PERFORMANCE DATA ANALYSIS YOU CAN USE

Cecilia ("CeCe") Daniels-Harrod and Barbara Phillips

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Abstract

- Time is always of the essence at fast-moving missions at NASA's Goddard Space Flight Center (GSFC). Launch dates loom. To turn project data into information that can be used for decision making requires use of business intelligence software such as Tableau to quickly analyze and keep it relevant.
- Business intelligence software can analyze data coming from a myriad of sources, including earned value and financial, and enables the ability to join and review data to quickly discover anomalies critical for decision making.
- This presentation will cover the mass of data and provides examples of how business intelligence software supports data convergence for reporting.

Contents

- Project Details: NASA GSFC Satellite Servicing, Restore-L and RRM3
- Problem Statement
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Excel is fine to hold the data. It's fine to do an overview but you can't do any analysis in Excel.
Tableau is about using charts and being able to actually gain insight from them.
Tableau helps people transform data into actionable insights.

Project Details: NASA GSFC Satellite Servicing

NASA Goddard Space Flight Center's (GSFC) Satellite Servicing Projects Division is advancing the state of the art in robotic and human servicing through the management of servicing missions, the execution of targeted technology development campaigns, and the infusion and transfer of servicing capabilities to government and industry stakeholders.

Satellite Servicing is working to:

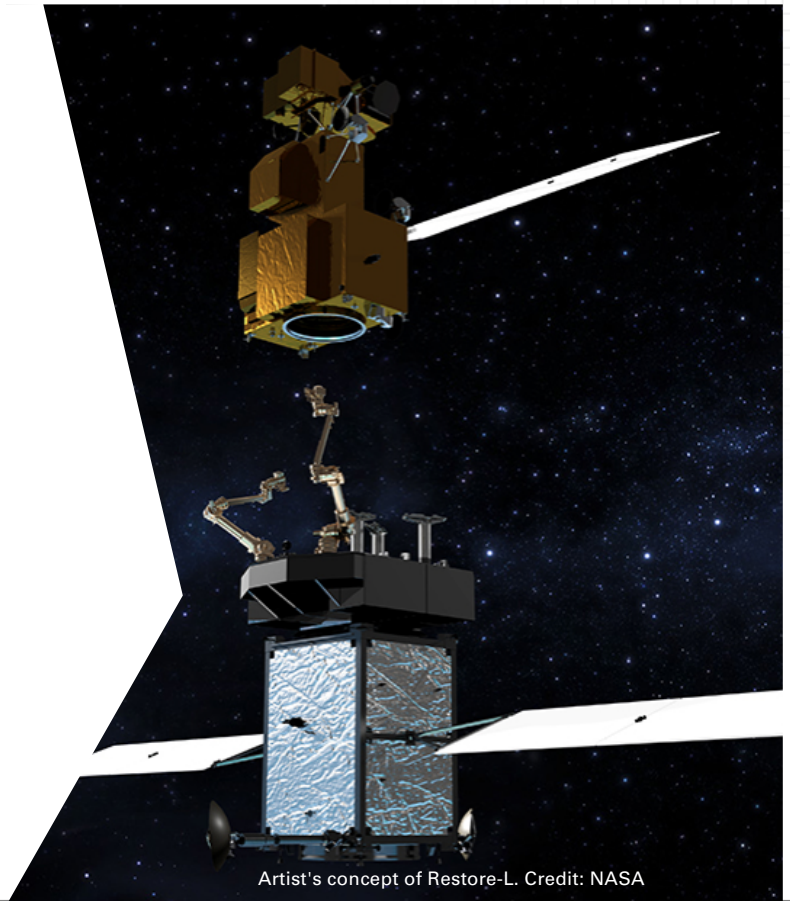
- Advance the state of robotic servicing technology to enable the routine servicing of satellites that were not designed with servicing in mind.
- Position the U.S. to be the global leader in in-space repair, maintenance and satellite disposal.
- Help to enable a future U.S. industry for the servicing of satellites.

Projects:

- **Restore-L:** In Development, Launch date: 2022
- **Robotic Refueling Mission (RRM3):** Launched to International Space Station in Low Earth Orbit (LEO) December 5, 2018 on SpaceX CRS 16.

Project Details: Restore-L and RRM3

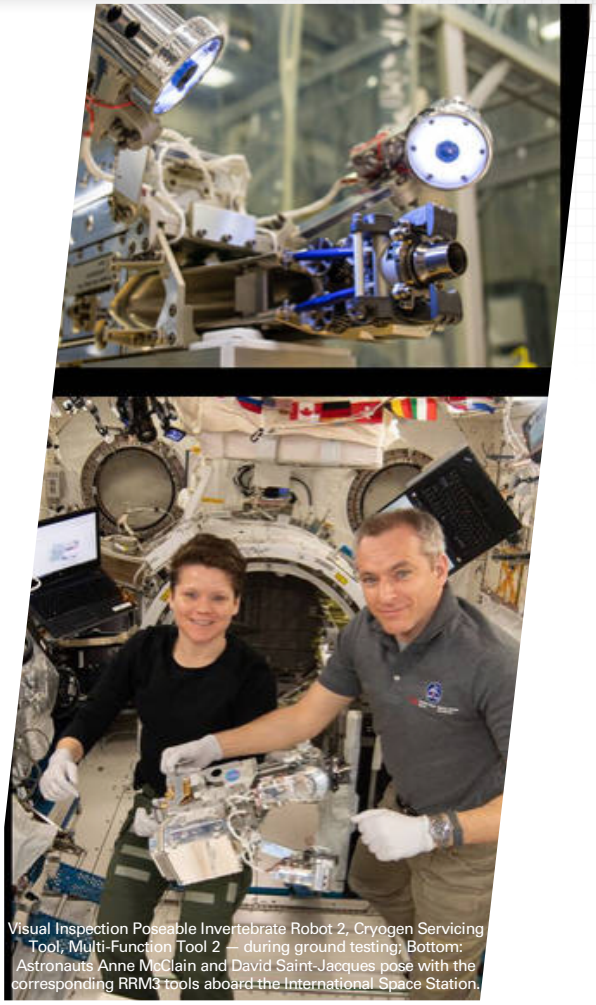
- During its mission, the Restore-L servicer will rendezvous with, grasp, refuel and relocate a government-owned satellite to extend its life.
- Successfully completing this mission will demonstrate that servicing technologies are ready for incorporation into other NASA missions, including exploration and science ventures.
- NASA also plans to transfer Restore-L's technologies to commercial entities to help jumpstart a new domestic servicing industry.



Artist's concept of Restore-L. Credit: NASA

Project Details: RRM3

- Launched in December 2018
- Partial Tools Assembled February 2019 in ISS



Visual Inspection Poseable Invertebrate Robot 2, Cryogen Servicing Tool, Multi-Function Tool 2 — during ground testing; Bottom: Astronauts Anne McClain and David Saint-Jacques pose with the corresponding RRM3 tools aboard the International Space Station.

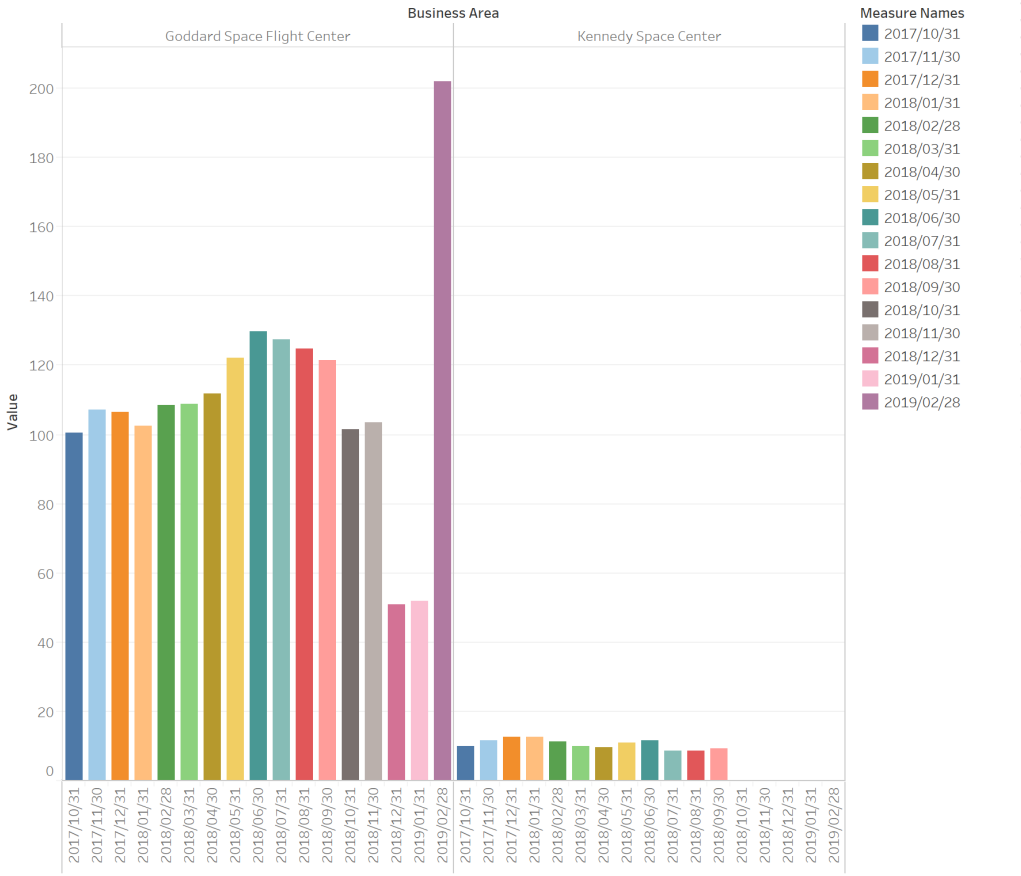
Problem Statement

To improve project management support, NASA has embarked on reorganizing the program planning and control (PP&C) operations by converting from a project-based to a matrix-based organizational structure. NASA wants to enable an efficient work force without the confines of staff dedicated to a project.

Using tableau, we wanted to investigate the transition to the matrix-based and learn its effect on staffing projects.

Scenario: What does the data tell us?

Hint:
Note the months/year. What was in the news?



2017/10/31, 2017/11/30, 2017/12/31, 2018/01/31, 2018/02/28, 2018/03/31, 2018/04/30, 2018/05/31, 2018/06/30, 2018/07/31, 2018/08/31, 2018/09/30, 2018/10/31, 2018/11/30, 2018/12/31, 2019/01/31 and 2019/02/28 for each Business Area. Color shows details about 2017/10/31, 2017/11/30, 2017/12/31, 2018/01/31, 2018/02/28, 2018/03/31, 2018/04/30, 2018/05/31, 2018/06/30, 2018/07/31, 2018/08/31, 2018/09/30, 2018/10/31, 2018/11/30, 2018/12/31, 2019/01/31 and 2019/02/28. The view is filtered on Business Area, which keeps Goddard Space Flight Center and Kennedy Space Center.

Scenario: What does the data tell us?

Hint:
Compare and contrast the raw numbers vs the percentages

A few acronyms:

- ISTD — Engineering Instrument Systems & Technol
- POD — Program Operations Division
- MESAD — Mission Engineering & System Analysis Div
- MSD — Engineering Mechanical System Division

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Data View

CCDescLvl2	Year of Date 2016	2017	2018
Astrophys Proj	6.1	4.2	
Flight Mgmt		0.1	
Protective Service		0.5	
EarSci		0.5	0.0
EOP		0.0	0.0
Flight Proj	131.4	17.4	0.0
JPSS POL Sate	0.8	0.6	0.1
BMO	0.1	1.8	0.2
CFO			0.4
STRO		0.3	0.5
POES	0.4	1.9	1.0
Sa & Miss Assur		5.1	2.2
OCFO		0.5	2.8
Explore Space	0.4		3.5
SolarSys	0.0	0.1	3.9
Instrument Proj	0.2	2.8	8.5
Assur Sys Division	2.8	8.0	9.7
Safety Div	3.5	6.9	10.3
Quality and Rel	13.5	18.0	11.2
POD	18.5	25.1	13.6
Eng & Tech	23.9	33.0	37.0
ISTD	3.8	22.2	44.0
MSD	79.6	95.6	77.4
EED	45.7	97.1	109.8
INFOSYS	82.9	164.4	137.8
Satellite Serv	9.7	139.2	138.6
MESAD	106.1	232.4	226.1

FTE: -25.8 232.4

Sum of FTE broken down by Date Year vs. CCDescLvl2. Color shows sum of FTE. The marks are labeled by sum of FTE. The view is filtered on Date Year, which keeps 2016, 2017 and 2018.

Data View

CCDescLvl2	Year of Date 2016	2017	2018	Grand To..
Astrophys Proj	0.27%	0.19%		0.46%
Flight Mgmt		0.01%		0.01%
Protective Service		0.02%		0.02%
EarSci		0.02%	0.00%	0.02%
EOP		0.00%	0.00%	0.00%
Flight Proj	5.85%	0.78%	0.00%	6.63%
JPSS POL Sate	0.04%	0.03%	0.00%	0.07%
BMO	0.00%	0.08%	0.01%	0.09%
CFO			0.02%	0.02%
STRO		0.01%	0.02%	0.04%
POES	0.02%	0.09%	0.04%	0.15%
Sa & Miss Assur		0.23%	0.10%	0.33%
OCFO		0.02%	0.12%	0.15%
Explore Space	0.02%		0.16%	0.17%
SolarSys	0.00%	0.00%	0.17%	0.18%
Instrument Proj	0.01%	0.12%	0.38%	0.51%
Assur Sys Division	0.13%	0.36%	0.43%	0.92%
Safety Div	0.16%	0.31%	0.46%	0.92%
Quality and Rel	0.60%	0.80%	0.50%	1.90%
POD	0.83%	1.12%	0.60%	2.55%
Eng & Tech	1.06%	1.47%	1.65%	4.18%
ISTD	0.17%	0.99%	1.96%	3.11%
MSD	3.54%	4.26%	3.45%	11.25%
EED	2.03%	4.32%	4.89%	11.25%
INFOSYS	3.69%	7.32%	6.14%	17.15%
Satellite Serv	0.43%	6.20%	6.17%	12.81%
MESAD	4.73%	10.35%	10.07%	25.14%

% of Total FTE: 0.00% 10.35%

% of Total FTE broken down by Date Year vs. CCDescLvl2. Color shows % of Total FTE. The marks are labeled by % of Total FTE. The view is filtered on Date Year, which keeps 2016, 2017 and 2018. Percents are based on the whole table.

Conclusion

Business intelligence tools are the future. MS Excel has some of the same features as Tableau but Tableau is more visually appealing and illuminating.

Speaker Bios

Cecelia Daniels-Harrod, NASA GSFC

- Phone: 443-975-1337 E-mail: cdanielsharrod@gmail.com
- **Career Highlights:** Ms. Daniels-Harrod is a Sr Accountant at GSFC. Currently she is a Senior Resource Analyst. She develops actions plans to improve the quality of NASA's financial accounting system – Systems Applications Products (SAP). She monitors the SAP account systems to identify problems. Started her career in State of Maryland in the Prince George (PG) County's library system as a programmer as well as taught at PG Community College. Work at various companies including Amtrak as well as the private sector before coming to NASA in 1999 and continuing today.
- **Education**: MS, Technology Management, University of Maryland University College

Barbara Phillips, PMP, EVP, Eagle One Solutions, Inc. (EOSi)

- Phone: 703-626-4752 E-Mail: bphillips@EOSiOnline.com
- **Career Highlights:** Ms. Phillips is Director of Performance Management Solutions at Eagle One Solutions, Inc. (EOSi), a small business specializing in performance management, acquisition and contraction management, business process management, human capital management, IT project management, strategic planning, cost/schedule analysis, and program assessment support. Ms. Phillips is a recognized leader in the EVM community. Prior to joining EOSi, Ms. Phillips was an EVM SME for ASRC Federal/InuTeq LLC at NASA Goddard Space Flight Center where she implemented EVM on a large flight project. As the EV Program Architect at L-3 STRATIS' Center for Performance Management, she initiated and deployed a strategy for the development and implementation of sustainable earned value management systems across the division. At BAE Systems, she led EVM consulting assignment to provide subject matter expertise in EVMS implementations and integrated project management.
- Ms. Phillips is an active volunteer with the College of Performance Management (CPM). For 7+ years she's been a dean of the Organization and Structures training track at *EVM World* and I*ntegrated Project Management Workshop (IPMW)* conferences and for 5+ years she's been the President of CPM WDC. Further, she has provided presentations addressing EVM and project management at several forums including the *EVM World, Integrated Project Management Workshop (IPMW)* and Deltek *Insight* conference.
- **Education**: BA in American Studies from The George Washington University, Washington, DC and MS Information Systems from George Mason University, Fairfax, VA