POPLOG

A SELECTION OF APPLICATIONS

INCLUDING

CAD/CAM, PROCESS INDUSTRY,

ON-LINE MONITORING, FINANCE,

SOFTWARE ENGINEERING AND

IMAGE PROCESSING
**POPLOG Applications**

- Avionics simulation (*Avonicom*)
- Remote sensing / satellite image interpretation (*NERC*)
- Traffic information management (*TRRL*)
- Helical spring design (*Smiths Industries*)
- Intelligent program prover (*Program Validation*)
- ICAD/ICAM (*GEC Electrical Projects*)
- System design for testability (*RAF*)
- Air traffic control (*CAA*)
- Image analysis (*BP*)
- Real-time process monitoring/control (*COGSYS*)
- Currency prediction (*HP/BZW (/Logica]*)
- Image processing tools (*Reading University*)
**FAUST**

- Real-time fault diagnosis of electricity supply systems
- ECRC / SEB (EMEB) / Thames Polytechnic
- Operators have to deduce faults from telemetry
- High fault rates can swamp operators (e.g. storm, October 1987 - 400 faults/min)
**FAUST**

- Object representation of grid *(POP-11 flavours)*
- Reads live telemetry *(C)*, stores on blackboards *(Prolog)*
- Hypothesises possible faults, uses simulator to predict confirmatory telemetry
- Can cope with absent/partial data
- Sophisticated graphical interface *(PWM)*
- **Nov. 1989**: live pilot operation in EMEB control room, Nottingham
JAY

- CASE tool developed by RGIT
- Supports SSADM plus extensions
- Data Flow Diagram tool
- Entity Relationship tool
- Intelligent consistency checking/reporting
- Currently prototype
  - expected as product Q3 1990
Design to Product

- Alvey large-scale IKBS demonstrator

- Application of AI to all stages of manufacturing process


- Parts implemented in Prolog, Lisp, POP-11

- Data sharing through multi-user object-oriented database ("IMS")
  - implemented using KERIS "Rocks"
Real-time Expert Systems Club of Users

Live on ICI ethoxylates plant
**COGSYS**

Commercial follow on to RESCU

Consortium of leading industrials

First delivery of generic system end ’89

Two components:

DEVELOPMENT  ➔  DELIVERY

POPLOG
- Real-time facilities
- Development aids

C
- Portable
- Compact
Program Checker/Validator
Program Validation Ltd.

Sold as commercial product

Users include:

Aquila, Admiral, BAe, GCHQ, GEC Avionics
SD, AWRE, Rolls Royce
EDWIN

- Currency Prediction by Chartism
- Hewlett Packard, BZW
- Outperformed experts in difficult situations
- Graphical (X-Windows) interface
- Flagship for HP/Logica Finance collaboration
Design for Testability

SD-Scicon/RAF (Procurement Executive)

Problem:
- High fault-rate in commissioned electronic components

Solution:
- Expert system to advise on optimising for testability at design stage

Works in cooperation with CAD tools
Design for Testability

- Object Representation of classes/instances of components
- Relationship models of connectivity
- Rules operate at schematic and physical levels
EXCAP

CAD/CAM - machinable components

UMIST

CAD TOOL

Plan manufacturing process

Program machine tools

MANUFACTURE
EXCAP

CAD TOOL

EXCAP
Plan manufacturing process

EXCAP
Simulate machining

EXCAP
Program machine tools

MANUFACTURE
Interactive Vision Environment (IVE)

- Developed by University of Reading
- Reduces effort required to find best algorithms and parameters for image processing
- Allows experimentation on sub-regions of images
- Object-oriented implementation (POP-11 Flavours)
- Links to routines in Fortran, C etc.
- Sophisticated browsing facilities