Haskell Suite

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I LOVE GHC!
Haskell Suite Vision

- A modular set of libraries, together comprising a complete Haskell implementation—... for some definition of complete.

- Each library in the suite supporting fine-grained, explicit operations.

- Focus on interface, not on performance.
Cool use cases

• Transformations: Custom extensions, pre-processors, (type-driven) refactoring, ...

• IDEs: Syntax high-lighting, type tooltips, definition sites, analysis, built-in refactoring, ...

• DSLs: Domain-specific type checking, pre-processing, code generation, quasiquoters, ...

• Light-weight embedded Haskell functionality

• Your cool idea that hasn’t even been envisioned yet
• Your own extension you want to test out
Other motivation

• ghc-api, the only current alternative, is monolithic, opaque, and has a different goal.

• GHC needs (front-end) ”competition”!
  – Being an entity with different concerns (i.e. not another compiler) is a plus.
haskell-meta
Meta-level programming

haskell-types
Type inference

haskell-desugar
AST simplification

haskell-names
Name resolution, scope analysis, import chasing

haskell-src(-exts)
Parsing, AST(s), pretty-printing

haskell-interpreter
Interpreted execution

Here be code generators!
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Here be compilers!

Lennart Augustsson
Shayan Najd Javadipour
GSoC 2012 project
haskell-src-exts

- Library for Haskell source code manipulation.
- On hackage since waaaay back, actively maintained since 2006 (with some dips).
- Almost compatible with GHC (for the source side).
  - 7.6 syntactic extensions not yet added
  - GHC is sometimes wrong
- Among the top 20 most downloaded packages on hackage.
haskell-type(-ext)s

• GSoC project this past summer, by Shayan Najd Javadipour

• Result: (More or less) complete type inference for Haskell2010.
  – Much focus on structure for future extension and maintenance.
  – {-# LANGUAGE NoTraditionalRecordSyntax #-}

• Development will continue, with the goal of supporting (almost) all that GHC supports.
haskell-names

- Hobby project by the world’s best programmer (Lennart).
  - aka haskell-modules

- ”90% complete” on delivery.
  - Very nice interface.
  - Support for just the things we want.
Other parts

• Interpreter:
  – Won’t be the fastest – but people still use Ruby, PHP, ...

• Meta programming:
  – If we have a parser, an AST and combinators to build with, and pretty-printing, why not use them ourselves?

• Desugaring:
  – Just makes other parts easier
  – An example of a transformation pass
The long and winding road ahead

• An ambitious task – but important!
  – ... at least *I* think so.

• Making this real will eventually need more
  {resources | contributors | effort | dedication}*

• Get into the Platform?
  – Supersede the old haskell-src
  – Licensing intricacies