

Assessment 1: Innovation & Research

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Assignment 1: Innovation & Research

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Introduction:

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This project has been developed to explore and create a ***Digital Wellbeing Analytics Platform*** through ideation, research design, and analytical techniques. This concept fits both the Changemakers theme and the broader function of innovation in society. In order to ensure that the proposal is based on both technical knowledge and significant social value, each task utilises academic skills that have been presented throughout the semester, such as critical thinking, issue framing, and responsible research practice.

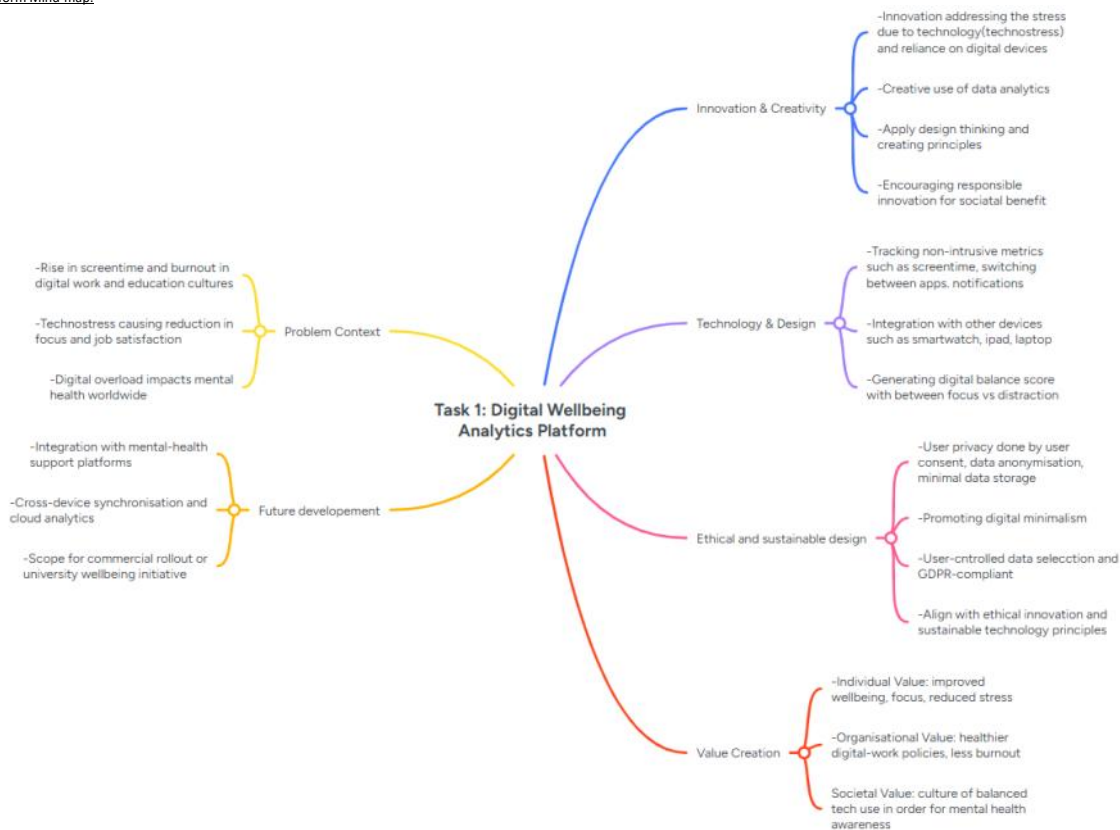
Task 1: Ideation and Mind Map

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Ideation:

The Digital Wellbeing Analytics Platform emerged from identifying a rising issue affecting students, professionals, and society: increasing reliance on digital devices and its impact on mental health. During ideation, I explored how creativity and innovation can address meaningful challenges. By observing daily patterns (constant alerts, app switching, and screen fatigue) I recognised these behaviours had become normalised. Engaging with "Unit 1 Topic 1 – How Innovation Shapes the World" highlighted how innovation drives societal development and influences wellbeing, inspiring a solution that promotes healthier digital habits. Early sketches, technostress research, and design-thinking methods shaped a platform that uses data analytics constructively, translating digital-behaviour metrics into insights that enhance wellbeing. This process reflects responsible innovation aligned with the Changemakers theme of generating societal value. [4]

Digital Wellbeing Analytics Platform Mind-map:



[3]

Problem Context

The mind map begins by outlining the problem context, which frames why the Digital Wellbeing Analytics Platform is needed. Screen use has risen markedly in work and education, often causing burnout and cognitive overload. [6] Technostress is a significant wellbeing concern, linked to reduced attention, diminished satisfaction, and mental fatigue. [1] Digital overload correlates with anxiety, distraction, and emotional exhaustion. This demonstrates a clear gap: accessible tools are needed to understand and manage digital behaviour, grounding the project in social relevance and empirical evidence.

Innovation & Creativity

This section demonstrates how the plan addresses issues related to digital wellness through innovation and creativity. Beyond productivity, the platform uses analytics to foster balance and mental wellness. By understanding user pain, describing the issue, coming up with solutions, and testing out prototype concepts, it employs design-thinking techniques. This innovative approach turns common digital measures into insights about wellness, demonstrating how data can be used for personal empowerment rather than performance tracking. This aligns with ideas presented in Unit 1 Topic 1, which highlight how innovation shapes society by transforming everyday challenges into opportunities for positive change. Additionally, the branch emphasises responsible innovation, stressing that rather than adding to stress, digital solutions should help people and society.

Technology & Design

The technology and design branch describes the technologies that support the platform and how it operates. Coding tools like Python and Visual Studio Code, which enable the processing and analysis of digital-use metrics, are important technology. The system monitors non-intrusive data including screen time, app switching, and notifications which are closely linked to technostress and distraction. To provide a comprehensive view of digital activity across contexts, the platform can interface with gadgets including tablets, laptops, and smartwatches. The "Digital Balance Score," a metric that gives consumers an easy-to-understand visual representation of their focus-to-distraction ratio, is a key component of the design. This paragraph demonstrates the project's technological viability, careful planning, and foundation in computing practice.

Ethical and sustainable design

This branch illustrates how crucial it is to build the platform in a way that safeguards users and encourages enduring good behaviours. Because the system gathers behavioural data, user permission, data anonymisation, and minimum data storage must be used to promote privacy. The approach guarantees that users retain control over what data is gathered and retained while adhering to GDPR regulations. Promoting digital minimalism, a philosophy that encourages deliberate, healthy use of technology, is another crucial element. By lowering usage, avoiding digital fatigue, and promoting long-term mental wellness, this strategy is consistent with ethical innovation and sustainable technology ideals. For the project to demonstrate accountability, safety, and ethical consciousness, this branch is crucial.

Value Creation

The value generation branch demonstrates how the initiative produces advantages for individuals, organisations, and society as a whole. [5] By assisting users in comprehending how their digital activity affects tension, concentration, and mental equilibrium, the platform enhances wellbeing for persons. Anonymised data might benefit employees and lessen burnout at the organisational level by influencing better digital work habits. The initiative raises awareness of mental health issues and promotes a culture of responsible, balanced technology usage on a larger social level. As explained in Unit 1 Topic 1, innovation is most impactful when it creates value that benefits both individuals and society, which is central to the aims of this project. The platform fits with the Changemakers theme by using creativity and computers to produce meaningful, socially good value, and promoting wellness on many levels.

Future Development

The last branch offers prospects for future project expansion. To identify early indicators of burnout and suggest tailored therapies, predictive AI might be incorporated. Customised materials and assistance might be provided to users through integration with mental health platforms. Integration with mental-health platforms, cloud analytics, and cross-device syncing could enhance usability. Emphasising future development demonstrates the project's scalability, long-term significance, and practical potential beyond its original conception.

References:

- [1] G. Bondanini, G. Giorgi and A. Ariza-Montes, "Technostress Dark Side of Technology in the Workplace: A Scientometric Analysis," *International Journal of Environmental Research and Public Health*, vol. 17, no. 21, 2020.
- [3] Y. Cho, N. Bianchi-Berthouze, N. Marquardt and S. J. Julier, "Deep Thermal Imaging: Proximate Material Type Recognition in the Wild through Deep Learning of Spatial Surface Temperature Patterns," in *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18)*, Montréal, Canada, 2018.
- [4] C. Newport, *Digital Minimalism*, Penguin Business, 2020.
- [5] A. "Digital Health," World Health Organisation, 2022. [Online]. Available: https://www.who.int/health-topics/digital-health#tab=tab_1. [Accessed 25 November 2025].
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Task 2: Aim and Objectives and Research Area

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Project Aim:

The aim of this project is to design and investigate a **Digital Wellbeing Analytics Platform** that uses data-driven insights to help individuals monitor, understand, and improve their digital habits. The project looks to investigate how computing technologies, such as data analytics, interface design, and usage tracking, can encourage a balance between online engagement and wellness, lessen technostress, and support healthy digital behaviour. [1] [6]

Project objectives:

1. To use recent research to examine the origins and consequences of technostress in digital learning and work contexts using industry and academic research. [1] [6]
2. To create a conceptual model that illustrates how non-intrusive measures like screen time, app switching, and notification frequency may be used to track digital activity. [9]
3. To investigate how dashboard analytics and data visualisation might help users become more conscious of their online behaviour and promote self-control.
4. To look at the moral issues around the gathering, storage, and display of behavioural data while making sure the design complies with GDPR and privacy-by-design guidelines. [8]
5. To evaluate the platform's potential worth and practical advantages for people, organisations, and educational institutions. [6]

Research Philosophy:

This project adopts an interpretivist research philosophy because digital wellbeing is a human-centred phenomenon shaped by personal views, emotion, and individual behaviour. Interpretivism is an appropriate model for examining how people perceive their own technology use and how digital conduct affects mental balance since it emphasises understanding subjective experiences rather than considering people as data points. This aligns with the ideas introduced in "*Unit 1 Topic 2 - How Do YOU Solve a Problem?*", where problem-solving was framed as an iterative, human-centred process that requires understanding how people interpret and experience the challenges being addressed.

Exploration of lived experiences, such as how users feel as their screen time rises, why alerts induce distraction, or how multitasking impacts perceived stress, is made possible by the interpretivist approach. The project may employ a combination of techniques to assist this, including:

- **Qualitative data** (interviews, open-ended reflections, wellbeing surveys) to understand personal experiences of digital overload.
- **Quantitative data** (screen-time metrics, app usage frequency, device switching counts) to identify patterns that influence wellbeing.

This combination enables the study to analyse human conduct while establishing quantifiable trends as the basis for results. Interpretivism offers the depth necessary for effective research since digital wellness encompasses both visible digital patterns and subjective experience.

[9]

Research Tools, Databases, and Search Strategy:

To support the academic foundation of the project, a structured literature search was conducted using several computing and psychology-focused research databases:

Databases used:

- IEEE Xplore
- TechTarget
- ACM Digital Library
- ScienceDirect (Elsevier)
- SpringerLink
- Google Scholar

These databases were selected because they provide high-quality peer-reviewed research on HCI (Human-Computer Interaction), mental health technology, digital behaviour, and data ethics. [9]

Search Keywords & Boolean Strategy:

Search terms were developed using Boolean operators to refine academic results:

- "digital wellbeing" AND "data analytics"
- "technostress" AND "productivity"
- "screen time" AND ("mental health" OR "stress")
- "HCI" AND "wellbeing"
- "digital overload" AND "behaviour change"

Filters such as *year (last 5–8 years)*, *peer-reviewed*, and *computing journals only* were applied to ensure relevance and quality.

Evaluation of Sources:

Each article was evaluated based on:

- Relevance to digital activity, behaviour, or wellbeing
- Credibility of the authors and journal
- Recency, ensuring up-to-date understanding of technostress
- Methodological strength, especially for studies measuring behaviour or stress

This process ensured that the literature supporting the project is academically valid, reliable, and aligned with computing research standards. [10]

This approach also reflects the guidance from "*Unit 1 Topic 3 - Known Knowns*", which emphasised the importance of distinguishing well-established knowledge from assumptions by using systematic search methods and reliable academic sources.

[7]

References:

- [1] G. Bondanini, G. Giorgi and A. Ariza-Montes, "Technostress Dark Side of Technology in the Workplace: A Scientometric Analysis," *International Journal of Environmental Research and Public Health*, vol. 17, no. 21, 2020.
- [6] X. Li, Y. Ting and K. F. Yuen, "Mental Wellbeing in Digital Workplaces: The Role of Digital Resources, Technostress, and Burnout," *Technology in Society*, vol. 81, 2025.
- [7] D. Li, P. Patrick Rau and Y. Li, "A Cross-cultural Study: Effect of Robot Appearance and Task," *International Journal of Social Robotics*, vol. 2, pp. 175-186, 2010.
- [8] K. Martin, *Ethics of Data and Analytics*, Auerbach Publications, 2022.
- [9] J. Lazar, J. H. Feng and H. Hochheiser, *Research Methods in Human-Computer Interaction*, Cambridge, Ma: Morgan Kaufmann, 2017.
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Task 3: Research Strategies

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Strategies to enhance validity, reliability, generalisability, and ethical considerations:

The Digital Wellbeing Analytics Platform aims to evaluate real digital conduct and its influence on wellbeing, strong validity is a crucial element. Several types of data, including screen-time logs, app-switching frequency and self-reported wellbeing scores, will be gathered in order to enhance **internal validity**. By using triangulation, results are guaranteed to represent real trends rather than isolated behaviours. Consistency in data gathering techniques will increase **reliability**. To reduce measurement discrepancies, all participants will utilise the same tracking tool or prototype design. If rating scales or surveys are employed, they shall be standardised and evaluated during the pilot phase to ensure repeatability and clarity. These considerations reflect the guidance introduced in "Unit 2 Topic 2 - Finding a Needle in a Haystack" where evaluating information systematically and recognising potential bias were emphasised as essential steps in producing valid and trustworthy findings. Participants with different digital usage habits will increase **generalisability**. Students, distant workers and casual users make up a more diversified dataset, which increases the possibility that results may be applicable to larger groups. Due to behavioural data and wellbeing indicators are sensitive, **ethical considerations** are crucial to this study. User permission, data minimisation and complete openness about what is being gathered are all guaranteed by a privacy-by-design approach. Users will have the option to withdraw at any moment and data will be anonymised prior to analysis. The GDPR's three guiding principles: secure storage, limited retention and user choice over deletion—will be applied to all data. [12] Together, these tactics bring the study into compliance with professional computing norms and responsible innovation. [2] [4]

Research Strategies, Data Collection & Pilot Design:

For the project a mixed-methods research strategy will be used to gather meaningful data. This is suitable because digital wellbeing involves both quantifiable behaviours and subjective psychological experiences.

Data Collection Methods:

Quantitative data :

- Daily screen-time metrics
- Number of app switches per hour
- Notification frequency
- Minutes spent in focused vs. distracted states

These metrics reflect measurable digital-behaviour patterns linked to technostress.

Qualitative data :

- Short interviews or open-ended questionnaires
- User reflections on digital overload or focus difficulties
- Feedback on the clarity and usefulness of the Digital Balance Score

These responses will help interpret how users perceive their digital habits and which insights they find meaningful. This "Unit 4 Topic 2 - There's a Theme Here"

Pilot Study Design:

A small pilot study (5-10 participants) will be conducted to test the first version of the tracking tool or dashboard mock-up. Participants will use the system for 1 to 2 days (24–48 hours) and provide feedback on metrics accuracy, dashboard clarity, and personal comfort with data collection.

Users will be given a brief feedback form (questionnaire) that asks them whether the visualisations made sense, if any metrics were invasive, and what changes they would recommend. Pilot findings will be summarised and placed in **Appendices** (where an example pilot study feedback table has been provided). This pilot will help refine the project's focus by identifying unclear features, ethical concerns, or missing metrics before full development begins. [9]

Quantitative and Qualitative Analysis:

The **quantitative** analysis focuses on numerical patterns in digital behaviour. Numerical trends in digital conduct are the main focus of the quantitative investigation. The investigation will look at screen-time patterns and app-switching behaviour using descriptive statistics like averages, frequency counts, and time-series graphs. This aligns with the "Unit 4 Topic 1 - It's All in the Numbers" explanation that explains how quantitative analysis focuses on identifying measurable patterns and numerical relationships that help build a clear statistical picture of digital behaviour. Links between more notifications and greater levels of self-reported stress may also be investigated using correlation analysis.

The perspectives and experiences of users will be investigated using **qualitative** analysis. To find recurring themes like distraction, awareness, exhaustion, and motivation, a **thematic analysis** technique will be employed. [11] This directly reflects the "Unit 4 Topic 2 - There's a Theme Here" principles, where coding and theme-building are used to explain user meaning and subjective experience. By coding the data, it can determine how users understand their digital habits and which features of the platform affect their wellbeing. Combining both approaches enhances the project's findings and promotes a deeper comprehension of digital conduct.

References:

- [2] M. Sailer, J. U. Hense and S. K. Mayr, "How gamification motivates: An experimental study of the effects of specific game design elements on psychological need satisfaction," *Computers in Human Behavior*, vol. 69, pp. 371-380, 2017.
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Conclusion:

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The Digital Wellbeing Analytics Platform shows how creative, data-driven strategies can effectively address the psychological and cognitive effects of widespread usage of digital devices. Through the integration of proven measurements, ethical protections, and mixed-methods research, the project guarantees dependable, broadly applicable information that enables people to properly control their digital habits. In the end, this project serves as an example of how ethical innovation can provide real social benefit while fostering personal wellness in a world growing more interconnected by the day.

References:

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- [1] G. Bondanini, G. Giorgi and A. Ariza-Montes, "Technostress Dark Side of Technology in the Workplace: A Scientometric Analysis," *International Journal of Environmental Research and Public Health*, vol. 17, no. 21, 2020.
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- [3] Y. Cho, N. Bianchi-Berthouze, N. Marquardt and S. J. Julier, "Deep Thermal Imaging: Proximate Material Type Recognition in the Wild through Deep Learning of Spatial Surface Temperature Patterns," in *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18)*, Montréal, Canada, 2018.
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- [12] Anonymous, "Getting started with data protection a step-by-step guide," ICO, 2025. [Online]. Available: https://ico.org.uk/for-organisations/advice-for-small-organisations/getting-started-with-gdpr/getting-started-with-data-protection/?utm_source=chatgpt.com. [Accessed 25 November 2025].

Appendices:

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Task 3, pilot study feedback table example:

As this project is conceptual, the table below displays hypothetical pilot feedbacks designed to illustrate the kind of responses and insights that would provide early design improvements.

Participant	Feedback	Improvement Suggested
1	"Dashboard is clear but I didn't understand the Balance Score at first."	Add a short explanation/tip.
2	"Too many stats on the screen."	Allow users to hide or customise metrics.
3	"Notifications are helpful but a bit frequent."	Add adjustable notification timings.
4	"I want more control over what data is stored."	Add a privacy settings page.

Screenshot of Reference list created on MS Word:

References:

- [1] G. Bondanini, G. Giorgi and A. Ariza-Montes, "Technostress Dark Side of Technology in the Workplace: A Scientometric Analysis," *International Journal of Environmental Research and Public Health*, vol. 17, no. 21, 2020.
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