

DECISION SUPPORT SYSTEM FOR ORGANIZATIONAL CAPABILITY ASSESSMENT

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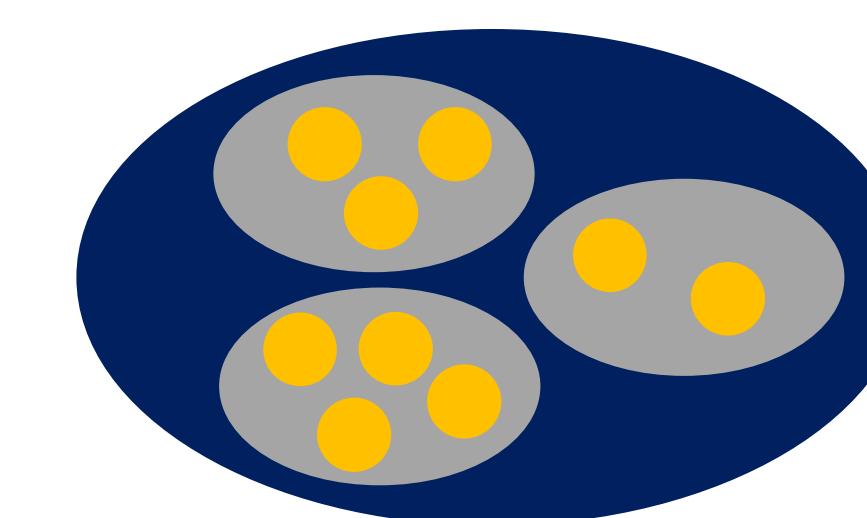
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Motivation

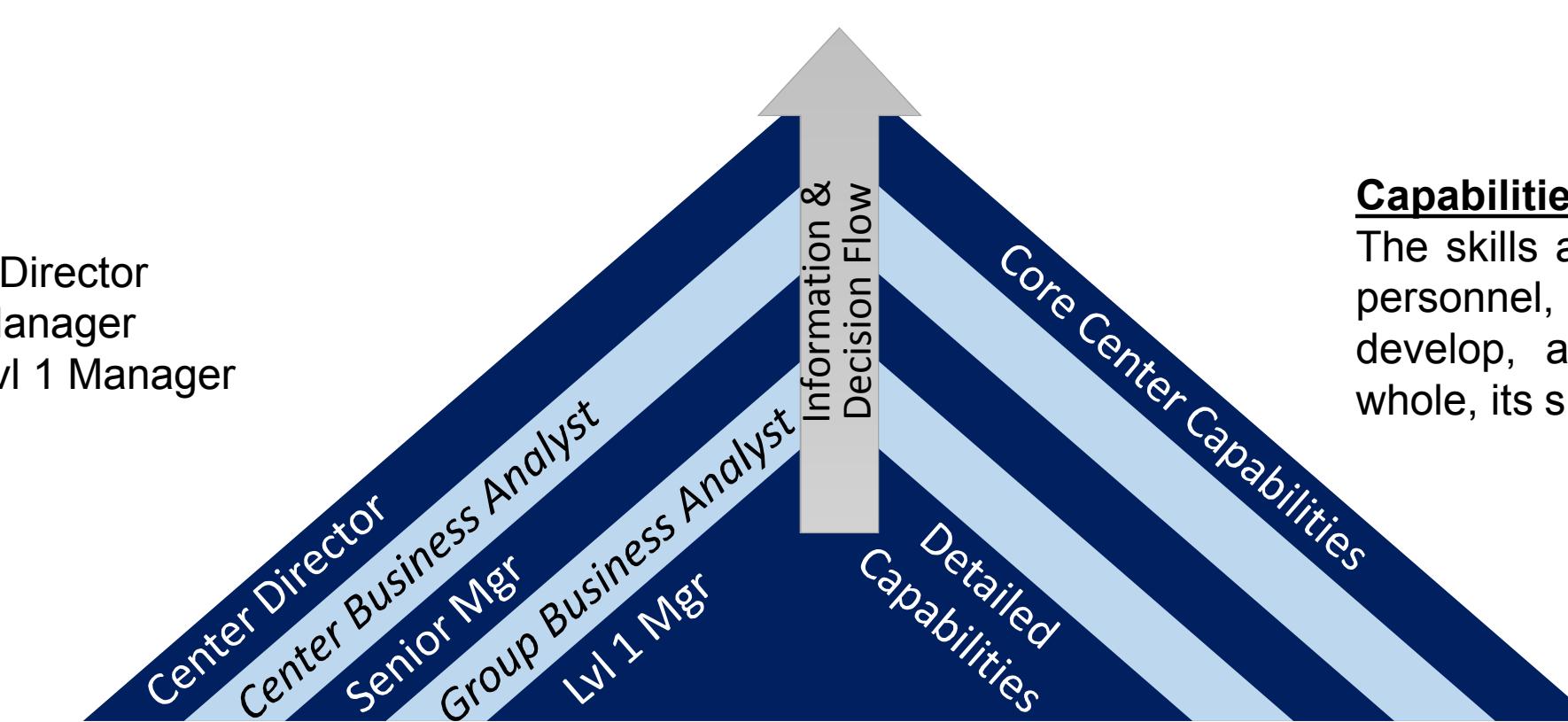
Problem: Currently, there isn't a rigorous system for tracking and supporting strategic, programmatic decisions regarding what capabilities should be established, grown, maintained, retired, transitioned, or reinstated. Currently, these decisions are made using experience and subjective predictions.

Proposed Solution: Creation of a dashboard to outline an organization's strategic investments into technologies and capabilities. The dashboard would include a status of current capabilities as well as historical information of past capabilities.

Context



Hierarchical Structure
 ➤ Navy – "Center", lead by Center Director
 ➤ Gray – "Group", lead by Senior Manager
 ➤ Yellow – "Department", lead by Lvl 1 Manager



Capabilities
 The skills and knowledge, processes, facilities, personnel, and equipment needed to design, develop, and support the organization as a whole, its subsystems, and its components

Potential Impacts



CONTENT

Describe current capability landscape

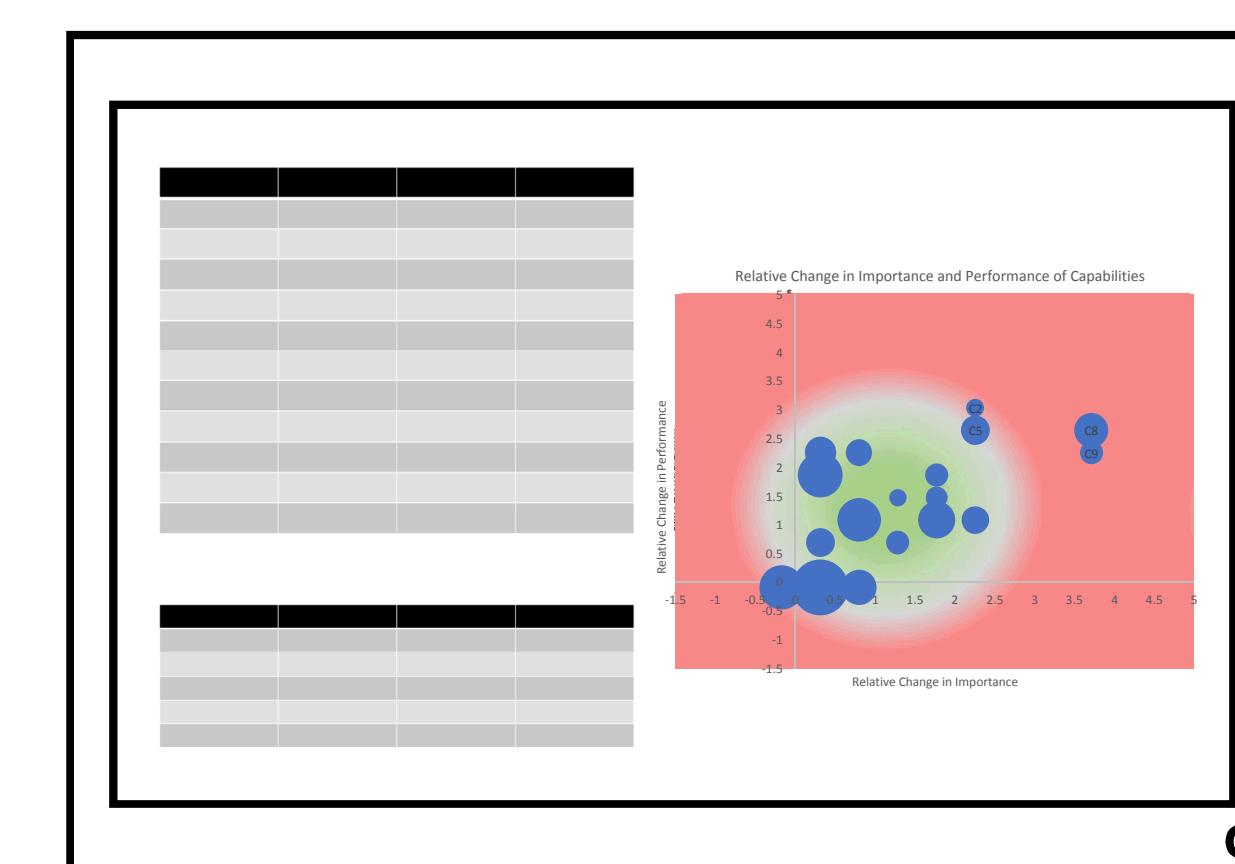
Design semi-structured interview protocol → Conduct interviews with Department Managers → Analyze interview notes using qualitative, content analysis → Send resulting information to participants for feedback

Interview Overview
 Identify which capabilities need to be grown and how managers can strategically achieve growth.
 Elicit Level 1 managers' perception of:
Capability Importance to the overall organization's mission
Capability Performance or the team's ability to execute and apply the capability

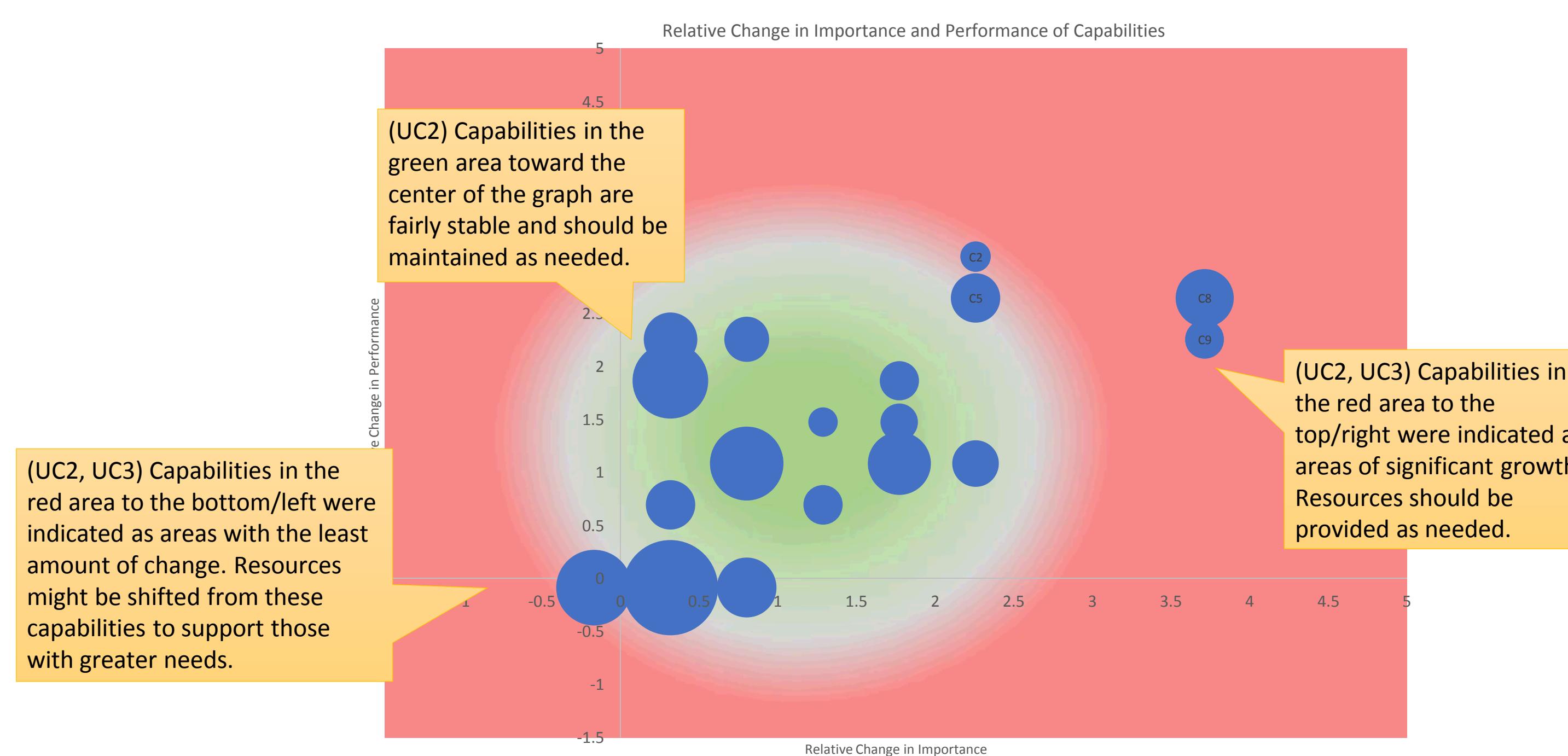
Department	Capability	Core Capability (CC)	Importance Current	Importance Future	Performance Current	Performance Future	Associated Projects	Resource Needs
Dept 1	Capability 1	CC1, CC3, CC4	3	10	3	10	P1, P5, P10	Training, Hiring
Dept 1	Capability 2	CC1, CC2, CC3	4	5	10	10	P1, P2, P3	
Dept 1	Capability 3	CC4, CC5	5	8	3	8	P2	Collab w/ Stat Team
Dept 1	Capability 4	CC4	10	10	7	7	P2, P3, P6, P10	
Dept 1	Capability 5	CC2, CC3	3	6	5	8	P2, P3, P6, P9	Networking, Mgt Support
Dept 1	Capability 6	CC1, CC2, CC3, CC4, CC5	5	5	4	6	P1, P2, P3, P4	Software, Desk Space
Dept 1	Capability 7	CC6	3	3	10	10	P4, P8	
Dept 1	Capability 8	CC2, CC3	7	7	10	10	P2, P7	
Dept 1	Capability 9	CC3, CCS	3	7	3	6	P4, P7	
Dept 1	Capability 10	CC1, CC3, CC4	3	7	3	10	P2, P4, P6	Hiring, Co

Core Capabilities
 Three of the core capabilities were initially identified through the organization's business rhythm. These categories were then associated with individual manager capabilities through a Thematic Analysis. In the Thematic Analysis, two researchers individually read through all of the manager's capabilities and identified common, high-level themes (the Core Capabilities). The researchers then compared their findings and discussed differences to agreement. The analysis identified three additional core capabilities (customer interactions, personnel KSAs, and training).

Ex. Core Capability	Selected Department Capabilities
Surety Assessment	Reliability, Safety Engineering, Modeling, Core Engineering, Statistics, Risk Analysis
Qualification	Statistics, Technical Engineering Judgement, Data Analysis, Mapping Requirements, Fault Tree
Data Analysis	Statistics, Technical Engineering Judgement, Modeling, Design of Experiments, Data Mining
Human Dimension	Risk Analysis, Elicitation, Task Analysis, Decision Support Systems, Usability, Engineered Safety
Customer Interactions	Networking, Technical Communication, Ability to Influence, Network Broadness, Peer Review
Personnel KSAs	Tech Communication, Collaboration & Teaming, Instruction, Problem Solving, Engineering Judgement
Training	Technical/Topical Courses, Onboarding



Users: Center Director, Business Office (Center Business Analyst, Group Business Analysts), Senior Managers, Level 1 Managers



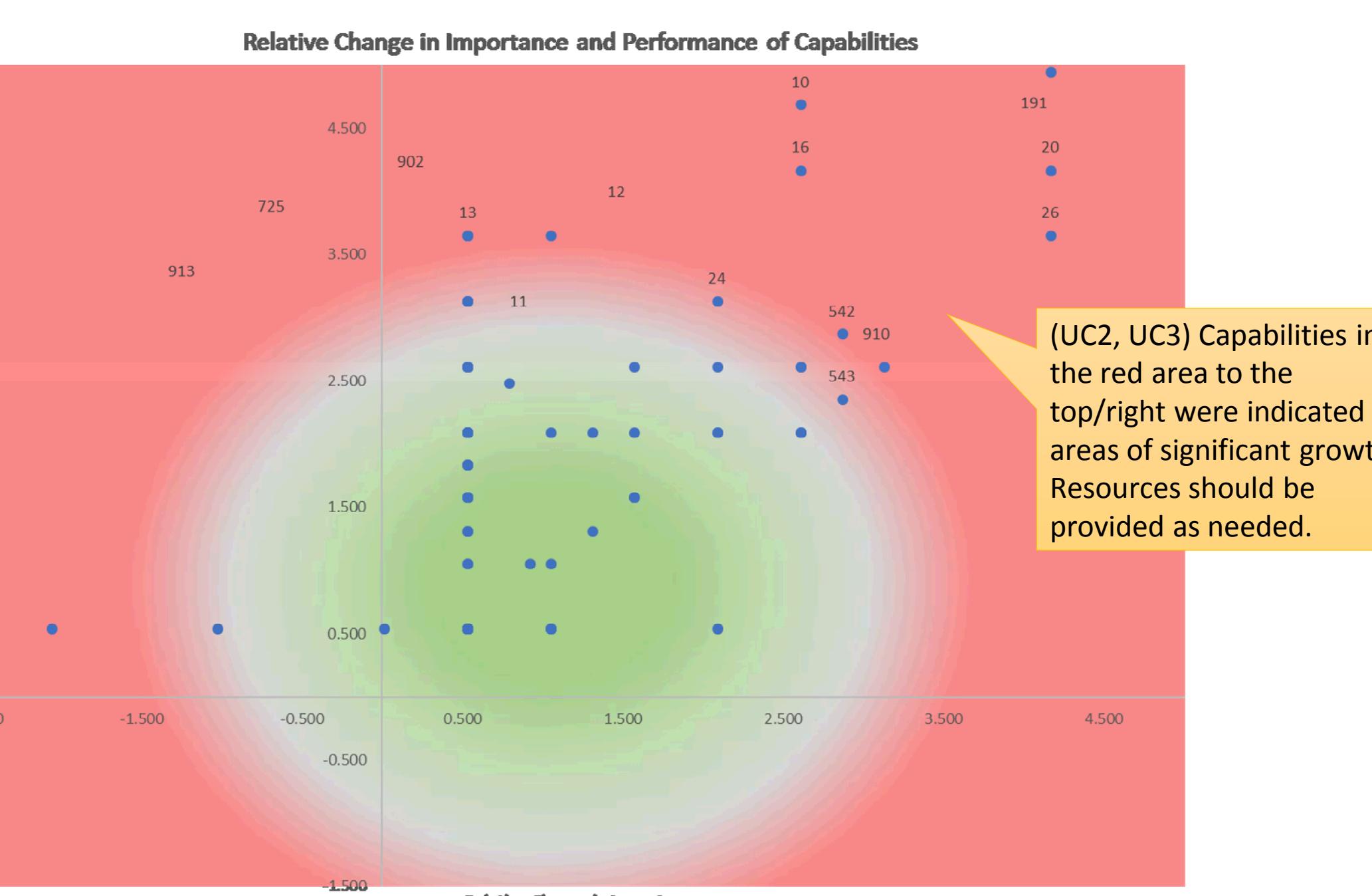
COMPONENTS

Define Dashboard Use Cases

Outline user groups and information flow → Design semi-structured interview protocol → Interview one member of each user group → Define detailed use cases → Group use cases into high-level categories → Prioritize use cases based on original problem statement

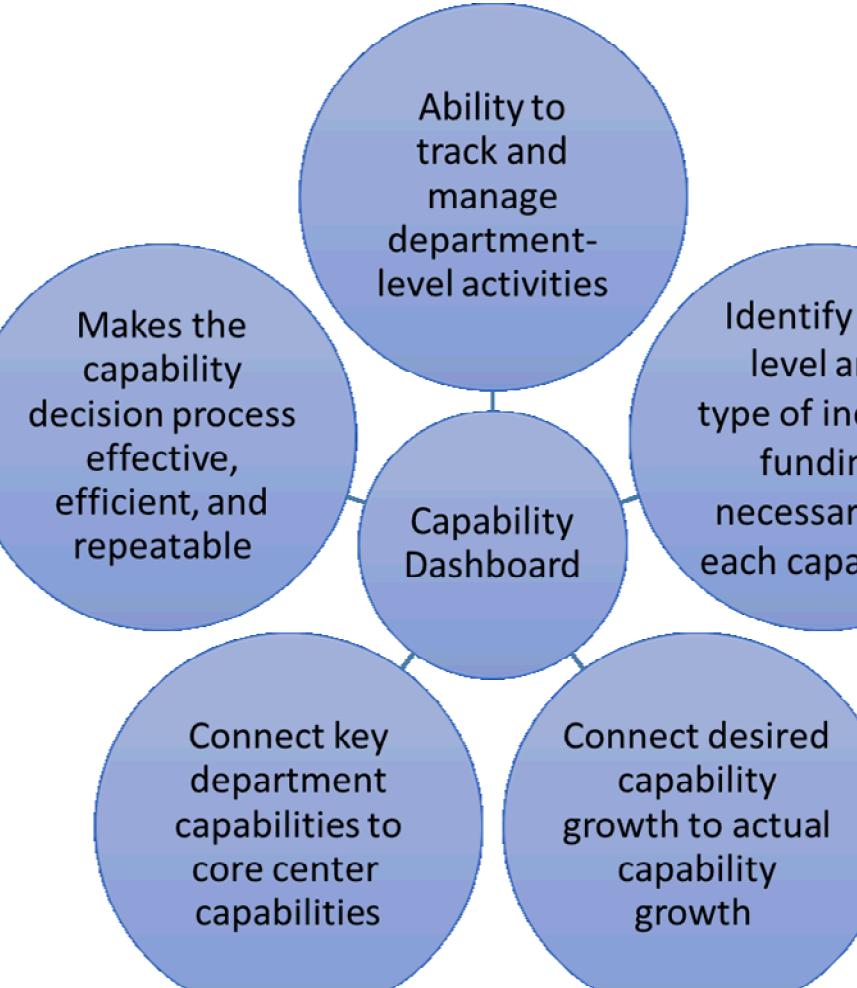
Use Cases

1. Identify center capabilities
2. Assess health of capabilities
3. Support funding allocation decision-making
4. Support sharing information and decision-rationale between different entities (e.g. R&D management and the business office)



The Murchi graph demonstrates how the importance of a department's capability as well as how the execution or performance is changing over (future) time, from the perspective of the department manager. The axes of the Murchi graph are weighed such that each capability is compared relative to the other capabilities. The x-axis represents the change in importance, and the y-axis represents the change in performance (both weighted relative to other capabilities). The center of the Murchi graph is at (1,1), or where capabilities are maintaining their current importance and performance state. As you move radially outward from this center point, the managers desired a greater change in importance and/or performance for that specific capability. From statistical analysis, the "green" region is considered our more stable area. Outside the "green" region, is the "red" zone, where capabilities often need resources to enhance their importance (right side of graph), their performance (upper portion of graph), or both (upper-right corner of the graph).

Implications



Future Work

Develop Dashboard Prototype

- Iterative design process
- Gather user feedback
- Test dynamic and flexible platform
- Verify and Validate dashboard

Provide tool for resource management using a data-driven approach

- Connect desired capability growth to actual capability changes
- Gather decision-making rationale
- Compare previous year's budget to next year's expected budget
- Prioritize long-term and short-term investment needs

Integrate business operations tools with capability management tool

- Understand business office processes, information, and tools
- Share information with business office and financial analysts
- Share supporting data about capability investments



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