

The Present and Future of Agda

Andreas Abel¹

¹Department of Computer Science and Engineering
Chalmers and Gothenburg University, Sweden

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Agda: Outside View

- A language to formalize math and computer science
- A language to write papers (96 on the wiki)
- A language for teaching (15 courses on the wiki)
- A brand: *Coq and Agda*
- A user community

Martin Escardo, Wolfram Kahl, Dan Licata, Serge Mechveliani, . . .

Competition

- Coq: different league
- Epigram? (perfected to death?)
- Idris!
 - Builtin types and Prelude
 - Easy-to-use FFI
 - Good compilers
 - Emphasis on programming
 - Catching up in interactive development
 - But: still more “prototype”
- Haskell

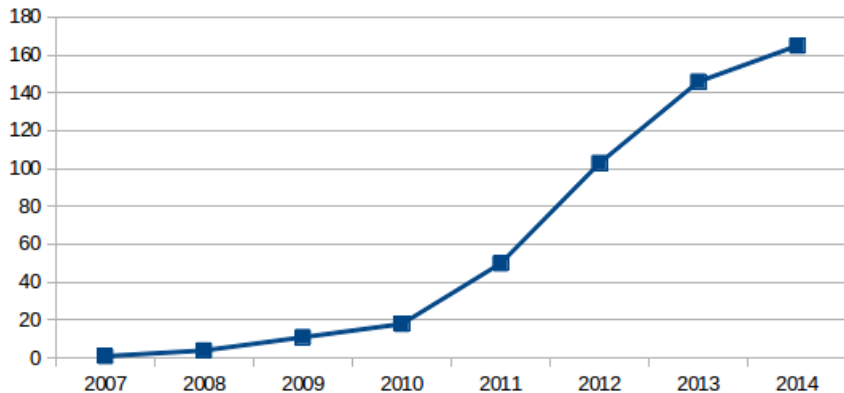
Agda: Inside View

- 3 main developers (part-time)
 - a dozen contributors (sporadically active)
 - a long tail of single-patch submitters
 - 70.000 loc
 - 1076 issues on the bug tracker (165 open)
- | | |
|-----------|-----------------|
| 2007-2010 | 100 bugs/year |
| 2010-2013 | 200 bugs/year |
| 2013- | 300 bugs/year ? |

Agda: Where do the 70kloc come from?

<u>Component</u>	<u>loc</u>
Utility functions	4100
Syntax (Concrete, Abstract)	6600
Parser	3300
Printer	1900
Scope checker	2700
Syntax (Internal)	1400
Type checker (+ eval, coverage)	29600
Termination checker	4600
Interaction (+imports)	6600
Agsy	4100
Compiler	5200

Open issues



Long on the Wish List

- User manual
- Packaging
- Type classes
- Universe cumulativity
- Reflection/tactics
- Efficient type-checking
- Usable compiler

Core Language / Internal Syntax

- Sharing
- Independent checking
- Termination certificates
- Shared optimizations/transformations used by compiler backends

Research topics

- Equality (HoTT, OTT)
- Parametricity/colors
- Sized dependent types
- Proof/instance search and unification
- Foundation for hidden/named arguments
- Telescopes/ Σ -types at framework level
- Printing

Get Involve(d!)/ments)

- Critique: closed developing process
- Move to github
- Developer documentation
- Advertize projects
- More funding?

Related Work

- <http://www.drdobbs.com/architecture-and-design/so-you-want-to-write-your-own-language/240165488>