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Date: 11/02/07

To: Professor Rob Myre

From: Karen Prieto

Re: Results of Card Sorting Exercise

Hi Rob,

I chose to do a card sort on system administration topics, in order to research how different system administrators (SAs) in my office perceive the various information stored in our document management system.

Audience

My audience includes Solaris™, Linux®, and Windows® SAs who are responsible for routine server maintenance and resolution of any service outages. Based on application requirements for a vacant SA position, our SAs hold at least undergraduate degrees, and have at least two years of administrative experience.

All SAs are familiar with Windows conventions and have typical website navigation skills. Most are used to going to a website or file share to look for technical documentation.

When needed, the SAs consult in-house documentation for procedures, standards, troubleshooting notes, and other support information. These documents are being migrated from various share drives and webservers to a Documentum® repository.

The SAs are ambivalent about Documentum itself, but are enthusiastic about "having a search engine that really works" and "not having to remember which server stores which documents." But some of them prefer to find documents by manually browsing through folders, rather than by using the search engine.

Therefore, I'd like to organize our documents in a way that makes sense to the majority of SAs. (Maybe I should have narrowed my audience to "SAs who browse rather than search." Oh well – next time!)

Research Technique

Instead of conducting my card sorts in person, I opted to go paperless, thanks to ["free study for ten participants"][i] offer at WebSort™.

1.   To set up, I went to WebSort's *Create a Study* page and entered my 30 items (for a list, see *Appendix* on page 10), plus these instructions:

> "The purpose of this card sort is to research how different people organize SA-related information. There is no "correct" response.
>
> Please do these steps:
>
> 1. Review the list of items.
>
> 2. Think about how they relate to each other - in YOUR opinion.

3. Group items by dragging each item into a folder.

(Click the Add Group button to add folders.)

4. Name each folder with a word or words that describe the set of items it contains.

There is no "correct" number of groups. But if you have a group with a large amount of items, you may be able to split it up.

Thank you for taking the time to participate!"

2. Next, I assembled a list of SAs in my Branchburg, NJ office, assigning each a number, for a total of 18. Figuring that not everyone would respond, yet allowing the possibility everyone might, I pulled out my handy virtual d20[ii] (uh, 20-sided die), and rolled, discarding 1s and 20s until I had 10 randomly-selected prospective participants.

3. I then sent my participants this email message (with managerial blessing):

    "Hi,

    When you have a few minutes, could you possibly help me with some research by participating in a card sort study? This is an assignment for a class I'm taking, but will have real life benefits.

    The purpose is to research how different people organize SA-related information (which may help organize our documents in NetLib).

    The study is available online at http://websort.net/go/NetLibCardSort, and will probably take you 10 to 20 minutes.

    If you could visit the site and submit your answers within the next week or so, I'd really appreciate it.

    (Holler if you have questions.)

    Thank you!

    Kp"

A week or so later, I visited WebSort's Study Results page to discover a 50% response rate, and thus my needed five participants!

Results

WebSort provide two types of results: a graphical tree diagram that depicts average item groupings across all entries, and a delimited report each participant's exact responses. The tree diagram is shown in *Figure 1* and the report is posted[iii] online.
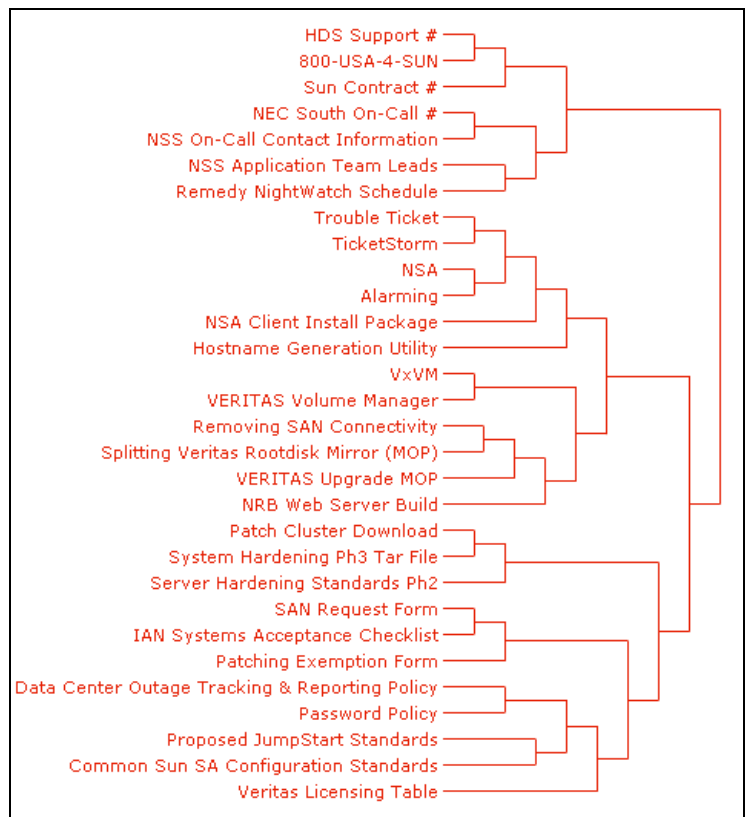

Figure 1

Analysis

Larry Wood recommends three major steps for analyzing card sorts (1):

1. Check the report for suspicious-looking data and identify any invalid entries.

2. Use the tree diagram to determine item groupings

3. Use the report to select group names.

"Suspicious" includes entries with only one or two groupings, along with those that exclude group names. Such entries suggest that the participant was disinterested and did not devote much thought to responses. Fortunately, all of my participants provided valid-looking data, so my "just enough" dataset remains sufficient.

Groupings

Looking at the tree diagram, the first trend involves all the list items relating to contact and call-out information. As you can see in *Figure 2*, participants saw these as closely-related.
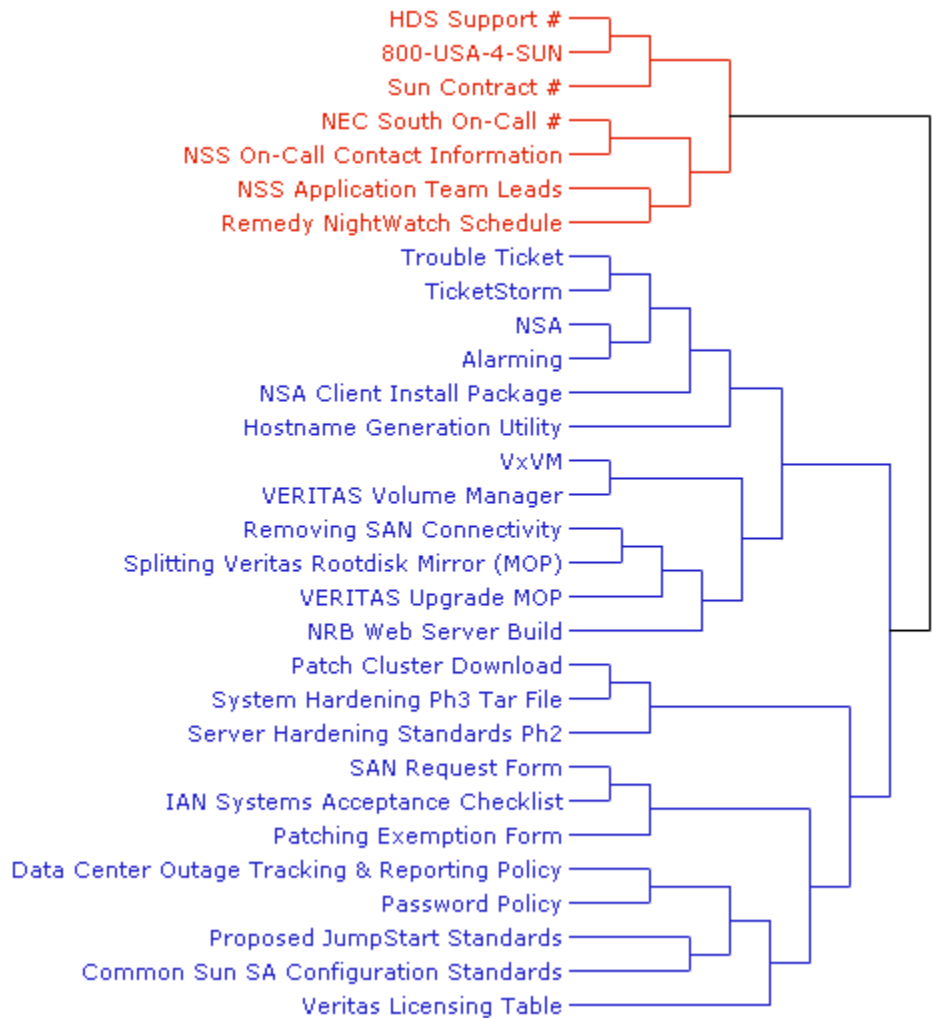

Figure 2

These items are either phone numbers or associate individuals with areas of responsibility (except for "Sun Contract #," which would be used while contacting someone for assistance), and are likely to be referenced by an SA who needs assistance in resolving an issue. This set distinctly divides further into external information (HDS & Sun), and internal (NEC, NSS, and Remedy).

The non-contact / call-out items are distributed fairly evenly into two more groups, as shown in *Figure 3*.
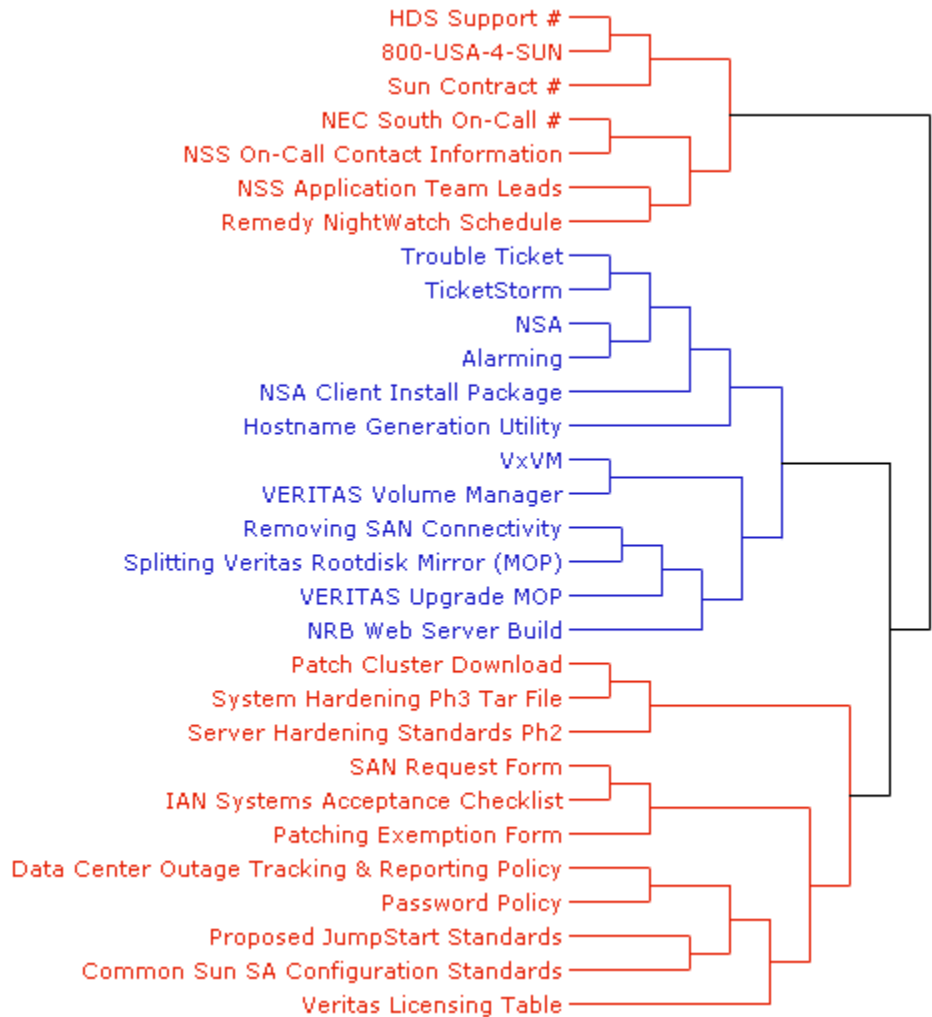

Figure 3

At a glance, the trend here seems to be topics & procedures in one group (the blue), and reference information & forms in the other (red). However a few seemingly-related items are divided across these two groups:

- Patch Cluster Download,

- System Hardening Ph3 Tar File, and

- NSA Client Install Package

… are all binary files, intended to be downloaded and acted upon, rather than viewed and read. But they got separated - perhaps because the third item has an affinity with the blue group's standalone "NSA" item, as well as "TicketStorm" (a legacy name for this software tool), and "Alarming" (which describes the tool's function). Or perhaps the first two items originate from the team that also produces the standards and policy documents found in the red group.

Additionally, "Hostname Generation Utility" seems out of place in the blue group, considering that it performs a function rather than conveys information, and could therefore be viewed in parallel with the red group's forms and checklist which are also more functional than informational. Furthermore, "Hostname Generation Utility" also originates from the team that also produces the standards and policy documents found in the red group.

Despite the oddly-placed items, the three top-level groups - contact info, topics & procedures, references & forms - suggests that the participants focused on function rather than topic. For example,

- "SAN Request Form" is related more closely with "Patching Exemption **Form**" than "Removing **SAN** Connectivity"

- "Proposed JumpStart Standards" (a topic concerning installations and builds) is related more closely with "Common Sun SA Configuration **Standards**" than "NRB Web Server **Build**" or "NSA Client **Install** Package"

- "Veritas Licensing Table," a reference lookup tool, is related more closely with reference information and tools than "VERITAS Volume Manager," "Splitting Veritas Rootdisk Mirror (MOP)," etc.

However, when the non-contact / call-out items are subdivided, only the outer groups remain functional. The others become topic-oriented. In *Figure 4* on page 6, the three middle groups (blue, red, blue) each equate closely to a fairly narrow topic: alarming/ticketing, SAN/volume management (NRB Web Server Build is an oddball here), and hardening/patching.
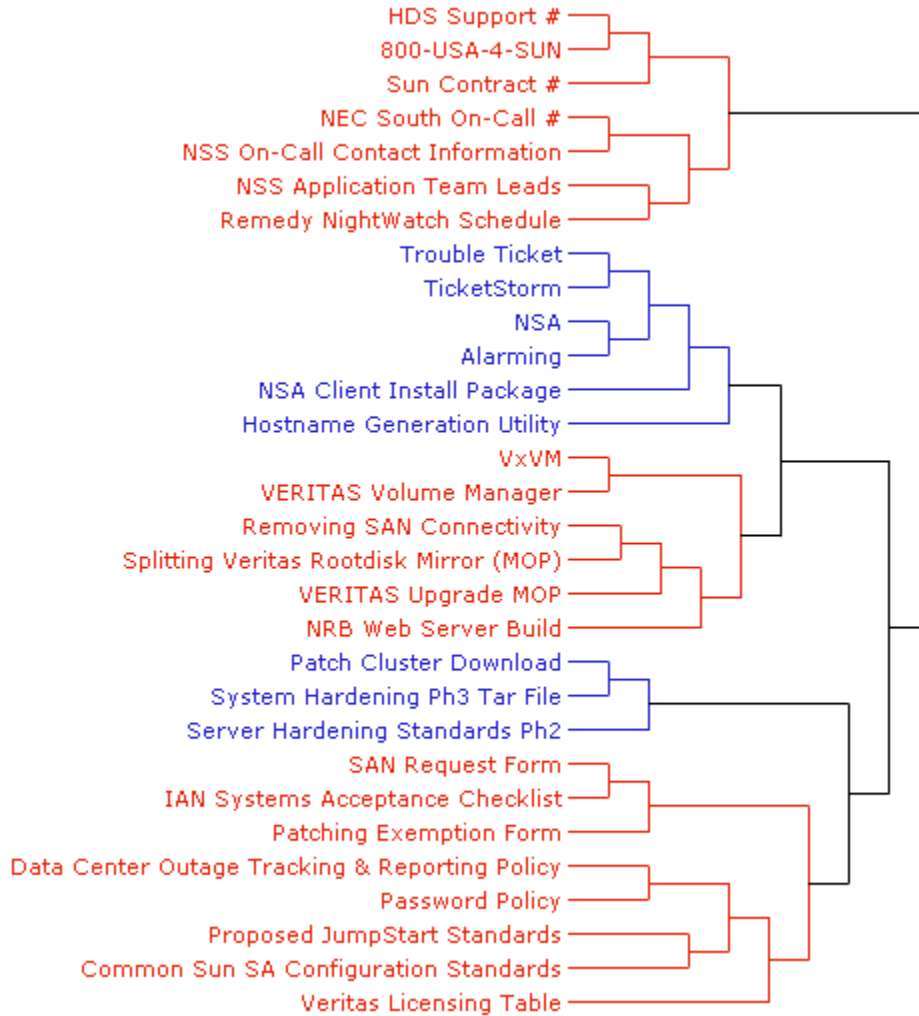
Figure 4

Group Names

To examine group names, I surmounted my inhibitions about running strange macros, and applied WebSort's [Group Names Frequency Excel® macro](iv) against my delimited report. This produced [a list](v) of each card sort item followed each group name in which it appears, and the frequency in which it appears. After a few touches of my own to facilitate filtering, I determined that "Support Contacts," "Downloads," "Forms," and "Standards" are the most common group names (see *Table 1*).

Table 1   Most Common Names

Item	Group Name	Freq
HDS Support #	Support Contacts	2
800-USA-4-SUN	Support Contacts	2
Sun Contract #	Support Contacts	2

Item	Group Name	Freq
NEC South On-Call #	Support Contacts	2
NSS On-Call Contact Information	Support Contacts	2
NSS Application Team Leads	Support Contacts	2
Remedy NightWatch Schedule	Support Contacts	2
HDS Support #	Vendor Support Contact	1
800-USA-4-SUN	Vendor Support Contact	1
Sun Contract #	Vendor Support Contact	1
NSAs	Downloads	2
NSA Client Install Package	Downloads	2
Patch Cluster Download	Downloads	2
Patch Cluster Download	Administration Downloads	1
System Hardening Ph3 Tar File	Downloads	2
System Hardening Ph3 Tar File	Administration Downloads	1
Server Hardening Standards Ph2	Administration Downloads	1
SAN Request Form	Forms	2
IAN Systems Acceptance Checklist	Forms	2
Patching Exemption Form	Forms	2
Hostname Generation Utility	Standards and Forms	1
SAN Request Form	Standards and Forms	1
IAN Systems Acceptance Checklist	Standards and Forms	1
Patching Exemption Form	Standards and Forms	1
Data Center Outage Tracking & Reporting Policy	Standards and Forms	1
Password Policy	Standards and Forms	1
Proposed JumpStart Standards	Standards and Forms	1
Common Sun SA Configuration Standards	Standards and Forms	1
Veritas Licensing Table	Standards and Forms	1
Server Hardening Standards Ph2	Standards and Policies	1
Data Center Outage Tracking & Reporting Policy	Standards and Policies	1
Password Policy	Standards and Policies	1
Proposed JumpStart Standards	Standards and Policies	1
Common Sun SA Configuration Standards	Standards and Policies	1
Hostname Generation Utility	Standards	1
Server Hardening Standards Ph2	Standards	1
Patching Exemption Form	Standards	1

Item	Group Name	Freq
Password Policy	Standards	1
Proposed JumpStart Standards	Standards	1
Common Sun SA Configuration Standards	Standards	1

I also determined that "procedure," "how-to," and "MOP" are pretty much interchangeable (see *Table 2*).
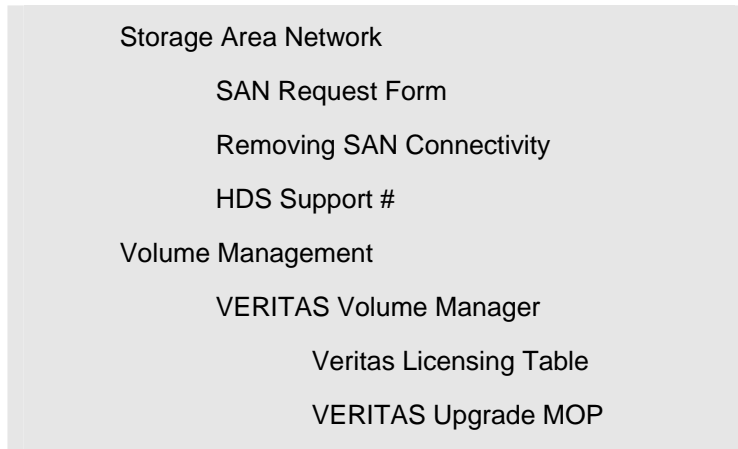
Table 2   Analogous Names

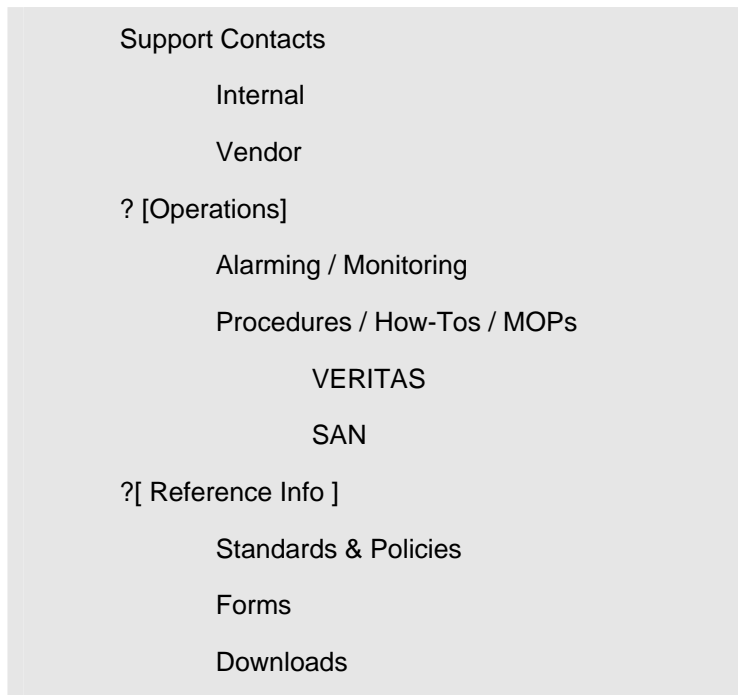| Item	Group Name	Freq
NSA	Howto's	1
NSA Client Install Package	Howto's	1
Hostname Generation Utility	Howto's	1
VxVM	Administration Procedures and MOPs	1
VxVM	Howto's	1
VERITAS Volume Manager	Administration Procedures and MOPs	1
VERITAS Volume Manager	Howto's	1
Removing SAN Connectivity	Administration Procedures and MOPs	1
Removing SAN Connectivity	Howto's	1
Removing SAN Connectivity	Procedures and Howtos	1
Removing SAN Connectivity	Procedures and MOPs	1
Splitting Veritas Rootdisk Mirror (MOP)	Administration Procedures and MOPs	1
Splitting Veritas Rootdisk Mirror (MOP)	Howto's	1
Splitting Veritas Rootdisk Mirror (MOP)	Procedures and Howtos	1
Splitting Veritas Rootdisk Mirror (MOP)	Procedures and MOPs	1
VERITAS Upgrade MOP	Administration Procedures and MOPs	1
VERITAS Upgrade MOP	Procedures and Howtos	1
VERITAS Upgrade MOP	Procedures and MOPs	1
NRB Web Server Build	Administration Procedures and MOPs	1
NRB Web Server Build	Procedures and Howtos	1
NRB Web Server Build	Procedures and MOPs	1
Common Sun SA Configuration Standards	Howto's	1

Despite these similarities, though, I also see many variations. The closer I look at the individual responses in the original report, the more differences I see – in both groupings and group names.

Recommendations

Currently, the Documentum repository is organized more by topic, than function. For example,

> Storage Area Network
>
> > SAN Request Form
> >
> > Removing SAN Connectivity
> >
> > HDS Support #
>
> Volume Management
>
> > VERITAS Volume Manager
> >
> > > Veritas Licensing Table
> > >
> > > VERITAS Upgrade MOP

But according to the trends in the NetLib card sort study, the repository should be more functionally-focused. Based on the five groups in the tree diagram, the repository could be organized something like this:

> Support Contacts
>
> > Internal
> >
> > Vendor
>
> ? [Operations]
>
> > Alarming / Monitoring
> >
> > Procedures / How-Tos / MOPs
> >
> > > VERITAS
> > >
> > > SAN
>
> ?[Reference Info]
>
> > Standards & Policies
> >
> > Forms
> >
> > Downloads

Such a reorganization would be significant, essentially inverting the existing repository structure. Since this would be a drastic change, I would like to have a greater degree of certainty before implementing it. Reviewing a larger set of card sort data, and perhaps finding "tie breakers" for some of the variations would probably help with this. Therefore, I should conduct a second card sort study, with a larger set of participants, before applying major changes to the repository.

References

Myre, Robert. "Week 8 Course Notes: Usability Concepts – Task Analysis." <u>PTC 632-851, Content Management and Information Architecture</u>. New Jersey Institute of Technology, Newark, NJ. Oct. 2007.

Wood, Larry. "Analyzing the Results of a WebSort Study." <u>WebSort Card Sorting: Improve the organization of your site</u>. Parallax, L.L.C. 2 Nov 2007. <http://websort.net/maincontent/Analysis.pdf>

Appendix

Card sort values:

1. NSS Application Team Leads
2. Patch Cluster Download
3. SAN Request Form
4. Veritas Licensing Table
5. Sun Contract #
6. Trouble Ticket
7. Data Center Outage Tracking & Reporting Policy
8. Hostname Generation Utility
9. Server Hardening Standards Ph2
10. Remedy NightWatch Schedule
11. Removing SAN Connectivity
12. Proposed JumpStart Standards
13. HDS Support #
14. System Hardening Ph3 Tar File
15. IAN Systems Acceptance Checklist
16. Common Sun SA Configuration Standards
17. TicketStorm
18. 800-USA-4-SUN
19. NSA
20. Password Policy
21. Alarming
22. VxVM
23. Splitting Veritas Rootdisk Mirror (MOP)
24. NEC South On-Call #

25. NRB Web Server Build

26. Patching Exemption Form

27. NSS On-Call Contact Information

28. NSA Client Install Package

29. VERITAS Volume Manager

30. VERITAS Upgrade MOP

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[i] http://websort.net/?pg=features

[ii] http://www.wizards.com/dnd/dice/dice.htm

[iii] http://www.geocities.com/kprieto01/NJIT/PTC632/netlibcardsort_102507.xls

[iv] http://websort.net/macros/GrpNamesFreqMacro.xls

[v] http://www.geocities.com/kprieto01/NJIT/PTC632/NetLibGrpNamesFreq.xls