

GRIDORBIT – AN INFRASTRUCTURE AWARENESS SYSTEM

For increasing contribution
in volunteer computing

Juan David Hincapié-Ramos,
Aurélien Tabard & Jakob E. Bardram

GridOrbit Public Display

GridOrbit Personal Notifications

Mini-Grid



GridOrbit Public Display



Mini-Grid / CLCbio Workbench ⓧ

You contributed 12% less than other contributors this week.

Click here to contribute more by launching CLCbio.

GridOrbit Personal Notifications

What did awareness systems lead to?

Increased Participation

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Data deluge and scientific computational analyses alternatives:

- Big PC: takes a lot of time
- Local servers: expensive in man-power and \$
- Grid computing / Cyber-Infrastructures
- Volunteer computing infrastructures
 - SETI@HOME
 - World community grid

The Mini-Grid volunteer infrastructure

Local vs. ~~Worldwide~~
Symetric vs. ~~Master-Slave~~
Low cost

Problem of volunteer computing



How do we get people to participate to the Mini-Grid?

A local Volunteer Computing infrastructure means we can leverage existing social ties!

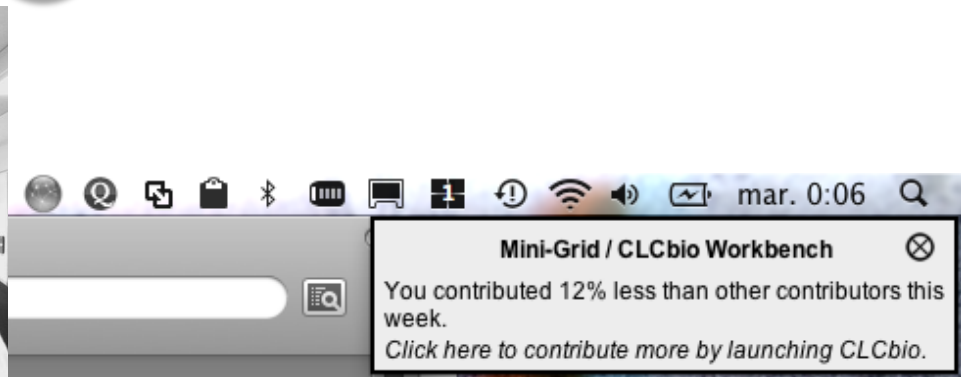
Details in the paper...

- Grid Capacity
- Grid Activity
- People

GridOrbit

1 Public Displays

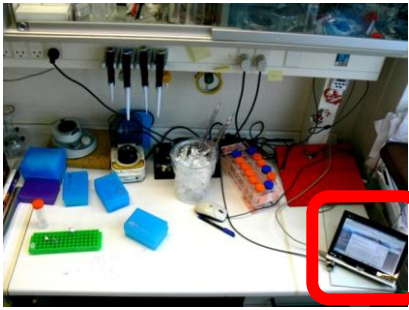
2 Notification System



Building 1:
Corridor in front of the Cafeteria



Building 2:
Elevator +Mail Box Waiting Area



research

folding

DNA

biology

The Real Campeon:
Computes in the grid (running the CLC Bio Workbands) are shown as windmills, and the Forest & gear: the more you are helping others to do.
Sent: 6/2/2010 11:36:14 PM • Reply

The Real Campeon:
Would the real sim shady please stand up?
Sent: 6/2/2010 11:36:01 PM • Reply

The Real Campeon:
Would the real sim shady please stand up?
Sent: 6/2/2010 11:36:01 PM • Reply

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TWEET)))

HOW TO JOIN?

COMMENTS

Machine Name: The Real Campeon
Jobs Submitted: 8
Tasks Executed: 151

[Admin User](#) [View Less](#)

Progress: 100,00 Remaining Time: 0 seconds

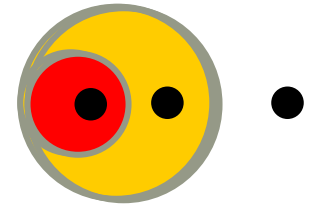
Progress: 100,00 Remaining Time: 0 seconds

Progress: 100,00 Remaining Time: 0 seconds

Progress: 100,00 Remaining Time: 0 seconds


Progress: 100,00 Remaining Time: 0 seconds

Progress: 100,00 Remaining Time: 0 seconds



Notification Zone
(40cm x 70cm)



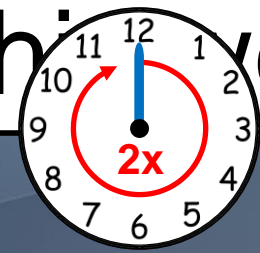
Mini-Grid / CLCbio Workbench 

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Personal Motivation

You contributed for less than 40 hours on the Mini-Grid this week

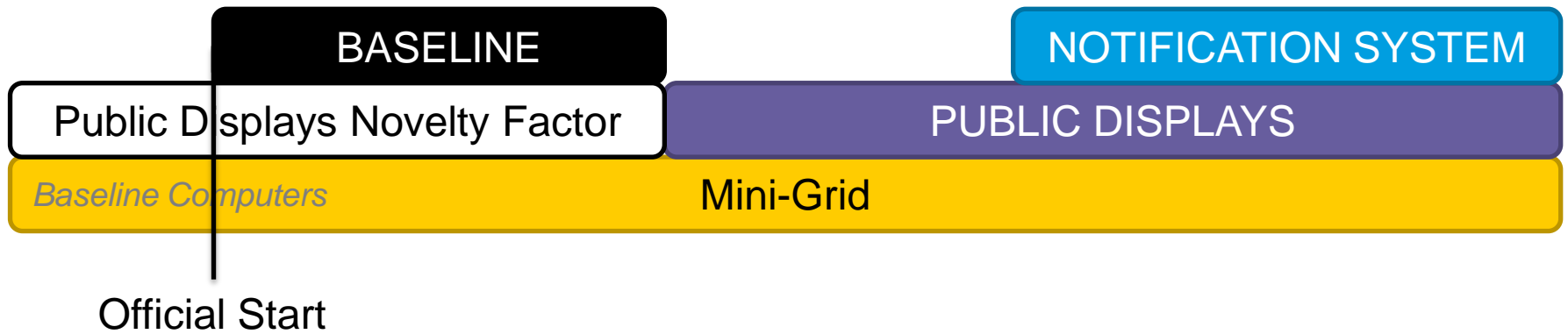


Goals

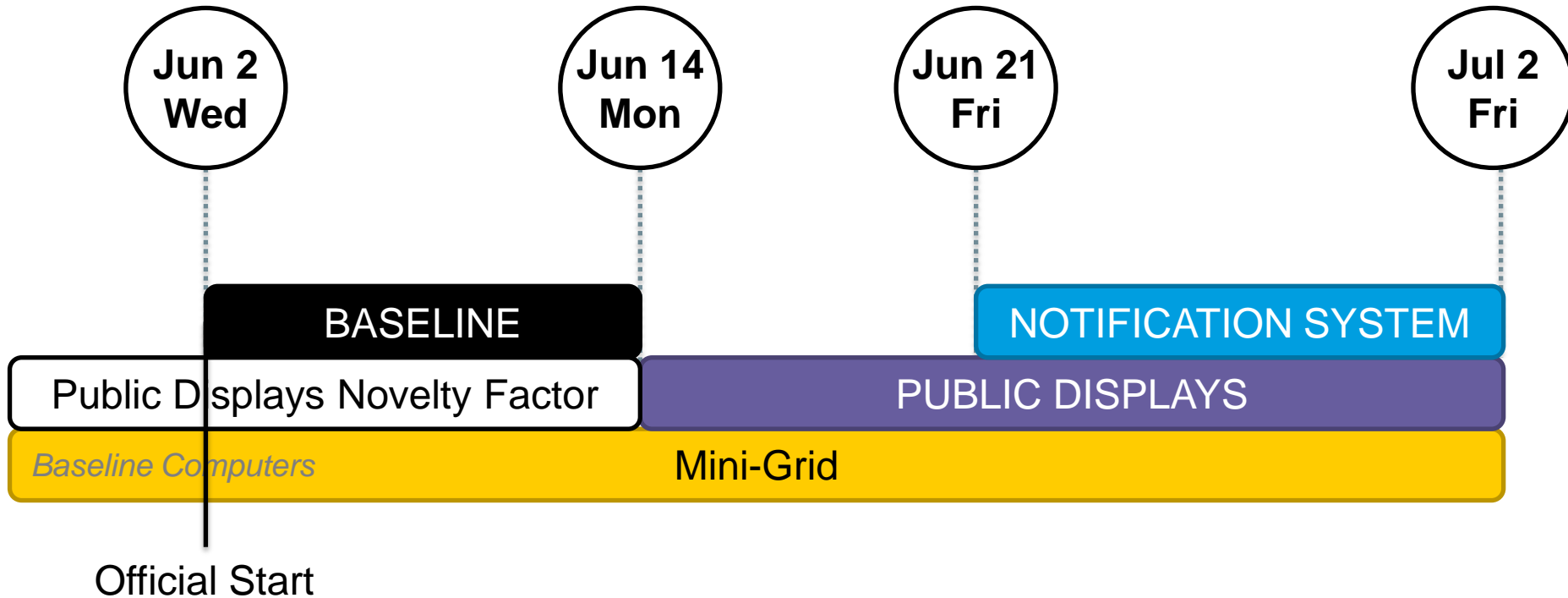
1- See what the impact of these awareness technologies is in the recruitment of volunteers.

2- Gather empirical information about the relation of users and these awareness technologies.

Experimental Design

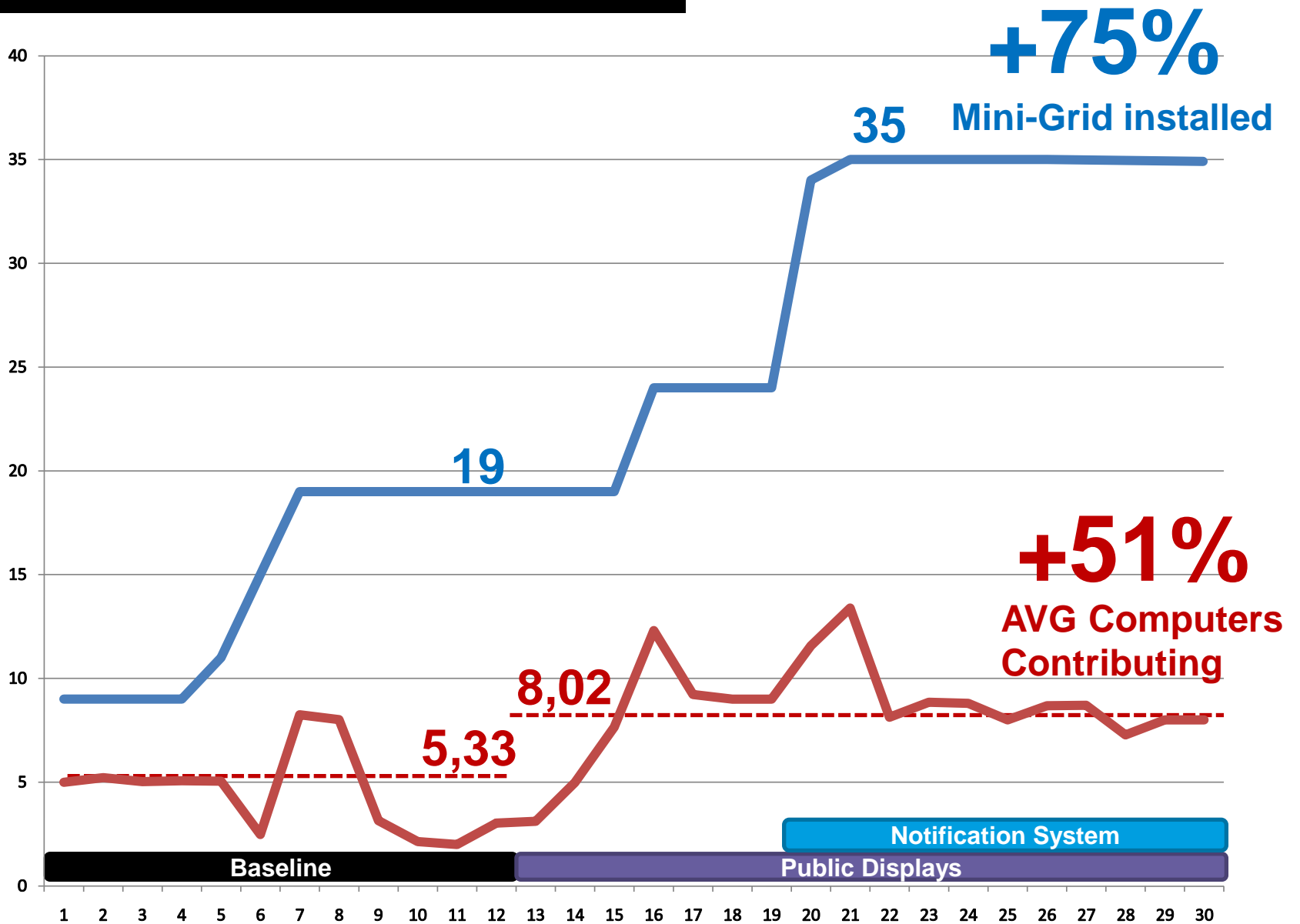


Experimental Design



Results

Increase in Contributions



+75%

Mini-Grid installed

19

+51%

AVG Computers Contributing

5,33

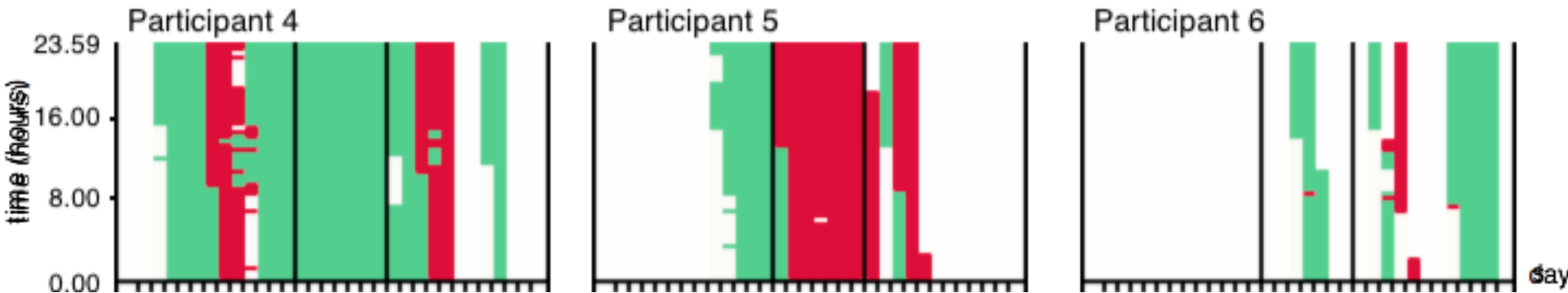
8,02

Baseline

Notification System

Public Displays

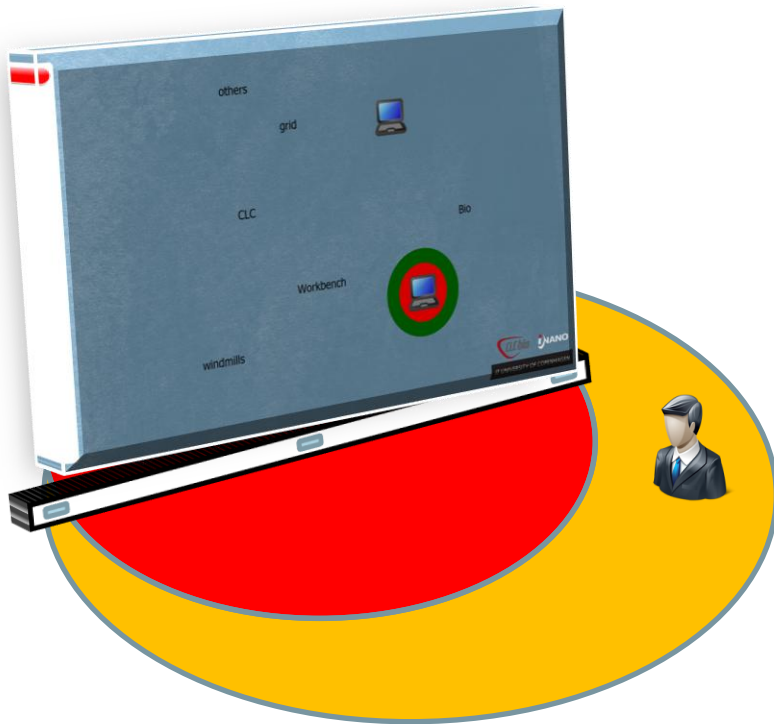
Types of Contributors



- Dedicated Secondary Computers
- Work Desktops
- Laptops (intermittent use)
- Bootstrapping Computers

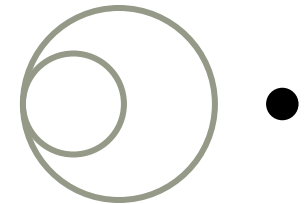
Visits to the public displays

$\Delta t = 1500$



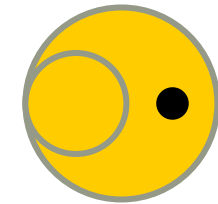
Aware

60% of the Visits
Ambient Zone



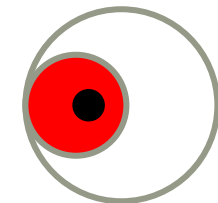
Curious

30% of the Visits
Int + Notification Zone
- Touch Interaction



Explorer

10% of the Visits
Interaction Zone
+ Touch Interaction



Visits to the public displays

Visits

-



Capacity

+



Activity



Face Time!

*From: Participant X
Date: Wed, Jun 16, 2010 at 1:51 PM
Subject: Re: GridOrbit hide details 6/16/10*

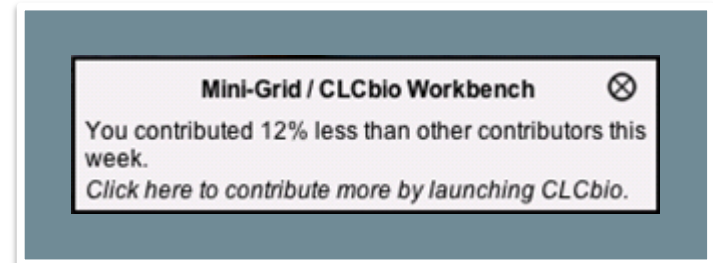
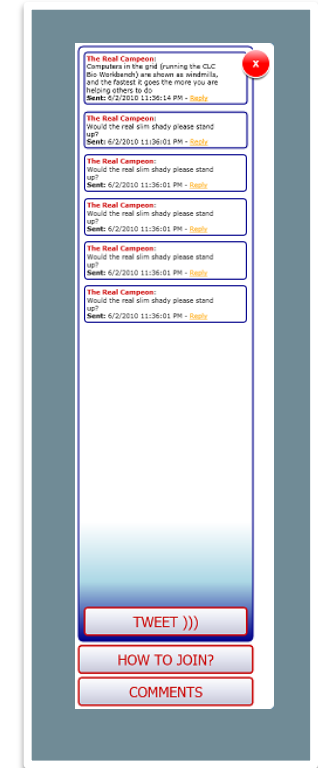
Hi Juan

I got the plugin installed and the whole thing should be up and running. Now I just need to figure out how I can get my picture on the screen in the main building... Do I need to set up some profile somewhere or something like that?

Cheers

No Results

- The on-screen messaging functionality (bulleting board) was not used. We saw only 5 messages for the whole deployment.
- We did not find any significant impact of the different notifications strategies.



Conclusions

- Awareness Technologies can support recruitment **75% increase in total participants**, and **51% increase in hourly average participants**
- Different patterns of contribution of work desktops, secondary computers and laptops.
- There are sustained patterns of visitors: aware, curious, explorer.
- Design for stressing out activity levels.
- Find proper ways to scale visualizations.

Thanks

@jhincapie @aurelient @jbardram