product design; the development of software modules and associated documentation; the building of configurations; the issuing of product items; the user-defined rules; and procedures and the objects created.

Dimensions tracks all the changes implemented to the various applications throughout the lifecycle. This makes it easy for internal and external software engineers working on ESA MIS projects to recreate an application since there is a complete record of how it was built in the first place.

"Clearly, having this information at our fingertips instantly is a major time saver and makes it possible for the Informatics Department to effectively manage and roll out across the organization the software it receives, and which is subject to changes," reports Moulin. "Without such a system in place, we would not be able to identify in which versions these changes reside and what modifications are contained in a given release."

A major advantage of the use of Dimensions is that it provides managers with many critical status reports documenting the progress of development efforts. Such deliverables include traceability and management reports, change management reports and configuration management reports, and many other important metrics.

Dimensions empowers the organization to capitalize on the critical knowledge gained during the course of the project.

"It is now easier for us to transfer know-how from one project to the next, and to improve upon what we are doing, because this system documents and enforces all the development processes of the organization," explains Moulin. "Having repeatable and improvable processes via Dimensions makes it possible for the Informatics Department to have a corporate culture conducive to the sharing of knowledge and the adoption of well-defined common development procedures to get the work done."

Using Dimensions, the Agency's IS Department has also implemented a template for internal ESA MIS projects. "This template defines the lifecycle of the items and associated project management tasks including reporting," says Moulin. "We can now re-use this template across projects thanks to Serena Dimensions."

## CONCLUSION

Software properly managed via a leading edge process-based configuration management technology like Dimensions plays a critical role in ensuring the smooth running of the European Space Agency and their increasingly complex development needs and standards.

## ABOUT SERENA

Serena Software provides solutions that orchestrate application delivery, IT operations and business processes for the Global 2000. Serena's mission is to help enterprises orchestrate their world. Its 3,000 active enterprise customers, encompassing almost one million users worldwide, have made Serena the largest independent ALM vendor, and are now using Serena to orchestrate IT service management and many other processes. Headquartered in Silicon Valley, Serena serves enterprise customers from 29 offices in 14 countries. Serena is a portfolio company of Silver Lake Partners, the leader in private investments in technology-enabled industries. For more information on Serena, visit <http://www.serena.com>

## CONTACT

Website: [www.serena.com](http://www.serena.com)

Phone: 1-800-457-3736

Email: [info@serena.com](mailto:info@serena.com)