



A Practitioner's Perspective on Taxonomy, Ontology and Findability



NASA Johnson Space Center

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DB Consulting

Information Technology and Multimedia Services Contract

May, 2011

Case Study: Semantic System



➤ This case study follows the NASA “Case of Interest” definition, meaning it illustrates the value of best practices that might otherwise seem insignificant, in order to promote effective implementation.

➤ **Product Endorsement Disclaimer**

This is not product endorsement but a case study on what we have done and suggestions for the recognition and development of a semantic system.

Demonstrated Need



- Need for broad categories of information that easily map to/ integrate with existing information architecture
- Need for evolving procedures and processes that are easily maintained and fit users needs
- Internal & External analysis
 - Subject Matter Expert (SME) interviews
 - Repository owners, content creators
 - NASA Thesaurus
 - Dow Jones Taxonomy Services
 - Taxonomy consultants

Functional



<http://www.autoblog.com/media/2009/09/tata-nano-lux-white-630.jpg>



JSC needed an uncomplicated, functional system to improve information accessibility and retrieval.

Succinct Planning = Successful Implementation



The vision for the JSC Taxonomy is to create a controlled vocabulary to connect information stovepipes into an integrated view.

The envisioned end results are:

- Increased information accessibility, relevancy and currency
- Improvement of the information consumers' user experiences

The scope of the JSC Taxonomy is:

- To encompass JSC created and/or owned content
- To include local level vocabularies, not to replace existing information architecture



Monetized Need

➤ Cost Benefit Analysis

- Evidence-based measurement of JSC information workers' search habits, contrasted with industry standards and considering the current search environment/available applications
- Information worker = content owners and creators, information consumers
- Conservative, salary based value only. Additional costs such as benefits and multiple employee efforts not included.
 - 8.8 hrs/wk average information worker*
 - 10.5 hrs/wk average JSC information worker
\$21,840 annual cost per employee

* International Data Corporation Hidden Costs of Information Work: A Progress Report, May 2009, Doc # 217936

Investment that Pays



The advantages of planning
and technology.

<http://www.jaguarxf.info/>



Semantic Systems as Tools



System Review



- International Standards Organization, ISO 2788 (establishment of a monolingual thesauri) to 25964- parts I-IV (thesauri & interoperability with other vocabularies).
- Dublin Core Metadata schemas and vocabulary type
- Z39.50- semantic protocol for search and retrieval from remote computer databases.



The Advantages of Planning and Technology



Space Shuttle Discovery, STS-133, on it's final ascent, February 24, 2011

- Speeds of over 17,000 mph in ~ 8 minutes = acceleration of 2,000 mph each minute
- Two solid rocket boosters
- Three Space Shuttle Main Engines (SSMEs)
- Two Orbital Maneuvering System (OMS) engines to place the vehicle in orbit
- 38 primary and six vernier Reaction Control System engines for separation and in-space propulsion



Components of the Semantic System



STS-114
STS-115
STS-116
STS-117
STS-118
STS-119
STS-120
STS-121
STS-122
STS-123
STS-124
STS-125
STS-126
STS-127
STS-128
STS-129
STS-130
STS-131
STS-132
STS-133
STS-134
Space Station Freedom Program
Uncrewed space flight
Related Organizations
Research Areas
Aeronautics
Astronautics
Chemistry
Acidity & basicity
Atoms
Chemical bonds
Chemical substances
Chemical reactions
Chemicals & drugs (Biology)
Amino acids, peptides, & proteins
Biological factors
Biomedical & dental materials
Carbohydrates
Chemical actions & uses
Complex mixtures
Enzymes & coenzymes
Heterocyclic compounds
Hormones, hormone substitutes, & hormone analogs
Inorganic chemicals
Lipids
Macromolecular substances

- Controlled Vocabulary
 - Hierarchy
 - Preferred terms
- Ontology
- Equivalence Relationships
 - NonPreferred Terms

STS-133	
Class: SpaceShuttleProgram	
Hierarchical	
Type	Term
BT	Space Shuttle crewed missions

Associative	
Type	Term
Car...	Multi-purpose logistics modules
Car...	Permanent Multi-Purpose Module
Car...	Robonaut 2
Cre...	Barratt, Michael R.
Cre...	Boe, Eric
Cre...	Bowen, Stephen G.
Cre...	Drew, B. Alvin
Cre...	Lindsey, Steven W.
Cre...	Stott, Nicole P.
Has...	Discovery
Lau...	Launch Pad 39A

Equivalence	
Type	Term
UF	Shuttle 133
UF	Space Shuttle 133
UF	STS 133

Components of the Semantic System (2)



Preferred terms to generate rulebases

STS-113_791_Missions.xml	XML Docum...	3/10/2011 11:27 AM	24,461
STS-114_792_Missions.xml	XML Docum...	3/10/2011 11:27 AM	30,100
STS-115_793_Missions.xml	XML Docum...	3/10/2011 11:27 AM	24,384
STS-116_794_Missions.xml	XML Docum...	3/10/2011 11:26 AM	24,268
STS-117_795_Missions.xml	XML Docum...	3/10/2011 11:27 AM	24,360
STS-118_796_Missions.xml	XML Docum...	3/10/2011 11:26 AM	24,459
STS-119_797_Missions.xml	XML Docum...	3/10/2011 11:28 AM	24,411
STS-120_798_Missions.xml	XML Docum...	3/10/2011 11:26 AM	24,351
STS-121_799_Missions.xml	XML Docum...	3/10/2011 11:28 AM	24,176
STS-122_800_Missions.xml	XML Docum...	3/10/2011 11:26 AM	24,266
STS-123_801_Missions.xml	XML Docum...	3/10/2011 11:26 AM	24,272
STS-124_802_Missions.xml	XML Docum...	3/10/2011 11:27 AM	24,256
STS-125_2541_Missions.xml	XML Docum...	3/10/2011 11:27 AM	41,755
STS-126_803_Missions.xml	XML Docum...	3/10/2011 11:26 AM	24,185
STS-127_23321_Missions.xml	XML Docum...	3/10/2011 11:27 AM	24,209
STS-128_23611_Missions.xml	XML Docum...	3/10/2011 11:26 AM	24,204
STS-129_23613_Missions.xml	XML Docum...	3/10/2011 11:27 AM	24,120
STS-130_23618_Missions.xml	XML Docum...	3/10/2011 11:27 AM	24,109
STS-131_23620_Missions.xml	XML Docum...	3/10/2011 11:26 AM	24,320
STS-132_31919_Missions.xml	XML Docum...	3/10/2011 11:28 AM	24,112
STS-133_31921_Missions.xml	XML Docum...	3/10/2011 11:26 AM	24,198
STS-134_31923_Missions.xml	XML Docum...	3/10/2011 11:27 AM	23,920
Structure & Function Related Neuronal Plasticity_52631_Equipment.xml	XML Docum...	3/10/2011 11:36 AM	12,053
Structure & Solidification of Largely Undercooled Melts_61253_Equipment.xml	XML Docum...	3/10/2011 11:36 AM	11,658
Student Temporary Employment Program_57111_Functions.xml	XML Docum...	3/10/2011 11:23 AM	30,536
Studies of Ionization States_47768_Equipment.xml	XML Docum...	3/10/2011 11:36 AM	13,963
Studio photography_32941_Functions.xml	XML Docum...	3/10/2011 11:23 AM	9,603
Study Capillary Waves on Water Surface_47502_Equipment.xml	XML Docum...	3/10/2011 11:36 AM	4,846
Study of Meteoroid Impact Craters on Various Materials_49555_Equipment.xml	XML Docum...	3/10/2011 11:36 AM	5,567
Study of the Effects of Mammalian Gravity Receptors_50175_Equipment.xml	XML Docum...	3/10/2011 11:36 AM	14,494
Study Proposed Propellant Acquisition System_47494_Equipment.xml	XML Docum...	3/10/2011 11:36 AM	3,754
Study Solar Flux Separation_47500_Equipment.xml	XML Docum...	3/10/2011 11:36 AM	3,793

Components of the Semantic System (3)



Rulebases are informed by the taxonomy and ontology, the proximity and location of terms, and different weights to enhance the accuracy of Classification.

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<!-- TITLE RULES FOR NPTs -->
- <combine weight="100" label="link.Missions.STS-133.31921_TITLE_NPT" _key="k815323">
  <!-- multi-word NPT - title -->
  - <max not="0" scale="0" weight="100" _key="k815325">
    - <phrase case="0" field="title" foreach="0" weight="25" not="0" stem="1" _key="k815326">
      - <any case="0" not="0" weight="100" stem="1" _key="k815327">
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        <text case="0" field="title" weight="100" not="0" data="S.T.S." stem="1" _key="k815329" />
        <text case="0" field="title" weight="100" not="0" data="STS" stem="1" _key="k815330" />
      </any>
      <text case="0" field="title" weight="100" not="0" data="133" stem="1" _key="k815331" />
    </phrase>
    - <near case="0" count="2" foreach="0" weight="20" field="title" not="0" stem="1" _key="k815332">
      - <any case="0" not="0" weight="100" stem="1" _key="k815333">
        <text case="0" field="title" weight="100" not="0" data="S T S" stem="1" _key="k815334" />
        <text case="0" field="title" weight="100" not="0" data="S.T.S." stem="1" _key="k815335" />
        <text case="0" field="title" weight="100" not="0" data="STS" stem="1" _key="k815336" />
      </any>
      <text case="0" field="title" weight="100" not="0" data="133" stem="1" _key="k815337" />
    </near>
    - <sentence case="0" field="title" not="0" weight="15" stem="1" _key="k815338">
      - <any case="0" not="0" weight="100" stem="1" _key="k815339">
        <text case="0" field="title" weight="100" not="0" data="S T S" stem="1" _key="k815340" />
        <text case="0" field="title" weight="100" not="0" data="S.T.S." stem="1" _key="k815341" />
        <text case="0" field="title" weight="100" not="0" data="STS" stem="1" _key="k815342" />
      </any>
      <text case="0" field="title" weight="100" not="0" data="133" stem="1" _key="k815343" />
    </sentence>
  </max>
  - <max not="0" scale="0" weight="100" _key="k815344">
    - <phrase case="0" field="title" foreach="0" weight="25" not="0" stem="1" _key="k815345">
      - <any not="1" _key="k815346">
        <text data="Space" _key="k815347" />
      </any>
      <text case="0" field="title" weight="100" not="0" data="Shuttle" stem="1" _key="k815348" />
      <text case="0" field="title" weight="100" not="0" data="133" stem="1" _key="k815349" />
    </phrase>
```

Classification Driven Results



Subset of the content corpus

Fewer, more relevant results

Basic Search | Advanced Search | NASA Search | JSC Home | FAQ | A-Z | New Features | Ask A Librarian | Submit Feedback

inside JSC Johnson Space Center Search JSC

Search Results: Results 1 - 10 of about 1470 for STS-133 (0.11 seconds) Sort by date

Beta Features and Feedback
Limited By ?

- STS-133
[\[Update\]](#) [\[Clear All\]](#)

Limit To ?

- Show Full Tree
- Content**
 - Document
 - PDF
 - PowerPoint
 - Spreadsheet
 - Web Page
 - XML
- Show all file types
- Facilities & Labs**
 - Launch Pad 39A
- Functional Areas**
 - Safety
 - Johnson Space Center Administration
 - Alerts
 - Coordination
 - Evaluation
- People**
 - Anderson, Michael P.
- Programs & Missions**
 - STS-107
 - Space Shuttle crewed missions
 - On orbit
 - STS-130
 - STS-133**
 - STS-134
- Systems & Equipment**
 - Discovery
 - Endeavour
 - International Space Station
 - Extravehicular Mobility Unit
 - Crew Compartment
 - Certification
 - Space Shuttle

STS-133
Programs & Missions » Space Shuttle Program » Space Shuttle missions » Space Shuttle crewed missions » STS-133
Discovery's STS-133 flight will deliver install the Permanent Multipurpose Module, the Express Logistics Carrier 4 and provide critical spare components to the International Space Station. This will be the 35th shuttle mission to the station, and Discovery's last flight.
[Related Information ?](#) [\[show\]](#)

Kennedy Media Gallery [Relevance Score: 10 of 10] ⓘ
... Category: STS-133. To refine search, enter text here + GO. Open Image KSC-2011-1327. KSC-2011-1327 (02/01/2011) -- CAPE CANAVERAL, Fla. ... [mediaarchive.ksc.nasa.gov/search.cfm?cat=214 - 86k - Request Removal](#)

Home - STS-133/ULF5 JOP [Relevance Score: 10 of 10] ⓘ
... STS-133/ULF5 JOP. This Site, Go Search. ... DA8/Flight Director Office > STS-133/ULF5 JOP. STS-133/ULF5 JOP. Shuttle FD ... [modspops.jsc.nasa.gov/mod/DA8/JOP_ulf5_sts133/default.aspx - 123k - 2011-02-09 - Request Removal](#)

Image Science & Analysis Group (STS-133) [Relevance Score: 10 of 10] ⓘ
... STS-133 Mission Information The link to the old web site is generated here. ... Mission Information. Mission: STS-133, Pad: A. Launch: 134, MLP: ... [isag.jsc.nasa.gov/shuttle/ShowPage.pl?template=mission.htm&mission=STS-133 - 18k - Request Removal](#)

Home - STS-133/ULF5 JOP [Relevance Score: 10 of 10] ⓘ
... STS-133/ULF5 JOP. This Site, Go Search. ... DA8/Flight Director Office > STS-133/ULF5 JOP. STS-133/ULF5 JOP. Shuttle FD ... [modspops.jsc.nasa.gov/mod/DA8/JOP_ulf5_sts133/ - 123k - 2011-02-09 - Request Removal](#)

Image Science & Analysis Group (ULF5/STS-133) [Relevance Score: 10 of 10] ⓘ
... ULF5/STS-133 Mission Information The link to the old web site is generated here. ... Mission Information. Mission: ULF5/STS-133, Vehicle: Discovery ... [isag.jsc.nasa.gov/Station/ShowPage.pl?template=mission.htm&mission=ULF5/STS-133 - 16k - Request Removal](#)

STS 133/ULF5 Document Library [Relevance Score: 10 of 10] ⓘ
... STS-133/ULF5 JOP. This Site, Go Search. ... JOP > STS-133/ULF5 Document Library. STS-133/ULF5 Document Library. ... [modspops.jsc.nasa.gov/mod/DA8/JOP_ulf5_sts133/STS133ULF5%20Document%20Library/Forms/AllItems.aspx - 76k - 2011-02-09 - Request Removal](#)

Home - STS-133/ULF5 JOP [Relevance Score: 10 of 10] ⓘ
... STS-133/ULF5 JOP. This Site, Go Search. ... DA8/Flight Director Office > STS-133/ULF5 JOP. STS-133/ULF5 JOP. Shuttle FD ... [modspops.jsc.nasa.gov/mod/DA8/JOP_ulf5_sts133 - 123k - 2011-02-09 - Request Removal](#)

Image Science & Analysis Group (STS-133) [Relevance Score: 10 of 10] ⓘ
... STS-133 Mission Information The link to the old web site is generated here. ... Mission Information. Mission: STS-133, Pad: A. Launch: 134, MLP: ... [isag-web1.jsc.nasa.gov/shuttle/ShowPage.pl?template=mission.htm&mission=STS-133 - 18k - Request Removal](#)

[MS WORD] NASA Letterhead with "Meatball" [Relevance Score: 10 of 10] ⓘ
... TO: Distribution. FROM: DA8/STS-133 Lead Flight Director. ... SUBJECT: STS-133/ULF-5 Joint Operations Panel #2 Minutes. ...

Components of the Semantic System (4)



- Term metadata library
- Mapping to the interface
- Standards for inclusion

A screenshot of a web form titled "STS-133" with a class of "SpaceShuttleProgram". The form is divided into a "Term Information" section with several input fields:

- image_title:** Image of the STS-133 mission patch
- image_URL:** <https://io.jsc.nasa.gov/photos/10413/thum/sts133-s-001.jpg>
- site_description:** Discovery's STS-133 flight will deliver and install the Permanent Multipurpose Module, the Express Logistics Carrier 4, and provide critical spare components to the International Space Station. This was the 35th shuttle mission to the station, and Discovery's last flight.
- site_title:** STS-133
- site_URL:** http://www.nasa.gov/mission_pages/shuttle/shuttlemissions/sts133/index.html

Term Information Driven Interface



Basic Search | Advanced Search | NASA Search | JSC Home | FAQ | A-Z | New Features | Ask A Librarian | Submit Feedback

inside JSC Johnson Space Center Search JSC

Search Results 1 - 10 of about 1470 for STS-133 (0.11 seconds) Sort by date

Beta Features and Feedback
 Limited By ?
 STS-133 [Update] [Clear All]

Limit To ?
 Show Full Tree
Content
[Document](#)
[PDF](#)
[PowerPoint](#)
[Spreadsheet](#)
[Web Page](#)
[XML](#)
[Show all file types](#)
Facilities & Labs
[Launch Pad 39A](#)
Functional Areas
[Safety](#)
[Johnson Space Center Administration](#)
[Alerts](#)
[Coordination](#)
[Evaluation](#)
People
[Anderson, Michael P.](#)
Programs & Missions
[STS-107](#)
[Space Shuttle crewed missions](#)
[On orbit](#)
[STS-130](#)
[STS-133](#)
[STS-134](#)
Systems &
[Discovery](#)
[Endeavour](#)
[International Space Station](#)

STS-133
Programs & Missions » [Space Shuttle Program](#) » [Space Shuttle missions](#) » [Space Shuttle crewed missions](#) » [STS-133](#)
 Discovery's STS-133 flight will deliver install the Permanent Multipurpose Module, the Express Logistics Carrier 4 and provide critical spare components to the International Space Station. This will be the 35th shuttle mission to the station, and Discovery's last flight.

Related Information ? (hide)

Carried	Crewed by	Has vehicle	Launched from
Multi-purpose logistics modules Robonaut 2	Barrett, Michael R. Boe, Eric Drew, B. Alvin Kopra, Timothy L. Lindsey, Steven W. Stott, Nicole P.	Discovery	Launch Pad 39A

Kennedy Media Gallery [Relevance Score: 10 of 10] ⓘ
 ... Category: STS-133, To refine search, enter text here + GO. Open Image KSC-2011-1327. KSC-2011-1327 (02/01/2011) --- CAPE CANAVERAL, Fla. ... [mediaarchive.jsc.nasa.gov/search.cfm?cat=214](#) - 86k - [Request Removal](#)

Home - STS-133/ULF5 JOP [Relevance Score: 10 of 10] ⓘ
 ... STS-133/ULF5 JOP. This Site, Go Search. ... DA8/Flight Director Office > STS-133/ULF5 JOP. STS-133/ULF5 JOP. Shuttle FD ... [modspops.jsc.nasa.gov/mod/DA8/JOP_ulf5_sts133/default.aspx](#) - 123k - 2011-02-09 - [Request Removal](#)

Image Science & Analysis Group (STS-133) [Relevance Score: 10 of 10] ⓘ
 ... STS-133 Mission Information The link to the old web site is generated here. ... Mission Information. Mission: STS-133, Pad: A. Launch: 134, MLP: ... [isag.jsc.nasa.gov/shuttle/ShowPage.pl?template=mission.htm&mission=STS-133](#) - 18k - [Request Removal](#)

Home - STS-133/ULF5 JOP [Relevance Score: 10 of 10] ⓘ
 ... STS-133/ULF5 JOP. This Site, Go Search. ... DA8/Flight Director Office > STS-133/ULF5 JOP. STS-133/ULF5 JOP. Shuttle FD ... [a.gov/mod/DA8/JOP_ulf5_sts133/](#) - 123k - 2011-02-09 - [Request Removal](#)

& Analysis Group (ULF5/STS-133) [Relevance Score: 10 of 10] ⓘ
 Mission Information The link to the old web site is generated formation. Mission: ULF5/STS-133, Vehicle: Discovery. ... [Station/ShowPage.pl?template=mission.htm&mission=ULF5/STS-133](#) - 16k - [Request Removal](#)

Document Library [Relevance Score: 10 of 10] ⓘ
 JOP. This Site, Go Search. ... JOP > STS-133/ULF5 Document Library. STS-133/ULF5 Document Library. ...

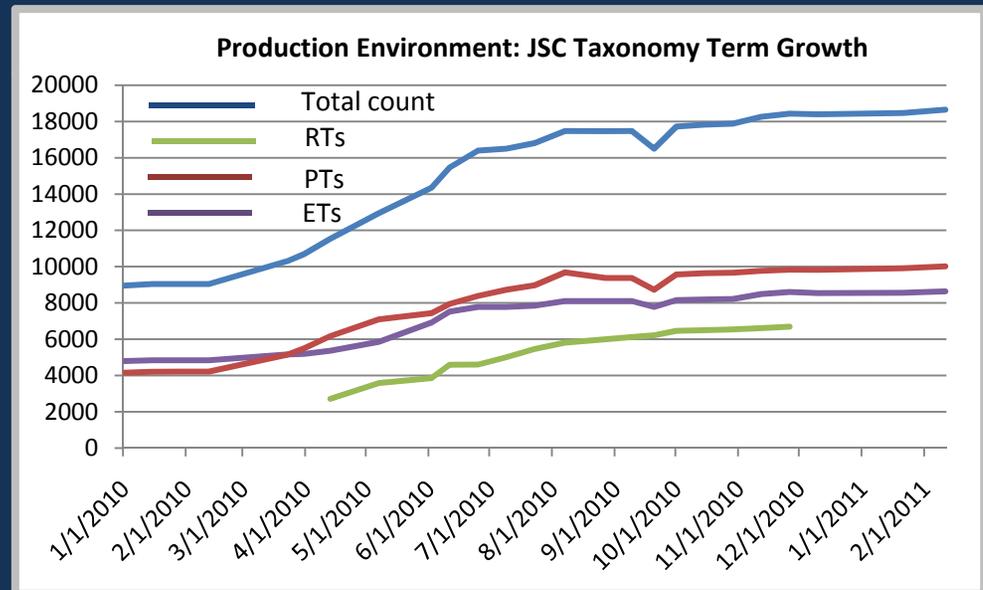
STS-133
 Discovery's STS-133 flight will deliver install the Permanent Multipurpose Module, the Express Logistics Carrier 4 and provide critical spare components to the International Space Station. This will be the 35th shuttle mission to the station, and Discovery's last flight.

Evolution of the Semantic System



Since January 2010, the JSC Taxonomy has more than doubled in term count while the scope of areas covered has grown exponentially! Seven 'Top Level' facets are active in the JSC Google Search.

- Within the facets are over 100 'Classes' (major categorizations), many of which are taxonomies in their own right.
- Within the classes are over 8,000 preferred terms with nearly 17,000 relationships between them. These relationships make up the JSC Ontology!
- Best bet URLs, images and definitions have been added to further enrich results in the Google Search Appliance



RTs= Related Terms
PTs= Preferred Terms
ETs= Equivalence Terms

Encourage User Participation



A	B	C	D	E	F	G	H	I	J	K	L	M	
<u>Preferred Term</u>											<u>Level</u>	<u>Scope Notes</u>	<u>Comments</u>
				STS-126							(level 4)		
				STS-127							(level 4)		
				STS-128							(level 4)		
				STS-129							(level 4)		
				STS-130							(level 4)		
				STS-131							(level 4)		
				STS-132							(level 4)		
				STS-133							(level 4)		
				STS-134							(level 4)		
			Space Station Freedom Program								(level 1)		
			Uncrewed space flight								(level 1)		
												An Explorer mission managed by the Office of Space Science Mission and Payload Development Division focused on the study of accelerated particles arriving from the Sun, interstellar, and galactic sources.	
			Advanced Composition Explorer Mission								(level 2)		
			Advanced Satellite for Cosmology & Astrop								(level 2)		
			Aquarius Mission								(level 2)		
			Asteroidal Cometary Missions								(level 2)		
			Comet Nucleus Tour Mission								(level 3)		

- Allow for user and Subject Matter Expert participation in the development and maintenance of the semantic system.
- Identifying the components and functions of a semantic system makes development more palatable. Spreadsheets are the most common tools!



Encourage User Participation

JSC KNOWLEDGE ONLINE

Search JKO

Home | Case Studies | Resources | Lessons Learned | QMS | Lean 6 Sigma | Storytelling | Voices | Taxonomy | Who To Call

JSC Taxonomy Feedback

STS-133

Programs & Missions » Space Shuttle Program » Space Shuttle missions » Space Shuttle crewed missions » STS-133

Description

Discovery's STS-133 flight will deliver install the Permanent Multipurpose Module, the Express Logistics Carrier 4 and provide critical spare components to the International Space Station. This will be the 35th shuttle mission to the station, and Discovery's last flight.

External Link http://www.nasa.gov/mission_pages/shuttle/shuttlemissions/sts133/index.html

Additional Information

Use For

- Shuttle 133
- Space Shuttle 133
- STS 133

STS-133

JSC Search (Keyword) | JSC Search (Filtered)



Image of the STS-133 mission patch

Related Information

Carried

- [Multi-purpose logistics modules](#)
- [Robonaut 2](#)

Crewed by

- [Barratt, Michael R.](#)
- [Boe, Eric](#)
- [Bowen, Stephen G.](#)
- [Drew, B. Alvin](#)
- [Lindsey, Steven W.](#)
- [Stott, Nicole P.](#)

Has vehicle

- [Discovery](#)

Launched from

- [Launch Pad 39A](#)

Feedback (0)

No feedback exists for this term.

[Web Accessibility and Policy Notices](#) | [JSC Home](#) | Responsible NASA Official: [Jean E. Engle](#) | Curator: [Allan Stilwell](#) | [Site Administration](#)

Last Modified: 12/17/2010 | Visits: 265903

➤ Consider this a monitored folksonomy, meaning the product is centrally broadcast, not individually applied.



What We Have Learned

- Read the manual
- Examine the rulebases
- Maintain separate, but integrated domains
- Governance is both overarching and local
- Don't *require* SMEs to manipulate the semantic system, but allow user participation
- Spread the word
- Test. Test. Test.



What We Suggest

- Plan your semantic system based on end user expectations and how the components of your system will meet them
- Define the scope for each component and personnel working them
- Consider the content to be represented, are there document management procedures in place to serve as a reference?
- Identify the time frame to be included: historical information retrieval, roadmap for the future or both?
- Recognize continuous maintenance and governance needs
- Inform the funders, set realistic expectations



Conclusion

At NASA Johnson Space Center (JSC), the Chief Knowledge Officer has been the champion for developing the JSC Taxonomy to capitalize on the accomplishments of yesterday while maintaining the flexibility needed for the evolving information environment of today.

A clear vision and scope for the semantic system is integral to its success. The vision for the JSC Taxonomy is to connect information stovepipes to present a unified view for information and knowledge across the Center, across organizations, and across decades.

Semantic search at JSC means seamless integration of disparate information sets into a single interface. Ever increasing use, interest, and organizational participation mark successful integration and provide the framework for future application.

Perspective has its Advantages Too!



Tracy Caldwell Dyson
ISS Expedition 24

