

RNS and File Catalog Standardization

GFS-WG, OGF25 Catania

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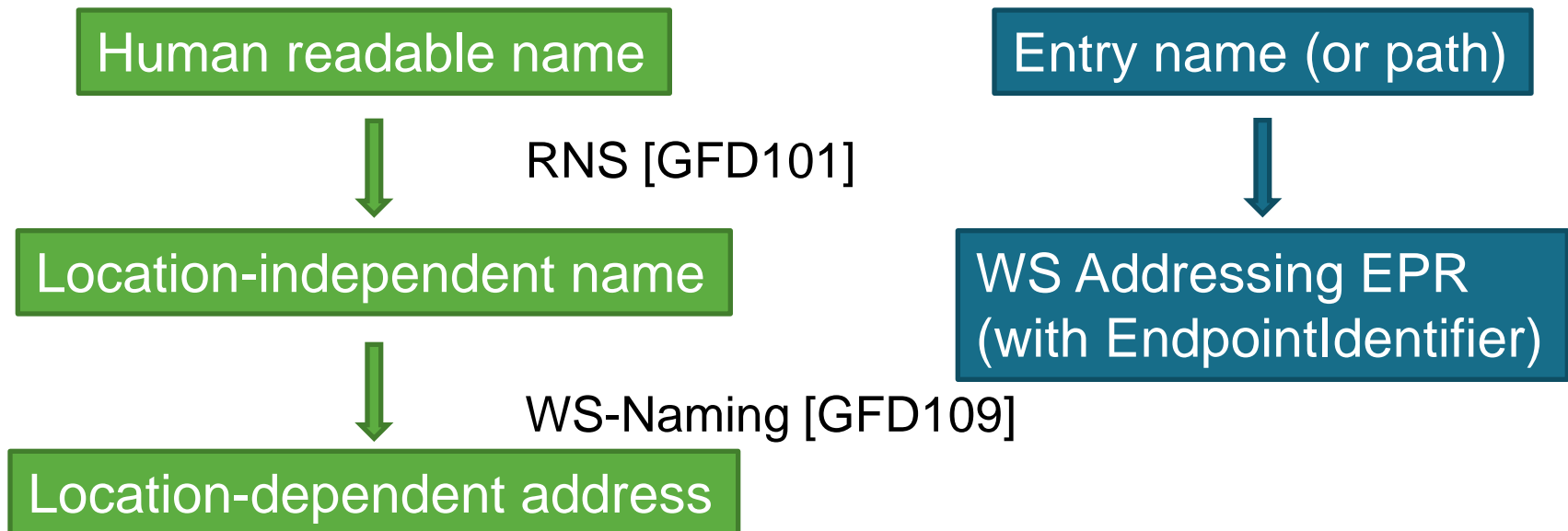
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Agenda

- Introduction (5min)
- RNS-1.1 discussion (30min)
 - Specification review
 - Demonstration (Kido and Matsuda, Osaka Univ)
- File Catalogue Standardization discussion (40min)
 - Talk from Japan eScience Project (Matsuda, Osaka)
 - Talk from KEK (Iwai, KEK)
 - Talk of Data Location Interface (Field, CERN)
 - Discussion
- Master-slave data management (15min)
 - Talk about the info document (Leitao Guo, China Mobile)

- Three-layer naming scheme in distributed systems
 - Usability and many of transparencies



RNS Port Type in RNS-1.1



RNS Resource Properties

elementCount: unsignedLong
createTime: dateTime
accessTime: dateTime
modificationTime: dateTime
readable: boolean
writeable: boolean

RNS operations

add(entryName: String , [entryEndpoint: EPR], [entryMetadata: XML]): RNSEntry
lookup([entryName: String]): LookupResults
remove(entryName: String): RNSEntry
rename(oldEntryName: String, newEntryName: String): RNSEntry
setMetadata(String entryName, XML newMetadata): RNSEntry

Response of lookup operation

- A list of entries
- The EPR of an iterator
 - See WS-Iterator doc
- Both

Recommended RNS Entry Metadata by RNS Implementation



Metadata	Type	Value	Description
supports-rns	rns:supportType	true, false, or unknown	Indicates whether or not entry-endpoint supports RNS Port Type

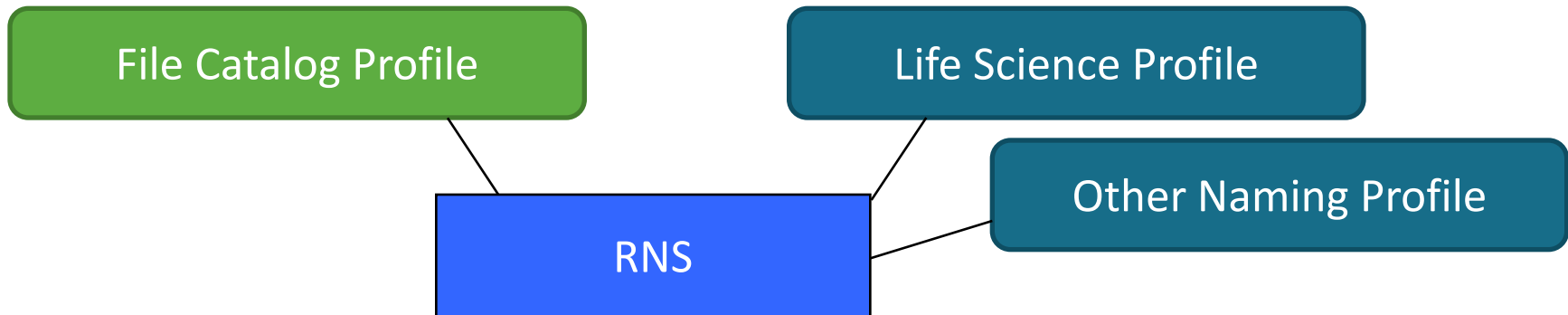
Changes from RNS-1.0 to 1.1

- No distinction between junction and virtual directory
 - RNS entry is a directory having a list of entry-name, entry-endpoint and entry-metadata
- Operation change
 - Remove Query()
 - Remove entry_parent
 - Change list() to lookup()
 - lookup() does not accept regexp to be passed as a parameter
 - Change Update() to rename() and setMetadata()
- Introduce iterator in lookupResponse

Comments for RNS-1.1

- Having multiple EPRs for each entry requested from many parties **
 - Comment: Do not rely on client. Instead, one epr and resolution service is better. This avoids multiple update point problem
 - not agreed
- Mistakes in WSDLs and XML Schema
- Garbage collection issue of RNS entries
 - Comment: It is a problem, but no need to be included in the spec
- How to add another RNS entry? ***
 - Need to clarify. One solution is include metadata of add()
- Bulk operation required to add multiple entries at once to enhance performance **
 - Should be included in 1.1

File Catalog Profile



- Define necessary feature for File Catalog on top of RNS
 - RNS Entry metadata for File Catalog
 - Required Resource properties and operations

File Catalog Metadata (1)

EntryType	The target data type; regular file, directory, FIFO, . . .
ContentType	Mime type of the target file
Checksum	String representation of the actual checksum corresponding to the target data source.
ChecksumType	String representation of the checksum type or algorithm used to produce the checksum.
Description	Description of entry.
Size	The physical size of the targeted data source.
ModificationTime	The replica or fileset's point-in-time timestamp corresponding to the time at which the source snapshot was made.
Version	The version number of the targeted data if available.

File Catalog Metadata (2)

MutableSource	Identifies whether or not the file or filesystem source targeted by this RNS entry can change.
ReadOnly	Identifies whether or not a local copy of the data should be locally read-only.
ReplicaCopy	Identifies whether or not the file or filesystem source targeted by this RNS entry is a replica copy.
Complete	Identifies whether or not the file or filesystem source targeted by this RNS entry is complete. In the case of files, a value of true connotes all of the file content is embodied in the file; for filesets (filesystem subtrees) this identifies whether or not the fileset is complete in terms of number of files participating and the coherency of these files.

Further Consideration

- Performance
 - Bulk operation
 - NFSv4-like COMPOUND procedure, which is used to combine one or more operations into a single RPC request
- Security
 - Access control list
 - To namespace information
 - To the target resource that the namespace refers to

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