CS4078: Applied Interaction Design

Assignment 1 Report

Critical Design Approach on the Future of Remote Work and Hybrid Collaboration

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1. Introduction

The topic that our group has chosen to examine is the future of remote work and hybrid collaboration. By employing a critical design approach, our group seeks to challenge current perceptions of workplace monitoring, question the ethics of balancing productivity and flexibility, maintain trust and communication between employee and employer, and ensure the overall well-being of employees. We therefore seek to initiate conversations about the upholding of traditional productivity metrics in remote and hybrid work environments. As society navigates the increasing evolution of remote and hybrid work, it is critical to be aware of the implications of this evolution on technology, workplace culture, and managerial-employee relationships. While it may be argued by some that hybrid and remote work may empower and enhance workers with greater personal control over their affairs, others may show concern towards the possible erosion of personal boundaries between an employee's personal life and their professional life resulting from this increasingly changing landscape. Thus, due to the future of remote work and hybrid collaboration provoking such questions, how employees, managers, and organisations will adapt to its growing evolution remains to be seen.

According to a 2024 study undertaken by the World Economic Forum, digital jobs on a global scale are expected to increase to "92 million [roles] by 2030 – an increase of around 25%" (Lebel, A. & Zahihi, S. (2024)). While it is indisputable that remote and hybrid collaboration has steadily continued to increase in usage in the workforce, questions continue to remain towards factors such as employee autonomy, maintaining a healthy work-life balance, and how employers may seek to enforce productivity and engagement from their employees despite not being co-located. The increasing relevance of remote and hybrid collaboration results in our attention to how digital surveillance practices will influence the tracking of employee activity, performance, and efficiency in remote work settings. The conceptualisation of our group's topic emerged from our firsthand observations during our time on Cooperative Education placements. Throughout our time in each of our roles, we observed strategies that our employers used to monitor our engagement and level of productivity while we were in remote work environments. From our observations, we noticed that our employers would intentionally send vague messages to capture our attention and test our responsiveness, or regularly check our Microsoft Teams' activity status to determine if we were actively engaged with our work computers. Our observations subsequently led us to critically examine these employer practices by designing a feature that tracks each employee and their specific actions, behaviours, and overall productivity using a sensor (explained in more detail below) using the critical design method.

A study by Siegel, R., König, C. J., & Lazar, V. examines the impact of electronic monitoring on employees' job satisfaction, stress, performance, and counterproductive work behaviour. This meta-analysis investigates the consequences of electronic monitoring on employees. Electronic tracking refers to the use of cameras, computers, wearable technology, and other tools to monitor how workers perform their jobs. The study reviews previous research to uncover the advantages and disadvantages of job monitoring. Additionally, it considers factors that may influence how tracking affects workers, such as the reasons they are being observed, the goals of their work, the setting of the study (lab versus field), and whether they receive feedback.

Companies may often claim that tracking employees is necessary to boost productivity, ensure employee safety, and hold employees accountable. However, others may argue that it can cause employees to have dissatisfaction within their roles, feel increased stress levels, and cause poor performance or behaviour. The following study seeks to add to earlier studies by examining these effects and different variables that might affect the results. The study aims to answer several important questions: Does computer tracking make individuals less happy with their jobs? Does it make workers more stressed? Does it improve performance the way it is supposed to? What effect does it have on counterproductive work behavior (CWB), such as cyberloafing or other bad habits?

The researchers believed that tracking could lead to decreased job satisfaction and increased stress. They speculated it might enhance individual performance, yet the findings were inconclusive. Regarding counterproductive work behavior (CWB), the anticipated relationship was unclear, prompting the researchers to consider it an open question.

Multiple databases were searched, and 63 studies related to the subject were found. The experts analysed the data using a three-level random-effects model, which gave them a more accurate picture by examining different effect sizes from the same studies. A small but consistent negative impact on job satisfaction was observed. Individuals are less likely to enjoy their jobs when they know they are being watched. Electronic monitoring is associated with a slight rise in stress levels.

Some individuals thought tracking would significantly affect speed, however, this wasn’t the case. The study also found that things such as success goals and feedback may make the harmful effects worse. For example, the effects on job happiness and worry are more substantial when workers are given strict performance goals or get constant feedback from the monitoring system. Field studies, which are done in real workplaces, were also found to have slightly bigger effects than lab studies. Individuals often think that computer tracking can help them do better, but the study shows that it doesn't help with that. Instead, it seems to be bad for the well-being and joy of workers. These results are affected by how tracking is presented (whether it is seen as supporting or controlling) and whether success goals are present. This is why companies need to carefully consider how they set up tracking tools and make a balance between their own needs and their workers' freedom and health.

Ultimately, this meta-analysis demonstrates that electronic monitoring has diverse effects on employees. It often leads to decreased job satisfaction and increased anxiety, without enhancing performance. Additionally, it tends to exacerbate certain undesirable behaviours. This study reveals that how these negative effects are established and monitored, such as through the implementation of performance targets and the provision of feedback, can aggravate them. Consequently, businesses must exercise caution when employing computer tracking. The purpose of such tracking should be transparent, and the rights and wellbeing of workers must be safeguarded. It is vital to explore how tracking can be integrated with other HR practices to mitigate its adverse effects and understand its long-term implications for both businesses and employees.

2. State of the Art

As research and life experience highlighted, remote work and hybrid collaboration are currently supported by a wide range of tools and technologies to facilitate communication, productivity, and oversight. Commonly used platforms include Microsoft Teams, Slack, and Zoom, which provide messaging, video conferencing, and project management features.

Microsoft Teams status updates, such as "Available," "Away," "Busy," "Offline," and "Out of Office," provide a quick snapshot of a user's current availability.
These updates let other individuals know when someone is free for a chat, in a meeting, or not available. Additionally, they help individuals communicate clearly and quickly when they work from home or in a mixed setting. On the other hand, some workers may think that always knowing their availability status puts them under more pressure or leads to micromanagement.

In addition to communication tools, many companies employ digital monitoring software, such as Hubstaff, Time Doctor, and Teramind. These tools log work hours, screen activity, and monitor productivity levels. These tools reflect the increasing trend of digital surveillance, blurring the boundary between professional oversight and intrusive monitoring.

A key development in workplace tracking technologies is integrating biometric and physiological monitoring tools. For example, companies like Emotiv and Humanyze have developed wearable sensors tracking employee engagement through brain activity and biometric data. These tools claim to enhance workplace efficiency by providing insights into employee concentration levels. However, they also raise serious ethical concerns about autonomy, privacy, and consent, mirroring the themes explored in Dunne and Raby's (2006) *Design Noir*. The reading emphasises how technology often serves industrial agendas rather than addressing human well-being.

Similarly, "bossware" applications, such as VeriClock, take workplace monitoring to an extreme, with features such as continuous webcam snapshots and keystroke logging. This tool exemplifies the affirmative design that Dunne and Raby (2006) criticise, which conforms to existing cultural and economic expectations rather than questioning them. In contrast, critical design, as they describe, provokes discussion and challenges assumptions about technology's role in everyday life. Our critical design artefact aligns with this perspective by exaggerating current monitoring trends to highlight their potential dystopian consequences.

Our critical design project builds upon these existing systems by envisioning an exaggerated future in which employees are subjected to real-time biometric tracking, social surveillance from colleagues, and automated financial penalties based on productivity levels. By adopting speculative design principles, we aim to question whether the trajectory of remote work should continue along this path or if alternative, human-centric approaches should be considered.

In summary, while existing remote work tools and monitoring software enhance communication and productivity, they also introduce significant ethical dilemmas. Dunne and Raby's (2006) critique of corporate-driven design highlights the necessity of alternative

visions, encouraging designers to challenge dominant narratives rather than reinforce them. Our design artefact extends this critique, using speculative and critical design to expose the hidden consequences of pervasive workplace surveillance.

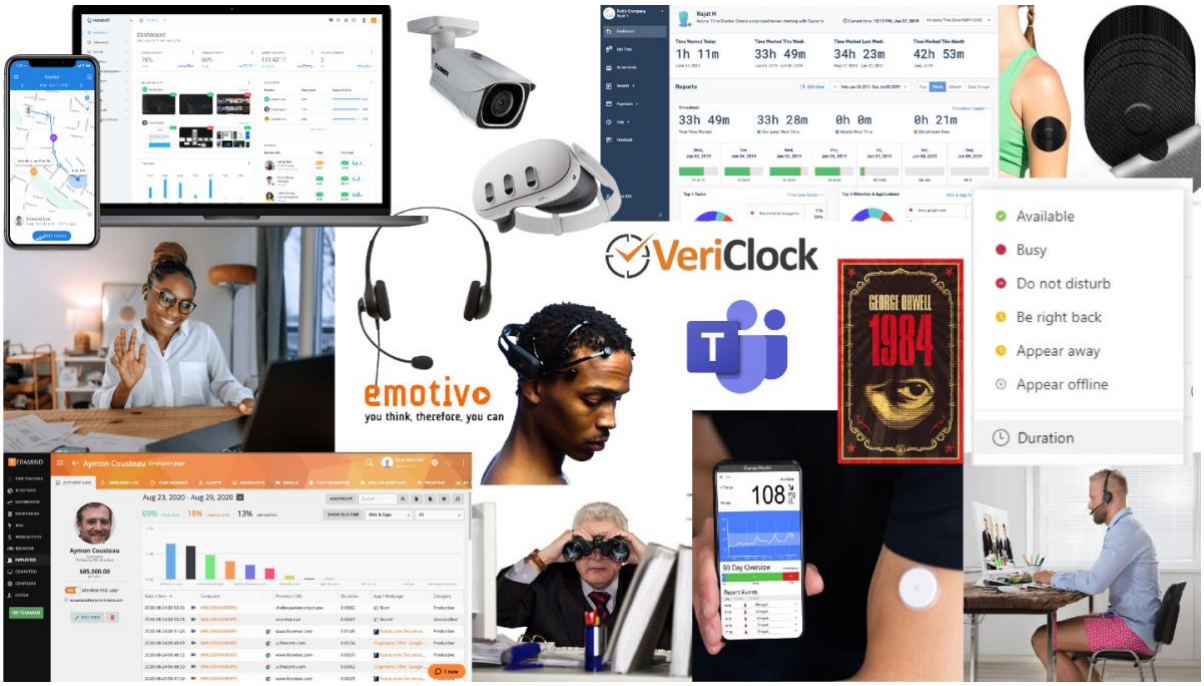

Figure 1 - Moodboard of the Status Quo

3. Target Audience (recruitment process, age group, stakeholders, users, participants)

Our target audience includes all individuals who have worked remotely, in a hybrid capacity, and have utilised computer-supported collaborative tools to support their work. To incorporate a range of opinions and experiences, we aim to recruit various individuals from different age groups and work backgrounds. Our target audiences include young adults (18–21) and (21–31), encompassing undergraduates, postgraduates, current interns, and freelancers. Due to our limited access to the middle-aged audience pool, we have decided to cap the age range at 31. The stakeholders related to our design topic include employers, HR professionals, and organisational leaders who influence remote work policies and oversee productivity. Consequently, we plan to recruit affected employees from the aforementioned hierarchy. We intend to begin our recruitment by collaborating with the Postgraduate Students' Union of the University of Limerick, UL's Doctoral College, individuals who have completed or are finishing their internships, freelancers through social media, and participants from clubs and societies.

4. Brainstorming

Of the three design methods presented, our group believes that employing a critical design method would produce the most effective strategy to challenge conventional assumptions, maximise exploration of innovative thinking, and develop impactful solutions. The group believes that hybrid and remote learning capabilities have been very much refined and developed through its ever-increasing usage both during and in the years following the height

of the COVID-19 pandemic. Due to the high saturation of remote learning and its increasing usage in the workplace, the group seeks to critique this oversaturation by developing a prototype that criticises the workplace and productivity monitoring.

According to a study conducted by Siegel, R., König, C. J., & Lazar, V. (2022) in which the effects of employee engagement on productivity were analysed, its findings indicated that electronic monitoring in the workplace subtly – but noticeably – may impact employees' well-being: "Results [from data] indicate that electronic monitoring slightly decreases job satisfaction, r = −0.10, and slightly increases stress, r = .11, supporting the notion that electronic monitoring negatively affects employees' well-being and work attitudes. Moderator analyses suggest that performance targets and feedback may further exacerbate these negative effects on workers. (Siegel, R., König, C. J., & Lazar, V., (2022))".

The screenshot below highlights our brainstorming method through the use of the visual collaboration tool of Mural. Through usage of Mural, we devised an ideation process to brainstorm what design method would be best applicable and effective in exploring the topic of the future of remote work and hybrid collaboration:

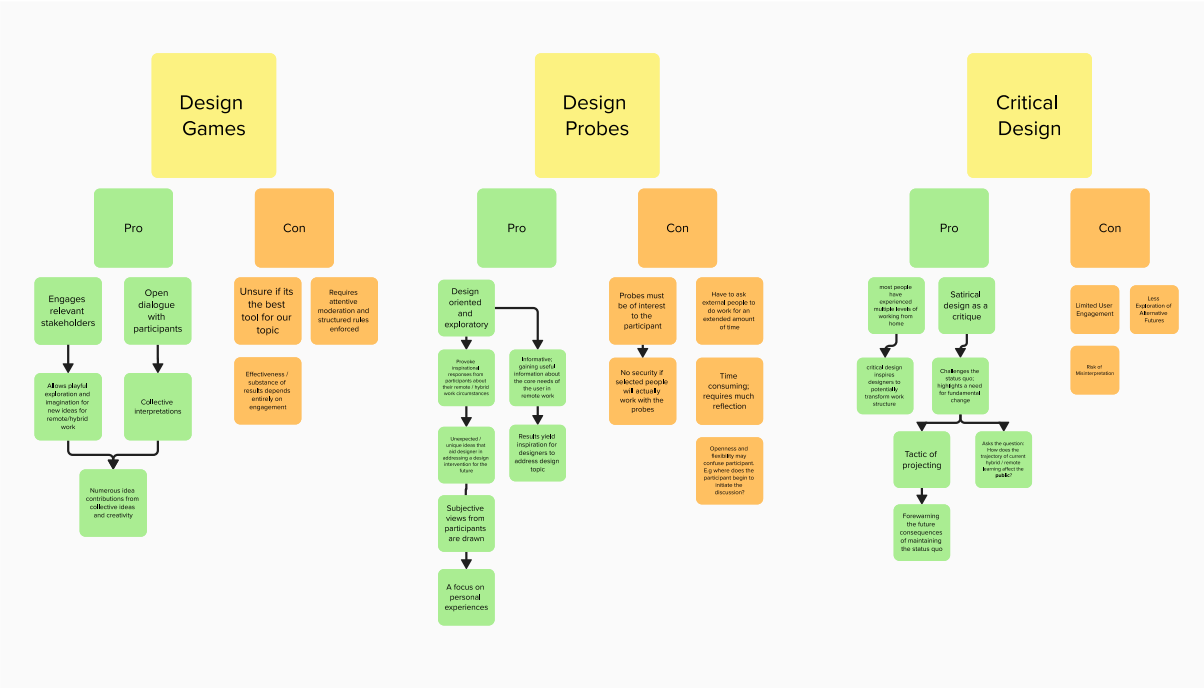

Figure 2 - Screenshot of Mural

Why The Future of Remote Work and Hybrid Collaboration Is Relevant

The evolution of remote and hybrid work is reshaping workplace norms and, therefore, demands reconsideration of traditional managerial structures and productivity measurements. While remote work offers increased flexibility, it also introduces new forms of digital surveillance, blurring the boundaries between one's professional and personal life. Employers' ability to monitor employees through tracking tools raises ethical concerns about autonomy, trust, and mental well-being.

With hybrid work becoming a long-term reality, it is crucial to challenge the status quo and question whether productivity-focused metrics should remain dominant. Should work be

measured solely by efficiency, or should well-being and flexibility take precedence? This critical design piece critiques these issues by exaggerating current workplace surveillance tactics, provoking discussion about the role of control, autonomy, and employee well-being in the evolving future of work.

Why the Critical Design Method Is Applicable

The critical design method applies to our topic because it may send a broader message that encourages designers to think beyond the traditional work structures that have dominated in-person work environments. With remote and hybrid work's application in the workplace only increasing, designers need to dispense of the idea that the traditional work structures are universally applicable to remote and hybrid work, too. Remote and hybrid work also raises concerns regarding digital supervision, maintaining a healthy work-life balance, and ensuring the welfare of individuals. We must, therefore, question the status quo of whether the structures of in-person work (prioritisation of productivity, efficiency) must be carried over into remote/hybrid work in the future or if its focus could switch to well-being and more flexible work structures.

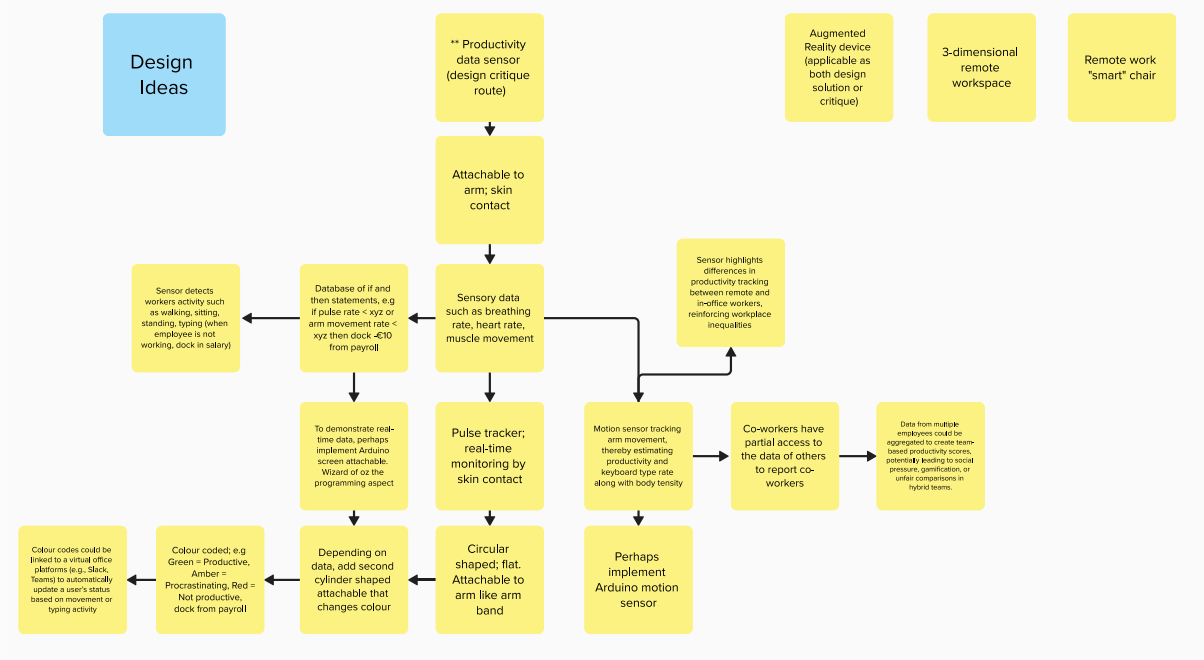

Figure 3 - Screenshot of Mural 2

Initial Expectations

We expect participants to respond to our design with a range of reactions, depending on their personal experiences with remote work and workplace surveillance. The following outlines some of our anticipated responses:

a. Shock and Discomfort

The participants may feel uneasy or even disturbed by the exaggerated level of surveillance depicted in the design.

b. Recognition and Resonance

Some participants, especially those who have experienced strict remote monitoring, may recognise similarities between the installation and their work environments. This realisation could lead them to question how much surveillance they already accept as "normal."

c. Defensive or Justifying Reactions

Employers, managers, or individuals accustomed to performance monitoring may justify the system as a necessary way to ensure productivity. They might argue that remote work requires oversight to ensure productivity.

d. Humor and Satirical Engagement

Since the design is a form of critical satire, some participants might find humour in the exaggerated surveillance features. They could engage with the system playfully, joking about their productivity scores or how they would be penalised in real life.

e. Anxiety and Ethical Concerns

Others may feel increased anxiety or express concerns about privacy and ethics. This could lead to discussions about workplace rights, data security, and the psychological impact of constant monitoring.

The workshop following the installation would provide a structured way for participants to express these reactions.

Overall, the installation aims to provoke critical thought, start a discussion, and challenge the assumptions about remote work and traditional office environments.

5. Summary of Topic and Design

5.1 Description of the Material

We have developed a small 3D-printed device loosely inspired by the location and functionality of a diabetes device. The device will not be functional and only represents functions in the sense of a low- to medium-fidelity prototype. However, our video advertisement will make it seem like the device is fully functional through video editing and a Wizard of Oz approach.

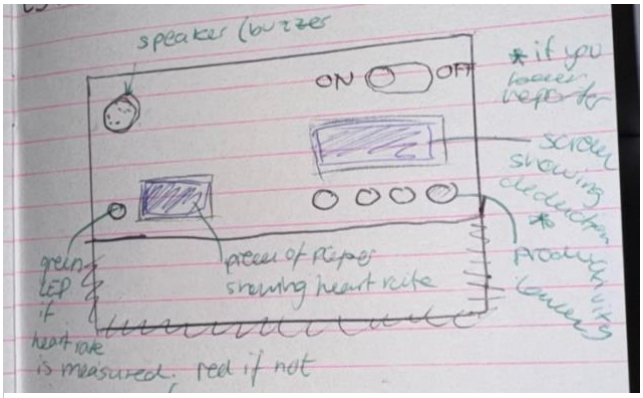

Figure 4 - First sketch of our critical artefact

Additionally, we have created a sidebar on Figma that displays the data the device recorded.

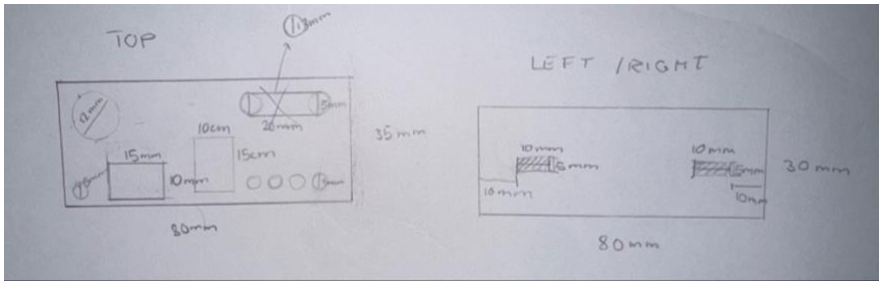

Figure 5 - Second sketch with measurements

The device has multiple sensors connected to it, including a buzzer, LED lights, and a button. A fully functional version would also have a shocker, heart rate sensor and an accelerometer. However, these three sensors have been excluded from our 3D-printed version because they wouldn't be visible to the user.

The device has straps that can be worn on an employee's arm. When turned on, multiple green lights indicate that the heart rate sensor measures the heart rate and that the employee's productivity levels are at an approved level. The device also offers a small screen that informs employees of their heart rate.

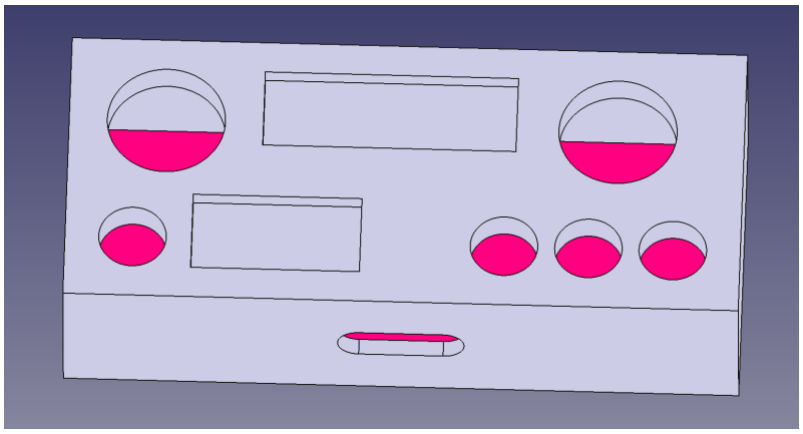

Figure 6 - FreeCAD design of critical artefact

If productivity levels decrease, the bar of three LED lights will light up more. For example, first, only a green light will light up, then an orange light, and lastly, a red light. If the productivity bar shows a red light, the employee's salary will be deducted. The LED lights and buzzer provide immediate feedback, reinforcing the pressure of constant monitoring and increasing workplace stress.

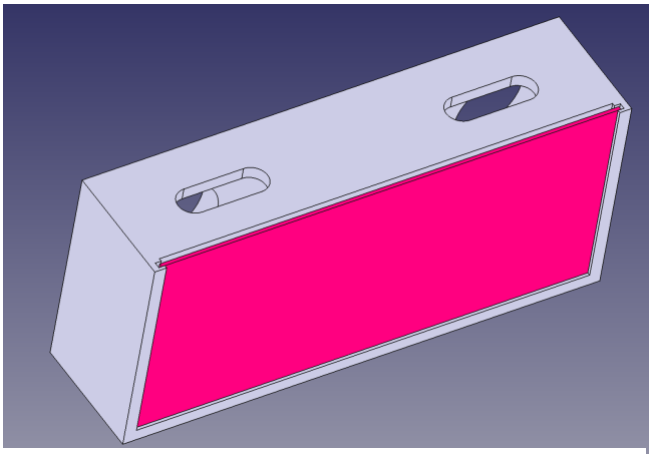

Figure 7 - FreeCAD design of critical artefact (bottom perspective)

Additionally, another screen will inform the employee if another employee has reported them via the sidebar or how high a deduction was.

The sidebar shows the data of all employees within a team to everyone in the team. Enabling team members to report each other for lack of productivity recorded. There is also an availability, away and busy feature.

As discussed in the reading, Dunne and Ruby (2006) *Design Noir*, digital surveillance and workplace control are key themes in the design noir approach. Our device and sidebar embody these themes by exaggerating real-world productivity tracking methods to highlight their ethical implications.

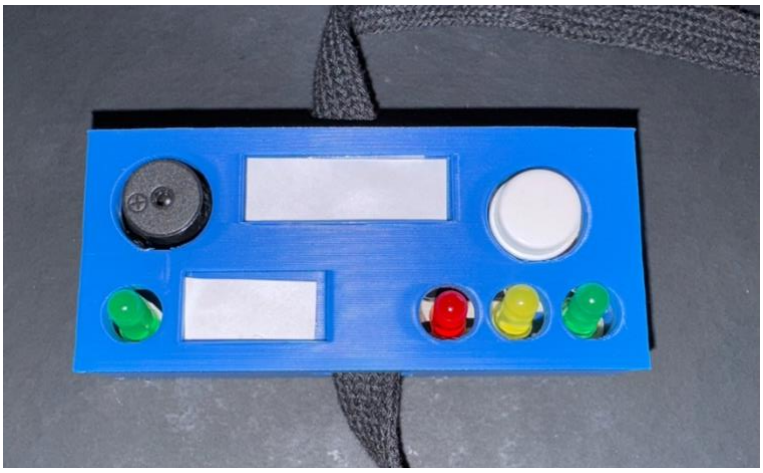

Figure 8 - Critical Artefact strapped on an arm

Figure 9 - Critical Artefact

The reading also emphasises the role of speculative design in provoking critical discussions about technology. Our prototype follows this approach by illustrating the potential consequences of peer surveillance, as seen in the sidebar feature that allows employees to report each other.
We selected these sensors and the sidebar to emphasise the themes of digital surveillance, workplace control and employee accountability in remote work settings. The heart rate sensor was chosen to symbolise the extreme quantification of productivity, suggesting that an employee's physiological state could be used as a metric for productivity. The LED lights and buzzer were included to create an immediate, visible, and auditory response to changing productivity levels, reinforcing the pressure of constant monitoring. The reading discusses the impact of workplace monitoring on employee well-being, which aligns with our design choice to include LED indicators and buzzers that reinforce stress-inducing productivity tracking.
The sidebar feature was added to highlight the potential for peer surveillance, where employees are not only monitored by an employer but also by their colleagues. Inspired by the reading's exploration of power dynamics in surveillance technology, our device demonstrates how monitoring tools can shift control from employers to employees, fostering an environment of self-regulation and mutual oversight.

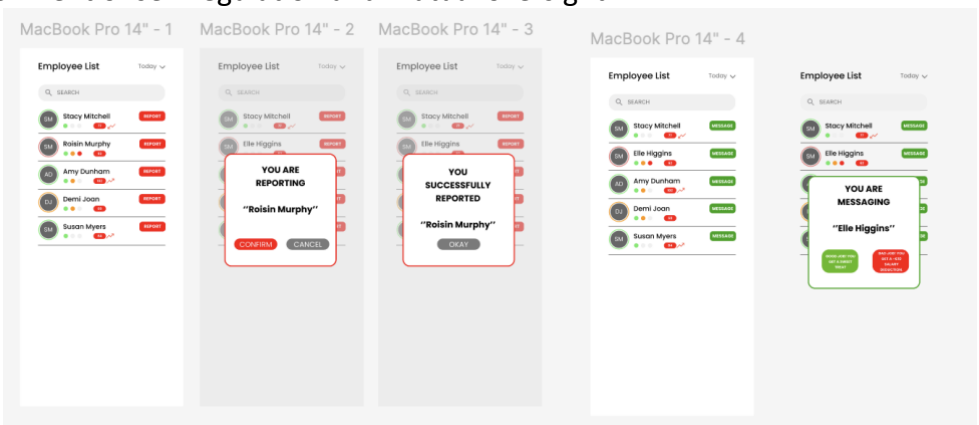

Figure 10 - Figma prototype for the sidebar

In order to develop a fully comprehensive video advertisement that would effectively demonstrate our 3D-printed tracking device in practice, we sought first to brainstorm how we wanted the ad to be conveyed to the audience. The style of a video was chosen as a modern b2b marketing standard. Using the business casual aesthetically refined approach, we present the tracking device as a critical design artefact that is meant to highlight the potential risks of a dystopian future in which hybrid and remote work is the supreme and only form of work, we intentionally chose to present the advertisement in a serious tone. However, this serious tone would equally be layered with a subtleness of satire, allowing the audience to recognise the absurdity and outlandishness of the device despite its realistic and professional portrayal.

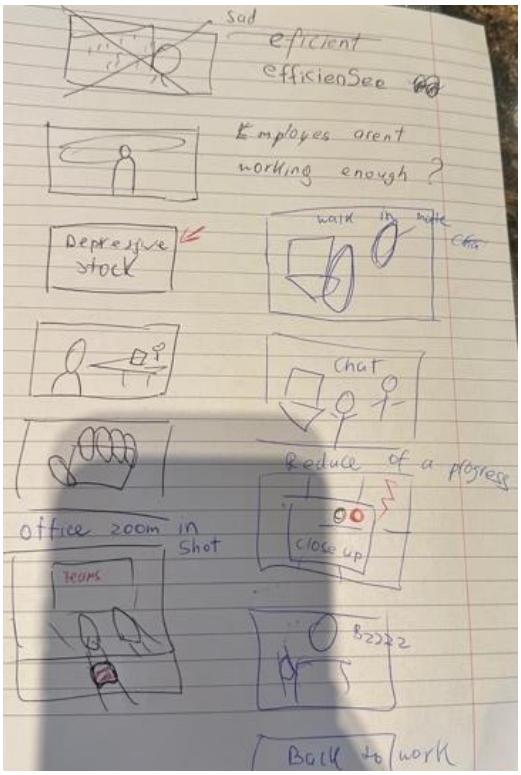

Figure 11 - Storyboard

In order to achieve the effect of a serious tone in our advertisement, we carefully planned the video's structure by outlining its progression in a notebook. We ensured that each scene offered a meaningful contribution.

Our video advertisement features a fictional "manager" as the leading figure throughout the entirety of the video. Therefore, we initiated our video advertisement by introducing the face of the "manager" and the name of our product, 'EfficenSee', highlighting our main idea of increasing productivity through the surveillance of employees.

By including stock video elements, we sought to upgrade the video's quality and ensure a more professional looking image that reflected the seriousness of our point.

A key component of our approach to the video advertisement saw us incorporate a scripted narration throughout the advertisement by deliberately using insincere and calculating language. For example, we sought to include strong phrases such as: "We have grown increasingly worried about your safety", "Your well-being is our top priority", and "Our corporate family keeps an eye on you like a big brother", which particularly hints to the George Orwell novel '1984'. The idea of this novel provided us with a degree of inspiration towards the theme of no privacy and control of the working class. These sharp phrases may sound particularly alarming to the audience, reinforcing the existence of a hierarchy in the average workplace environment. Each storyboard frame also included voiceover text to ensure the audience understands the advertisement's flow and the "manager's" narration.

5.2 Descriptions of Tasks/Activities

After finalising our critical artefact and video advertisement, we will imitate the recruitment process for our focus group. This session will consist of structured activities designed to gather insightful information from people who are currently experiencing or have experienced

remote work. One of our goals is to assess how effectively our artefact communicates its intended message, its emotional and practical impact, and potential areas for refinement.

1. Presentation of the Critical Artefact

Participants will first be introduced to the critical artefact through a structured presentation. This will include:

1. Screening of the video advertisement: This will showcase how the artefact is intended to be perceived by the target audience and highlight its purpose, benefits, and implications.
2. A brief explanation of the physical device: We will provide an overview of the device's functionality and intended use in a workplace setting.

2. Activities

Following the presentation, we will facilitate a guided discussion to explore participants' initial reactions, perceptions, and concerns. Key discussion themes will include:

- First Impressions – What stood out to participants? Was the concept clear?
- Emotional and Cognitive Responses – Did the artefact evoke any strong reactions?
- Perceived Usability and Practicality – How would this product be received in a real-world setting?

We will integrate interactive tools such as Mentimeter and word cloud generators to visualise participants' collective responses and encourage engagement.

Figure 12 - Word Cloud Idea

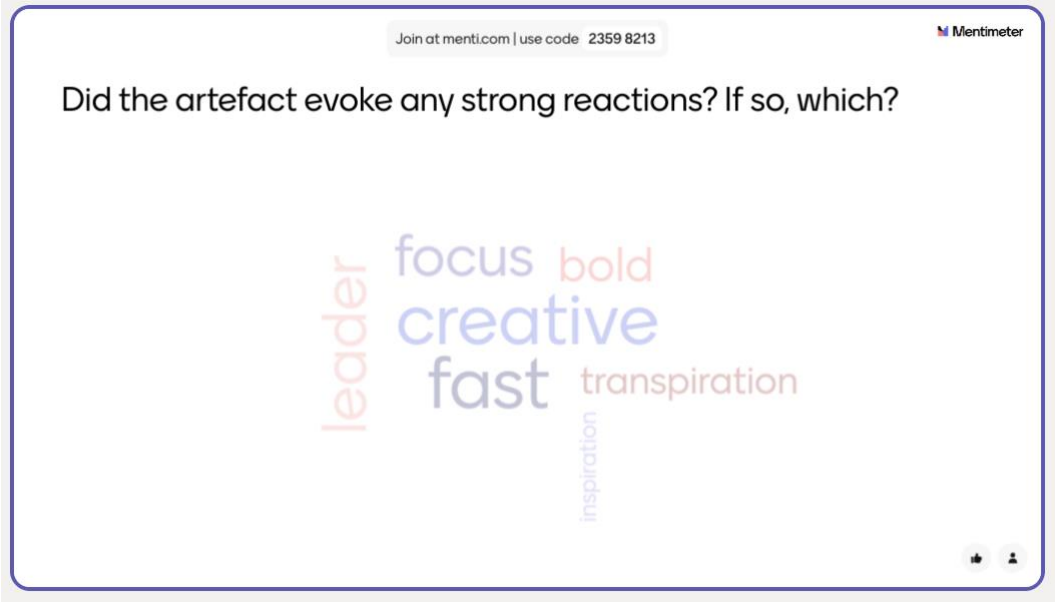

Figure 13 - World Cloud Idea 2

Afterwards, we will introduce more interactive activities to inspire participants to engage in the material and express their thoughts and opinions.

- Interactive Sessions
  - Whiteboard Activity – A pre-drawn diagram where participants place themselves within a conceptual framework, helping us visualise perceptions of workplace monitoring.

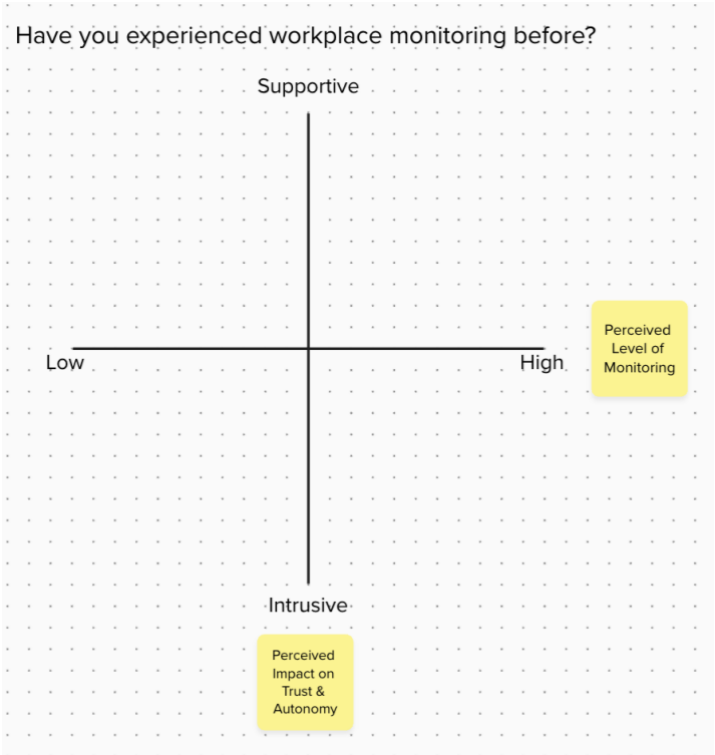

Figure 14 - Idea for a whiteboard activity

  - Scenario Testing & Role Play - Participants will be asked to put themselves in two different roles:

    - An Employee Using the Device: How would they feel about wearing the device? How might it impact their productivity, autonomy, and well-being?
    - An Employer Managing a Hybrid Team: Participants will imagine they are overseeing a remote workforce whose productivity fluctuates between office and home settings. They will consider whether the artefact is a viable solution and explore alternative productivity-boosting strategies.

To support these scenarios, we will include a questionnaire with the following key questions, which are a combination of quiz-style and open-ended questions to assess understanding and perspectives.

- Have you seen similar products or advertisements before?
- Have you ever been monitored while working remotely? If so, how did it affect your work experience?
- From an employer's perspective, what alternative strategies could be used to improve productivity?

These activities aim to provoke reflection and dialogue about the potential future of remote work and how workplace monitoring practices impact employees' autonomy, well-being, and productivity. Additionally, we want to assess whether the video successfully conveys its intended message and identify aspects of the artefact that may require refinement for better impact.

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