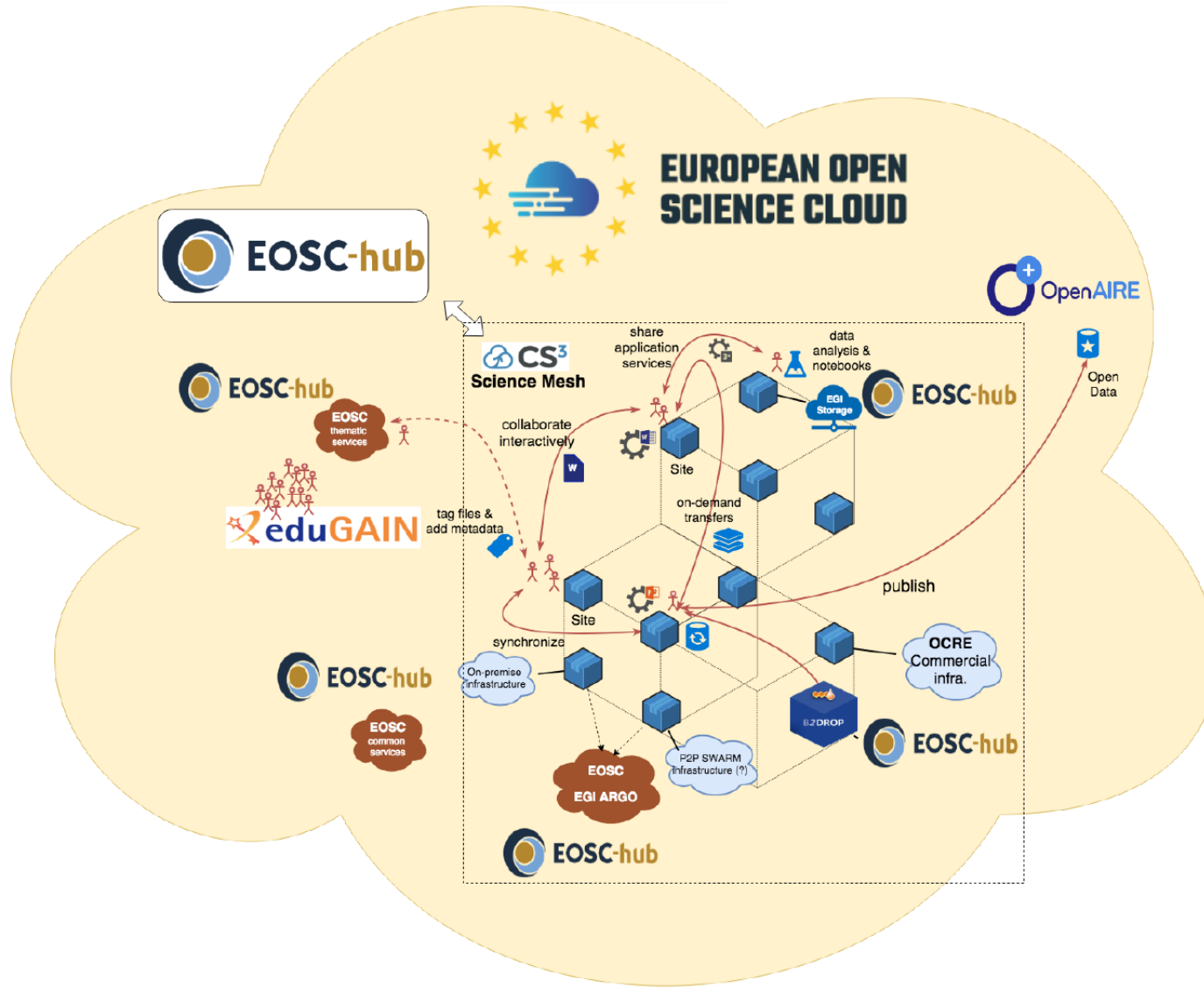


- # Ron Trompert, Thirsa de Boer, Antoon Prins
- # On-demand Data Transfers (SURF, PSNC, CESNET, AARNET, CERN)

- # CS3MESH4EOSC is a H2020 Project (2020-2022)
 - # Interconnects existing sustainable storage and research services
 - # Create an innovative collaborative mesh of application services
 - # Supports open source software and FAIR, open data principles
 - # Build an operational, decentralised infrastructure (with a lightweight central component) based on the protocols:
 - # CS3APIs (links apps with an EFSS)
 - # Open Cloud Mesh/OCM (links EFSS') → **user invitation & data sharing**

<https://cordis.europa.eu/project/id/863353>

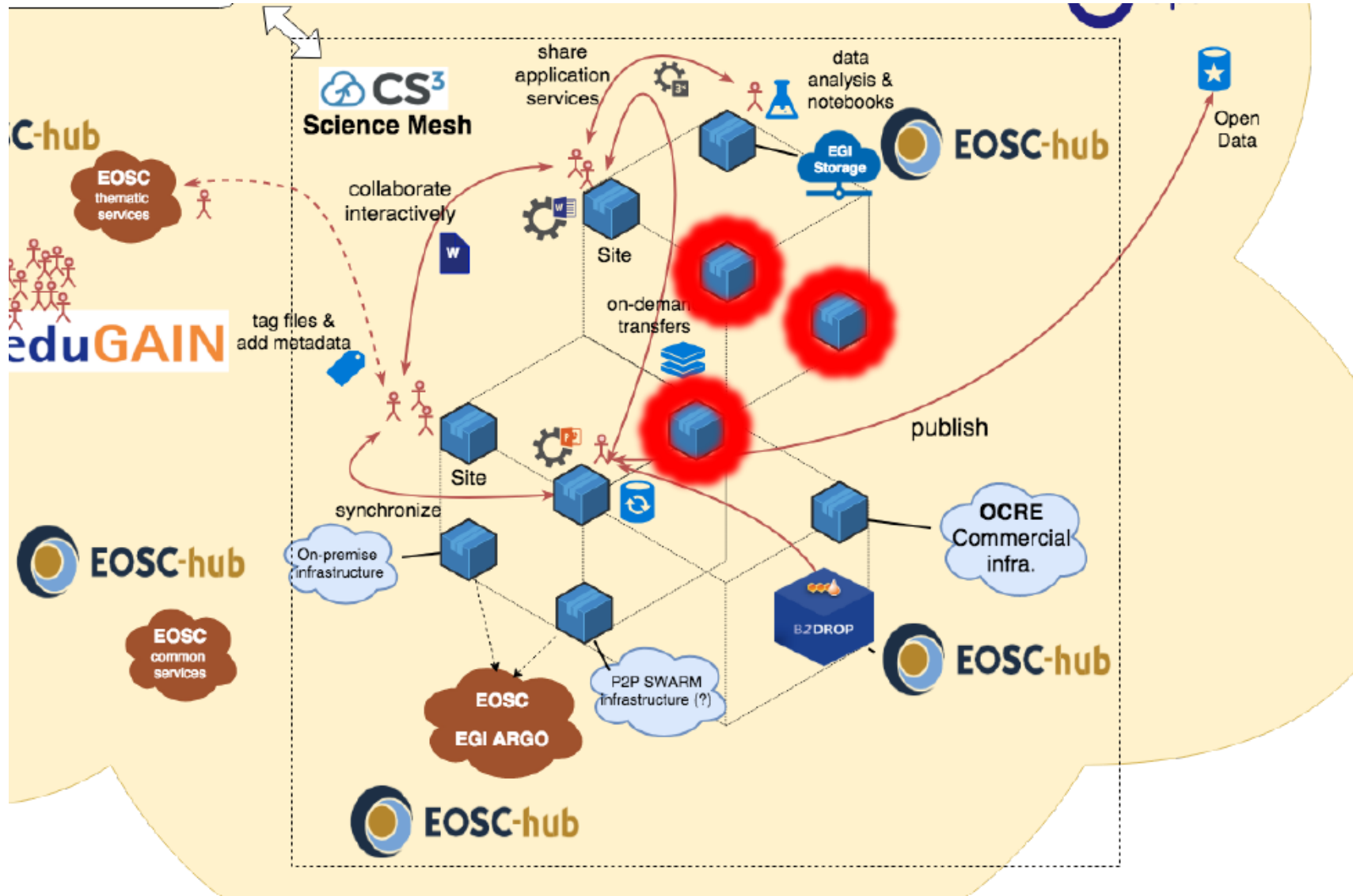


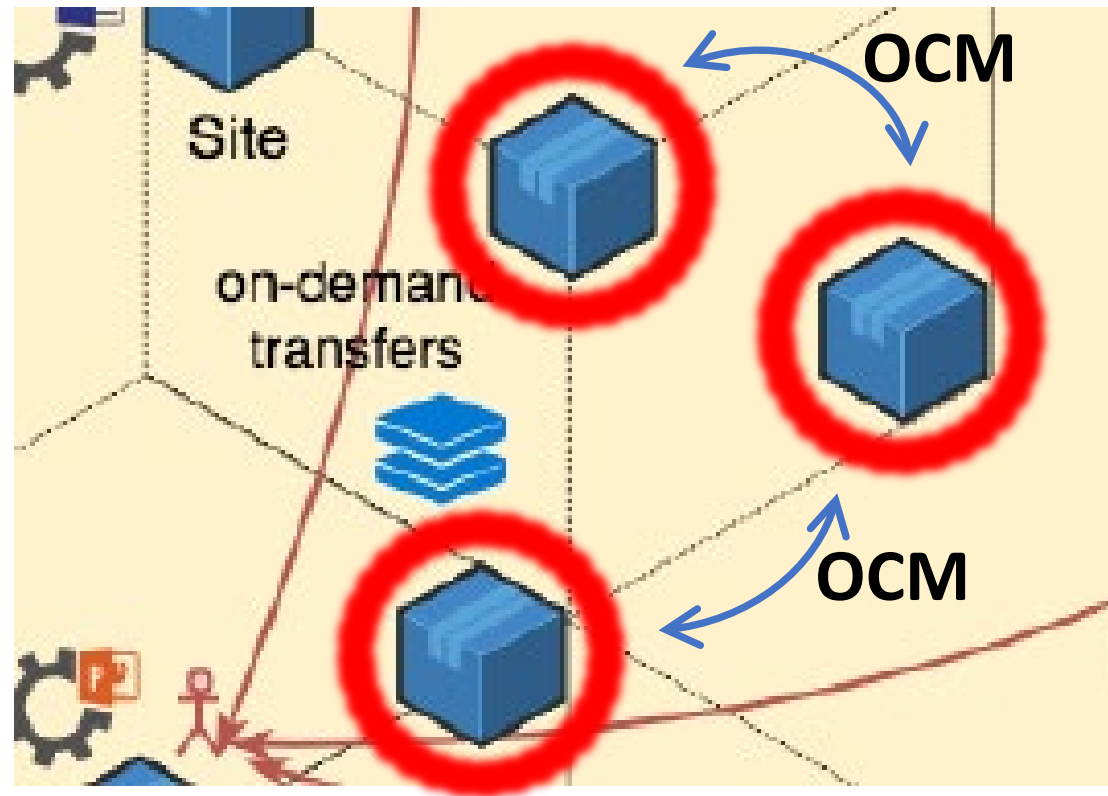


CS³MESH⁴EOSC

Connecting European Data

The CS3MESH4EOSC ScienceMesh





- # Why on-demand data transfers?
 - # Data locality may be important for some use-cases
 - # Sharing of data is not good enough
 - # Remote processing may cause overload on the source EFSS system, processing at source is not possible
 - # Larger data sets
- # Support for data transfers between EFSS systems and between EFSS systems and other storage systems
- # Transfer mechanism agnostic

- # OCM is instrumental in data sharing between EFSS'
 - # invitation flow & data sharing

- # Use OCM for data transfer as well ...
 - # Yes it can

- # Same steps, as in data sharing
 - # Invite, share, accept



```
{
  "shareWith": "peter.szegedi@geant.org",
  "name": "spec.yaml",
  "description": "This is the Open API Specification file (in YAML format) of the Open Cloud Mesh API.",
  "providerId": "7c084226-d9a1-11e6-bf26-cec0c932ce01",
  "owner": "dimitri@apiwise.nl",
  "sender": "john@apiwise.nl",
  "ownerDisplayName": "Dimitri",
  "senderDisplayName": "John Doe",
  "shareType": "user",
  "resourceType": "file",
  "protocol": {
    "name": "webdav",
    "options": {
      "sharedSecret": "hfiuhworzwnur98d3wjiwahr",
      "permissions": "{http://open-cloud-mesh.org/ns}share-permissions"
    }
  }
}
```



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    "name": "webdav",
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      "sharedSecret": "hfiuhworzwnur98d3wjiwahr",
      "permissions": "{http://open-cloud-mesh.org/ns}share-permissions"
    }
  }
}
```

protocol > required	object The protocol which is used to establish synchronisation. At the moment only <code>webdav</code> is supported, but other (custom) protocols might be added in the future.
------------------------	---



```
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  "owner": "dimitri@apiwise.nl",
  "sender": "john@apiwise.nl",
  "ownerDisplayName": "Dimitri",
  "senderDisplayName": "John Doe",
  "shareType": "user",
  "resourceType": "file",
  "protocol": {
    "name": "datatx",
    "options": {
      "sharedSecret": "hfiuhworzwnur98d3wjiwahr",
      "permissions": "{http://open-cloud-mesh.org/ns}share-permissions"
    }
  }
}
```

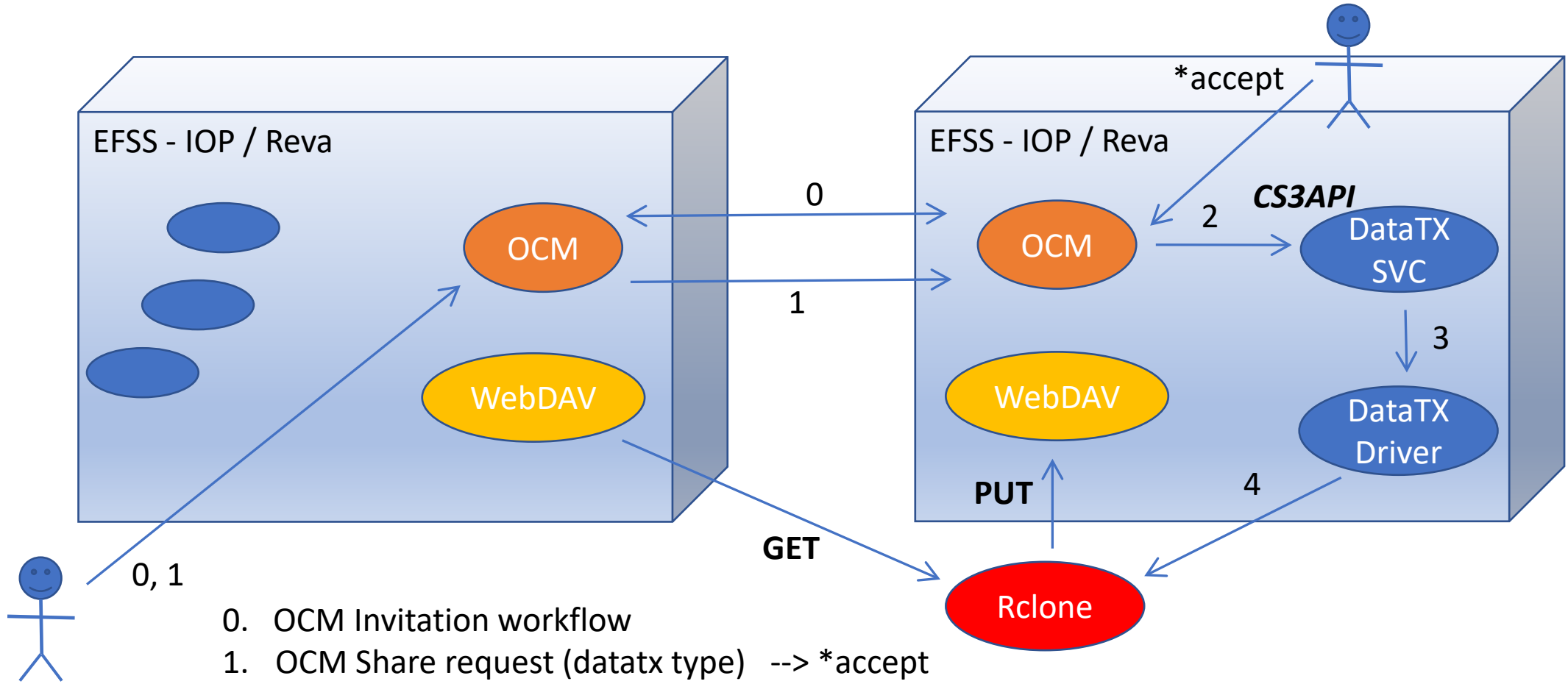
Data Transfer is a case

```
switch protocol.Value {  
    case "webdav":  
        ... regular file share  
  
    case "datatx":  
        ... data transfer  
  
    case default:  
        ... protocol not recognized  
}
```

Services to manage the data transfer

Data Transfer tool (rclone, FTS, ...)

- # EFSS' on top of the IOP layer
 - # Build on CS3APIs (collaboration API)
 - # The implementation of this is the Reva project (<https://github.com/cs3org/reva>)
 - # Reva is installed alongside an EFSS
- # ScienceMesh of application services
 - # OCM for linking EFSS'
 - # CS3APIs in the IOP for linking apps, storages to EFSS



- 0. OCM Invitation workflow
- 1. OCM Share request (datatx type) --> *accept
- 2. OCM passes the transfer request to the DataTX SVC
- 3. DataTX SVC delegates to DataTX Driver
- 4. DataTX instructs Rclone to 'pull' the data

- # Data transfer service in Reva (CS3API)
 - # PullTransfer
 - # GetTransferStatus, ListTransfers, CancelTransfers, RetryTransfers
- # For the management methods we have created CLI commands
 - # PullTransfer is never called explicitly by the user → the user accepts the share
- # rclone driver
 - # Some essential rclone changes since v1.55.0

- # OCM can support data transfer through a simple protocol extension
 - # POST /shares
 - protocol:
 - name: datatx

- # OCM flow for Data Transfer is very similar to regular Data Share
 - # OCM Invite & Share & Accept

- # In Reva the services to support this have been implemented
 - # To be merged into the Reva master branch
 - # checkout the screencast at <https://youtu.be/xfhP7AigLtw>



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MESH⁴
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Connecting European Data

Thank you!
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