



# FTS3 on the web

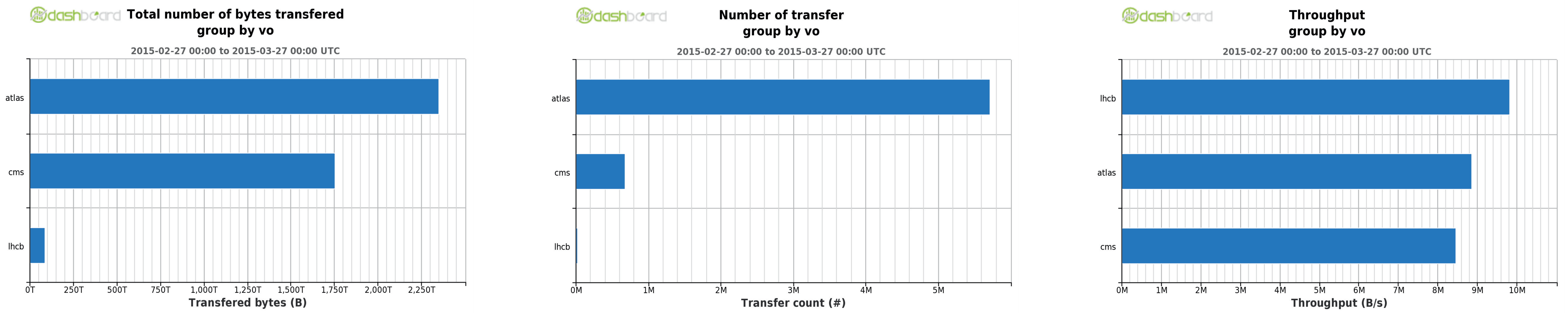
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**FTS3** is the service responsible for globally distributing the majority of the LHC data across the WLCG infrastructure. It provides reliable bulk transfers of files from one site to another while allowing participating sites to control the network resource usage.

**WebFTS** is a user-oriented web application built on top of FTS3 via its **REST API**

## FTS3 as a powerful engine

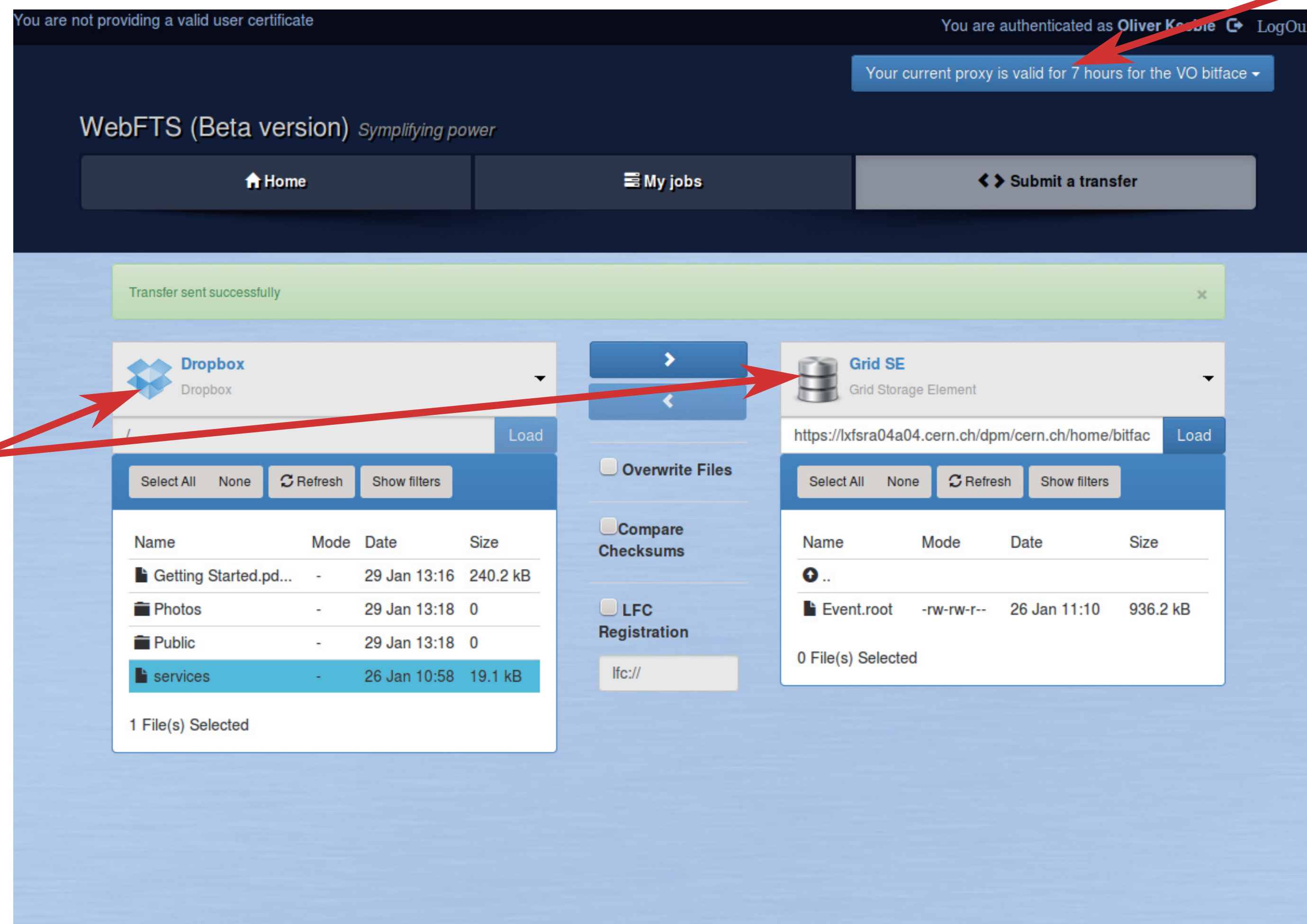
A single FTS3 service (\*) is capable of scheduling more than 4 PB in 28 days, distributed across more than 6 million transfers. Since WebFTS builds on top of this service, it benefits from its scalability and exhaustive validation.



(\*) CERN Production FTS3 instance with 9 virtual machines

## WebFTS is easy to use

WebFTS is an autonomous web application that interacts with FTS3 via its REST interface. It can be used directly by end users via their browser. A built-in step-by-step guide is available so the user is introduced to the various screens and to the functions available.

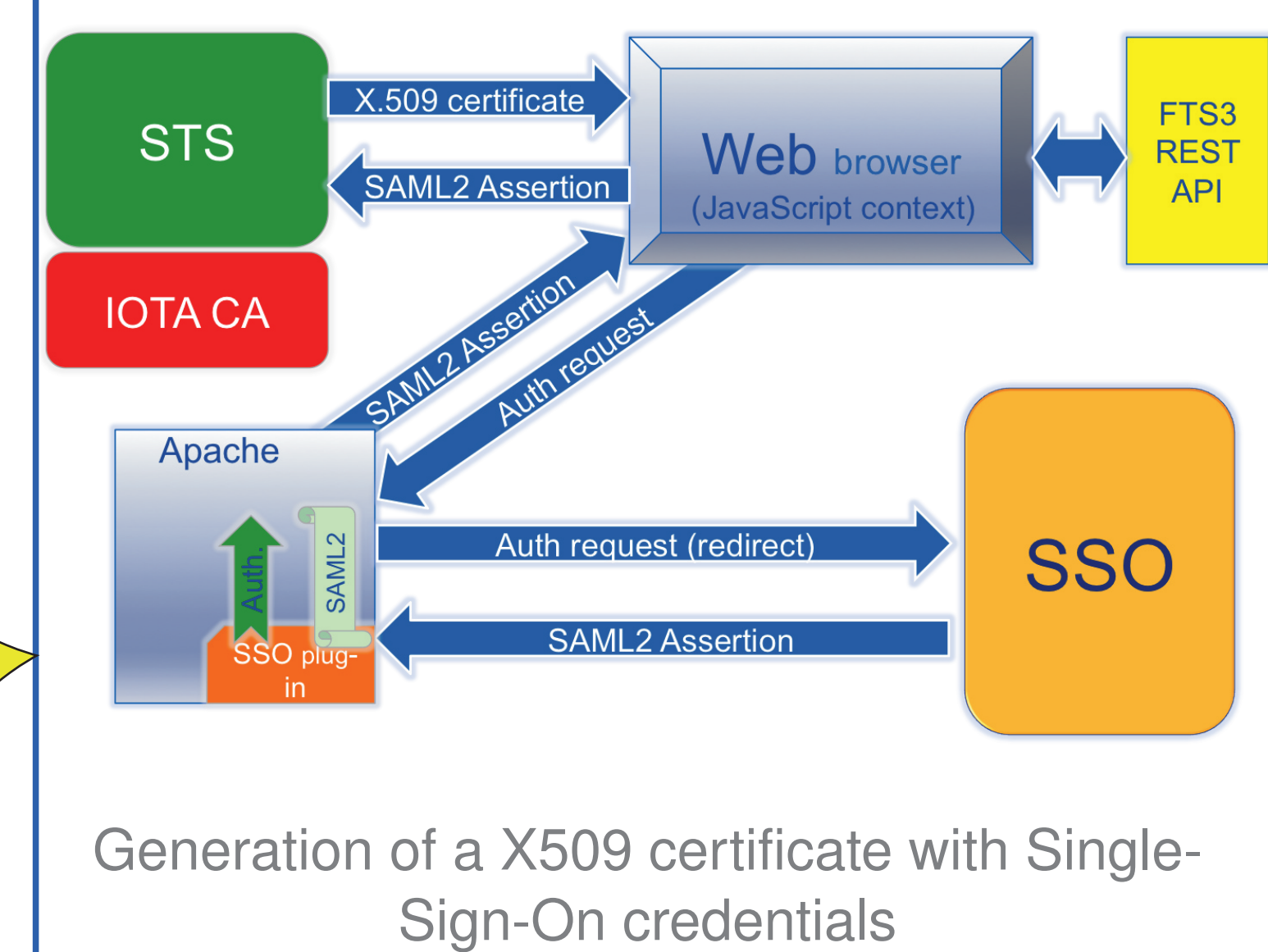


## X.509-free end-user experience

Normally Grid access requires a proxy certificate - with or without VO extensions. WebFTS does support proxy generation via browser, but a first version including **integration with STS** (Security Token Service) **renders the requirement of a client certificate unnecessary**.

- Authentication via **eduGAIN**
- VOMS proxy issued server-side
- Transparent to the user
- WebFTS operates as a "portal"

The Security Token Service (STS) consumes SAML2 assertions and produces X.509 credentials in return. This functionality is based on a so-called IOTA CA (Identifier-Only Trust Assurance Certification Authority) that issues short-lived (days) X.509 certificates.



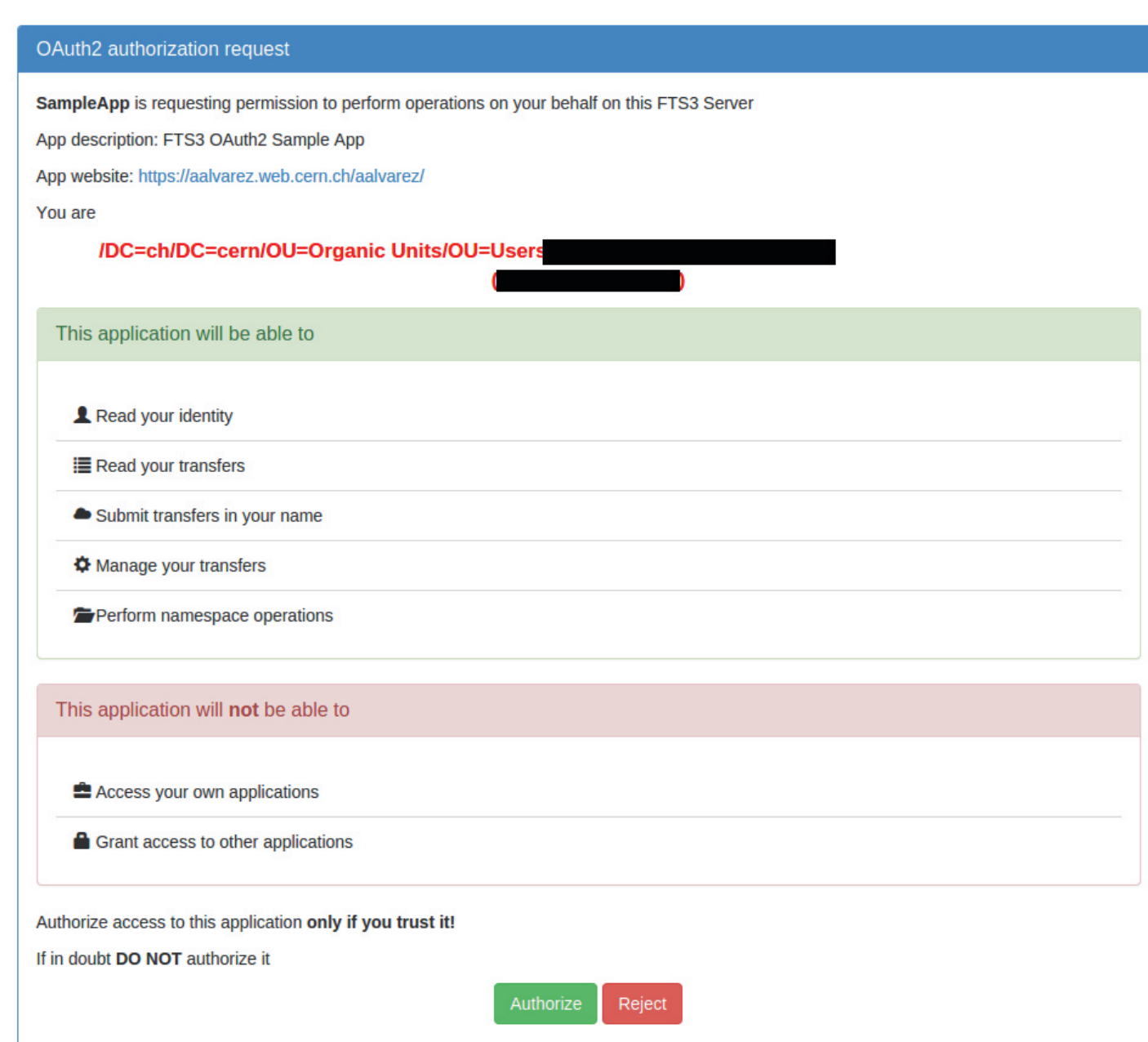
Generation of a X509 certificate with Single-Sign-On credentials

## Moving in and out of the Grid

FTS3 includes support for **S3** and **Dropbox**. Dropbox is particularly well integrated into WebFTS, so once the user grants FTS3 access to its Dropbox account, she can copy files between any Grid storage and Dropbox, covering the last mile between the user laptop and the Grid.

## REST API and OAUTH2 for third-party applications

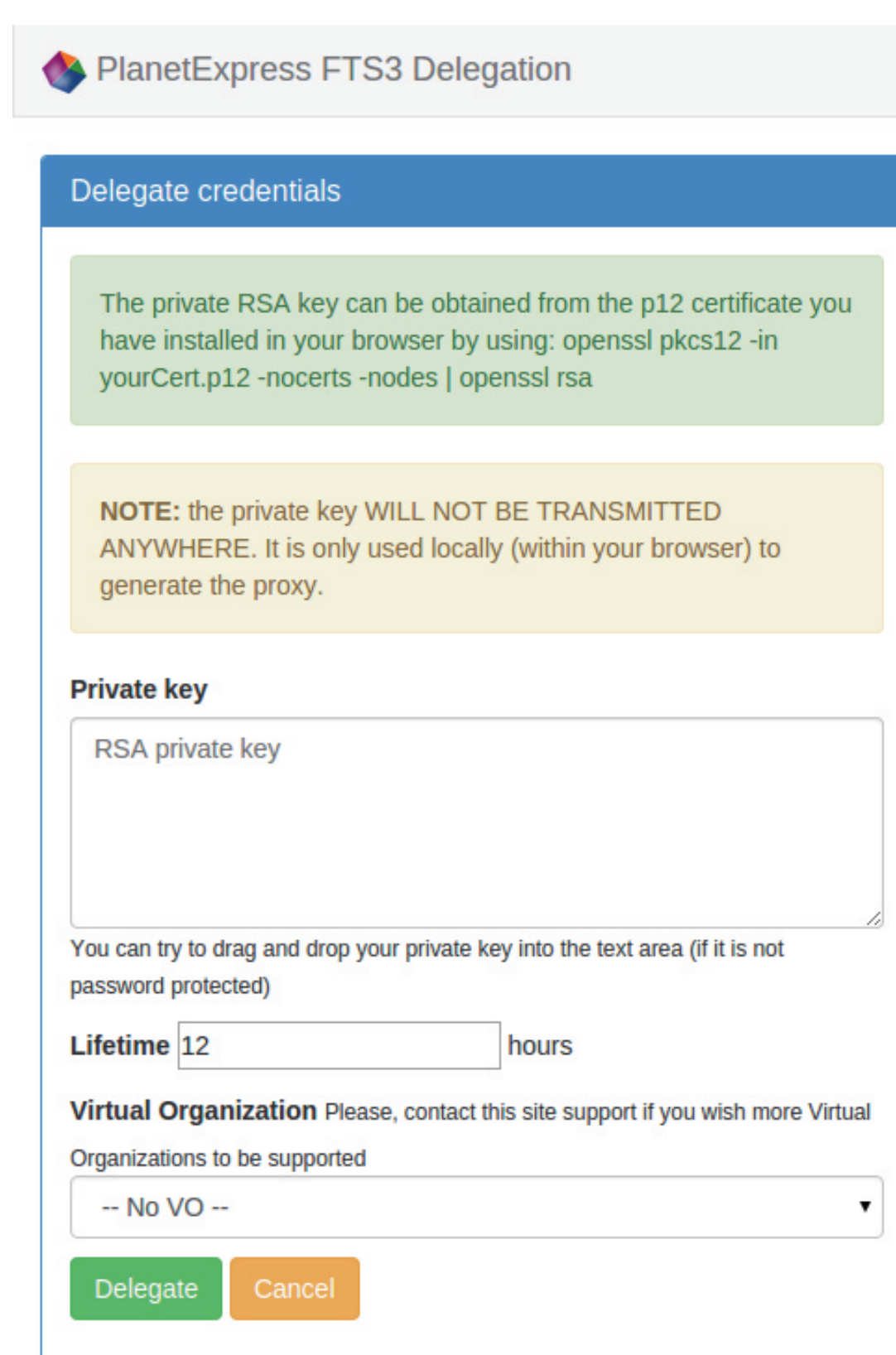
WebFTS demonstrated the potential of the **FTS3 REST API** for developing services on top of the reliability of FTS3. This API can be used by third-party developers that would like to benefit from the functionality and power of FTS3. Via **OAUTH2**, users can grant these applications permissions to access FTS3 without giving their credentials away. This can be applied to workflow integration, storage synchronisation, etc...



Authorisation OAuth2 dialog

## In-browser X509 delegation

The FTS3 REST API also provides an interface for the users to delegate their credentials. In this manner, the third party application developer need not worry about how to handle X509 delegation. FTS3 becomes effectively a **Gateway** between the Grid and the Web.



X509 delegation via browser

In the future we plan to port the X509-free access to the FTS3 REST API, allowing external applications to benefit from transparent and easy access to an **exchange point** between the Grid, the Web and the Cloud. We believe this combination could open up a lot of new possibilities, smoothing the users' workflows. It could all start with something as simple as dropping a file in a local folder and automatically getting it replicated across the Grid, but where would it end...?

You can already try a fully functional WebFTS instance deployed at CERN

<https://webfts.cern.ch/>



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