Transition and Evolution

Moving to Grid Services

GT3 is *not* Grid Services

- There is nothing special about GT3
- GT2 was GT1.1.3 with feature enhancements to the existing components and a lot of new functionality (GridFTP and RC)
- GT3 is all of GT2.4 with feature enhancements to the existing components and a lot of new functionality (OGSI compliant components)

Terminiology

- Everyone (including us) has a bad habit of saying GT3 to mean Grid Services.
- To be clear we should refer to OGSI or non-OGSI compliant services.
- One confusing point:
  - For the first time, there are two ways to do some things in the toolkit.
  - I.e., non-OGSI job submission .vs. OGSI compliant job submission

Transition

- We use the Linux versioning convention
  - Even number releases, I.e. 3.0, are stable releases (bug fixes only)
  - Odd number releases, I.e., 3.1 are experimental (feature additions, possible interface changes)
- Our support policy has not changed since GT 2.0.
  - We support the current and one previous stable release

The Question

- How long will we support GT2.x?
  - That is the wrong question
- We invested substantial work in packaging so that we could upgrade components separately.
- We can also End-Of-Life (EOL) them independently as well.
- This is what we will do

The Right Question… And the Answer

- When will we EOL specific Components
- Depends on the component, but what we do know is this:
  - All components will be present in 3.2
  - The earliest we could EOL something is 3.4 (though we have no plans for this yet)
  - Therefore, support for all existing components AT LEAST until the release of 3.6, probably longer
  - This means late 2004, probably well into 2005

Evolution

- How a specific project makes this transition is a huge question depending on a lot of details.
- Largely depends on how much you have already invested in Grid development
- Obviously, EDG has a significant investment, which makes it harder
- However, there are some techniques that should help.

OGSI and non-OGSI in Toolkit

- For now, the entire non-OGSI suite is present.
- You can install non-OGSI just like you do today and run production, while working on transition issues.
- We have provided transition clients where we think it is needed or feasible
- Let us know if you think there is something missing.

Where do you put the OGSI Interface?

- Build an OGSI service to interface to non-OGSI services
  - RFT to GridFTP
- Maintain your client interface and re-implement to send SOAP messages
  - globus-job-run
  - globus-url-copy?
- What if I want to use both OGSI and non-OGSI services?
  - Must use discovery of some kind to choose appropriate client interface

GT3 Key Points

And a glimpse of things to come

Web Services

- At the heart of Web services is:
  - WSDL: Language for defining abstract service interfaces
  - SOAP (and friends): Binding from WSDL to bytes on the wire
- Web services appears to offer a fighting chance at ubiquity (unlike CORBA)
- But Web services does not go far enough to serve a common base for the Grid…

Transient Service Instances

- "Web services" address discovery & invocation of persistent services
  - Interface to persistent state of entire enterprise
- In Grids, must also support transient service instances, created/destroyed dynamically
  - Interfaces to the states of distributed activities
  - E.g. workflow, video conf., dist. data analysis, subscription
- Significant implications for how services are managed, named, discovered, and used
  - In fact, much of Grid is concerned with the management of service instances

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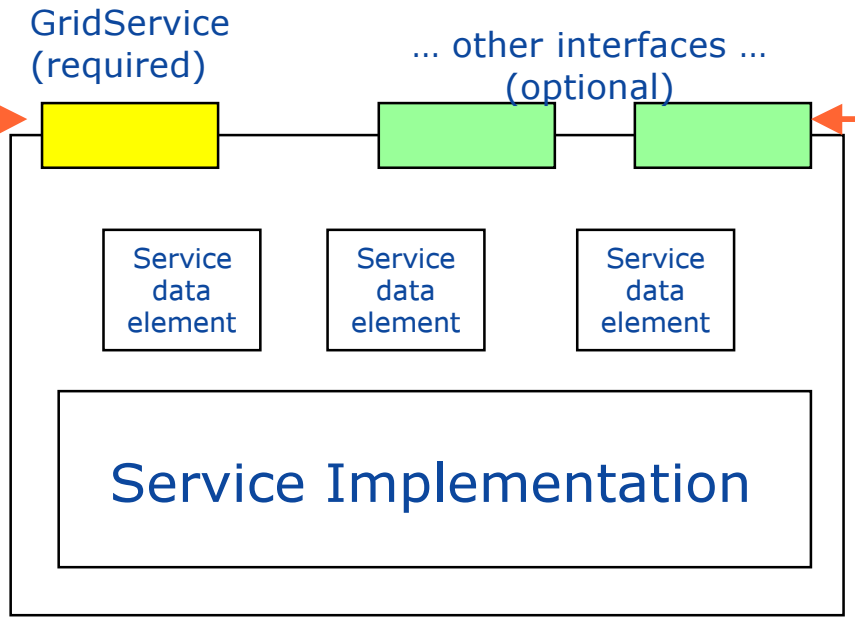
GT3 Core:
OGSI Specification

The Specification Defines how Entities can Create, Discover and Interact with a Grid Service

Required:
- Introspection (service data)
- Explicit destruction
- Soft-state lifetime



Optional:
- Service creation
- Notification
- Registration
- Service Groups

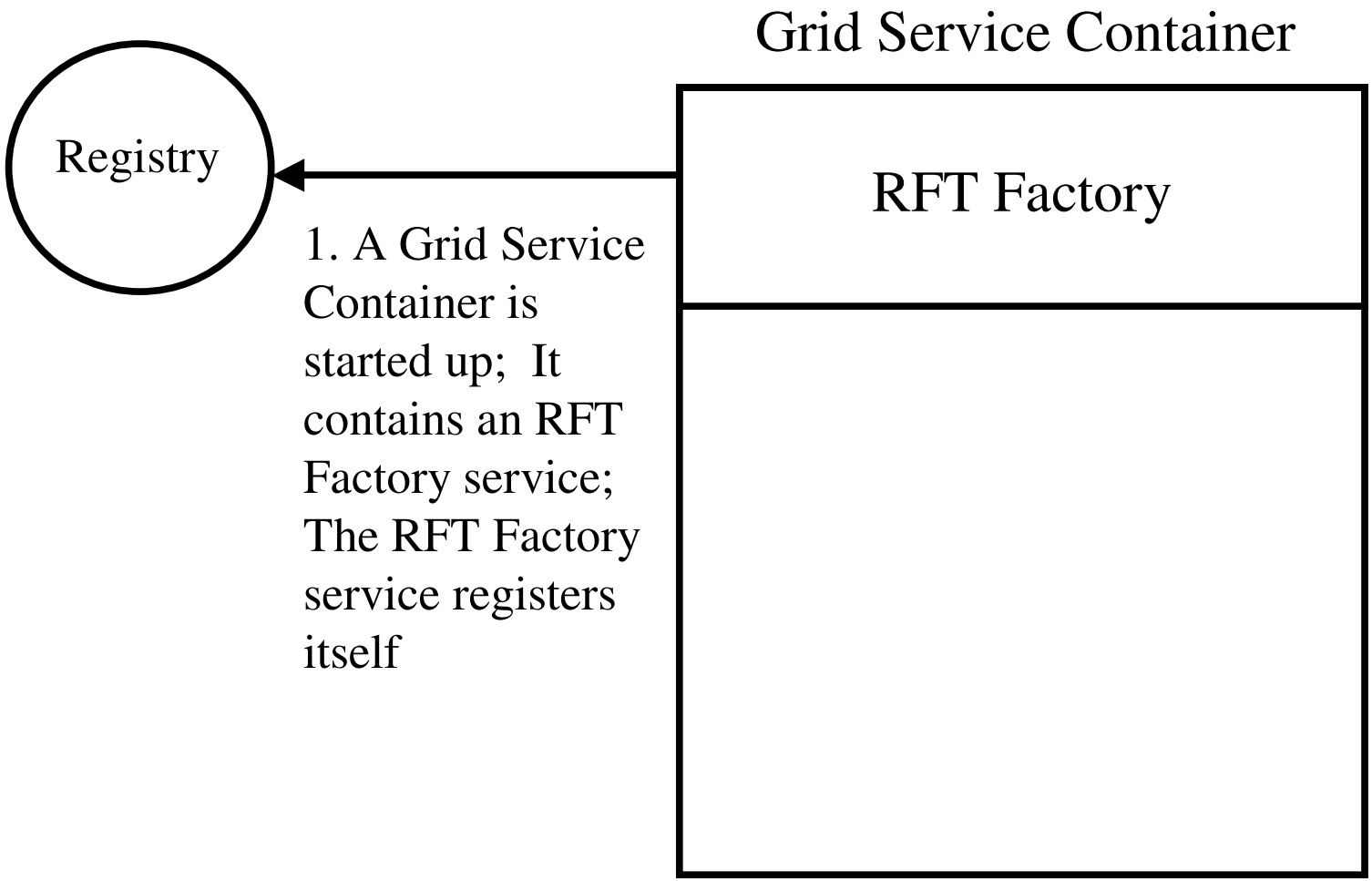
+ application-specific interfaces

Service locator

Includes 0 or more Grid Service Handles (GSHs)

Includes 0 or more Grid Service References (GSRs)

RFT in Action



* The scenarios in this presentation are offered as examples and are not prescriptive

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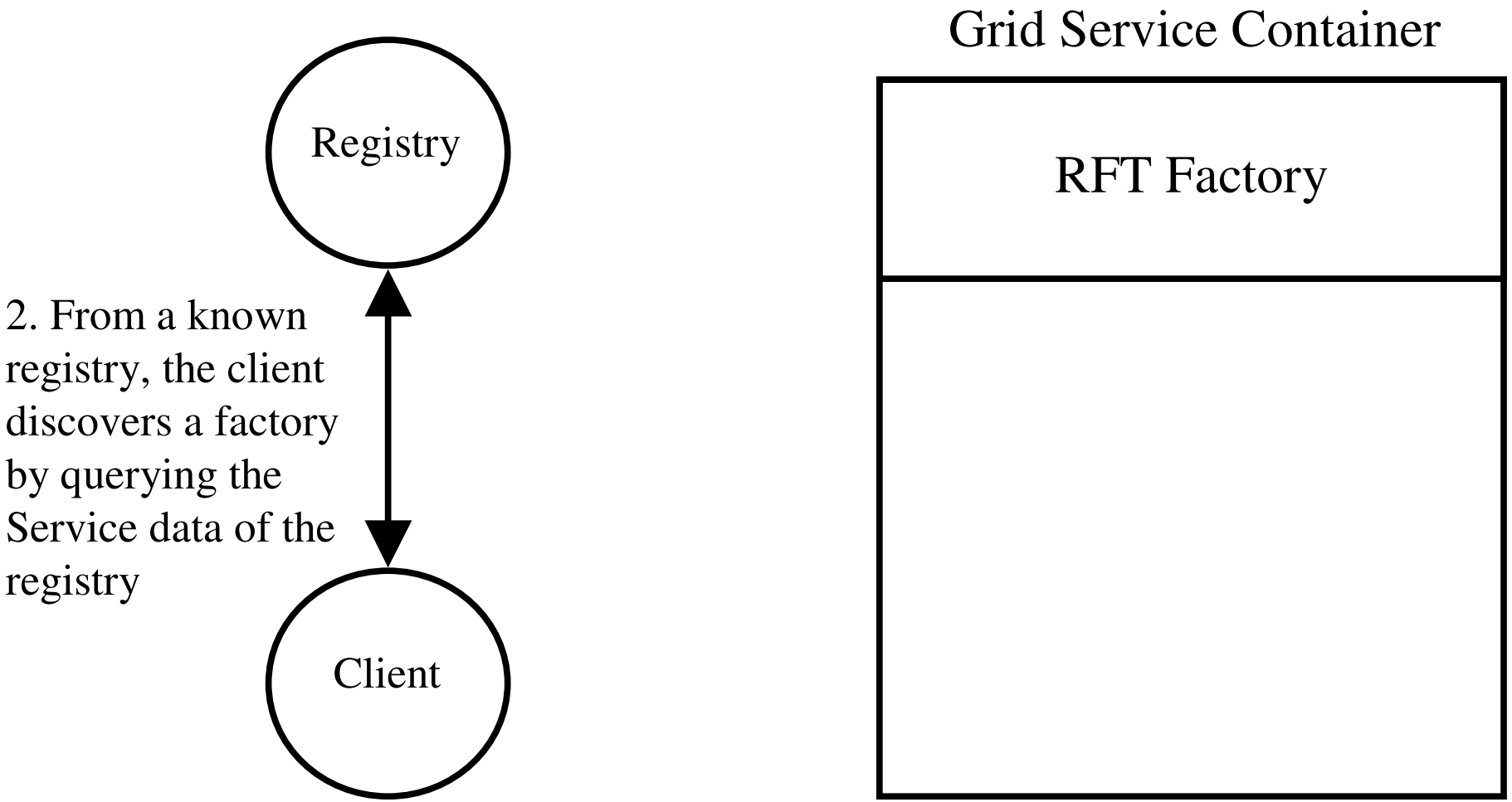
RFT in Action



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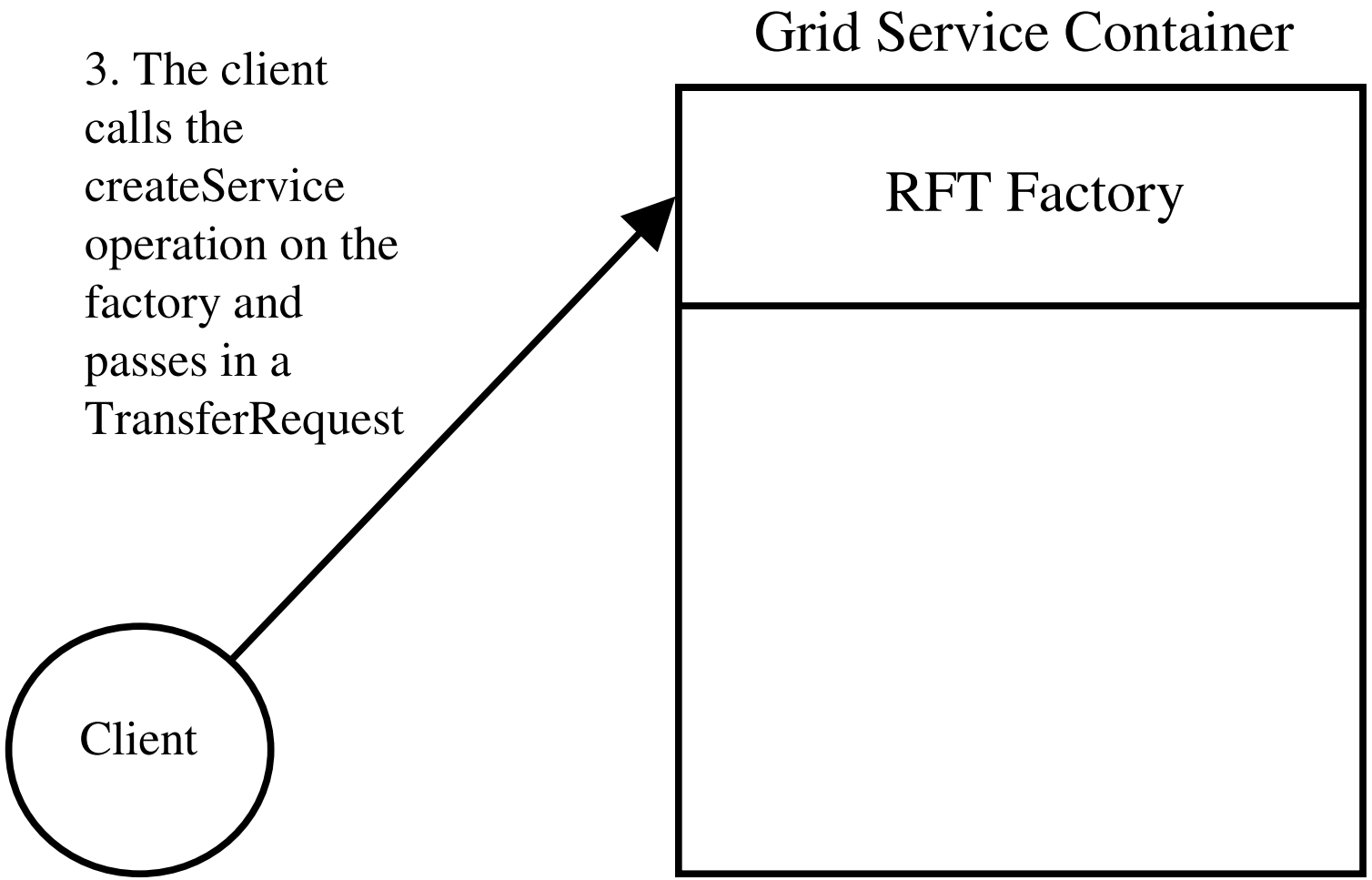
RFT in Action



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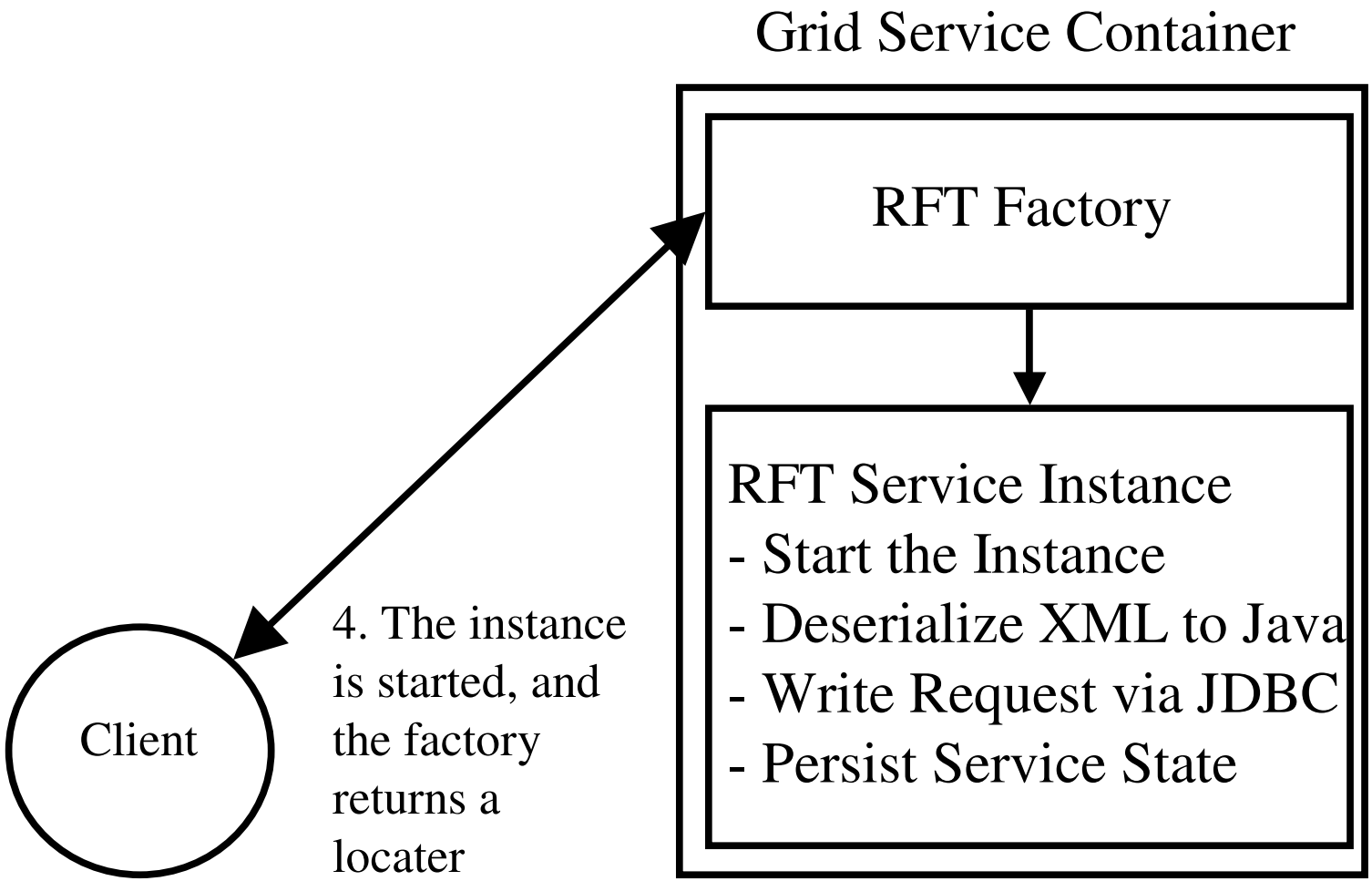
RFT in Action



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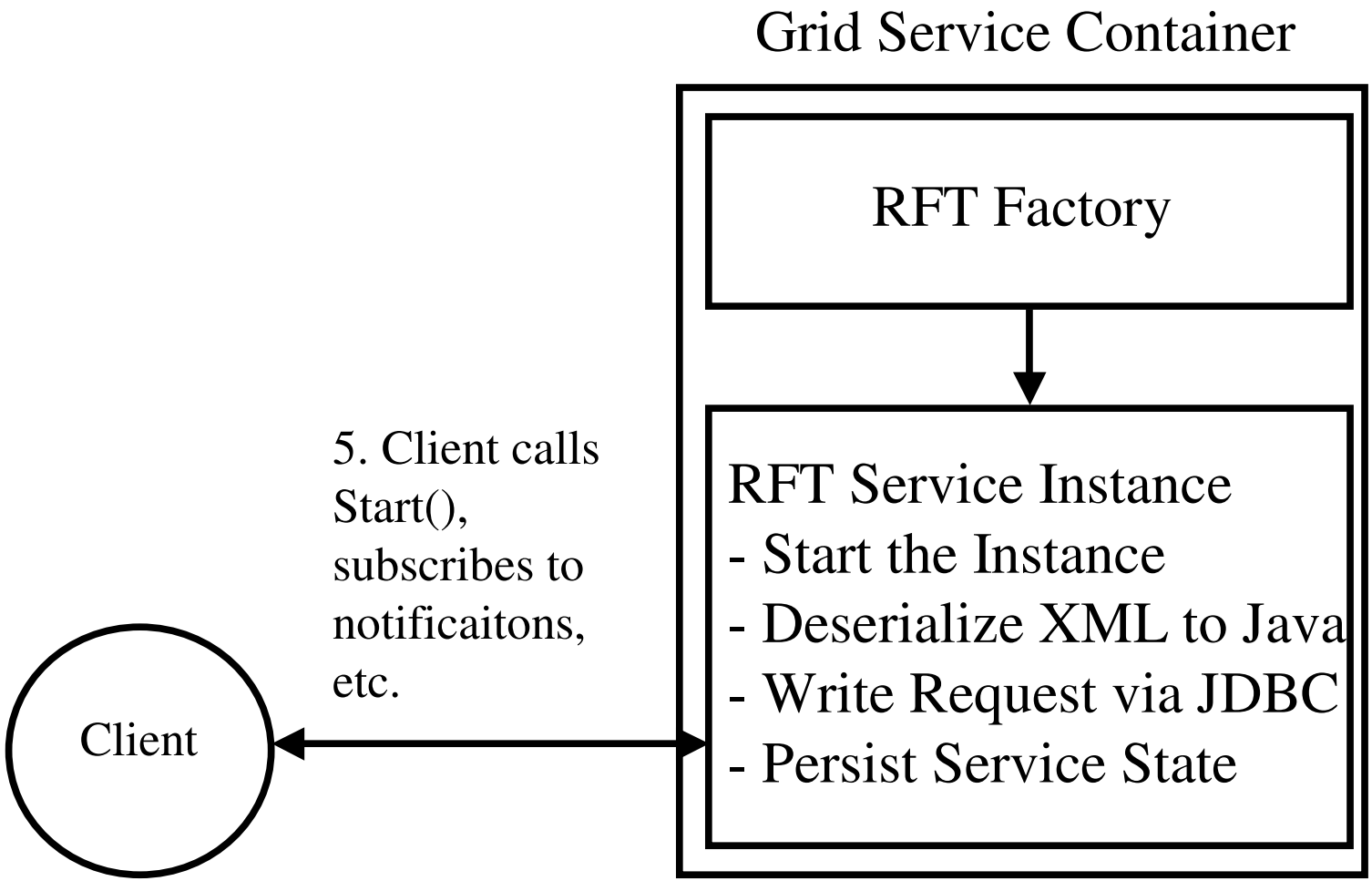
RFT in Action



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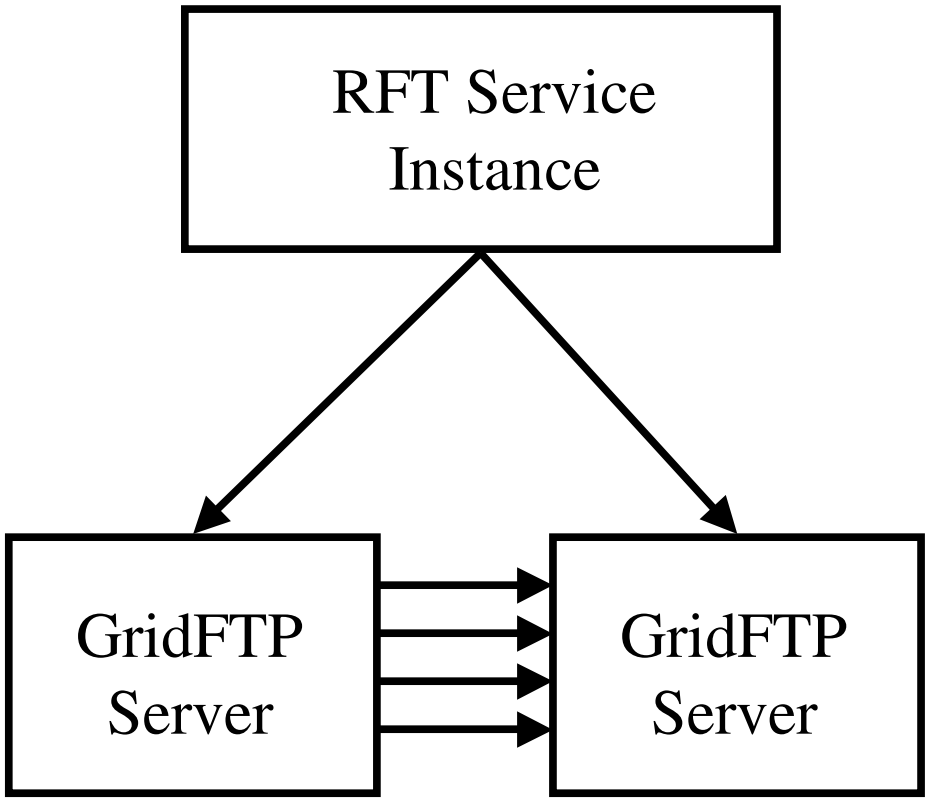
RFT in Action

- Service is OGSI compliant
- Uses existing GridFTP (non-OGSI) protocols and tools to execute 3rd Party Transfer for the user
- Provides extensive state transition notification



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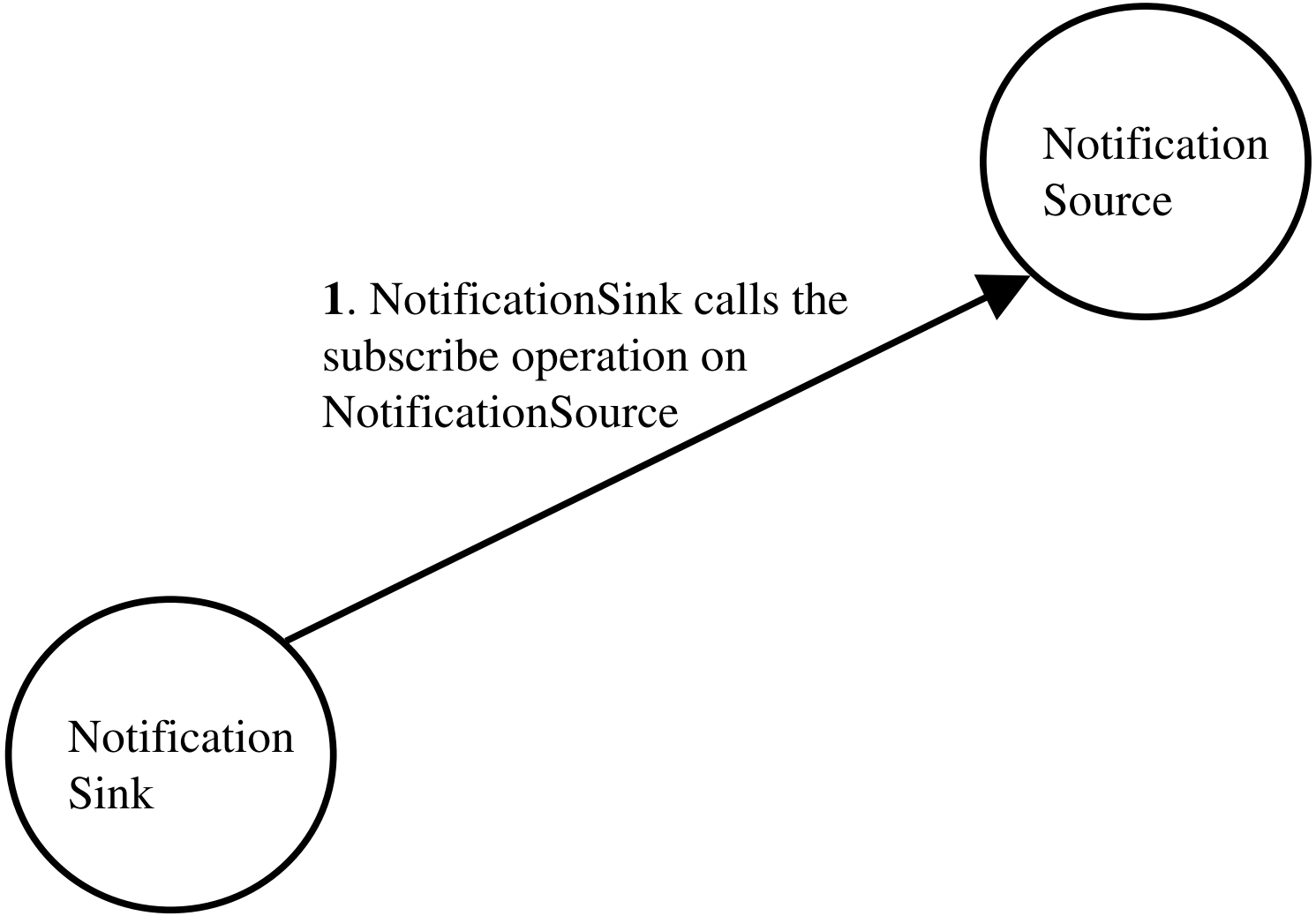
A Notification Scenario



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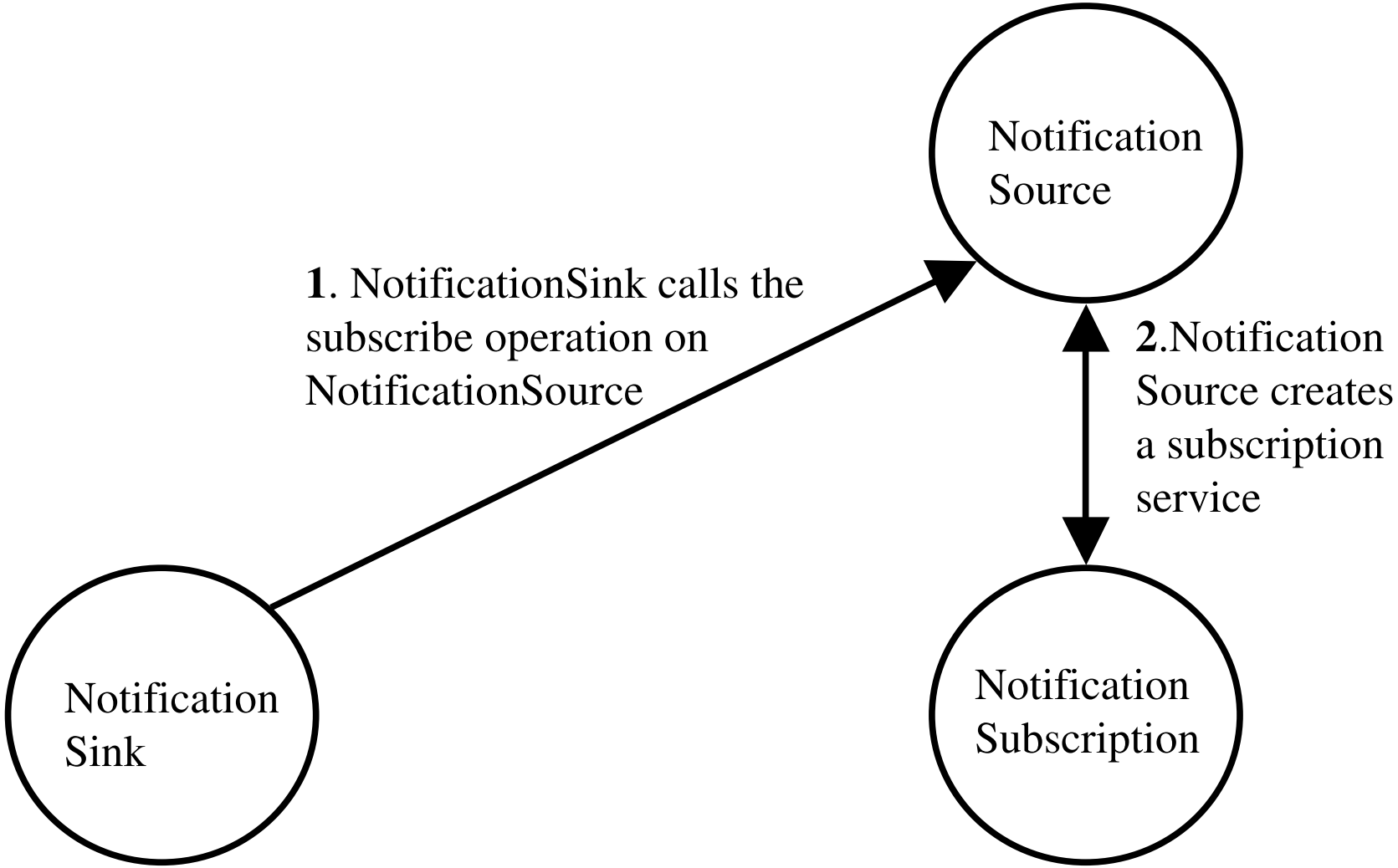

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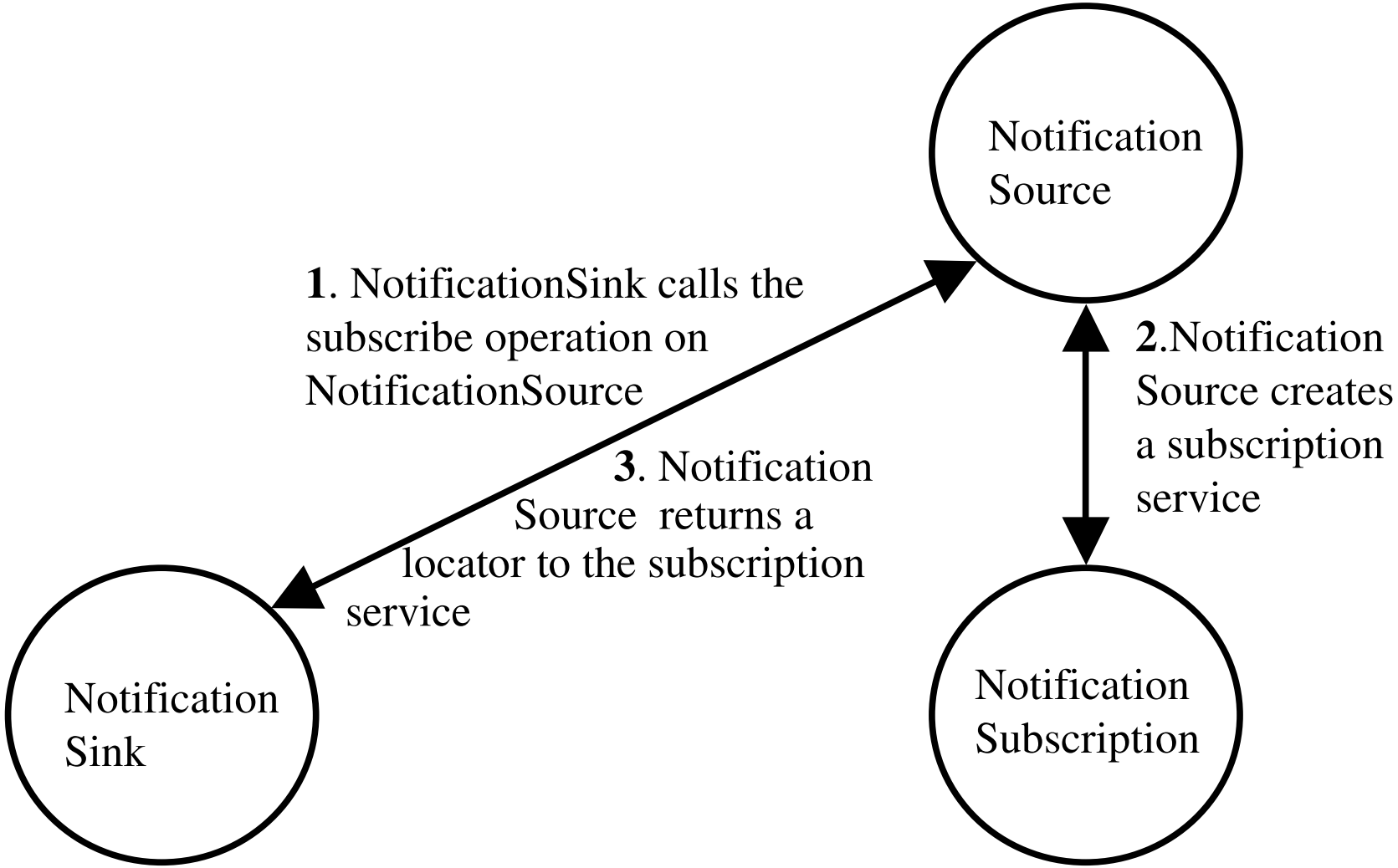

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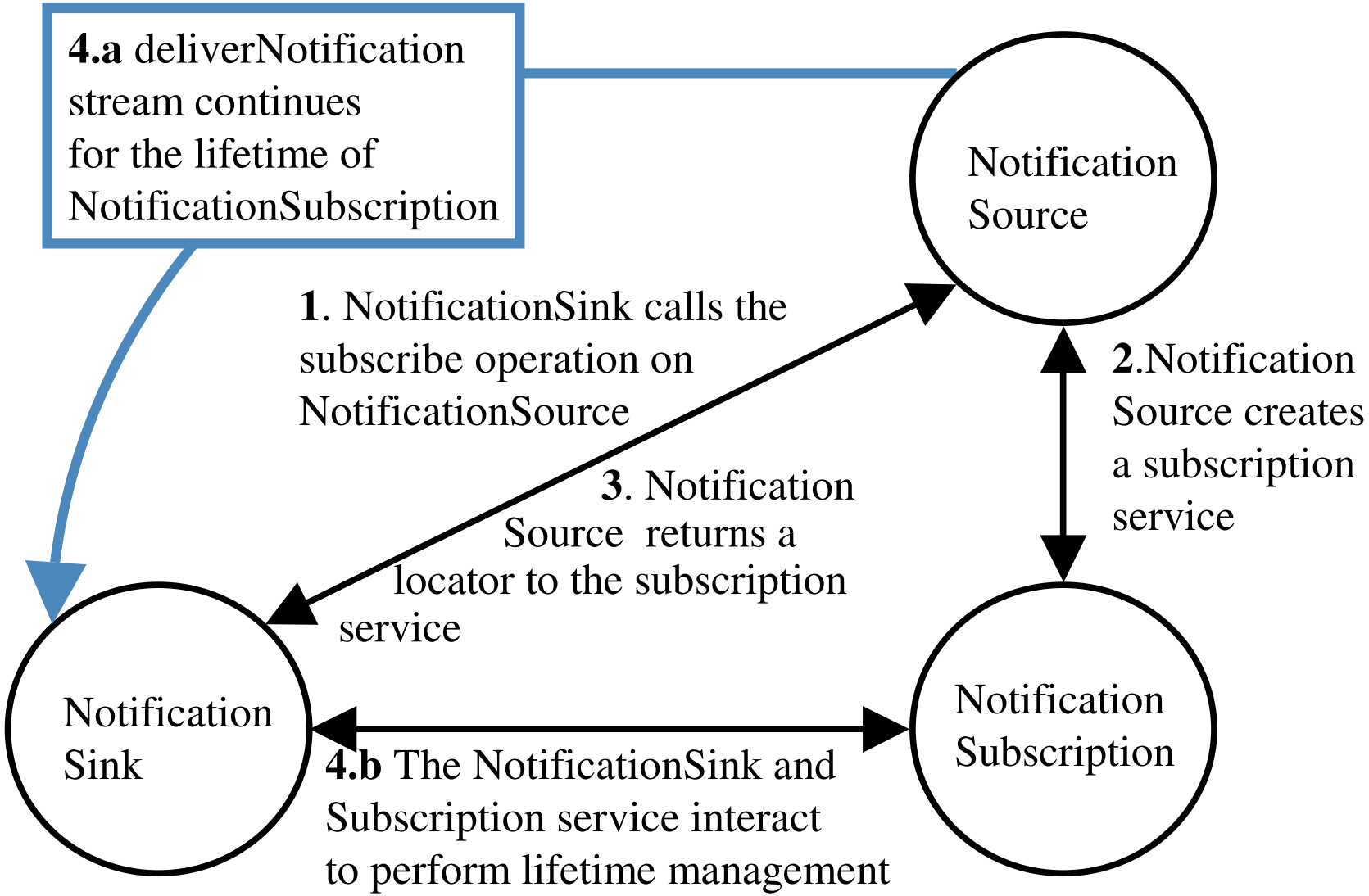

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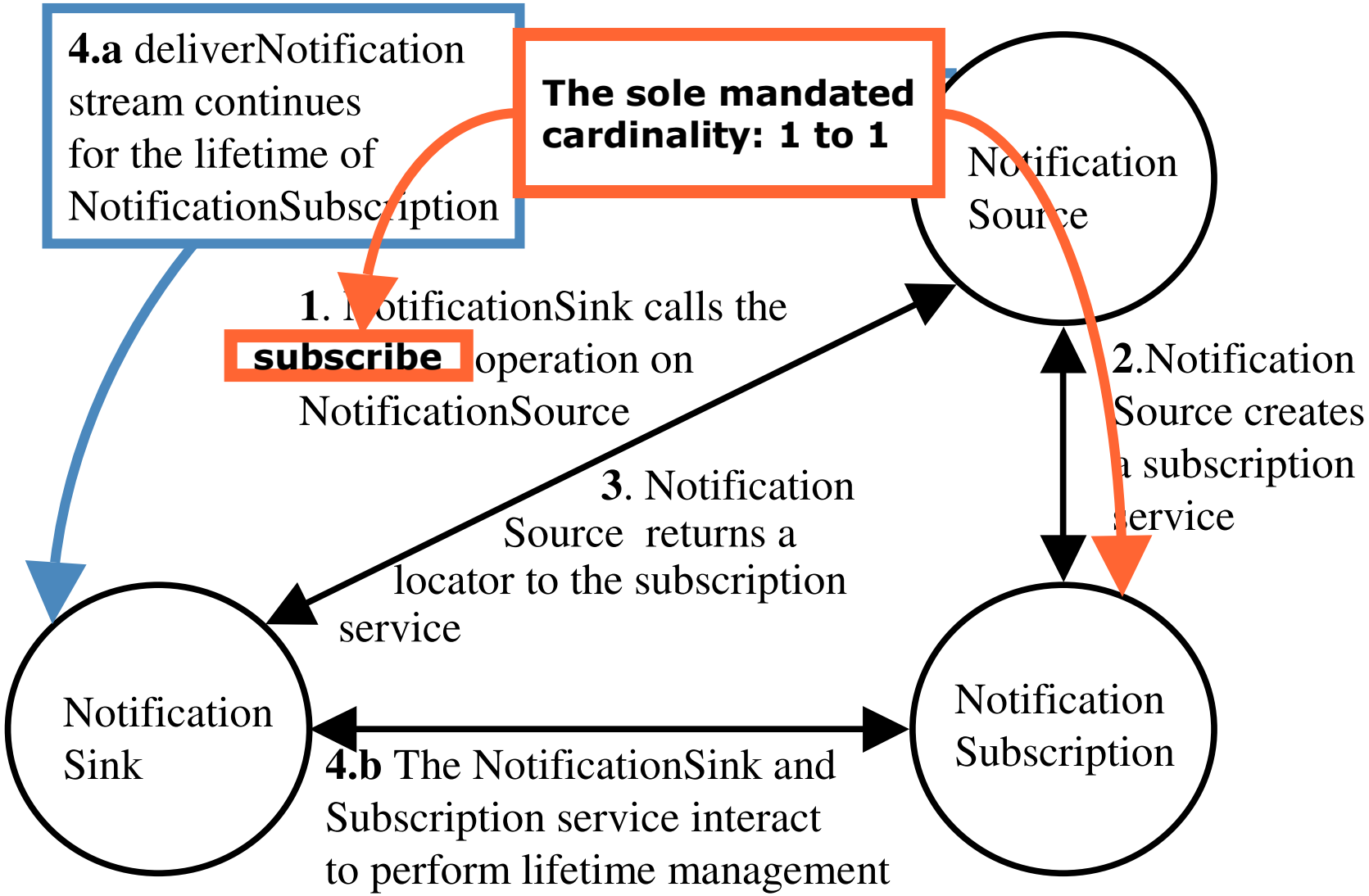

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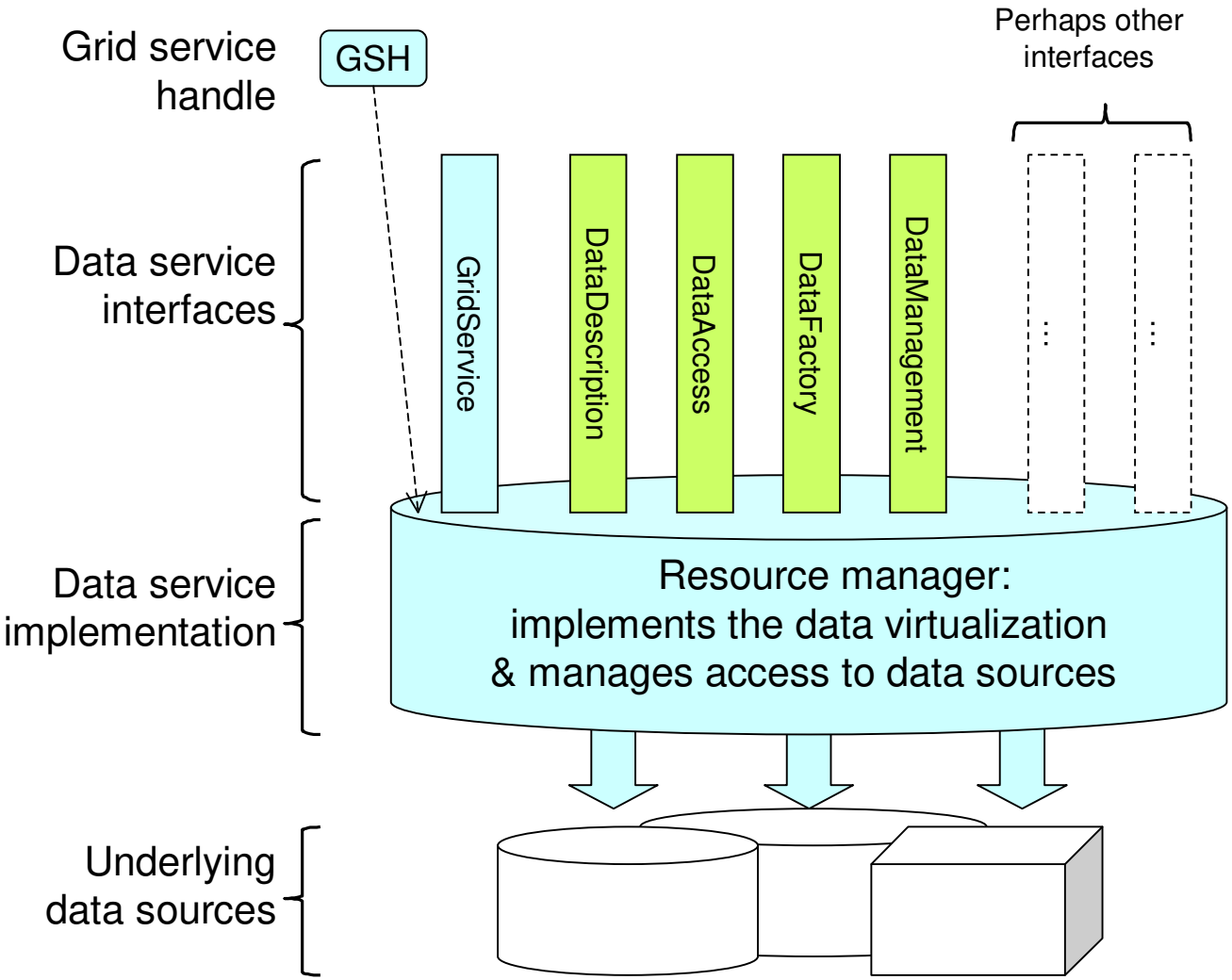
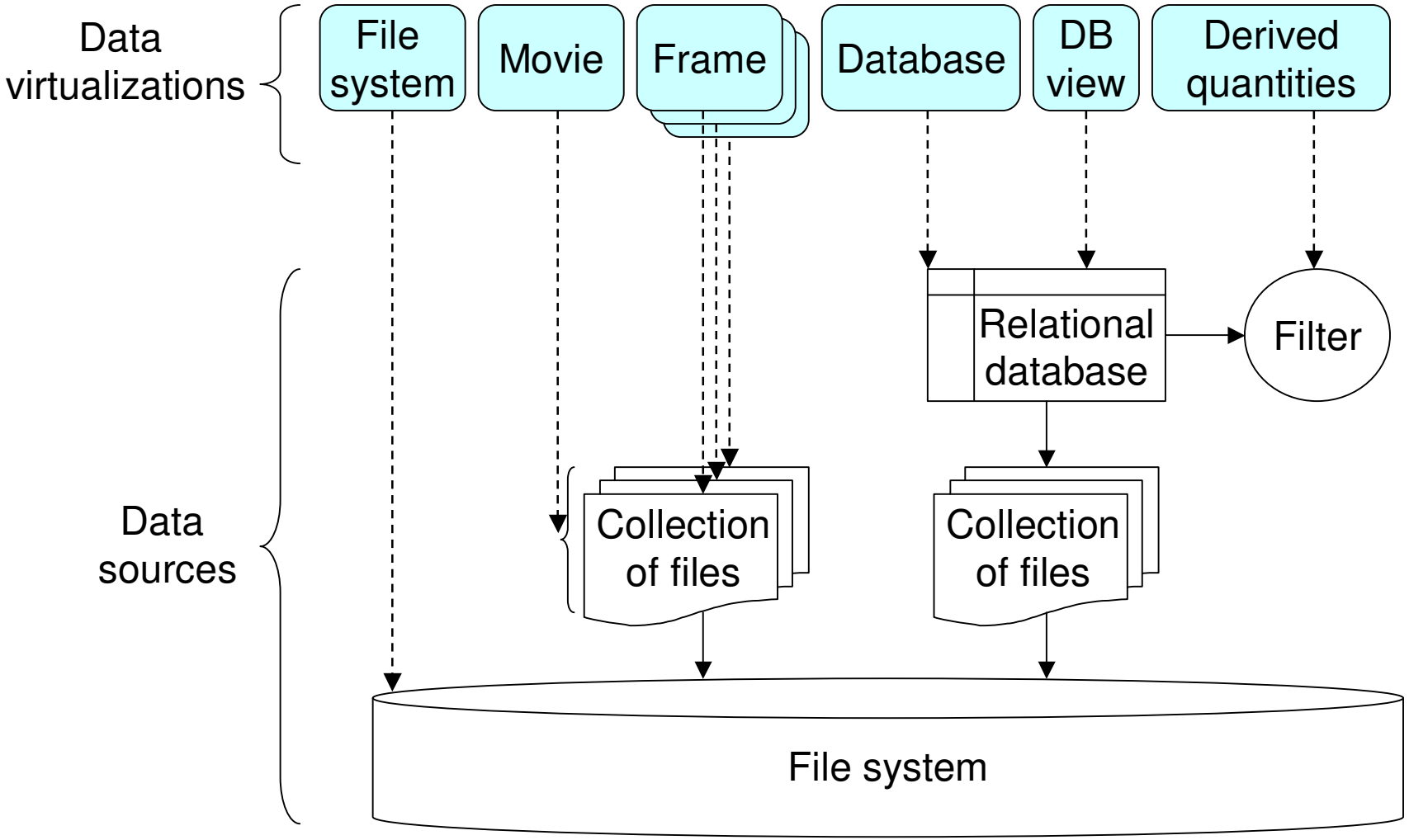
Data Service Overview



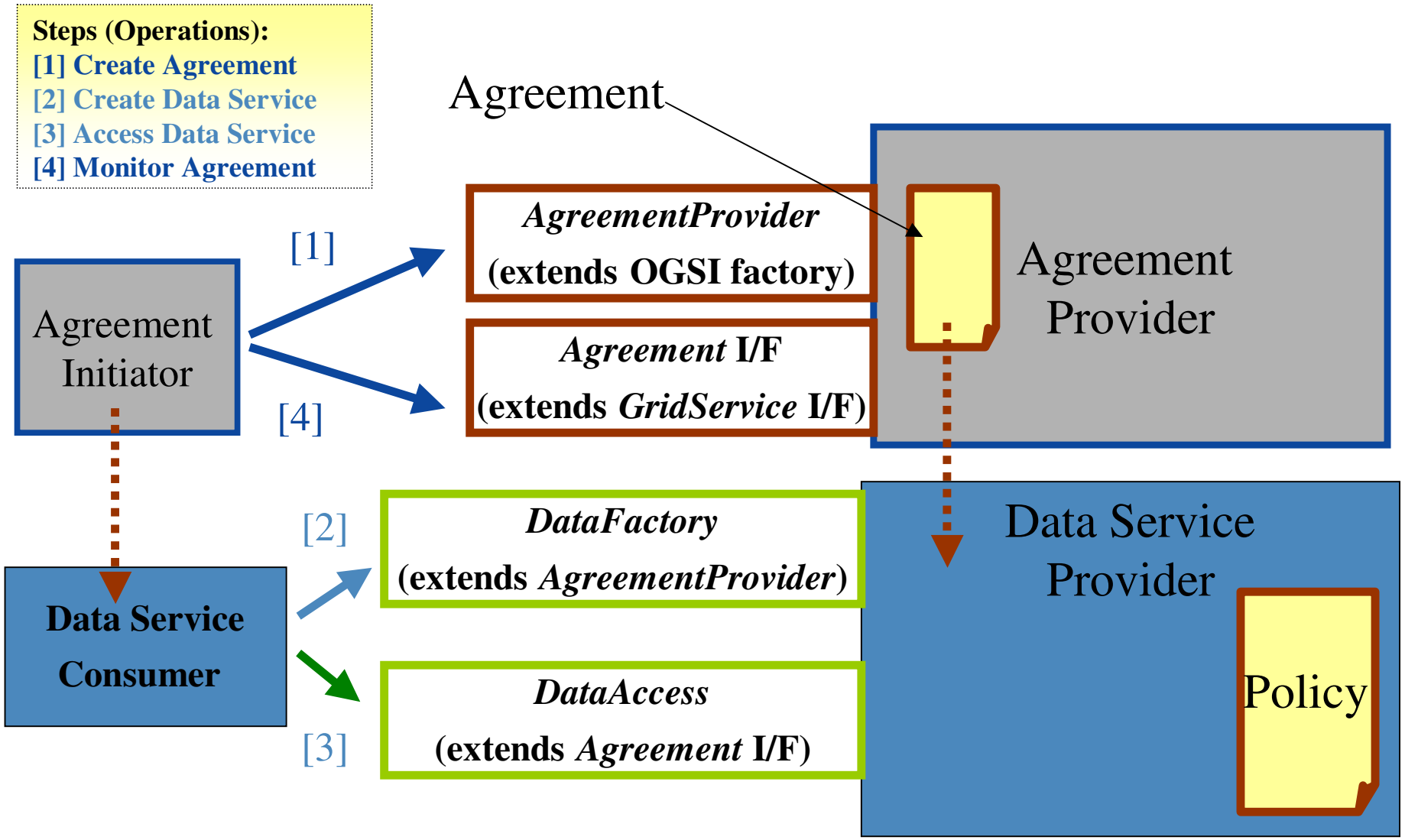
Multiple Virtualizations Example



(OGSI-) WS-Agreement

- Recall key criteria of a Grid:
  - *Coordinates resources that are not subject to centralized control* …
  - using standard, open, general-purpose protocols and interfaces …
  - *to deliver non-trivial qualities of service*.
- Implies need to express and negotiate agreements that govern the delivery of services to clients
  - Agreement = what will be done, QoS, billing, compliance monitoring
- All interesting Web/Grid services interactions will be governed by agreements!

WS-Agreement Contents

- Standard agreement *language*
  - A composition of a set of terms that govern a service's behavior with respect to clients
  - Agreement language uses WS-Policy (currently)
  - Standard attributes for terms that express current state of negotiation
  - Other groups define specific terms
- Standard agreement negotiation *protocol*
  - Establish, monitor, re-negotiate agreement
  - Expressed using OGSI GWSDL interfaces
  - Each agreement represented by a service

Agreement Overview