



Enabling Grids for
E-science in Europe

www.eu-egee.org

This product includes material developed
by the Globus Project (<http://www.globus.org/>).

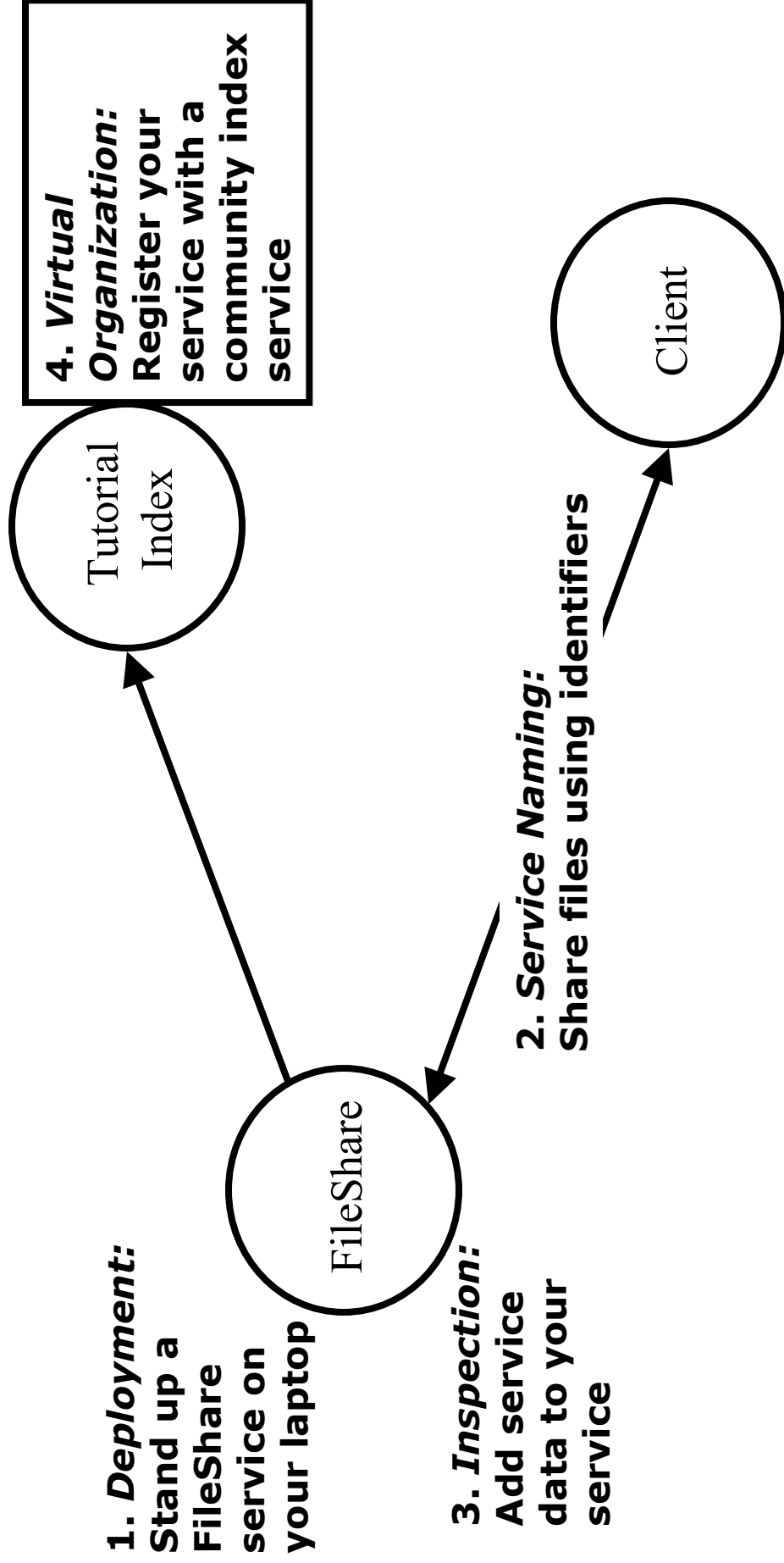
Exercise 4



How to Build a Grid Service Using GT3

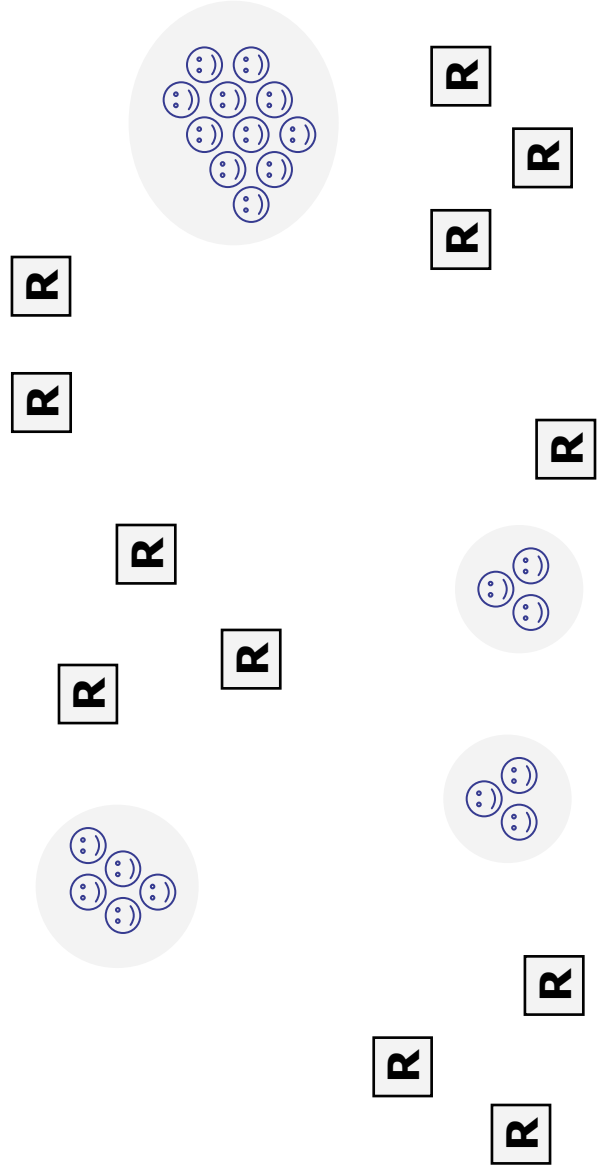
- Overview of Grid Services and GT3
- Build a Grid Service
 - Overview
 - 1. Deployment: Stand Up a FileShare Service
 - 2. Naming: Share Files using Identifiers
 - 3. Inspection: Add Service Data
 - **4. Virtual Organization: Register with a Community Index**
 - 5. Lifetime Management: Maintain service registration
 - 6. Discovery: Find a File
 - 7. GT3 Security: Share Files Securely
- **Time permitting:**
 - 8. Transience: Create and Destroy FileShares
- Publish your Grid Service: The GTR

Exercise 4: Virtual Organization



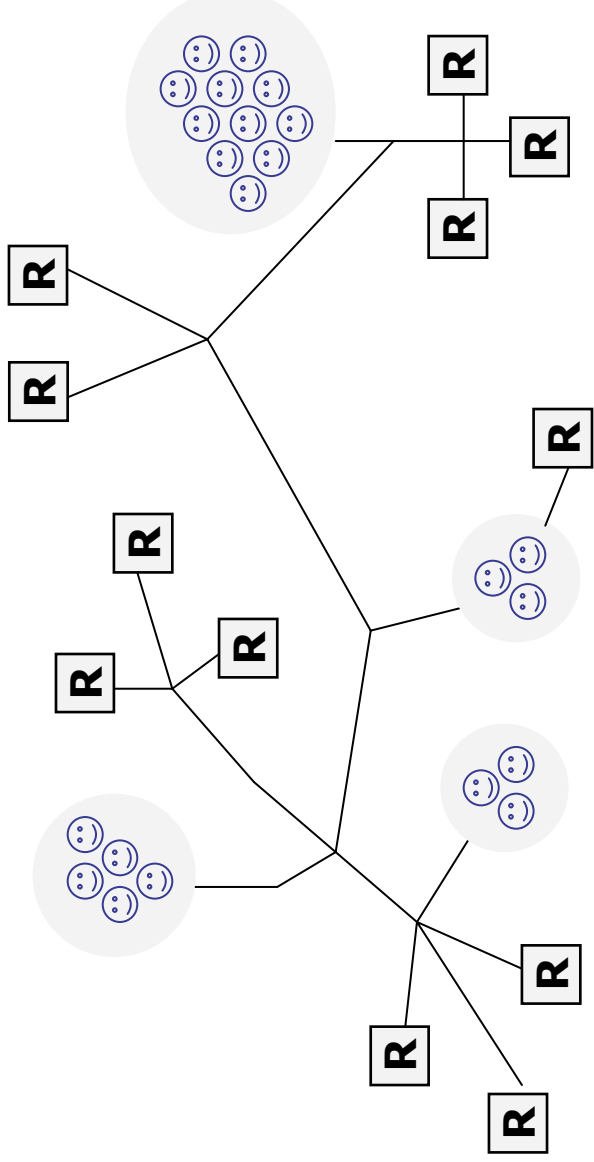
Distributed resources and people **Virtual Organizations**

- Distributed resources and people



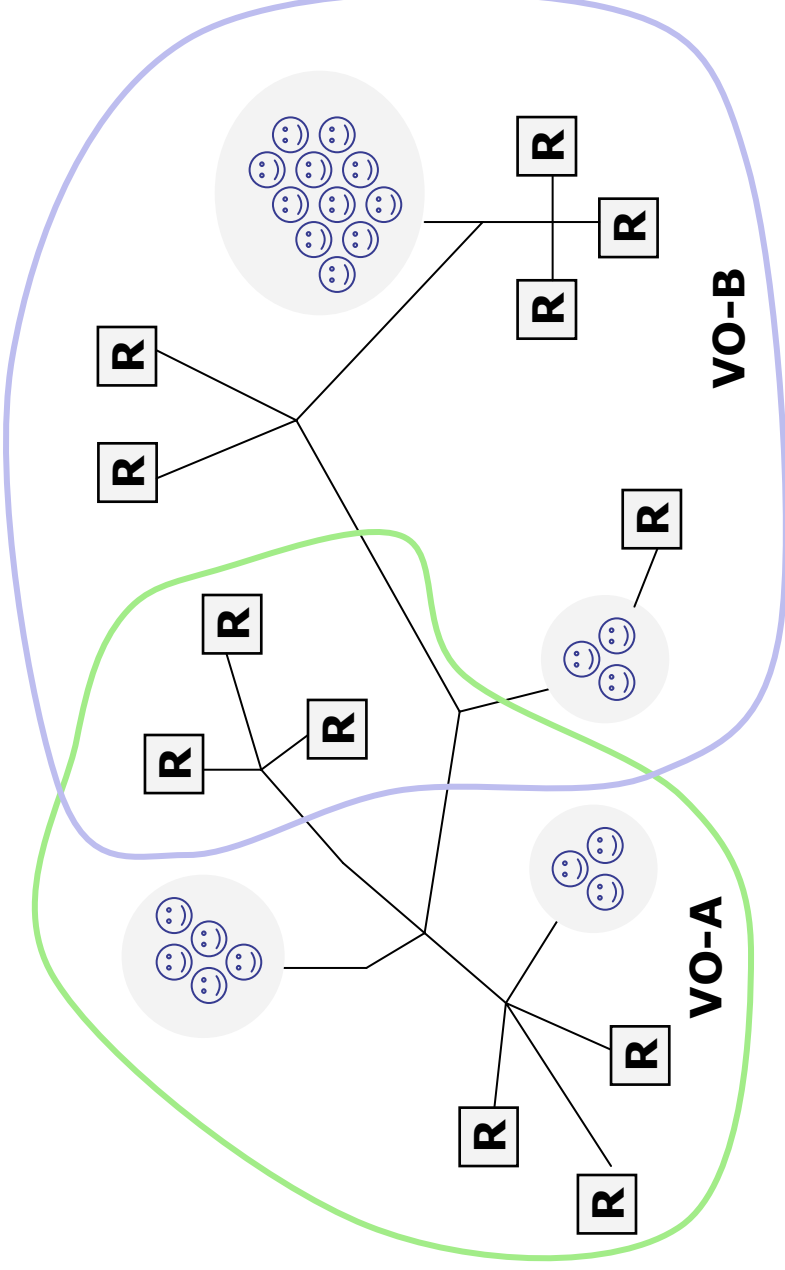
Virtual Organizations

- Distributed resources and people
- Linked by networks, crossing administrative domains



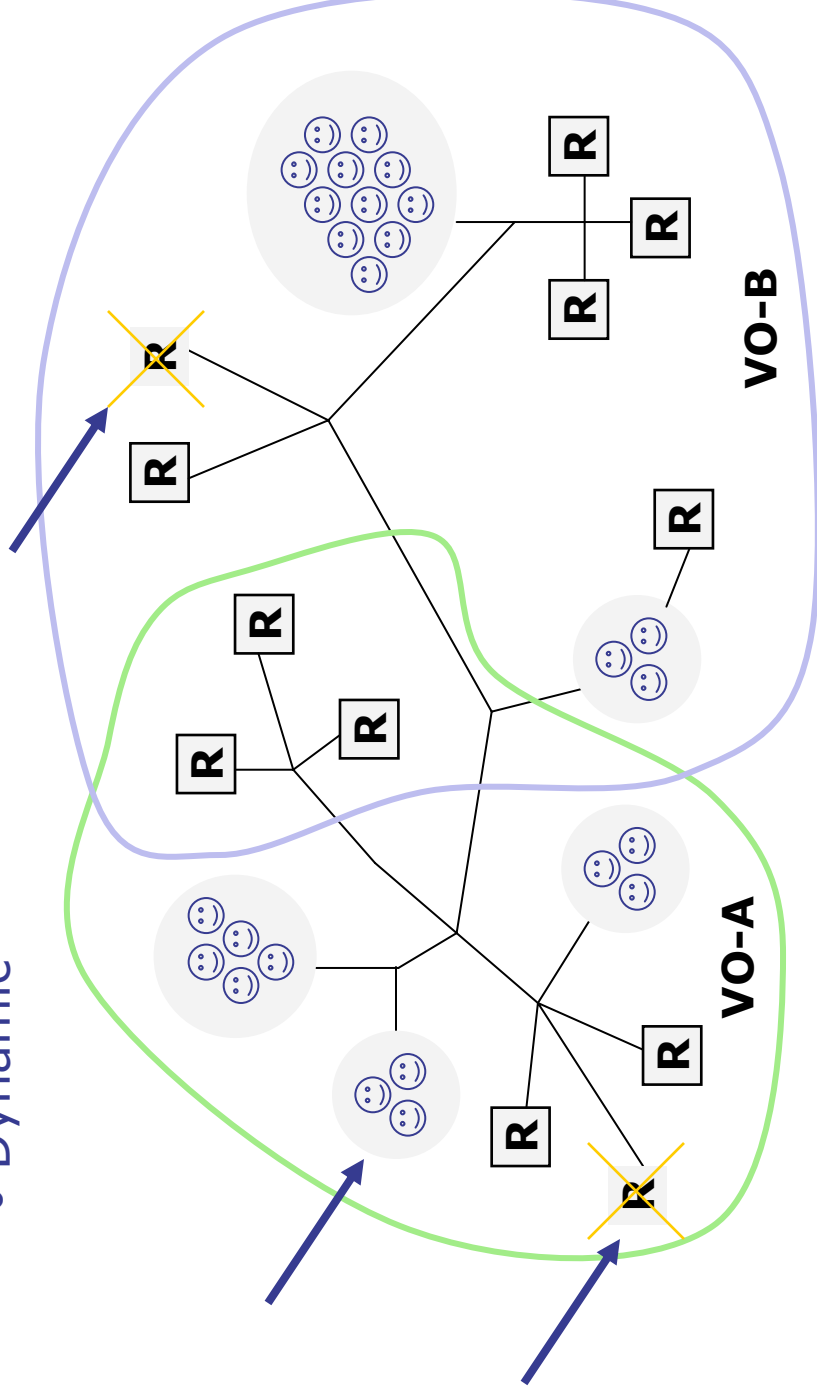
Virtual Organizations

- Distributed resources and people
- Linked by networks, crossing administrative domains
- Sharing resources, common goals



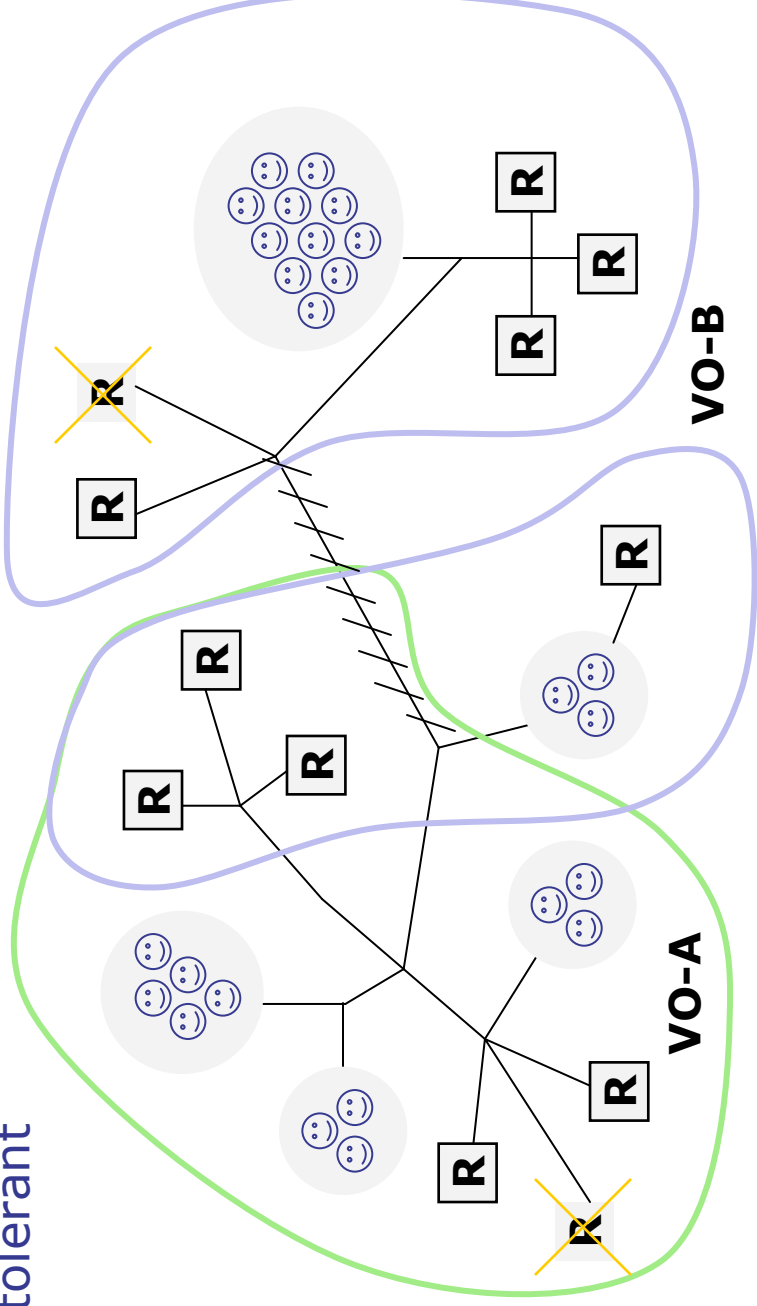
Virtual Organizations

- Distributed resources and people
- Linked by networks, crossing administrative domains
- Sharing resources, common goals
- Dynamic

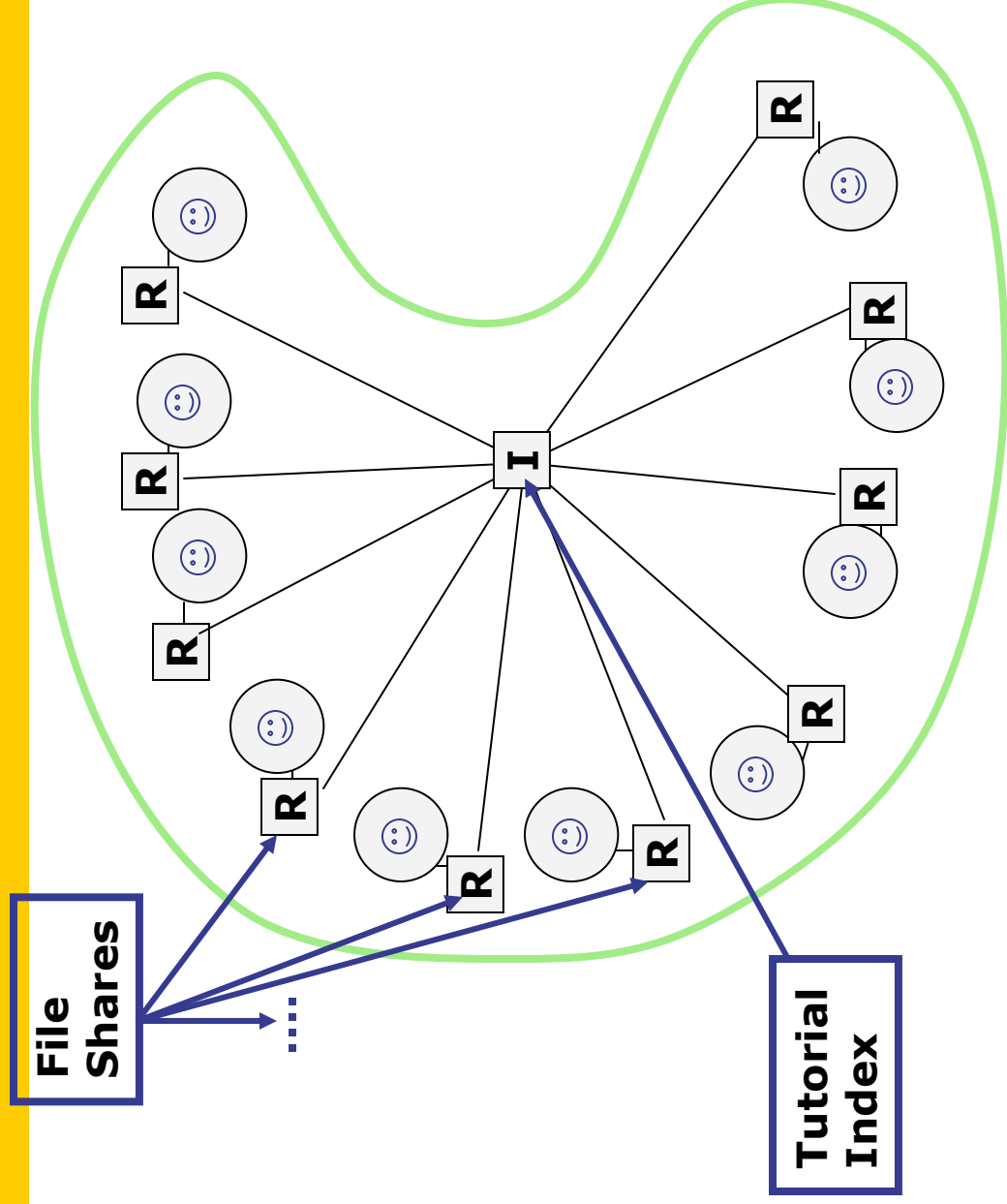


Virtual Organizations

- Distributed resources and people
- Linked by networks, crossing administrative domains
- Sharing resources, common goals
- Dynamic
- Fault tolerant



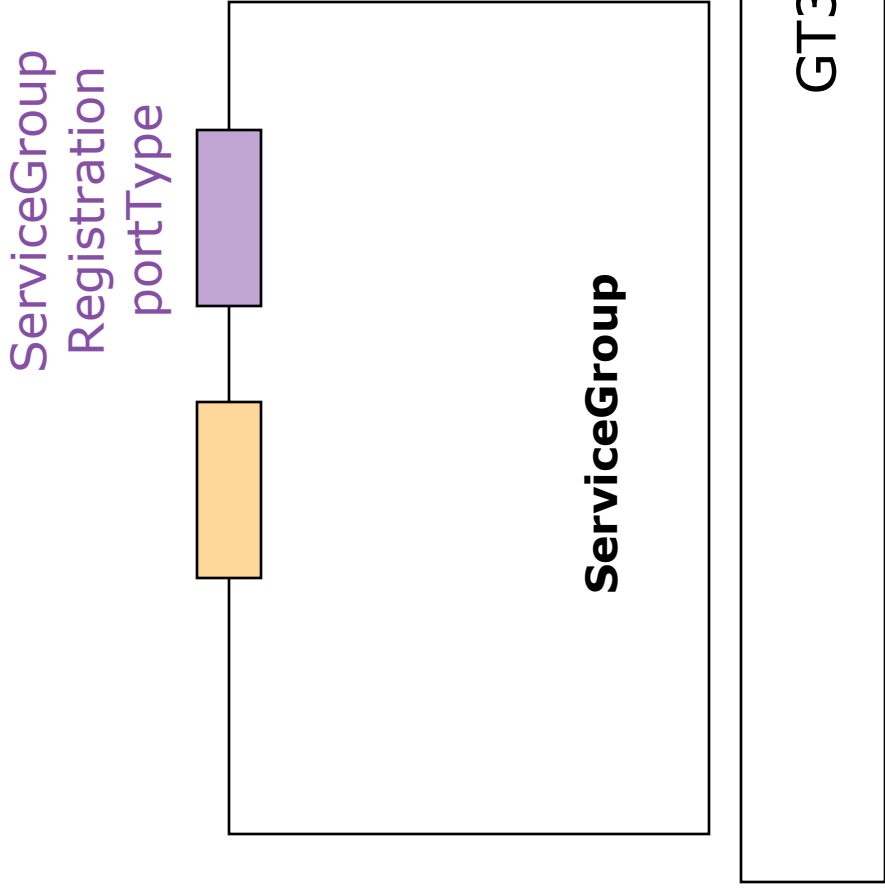
Tutorial VO



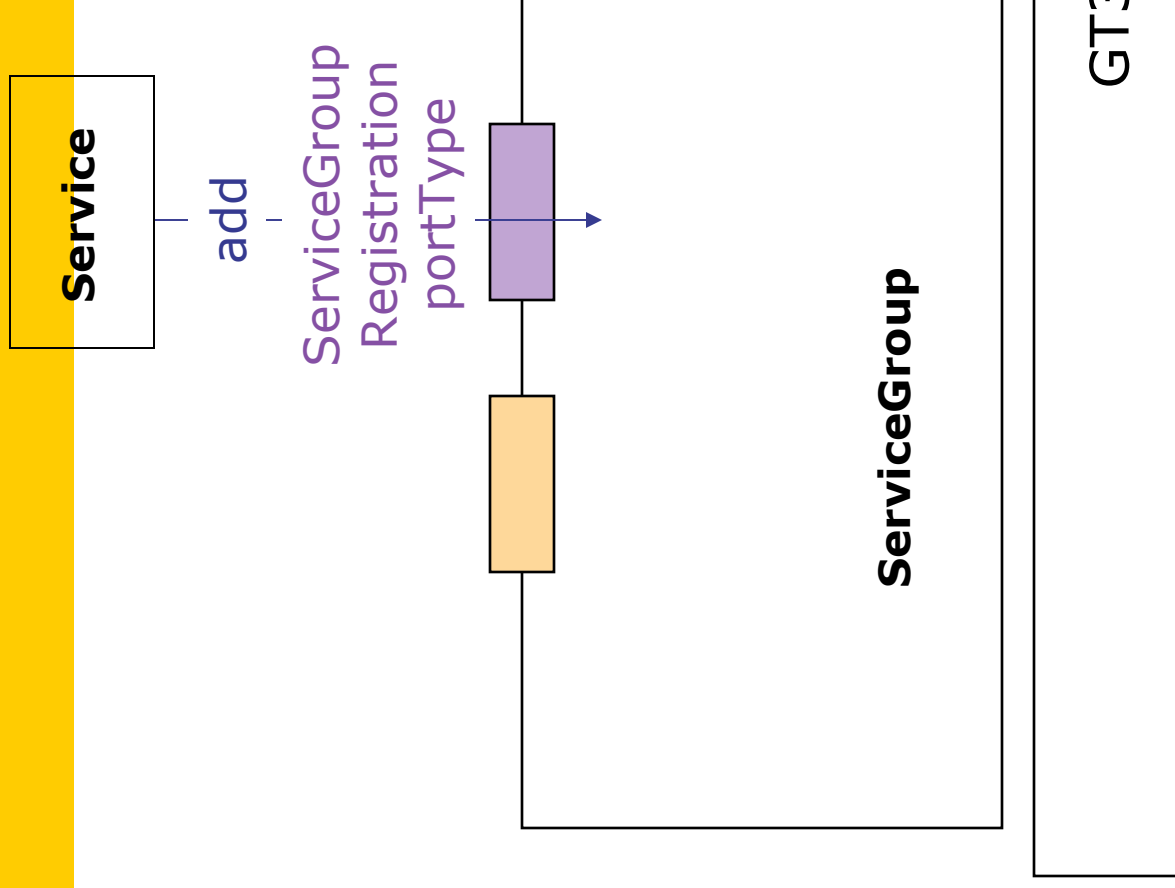
Service Group

- Service Groups represent a collection of services
 - The OGSI spec defines Service Groups as a generic “bag” of entries
 - Developers extend the semantics in ways that are meaningful in their problem space
- The Tutorial Index is written on top of Service Groups

Service Group Structure



Service Group Structure

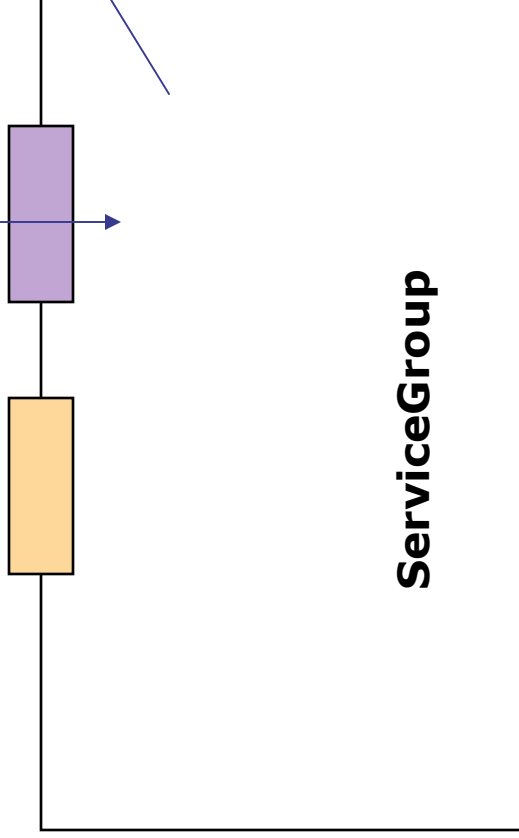


Service Group Structure

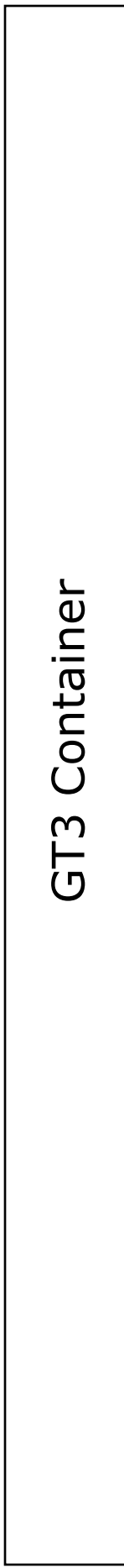
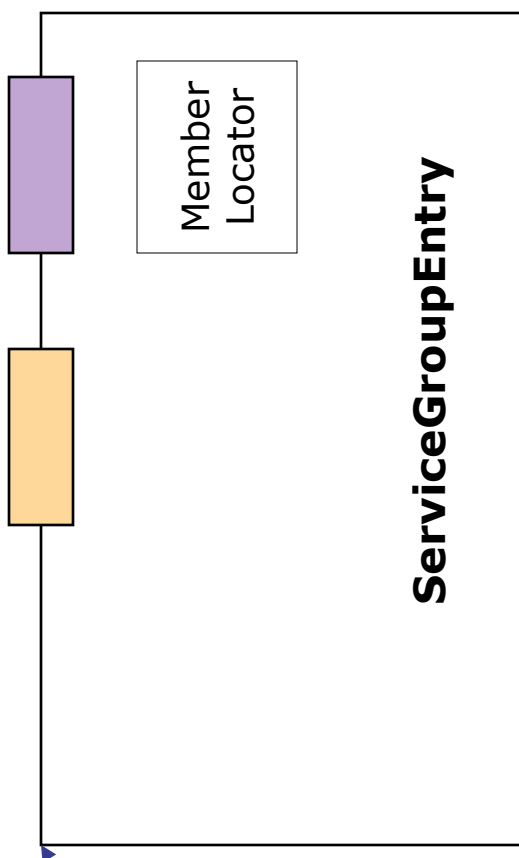


add

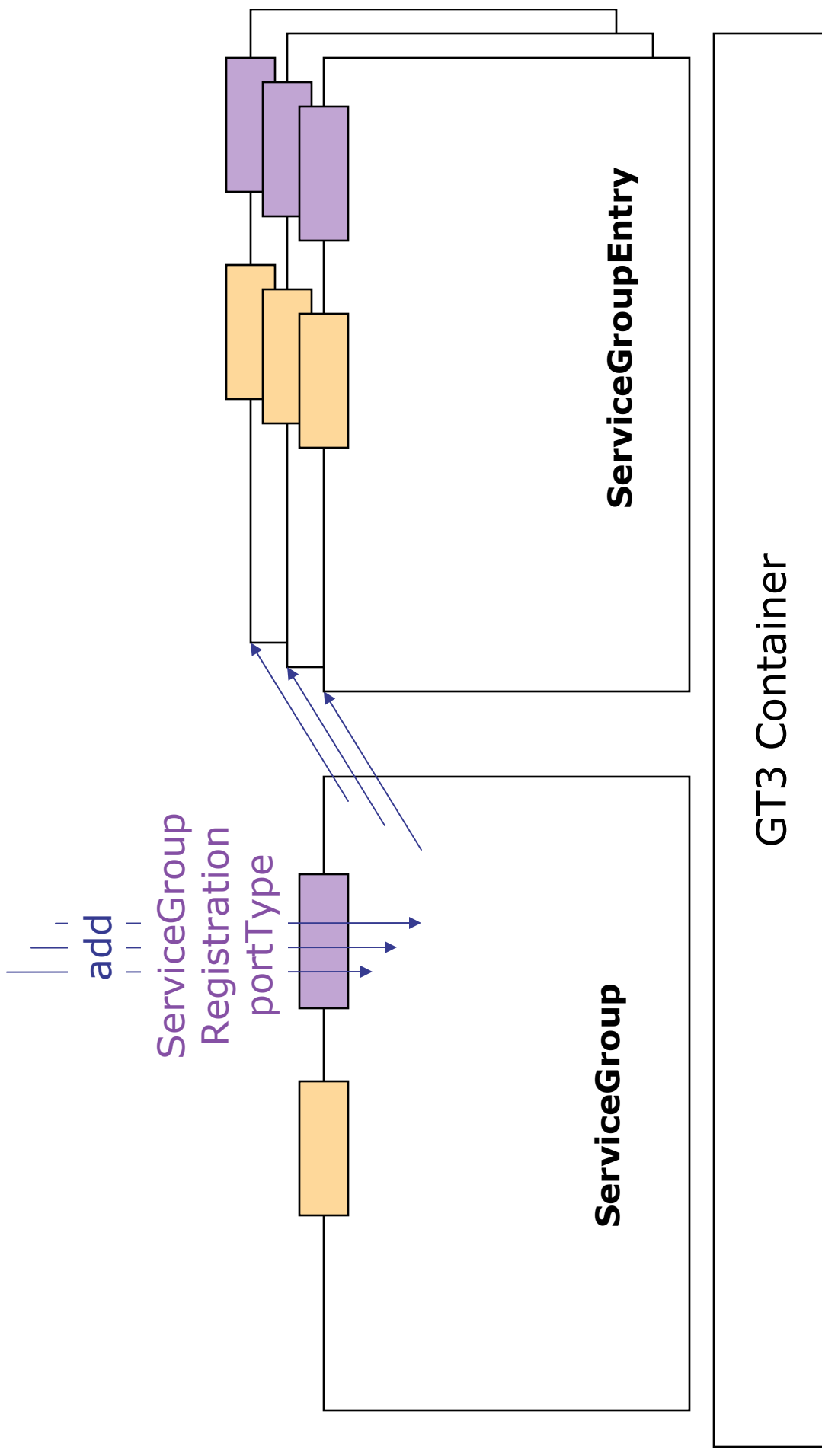
ServiceGroup
Registration
portType



ServiceGroup
Entry
portType



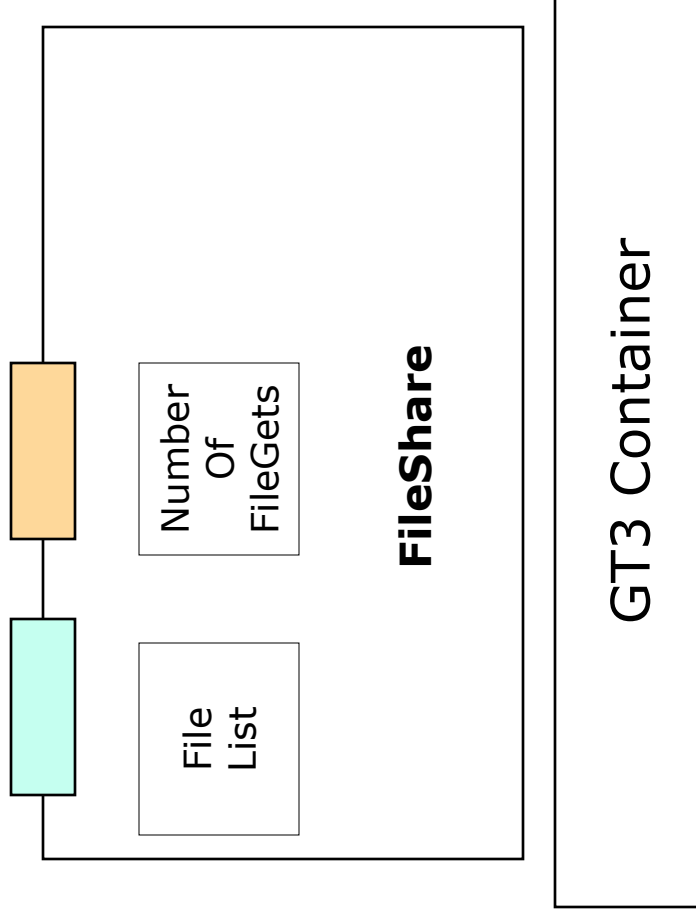
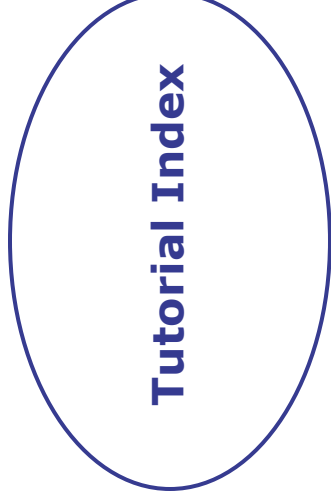
Service Group Structure



The Tutorial Index

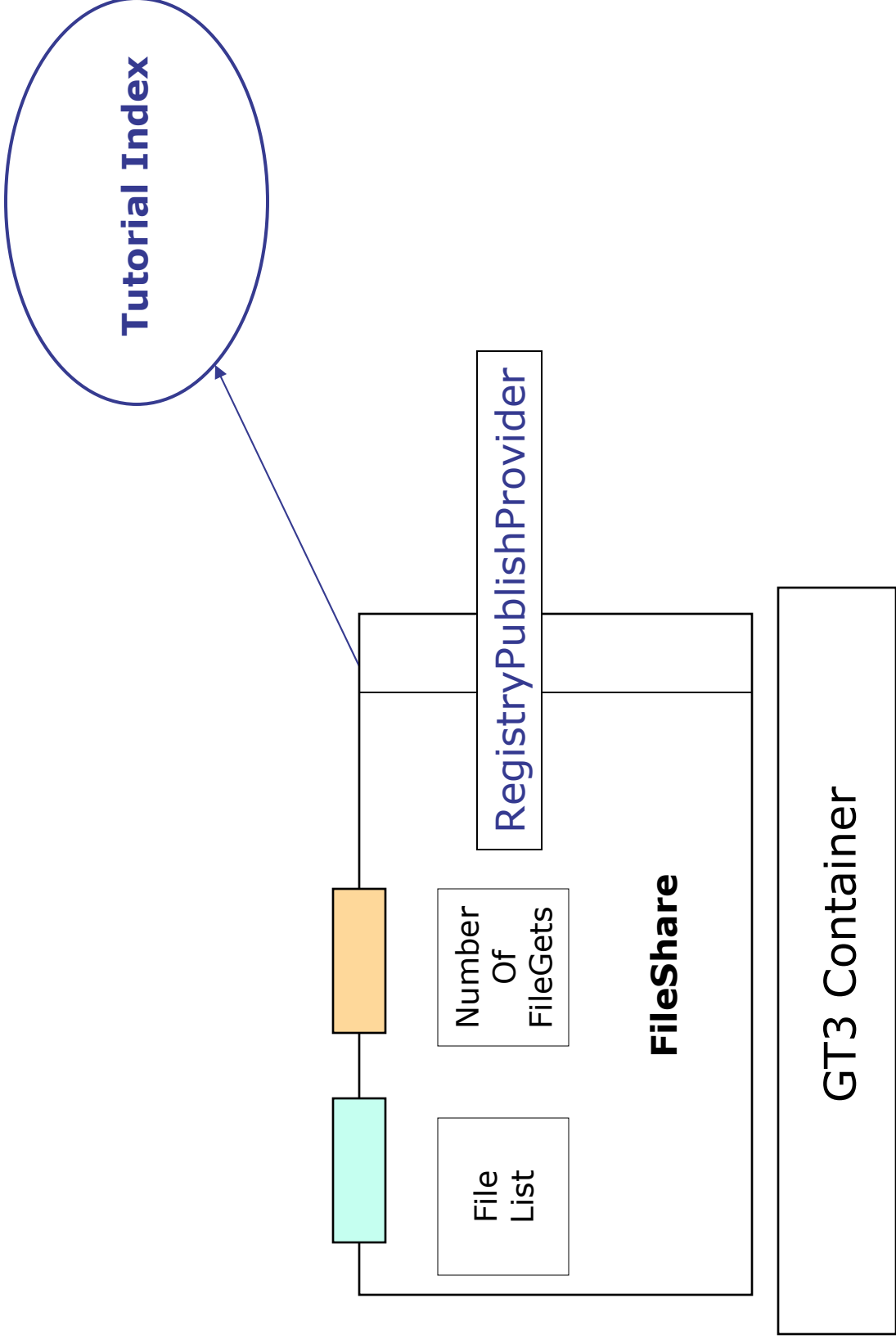
- The Index will be running on one of the instructor's machines
- The Index represents a collection of services
 - A way for each FileShare to advertise its existence to the VO
 - A copy of each FileShare's service data to be cached in a single place

FileShare-Index Interaction

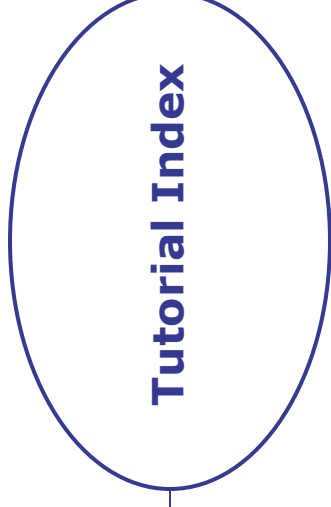


In order to add our FileShare as an entry in the index we will add an operation provider called RegistryPublishProvider to the definition of the FileShare service

FileShare-Index Interaction

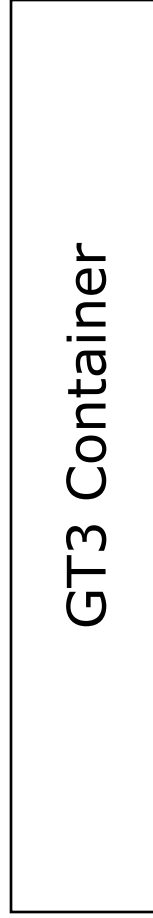
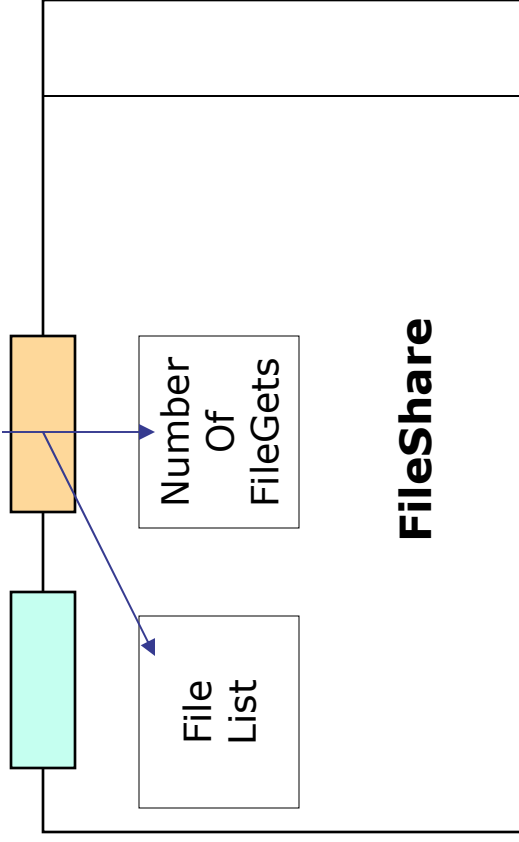


FileShare-Index Interaction



findServiceData

GridService
portType



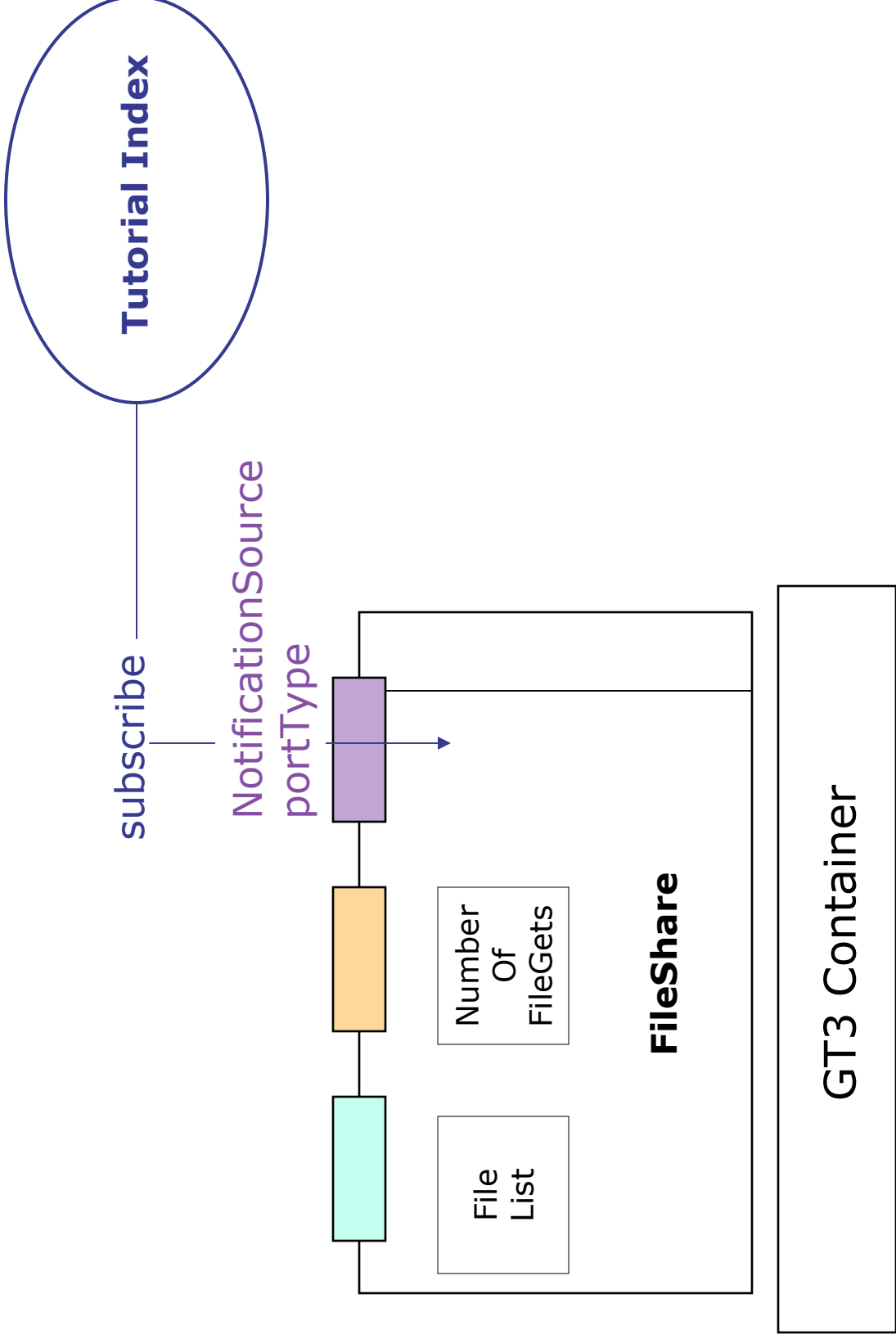
Once a FileShare service is a member of the Tutorial Index, the index will retrieve the FileShare's service data in order to cache a local copy

For our purposes, the Tutorial Index will need to keep the copies of FileShare service data current

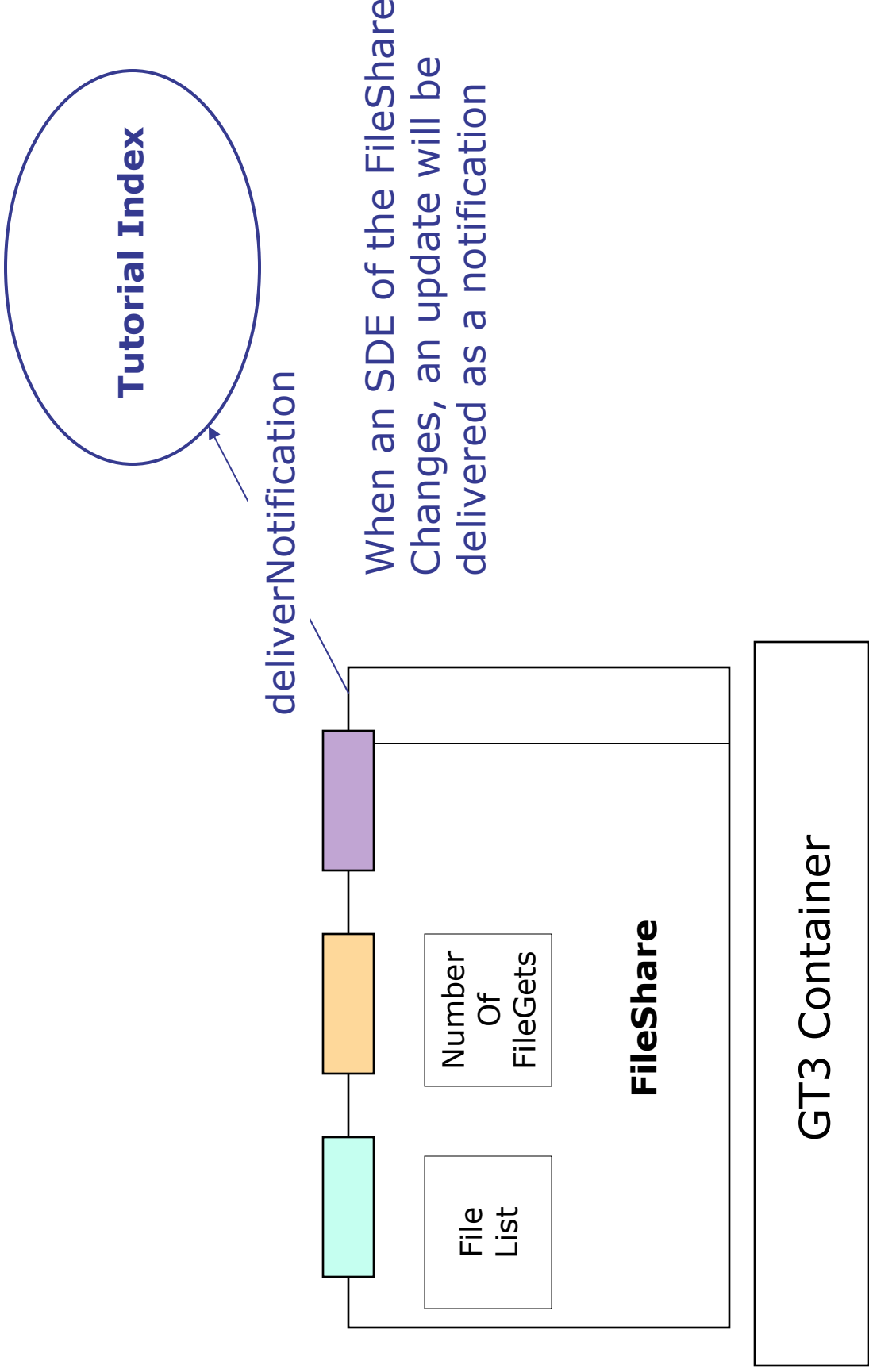
Subscriptions

- NotificationSource portType
 - an optional OGSI interface
- Used by our index to subscribe to the service data of FileShare services
- As part of the OGSI notification pattern, the Tutorial Index implements the NotificationSink portType

FileShare-Index Interaction



FileShare-Index Interaction



Concepts in Exercise

- operationProviders is an entry in the WSDD file
- Operation providers add functionality
- If the additional functionality includes the addition of a public interface, you need to add an entry to the .gwsdl
- If the additional functionality requires runtime parameters, you need to add them to the .wsdd

RegistryPublishProvider

- RegistryPublishProvider requires parameters in wsdd file:
 - **registry** GSH of the Tutorial Index service group (mandatory)
 - **registry-keepalive** set to 'true' to keep registration alive (optional)
 - **registry-lifetime** time parameter to specify how long the entry should live (optional)
 - **registry-remove** 'true' if the entry should be removed at shutdown (optional)
- Defines no operations, does not need anything to be changed in GWSDL

NotificationSourceProvider

- NotificationSourceProvider makes our service data available for subscription
 - Defines an operation that will be used by the Index service we're registering to
 - Therefore, needs to appear in our GWSDL
- In the end, our GWSDL will extend both GridService and NotificationSource
- Does not require any WSDD parameters

What Attendees Should Do

- Uncomment operationProviders and parameters in WSDD
- Add NotificationSource portType to GWSDL
- Deploy, restart container
- Don't need to modify any service code!

What Attendees Should See



**A representation
of your FileShare
inside a
representation of
the tutorial index**

**Your
IP**

**Number
of files
shared**

Exercise 4 Review

- operationProviders allow you to add functionality without writing code
 - We saw this with RegistryPublish and Notification Source
- Service Groups contain ServiceGroupEntries representing members of the group
- The Tutorial Index uses subscriptions to receive updates