
When Acceptance Isn't Enough; Improving Evaluations of Novel Decision Support Tools

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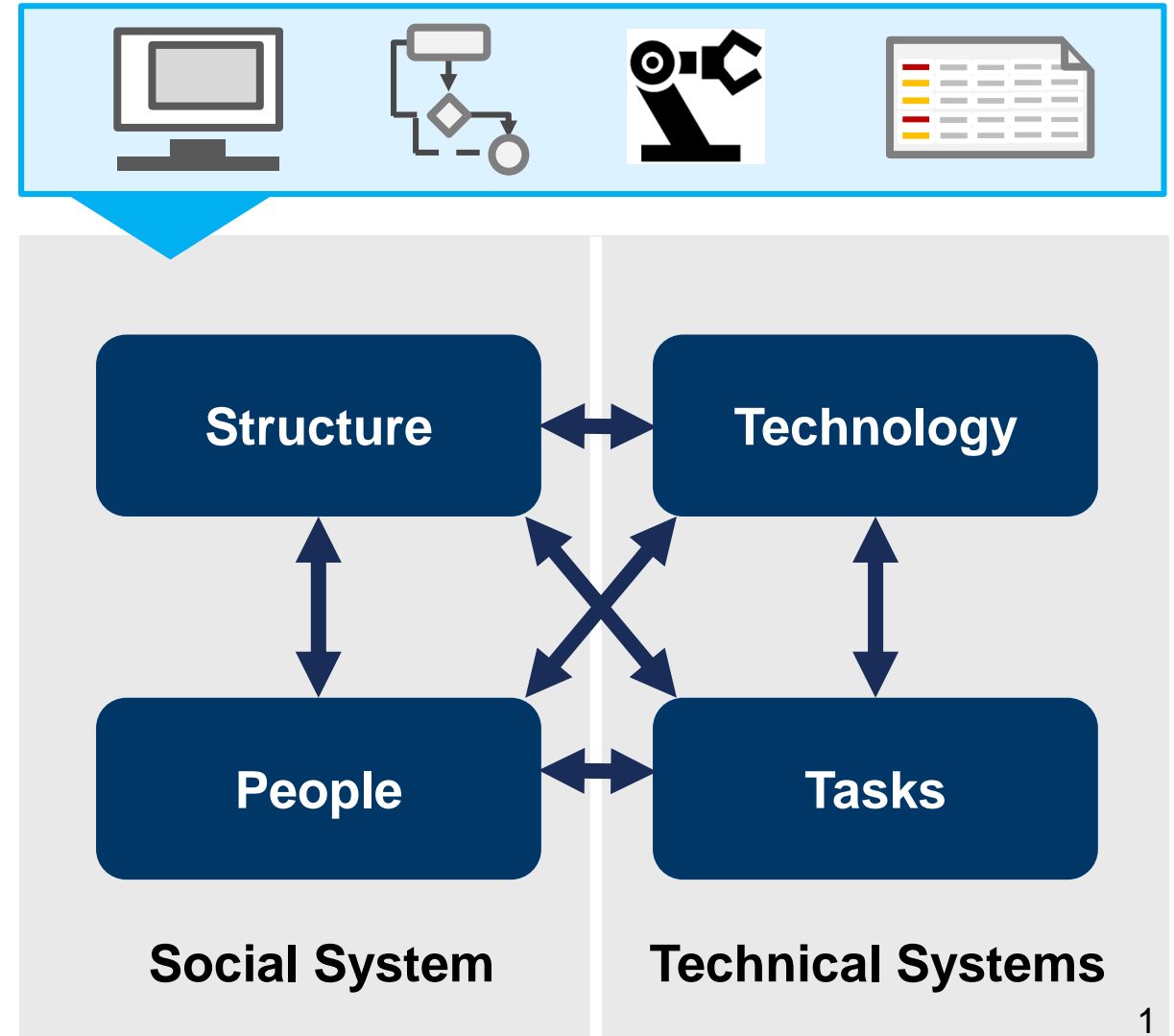
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The Difficulty Introducing Novel Technology





- **Need to integrate with existing**
 - **Processes and procedures**
 - **Tools and technology**
 - **Tasks and goals**
- **Many organizations rely on prospective users to evaluate new tools**



¹ Adapted from: Robert P. Bostrom, J. Stephen Heinen, MIS Problems and failures a socio-technical perspective part II: the application of socio-technical theory, MIS Quarterly, v.1 n.4, p.11-28, December 1977



The User Acceptance Gap

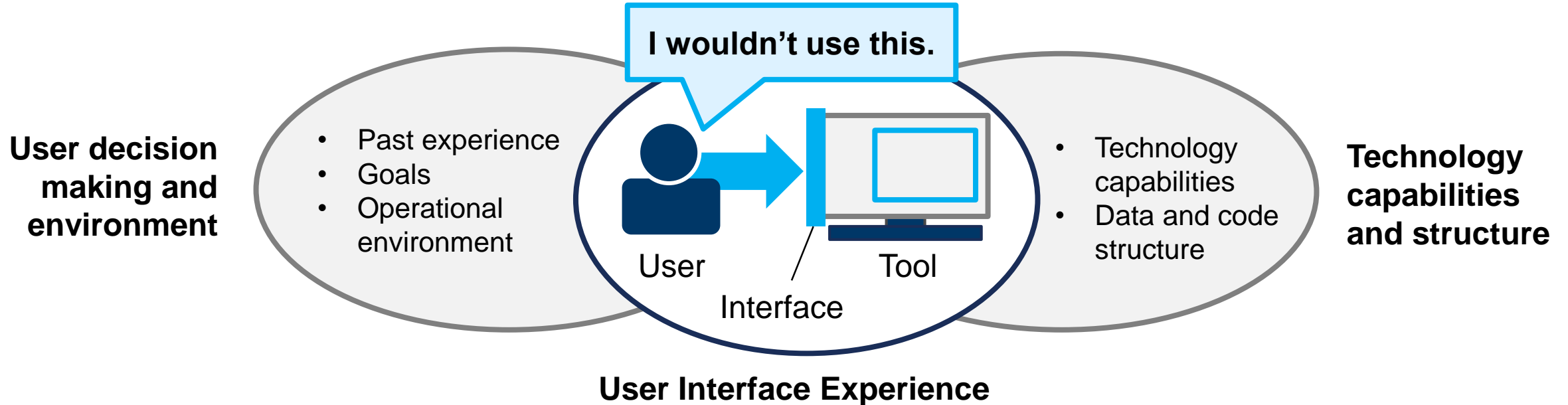
A user can...		User Acceptance	
		Reject	Accept
Potential for Operational Benefit	High	 <i>reject high benefit tool</i>	 <i>accept high benefit tool</i>
	Low	 <i>reject low benefit tool</i>	 <i>accept low benefit tool</i>

User acceptance methods provide a means to evaluate technology

- **Challenges:**
 - May not address potential for operational benefit or identify means to improve
 - May not account for additional skills or process changes required



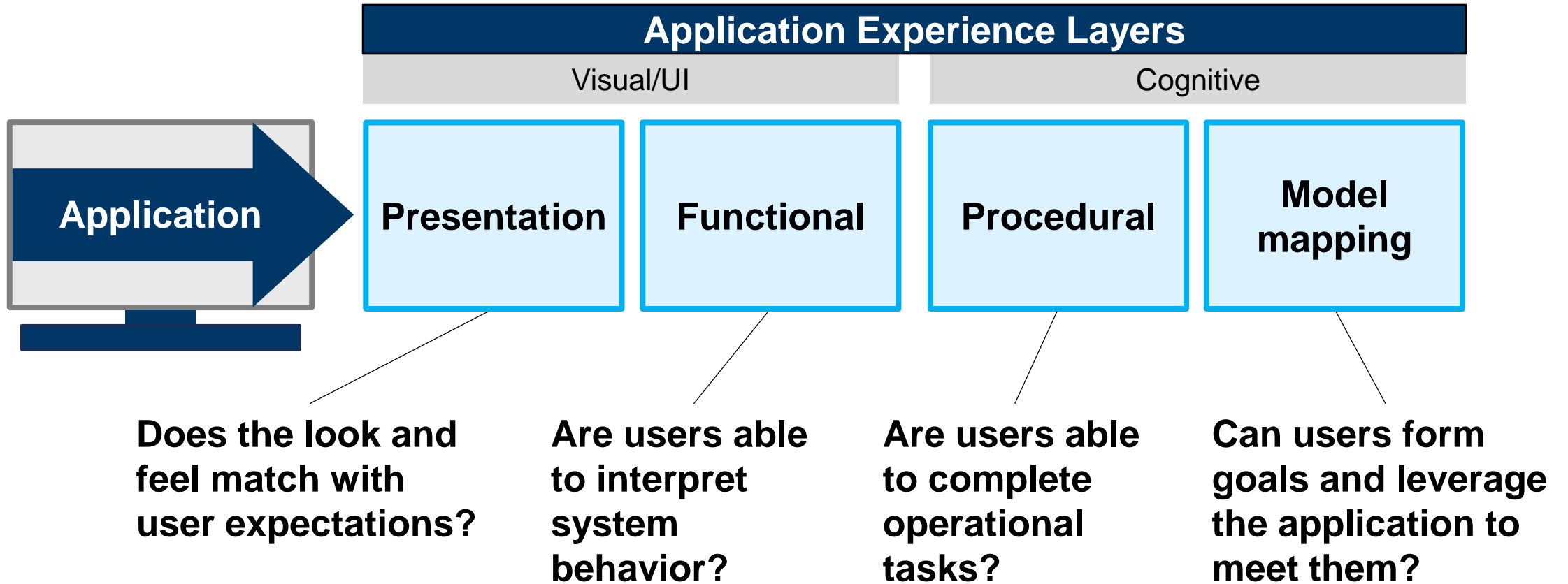
Users, Technology, and Interfaces



- **Users experience the technology through the interface**
- **Reducing project risk and targeting efforts requires proper interpretation of user feedback**



Application Experience Framework²: Anticipating and Interpreting User Experience



²Working paper: J. Alekseyev (2019). "Novel Application Experience Framework to Improve Evaluations of User Interfaces"



Application of Framework

Layer	Focus	Formative / Evaluative	Suggested Method
Presentation	Does the look and feel match with user expectations?	Formative	Review existing, new concepts
		Formative / Evaluative	Review of best practices
		Evaluative	Usability assessment
Functional	Are users able to interpret system behavior?	Formative	Review existing
		Evaluative	Cognitive walk-through
		Evaluative	Usability assessment
Procedural	Are users able to complete operational tasks?	Formative	User interviews, walk-through
		Formative	Critical decision study
		Evaluative	Cognitive assessment
Model Mapping	Can users form goals and leverage the application to meet them?	Formative	Task, goals assessment
		Formative	User interviews, walk-through
		Formative	Team interviews, walk-through
		Evaluative	Cognitive assessment



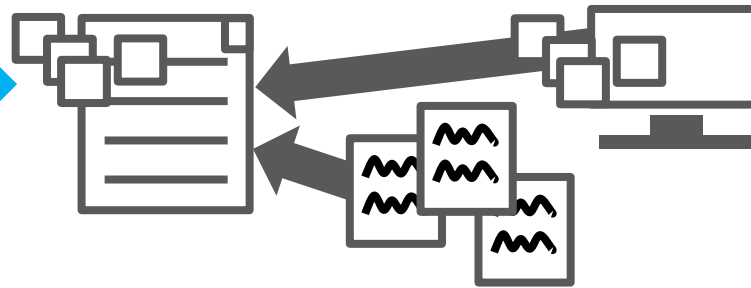
Case Study: Metrics Management for the Military Sealift Command (MSC)

Data Identification



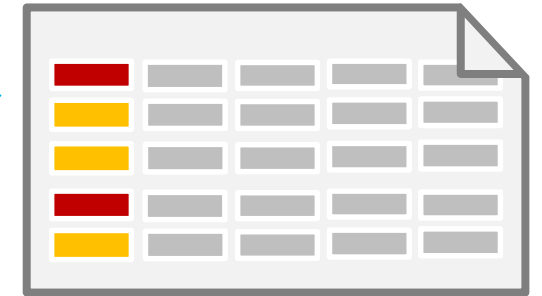
Terms can have different meanings; data may be stored locally

Data Integration and Curation



Time-intensive to gather, clean, and compile data for each metric

Decision-Making



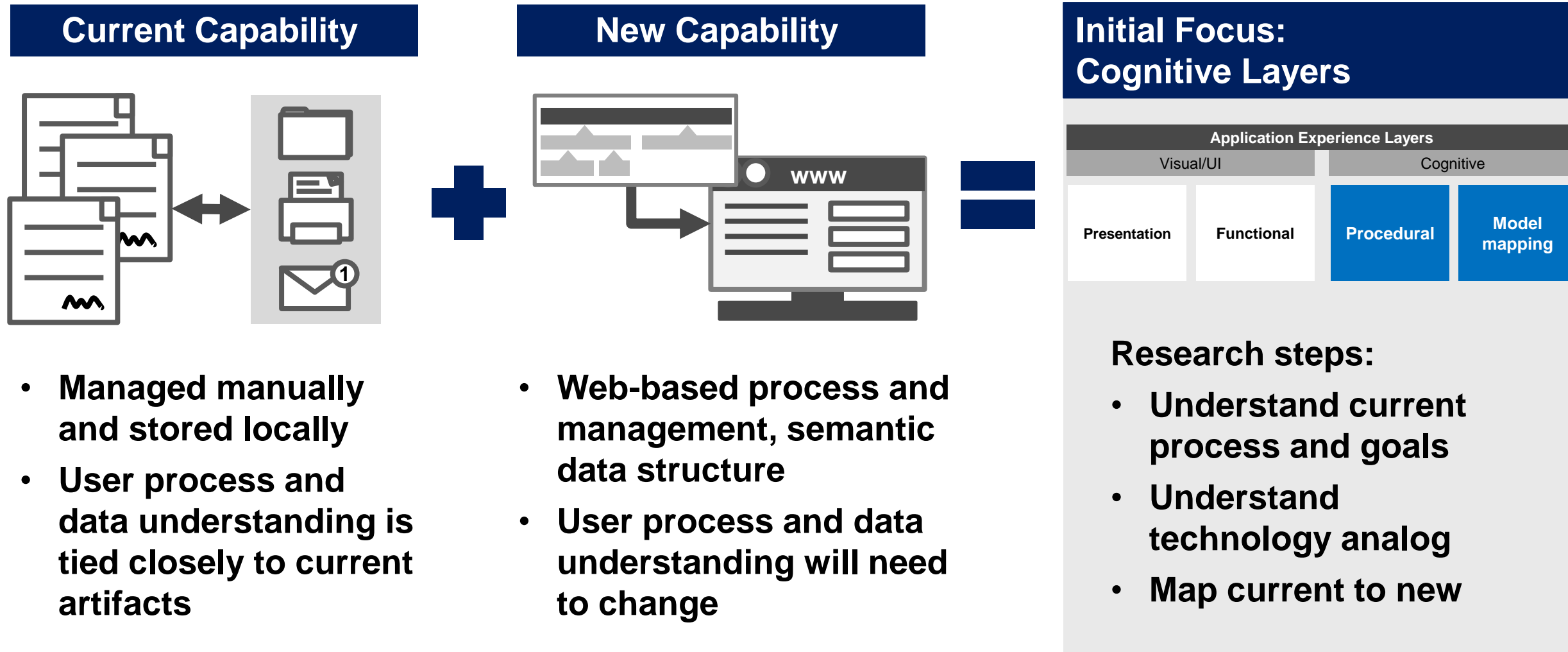
Time intensive to manage, update, and maintain data

Data Management: Semi-manual process for updates or changes

Goal: Introduce technology to improve metrics management



Case Study: Identifying Initial Focus





Case Study: Mapping Steps

1. Current concept

Metric: Shipping Time

Notional

Definition: Ratio of

$n_{\text{shipped}} = \# \text{ orders shipped on or by the requested date, divided by } n_{\text{total}} = \text{total number of orders}$

Calculation: $n_{\text{shipped}} / n_{\text{total}}$

Data Source:

Shipping Orders Database

Managed by: Program Management, John Doe

Leadership Approval: *Sue Adams*

2. Map to New Technology



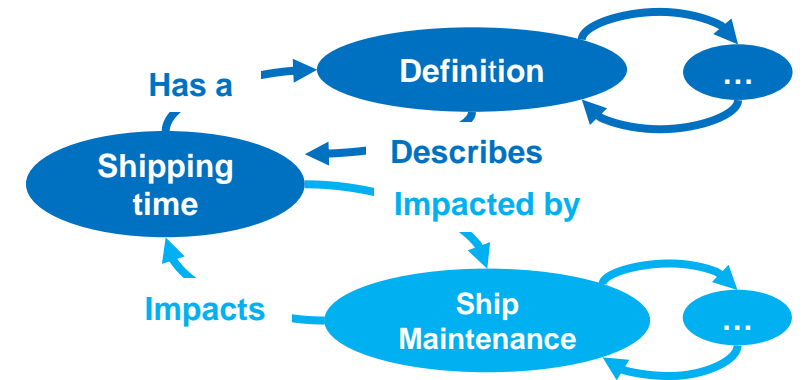
Term definitions and descriptions



Process management



"Tribal" data knowledge



Example semantic data structure



Summary and Conclusions

- **Introducing novel technology into existing processes is complicated, and success can be difficult to measure**
- **Effective use of user acceptance measures requires robust understanding of user experience with technology interfaces**
- **Novel framework was developed to guide interface analysis and interpretation of user feedback, and was applied to support research and development of prototypes for MSC**



Acknowledgements

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