

# USER-CENTERED DESIGN CSP 588

## Participation – P5

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### Participation – P5

1) Choose any commonly used system and:

Let's consider **ATM systems** which are very commonly used and examine how **top-down** and **bottom-up design improvements** may be shown in an ATM (automated teller machine) system:

– **Explain an aspect of the system which represents a bottom-up design improvement.**

Considering the definition and concepts of **Bottom-up design** that is:

Designing for existing work practice

- Starts with details known **about work domain, work practice, usage**
- Design informed **directly by usage research**
- Design **built up to support the known usage**

**Goal:** Improve support for existing work practice

Sometimes called User-Centered design (UCD)

A **practical approach**, least risk, least disruption

- But also least likely to be innovative

#### **Bottom-Up Design Improvement for ATM Systems:**

- **User-Centric Interface:** The ATM system's transaction flow and user interface **demonstrate the benefits of bottom-up design.**

- **Human-Teller Experience:** At first, user research and well-established bank customer behaviours were used to inform the layout of ATMs to simulate the interaction experience with a human bank teller.
  - **User Behaviours:** A thorough understanding of banking activities and user behaviours including cheque deposits, cash withdrawals, money transfers, and balance inquiries was the foundation for the bottom-up strategy.
  - **Familiar and Accessible:** The goal of the bottom-up design was to provide an ATM experience that was familiar and intuitive for users who were used to visiting physical bank locations.
  - **Supporting Existing Processes:** By providing a self-service option that enhanced conventional banking interactions, the main objective was to improve the support for current work processes.
  - **Task-Centric Interface:** A bottom-up design approach is demonstrated by placing key choices like "Withdraw Cash," "Deposit," "Balance Inquiry," and "Transfer Funds" prominently on the ATM's main screen.
  - **Data-Informed Design:** These options are positioned strategically to represent the most frequently performed banking tasks by users, as determined by the use of research data.
  - **Usability and Awareness:** Bottom-up design enhancements to the ATM system prioritise usability and familiarity to minimise user learning curves and cause as little disturbance as possible to long-standing banking practices.
- **Explain an aspect of the system which represents a top-down design improvement.**

Considering the definition and concepts of **Top-down design**

**Designing for abstract work activities**

**Goal:** Create the **best design solution** that **enhances and supports** the work  
Can be **informed by usage research data**, but:

- The primary driver is the **designer's knowledge, skills, experience, intuition, and creativity**

**Top-Down Design Improvements in ATM Systems:**

- **Integration of Advanced Security Features:** The integration of advanced security features, such as biometric identification and cardless transactions, is evident in the ATM system's improved top-down architecture.

- **Focus on Unique Solutions:** Top-down design seeks to anticipate creative solutions that go beyond current practices by giving priority to developing design solutions that improve and support the job, even if doing so means introducing fresh ideas or technology.
- **Increasing Security, Efficiency, and Convenience:** Top-down design enhancements for ATM systems seek to increase security, efficiency, and convenience; these objectives are frequently met by using technological breakthroughs.

### Top-down Design Improvement Examples

- **Biometric Authentication:** A top-down design enhancement has been made with the advent of biometric authentication techniques like fingerprint or vision scanning. The designers' goal of enhancing the ATM experience overall by using upcoming technology is reflected in this creative solution, which provides a more convenient and secure substitute for conventional ATM authentication techniques.
- **Cardless Transactions:** In the same way, the introduction of cardless transactions, which allow customers to access cash without actual cards by using their smartphones or authentication applications, is an example of a top-down design methodology. This creative approach, which relies less on pre-existing user behaviours and more on the imagination and vision of designers, represents a change in transaction start and authentication.
- **Visionary and hazardous:** The ATM system's top-down design innovations are revolutionary and can completely change the way that financial services are provided. They may be risky, though, and consumers would have to adjust to new methods and technology. Nevertheless, these developments might improve ATM transaction accessibility, security, and efficiency.

2) Compare the improvements and discuss:

– The relative effort to achieve each (which was harder and why)

### Bottom-Up Approach:

- **Required Efforts:** Significant study, analysis, and repeated testing are frequently necessary when implementing improvements through a bottom-up method. Usability testing, significant user research, and feedback-driven iteration are all necessary for this method as it demands an in-depth understanding of user needs, behaviours, and preferences. It

**takes time and money** for designers to collect information, evaluate results, and refine designs to make sure they satisfy user demands and improve the user experience as a whole.

- **Reasoning:** The **goal of bottom-up improvements** is to **enhance current designs** by taking user input and insights into consideration. This takes a **lot of work to collect and analyse**. The technique requires several iterations and modifications to reach the best outcomes because it is based on empirical data and user feedback. Furthermore, bottom-up **enhancements could require a labour-intensive process** of attending to a variety of small aspects to guarantee that they all work together to **improve the user experience**.

#### **Top-Down Design Improvements:**

- **Relative Effort:** When it comes to research and iteration, **top-down design changes could need less work than bottom-up methods**. This is because top-down innovations are **not influenced by direct user input**, but **rather by the vision, creativity, and competence of the designer**. To find chances for innovation and advancement, designers can depend more on their sense of intuition and industry expertise. Nevertheless, considerable resources may still be needed for experimenting, prototyping, and testing novel ideas when adopting top-down changes.
- **Difficulty:** Because bringing new ideas carries some risk and uncertainty, **top-down innovations can be difficult even though they may need less work in terms of user research**. To find chances for innovation that are feasible, designers need to have a **thorough awareness of user trends, upcoming technologies, and industry landscapes**.

- **The relative benefit (which was more significant and why)**

#### **Bottom-Up Design Improvement Benefit:**

- **User-Focused Solutions:** Bottom-up improvements aim to understand and meet the specific needs, behaviours, and preferences of users, resulting in more intuitive, efficient, and satisfying solutions closely aligned with user expectations.

- **Reduced Risk:** Grounded in real user data and feedback, bottom-up improvements lower the risk of investing in features that may not appeal to users, minimizing the chance of product failure and increasing market acceptance by prioritizing user needs and preferences.
- **Improved Usability:** Bottom-up improvements often lead to easier-to-use products or services, enhancing task performance, reducing errors, and boosting user satisfaction. This optimized user experience can provide a competitive advantage and foster long-term customer loyalty.
- The significant benefits of bottom-up design improvements stem from their focus on understanding and addressing user needs. By creating solutions that resonate with users, organizations can deliver products or services that meet or exceed user expectations, leading to increased satisfaction, loyalty, and market success.

#### Top-Down Design Improvement Benefits :

- **Innovation and Uniqueness:** Top-down improvements are fueled by forward-thinking, creativity, and industry expertise, leading to groundbreaking innovations and setting products or services apart in the market. By challenging norms and exploring new ideas, organizations can offer distinctive value and gain market share.
- **Strategic Edge:** Top-down improvements enable organizations to foresee future trends, technologies, and user needs, positioning them for long-term success and continuity. By embracing innovation and staying ahead, organizations can maintain a competitive edge and foster growth in rapidly changing markets.
- **Transformative Impact:** Top-down improvements can trigger major changes in user behaviour, business models, and societal norms, potentially leading to paradigm shifts in industries. By introducing disruptive innovations, organizations have the potential to reshape markets and define the future of their industries.
- The significant benefits of top-down design improvements arise from their capacity to drive innovation, uniqueness, and strategic advantage. By taking a visionary approach and pushing boundaries, organizations can create products or services that not only address current user needs but also anticipate future trends and opportunities.

