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sustainability consulting + software

LCA Cloud: enhancing LCA data collaboration

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- LCA Cloud Web Service
- LCA Cloud in openLCA
  - Examples of use case scenarios
- Outlook and conclusions

Challenges

- Simultaneous group work
- Facilitate sharing of LCA information

What is the LCA Cloud?

A platform to enable data collaboration and sharing

→Teams of users can work on the same data sets independently and merge their changes together

LCA Cloud
Web Service

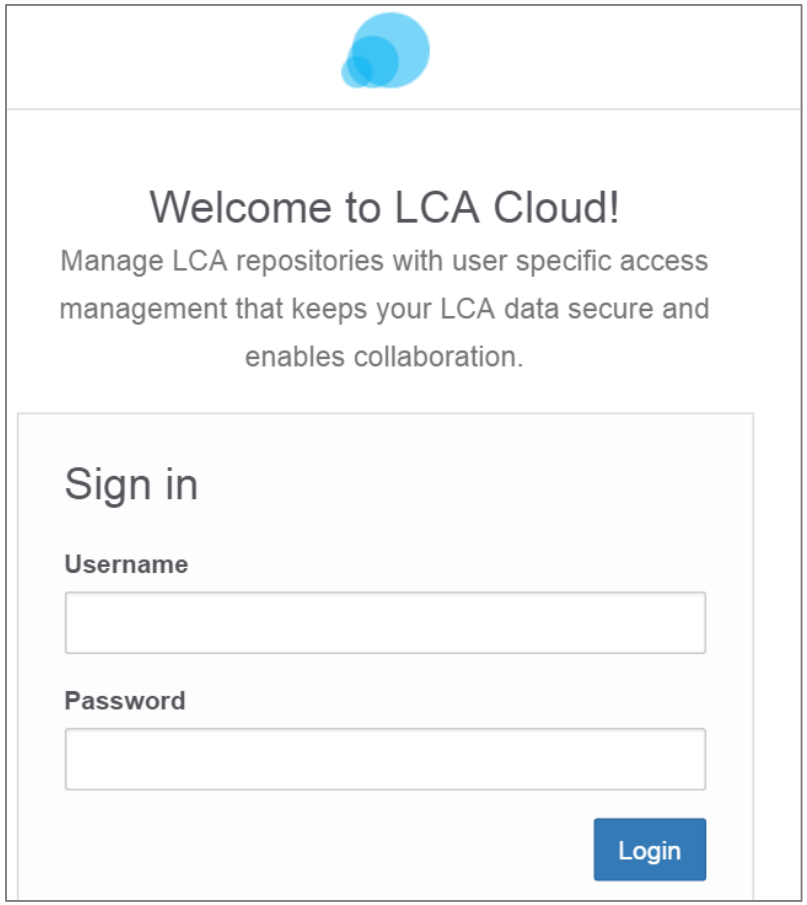
LCA Cloud features
in openLCA

Main functionalities

- Upload, download, synchronize LCA data between a local openLCA database and a server repository
- Merging (possibly conflicting) changes in data sets
- History of changes
- User friendly web view of data in the repositories

LCA Cloud Web UI

The LCA Cloud Web UI is the central access and management tool for LCA repositories



Technical details

- RESTful web service for storing and providing LCA data in a uniform way
- Developed as a standalone web application
- It can be hosted independently and can be deployed on any web server implementing the Java Servlet specification (e.g. Tomcat)
- Unlimited amount of servers possible → same application, different data

Data format

- Server runs the web application with a Derby database
- The JSON ld format is used for the exchange of data

  → Format recommended by W3C for linked data

  → It can directly be parsed as RDF triples and, therefore, be directly linked to ontologies

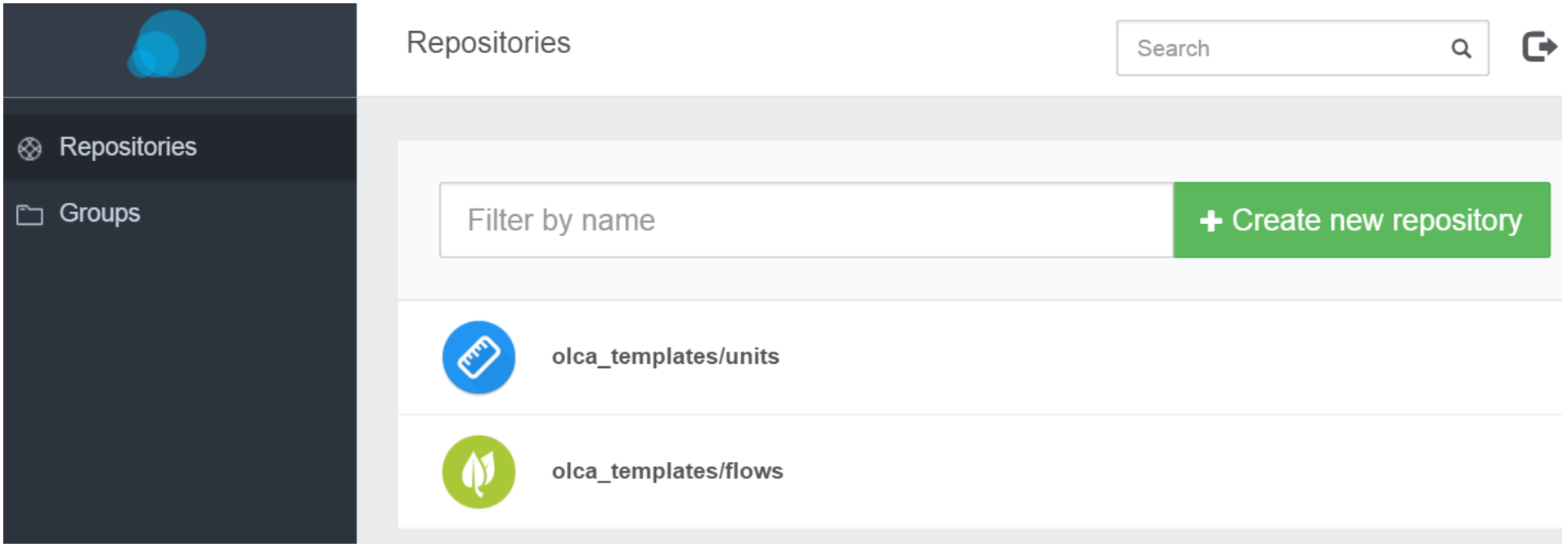
Integration into LCA software

- Third party applications are able to integrate the services via HTTP calls:
  - Right now LCA Cloud features only integrated in openLCA, but
  - The URLs that can be called will be publicly documented + Java API calling these webservices is part of the openLCA code and will therefore be open source

    → other LCA software could connect to it too

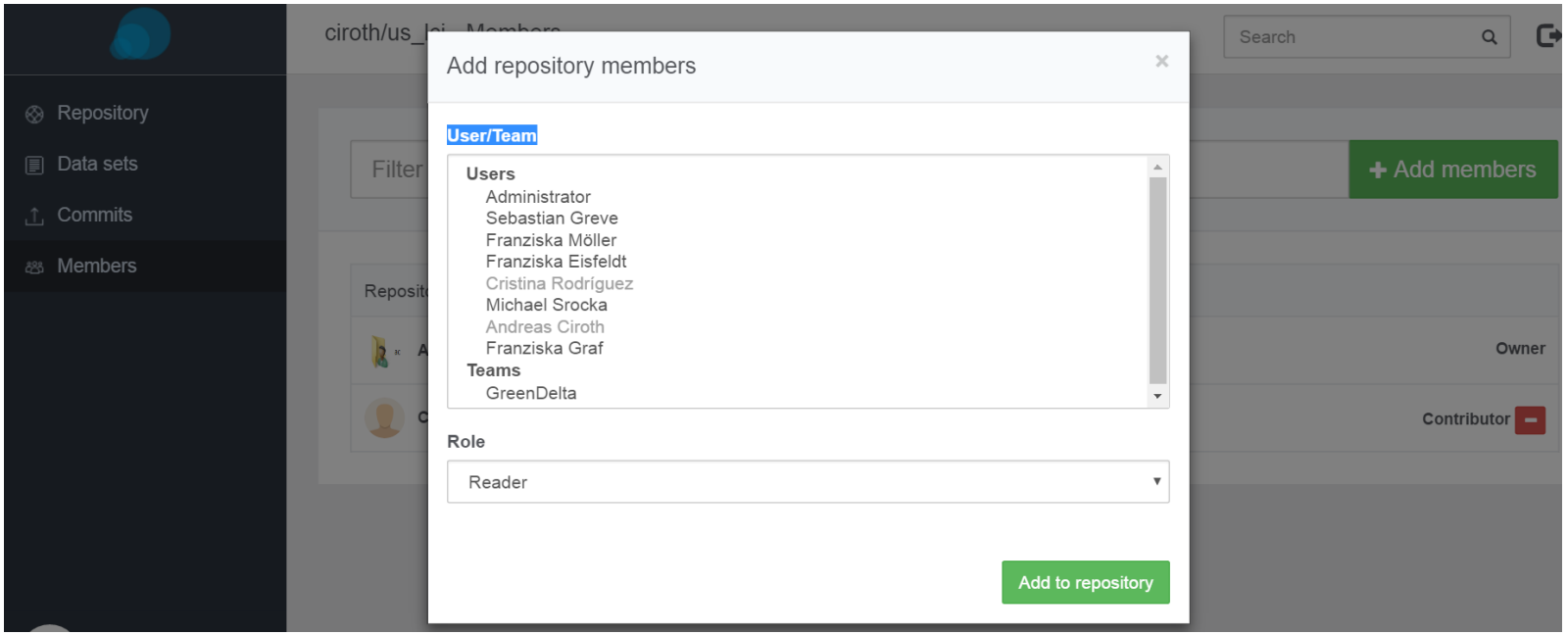
Features: Repository management

- Create/delete repositories
- Create/delete groups of repositories
- Clone repositories in a specific state (i.e. commit)



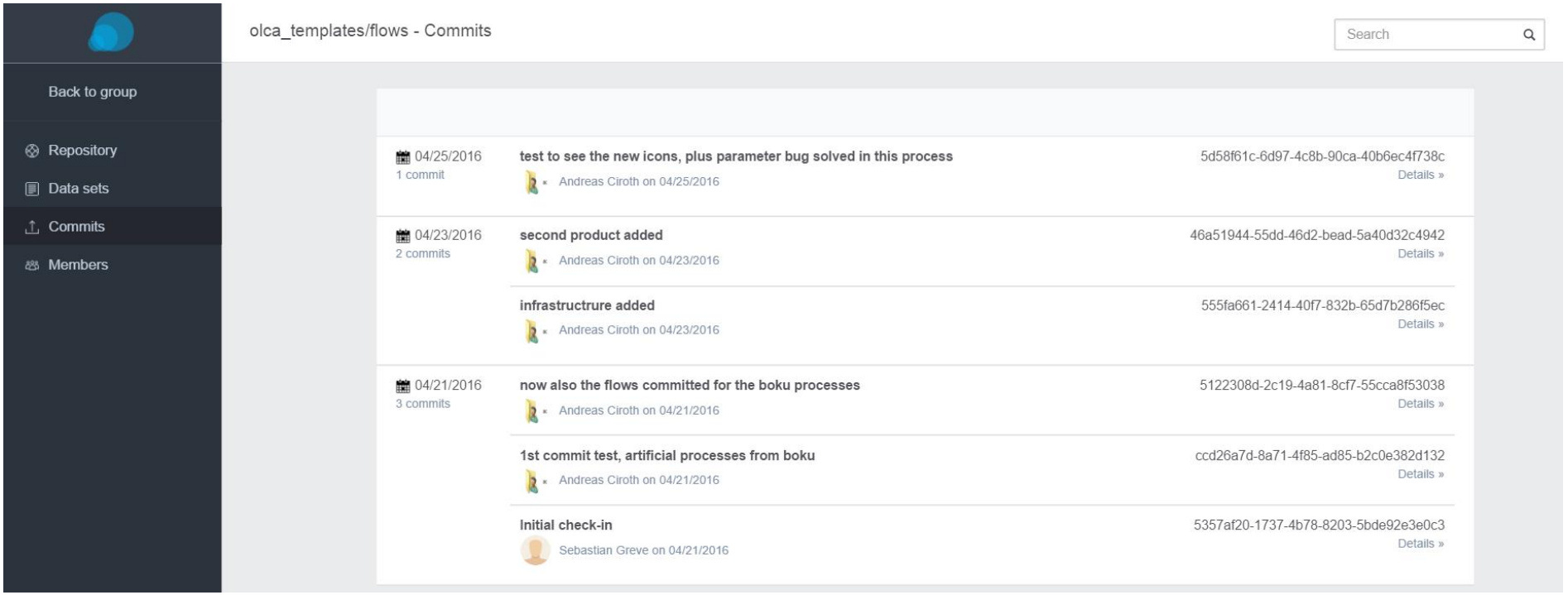
Features: User management

- Create/delete users and teams of users
- Roles: Owner, Contributor, Reader
- Set permissions per repository/group of repositories
- User profile



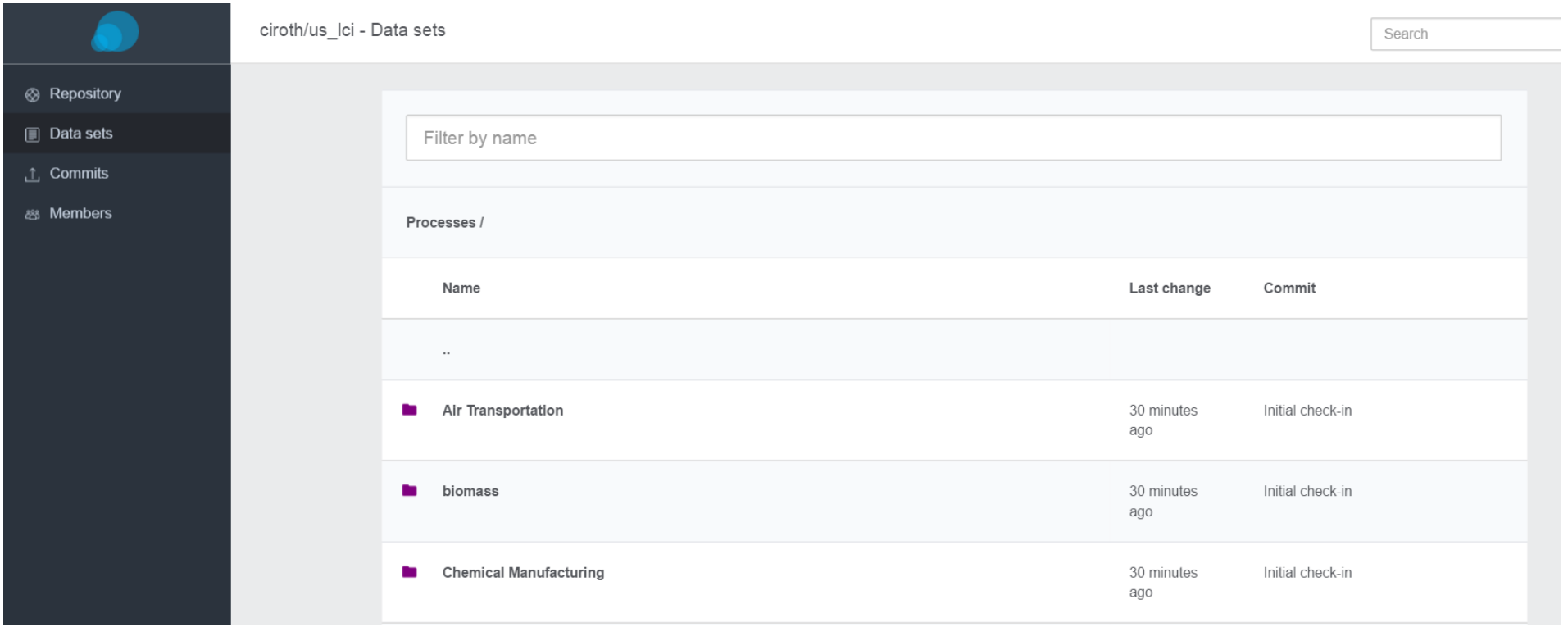
Features: Commit history

- View all changes per commit and navigate to the correspondent data sets



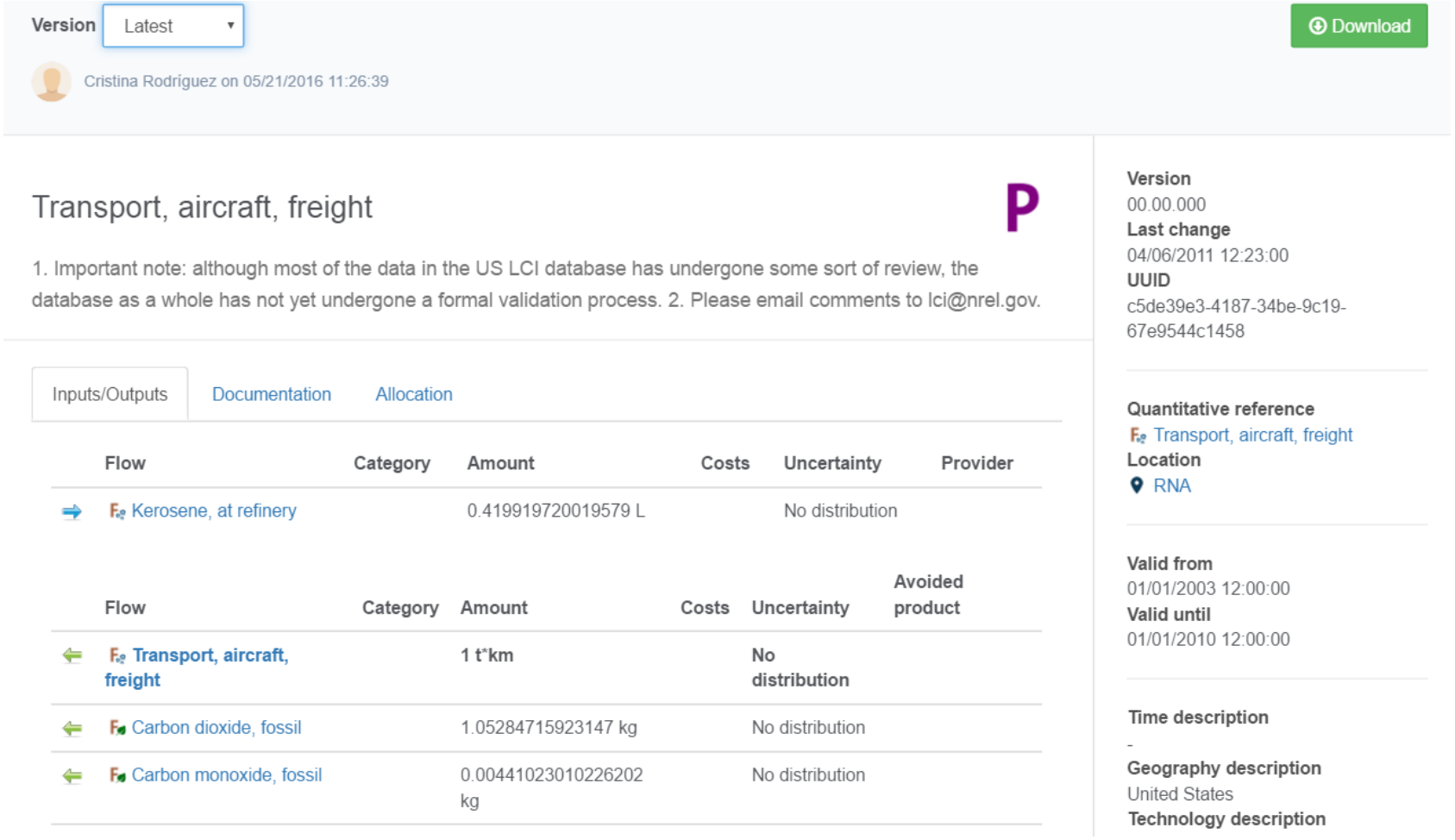
Features: Data sets browser

- Browse through the current state of the repository data sets (Filters by type and name)



Features: Data sets browser

- Download selected data sets as JSON format



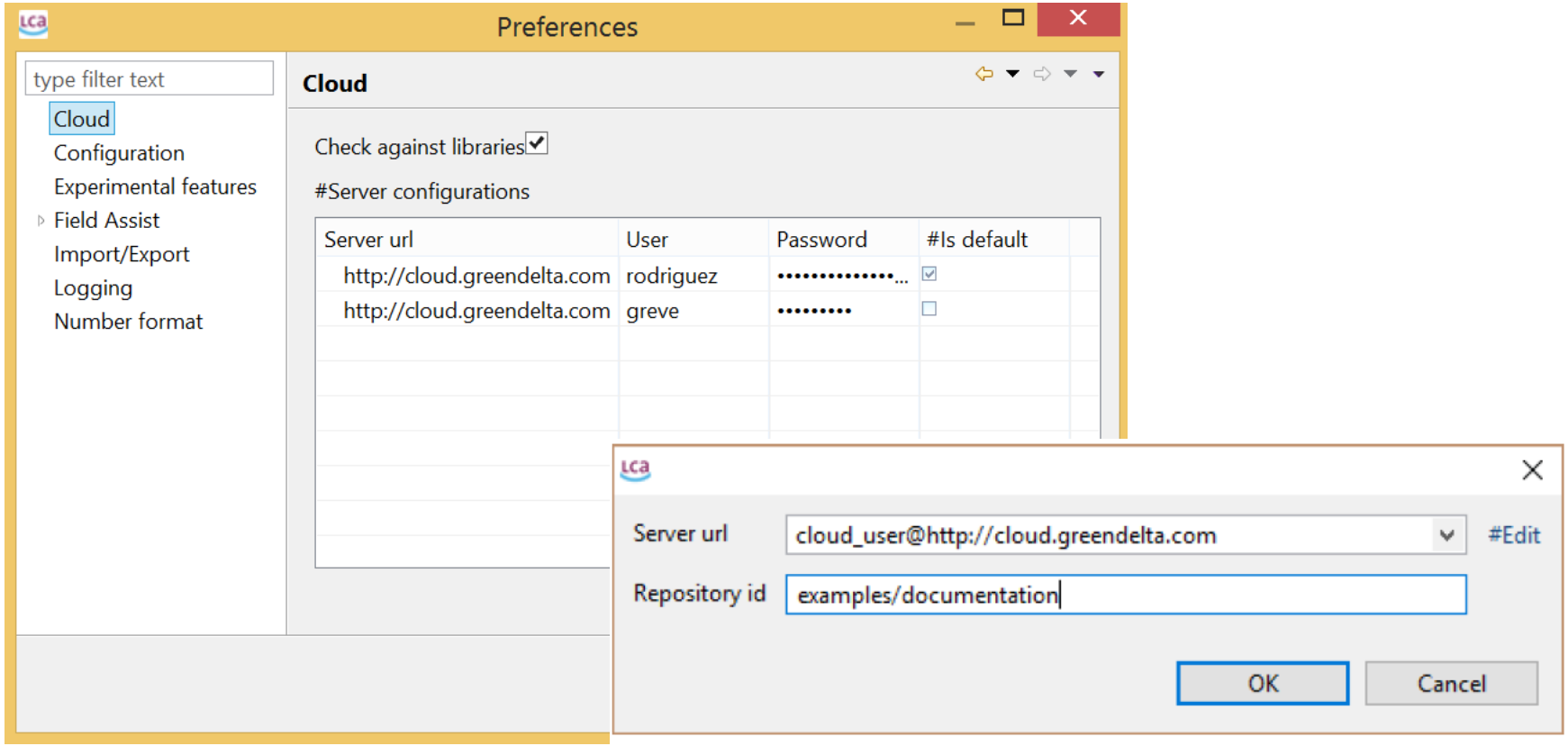
LCA Cloud integration in openLCA

openLCA integrates the usage of the LCA Cloud features:

- enabling users to share their data through LCA repositories
- adding additional tools to make the workflow more user friendly

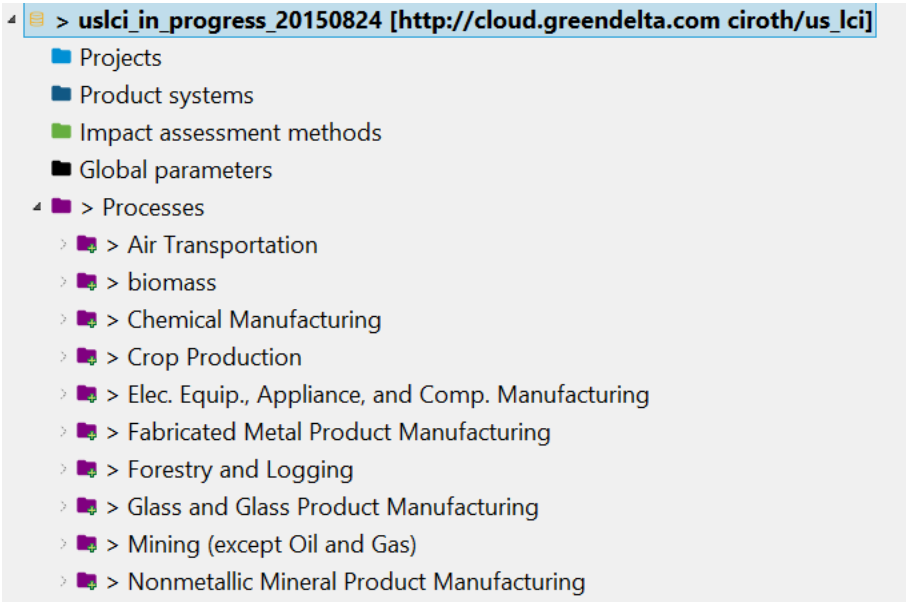
Features: Connection to a repository

- Configure remote server accounts
- Connect a local database to a remote repository



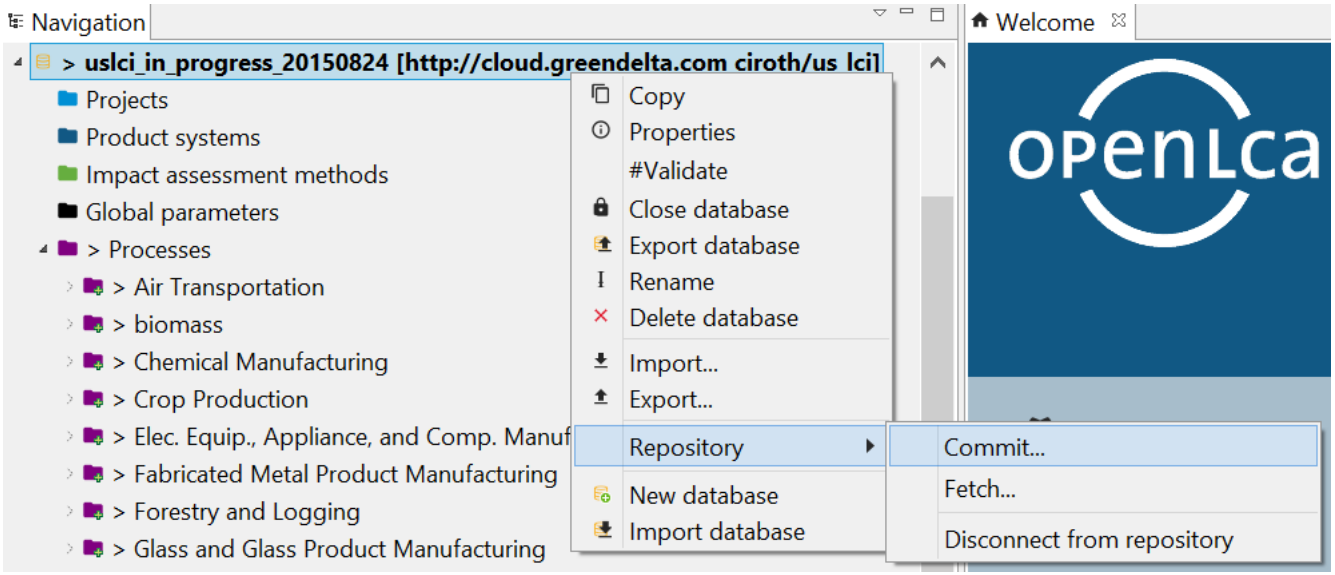
Features: Display of changes

- The data in the local database and in the repository is compared after the connection:
  - > Indicates if a data set was changed
  - ✚ Indicates that there is new data in the local database



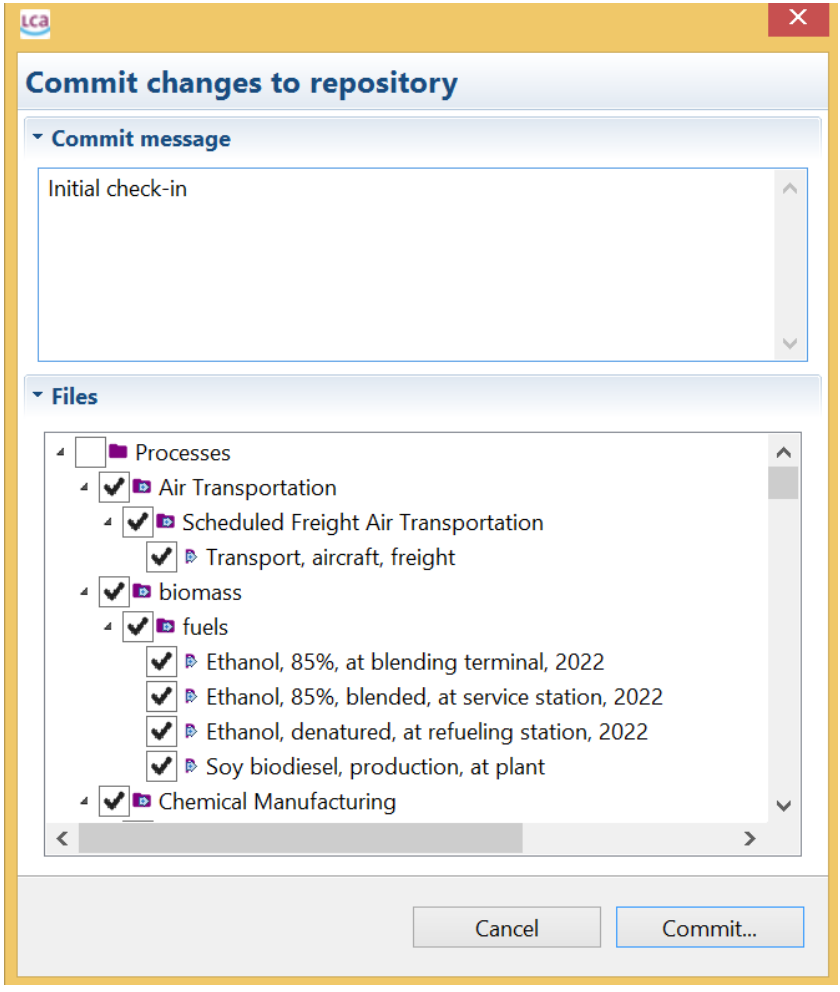
Features: Commit data

- Synchronize local changes with the repository (Commit)



Features: Commit data

- A subset of the changes can be selected



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Features: Data integrity check

- Data validity checks

  → Avoid deletion of linked data

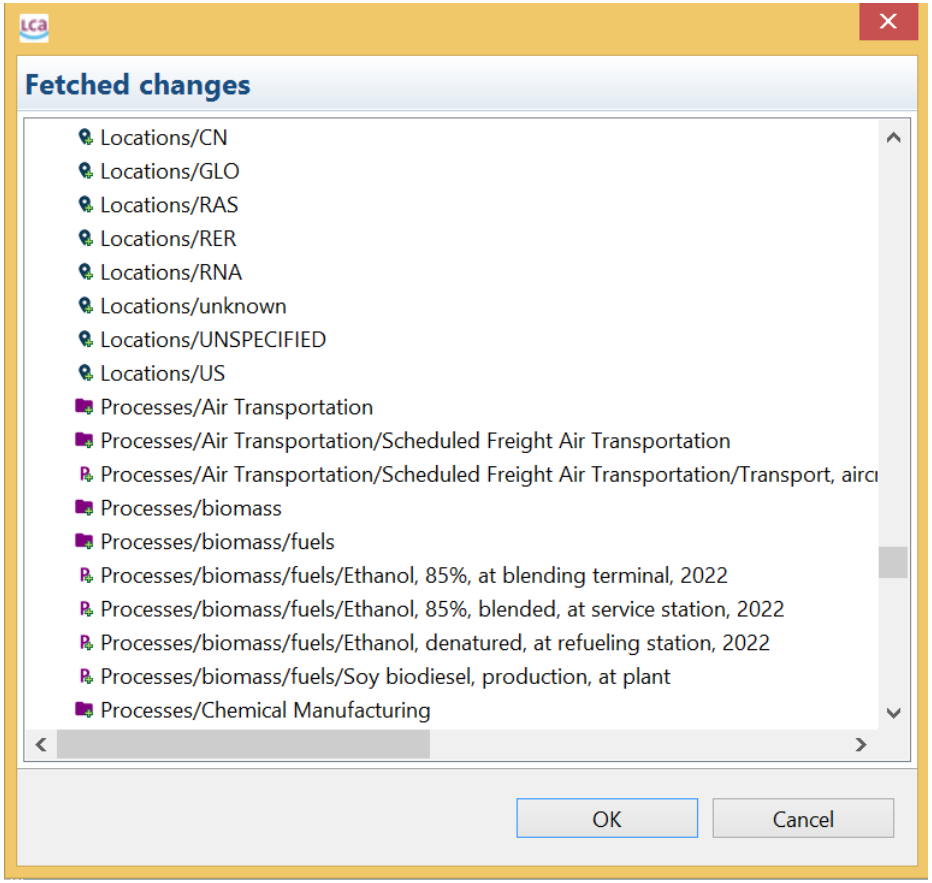
  → Avoid upload of incomplete data

- Protection of library data

  → Warning is shown when trying to commit changes

Features: Fetch data

- Synchronize changes on the remote repository with your local database (Fetch)



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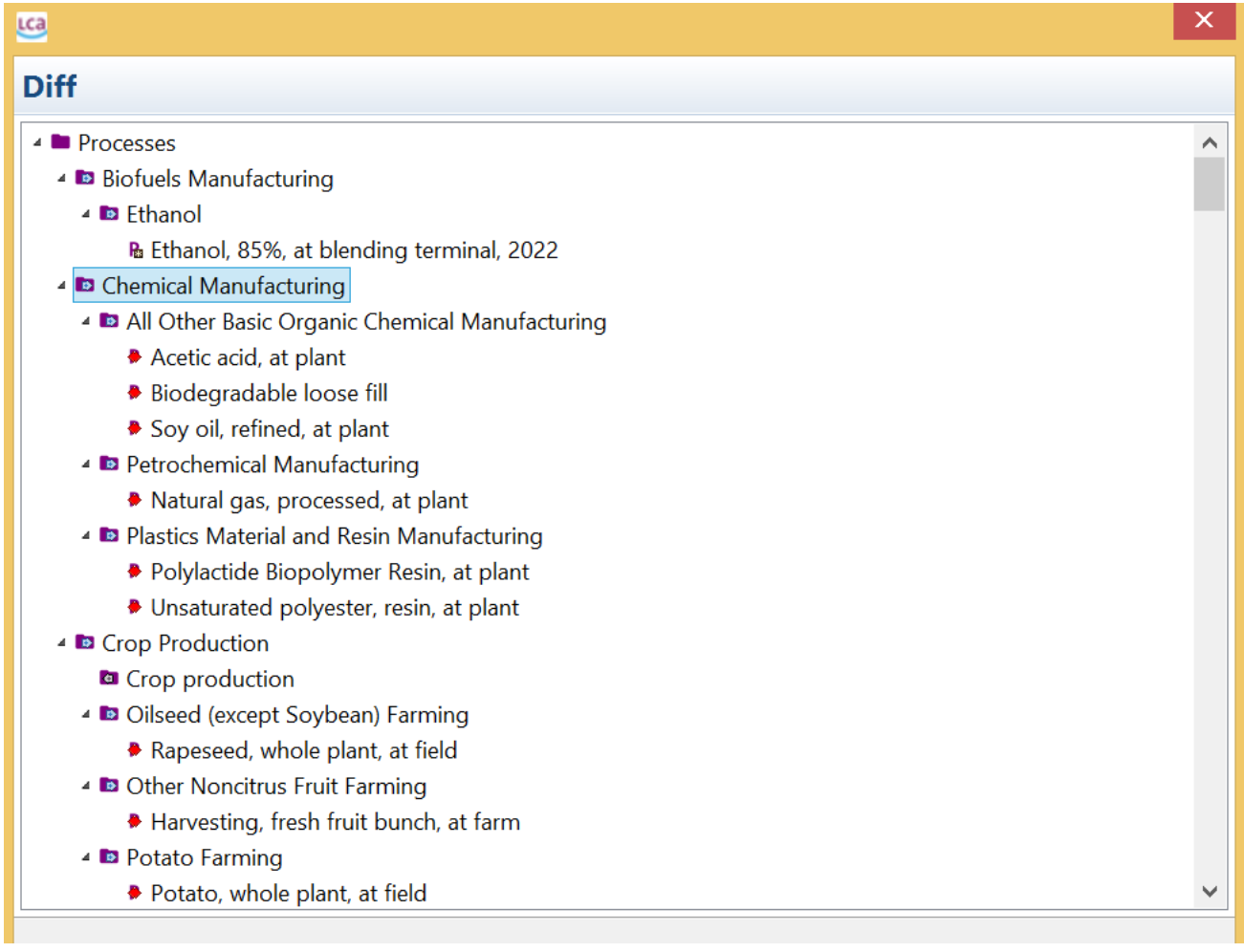
Features: Fetch data (Diff tool)

- Merge conflicting changes (Diff tool)



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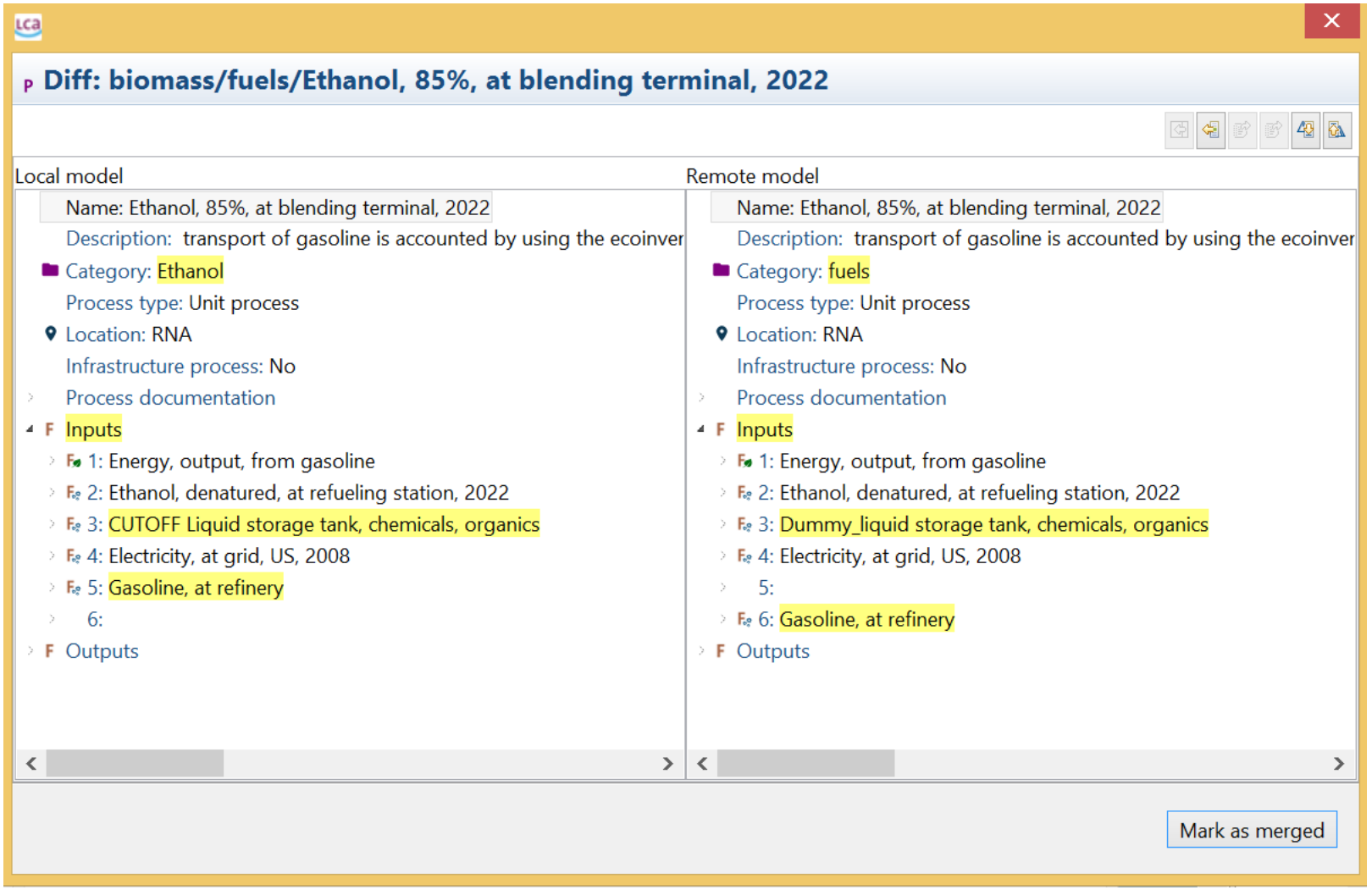
Features: Fetch data (Diff tool)



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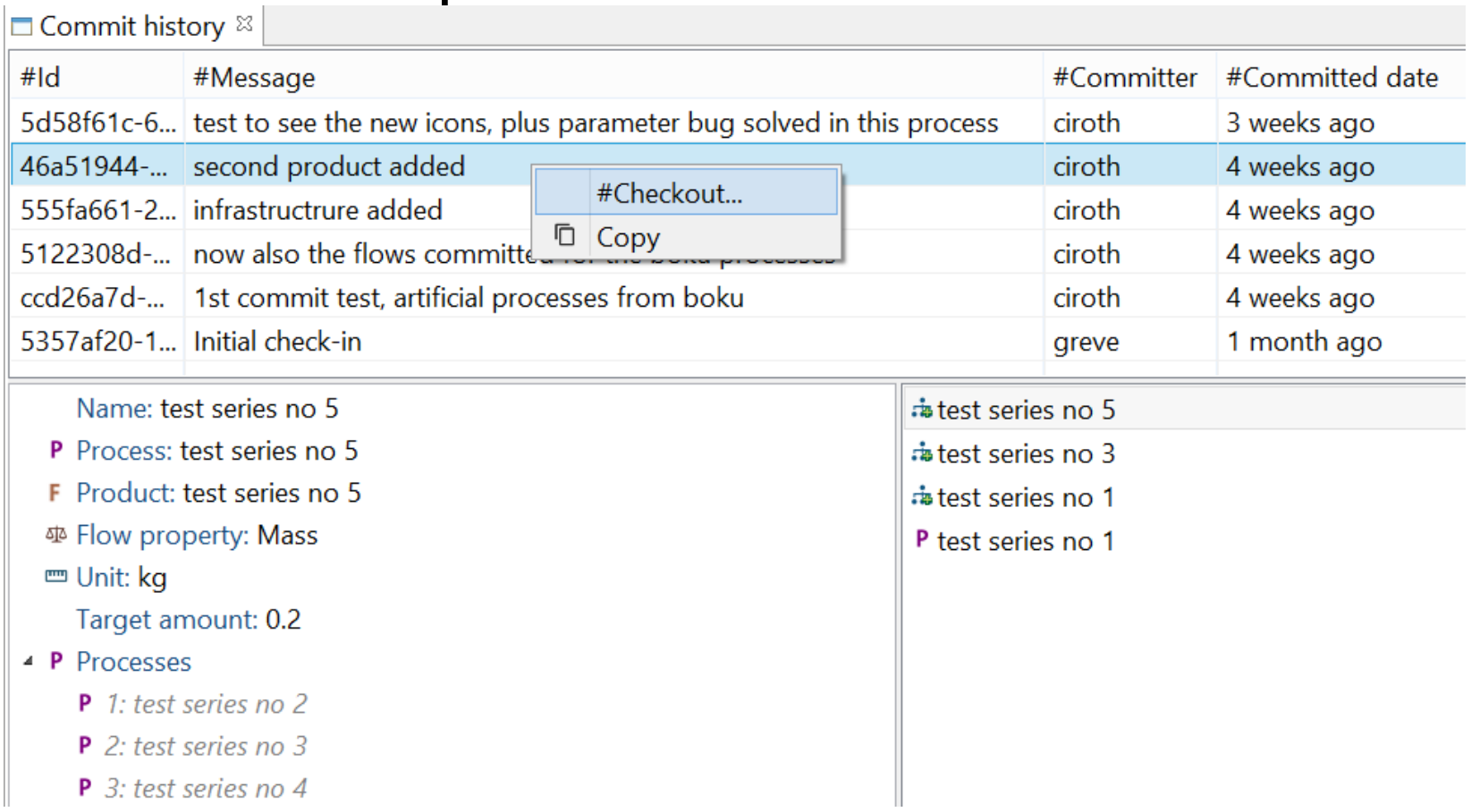
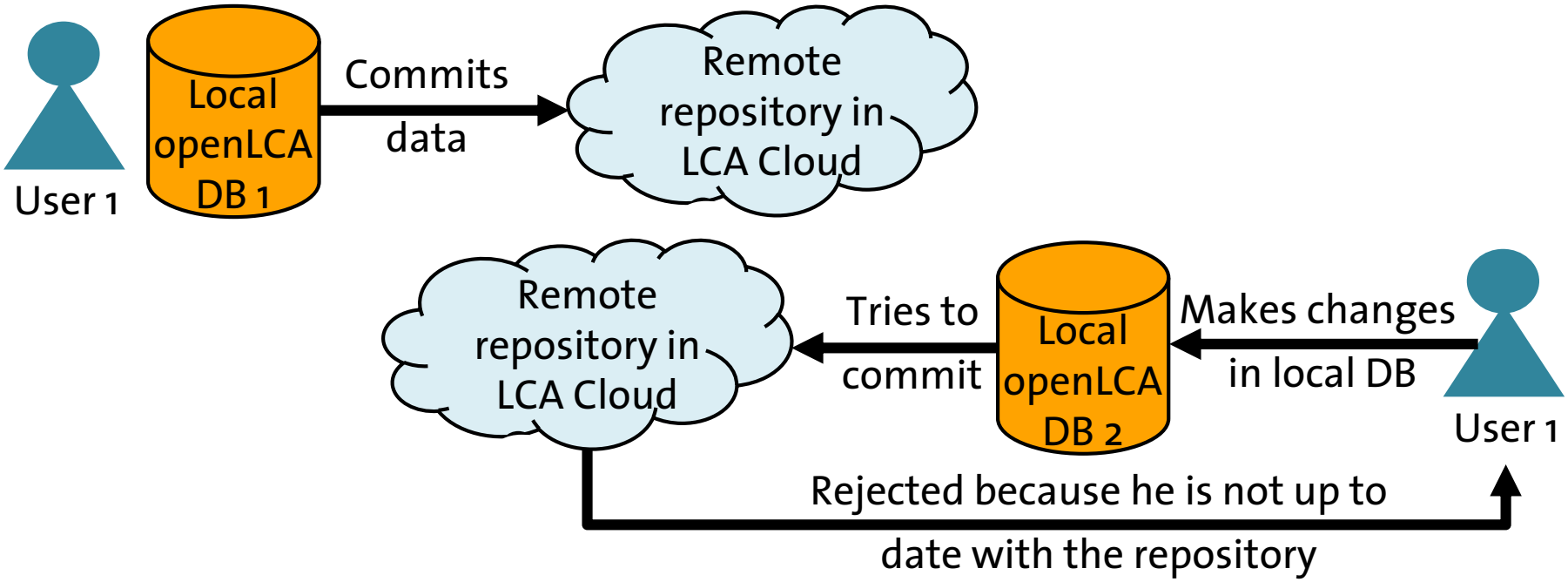
Features: Commit history

- View commit history
- Check out at specific commit states



Use case scenario I: Data collaboration



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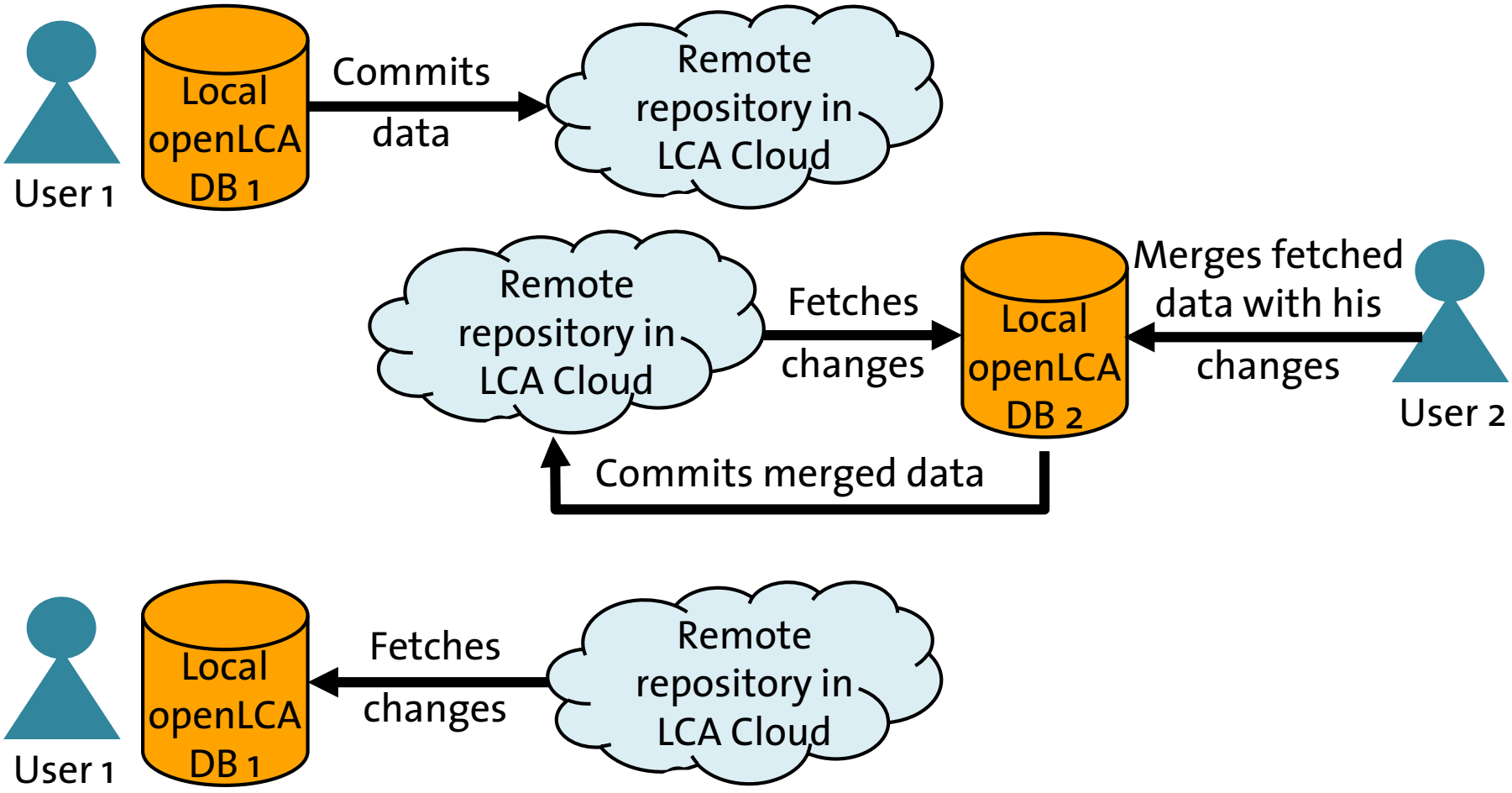
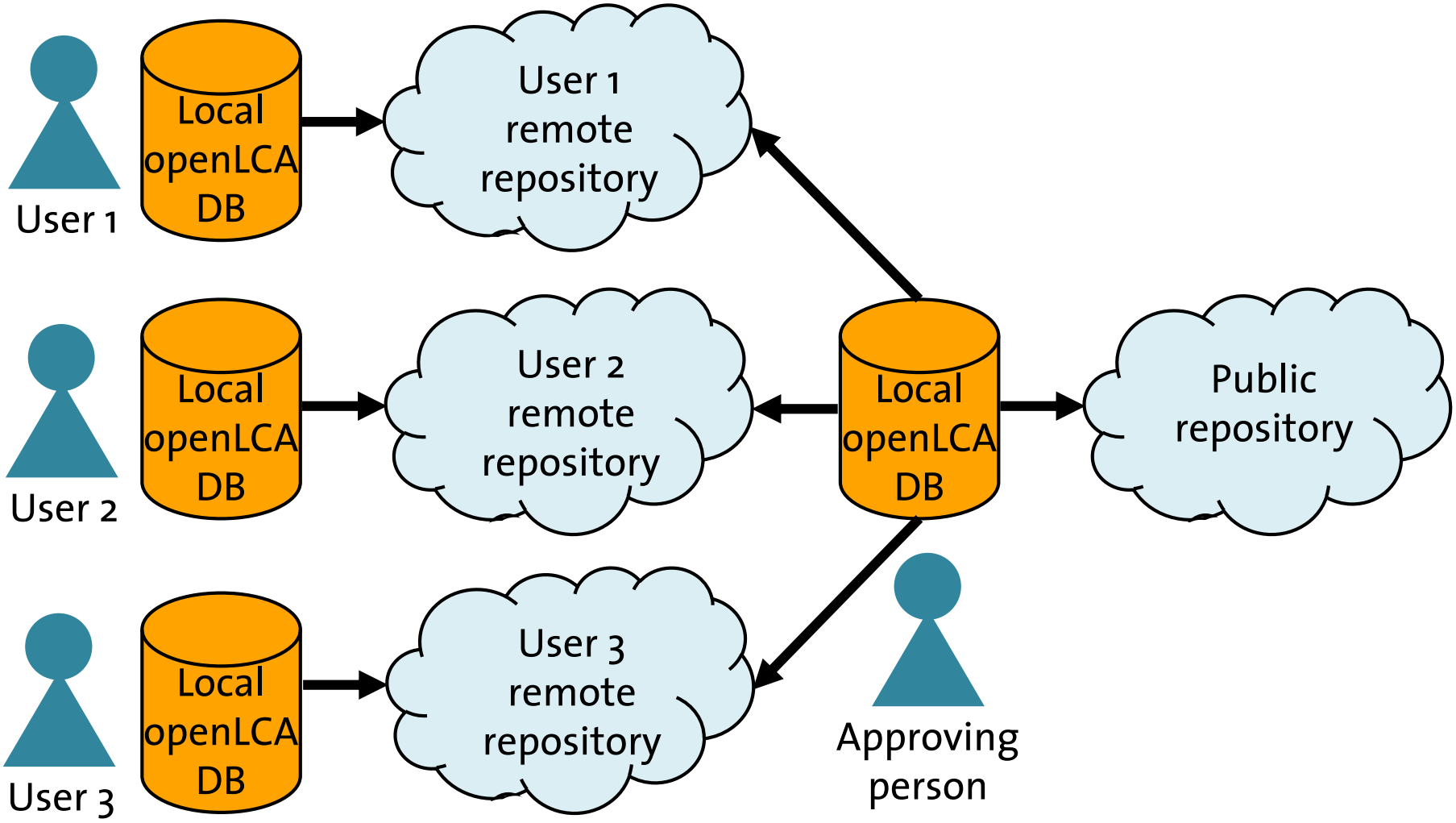
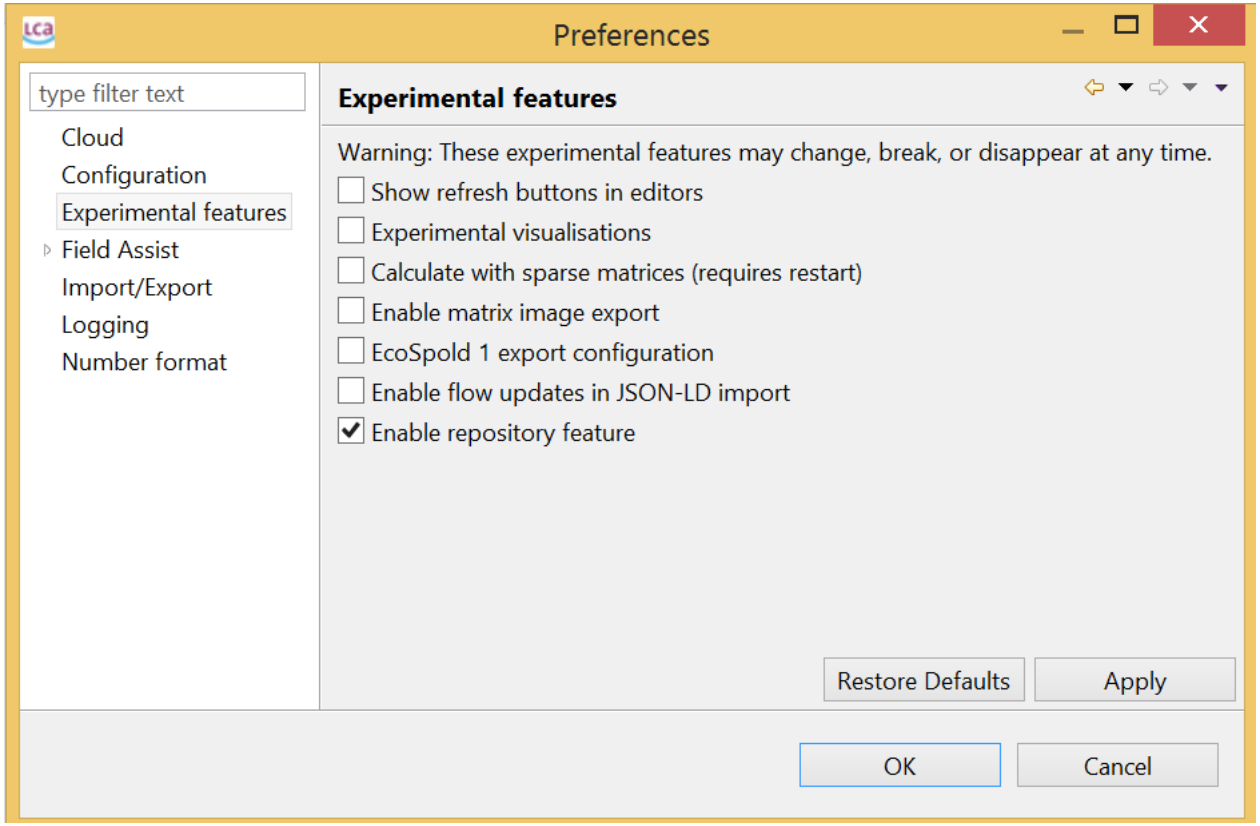


Use case scenario II: Editorial



Status of LCA Cloud

- Basic functionalities are included in openLCA 1.5.0 beta 1 as “Experimental feature” since January 2016



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Outlook

- Extended and usability features will be included in next version of openLCA

  → A beta version with a fully featured web-application is currently being tested by openLCA partners

Conclusions

- Very powerful and complete tool for group work and data sharing:
  - Independent repositories and group of repositories
  - User/Team roles per repository/group
  - Data validity: linear workflow, validity checks
  - Web-view of repositories and download of data sets
- Very flexible:
  - Selection of data to commit
  - Merging of conflicting changes
  - URLs that can be called + Java API to connect to the web-services and all other features in openLCA open source

Acknowledgments

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Merci!

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