QPR ProcessGuide White Paper

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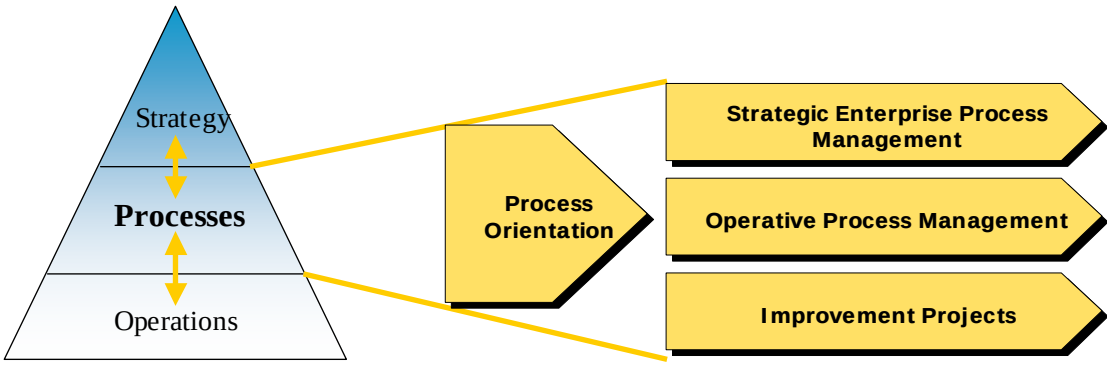
1. Executive Summary

QPR ProcessGuide is an interactive tool for planning, implementing, communicating and committing people to business process improvement. It enables organizations to do process management in order to achieve the following characteristics of a successful organization:

- Processes and process improvement efforts are in line with the **strategy**
- Personnel are **committed** to processes and understand the role they play in them.
- **Motivated** improvement efforts are focused on right processes, providing good results.
- Collaborative external processes are working well, based on **mutually understood** process interfaces.
- Internal **efficiency** is good, IT systems support processes effectively and people quickly find the **optimal** way to do tasks.

Modeling and publishing the corporate processes with QPR ProcessGuide can effectively support this. Every organization needs basic infrastructure to ensure that the fundamental levels of process management (see picture 1) are working.



Picture 1. QPR ProcessGuide focuses on ensuring that process management works by committing people to processes.

Using QPR ProcessGuide together with **QPR ScoreCard** is an optimal way to ensure that strategy really drives the business by being implemented properly as processes. To read more about becoming an efficient and agile organization, see Business Activity Monitoring concept in QPR Online[3] (http://www.qpronline.com/BAM/index.html).

ProcessGuide provides an exceptional return on investment by combining the following factors:

- **Realize financial benefits** of process improvement (improved revenue, time-to-market ratio and cost savings) sooner by doing faster improvement projects.
- **Save working time in process modeling** by having good presentation and manipulation capabilities.
- **More cost-effective trainings** (faster sessions less frequently, as most of training takes place as self-studying in everyday work).
- **Save working time in publishing and communicating** with the use of automated web publishing for the process documentation.
- **Improve effectiveness of personnel** utilizing processes by providing them with a more effective way to understand the tasks they are doing.

These benefits are a combined result of the following **key features**:

- Process modeling, a hierarchical model that suits different modeling styles and scales according to needs.
- Visual presentation with easy-to-manipulate flowcharts.
- Communication with web publishing, providing personalized access to processes.

- Advanced modeling possibilities.
- Support for simulation and analysis of processes.
- Integration possibilities, allowing linkage to any external data or application and importing/exporting processes in XML.
- Technical architecture that minimizes IT costs of usage.

The features are designed for a range of organizations, which vary in level of maturity of process management. QPR ProcessGuide is usable in taking the first small steps towards process orientation, as well for process management of large organizations.

ProcessGuide is a versatile tool for different business process-related **solutions** that realize process management efforts in practice. Examples include electronic quality systems (ISO 9000-2000), knowledge-intensive R&D/project processes, supply-chain management (RosettaNet), service processes (CRM), industry-specific process or different change management methods (Six Sigma etc.). See QPR Online [3] for examples of different QPR-based solutions.

Technically, QPR ProcessGuide is a scalable system running on Windows platform. It can be used as a standalone application by a single user or by a large amount of simultaneous users. It flexibly utilizes existing IT infrastructure by supporting all the major databases and web servers.

The rest of the document describes process management implementation and QPR ProcessGuide in more detail, focusing on features and technical aspects. The following manuals are available for more information:

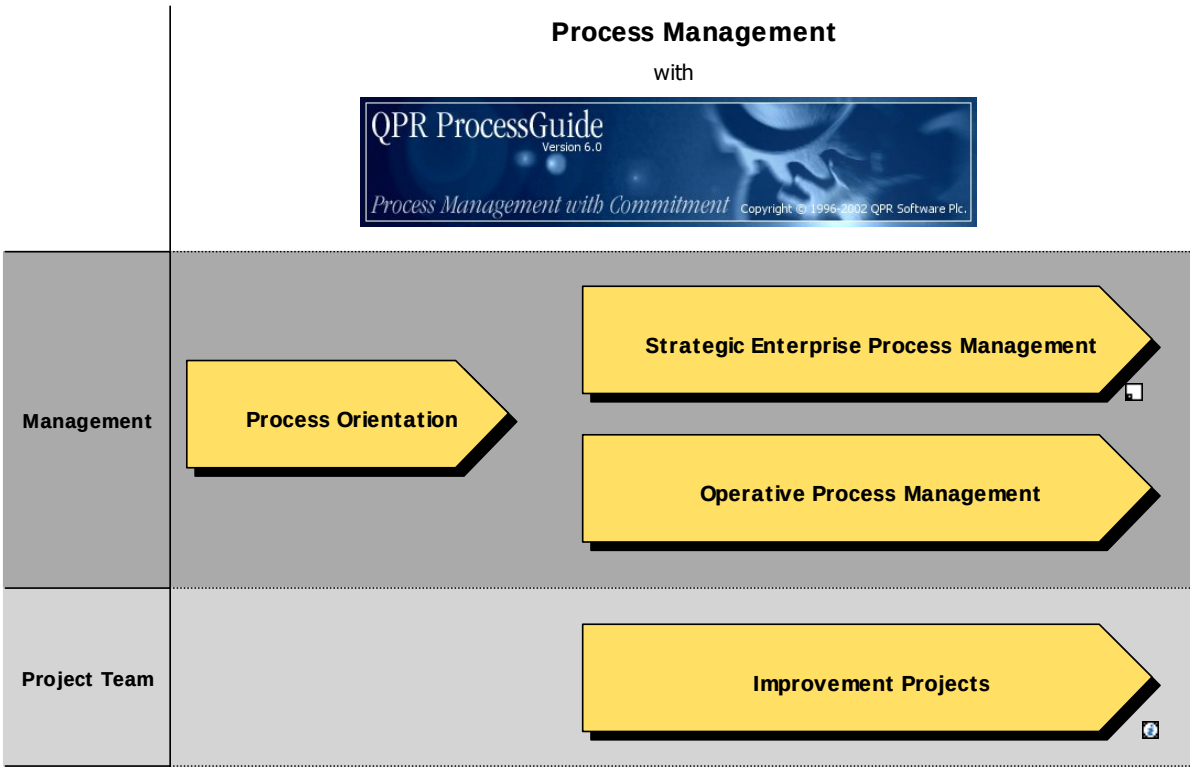
- Getting Started Guide [1], for a quick tour of the software.
- Administrator's Guide [2], for more detailed insight from technical and model administration perspective.

On the web, information about QPR ProcessGuide is available on QPR Online (http://www.qpronline.com)[3], the online resource comprising management software and solutions.

2. Implementing Process Management with QPR ProcessGuide

Implementing process management is not an easy task. It cannot succeed without management commitment – meaning that top management must understand the goal (to be efficient and agile!) and set the requirements for process management personnel.

Potential benefits are immense. Typically winners of each industry excel also in process management – having a considerable bottom-line impact each year, providing them with a possibility to further distinguish themselves from the rest of the pack.



Picture 2. Implementing process management.

If an organization finds out that process management has not been fully utilized throughout the organization, implementation should start with a **Process Orientation** phase. Key outputs of it are:

- Top management makes the strategic decision. As a result the process management initiative is clearly linked to corporate strategy.
- Key processes and their owners are defined.
- Basic infrastructure for modeling and communicating processes is in place.
- Initiative and key processes are properly communicated to personnel.

After that process management is done continuously on three levels:

- Strategic enterprise process management
- Operative process management
- Improvement projects

Strategic enterprise process management focuses on keeping the process management efforts in line with the strategy. Key tasks and outputs are:

- Observe changes in business environment (e.g. a better way to handle delivery of products)
- Monitor and analyze current operations
- Prioritize process improvement efforts
- Organize improvement projects and decide on the right approach (re-engineering or smaller improvements) for each of them.
- Agility of organization improves.

Operative process management does continuous small improvements and makes sure that existing processes are constantly utilized in everyday work. Thus it provides the following outputs:

- Processes documentation is always available for those who need information.
- Quick response times for improvement suggestions
- Good motivation to follow the process, as it constantly evolves to serve the personnel in a better way.
- Benefits of past improvement projects prevail.
- Good root-level understanding of how business processes are really doing.

Improvement projects plan, implement, communicate and commit people on business process improvements based on requirements set to each project:

- Improvements are properly planned. Best practices are applied, if such are available.
- During implementation, good communication between IT department and business process experts ensures that processes are implemented properly as IT systems.
- In communication and commitment phase improved process is published, trained, and fine-tuned according to feedback from personnel.
- Improvement efforts are efficient.
- Projected benefits of process improvement projects become realized.

The best practice of implementing process management with QPR ProcessGuide has been documented in detail into QPR ProcessGuide Design Pack[4], giving concrete instructions on how to succeed in each of these tasks.

3. Concepts

By nature QPR ProcessGuide is a versatile tool for different process-oriented purposes. This chapter presents some concepts with specific application areas. In many of them, significant additional benefits can be achieved by using ProcessGuide together with **QPR ScoreCard**, combining performance measurement/management with processes. **QPR CostControl** (activity based costing/management) is also a fine tool, if cost and profitability optimization of processes is a critical success factor of the organization.

QPR ProcessGuide has been used successfully in the following application areas:

- Quality systems/management, for creating process-oriented quality handbooks or to transfer ISO 9000-certified quality system to new, process-oriented ISO 9001-2000 version of the standard.
- Knowledge-intensive R&D processes
- Processes implemented as projects or development programs.
- Supply-chain management, where supply chains need to be planned, analyzed and simulated. QPR ProcessGuide for RosettaNet [3] is a specialized package for organizations implementing it as a standard way to communicate with their supply-chain.
- Service processes (CRM).
- Industry-specific solutions, e.g. health care and airport management.
- Different change management methods (Six Sigma etc.).

The key issue in all is to commit people to improved processes through effective communication. Furthermore, the largest benefits of process management can be achieved by using QPR ProcessGuide as a corporate process management solution. And on top of that, more large-scale benefits can be achieved by using all QPR products corporate-wide to manage processes, to measure corporate performance and to analyze profitability from different viewpoints.

See QPR Online [3] for examples of different concepts based on QPR ProcessGuide and other QPR products.

4. Scalability

QPR ProcessGuide can be used in several ways to meet the needs of smaller, bigger, or even global organizations. Different alternatives offer the right level of investment for different purposes. They also offer a way to gradually deploy the tool in an organization, starting from a small-scale pilot project and then continuing with sequential rollouts towards corporate usage.

The two following topics describe the system used in small-scale and large-scale usage in simple terms. See Chapter 6 for an overview of system architecture and QPR ProcessGuide Administrator's Guide [2] for detailed information.

4.1 Small-Scale Usage

If only a small group of people utilizes process models and there is no need to save the models in a centralized repository or update published processes frequently, it is sufficient to use QPR ProcessGuide as a stand-alone application.

When modeling in stand-alone manner, the models are saved in files. Only one person can use a file model at once.

QPR ProcessGuide is an easy-to-use, standard Windows application and thus installation of a stand-alone application is easy. Full model development and analysis/simulation features are available for the users. Web publishing can be done statically using the Web Page Export feature.

4.2 Large-Scale Usage

QPR ProcessGuide offers a solution that enables large-scale, dynamic and simultaneous usage of process models. In large-scale systems the data is handled in three tiers instead of one (that is used in stand-alone applications).

In large-scale usage an Application Server (serving as a central repository) is used to store the models. This means that the models are stored in a single location and can be used concurrently by several users.

It is also important to note, that checking a model out of Application Server for off-line usage is straightforward, allowing great flexibility for users. After modifications have been done, process is checked back into Application Server.

Large-scale usage together with **QPR ScoreCard** also allows a combined process performance management solution with measure indicators directly in process maps and bidirectional drill-down capabilities.

In large-scale usage it is recommended to publish models in a dynamic way, using the QPR Web Application Server.

5. Features

Features provided by QPR ProcessGuide have been developed according to the following principles:

- Basic modeling must be easy to use, done by drawing processes as hierarchical, easily understandable flow charts.
- Web Utilization capabilities must support fast and easy retrieval of relevant information, as well as advanced support for feedback, communication and action planning.
- Working with large, complex models and with large process repositories containing a lot of process information must be possible.
- Extensive customization is possible for special needs.
- Support for all business process management –related tasks is available.

All of these must be available, as indicated in the previous chapter, for a single user as well as for a large organization.

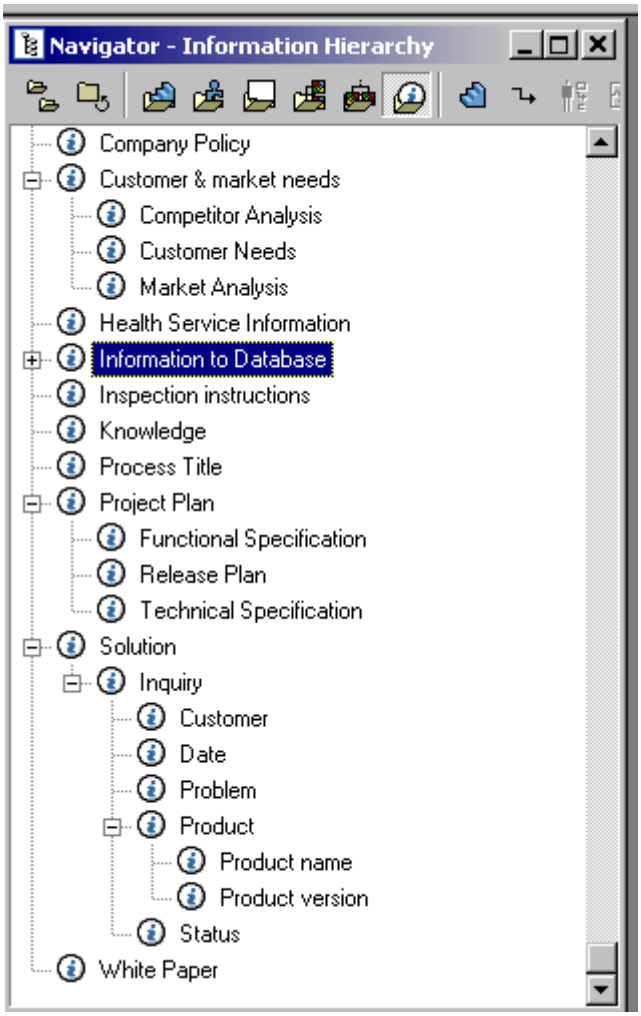
5.1 Process Modeling

QPR ProcessGuide has a hierarchical model consisting of process levels, which can be seen as a single process step in higher process level. It is also possible to create a generic subprocess and use (instantiate) it in several different process levels.

Also referencing external models (created either with QPR ProcessGuide or with any application) is possible. If another application saves data into file, it can be embedded into process steps of External Model type.

A model can contain the following element types for modeling:

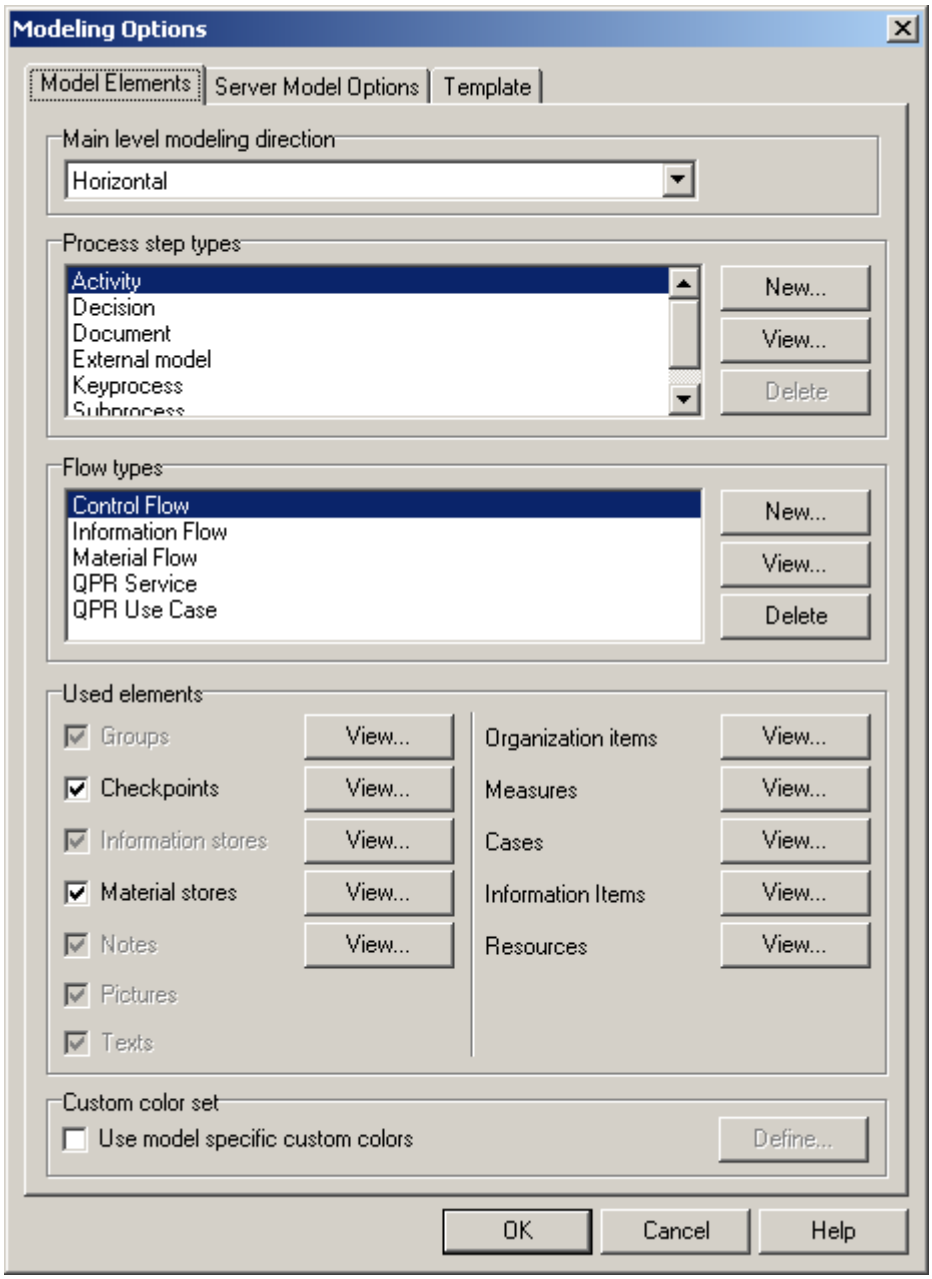
- Process steps (hierarchy, see Pictures 5.2 and 5.3)
  - A model can contain as many different process step types as needed.
  - Actual names of process step types can be customized.
- Flows (separate types for control, information and material)
- Stores (separate for information and material)
- Information (hierarchy, see picture 5.1)
  - Link external data sources to process.
  - Model information that is processed.
- Resources (resource group and pool hierarchies)
  - Personnel (roles)
  - Material
- Organization (hierarchy)
- Groups



Picture 5.1. Information hierarchy of an R&D Process

5.2 Support for Different Modeling Notations

By default, QPR ProcessGuide provides a set of basic elements that support creation of visually attractive process models. As modeling options can extensively be customized (see picture 5.2), modeling notation can be customized to include elements of different type as well. This makes it possible to use IDEF notations, data flow modeling, or any other notation that suits the organization's needs the best.

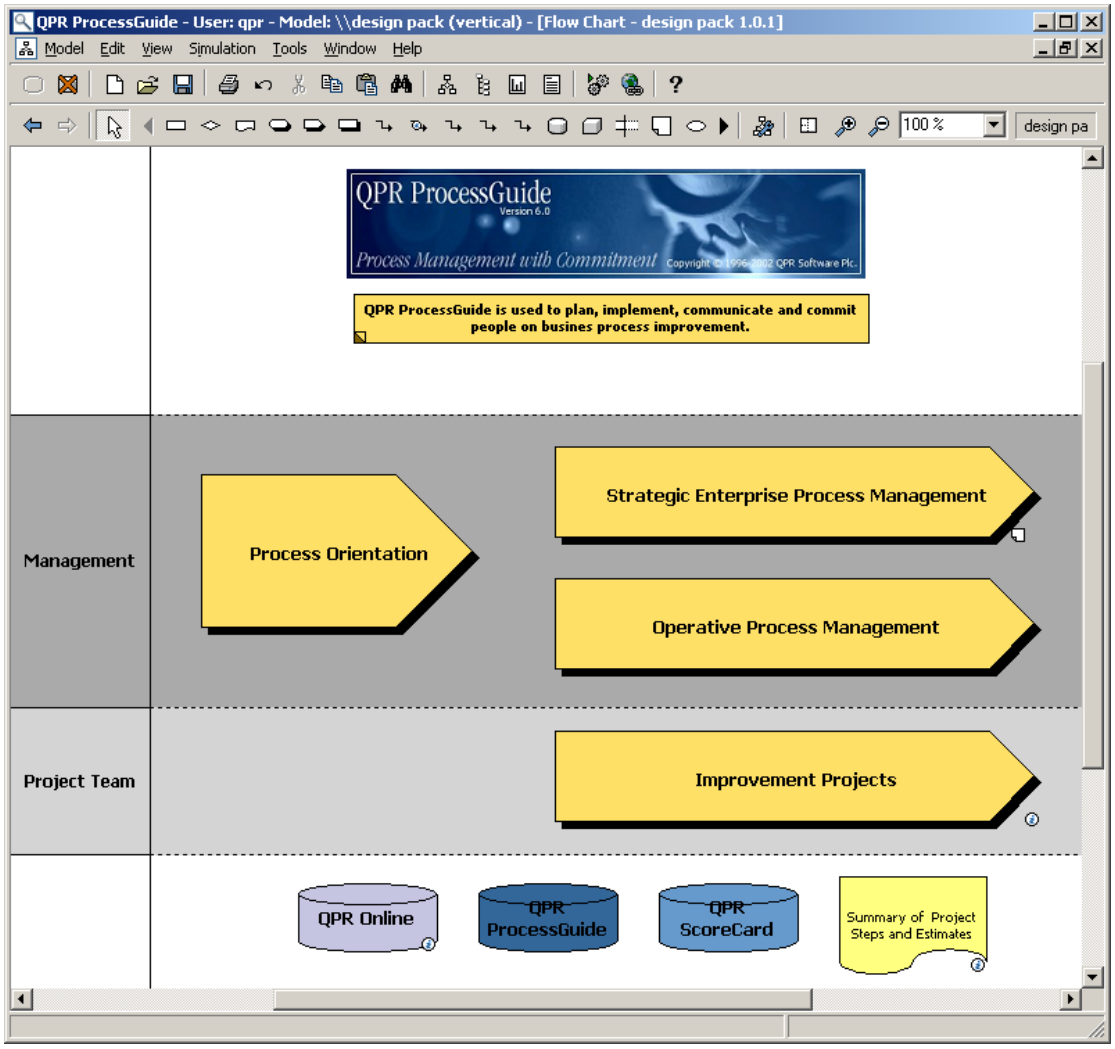


Picture 5.2, Example of modeling options for modeling application architecture and data structures along processes in QPR ProcessGuide.

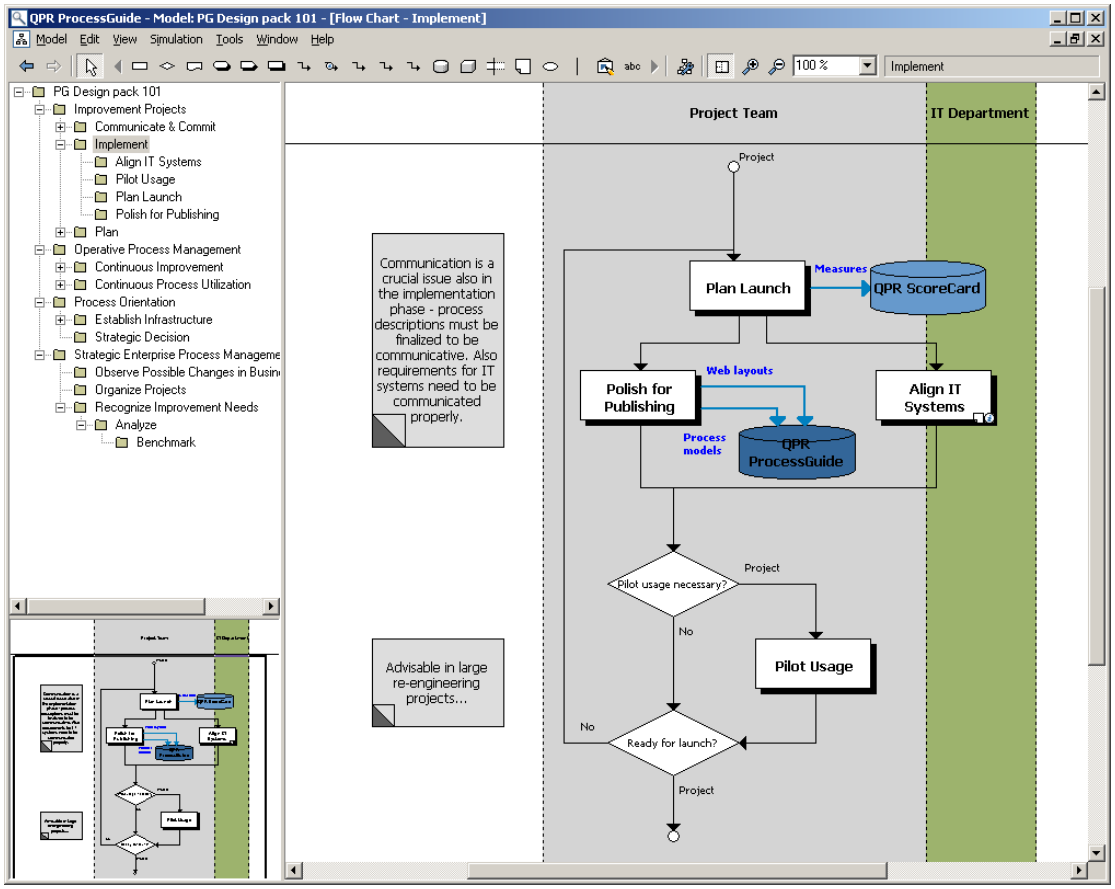
5.3 Visual Presentation with Flowcharts

At first sight QPR ProcessGuide may look like a drawing tool for process diagrams. This is intentional, as diagramming with flow charts is the best way to visualize processes as well as drawing is the natural way to modify them.

The difference comes from the process model (based on object orientation) behind the drawing, which enables advanced process management features. See pictures 5.3 and 5.4 for examples on how QPR ProcessGuide visually presents processes and a process/subprocess relationship as flow charts, where organizational structures can be modeled either horizontally or vertically.



Picture 5.3. The top level of a process



Picture 5.4. 'Implement' -subprocess, containing 'Plan Launch' and three other subprocesses.

In flowcharts (along model objects) also checkpoints, notes, pictures and texts can be used as drawing objects to enhance visual presentation and communication of process-related issues to those viewing them.

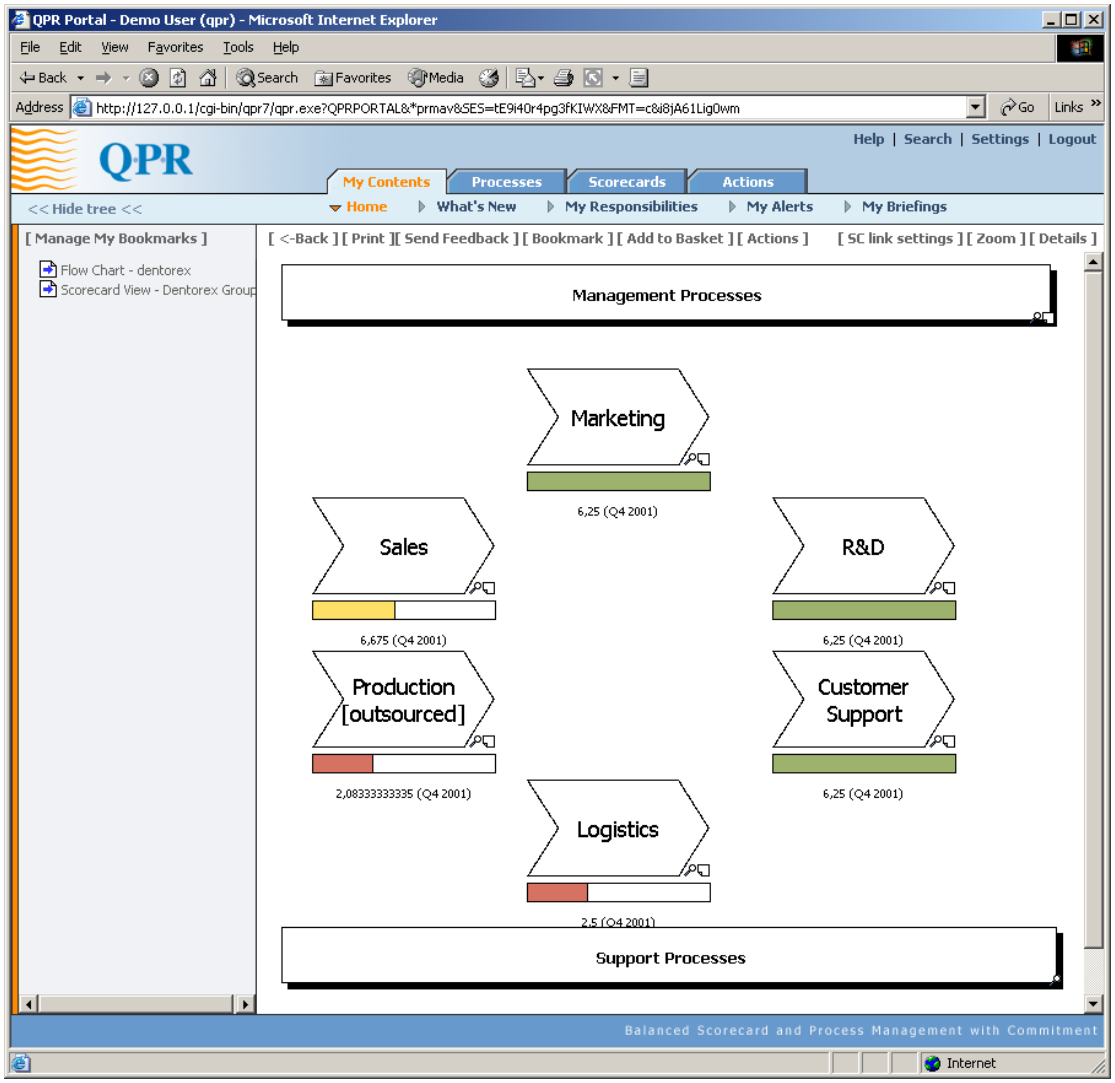
5.4 Interactive Communication

QPR ProcessGuide communicates processes through a web client. Traditional ways, such as printing and displaying reports, are supported but the focus is on providing quick access to large process repositories via web clients.

5.4.1. Web

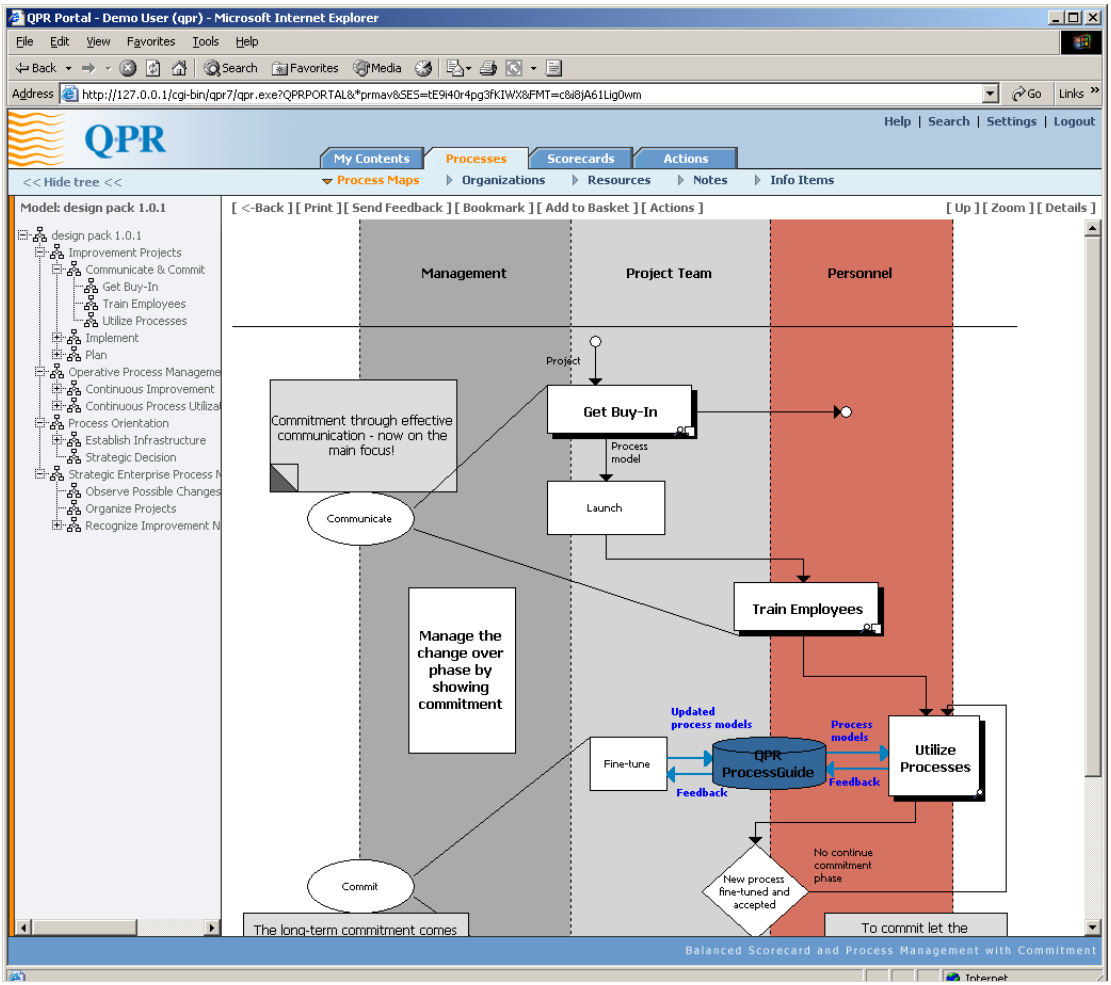
QPR Web Application Server offers a way to utilize processes via the company's intranet or the Internet. To maximize the benefits of process management, QPR Portal (picture 5.5) offers instant access to relevant process information and allows users to choose what kind of information they want to access quickly. Naturally a user security system is included as well.

If organization implements Balanced Scorecard with QPR ScoreCard, then same client provides access to both products (see picture 5.5, where flowchart produced with QPR ProcessGuide shows also process performance with indicators from QPR ScoreCard.



Picture 5.5. QPR Portal, providing instant access to relevant process information

As an alternative to this, models can be browsed in traditional top-down manner (see picture 5.6). Views showing hierarchies, flowcharts or detailed information of certain model element can also be used as parts of various enterprise portals.



Picture 5.6. Dynamic web publishing provides top-to-bottom process browsing possibilities with the QPR Web Application Server

It is also possible to automatically export model as static HTML pages.

Layout, published data and link behavior in both means of web publishing can be extensively customized. Several different customized web layouts can be simultaneously used in web publishing for different process models. Details of customization possibilities are available in QPR ProcessGuide Administrator's Guide [2].

5.4.2. Printing

QPR ProcessGuide can print flowcharts of various formats, including simulation game material, reports, analysis views (measure data in a sheet or graph) and simulation results.

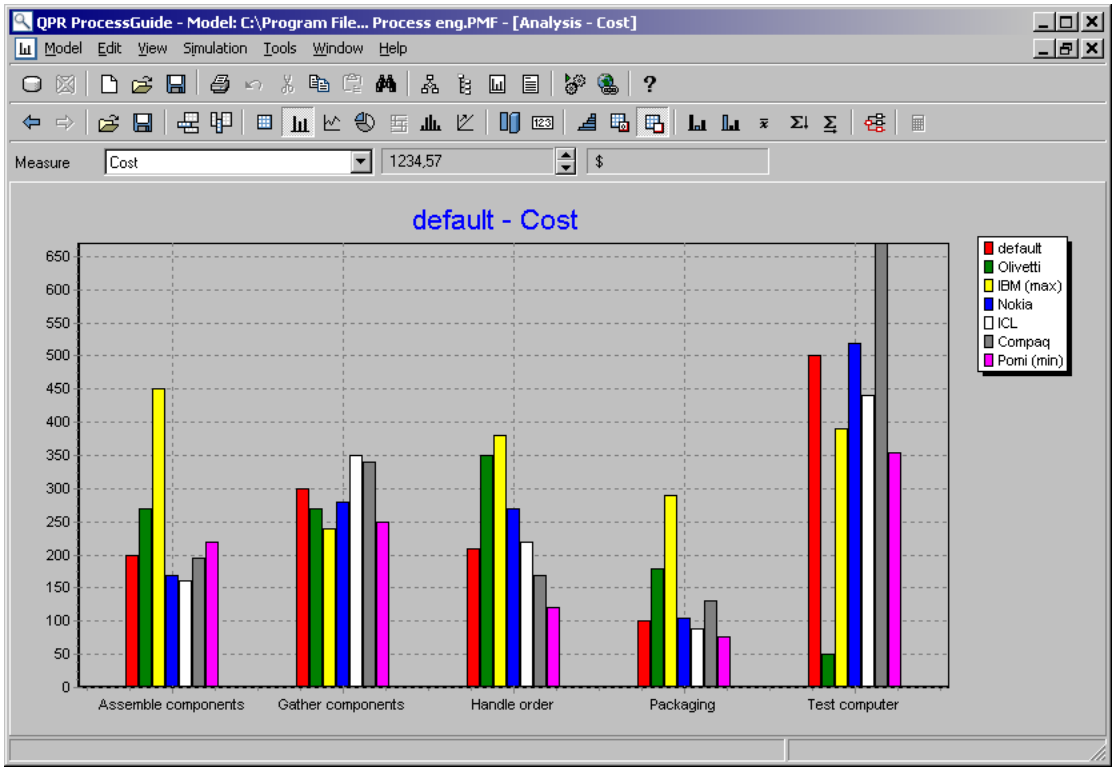
5.4.3. Reporting

Basic reports are available, providing model summary information and model element information by type.

5.5 Process Performance Management and Analysis

QPR ProcessGuide and QPR ScoreCard can be integrated to create a process performance management (or Business Activity Monitoring, BAM) solution, allowing measure data to be directly shown in flowcharts (see picture 5.5) drill-down between measures and flowcharts.

QPR ProcessGuide also offers a set of basic measures and a possibility to freely define your own measures for analyzing processes. Process analysis is done from within the Analysis view (picture 5.7) in development client.



Picture 5.7. Analysis view, showing a set of measure values in a graph

Measure data can be viewed and modified in a sheet view, which also performs various calculations. The whole sheet or a certain part of it can also be shown as a graph to present analysis results graphically.

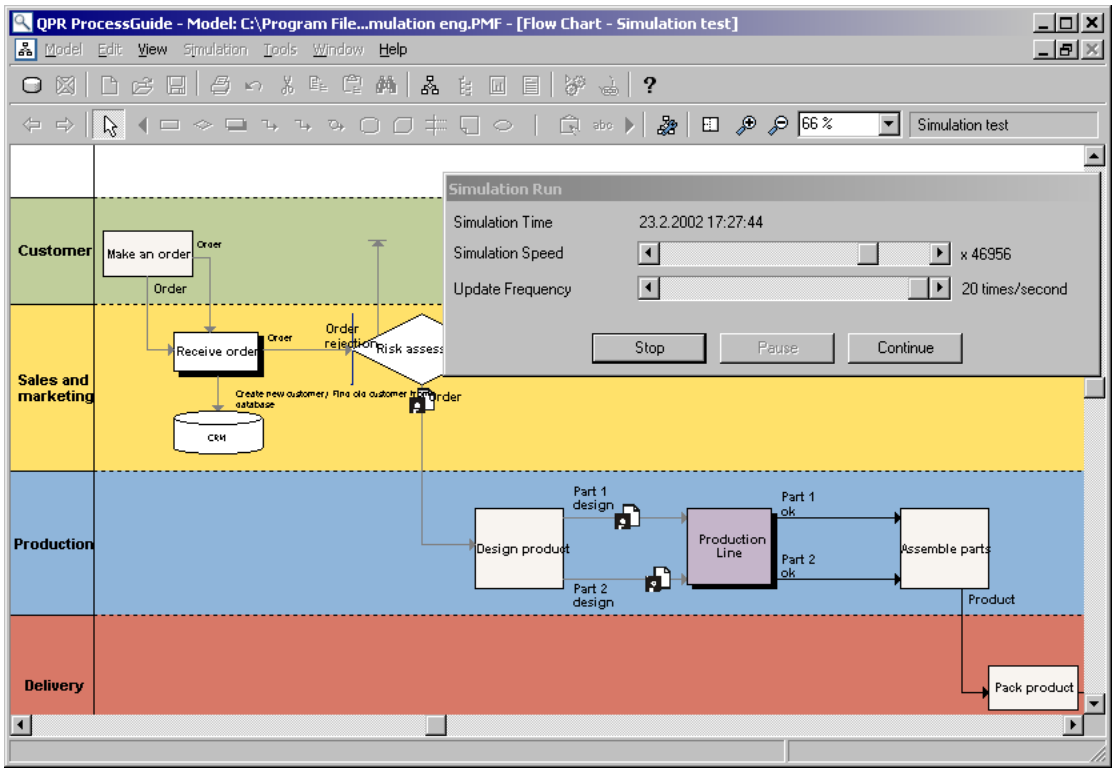
Data used in analyses can be imported by various means.

5.6 Simulation

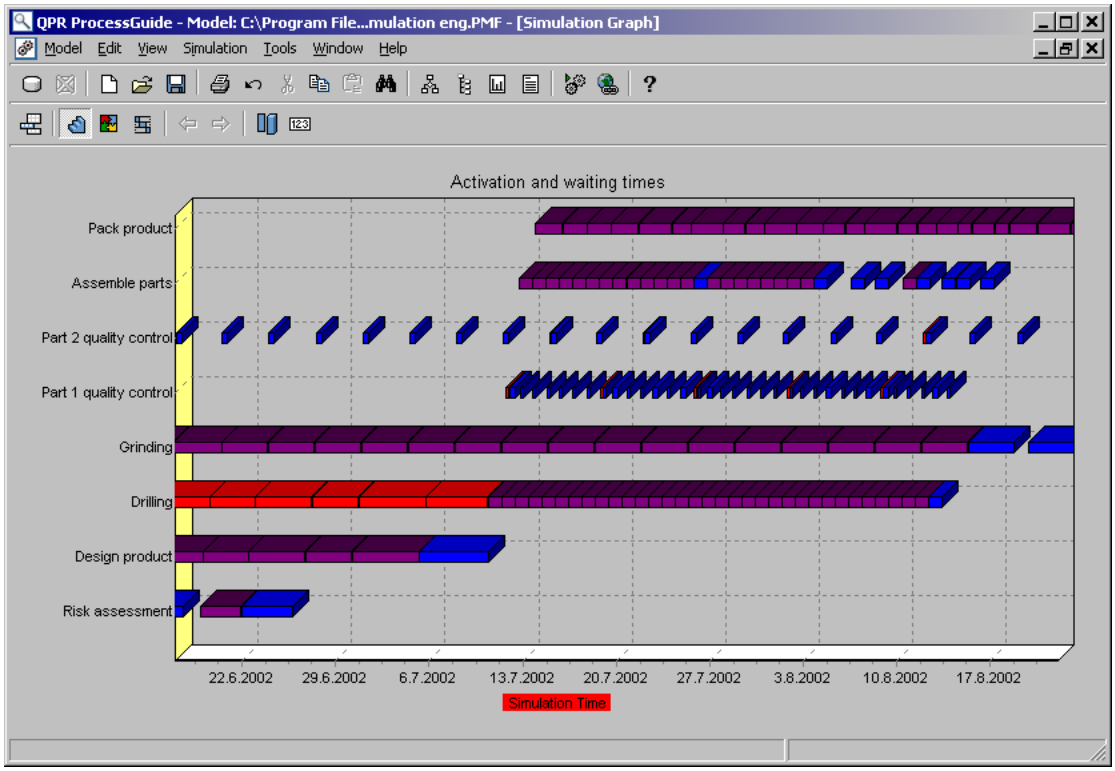
ProcessGuide offers a possibility to simulate processes as a part of improvement efforts. The dynamics of the process can be stored as resource and simulation properties. With proper values, the process can be simulated (picture 5.8) for the following purposes:

- Optimize resource usage.
- Identify bottlenecks and test various alternatives for removing them.
- Test different scenarios (e.g. how our Helpdesk performs if the launch of a new product doubles the amount of calls).
- Validate new process before implementing it.
- Illustrate dynamics of the process through animation.

Results (including cost and time) are shown graphically (picture 5.8) and saved as detailed report files. They can also be stored as measure values for further analysis.



Picture 5.7. Simulation running, vertical lines (activities) and transfer type icons (flows) indicating activations



Picture 5.8. Graphical presentation of simulation results, showing activation and waiting times (=bottlenecks) for simulation cases.

5.7 Integration

QPR ProcessGuide provides full XML (Extensible Markup Language) support. This means that a process model can be exported to (or imported from) virtually any system, if it offers corresponding support.

Technically this happens through QPR XML format, which must be transformed into format that is compatible with destination system. Importing data back to QPR ProcessGuide is a reverse process.

QPR ProcessGuide offers also the following means for transferring data to/from other applications:

- Clipboard allows copy/paste -operations with various views.
- External systems and documents can be linked as information items of the process model. Model and user data can be used as parameters in links.
- Measure data can be exported and imported in ASCII format.
- HTML export with Web Page Export can be extensively tailored to export different parts of the model for various purposes.
- Web views provided by the QPR Web Application Server can be used as a part of various management portals etc. This is especially useful with QPR ScoreCard to combine online performance measurement information with processes.
- Activity-based costing analysis can be done with QPR CostControl by exporting certain parts of the model and importing results back to QPR ProcessGuide or by publishing them as web reports and linking those reports to a QPR ProcessGuide model. ProcessGuide and CostControl models can also be linked to view corresponding information in one another.

5.8 Management Features

QPR ProcessGuide offers a set of features for customization, model management, user control, and simultaneous usage that enable corporate usage.

5.8.1. Customization possibilities

The following features offer good possibilities for customizing ProcessGuide according to customer-specific needs:

- Modeling options define what kinds of model elements are used and what they look like. Also modeling direction of organization items can be either horizontal or vertical.

- Templates can be used to store modeling options in both files and databases.

- Element-specific graphical properties are available for defining individual layout for each element separately.

- Web settings can be extensively modified for both dynamic and static web publishing.

Also other settings are available for various purposes, e.g. for flowchart view settings or report contents.

5.8.2. Model Management

Model Properties are available for storing generic model information, including version information (author, status, date, comment). Versioning can also be done separately for each subprocess. Changes made to the model can be monitored with changes in the log file.

5.8.3. User Management and Rights

User rights can be set for each process level and separately for resources, measures and simulation. Rights can be given to user groups as well. Rights apply to both the Windows application usage as well as to the web client.

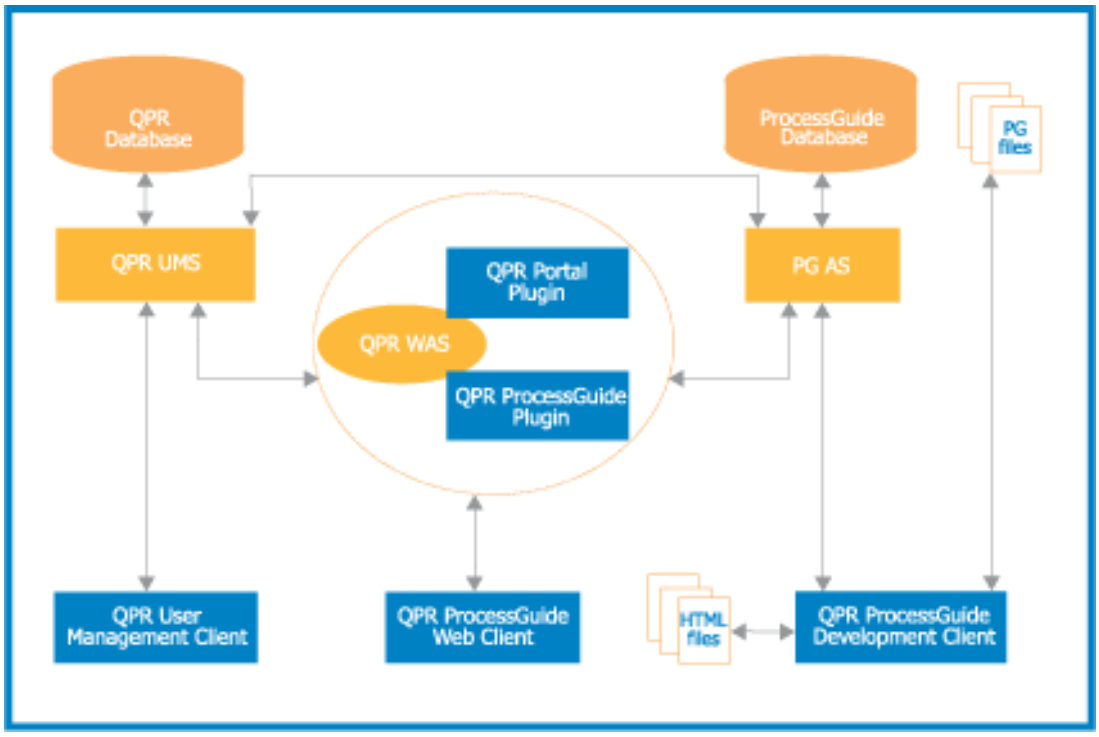
QPR ProcessGuide uses the QPR User Management System with database models. It provides a common user database for all QPR products, as well as the possibility to import and integrate users with various sources, including Windows NT/2000 users and any LDAP (Light Directory Access Protocol) systems, e.g. Lotus Notes.

5.8.4. Simultaneous Usage

With file models, only one user can modify a certain model at a time. Others can open it for viewing. With server models a model hierarchy can be generated, allowing several users to work with same process simultaneously. For effective simultaneous usage it is recommendable to divide the process into several models in such a way that only the user responsible for the part has full rights to it.

6. Technical Information

The technical architecture (see picture 6.1) of QPR ProcessGuide offers the possibility to use either standalone or 3-tier client/server architecture.



Picture 6.1. QPR ProcessGuide technical architecture

6.1 Web Client

To use web views provided by QPR Web Application Server, a **browser** with support for frames and JavaScript is required.

Static HTML pages exported by ProcessGuide are usable with any web server and a browser with support for frames. With models stored into file they are the only alternative for publish processes in web.

6.2 Development Client

The software requirements for Development Client (used as a **standalone application** or as a client with the ProcessGuide Application Server) are:

- Windows 98 or ME
- Windows NT 4.0
- Windows 2000 or
- Windows XP

The minimum hardware requirement is a Pentium PC with minimum 16 MB RAM (if Windows 98 is installed) or 32 to 64 MB RAM (if Windows NT – based operating system is used).

Large ProcessGuide models are more usable with workstations that have as much memory and processing power as possible. Also a good graphics performance is important when working with large flowcharts.

Development client connects to the Application Server with a TCP/IP connection.

6.3 Server

The software requirements for server components of QPR ProcessGuide (Application Server, User Management Server and Web Application Server) are:

- Windows NT 4.0
- Windows 2000 or
- Windows XP

Memory requirements depend on the amount of processes that are in active use.

The Application Server requires ODBC for connecting to the ProcessGuide database.

6.4 Database

The database server must be capable of installing and running one of the following databases:

- Oracle 8.0, 8i or 9i
- Microsoft SQL Server 7.0 or 2000
- IBM DB2 6.2 or 7.1
- Microsoft Access (2000 or 2002), for stand-alone usage only.

6.5 Web Publishing

When using QPR ProcessGuide for web publishing, the **QPR Web Application Server computer** has the following software requirements:

- Windows NT 4.0
- Windows 2000 or
- Windows XP

Memory requirements depend on the amount of published models and publishing settings used. TCP/IP connection to the Application Server is required.

Requirements for the **web server computer** depend on the estimated amount of simultaneous connections. QPR Web Application Server (WAS) uses a 'thin' cgi-binary application for processing web requests, which can handle numerous requests with minimum memory usage. The connection to QPR WAS is performed with sockets. All major web servers in Unix and Windows platforms are supported.

7. References

1. QPR ProcessGuide Getting Started Guide, available in English.

2. QPR ProcessGuide Administrator's Guide, available in an English electronic version.

3. http://www.qpronline.com, the online resource for QPR Management Software-related information.

4. http://www.qpr.com, the QPR Software web site.