

bwHPC Course

Access: bwUniCluster, bwForCluster, ForHLR I

Elisabeth Syrjakow



UNIVERSITÄT
HEIDELBERG
ZUKUNFT
SEIT 1386

Hochschule
für Technik
Stuttgart



UNI
FREIBURG



Hochschule Esslingen
University of Applied Sciences

Universität
Konstanz



UNIVERSITÄT
MANNHEIM



Universität Stuttgart

EBERHARD KARLS
UNIVERSITÄT
TÜBINGEN



KIT
Karlsruher Institut für Technologie



ulm university universität
uulm

Outline

- Intro
- Registration Processes
 - bwUniCluster
 - bwForCluster
 - ForHLR I
- First Steps
 - Login
 - File Transfer
- Questions

1. Intro

References

■ bwHPC Wiki

- <http://www.bwhpc-c5.de/wiki>

■ Registration/Access

- <http://www.bwhpc-c5.de/wiki/index.php/Category:Access>
- http://www.bwhpc-c5.de/en/ZAS/zas_overview.php

■ File Transfer

- <http://www.bwhpc-c5.de/wiki/index.php/BwFileStorage>

■ Slides

- <https://indico.scc.kit.edu/indico/event/132/>
- <ab1234@bwunicluster:/opt/bwhpc/kit/workshop/>

2. Registration

Registration

Different clusters → different registration processes

■ bwUniCluster:

- Tier 3 cluster for general purposes
- Simple registration process


■ bwForCluster:

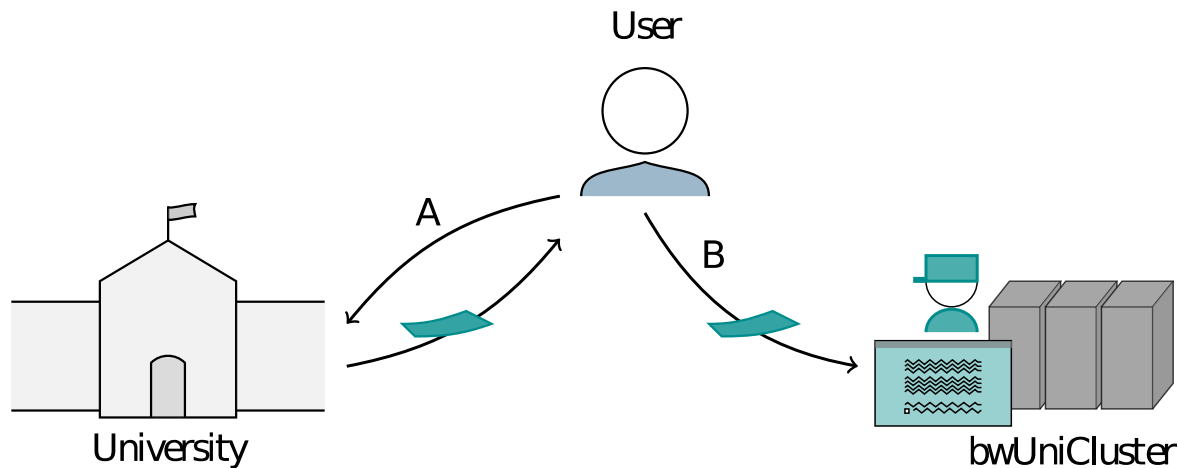
- Tier 3 research clusters
- Architecture optimized for certain scientific communities
- Access process ensures using the suitable cluster and enhances user support

■ ForHLR 1:

- Tier 2 cluster
- Access process ensures that applications fulfill requirements of parallelization

Registration Process - bwUniCluster

- Access only for members of shareholder universities.
- Authentication with usual university account via bwIDM.
- Authorization via bwUniCluster entitlement  issued by the universities.



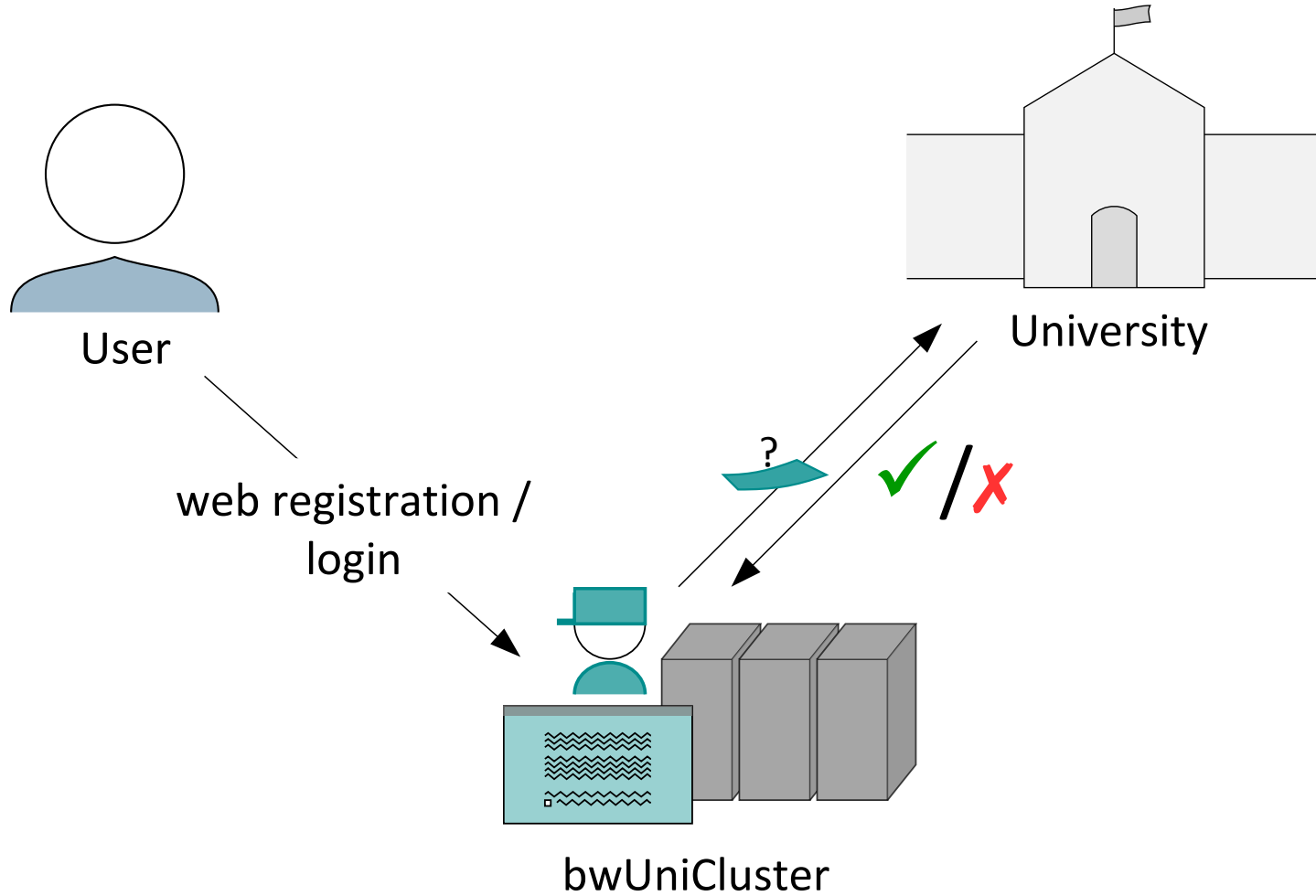
Step A: Obtainment of bwUniCluster entitlement

- Each university has its own entitlement granting policies!

Step B: Web registration at <https://bwidm.scc.kit.edu/>

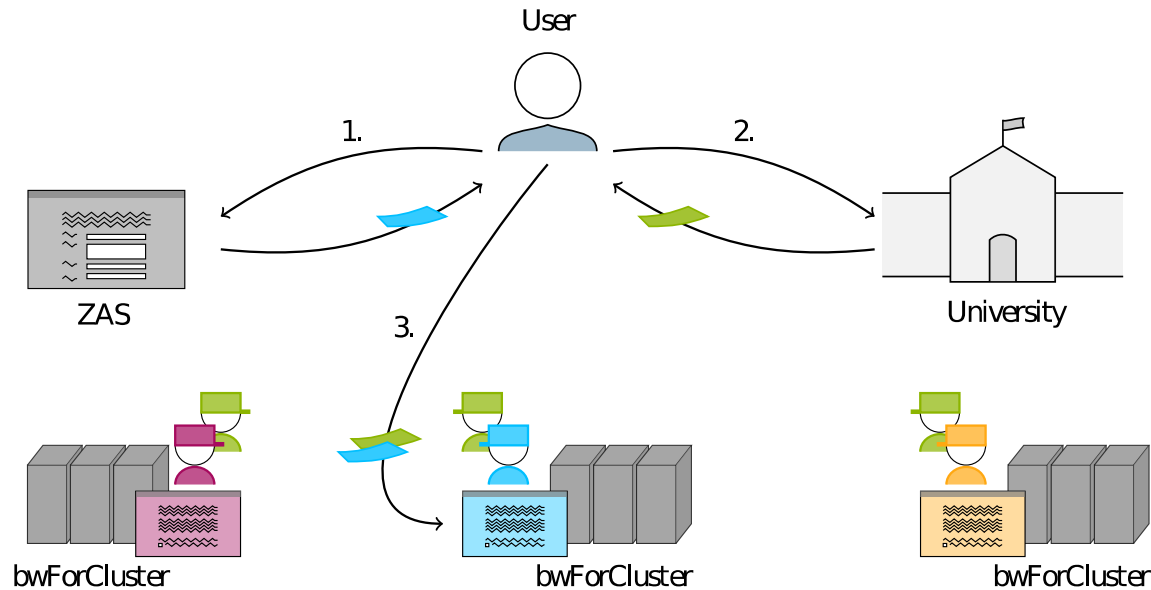
- Login via bwIDM with your account at university

Registration Process - bwUniCluster



Registration Process - bwForClusters

- Access for members of Baden-Württemberg's universities.



Step 1: Registration at „Zentrale Antragsseite (ZAS)“

- Approval  of Cluster Assignment Team (CAT)

Step 2: Obtainment of bwForCluster entitlement 

Step 3: Web registration at bwForCluster operator

- e.g. <http://bwidm.rz.uni-ulm.de/>, bwForCluster JUSTUS (Computational Chemistry)

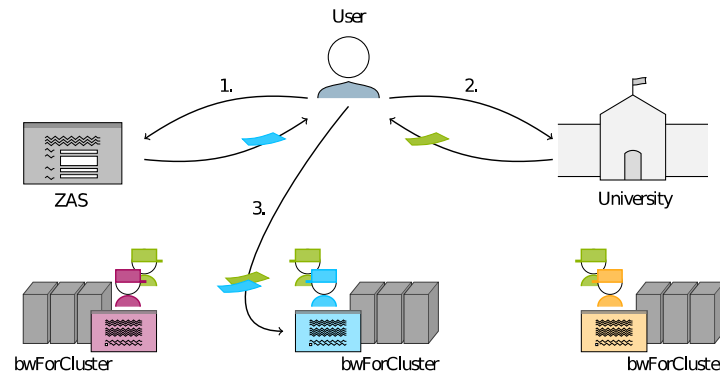
Registration Process – bwForClusters - ZAS

The screenshot shows the website interface for bwHPC-C5. The top navigation bar includes 'News', 'Project Partners', 'Project Objectives & Tasks', 'Project Results', 'User Support', 'Resources and Portfolio', 'ZAS', 'bwHPC Wiki', 'bwHPC Concept', 'User Steering Committee', and 'Contact'. The 'ZAS' link is circled in yellow, and a yellow arrow points from it towards the registration process diagram on the right.

- Registration of compute activities for **A** bwForCluster



- Approval of the Cluster Assignment Team (CAT) is valid for **ONE** bwForCluster.



- Zentrale Antragsseite* (ZAS) is located at <http://www.bwhpc-c5.de/>

Registration Process – bwForClusters - ZAS

The screenshot shows the website interface for bwHPC-C5-ZAS. The browser address bar displays https://www.bwhpc-c5.de/en/ZAS/zas_overview.php. The page features the bwHPC-C5 logo and the text 'Coordinated Compu'. A navigation menu on the left includes items like 'News', 'Project Partners', 'Project Objectives & Tasks', 'Project Results', 'User Support', 'Resources and Portfolio', 'ZAS', 'bwHPC Wiki', 'bwHPC Concept', 'User Steering Committee', and 'Contact'. The 'ZAS' section is highlighted in orange and contains sub-items: 'bwForCluster RV registration', 'bwForCluster Collaboration', 'bwUniCluster Survey', and 'My Compute Activities'. The main content area on the right includes sections for 'Central Proposal Site', 'Registration of a reche', 'Collaboration in a recr', and 'Your compute activitie'.

Rechenvorhaben (RV)

research objective,
used methods & software packages, ..

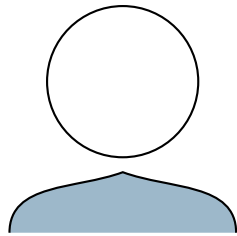
Resource requirements
CPU Hours, memory,
disk space, ..

RV responsible
= applicant

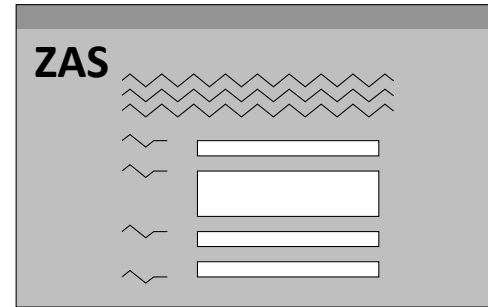
Team
managers, coworker

- An RV approval is valid for
 - **one** certain bwForCluster
 - **all team members**
 - a period of **one year** after approval

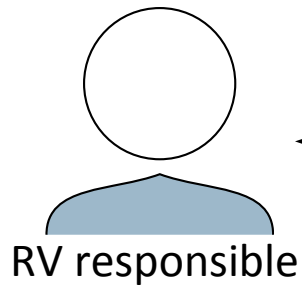
Registration Process – bwForClusters



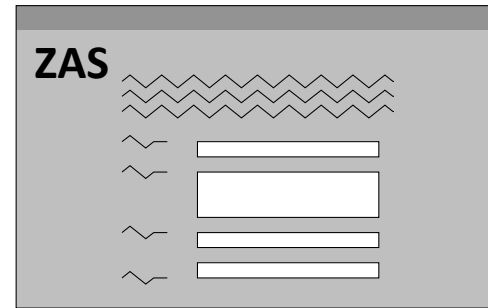
RV registration



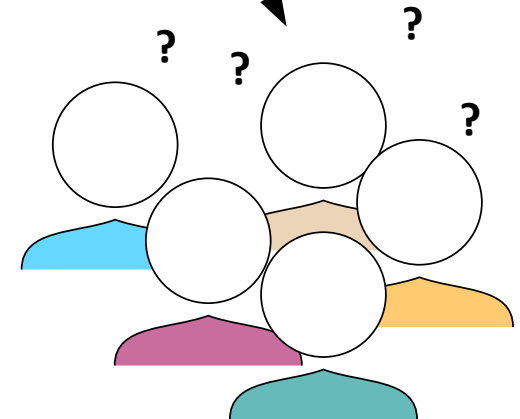
Registration Process – bwForClusters



← acronym / password

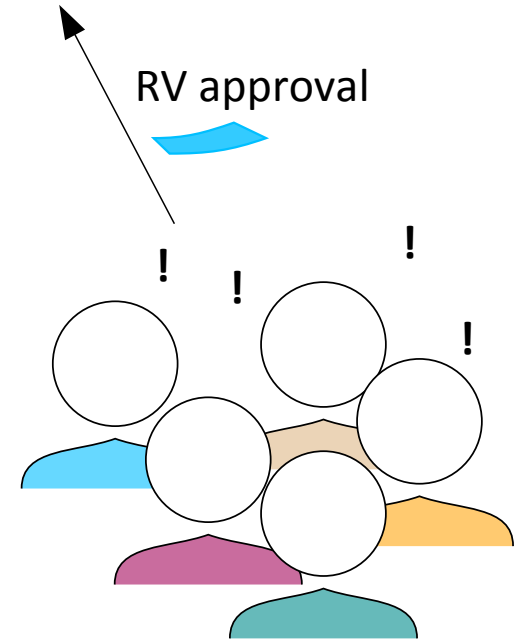
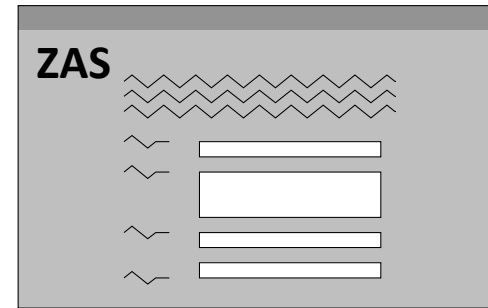
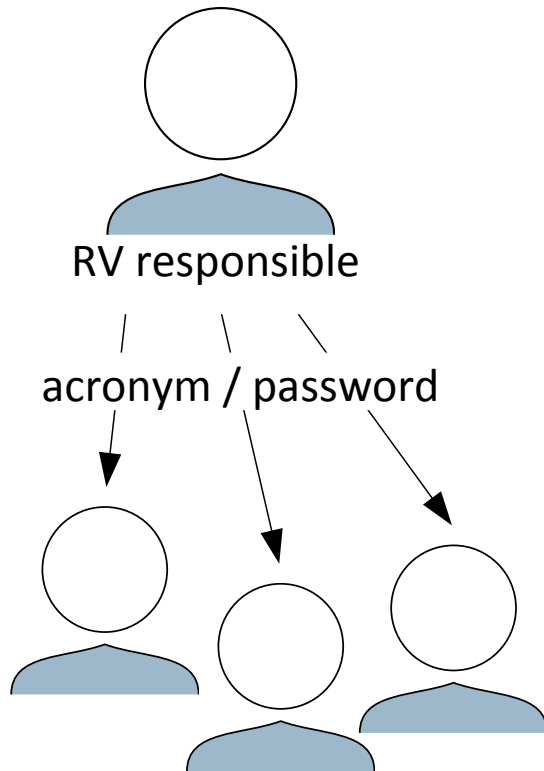


RV application

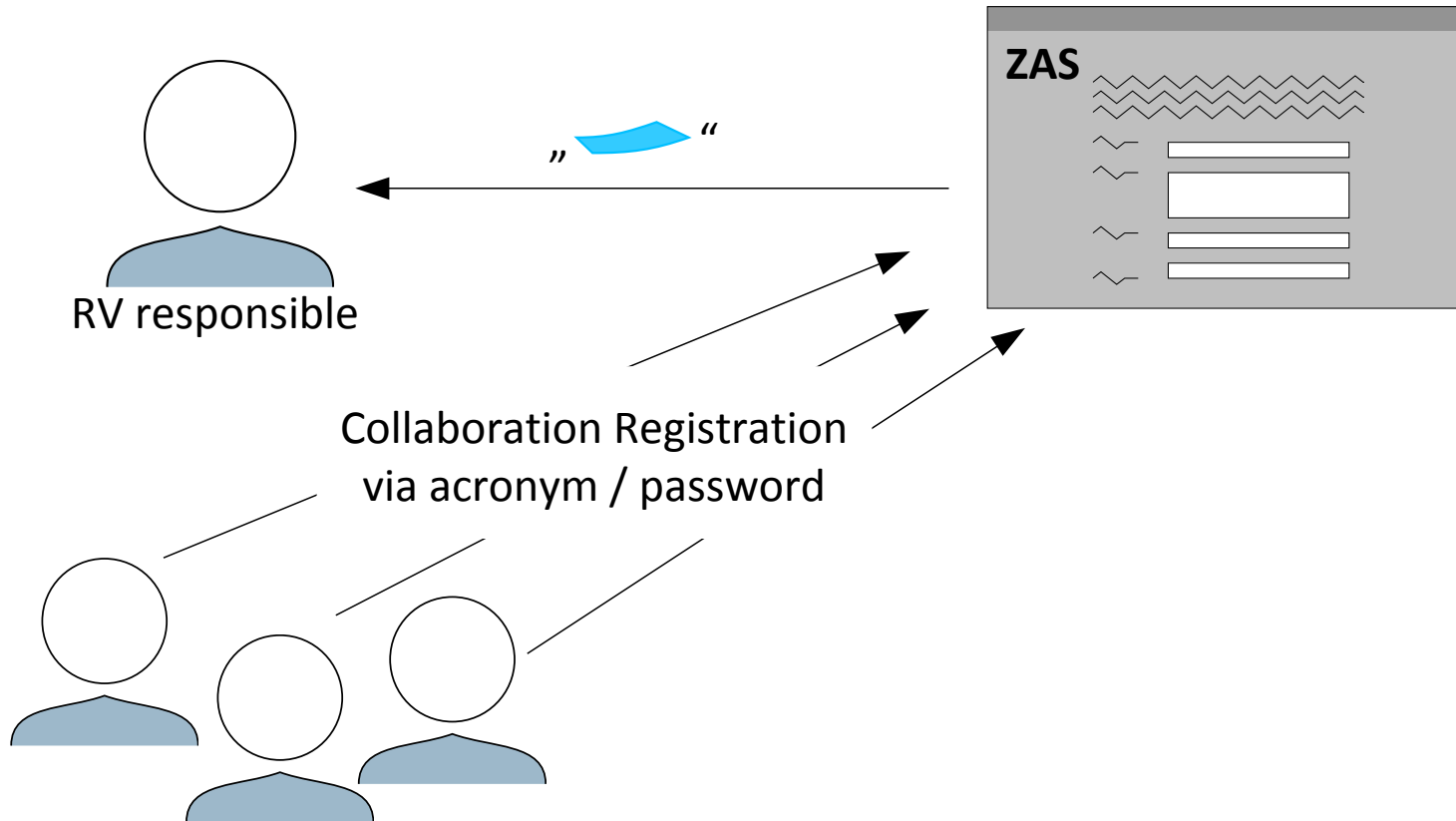


CAT (Cluster Assignment Team)

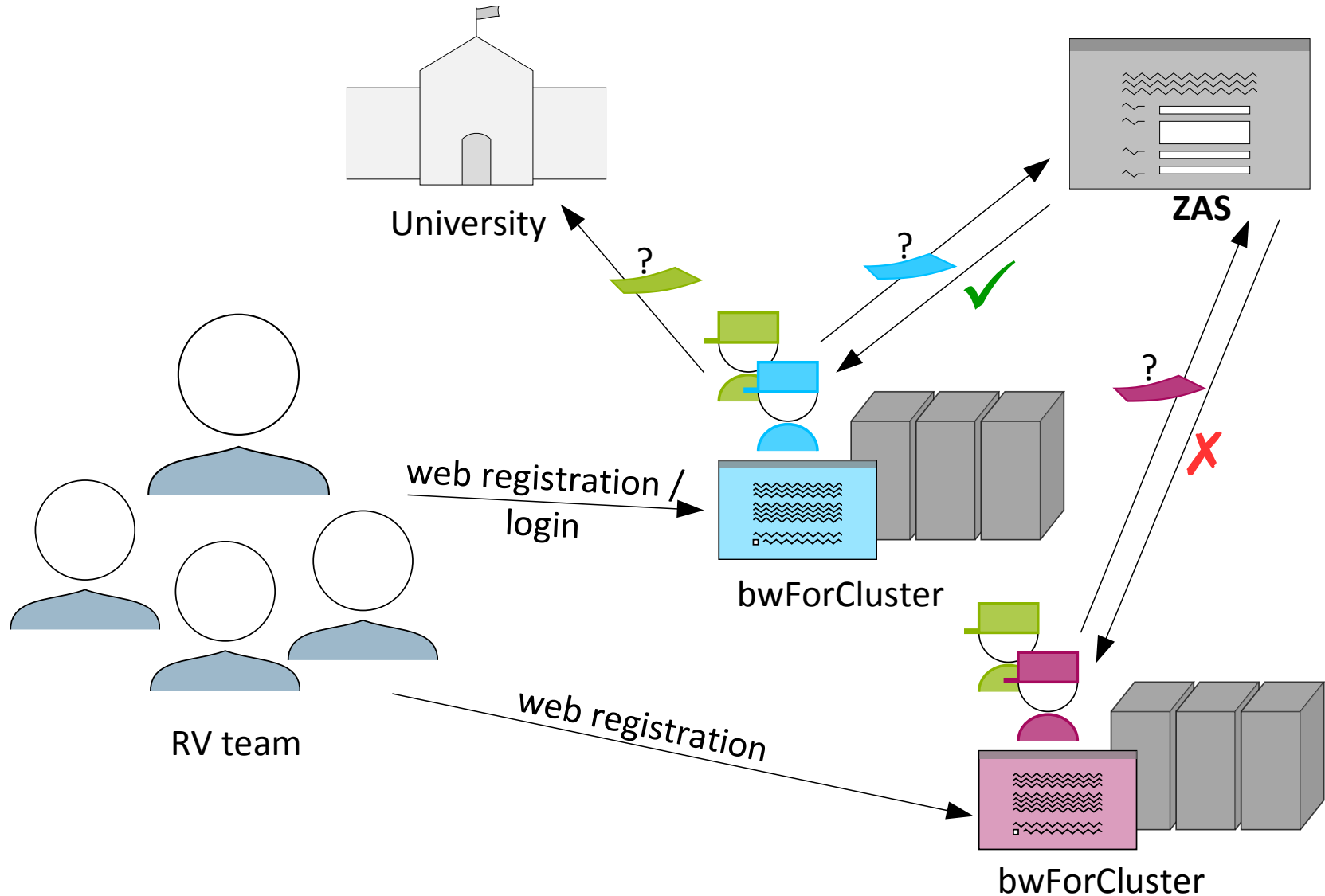
Registration Process – bwForClusters



Registration Process – bwForClusters



Registration Process – bwForClusters

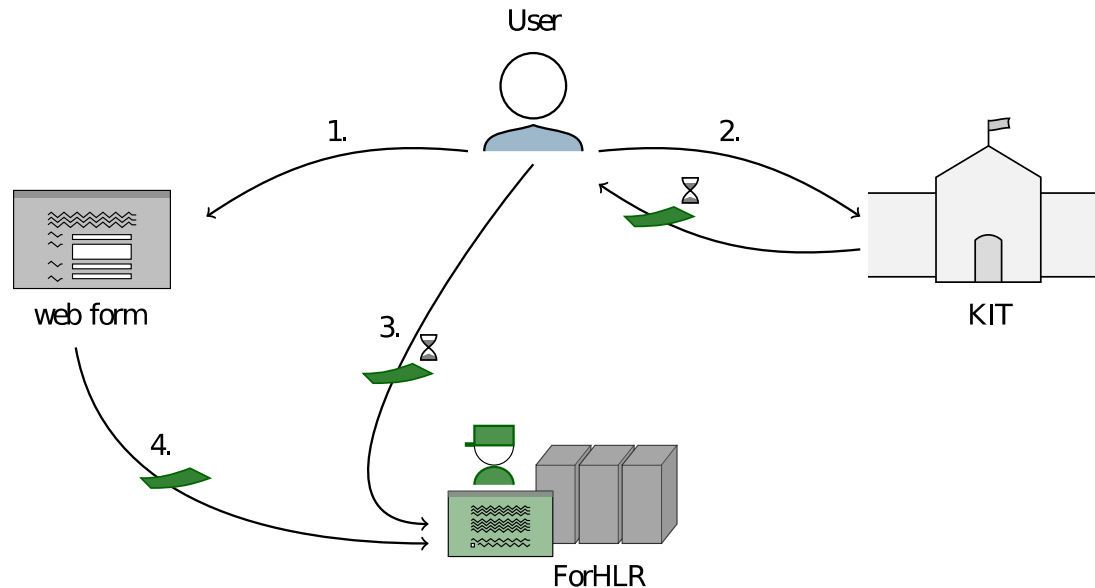


Registration Process – bwForClusters - ZAS

- RV responsible
 - Read details of RV description, resources, RV responsible, team and status
 - Change roles (manager/coworker) of team members
 - De-/Reactivate team members
 - Renew password
 - Apply further resources (if approved)
 - Access to bwForCluster (if approval is valid)

- Team members (managers, coworkers)
 - General rights (managers & coworkers)
 - Read details of RV description, resources, RV responsible and status
 - Access to bwForCluster (if approval is valid)
 - Additional manager rights
 - Read team details
 - De-/Reactivate coworkers

Registration Process – ForHLR 1



Step 1: Submission of a **project proposal**

- Reviewed by a scientific steering committee

Step 2: Obtainment of **preliminary** ForHLR access  via

http://www.scc.kit.edu/downloads/sdo/Antrag_Benutzernummer_ForHLR.pdf

Step 3: Web registration at <http://bwidm.scc.kit.edu/>

Step 4: Approval  of the steering committee confirms access

3. First Steps

Login (1)

General

Connection by **ssh**

Username

[<prefix>_]<username>

■ **ab1234** (KIT)

■ **ho_anfuchs** (Hohenheim)

Host:

■ **ucl.scc.kit.edu**

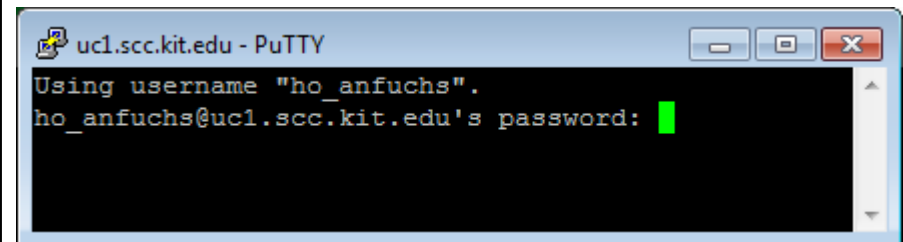
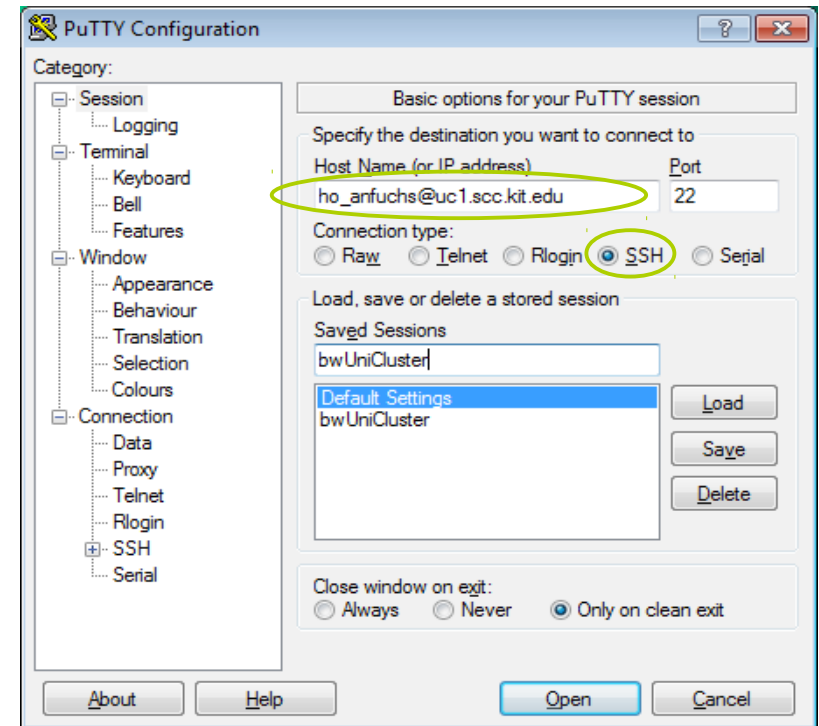
■ **justus.uni-ulm.de**

■ **fh1.scc.kit.edu**

Linux / Mac OS

```
$ ssh ab1234@ucl.scc.kit.edu
ab1234@ucl.scc.kit.edu's password:
```

Windows (via PuTTY)



Basic commands

<code>\$ pwd</code>	show path of working directory
<code>\$ mkdir <dirname></code>	make directory
<code>\$ ls -l</code>	list directory contents
<code>\$ cd</code>	change directory
<code>\$ cp <sourcefile> <targetfile></code>	copy file
<code>\$ mv <sourcefile> <targetfile></code>	move file
<code>\$ rm <filename></code>	remove file
<code>\$ man <command></code>	show command's manual
<code>\$ vi</code>	standard unix editor

File transfer (1)

<pre>\$ scp <sourcefile> <targetfile></pre>	secure copy (remote file copy program)
<pre>\$ scp -r <sourcedir> <targetdir></pre>	recursively copy entire directories
<pre>\$ sftp <targetdir> \$ put get <sourcefile></pre>	secure file transfer program upload/download file

■ Example

- ```
$ scp paket.tar ab1234@uc1.scc.kit.edu:dir/
ab1234@uc1.scc.kit.edu's password:
```
- ```
$ sftp ab1234@uc1.scc.kit.edu:test  
ab1234@uc1.scc.kit.edu's password:  
Connected to uc1.scc.kit.edu.  
Changing to: /pfs2/data2/home/kit/scc/ab1234/test  
sftp> put paket.tar
```

File transfer (2)

Windows (via WinSCP)

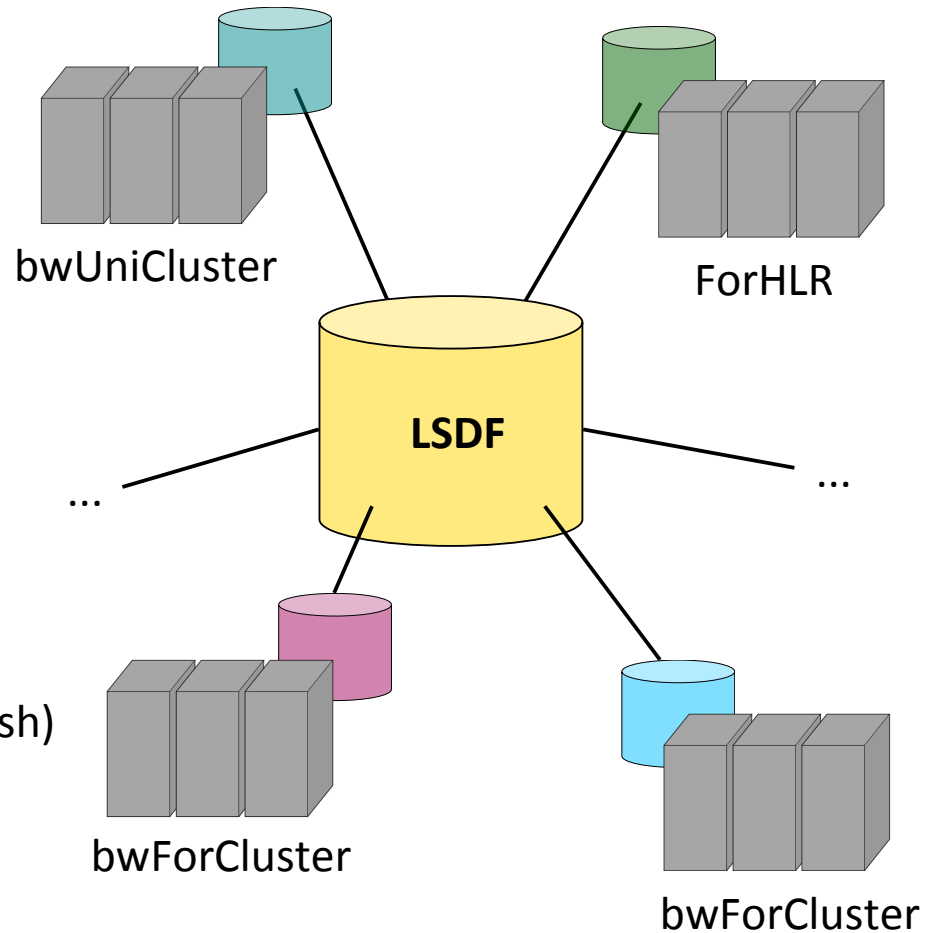
The screenshot shows the WinSCP interface with the following details:

- Source Directory:** C:\Users\anfuchs\Desktop\c5
- Target Directory:** /pfs/data2/home/ho/ho_kim/ho_anfuchs/ordner
- File Transfer:** A file named 'paket.tar' (3.206 MiB, TAR-Datei) is being transferred from the source to the target.
- WinSCP Anmeldung Dialog:**
 - Übertragungsprotokoll: SFTP
 - Rechnername: uc1.scc.kit.edu
 - Portnummer: 22
 - Benutzername: ho_anfuchs
 - Buttons: Bearbeiten, Erweitert...
- Status Bar:** 0 B von 3.206 MiB in 0 von 1; Markierte lokale Datei(en) ins entfernte Verzeichnis hochladen; SFTP-3; 0:07:50



bwFileStorage

- Access to Large-Scale Data Facility
 - Central storage located at KIT
 - 100GB disk space per user
- Requirements
 - bwFileStorage entitlement
 - web registration at <https://bwidm.scc.kit.edu>
- Hosts
 - `bwfilestorage.lsf.kit.edu`
 - <http://bwfilestorage.lsf.kit.edu>
 - `bwfilestorage-login.lsf.kit.edu` (ssh)
- Transfer tools
 - `scp`, `sftp`, `https`, ..
 - `rdata` (bwUniCluster, ForHLR)



bwFileStorage: rdata

- file system operations on „data mover“ nodes
- supported commands:
`cp, rm, ls, rsync, mv, mkdir, ...`
- Environment variables:
 - `$BWFILESTORAGE=/bwfilestorage/ka/ka_scc/ab1234/`
 - `$BWFS=/bwfilestorage/ka/ka_scc/ab1234/`
- Example:

```
$ scp file ka_ab1234@bwfilestorage.lsd.f.kit.edu:  
$ rdata cp file $BWFS
```

- Performance with a file size of 20000 MB:
 - `scp`: 2min 24 s (139 MB/s)
 - `rdata cp`: 1 min 5 s (308 MB/s)

4. Questions