



Space Communications & Navigation

What's a Metric Got to do to be Useful 'round Here?: A SCaN
Schedule Case Study

2023 NASA Cost and Schedule Symposium at JPL

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- SCaN, Strategic Integration Lead

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SCaN's Recent Schedule Metrics Journey

1 Before Times – What Prompted Change?

1. Pipeline to Decision
2. Direction to Widen Aperture

2 Search for Better Metrics

1. Decision Framing
2. Known Potholes
3. Finding Possibilities
4. Making a Choice

3 Current

1. Next steps



Will Cover...

Successes

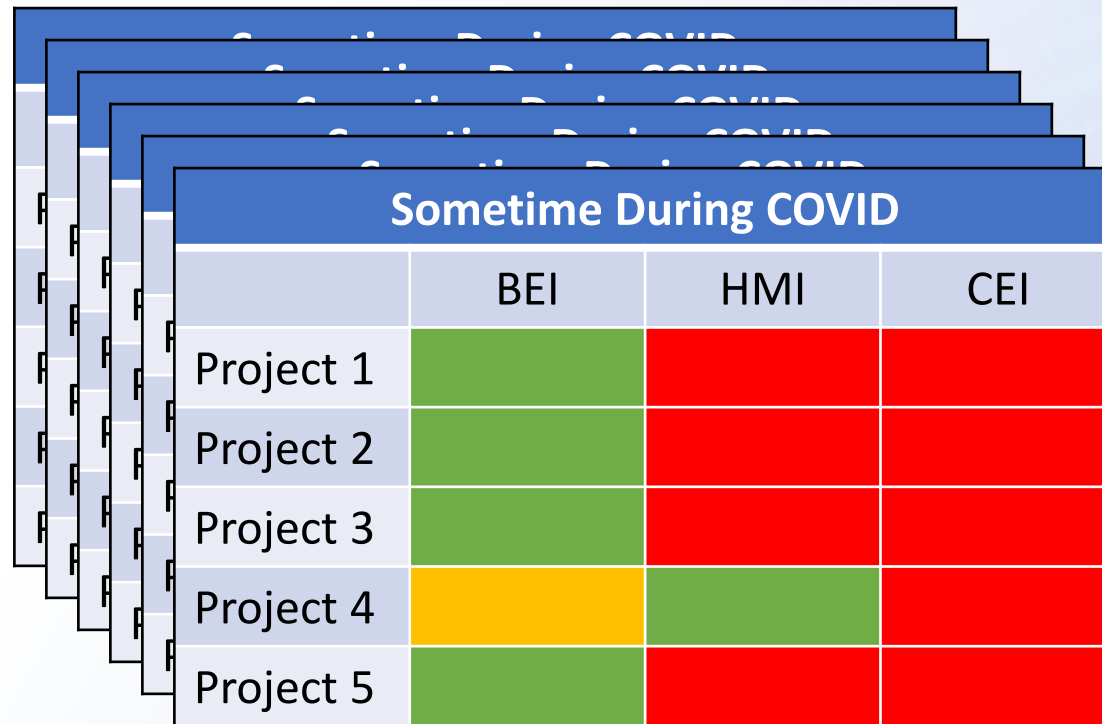
Speedbumps

Dead ends

Forks

Hazards

Before Times – Identification of Issues: Metric to Insight to Action/Decision



Sometime During COVID			
	BEI	HMI	CEI
Project 1	Green	Red	Red
Project 2	Green	Red	Red
Project 3	Green	Red	Red
Project 4	Yellow	Green	Red
Project 5	Green	Red	Red

** Fictious data for illustrative purposes*



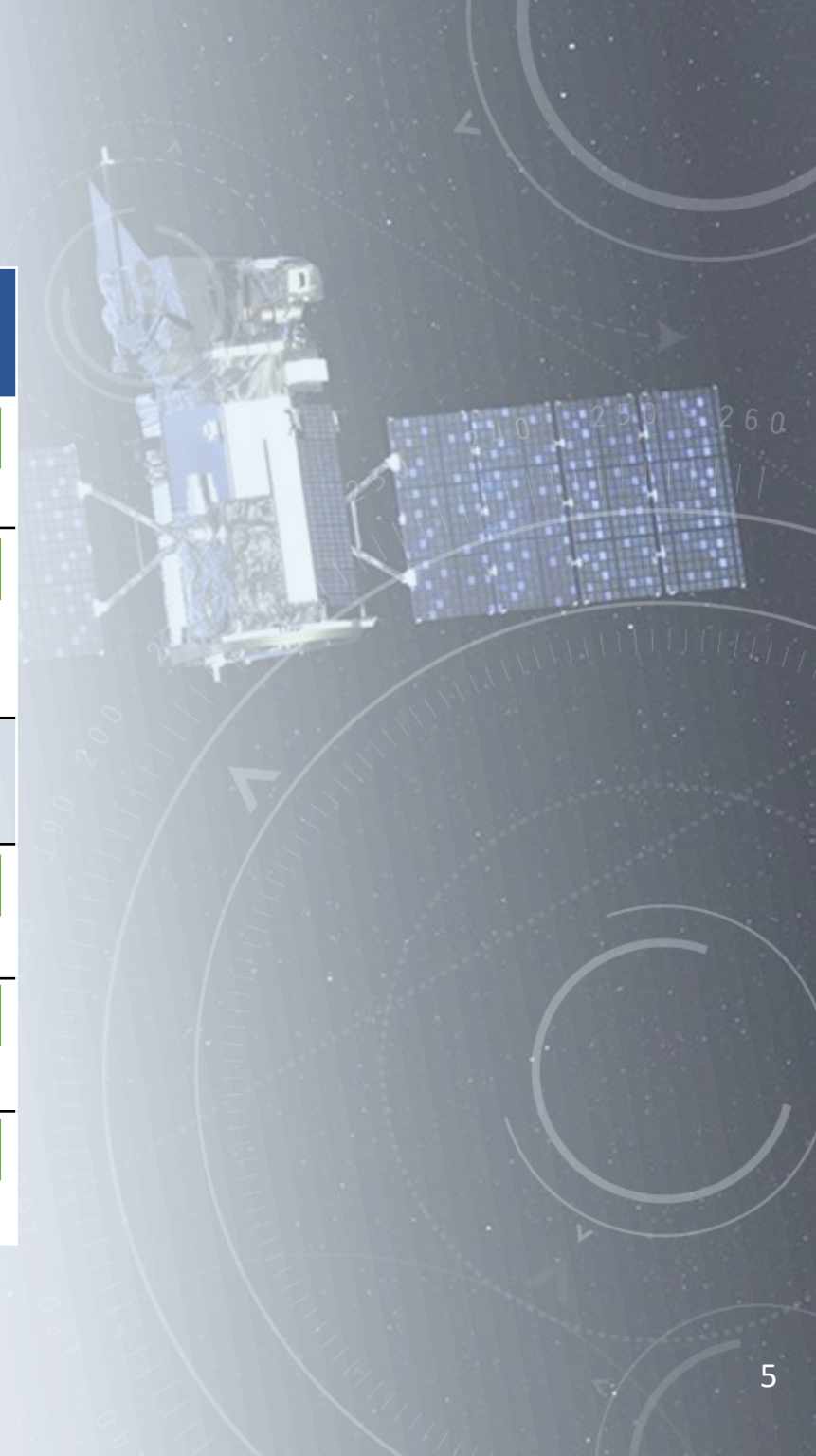
Before Times – Identification of Issues: Direction to Widen Aperture



Challenge of Widening Aperture

SCaN's Broad Spectrum of Activity Types				
Cost	<\$100K <input checked="" type="checkbox"/>	➔		\$1B+ <input checked="" type="checkbox"/>
Type	Operations <input checked="" type="checkbox"/>	Upgrade Development <input checked="" type="checkbox"/>	Technology Demonstration <input checked="" type="checkbox"/>	Technology Development <input checked="" type="checkbox"/>
Location	Ground <input checked="" type="checkbox"/>	Space <input checked="" type="checkbox"/>		
Lifespan	<1 year <input checked="" type="checkbox"/>	➔		Decades <input checked="" type="checkbox"/>
Executing Center	GRC <input checked="" type="checkbox"/>	JPL <input checked="" type="checkbox"/>	GSFC <input checked="" type="checkbox"/>	Others <input checked="" type="checkbox"/>
Phase	Pre-A <input checked="" type="checkbox"/>	➔		E <input checked="" type="checkbox"/>

...and they're loosely-coupled!

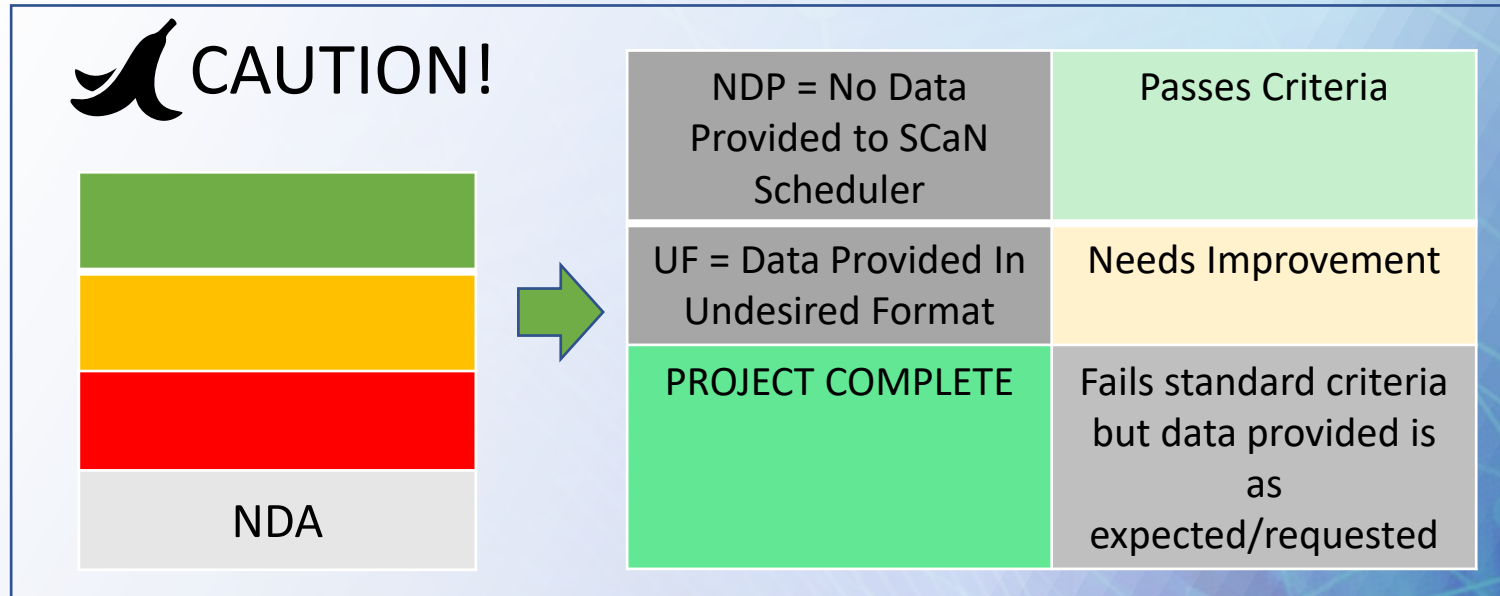
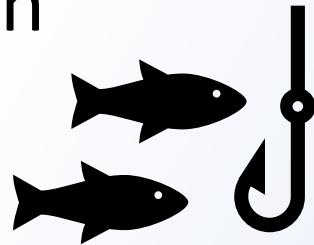


Initial Attempt to Get Consistent Data

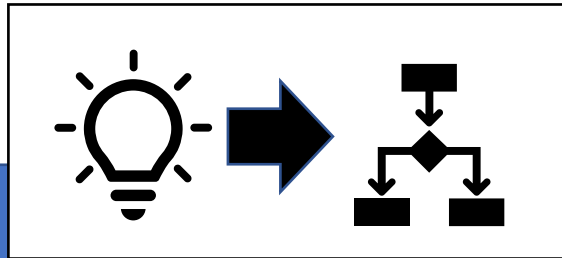


'Give me all your 3s'

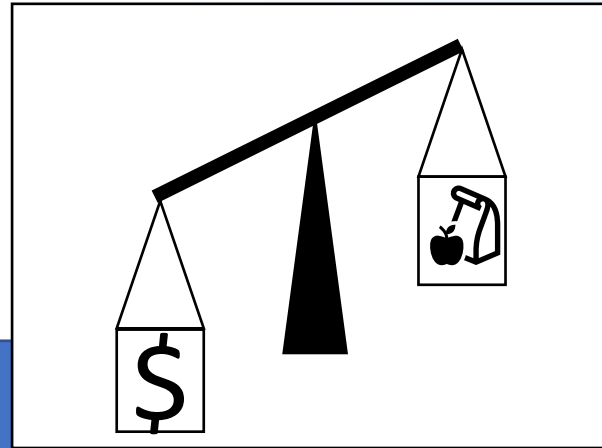
'...go fish'



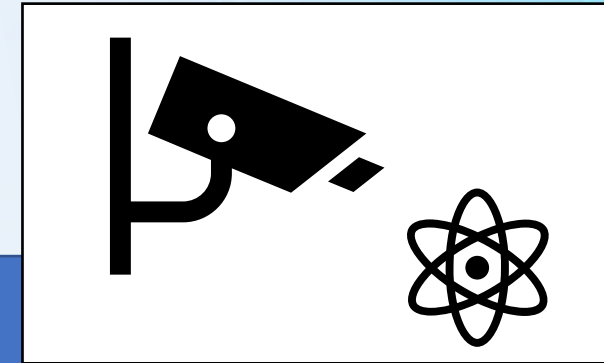
Framing: What makes a metric worth having?



Metric to
Insight to
Action /
Decision



No Free
Lunch



Observer
Effect
(Thanks Heisenberg...)

Known Potholes

Boat to the Moon



Distorted Incentives



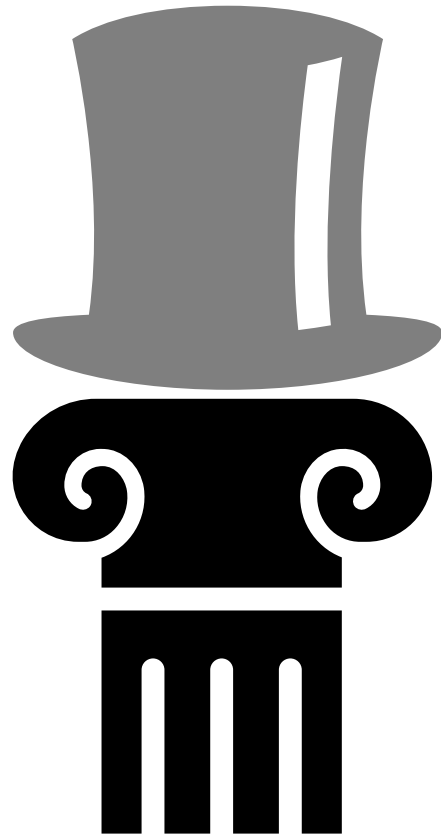
"Dew Point" Metric



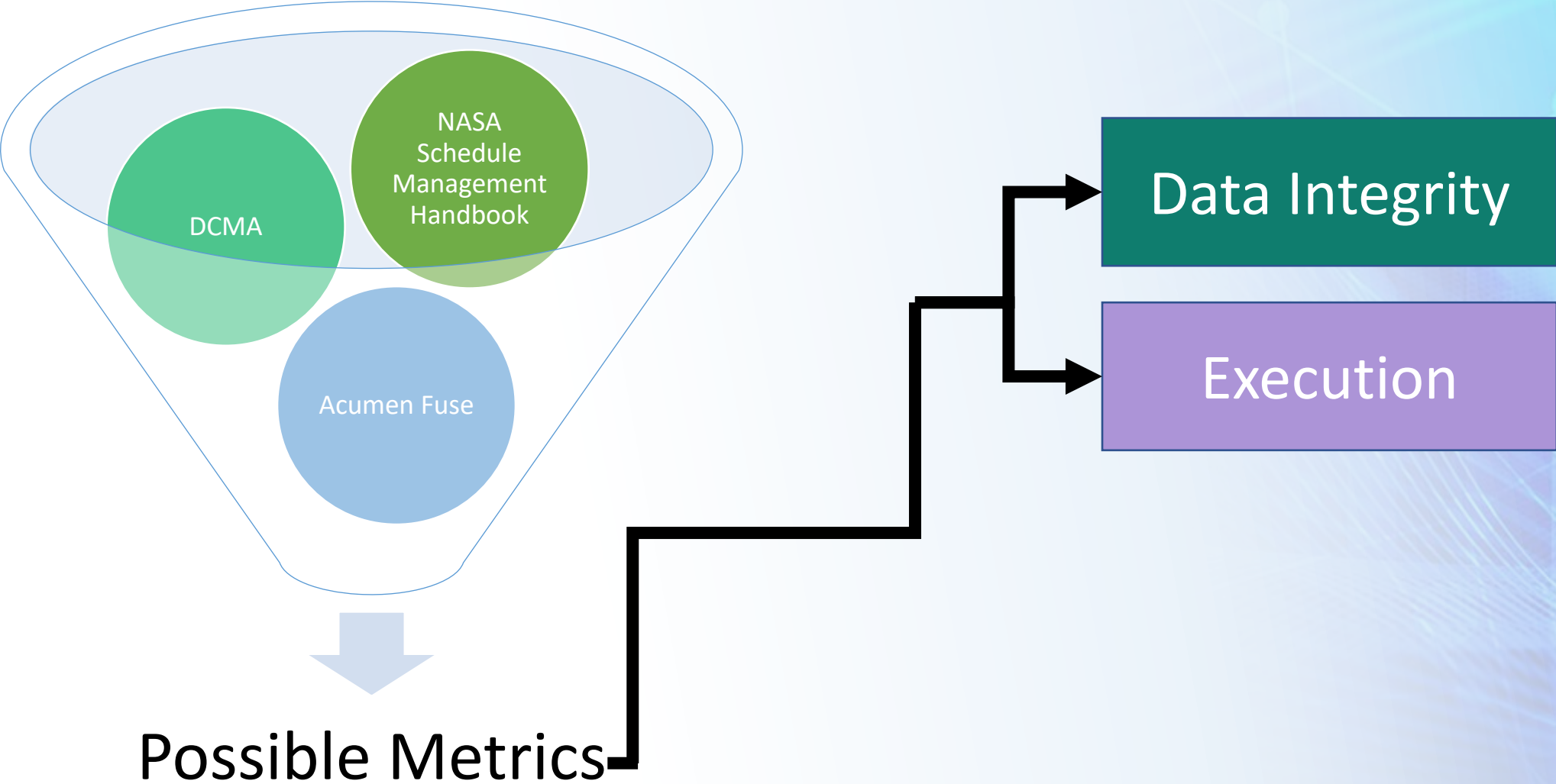
One Metric to Rule All



'Grand Canyon' of Potholes – Decision Paralysis



Finding Metric Possibilities



Choice of Metrics

Data Integrity

Missing Logic

Looks for tasks having no predecessor, successor, or both.

Leads / Negative Lag

Leads disrupt the forward flow of the schedule at best, and at worst may violate network logic

Baseline Execution Index

Measures task completion efficiency when compared to the baseline, and relative to the status date.

Negative Float

Negative float indicate that a schedule is already behind, and target dates cannot be achieved

Execution

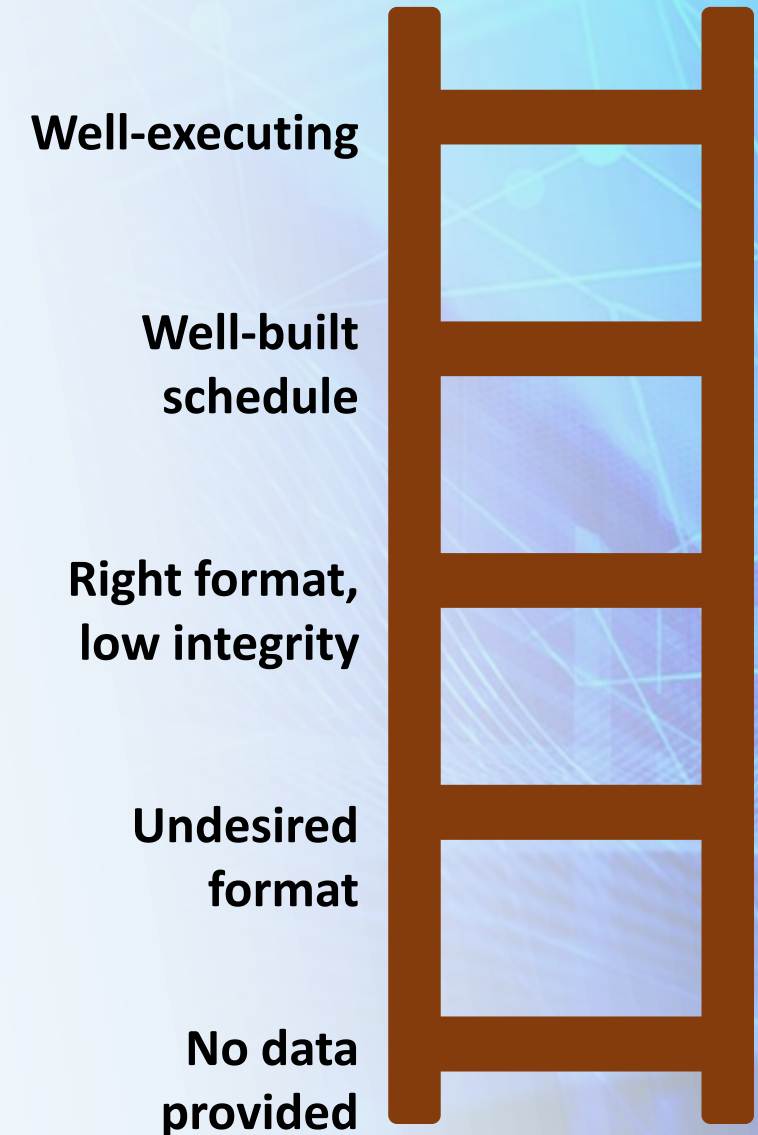


Current and Next Steps

✓ **Baselined which activities are a part of the widened aperture**

Bring activities up the ladder

Be able to provide consistent insights to support Program decision-making



Abstract and Contact Information

Title: What's a Metric Got to do to be Useful 'round Here?: A SCaN Schedule Case Study

Abstract: To be worth their salt, metrics need to provide actionable insights to decision-makers. Metrics also are like lunch; they are never free - they impose burdens, and the benefit needs to be worth the cost. And for better and worse, Heisenberg's lessons on observers applies to schedules as the choice of measurements alters the thing measured. Over the past year, the loosely-coupled SCaN Program has revamped its schedule metrics approach with lessons learned and a smorgasbord of analogies and metaphors to share.

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