XSEDE Canonical Use Case 12:

Update Resource Information

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Version 1.2

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A. Document History

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	Version	Date	Changes	Author
First use case draft	0.1	3/21/2013	Document created	Foster, Grimshaw, Hossain, Lifka, Riedel, Tuecke
Revised draft	1.0	9/28/13	Clean up formatting; Separate from UCCAN 8; prepare for archiving	Brown
Near final draft	1.1	11/13/13	Split 7,8 into 7,8,11,12; incorporate ADR reviewer feedback	Navarro, Smith
Final Draft	1.2	3/27/2014	Cleaned up some terms.	Navarro

B. Document Scope

This document is both a user-facing document (publically accessible) and an internal working document intended to define user needs and use cases that fall within the overall activities of XSEDE. The definition of use cases is based on a template from Malan and Bredemeyer[1]. In general it is in keeping with the approaches and philosophy outlined in "Software architecture in practice."[2]

This document is one component of a process that generates at least the following documents, some of which are user-facing, some are as of now intended to be internal working documents:

- ***This document*** - A description of use cases [User facing]
- A set of level 3 decomposition documents, which include:
    - Quality Attributes descriptions
    - Connections diagram in UML

The use cases are presented here using the following format, derived from the Malan and Bredemeyer white paper[1] as follows:

Use Case	Use case identifier and reference number and modification history
Description	Goal to be achieved by use case and sources for requirement
References	References and citations relevant to use case
Actors	List of actors involved in use case
Prerequisites (Dependencies) & Assumptions	Conditions that must be true for use case to be possible Conditions that must be true for use case to terminate successfully
Steps	Interactions between actors and system that are necessary to achieve goal
Variations (optional)	Any variations in the steps of a use case
Quality Attributes	

[1] Malan, R., and D. Bredemeyer. 2001. Functional requirements and use cases. *www.bredemeyer.com/pdf_files/functreq.pdf*
[2] Bass, L., P Paul Clements, and Rick Kazman

Non-functional (optional)	List of non-functional requirements that the use case must meet
Issues	List of issues that remain to be resolved

C. Related Use Cases

Canonical Use Cases (UCCAN) 7.0, 8.0, 11.0, and 12.0 reflect two different forms of information system: first an asynchronous publish subscribe mechanism in which consumers can subscribe to topics and publishers can publish on topics, and second a form akin to a centralized registry or database in which publishers synchronously update information that can be subsequently queried by consumers. As a consequence asynchronous pub/sub systems are typically used when high volume message transport is required and data validation is less important. In these systems accepted messages are not immediately available to subscribers. By contrast, synchronous add/update/query systems are typically used when information validation is more important and publishers need confirmation that information was successfully updated and is available immediately to users.

Examples of information that may be available thru update query:

- Resource description and characteristics information
- Software description, characteristics, and availability information
- Project/allocation information

User information

D. Canonical Use Case 12

Use Case UCCAN 12.0	Update Resource Information
Description	Synchronously add or update resource information in the information system.
References	
Actors	Publisher: publishes resource information to the Information System Information system: receives published information and stores it
Prerequisites (Dependencies) & Assumptions	• The Publisher knows how to contact and communicate with the Information System. • The term "*information system*" does not imply a single central service. • The Publisher is responsible for the quality of the published information (e.g., it is accurate, it is up to date, it conforms to any specified schemas). • Publishers include appropriate timestamps and validity time (time to live) in the resource information they update. • The Publisher has authenticated to the Information System and has been authorized. • Publishers must be able to communicate securely with the information system when they wish to. • Publishers will comply with XSEDE wide information policies.
Steps	1. The Publisher obtains resource information that it needs to update. 2. The Publisher sends resource information to the Information System. 3. Optionally, the Information System validates the resource information against the validation rules, and rejects the resource information if it does not conform. 4. The Information System acknowledges acceptance of the information (i.e., Publisher can be assured the resource information has been updated in the Information System). 5. If the Publisher has additional resource information, return to step 2.
Variations (optional)	*Related use case UCCAN 11.0 describes an alternate approach for publishing resource information.*
Quality Attributes	When the information system is providing acknowledgements to the Publisher, the amount of time it takes to publish information and receive

	acknowledgement is less than 5 second. [source: A&D] The aggregate rate at which all Publishers can update information. 2 updates/sec and 100 KB/sec.[source: job state updates rates] The amount of resource information that can be stored by the Information System: 100 million entries, 100 GB of data total. [source: job volume, accounting volume] Information that does not conform with specified schemas and integrity rules will be rejected by the Information System 99.999% of the time. [source: A&D] Update requests that conform with specified schemas and integrity rules will succeed 99.9% of the time [source: A&D] Once information has successfully been accepted by the system, it will be available for retrieval in the system for one year 99% of the time unless it is explicitly deleted. [source: A&D]
Non-functional (optional)	*Update-query software is easy to install and support. [source SPs]* *Update-query interfaces are simple and well documented. [source SPs]*
Issues	