



# Avoid Conflicts and Inconsistencies by Managing Branched SAP<sup>®</sup> Development Systems with Transport Express

[ **White Paper** ]

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Are you upgrading your SAP systems, or delivering new business capabilities based on the mySAP<sup>®</sup> Business Suite? All the while supporting Production?

No doubt you are aware of the risks and costs that inconsistencies, errors, re-work and project delays bring to a business.

See how Transport Express introduces an improved flexible process to better manage the introduction of changes when supporting Production systems alongside project work.

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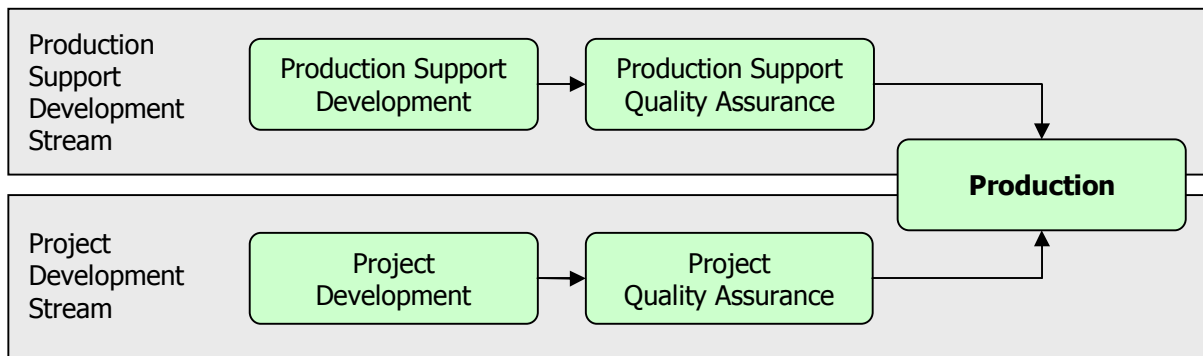
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## Introduction

This paper describes a process for managing an SAP system landscape when a copy of a development system is taken to allow independent changes to be made in each of the development systems. This is referred to as branching development systems.

The most common reason for branching development systems is because Production Support changes must continue to be made whilst a project is being implemented.

This paper will focus on a company that is continuing to support a Production system running R/3 4.6B, whilst also running a project to upgrade the Production system.



For the purpose of this paper, it does not matter whether the company has chosen to upgrade from R/3 to mySAP ERP or R/3 Enterprise. The process is the same and is equally applicable to upgrading other components of the mySAP Business Suite.

## What is the problem?

The problem to be overcome with branched development systems is ensuring that Production Support changes are applied completely, correctly and at the right time to the project development stream. If these changes are not properly managed then the company risks:

- Introducing inconsistencies and errors in the Production system when the upgrade project goes live, because previously applied changes are no longer present or only partially present.
- Bringing Production Support changes that are still a work-in-progress into the Production system when the upgrade project goes live, before the business is ready for them.
- Rework of changes already applied to the project development system and invalidation of associated testing, caused by the loss of changes in the project development system due to the incorrect application of Production Support changes.

These risks are real and if a process is not in place to manage them, the result can be project delays and rework – or worse, unplanned Production system downtime.

### What is required to solve the problem?

The process for managing branched development systems, for productively merging production support changes into the project development stream, relies on a tool that controls and manages the branched systems as an integrated whole by:

- Tracking when changes must be applied to the project development stream.
- Maximising productivity by analysing changes to determine those that can be automatically applied and those which must be manually merged because of conflicts with project work already undertaken.
- Providing a reconciliation capability to give confidence that all changes have been applied completely and without regression, as well as providing an audit trail to hold individuals accountable for their actions.

Such capabilities are not provided by SAP's own Transport Management System and so a tool that complements TMS is required: Basis Technologies' Transport Express.

Transport Express has been the SAP transport management solution of choice for many companies since its introduction in 1997. It is a solution with users based in North America, Europe and the UK, Australia and Africa. Transport Express is tightly integrated with your entire SAP system landscape.

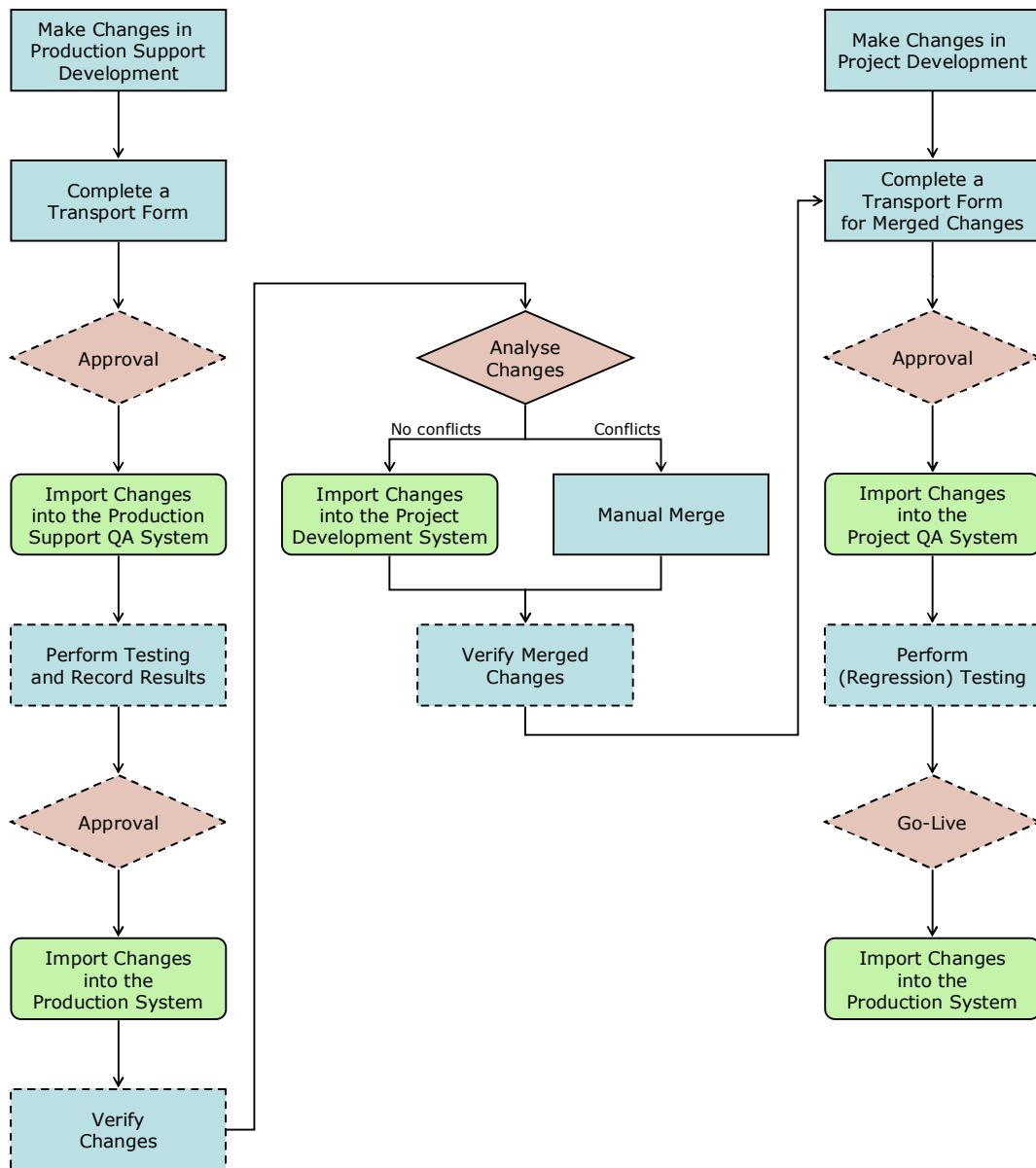
Please note that this paper focuses only on the capabilities of Transport Express with respect to supporting a process for managing branched development systems, and as such, does not cover all of the advanced capabilities it possesses to help you to reduce the cost and risk of implementing and supporting changes across your SAP enterprise business landscape.

## An Improved Transport Management Process

The process flowchart pictured below shows the steps for best practice management of branched development systems. Not all steps are required; the optional steps are pictured with dashed borders.

Rectangular boxes in blue represent steps requiring manual action. Diamond boxes in purple represent decision points. Rounded boxes in green represent automated steps.

Each of these steps is covered in more detail in the following pages.



### **Step 1: Make Changes in Production Support Development**

Production Support team members continue to make changes according to business requirements in the Production Support Development system, as they always have.

When changes are ready to be moved to the Production Support Quality Assurance system for testing, the responsible team member completes a transport form.

### **Step 2: Complete a Transport Form**

The transport form is a simple form that can usually be completed in less time than it takes to send an e-mail. The transport form is used to document and categorise the changes made.

Importantly, the transport form associates the technically-oriented change requests to be transported with the corresponding business requirements. Although this is an optional association, it is strongly recommended as it:

- Groups together technically separate but functionally-related change requests that collectively implement the changes necessary to meet individual business requirements.

For example, a production problem with an inbound payments interface might require an interface program to be changed and configuration to be changed. These changes might be recorded on multiple SAP change requests, even though they collectively implement a solution for a single requirement: that is, to correct the problem with the inbound payments interface.

- Allows for the progress and testing of the solution to a business requirement throughout the Production Support development stream to be monitored and then subsequently reconciled with the progress and regression testing of that same business requirement throughout the Project development stream.
- Provides the business context for business users and team leaders involved in the change process (for example, from an approval perspective).

When managing branched development systems, it is recommended that Production Support team members document in natural language the individual steps taken to implement the changes. This documentation is often necessary in the later "manual merge" step should the changes be found to conflict with project changes.

Documentation can either be entered directly into the transport form or completed separately and attached to the transport form (if "richer" documentation is required).

Note, at this stage it is too early to indicate that the production support changes do not conflict with project changes, as it is too early to apply these changes to the project development stream.

### **Step 3: Approval**

This is an optional step. Whether approval is required at this stage of the process is a choice that each implementation must make and is influenced by the culture of the company and the controls it requires to satisfy itself and possibly external regulators that a trusted, secure and accountable change process is in place.

If approval is required, changes will not be applied to the Production Support Quality Assurance system (and others if present) until an approval is given by one or more authorised individuals.

The individuals authorised to approve changes can be influenced by the classification of those changes. For example, the changes may need to be approved by the team leader of the corresponding functional area.

### **Step 4: Import Changes into the Production Support QA System**

Once the changes are approved, or after the transport form has been completed if approval is not required, the changes are ready to be imported into the Production Support Quality Assurance system.

Before importing the changes, an advanced analysis of the changes is automatically performed to determine whether:

- The changes represent the complete solution (identified so far) to the various associated business requirements.
- Any earlier changes made to the same content are being overtaken.
- Regression will be caused by replacing any later changes to the same content that has already been imported.

Note, changes should not be applied to the Project development stream at this stage of the process. The changes should be applied to the Project development stream only after they have been imported into the Production system, otherwise there is a risk that the project will introduce changes that the business is either not ready for or do not want, when it goes live.

### **Step 5: Perform Testing and Record Results**

After the changes have been imported into the Production Support QA system, they can optionally be made to wait until one or more test results are entered before they can proceed to the Production system.

Test results are associated with the business requirements being addressed, such as correcting a problem with the inbound payments interface.

Recording test results is recommended because not only does it promote control and accountability, but also because the test results are a useful reference during a later step when equivalent changes are checked for regression in the project development stream.

### **Step 6: Approval**

Although this is an optional step, it would indeed be rare for an SAP implementation not to require formal approval of changes into the Production system.

At this stage a combination of approvals may be required, for example:

- An approval by a QA manager to indicate that the changes have been tested and documented to the desired level.
- An approval by one or more solution owners to formally accept the changes into the Production system according to business-readiness timeframes.

Once approved, the changes may be imported into the Production system.

### **Step 7: Import Changes into the Production System**

The changes to be imported are again analysed (as they were in step 4) to ensure consistency and reduce the risk of introducing unwanted side-effects.

Unfortunately, sometimes problems cannot be foreseen and for this reason a backup of the Production content that is about to be changed is optionally taken before the changes are imported into the Production system. If a problem is encountered then the changes can be quickly and automatically backed out, restoring the Production system to the pre-import state, allowing business operations to continue unaffected.

### **Step 8: Verify Changes**

This optional step can be employed as a form of acceptance testing, similar to step 5, documenting the business' acceptance or otherwise of the delivered solution.

### **Step 9: Analyse Changes**

Once changes have been imported into the Production system they also need to be applied to the Project development stream, to ensure that the changes are not lost when the project goes live.

This activity must be done carefully, to ensure that project changes are not also lost when the production support changes are applied. Unfortunately in cases where the production support changes do conflict with project changes, there is little choice but to manually compare and merge the two sets of changes.

During this step, Transport Express accurately decides which changes can be safely applied to the project development system automatically and which must be merged manually, minimising the overall effort required to keep the Production Support and Project development streams synchronised.

### **Step 10-A: Import Changes into the Project Development System**

When importing those changes that can be applied automatically, Transport Express creates a merge change request in the project development system that references the same content as was just imported. This allows for the merged changes to be transported to the downstream systems of the project development stream.

The merge change request automatically references the same business requirements as the corresponding Production Support changes, and the support change requests themselves. This provides an audit trail that is used for reconciliation.

### **Step 10-B: Manual Merge**

Unfortunately, in some circumstances, the Production Support changes may conflict with changes already made in the project development stream. In this situation the changes must be manually merged with the project changes.

Even in this manual step, Transport Express eases the effort required by identifying those development objects and configuration entries that were found to conflict.

Once the changes have been manually merged, the team member indicates that the merge is complete by associating the relevant Production Support change requests with the corresponding change request(s) in the project development system.

The merge request in the project development system automatically references the same business requirements as the corresponding Production Support changes.

### **Step 11: Verify Merged Changes**

This optional step exists to manually verify that the merged changes that were either automatically or manually applied, co-exist well with project changes already made in the project development system.

If problems are found at this stage, they are to be corrected by making changes in the project development system only.

### **Step 12: Make Changes in Project Development System**

This "step" is not a strict step of the recommended process for managing branched development systems, but rather an ongoing project activity. Developers can reduce the potential for Production Support changes to conflict with project changes by:

- Changing the SAP Workflow prefix to avoid naming conflicts between different objects created in the Production Support and Project development systems.
- Avoiding the creation of new function modules in existing function groups, or new messages in existing message classes.

### **Step 13: Complete a Transport Form for Merged Changes**

When the project and/or merge production support changes are ready to be moved to the project Quality Assurance system for testing, a transport form is completed.

Transport Express automatically knows that these changes are to be moved through the project development stream, rather than the Production Support stream.

### **Step 14: Approval**

This is an optional step for the approval of changes that are to be applied to the downstream project systems, in the same way that approval was given during step 3 (also optional) for the Production Support development stream.

It is not uncommon for a project to allow changes to be freely transported to the QA system during the earlier stages of a project. This can be supported, with this step only being employed at a later stage when tighter control of the project QA system becomes necessary.

### **Step 15: Import Changes into the Project QA System**

The changes to be imported are again analysed to ensure consistency and reduce the risk of introducing unwanted side-effects.

Quality Assurance systems are often configured to import (approved) changes at set times automatically, for example every 30 minutes.

### **Step 16: Perform (Regression) Testing**

Although this step is optional, it is important. At this stage of the process, not only do we need to test that the changes being implemented by the project are correct but also that the merged production support changes have not regressed.

Once again, the focus at this stage is not on testing individual changes, but rather business requirements. Carrying on from a previous example, it would be necessary at this stage to confirm that the inbound payments interface is working correctly in the project Quality Assurance system.

This step is simplified by providing the team member with the test results from when the business requirement was tested in the Production Support QA system.

### **Step 17: Go-Live**

A factor in deciding whether a project should go-live is knowledge that all Production Support changes have been incorporated without regression.

This knowledge can be assured by the adoption of this process and by the available reconciliation reports that detail discrepancies, such as if a merged change had not been transported to the downstream systems of the project development stream.

### **Step 18: Import Changes into the Production System**

At the appropriate time for go-live, the accumulated project and merged Production Support changes will be imported into the Production system.

Like any major deployment, a full database backup should be relied upon to restore the Production system if necessary. The pre-import backup capability used in step 7 should not be utilised at this stage, as it is too slow relative to the capabilities of any modern database management system.

### Summary

We at Basis Technologies understand the difficulty of managing change in your SAP system landscape, particularly when branched development systems are required.

Transport Express is specifically designed to overcome these difficulties and to help you better manage your landscape as safely and efficiently as possible.

Please contact us to discover more about Transport Express, or to arrange a product demonstration to show how your transport management process will be improved.

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