4-6 October, Nationals Park, Washington DC

Data Catalog and Advanced Data Analytics

"Project controls are all about collaboration and teamwork"

Project Controls EXPO
Washington, DC - USA

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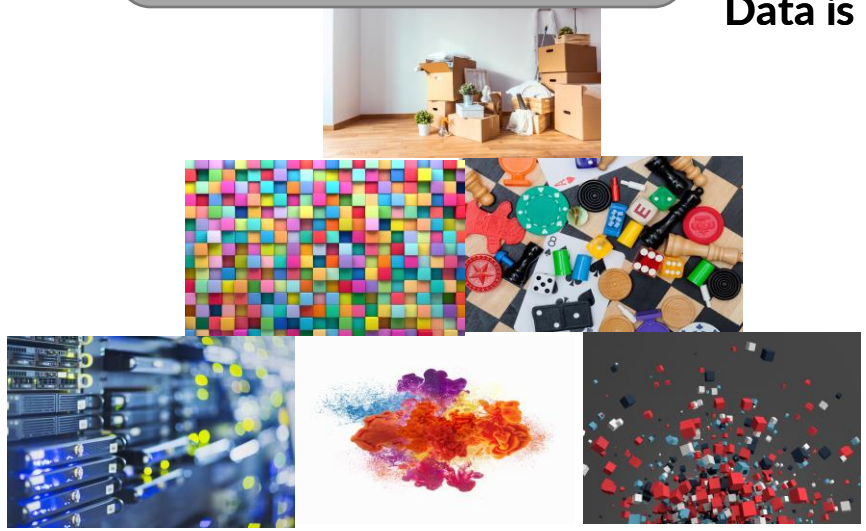
Analytics and Innovation in Project Delivery

- Construction and engineering firms, owners and lenders
- Executive Director, Project Controls, NYC Dept. of Design & Construction
- MS in Civil and Environmental Engineering, Carnegie Mellon University

Extracting Insights from Data

Data → *Extract* → Insights



Data is an asset not liability

Is use of data and analytics new to project controls?

Long history of leveraging data.
In fact, we thrive on data!

Analytics is core part of project controls tools and techniques

Forecasting Completion Date …

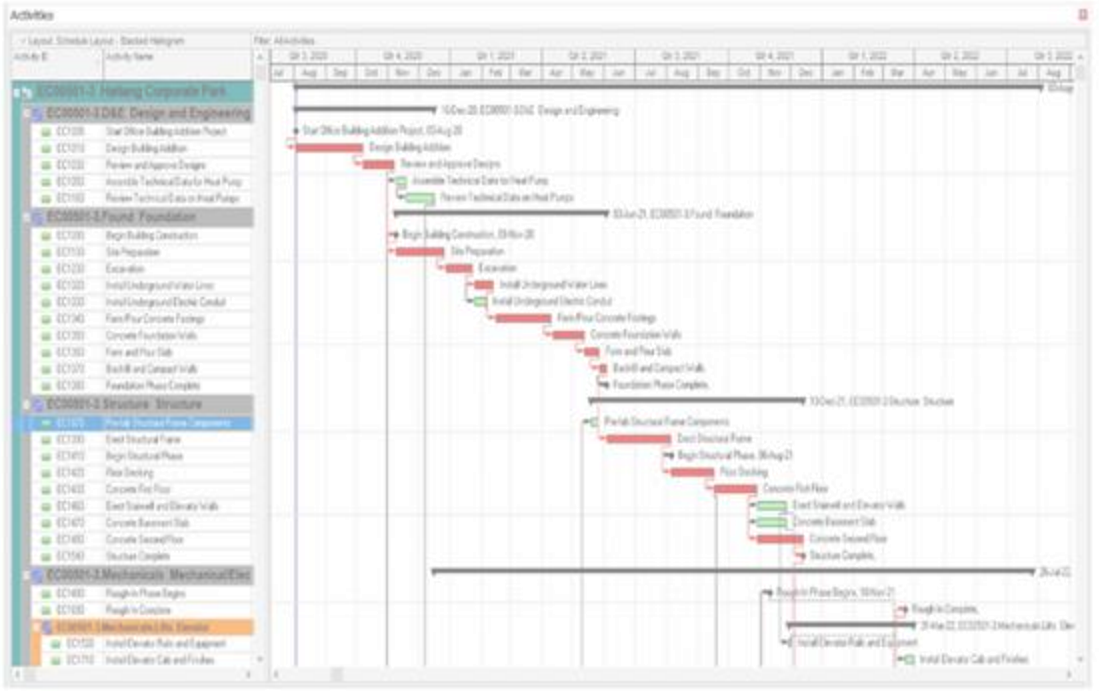
Raw Data:

tasks
resource needs
productivity
duration
project constraints
sequencing logic
risks

Analytic Techniques:

CPM
Earned Schedule
Monte Carlo

\+
expert
Judgement

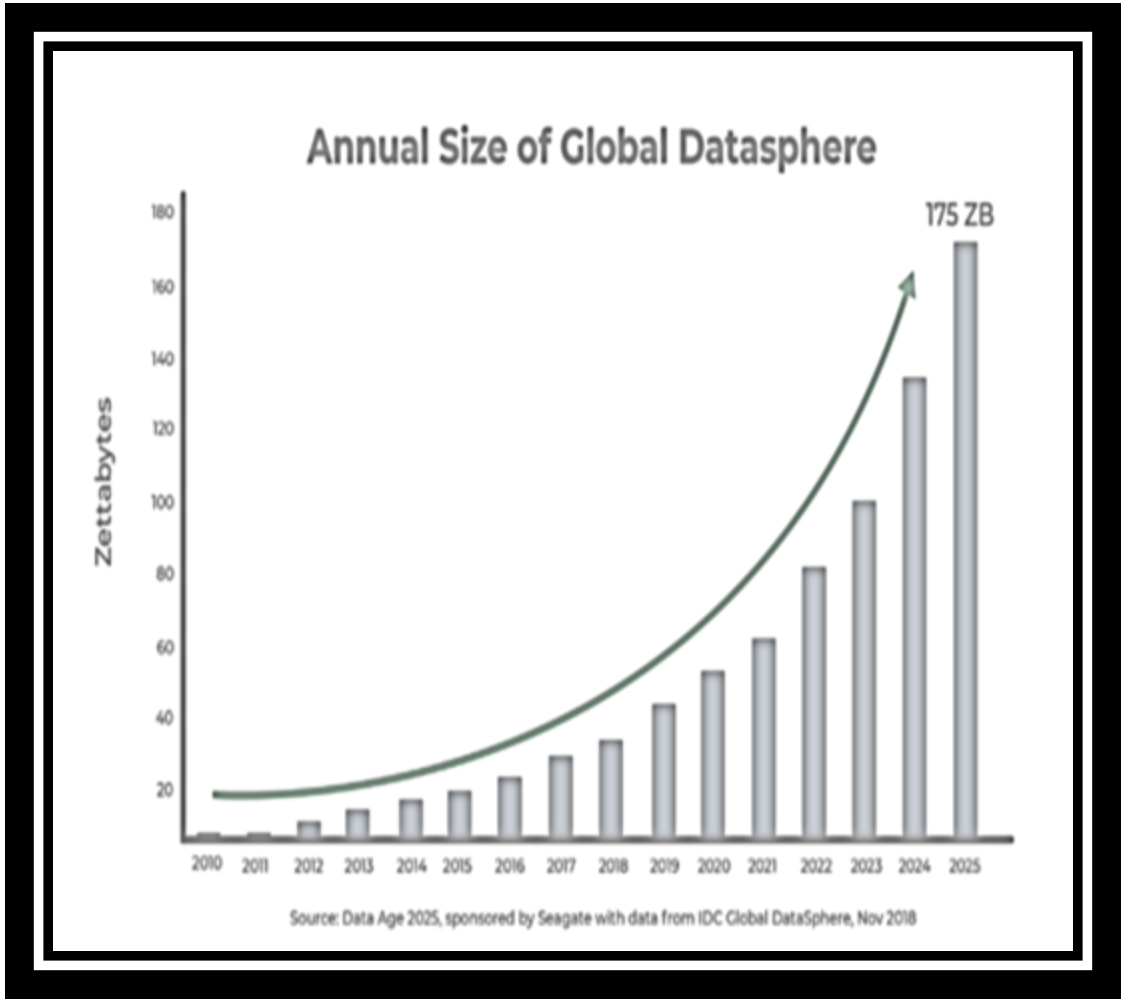


Projected Completion Date

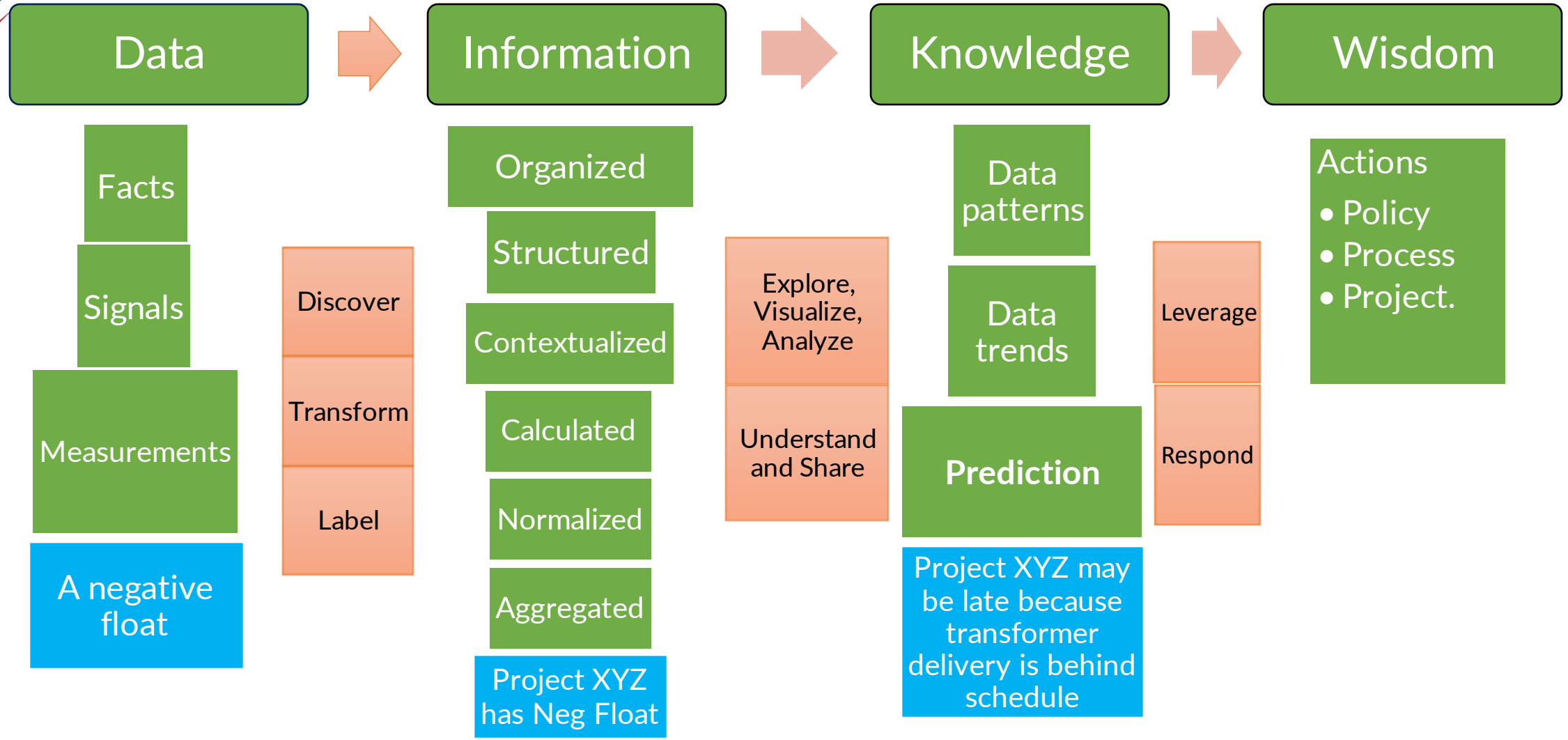
But why do we talk about analytics as if new?

- Data Production trends
- Data Consumer trends

The way we practice project controls will evolve;
partly because we need to think about data in a different way.

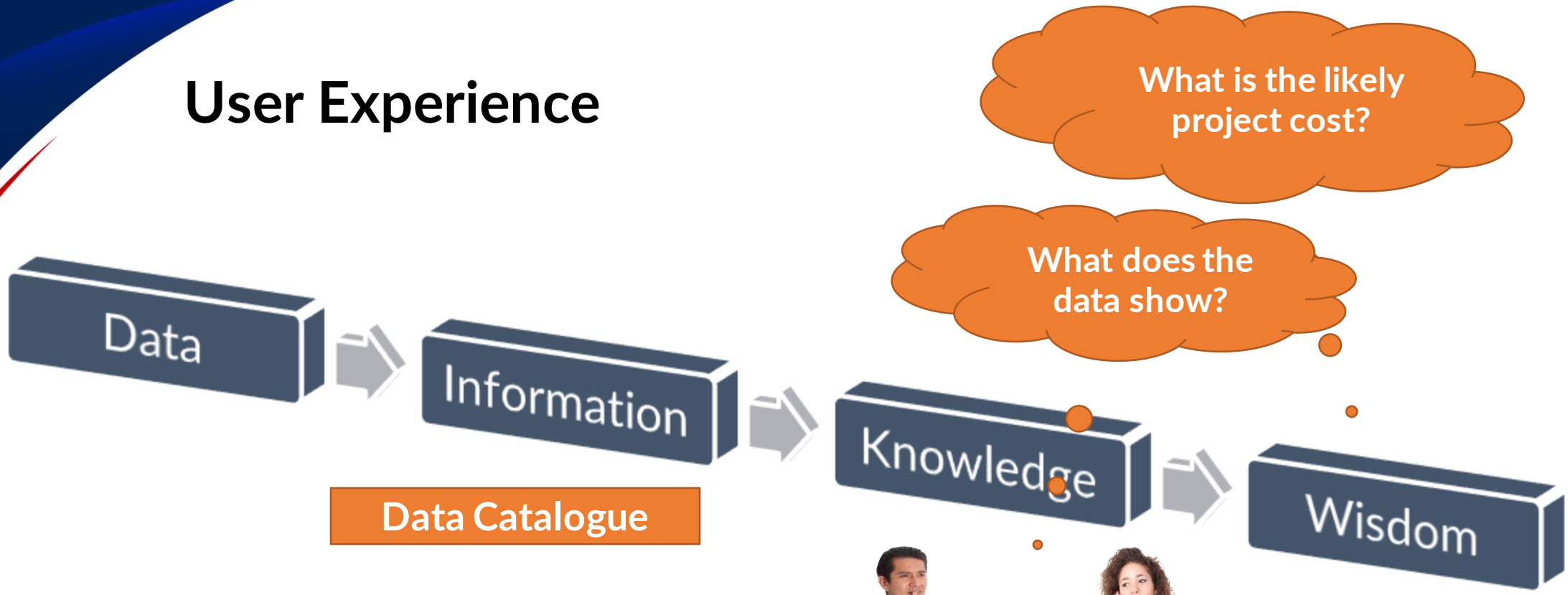


Data Analytics Strategy



A DIKW model can illustrate the transformation of data into insights

User Experience



Data catalog provides project team members the user experience needed to explore and leverage data.

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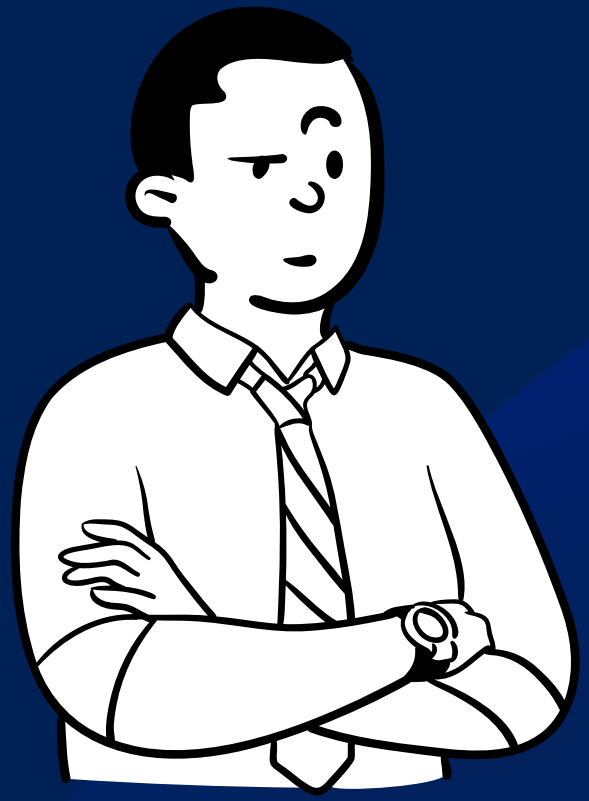


Is Catalog a must have?

- Makes data visible and transparent
- Makes data discoverable
- Improves data governance: security, quality, access and trust
- Promotes utilization of data

What is data catalog?

A Data Catalog is a self-service communication tool and an organized inventory of data that is useful for exploring, understanding and leveraging enterprise data assets.

A core component of data governance and DataOps

Core Features of a Data Catalog

1. self-service approach

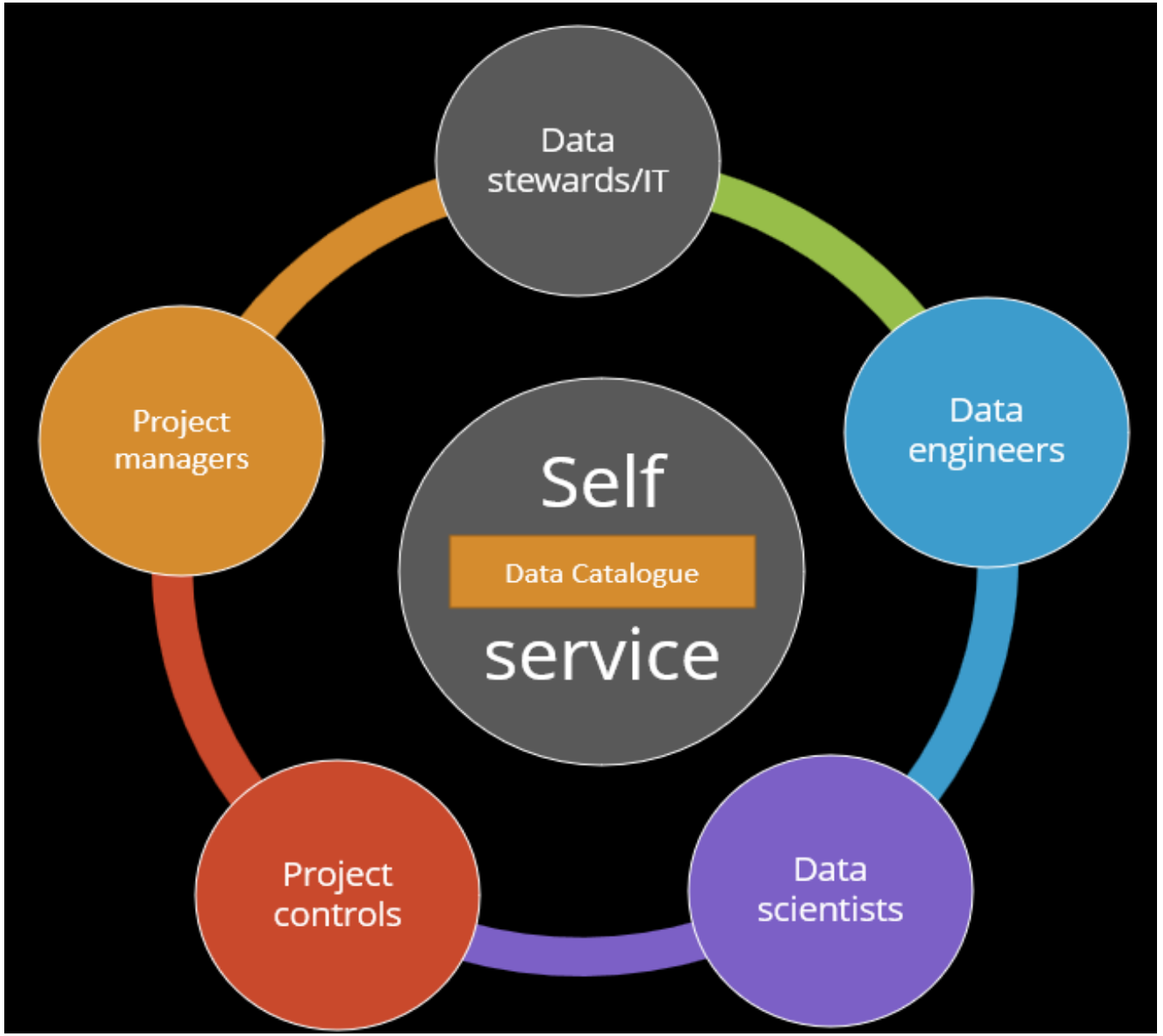
- Universal schema
- Easy to access and navigate
- Allows user feedback and input

2. captures metadata

- Technical attributes: data type, lineage
- Business attributes: glossary, examples, formula, synonyms, data owner
- Social knowledge: user feedback, usage stats

Who uses it?

- Universal schema for multiple user groups
- Self-service drives adaption



NYC DDC

Established in 1996 as the New York City's chief design and construction manager.

Active portfolio is ~800 projects estimated at $25B

DDC Atrium

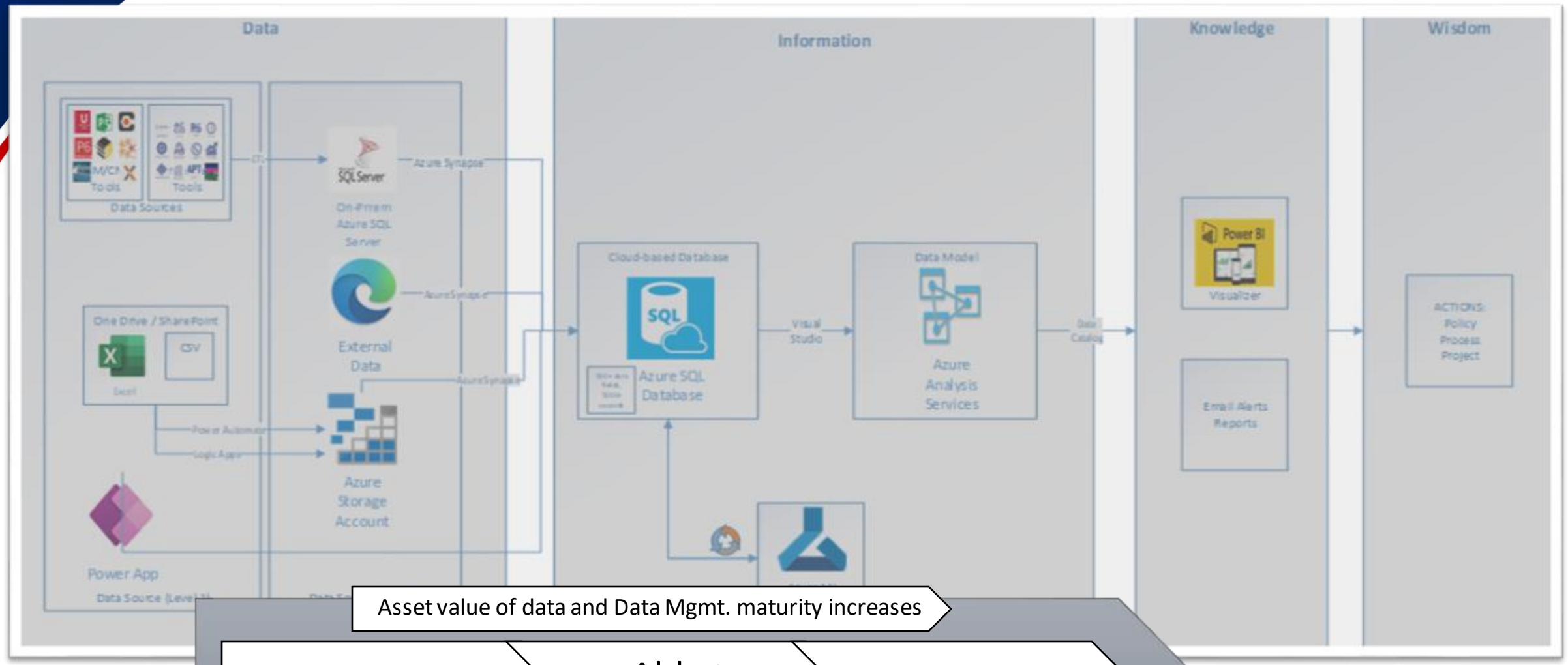
Performance Management

Through a **newly centralized Project Controls Division**, DDC is using rigorous data analytics at all stages of project delivery to identify strengths, monitor progress and find new opportunities for improvement.

A Focus on Data-Driven Improvement

Since the 2019 *Blueprint*, DDC has advanced a rigorous, performance-based approach to agency operations. We have embedded a culture of performance management at all stages of project delivery. Using clear and measurable data alongside ambitious targets, DDC continually monitors performance to chart our progress. We also identify opportunities for improvement and devise data-driven strategies to address them.

Analytics Model



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Data Catalog Considerations

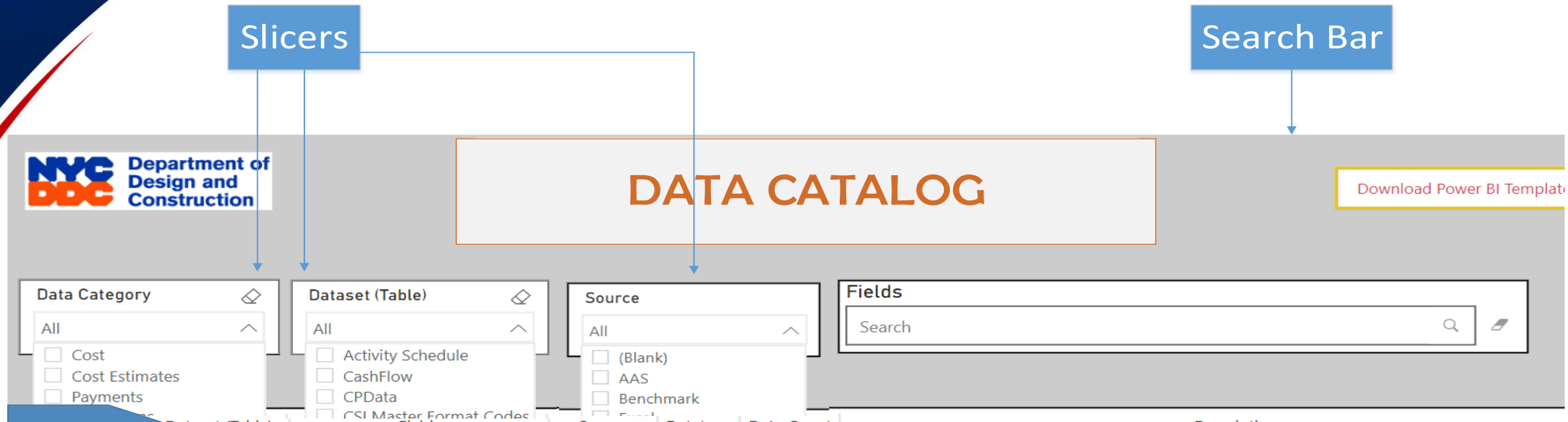
Content – What is included?

- Cost, Schedule, Risk, other Project features, external data
- Add data incrementally
- Ensure content is trusted

What is the right tool?

- Store metadata in Azure SQL database
- Navigate using Power BI
- Use Power App for inputs

Data Catalog Interface



	Dataset (Table)	Fields	Source	Datatype	Data Count	Description
	Activity Schedule	Activity Id	P6 (XML)	text	22,394	The unique identifier of the activity. In order to identify and track activities, P6 assigns each activity unique Activity ID that is the result of joining the Activity ID Prefix with the Activity ID Suffix and th adding an Increment value. For example, a prefix of PROJ-A# combined with a suffix of 2500 and a Increment of 5 will yield the following activity IDs: PROJ-A#2500, PROJ-A#2505, etc.
Schedule	Activity Schedule	Activity Name	P6 (XML)	text	22,394	The name of the selected activity's predecessor or successor.
Schedule	Activity Schedule	Actual Duration	P6 (XML)	int	22,394	The total working time from the activity Actual Start date to the Actual Finish date for completed activities, or the total working time from the Actual Start date to the data date for in-progress activ The actual working time is computed using the activity's calendar.
Schedule	Activity Schedule	Actual Duration (In Days)	PC Azure DB	int	22,394	Duration for activity (days) - Based on data fields from P6
Schedule	Activity Schedule	Actual Finish Date	P6 (XML)	date	22,394	The date on which the item, such as an activity, assignment, or project, is complete.
Schedule	Activity Schedule	Actual Start Date	P6 (XML)	date	22,394	If work has started, the date work on the activity, WBS, project, or EPS began. If resources (labor, nonlabor, or material) or roles are assigned to the activity, the actual start date earliest among all the resource or role assignments. For a WBS, project, or EPS, the actual start date is the earliest actual start date among all activities the WBS, project, or EPS.
Schedule	Activity Schedule	At Completion Duration	P6 (XML)	int	22,394	The total working time from the activity's current start date to the current finish date. The current s date is the planned start date until the activity is started, and then it is the actual start date. The cu finish date is the activity planned finish date while the activity is not started, the remaining finish d while the activity is in progress, and the actual finish date once the activity is completed. The total working time is calculated using the activity's calendar.

Wrapping Up….

Extract

Analytics & Project Controls

Roadmap to Success

What does the data say?

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THANK YOU FOR YOUR TIME !

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