CTIT

Performance Prediction of Medical Imaging Systems

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Design and Analysis of Communication Systems (DACS)
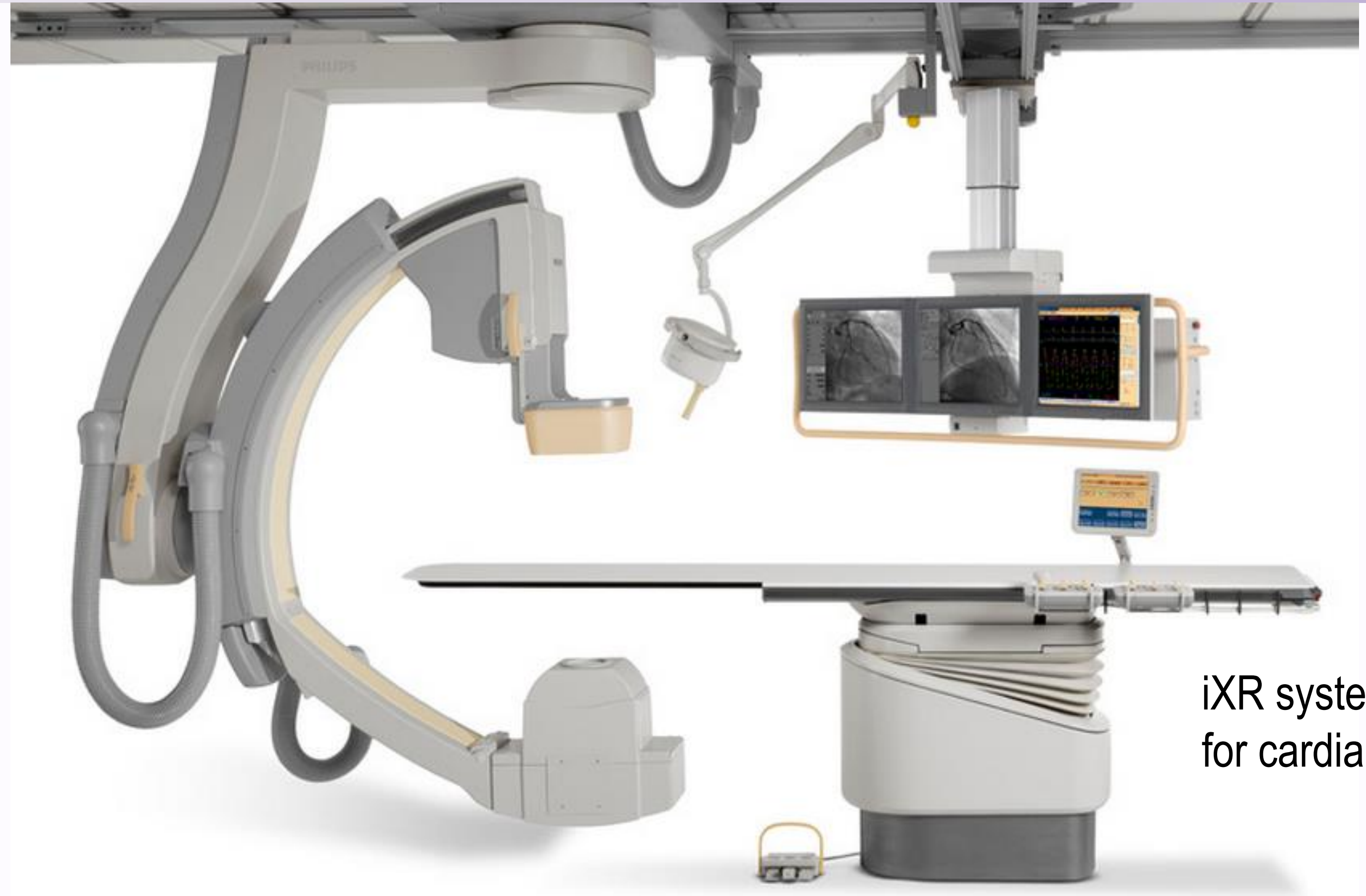http://www.utwente.nl/ewi/dacs/

Challenge (example)

What is the effect of merging frontal and lateral Image Processing onto a single hardware platform for iXR systems?
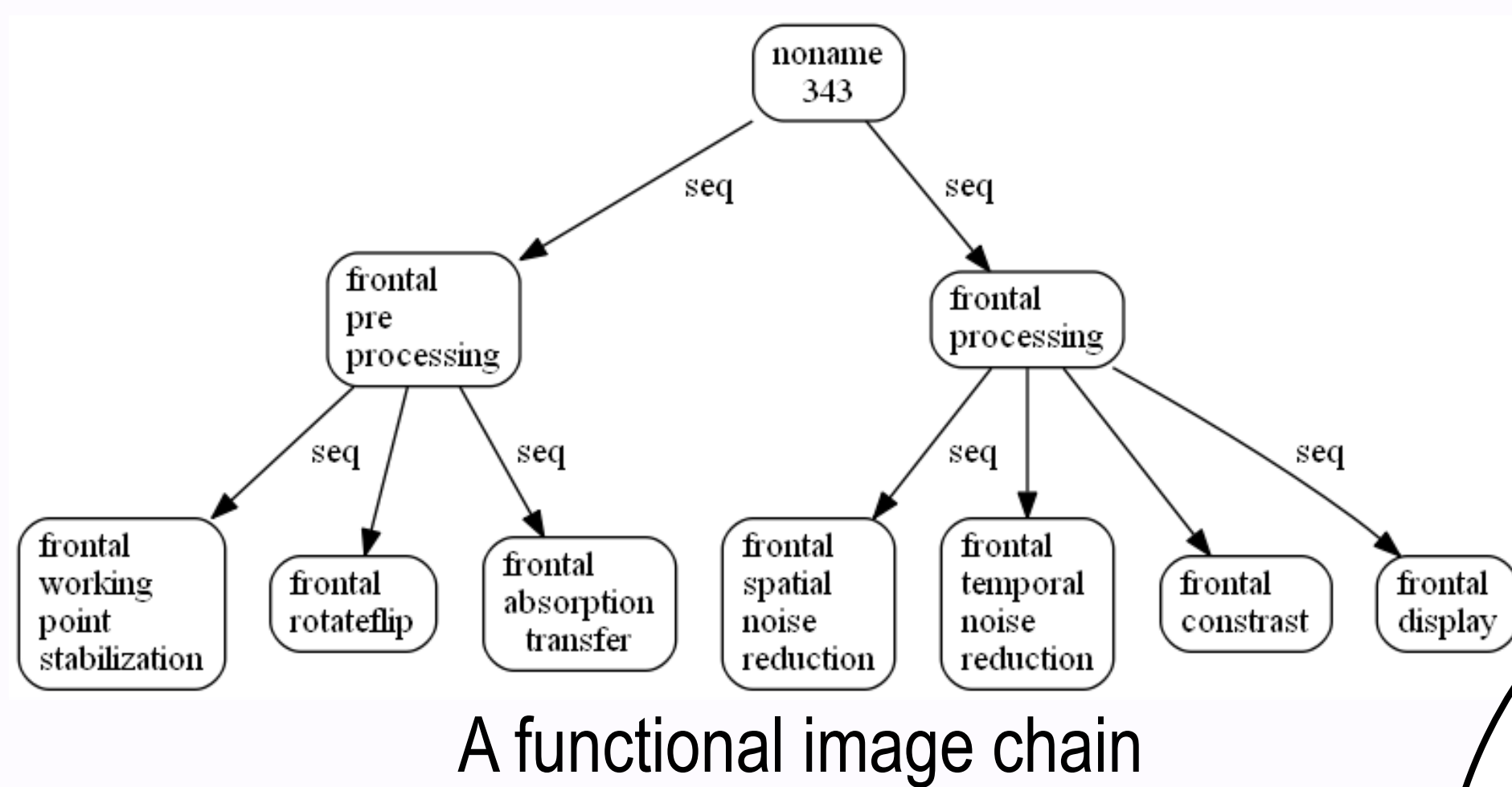
Tooling

iDSL, our performance evaluation language and toolbox, fully automates our approach
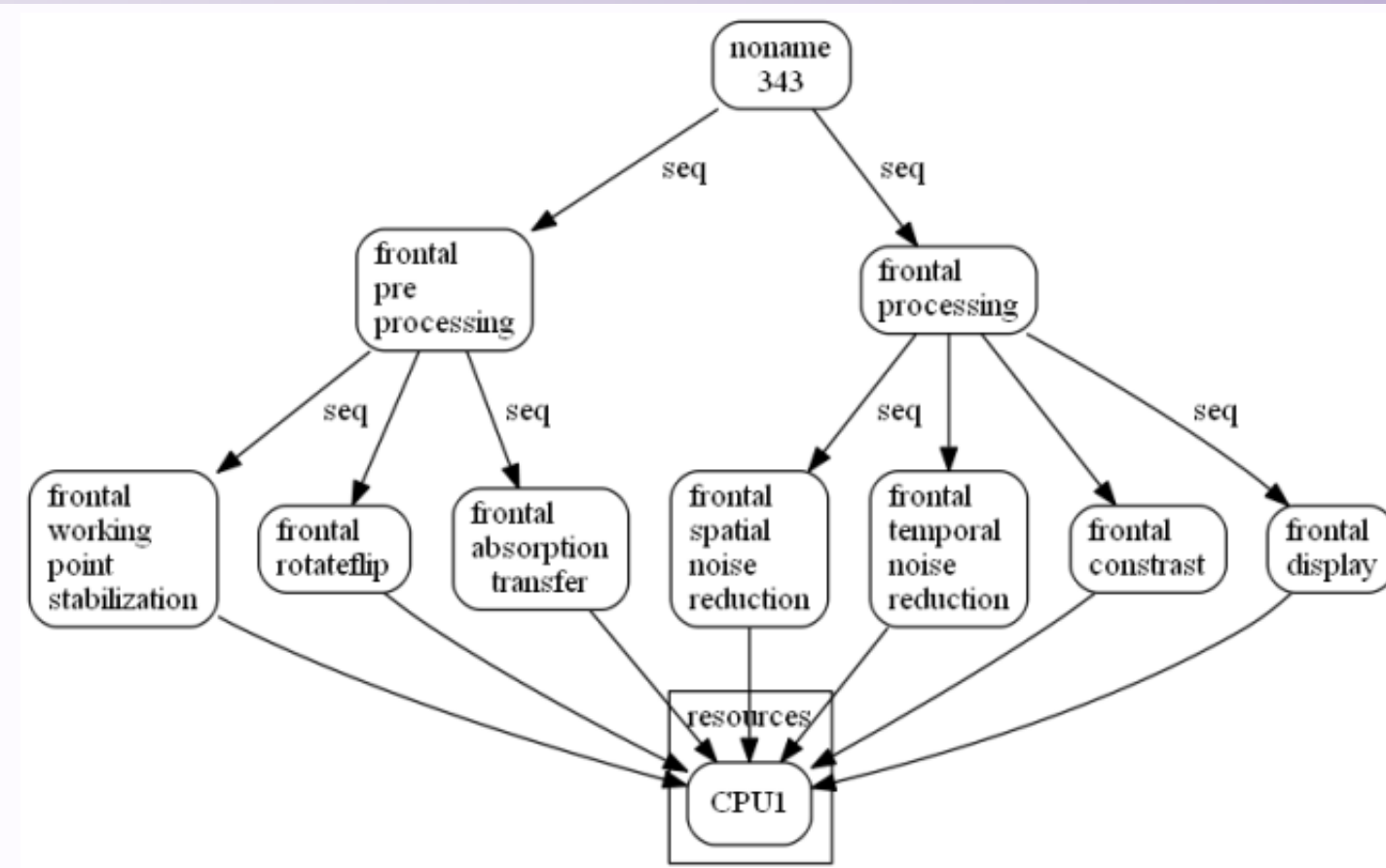
Measurement on real iXR systems

iXR systems are used for cardiac surgery
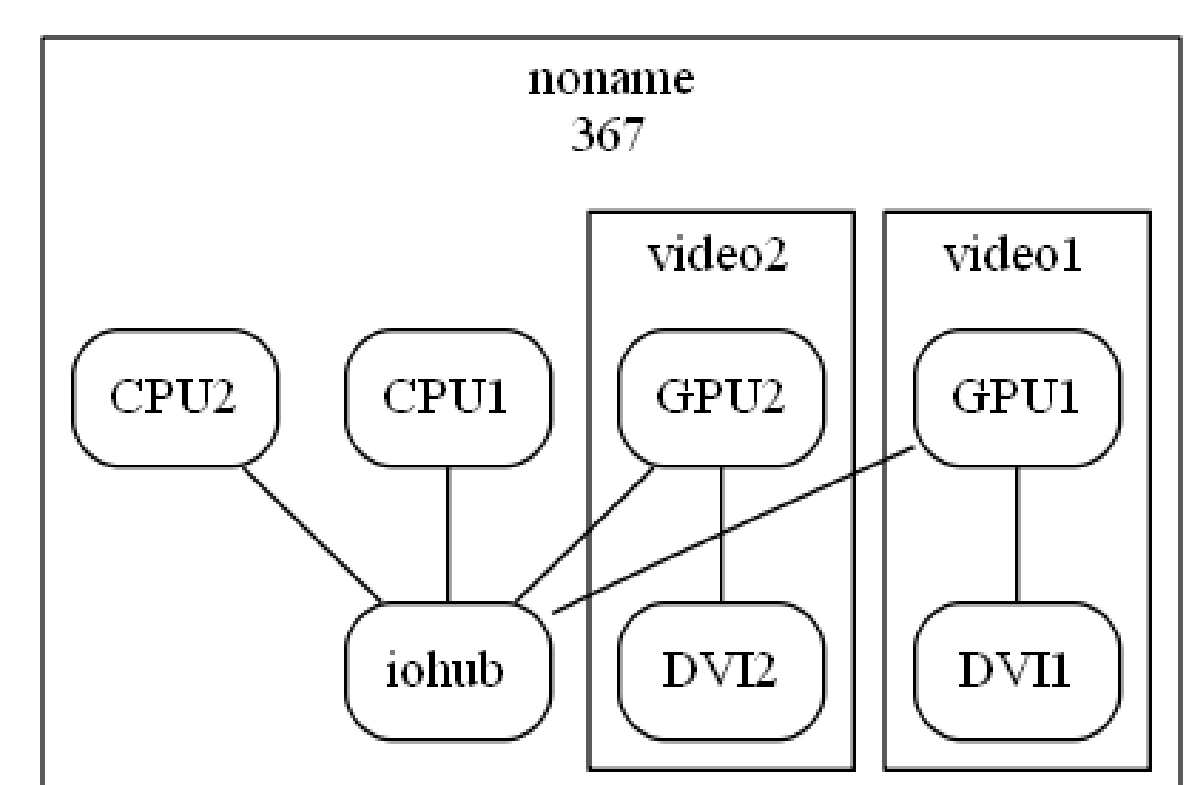
iDSL process model

A functional image chain

Calibration

iDSL resource model

2 CPUs, 2 GPUs and an iohub

Mapping

iDSL integral system model

Processes are mapped to resources

Instantiation

iDSL performance analysis

image resolution		Image frame rate				
		6	10	15	20	25
	512*512					
	1024*1024					
	2048*2048					

Performance is evaluated for various configurations based on **Simulations** and **Model Checking**
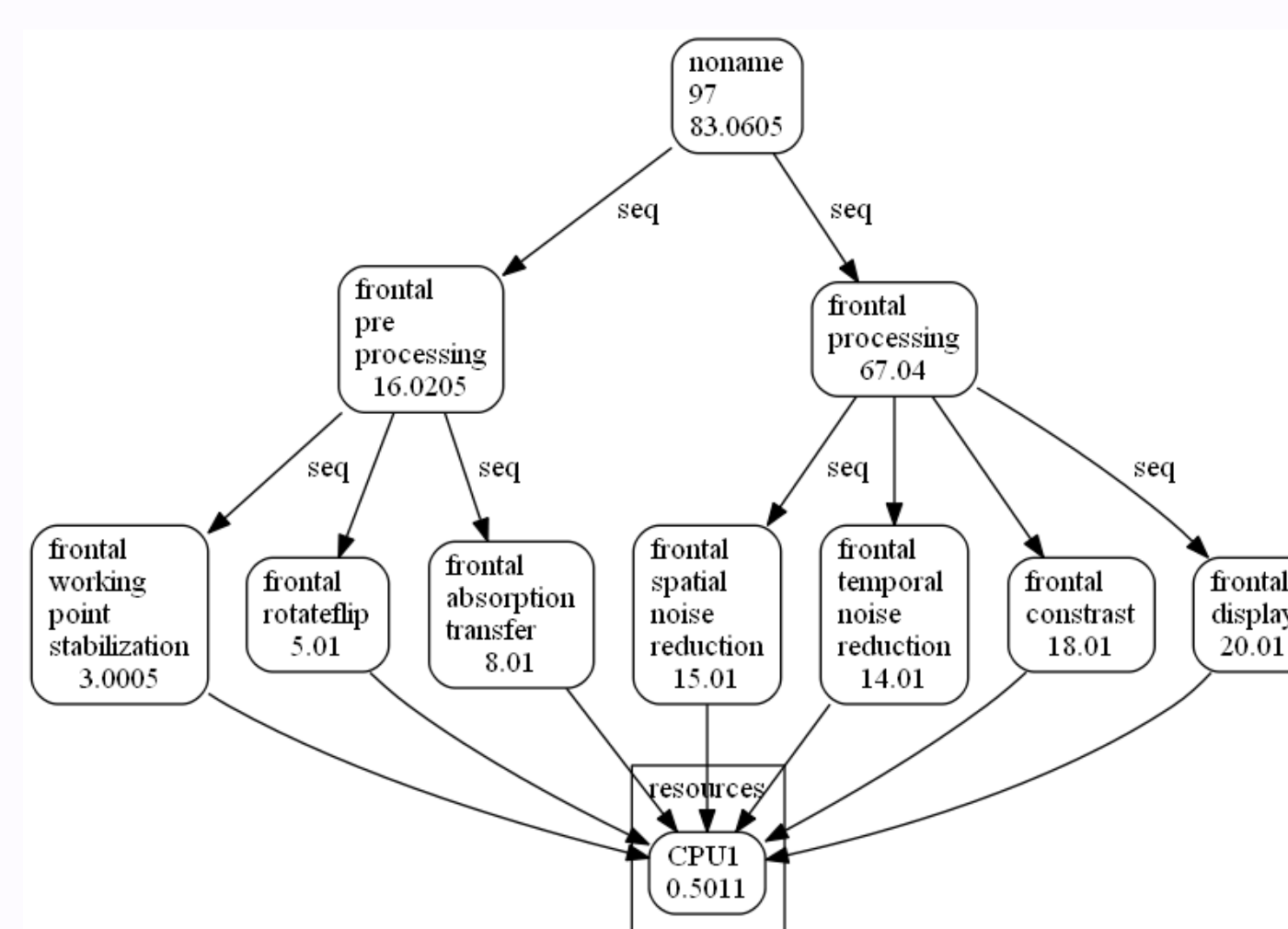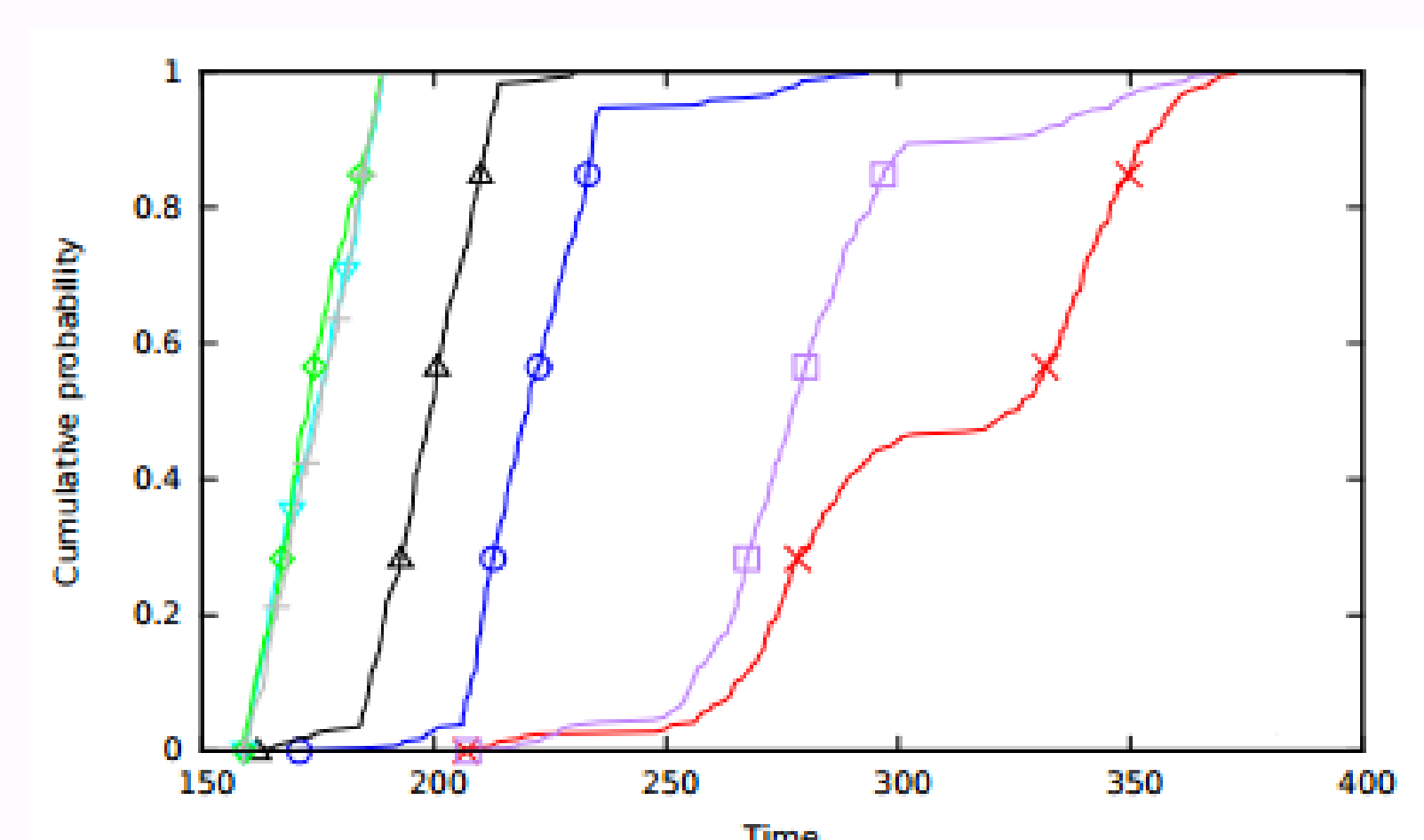
Results

The iDSL toolbox

- A model-based approach
- Written in XTEND for DSLs

- Transforms to Modest for Simulations & Model checking
- Transforms to GraphViz and GNUplot for visualizations

mime
The Modest Toolset

GNUPLOT

Latency breakdown chart

Which processes are bottlenecks?

Model validation

Do model results reflect reality?

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