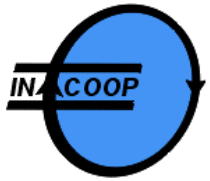


Implemented Software Architecture

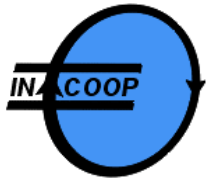
TU Eindhoven: Mario Balenovic

TU Delft: Dennis van Hessem

IPCOS: Peter Geerlings

INCOOP Workshop

Düsseldorf, January 23 -24, 2003

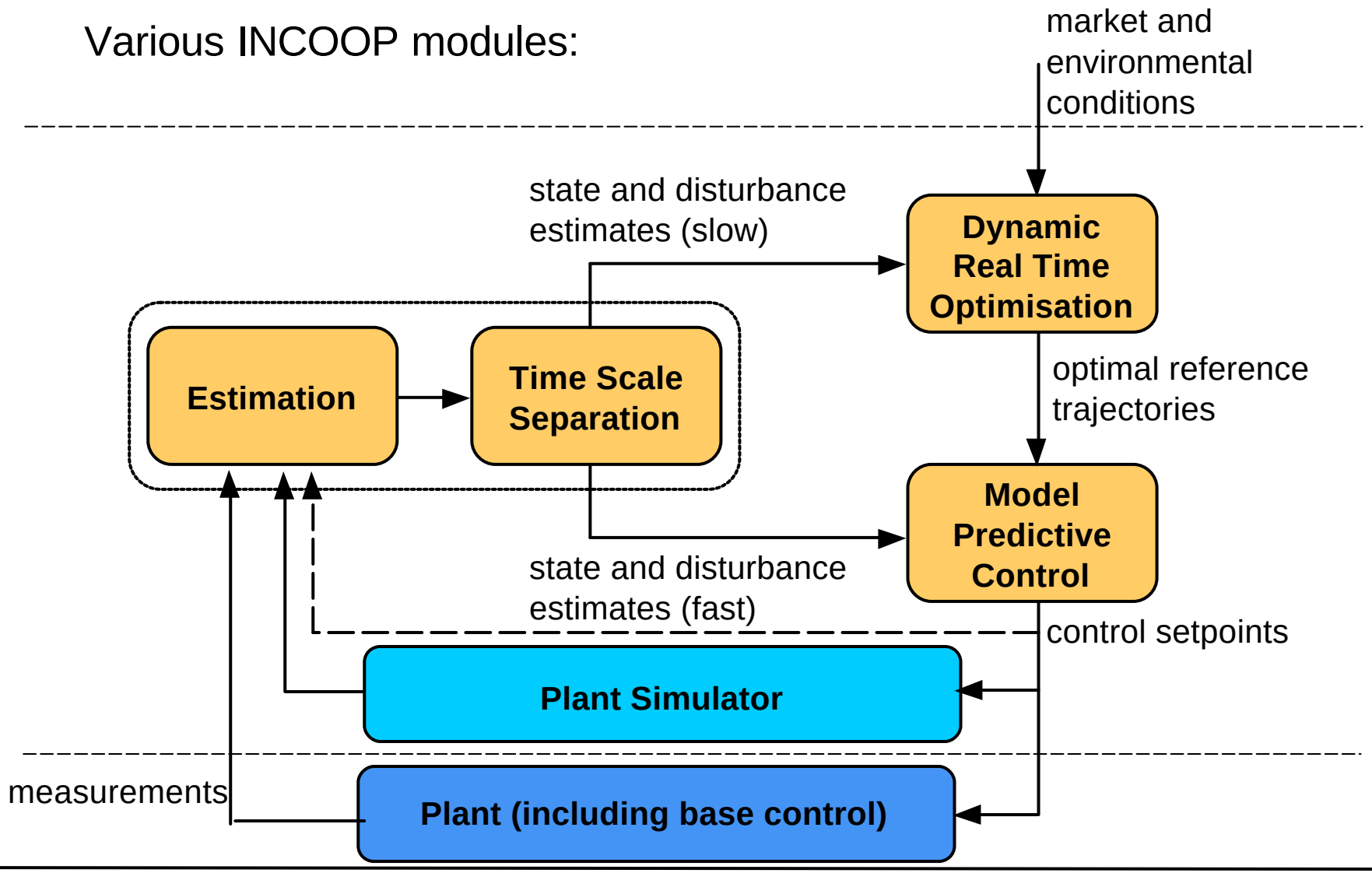


Outline

1. Basic Idea
- Software Implementation
- Experimental implementation
- Data server setup
5. Conclusions

Basic Idea

Various INCOOP modules:



Basic Idea

Have a good software development environment

Modular setup

-Various modules should easily be added/changed or removed

Use mathematical tool such as Matlab

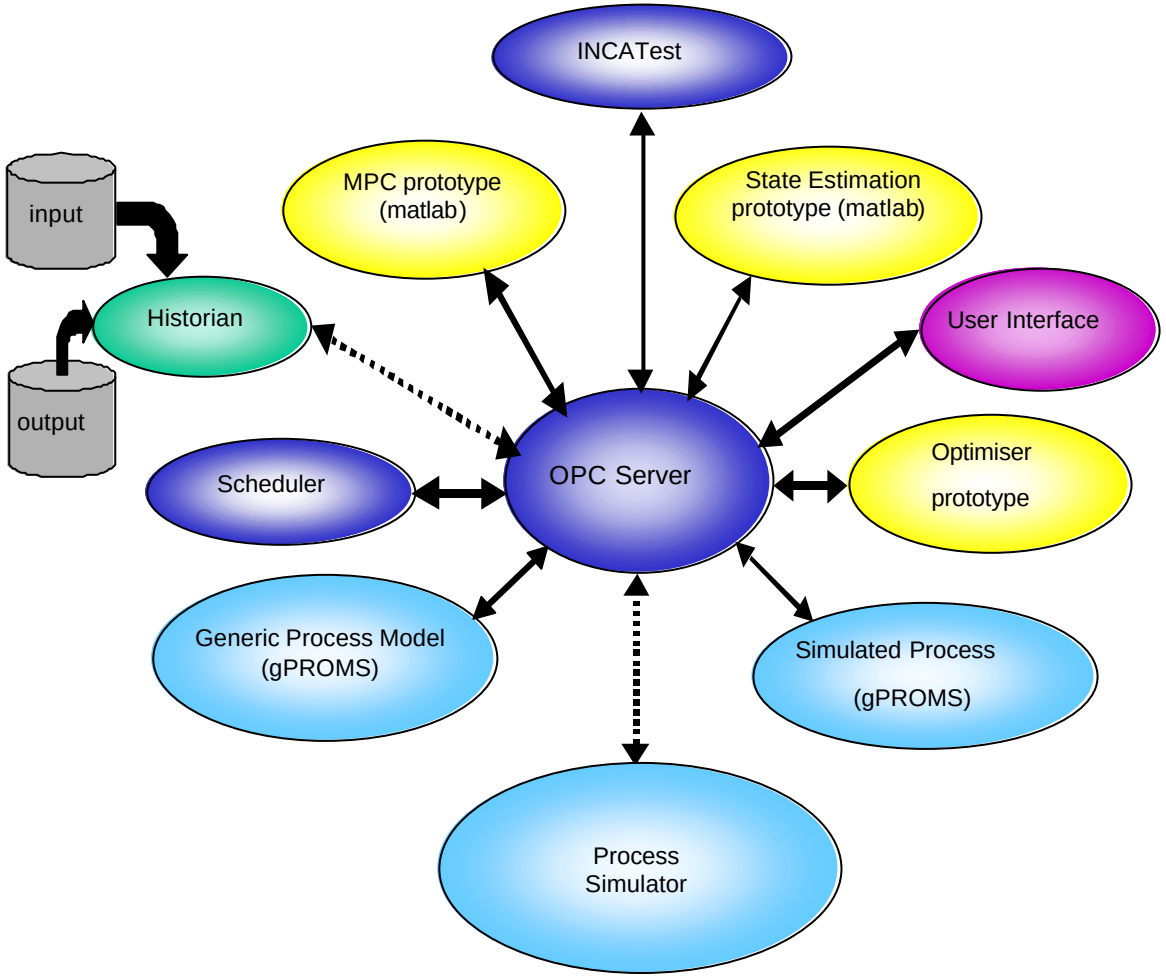
-freedom in algorithmic development

Can use/integrate software from other suppliers

-SLICOT, optimization tools, C/C++ etc.

Use professional process modeling tool including integration routines such as gPROMS.

Software Implementation



Signal definitions

- For each new model define inputs,outputs and disturbances
- Automatically generate model information structure containing:
  - state/input/output names and indices
  - still retain the physical meaning of signals just as in model
- Use these physical names as basis for signals
  - root_name_signal.class.subclass
  - classes: predicted, history, estimated etc.
  - ex: column.tray(10).temp.history.measured.value
- For any signal use time-stamp
  - Easy to inject new reference signals (dynamic optimization)
  - Full integration of optimization and control

Basic Idea

Have a good experimental setup

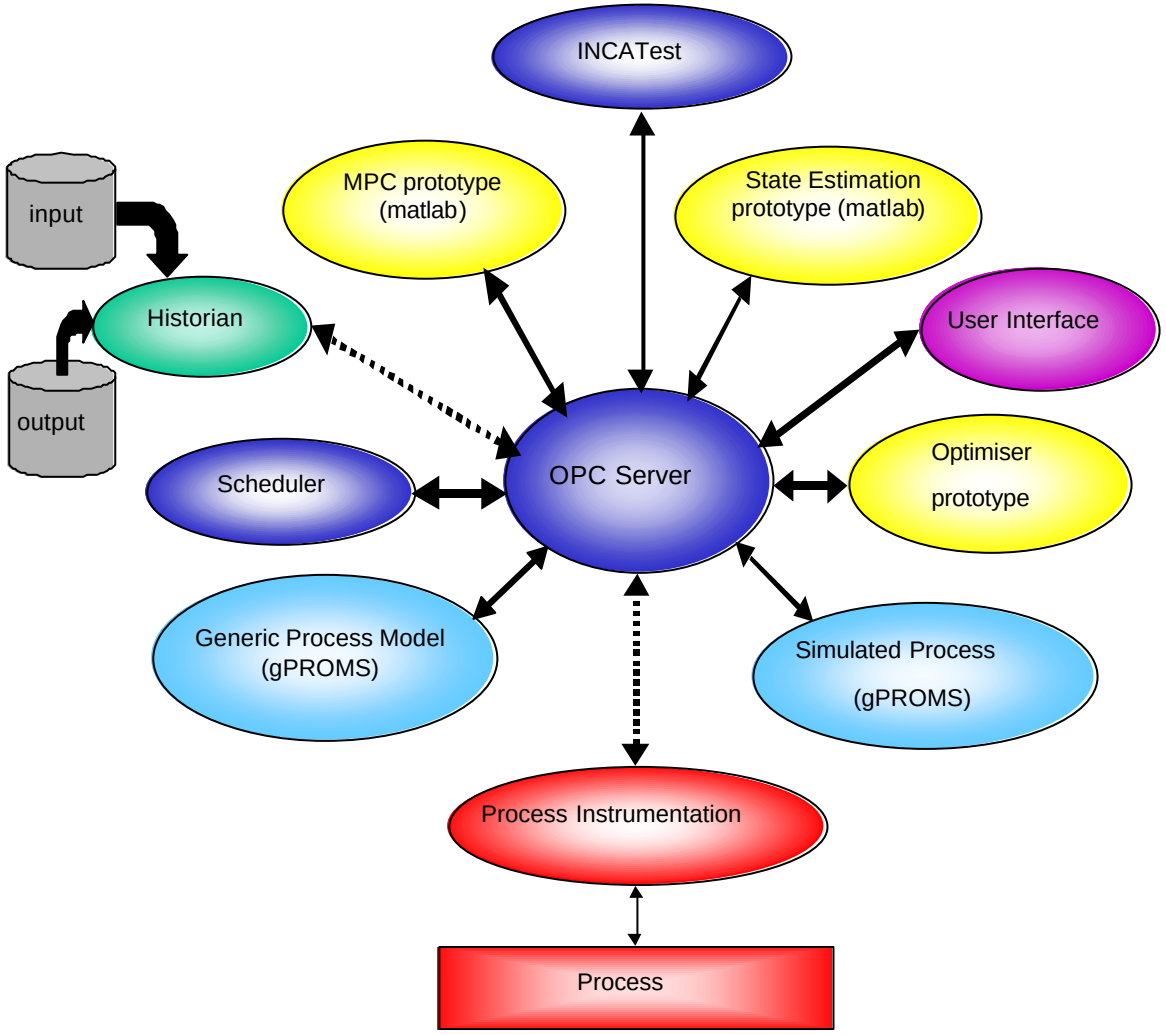
Replace process simulator with real plant data

- Have low implementation cost

Work with professional process operation tools

- IPCOS Integrated Solution Platform (IISP)
- Central data server
- Communication protocols

Experimental Implementation



Conclusions

Advantages

- Distributed modular structure.
- Easy to adapt to new processes.
- Equivalent simulation and process environment.
- Easy to interchange and add modules.
- Suited for large processes.
- Networks of various OPC servers are easily applied.

Typical experimental setup

-Three-server-network:

- •process server (connection to DCS)
- •calculation module server (standard INCOOP environment)
- •user interface server (visualisation)

–Failure in one module does not influence other modules.