Shaping Workforce with

Business Intelligence

NASA

Cost and Schedule Symposium 2023

at the Jet Propulsion Lab

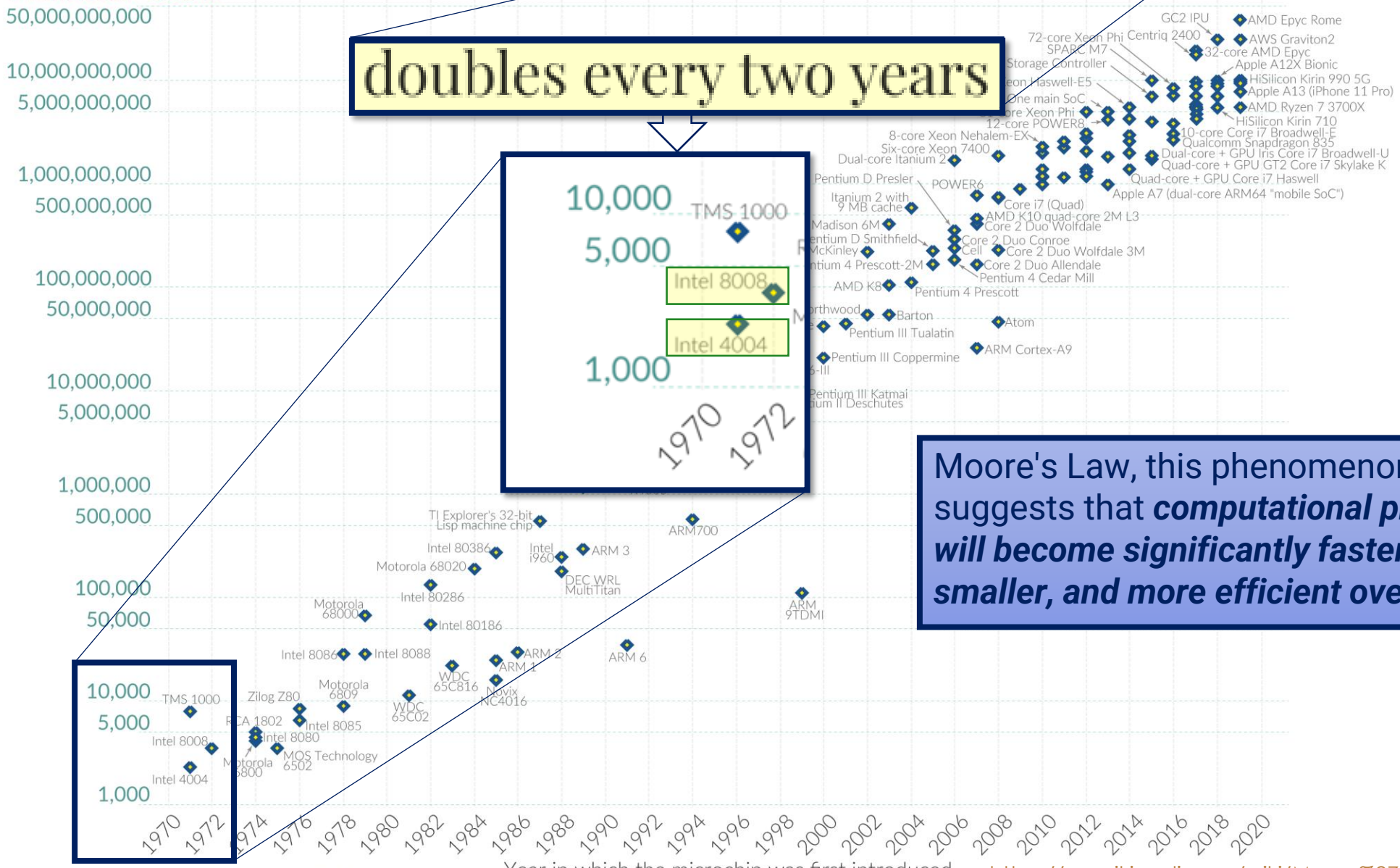
Jeff Fajardo

May 2023

Moore's Law: The number of transistors on microchips doubles every two years

Moore's law describes the empirical regularity that the number of transistors on integrated circuits doubles approximately every two years. This advancement is important for other aspects of technological progress in computing – such as processing speed or the price of computers.

Our World in Data

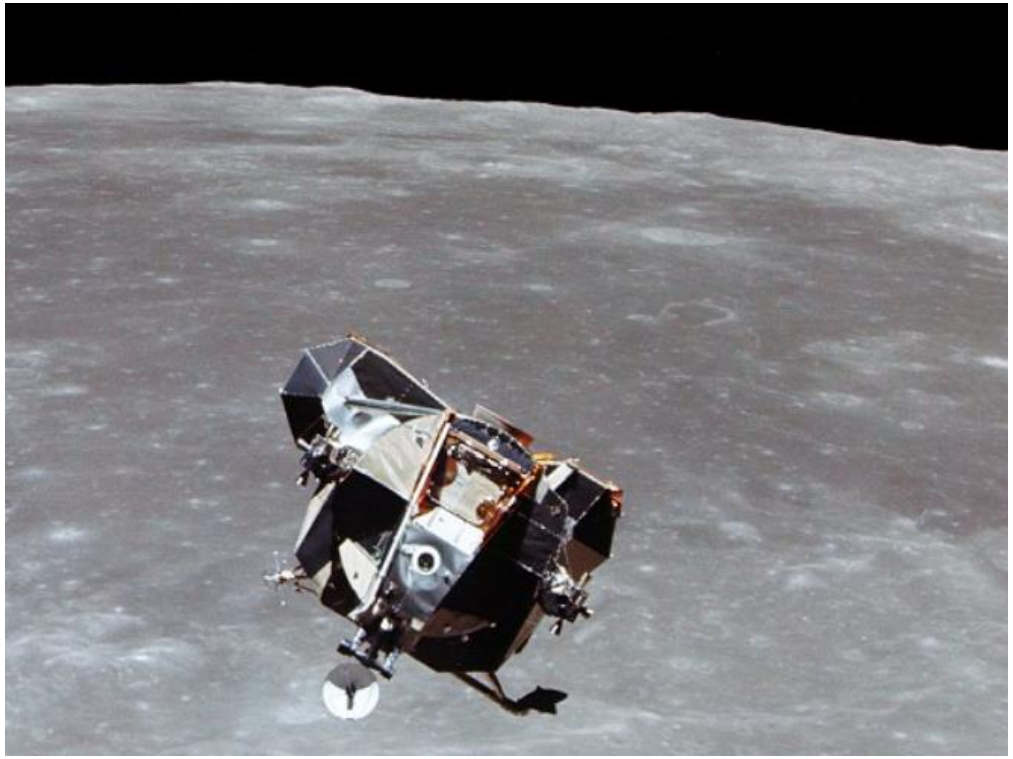


Moore's Law, this phenomenon suggests that ***computational progress will become significantly faster, smaller, and more efficient over time.***

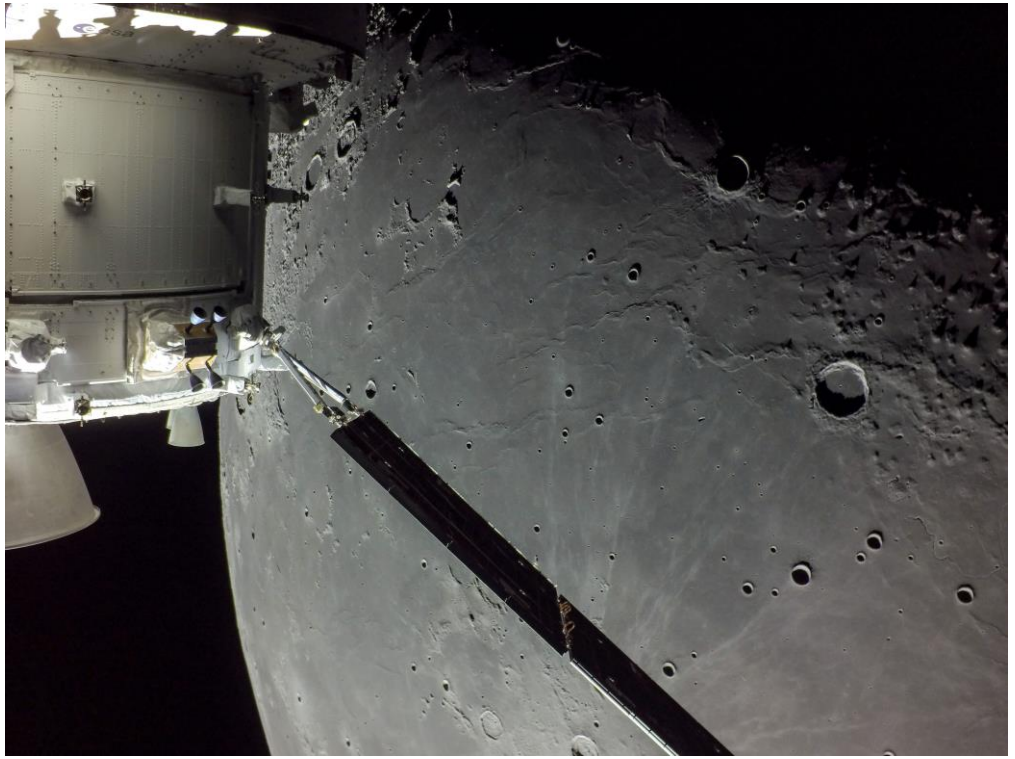
Data source: Wikipedia (wikipedia.org/wiki/Transistor_count)
OurWorldinData.org – Research and data to make progress against the world's largest problems.

https://en.wikipedia.org/wiki/Moore%27s_law

Apollo 11
1969



Artemis-I
2022



53 years of technological advancement

Can you tell the difference?

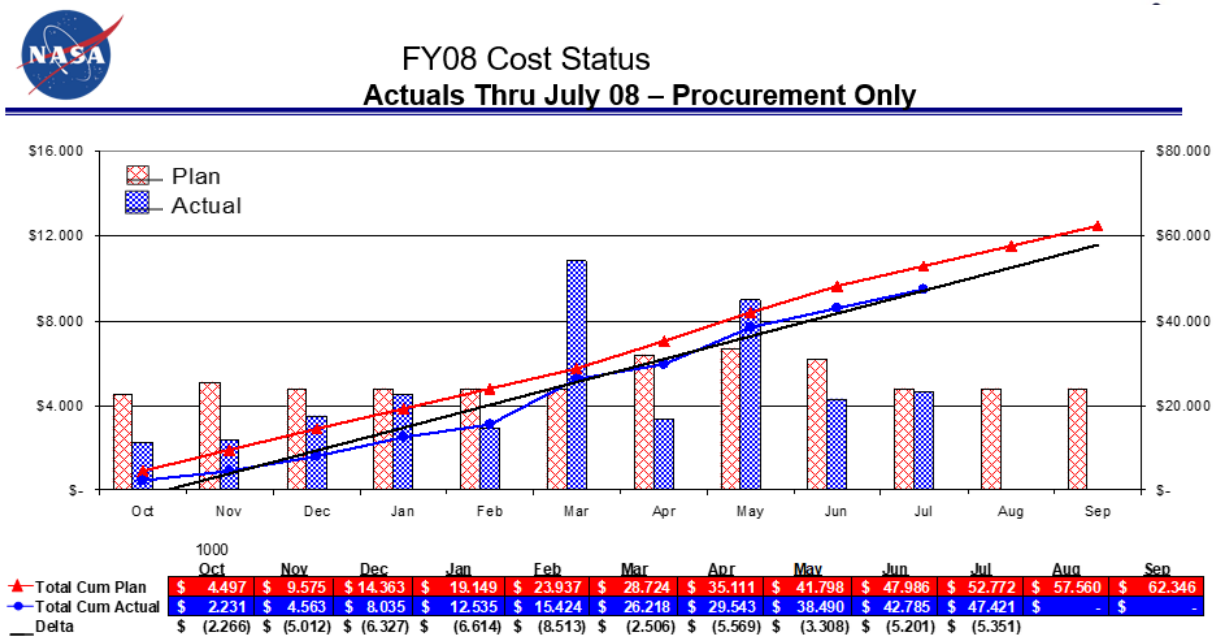
Hubble
2008

Webb
2022

14 years of technological advancement

Can you tell the difference?

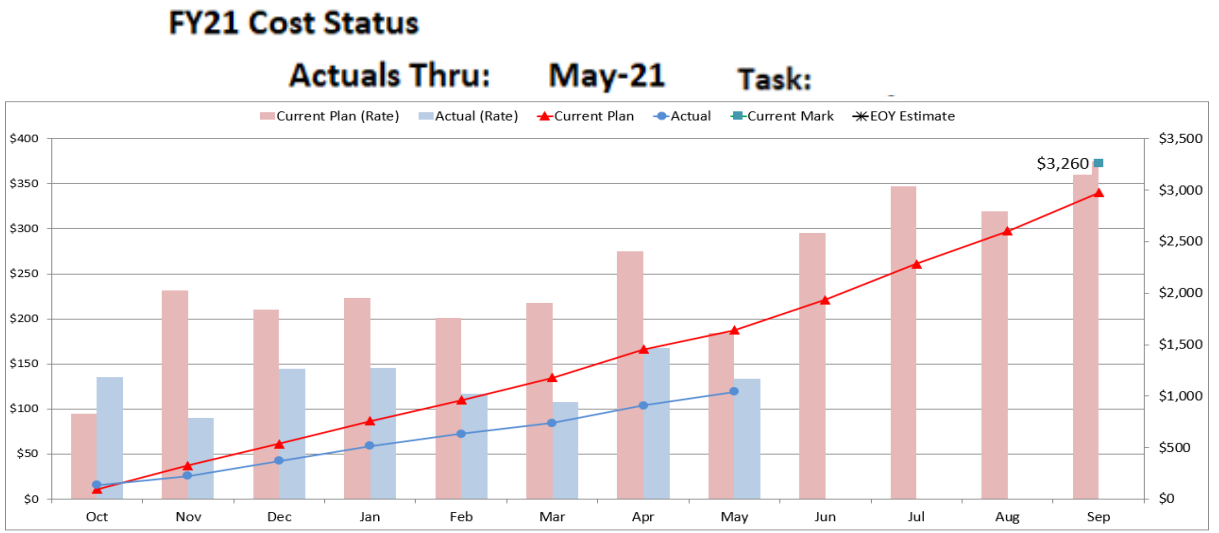
Cost Performance Charts 2008



1000

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Total Cum Plan	$ 4.497	$ 9.575	$ 14.363	$ 19.149	$ 23.937	$ 28.724	$ 35.111	$ 41.798	$ 47.986	$ 52.772	$ 57.560	$ 62.346
Total Cum Actual	$ 2.231	$ 4.563	$ 8.035	$ 12.535	$ 15.424	$ 26.218	$ 29.543	$ 38.490	$ 42.785	$ 47.421	$ -	$ -
Delta	$ (2.266)	$ (5.012)	$ (6.327)	$ (6.614)	$ (8.513)	$ (2.506)	$ (5.569)	$ (3.308)	$ (5.201)	$ (5.351)		

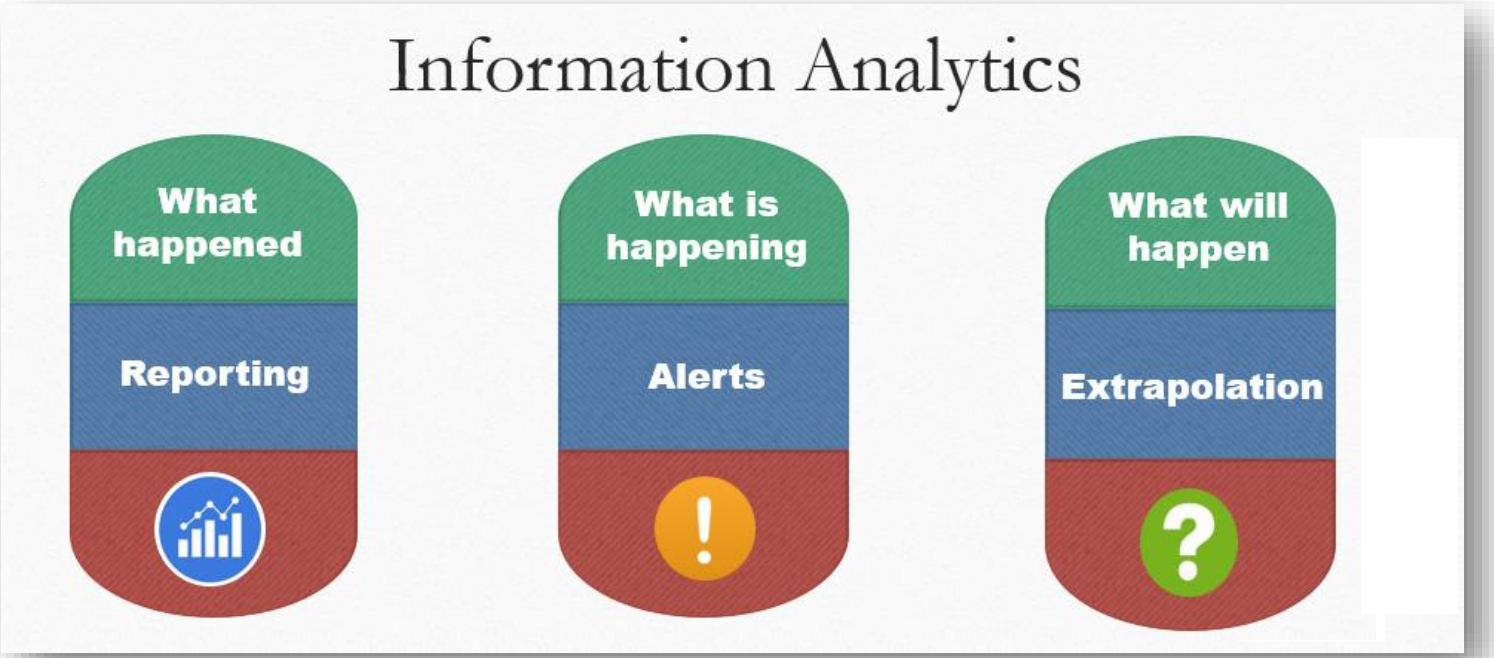
Cost Performance Charts 2021



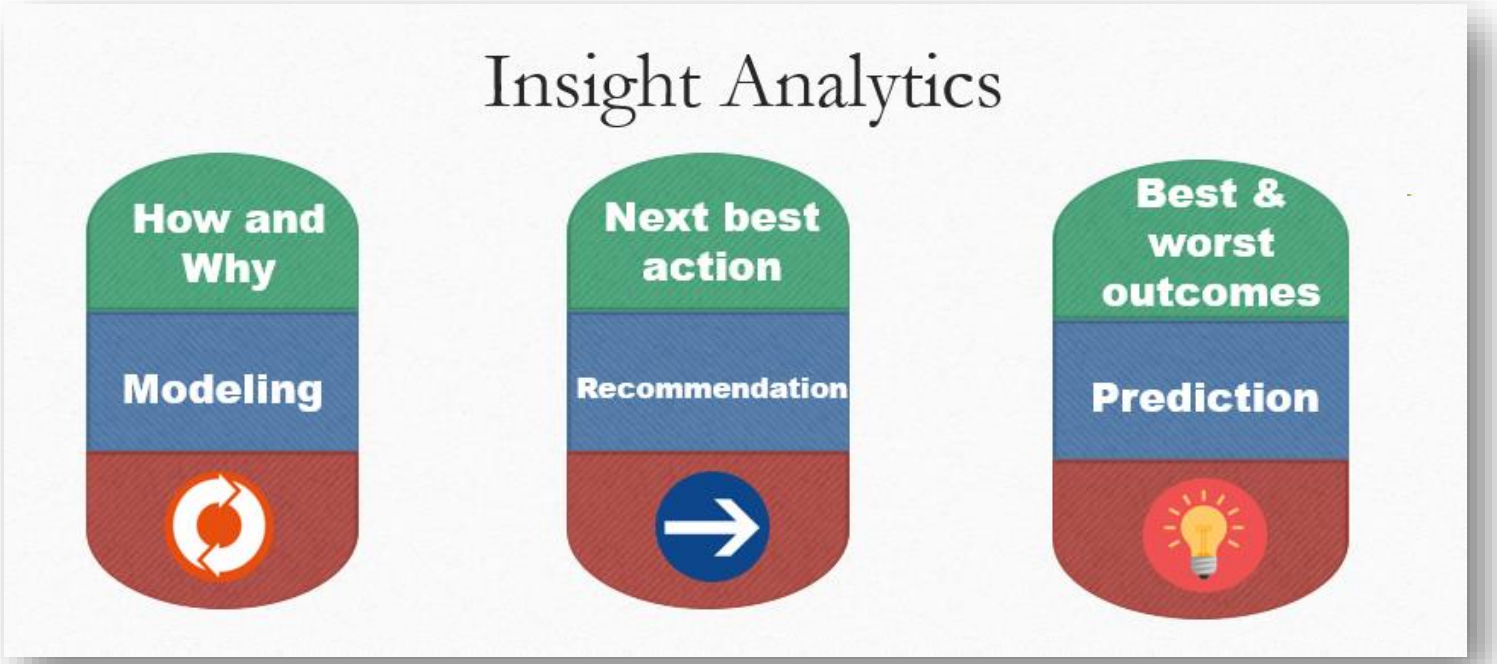
Total	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Carryout
Baseline Plan	94	326	536	760	961	1,179	1,454	1,638	1,934	2,281	2,601	2,976	283
Current Plan	94	326	536	760	961	1,179	1,454	1,638	1,934	2,281	2,601	2,976	283
Actual	135	225	370	515	632	739	907	1,040					
DELTA	*41*	*(100)*	*(166)*	*(245)*	*(329)*	*(439)*	*(547)*	*(598)*					

13 years in between

Can you tell the difference?



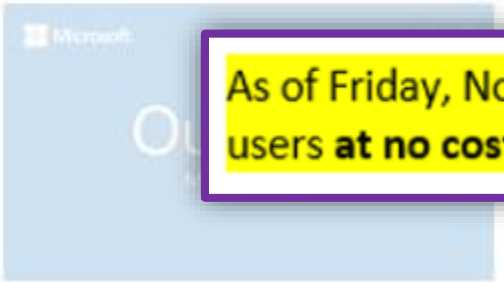
Data-Driven Decision making = Value



Source:

Analytics at Work: Smarter Decisions, Better Results

by Thomas H. Davenport, Jeanne G. Harris, Robert Morison



As of Friday, November 18, Power BI Pro is now available to all NASA end users **at no cost**!

Advisory: Power BI Pro Now Available to All NASA End Users

JSC-OCIO-Outreach

To: JSC-DL-JSC-Civil-Servants;JSC-DL-JSC-Contractors

Cc: JSC-OCIO-Outreach

Signed By: jsc-ocio-outreach@mail.nasa.gov

You forwarded this message on 11/28/2022 4:03 AM.

Please use the links included in the message to learn more about Power BI Pro.

...TION OFFICER

Distribution Date:	November 18, 2022
To:	NASA Personnel
Subject:	Advisory: Power BI Pro Now Available to All NASA End Users
What's Happening:	As of Friday, November 18, Power BI Pro is now available to all NASA end users **at no cost**! You can request Power BI Pro via the NASA Access Management System (NAMS) by completing the Power BI Pro License Entitlement request. Requests will be automatically approved, as long as you have a NASA mailbox.
Background:	Power BI Pro is a suite of business intelligence (BI) software services, apps, and connectors that let you easily connect your data sources, visualize, and share. Power BI can turn your unrelated sources of data into coherent, visually immersive, and interactive insights. With Power BI Pro, you can discover what is important and share that with anyone or everyone you want.

National Aeronautics and Space Administration

Office of the Administrator
Mary W. Jackson NASA Headquarters
Washington, DC 20546-0001

TO: Officials-in-Charge of Headquarters Offices
Directors, NASA Centers
NASA Acquisition Workforce

FROM: Deputy Administrator and Chief Acquisition Officer

Pamela A. Melroy

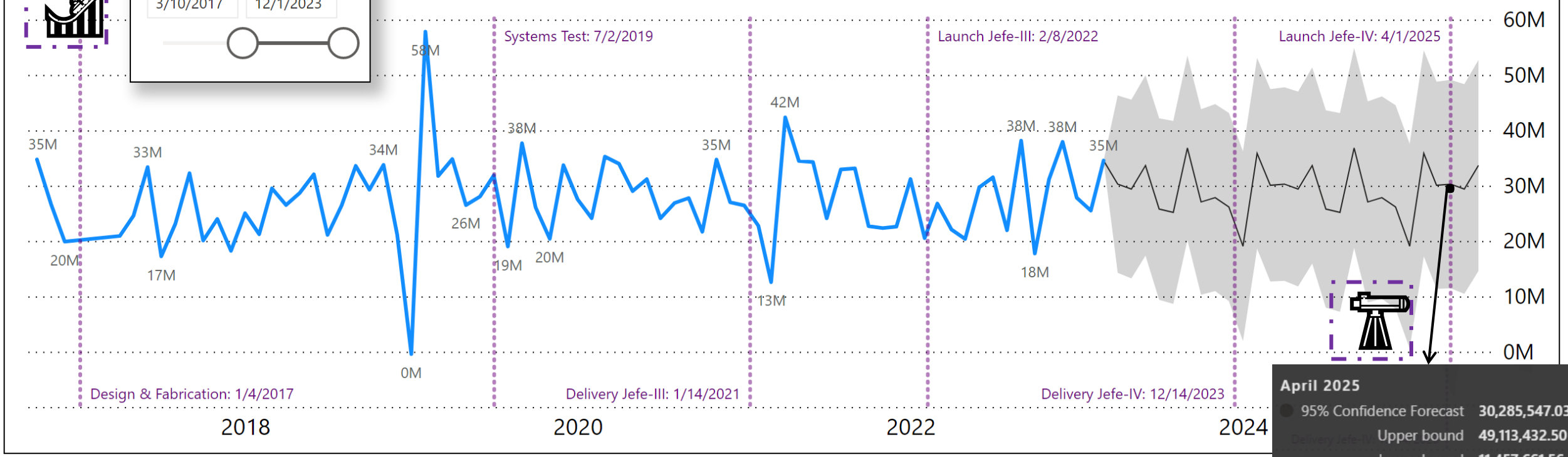
SUBJECT: NASA Chief Acquisition Officer's Intent

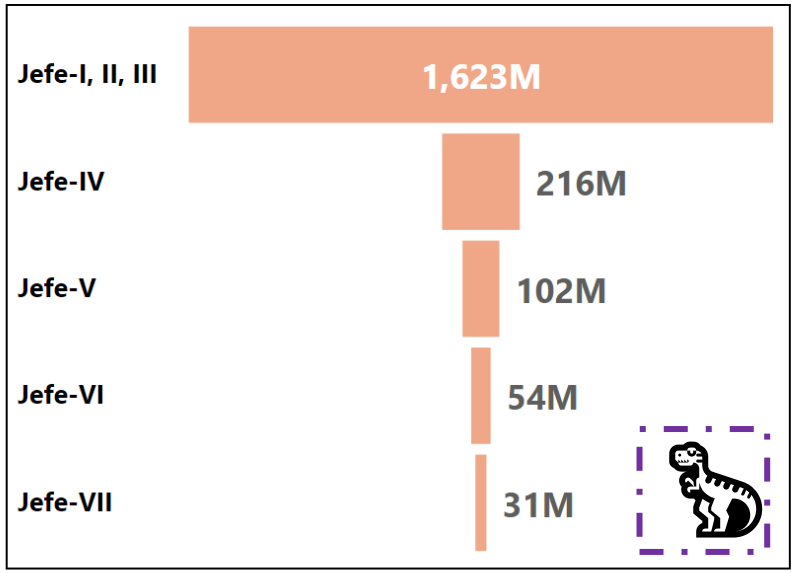
- **Empowering the Project Management Workforce:** We will develop and foster communities of practice within the procurement, project management, and PP&C disciplines. These communities of practice will develop and share best practices, lessons learned, data access, and tool implementation techniques. We will also invest in software and tools so that practitioners from disparate parts of the Agency can easily access shared repositories of project information, handbooks and guidance documents, and data. These workforce networks must foster an understanding of NASA's policies, best practices, and planning tools and must aid in easing and streamlining our acquisition workforce's execution and oversight of hardware and services.

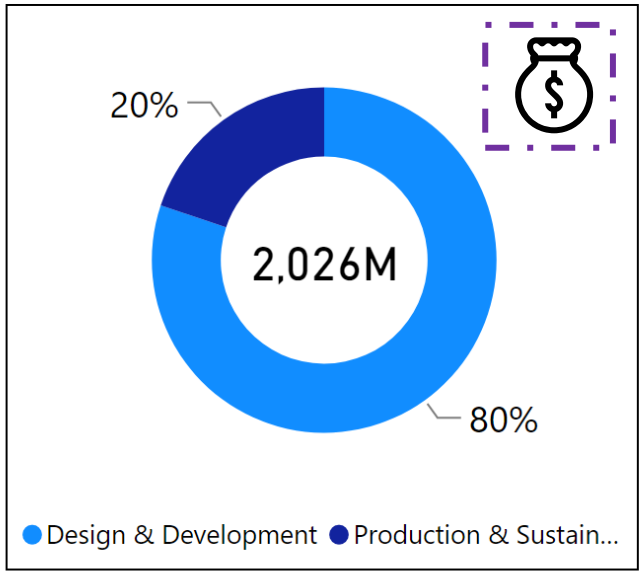
Project Jefe

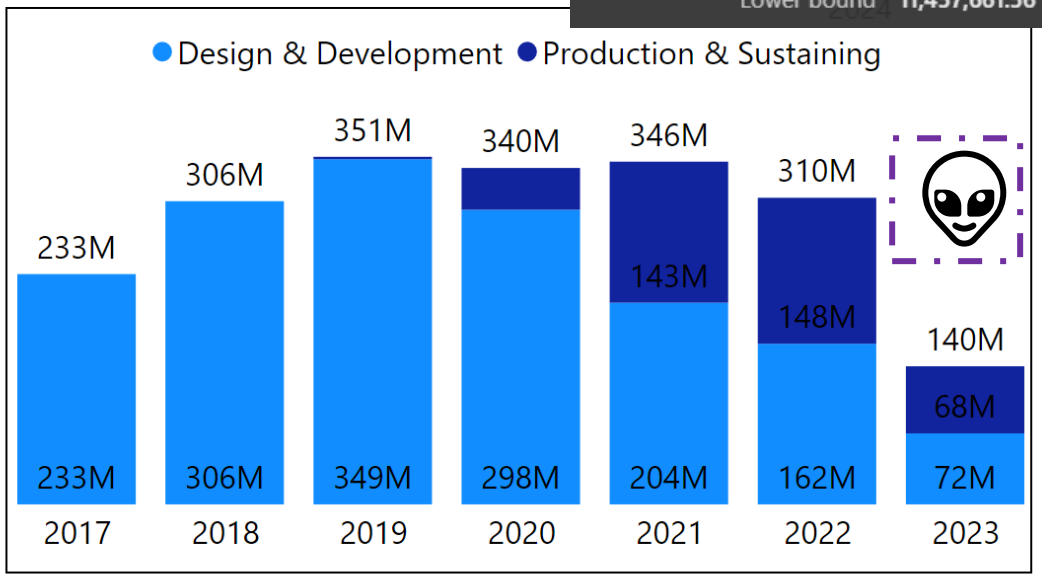
*Mock Data

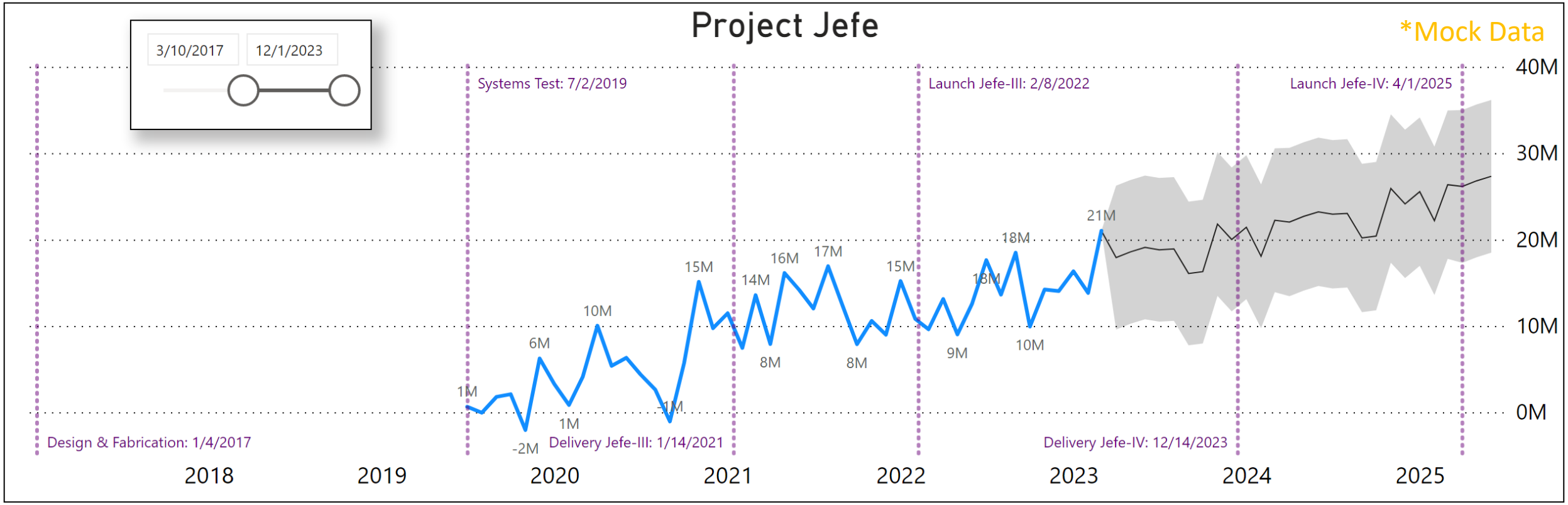
3/10/2017 — 12/1/2023

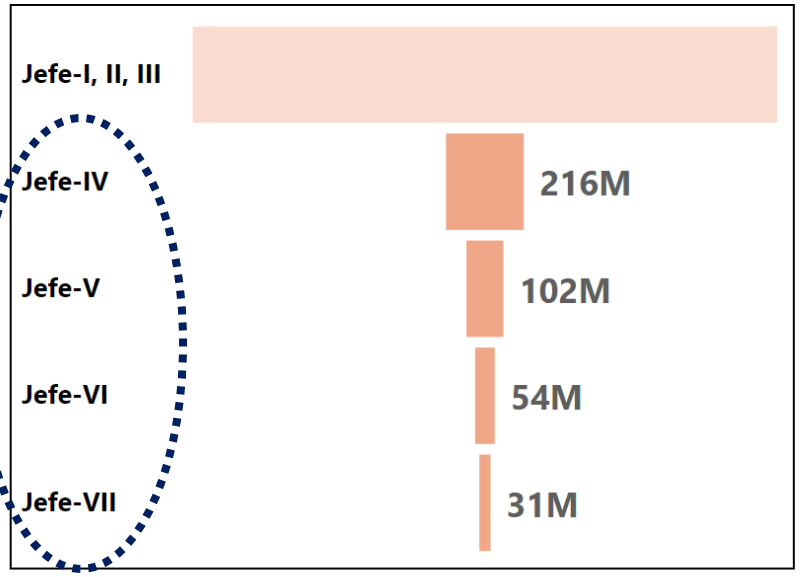


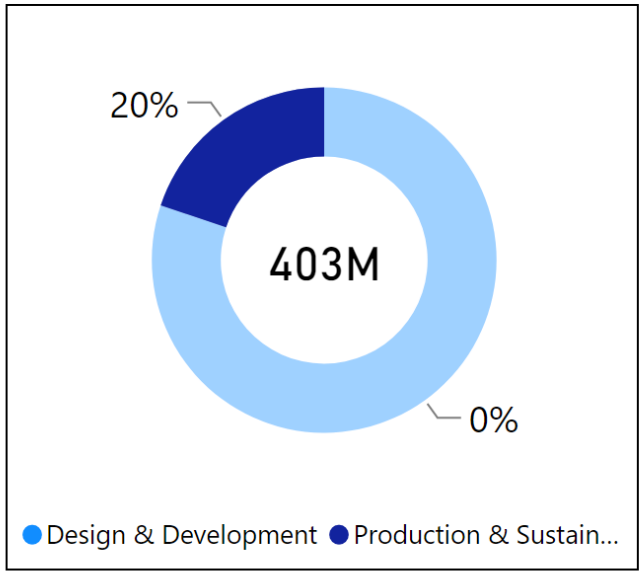







Project Jefe
*Mock Data
3/10/2017
12/1/2023
Systems Test: 7/2/2019
Launch Jefe-III: 2/8/2022
Launch Jefe-IV: 4/1/2025
Design & Fabrication: 1/4/2017
Delivery Jefe-III: 1/14/2021
Delivery Jefe-IV: 12/14/2023
40M
30M
20M
10M
0M
1M
6M
-2M
1M
10M
-1M
15M
8M
14M
16M
17M
8M
15M
9M
18M
10M
18M
21M
2018
2019
2020
2021
2022
2023
2024
2025


Jefe-I, II, III
Jefe-IV
Jefe-V
Jefe-VI
Jefe-VII
216M
102M
54M
31M


20%
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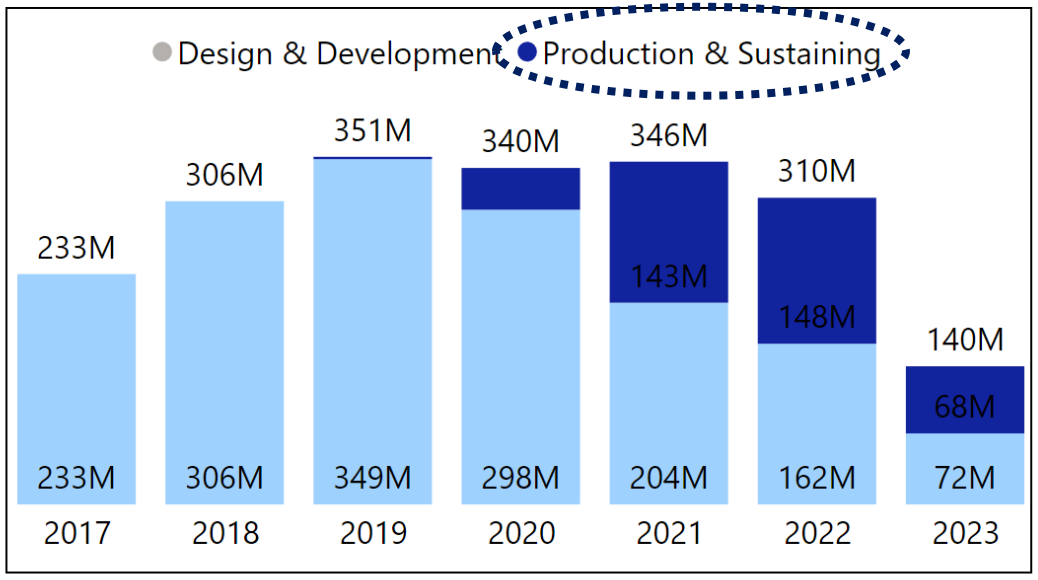
Design & Development
Production & Sustain...


Design & Development
Production & Sustaining
233M
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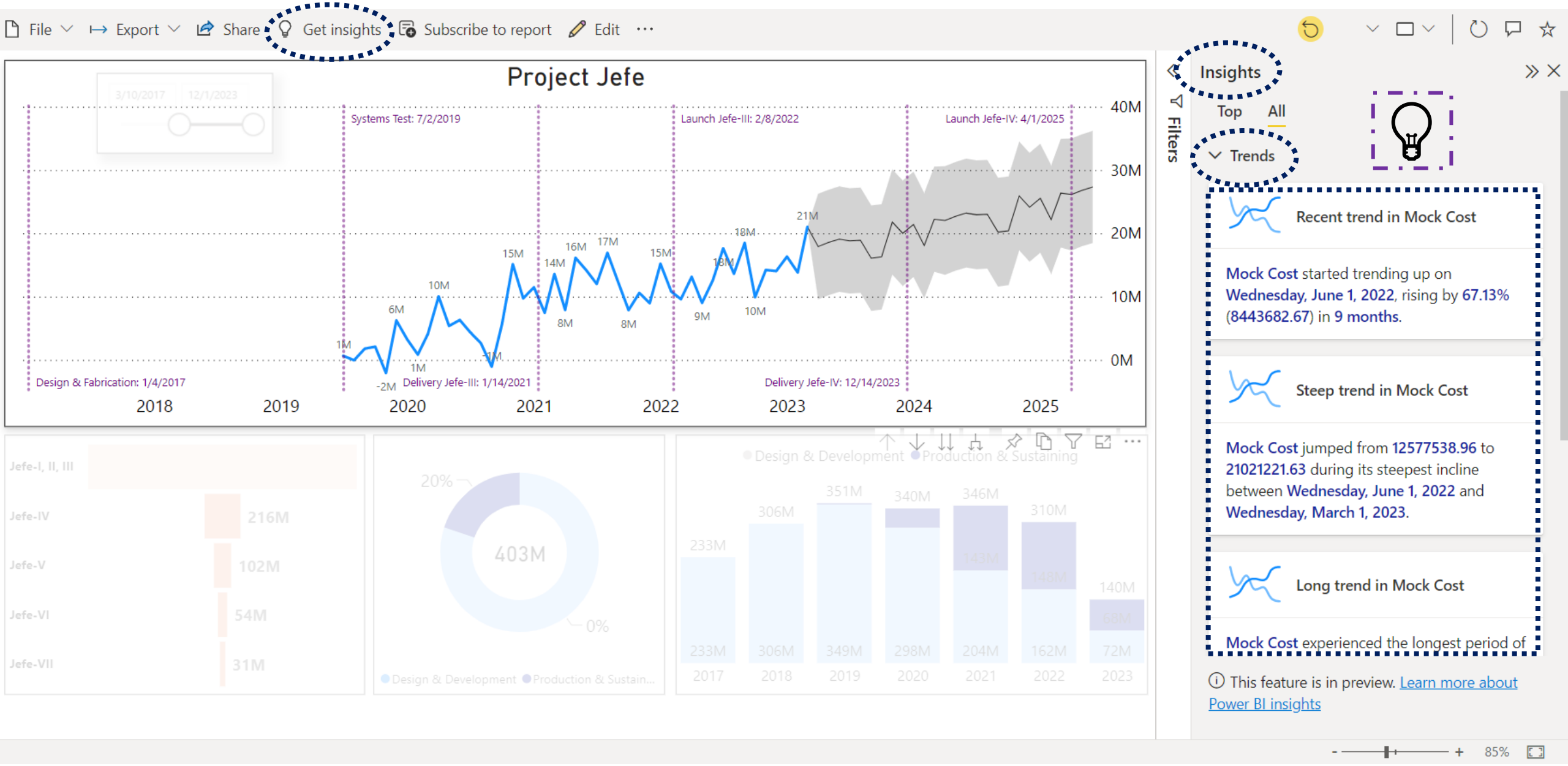
351M
340M
346M
310M
140M
143M
148M
68M
233M
306M
349M
298M
204M
162M
72M
2017
2018
2019
2020
2021
2022
2023

Get Insights Feature

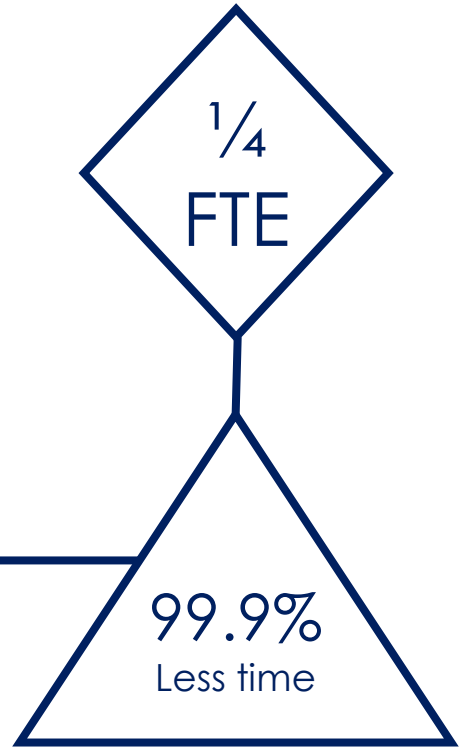
*Mock Data



Top Benefits

Automation leading to time saving:

- **Monthly Cost Performance Chart Production Time Savings:**
  - 9 CAMs x 5 hours per month = 45 hours per month, 540 hours per year
  - From 45 hours per month to 1 min per month
  - From 540 hours per year to 12 mins per year



Enhanced and Faster Data Analysis for Deeper Insights

- Advanced Analytics at the click of a button
- Artificial Intelligence Visuals: ask a question about your data

Jeff Fajardo's Dashboard - Power

app.powerbigov.us/groups/e5295448-bf9d-425f-8de7-b6f8bcfc61ec/dashboards/e59e87c3-40bd-4375-8543-333c8495e9b6

Power BI Orion Program Dashboards

Jeff Fajardo's Dashboard

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Ask a question about your data

Views, Users, Views %

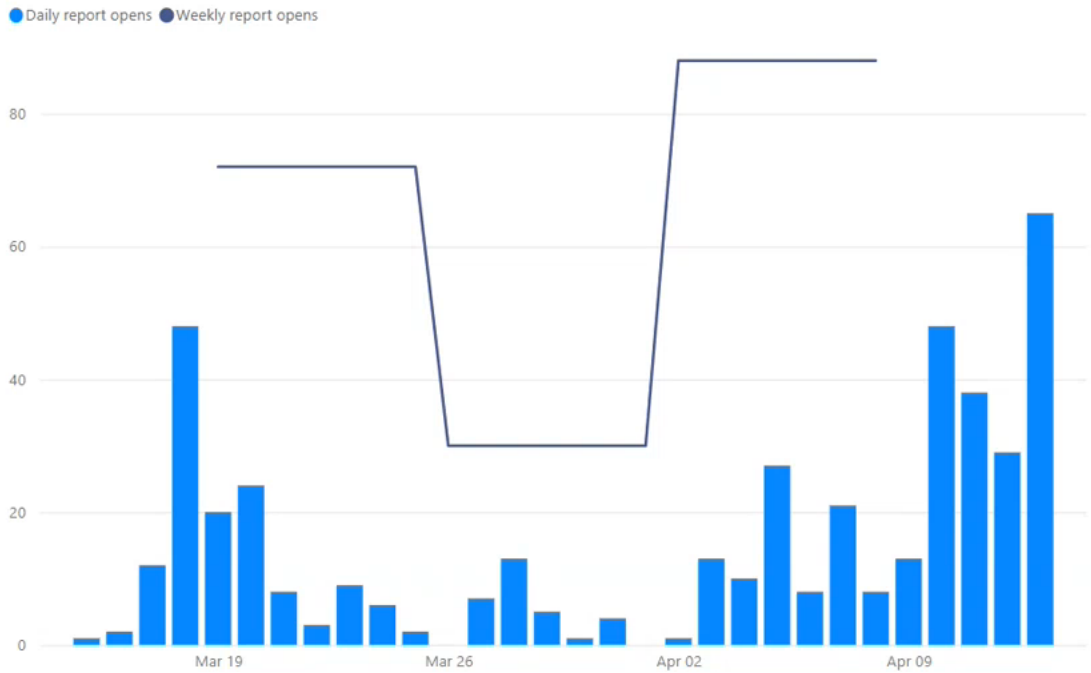
BY REPORT, DAYS, VIEW TREND

Report	Views	Views %	Users	Days	View trend
Orion Variance 1.0	92	20%	16	5	0%
MIRROR v1.0	107	23%	12	22	106%
Orion FTE	88	19%	9	14	778%
Orion Prime Dashboard	130	28%	5	20	-79%
Orion Travel	17	4%	4	11	43%

Pages table

Page	Users	Views	Views %
NASA Cost Actuals	4	82	5%
Variance	11	80	5%
Decomposition Tree	9	79	5%
Power App	9	61	4%
533 Summaries	2	56	3%
Non-Prime $	11	55	3%
Program	5	55	3%
DDTE 533 Data	3	52	3%
Matrix	8	42	3%
Orion FTE	7	41	2%
Q&A	5	40	2%
DDTE IDIQ Report	3	39	2%
LM Milestones	2	37	2%
OPOC 533 Data	2	36	2%
DDTE MR	3	29	2%
Variance by Period	5	29	2%
DDTE FY Phasing	1	28	2%

Report open requests



Count of Report views

BY DATE

Fajardo, Jeff C. (JSC-LC111)

Type here to search

7:08 AM
4/15/2023

Jeff Fajardo's Dashboard - Power

app.powerbigov.us/groups/e5295448-bf9d-425f-8de7-b6f8bcfc61ec/dashboards/e59e87c3-40bd-4375-8543-333c8495e9b6

Power BI Orion Program Dashboards

Jeff Fajardo's Dashboard

File Share Comment Subscribe to dashboard Edit

Comments Feature

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Apps
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Learn
Workspaces
Orion Program...

Ask a question about your data

Views, Users, Views %

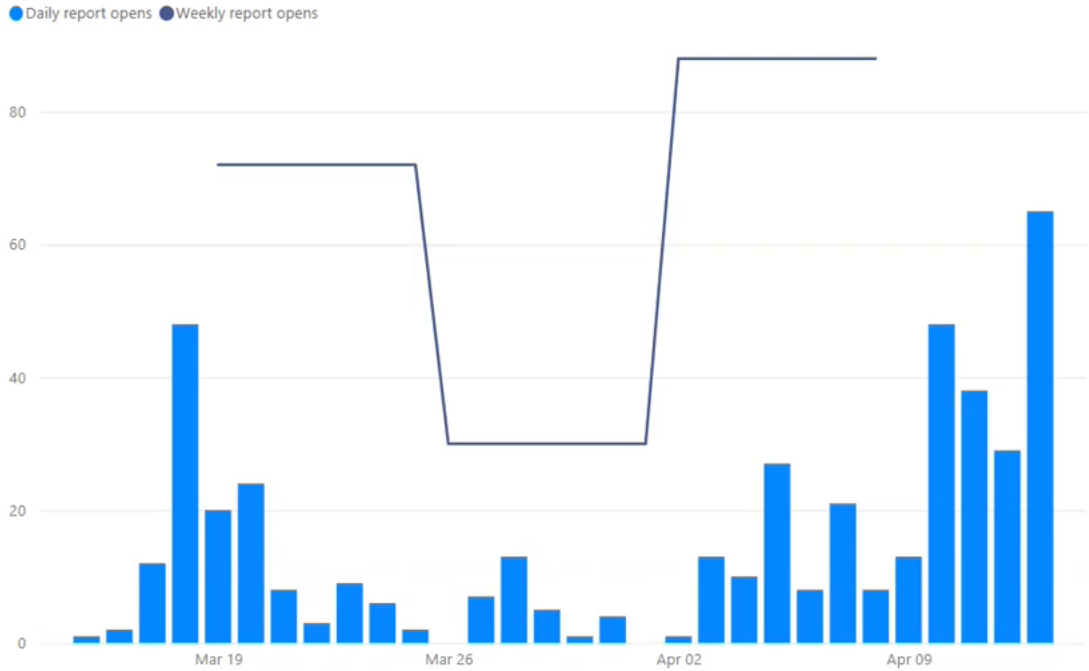
BY REPORT, DAYS, VIEW TREND

Report	Views	Views %	Users	Days	View trend
Orion Variance 1.0	92	20%	16	5	0%
MIRROR v1.0	107	23%	12	22	106%
Orion FTE	88	19%	9	14	778%
Orion Prime Dashboard	130	28%	5	20	-79%
Orion Travel	17	4%	4	11	43%

Pages table

Page	Users	Views	Views %
NASA Cost Actuals	4	82	5%
Variance	11	80	5%
Decomposition Tree	9	79	5%
Power App	9	61	4%
533 Summaries	2	56	3%
Non-Prime $	11	55	3%
Program	5	55	3%
DDTE 533 Data	3	52	3%
Matrix	8	42	3%
Orion FTE	7	41	2%
Q&A	5	40	2%
DDTE IDIQ Report	3	39	2%
LM Milestones	2	37	2%
OPOC 533 Data	2	36	2%
DDTE MR	3	29	2%
Variance by Period	5	29	2%
DDTE FY Phasing	1	28	2%

Report open requests



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Fajardo, Jeff C. (JSC-LC111)

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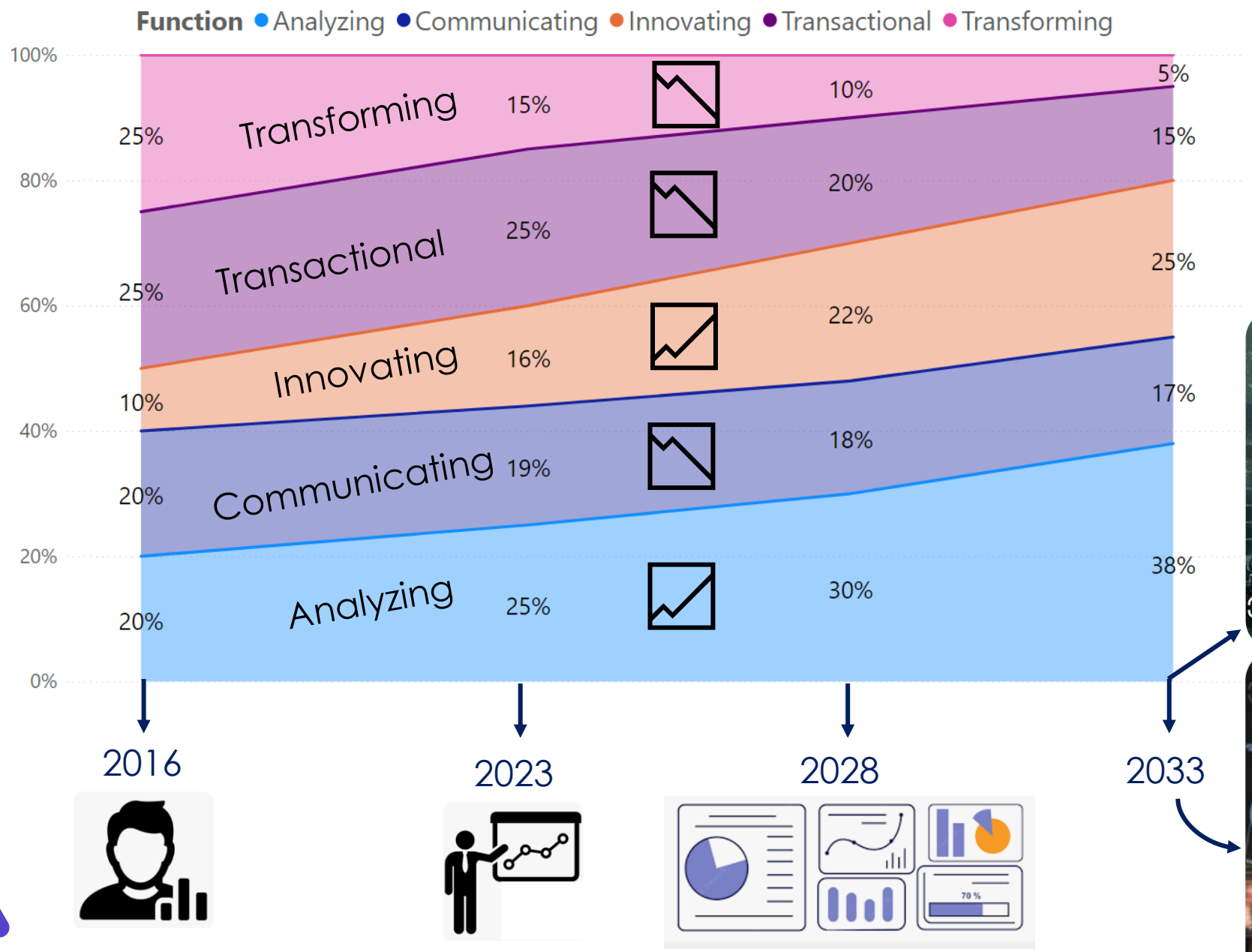
4/15/2023

Primary Functions of an Analyst (in my experience)

- **Transforming –** taking raw data and turning it into a finished product.
- **Transactional –** conducting activities in systems.
- **Analyzing –** discovering and interpreting meaningful information and insights from a data set.
- **Communicating –** email, IM, phone, meetings, and presentations.
- **Innovating –** creating something new that adds value to the organization. Includes learning.

Forward Thinking



Game Plan

1. **Stimulate Innovation specifically to reduce time spent in transforming and transactional functions.**

2. **Fuel Analytical Value Creation specifically in Information and Insight Analytics.**
   - What are the “knobs” that can be turned?
   - What algorithms will aid optimal data-driven decision making?

3. **Combine Cost, Schedule, and associated risks into all encompassing accurate Scenario-based Predictor.**

4. **Machine Learning. "Hindcasting".**

5. **Human learning. Natural Language Analysis/Coding. What’s the next big thing?**