Optimizing The Proficient Lab's User Experience: Insights from Heuristic Analysis and Cognitive Walkthrough

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ABSTRACT

The Proficient Labs (TPL) platform is designed to streamline laboratory processes and enhance collaboration between life science sites and organizations. TPL achieves this by providing decentralized tools and resources, including document control, customizable training modules, compliance tracking features, digital files for document storage, and AI-supported dashboards for oversight of activities and compliance status. These features support the standardization of lab processes while also allowing customization of templates to meet specific lab needs. Additionally, the platform includes an AI assistant to help users create content by pulling and reformatting original material, further enhancing the user experience.

To refine TPL's user experience, HITLAB conducted a usability analysis, combining cognitive walkthroughs and heuristic evaluation techniques. Through cognitive walkthroughs, HITLAB simulated real user interactions to uncover potential cognitive barriers and assess how easily users can navigate the platform. The heuristic evaluation further assessed the platform's interface against Nielsen's 10 usability heuristics, identifying key areas for improvement in user interaction, task management, and clarity.

The results of this analysis provided actionable recommendations to enhance the platform's user-friendliness, improve task management workflows, and streamline the process of compliance tracking. These insights are aimed at making TPL a more repeatable, scalable, and efficient solution.

OBJECTIVES

- Assess the user experience and learnability of TPL platform through a task-oriented cognitive walkthrough.
- Derive actionable insights to refine TPL platform, with the aim of enhancing its efficiency.

STUDY METHODOLOGY

- Formulated key evaluation objectives aligned with the intended purpose of the interface and the expectations of the target audience.
- Two independent researchers conducted evaluations of the TPL platform to assess its usability.
- Three user personas were created for the evaluation, representing real-world end users of the TPL platform: a lab director, a lab manager, and a lab technician.
- The researchers evaluated and identified cognitive problems and task-related challenges encountered by users through cognitive walk through.
- The usability of the TPL platform was assessed using Jakob Nielsen's interaction design heuristics.
- Interface issues were ranked based on their severity, taking into account the frequency, impact, and persistence of problems.

TPL: A decentralized quality management ecosystem for life science laboratories

Why TPL Is a Game-Changer for Labs?

- **Decentralized Compliance Management:** TPL simplifies compliance by tracking and reporting in real-time, ensuring labs meet regulatory standards with ease and can collaborate with other organizations in TPL's network when needed.
- **Collaboration Made Easy:** TPL simplifies collaboration within teams and across labs by managing meetings, discussions, and action items, ensuring clear communication and accountable follow-ups.
- **AI-Powered Automation:** Integrated AI assistants automate routine tasks, provide content suggestions, and optimize workflows, improving productivity and reducing manual errors.
- **Scalable and Customizable:** TPL adapts to any lab, offering customizable templates and protocols that scale seamlessly as the operations grow.
- **Data-Driven Insights:** Real-time dashboards provide clear, actionable insights into training, compliance, and performance, empowering better decision-making.
- **End-to-End Integration:** TPL connects every aspect of lab operations—training, audits, document management—into one cohesive platform, reducing complexity and improving efficiency.
- **Automation Across Processes:** TPL automates key workflows, including training, competency assessments, and audits, ensuring that no events or tasks are missed, and everything is completed on time.

Key Features

01 AI Content Creator
02 Unparalleled Multi-Media Detail
03 Easy Navigation
04 Interactive Communication
05 Notifications And Reminders
06 End-To-End Digital Execution
07 Global Community Sharing
08 One-On-One TPL Support

RESULTS

Cognitive Walk-through

- Cognitive walkthrough unveiled several strengths as well as areas of improvement.
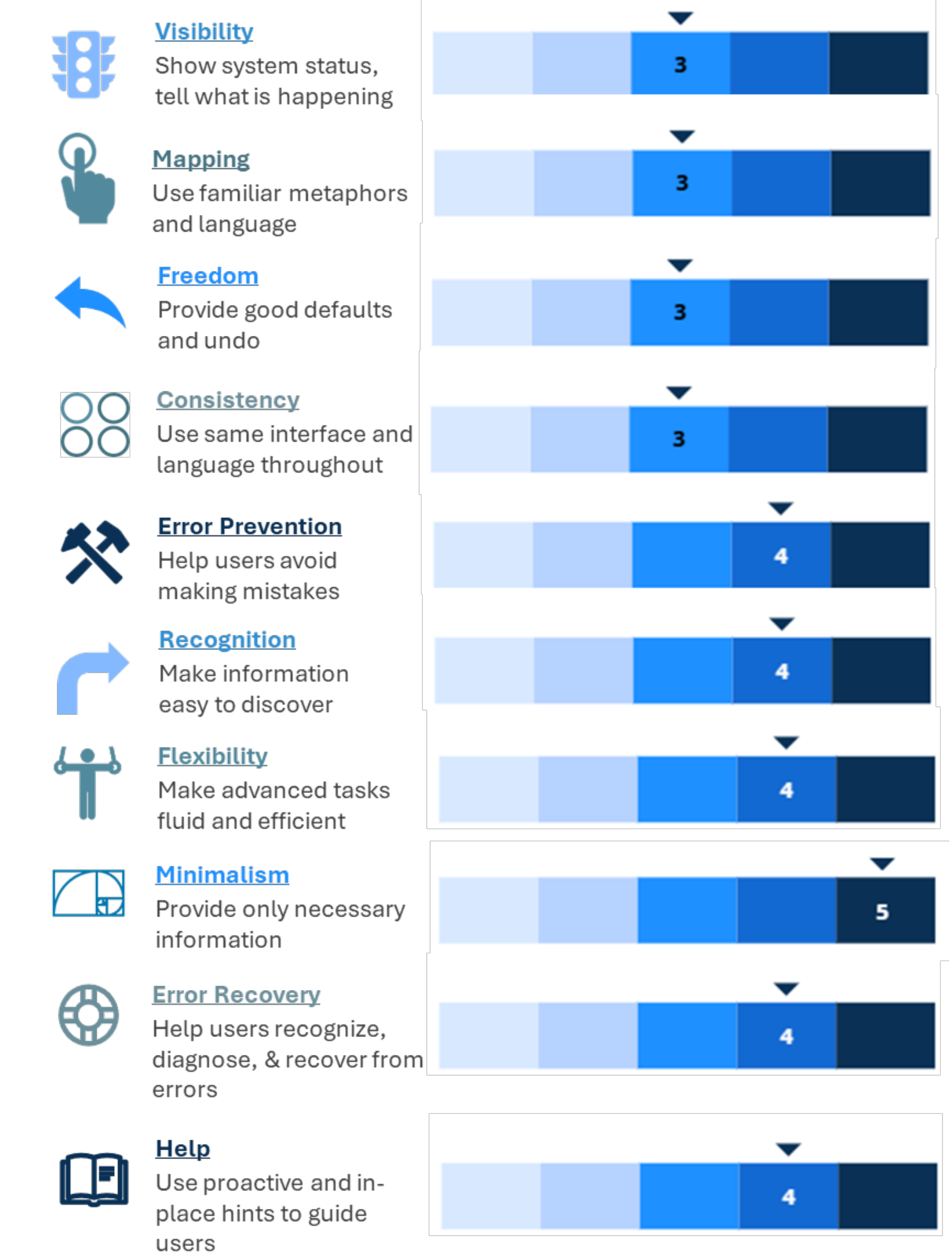
Key Strengths:

- **Streamlined Collaboration:** Effortless document sharing between lab sites and organizations.
- **Template Cloning:** Replicate document templates quickly for consistency and faster creation.
- **AI-Assisted Content Creation:** Assists in creating and formatting content, saving time and improving efficiency.
- **Search & Filtering:** Helps quickly find specific documents and tasks.
- **Task Tracking:** Signatures with timestamps and status updates track progress.
- **Audit Summaries:** Concise views of activities for better oversight.
- **Bug Reporting:** Quick issue reporting to drive continuous improvements.
- **Task Automation:** Automates repetitive tasks, reducing errors and increasing productivity.

Recommendations

Clearer Information and Feedback

- Simplify descriptions and status updates to ensure users always know what to do next.
- Provide clear feedback after actions (e.g., confirmations for completed tasks).

Improve Usability and Navigation

- Relocate important actions, like the signature icon, to more visible areas for better accessibility.
- Make icons more distinct to avoid confusion.

Streamline Task Management

- Add indicators for pending actions and responsible users, making it easy to track progress.
- This will help ensure timely completion of tasks and prevent delays in the workflow.

Scalable User Management

- Improve the user list with a search function that offers auto-suggestions, making it easier to navigate when there are many users.

User Support

- Introduce tooltips and help messages for guiding less tech-savvy users.

Heuristic Evaluation

- An evaluation of the platform against Jakob Nielsen's ten usability heuristics identified problems that were ranked based on their severity, importance, and prevalence.

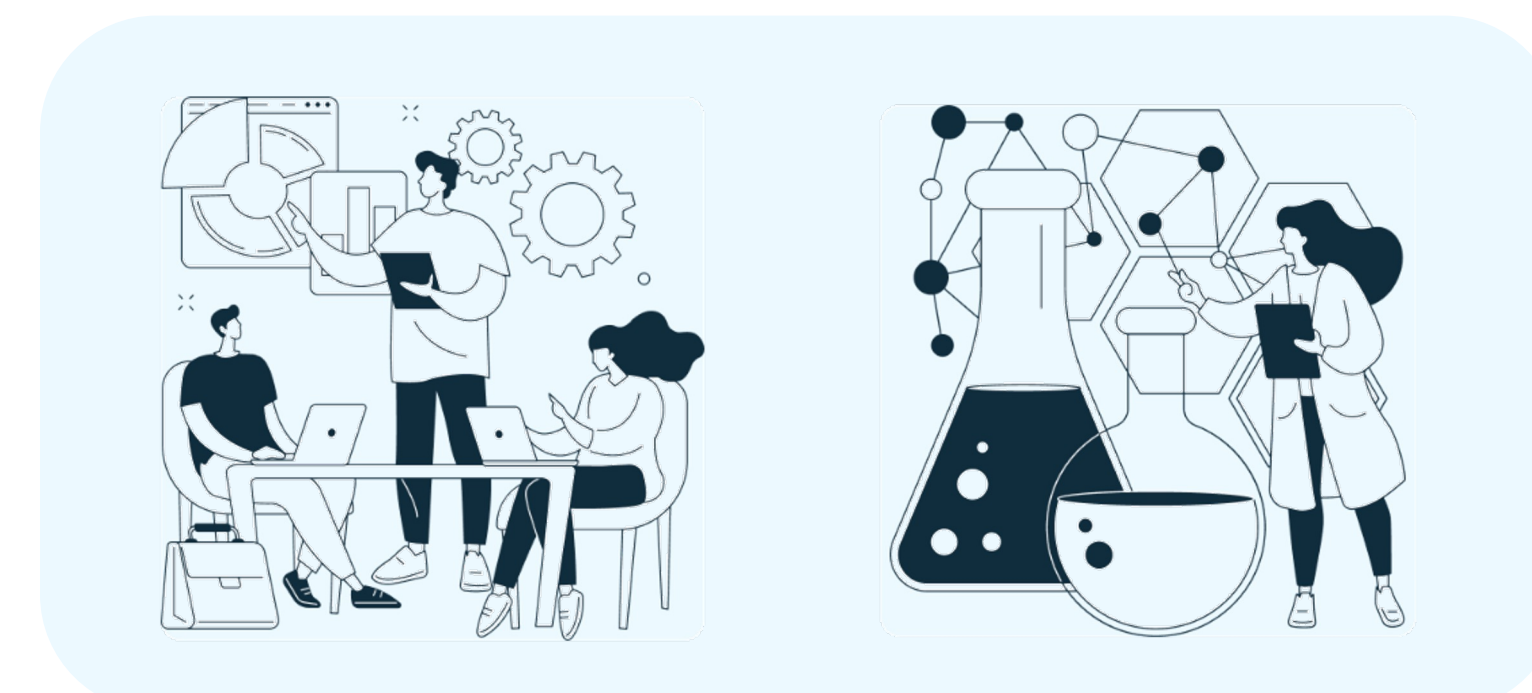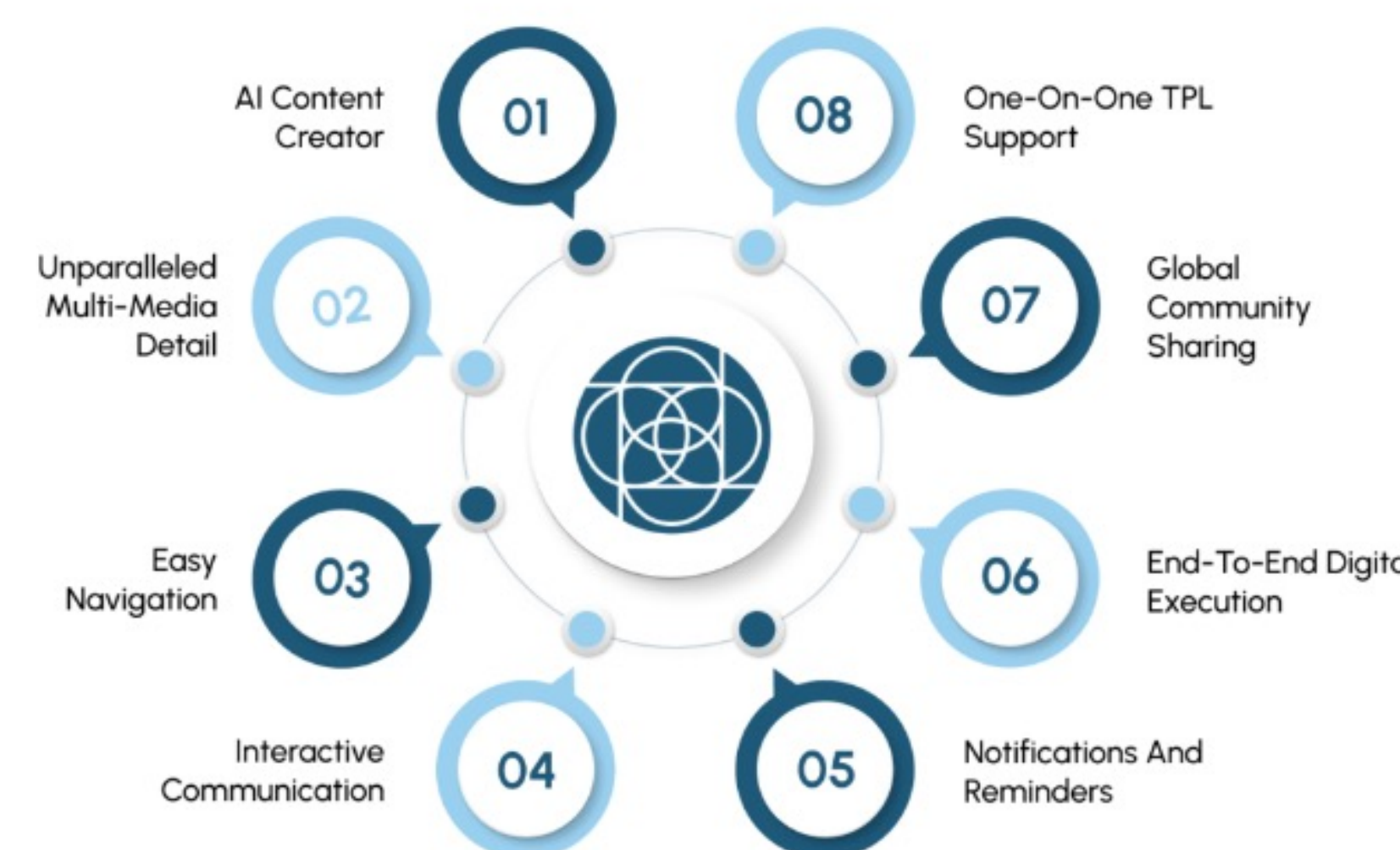| Heuristic	Score
Visibility – Show system status, tell what is happening	3
Mapping – Use familiar metaphors and language	3
Freedom – Provide good defaults and undo	3
Consistency – Use same interface and language throughout	3
Error Prevention – Help users avoid making mistakes	4
Recognition – Make information easy to discover	4
Flexibility – Make advanced tasks fluid and efficient	4
Minimalism – Provide only necessary information	5
Error Recovery – Help users recognize, diagnose, & recover from errors	4
Help – Use proactive and in-place hints to guide users	4

CONCLUSIONS

- **TPL's Potential for Streamlining Compliance:** TPL is a comprehensive platform that offers tools for document management, tracking, and approvals. By automating processes and enhancing user navigation, TPL helps reduce manual effort, enabling seamless compliance and allows data to be shared between organizations.
- **Platform Strengths and Improvement Areas:** TPL excels in document management and real-time tracking features that enhance user experience. However, there are opportunities to improve its usability by optimizing navigation, enhancing feedback systems, and ensuring clearer task assignments for more efficient workflow management.
- **Methodological Importance:** The study demonstrates the value of a combinatorial approach of heuristic evaluation and cognitive walkthroughs in ensuring comprehensive coverage of usability issues. Cognitive walkthroughs identified learnability issues and user experiences, while heuristic evaluations pinpointed broader usability pain points.

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