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Assignment 1: Innovation &
Research.

Module: Changemakers: Creativity and Value Creation

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Task 1

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Task 1

Innovation has been a driving factor throughout the history of mankind. **Ideation** – a process of forming new ideas, stands right next to innovation in importance. Both played crucial roles in forming the world we live in today. Exploring historical examples of innovation, we could learn and get inspired to be a part of history ourselves.

From invention of the first wheel to digital revolution, in every significant achievement of civilization, there was an ideation and innovation. The earliest example would be around 10000 BC. Humanity started transition from nomadic lifestyle to settle as a farming community. Which later led to better food production and more complex societies. Ideation helped with developing crop rotation, domestication of animals and new agricultural techniques. All this set a stage for future civilisations.[1]

The industrial revolution of 18th and 19th centuries mechanised technologies, such as steam engines, power looms and the spinning jenny. All this innovation transformed manufacturing, transport and day to day life of the people of that time, leading to economic expansion and rise of living standards.

In the 20th century scientific innovation was on the rise. It reshaped our daily life, medicine, industry, communications and energy. The world had witnessed massive breakthroughs which moved societies from mechanisation to digital revolution. With mass production of antibiotics such as penicillin, public health improved and curing infectious disease became much more effective. Inventions like transistors and integrated circuits accelerated computation and enabled development of more powerful machines and personal computer and later network systems. Early research networks evolved into global internet, laying foundation for instant communication and digital economy.

The century introduced powerful new technologies in energy and materials. Nuclear power offered a high-density energy source, while jet propulsion revolutionized long-distance travel. Synthetic materials such as plastics and advanced polymers transformed manufacturing and consumer goods. These innovations brought economic and practical benefits but also introduced environmental, safety, and geopolitical challenges that required new regulatory and ethical responses.

The 21st century brought another level of advancement through technological and scientific change. Mobile devices and high-speed internet and new innovations in biology, energy and materials have move from research labs to our everyday life. Advances in machine learning and data analytics have made AI a practical tool across many sectors. The combination of big data, improved algorithms, and cheaper compute enabled capabilities such as image and speech recognition, recommendation systems, and process automation. These technologies increased efficiency and unlocked new services, while also raising concerns about bias, privacy, and the need for transparent governance. [2]

All these innovations helped to improve productivity and created new industries, which demand toward digital and technical skills. These advances improved our daily lives. Innovation and ideation have been a driving force for societies to grow and

explore the world around them. They boosted productivity and helped to solve complex problems humanity face at each stage of its development. In our present day, it is important for us to carry on innovating and creating new ideas. Our leaders should encourage young generations to be inspired by all the achievements of the past. And we have to make sure that we prioritise innovation that serves long term wellbeing and helps societies meet future challenges.[3]

References

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Task 2

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Task 2

For the second task I had an idea of a Task manager software with analytics. This software would allow to boost productivity and prioritise important tasks. This is something that many people are struggling with in this day and age. With the improvement of technology our attention span seems to be reducing and in the world with many distractions this software would be beneficial to some users.

Aim: To design, implement, and evaluate a Task Manager with Analytics that improves individual productivity by allowing to prioritise most important to least important task. And implement a grading system, which would show score on each task.

Objectives

1. Requirements and user needs: Conduct surveys and interviews with potential users (student or professionals) to identify demand, expected features and privacy expectations.
2. System design: Produce a modular architecture, like frontend and backend, analytics engine, secure data store. Also create wireframes.
3. Implementation: Develop the core application features including full task lifecycle operations (create, read, update, delete), a flexible tagging and priority system, both manual and automatic time-tracking, and an analytics component that produces metrics such as task completion rates, breakdowns of time spent by category, and short-term trend forecasts.
4. Evaluation: Assess the system by recording operational metrics (response latency, error frequency), validating the analytics (correctness of aggregations and forecast accuracy), and measuring user impact through a controlled study that captures behavioural outcomes (changes in task completion) and subjective measures (self-reported productivity).
5. Ethics and deployment: Produce documentation of privacy safeguards, implement user-controlled telemetry with explicit opt-in consent, and deliver deployment artifacts (Docker images, CI/CD configuration). Compile a final report that details limitations, ethical considerations, and recommended next steps.[1]

Research Philosophy

For applied engineering project the best research philosophy would be pragmatist research philosophy. Because it supports different methods such as quantitative evaluation of analytics and system metrics and user research to understand context and usability. It also supports evidence-based improvements focused on practical outcomes. It is also flexible and problem oriented and it helps to bridge gap between theory and practice.

To locate relevant literature for developing a task-manager app with analytics, the following databases and search methods will be used.[2]

Databases.

- Google Scholar: Broad coverage of articles, conference papers, and theses on software engineering and user experience for task management tools.
- IEEE Xplore: Technical publications on software systems, performance, and

interface engineering.

- ACM Digital Library: Computing and HCI research, including studies on task systems and productivity analytics.
- SpringerLink: Journals and books in computer science that cover analytics methods and application design.

Search approach.

- Keywords: Use targeted terms such as task management application, productivity analytics, user experience design, software development, and task completion tracking.
- Boolean logic: Combine concepts with operators (e.g., task management AND productivity analytics) and include synonyms with OR (e.g., task tracking OR task management) to broaden results.
- Filters: Restrict results to recent work (for example, the last five years) and prioritize peer-reviewed publications to ensure reliability and relevance.[3]

Applying this structured strategy across the selected databases will produce a focused, up-to-date body of literature to inform the design and analytics features of the task manager, supporting a robust and evidence-based development process.

Reply queries to receive tailored search strings and recommended filters for each database.

References

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Task 3

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Task 3

Enhancing validity, reliability, generalisability, and ethical safeguards

To maximise the project's credibility and impact, the study will adopt targeted measures that strengthen validity, reliability, generalisability, and ethical compliance.

Validity. Ensure measurements actually capture the intended constructs by triangulating data sources. Combine structured surveys with semi-structured interviews and hands-on usability tests so findings reflect both reported preferences and observed behaviour. Use task-based usability scenarios to verify that analytics outputs and UI elements correspond to real user needs.

Reliability. Promote consistency across measurements by standardising instruments and procedures. Use established, previously validated questionnaires where possible and apply uniform protocols for interviews and usability sessions. Run a small pilot to detect ambiguous items or procedural inconsistencies, then revise instruments so results are repeatable over time.

Generalisability. Improve the extent to which results apply beyond the sample by recruiting a heterogeneous participant pool that spans different ages, roles, and organisational contexts—especially representatives from small and medium enterprises. Use stratified sampling where feasible and apply appropriate statistical techniques to assess how findings might extend to wider populations.

Ethical safeguards. Protect participants through clear informed-consent procedures, transparent explanations of the study's aims, and strict confidentiality measures. Implement data minimisation, anonymise identifiable records, and secure data in transit and at rest. Obtain institutional ethical approval before data collection and make withdrawal rights explicit so participants can leave the study at any time without penalty.[1]

Research strategy and data collection methods

A mixed-methods approach will be used to capture both measurable patterns and rich contextual insights.

Quantitative methods.

- **Surveys:** Deploy an online questionnaire to quantify user experiences with current task apps and expectations for analytics features.
- **In-app usage analytics:** Instrument the prototype to log anonymised interaction events (e.g., task creation, completion, time tracked) to produce objective usage metrics and behavioural trends.

Qualitative methods.

- **Semi-structured interviews:** Conduct interviews with a purposive sample to explore motivations, pain points, and feature priorities in depth.
- **Focus groups:** Facilitate group discussions to surface collective preferences and to test early design concepts.

Pilot phase. Before the main study, run a pilot survey and a small set of usability sessions (approximately ten participants) to refine question wording, task scenarios, and logging instrumentation. Use pilot feedback to improve clarity, reduce respondent burden, and ensure the data collection workflow functions as intended.[2]

Analytical approaches

Quantitative analysis.

- Descriptive statistics: Summarise participant demographics, baseline behaviours, and survey responses to characterise the sample.
- Inferential statistics: Apply tests such as t-tests, ANOVA, or non-parametric equivalents to compare groups or to evaluate pre/post changes in productivity metrics after using the prototype. Use effect sizes and confidence intervals to interpret practical significance.

Qualitative analysis.

- Thematic analysis: Code interview and focus-group transcripts to identify recurring themes, user needs, and usability issues; synthesise themes into design recommendations.
- Content analysis: Convert qualitative feedback into categorical codes where appropriate to quantify sentiment or feature requests and to track their prevalence across participants.[3]

Summary

By combining multiple data sources, standardised procedures, diverse sampling, and robust ethical protections, the project will produce dependable, applicable, and ethically sound findings. The mixed-methods design ensures that numerical performance indicators and user perspectives jointly inform the development and evaluation of the task manager with analytics.

References

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