

Welcome to HTCondor Week #15 (year #30 for our project)

HTCondor Team 2013



Established 1985

**The HTC community
continues to expend –
new platforms, new
applications, new users
and higher expectations**

Subject: Meeting request

From: Michael Gofman <michael.gofman@gmail.com>

Date: Thu, 16 May 2013 11:47:50 -0500

To: MIRON LIVNY <MIRON@cs.wisc.edu>

Dear Miron,

I am an assistant professor of finance at UW-Madison. I did my Phd at the University of Chicago and master degrees at the Tel Aviv University.

In the last couple months I was using HTC resources that you developed to compute optimal financial architecture.

I would like to meet with you and tell you more about my project as well to thank you personally for developing this amazing platform.

Yours,

Michael

In 1996 I introduced the distinction between High **Performance** Computing (**HPC**) and High **Throughput** Computing (**HTC**) in a seminar at the NASA Goddard Flight Center in and a month later at the European Laboratory for Particle Physics (CERN). In June of 1997 HPCWire published an interview on High Throughput Computing.

HIGH THROUGHPUT COMPUTING: AN INTERVIEW WITH MIRON LIVNY
by Alan Beck, editor in chief

06.27.97
HPCwire

=====

This month, NCSA's (National Center for Supercomputing Applications) Advanced Computing Group (ACG) will begin testing Condor, a software system developed at the University of Wisconsin that promises to expand computing capabilities through efficient capture of cycles on idle machines. The software, operating within an HTC (High Throughput Computing) rather than a traditional HPC (High Performance Computing) paradigm, organizes machines

High Throughput Computing
is a **24-7-365** activity and
therefore requires
automation

$FLOPY \neq (60 * 60 * 24 * 7 * 52) * FLOPS$

**In July 2013 we
renewed our contract
with the HTC
community for
another five years**

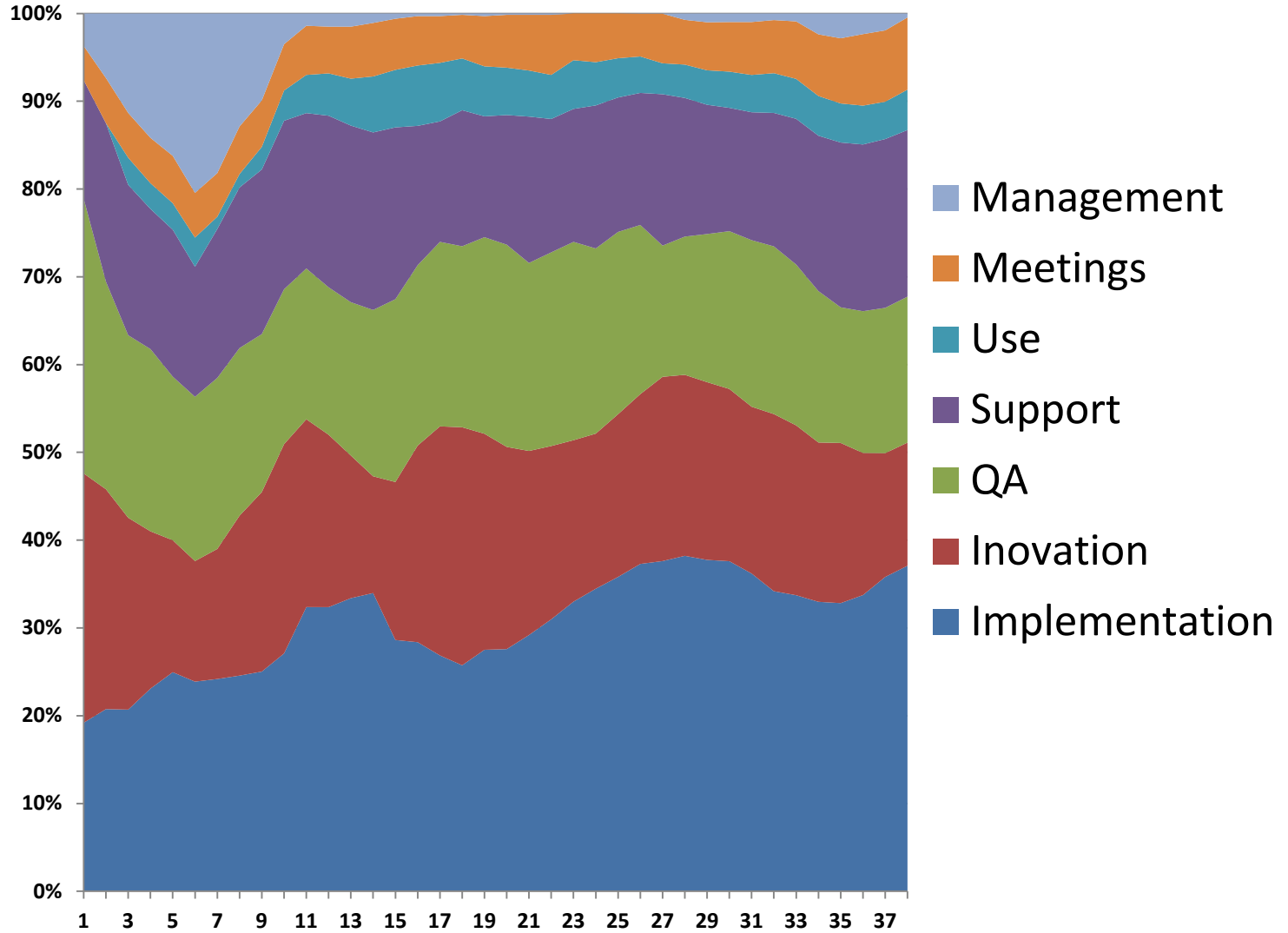
“Over the last 15 years, Condor has evolved from a concept to an essential component of U.S. and international cyberinfrastructure supporting a wide range of research, education, and outreach communities. The Condor team is among the top two or three cyberinfrastructure development teams in the country. In spite of their success, this proposal shows them to be committed to rapid development of new capabilities to assure that Condor remains a competitive offering. Within the NSF portfolio of computational and data-intensive cyberinfrastructure offerings, the High Throughput Computing Condor software system ranks with the NSF High Performance Computing centers in importance for supporting NSF researchers.”

A recent anonymous NSF review

“... a mix of continuous changes in technologies, user and application requirements, and the business model of computing capacity acquisition will continue to pose new challenges and opportunities to the effectiveness of scientific HTC. ... we have identified six key challenge areas that we believe will drive HTC technologies innovation in the next five years.”

- **Evolving resource acquisition models**
- **Hardware complexity**
- **Widely disparate use cases**
- **Data intensive computing**
- **Black-box applications**
- **Scalability**

Monthly Average Dedication



Obstacles to HTC

- ▶ **Ownership Distribution** (Sociology)
- ▶ **Size and Uncertainties** (Robustness)
- ▶ **Technology Evolution** (Portability)
- ▶ **Physical Distribution** (Technology)

*The words of Koheleth son of David, king in
Jerusalem ~ 200 A.D.*

*Only that shall happen
Which has happened,
Only that occur
Which has occurred;
There is nothing new
Beneath the sun!*



Ecclesiastes, (קֹהֶלֶת, *Kohelet*, "son of David, and king in Jerusalem" alias Solomon, Wood engraving Gustave Doré (1832–1883)

Ecclesiastes Chapter 1 verse 9

**What Did We Learn From
Serving
a Quarter of a Million
Batch Jobs on a
Cluster of Privately Owned
Workstations**

1992

Miron Livny

Computer Sciences Department
University of Wisconsin — Madison
Madison, Wisconsin
{mlron@cs.wisc.edu}

**User
Prospective**

- Maximize the capacity of resources accessible via a single interface
- Minimize overhead of accessing remote capacity
- Preserve local computation environment

Global Scientific Computing via a Flock of Condors

CERN 92

Miron Livny

Computer Sciences Department
University of Wisconsin — Madison
Madison, Wisconsin
{miron@cs.wisc.edu}

MISSION

Give scientists effective and efficient access to large amounts of cheap (if possible free) CPU cycles and main memory storage

THE CHALLENGE

How to turn existing privately owned clusters of *workstations, farms, multiprocessors, and supercomputers* into an efficient and effective Global Computing Environment?

In other words, how to minimize wait while idle?

APPROACH

Use wide-area networks to transfer batch jobs between Condor systems

- Boundaries of each Condor system will be determined by physical or administrative considerations

TWO EFFORTS

- UW CAMPUS**
Condor systems at Engineering, Statistics, and Computer Sciences
- INTERNATIONAL**
We have started a collaboration between CERN-SMC-NIKHEF-Univ. of Amsterdam, and University of Wisconsin-Madison

Dear Miron,

I'm contacting you to follow up on an e-mail exchange you have recently had with Frederic Hemmer, IT Department head at CERN.

Not sure you remember me, but we have met a few times. Around the mid 90s I set up a small Condor pool for the Chorus experiment at CERN, and we met in Bologna, where courses and discussions were held.

... We haven't tested XXXX at great length, but as the architecture looks similar to XXXX, we don't think we would get much further. Very positive experience reported by RAL as well as by the US Tier-1s and the sufficiently different architecture have hence made us interested in Condor.

...

Helge MEINHARD CERN, IT Department, CH-1211 Geneve 23, Switzerland

Phone: +41 22 76-76031, Fax: +41 22 76-69935

E-mail: Helge.Meinhard@cern.ch

Usability

(Simpler to install/use/operate
and easier to understand)

**periodic_remove = JobStatus == 2 &&
(CurrentTime-
JobCurrentStartExecutingDate) > 3600**

VS.

MaxRunTime = 3600

Why are my jobs not running? It is the DNS at psychiatry!

Thank you for building such



a wonderful HTC community