Lodestone

Running a Single Instance of SAP:

Impact Analysis for System Changes

by Andreas Wyss

Implementing changes without
putting your business at risk

Table of Content

Without the correct governance and impact analysis companies can lose the ability to react quickly to the changing business environment

Multiple SAP instances, whether in different countries, locations, or divisions, are difficult and costly to support.

A single instance provides important benefits, including the reduction of infrastructure complexity and the standardization of processes and data. There are, however, risks involved with operating in a single instance environment. Additionally, the transition from multiple instances to a single instance is a complex process. When operating within a single instance of SAP, a well-designed change control framework and appropriate support tools can help you mitigate risks associated with changes to system configuration and development.

Lodestone Management Consultants understand the complexities of running in a single instance environment. Our experience and background help ensure a secure foundation that includes a change control framework and appropriate support tools.

Current Environment

“A confluence of forces, including process-centric standardization like shared services, regulatory requirements like SOX and Basel II, and cost-cutting initiatives like consolidating IT spending drive enterprises toward the goal of single-instance ERP”
Forrester Research, April 2005

During the first wave of globalization, Life Sciences companies introduced separate ERP systems in each region and in some cases, multiple SAP instances in one country. This led to numerous interfaces, which are a nightmare for standardization and expensive to maintain. Often, the advantages – including mitigating risk of total system outage – were seen as sufficient reason to keep the existing architecture in place.

Today, organizations are looking for ways to reduce the Total Cost of Ownership, simplify their IT system architecture, and achieve global business process harmonization. A single instance of SAP makes these three objectives possible. While discussing a single instance of SAP, we are focusing only on a single instance of SAP Enterprise Central Component. There may be multiple production instances of other applications within the SAP Business Suite (Customer Relationship Management, Supply Chain Management, Product Lifecycle Management, Master Data Management, Business Intelligence, Process Integration, etc.). While many of the benefits of a single SAP instance may be obvious, the challenges of the architecture are often not apparent to organizations.

Single Instance Strategy Options

SAP Clients for Production and Development
Before making the transition to a single system approach, companies need to understand the challenges and how to address them. This includes making critical decisions such as:

- The number of production clients (one per region or country, or a single one)
- The number of development clients

The diagram on the following page shows 4 potential options for an SAP ECC system landscape. The options are presented in the order of increasing complexity of IT architecture, with Option 1 representing the least complex landscape. Note the risks and benefits of each of the options.

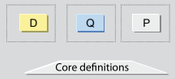
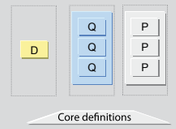
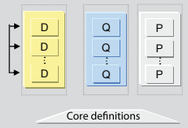
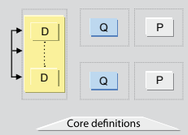
1 	Single Client	▪ Common DEV and PRD client for all Divisions / Countries	▪ Synergies: Platform for global business operation, shared services (i.e. common process model) ▪ Full transparency and interoperability across divisions	▪ Business changes need to be aligned i. e. reduced flexibility ▪ Strong, efficient Governance in business needed ▪ High alignment in areas of Security and Application Data
2 	Common Development	▪ Common DEV ▪ 1 PRD Client for each Division/ Country	▪ Application data and Security separated in PRD ▪ Synergies in Development ▪ Core standards are enforced automatically through common DEV	▪ Business changes need to be aligned i. e. reduced flexibility ▪ Strong, efficient Governance in business needed ▪ Full transaprency in BI ▪ Creation of interfaces for IC ▪ Requires common master data management
3 	Multi client	▪ Separate DEV Client for each Division/ Country	▪ Flexibility: High Business flexibility on client level ▪ Synergies in Development ▪ Customizing, Application data and Security separated in PRD	▪ Full transaprency in BI ▪ Creation of interfaces for IC ▪ Loss of synergies and standardization ▪ Requires common master data management and strict adherence to Core
4 	Multi system	▪ Separate DEV Client for each Division / Country ▪ Separate PRD systems	▪ Flexibility: High Business flexibility on client level ▪ Synergies in Development ▪ Customizing, Application data and Security separated in PRD ▪ Timing of change import to different PRD can vary	▪ Same as for multi client strategy ▪ Enhanced system architecture complexity ▪ Higher infrastructure and maintenance costs

Figure 1: SAP system and client strategies.

Consider the differences in the overall strategies above:

- **Option 1** Ensures highest harmonization in terms of configuration and data.
- **Option 2** Ensures harmonization of configuration through a central configuration client but allows for separated application data.
- **Option 3** Allows for a high degree of flexibility between the different clients.
- **Option 4** Represents the existing situation for many global companies.

Separation of application data does have an advantage in terms of security, because data access ismostly limited to the logon client. However, splitting a company into multiple productive clients would require the addition of Business Intelligence (BI) to the system landscape for consolidation and Master Data Management (MDM) for master data harmonization and Process Integration (PI) for ensuring communication between the clients.

Governance and Impact Analysis

Implementing and maintaining a centralized single system places a much higher importance on having the appropriate change control processes in place. When countries are no longer alone on their system, the impact of system changes has to be thoroughly assessed as a change has the potential to affect all organizations on the single global instance. Not establishing proper procedures to manage this complexity could result in jeopardizing the system stability, leading to defects and malfunctions in the Global Production system. On the other hand, implementing change a control process that is too complex can lead to a loss of agility, not allowing changes to be implemented fast enough and therefore not supporting business. In order to find the right balance, it's important to quickly and accurately identify the impact level of a change (does the change affect all organizations using the system, only a number of them or is the impact restricted to a single organization) and based on this information to define the appropriate steps in the change process.
It's essential to find the right balance between control and agility. By developing a model that allows you to fully understand the change that's being proposed, and what its impact will be. This has two major components: governance and impact.

Governance Level
Governance Level defines level at which changes are approved, which could be corporate, divisional, or local. System changes can only be performed with the approval of the corresponding governance unit.

The governance level may differ:

- SAP company codes may be controlled at a Corporate level (for example a change to the Chart of Accounts)
- SAP sales order types may be controlled at the Division level (for instance, a Pharma division uses certain standardized order types, while a Generics division uses others)
- SAP Purchasing Groups may be controlled at the Local level (so that each country or affiliate can define their own purchasing groups)

Impact Level
Impact Level defines at which levels of the organization the impact will be experienced.
The Impact Level is used to help determine the governance level where a system change needs to be approved. For example, if the company code for the Italian affiliate were changed, the impact of the change may be restricted to Italy, although the governance level required an approval of the change on corporate level.
In a centralized ERP System, the impact level is no longer restricted by system boundaries; therefore the Impact Level assessment of a change becomes much more important when operating in a single global environment than when operating in a decentralized environment.

Impact Analysis for Development Changes
Another important topic is the assessment of the impact of a development object change. It is vital tohave full visibility of the structure of a development and what technical components are used in which development objects.
Consider the diagram below, showing a two phased approach to the roll out a single SAP instance. A "development" may be a complex aggregation of individual components. During Phase 1, a change to function F3 may only impact Italy. During Phase 2 of the project, the same change will also have impact on Netherlands.

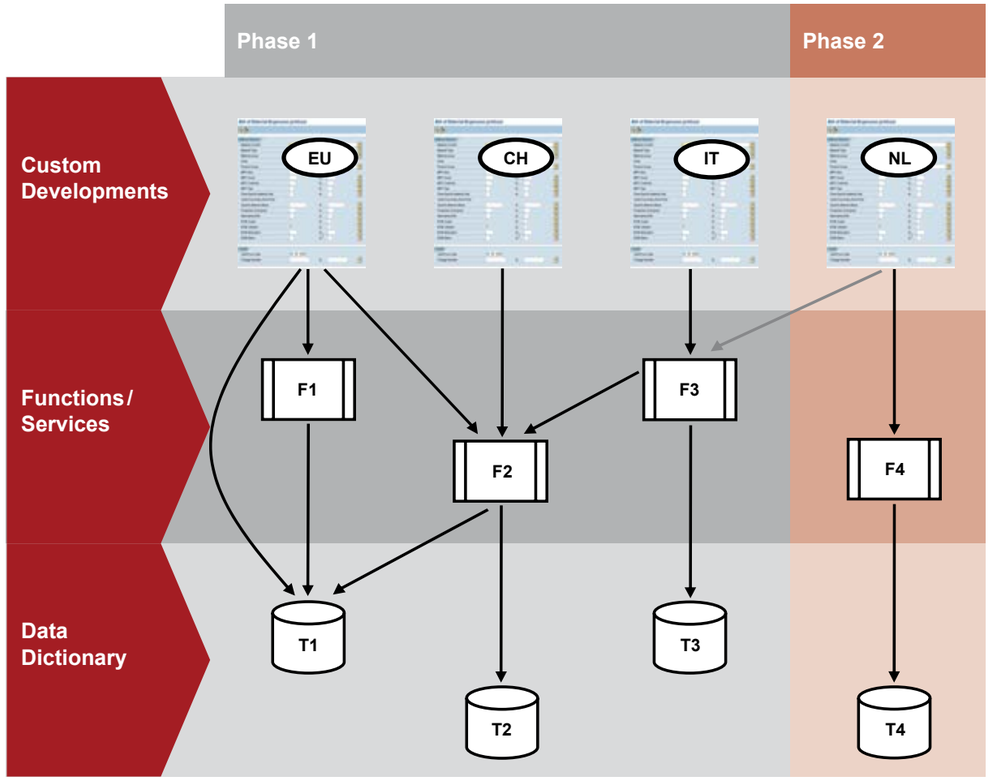


Figure 2: Impact Analysis for development changes in a centralized global environment.

Change Control Framework

Our experience has indicated that the most important aspect of successfully supporting a single SAP instance across countries and divisions is impact analysis. We have worked with many global organizations to develop a change control framework, including:

Change Request Process
A process to manage documentation and approvals, based on a clear understanding of who is involved, and the potential impact. Useful tools to support this process include SAP Solution Manager and HP Service Desk, among others.

SAP Transport Management Process
A process to manage the deployment of system-related changes from the development environment to the testing environment and, finally, to the production environment. Useful tools include SAP Transport Management System (TMS) and CTS+, used in conjunction with the Java Stack on SAP systems. Lodestone's unique CTS-Log-Tool is a valuable addition to the toolkit.

Documentation Management Process
A process to handle the version management and approval processes for system lifecycle documentation. Tools to support this process include SAP Solution Manager and Documentum.

Synchronizing these processes ensures that system or documentation changes can only be done with approval and that changes are only transported to the production environment with testing and import approvals.

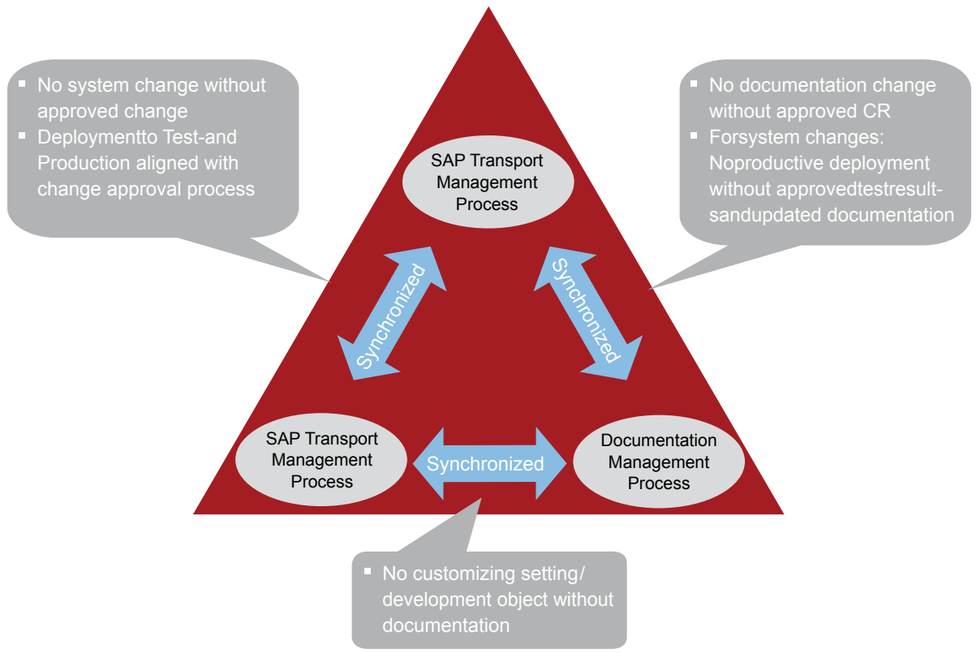


Figure 3: The change control framework is driven by change requests. It ensures that the SAP system changes are communicated in accordance with necessary approvals.

CTS-Log
Tool When operating on a single instance of SAP, the volume of changes is significantly higher than in a distributed system architecture. The effective management of transports without a tool to support it is not easily achieved. Lodestone has developed CTS-Log, a tool that runs on top of SAP standard Transport Management System (TMS) using the standard API´s and ensuring full compatibility with further SAP releases. The Tool supports the following major functions:

- Management of the transport pipeline (e.g. between Development-, QA- and Production systems) to provide visibility of:
  – Sequence: check leap-frog transporting of objects. Importing transports out of sequence can lead to major problems. If a new transport must be imported urgently, CTS-Log checks if the new transport contains any objects that would leap-frog an older transport
  – Dependencies: ensures that all transports belonging together are only transported as a whole (e.g. transports belonging to same change request or explicitly connected transports)
  – Slow movers: support to easily identify slow moving transports in the pipeline

- Trigger imports based on enhanced authorization checks (e.g. allow a group to perform imports to QA-Systems but not to Production Systems, requesting batch imports to Production). This feature helps to clearly separate the responsibility of SAP Basis teams (responsible for TMS configuration and system architecture) and the project/support teams (responsible for transporting and testing).

- Preparation and execution of mass transport activities (such as "promote to production" transports for projects)

- Automated impact analysis of each transport based on the object list of the transport request. Based on configuration tables the tool can determine the impact of customizing- and development transports.

Conclusion

Companies understand that there are clear advantages to operating on a single instance of SAP ECC, including a reduction of the Total Cost of Ownership, simplification of their IT system architecture, and global business process harmonization.

Yet significant challenges prevent organizations from realizing these competitive benefits.

Lodestone can help you mitigate associated risk by working with you to introduce an integrated system, built on a secure foundation that includes a change control framework and appropriate support tools.

Author

Author Andreas Wyss, Partner, Switzerland

Andreas has broad experience in managing large and complex projects in the areas of ABAP Development, Development standards & processes, CTS Management/Change Management, SAP Integration Technology (XI/PI), EAI, and Interfaces. He has worked primarily in the Pharmaceutical industry and understands the technical impacts of regulatory requirements such as GxP and CSV. Andreas is the Lodestone contact for tools including CTS-Log, Interface Manager (IMT = Interface Management Tool), eSCR (electronic Source Code Review) and for the Solution Platform Consulting area (ABAP, XI/PI, Portals, Security and Architecture).

Lodestone is a global management consultancy, committed to designing and delivering solutions that enable companies to thrive in today's complex business environment. Lodestone has developed significant experience and expertise in single instance environments and has a proven track record in delivering solutions to global Life Sciences companies in this area.

Headquarters:
Lodestone Management Consultants AG
Obstgartenstrasse 27, Kloten | Postfach 201 | CH-8058 Zürich, www.lodestonemc.ch

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