

SCIENCE AND ENGINEERING RESEARCH COUNCIL  
RUTHERFORD APPLETON LABORATORY

COMPUTING DIVISION

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## SOFTWARE ENGINEERING

### Software Technology Initiative

A SERC Panel, chaired by Derek Roberts, recommended that SERC mount major new initiatives in several fields of Information Engineering. One of the new technologies recommended for encouragement was Software Technology.

The Roberts Panel reported that:

"Already the cost of software is frequently greater than that of the associated hardware, and this trend will be accentuated by the continued reduction in (silicon) hardware costs. Software production must be one of the few industries where no adequate tools exist for specification, design, production updating and re-engineering. Despite the high cost, and long development cycle of most large systems, no serious attempt is being made to develop new software methods and standards which could reduce both cost and timescale. Add to that the need for improved hardware independence and more user-orientated approaches to high level language development and it is clear that this should be a major area for SRC support. The Panel is aware that the Computing Science Committee has devoted significant funding to this area but considers that more should be done, particularly in exploiting existing research and applying this in industry. As with Silicon Chip Design, there may be a need for a mechanism to bring Universities, Software Houses and Industry together and maximise the benefit of academic research, taking full account of the major contribution industry is able to make in this area."

SERC's Computing and Communications Sub-Committee (CCSC) has acted on the Roberts Panel's recommendations and launched a Software Technology Initiative in 1982, which will run for approximately 5 years. The CCSC has identified three major objectives for the Software Technology Initiative:

- (1) stimulate more high quality software engineering research;
- (2) improve the academic Software Technology base;
- (3) facilitate two-way technology transfer between industry and academia.

RAL is coordinating and supporting the Software Technology Initiative. The Coordinator is responsible for implementing the CCSC's policy, stimulating new grant applications, co-ordinating existing work and encouraging technology transfer. The RAL support work involves the operation of the Common Base Policy by orientating software technology development towards PASCAL, FORTRAN, the GKS graphics standard, UNIX operating system, PERQ single user computers, Cambridge Ring local area networks and X25 wide area networks.

The Software Technology Initiative has taken steps to:

- (1) identify the software tool/technique producing people and projects;
- (2) form them into a working community by person-to-person links, computer-to-computer links, and a common software and hardware base policy;
- (3) set in motion a coherent plan to exploit their software tool production by making such tools/techniques widely known and available in forms which can be readily used by the whole user community.

It is envisaged that by setting up software technology centres, co-ordination, collaboration between funding bodies, an increased level of research activity and the creation of software engineering development and user communities, the British academic community will be drawn into close association with British industry to effect two-way transfer of software technology which is so vital in a modern industrial society.

The STI has set up a Software Technology Centre at York University specialising in Ada, a Software Tools Centre at UMIST specialising in Pascal and a Software Tools Centre at Kent University for Fortran, quality control, tool collection and distribution.

A large number of workshops have been run on topics ranging from theorem proving to Ada compilation. These workshops have been well supported by industry.

The STI now has over 35 active research projects in 20 universities.

#### Alvey Programme

During 1982 a committee under Mr J Alvey recommended to UK Government that a major new initiative in Information Technology should be launched. RAL staff helped to prepare the Alvey Report; the STI Coordinator was seconded to help prepare the Software Engineering section.

The Alvey programme was started in June 1983. The SERC sponsored STI will be merged with the Alvey Software Engineering Programme; the STI Coordinator has become a member of the Alvey Directorate staff.

#### Software Engineering at RAL

With the growth of software engineering research management and RAL's intramural activity a new Software Engineering Group was set up on 1st August 1983.