# FinPSA: New Features in PRA Software


## Topics

- Multi-PC system
- Integration to Windows
- Traceability
- Hazard table
- Capacity
- Importance map

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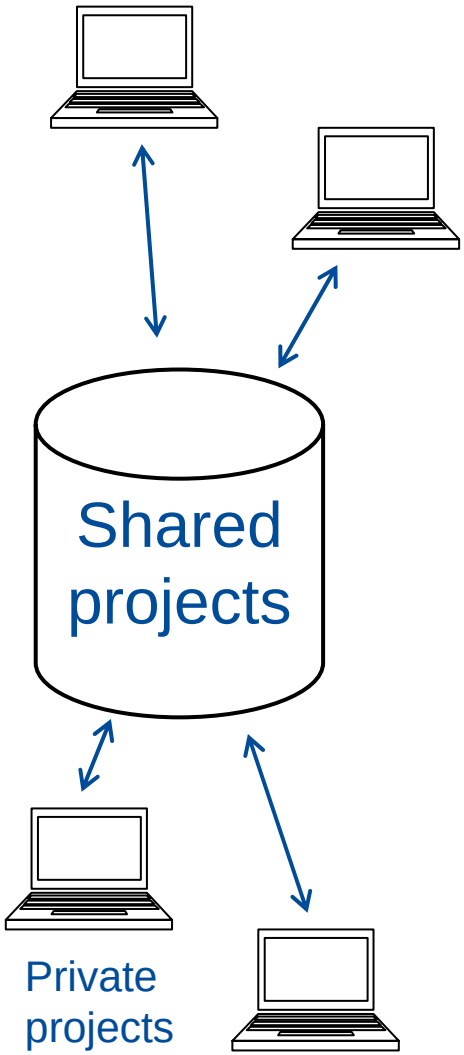
# Multi-PC system




Teamwork
Several users can work with one project

Parallel computation
- Snapshot allows editing while computing
- Enter & leave calculation on the fly

Single-button daily backup

# Integration to Windows

Copy / paste model parts - data records, fault trees, fault tree branches, event trees, tables, etc.

Copy results - large variety of results, tables and summaries.

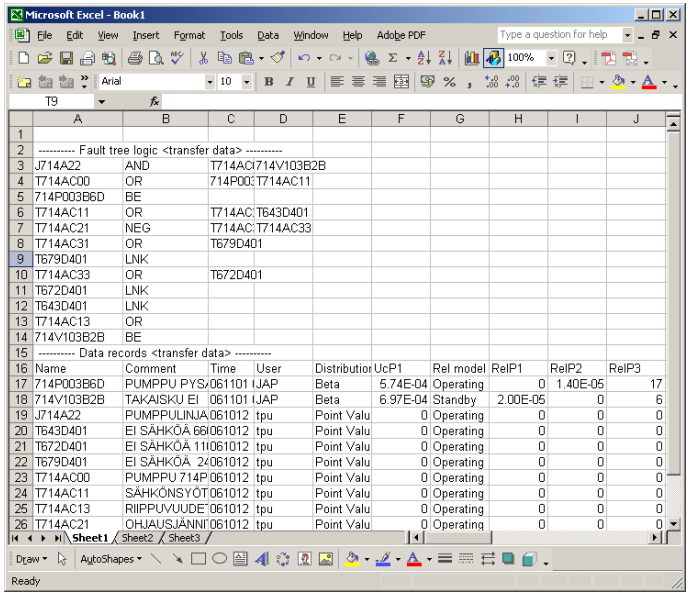
Variety of results and formats for automated documents.

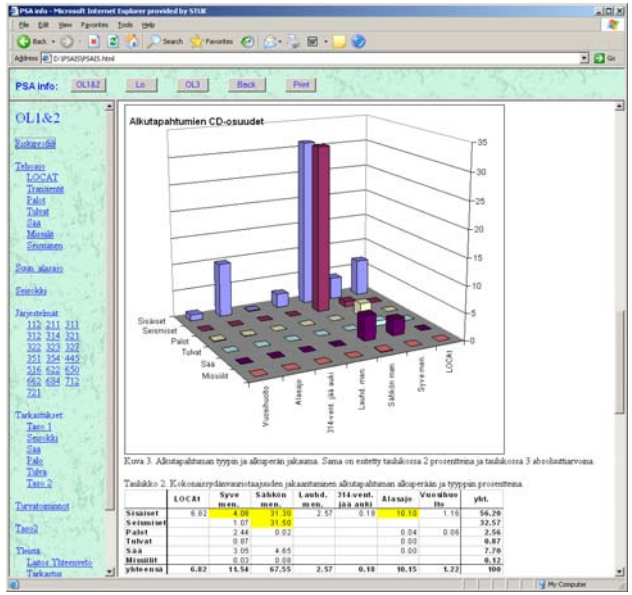
data

results

Excel, Word, etc.

PSA info system (web)



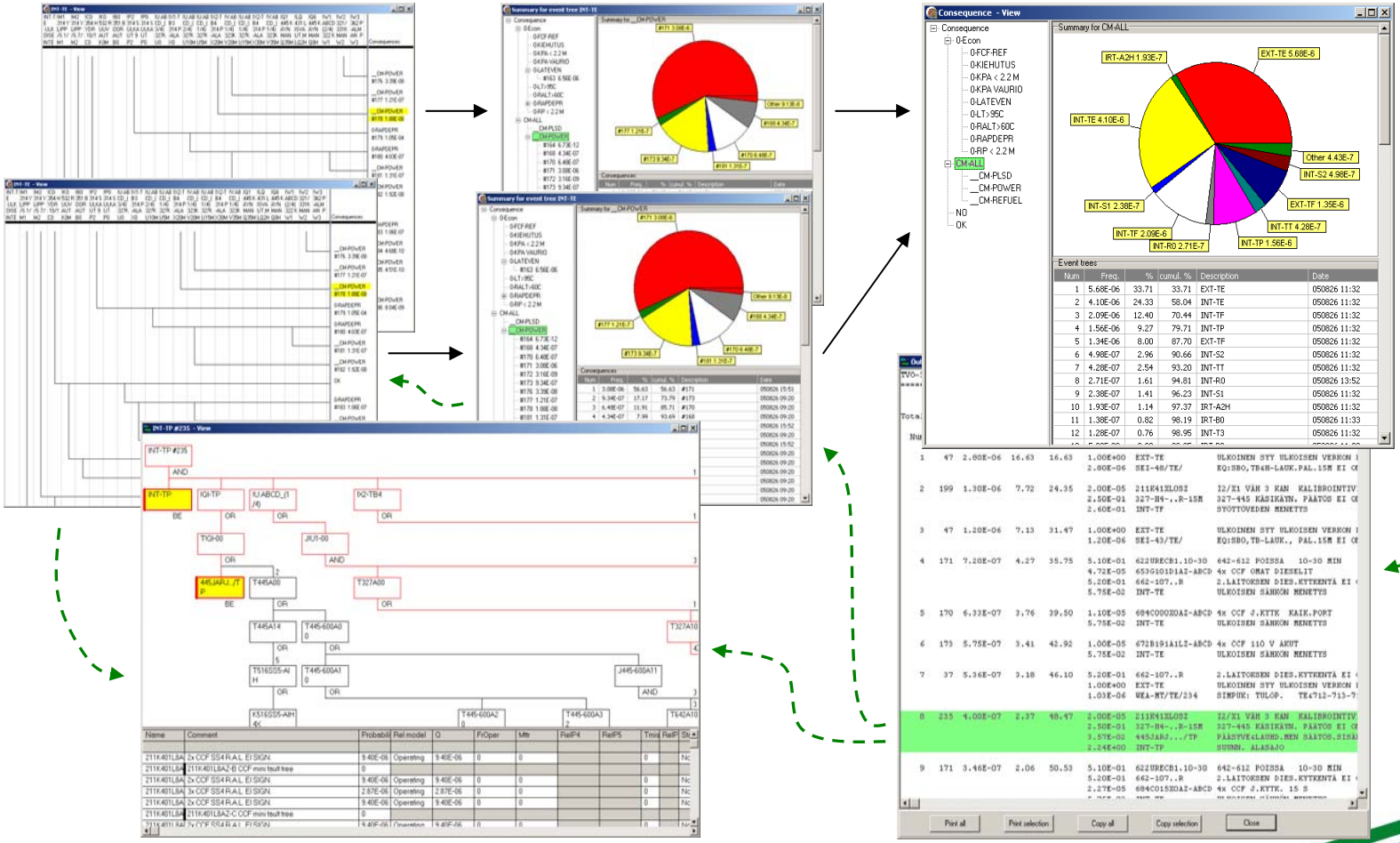
# Traceability

## Double-click any minimal cut set to see failure propagation

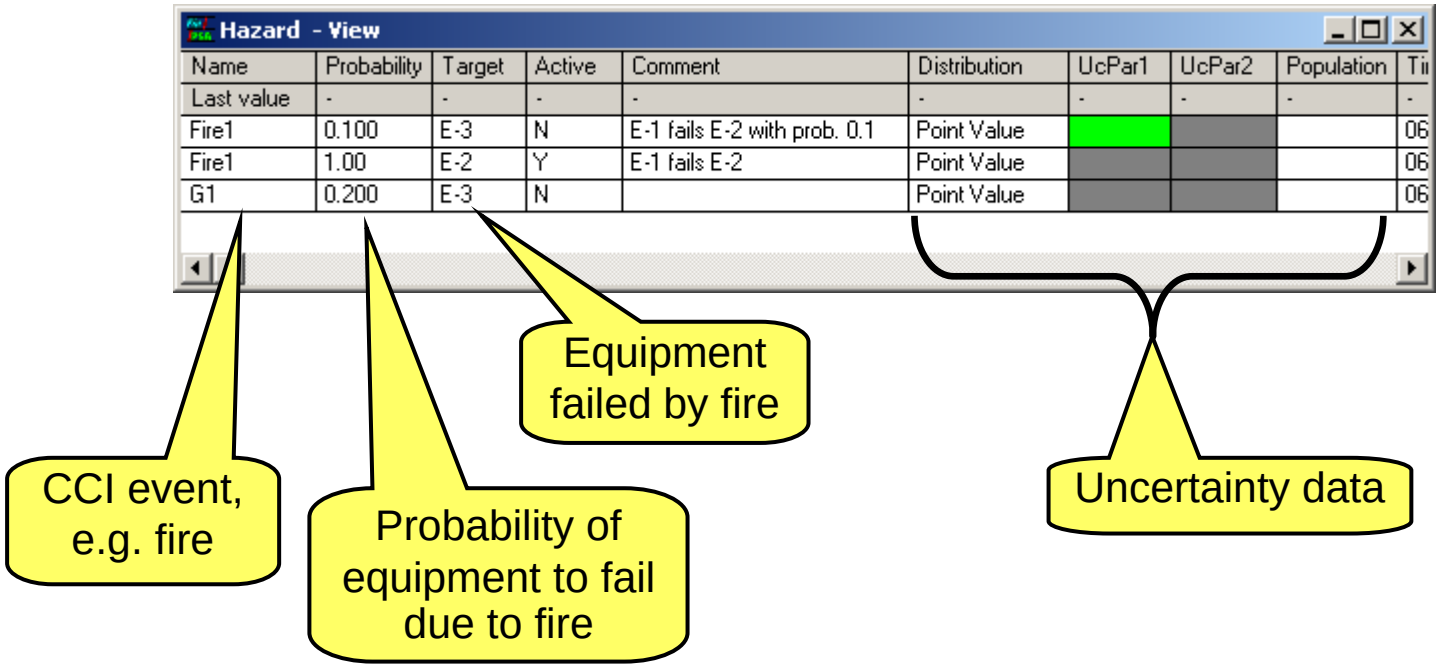
Event trees

Event tree results

Consequence results



# Hazard table




CCI dependencies in one self-documenting table

- Automatically mapped to fault trees
- No modifications necessary in fault trees
- External event modelling is done by creating the hazard table

# High capacity

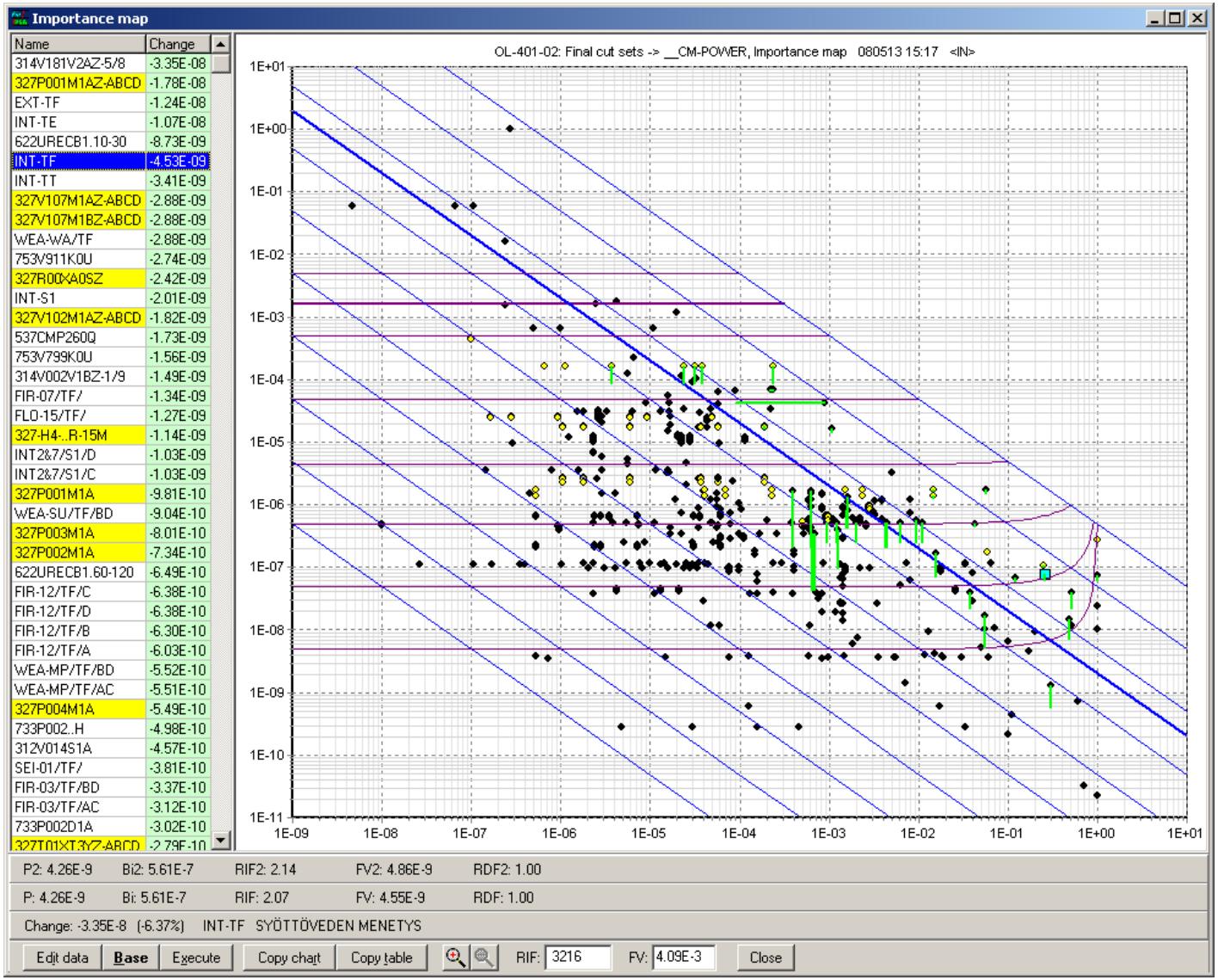
| PRA model | Number of event trees | Number of quantified accident sequences | Number of minimal cut sets generated | Minimal cut set generation time |
|---|---|---|---|---|
| A | 172 | 8 287 | 3 307 907 351 | 3 h 57 min |
| B | 59 | 12 576 | 11 801 051 317 | 5 h 12 min |
| C | 65 | 1 002 | 4.73238E+14 | 53 min |
| D | 80 | 23 456 | 40 332 435 199 | 5 h 10 min (4 PC) |
| E | 36 | 489 | 1.14404E+11 | 47 min |
| F | 122 | 1 200 | 4 040 544 586 | 37 min |

Times are for full generation of minimal cut sets for the entire PRA model.

Calculations with existing cut sets are mostly a matter of seconds.

# Importance map: OL1/2 aux FW system

## Interactive tool for risk-informed applications




Yellow points belong in the Aux FW

Black components give safety margin to aux FW system

Change:
opening of 6 valves in pressure relief system made 10 times more reliable

# Conclusions

- Efficient minimal cut set search engine
  - Maximum number of generated minimal cut sets is $9.18 \cdot 10^{18}$
- Excellent traceability
  - Accident sequence of every minimal cut set is known
  - Every minimal cut set can be displayed in fault tree with a click
- New modelling features
  - Hazard table isolates CCIs from the internal events model
  - Addition of communication-based I&C model in the future
- For everyday use
  - Teamwork and parallel processing
  - Versatile outputs to Windows programs