

# XSEDE Canonical Use Case 8: Search for Resource Information

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Version 1.2



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## A. Document History

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### Overall Document Authors:

Ian Foster  
The University of Chicago and Argonne National Laboratory  
Argonne, IL 60439  
[foster@anl.gov](mailto:foster@anl.gov)

Morris Riedel Jülich Supercomputing Centre  
Forschungszentrum Jülich GmbH  
D-52425 Jülich  
Germany

Felix Bachmann  
Carnegie Mellon University  
4500 5th Avenue  
Pittsburgh, PA 15213  
[fb@sei.cmu.edu](mailto:fb@sei.cmu.edu)

Andrew Grimshaw  
University of Virginia  
PO Box 400740  
Charlottesville VA 22904  
[grimshaw@virginia.edu](mailto:grimshaw@virginia.edu)

David Lifka  
Cornell University  
512 Frank H. T. Rhodes Hall  
Ithaca, NY 14853  
[lifka@cac.cornell.edu](mailto:lifka@cac.cornell.edu)

Warren Smith  
Texas Advanced Computer Center  
10100 Burnet Road  
Austin, TX 78758-4497  
[wsmith@tacc.utexas.edu](mailto:wsmith@tacc.utexas.edu)

John-Paul Navarro

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The University of Chicago and Argonne National Laboratory  
Argonne, IL 60439  
navarro@mcs.anl.gov

	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
<b>Near final draft</b>	1.1	11/13/13	Split 7,8 into 7,8,11,12; incorporate ADR reviewer feedback	Navarro, Smith
<b>Final Draft</b>	1.2	3/27/2014	Cleaned up some terms.	Navarro

## B. Document Scope

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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<sup>1</sup>. In general it is in keeping with the approaches and philosophy outlined in “Software architecture in practice.”<sup>2</sup>

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<sup>1</sup> as follows:

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

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<sup>1</sup> Malan, R., and D. Bredemeyer. 2001. Functional requirements and use cases. [www.bredemeyer.com/pdf\\_files/functreq.pdf](http://www.bredemeyer.com/pdf_files/functreq.pdf)

<sup>2</sup> Bass, L., P Paul Clements, and Rick Kazman

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<i>Non-functional (optional)</i>	List of non-functional requirements that the use case must meet
<i>Issues</i>	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 8

Use Case UCCAN 8.0	Search Resource Information
<i>Description</i>	Synchronously search or query for resource information from the information system.
<i>References</i>	
<i>Actors</i>	Searcher: requests that an Information System perform a search/query over resource information and receives the results Information System: receives search/query requests and returns requested resource information to the Searcher
<i>Prerequisites (Dependencies) &amp; Assumptions</i>	<ul style="list-style-type: none"> <li>• The Searcher knows how to contact and communicate with the Information System.</li> <li>• The term “<i>information system</i>” does not imply a single central service.</li> <li>• When required the Searcher authenticates with the Information System and is authorized.</li> <li>• Authentication and Authorization are consistent with UCCAN 9.0 and the relevant security architecture.</li> <li>• Searchers will comply with XSEDE wide information policies.</li> </ul>
<i>Steps</i>	<ol style="list-style-type: none"> <li>1. The Searcher sends search/query criteria to the Information System</li> <li>2. The Information System sends 0 or more search results (resource information) to the Searcher</li> <li>3. The Searcher can return to step 1 if it has more searches to perform</li> </ol>
<i>Variations (optional)</i>	<p><i>Related use case UCCAN 7.0 describes an alternate approach for obtaining resource information. Information obtained using this use case may not be available thru variants.</i></p> <p><i>Large search or query responses may be returned in pages/chunks.</i></p>
<i>Quality Attributes</i>	<p>A Searcher will receive a response to a search/query request returning 1 MB or less in less than 5 seconds 90% of the time. [source: A&amp;D] The minimum aggregate rate at which all Searchers can perform searches. 2 searches per second. Search requests to the Information System will succeed 99.9% of the time [source: A&amp;D] Query results are delivered to the searcher without modification (integrity) 99.9% of the time [source: A&amp;D]</p>
<i>Non-functional (optional)</i>	<p><i>Update-query software is easy to install and support. [source SPs]</i></p> <p><i>Update-query interfaces are simple and well documented. [source SPs]</i></p>

<i>Issues</i>	
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