

Business Process Management and Knowledge Toolkit



ADONIS

The integrated Business Process Management and Knowledge toolkit from BOC GmbH.

ADONIS offers you a wide-range of various functionalities in the following operational areas:

E-Business:

E-business application development, as well as constant and integrated modelling of business models, Business Processes, products, IT systems and IT infrastructures.

Business process management:

Acquisition, modelling, analysis, simulation, evaluation, documentation and realisation of Business Processes.

Process-based application development:

Application development with workflow, CASE-, groupware and object technology as well as process-based introduction of standard software.

Process Warehouses:

Operational data management and Evaluation based on business process and integrated solutions with different workflow products .

Knowledge management - Training and Learning:

Production of training supports through graphic models and process orientated knowledge management.

ADONIS is a client/server multi-user system, which has an object-oriented structure. Additionally, **ADONIS** has a remarkable adaptation possibility, so it can be configured according to your needs and developed according to your requirements(ADONIS-customising)".

Business Process Management

- The goals of **Business Process Management** are the optimization of both the processes of an enterprise, as well as the resources and technology which execute those processes.
- To enable this, the Procedural Modelling, Analysis, Simulation and Evaluation of Business Processes is a decisive success factor.
- Models can be constructed using the **ADONIS Business Process Management toolkit** (BPM)
- By using the ADONIS BPM toolkit, users can model their **business processes** as well as their **working environment** (organizational structures). The toolkit offers extensive functionality, which allows to **acquire**, **analyse**, **simulate** and **evaluate** business processes and working environments in a cost-effective way.

ADONIS Business Process Management toolkit

- The ADONIS Business Process Management toolkit consists of the following components:

Acquisition

Information acquisition supports you in gathering information, which is important (or necessary) to successfully model your Business Processes and Working Environments. One of the methods provided is the use of the **acquisition tables** or **HOMER** component, which runs through a link to Microsoft Excel. Data can be entered in these tables (excel sheets) and this data can then be exported to an ADL file and imported into the ADONIS Business Process Management toolkit.

Modelling

The Modelling component is the heart of the ADONIS Business Process Management toolkit. The Modelling component allows you to build the models you require (e.g. Business Process or Working Environments). You can create and amend your own models (and the attribute values of the objects used) using the graphical editor (**model editor**) provided. Additionally, it is also possible to input attribute values through a tabular view of the model.

ADONIS Business Process Management toolkit

- The ADONIS Business Process Management toolkit consists of the following components:

Analysis

Within the Analysis component, **queries** on your ADONIS models can be run and **relation tables** or **predefined charts** can be produced. Both predefined and user-definable queries are provided in ADONIS. The query language in ADONIS is AQL (AQL = **ADONIS Query Language**). Creation of queries will be defined by the ADONIS Administrator, and will be provided to an ADONIS User.

The results of a query can be displayed either as a table or graphically. The results can also be exported to an ASCII file. In this way you can process the results further in another application (e.g. spreadsheet, word processor etc.).

An **Analytical Evaluation** of Business Process models can also be carried out.

Simulation

The Simulation of Business Processes and Working Environments is executed in the Simulation component. Four Simulation algorithms are available in ADONIS: **path Analysis** simulates the Business Process models, only while the **capacity Analysis**, **workload Analysis (steady state)**, and **workload Analysis (fixed time period)** simulate the Business Process models AND the corresponding Working Environment models.

ADONIS Business Process Management toolkit

- The ADONIS Business Process Management toolkit consists of the following components:

Evaluation

The Evaluation component offers mechanisms for the Evaluation of "should-be" models as real running processes.

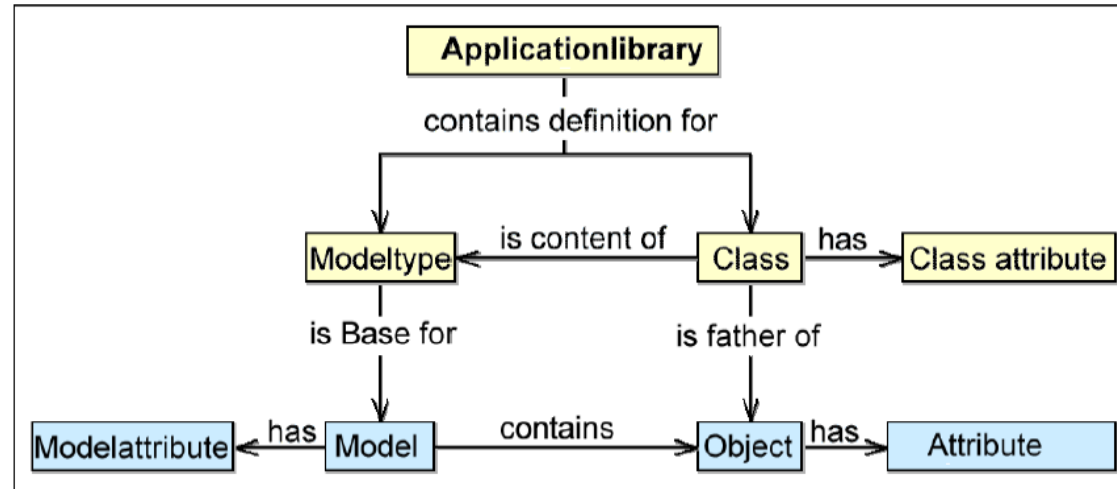
The Evaluation component provides the following areas of functionality **comparative representation of results**, **Evaluation of real-time audit trails of the workflow management system MQSeries Workflow (IBM)** and **pre-defined Evaluation queries**.

Import/Export

The Import/Export component provides the option of **exporting** ADONIS models, model groups and application models **into ADL files** as well as **importing** them into an ADONIS database from **ADL files**. ADL stands for **ADONIS Definition Language**. With the help of ADL-import and ADL-export, you can transfer ADONIS models, model groups and application models into a different ADONIS database. Additionally, ADL-Export can serve as a back-up mechanism for your models, model groups and application models.

The **Documentation** component provides you with the possibility to transfer your ADONIS models into an electronic model documentation (e.g. HTML, XML data) or in a paper documentation (e.g. RTF data for MS Word). In this way it is possible to distribute the contents of your models either in document format (through a word processing program) or over an Intranet.

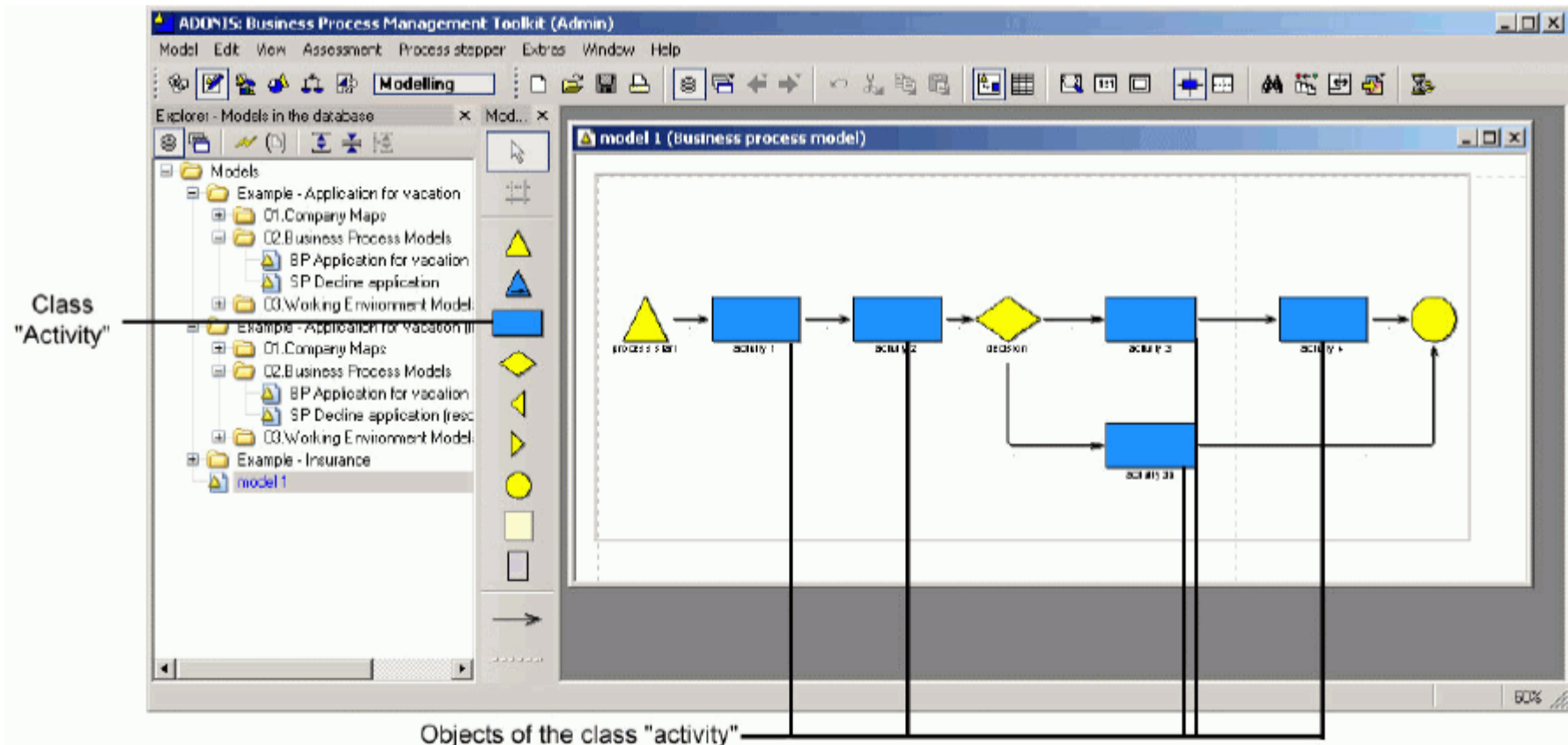
Terms and context in BPM toolkit



- A **model type** is a grouping of classes, i.e., Company map, Business process model, Working environment model, Document model etc.
- **Classes** represent the pattern for the objects created by users. Classes have **class attributes**, which control the graphical display of an object etc.
- **Models** based on a model type will be created in the ADONIS BPM toolkit, having **model attributes** that provide general information about the model (e.g., date of creation, status)
- A model is made up of **objects**, which are instances of classes. Objects have object **attributes**, which describe the model and its contents.

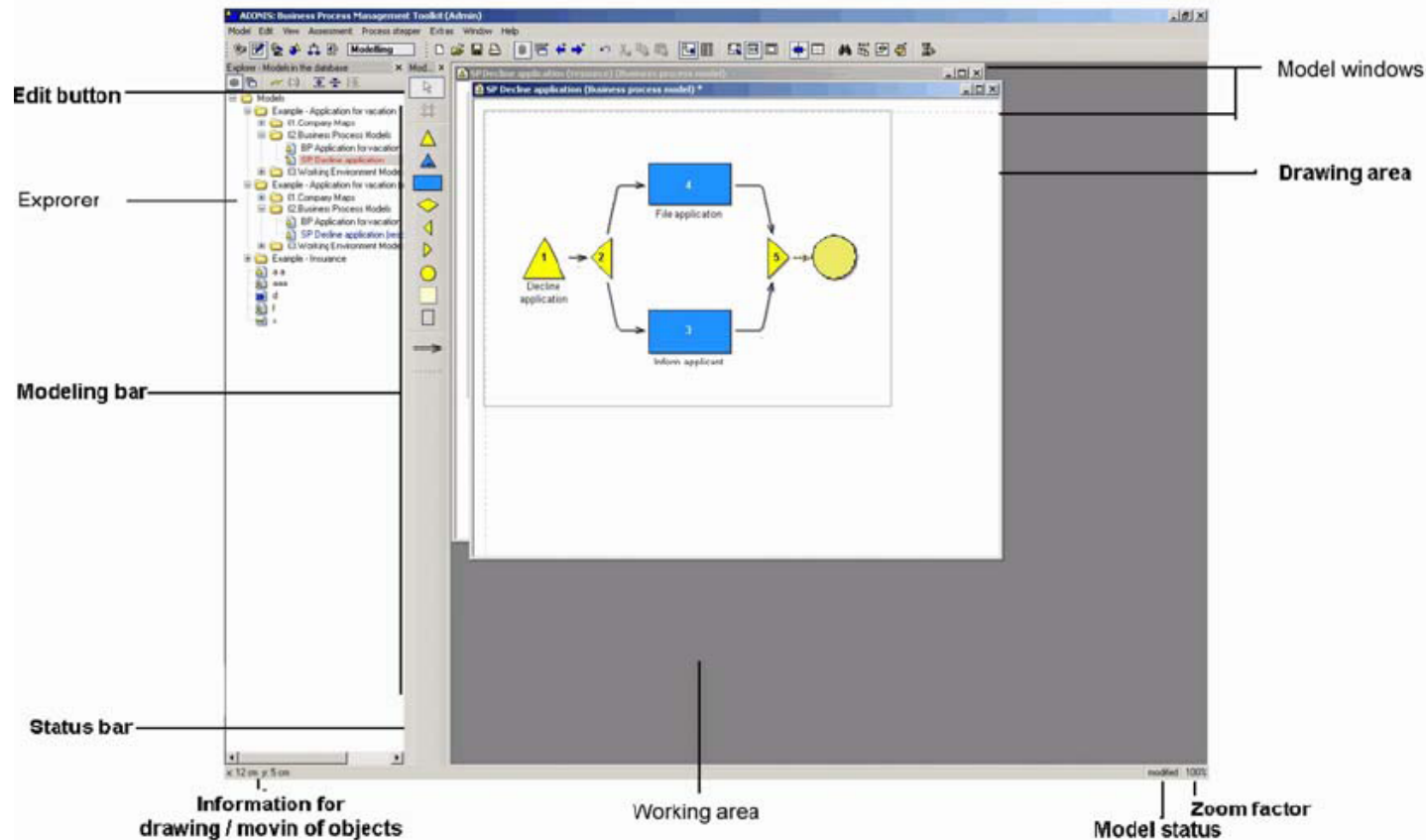
Example from the BPM toolkit

- Model, classes and objects in ADONIS: the figure shows the model “BP model 1” of the model type “Business Process Model”



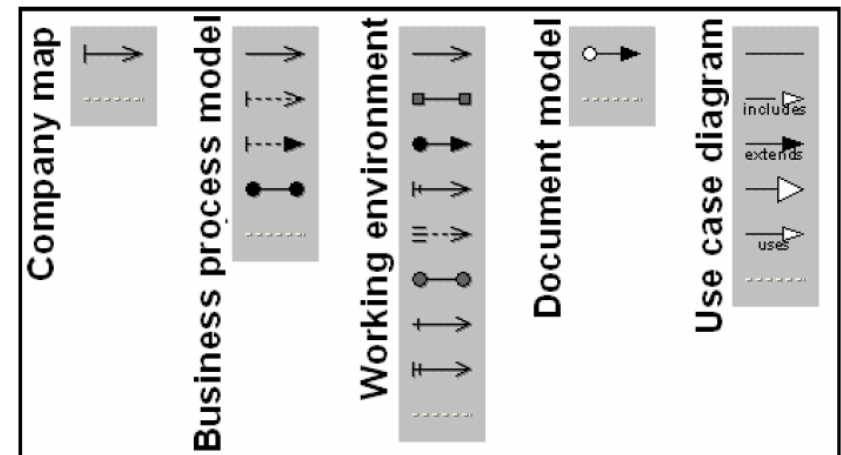
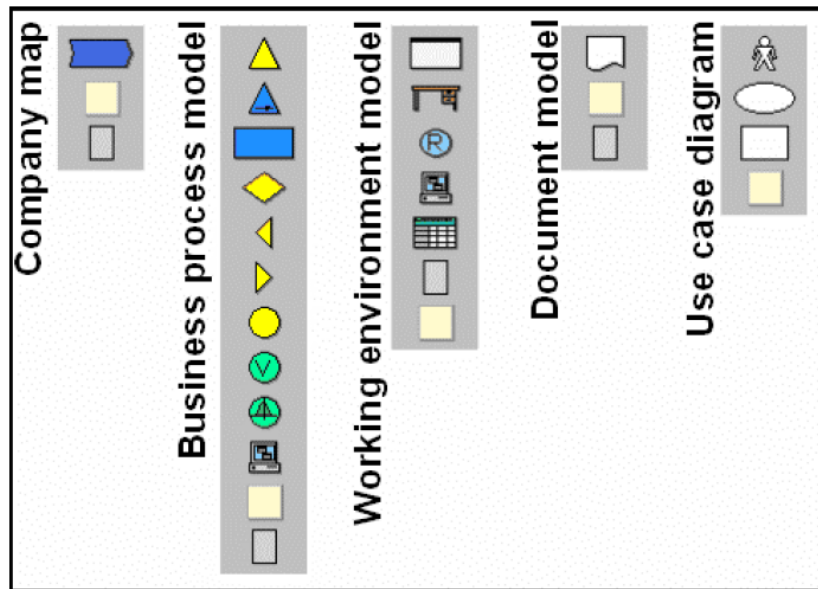
1. Modeling

- The modeling of business processes and working environments plays a central role within ADONIS. **Modeling is the basis for further work.**



1. Modeling – Class Panel

- The **classes** (left) and **relations** (right) available for modeling on the Class panel, depending on the model type.
- There are numerous drawing methods and tricks for objects and connectors available.



1. Modeling – Notebook

- Double-clicking on an object or connector causes its **ADONIS notebook** to be opened.
- Within an ADONIS notebook, you can edit the attributes of an object or of a connector.

The screenshot shows the ADONIS notebook interface for 'Activity-35066 (Activity)'. The main window has a title bar 'Activity-35066 (Activity)' and a standard Windows-style window control bar. The interface is divided into several sections:

- Name:** A text field containing 'Activity 1'.
- Order:** A text field containing '0'.
- Description:** A large text area with a small icon and a dropdown arrow on the right.
- Comment:** A large text area with a small icon and a dropdown arrow on the right.
- Responsible role:** A section containing a text field labeled 'Responsible role' with a small icon and a dropdown arrow on the right, and a checkbox labeled 'Display responsible role'.
- Classification:** A section containing a large text area with a small icon and a dropdown arrow on the right.

At the bottom of the main window are two buttons: 'Close' and 'Reset'. In the bottom right corner, there is a '1/2' indicator and a double-headed arrow icon.

On the right side of the interface, there is a vertical sidebar with a list of tabs: 'Description', 'Input/Output', 'Time/Costs', 'Working environment', 'Other simulation data', 'Simulation results', 'External tool coupling', and 'Deutsch'. The 'Description' tab is currently selected and highlighted.

1. Modeling – Practical Functionalities

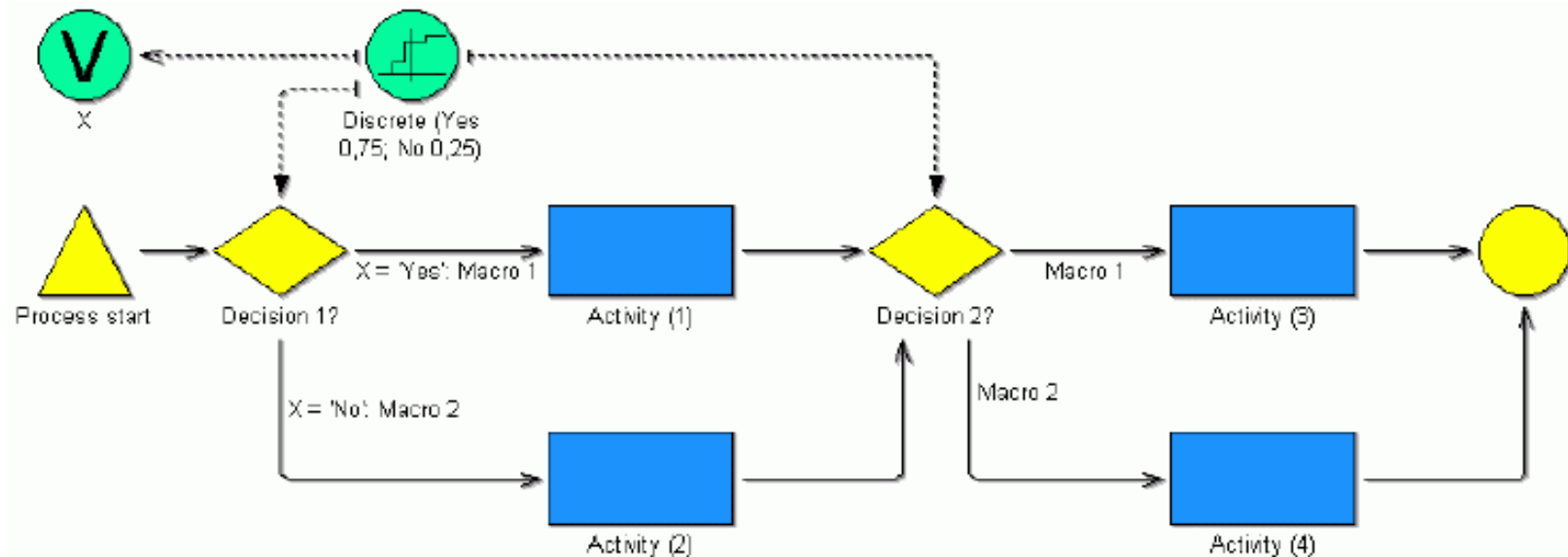
- **Graphic generation:** You can save models or model parts as graphic files (bmp, jpg, svg, png, pcx, emf).
- **Automatic Object Arrangement:** You can select a predefined function to run on the current model to arrange objects and connectors automatically.
- The drawing area will be **automatically expanded**, as soon as one object or connector is placed on the right or below the border of the drawing area.

1. Modeling – Transition Conditions (1/3)

- Connectors leaving **decision objects** must be assigned with **transition conditions** or **transition probabilities**. These will be used by the simulation algorithms and Analytical Evaluation to determine under which conditions or probabilities a path will be chosen.
- Transition conditions will be evaluated during the simulation, the valuation, the process cost analysis and the human resource planning. They consist of an **expression**, a **probability** or a **macro** and are assigned in the ADONIS notebook of the subsequent connector.
- Transition probabilities will be raised during the Analytical Evaluation to determine paths.

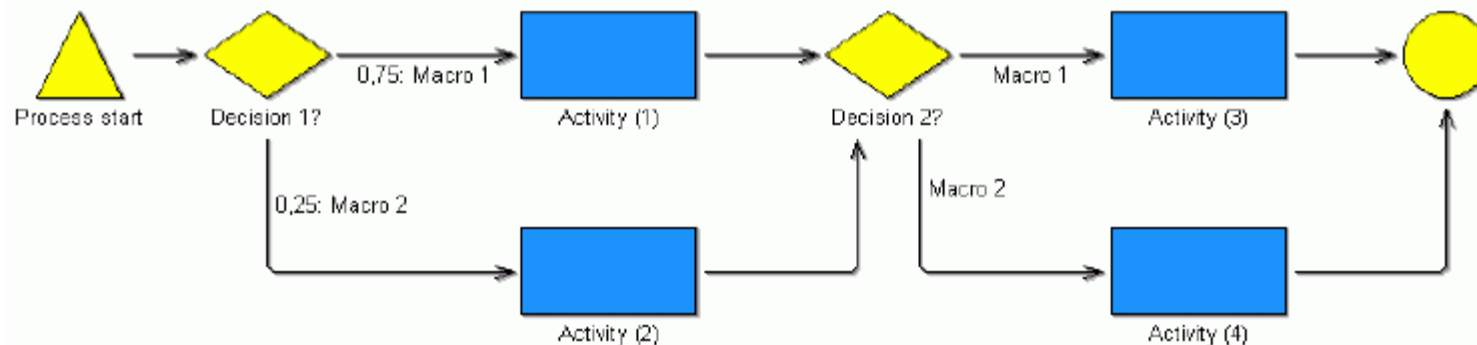
1. Modeling – Transition Conditions (2/3)

- Example: macros of variables
- “Macro1” replaces the transition condition “X=Yes” and “Macro2” the transition condition “X=No”.
- Macros are globally valid.



1. Modeling – Transition Conditions (3/3)

- Example: Macros for probabilities
- If macros for probabilities are defined, they will **always** be used after branching. This way, they show **depending probabilities**.
- In this example, the probabilities will be evaluated after “Decision-1” for each process run. After “Decision-2”, the path which macros has been previously defined will always be taken. So there are **only 2 possible paths** through the process:
 - Process start -> Decision-1 -> Activity (1) -> Decision-2 -> Activity (3) -> End
 - Process start -> Decision-1 -> Activity (2) -> Decision-2 -> Activity (4) -> End



1. Modeling – Assigning and Defining Sub Processes

- Sub processes enable you to keep your business process models clearly structured or to reuse models.
- ADONIS supports the following proceeding to model process models through the assignment and definition of sub processes in reference sub processes:
 - **Bottom-up Modeling**: you start the model by modeling the sub processes (lowest level, while modeling the higher processes later on).
 - **Top-down Modeling**: you begin modeling at the highest level (the main process).

1. Modeling – Assigning Performers

- Business process models and working environment models are linked on the one hand by **defining application models** and on the other hand by **assigning performers to activities**.
- Such links enable the capacity and workload simulations, as well as Process Cost Analysis.
- Assigning **performers** means that one or a group of performers are entered into the attribute “Performer” of each object of the class “Activity”. These performers can execute the particular activity within the simulation.
- In order to define the performers who can execute a particular activity, you must first select the **working environment model**, in which the performers to be assigned, their **roles** and their **organizational units** have been modeled.
- You can also define **assignments with probabilities**. For instance, an activity should be assigned with a probability of 20% to a performer of the role “Clerk”, with 30% to a performer of the role “Secretary” and with 50% to a performer of the role “Temporary help”.

1. Modeling – Assigning Resources

- Allocating **resources** means that one or more actual resources are assigned to each object of the class “Resource” via the “Selection” attribute. These resources are required when executing an activity.
- Allocated resources are evaluated in the simulation component during capacity analysis and workload analysis.
- Before resources can be allocated, you must first select the working environment model in which the resources to be allocated are modeled.
- **Exactly one resource** is allocated to an activity.

1. Modeling – Performer and Process Calendar

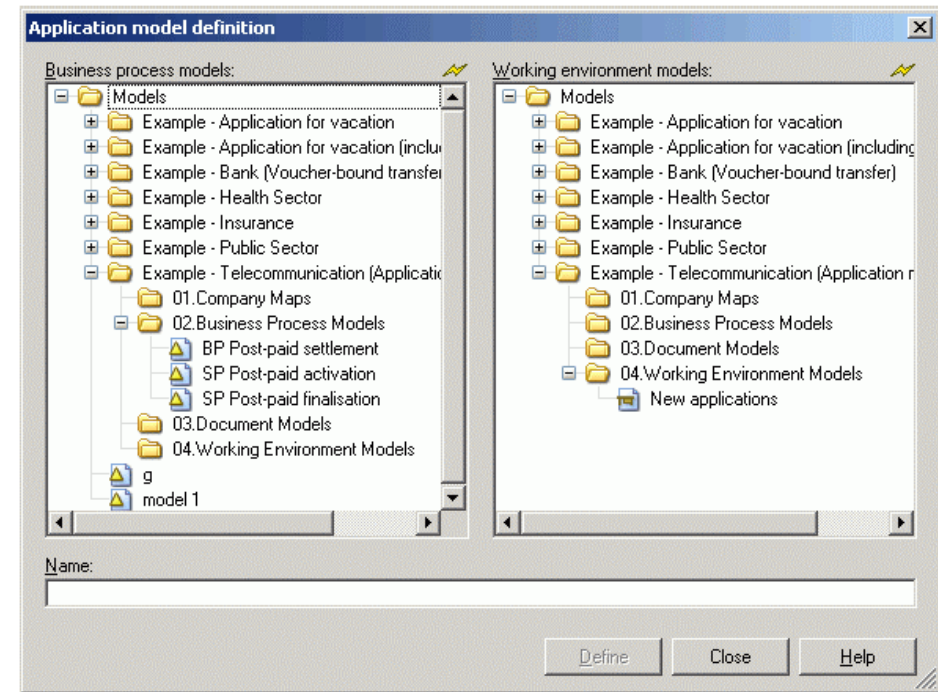
- The **performer calendar** allows you to define working time profiles for objects of class “Performer”. This calendar is evaluated by the workload analysis and specifies, for a one year period, the presence of a performer.
 - The default setting is that Monday to Friday are working days, Saturday and Sundays are days off (vacation are not taken into account).
- The **process calendar** offers you the possibility to define occurrence profiles for every business process. The calendar is evaluated by the simulation algorithm workload analysis and states the period of occurrence and the probability of occurrence of a given business process referring to one year.
 - Example: if you enter the frequency “Uniform (00:30:00; 02:00:00)”, the business processes will be triggered from every 30 minutes (min) to every two hours (max).

1. Modeling – Modeling Guidelines

- Completeness
 - Each model must have **exactly one** start object and **at least one** end object that must be **completely and logically linked** by other modeling objects and/or connectors (e.g., activities, decisions etc)
 - The **transition conditions** or **probabilities** after a decision must be defined correctly.
 - A **performer assignment** must be defined in every **activity**.
 - An **application model** of at least one business process model and exactly one working environment model must be defined.
- Modeling and nesting **parallel paths**
- Performer assignment and resource allocation
- Performer and process calendar
- Sub processes

1. Modeling – Application Models

- Defining **application models** is necessary if you wish to execute the Simulation algorithms “Capacity Analysis” and “Workload Analysis” in the Simulation component. An application model combines **exactly one** working environment model with **one or more** business process models.
- To define an application model, select the “Application models...” from the “Model” menu and click in the “application models” window on the “Add” Button. The Application Model definition window will be displayed.



1. Modeling – Calculating times and costs

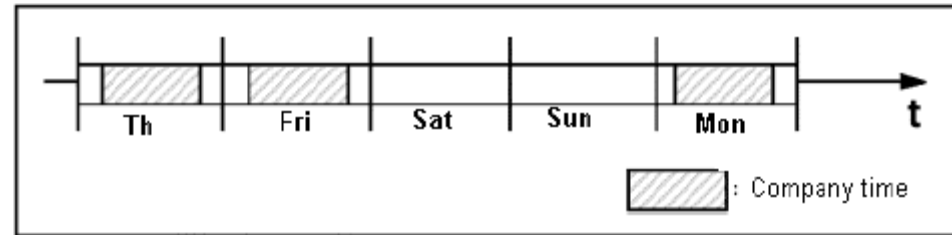
- The assessment of business process models enables you to calculate average values for the following criteria:
 - Execution time
 - Waiting time
 - Resting time
 - Transport time
 - Cycle time
 - Costs

Business process models are assessed with respect to times and costs according to the following parameters:

- **Number of Simulations:** Measure for the accuracy of the results; the higher the number of Simulations, the more exact the results of the assessment will be.
- **Working days per year:** This value is necessary (together with the value "Hours per working day") to convert real time into company time.
- **Hours per working day:** This value is necessary (together with the value "Working days per year") to convert real time into company time (see chap. 4.1.3.1, p. 344).
- **Input parameters:** The input parameters determine which attributes are used as input for the assessment. Input parameters are defined during customising. The ADONIS standard application library provides you with the input parameters "**Standard**" and "**Without resting and transport time**".

1. Modeling – Time concepts

- **Company time** and **Real time**: Company time means the time during which your business process models are executed.
- **Activity times** (attributes of activities):
 - Execution time
 - Resting time
 - Transport time
 - Waiting time



The (recommended) standard definition for the single activity time (see fig. 293, p. 345) is:

- Resting Time:** This is the time after an activity has been completed by one performer and before it is passed over to the next performer (for example it is lying in an out-tray waiting to be picked up by the internal post).
- Transport Time:** The time it takes for an activity to be transported from the previous to the next performer. Transport times especially occur - similarly to resting times - when documents must be passed on manually between the performers.
- Waiting Time:** This is the time when a particular activity is ready to be executed but the performer (or resource) it is waiting for is busy with another activity. Waiting times can also occur when an activity is interrupted and continued at a later point in time.
- Execution Time:** The time during which the current activity is executed.

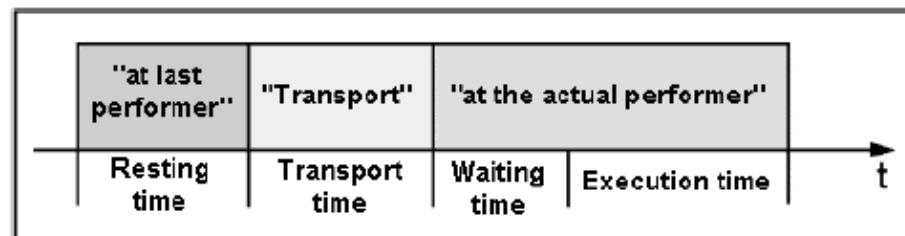


Figure 293: Standard definition of activity times

2. Analysis

- The Analysis component allows you to carry out **static evaluation** on your ADONIS models (the Simulation component allows the possibility of dynamic evaluation).
- In “**Queries/Reports**” you can analyze the contents of your models (objects, connectors, their attributes), which contain specific defined criteria. The results can be displayed either in **graphical** or **tabular** form and saved in different formats.
- Additionally, it is possible to execute “predefined queries”.
- When carrying out a **standardized query**, you only need to supply the missing parameters, without having to enter an AQL expression. A **user-defined query** is carried out by combining standardized queries or using AQL expressions, which can be formulated directly.
- You may also execute certain **predefined queries** or generate **predefined plans**.

2. Analysis – Carrying out Queries

Queries

Standardised queries

Query:

- Get all objects of class...
- Get all objects of class ... with attribute ...
- Get all objects of class ... with the number of rows in record attribute ...
- Get all objects of class ... with record attribute ... and with column ...
- Get object ... of class ...
- Get all objects connected with the object ... of class ... with the relation ...
- Get all connectors of relation ...
- Get all connectors of relation ... with attribute ...

Add Evaluate

User defined queries

AND OR DIFF Clear

☒ Show attributes in columns

OK Attributes... Model info... Cancel Help

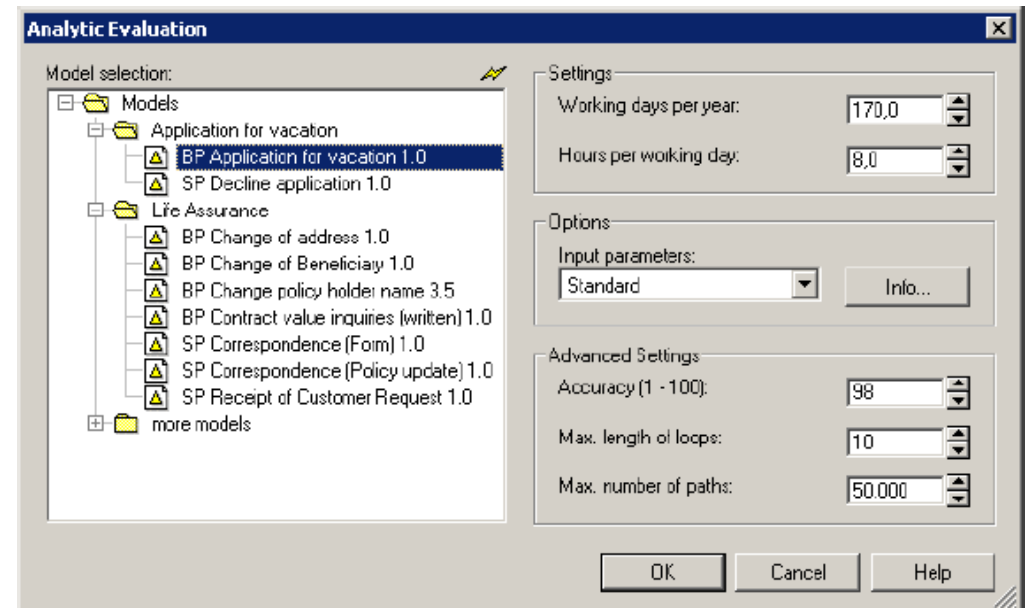
Query result: (<"Activity">[?"Execution time" >= "00:000:00:00:00"])

Model	Name	Class	Attribute	Value
1. BP Patient				
patient	Activity	Description	The measures that have been taken during the diagnosis planning enable to	
		Execution time	00:000:00:05:00	
		Performer	{("Nurse Admission administration")} <- "Has role"	
patient	Activity	Description	Reading the chip card (national health patient) or collecting manually the data	
			The diagnosis are then encoded and entered in the system. They have to be	
			A patient number is then assigned to every patient during the visit. This patient	
		Execution time	00:000:00:02:30	
		Performer	{("Nurse Admission administration")} <- "Has role"	
contained v	Activity	Description	Provided that the patient has already been treated in the hospital, the patient	
		Execution time	00:000:00:02:30	
		Performer	{("Nurse Admission administration")} <- "Has role"	
e patient	Activity	Description	If a pack has not yet been created for the patient, it will be done in the next st	
		Execution time	00:000:00:03:30	
		Performer	{("Nurse Admission administration")} <- "Has role"	
e patient	Activity	Description	If the patient has never been treated in the hospital, an information pack must	
		Execution time	00:000:00:03:30	
		Performer	{("Nurse Admission administration")} <- "Has role"	

Save... Print... Search... Diagram... Close Help

2. Analysis – Analytic Evaluation

- **Analytic Evaluation** enables you to carry out a static evaluation of your business process models. The working environment is not taken into account.
- Analytic Evaluation calculates the **average times** and **costs** of the business processes in question. In particular the analytic evaluation provides the following results:
 - Frequency
 - Execution time
 - Waiting time
 - Resting time
 - Transport time
 - Costs
 - Execution time (working days)
 - Cycle time



3. Simulation

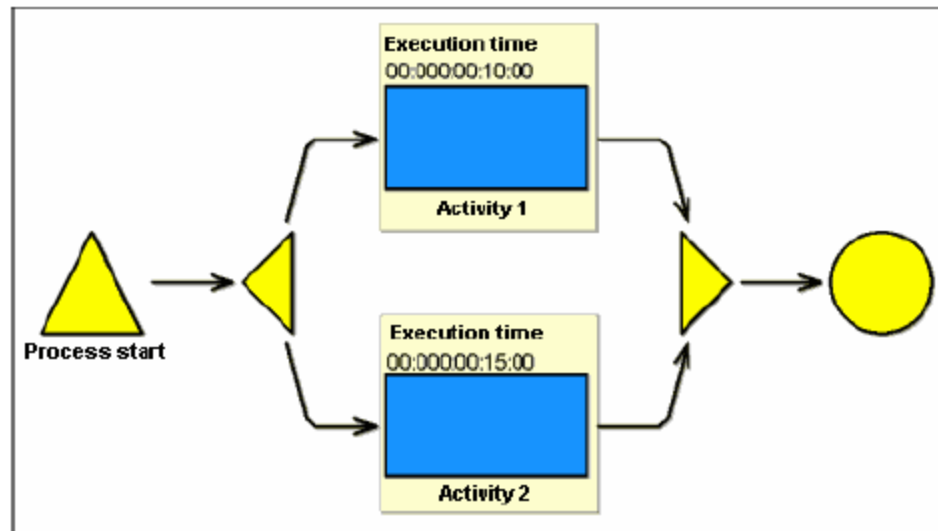
- By simulating your Business Process Models you can try out potential restructuring measures and examine the effects of such measures from different views.
- ADONIS provides you with the following **simulation algorithms**:
 - Path analysis
 - Capacity analysis
 - Workload analysis (steady state) (with animation)
 - Workload analysis (fixed time period) (with animation)
- In addition, there are **evaluation mechanisms** that enable you to carry out further evaluation on the simulation results by using ADL queries (i.e., determine all processes which have an aggregated execution time of more than 50 days per year). Evaluation queries are carried out in an identical manner for all simulation algorithms.

3. Simulation – Overview of the simulation algorithms

- Path analysis allows you to evaluate your Business Process Models without taking the Working Environment into account, whereas in capacity analysis and workload analysis there are assignments of performers to the activities.
- Capacity analysis vs Workload analysis
 - Capacity analysis determines **how many resources** (performers and machines) are necessary for the execution of certain business process models based on how often these models are executed in a given period of time.
 - Workload analysis determines the **waiting and cycle times** of business process models and activities based on a given quantity of resources and their availability
- Steady state vs fixed time period workload analysis
 - Steady state: a **specific number of process runs** are simulated, independent of the time period covered by the execution of the models. The results are calculated once a steady state has been reached.
 - Fixed time period: a **previously determined time period** is simulated, independent of how many models are executed within this period.

3. Simulation – Parallelisms

- One of the most important results which ADONIS produces is the **average cycle time** of a business process, which specifies how much time is needed on average from the start of a business process to its end.
- The **execution time** of business process model shown below is 25 minutes, while the **cycle time** is 15 minutes, since both activities are executed in parallel and so can start at the same time.



3. Simulation – Path analysis

- The path analysis algorithm enables you to evaluate your business process models without regard to the working environment. You obtain process and path related results, which can be displayed both graphically and in text format.

- Path results

- Average Execution Time of the Path
- Average Waiting Time of the Path
- Average Resting Time of the Path
- Average Transport Time of the Path
- Average Cycle Time of the Path
- Average Costs of the Path
- Average Probability of the Path

Business Process Results

- (Average) Execution Time of the Business Process
- (Average) Waiting Time of the Business Process
- (Average) Resting Time of the Business Process
- (Average) Transport Time of the Business Process
- (Average) Cycle Time of the Business Process
- (Average) Costs of the Business Process

3. Simulation – Capacity Analysis

- Capacity analysis is based on an application model, consisting of **exactly one** working environment model and **at least one** business process model. It calculates business process costs.
- A capacity analysis simulates each business process model contained in the application model as many times as specified in the number of simulations. The results can be examined either as process or period related. As the activities are assigned to performers, the capacity of each can be identified.
- In addition, the **personnel** and **resource costs** of the activities and the business process models are calculated.
- In order to run a capacity analysis, the performers of the various activities must be defined. Capacities with a value greater than 1 mean that the performer is overloaded.

3. Simulation – Workload Analysis

- The workload analysis investigates the dynamic behavior of the organization. It bases calculations on the (process or performer) calendars and the waiting queues at simulation time.
- The input is an application model. It calculates the **waiting times of the activities** and thus also cycle times of the processes using the **workloads of the performers and resources**. If an activity is assigned to a performer or to a resource, while he is still busy executing a different task, waiting time is caused.
- The workload analysis simulates on the **time axis**, in contrast to the path and capacity analysis algorithms. Simulation on the time axis allows the number of activities a performer has to execute to vary as the processes are started at random.

3. Simulation – Agents

- The task of **agents** is to support you if you wish to calculate additional non-standard simulation results. During the simulation the agents collect information about the behavior of the business process models and thus produce additional simulation results.
- While the simulation calculates **general process measures**, such as cycle and execution times, you can employ agents to calculate **process-specific measures**, such as the cycle time up to a specific activity, the execution times of all manual activities etc.
- Agent can also determine evaluation results for **selected periods of time**, for instance expected costs in the first quarter of a year.
- There is a number of pre-defined agent types, based on templates that define their characteristics and tasks. Such agents are Animation/simulation progress, WE Agent:Personnel, BP Agent:Personel, BP Resource Agent, Standard

3. Simulation – Offline Animation

- Offline animation enables you to re-run a protocol created during a simulation.
- It offers the following advantages:
 - You can examine certain parts of the period simulated, **fast forward** or **rewind** the simulation protocol and **replay** the animation in single steps.
 - Offline animation is usually **faster** than the simulation
 - It is possible to investigate specific aspects of your models more closely. You may still define appropriate **agents** and repeat the previous simulation run exactly using the offline animation. The agents' results are thus based on the same simulation events as the simulation results.

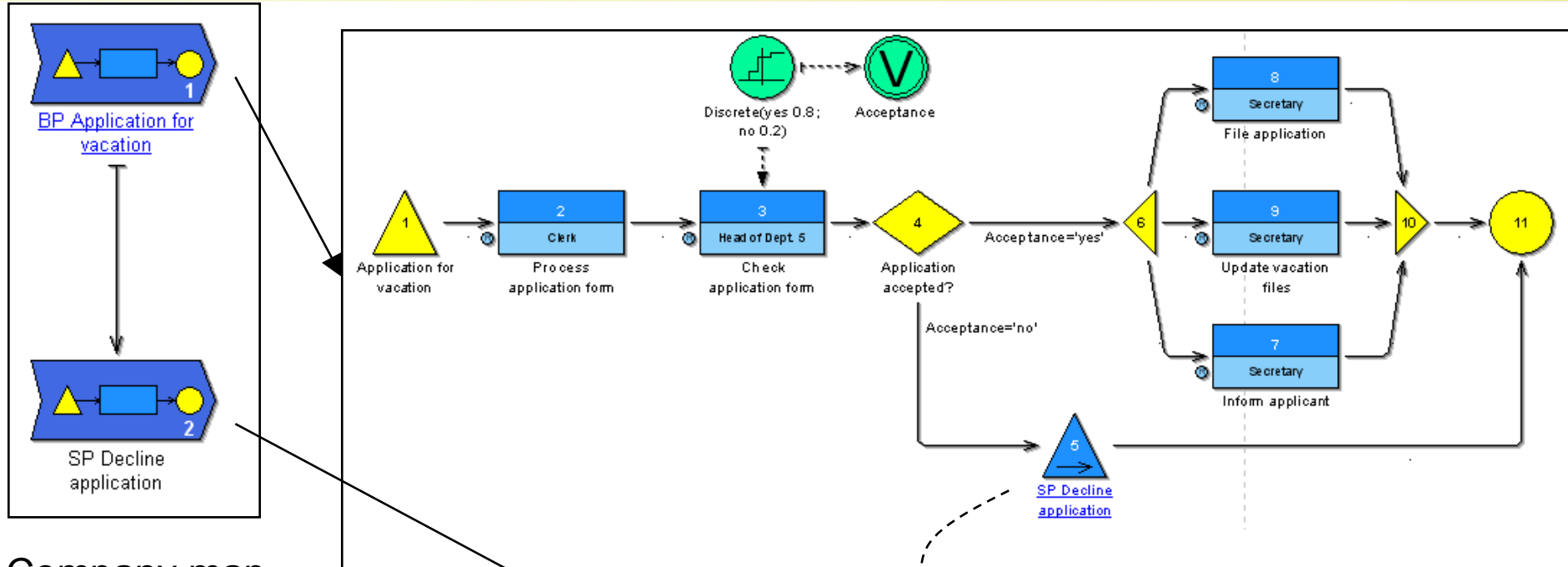
4. Evaluation

- The Evaluation component offers a number of modules, such as:
 - **Comparison of results** – you may compare the results of various ADONIS simulations or analysis to each other, that have previously been saved in the “Comparing Representation” format. There can be either tabular or graphical representation.
 - **Evaluation queries** – various evaluation queries can be run either default or user-defined.
 - **Flowmark Audit Trail evaluation** – this module enables you to evaluate processes and activities in a way similar to that of the simulation component, recognizing bottlenecks and other problem areas in a business process, which has been transformed into Flowmark (IBM) or MQSeries Workflow (the most recent version of Flowmark).

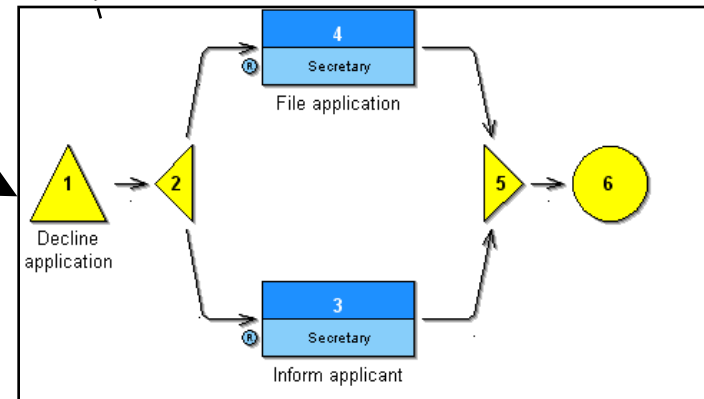
5. Import/Export

- The **Import/Export component** enables you to export to ADL or XML files the models, model groups, attribute profiles and application models that are saved in the ADONIS database.
- Using the **documentation component**, you can transform ADONIS models to files (e.g., HTML, RTF, XML). This way it is possible to integrate the model contents including graphical representation into documents.

6. Examples – Application for Vacation

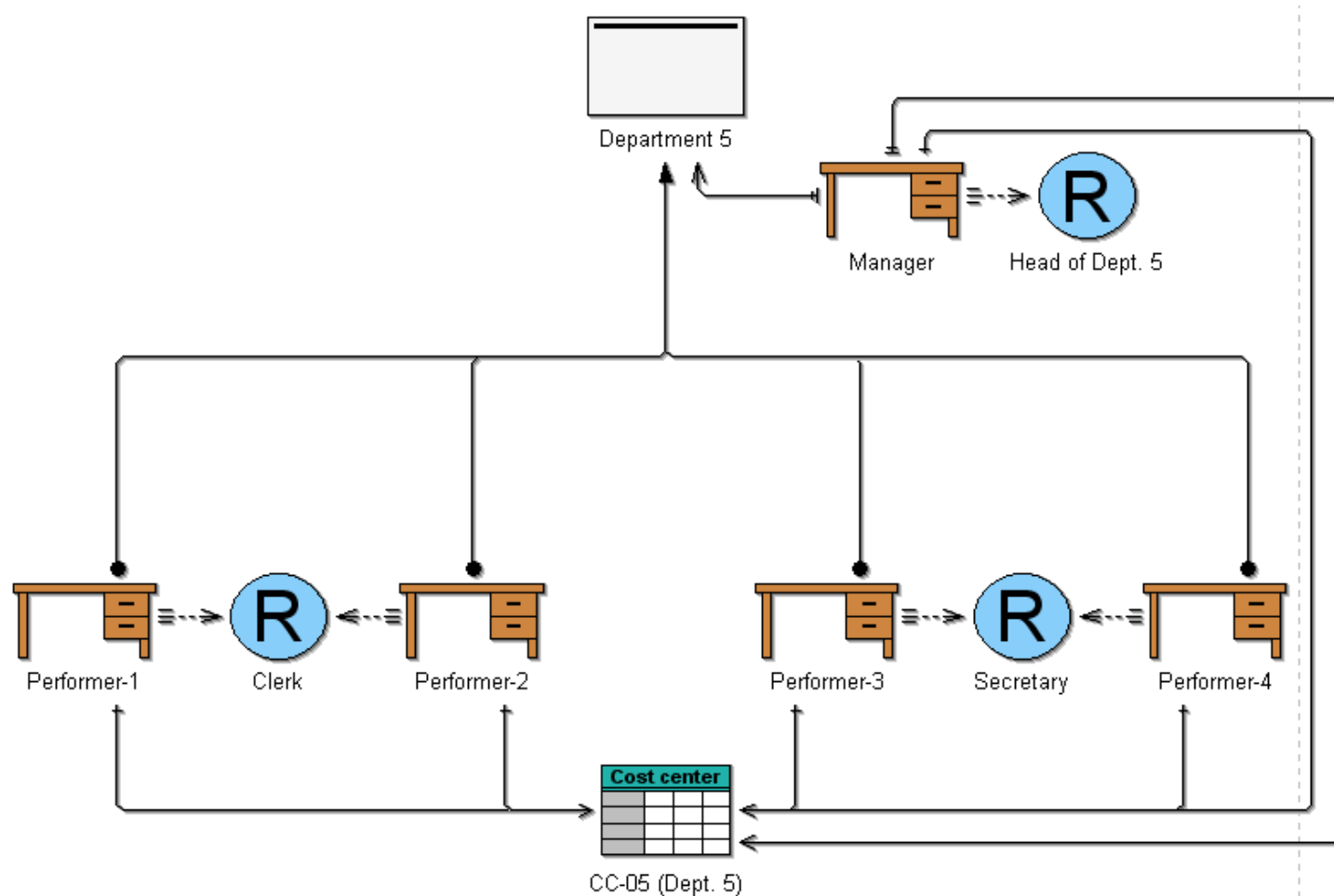


- Company map
 - Applying for vacation
- Business Process Models
 - BP Application for vacation
 - SP Decline Application
- Working Environment Models
 - Application Department



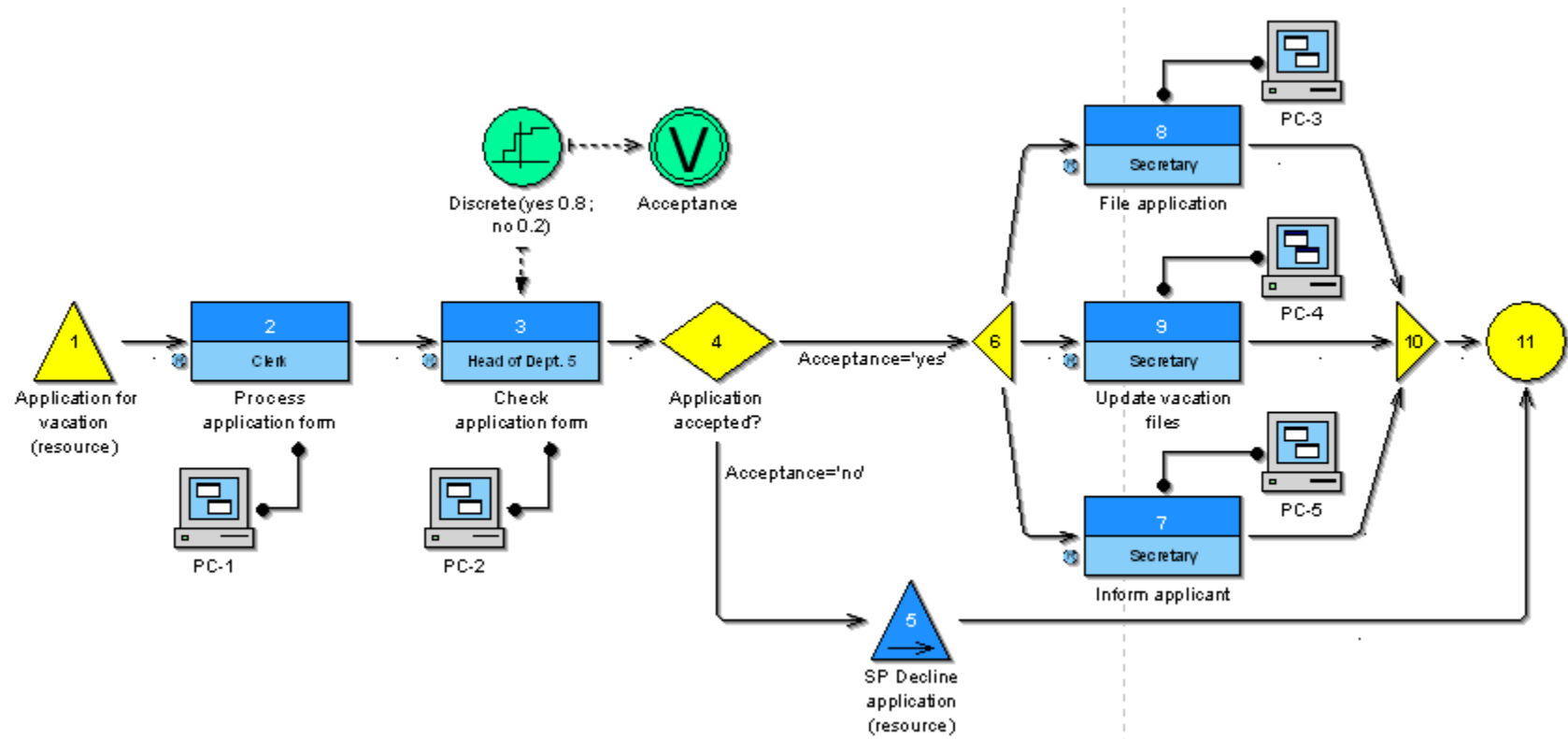
6. Examples – Application for Vacation

- Working Environment: Application Department



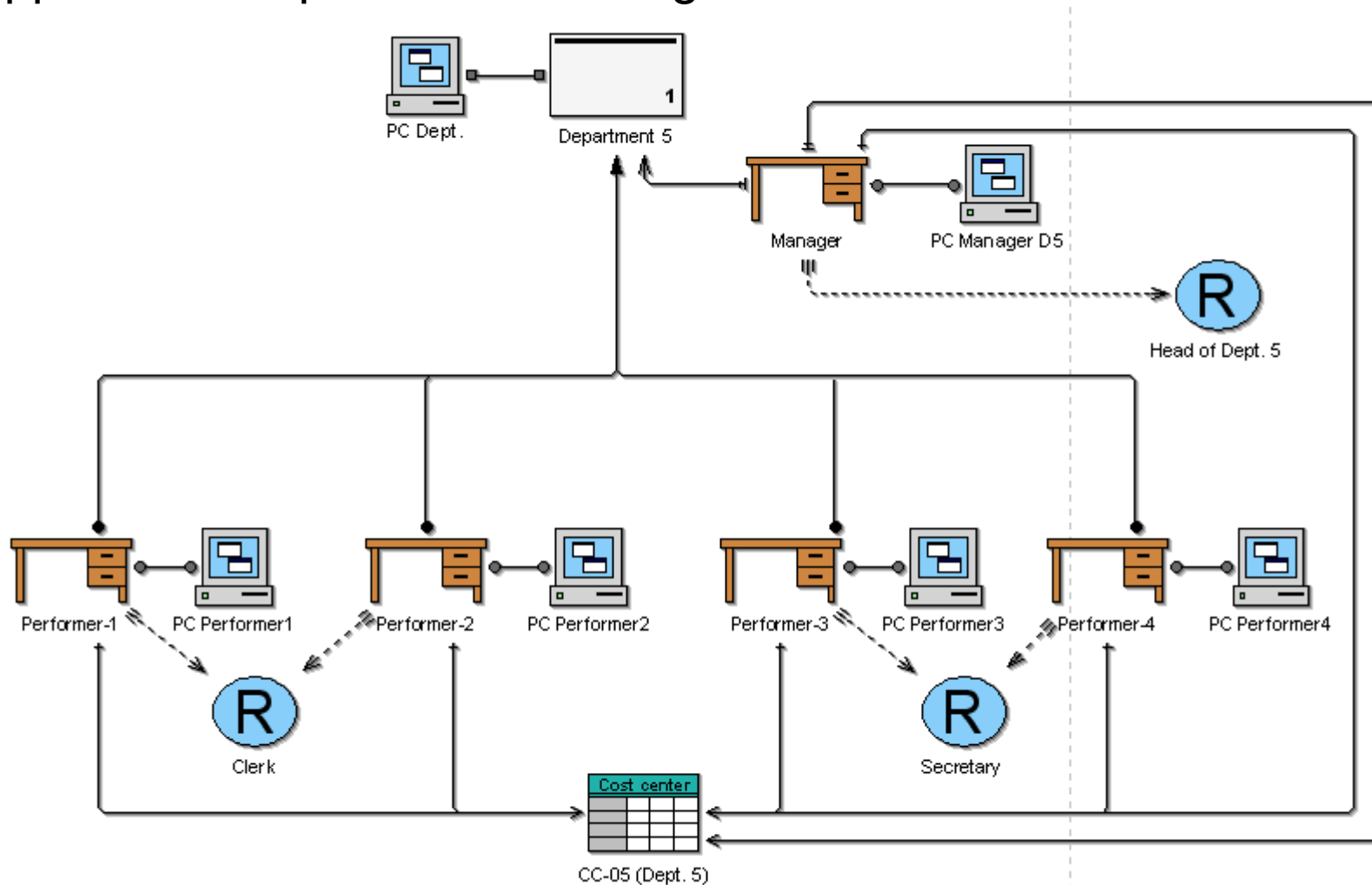
6. Examples – Application for Vacation (with resources)

- BP Application for vacation Process Model



6. Examples – Application for Vacation (with resources)

- Application Department Working Environment Model



6. Examples – Application for Vacation (with resources)

- Tutorials
 - Example – Application for vacation
 - Example – Insurance

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