

# gRaphical Models in R

## A new initiative within the R project

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## What is this?

In September 2002 a small group of people gathered in Vienna for the brainstorming workshop gR 2002 with the purpose of initiating the development of facilities in R for graphical modelling. This was made in response to the facts that:

- graphical models have now been around for a long time and have shown to have a wide range of potential applications
- software for graphical models is currently only available in a large number of specialised packages, such as BUGS, CoCo, DIGRAM, MIM, TETRAD, and others.

The time has come to integrate such facilities in general software, such as R, with flexible extension and modification of prepackaged modules. The workshop web page can be found on <http://www.ci.tuwien.ac.at/Conferences/gR-2002/>.

## Summary of workshop

Two rather separate clusters of activities could be identified. In one, model selection and identification based on i.i.d. repetitions was the main issue and in the second, the primary issue was modularity in modelling and computation for complex patterns of observations.

Although some effort would be needed to accommodate both of these aspects, the aim of the initiative is to do so and get software from both of these clusters into R.

Further research is needed to make R move from computing within models to computing directly with 'abstract' models as objects, which seems necessary to represent the natural modularity of graphical models.

It was decided to take the following simple steps immediately:

**WWW** A web-page for the project has been set up at <http://www.R-project.org/gR/>.

**SIG** A special interest group for the gR project was formed with the associated mailing list [R-sig-gR@lists.r-project.org](mailto:R-sig-gR@lists.r-project.org). See the gR project web-page for subscription information.

**DSC 2003** A session at the Distributed Statistical Computing workshop, taking place in Vienna in the period 20-22 March 2003, will be devoted to gRaphical models and the gR project.

**Software** Some software for graphical models was already integrated or is easily integrable in R and these packages would as quickly as possible be made available through CRAN. This includes

- **deal** for learning Bayesian networks (C. Dethlefsen and S. G. Böttcher) is already available as an R package;
- the extensive program COCO for analysis of discrete data (J. H. Badsberg);
- an interface making it possible to access MIM within R (S. Højsgaard);
- GRAPPA, a suite of R functions for probability propagation (P. Green).

**gR 2003** A larger workshop is tentatively planned in Aalborg, Denmark, in September 2003.

**Graph computations** A special interest group had already been formed with the purpose of creating a module under R for computation with graphs. Such a module will be extremely valuable for the gR project.

**Organisation** Kurt Hornik will act as main contact between gR and the R Core team, and Claus Dethlefsen, Aalborg University, will serve as the maintainer of the CRAN view for R.

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# Recent and Upcoming Events

## R at the ICPSR summer program

R played a prominent role at the 2002 ICPSR Summer Program. Headquartered at the University of

Michigan, the Inter-University Consortium for Political and Social Research (ICPSR) is an international organization of more than 400 colleges and universities. The Consortium sponsors a variety of services