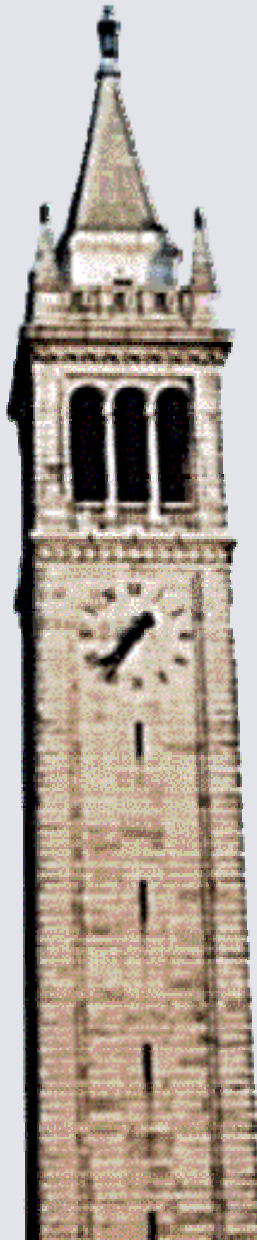


# New results in Platform Modeling

Edited and presented by  
Tivadar Szemethy  
ISIS, Vanderbilt University



Chess Review  
November 21, 2005  
Berkeley, CA

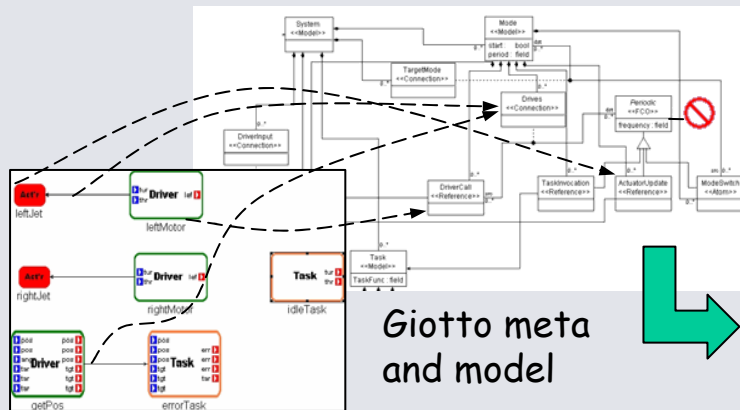


# Model Transformation for Hard Real-Time Systems I.

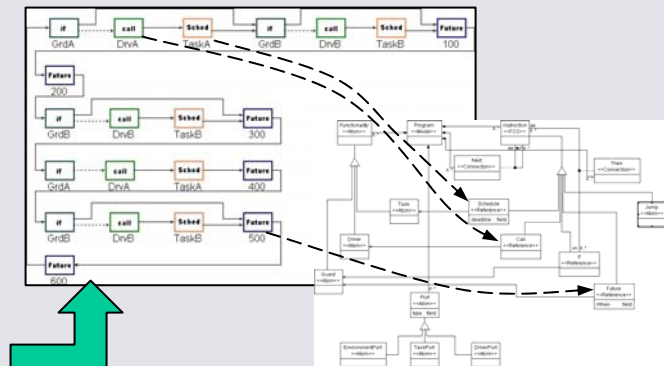
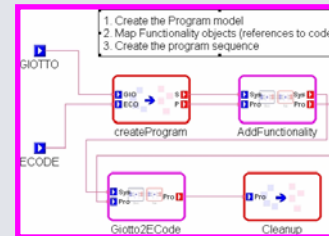


Giotto → E-code mapping using UML-based metamodels and graph rewriting techniques

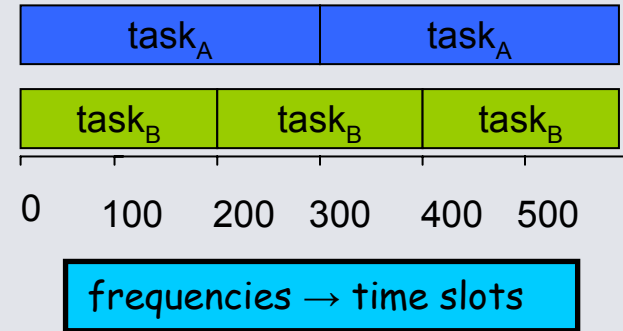
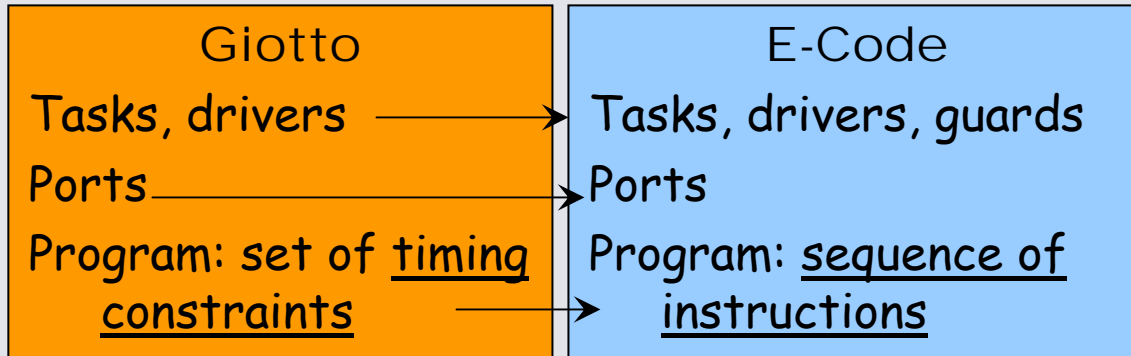
- 1) "Proof of concept" for a declarative approach using GME/GReAT
- 2) Part of the DSML → Platform → Analysis model mapping chain



**GReAT**  
transformation



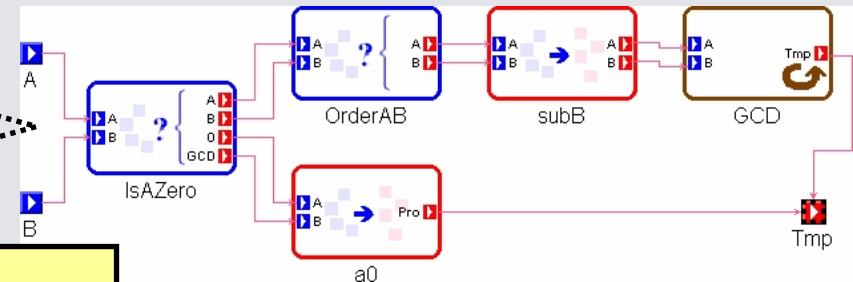
# Model Transformation for Hard Real-Time Systems II.



**Euclid's GCD algorithm**

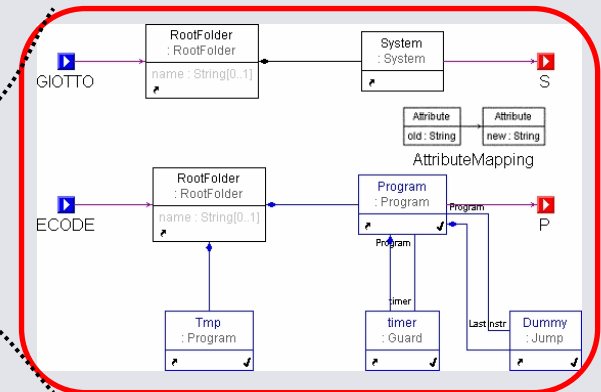
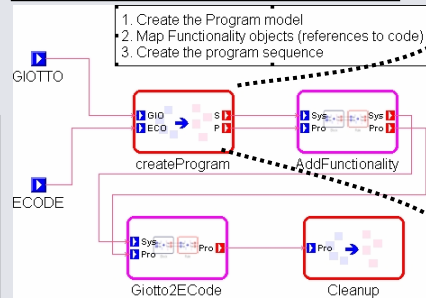
- 1) choose (a,b) s.t.  $a \geq b$
- 2) if (a==0) GCD is in b
- 3) ensure that  $a \geq b$
- 4) let  $a := a - b$
- 5) goto 2)

- RuleBlocks
- Port bindings
- Initial matches



## GReAT

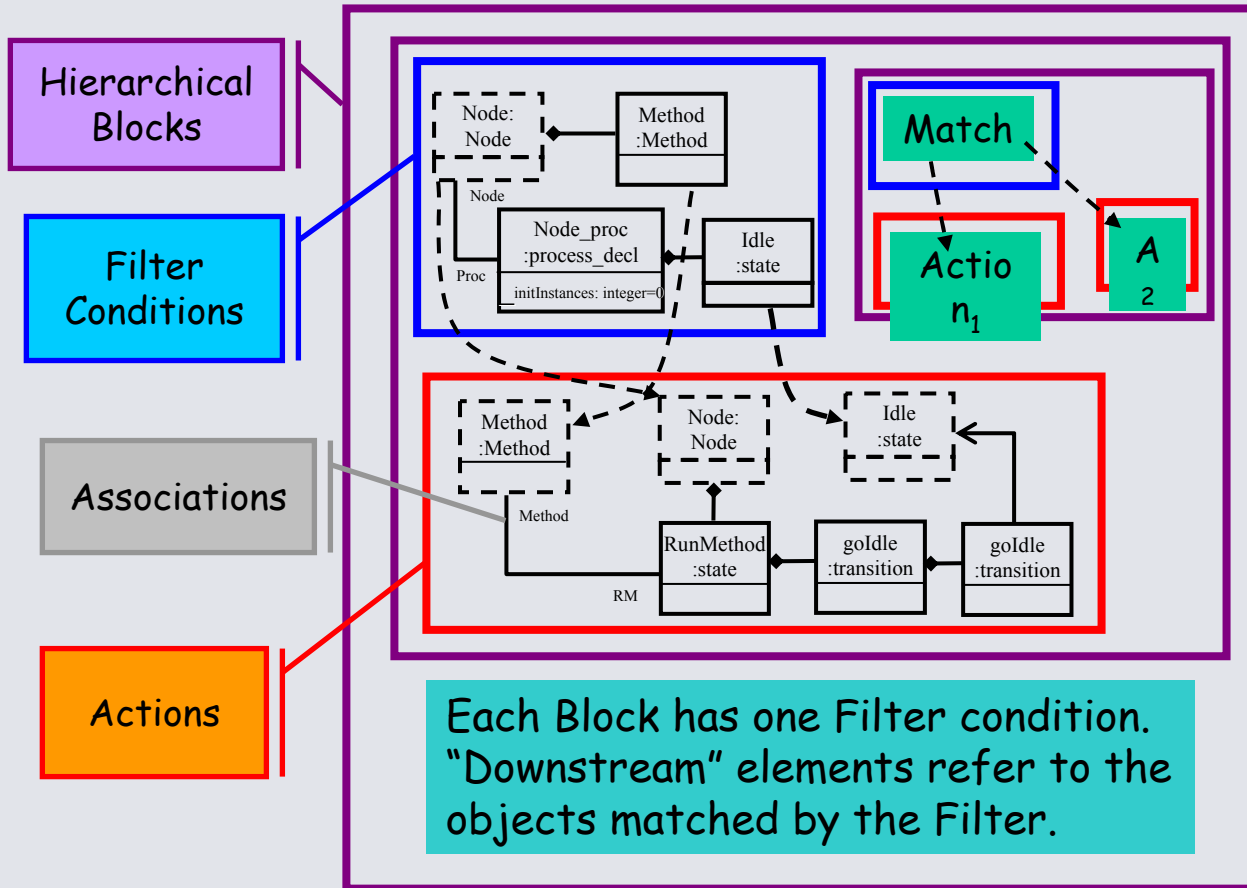
- UML Patterns
- Actions (match, create, delete)
- AttributeMapping boxes



# Platform Modeling Language



The Platform Modeling Language (PML) is a declarative formalism to capture platform entity → analysis automaton structure mappings



## PML Semantics

**while** (exists  $i$  such that  $GFC_i$  is *true*)  
 Execute Action <sub>$i$</sub>   
**end**

$GFC_i$  (*Global Filter Condition*)  
 Chain of filter conditions for Action <sub>$i$</sub>

PML Example  
 DFK (Dataflow Kernel) to IF (timed FSM) mapping

