Observer Symbols

Mattias Ulbrich & Benjamin Weiß

May 18, 2009

Evolution

Location dependent symbols (Richard)

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Semantics of anonymising updates (PHS)

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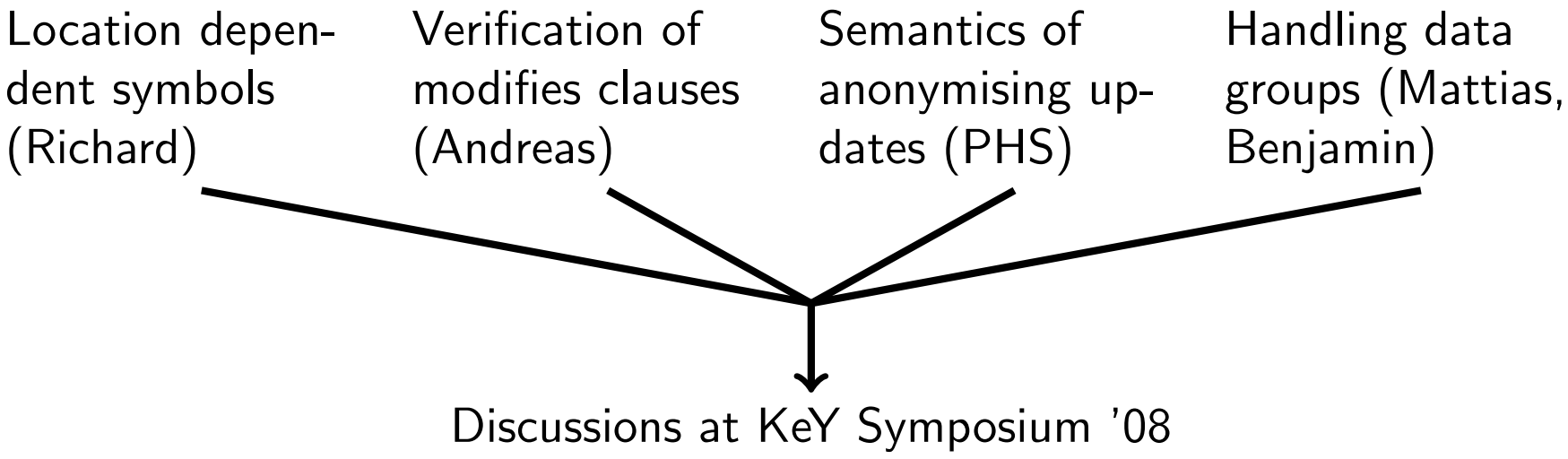
Handling data groups (Mattias, Benjamin)

Evolution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"Classification of Symbols" (this talk)

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⇣

Explicit heap model (later talk)

What is this all about?

Reasoning with sets of memory locations:

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- "A state change affects at most locations in L" (*modifies clauses*, *anonymising updates*)

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  (*modifies clauses*, *anonymising updates*)
- "If locations L are not changed, x also cannot be affected"
  (location *dependencies*)

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Reasoning with sets of memory locations:

- "A state change affects at most locations in L" (*modifies clauses*, *anonymising updates*)
- "If locations L are not changed, x also cannot be affected" (location *dependencies*)
- Handle location sets whose contents are not completely known (*data groups*)

Old Situation

Old classification of function & predicate symbols

- Rigid (e.g. $+$)

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We cannot...

- do any of this without explicitly naming all involved location symbols

Data Abstraction

```
interface List {



  void add(Object element);


  Object get(int index);
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interface List {


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Contains location symbols and observer symbols

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- examples: $+$, *reach*, *inReachableState*, queries, JML model fields, ...

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Updates

$ld := *n$ for every $n \in \mathbb{N}$

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Updates

$ld := *n$ sets all locations in $val_{\mathcal{K},s}(ld)$ to state $*(n)$

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  - cannot give dependencies of location sets themselves

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  - talking about location descriptors in formulas
  - generic anonymising updates $ld := *n$
- Allows to reason with only partially specified location sets ($\rightsquigarrow$ modularity)
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- Calculus? $\rightsquigarrow$ next talk!