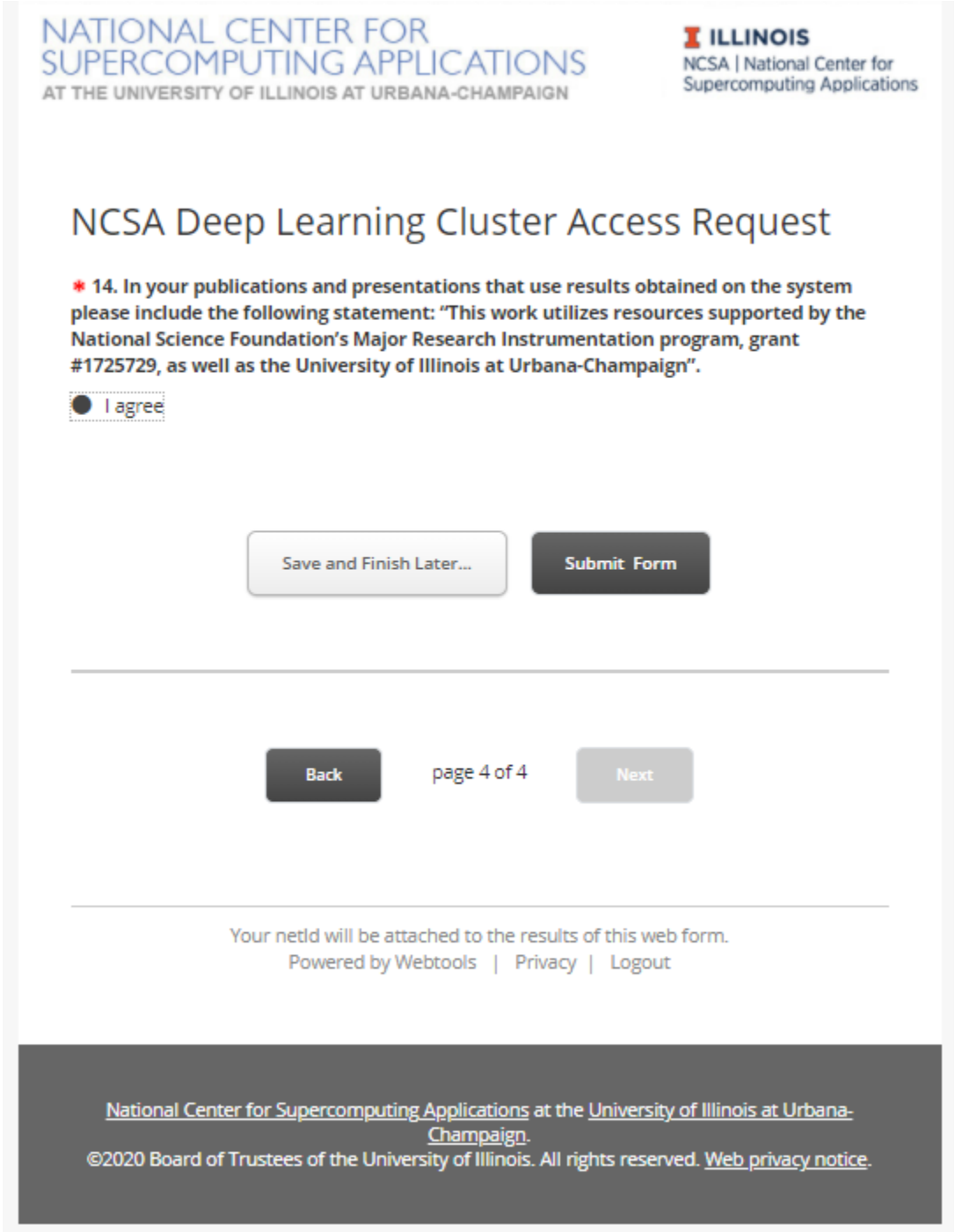
New User Guide for HAL System

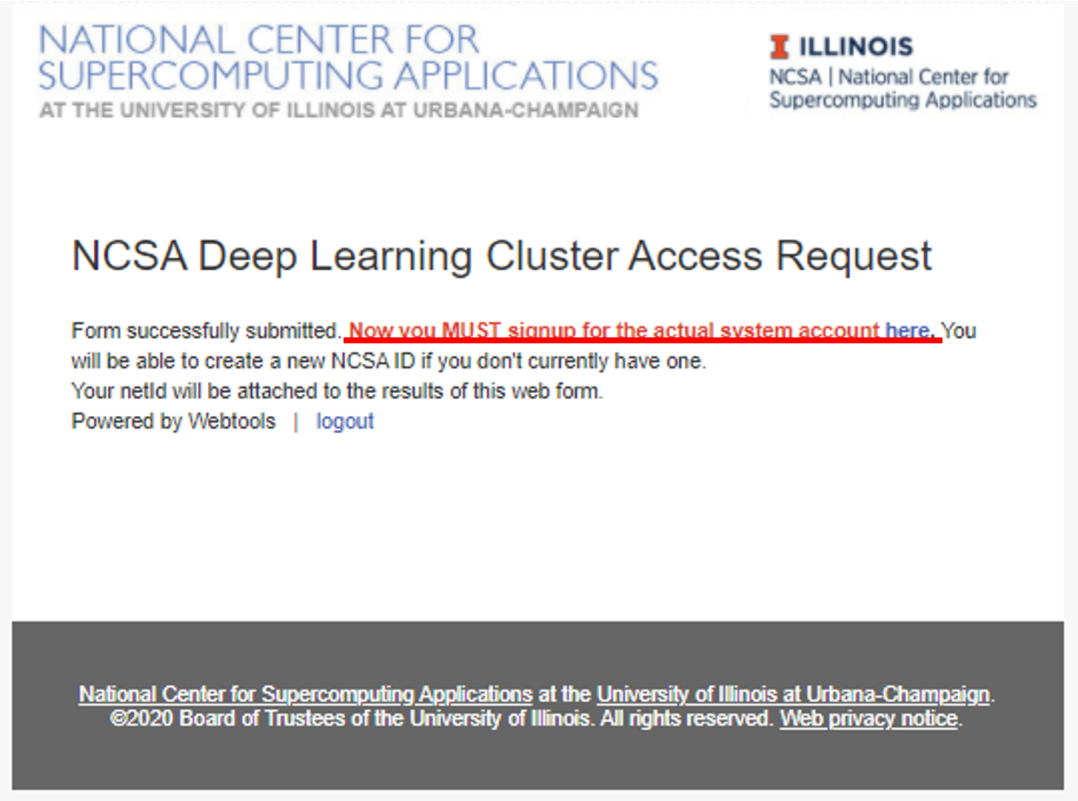
Step 1. Apply for a User Account

New user need to fill out **THIS FORM** to apply a system account.

After login with your **NetID**, you will need to fill out **TWO** forms.



By clicking "Submit Form", you only complete the FIRST form, please click "**HERE**" to complete the second form.



Step 2. Set up DUO device

New user needs to set up his/her DUO device via https://duo.security.ncsa.illinois.edu/.

If there has any problem, See https://go.ncsa.illinois.edu/2fa for common questions and answers. Send an email to help+duo@ncsa.illinois.edu for additional help.

Step 3. Log on for the First Time with SSH

New user needs to log on HAL system for the first time with SSH to initialize his/her accounts.

SSH

```
ssh <username>@hal.ncsa.illinois.edu
```

or

SSH

```
ssh <username>@hal-login2.ncsa.illinois.edu
```

Interactive jobs

Starting an interactive job

Using original slurm command

SSH

```
srun --partition=debug --pty --nodes=1 --ntasks-per-node=16 --cores-per-socket=4 \
     --threads-per-core=4 --sockets-per-node=1 --mem-per-cpu=1200 --gres=gpu:v100:1 \
     --time 01:30:00 --wait=0 --export=ALL /bin/bash
```

Using slurm wrapper suite command

SSH

```
swrun -p gpux1
```

Keeping interactive jobs alive

Interactive jobs cease when you disconnect from the login node either by choice or by internet connection problems. To keep an interactive job alive you can use a terminal multiplexer like **`tmux`**.

You start `tmux` on the login node before you get an interactive slurm session with `srun` and then do all the work in it.

SSH

```
tmux
```

In case of a disconnect, you simply reconnect to the login node and attach to the `tmux` session again by typing:

SSH

```
tmux attach
```

or in case you have multiple session running:

SSH

```
tmux list-session
tmux attach -t <session_id>
```

Batch jobs

submit jobs with original slurm command

SSH

```
#!/bin/bash
#SBATCH --job-name="demo"
#SBATCH --output="demo.%j.%N.out"
#SBATCH --error="demo.%j.%N.err"
#SBATCH --partition=gpu
#SBATCH --time=4:00:00
#SBATCH --nodes=1
#SBATCH --ntasks-per-node=16
#SBATCH --sockets-per-node=1
#SBATCH --cores-per-socket=4
#SBATCH --threads-per-core=4
#SBATCH --mem-per-cpu=1200
#SBATCH --export=ALL
#SBATCH --gres=gpu:v100:1

srun hostname
```

submit jobs with slurm wrapper suite

SSH

```
#!/bin/bash
#SBATCH --job-name="demo"
#SBATCH --output="demo.%j.%N.out"
#SBATCH --error="demo.%j.%N.err"
#SBATCH --partition=gpux1
#SBATCH --time=4

srun hostname
```

submit a job with multiple tasks

SSH

```
#!/bin/bash
#SBATCH --job-name="demo"
#SBATCH --output="demo.%j.%N.out"
#SBATCH --error="demo.%j.%N.err"
#SBATCH --partition=gpux1
#SBATCH --time=4

mpirun -n 4 hostname &
mpirun -n 4 hostname &
mpirun -n 4 hostname &
mpirun -n 4 hostname &

wait
```

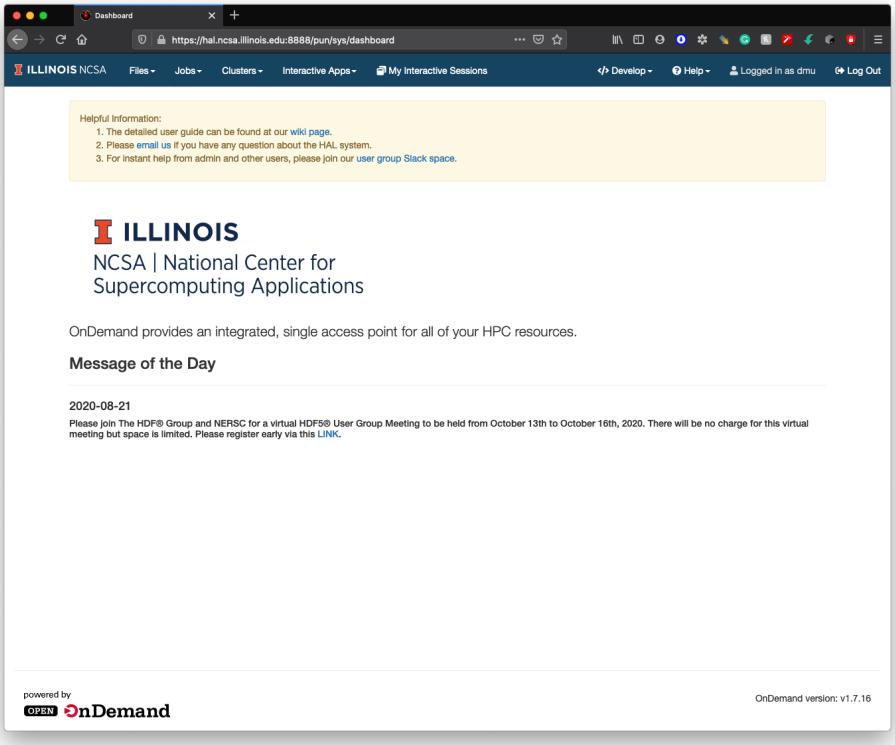
For detailed SLURM on HAL information, please refer to Job management with SLURM.

Step 4. Log on HAL System with HAL OnDemand

New users need to log in to the HAL system via "ssh hal.ncsa.illinois.edu" first to initialize their home folders. After new users initialization, HAL OnDemand can be accessed through

HAL OnDemand

```
https://hal-ondemand.ncsa.illinois.edu
```



For detailed HAL OnDemand information, please refer to Getting started with HAL OnDemand.