Dafydd Edwards 2417062

Project Proposal

Changemakers: Creativity and Value Creation

Assignment 1

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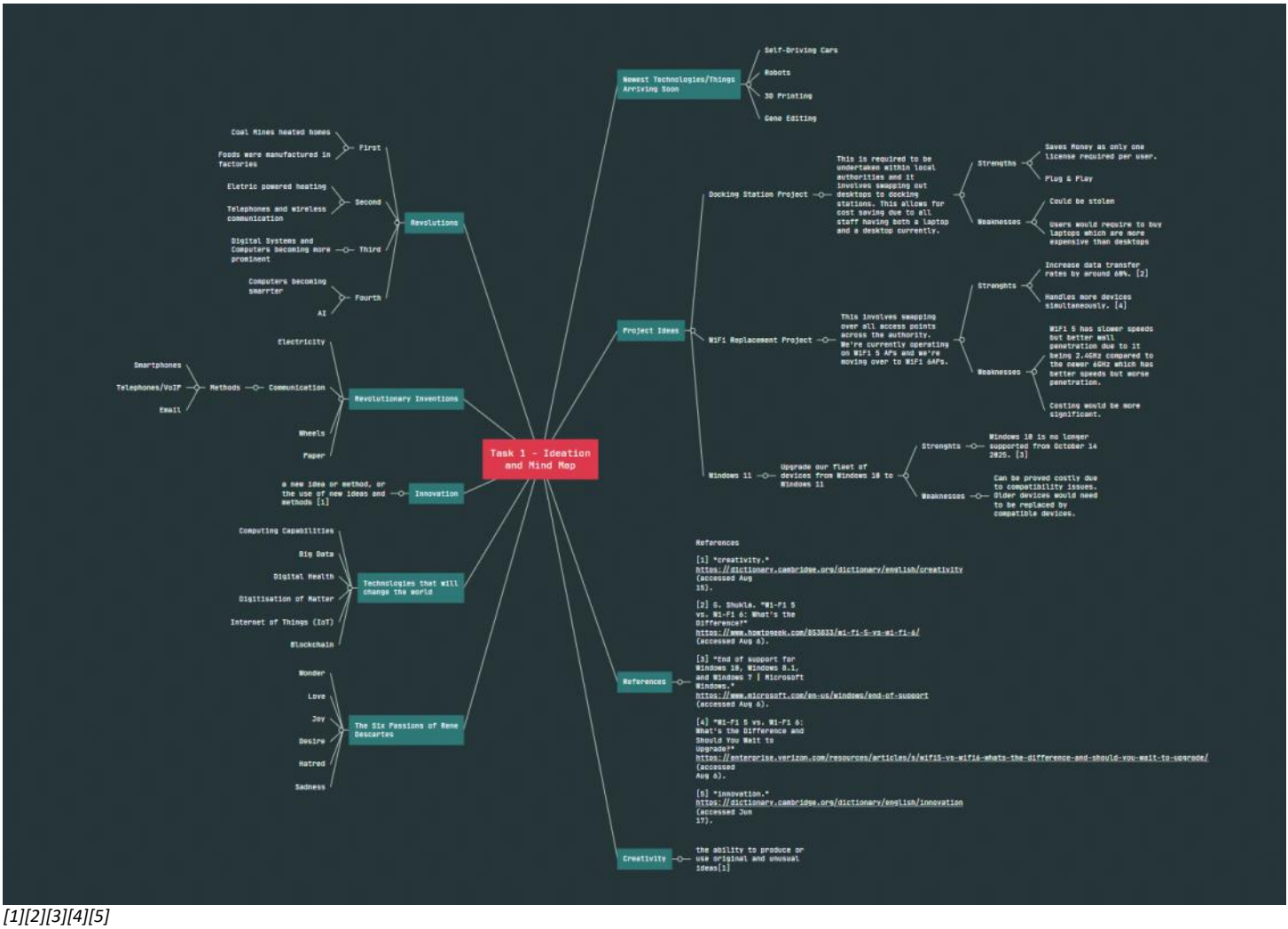
Computer Networks and Cybersecurity

Task 1 - Ideation and Mind Map

03 June 2025 11:43



[1][2][3][4][5]
Mindmap created on MindMeiester [6]

I have decided to choose the Wi-Fi Replacement Project because it offers the most impactful and long-term benefits across the organisation, particularly in terms of performance and scalability. The strengths clearly show that upgrading to Wi-Fi 6 significantly increases data transfer rates (by around 60%) and improves the network's ability to handle a larger number of connected devices at once. This is especially important in modern work environments where staff use multiple devices simultaneously, and where video calls, cloud services, and large file transfers are now standard. These improvements can directly boost productivity and user satisfaction. While there are some weaknesses, such as the higher cost and potentially reduced signal penetration on certain frequencies, these are outweighed by the long-term gains in speed, efficiency, and network capacity. Additionally, investing in Wi-Fi 6 infrastructure prepares the organisation for future technologies and growing digital demands, making it a more forward-thinking and sustainable choice compared to the other options listed.

Task 2 - Aims & Objectives and Research Area Q1

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Project Aim

To enhance the performance, reliability, and capacity of the local authority's wireless network infrastructure by upgrading all existing Wi-Fi 5 access points to Wi-Fi 6, ensuring improved connectivity, future scalability, and support for modern digital services across all council facilities.

Project Objectives

1. **Audit and Assessment**
   Conduct a comprehensive audit of all current Wi-Fi 5 access points and associated infrastructure across all council buildings by Monday 15th September 2025.
2. **Deployment and Installation**
   Replace 100% of existing Wi-Fi 5 access points with Wi-Fi 6 models in all local authority locations by Monday 24th November 2025 ensuring minimal disruption to day-to-day operations. This would include replacement during weekends/evenings where necessary.
3. **Performance Validation**
   Achieve at least a 25% increase in data transfer rates in higher workload areas compared to baseline Wi-Fi 5 performance. Testing to be completed by Monday 12th January 2026 using a WiFi coverage checker such as SpeedTest.
4. **Staff and User Communication**
   Inform all departments and end users of expected improvements and planned outages prior to installation and gather feedback on user experience. I will aim to do this via surveys.
5. **Future-readiness and Documentation**
   Update documentation and databases within our OTRS ticketing system.

Task 2 - Aims & Objectives and Research Area Q2

14 August 2025 08:22

Research Philosophy

There are 3 different forms of philosophy: Ontology, Epistemology and Axiology.

Ontology is the branch of philosophy that explores the nature of reality and what exists. There are two types of Ontologists: Objective and Subjective. Objective ontology is that there is only one true answer and it is factual. Whereas, subjective ontology is based on people's perceptions of different things.

Epistemology is the study of how knowledge is acquired. The objective is where it is believed knowledge is discovered through observation and reason. On the other hand, the subjective is built through personal discovery and is shaped socially.

Axiology is the branch of philosophy that deals with values, including ethics and aesthetics. It will define whether the research is done ethically by gaining work permits and respecting privacy. It will also take into consideration whether the researcher believes that value does or does not influence the research.

In order to complete this project, I will be using a pragmatic approach. This is because it is a result-driven approach that prioritises effectiveness and efficiency. With this approach, I am able to use what is already in place. Instead of redesigning the entire network, I can evaluate which access point locations are already working well and could just be upgraded. This will save time and reduce disruption while still delivering noticeable improvements in performance and reliability. When unexpected issues come up such as outdated cabling or limited power sources, taking a pragmatic approach could help me adapt quickly and keep the project moving forward. [7]

Task 2 - Aims & Objectives and Research Area Q3

14 August 2025 08:31

To support my Wi-Fi replacement project with relevant research, I selected a range of appropriate search tools and databases that are well-suited for finding technical, academic, and industry-related information. These resources helped me explore current best practices, technology standards, case studies, and performance comparisons related to wireless networking and infrastructure upgrades. One of the sites I will be using for research is Cisco's knowledge base. The documentation and support offered by these give full guidance on how to install the kit and what to do if anything goes wrong. Other sites that I may use during the project may be Google Scholar, .GOV website and Microsoft Forums etc. Before using these websites, I must ensure I CRAP test each site.

Currency - How recent was this published?
Reliability - is it facts or opinions?
Author - Who wrote this? Are they a credible source?
Purpose - why was this made? [8]

Task 3 - Research Strategies Q1

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To enhance the validity of my Wi-Fi access point replacement project, I will ensure that all data collected during site surveys and performance testing accurately reflects the real-world network environment. This includes using reliable measurement tools and following standard procedures to avoid biased or inaccurate results. To improve reliability, I will repeat tests under consistent conditions and document procedures clearly so that results can be replicated if needed. This will help confirm that performance improvements are consistent and not due to random variations. Regarding generalisability, while the project focuses on a specific site, I will ensure the approach and findings are applicable to other similar environments, allowing the outcomes to inform future projects of the same nature. Finally, ethical considerations will be carefully managed by respecting user privacy during network testing and communication, ensuring all changes cause minimal disruption to users, and properly handling any sensitive data. I will also obtain the necessary permissions before accessing network infrastructure and clearly communicate the purpose and impact of the project to everyone involved.

Task 3 - Research Strategies Q2

14 August 2025 08:32

For my Wi-Fi access point replacement project, I would use a combination of quantitative and qualitative research strategies to gather meaningful data that informs planning and decision-making. The main goal is to test the performance of the current Wi-Fi network and gather feedback that helps guide us on updating the current infrastructure in place.

Primary Data Collection Methods:

Site Survey and Signal Analysis (Quantitative):
I will conduct a physical site survey using Wi-Fi analysis tools to map current access point locations, measure signal strength and identify WiFi black spots. This data will provide objective and an understanding into current coverage and performance.

User Feedback Survey (Qualitative):
I will design a short user survey to collect subjective feedback from staff or users of the existing network. This will include questions about connection reliability, speed, and common issues experienced during daily use.

Communication with IT Staff (Qualitative):
Short interviews with on-site IT Support Staff or network admins can provide technical insight into the challenges they face in maintaining the current system and what improvements they expect from the upgrade.

Task 3 - Research Strategies Q3

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Quantitative analysis for my Wi-Fi replacement project would focus mainly on measuring download speeds and network coverage. I would use tools like Speedtest to record download speeds in different areas before and after replacing the access points. This helps me clearly see whether performance has improved in terms of speed. For coverage, I would carry out a site survey using a Wi-Fi analysis tool to check how far the signal reaches and identify any weak spots or dead zones. Comparing the coverage maps before and after the upgrade would allow me to see if the new Wi-Fi 6 access points provide a stronger and more consistent signal throughout the building.

Qualitative analysis would involve speaking to users and collecting feedback about their experience using the network. I'd ask questions like whether the Wi-Fi feels faster, if they're able to stay connected without issues, and whether there are any areas where the signal still drops. This kind of feedback is important because even if the technical data shows improvements, the real test is whether users actually notice and benefit from those changes. I'd also talk to IT staff to understand any practical challenges they faced during the upgrade, such as configuration issues or unexpected obstacles.

Appendices

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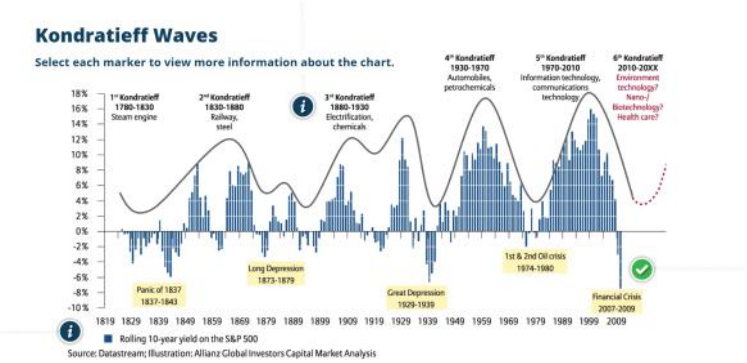
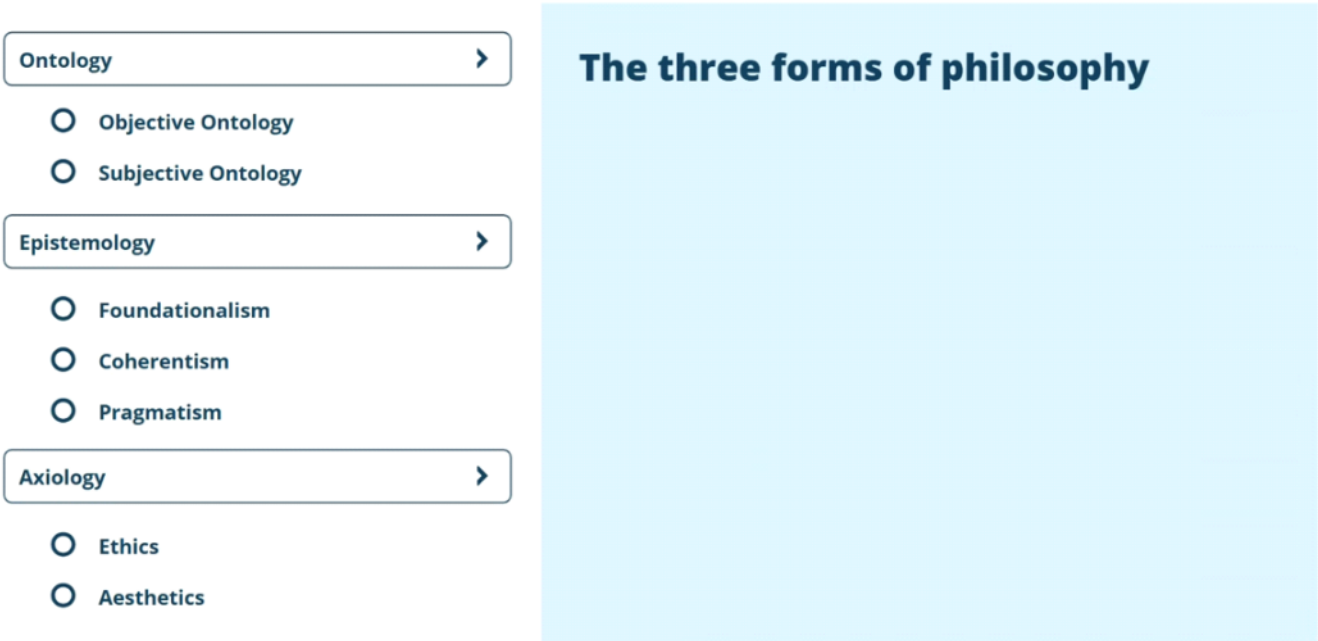


The idea of revolutions of industry is developed further in the ideas of Russian economist Nikolai Kondratieff. Kondratieff studied the impact of innovation on society and produced a chart that is often referred to as Kondratieff Waves or Cycles. He believed, and subsequently people have proved, that certain innovations cause spikes of prosperity in society before they then return back to normal.

Link to Mindmap created on MindMeister: https://mm.tt/map/3587881690?t=Dt9ixMlrfW



Types of philosophy derived from Unit 1 Topic 2

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15 August 2025 14:52

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[4] "Wi-Fi 5 vs. Wi-Fi 6: What's the Difference and Should You Wait to Upgrade?" https://enterprise.verizon.com/resources/articles/s/wifi5-vs-wifi6-whats-the-difference-and-should-you-wait-to-upgrade/ (accessed Aug 6).

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[7] "Pragmatism Research Philosophy", *Research-Methodology,* https://research-methodology.net/research-philosophy/pragmatism-research-philosophy/ (accessed Aug 15, 2025).

[8] "The CRAP Test for Evaluating Websites" https://www.youtube.com/watch?v=Wpjr35uNnWEThe CRAP Test for Evaluating Websites (accessed Aug15)