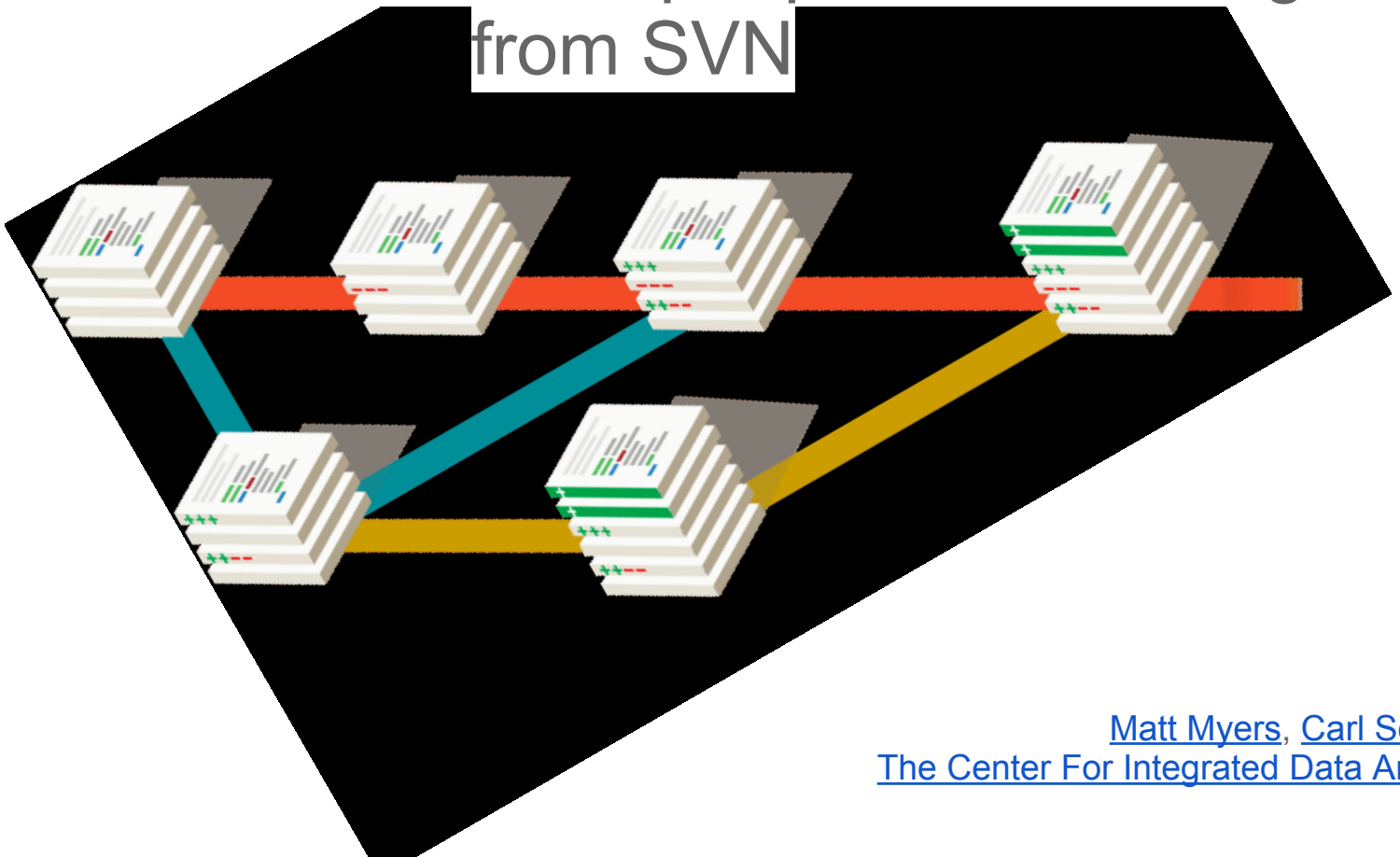
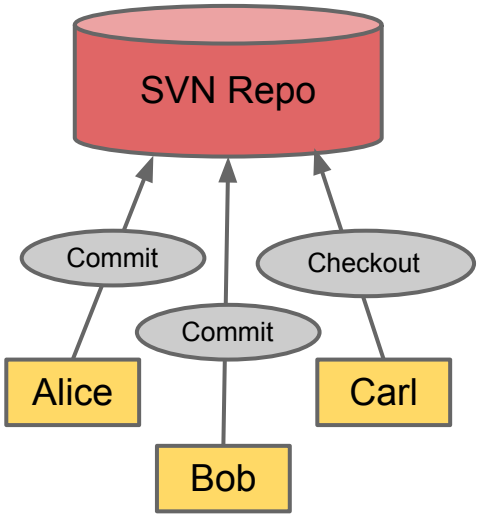
# CIDA Git Primer

Basic information for people transitioning from SVN

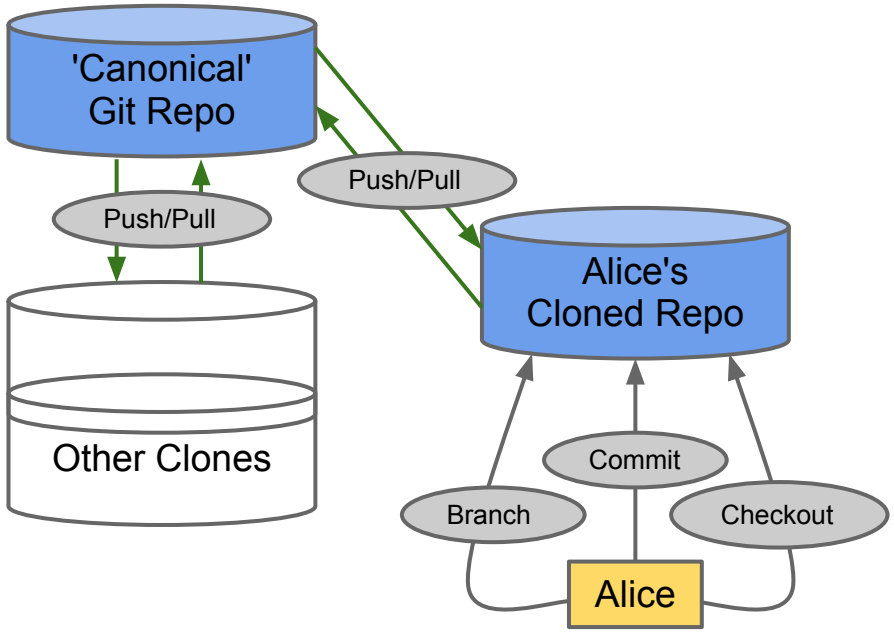


Matt Myers, Carl Schroedl
The Center For Integrated Data Analytics

# Git vs. SVN

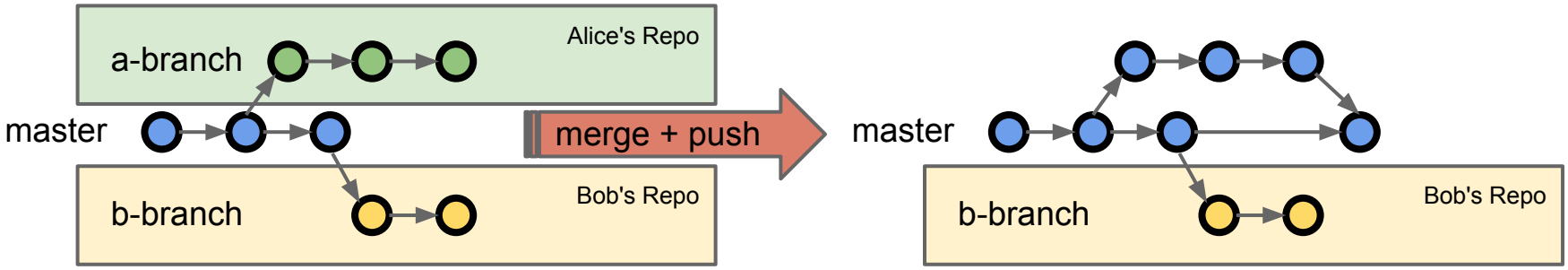



In SVN, there is a single repository which everyone interacts with directly. It serves out files on checkout requests, accepts commits, and keeps track of history.



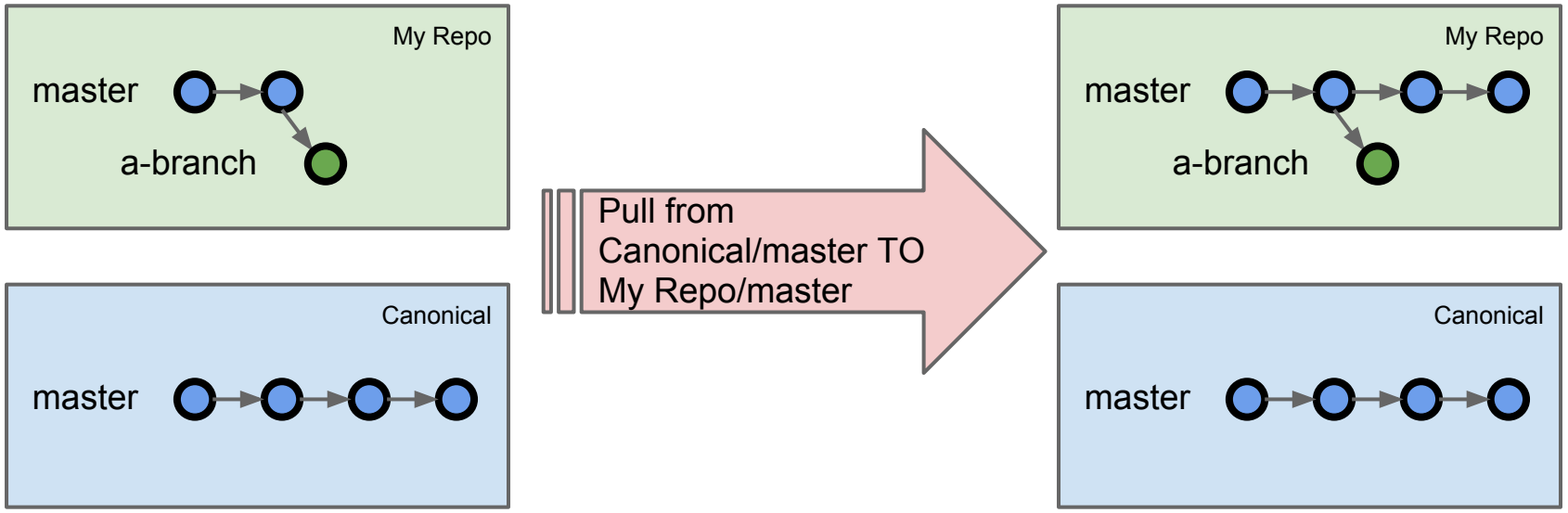

Git is 'distributed'. You clone a repository, which gives you its entire history, and only interact directly with your personal clone. In order to sync the state of your clone with 'remote' repositories, you use commands like push and pull, and issuing Pull Requests on Github.

# Why Git?

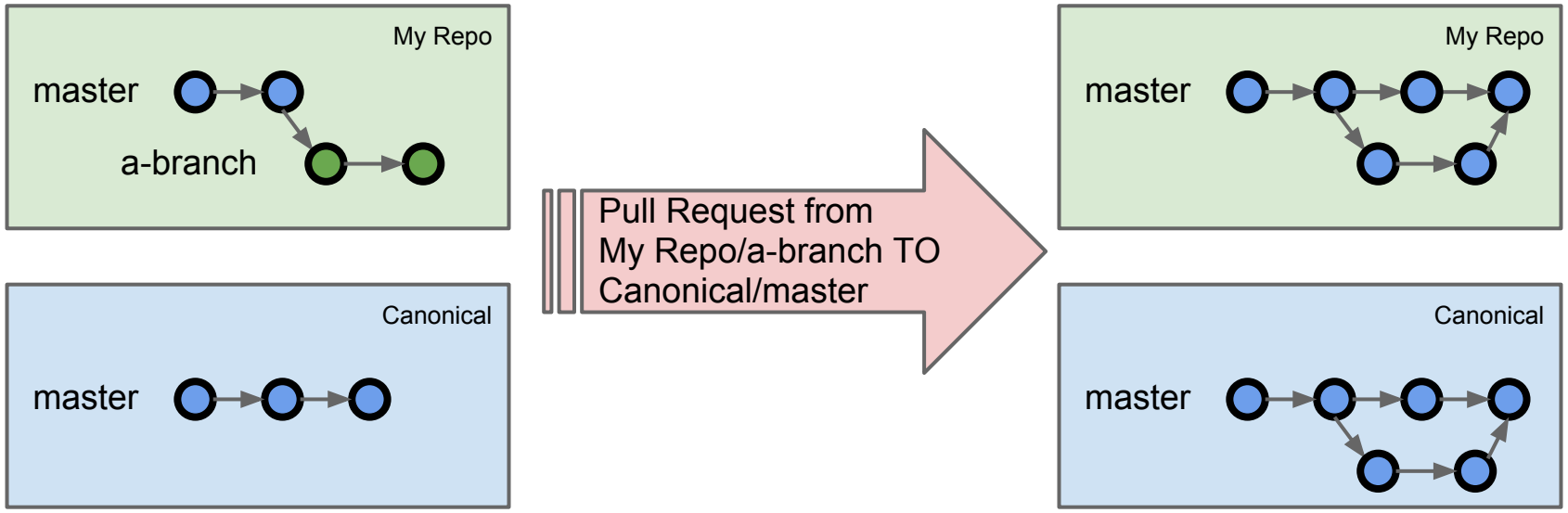


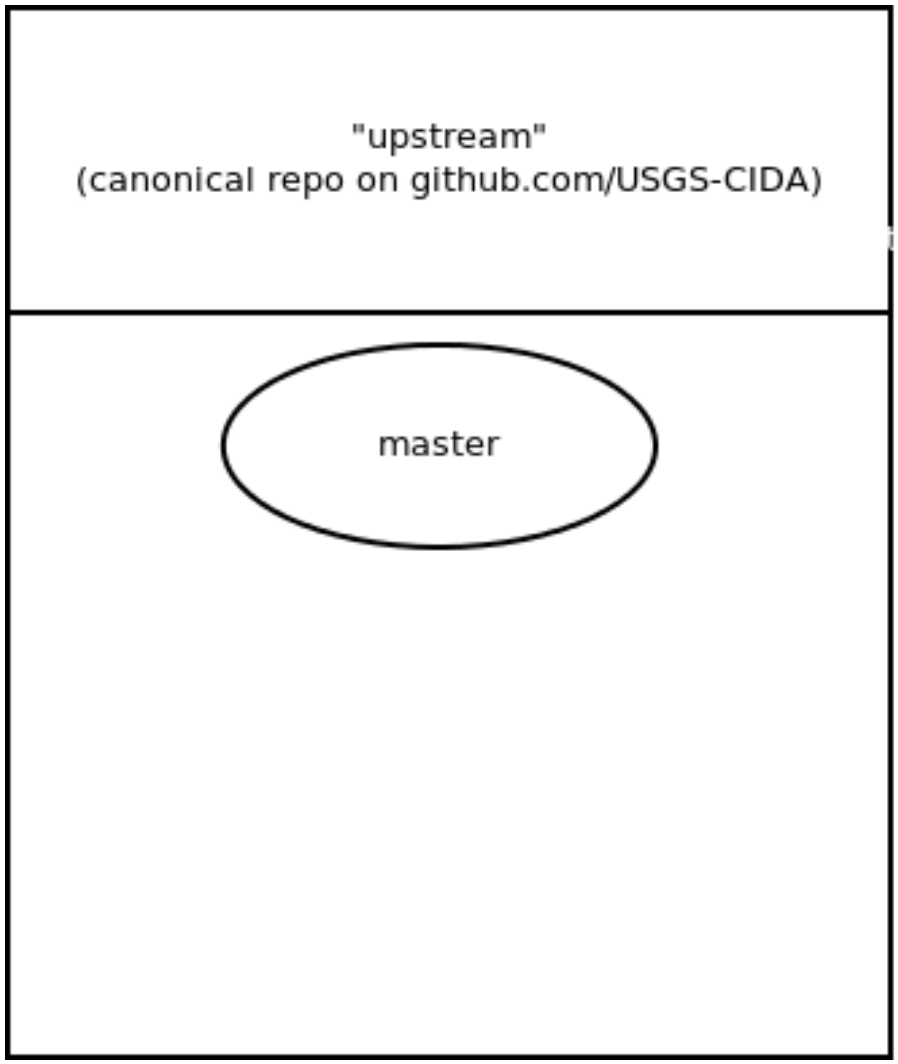

- Branching is easy, and should be used of part of normal workflows
- Using branches in this way allows isolation, so nobody clobbers someone else's work
- When code is ready to become official, merge and push to canonical repo
- Merging is a single command, unless 'conflicting' changes occur
- Code in personal branches is not seen by automated build systems until merged in
- Encourages good source control habits; commit often, in small chunks

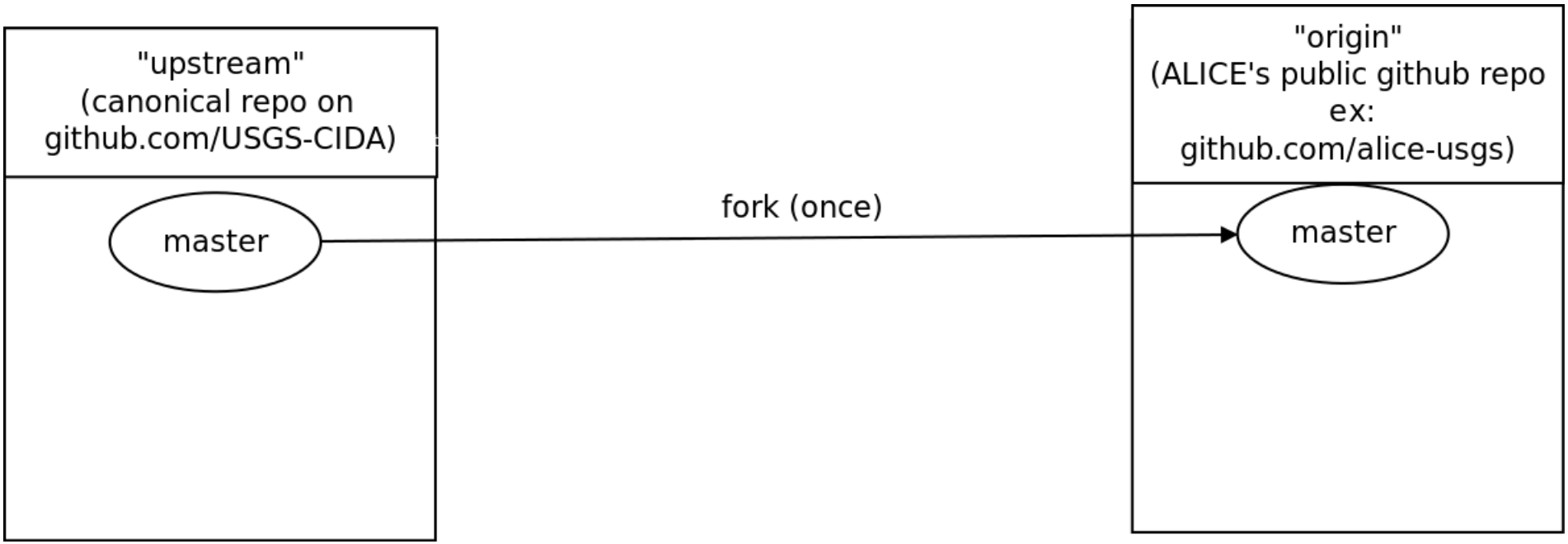
# Managing Multiple Repos



# Github


My Repo
master
a-branch
Canonical
master
Pull Request from
My Repo/a-branch TO
Canonical/master
My Repo
master
Canonical
master


"upstream"
(canonical repo on github.com/USGS-CIDA)
master


"upstream"
(canonical repo on
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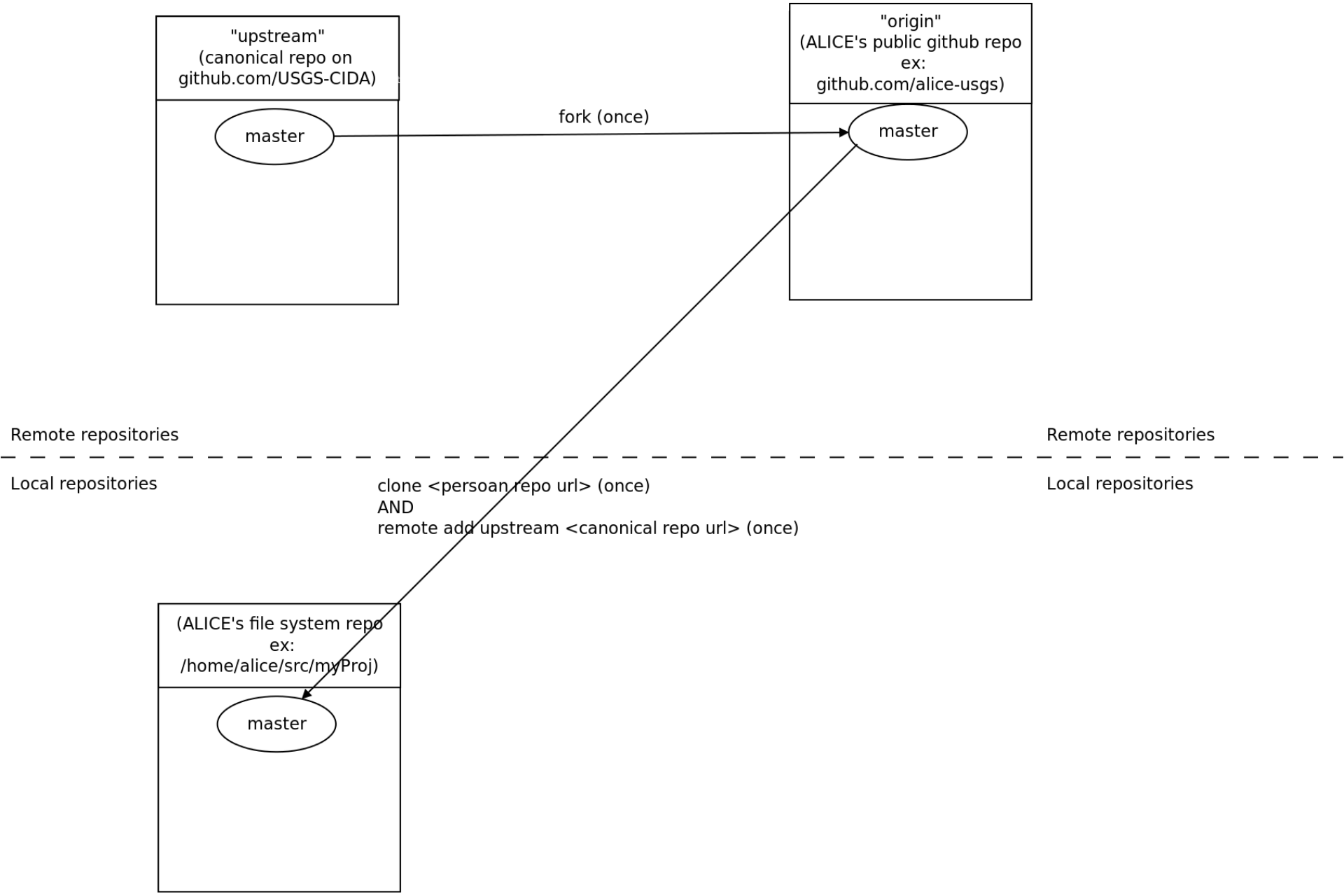
master
fork (once)
"origin"
(ALICE's public github repo
ex:
github.com/alice-usgs)
master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Local repositories
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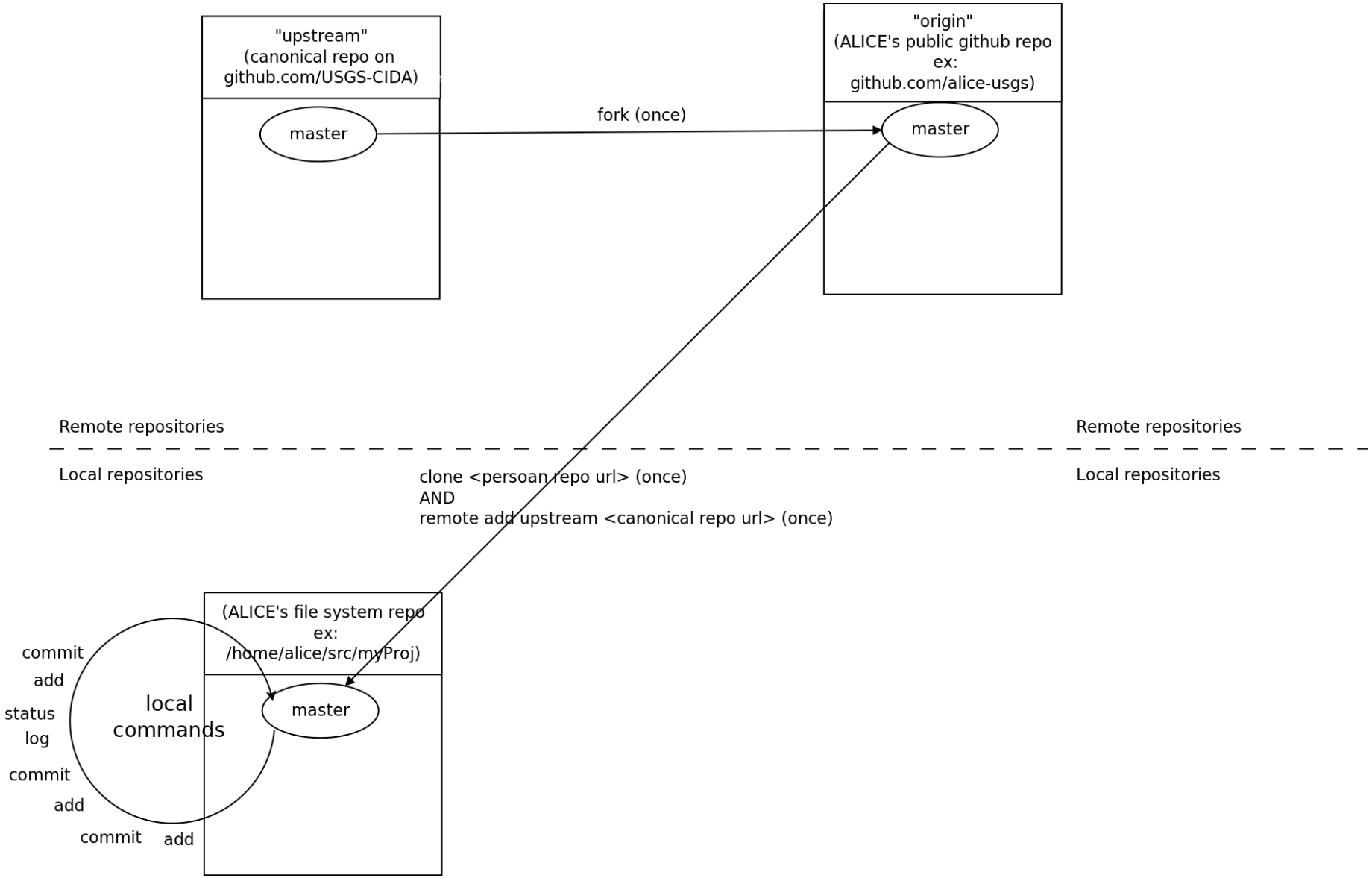
AND
remote add upstream <canonical repo url> (once)
Local repositories
(ALICE's file system repo
ex:
/home/alice/src/myProj)
master

# DOING IT WRONG:

## A Simplified Model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commands
commit
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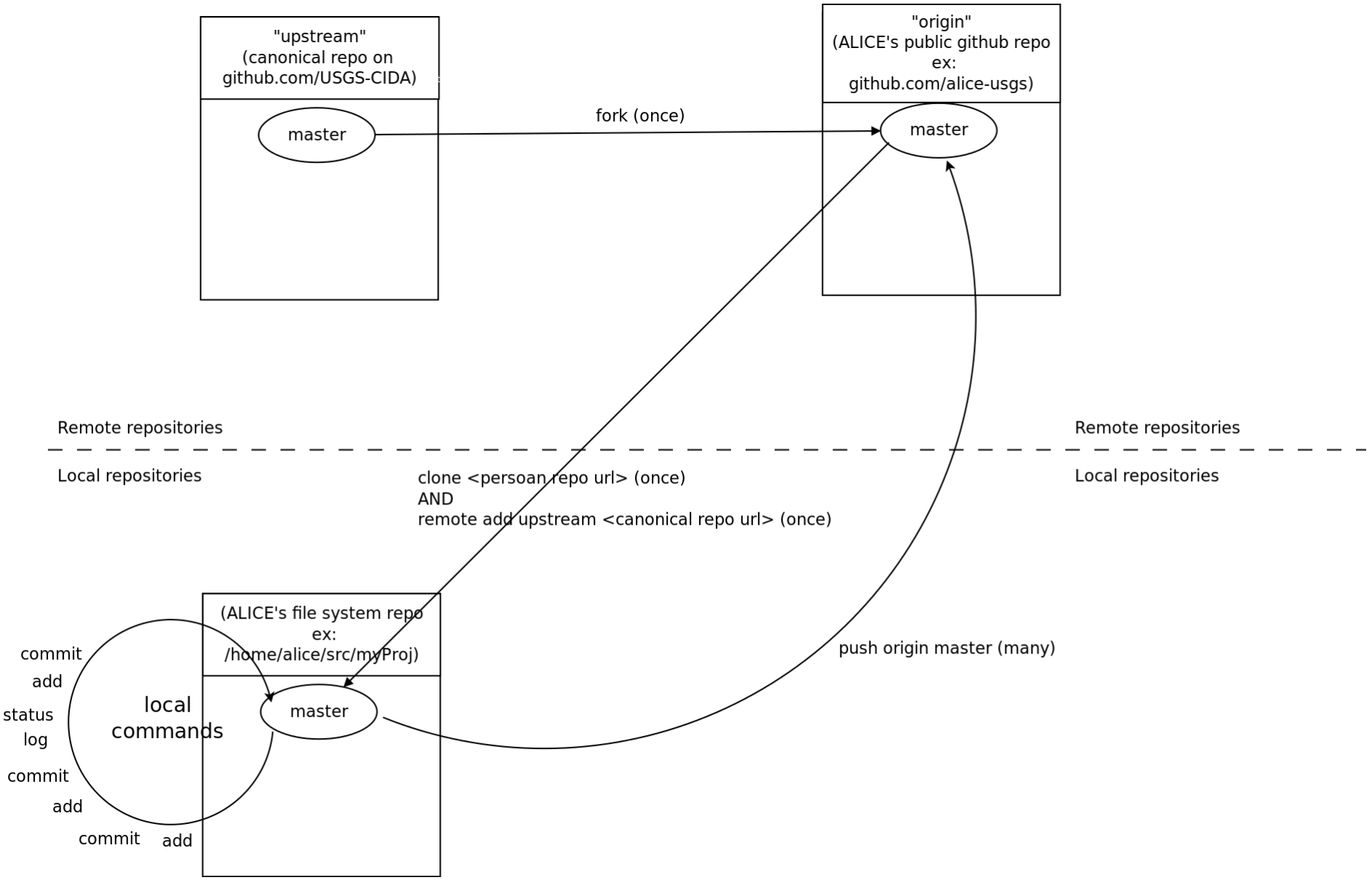
add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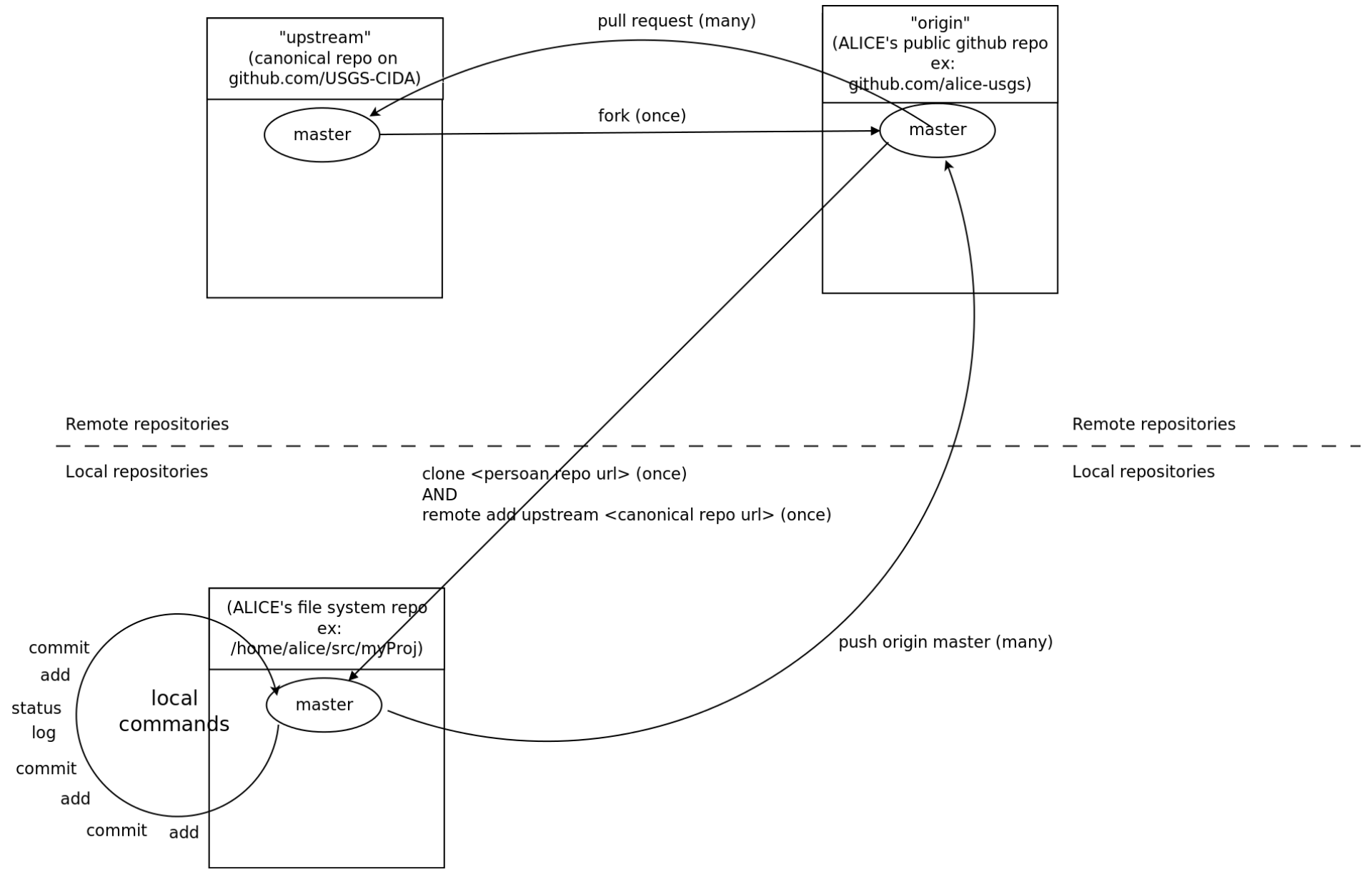
master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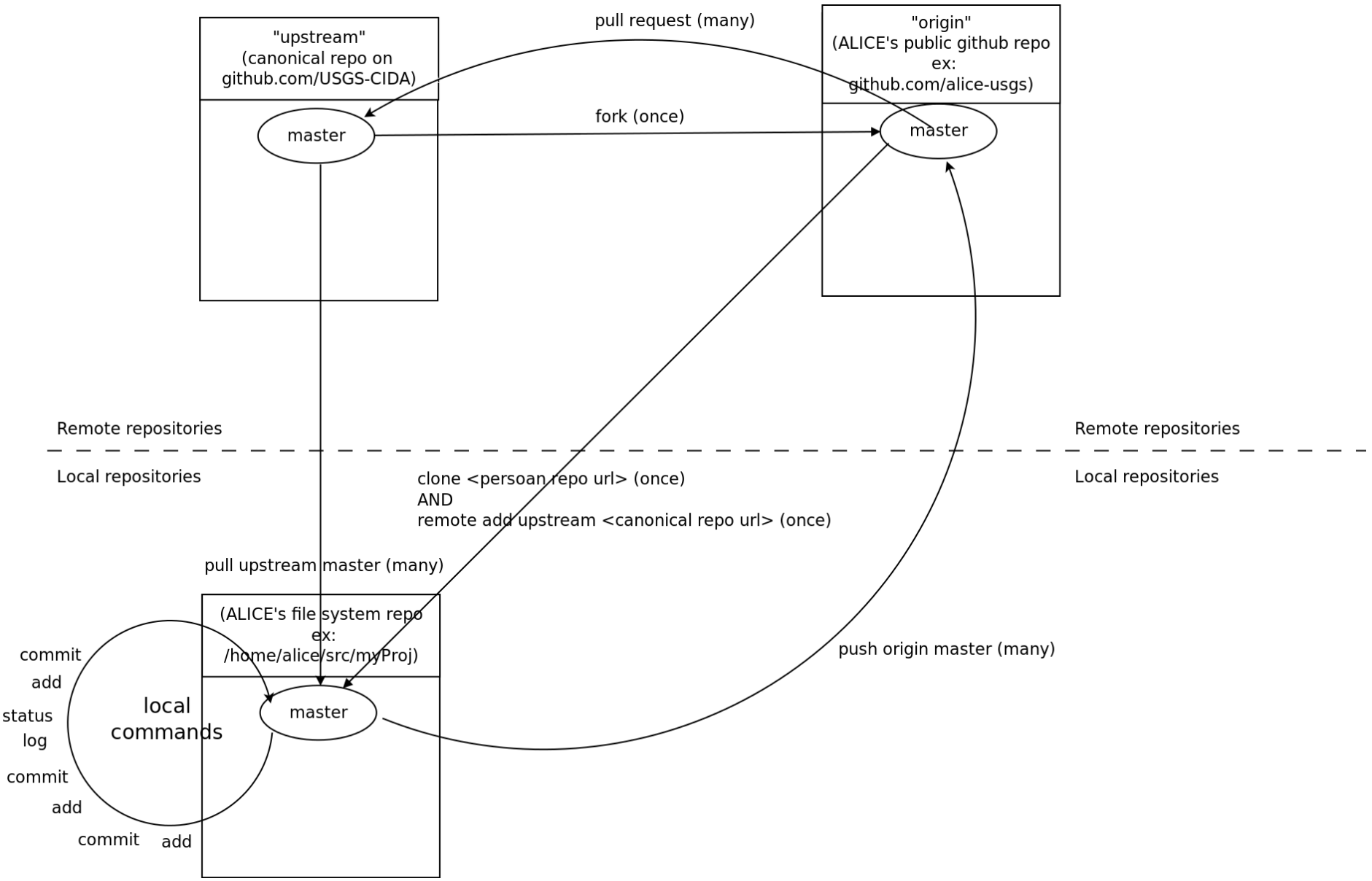
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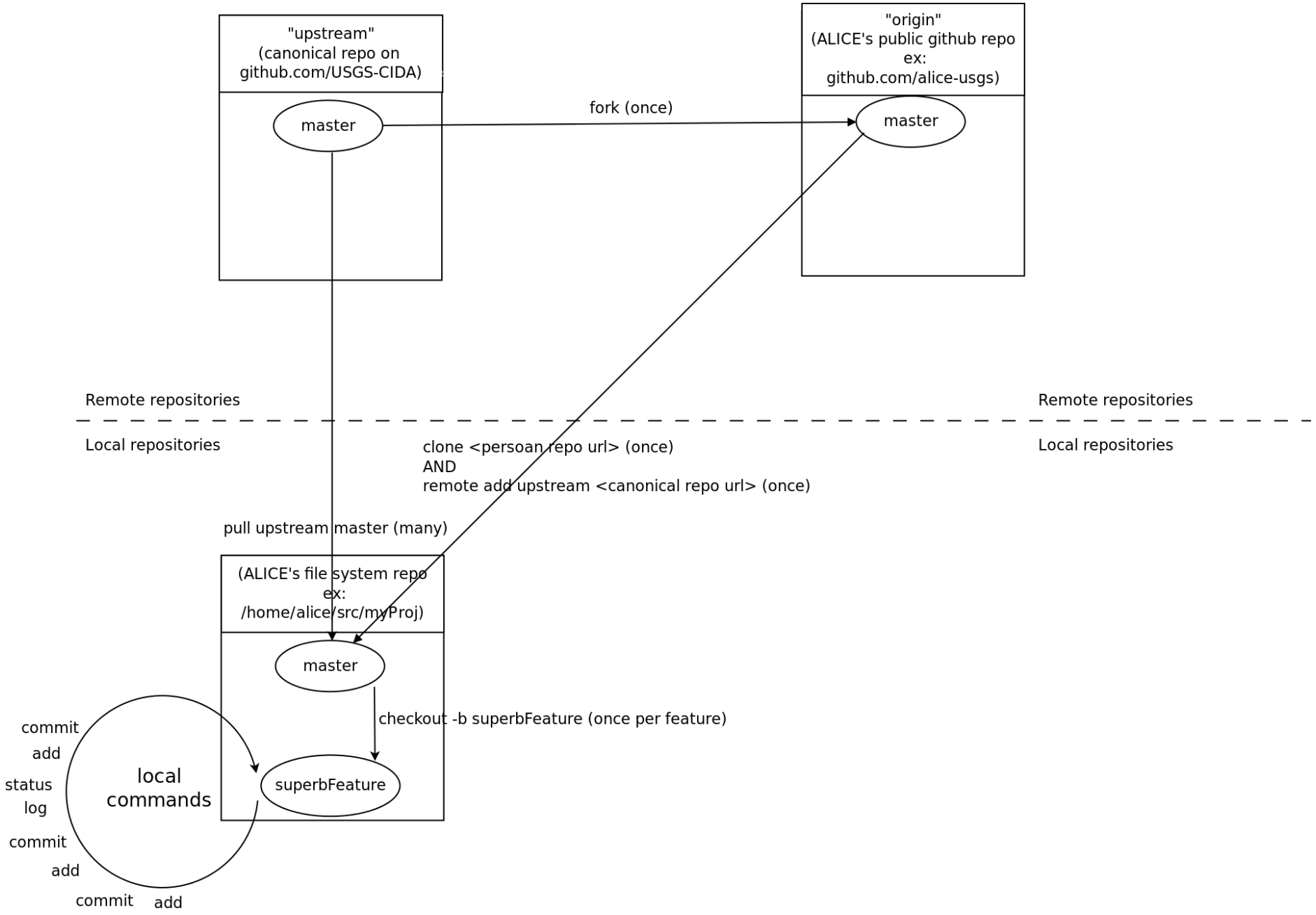
# DOING IT RIGHT:
## A More Useful Workflow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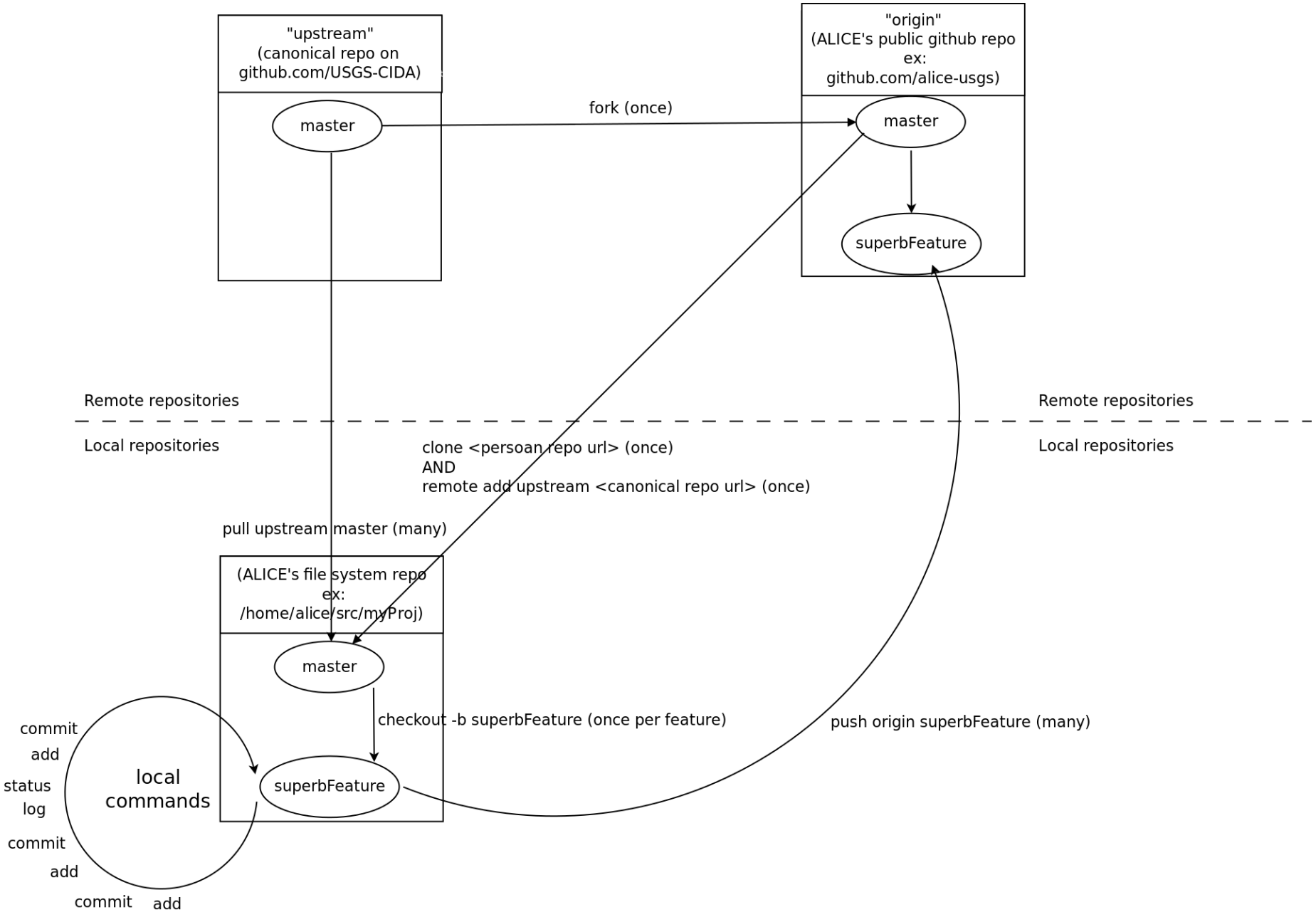
checkout -b superbFeature (once per feature)
commit
add
status
log
commit
add
commit
add
local
commands
superbFeature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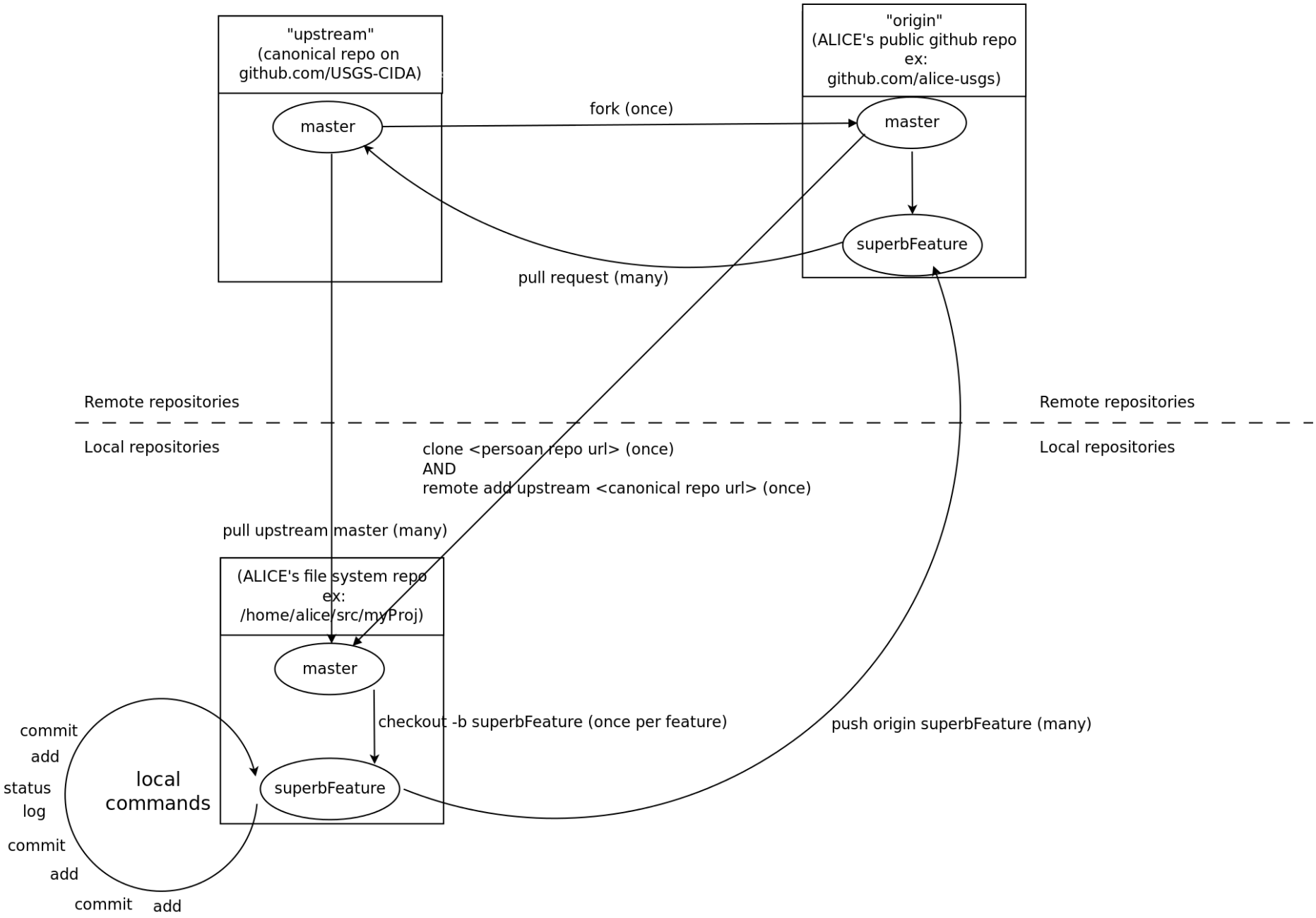
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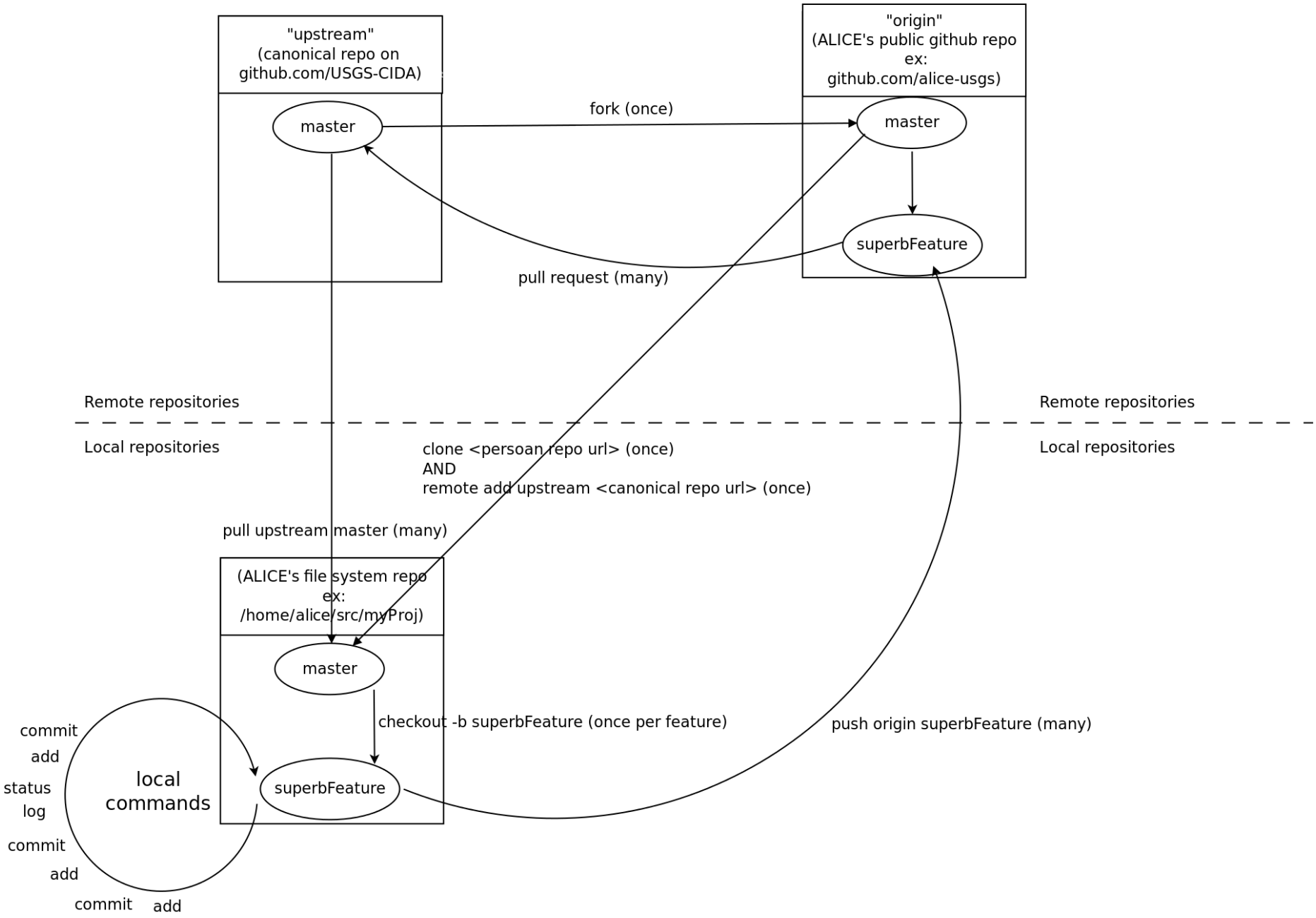
# Pull Request Github Web Interface

Example:

https://github.com/USGS-CIDA/glri-afinch/pull/43/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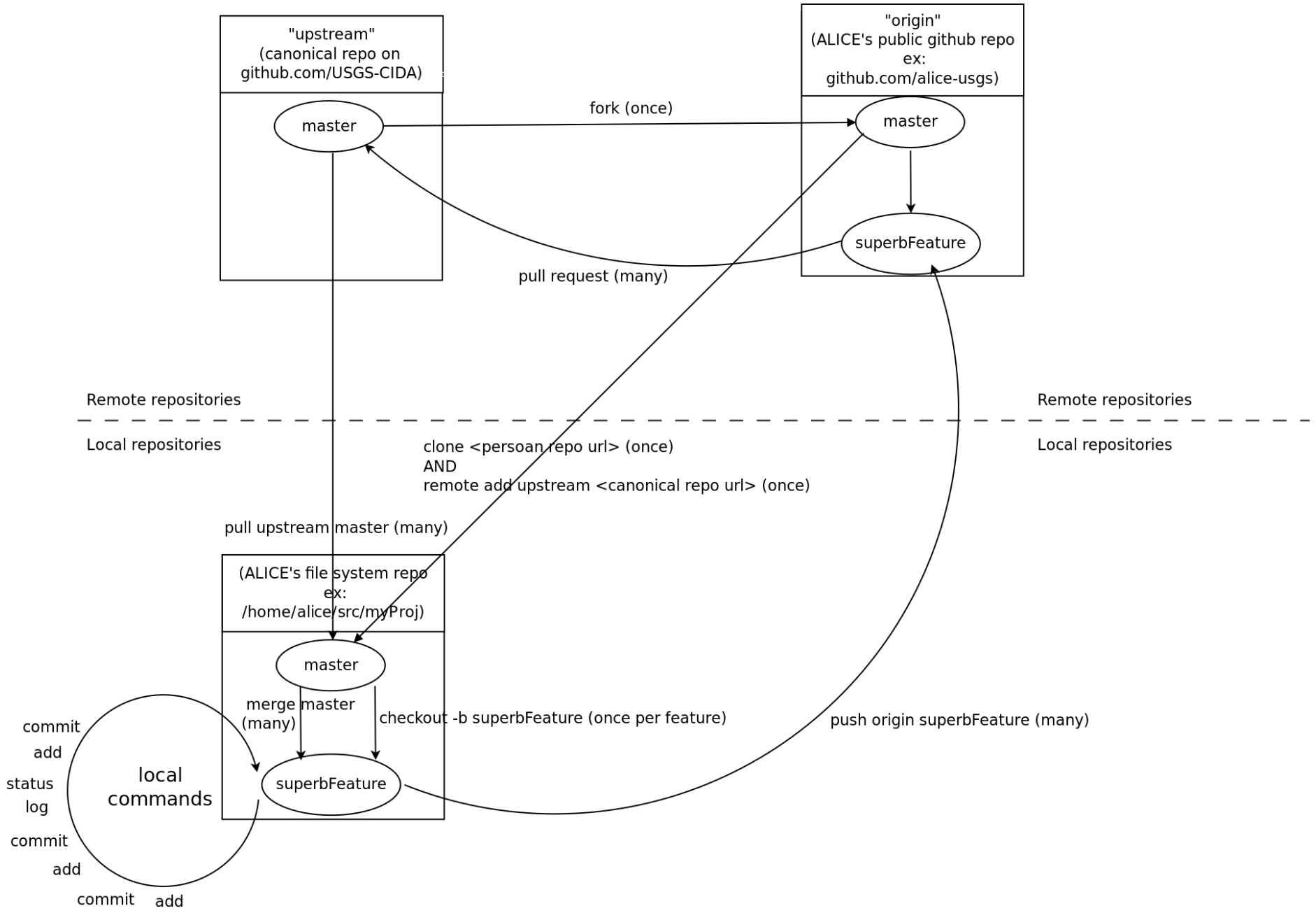
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merge master
(many)
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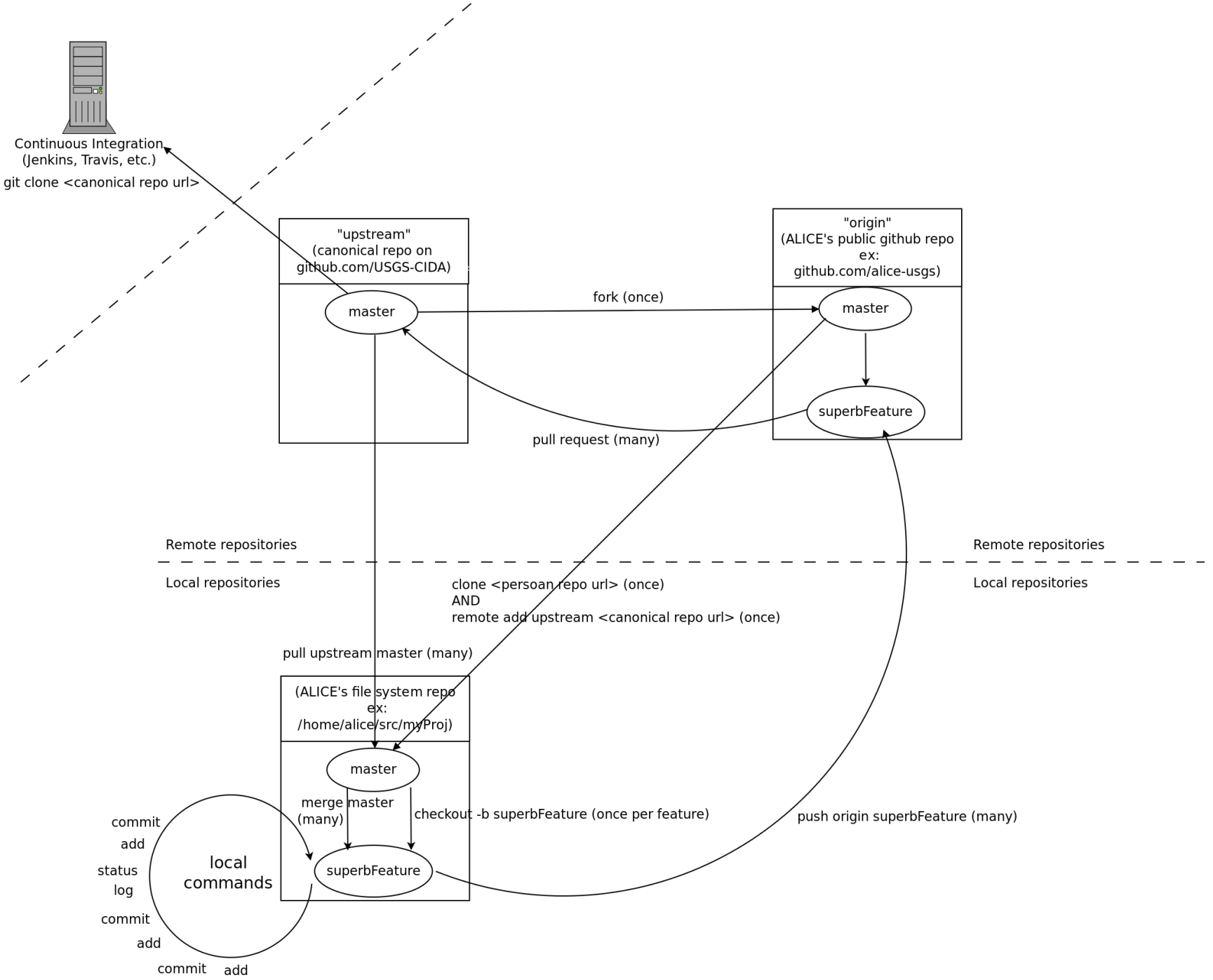
Continuous Integration
(Jenkins, Travis, etc.)
git clone <canonical repo url>
"upstream"
(canonical repo on
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fork (once)
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merge master
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push origin superbFeature (many)
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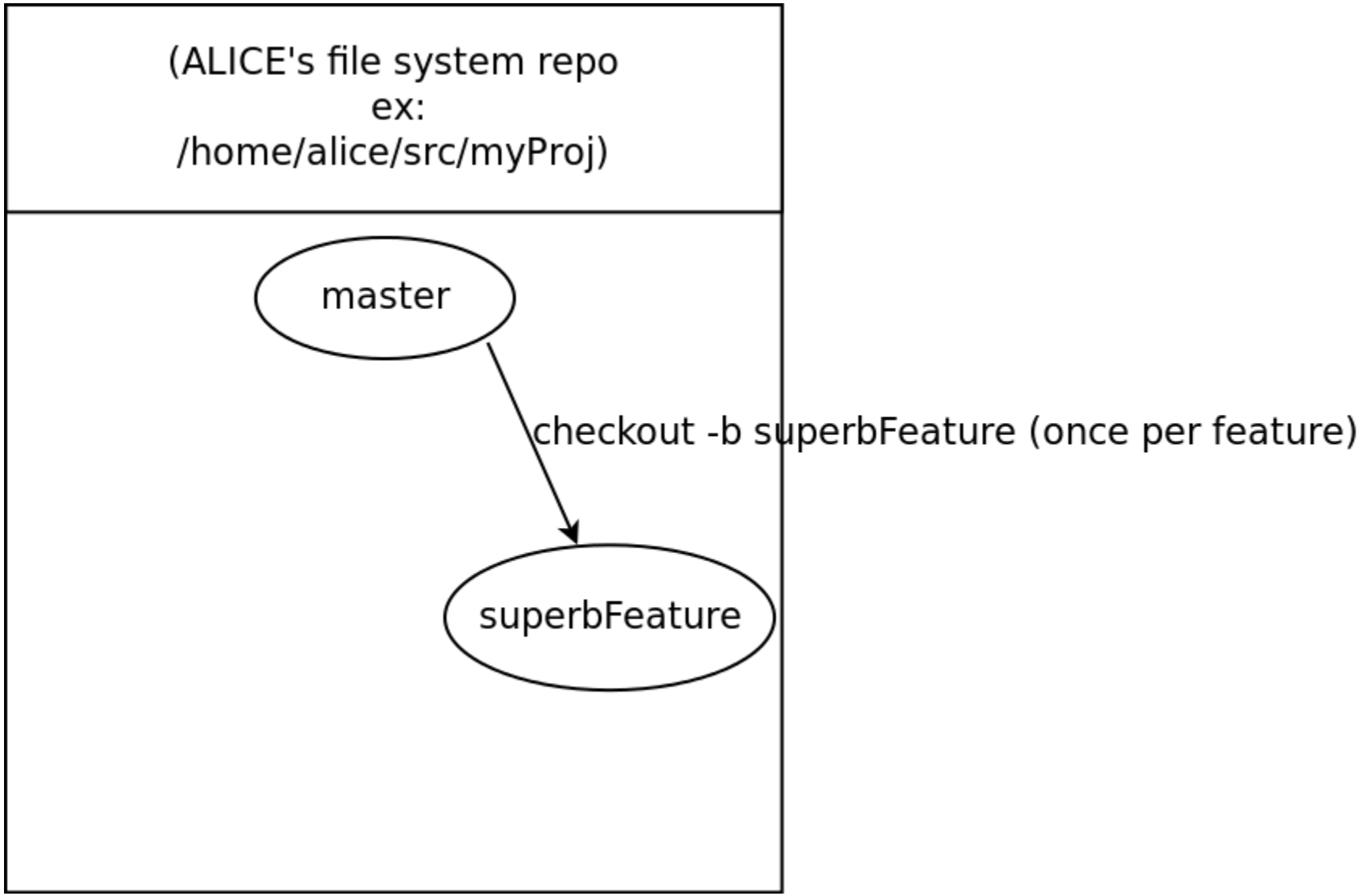
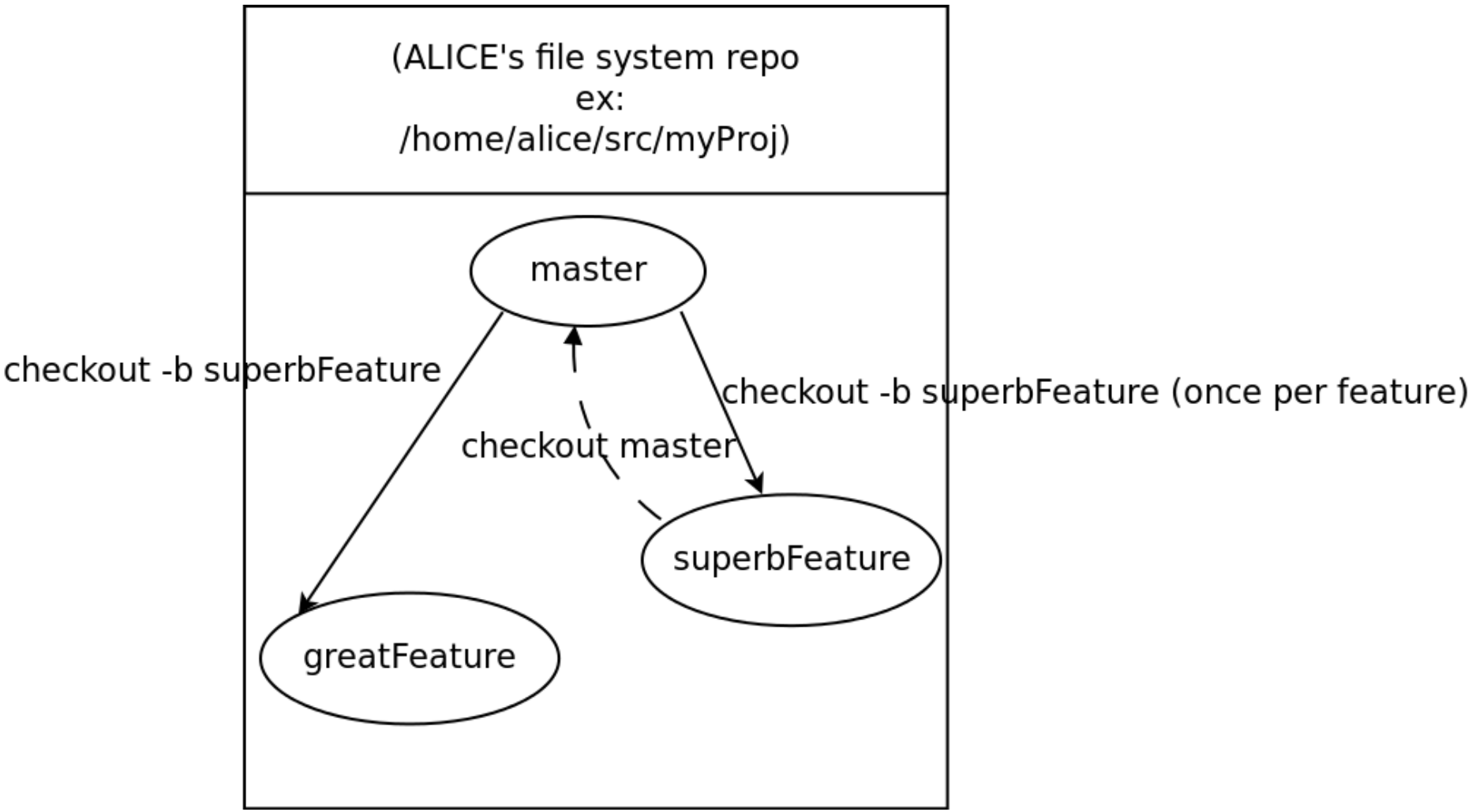
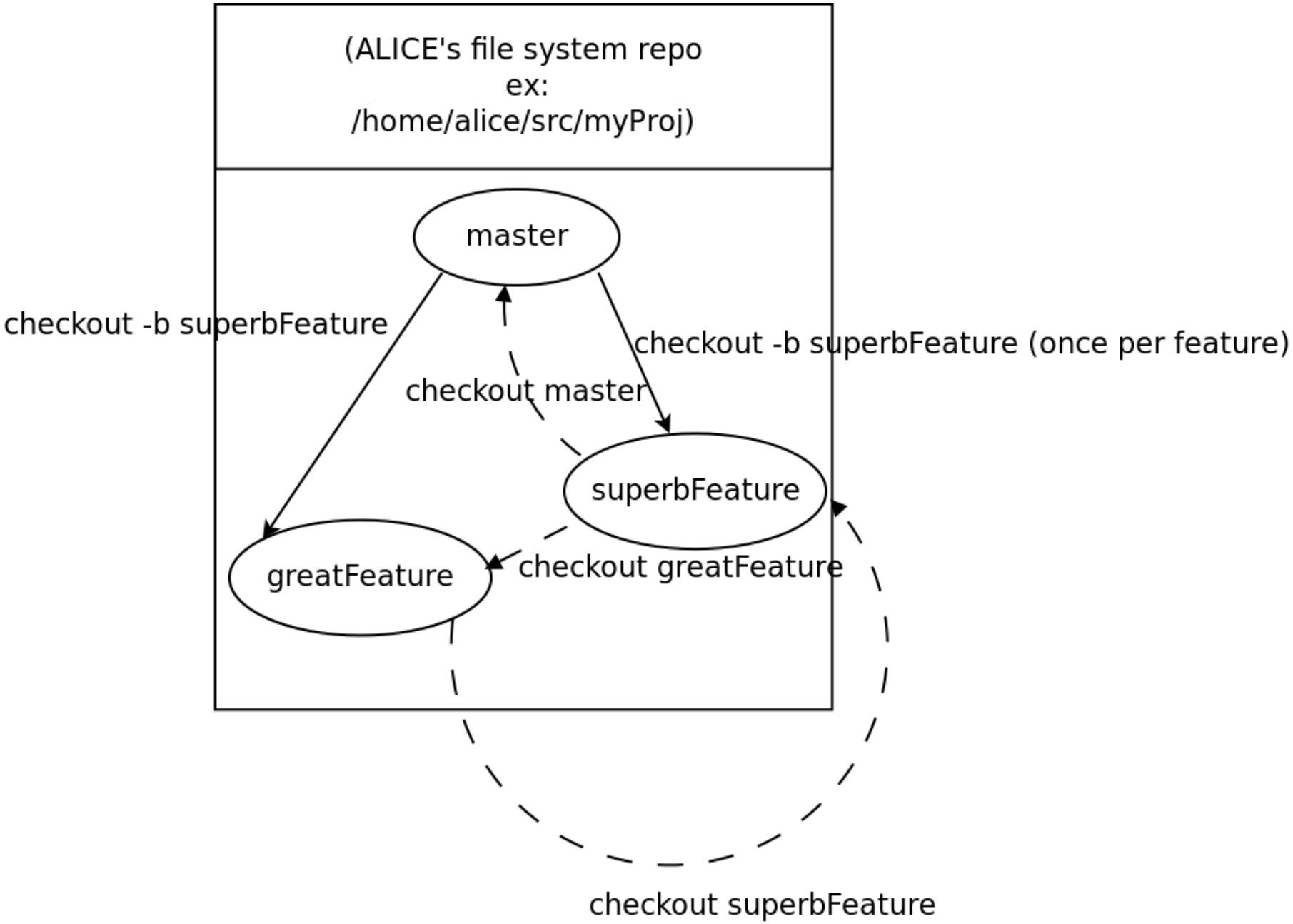
# Local Branching In Detail:


(ALICE's file system repo
ex:
/home/alice/src/myProj)
master
checkout -b superbFeature (once per feature)
superbFeature


(ALICE's file system repo
ex:
/home/alice/src/myProj)
master
checkout -b superbFeature
checkout -b superbFeature (once per feature)
checkout master
superbFeature
greatFeature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checkout -b superbFeature (once per feature)
checkout master
superbFeature
greatFeature
checkout greatFeature
checkout superbFeature

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