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Instrument: **SPECIFIC TARGETED RESEARCH PROJECT**

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Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission	
RE	Restricted to a group specified by the consortium (including the Commission	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Abstract

The qualitative reasoning and modelling (QRM) portal is part of the NaturNet-Redime project. It has been developed to support internal project needs, such as supporting modelling by making documentation and software available, archiving and commenting on work in progress, making the QRM workbench Garp3 available and assisting users via the QRM mailing list. The QRM Portal also aims to support the QRM users outside the NaturNet-Redime project in the same way, and aims to increase the size of the community by providing tools, methods and communication facilities to support developing, strengthening and further improving education and training on topics dealing with systems and their behaviours. The webpage can be visited on: <http://hcs.science.uva.nl/QRM/>

Document history

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1 Introduction

The qualitative reasoning and modelling (QRM) portal has been developed to present the qualitative reasoning (QR) based aspects of the NaturNet-Redime project. Its main goals are to fulfil both the internal and external needs of the project.

The home page of the QRM portal (see Figure 1) describes the Qualitative Reasoning and Modelling (QRM) field, and the main goal of the QRM portal. *This goal is to provide tools, methods and communication facilities to support developing, strengthening and further improving education and training on topics dealing with systems and their behaviours.* The most important tool the QRM portal provides is the qualitative reasoning and modelling workbench Garp3, which supports users in articulating and simulating their conceptual knowledge of system behaviour. Therefore the home page directly links to the software page. The portal is also used to organise and update project documents related to QRM.

On the bottom of the QRM home page are the latest updates which have been made to the portal. A link is also provided to the changelog, which lists the updates which have been made to the QRM portal since it went live in October 2005 (see Figure 2).

Effort has been made to make the QRM portal compliant to web standards. Therefore, semantic markup has been used to describe its content. Every page uses valid XHTML (Extensible Hypertext Markup Language) 1.0 Strict and valid CSS (Cascading Style Sheets).

The webpage can be visited on: <http://hcs.science.uva.nl/QRM/>

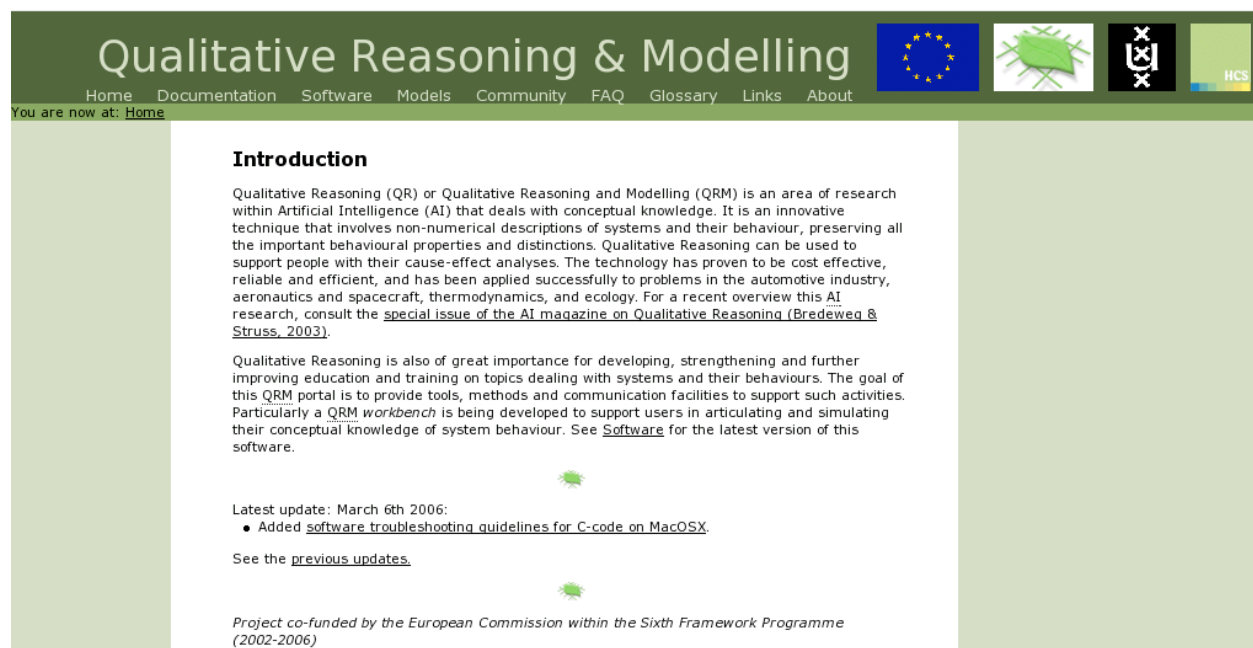


Figure 1: The home page of the Qualitative Reasoning & Modelling Portal

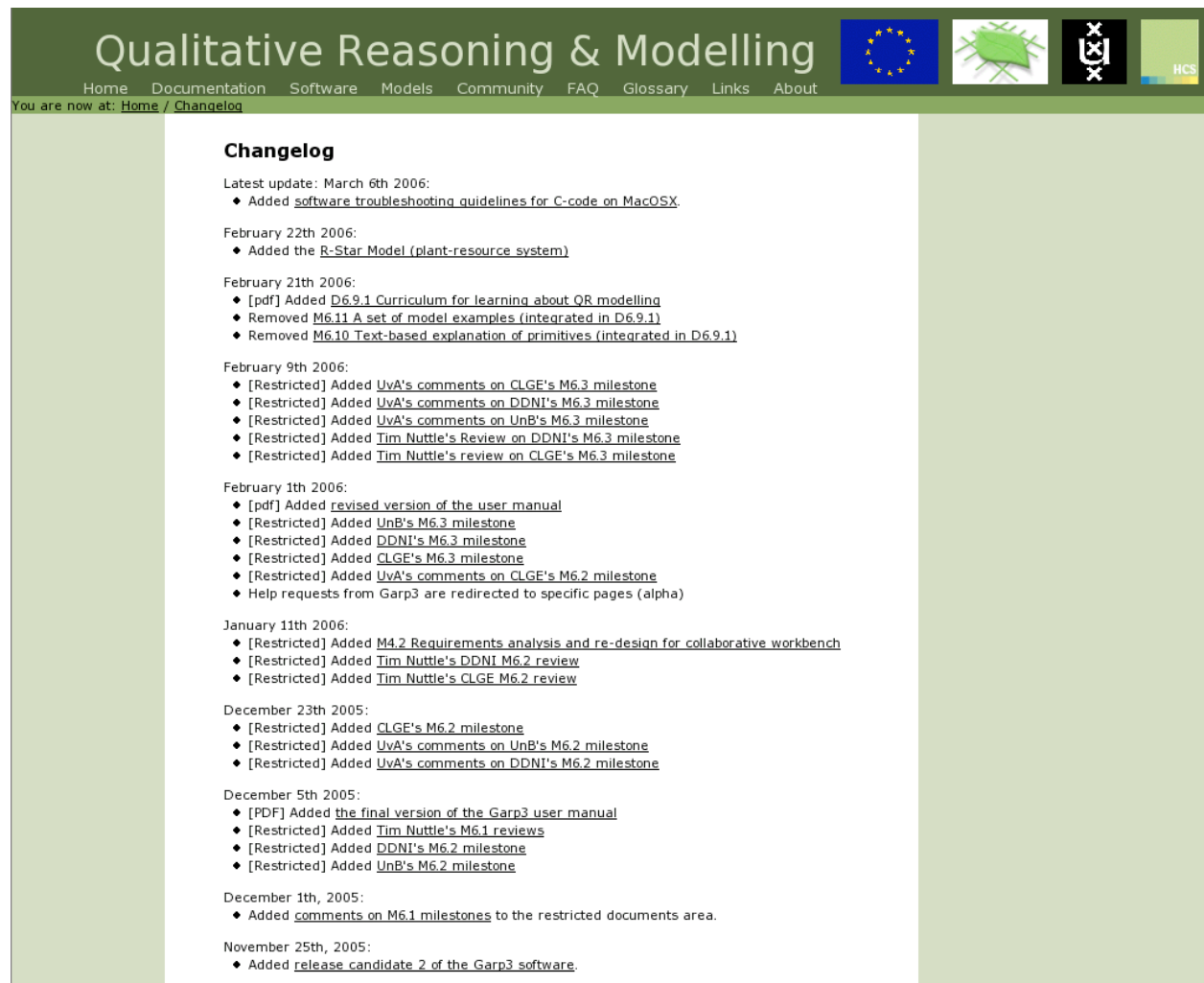


Figure 2: The changelog listing the updates of the QRM Portal since its inception in October 2005

2 Documentation

The documentation part of the QRM portal is divided into two sections. The documents section and the restricted documents section. The former is used to inform the community and the NaturNet-Redime partners about how QRM technology can be used and how their work is supported (see Figure 3). This section provides:

1. A curriculum for learning about QR modelling, which explains some QR theory, provides an overview of the Garp3 QRM workbench, describes QR model examples, shows the application of QR in ecology, discusses the QRM vocabulary and has some assignments.
2. A framework for conceptual QR description of case studies, which provides a methodology that structures and supports the capture of conceptual knowledge using a qualitative approach. The framework defines a protocol for describing content (knowledge and expertise) that supports the development conceptual understanding of systems and how they behave. In addition to structuring the work involved in building models, the framework also facilitates easier comparison and evaluation of the results of modelling efforts.
3. The Garp3 User Manual, which describes how the software supports the operations necessary to build, simulate, and inspect qualitative models. The explanations are divided in three categories. The first concerns file operations,

such as opening models, saving models, and starting a new model. The second consists of model building operations to define building blocks (e.g., entities, quantities and quantity spaces) and use these to create model fragments and scenarios. Finally, the third category contains the simulation tasks, such as running a simulation and inspecting the resulting state graph using a variety of visualisations. The manual provides task-oriented instructions for each available operation in Garp3, accompanied by clarifying examples throughout the text.

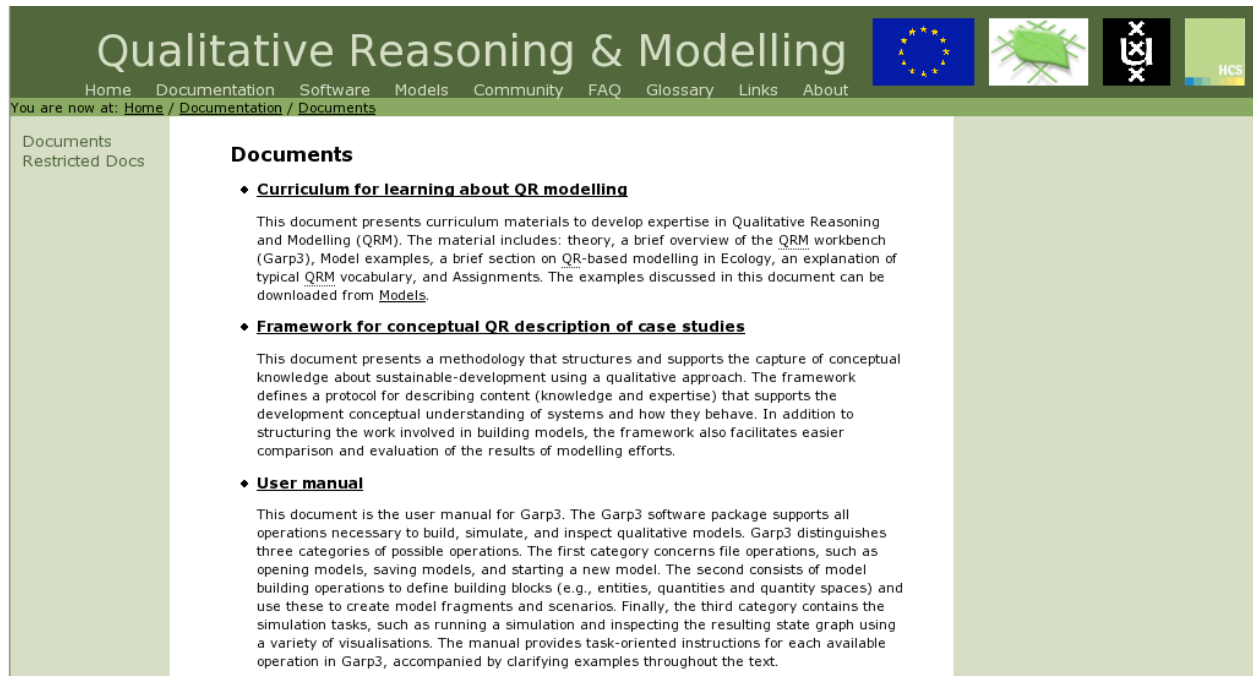


Figure 3: The documents section of the QRM Portal

The restricted documents page archives work in progress and is particularly meant for the NaturNet-Redime partners. Therefore it is password protected. The restricted section is shown in Figure 4. It contains the requirement analysis and re-design for collaborative workbench, which describes the work which will be done on the Garp3 QRM workbench to support collaborative modelling. It also lists the milestones for each of the Redime case studies (Riacho Fundo, River Mesta, Danube Delta), which use the framework for conceptual QR description of case studies to create a textual description about their case subject. As these textual descriptions are essential for the success of developing a model about these case studies, both the UvA and Tim Nuttle (University of Jena) provided comments on the milestones, which are also available on the restricted documents page. Once the textual descriptions of the case studies are finalised they will be available in the documents section.

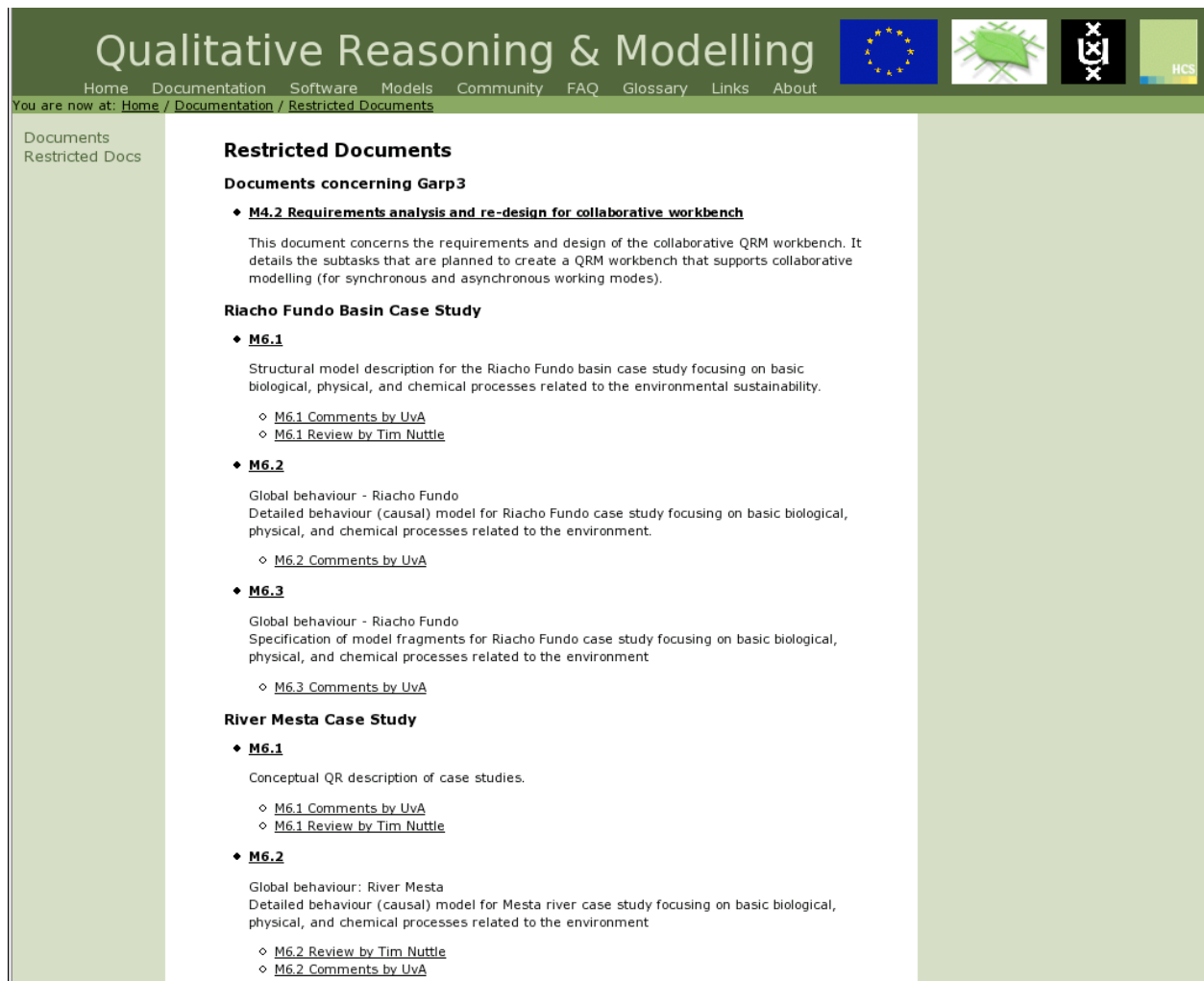


Figure 4: The restricted documents section

3 Software (Garp3)

The software section (shown in Figure 5) provides the latest version of the Garp3 QRM workbench. It also describes guidelines to installing the software on different platforms (Windows, Unix/Linux, MacOS). If a user encounters problems he is referred to the FAQ and the QRM mailing list.

4 Models

The models section provides the community with examples of qualitative reasoning models which can be analysed, adapted and simulated in the Garp3 workbench. In addition of the model file itself, a short description of the model is also added. In the future this section will be replaced by a qualitative reasoning model repository in which users can search for models, upload models and submit ratings.

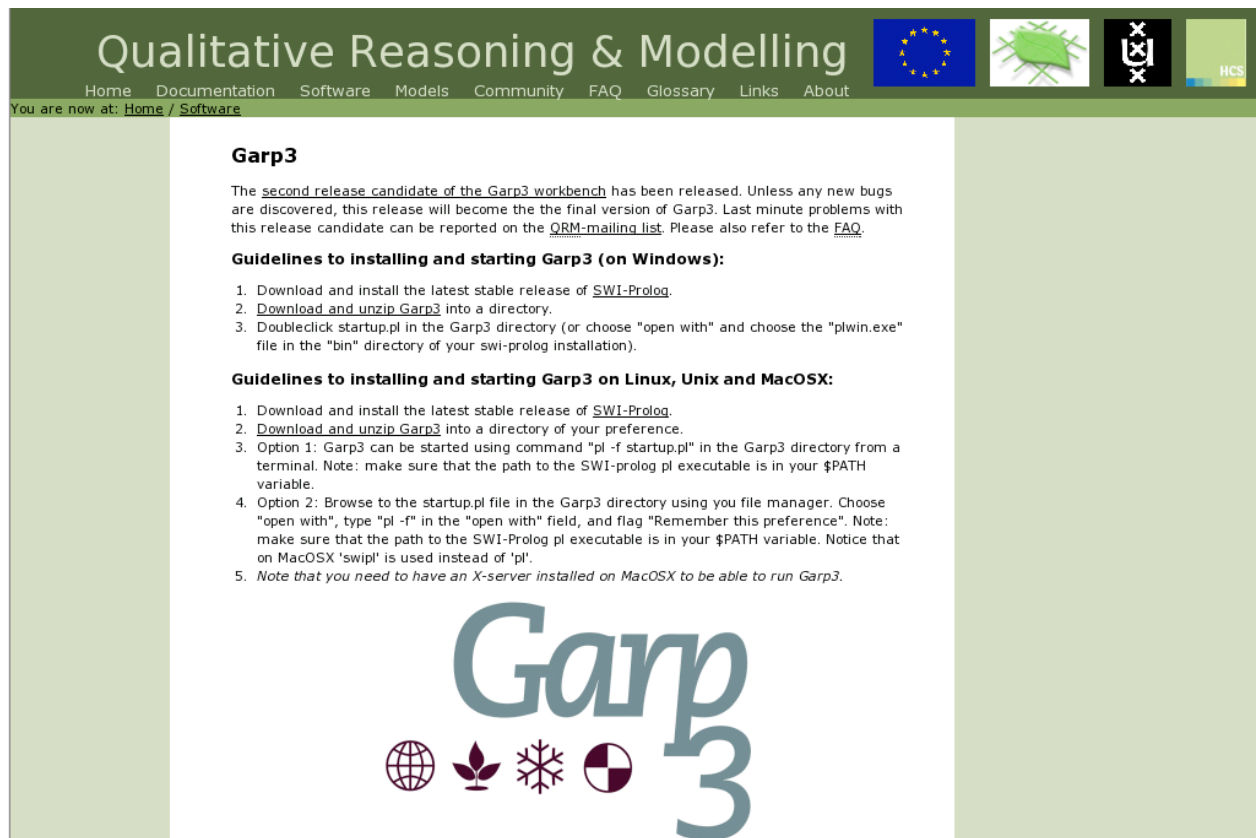


Figure 5: The software section providing the Garp3 software and installing guidelines

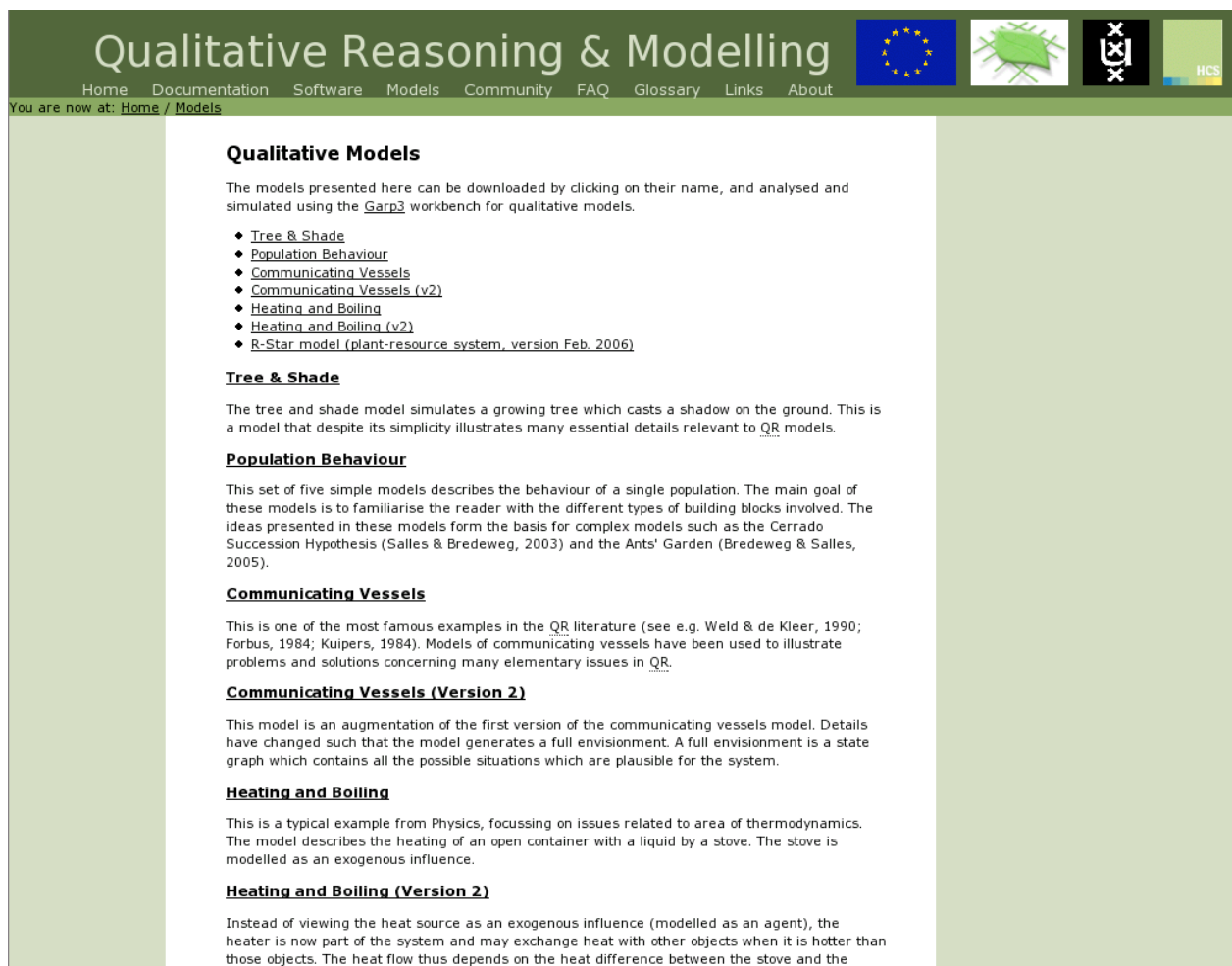


Figure 6: The Models section providing examples of qualitative models.

5 Community

The community section is divided into three sections. The first page provides access to the mailing list. The second and third page explain the use of Skype and VNC.

Accessing the mailing list is not possible for every user, as the mailing list archive is password protected (see Figure 7). A user has to send a request to one of the webpage administrators to be added to the QRM mailing list. The user will be added and a password will be sent to that person.

The email address of the mailing list is: qrm-list@science.uva.nl. The email sent to this list is archived on a webpage (see Figure 8). The help requests which are answered on the mailing list will be processed and turned into Frequently Asked Questions (FAQ).

The Skype page (Figure 9) and the VNC page (Figure 10) describe how the Skype and VNC programs work. These programs are used to give support (particularly to the NaturNet-Redime partners) during their modelling task. The Skype program allows free teleconference calls over the internet. The VNC program allows desktop sharing with multiple participants. The idea is that the UvA partners start a VNC server and members of the community connect to this server using a VNC client. In the meantime a conference call is started via Skype. This allows the UvA to support other partners (or members of the community) by collaboratively analysing and improving models.

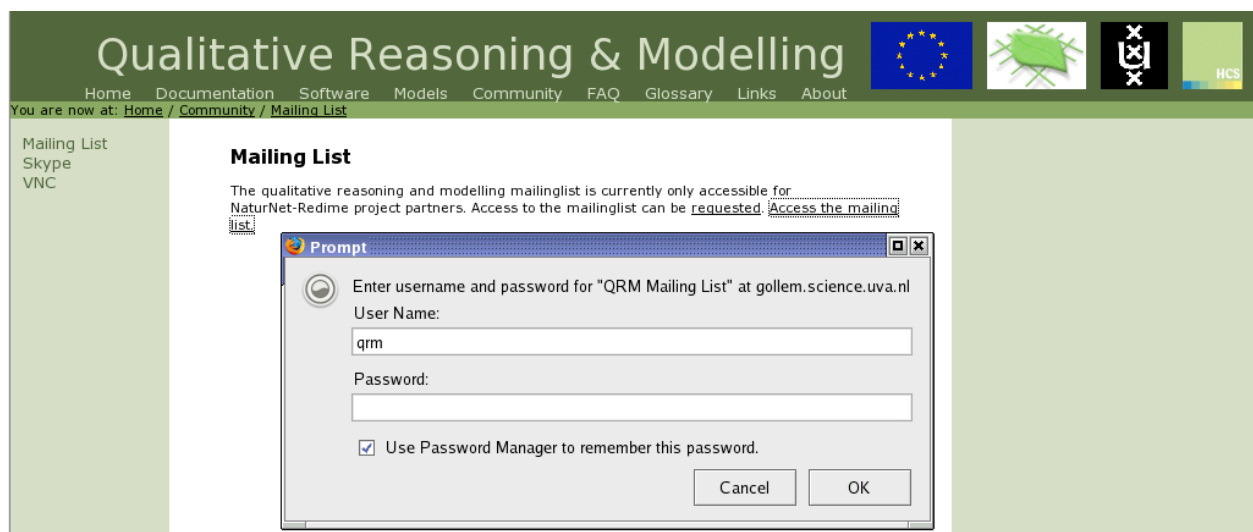


Figure 7: Accessing the mailing list archive is password protected

QRM mailing list by thread

[37 messages](#): *Starting* Thu 04 Aug 2005 - 17:15:56 CEST, *Ending* Thu 02 Feb 2006 - 23:00:01 CEST
sort by: [[thread](#)] [[author](#)] [[date](#)] [[subject](#)] [[attachment](#)]

- [minimize Garp3 main page](#) Tim Nuttle (Thu 02 Feb 2006 - 22:55:55 CET)
- [R-star vs16 based on vs14 - answering urgent question about vs14](#) Bert Bredeweg (Mon 30 Jan 2006 - 16:06:23 CET)
- [R-star vs15 augmenting vs14 - more amazing results!](#) Bert Bredeweg (Sat 21 Jan 2006 - 11:09:21 CET)
- [QRM: small Garp bug](#) Tim Nuttle (Sun 11 Dec 2005 - 01:12:31 CET)
 - [Re: QRM: small Garp bug](#) Bert Bredeweg (Wed 14 Dec 2005 - 15:18:33 CET)
- [QRM: general problem of opposing Influences \(and R-star vs 11\)](#) Tim Nuttle (Fri 09 Dec 2005 - 17:08:44 CET)
 - [Re:QRM: general problem of opposing Influences \(and R-star vs 11\)](#) Paulo Salles (Fri 09 Dec 2005 - 19:01:08 CET)
 - [Re: QRM: general problem of opposing Influences \(and R-star vs 11\)](#) Tim Nuttle (Fri 09 Dec 2005 - 20:09:45 CET)
 - [Re: QRM: general problem of opposing Influences \(and R-star vs 11\)](#) Bert Bredeweg (Sat 10 Dec 2005 - 23:40:49 CET)
 - [Re: QRM: general problem of opposing Influences \(and R-star vs 11\)](#) Bert Bredeweg (Sat 10 Dec 2005 - 23:13:34 CET)
- [QRM: R-star-vs10](#) Tim Nuttle (Fri 02 Dec 2005 - 05:42:31 CET)
- [R-star vs10b](#) Tim Nuttle (Fri 02 Dec 2005 - 17:16:38 CET)
- [GARP3.03 bug](#) Tim Nuttle (Fri 02 Dec 2005 - 16:42:45 CET)
 - [Re: GARP3.03 cr bug](#) Bert Bredeweg (Fri 02 Dec 2005 - 22:31:19 CET)
- [Question about abrupt changes causing conflicts](#) Tim Nuttle (Fri 18 Nov 2005 - 18:33:25 CET)
 - [Re: Question about abrupt changes causing conflicts](#) Bert Bredeweg (Sat 19 Nov 2005 - 02:28:34 CET)
 - [Re: Question about abrupt changes causing conflicts](#) Tim Nuttle (Mon 21 Nov 2005 - 17:03:59 CET)
 - [Re: Question about abrupt changes causing conflicts](#) Bert Bredeweg (Wed 23 Nov 2005 - 00:47:35 CET)
- [QR software tools question](#) tulosd_at_undisclosed (Tue 15 Nov 2005 - 17:52:39 CET)
 - [Re: QR software tools question](#) Bert Bredeweg (Sat 19 Nov 2005 - 01:46:47 CET)
 - [Re: QR software tools question](#) Tim Nuttle (Mon 21 Nov 2005 - 16:54:34 CET)
 - [Re: QR software tools question](#) Bert Bredeweg (Wed 23 Nov 2005 - 00:42:01 CET)
 - [RBS: QR software tools question](#) Paulo Salles (Thu 24 Nov 2005 - 10:09:18 CET)
- [r-star model: found problem with bad end state - what's solution?](#) Tim Nuttle (Thu 27 Oct 2005 - 05:53:11 CEST)
 - [Re: r-star model: found problem with bad end state - what's solution?](#) E.R. Bakker (Thu 27 Oct 2005 - 12:59:09 CEST)
 - [Re: r-star model: found problem with bad end state - what's solution?](#) Bert Bredeweg (Sun 20 Nov 2005 - 00:42:08 CET)
 - [Re: r-star model: found problem with bad end state - what's solution?](#) Tim Nuttle (Mon 28 Nov 2005 - 17:44:22 CET)
 - [Re: r-star model: found problem with bad end state - what's solution? - vs12 based on vs06](#) Bert Bredeweg (Sat 10 Dec 2005 - 22:41:27 CET)
 - [Re: r-star model: found problem with bad end state - what's solution? - vs12 based on vs06](#) Tim Nuttle (Mon 12 Dec 2005 - 16:40:47 CET)
 - [R-star model: vs14 based on vs06](#) Bert Bredeweg (Thu 19 Jan 2006 - 00:49:43 CET)
 - [Re: R-star model: vs14 based on vs06](#) Tim Nuttle (Thu 19 Jan 2006 - 18:32:03 CET)
- [\[QRM-List\] Qualitative Reasoning and Modelling Mailing List - Purpose & Members](#) Jochem Liem (Thu 20 Oct 2005 - 11:33:53 CEST)
- [\[QRM-List\] Password protection](#) Jochem Liem (Mon 29 Aug 2005 - 17:08:21 CEST)
- [Model doubts and weaknesses](#) Amruta Sudhalkar (Thu 18 Aug 2005 - 11:02:21 CEST)
- [Feedback on Amruta's model vs9 \(fwd\)](#) Bert Bredeweg (Sun 07 Aug 2005 - 01:36:53 CEST)
- [\[QRM-List\] Qualitative Reasoning & Modelling Mailing List](#) Jochem Liem (Thu 04 Aug 2005 - 17:12:40 CEST)

Figure 8: The mailing list archive

Qualitative Reasoning & Modelling

Home Documentation Software Models Community FAQ Glossary Links About

You are now at: [Home](#) / [Community](#) / [Skype](#)

Mailing List
Skype
VNC

Skype

In order to provide support on the qualitative modelling of case models within the NaturNet-Redime project, software will be used to enable remote real-time communication. Skype will be used to allow free telephone-like communication over the internet.

Internet Telephony using Skype

As telephone communication to other countries is very expensive, Skype is a good alternative to communicate. The Skype program can be used to make free calls over the internet to anyone else who also has Skype. It is available for free and works on most operating systems (Windows/Linux/MacOSX). Skype offers the possibility of making conference calls with up to 5 people. Two additional features are traditional chatting and file transfers.





As there are [install and user guides available](#) for Skype, the guidelines presented here are rather short. Please refer to [the official Skype guides](#) when you are having trouble.

- [Download a version of Skype](#) for your operating system
- Install Skype. (Be sure to unflag "Start Skype when the computer starts".)
- Register as a Skype user (concatenating your first and last name is a good way of choosing an available username). Be sure to unflag "Start Skype when the computer starts", again.
- Add other partners as contacts. (i.e. AndersBouwer, BertBredeweg, JochemLiem and others mentioned in the Partner Contacts file)
- Try to call someone who is online.
- Read [the information about starting a conference call](#).

Figure 9: The Skype page

Qualitative Reasoning & Modelling

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You are now at: [Home](#) / [Community](#) / [VNC](#)

Mailing List

Skype

VNC

VNC

In order to provide support on the qualitative modelling of case models within the NaturNet-Redime project, software will be used to enable remote real-time collaborative working. VNC will be used to share a common desktop on which the software will be run.

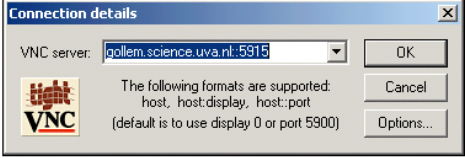
What is VNC?

Virtual Network Computing (VNC) is a open protocol which is used to remotely control a computer (the server) by using a simple program (the viewer/client). It allows users to see the desktop of a remote machine (and optionally control it with his local mouse and keyboard), as if the user is in the front of that computer. A person who wants to share his desktop, starts a VNC Server, and specifies a password giving complete interactivity, and another for view-only rights. Other participants can connect to the VNC Server (using the password) via the internet to view (and interact with) the desktop on that computer. VNC implementations (servers and clients) exist for most platforms (most importantly Windows, Linux and MacOSX). This allows viewers to connect to servers running a completely different operating system.

Clients: Connecting to a VNC Server

Windows Guidelines

- [Download TightVNC viewer for your operating system](#) and install it.
- Start TightVNC Viewer (Fast Compression) (see figure 2).
- Type the server and port in the VNC Server field, using the format HOST::PORT (note the double semi-colons) where PORT is the port-number indicated by the person starting the server. For example: gollem.science.uva.nl::5904.
- Press the Ok button.
- Enter the password indicated by the person starting the VNC Server in the Session password field, and press Enter.
- You are now watching a shared desktop running the intended software.



MacOSX Guidelines

- [Download "Chicken of the VNC"](#).
- Start "Chicken of the VNC" (see figure 3).
- Flag the Shared Display field.
- Type the server in the Host field (e.g. gollem.science.uva.nl).
- Type XXXX in the Display/Port field, where XXXX is a port-number indicated by the person starting the VNC server.
- Enter the password indicated by the person starting the VNC server in the Password field.
- Press the connect button.
- You are now watching a shared desktop running the intended software.

Figure 10: The VNC page

6 FAQ

As mentioned in the chapter 5 Community, the questions posed on the QRM mailing list are distilled into FAQ. This work is already in progress, and some common questions and answers are already available (as can be seen in Figure 11). On the left side of the page there are links which allow users to jump to questions about a specific subject. These subjects are:

- Software
- Causal Dependencies
- Inequalities and Values
- Model Fragments and Scenarios
- Simulation

In the future, these FAQ will provide the basis for new help functionality within the Garp3 software.

Qualitative Reasoning & Modelling

Home Documentation Software Models Community FAQ Glossary Links About

You are now at: Home / FAQ

Frequently Asked Questions

Software

- 1. What is GARP3?**
The GARP3 application can be used to visually create qualitative models and simulate them.
- 2. What happened to Garp, VisiGarp and Homer?**
All those tools have been integrated into GARP3
- 3. Why doesn't my simulate environment work?**
One option is that your model is incorrect, in which case you may try to simulate a [working model](#) using the [Garp3 User Manual \(pdf\)](#). Another option could be that you are running Garp3 on MacOSX using a SWI-Prolog version which is not recommended, or on a relatively new architecture. In that case it is probable that [the Garp3 c-code has to be recompiled](#).

Causal Dependencies

- 1. Should I use a proportionality or an influence?**
Influences should be used when the following relation has to be modelled: "If the magnitude of the source quantity has a non-zero value, the target quantity will change." When the relation "If the source quantity changes, the target quantity will change too." has to be modelled, proportionalities should be used.

Inequalities & Values

- 1. Should I add equality statements between zero point values of quantity spaces of different quantities?**
No, by definition zero's are universally equal throughout the model. This means that even zero's belonging to different quantity spaces can be considered as having an equality relation between them. Adding these equalities is superfluous.
- 2. If I define the equality relations $A=B$ and $B=C$, should I also define $A=C$?**
No, the qualitative simulator can infer this by itself, adding the statement would be superfluous. This inference is called transitive inequality reasoning.
- 3. What is the difference between specifying that two values are equal and specifying that two quantities are equal?**
Specifying that two values are equal means that those values are quantitatively the same. For example two cups could have the same maximum height (e.g. 5cm). This does not mean that the quantities have the same value at the same time. Specifying that two quantities are equal means that they will have the same value at the same time during simulation.
- 4. I want my quantity to be bigger than zero, can I just use an inequality?**
It is strange to specify that a quantity cannot have a specific value, as there should be a

Figure 11: The frequently asked questions

7 Glossary

The glossary about explains about 70 concepts related to qualitative reasoning and modelling (Figure 12). These concepts are organised in alphabetical order. On the left side a letter can be selected to jump to the concepts beginning with that letter.

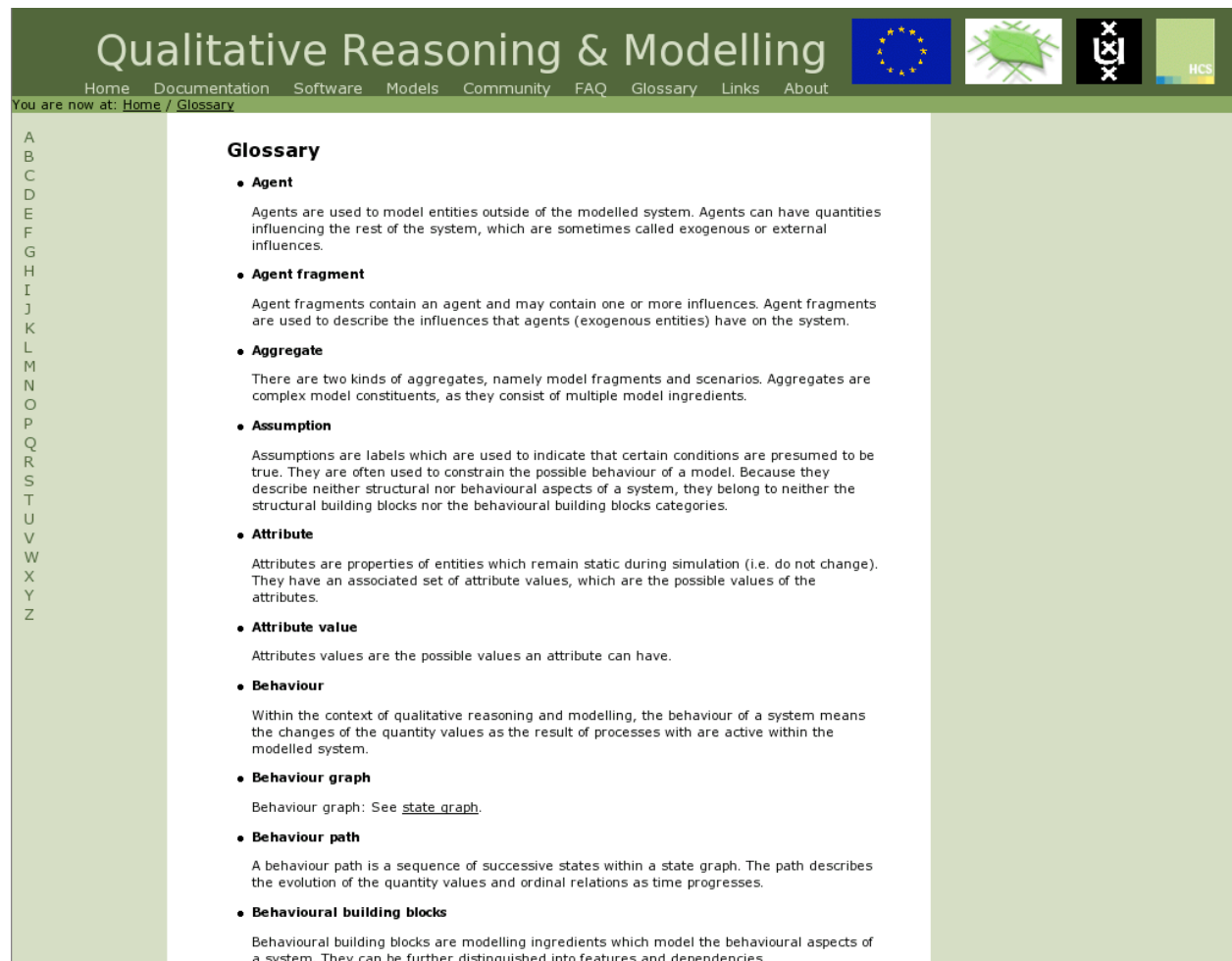


Figure 12: The glossary explaining the concepts related to qualitative reasoning and modelling

8 Links

The links page (Figure 13) provides links to other important pages related to QRM. Examples are the American Association of Artificial Intelligence (AAAI) qualitative reasoning (QR) page, the Artificial Intelligence Magazine issue dedicated to QR, and the QR2006 Workshop webpage.

9 About

The about page (Figure 14) indicates that the webpage is part of the NaturNet-Redime project, which is funded by the European Commission. It also indicates that the webpage was developed by the Human Computer Studies Laboratory group, one of the partners in the NaturNet-Redime project, which is part of the University of Amsterdam.

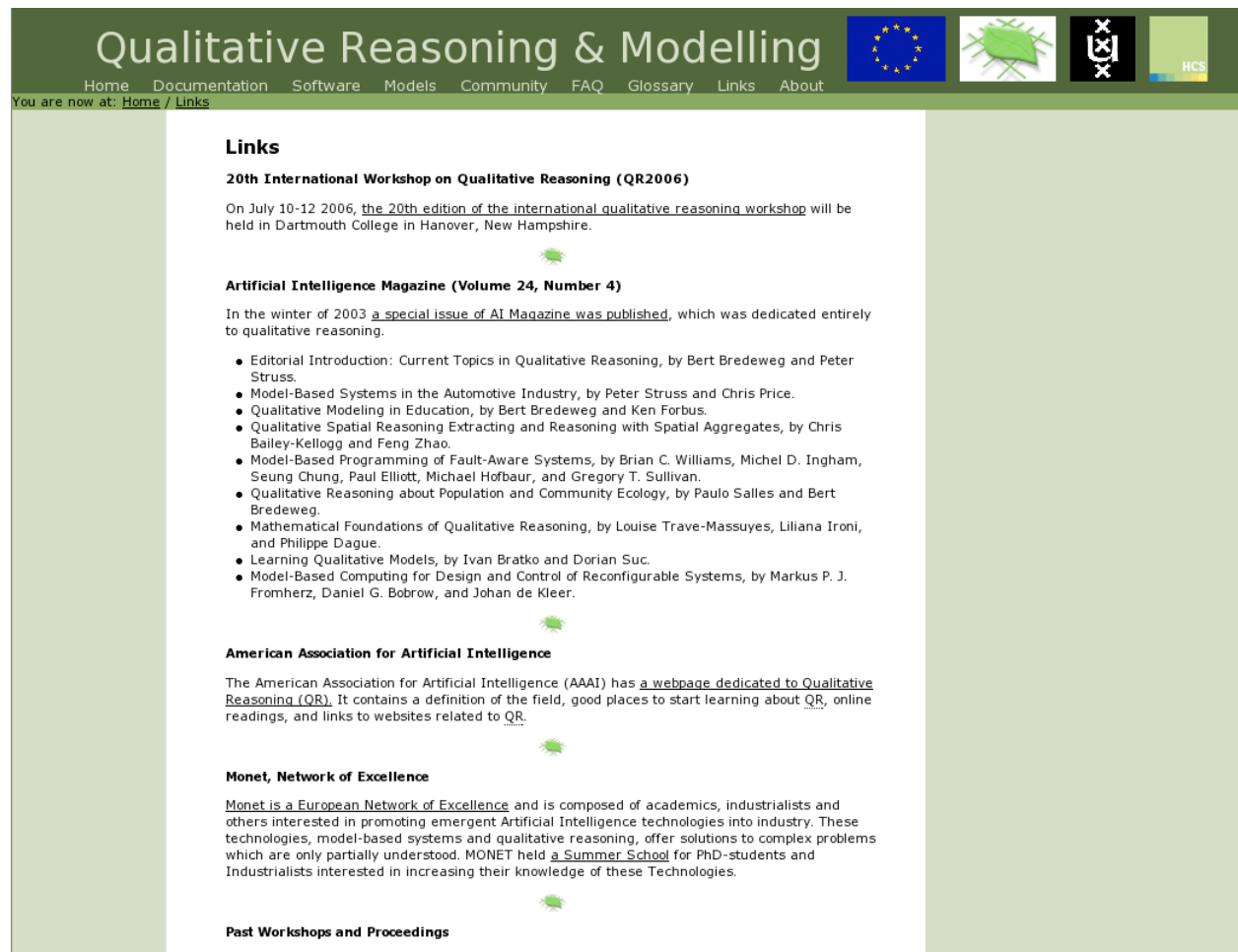


Figure 13: The links to related webpages page

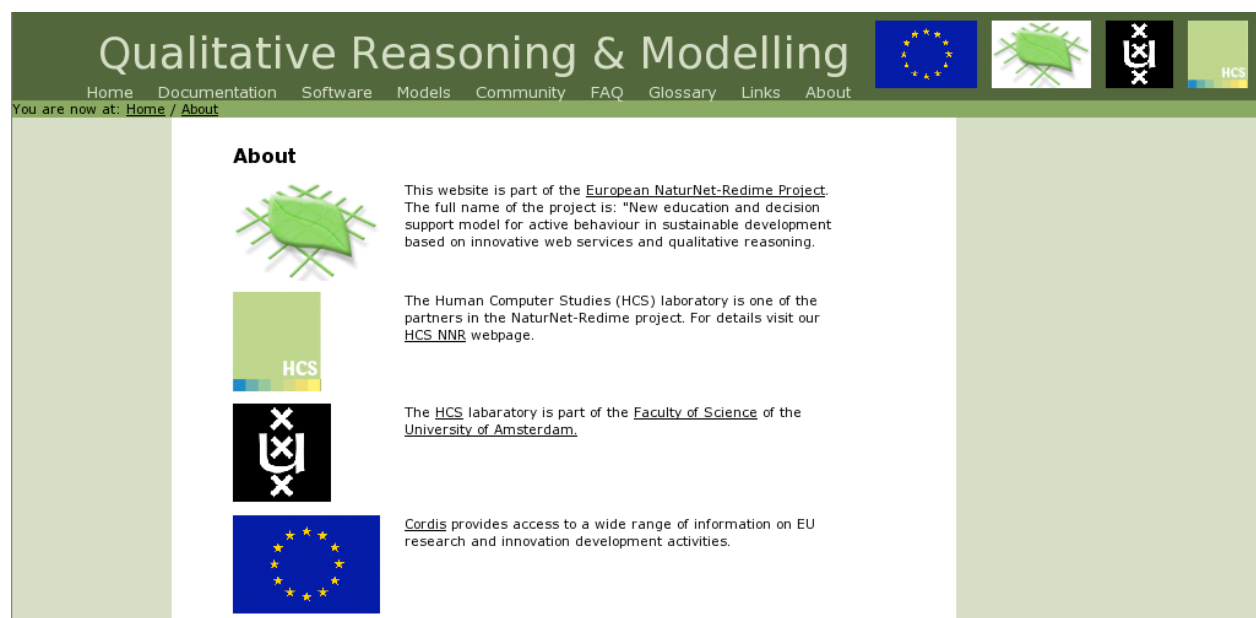


Figure 14: The about page

10 Results

The Qualitative Reasoning and Modelling Portal has seen increased usage since its inception in October 2005. According to the logs the portal gets about 80 hits per month. By actively improving the semantics of the XHTML and adding additional information such as acronyms the ranking on Google has increased significantly. In the future we will try to do some more PR and be linked from big QR related pages. As a result, the QRM Portal will hopefully increase even further in the Google rankings, which will result in more visitors.

<i>Google rank</i>	<i>Keywords</i>
#1	Qualitative reasoning and modelling portal
#1	Qualitative reasoning and modelling
#1	Qualitative reasoning portal
#12	Qualitative reasoning (weirdly nested within QR2005 page)
#23	Qualitative modelling

Table 1: The ranking of QRM Portal on Google depending on a set of keywords.

11 Conclusion

The QRM Portal went online successfully in October of 2005. The content has been continually updated, and the pages themselves have been made increasingly semantic. This has resulted in high Google rankings and high visitor counts. The portal has proven inconvenient in supporting the NaturNet-Redime partners by organising the deliverables, milestones, and the comments on them, answering questions on the QRM mailing list, and archiving the questions and answers on the QRM mailing list. In the future, the models page will be replaced by a qualitative model repository. Furthermore, we will add new public QRM-related deliverables to the Portal, continue answering questions on the QRM mailing list, archive common questions in the FAQ and add concepts to the glossary.