A BRIEF HISTORY OF

BOINC!
1985

- Wisconsin ➔ UC Berkeley
- Internet as backplane
1987

- Marionette
1992

- Industry
1995

- David Gedye: SETI@home idea
1998

- SETI@home development
  - Eric Korpela
  - Jeff Cobb
  - Matt Lebofsky
1999

- SETI@home launch
2000

- Infrastructure issues
- United Devices
2001

- United Devices falling-out
2002

- ClimatePrediction.net: Myles Allen
- BOINC
2002

- Open source software
- Credit
- Replication and validation
- Client job buffer
- Code signing
2002

- Hiram Clawson, Eric Heien
- NSF proposal
  - Mari Maeda, Kevin Thompson
- Visit Climateprediction
  - Carl Christensen, Tolu Aina
- Derrick Kondo
- Vijay Pande
2003

- UD lawsuit
- Undergrads, PHP code
- Karl Chen, Mr. Python
- Oct: LIGO, Bruce Allen
- Nov: CERN
  - Francois Grey, Ben Segal
- Nov: WCG kicks tires
2003

MySQL server

scheduler

transitioner

job creation

assimilator

validator
2004

- Rom Walton
- Charlie Fenton
2004

- Anonymous platform
- Separate GUI
- Cross-project ID and credit
- Preemptive scheduling
- Sticky files
- Upload/download hierarchies
- DB as buffer
2004

- Predictor@home, Michela Taufer
  - homogeneous redundancy
- SETI@home: Eric Korpela
- BURP: Janus Kristensen
- Climateprediction.net launch
- LHC@home launch
2004

- Supercomputer 04 talk

- Matt Blumberg, account manager design
2005

- Einstein@home
  - Reinhard Prix, Bernd Machenschalk, Oliver Bock
- Primegrid
  - Rytis Slatkevičius
- Rosetta@home
- IBM World Community Grid
  - Kevin Reed
2005

- 1st BOINC workshop at CERN
2005

- Translatable web code
- Mac installer and GUI
- Libcurl (HTTP)
- BOINC Alpha test project
2006

- Proteins@home (École Polytechnique, Paris)
- Spinhenge (U. Bielefeld)
- QMC@home (U. Munster)
- Tanpaku (Tokyo U. of Science)
- SIMAP (TU Munich)
- Malariacontrol.net (Swiss Tropical Inst.)
- Reisel Sieve
- Chess960
- CPDN “Climate Change”; BBC documentary
2006

- SZTAKI desktop grid
  - Adam Kornafeld, Attila Marosi, Jozsef Kovacs
  - DC-API, 3GBridge, genwrapper, X.509 certs, VM wrapper
2006

- BoincStats
  - Willy de Zutter
- BoincStats Account Manager (BAM!)
- GridRepublic
2006

- Graphics in separate app
- BOINC wrapper
- Preferences code rewrite
  - Christian Beer
- BOINC Manager simple view
- Account-based sandboxing
- Skype-based volunteer help
2006

- User poll
  - 92% male; 50-ish; technical
  - BOINC is unpopular
2007

- ABC@home (Leiden U.)
- Leiden Classical
- Lattice (U. Maryland)
- SHA-1 Collision Search (Graz U. Tech)
- Superlink@Technion: Mark Silberstein
- Yoyo@home: Uwe Beckert
- Enigma@home
2007

- Publicity: try to use volunteers
- Charity Engine: Mark McAndrew
- Berkeley@home
2007

- Trac, Subversion
- BOINC-Wide Teams
- Client emulator
- Bossa
  - Stardust@home
- Bolt
2008

- AQUA@home: D-Wave systems; Kamran Karimi
- GPUGrid.net: Gianni di Fabriitis
- Orbit@home: Planetary Science Inst.
- Quake Catcher Network (Stanford)

Jan: PetaFLOPS barrier broken
2008

- GPU support
  - client: detection, scheduling
  - scheduler RPC
  - scheduler

- Multi-core apps

- Plan class mechanism

- Adaptive replication
2008

- Jarifa
  - Daniel Gonzales
2009

- NSF@home (Cal State Fullerton)
- VTU@home (Vilnius Tech, Lithuania)
- Cosmology@home (U. of Illinois)
- Virtual Prairie (U. of Houston)
2009

- Workshop at Academia Sinica (Taipei)
- Progress Thru Processors
- BoincTasks: Fred Melgert
- Pootle-based translation system
- Motivation studies by Oded Nov (NYU)
2010

- eOn (U. Texas)
- CAS@home: Wenjing Wu
2010

- Trilce Estrada: server emulator
- Sony puts BOINC/WCG on VAIO computers
- BOINC packages for Debian: Gianfranco Costamagna
- nanoHub: Michael McLennan
- Einstein@home pulsar discovery
- BOINC tutorial at SC10
2010

- Notices
- New system for runtime estimation, credit
2011

- DistRTGen
- Surveill@home
- Mersenne@home
- U. of Westminster campus grid
2011

- Taipei, Beijing hackfests
- Brazil junket
2011

- Apps in virtual machines
  - vboxwrapper
  - support for large files
2012

- SAT@home (Russian Acad. Sci.)
- Fightmalaria@home (U. College Dublin)
- Oproject@home
- Volpex (U. Houston)
2012

- Android
  - Jeff Eastlack (Freescale)
  - Pavel Michalec: AndroBOINC
  - Mateusz Szpakowski: NativeBOINC
  - Google Summer of Code
  - Joachim Fritsch
2012

- Condor/OSG collaboration
  - Miron Livny
  - remote file management, job submission

- Git
2013

- Asteroids@home (Charles U., Prague)
- Subset@home (U. N. Dakota)
- RNA World (Rechenkraft.net)
2013

- July: BOINC/Android released
- BOINC installer includes VirtualBox
- Scheduler reimplemented (score-based)
2014

- Convector (Czech Tech U.)
- ATLAS@home (CERN)
- Bitcoin Utopia
- GridOctane (India)
2014

- Ripple support of WCG
- HTC: Power to Give
- Samsung: Power Sleep
The BOINCosphere

- Me, Rom, Charlie
- PC/phone owners
- testers
- help agents
- stats sites
- porters
- add-on developers
- organizations
- Samsung
- HTC
- Intel, IBM
- GridRepublic
- Charity Engine
- GridOctane
- Bitcoin Utopia
- Projects: academic, hobby
- SZTAKI, TACC, HUBzero
- CS research
- organizations
- SZTAKI, TACC, HUBzero
- CS research
- projects: academic, hobby
Reflections on software: things we did right

- Good factorization and good interfaces
- Server architecture
- Mechanisms that provide generality
  - account manager, anonymous platform, plan class
- Emulators
- Avoided software fossilization
Reflections on software: things we need to change

- Coprocessor model
- Preferences
Reflections on software: things we should have done differently

- Decentralized model
- Complexity of volunteer interfaces
- Complexity of server and job submission
Reflections on project management

- Personalities
- Resource allocation
- Autocracy
- Release management
- Documentation
Goals not achieved

- Widespread usage by scientists
- Publicity and outreach
- Volunteer population growth
- Interest from Computer Science
- Interest from funding agencies
My failures

- Overconfidence
- Didn’t know my audience
- Personality issues
My experience

- Negatives
- Positives
Joining the HTC mainstream

- Texas Advanced Computing Center (TACC)
- XSEDE
- nanoHUB/HUBzero
Volunteer interface

I want to support European cancer research

Science@home

projects

apps
Volunteer populations

- Female; young; non-technical
- Bitcoin mining GPUs
- PC game machines
  - Steam
- Mobile