

Background

Mission planning in aviation is a highly complex, critical, multi-stage process that occurs in all branches of the military.

Planners may be required to use multiple software tools that each have individual functions.

Many collaborators are involved in the development of the Air Force and Navy's next-generation mission planning system.

Managing a large, cross-enterprise portfolio raises challenges of usability at scale.

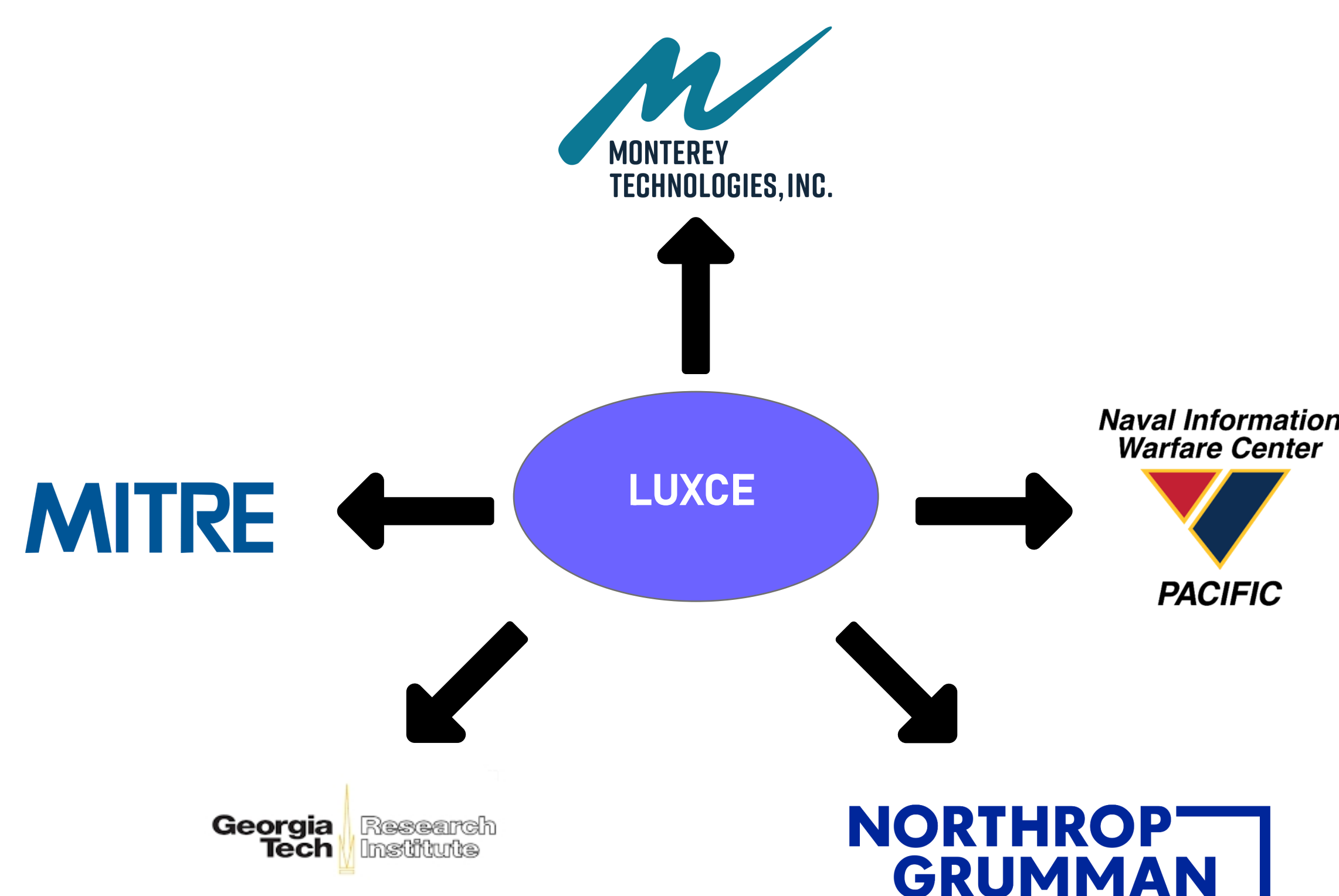
Implementing design standards for consistency is a continual challenge in the Department of Defense, with both government and private contractors working separately on different pieces of software.



The LUXCE Model

The Lean User Experience Center for Excellence (LUXCE) is a living example of a cross-institution collaboration.

Establishing and maintaining standards for the mission planning User Interface (UI) is the primary goal of LUXCE.

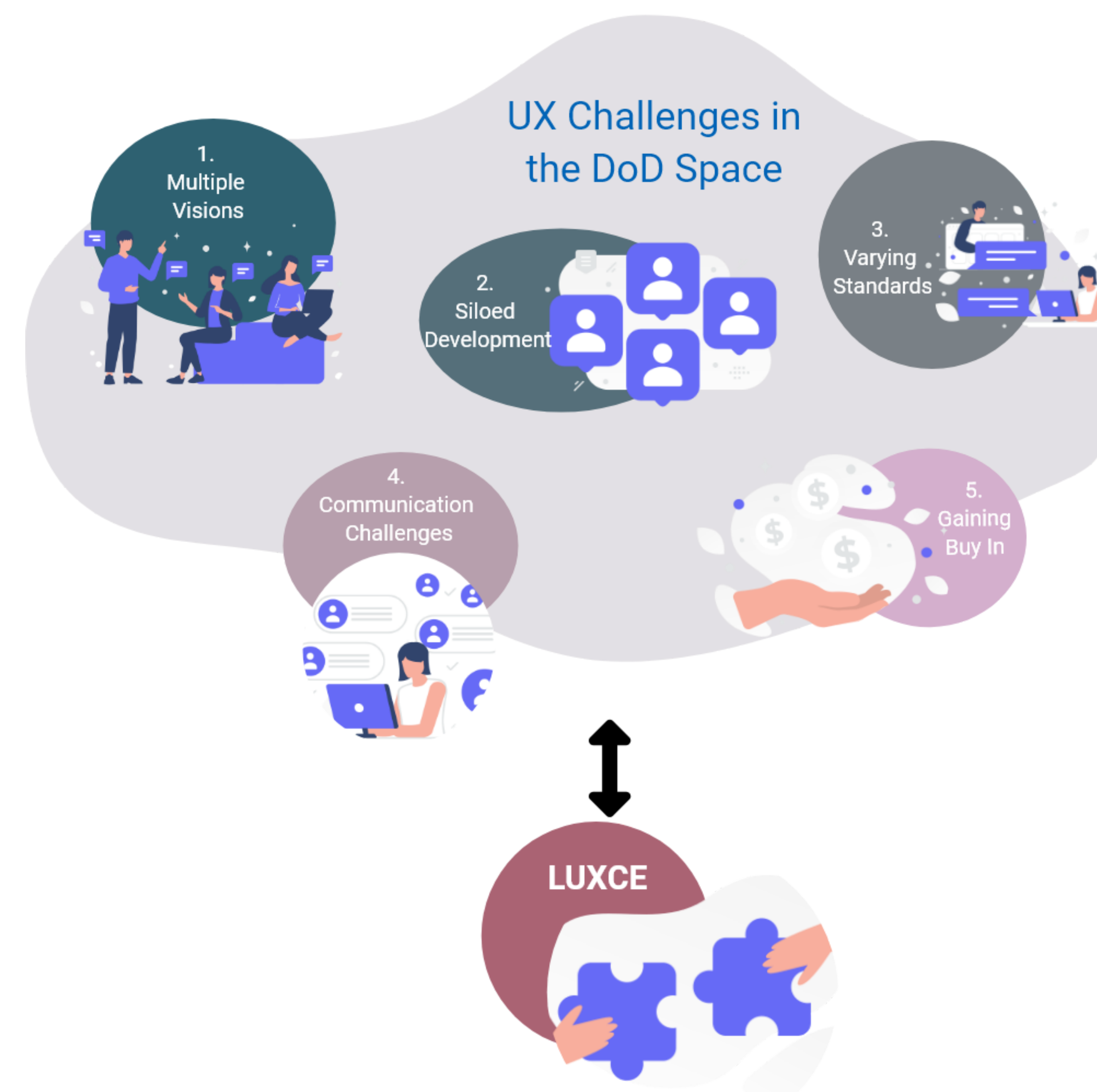


LUXCE successfully improves mission planning software usability via user-centered design processes at the Enterprise level.

Challenges

Tailored tools exist to meet individual mission and weapon planning requirements.

Usability decreases with lack of consistency and standards [1].



Multiple Visions

Different SME visions & perceptions of user and community needs lead to inconsistent requirements and design.

Siloed Development

Software built by varying contractors using individualized processes can result in tools with varying functionality.

The inconsistency hampers usability when the disparate tools are combined into a single mission planning process.

Varying Standards

Varying research processes and standards lead to inconsistent or mismatched levels of usability.

Communication Challenges

Enterprise wide communication issues hinder requirement identification.

Misalignment between user needs and design requirements results in decisions that neglect user-friendliness.

Identifying and following-up with responsible teams is difficult due to dispersed tools & features.

Gaining Buy-in

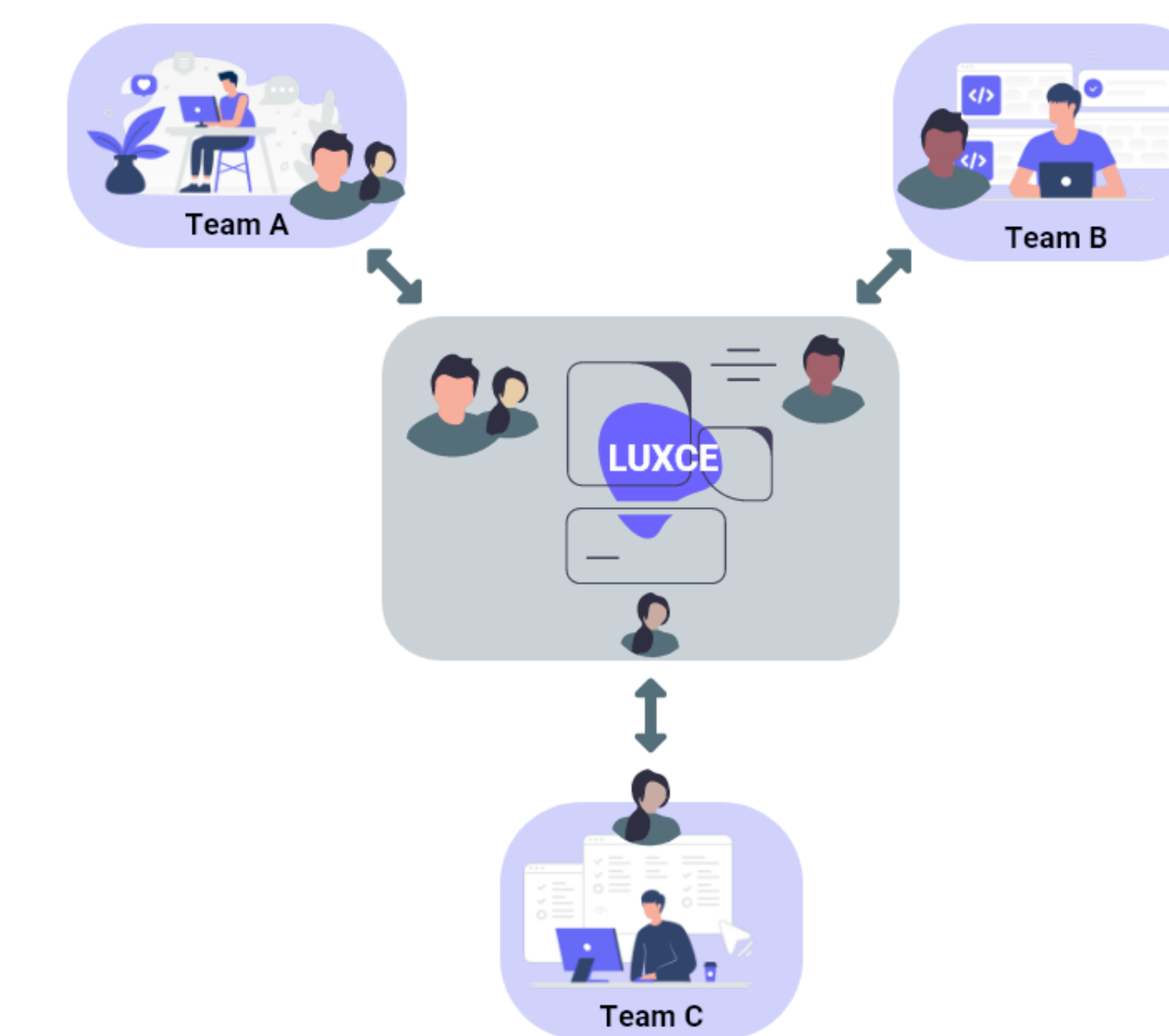
Stakeholder support for user-centered design face hierarchical challenges as user-center design practices can often be deemphasized.

LUXCE Solutions

Centralization of UX activities and knowledge helps mitigate design challenges.

Applies user centered design across all design and development groups.

Members are integrated in cross-functional teams.



Establishes and enforces design standards via a formal style guide.

New ideas are presented to and must be approved by the group.

LUXCE includes a formal user feedback process at regular intervals.

Unified Visions

Customers seek a unified mission planning software. LUXCE guides customization while ensuring a cohesive design and feature consolidation.

Established Development Standards

LUXCE acknowledges diverse development teams but integrates its standards through continuous design review, user research, and iteration across all UI components.

Consistent Standards

The LUXCE research team maintains consistent research processes across all software components via regular user feedback collected every 2-3 weeks. Participants include non-stakeholder end users, ensuring objective feedback.

Open Communication

LUXCE emphasizes regular communication with developers and stakeholders by involving design early on in the development process.

Open communication with developers helps align UI design with software constraints.

Developers are engaged from the start to ensure smoother hand-offs.

Successful Buy-in

Objective insights from user feedback sessions facilitate stakeholder buy-in.

Conclusions

1. LUXCE addresses the challenge of specifying requirements and determining design approvals.

2. LUXCE's collaboration improves cohesion for tools under its control, but cannot influence software development externally.

3. LUXCE demonstrates the success of an enterprise-level user-centered design process for mission planning software.

Learning Objectives

1. Consistency and standards are key principles of usability.

2. Practical advice for establishing and implementing design standards.

3. Successful government-private sector collaboration resulting in enterprise-level approach.

References

[1] Nielsen, J. (1994b). Heuristic evaluation. In Nielsen, J., and Mack, R.L. (Eds.), Usability Inspection Methods, John Wiley & Sons, New York, NY.