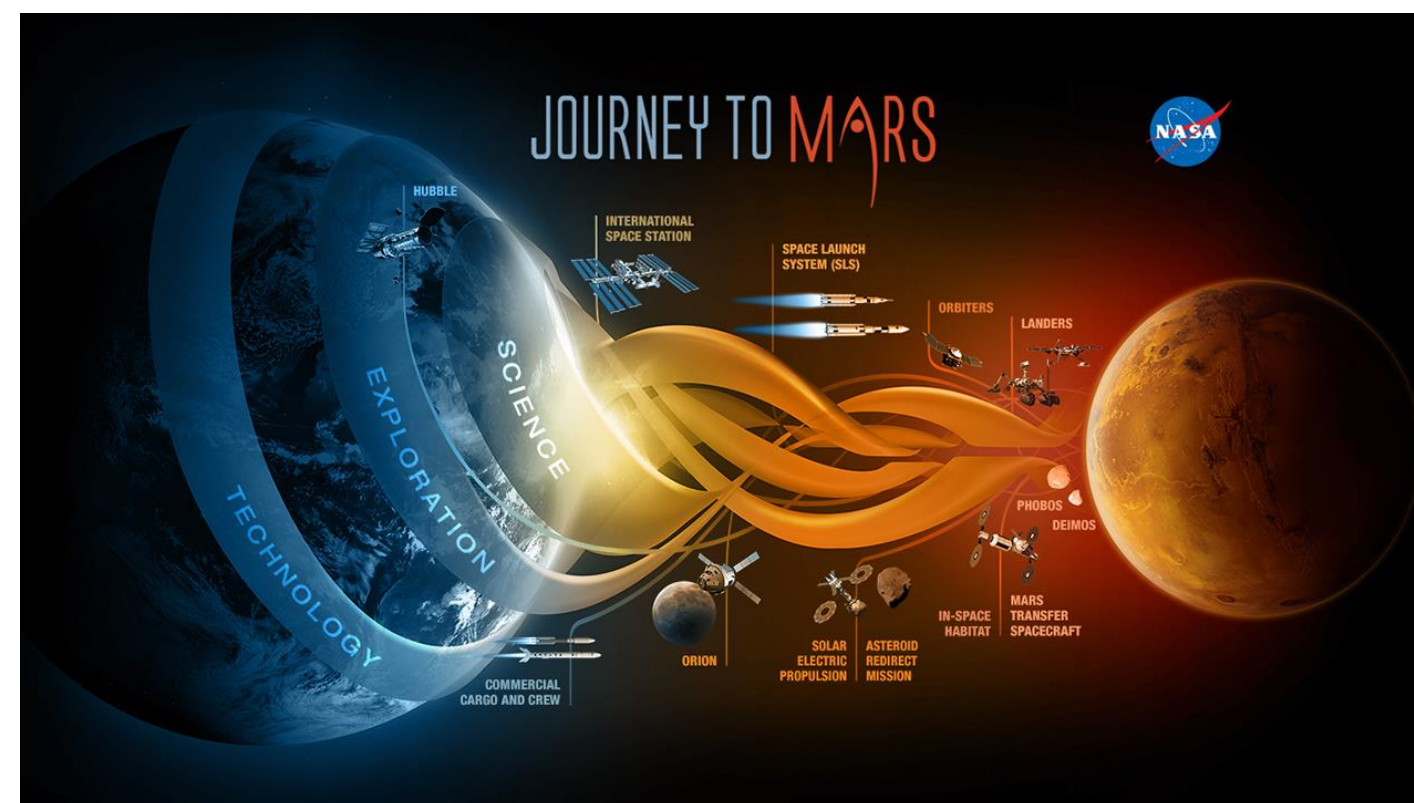


NASA Habitat: Framework for an analysis of preference communication

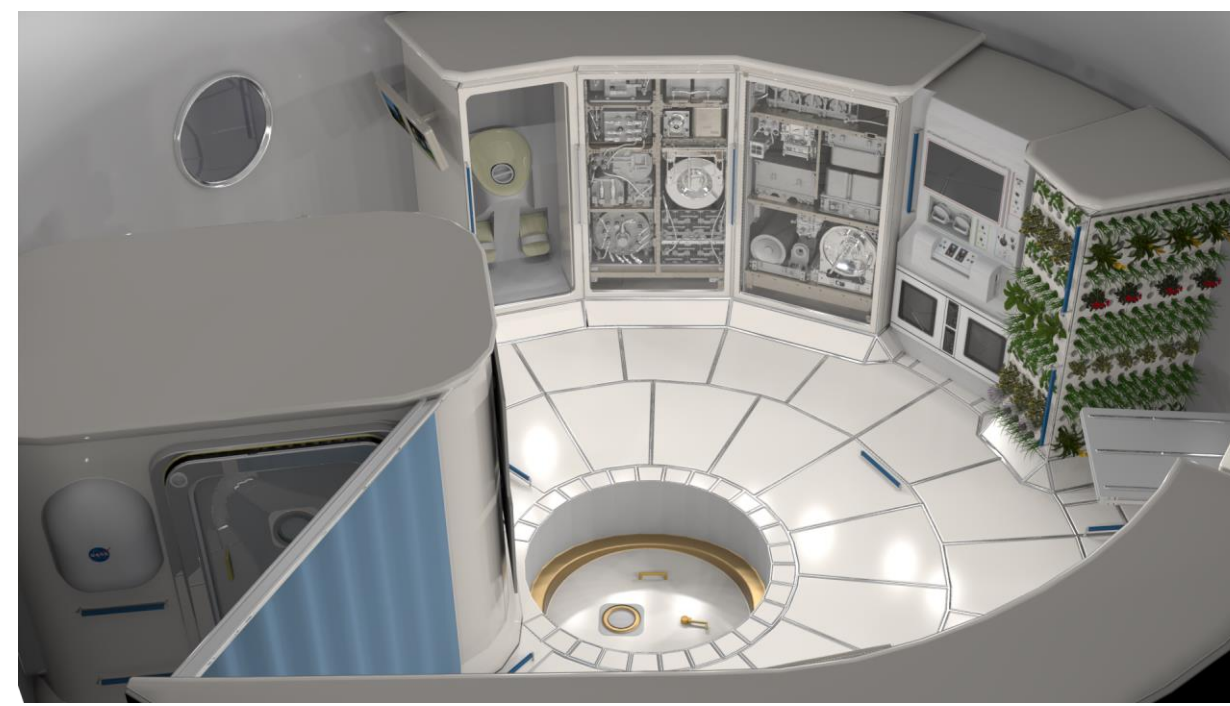
Giulia Palma – Industrial & Systems Engineering and Engineering Management

Overview

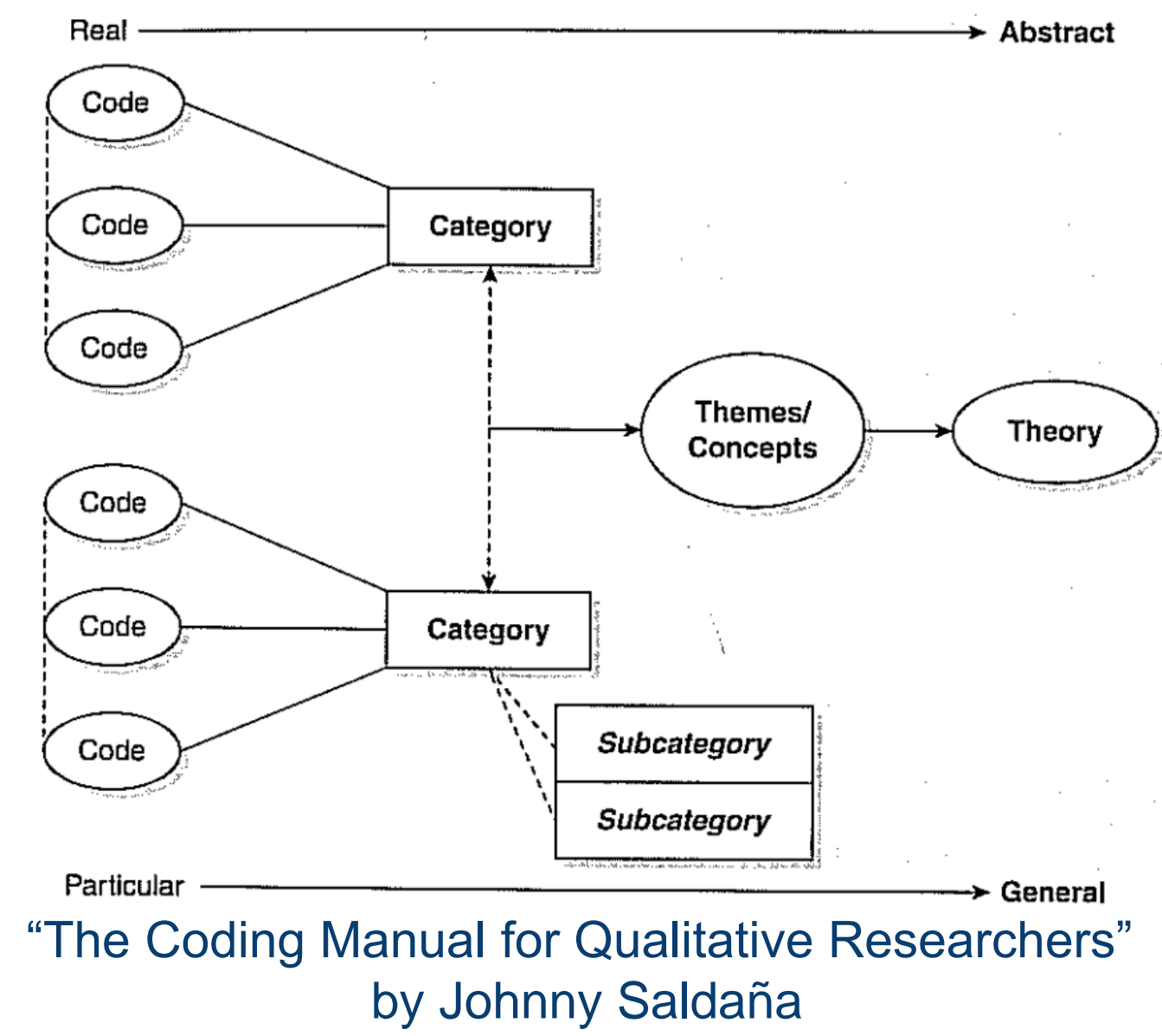
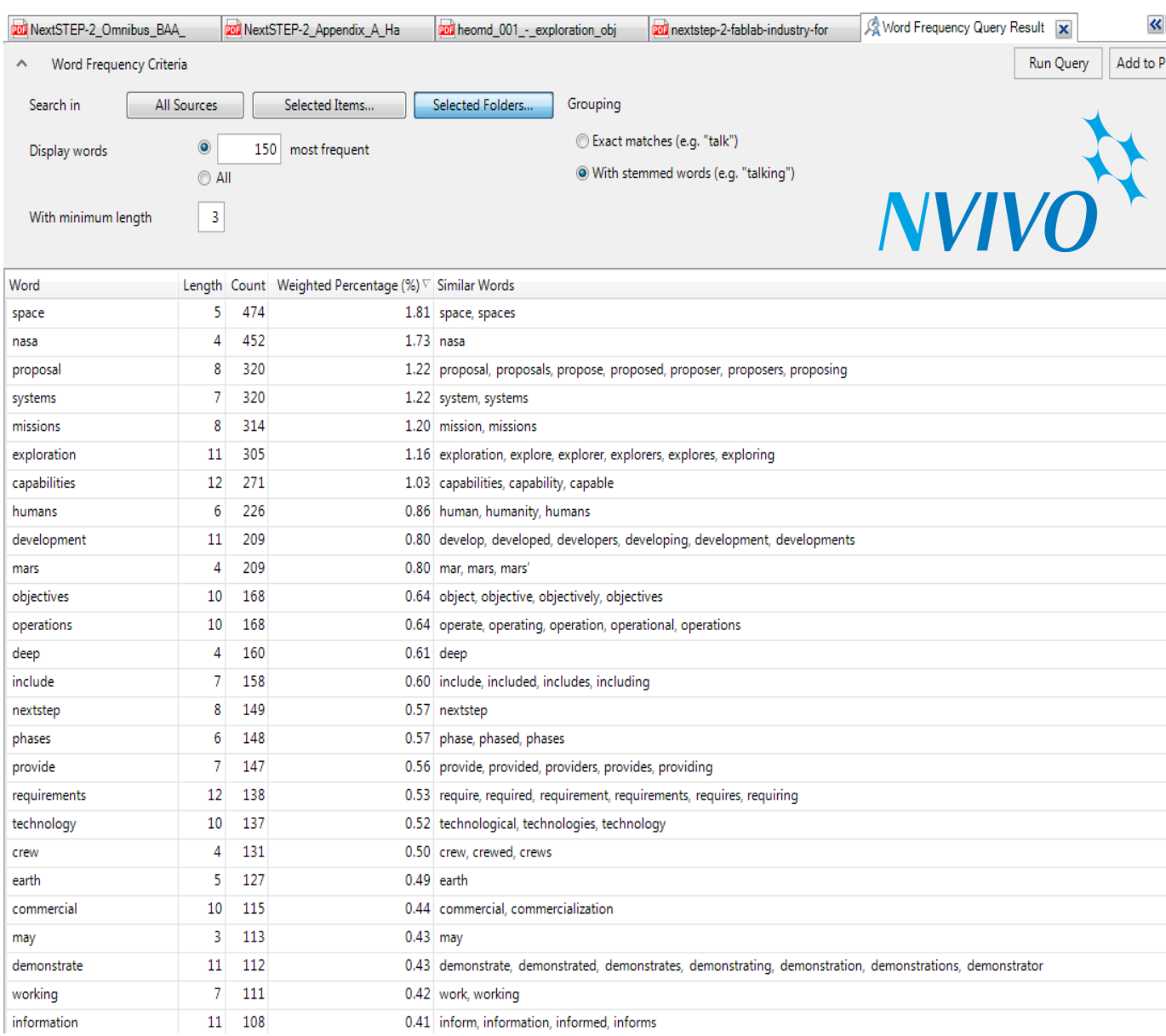
This research focuses on analyzing how NASA communicated its preferences to the NextSTEP-2 (Next Space Technologies for Exploration Partnerships) partners. This research will form a value model using qualitative data analysis. NextSTEP-2 is a Broad Agency Announcement (BAA) that fosters private-public partnerships between NASA and six commercial space companies.



NASA's Journey to Mars from www.nasa.gov



Concept image of inside of a Habitat from www.nasa.gov

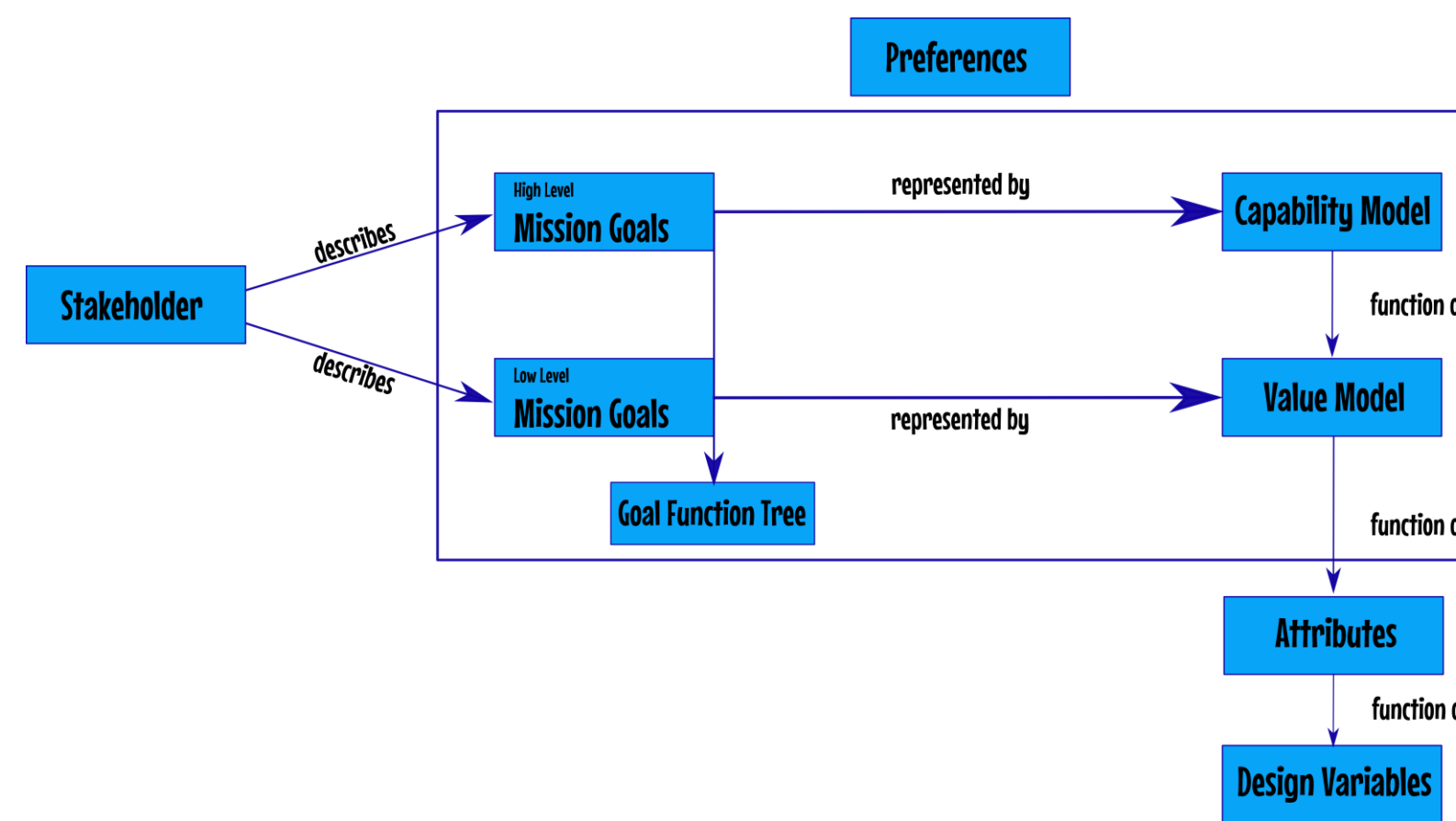
Word	Length	Count	Weighted Percentage (%)	Similar Words
space	5	474	1.81	space, spaces
nasa	4	452	1.73	nasa
proposal	8	320	1.22	proposal, proposals, propose, proposed, proposer, proposers, proposing
systems	7	320	1.22	system, systems
missions	8	314	1.20	mission, missions
exploration	11	305	1.16	exploration, explore, explorer, explores, exploring
capabilities	12	271	1.03	capabilities, capability, capable
humans	6	226	0.86	human, humanity, humans
development	11	209	0.80	develop, developed, developers, developing, development, developments
mars	4	209	0.80	mar, mars, mars
objectives	10	168	0.64	object, objective, objectives, objectives
operations	10	168	0.64	operate, operating, operation, operational, operations
deep	4	160	0.61	deep
include	7	158	0.60	include, included, includes, including
nextstep	8	149	0.57	nextstep
phases	6	148	0.57	phase, phased, phases
provide	7	147	0.56	provide, provided, provides, providing
requirements	12	138	0.53	require, required, requirements, requires, requiring
technology	10	137	0.52	technological, technologies, technology
crew	4	131	0.50	crew, crews, crews
earth	5	127	0.49	earth
commercial	10	115	0.44	commercial, commercialization
may	3	113	0.43	may
demonstrate	11	112	0.43	demonstrate, demonstrated, demonstrates, demonstrating, demonstration, demonstrations, demonstrator
working	7	111	0.42	work, working
information	11	108	0.41	inform, information, informed, informs

NVivo 11 Word Frequency query interface

Intellectual Merit

The novel development of a value model framework, taking into consideration the preferences identified through the qualitative coding, can be beneficial to understanding how the preference communication process occurs. A significant portion of systems engineering relies on the communication of preferences. Improving communication and understanding how communication currently occurs is an important research area to further explore.

Value Model Framework



A value model is a mathematical representation of the stakeholder's preferences. The qualitative analysis from NVivo 11 will be used to identify the preferences communicated by NASA through the BAA.



Word Cloud from second word frequency query run in NVivo 11

Methodology

Appendix A of the BAA-Habitat issued in April 2016, and other Habitat related documents, are being qualitatively coded to find patterns and to study NASA's preferences. A qualitative code is a summative word assigned to a paragraph, or sentence, of a document that is believed to best represent that part of the document. These codes are run through NVivo11 software to study trend analysis and preferences.

Future Work & Broader Impact

After coding and analysis are completed, a value model that captures NASA's preferences regarding cislunar Habitat will be developed. Value models of the industry partners will also be developed. An analysis of changes in value models with respect to time will be performed. Such value models will be useful to effectively and efficiently communicate preferences in a large organization.

Acknowledgements

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