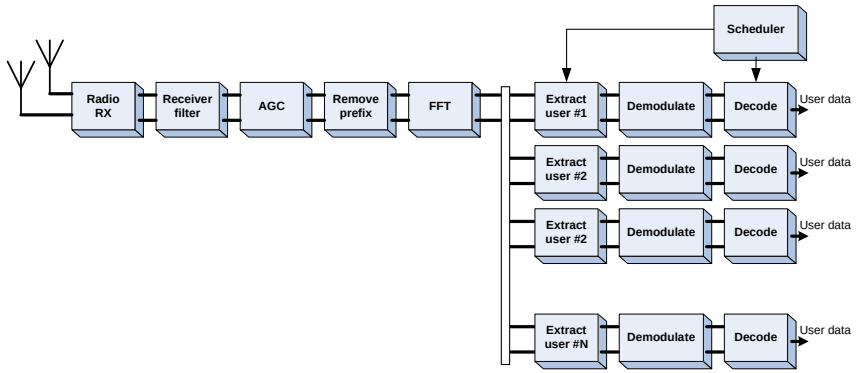
Methodologies and Tools for Development of Signal Processing Software on Multicore Platforms

Jerker Bengtsson and Bertil Svensson

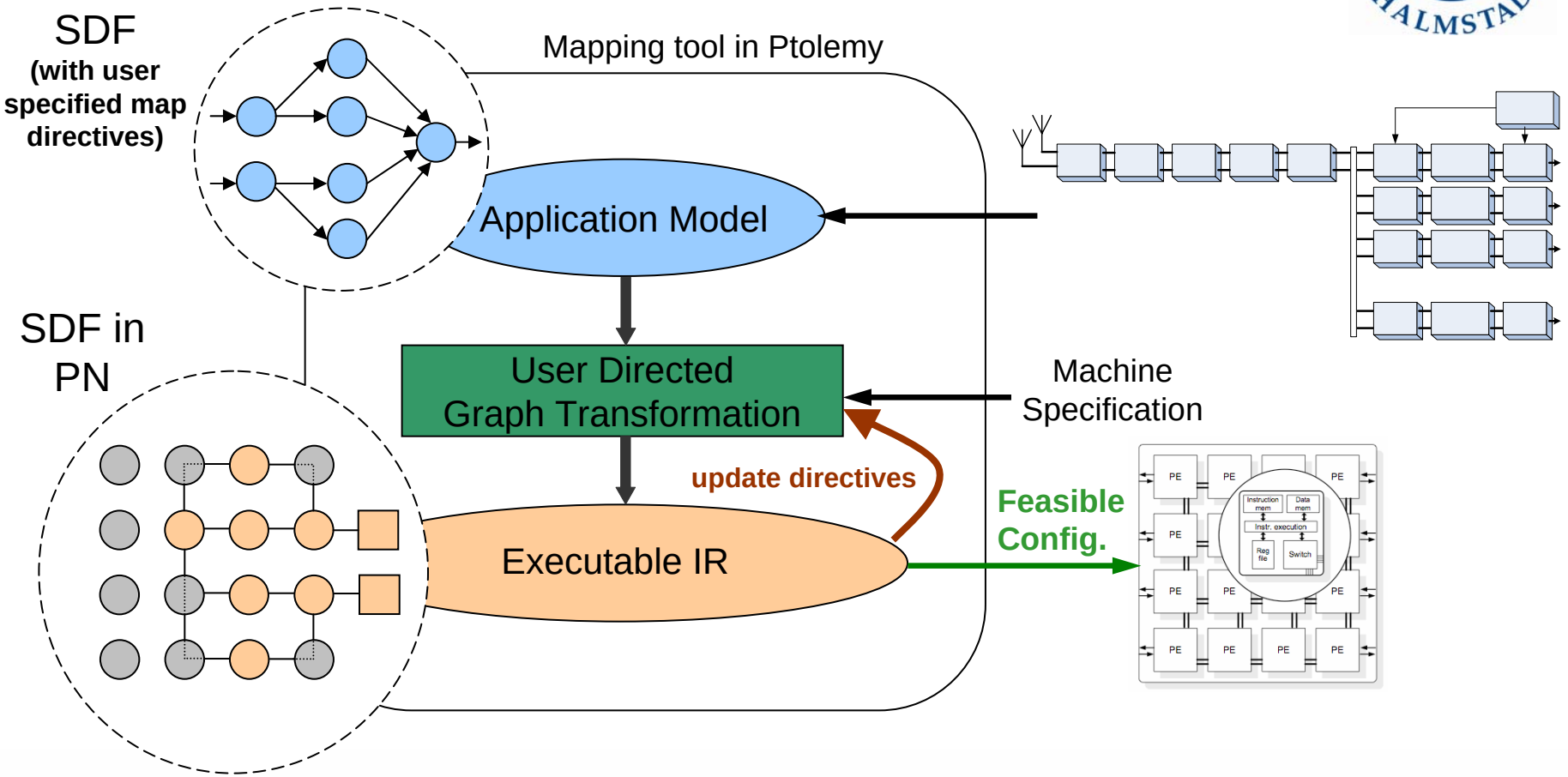
Research Focus



A modular view of the principal functions of the baseband receiver in long term evolution (LTE) Radio Basestation

- **Signal processing** systems with
  - large amounts of pipeline-, task- and data parallelism
  - ”hard” real-time constraints
- **Dataflow** is a good match with both application and multicores
- Research objective
  - **domain specific** tools for **tunable** mapping of **dataflow graphs** on **array structured** multicores

Tool for User Directed Mapping



Towards Iterative Mapping of Dataflow Graphs

- We are implementing our tool in Ptolemy (UC Berkeley)
  - we have developed a set of models for modelling of applications and array structured multicores
  - we have an executable IR for execution performance analysis
    - produces an execution trace through abstract interpretation
- Current work
  - comparing tool derived performance with real performance
  - especially studying contention effects of shared resources
  - experimenting with LTE baseband usecases (provided by Ericsson)