



# Data Dashboards in a Research and Development Organization

Note: This work reflects an experimental use of data tools in one specific branch of NRL, and does not reflect the views or usage by the entire organization.

**David Lechner, Ph.D.**  
**NRL Code 5723**  
**May 7, 2025**

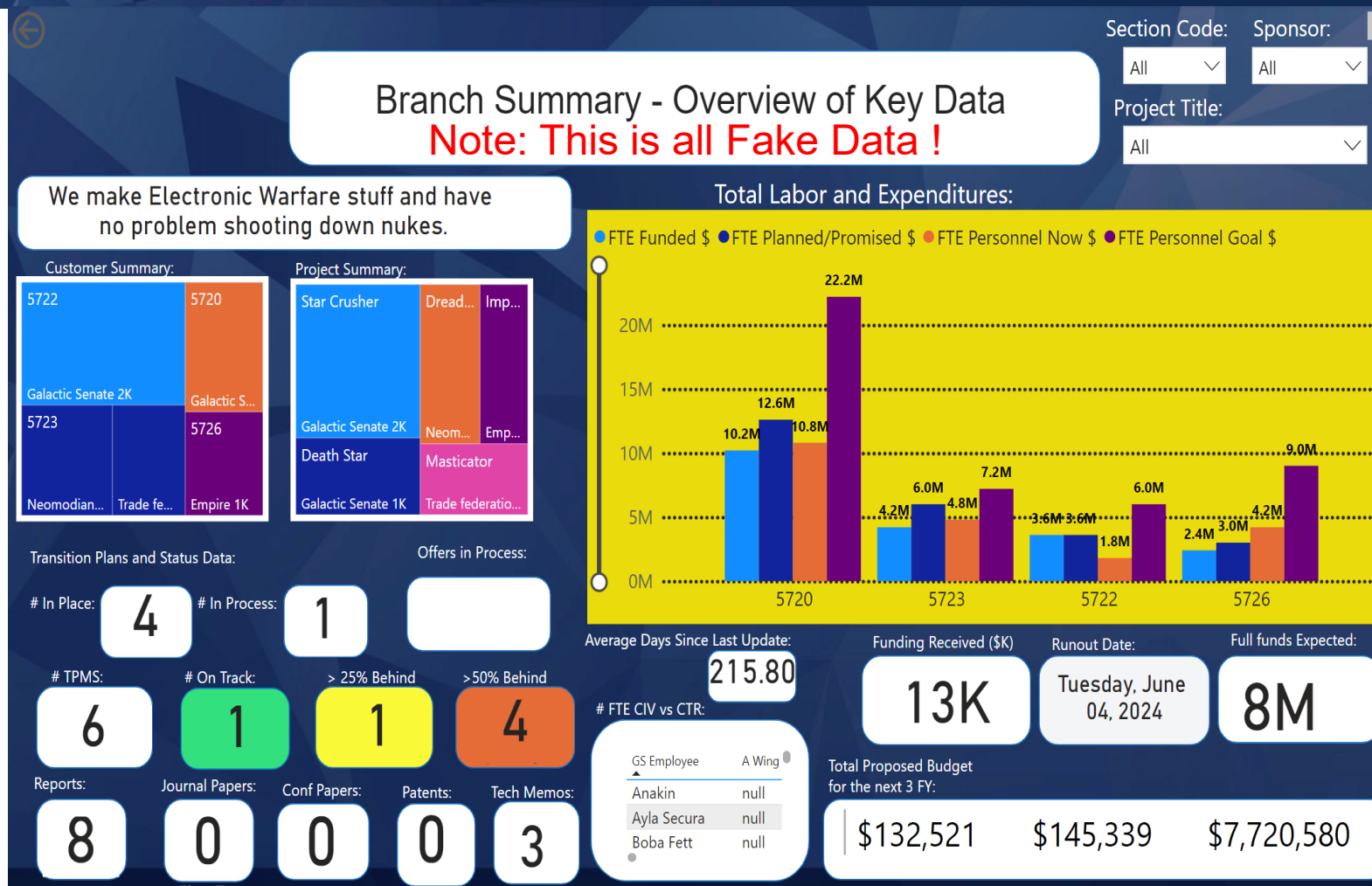
# Key Questions We Wanted to Answer

- What are the strategic technical objectives of our research?
- Is our cashflow OK ? Will we run out? Fully obligate?
- Do we have enough work for current staff?
- Do we have enough staff? Do we need to hire? When?
- Are the projects on track to meet technical objectives?
- Are the projects on track to complete on promised schedules?
- How do our sections compare in metrics?
- Who are our current sponsors? Future sponsors?

# What We Used to Do Before This....

- Power Point Slides & Excel Files!
- Data had to be manipulated and updated each time
- Slides had to be updated
- No data integration, no trend analysis, no history, no predictions
- Each project examined in isolation, in time and data.

# What We Created ! View 1: Overview



- **Purpose:** Provides branch's "health" and status. Our metrics. The data is "sliceable" by sponsor type, section code, and even by individual project.

# But - The Data is All Maintained in Excel !

Branch Code	FTE Goal	FTE Now	FTE Planned	FTE Funded	FTE Goal \$	FTE Now \$	FTE Planned \$	FTE Funded \$	Full FTE Funds Exp
5723	12	8	10	7	\$ 7,200,000	\$ 4,800,000	\$ 6,000,000	\$ 4,200,000	\$ 10,200,000
5726	15	7	5	4	\$ 9,000,000	\$ 4,200,000	\$ 3,000,000	\$ 2,400,000	\$ 5,400,000
5722	10	3	6	6	\$ 6,000,000	\$ 1,800,000	\$ 3,600,000	\$ 3,600,000	\$ 7,200,000
5720	37	18	21	17	\$ 22,200,000	\$ 10,800,000	\$ 12,600,000	\$ 10,200,000	\$ 22,800,000

Work Unit	TPM	Percentage of TPM Metric Met	Met or Exceeded	Greater than 25% behind	Greater than 50% behind	Has a TPM(1 for yes 0 for no)
57X002	Decrease mold buildup in the	110	1	0	0	1
57X003	Pcc Improves by 0.25	50	0	0	1	1
57X004	Decrease time needed for ta	0	0	0	1	1
57X001	Laser color will be greener by	75	0	1	0	1
57X003	Floatiness of the struts will li	10	0	0	1	1
57X005	Shield strength increased by	33	0	0	1	1

Work Unit	Runout Date
57X001	1/25/2027
57X002	3/22/2028
57X003	4/20/2030
57X004	8/5/2027
57X005	6/4/2024

Work Unit	Total Direct Cite Received All Yea	Total Reimbursable Received All yea	Total Received All Years Combined	Total Direct Cite Spent All Years	Total Reimbursable Spent All Years	Total Spent all yea	Funds Remain
57X001	\$ 146,900.00	\$ 170,084.00	\$ 316,984.00	\$ 175,092.00	\$ 201,339.00	\$ 376,431.00	\$ (59,447.00)
57X002	\$ 187,036.00	\$ 130,488.00	\$ 317,524.00	\$ 855,762.00	\$ 455,637.00	\$ 1,311,399.00	\$ (993,875.00)
57X003	\$ 11,000.00	\$ 22,000.00	\$ 33,000.00	\$ 13,426.00	\$ 10,892.00	\$ 24,318.00	\$ 8,682.00
57X004	\$ 1,870,012.00	\$ 990,108.00	\$ 2,860,120.00	\$ 98,887.00	\$ 104,908.00	\$ 203,795.00	\$ 2,656,325.00
57X005	\$ 6,400.00	\$ 6,000.00	\$ 12,400.00	\$ 89,776.00	\$ 57,663.00	\$ 147,439.00	\$ (135,039.00)

Work Unit	Date of Last Update	Days since last update
57X001	12/27/2023	328.00
57X002	12/28/2023	327.00
57X003	12/26/2023	329.00
57X004	11/12/2021	1103.00
57X005	6/7/2022	100.00

- Simple to use, common skills, easy to link data to other data tools. PowerBI tools allow pulling data and “Cleaning it up” in an automated mode.
- “Star” Organization – Multiple small files, NOT a big flat file. Data pulled when needed. We use Project Numbers as data “key”.

# Tool Starts with Technical Goals

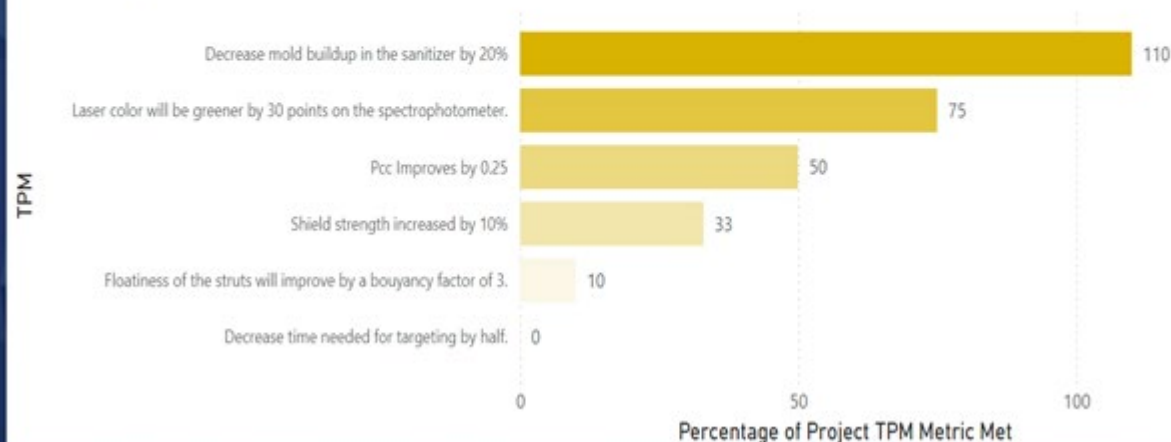
Work Unit	TPM	Percentage of TPM Metric Met	Met or Exceeded	Greater than 25% behind	Greater than 50% behind	Has a TPM(1 for yes 0 for n
57X002	Decrease mold buildup in the	110	1	0	0	1
57X003	Pcc Improves by 0.25	50	0	0	1	1
57X004	Decrease time needed for ta	0	0	0	1	1
57X001	Laser color will be greener by	75	0	1	0	1
57X003	Floatiness of the struts will i	10	0	0	1	1
57X005	Shield strength increased by	33	0	0	1	1

## Strategic Summary - Overview of Key Data

Section Code:

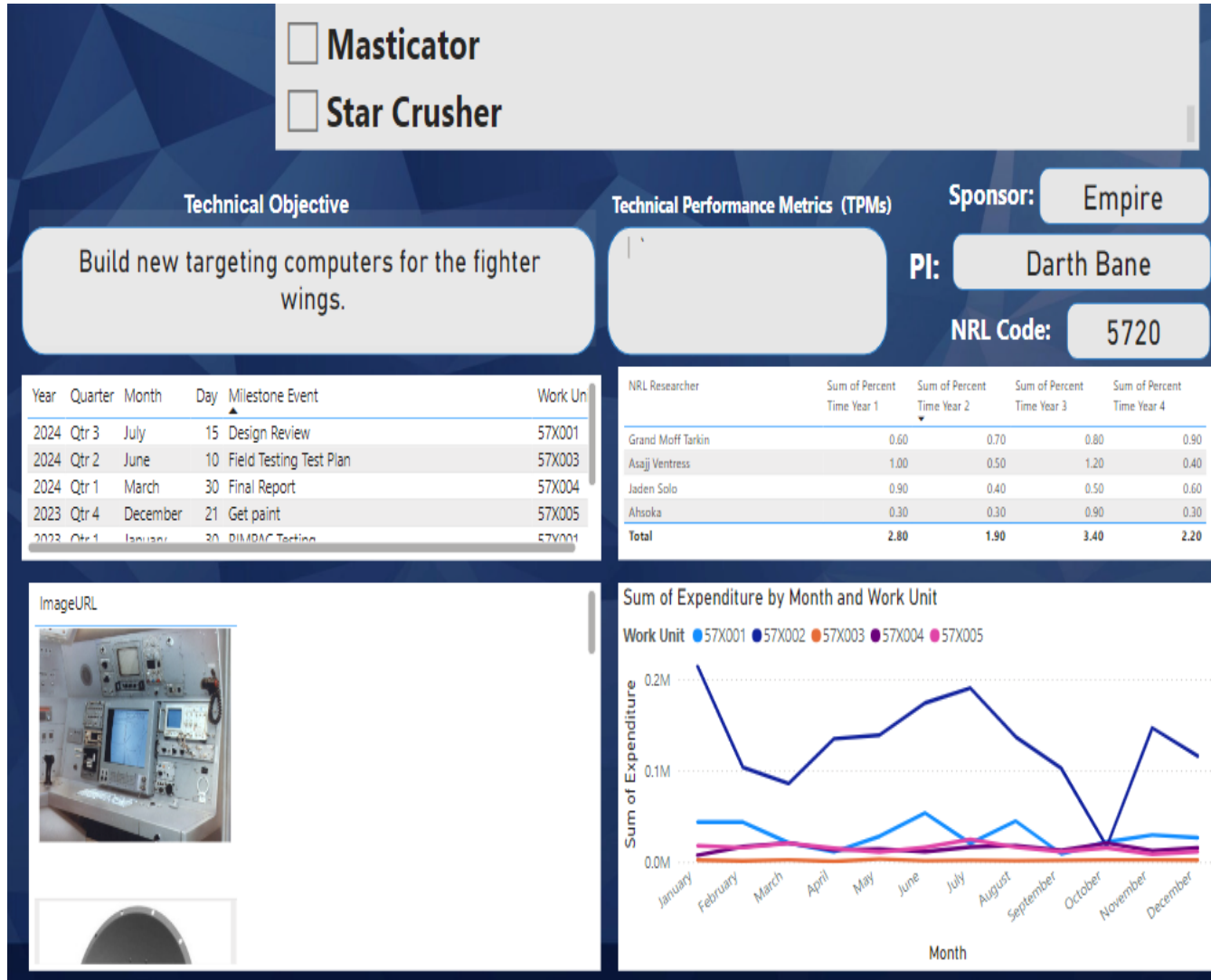
All

### Percentage of Project TPM Metric Met



- Allows all our projects to link to “Strategic Technical Goals” or “North Stars”
- Allows easy tracking of organization progress or achievements
- Metrics can be normalized and coded to remain unclassified
- (Note: Fake Data !)

# Project Quad Chart: Summary View



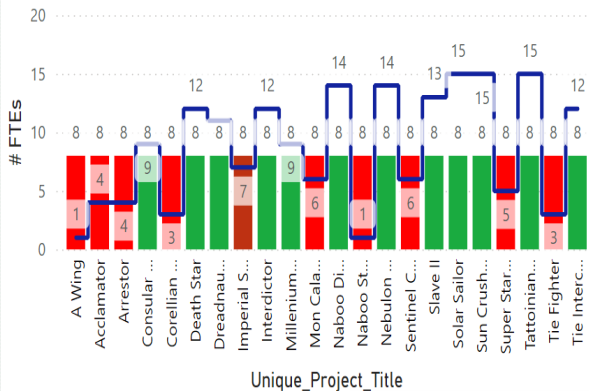
- Provides traditional view for project summary discussions
- Includes key data: schedule, financials, metrics, and objectives and graphic



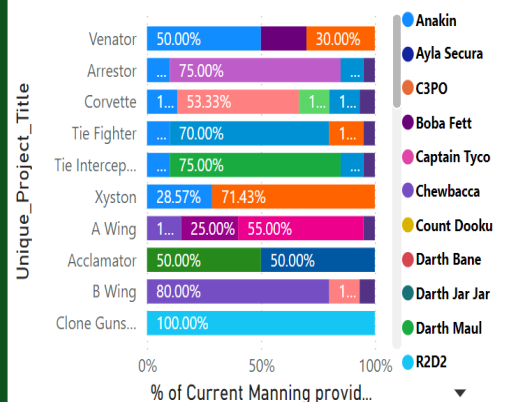
# Staff Planning Tool

Project FTE Fulfillment

Legend: ● Actual Planned Labor in FTEs — FY24 Budget for FTEs

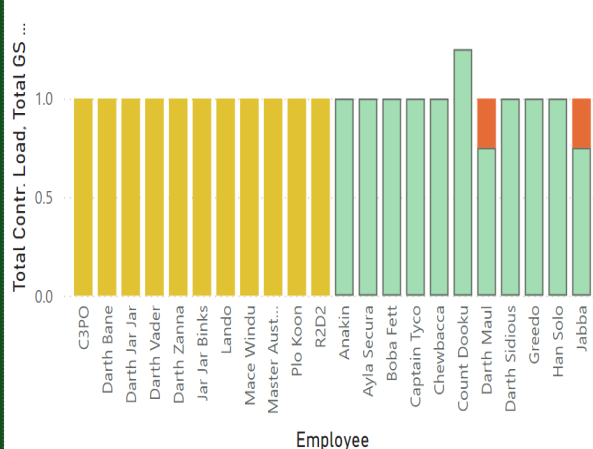


When reading this graph, the decimal represents the fraction of the person's time that is spent on the project, while the percentage represents how much of the project's staffing is filled by this pers...

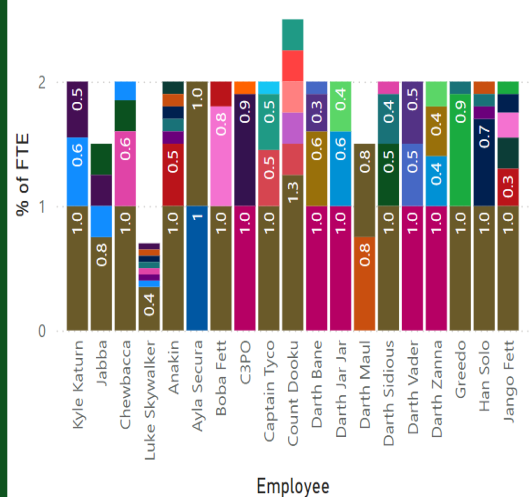


Staff Workloads

● Total Contr. Load ● Total GS Load ● % Not-Loaded



% of an FTE each person works



Section

- ☐ Select all
- ☐ 5720
- ☐ 5722
- ☐ 5723
- ☐ 5726

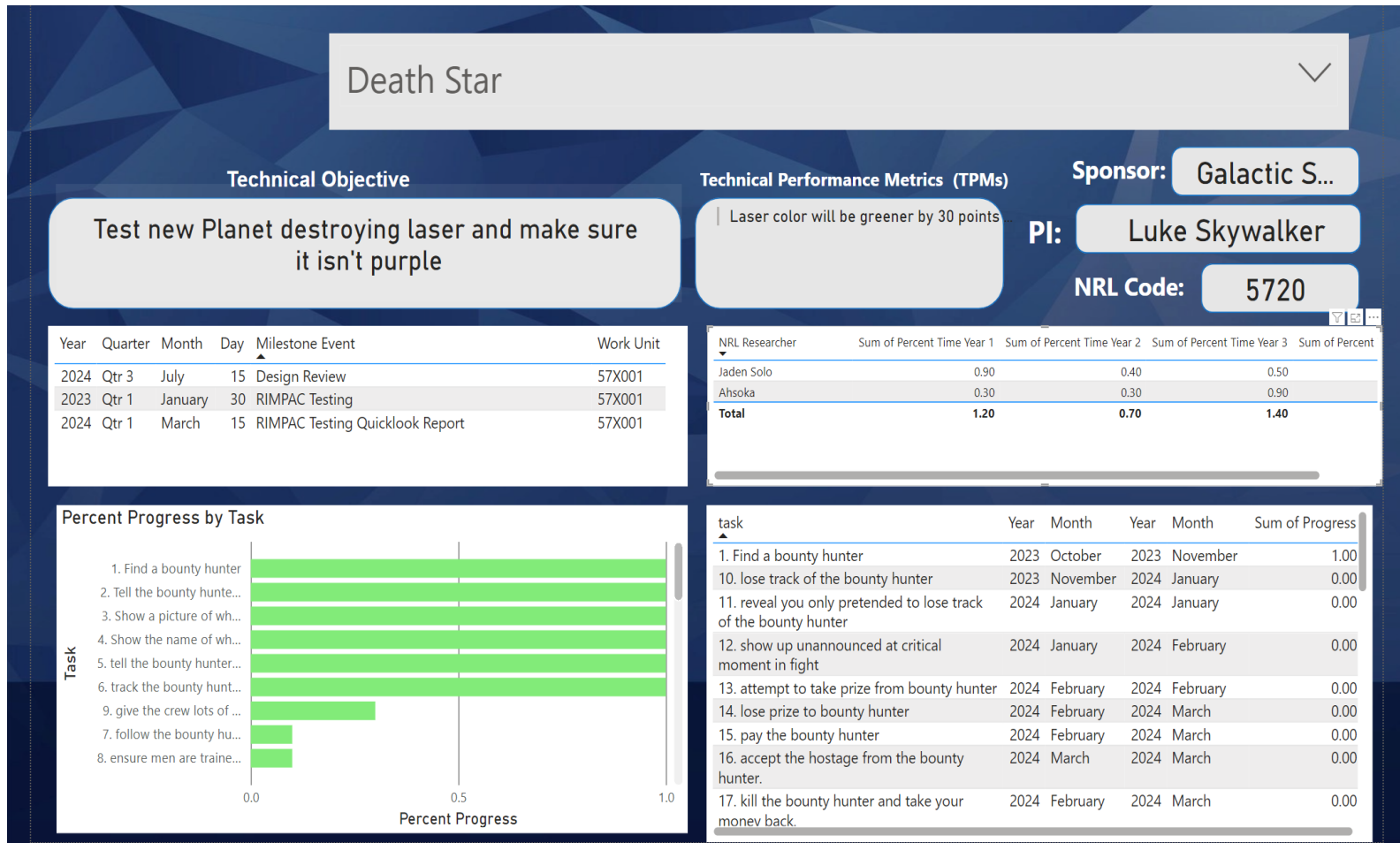
Employee

- ☐ Select all
- ☐ Anakin
- ☐ Ayla Secura
- ☐ Boba Fett
- ☐ C3PO
- ☐ Captain Tyco
- ☐ Chewbacca
- ☐ Count Dooku
- ☐ Darth Bane
- ☐ Darth Jar Jar
- ☐ Darth Maul
- ☐ Darth Sidious
- ☐ Darth Vader
- ☐ Darth Zanna
- ☐ Greedo
- ☐ Han Solo
- ☐ Jabba
- ☐ Jango Fett

- Is every project fully staffed?
- Does Everyone have enough work?
- Do we need more staff ?
- What projects are over-planned?

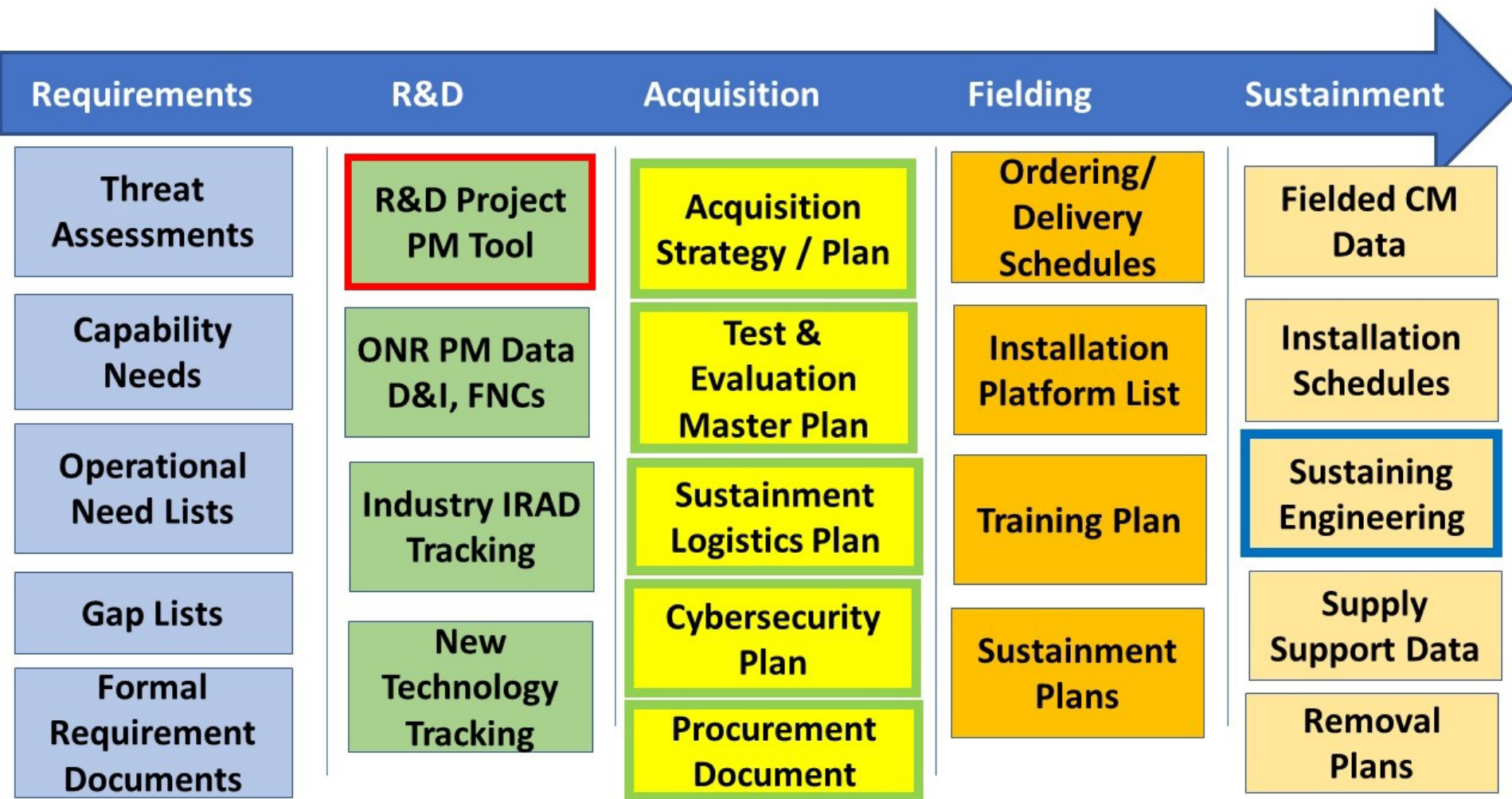


# Alternate Summary, with Detailed Schedule Data



- Provides a similar Quad-chart view, but with more detail on schedules

# Overall Framework for Acquisition Data Analytics



- Data analytics is applicable to all phases of the acquisition process.

Red outline= This Talk. Green Outline = Prior Work (2018). Blue Outline = NUWC Paper.

# Acquisition Strategy Data Schema, (2018)

(~ 200 Data Fields)

- Prior study examined transition of “plans” to data in 2018
- Approximately 66% of the document was converted to type-enforced data
- Implemented in Sharepoint Lists – (that was before Power-BI).
- Prime enabler for application of AI to the acquisition process. AI without the underlying data is pretty ... hard.
- Goal was a “Turbo-Tax” model for entering data, and “Online Shopping” model for review and analysis of projects.
- Routing data set for a program approval took less than 2 weeks with Docflow tracking.
- Some resistance to use – nothing to print. Hard to mark comments....

Title	Data Type	Title	Data Type
AP Appendix #	Text	9.1a Funding Years (List 5 Years)	Date
Project Title	Text	9.2a RDT&E Funding, Year 1	Currency
Document Date	Text	9.2b RDT&E Funding, Year 2	Currency
Acquisition Category Level (ACAT)	Text	9.2c RDT&E Funding, Year 3	Currency
Technical Project Manager (PM)	Text	9.2d RDT&E Funding, Year 4	Currency
Approval Date, Technical Manager	Date	9.2e RDT&E Funding, Year 5	Currency
Local Warfare Center Project Office Manager	Text	9.3a Procurement Funding, Year 1	Currency
Approval Date, Local Contracting Officer	Date	9.3b Procurement Funding, Year 2	Currency
Approval by HCA, PEO, or DRPM	Text	9.3c Procurement Funding, Year 3	Currency
Approval Date, HCA, PEO, or DRPM	Date	9.3d Procurement Funding, Year 4	Currency
Approved, Chief of Contracting Office	Text	9.3e Procurement Funding, Year 5	Currency
Approval Date, Chief of Contracting Office	Date	9.4a Construction Funding, Year 3	Currency
Approval, Contracting Officer	Text	9.4b Construction Funding, Year 4	Currency
Approval Date, Contracting Officer	Date	9.4c Construction Funding, Year 5	Currency
Approval, Program Manager	Text	9.5a Maintenance Funding, Year 3	Currency
Approval Date, Program Manager	Date	9.5b Maintenance Funding, Year 4	Currency
1a. Prototype Status?	Text	9.5c Maintenance Funding, Year 5	Currency
1c. MDAP Status	Text	9.6 Total Funding, All Types & Years	Currency
2. Technology Focus Area	Text	9.7a RTI Phase 1 Est. Cost	Currency
3. DOD Product of Services Descriptive Code	Text	9.7b RTI Phase 2 Assmt Cost	Currency
4. Program Office (Code)	Text	9.7c T&E Services Cost	Currency
5. Lead Contracting Office (Code)	Text	9.7d Production Costs, All Years	Currency
6.1 Statement of Need	Text	9.7d Procurement Profile, by Year	Number
6.2a Historical Summary, Background	Text	9.7e RTI Engineering Services Costs, All year	Currency
6.2b Historical Summary, Requirement	Text	10a CPARS Contact	Text
6.3a Previous Contract	Text	10b Email of DPARS Contact	Identity
6.3b Previous Contractor	Text	10c CPARS Contact Phone #	Text
6.3c Previous Contract Type	Text	11a MDA TDS Approval Date	Date
6.3d Previous Contract Code	Text	11b MDA Acquisition Strategy	Text
6.3e Prev. Contract, Quantity	Number	11d MDA Peer Review Date	Date
6.3f Prev Contract Award Date	Date	11e Purchase Request Receipt Date	Date
6.3g Prev Contract, PoP End Date	Date	11h White Paper & Draft RFP Release Date	Date
6.3h Prev Contract, Total Value	Currency	11j Full RFP Date	Date
6.4a RTI or FAST-Lane Rationale	Text	11l Proposal Due Date	Date
6.4b Govt. Resources Needed	Text	11m Contract Award Date	Date
6.4c Collaborating Integrator	Text	11o RTI Phase 1 Completion Date	Date
6.4d Integrator Funding, RTI Ph.1	Currency	11p M5-B Requirements Complete	Yes/No
6.4e Integrator Funds, RTI Ph.2	Currency	11g Pre-EMD Peer Review Complete	Yes/No
6.4f Integration Funding PMO Contact	Currency	11c Actual AS approval	Date
7.1 RTI Project Description	Text	11f Actual PR Receipt Date	Date
7.2 Likely Quantity	Number	11i Actual WP Release Date	Date
7.2a Estimated Unit Cost	Currency	11k Actual Proposal Receipt Date	Date
7.3a Primary EMP Name	Text	11n Actual Contract Award Date	Date
7.3b P-EMP Objective	Text	12a Prospective Sources	Text
7.4a Secondary EMP Name	Text	12b Other Considered contracts	Text
7.4b S-EMP Objective Value	Text	12c Small business Set-Aside Only?	Yes/No
7.5 EMP Tradeoffs	Text	13 Risks	Text
8a Relevant Patents	Text	14 GFP	Text
8b Relevant Copyrights	Text	15 GFI	Text
		16 Foreign Participation	Yes/No
		17 MDAP Considerations	Text

# Lessons Learned and Experience Summary

- PBI Tool Helps to manage technical planning, schedules, financial data, Contract status, and staffing.
- Experimental use in 1 Branch of 1 Division: About a dozen projects.
- Data schema and dashboards prototyped in 2023. Pilot use in 2024.
- About 4 staff months invested in the prototype tool so far.
- Data will accumulate over the long term and allow use of comparative analytics
- It was easier to make the tool than to start using it !
- Common View: These projects are 20% technical,90% social.

# R&D Data Dashboards: Summary

- NRL Code 5720 has developed a data dashboard on Power BI that can be easily adapted by other DoD users for project management.
- The data is maintained in simple MS Excel files and easily updated.
- Creating project instances takes a few hours, one time. Maintaining the data is less than an hour per update cycle (e.g. monthly).
- The research project data views are also useful for procurement offices and easily adapted to show contract planning, project execution, schedules, and technical success (or not!).
- The approach is scalable to organizational metrics and management (e.g. procurement office, hiring, and financial execution).
- The Power-BI files are available to any DoD organization. (Bring your own data).