

# Haskell: Batteries Included

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 Well-Typed

| galois |

Data visualisation by  tupil

# Libraries, Libraries, Libraries

- Languages succeed on the strength of libraries
- Great languages let us make more and better libraries
  - Quality: safer, flexible, composable libraries
  - Quantity: productivity, more reuse, sooner
- Haskell, the language, is done! (Well...)
- Now, libraries ... and **world domination!**

# 1990-2003: The dark ages

- Every Haskell app had its own build system
  - Endless twisty Makefiles
  - Nothing worked on Windows
- 3 Haskell libraries in the world
- Everything in base
- Applications bundled their own dependencies
- “Cathedral” model

# 2004-2008: The enlightenment

- Cabal: declarative package specifications
  - Includes a build system for simple packages
  - Many packages now build on Windows
- Hundreds of packages published on Hackage
  - <http://hackage.haskell.org>
  - *“If it's not on Hackage, it doesn't exist”*
- cabal-install: automated dependency chasing
- We begin to move from “Cathedral” to “Bazaar”

# Submit to ICFP **AND** Submit to Hackage

- On Hackage
  - QuickCheck
  - SmallCheck
  - Yi
  - CLASE
  - S&E session types
- Lost to the world
  - Lightweight monadic regions
  - Lightweight information flow security
  - P&T session types
  - Utrecht “gread” parsers

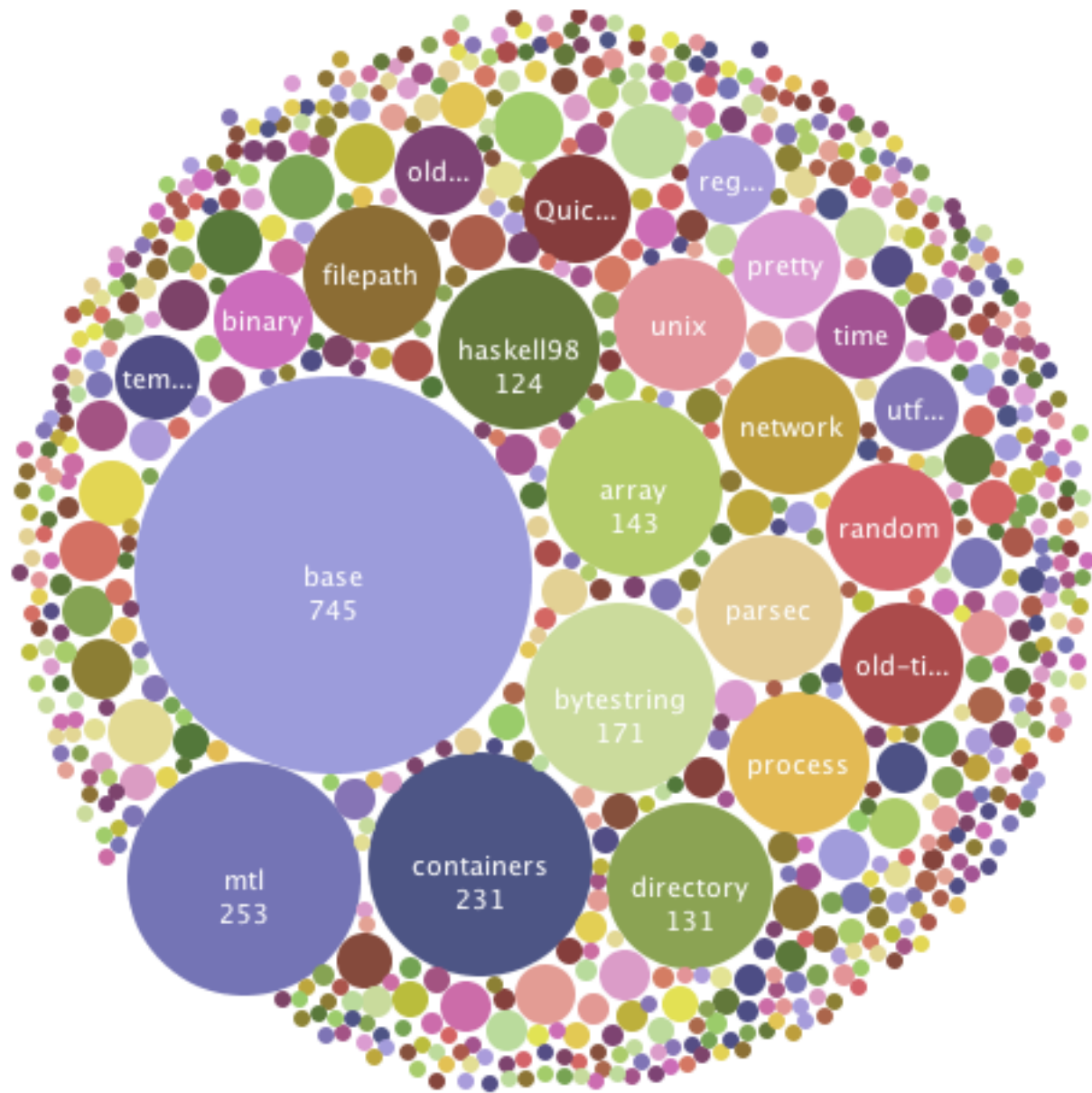
# Community: our greatest asset

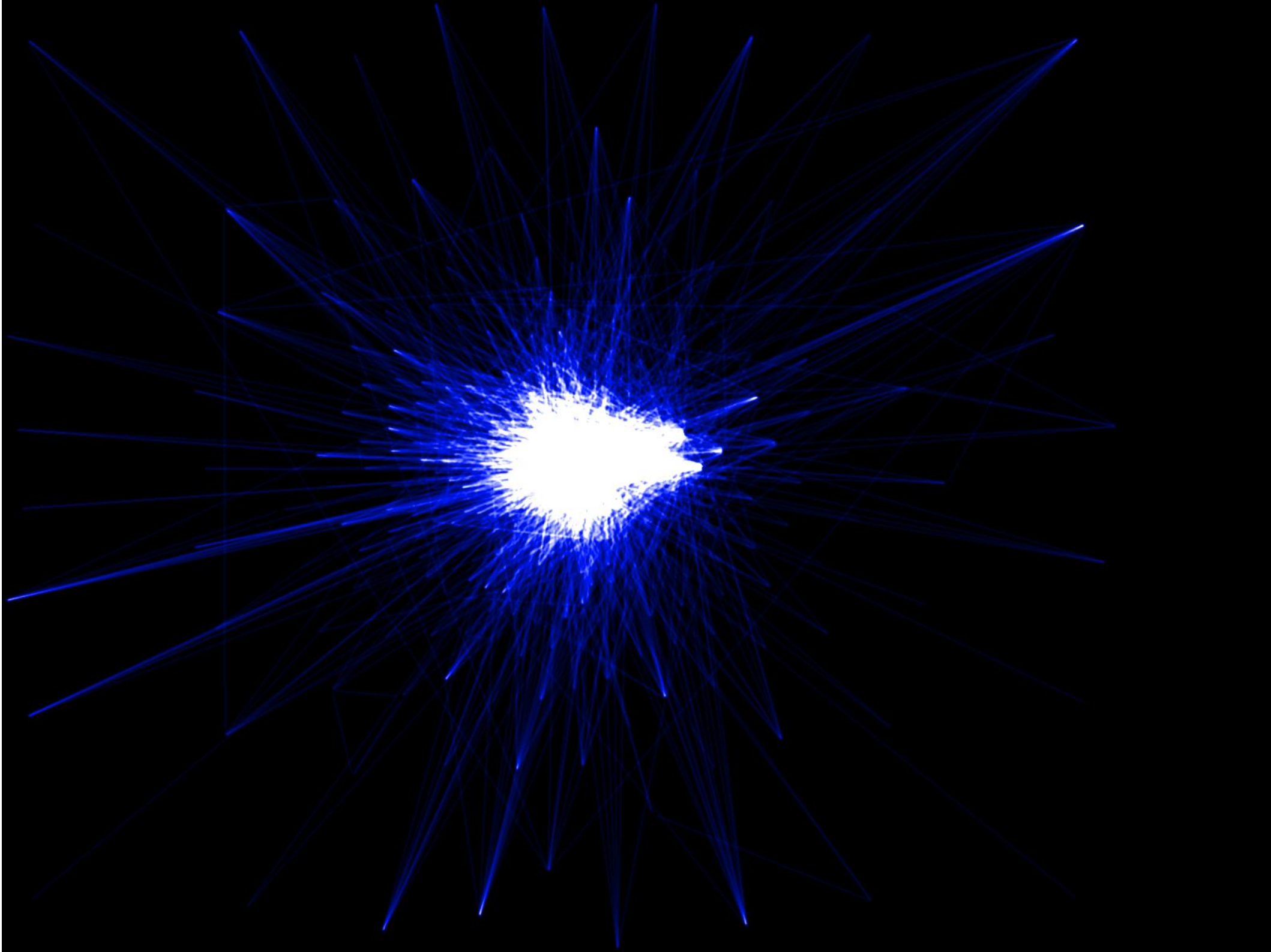
- We don't have the corporate backing of Java
- But we do have a large, passionate, active community
- Hundreds of developers across the world writing libraries for the community
- Focus this effort into a world-beating technology – in parallel
- We must use an open source “bazaar” organisation model to drive Haskell forward

AaronTomb AbramClark AdamLangley AdamSmyczek AdrianHey AlbertoRuiz AlesBizjak AlexDrummond AlfonsoAcos  
AlistairBayley AllanClark AndrePang AndreaRossato AndreaVezzosi AndresLoeh AndrewPimlott AndrewRobbins  
AndriiZvorygin AndyGill AntoineLatter Anttijuhanikaianaho AnttiSalonen ArieMiddelkoop ArjunGuha ArthurVanLeeu  
AshleyYakeley AsumuTakikawa AudreyTang AustinSeipp BalazsKomuves BartonMassey BenLippmeier BenSinclair  
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ChrisEidhof ChrisKuklewicz ChristophBauer ChristopherLaneHinson ClemensFruhworth CliffordBeshers ColinRuncima  
ConalElliott ConradParker CoreyOConnor DanDoel DanielCorson DanielGorin DanielWagner DavidBrown DavidFox  
DavidHimmelstrup DavidHouse DavidPlace DavidWaern DenisBueno DennisGriffith DerekElkins DinoMorelli  
DmitryAstapov DmitryGolubovsky DoaitseSwierstra DominicSteinitz DonaldStewart DuncanCoutts DustinDeWeese  
EdwardKmett EelcoLempsink EinarKarttunen EmilAxelsson EricKidd EricKow EricMertens EricSessoms ErikCharlebo  
EsaVuokko EugeneGrigoriev EvanMartin EvgenyJukov FelipeLessa FelixMartini GaborGreif GaneshSittampalam  
GeorgBrandl GeorgeGiorgidze GlebAlexeyev GordonStewart GracjanPolak GregHeartsfield GregoryWright GwernB  
HansVanThiel HenningGuenther HenningThielemann HiteshJasani HoldenKarau HristoAsenov IanLynagh IavorDiatch  
IgorBohm IsaacJones IvanTomic JaapWeel JanChristiansen JanisVoigtlaender JasonDagit JasonDusek JasonOrendorff  
JeanPhilippeBernardy JedBrown JeffersonHeard JensPetersen JeremyApthorp JeremyShaw JimSnow JinjingWang  
JochemBerndsen JoelReymont JohanTibell JohannesAhlmann JohannesWaldmann JohnGoerzen JohnLato JohnMacFar  
JohnMcCall JohnMeacham JohnVanEnk JonFairbairn JosefSvenningsson JostBerthold JudahJacobson JuergenNicklischF  
JustinBailey KetilMalde KevinEllis KidoTakahiro KrasimirAngelov KyleConsalus LajosNagy LennartAugustsson  
LennartKolmodin LeonidasFegaras LuisAraujo LukasMai LukePalmer LutzDonnerhacke MadsLindstroem MagnusJonss  
MagnusTherning MalcolmWallace ManuelChakravarty MarcWeber MarcoSilva MarioBlazevic MarkWassell MarkoLaur  
MarshallBeddoe MartijnVanSteenbergen MartinGrabmueller MartinLuetke MartinSulzmann MasatakeDaimon  
MattMorrow MatthewDanish MatthewMorrow MatthewNaylor MatthewSackman MattiNiemenmaa MaxBolingbroke  
MaxRabkin MichalKonecny MiguelVilaca MilanStraka MiloslavRaus NatarajanRajagopal NeilBrown NeilMitchell  
NicholasBurllett NicolasPouillard NiklasBroberg NilsAndersDanielsson NorbertWojtowicz OlivierBoudry OlivierThauvi  
OrenBenKiki OtakarSmrz PaoloVeronelli PatrickPerry PatrikJansson PaulJohnson PaulLiu PauloSilva PauloTanimoto  
PawelMurias Pepelborra PeterGammie PeterGavin PeterJonsson PeterSimons PeterTanski PiyushKurur RalfHinze  
ReinierLamers RickKaudewitz RobertDockins RobinGreen RohanDrape RomanLeshchinskiy RossPaterson  
RussellOConnor RyanIngram SamuelBronson ScottDillard SeanLeather ShaeErisson SigbjornFinne SimonMarlow  
SimonPeytonJones SpencerJanssen StefanKersten StefanORear StephanFriedrichs StephenBlackheath StephenCook  
StephenLihn SterlingClover StuartCook SveinOveAas SvenMoritzHallberg SvenPanne TaruKarttunen ThomasDavie  
ThomasDuBuisson ThomasHartman ThomasVanNoort ThorkilNaur TimChevalier TimDocker TimNewsham  
TomBevan TomMoertel TrevorElliott TristanAllwood TwanVanLaarhoven UweSchmidt VasiliGalchin VincentKraeutler  
VivianMcPhail WaltBaety WillThompson WolfgangJeltsch WolfgangThaller WouterSwierstra WrenThornton YangZha  
YannGolanski YoshikuniJujo alpheccar

Adaptive adhoc-network AERN-Real AERN-RnToRm AGI alex also-midi ALUT ansi-terminal ansi-wl-pprint anydbm AppleScript applicative-extras array Arr  
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cabal-test cabal-upload calc carray category-extras CC-delcont cedit cgi cgi-undecidable chalmers-lava2000 change-monger Chart ChasingBottoms  
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HAppS-Util happy harchive harp harpy Hashell hasim haskeline haskell98 haskelldb haskelldb-dynamic haskelldb-flat haskelldb-hdbc haskelldb-hdbc-c  
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IFS Imlib INblobs IndentParser infinity infix interleavableGen interleavableIO interlude IOR IOSpec ipc ipprint irc ircbouncer ivor jack json kbq-gu kibro  
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nano-hmac nano-md5 nat network network-bytestring network-connection network-dns network-minihttp network-multicast network-rpca NewBinary  
non-negative numbers numeric-prelude numeric-quest nymphaea obdd ObjectIO oeis old-locale old-time omnicodec only OpenAFP OpenAFP-Utils Op  
open-witness opml packedstring PageIO panda pandoc paradox parallel parameterized-data parport PArrows parseargs parsec parsedate parse-dima  
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rss2irc safe Safe safecopy sat sat-micro-hs scaleimage scc scenegraph scgi SDL SDL-gfx SDL-image SDL-mixer SDL-mpeg SDL-ttf selenium sessions  
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vector-space vty wavconvert WAVE WebBits whim Win32 Win32-notify winerror Wired witness wl-pprint WordNet WURFL wx wxcore wxFruit WxGeneric







<input type="checkbox"/>	unsupported lib	<b>haskell-adaptive 0.22-1</b>	0		Library for incremental computing.	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-adhoc-network 1.0.3-1</b>	0		Ad-hoc P2P network protocol	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-aern-real 0.9.6.1-1</b>	2	Yes	arbitrary precision interval arithmetic for approximating exact real numbers	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-aern-rntorm 0.4-1</b>	1	Yes	polynomial function enclosures (PFEs) approximating exact real functions	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-agi 1.2.2-1</b>	1	Yes	A library for writing AGI scripts for Asterisk	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-alsa-midi 0.3.2-1</b>	0		Bindings for the ALSA sequencer API (MIDI stuff)	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-alut 2.1.0.0-1</b>	1		A binding for the OpenAL Utility Toolkit	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-ansi-terminal 0.5.0-1</b>	0		Simple ANSI terminal support, with Windows compatibility	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-ansi-wl-pprint 0.4.0-1</b>	0		The Wadler/Leijen Pretty Printer for colored ANSI terminal output	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-anydbm 1.0.5-1</b>	0		Interface for DBM-like database systems	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-applicative-extras 0.1.3-1</b>	2	Yes	Instances for Applicative	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-arrayref 0.1.2-1</b>	0		Unboxed references, dynamic arrays and more	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-asn1 0.0.1.1-1</b>	0		ASN.1 support for Haskell	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-astar 0.2.1-1</b>	1	Yes	General A* search algorithm.	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-attoparsec 0.4-1</b>	1		Combinator parsing with Data.ByteString.Lazy	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-avltree 4.2-1</b>	0		Balanced binary trees using the AVL algorithm.	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-barracuda 1.0.2-1</b>	0		An ad-hoc P2P chat program	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-base64-string 0.1-1</b>	0		Base64 implementation for String's.	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-benchpress 0.2.2.2-1</b>	2	Yes	Micro-benchmarking with detailed statistics.	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-bencode 0.3-1</b>	0		Parser and printer for bencoded data.	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-bimap 0.2.4-1</b>	3	Yes	Bidirectional mapping between two key types	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-binary 0.4.3.1-1</b>	9	Yes	Binary serialisation for Haskell values using lazy ByteStrings	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-binary-search 0.0-1</b>	1		Binary and exponential searches	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-binary-strict 0.3.1-1</b>	1		Binary deserialisation using strict ByteStrings	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-bio 0.3.3.4-1</b>	0		A bioinformatics library	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-bitset 0.6-2</b>	0		A functional data structure for efficient membership testing.	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-bitsyntax 0.3.2-1</b>	1		A module to aid in the (de)serialisation of binary data	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-bktrees 0.2.1-1</b>	0		A set data structure with approximate searching	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-blas 0.5-3</b>	1		Bindings to the BLAS library	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-bloomfilter 1.2.5-1</b>	2	Yes	Pure and impure Bloom Filter implementations.	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-bytestring 0.9.1.2-1</b>	2	Yes	Fast, packed, strict and lazy byte arrays with a list interface	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-bytestring-csv 0.1.2-1</b>	1	Yes	Parse CSV formatted data efficiently	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-bytestring-lexing 0.1.2-1</b>	0		Parse literals efficiently from bytestrings	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-bytestring-mmap 0.2.0-1</b>	2		mmap support for strict ByteStrings	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-bytestring-show 0.2-1</b>	0		Efficient conversion of values into readable byte strings.	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-bytestringparser 0.3-1</b>	0		Combinator parsing with Data.ByteString.Lazy	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-bytestringreadp 0.2-1</b>	0		A ReadP style parser library for ByteString	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-bzlib 0.4.0.3-1</b>	4		Compression and decompression in the bzip2 format	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-cabal 1.4.0.2-1</b>	35	Yes	A framework for packaging Haskell software	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-carray 0.1.2-1</b>	1		A C-compatible array library.	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-category-extras 0.53.5-1</b>	1		Various modules and constructs inspired by category theory	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-cc-delcont 0.2-1</b>	1		Delimited continuations and dynamically scoped variables	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-cedict 0.2.5-1</b>	0		Convenient Chinese phrase & character lookup.	<a href="#">arch-haskell</a>
<input type="checkbox"/>	unsupported lib	<b>haskell-cgi 3001.1.7.0-1</b>	3	Yes	A library for writing CGI programs	<a href="#">arch-haskell</a>

# Now: The Haskell Platform

- **Selection of packages from Hackage**
- Consistent set of package versions
  - Tested together on all popular platforms
- Regular releases, every 6 months
  - You can download it
- Easy to install on all popular platforms
  - Binary installers
  - Supported by the distros
- Community process for new packages

# This structure works

Haskell Platform

GNU/Linux distro

GHC

Linux kernel

Hackage

SourceForge

Cabal

.rpm / .deb

cabal-install

yum / apt-get

Simon & Simon

Linus & Alan Cox

# What's in the platform for me?

- New Haskell users and systems administrators
  - “How do I get Haskell?”
- Application authors
  - One true Haskell release to build upon
- Library authors
  - Standard set of versioned dependencies
  - Wide distribution and publication for their work
- Compiler authors
  - Get back to writing compilers

# Future

- More and better infrastructure
  - Build reporting
  - Testing and code coverage
  - Useful quality information for package users
  - Available to all packages in Hackage
- More and better libraries
- Larger and better Haskell Platform
- World domination

# Hackage Live

**<http://10.0.71.98:5000/>**

