VIP : towards data platforms interoperability through CARMIN

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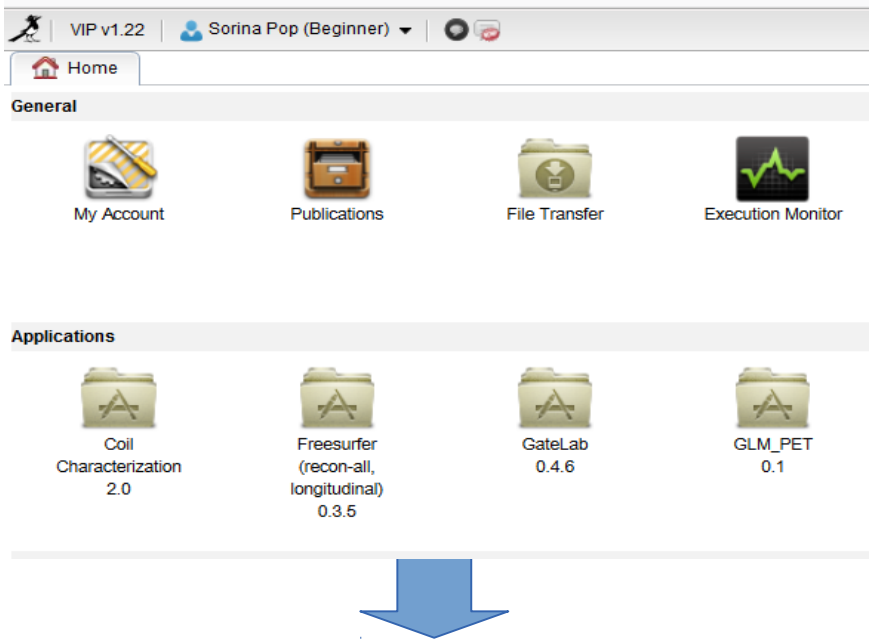
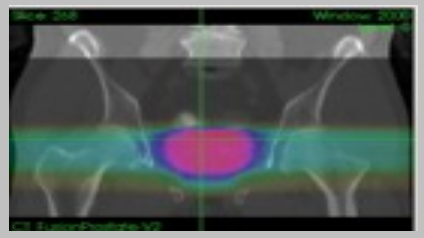
Overview

- VIP usage and limitations
- Need for data interoperability
- Issues to overcome
- Conclusion

The Virtual Imaging Platform

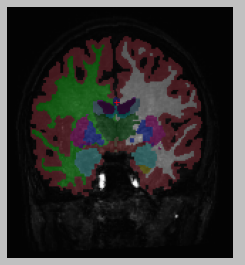


Cancer therapy simulation



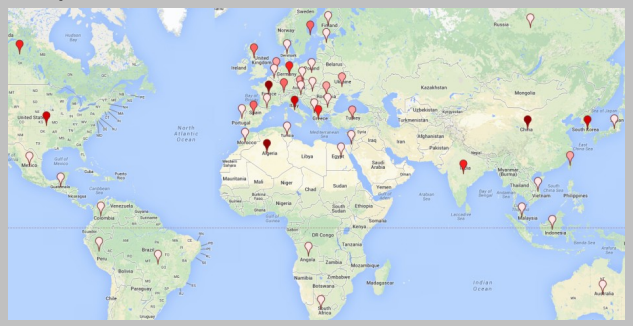
Prostate radiotherapy plan simulated with GATE(L. Grevillot and D. Sarrut)

Neuro-image analysis



Brain tissue segmentation with Freesurfer

1000+ registered users in October 2019
55 publications identified since 2011



Supported by EGI Infrastructure
Uses biomed VO (~65 sites in Europe and beyond)
230 cumulated CPU years utilized by VIP applications in 1 year

VIRTUAL IMAGING PLATFORM

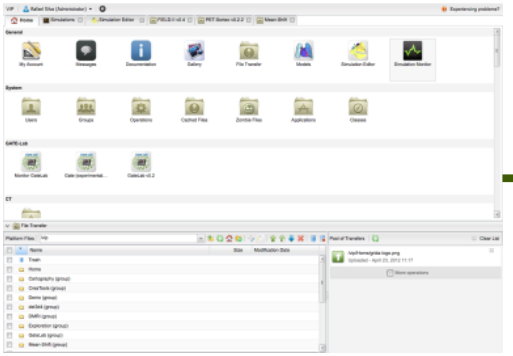
https://vip.creatis.insa-lyon.fr

VIP usage through the portal

User

1. Login
2.1 Send input data
3. Launch application

9.1 Download results



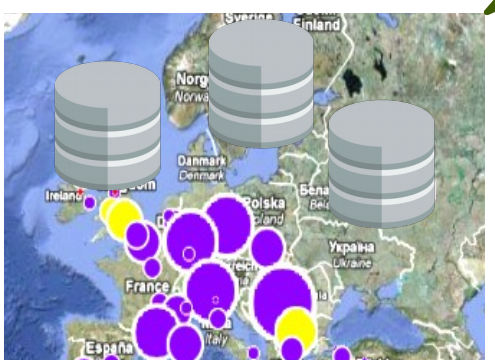
VIP Web Portal

4. Launch workflow
5. Submit jobs

Workflow Engine
+
DIRAC
THE INTERWARE

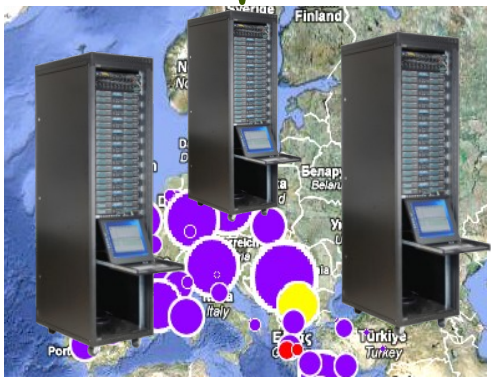
2.2 Transfer input files

9.2 Transfer Output files



Storage Element

6. Get files
7. Execute
8. Upload results



Computing site

VIP usage through the CARMIN API

External tool

1. Launch Application

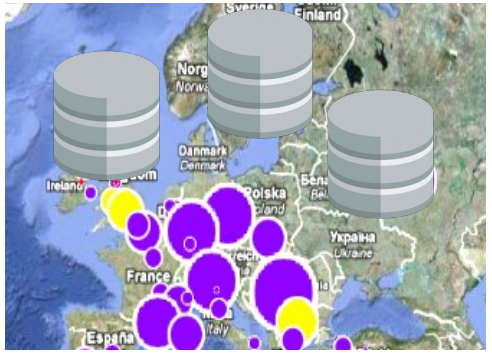
CARMIN Processing

VIRTUAL IMAGING PLATFORM

VIP

2. Launch workflow
3. Submit jobs

Workflow Engine
+
DIRAC
THE INTERWARE



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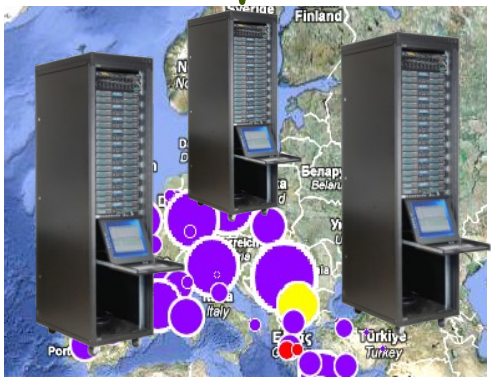

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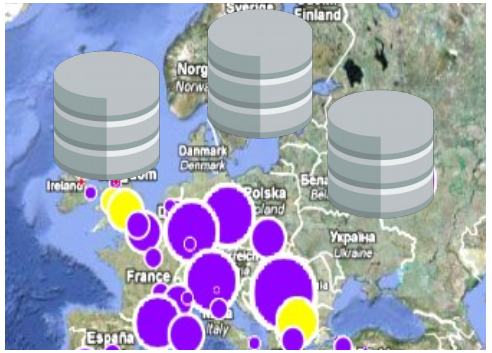
What about data ?



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Computing site

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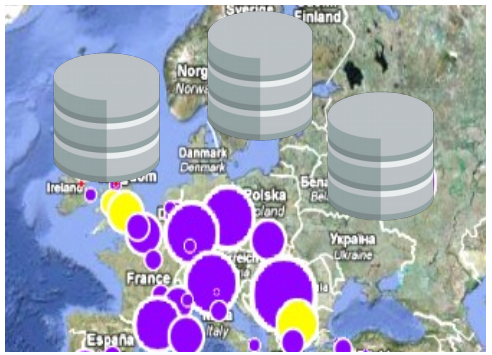
What about data ?

-> Need data interoperability



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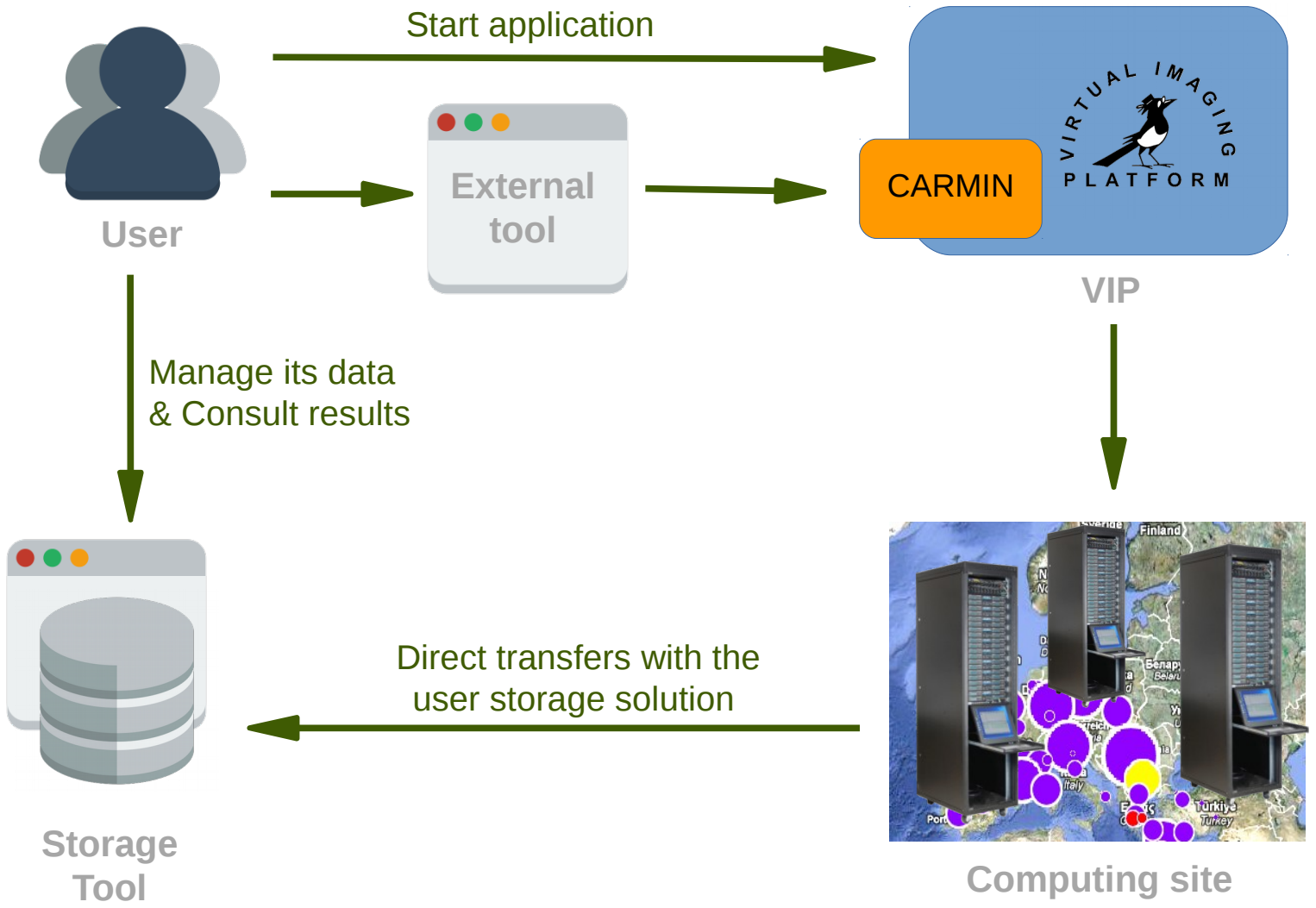
Computing site

Solution : access data where the user stores it



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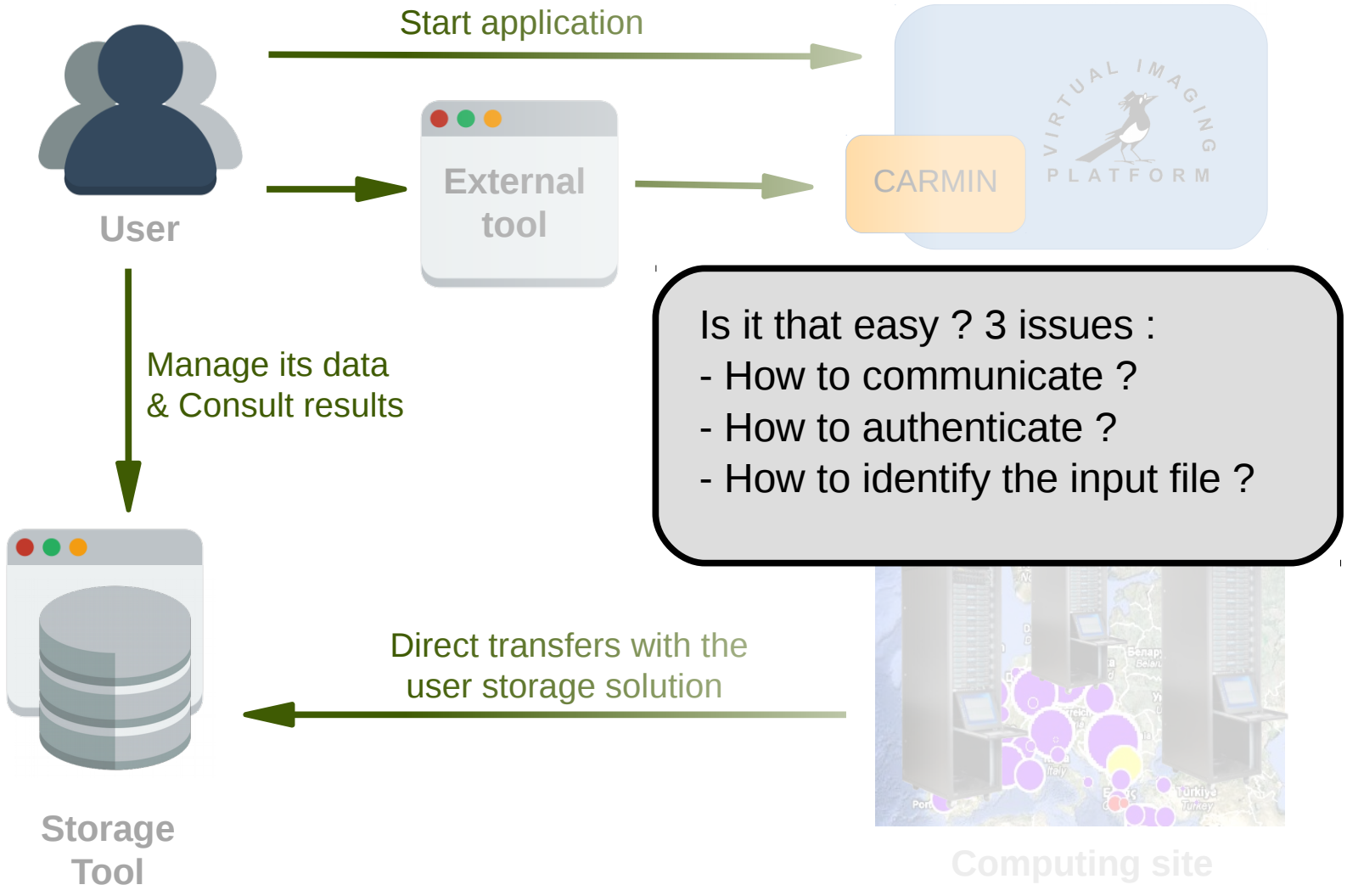
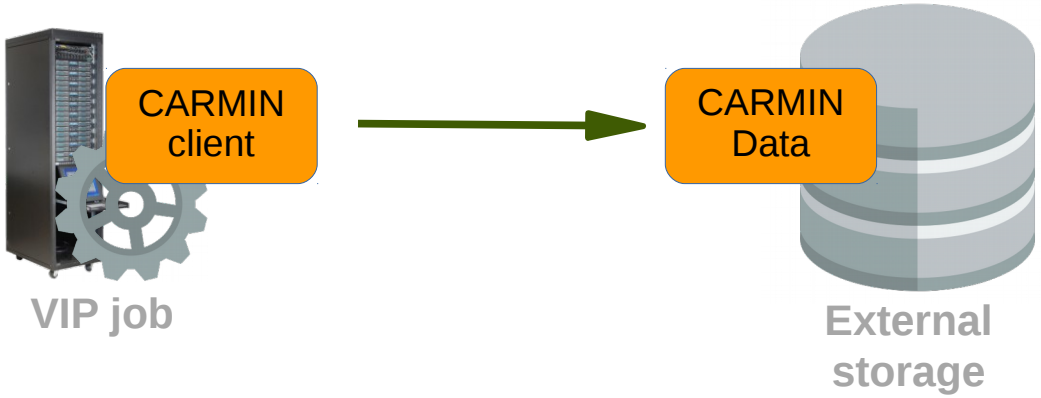


1st issue : Communicate with the storage tool

- The storage supports CARMIN Data



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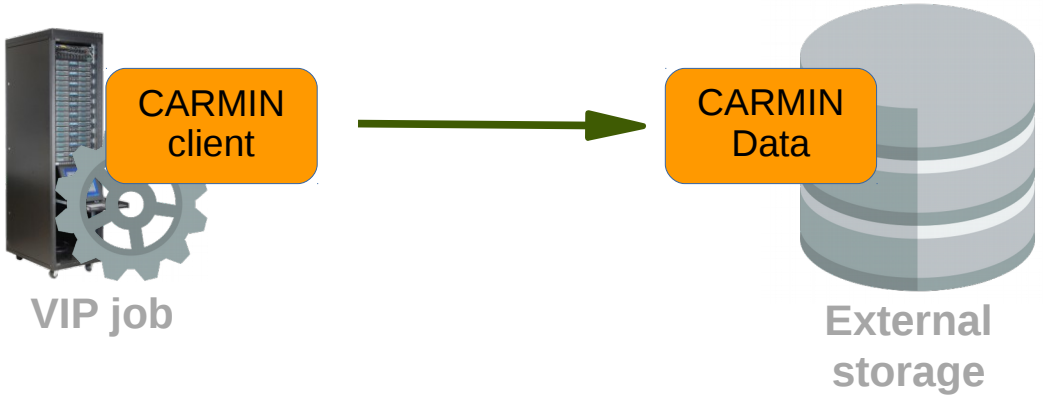
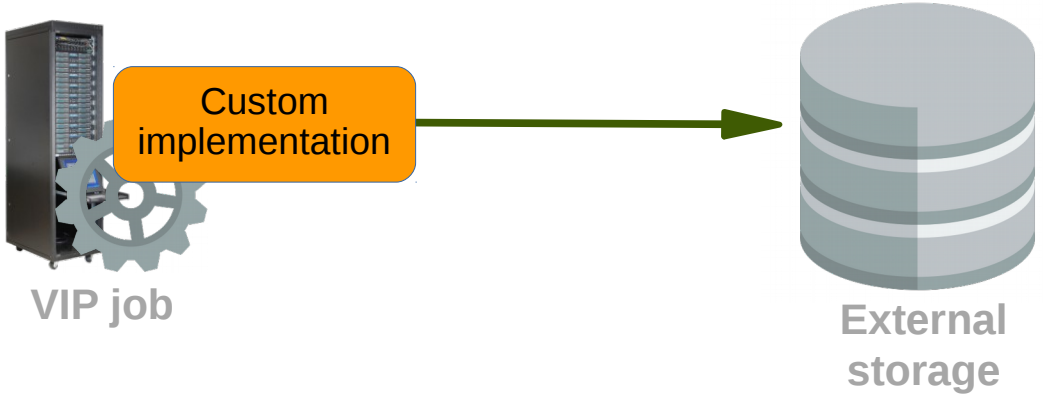
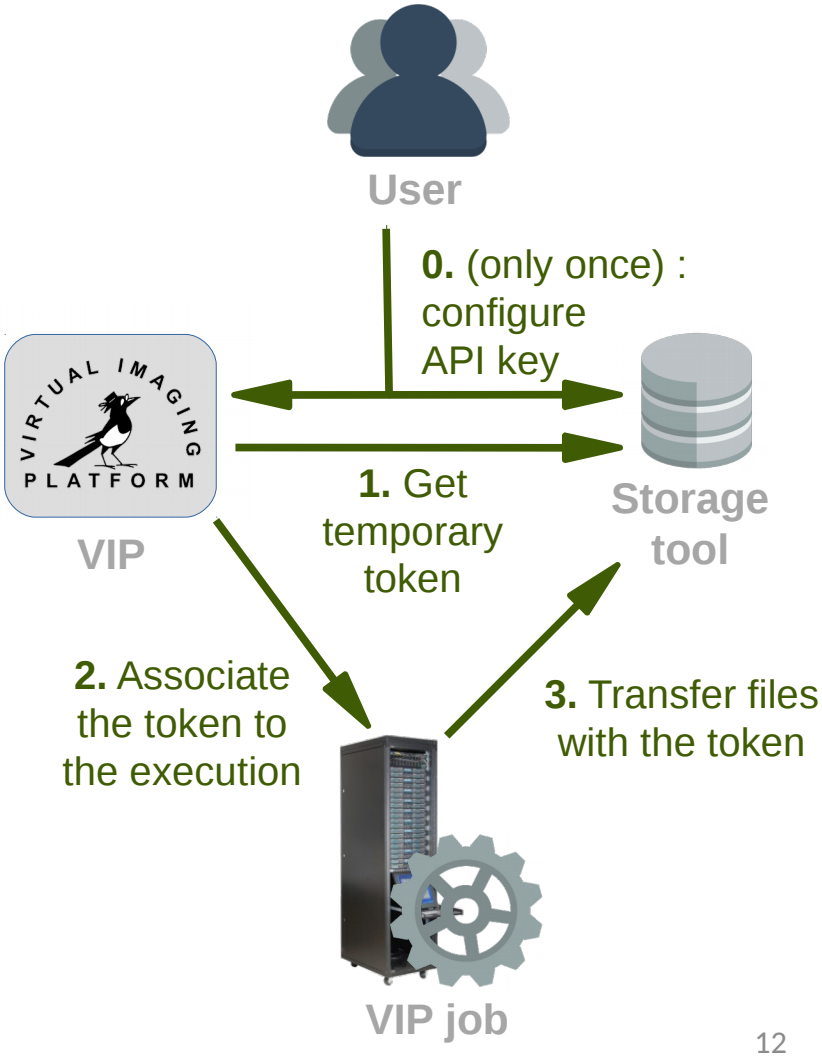


- Otherwise, a custom implementation is needed



2nd issue : Authenticate on the storage tool

- VIP needs to access the storage platform in the name of the user
- Credential delegation in 2 steps
  - an API key obtained from the storage tool is stored in VIP
  - The API key allows to get a temporary token for each execution
- Works for Girder (a data warehouse by Kitware)
- OpenID should work in theory (with refresh and access tokens)



3rd issue : Identify the input file

- CARMIN extended to support external storage
  - External files as input and outputs
  - API keys configuration

```
{
  "name" : "JCAD Test",
  "pipelineIdentifier":"GrepTest/2.0",
  "inputValues" : {
    "results-directory":"/vip/Home/out",
    "file":"brainPerfusionGirder:5d945bd3b848ce091e4849fc",
    "text":"mi"
  }
}
```

Conclusion

- Improved data interoperability in VIP
- Integrated into the CARMIN specification
- A step towards platforms networks