

The model stepwise

of racr-mquat

name = concept/context/non-terminal/terminal/ag-rule in the model

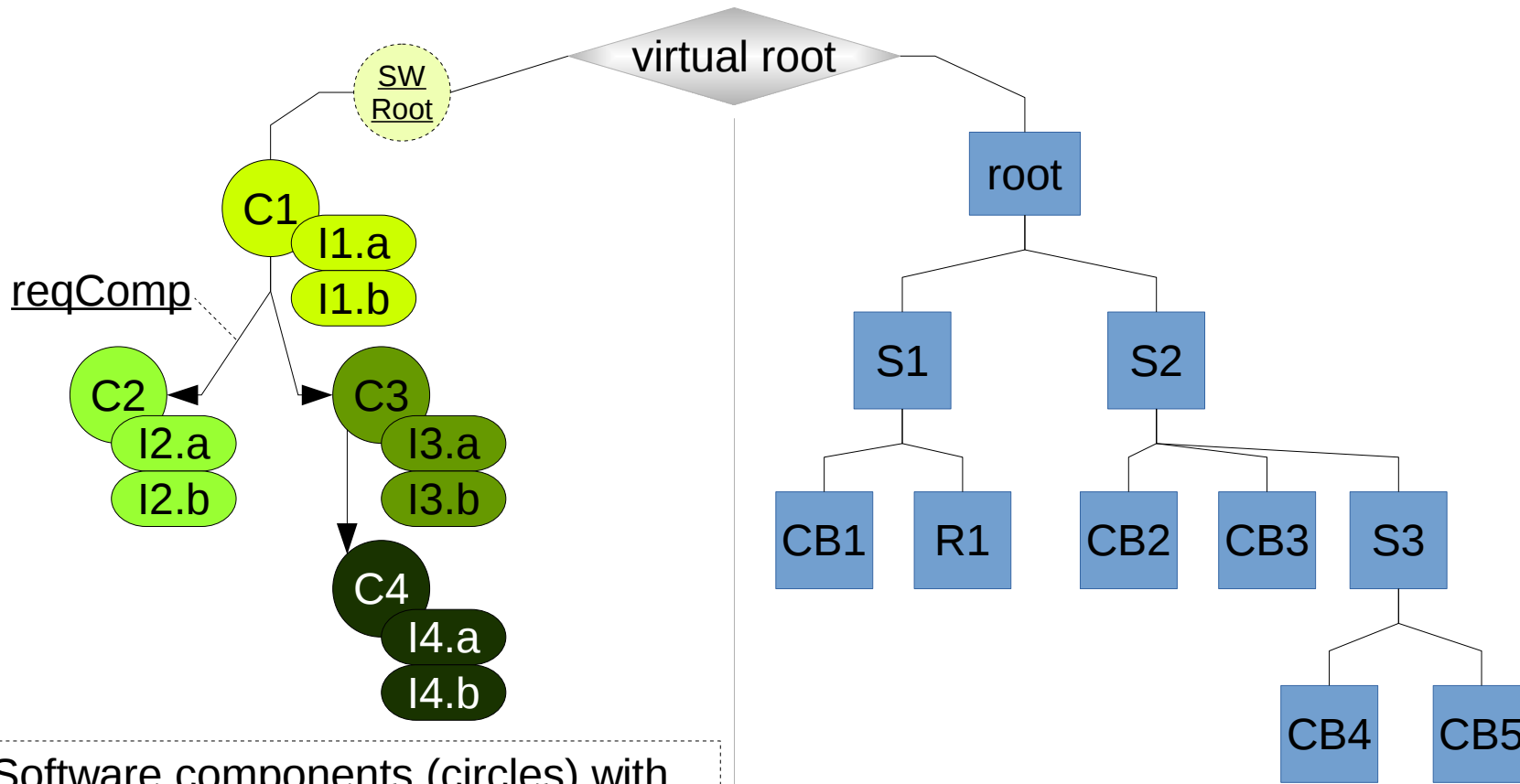


= currently missing feature in the model




= in the model, but not evaluated


The basic model



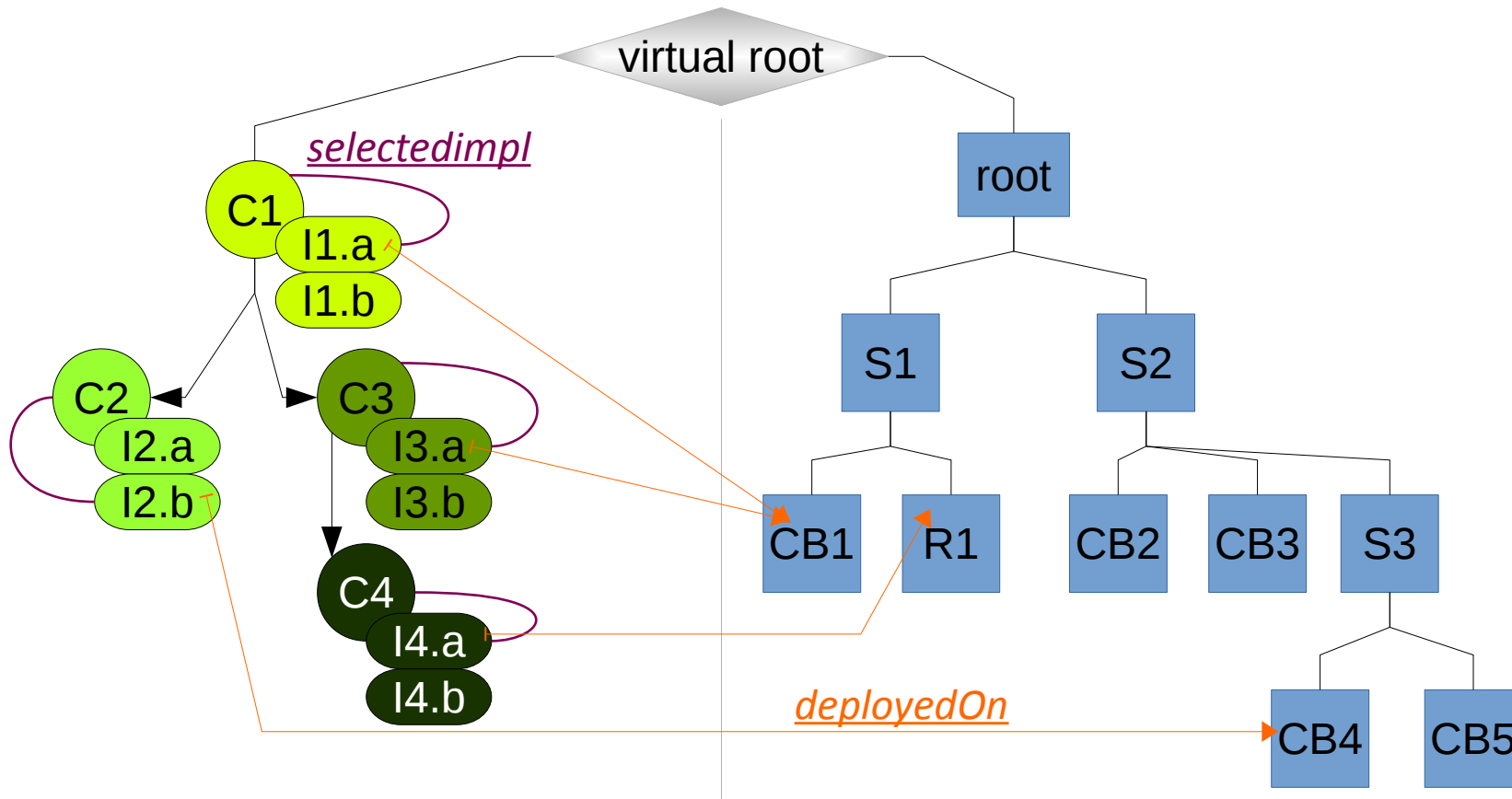
Software components (circles) with implementations (round rectangles) and their dependencies (arrows)

- dependency specified in contract together with NFP-constraints
- maybe also parallelism/sequential constraints for subcomponents, e.g. $C2 \parallel C3$, $C2 - C3$ 

Hardware resources (boxes) and their subresources (lines)

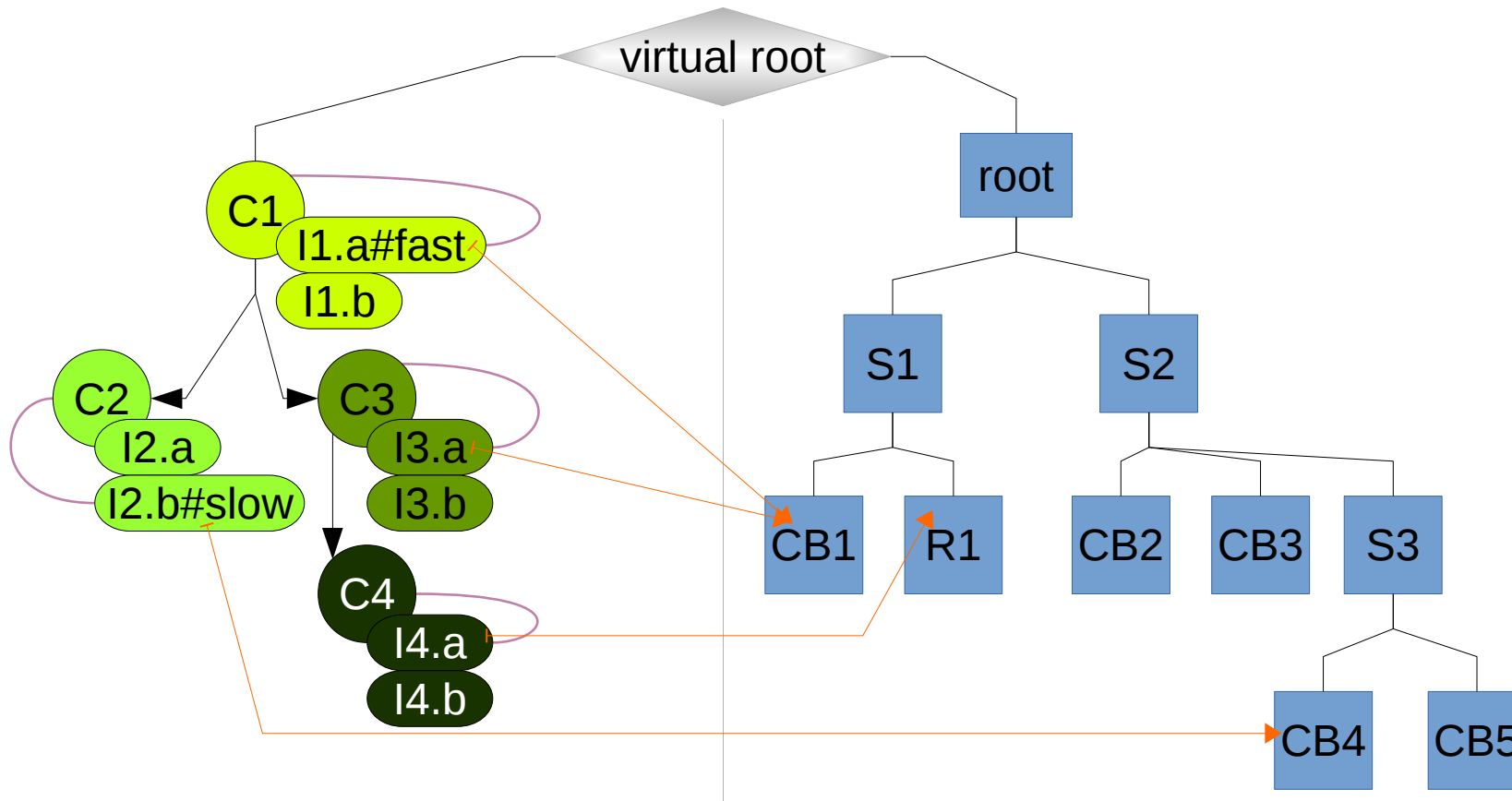
- provided NFPs
- maybe also shared resources, e.g. *NAS* 

Model += Selection



Assignment of implementations to HW components (PE)

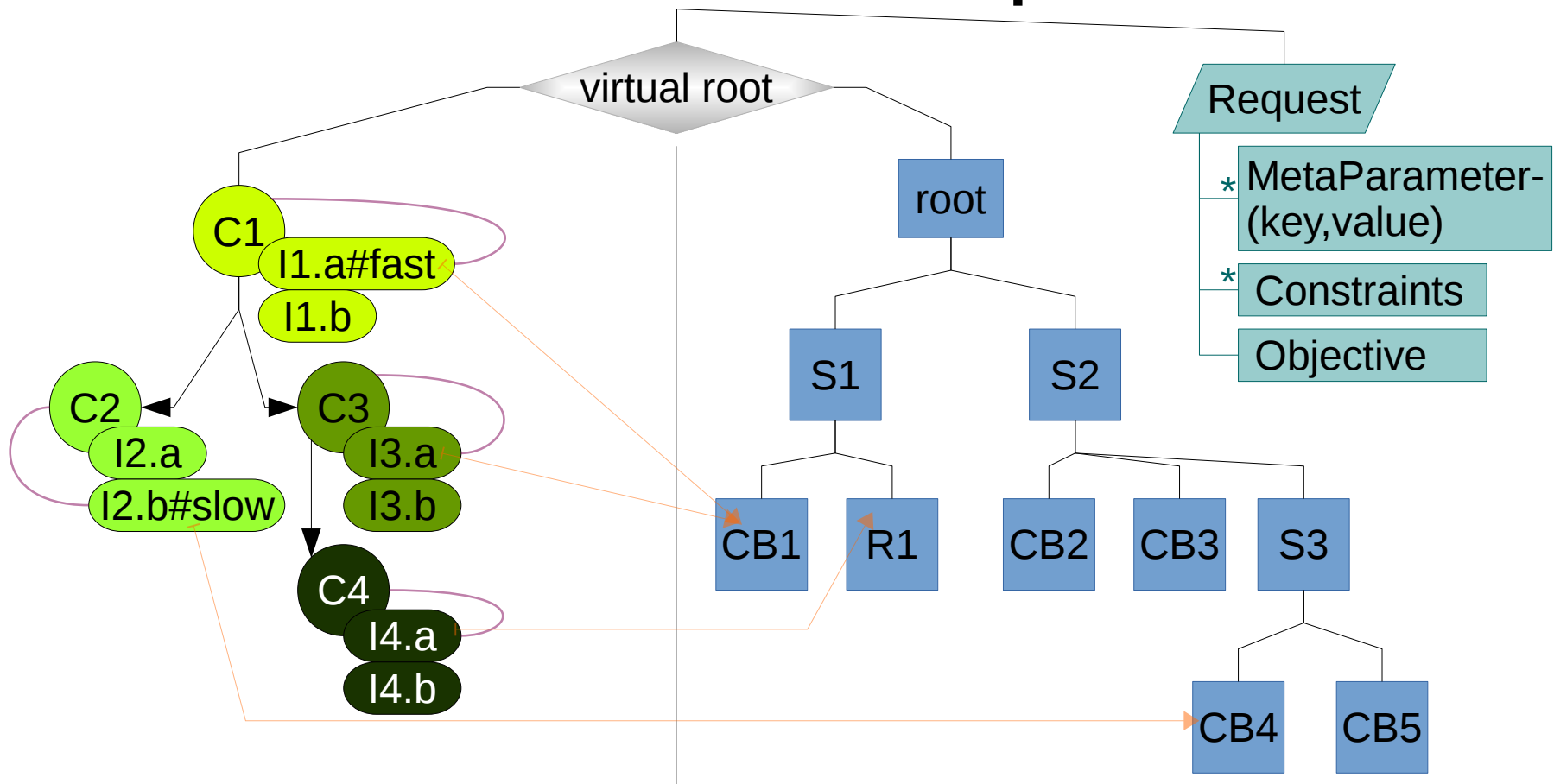
Model += Modes



Assignment of modes implementations to HW components (PE)

- mode name is shown after the hash symbol (#)
- if no mode show, the first (and mostly the only) mode of the impl is meant

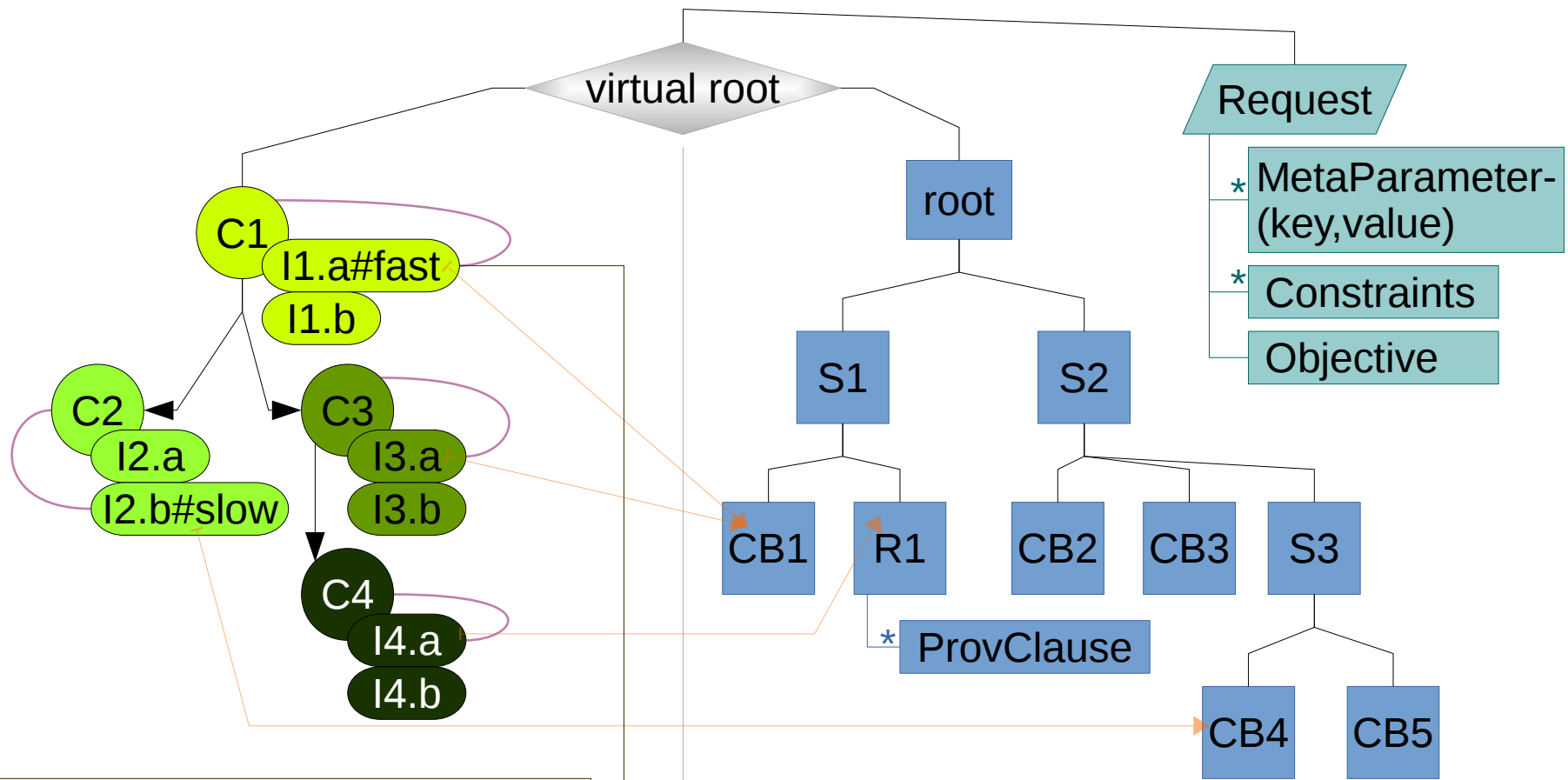
Model += Request



Request keeps information on

- concrete values of metaparameters (*list size, video resolution, particle count, ...*)
- constraints on properties of called component (*response time max 400ms, precision min 0.4, ...*) [optional]
- objective (*minimize energy, maximize precision, ...*) [optional, energy is default]

Model += Contracts and Clauses



I1.a#fast (

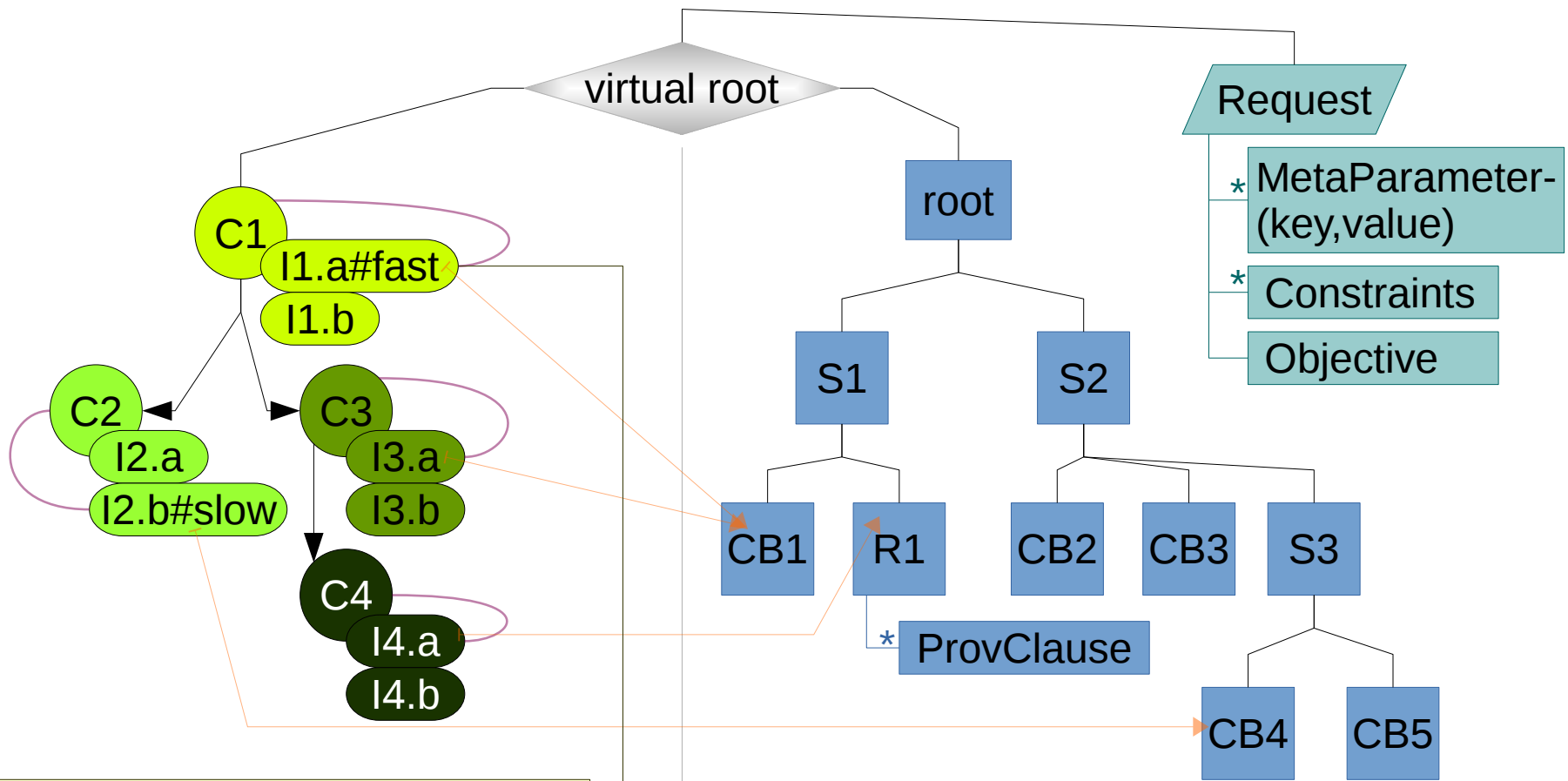
- requires C2 { p2 min 3 }
- requires C3 { p3 min 5 }
- requires PE { cpu-load max 0.5
ram-free min 1.2*workload }

I1.a#slow (...)

Contract defined on implementations

- comprising modes for this impl
 - mode is a named set of clauses (either requirement or provision)
- PEs have a set of properties

Model += Clause-Evaluation

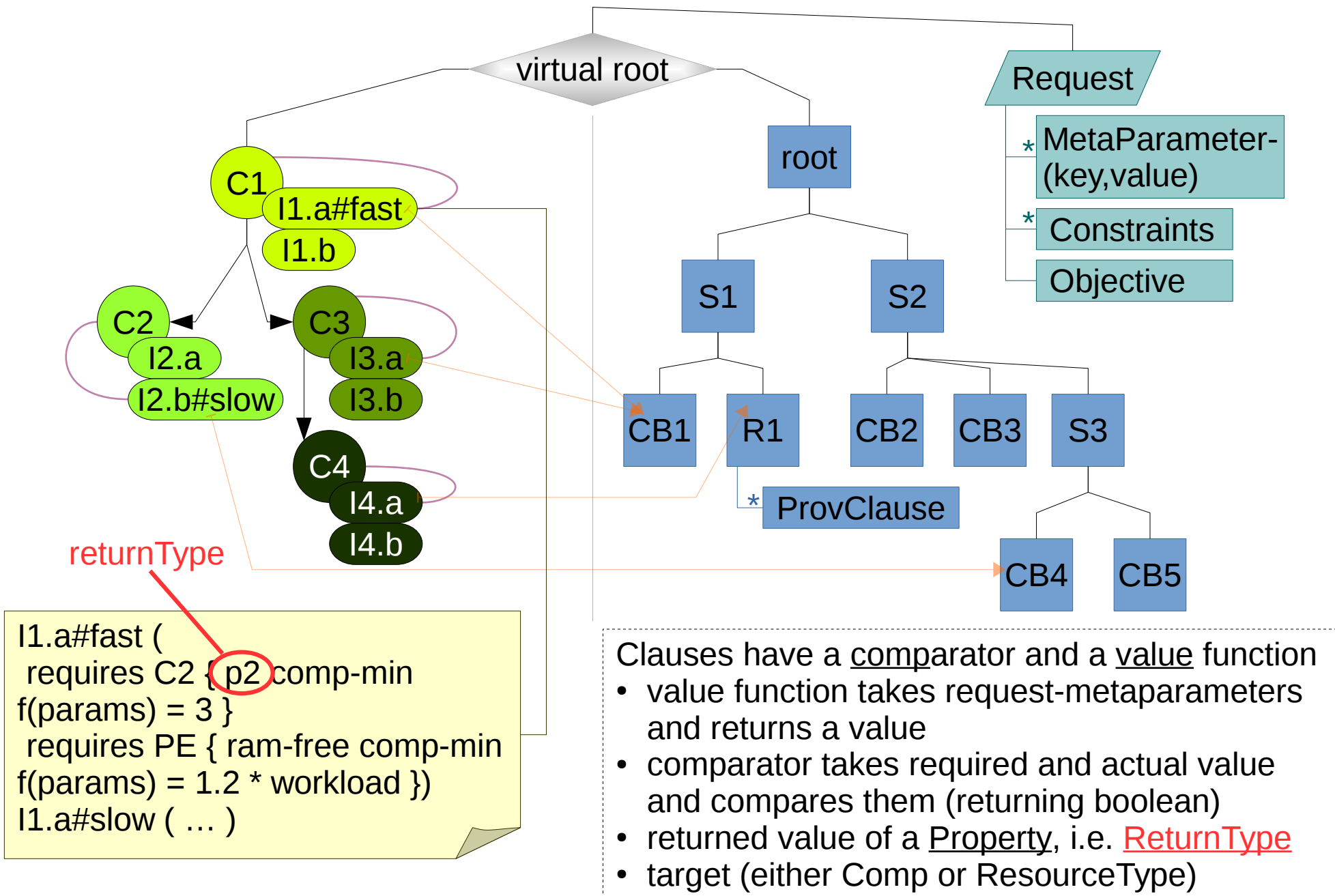


l1.a#fast (
 requires C2 { p2 comp-min
 f(params) = 3 }
 requires PE { ram-free comp-min
 f(params) = 1.2 * workload }
 l1.a#slow (...)

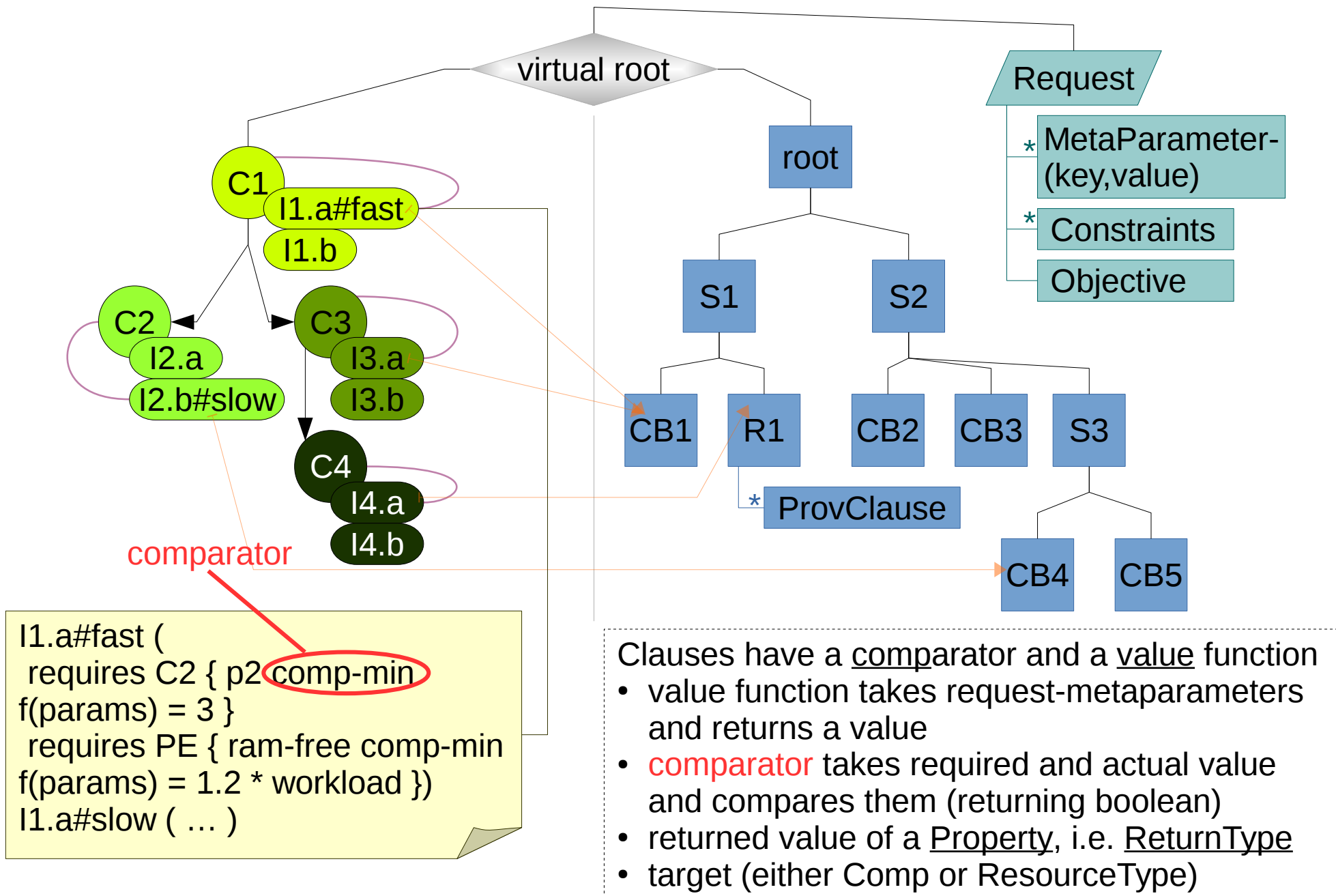
Clauses have a comparator and a value function

- value function takes request-metaparameters and returns a value
- comparator takes required and actual value and compares them (returning boolean)
- returned value of a Property, i.e. ReturnType
- target (either Comp or ResourceType)

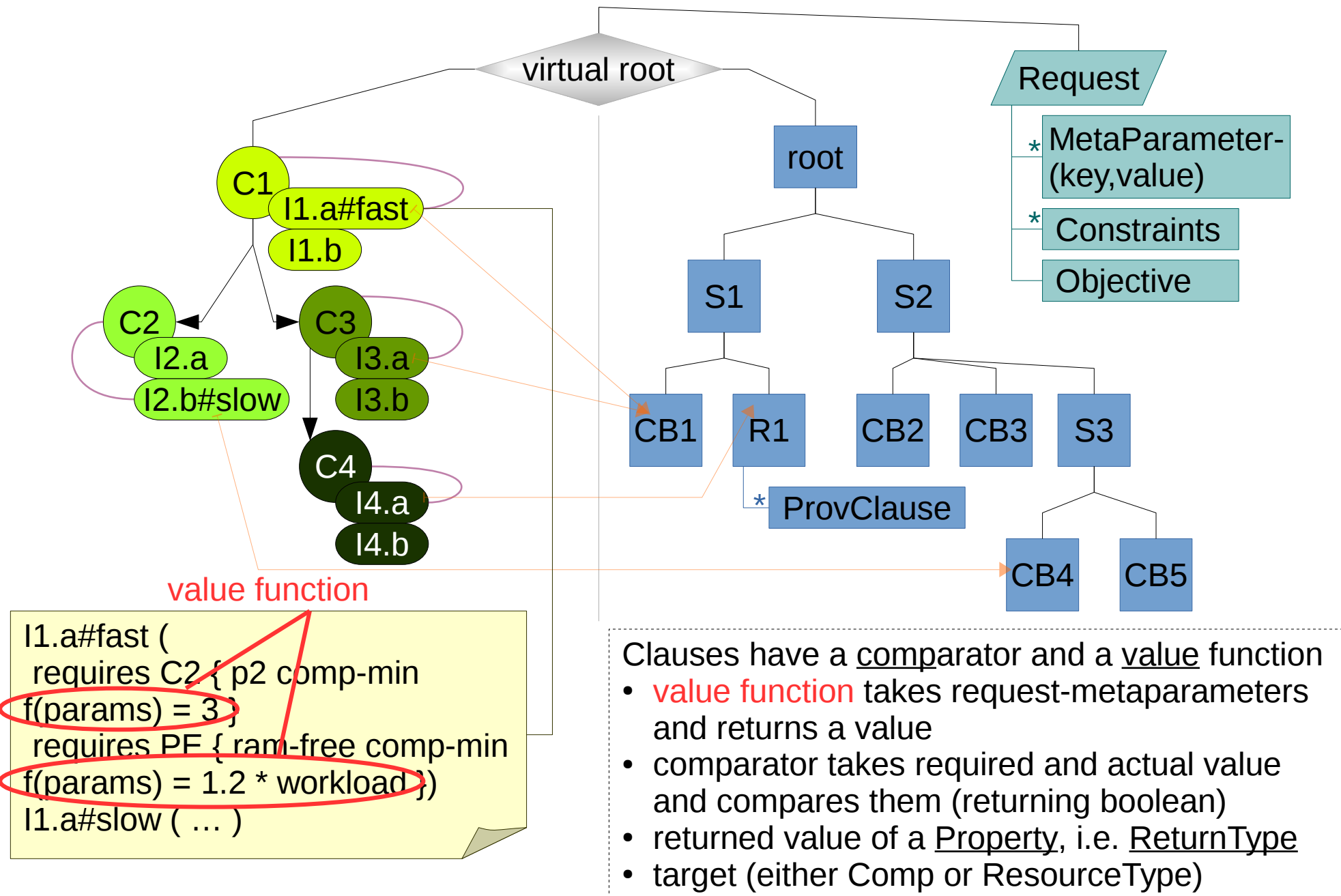
Model += Clause-Evaluation



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