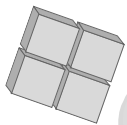


Chapter 3 Business Process Automation Deployment



Deployment overview

Task Desktop

Task instance management

BPA servers

Optimization of the business process

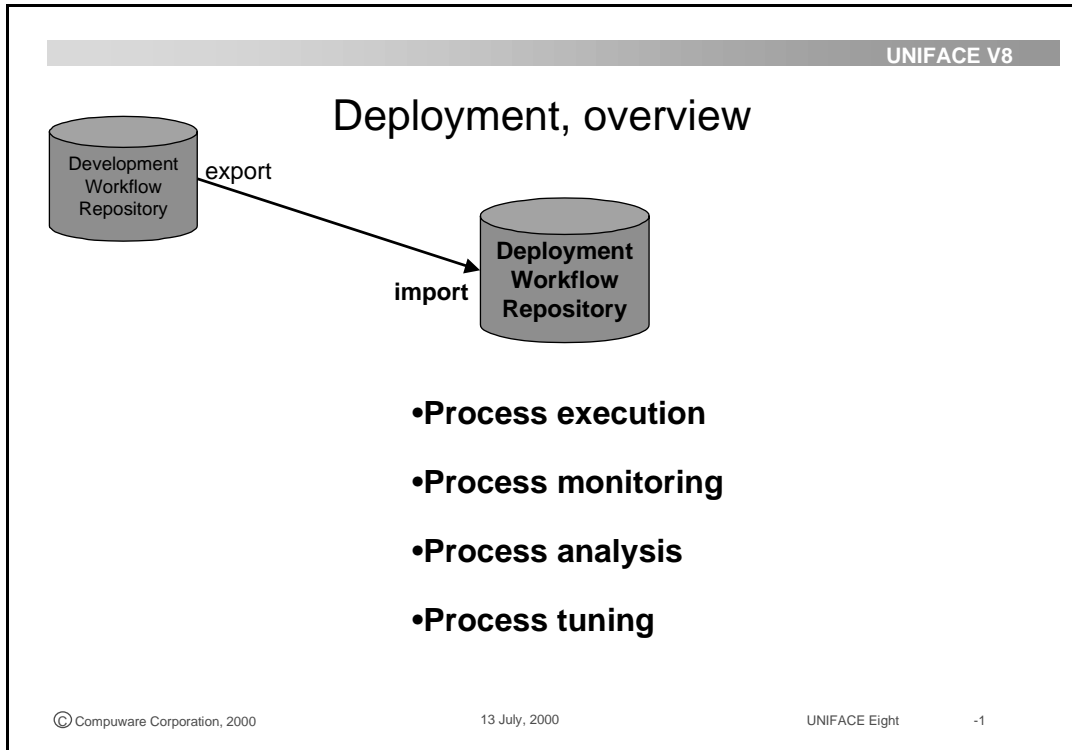
3 Business Process Automation Deployment

3.1 Deployment overview

During the BPA development process you have created the initial model for the business process. The last step of the development process is the creation of an export file that contains all the BPA data. This export file must first be imported in the deployment workflow repository. The model of the business process as it has been built during development can now be fine-tuned for a real life situation.

The main objectives during deployment are:

- **Process execution:** this runs your business.
- **Process monitoring:** closely looking what is happening during the execution of your business process.
- **Process analysis:** by analyzing the running process you may come up with improvements.
- **Process tuning:** improve your business process or modify it because of changing demands.



3.1.1 Workflow Repository

You model your business process using the Business Engineer Workbench (BEW). This process model consists of a sequence of tasks. The sequence can be sequential or can contain any combination of conditions, splits and joins. The process model definitions are maintained in the workflow repository.

To deploy the business process the definition must be included in the deployment environment. There are significant differences between the development workflow repository and the deployment workflow repository.

The development workflow repository contains:

- one version of the packages and objects of the business process model.

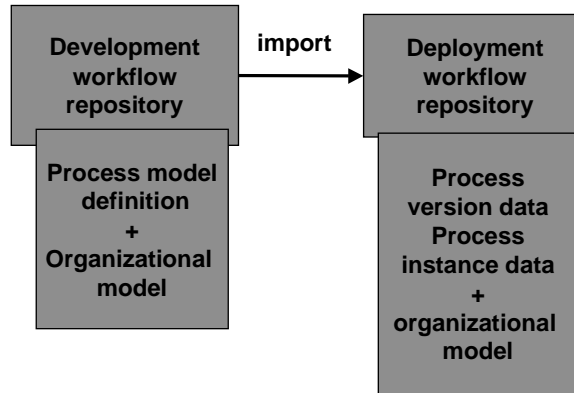
The deployment workflow repository can contain:

- multiple versions of a business process definition.
- multiple instances of each business process version.

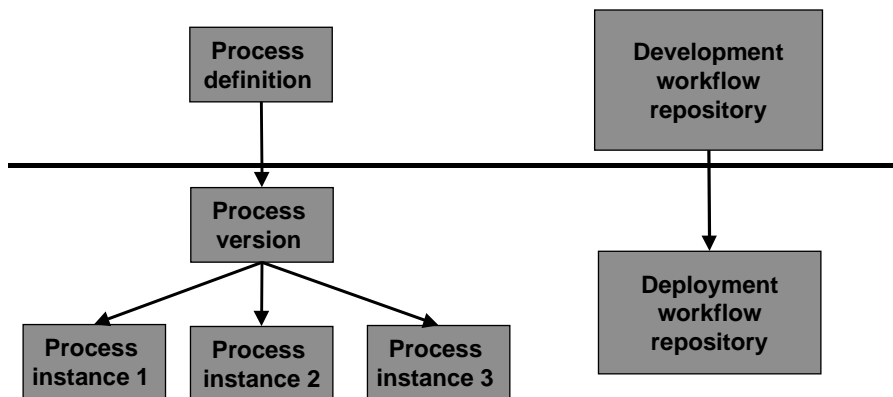
During deployment the process definition can be adapted, based on changing business needs. This deployment time adaptation results in having multiple versions of the process definition. The business manager creates and adapts these process versions. The business manager can also create a new version by (re-)importing a process definition from the development environment.

A process instance is created from a process version the moment that an actor starts executing the initial task of a process, for example entering the ordering data from a customer in an order handling process. A process instance is a runtime process version. The process version and instance data is maintained within the deployment workflow repository. Users work only with process instances

Workflow Repository



Process model definitions



3.1.2 BPA deployment tools

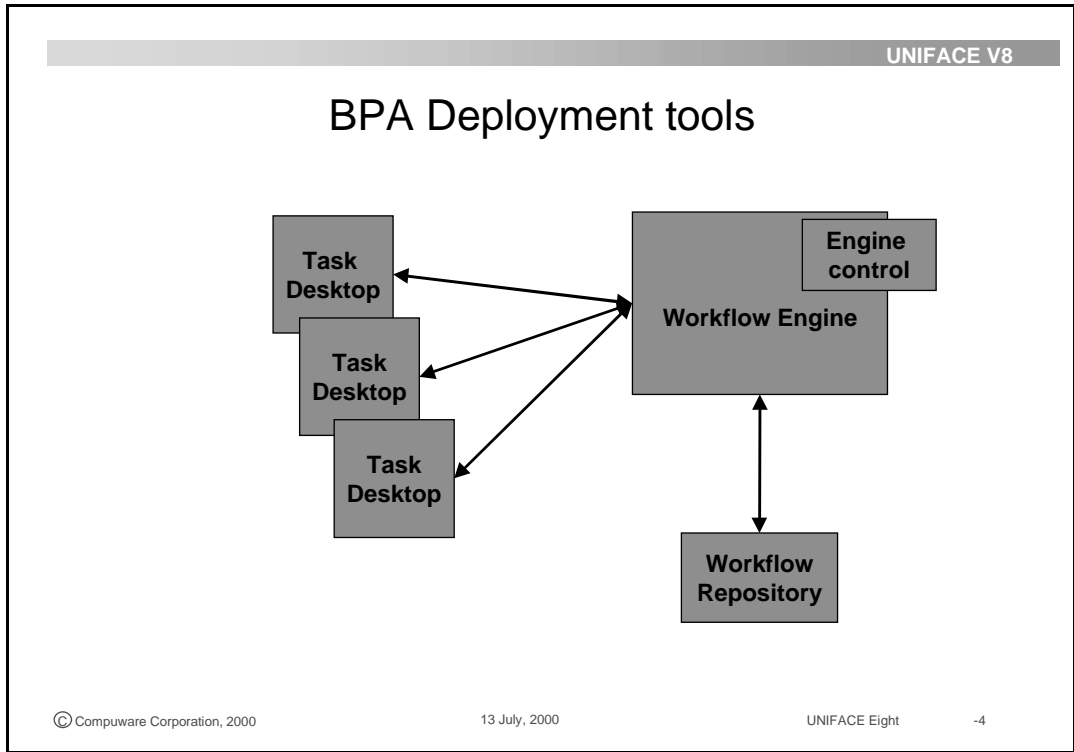
The process instance data is kept in the deployment workflow repository. The state of all ongoing process instances is maintained within the deployment workflow repository. Two types of BPA programs interact with the process instance data in the workflow repository, the Workflow Engine(s) and the Task Desktop(s).

The Workflow Engine controls the process flow and task assignment within process instances. The Workflow Engine reads the business process version data and then it creates process and task instances. After a task, it writes instance data to record the state of the business process.

For example, when an actor approves a stock check for a certain order, the order number and the stock check approval are stored in the deployment workflow repository. The workflow engine

The Task Desktop is the tool used by the actors of the process. Each actor receives a list of tasks that are assigned to him and require execution. They decide to start those tasks from the Task Desktop whenever it suits them.

The Workflow Engine and the Task Desktop communicate with each other asynchronously, exchanging event-based messages.

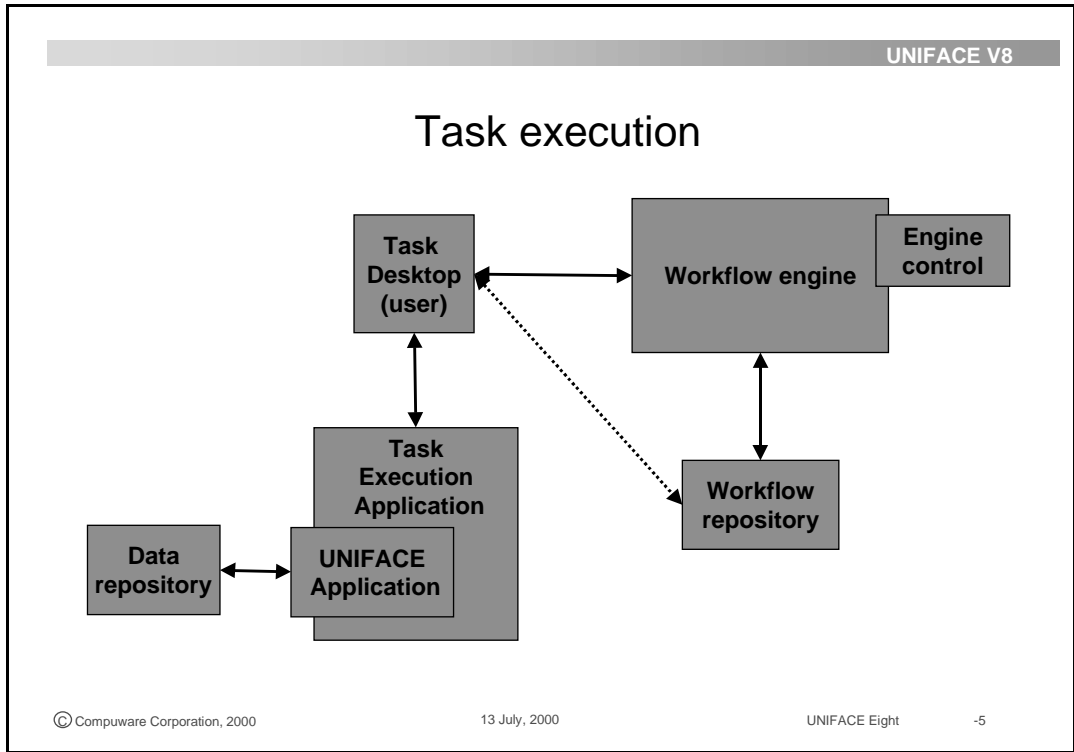


3.1.3 Task execution

The Task Desktop is the user interface for an actor to the Workflow Management system. Within the Task Desktop the actor can see which tasks are assigned to him for execution. The Task Desktop enables the user to execute those tasks.

Depending on the task type and implementation a particular task execution application (TEA) is needed. The TEA server as an application shell around the component engine that executes the task component. This way the TEA shields the Component engine from all workflow-related data and events. The TEA exchanges event-based messages with the Task Desktop.

For a manual task the TEA simply generates a user interface containing all IN and OUT parameters of that task. For an interactive task a dedicated TEA is needed, for example UNIFACE TEA for tasks implemented in UNIFACE.



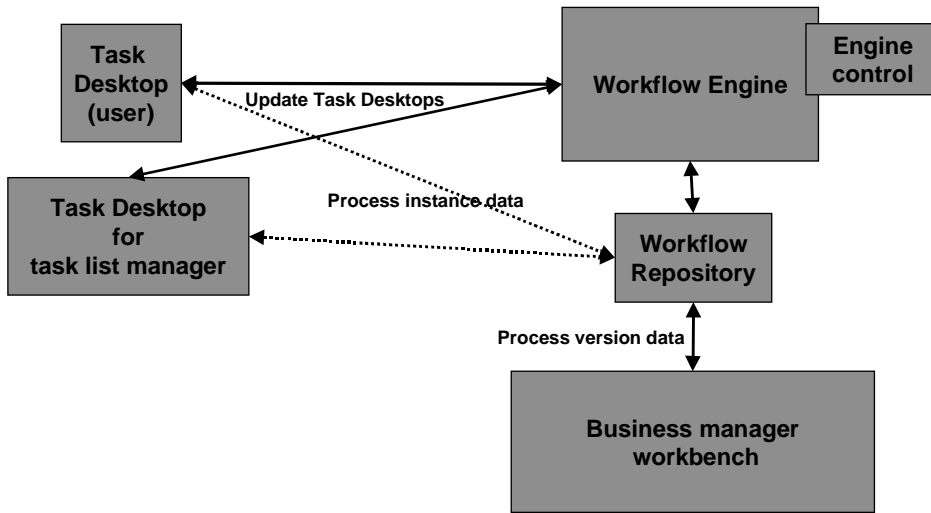
3.1.4 Process monitoring and tuning

A business process that has been deployed requires monitoring and tuning to keep on reflecting the business process as it is, and as it changes. The business process can be changed or the process can be optimized. It is the task list manager role to check whether the deployed process is still an adequate and efficient representation of the actual process as it is executed by the actors in the organization. Two tools enables the modification of the business process: the task list manager Task Desktop and the business manager workbench.

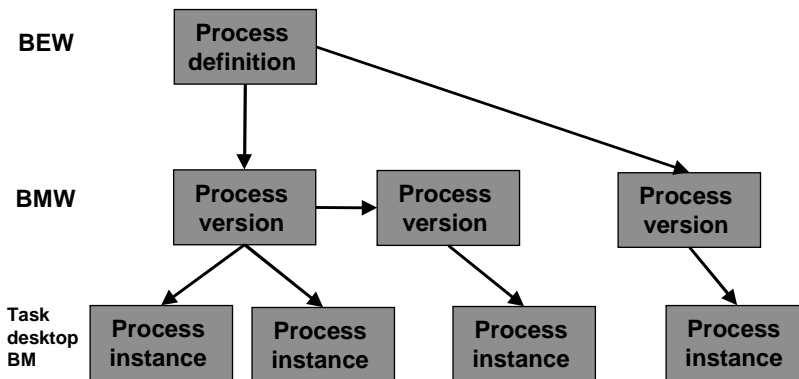
With the Task Desktop the task list manager can monitor and modify a business process instance that has already started. He can reassign a task from one actor to another, or abort a whole process instance. The task list manager can modify the state of a task or change the priority.

With the business manager workbench the business manager can optimize the process definition by either creating new process versions, or by updating an existing process version. Updating an existing version needs to be done with care and with insight in the currently active process instances, because they are influenced by this change. A new or modified process version can differ in flow, content or task assignments. From the Business Manager Workbench the business manager has full control over the deployed business processes.

Process monitoring and tuning



Tools to monitor and tune



3.2 Task Desktop

3.2.1 The user Task Desktop

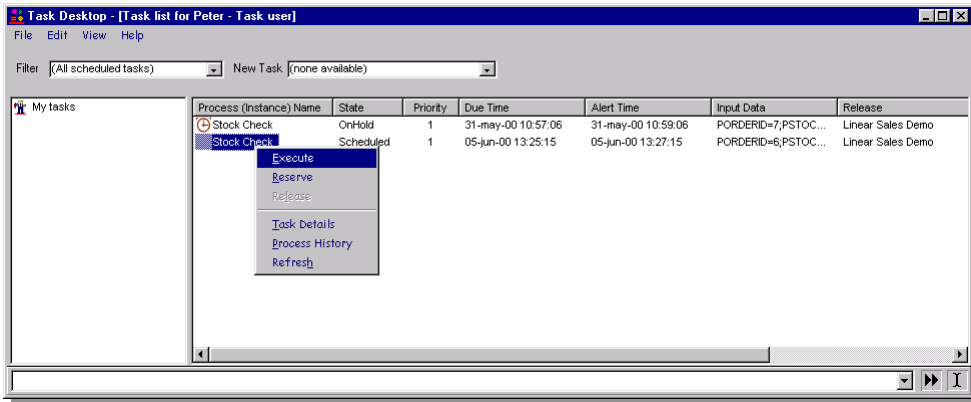
The Task Desktop delivers the tasks to a user that they are scheduled to perform. From the Task Desktop the user can also initiate new tasks or processes, if the process model enables them to do so.

The scheduled tasks appear to the user in a list from which he can directly start executing them. Within the Task Desktop the user can customize their task list to organize their workload.

The task information comes from the Workflow Repository, where it was retrieved and routed to appropriate user's Task Desktop by the Workflow Engine. As users complete their tasks, the Workflow Engine records this information in the workflow repository, and uses it to start and assign new tasks or complete processes.

If a task is assigned to multiple people, the assigned task will appear in all the Task Desktops of the actors. After execution of the task, it will be removed from all the Task Desktops.

Task desk top



3.2.2 User-driven tasks

From the Task Desktop an actor can start executing a task. Besides scheduled tasks an actor can also start a new task if that task is:

- Assigned to that actor, or to the role that actor has.
- A user driven task.

A user-driven task is a task which execution is initiated by the user, as opposed to a workflow-driven task whose execution is scheduled by the Workflow Engine. A new task can be an initiation task, which means it is the first task of a process. It can be a continuation task, which means the task occurs somewhere later in the process, but is not the first task.

Initiation and continuation tasks are started when an event associated with that task occurs. For example, Enter Order is the first task of an order handling process and commences when a customer telephones to place an order. The task Receive Payment is a continuation task later in the same order handling process and commences when the order clerk receives a fax containing payment details.

A new task can be started from the drop down list at the top of the Task Desktop, or by selecting Edit -> Start New Task...

For each task the user can invoke detail information, including the history of the process instance in which context the task is executed. There the user can see who has executed previous tasks in the process instance.

The user can also use the task detail form to reserve a task. Reserving a task is meaningful when a task is assigned to multiple users and one of those actors decides to execute the task, but not immediately. When the one users reserves the task, the scheduled task disappears from the Task desktops of all other assigned users. The user can now choose when to execute the task.

UNIFACE V8

User tasks

The screenshot displays the 'Task Desktop' application window. The main window title is 'Task Desktop - [Task list for George - Task user]'. It features a menu bar (File, Edit, View, Help) and a toolbar with a 'New Task' button and a 'Start' button. A filter dropdown is set to '(All scheduled tasks)'. Below the toolbar is a table of tasks:

Process (Instance) Name	Created
Credit Check	31-may-00 10:54:08
Stock Check	31-may-00 10:54:06
Stock Check	05-jun-00 13:22:15

Below the table, a status bar indicates '3 Task(s) to do, 2 overdue, and 0 late'. An overlay window titled 'Task Details for Stock Check' is open, showing the following information:

- Priority: 1
- State is: Scheduled
- Buttons: Reserve, Release, Abort
- Created on: 31-may-00 10:54:06
- Due time: 31-may-00 10:57:06
- Alert time: 31-may-00 10:59:06
- Description: (empty field)
- Additional Comments: (empty text area)
- Assigned Actor(s): George, Peter
- In Parameter(s):

Parameter	Value
ORDERID	7
PSTOCKOK	0
- Out Parameter(s):

Parameter	Value
PSTOCKOK	
- Buttons: Execute, Process History, Refresh, Close

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3.2.3 Customize the Task Desktop

Many tasks can appear at the same time in a user Task Desktop. Even tasks of different processes may appear. For example, if a clerk performs tasks for an order handling process and for a stock maintaining process, tasks from both processes can appear in their Task Desktop.

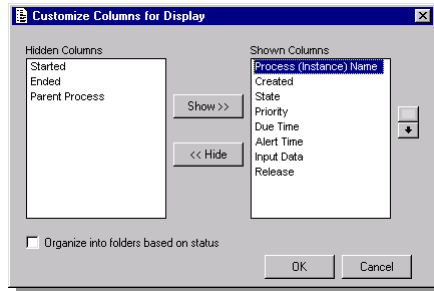
An actor can customize the Task Desktop to his needs. Tasks can be sorted, filtered or grouped into packages:

- **Sorting tasks** - Each user can customize the display of their Task Desktop by selecting the most relevant columns. The user can then sort the task list on those columns, for example on priority. Using the menu option View → Customize the user can select which task-related columns they want to view in their Task Desktop.
- **Filtering tasks** - Filters enable a user to see in their Task Desktop only those tasks that meet the filter criteria. Examples of filters are
 - All tasks with priority = 1
 - All tasks with process name = Credit Check
 - All tasks with a due time of less than 2 hours from now

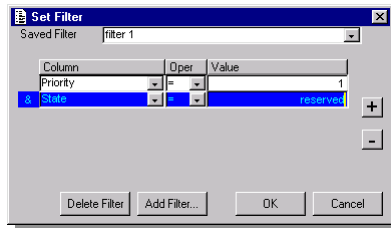
Using the menu option View → Set Filter an actor can create and maintain multiple filters.

- **Organizing tasks in packages** - When an actor chooses to organize their tasks into packages, all tasks that are in the same state (Executing, Scheduled, Reserved, Cancelled) are grouped together. This option is clicked on by using the Organize into Packages option on the View → Customize form.

Customize the task desktop



- **Sorting**
- **Filtering**
- **Grouping**



3.2.4 Task Desktop Configuration

With the Task Desktop the user logs on to the workflow system. The user data provided is verified in the workflow repository, and then used by the Workflow Engine to provide the user with scheduled tasks that are assigned to them to execute.

A pre-configured shortcut for the user Alfred has the following structure:

uniface engine.....uniface8\exe\bin\uniface.exe

assignment file...../asn=ThisActor.asn

application.....uwtskd.aps

UST and protocol.....ust=ThisActor dnp=tcp:

userdata.....user=Alfred password=AlfredsPassword

The assignment file of the Task Desktop is used to define paths to the Workflow Engine, the workflow repository and the task execution application.

The Task Execution Application (TEA) must be defined as a logical in the assignment file of the Task Desktop application:

[logicals]

tea ..\bin\uniface.exe /asn=bpa_dep.asn

The UNIFACE Server Type (UST) setting is used to register the Task Desktop session with the UNIFACE router (urouter.exe). The UNIFACE router can be installed as a service in a Windows environment. The UST must be unique for each actor or other BPA program and is an unique identifier that enables message passing between applications.

Batch tasks and B2B messages

To execute a batch task the Batch Task Server must be installed. If B2B messages are needed for your workflow management system, start the Batch Task Server with an assignment file that has logical assignment:

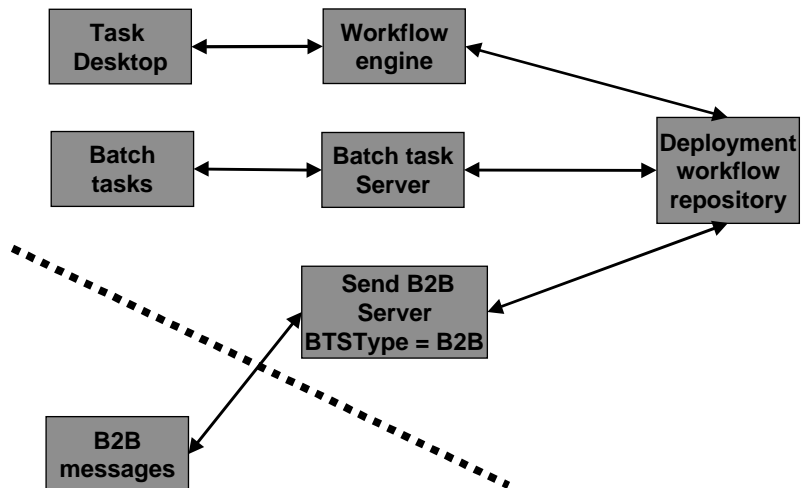
BTSType B2B

Task Desktop configuration



```
C:\usys8\bin\uniface.exe /asn=users.asn uwtskd.aps
ust=uwtask1 dnp=tcp: user=George password=
```

Batch tasks and B2B messages



3.3 Task instance management

3.3.1 The task list manager Task Desktop

The task list manager Task Desktop is a powerful monitoring tool which allows the task list manager to view and modify all business process instances. In his Task Desktop the task list manager can access all task and process instances (to be) executed by all users. He can select an organization unit or an individual user or a process and focus on tasks of that unit, process or user.

The task list manager Task Desktop enables him to view complete organization units, and then to focus on individual actors within that unit. He can

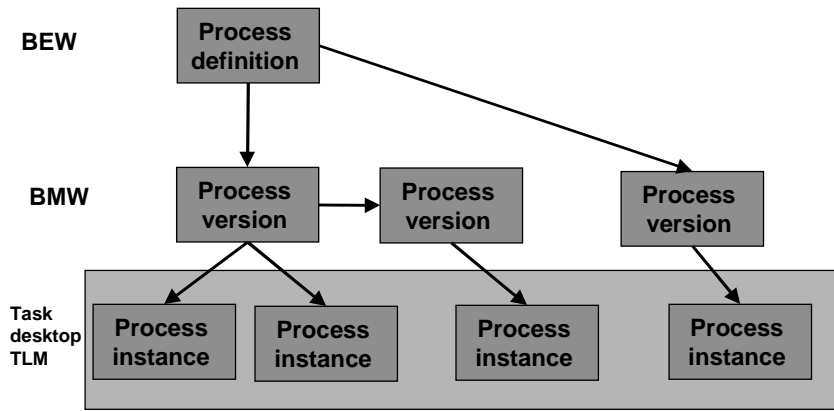
With the task list manager Task Desktop you can view:

- currently active process instances
- process histories
- tasks assignments

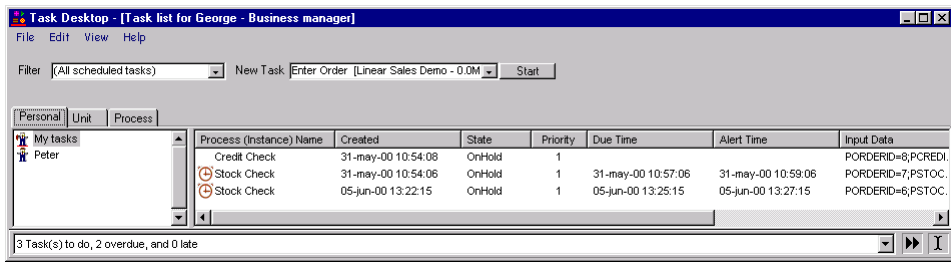
He can view per actor, unit or process

A task list manager can start a new manual task and abort a process.

Task instance management



Task list manager Task desktop



3.3.2 Task details

A task list manager can use the Task Desktop to focus on the details of a selected task. If necessary the task list manager can modify some of the task properties:

- **Priority** - The task list manager can increase or decrease the priority of a task
- **State** - The state of a task instance can be modified by a task list manager. He can abort the task if necessary.
- **Due and alert** - The Due and Alert time of the task can be changed by the task list manager.
- **The task list manager has the permission to modify parameters and process variables for a specified task of a process instance.**
- **Comment** - Comments can be added to a task.
- **Assignment** - The task list manager can assign another actor to a particular task. For example a task list manager can bring in additional actors, or replace an absent actor by one of their colleagues. Any reassignment is only valid for the current process instance.
- **Viewing the history** - The task list manager can view the history of any process instance, who has done what when. A user can only view the history of the process instance in which context the current task is executed.
- **Executing** - The business manager can execute any task. A user can only execute tasks that are assigned to him.

UNIFACE V8

Task details

Task Details for Stock Check

Priority: 1

State is: Scheduled

Buttons: Reserve, Release, Abort

Created on: dd/mm/yy hh:mm:ss
31-may-00 10:54:06

Due time: 31-may-00 10:57:06

Alert time: 31-may-00 10:59:06

Description:

Additional Comments:

Assigned Actor(s): George, Peter

In Parameter(s)	Value
ORDERID	7
PSTOCKCK	0

Out Parameter(s)	Value
PSTOCKCK	

Buttons: Execute, Process History, Refresh, Close

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3.3.3 Process history

Monitor ongoing processes by verifying which tasks are actually executed. For any process instance the task list manager can invoke the process history to see who has done what at which time.

Tasks within a process can be queried for more detailed data on when and by whom they were executed.

The task list manager can customize their Task Desktop to enable them to focus their view on what is most important at that time. That can be all high-priority tasks, but it can also be all tasks scheduled for user X.

The task list manager can customize the view on a process history the same way the view on the Task desktop is modified.

All tasks and flow elements from which the business process instance is created can be seen in the process history. For each individual task the details can be shown.

For example you can see that an AND-join is still waiting for a task to be finished. You can see that a condition was true.

UNIFACE V8

Process history

Process History for Linear Sales Process

Compound Process(es)

Name	Actor Name	Priority	Due Time	Created	Alert Time	Input Data
Linear Sales Process	1		06-jun-00 10:00:14			ORDERID=PCUSTO

Task(s)

Name	Actor Name	Priority	Due Time	Created	Alert Time	Input Data
Enter Order		1		06-jun-00 10:00:05		
Call customer	George	3		06-jun-00 10:00:18		ORDERID=10
Credit check needed?				06-jun-00 10:01:07		
Join				06-jun-00 10:01:07		
Stock Check		1	06-jun-00 10:04:07	06-jun-00 10:01:07	06-jun-00 10:06:07	ORDERID=10,PSTOCKOK=0

Refresh Task Details Customize Cancel

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3.4 BPA servers

3.4.1 Workflow Engine

The Workflow Engine is the server that controls the workflow processing. The Workflow Engine:

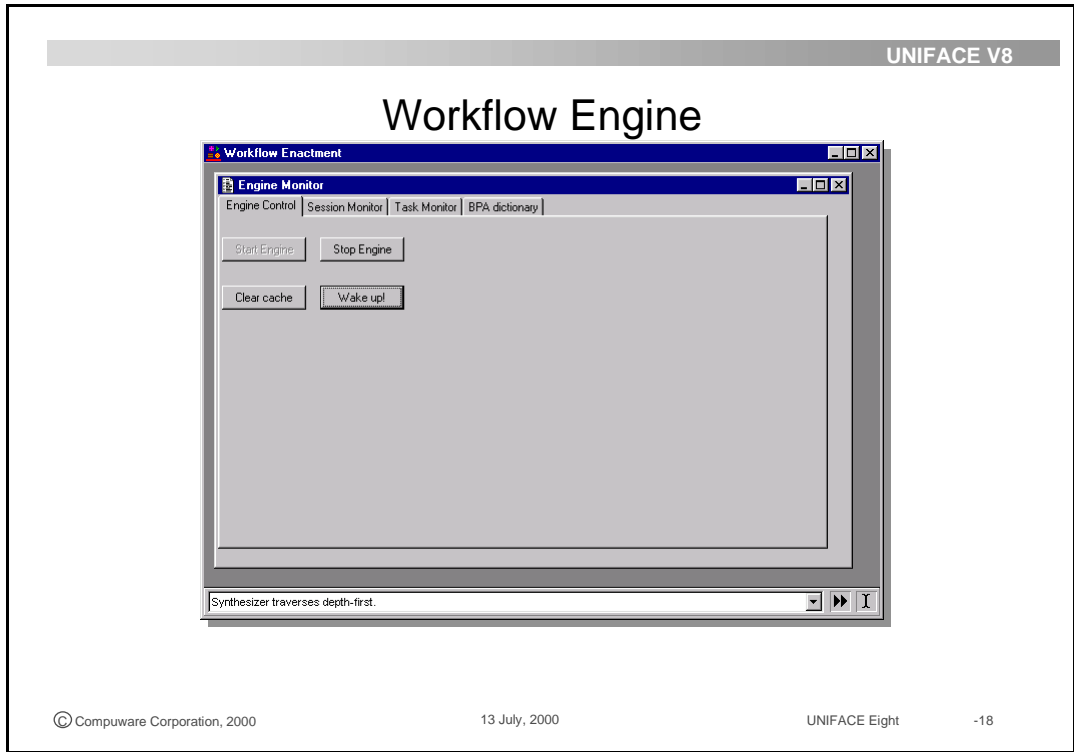
- Manages the creation of processes and tasks
- Schedules tasks
- Evaluates conditions and expressions within the process flow
- Responds to process-related events (like completion of tasks and time-outs of deadlines)

The Workflow Engine activities are governed by the process model definitions and assignment rules.

When you start a task list without having the Workflow Engine running, the task list is retrieved from the workflow repository but not updated by the workflow management system.

The Workflow Engine must always be active prior to any task execution by a user, to calculate what has to happen next in the process. The Workflow Engine maps out parameters to process variables, evaluates conditions, interprets the process flow and task assignments.

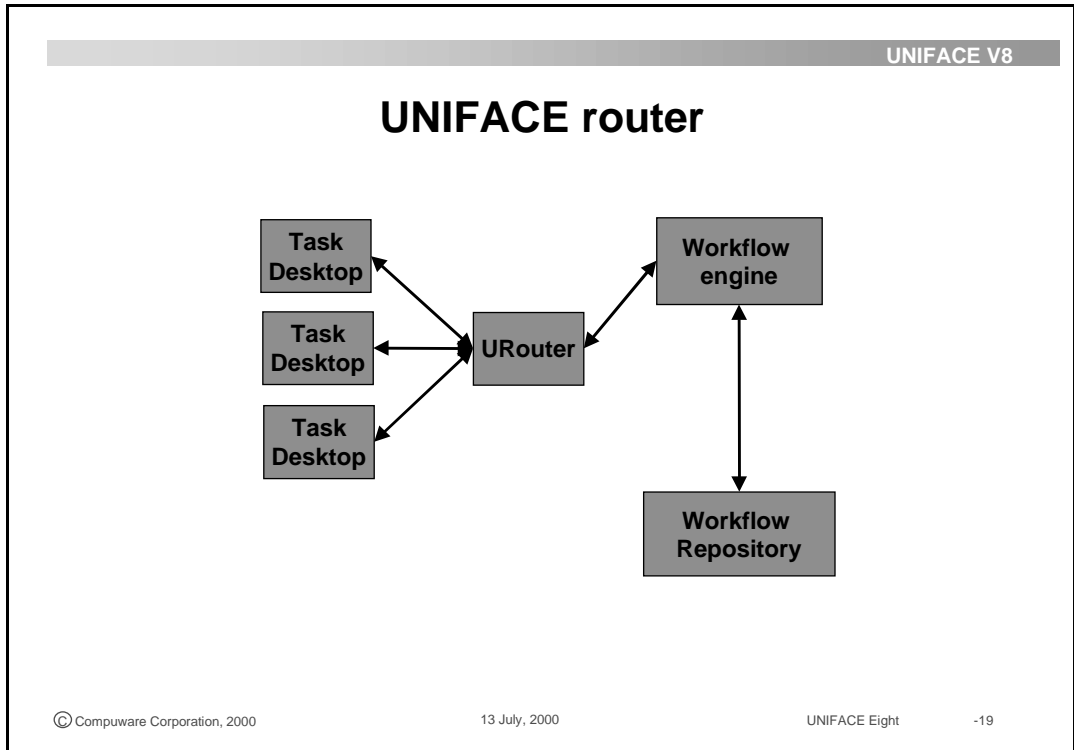
The Workflow Engine activities can be monitored using the engine console.



3.4.2 UNIFACE Router

All communication between the Task desktops is dealt with by the UNIFACE Router. Communication takes place in the form of messages that are directed to their destination by the UNIFACE Router. To enable the Router to send messages to each UNIFACE application, each UNIFACE application must register itself with the Router upon starting, using a UNIFACE Server Type (UST) value. The Router maintains in its memory the set of currently used UST's.

The UNIFACE Router itself is a multi threaded-process that must be started prior to any other UNIFACE program, to enable those programs to be registered during startup.



3.5 Optimization of the business process

3.5.1 Business Manager Workbench

The Business Managers Workbench (BMW) is a tool that enables the business manager to create and update process versions. Each user can be a business manager by assigning the system role 'business manager'

A growing insight in the actual business process, changing business needs, organizational changes and other factors can induce the business manager to alter the process version as it is currently deployed. With this tool the business manager can make adjustments in the process flow and organization to ensure that work is appropriately distributed.

The BMW uses virtually the same modeling environment as the Business Engineers Workbench, but the changes are made directly in the deployment version of the workflow repository, so that they become immediately available to the Workflow Engine.

With the BMW the business manager can modify both versioned (process) and non-versioned (organization) packages. The business manager can:

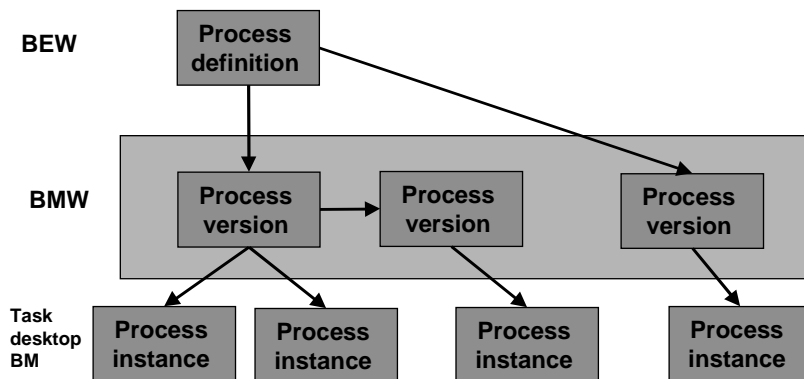
- Import a process definition from the business engineers workbench, thus creating a new process version
- Modify an existing process version. When this version is currently in use, this modification needs to be done with care to prevent errors occurring in the running processes.
- Create a new process version. All new process instances use this new process definition for execution.
- Modify the organization package used in the process. This affects all process versions, since the organization package itself is not versioned but it is imported into all versioned packages.

All these actions can be performed in the BMW, can also be done in the Business Managers Workbench. The only exception to this is the creation of new task implementations, which can only be done using the component editors of the Construction Workspace, which is not available from the Business Managers Workbench.

Business Manager Workbench(1)



Business Manager Workbench (2)



3.5.2 Process flow modifications

Within the process the business manager can modify the process flow in the following ways:

- Sequential tasks can become parallel tasks by adding a split and a join.
- A process flow condition can be added
- A process flow condition can be modified or deleted
- A task can be added (providing that, in case of an interactive task, the signature and corresponding component for the new task do already exist.)
- A complete sequence of tasks can be modified.

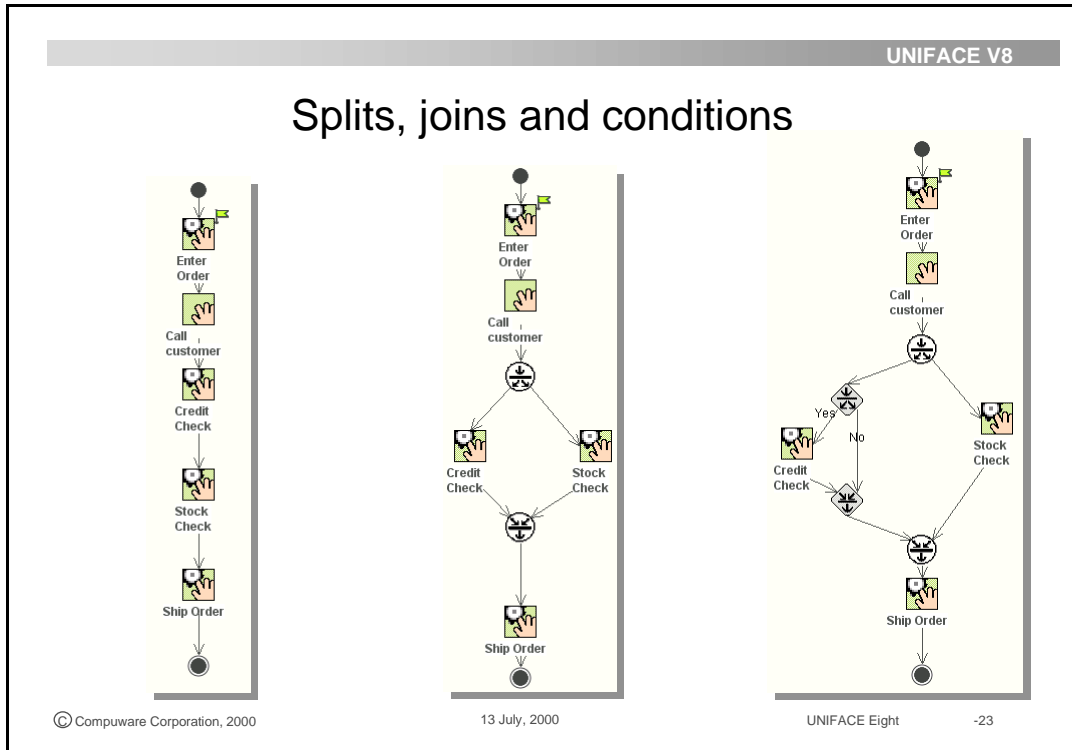
3.5.3 Splits, joins and conditions

The sequence in which tasks are executed can be flexible to an extent. Some tasks are dependent on the outcome of other tasks and therefore must always be sequenced after that task. Other tasks are completely independent of each other and can then be executed in parallel. What exactly is the best possible process flow depends on the nature of the process and the availability of actors. Also, what is an optimal flow today is not necessarily going to be so tomorrow, for example because a task has moved from one department to another and as a result the organization can execute more tasks in parallel than before.

At a split, the process flow changes from linear to two parallel flow paths. For example, a credit and a stock check can be executed parallel instead of sequential.

Because a process flow always ends in a singular endpoint, a split must be followed by a join. A join is the point where two flows meet and become a single flow again.

A join exists in two flavours, an AND-join and an OR-join. An AND-join indicates that both flows leading to that join must be completed before the process flow can continue. An OR-join means that only one income flow needs to arrive at the join, and then the process flow can continue immediately. Using a condition before the credit check is executed makes it possible to do a credit check only for orders with an order amount over \$1000. An OR-join is needed to let the process instance continue.



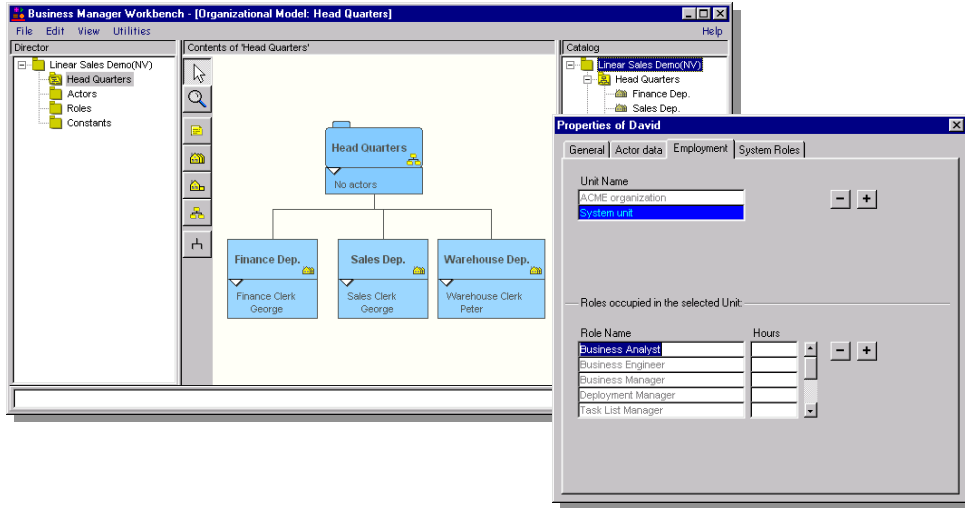
3.5.4 Organization and assignment changes

The organization model can be modeled using the BMW.

This initial modeling activity needs to be refined and modified during deployment to accommodate organization changes and resource availability. For example:

- Newly available actors, actors become unavailable.
- Changing task assignments, (more actors assigned to task, actor assigned to more tasks)
- New roles for actors
- Organization structure changes, such as departments that merge or new departments that are created

Organization and assignment changes



3.5.5 B2B messages

The messages are sent to the system with the given URL, through HTTP. In the system where it is received, it is further handled uses the two DTD names to identify appropriate receive B2B message definition. Both send and receive message must use the same DTDs.

Locally sent messages uses the identifier to identify the proper process instance. Local messages can be sent between systems the use the same deployment workflow repository.

The DTD of Envelope describes the meta data needed for transport. The DTD of Body describes the content of the message. A component needed for the message is made known to the BPA system in the DTD. For the DTD the component type is defined in the logicals section of the assignment file.

For example you can use a B2B message to order some article or to send an invoice. B2B messages are a mean of communication between different business processes.

UNIFACE V8

B2B messages

The diagram illustrates a B2B message flow. It begins with a 'Ship Order' icon, followed by a 'Check B2B' icon. From 'Check B2B', the flow branches into two paths: 'OnLine Invoice' and 'Send Invoice'. An arrow points from the 'Send Invoice' step to a configuration window titled 'Send to Remote Destination'. This window contains the following fields:

- Send to Remote Destination
 - Target Address:
 - DTD of Envelope: [OK]
 - DTD of Body: [OK]
- Send to Local Destination
 - Message Identifier: [OK]

3.5.6 Process versioning

The Business Manager Workbench enables the business manager to modify a process version. Since the current process version can already be in use by a process instance, that current version must be maintained as well. Therefore it is necessary in the deployment workflow repository to distinguish different versions of a process.

A (new) version of a process definition is created by cloning that process definition. Cloning is an action that adds a version identifier to a process definition. By means of cloning, multiple versions of the same process definition can be maintained within the deployment workflow repository. Process versions can differ in assignment rules, process flow or taskset.

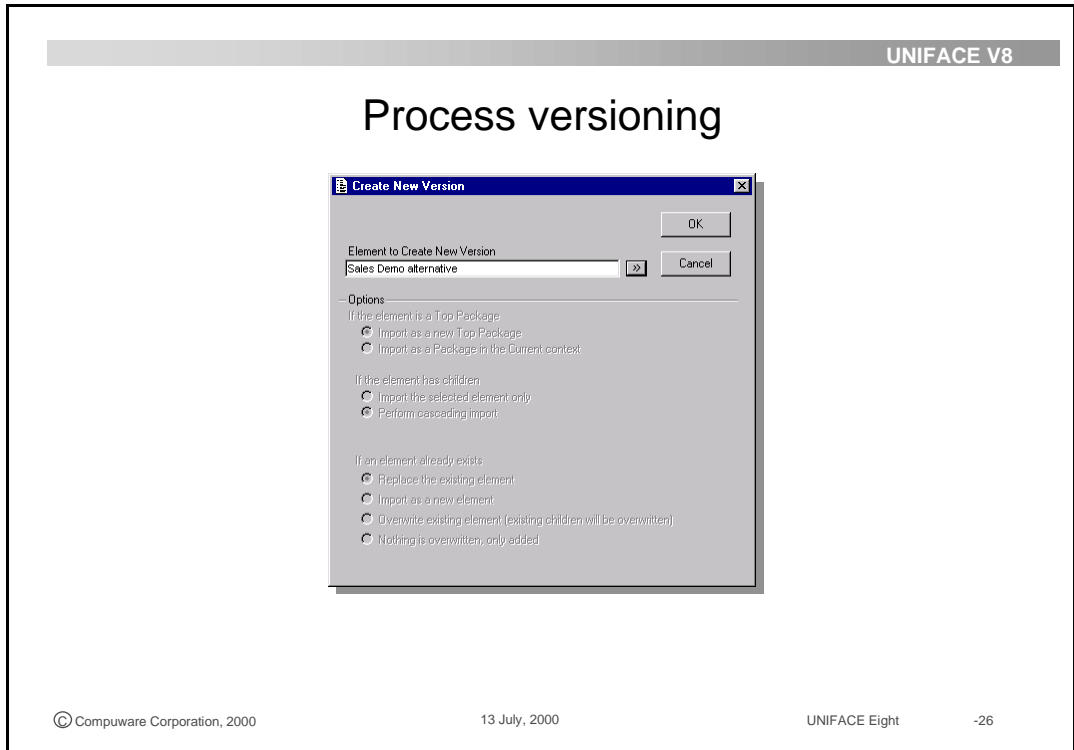
Create a new process version in either of the following ways:

- Import a process definition that was created with the Business Engineers workbench (implicit cloning)
- Modify an existing process version, using the Business Managers Workbench. (explicit cloning)

Versioned and non-versioned packages

A process package at deployment time is always a versioned package. Therefore if a process package, created with the BEW is imported using the BMW, the process definition is cloned into a process version.

An organization package is a non-versioned package. This means the organization package always exists only in one implementation, that is the current one. A process package always needs to include an organization package, to find the actors that are assigned to the tasks. A change in the organization package therefore affects all process packages that use the organization package.



3.5.7 Release states

For each versioned package a state can be set on the properties form of the process. During modification of a business process the deployed processes can be set on hold. This state can be set for all versions of the business process or for the current process only. Tasks of a business process that are set on hold cannot be executed.

The available release states for business processes are:

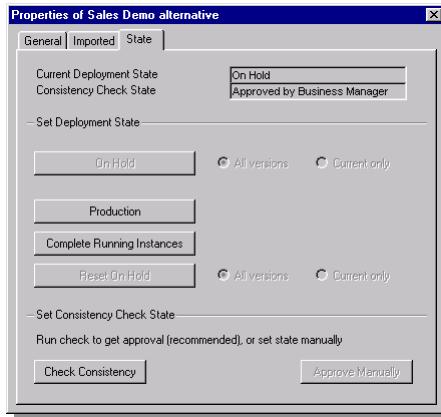
- On hold
- Production
- Complete running instances

3.5.8 Consistency check

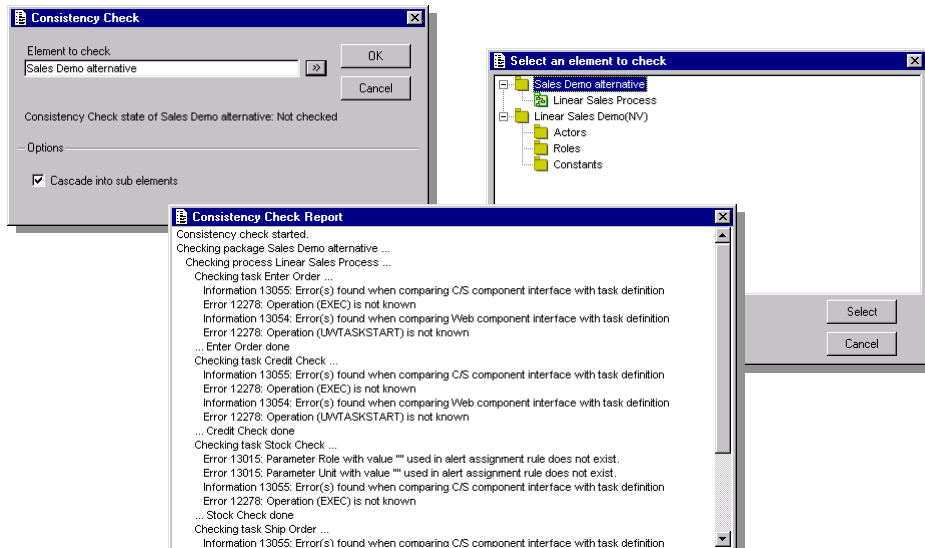
Before taking a modified or new version of the business process into production you must execute a consistency check. This is the same as the consistency check performed during the development phase of the BPA process.

Feedback about the consistency check is provided via the message frame.

Release states



Consistency check



3.5.9 Overview

Steps involved in the deployment of a workflow-based application are as follows.

1. Import your business model from the development phase.
2. Modify your business model, both the processes that take place or that you want to take place, and the organization that executes those processes. The Business Engineer Workbench enables you to perform this modeling activity.
3. Deploy your application. Involve one or more actors to execute the process
4. With the Task Desktop for the task list manager you can monitor how the process is performing and make small modifications to it when required.
5. Based on how the initial deployment of the process worked you may decide to make modification to the process definition, by changing the flow or the assignments or the organization.

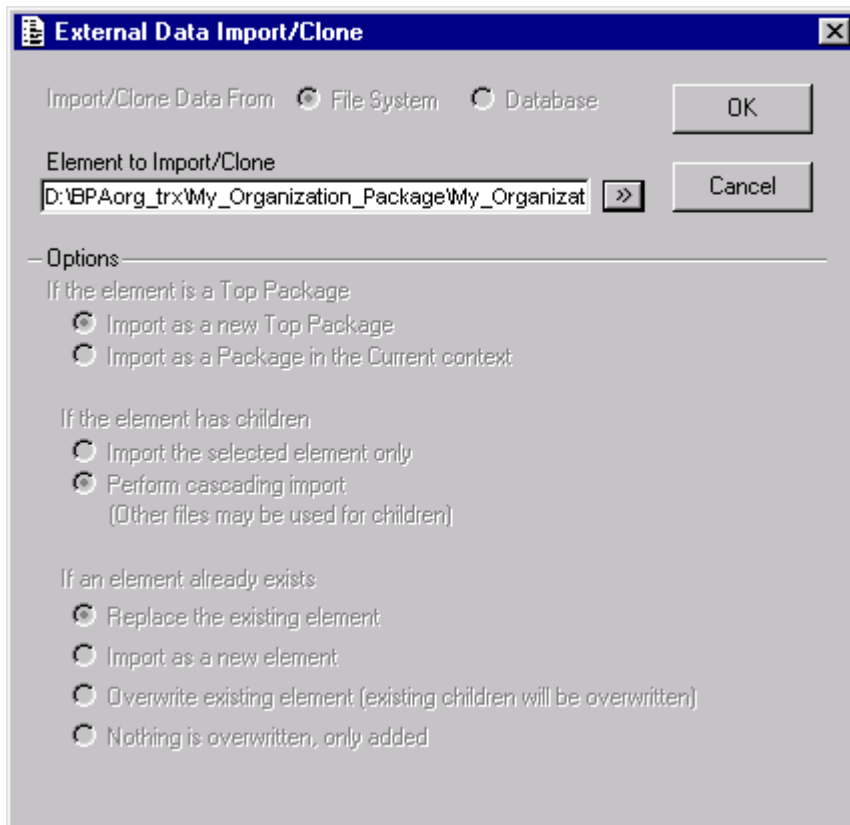
Overview

	Modeller	Taskdesktop
Development	(1) Business Engineer Workbench	(2) Task Desktop (test mode)
Deployment	(5) Business Manager Workbench	(3) Task Desktop (user) (4) Task Desktop (task list manager)

Exercise 3.1. Prepare for deployment

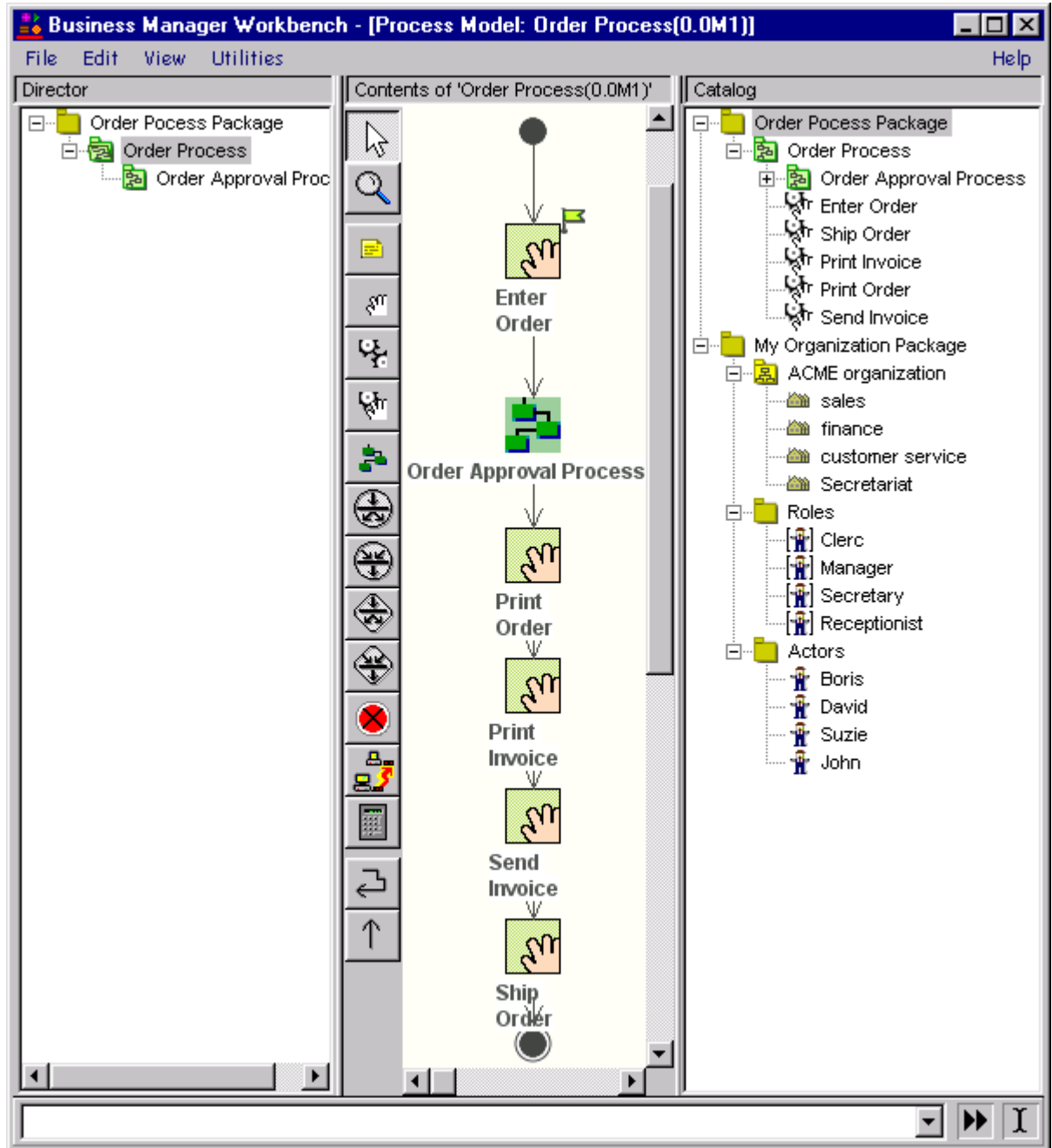
Before you can deploy your business process you have to import and save the organizational model and the business process model.

- Start your deployment database and your Business Manager Workbench. Username password combination must be bpa (username), bpa (password).
- Go to Utilities --> Import/Clone and browse to 'My_Organizatio_Package.trx' which is saved in the 'My_Organization_Package' subfolder of the 'BPAorg_trx folder', created during the last exercise of the development lesson.



- Click 'OK' to start the import/Clone process.
- Save the imported Organizational model
- Repeat the same procedure for the 'Order Process Package'
- Save the Order Process Package.

- Expand all trees to check the 'Order Package Model'



Exercise 3.2. Check the deployment environment

You will begin this series of deployment exercises with checking the definition of the actors, their roles and their initial assignments.

The table shows all tasks and assignment needed for the business to run. The last two tasks: 'Archive Order' and 'Copy and Archive Invoice' are not yet implemented. This will happen during the exercises.

- Start the UNIFACE 8 Business Manager Workbench and go to the Business Automation workspace.
- Select My Organization Package and go to the Actors package and check all the actors.
- Repeat the same action for the roles.

Actor	Role	Unit
Boris	Clerc	Sales
David	Manager	ACME organization
Suzie	Secretary Receptionist	Secretariat Customer service
John	Clerc	Finance

Table 3-1

- Now check the initial assignments for all tasks. To do this open the Order process Package and define the following assignments
- If you made any modifications save it and close the Business Manager Workbench:

Task	Assignment Rule	Role/Actor	Unit
Enter Order	All actors in Unit		Sales
Credit check	Actors with Role in Unit	Manager	ACME Organization
Contact Customer	All actors in unit		Customer Service
Cancel Order	All actors in Unit		Customer Service

Table 3-2

Task	Assignment Rule	Role/Actor	Unit
Print Order	Actors with Role in Unit	Clerk	Sales
Print Invoice	Actors with Role in Unit	Clerk	Finance
Send Invoice	Actors with Role in Unit	Clerk	Finance
Ship Order	Actor	Boris	
Archive Order			
Copy and Archive invoice			

Table 3-2

3.3. Start the user Task Desktop

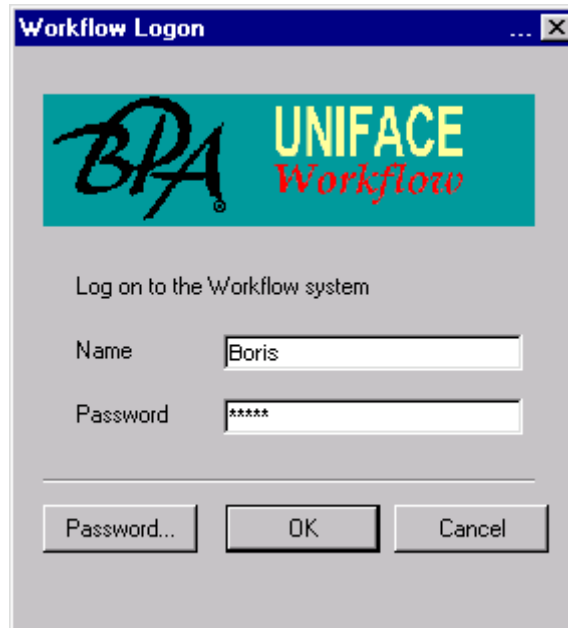
The organization is now completed and ready to execute the full order process.

- Copy an arbitrary Task Desktop four times and rename the shortcuts to:
 - Task Desktop Boris
 - Task Desktop David
 - Task Desktop Suzie
 - Task Desktop John
- For each shortcut the target must be entered on the properties form:
 - For Boris the target can be:
 D:\usys8\bin\uniface.exe /asn=bpa_dep.asn uwtskd.ap
 ust=uwtask1 dnp=tc
 D:\usys8 is the installation directory of UNIFACE Eight.
 - Now modify for each Task Desktop the Uniface Server Type (UST) to make sure that each shortcut uses a unique UST.

Actor	UST=
Boris	uwtask1
David	uwtask2
Suzie	uwtask3
John	uwtask4

Table 3-3

- Check that the router, the Workflow Engine and the Workflow repository are all active. Then start the task desktops for Boris. You are prompted for to enter logon information. Enter 'Boris' as username and 'boris' as password.



- Modify the shortcuts to the Task Desktops by adding information about username and password. Add to the target for Boris: user=Boris password=boris. Take a similar action for the other three users.

When you start a Task Desktop you will no longer be prompted for logon information.

- Start all Task Desktops and arrange the four Task desktops on your screen to make them all visible simultaneously.
- Because all actors in the unit Sales can execute the task Enter Order Boris can initiate an instance of the business process by entering an order. Boris enters the first order. Assign the following values to the variables.

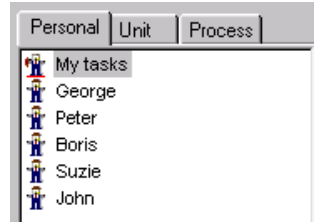
```
ORDER_ID      1
CUSTOMER_ID  10
TOTAL_AMOUNT 500
```

- Click OK to execute this task.
- The next task, Credit Check, now appears in the Task Desktop of David. Why?
- Perform the Credit Check by clicking OK.
- The Print Order task now appears in Boris' task desktop. Boris prints the order.
- The print of the invoice is the next task to be executed by John. Remember the assignment for this task: 'Actors with Role Clerk in unit Finance'.
- John has to send the invoice as well because the same assignment rule is used for this task. Invoke the task details for this task and press Process History to see which tasks have been executed in the current process.
- Now execute the task Send Invoice.
- The last task must be done by Boris and is the Ship Order. This task was assigned to the Actor Boris.
- Now all four task desktops remain empty. What has happened to the process flow?
- Go to the task monitor tab of the Workflow engine. Scroll to find the instances of the Order Process.

Exercise 3.4. Start the Task List manager Task Desktop

You have invoked the actors involved in executing the order process. With the Task Desktop you can also monitor and modify the ongoing order processes. To be able to monitor you need to log on as business manager.

- Modify actor David as a task List manager. Start your Business Engineer Workbench and select 'My Organization Package' Highlight actor Actors in the Director pane and invoke the properties form of David. Click on the System Roles tab page and check the Tasklist Manager checkbox on and save.
- Start the Task Desktop of David.
You will have Task List manager view on the task list. The left pane of the Task Desktop has option for a: Personel, Unit or Process view.



- Before starting new process instances we first terminate all unfinished tasks from processes started during previous exercises. Go to the Task Monitor tab of the Engine Monitor and press Delete process instance until all task and process data is cleared, then Save.
- Start the task desktops for Boris, Suzie and John. Arrange the 4 task desktops on your screen to make them all visible simultaneously.
- Boris starts the new task Enter Order, using the following values:

ORDER_ID2

CUSTOMER_ID11

TOTAL_AMOUNT200

The Task List manager can assign a task that needs execution to another actor. For example John of Finance takes over the execution of the credit check today.

- In the Unit tab of the Task desktop of David select the ACME organization, My Tasks and click right on 'Credit Check'. Choose Reassign, highlight John and click on Select.
- Check to TaskDesktop of John.
- Execute the Credit Check (John) and check also the Task Desktop of David.
- Localize the current task, Print Order, in the Task List managers Task Desktop (it is assigned to Boris). Click right and select Re-assign. In the Select an Actor browse form select Suzie to do this task. Press Refresh to update the page.
- On the Taskmonitor tab of the workflow engine you can see how far this instance of the Order Process has progressed.
- Start a second instance of the Order Process by having Boris enter the following new order:

ORDER_ID3

CUSTOMER_ID2

TOTAL_AMOUNT300

- Execute the Credit Check (David).

- The Print Order task now appears in the task desktop of Boris (Clerk in Sales). Click right on Print Order, select task Process History to see the history of this instance of the Order Process.
- Execute the Print Order from the Task List Manager task desktop, using the Execute button.
- Still in the Business Manager's task desktop, localize the next task, Print Invoice, and examine the history of this task and its parent process, the Order Process.
- Have Boris enter the next order

ORDER_ID4

CUSTOMER_ID3

TOTAL_AMOUNT400

- Execute this task and invoke the Credit Check task.

Suddenly the news that the company of this customer has gone bankrupt reaches the Task List manager. He now decides to abort the whole process instance.

- Select the Print Invoice task. Click right and select Task Details. Click on Abort. By aborting this task, the instance of the Order Process for this particular order is cancelled.

Exercise 3.5. Create a parallel process

So far the order process has been executed as it was modeled. As a business manager you probably wish to modify this modeled process flow, depending on the business needs as they manifest themselves.

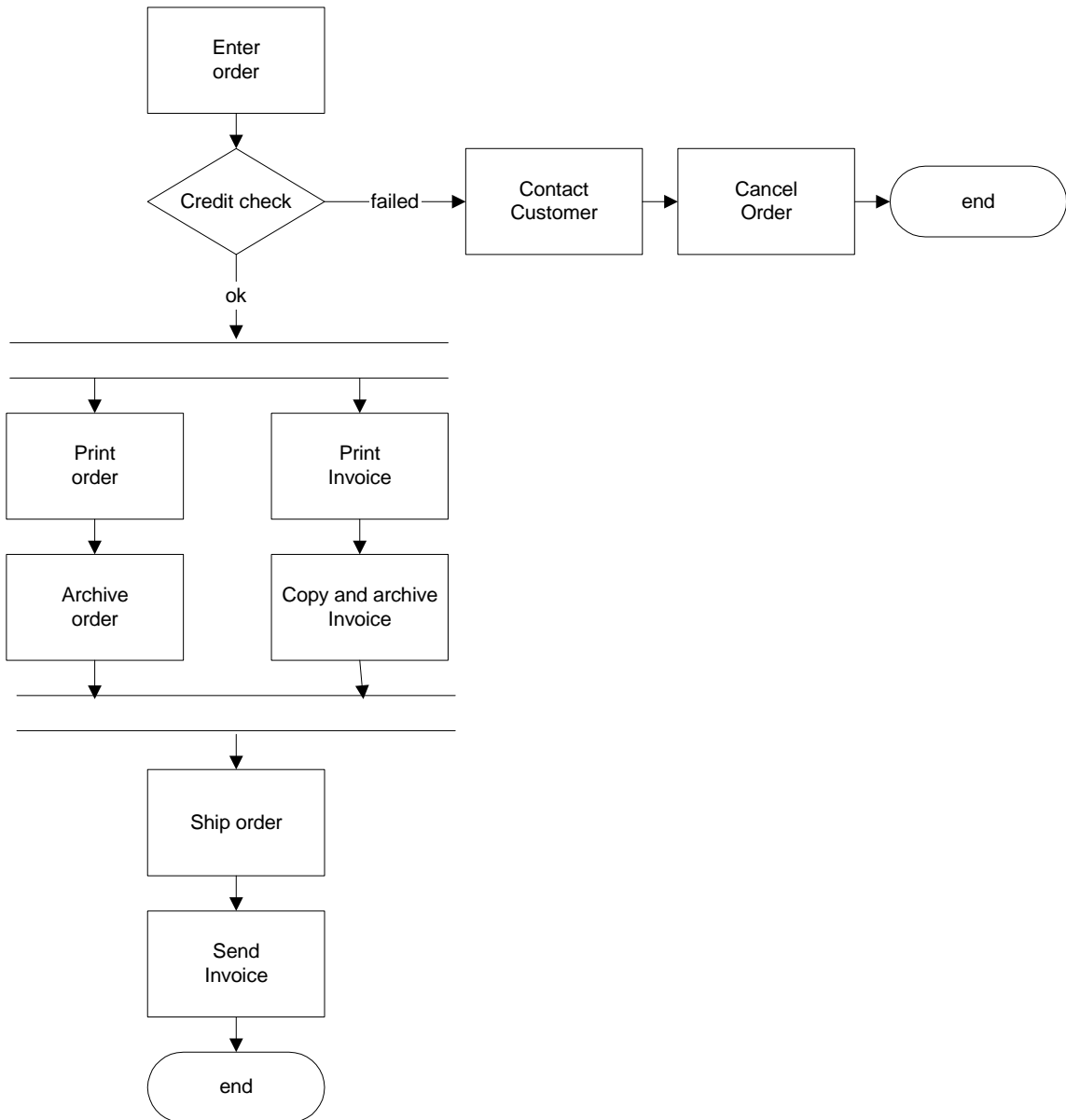
- If not done yet create a shortcut for the Business Manager Workbench. The easiest way to do this is to copy the shortcut of the development environment (in the development folder). Go to the properties and change idf.exe to uniface.exe and at the end add the start-up shell name bmw. David has been defined as a Business Manager in the deployment tab of the properties of David.

D:\usys8005\bin\uniface.exe /asn=bpa_dep2.asn bmw user=David
password=david

If there is no Business Manager defined for the system you can use bpa as username and password.

- Start the business manager workbench (or UNIFACE Modeler).

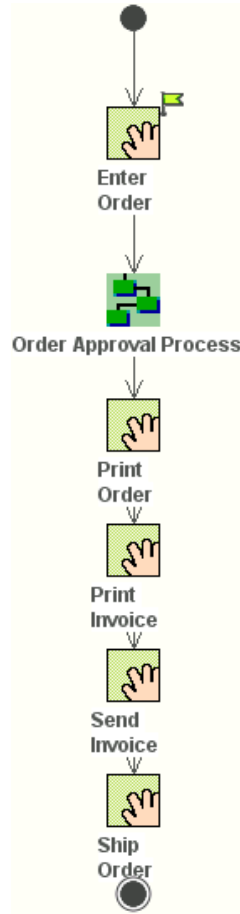
The business process has to be modified according the model.



In this exercise you will optimize process. Print Order and Archive Order are performed sequentially in parallel with Print Invoice and Copy and archive Invoice. Since the two sets of tasks are independent of each other,

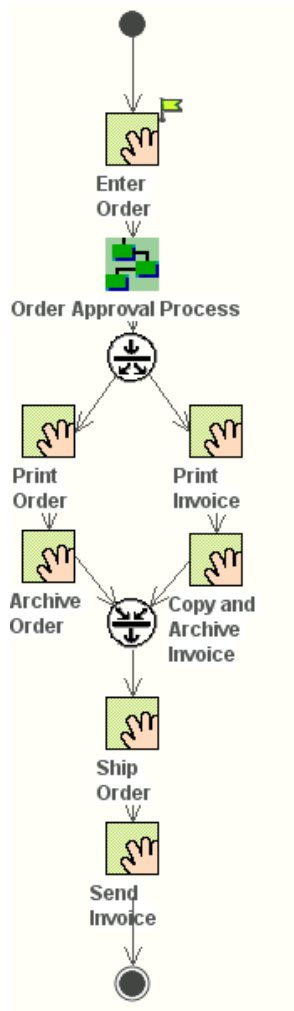
they can be executed in parallel. When both tasks are successfully completed, the process is completed by shipping the order and sending an invoice.

- In the Business manager Workbench select the Order Process Package expand the package in the Director and highlight the Order Process.



- Delete the all the flows (not the tasks!!) after Order Approval Process
- Create two new tasks: Archive Order and Copy and Archive Invoice, both manual tasks. Archive Order uses the ORDER_ID and as input parameter and the Copy and Archive Invoice uses ORDER_ID and CUSTOMER_ID as IN parameters.
- Rearrange the tasks according the diagram

- Now complete the modified process flow to enable both series of tasks to be executed in parallel, independent of each other.



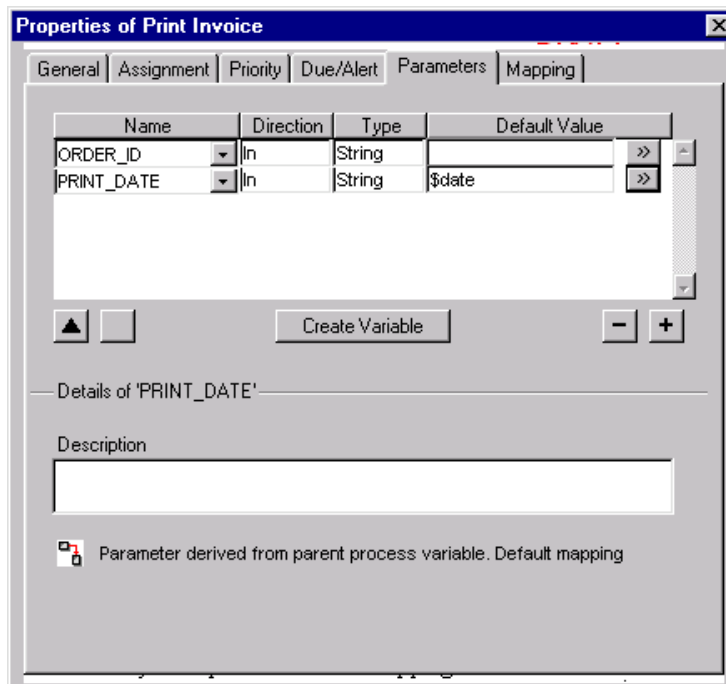
- Copying and archiving must be executed by any actor of the Secretariat.
- Save the modified process
- In order to test this modified process, start the Workflow engine and the task desktops of all actors.
- Boris enters an order.
- David executes the credit check

- You should now see both tasks, **Print Order** and **Print Invoice**, appear in the Task desktops of the actors they are assigned to. Execute these tasks.
- Check the Task Desktop of **Suzie** and execute both tasks: **Archive Order** and **Copy** and archive invoice.

Exercise 3.6. Set default values

The Print Order and Print Invoice tasks need a print data as input parameter. The Send Invoice need a data that is one day after the print data of the invoice.

- Start the Business Engineer workbench
- Open the properties form of the print invoice and click on the parameter tab page.
- Click on Create Variable and add a business variable PRINT_DATE as IN and of type string.
- Click on the detail button of the default value field of the parameter tab page. This invokes the expression editor.
- Use \$date (= system date) as default value for the PRINT_DATE.

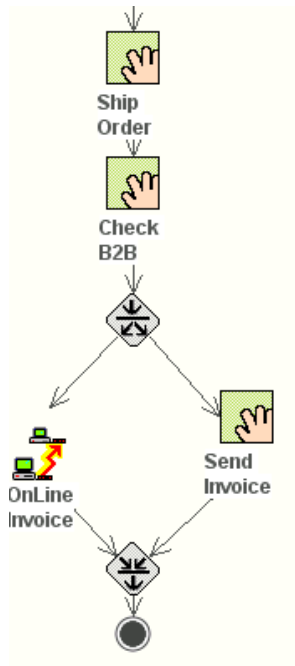


- Repeat the same procedure for the Print Invoice task.
- Again the same for the Send Invoice task but use \$date + 1d as default value.
- Start the business process and test the changes made.

Exercise 3.7. Model B2B communication.

Send invoice has been implemented as a manual task. To even more optimize the business process the Send Invoice task is modified to a B2B message. But because not all customers can receive B2B messages a task must be added where to decide what to do.

- Start your Business Engineer workbench.
- Create a new manual task; 'Check B2B'.
- Open the properties form of this task and set focus on the parameter tab page.
- Create a new business variable 'B2B_OK' as a boolean and define it as a OUT parameter. As IN parameter the CUSTOMER_ID is needed.
- All actors with the role 'clerc' can execute this task.
- Put the 'Check B2B' task after the 'Ship Order'
- Create a Business to Business message: OnLine Invoice. define this message as a 'Send' message.
- Check the 'Send to Remote Destination' and a Target Address DTD of the body.
- After the 'Check B2B' a Condition must be set. Use 'B2B_OK' boolean as condition.
- The 'True' flow goes to 'OnLine invoice' the 'False' flow goes to the 'Send Invoice'.
- Before ending the process an 'OR' join must be added.



- Save and test the new business process by starting at least to instances for the same process. One goes to 'Send Invoice' and the other goes to 'OnLine invoice'

Exercise 3.8. Modify a task implementation (optional)

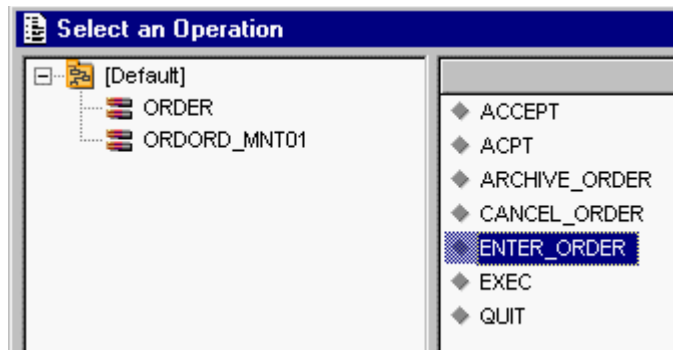
All tasks of the Order Process are modeled as manual tasks. This means the interface of each task is a simple listing of IN and OUT parameters, and is generated during execution of the task. Now you will also include some interactive tasks, which are implemented as UNIFACE components.

- Import `datamodel.exp` into your development environment. This file contains definitions for an application model. Import also `enterorder.exp` and `shiporder.exp` which contain components that implement some of the tasks of the Order Process.
- Compile all forms.
- Examine which assignment file is used by the task desktop of users of the Order Process. Open this assignment file and add the following setting
`$search_descriptor = dbms_first`

This is done to always look for the latest component signatures.

Now you are ready to modify the task implementation of some tasks. Enter Order is typically a interactive task, requiring a specific user interface.

- In the Order Process go to the Enter Order task and open the property inspector. In the General tab, set the type to Interactive.
- A new tab named Task appears. In this tab you can define the details of the implementation. As application fill in `uwtea`. Use the detail (>>) button to browse to the `Enter_order` operation of the Order component (`ORDORD_MNT01`):



- Find also the appropriate components and operations for the tasks Ship Order (`ORDORD_MNT02`) and Archive Order (`ORDORD_MNT01`).

- Save the modified process.
- Go to the task desktop of Boris and enter a new order. Go through the whole process and notice which implementations are used for each task.