XtremWeb-HEP 8.0.0

Interconnecting jobs over DG

Virtualization over DG

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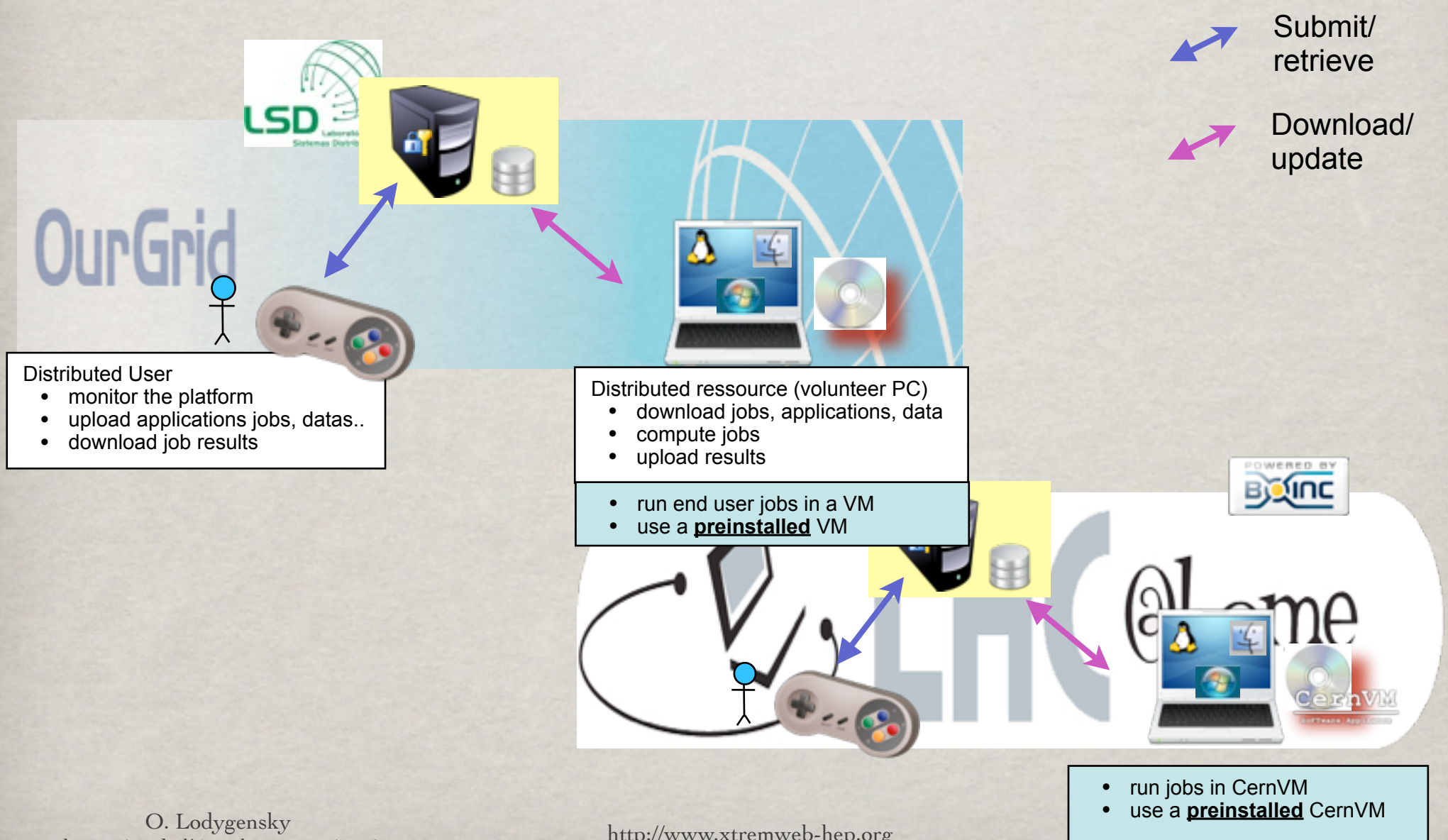
Objectives

1. Deploy Virtual Machines in XtremWeb-HEP desktop grid to:
   - ✓ protect volunteer resources
   - ✓ generalize «pilot job» to interconnect grids
   - ✓ deploy complex applications

2. Internode communications to:
   - ✓ deploy client/server jobs over DG
   - ✓ propose an interactive DG

➡ This does not make DG a cloud

Desktop Grids using VM



VM over XWHEP

Centralized and securized services store applications and data

- scheduler
- repository
- etc.

StratusLab proposes distributions with the IaaS paradigms.

Distributed ressource may declare the virtualbox application.

Distributed User

- submit a virtualbox job with a virtual disk

Distributed ressource (volunteer PC)

- download the virtual disk
- create and run a new VM inside **its local** VirtualBox

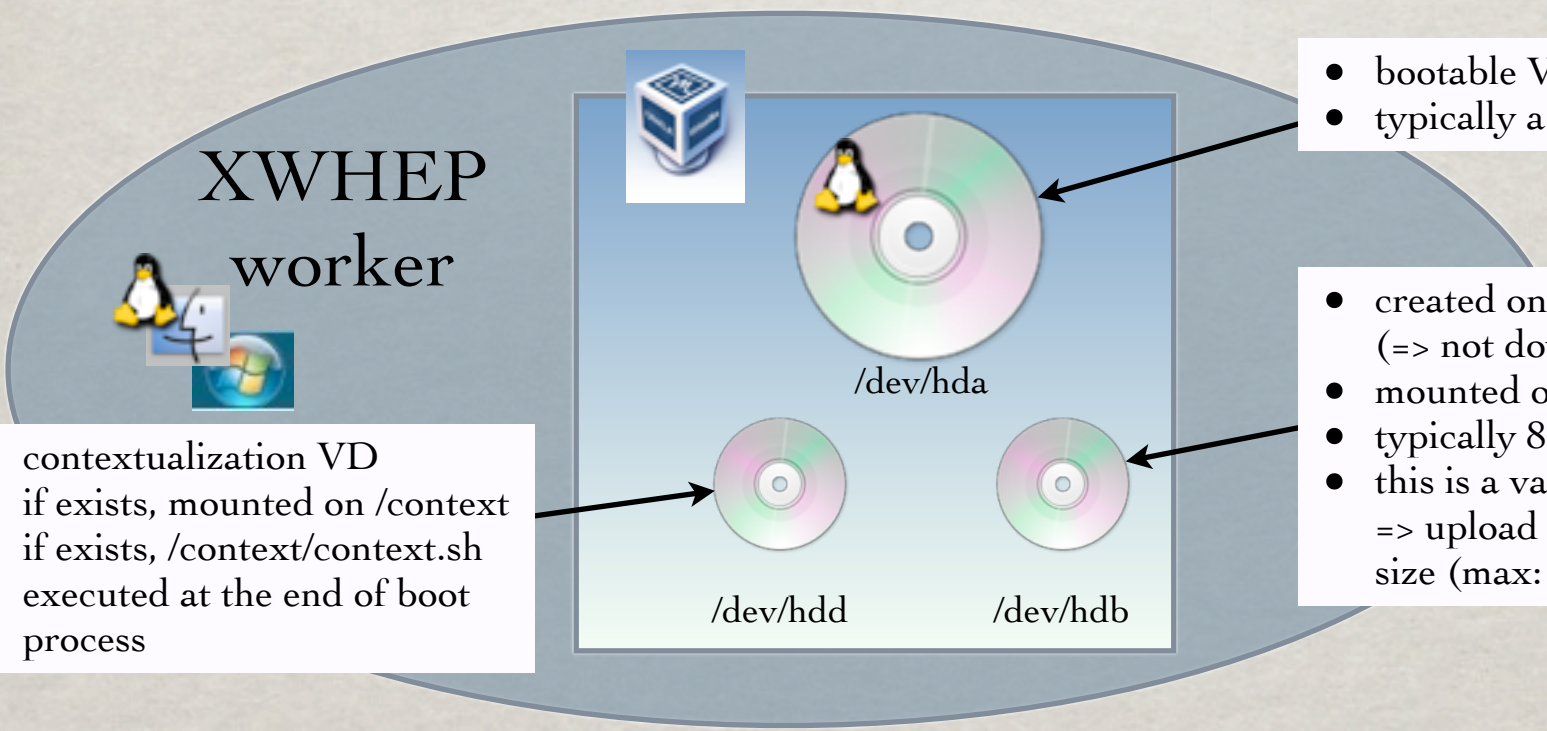
VM : Contextualization

It is not simple to create a virtual disk (VD) containing a virtualized OS.

➡ we need a repository of «template» VD to ease the user life

➡ any user can still create and use its own VD

➡ any VD can be contextualized



- bootable VD
- typically a live CD (350Mb)

- created on the fly by the worker (=> not downloaded)
- mounted on /scratch
- typically 8Gb
- this is a variable size file => upload size then depends on result size (max: 8Gb - hopefully less)

- contextualization VD
- if exists, mounted on /context
- if exists, /context/context.sh executed at the end of boot process

VM : Use Case

- HEP applications are linked to ROOT (http://root.cern.ch)
- DG resources don't have ROOT

➡ submitted jobs will not run

✓ Deploy a VM with ROOT and XWHEP worker

✓ Submit such VM on the fly

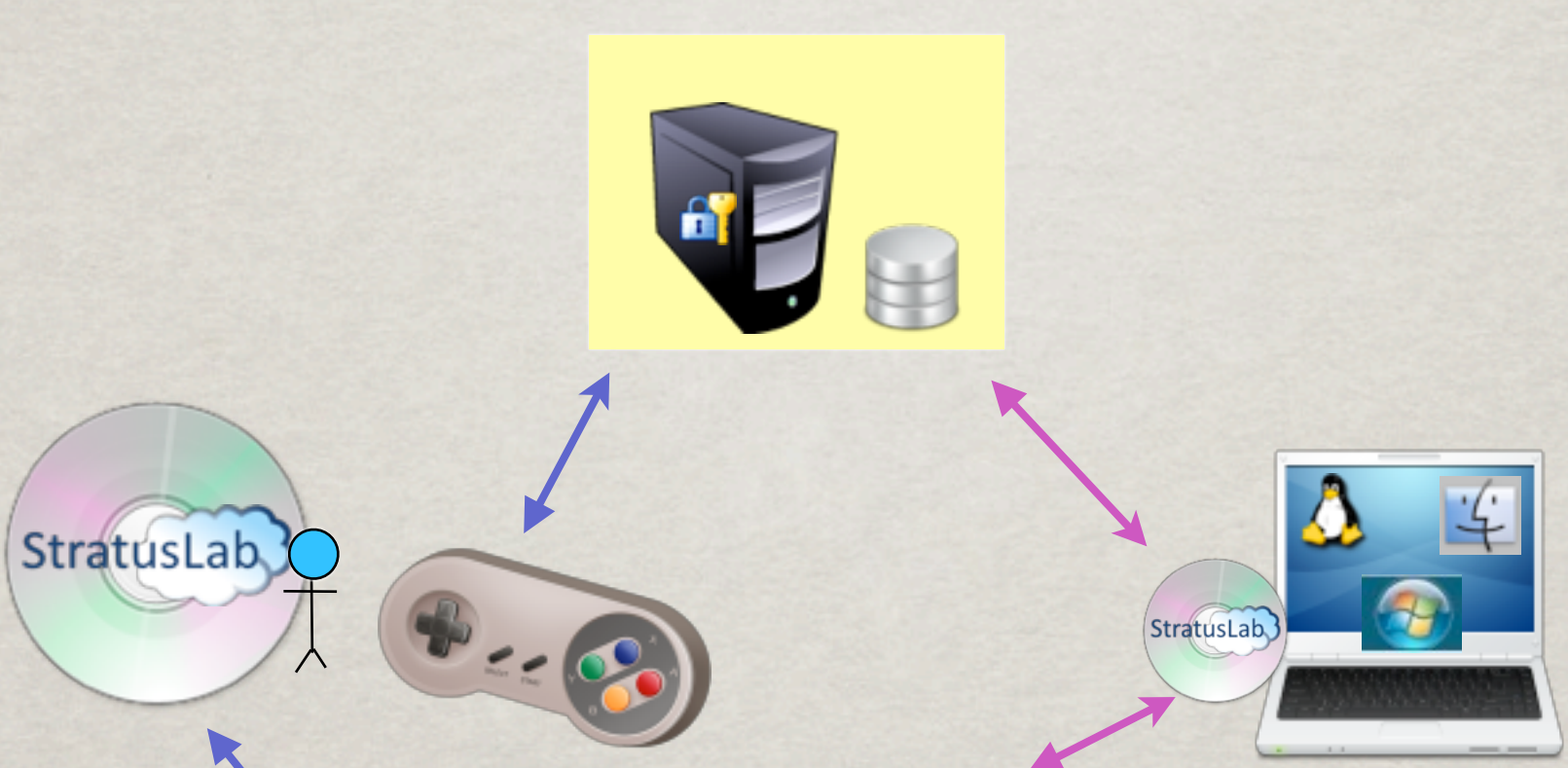
➡ the native worker shares VirtualBox

➡ the native worker launches the VM

➡ the virtualized worker shares ROOT

➡ the virtualized worker run HEP jobs

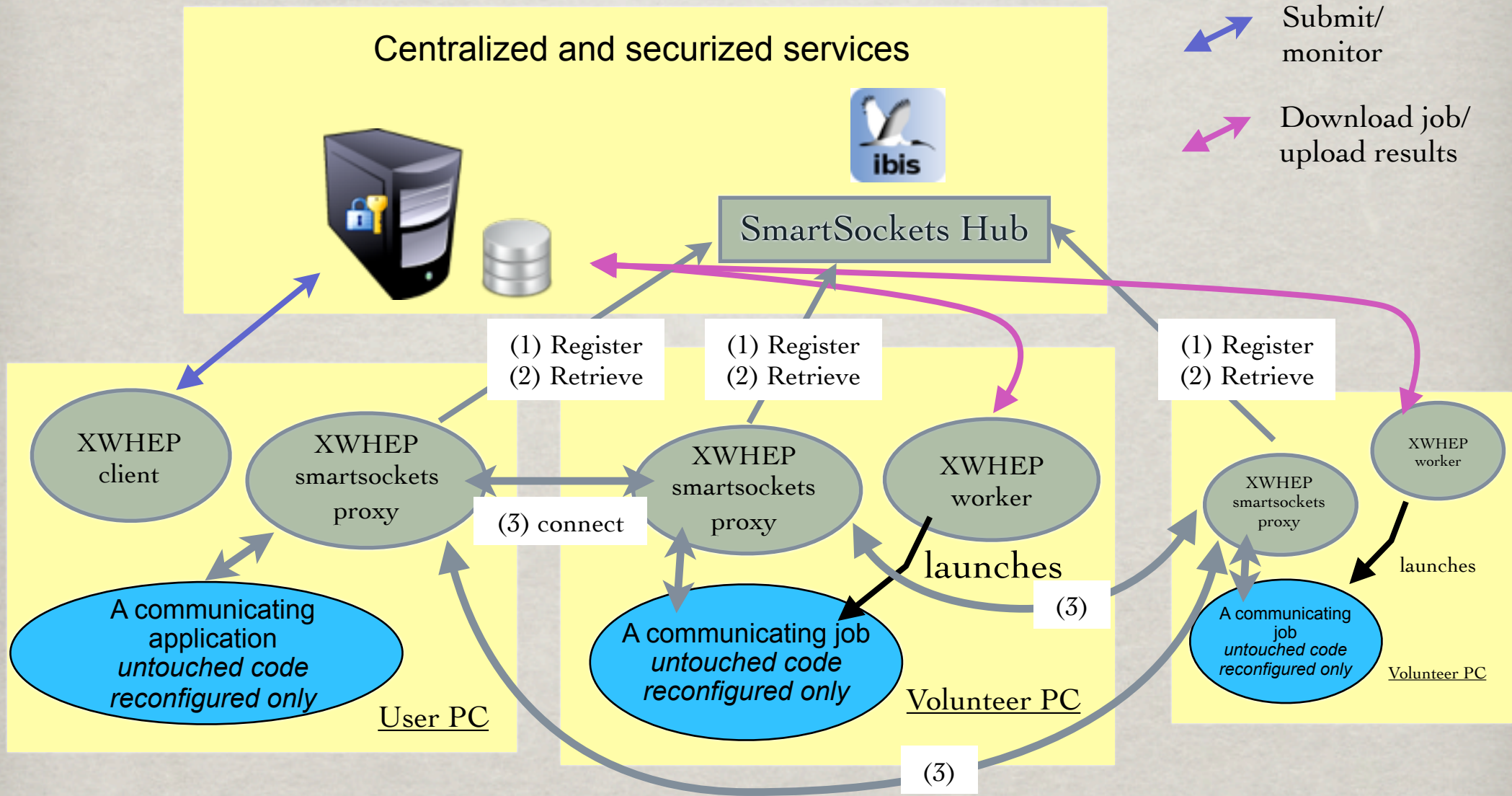
BitDew and XWHEP



The BitDew P2P network places the virtual disk to the expected XWHEP workers.

BiTDeW

Interconnect jobs and applications over DG

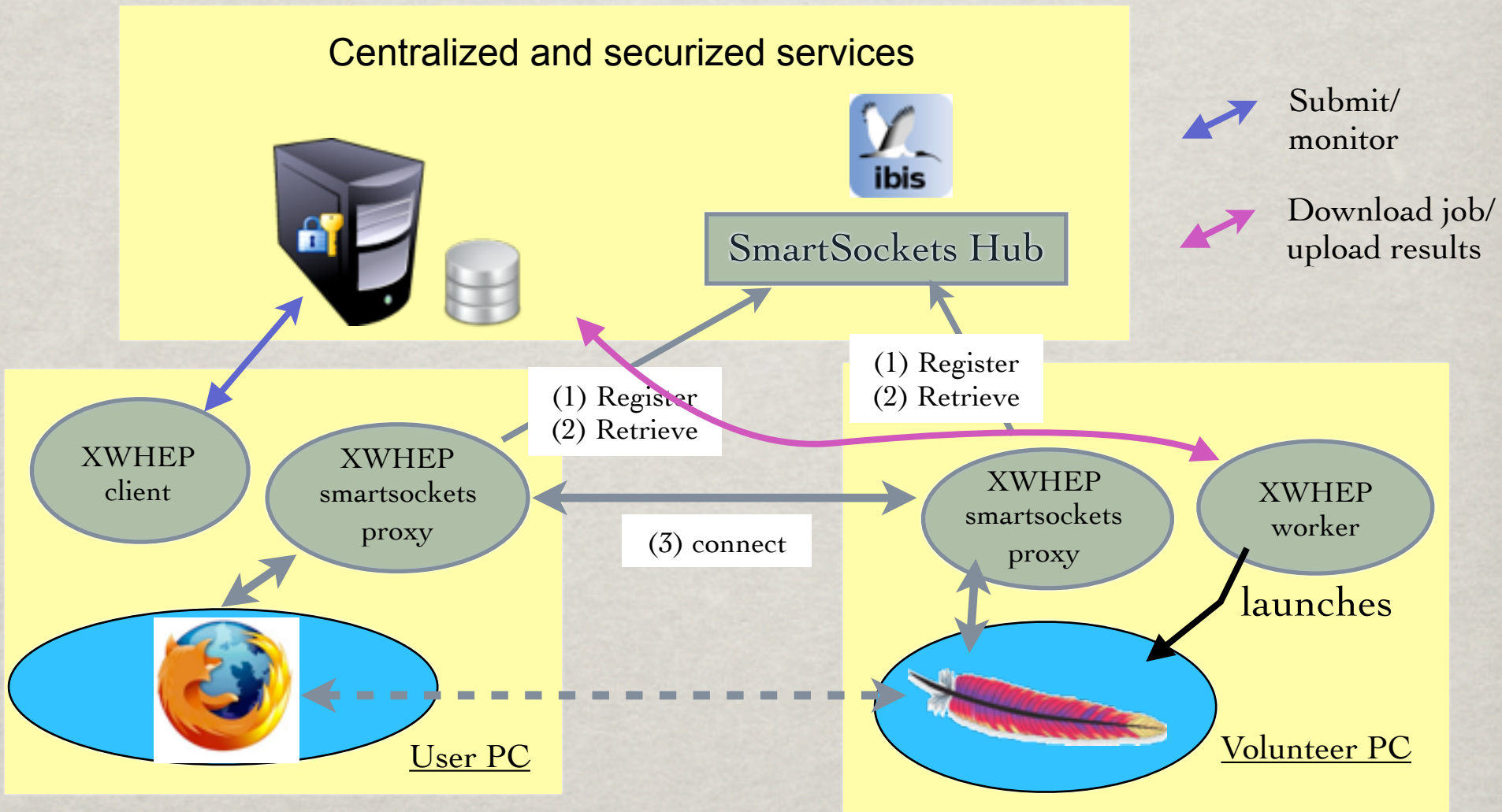


Bypassing FireWalls and NAT

Internode Communications

Example 1 : connect client to a job running on volunteer resource.

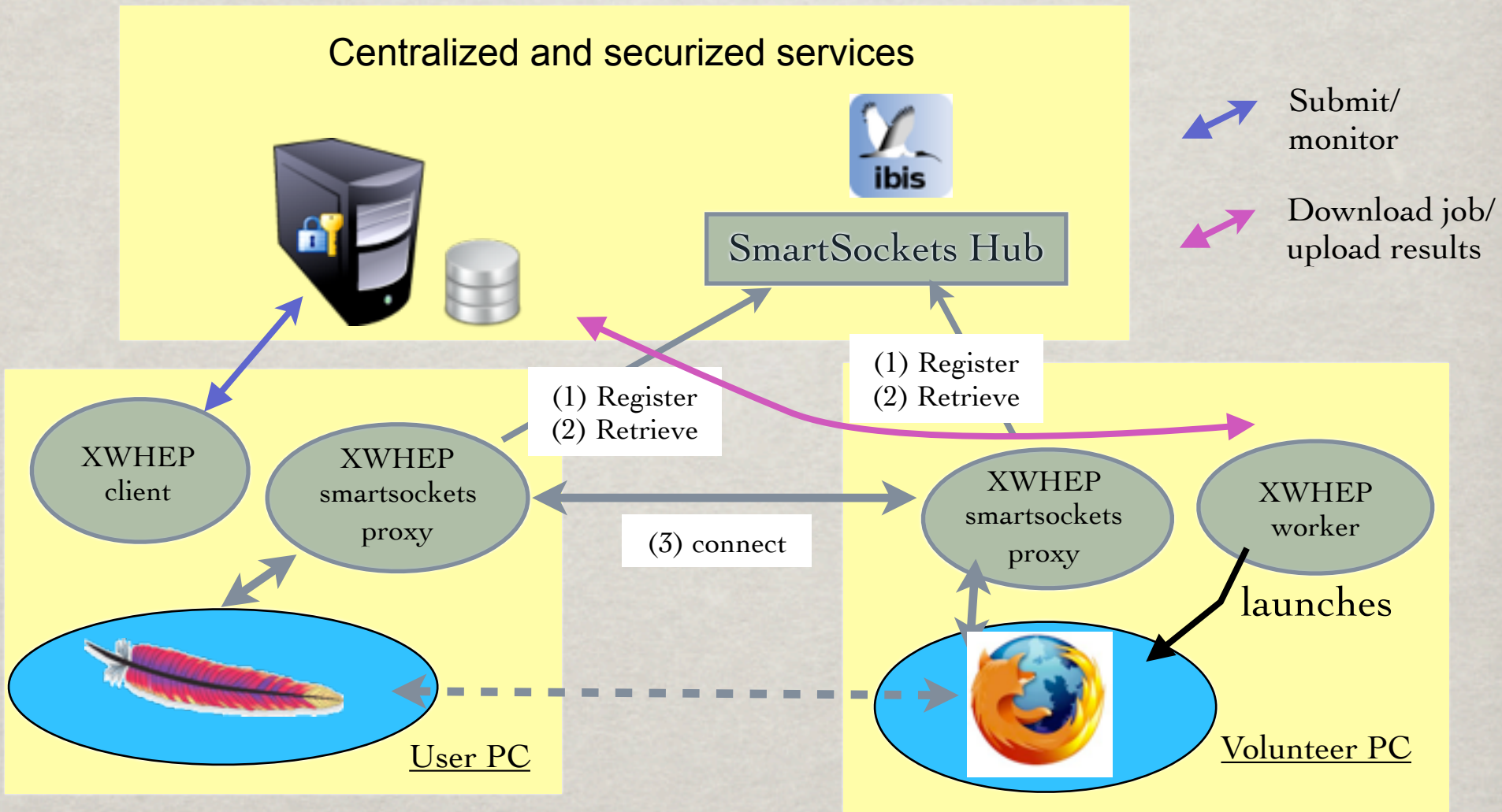
E.G. : deploying jackrabbit over DG (http://jackrabbit.apache.org)



Internode Communications

Example 2 : connect a job running on volunteer resource to a service

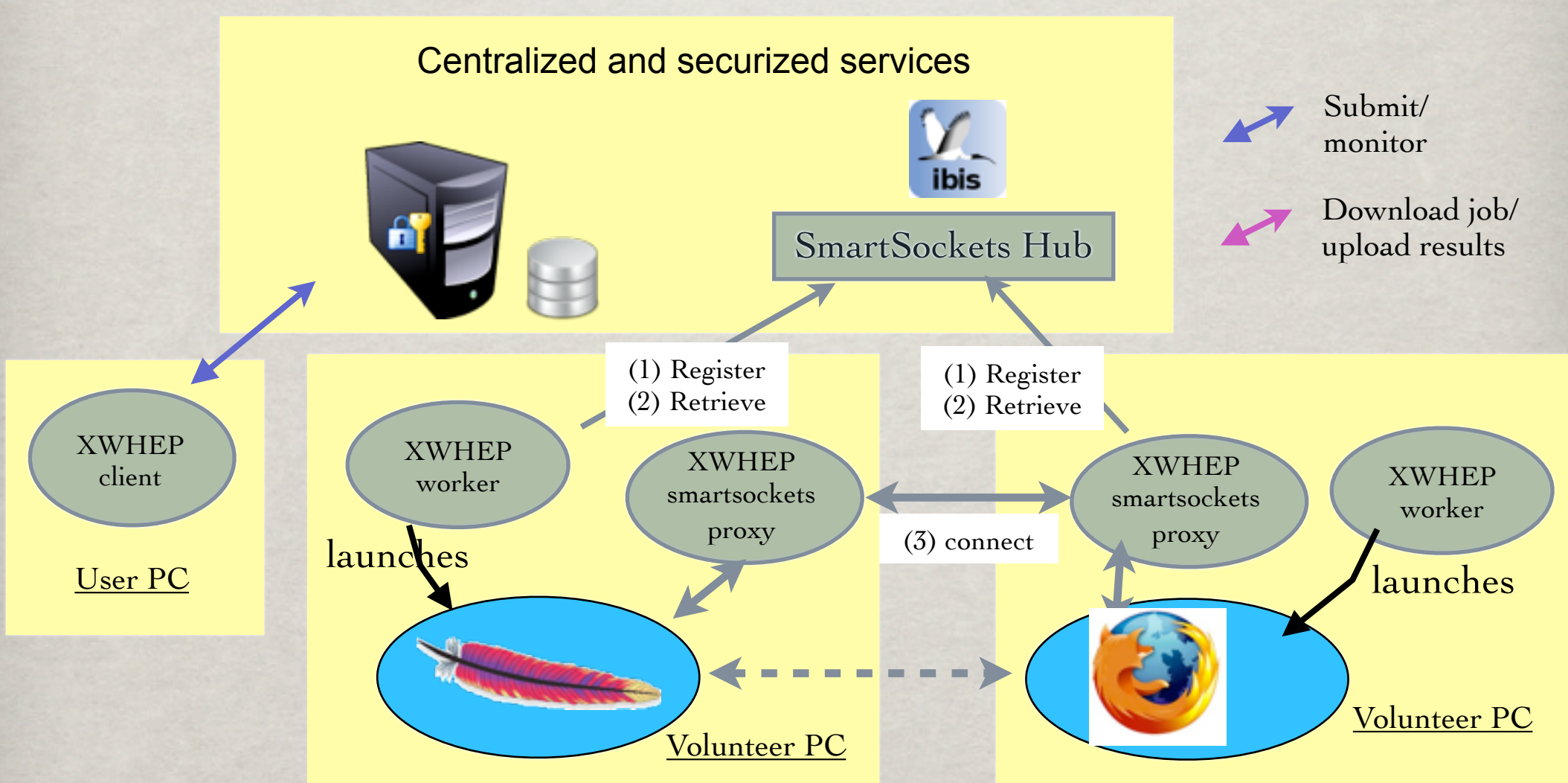
E.G. : deploy wget and connect to a web server running on client



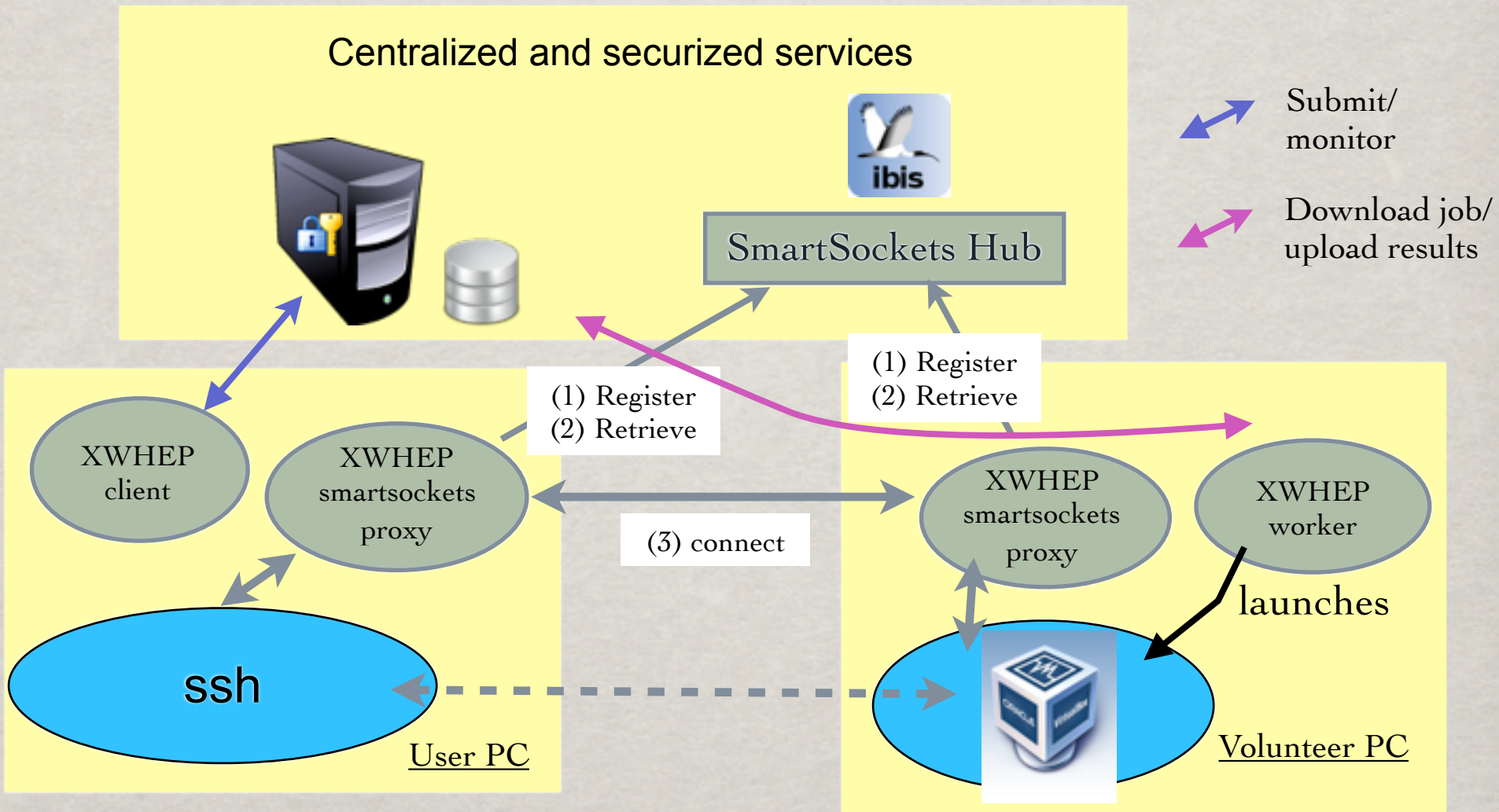
Internode Communications

Example 3 : interconnect jobs running on volunteer resources

E.G. : interconnect wget and jackrabbit running on volunteer resources



Internode Communications

Example 4 : connect client to a job running on volunteer resource.

E.G. : ssh to a running VM