IS LIFELOGGING SUITABLE IN PROFESSIONAL SETTINGS? A CASE STUDY WITH SCOTTISH CANALS EMPLOYEES

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This dissertation was submitted in part fulfilment or requirements for the degree of MSc Information and Library Studies

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DECLARATION

This dissertation is submitted in part fulfilment of the requirements for the degree of MSc of the University of Strathclyde.

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ABSTRACT

In acknowledgment of the fact that lifelogging is a relatively new concept for a workplace environment, this research explores the feelings and ideas of employees about the implementation of lifelogging devices in their work routine. This research takes place within the context of Scottish Canals, a company which is interested in launching a heritage project where the recording of employees is a possibility.

The aim of the research was to discover how employees view lifelogging devices with regards to their privacy and what benefits employees could see from implementing these devices. The research also aimed to provide preliminary recommendations for Scottish Canals about whether lifelogging is a suitable option for the impending project and if so, how it should be implemented accordingly in light of employees' perspectives.

It was discovered that around two thirds of employees were open to the idea of lifelogging devices in the workplace. However, this willingness was often accompanied with several conditions which would need to be in place before it would be viewed positively. This included providing a clear explanation for the device, an appropriate setting for the recording, strict protections and access to the footage, and some control over the editing and release of the information. Thus, implementing lifelogging devices in the workplace is a possibility for Scottish Canals and potentially other companies if certain measures are taken.

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1.0 INTRODUCTION

In acknowledgment of the fact that lifelogging is a relatively new concept for a corporate environment, this dissertation aims to bring a new contribution to the research on lifelogs and their use within the workplace. "A lifelog refers to the use of technology to capture and document large amounts of a user's life and broadcast it to an audience" (Techopedia, 2017). Lifelogging goes beyond occasional data capture as the idea is to fully document an aspect of the lifelogger's life from their own perspective. This research explores the thoughts and feelings of employees about the implementation of lifelogging devices in their work routine. This research took place within the context of Scottish Canals, a company which is interested in launching a heritage project where the recording of employees is a possibility. This project aims to capture and share the history of the canals from the perspective of the employees.

Existing research has mostly focused on lifelogging in a personal setting where it is a popular means of documenting various aspects of personal health and history (Bell and Gemmel, 2009; Clinch et.al., 2014). Some of the most interesting research into lifelogs has investigated the personal use of lifelogs and privacy concerns for third parties (Chowdhury et.al., 2016a, Chowdhury et.al., 2016b, Hoyle et.al., 2014). In a different vein, work has also been done to explore intrusions to employee privacy and provide policy recommendations when tracking devices have been used by companies to improve efficiency in the workplace (Fort et. al., 2016). However, research of employees' perspectives about video-capture in the workplace which does not have a high-level safety concern, such as with the police, has not been undertaken.

1.1 Research Questions

"The variety of goals, sources of data, and users of lifelogging has not yet been accounted for in the current ethical debate. There is a need to reassess the challenges and opportunities with regard to specific goals, devices and users because the various domains of application and devices trigger idiosyncratic challenges and opportunities" (Jacquemard, 2014, p. 392). To the best of my knowledge, research has not been done to advise a company on implementing lifelogging devices with employees' perspectives in mind, particularly when surveillance or safety is not the primary objective. My research questions will consider how lifelogging should be implemented by Scottish Canals as a means of digitally recording the history and

skills possessed by its current employees. The focus is the perceptions held by the employees themselves. Both the practical and the ethical aspects of lifelogging will be considered with regard to available technologies and current legislation. The questions for this dissertation are as follows:

1. What concerns do employees have about lifelogging devices at work, particularly with regards to their privacy?

2. What potential benefits do employees see from implementing these devices at work?

3. Is lifelogging a suitable option for the impending heritage project and possibly further projects within Scottish Canals and if so, how it should be implemented accordingly in light of employees' perspectives?

1.2 Research Objectives and Outcomes

The goal for this dissertation is to develop a theory about lifelogging devices in the workplace according to employees' perspectives. Once the employees' perspectives are considered, an additional research objective is to give preliminary best practice advice and recommendations which are relevant, suitable, pragmatic and specific for Scottish Canals as they consider introducing lifelogging for employees. Therefore, the research objectives are:

1. To discover current employee concerns to lifelogging devices at work, particularly with regards to privacy.

2. To discover employee perspectives on the potential benefits for lifelogging devices at work.

3. To create preliminary best practice recommendations for current and potential future projects for Scottish Canals according to employees' perspectives.

As well as paying attention to these objectives, I have considered Scottish Canals' own objectives for the company and the project in order to give best practice advice. The first objective identified by Steve Dunlop, CEO of Scottish Canals is the gathering of historical and cultural records which are "intended to shape the future of our historic places, inspire the next generation and celebrate our cultural legacy" (Heritage Strategy, 2013, p. 2). This is the primary aim of the heritage project and the basis for the decision to consider lifelogging. With regards to the current awareness of canal heritage, "it is likely that its range is not well

known given the lack of accessible information" (Heritage Strategy, 2013, p. 15). Therefore, the aim is to increase the amount and variety of accessible heritage information.

The second objective for Scottish Canals is to preserve the skills of employees who are close to retirement age. The technology would record more than they could describe in written logs and record details of their work that may have been passed down orally from a mentor. These logs could be essential for future apprenticeships and training reflecting the idea that "Man cannot hope fully to duplicate this mental process artificially, but he certainly ought to be able to learn from it. In minor ways he may even improve, for his records have relative permanency" (Bush, 1945).

These objectives for Scottish Canals are discussed further in 4.1 and the corporate plans and other company publications are addressed in sections 2.4 and 2.4.2.

Suggestions for policy and procedures will need to consider current legislation. The Data Protection Act 1998 (DPA) states that the information collected needs to be no more than necessary and willingly given and approved by the person in question for all intended uses. As Scottish Canals' objectives include collecting and possibly publishing or archiving cultural and heritage information, the DPA needs to be taken into consideration. Another possible factor is the EU Privacy Directive (GDPR) set to come into effect in 2018. "While the recent referendum changes the UK's membership of the EU, it is likely that UK organisations will need to conform to the principles of GDPR nevertheless" (England, 2016). Because of this directive, "ePrivacy rules are next in line for review" as there are several "concerns regarding the type of data that is collectable by wearable devices, the ability to profile users from such data and the security of these devices and the data collected" (England 2016). Legislation affecting privacy is discussed more fully in section 2.3.7.

2.0 LITERATURE REVIEW

2.1 Definition of Lifelogging

Vannevar Bush first mentioned the concept of lifelogging in 1945. He predicted the invention of a 'memex', "in which an individual stores all his books, records, and communications, and which is mechanized so that it may be consulted with exceeding speed and flexibility. It is an enlarged, intimate supplement to his memory." While the term 'memex' is not used today, Bush's usage predictions have largely come true.

According to Jacquemard et. al, because of the evolution of the technologies "…a generally accepted definition of lifelogging has yet to be crystallized" (2014, p. 380). It is suggested that the best general definition of lifelogging devices is as follows: "augmentation technologies that record and report the intimate states of object and self-memory, observation, communication, and behavior modeling" (Sonvilla-Weiss, 2008, p.73). This captures the fact that the lifelogging technologies are trying to simulate the memory of the human brain and it is important to note that the recording is of the live event unlike a blog or video diary where life is documented after the event. At a practical level, Sellen and Whittaker note that there are two ways to conduct lifelogging data capture. First, total capture "is a complete record of everyday life, capturing as many kinds of data as possible, as continuously as possible" (2010, p. 72). Second, situation-specific capture is narrower in scope and aims to "capture rich data in specific domains involving complex information" (Sellen and Whittaker, 2010, p. 73). The latter is a specialised way to capture data while remaining automatic in process when certain identified activities occur.

2.2 History and Uses of Lifelogging

Since its beginning, lifelogging has been used for a variety of initiatives. "Use of wearable cameras for first-person experience capture began in the early 1980s. While Mann's WearCam was user-triggered, more recent approaches have automated the capture process" (Sarah Clinch et. al, 2014, p. 1398). Mann also played with the ability to incorporate lifelogging technology into clothing. This approach has gained momentum today as evidenced by devices such as Google Glass and the Epson Moverio.

Additionally, Gordon Bell and Jim Gemmel (2009) note that for seven years, Bell, who coined the term 'lifelog' recorded information about various aspects of his life for the Microsoft project MyLifeBits. These methods reflect the most common use of lifelogs so far

which is to effortlessly document one's life for personal reasons such as health, as with a Fitbit, or for memory recall.

Other long-term research has been done through documenting years of a subject's life. An example of this usage is with Stanford University who "is developing a life archive, which seems like a lifelog, about William McDonough's working life as a sustainable architect (Fleming 2013)" (Jacquemard et. al., 2014, p. 394). A device used for this is the SenseCam which is "perhaps the most important single piece of lifelogging technology used in the psychology of memory research to date" (Harvey, 2016, p. 16). This Microsoft technology was "originally conceived as a personal 'Black Box' accident recorder, it soon became evident that looking through images previously recorded tends to elicit quite vivid remembering of the original event" (Microsoft, 2017). The SenseCam automatically records two to three images every minute for as long as the device is worn and switched on. It has since transferred ownership from Microsoft and new versions have been created under names such as the Vicon Revue and the OMG Autographer. The SenseCam has been used by Cathal Gurrin, a life-logger from Dublin City University, who has been life-logging for ten years to date. His research is aimed at finding a way to better understand the self and daily behaviour so it can be used as a "search engine for the self" (Gurrin, 2013) and so search engines can be built in a way that better understands daily life. In a video interview with The Economist, Gurrin demonstrates use of a device which clips onto a coat pocket or lanyard and captures images throughout the day. He advises that the device should be lightweight and easy to wear as it will be worn on the body for long periods of time. However, "The devices aren't small, they're not hidden. They're very very visible," (Gurrin, 2013) and Gurrin makes it clear that the goal is not to try and sneak data capture of other people. Gurrin responds to privacy implications stating that he would not wear it to a school but does wear it in other public settings such as the street. He also responds to accusations that wearing a camera would change his behaviour by being camera aware, and states that in the end, "life takes over and you cannot change your normal life patterns." (Gurrin, 2013). He also addresses the issue of capturing unpleasant or bad memories. He states that there is so much data, it is very difficult to find the bad memories again unless you specifically look for them.

Behavioural analysis for the development of search engines and other technologies has proved popular since the development of lifelogs. Work conducted through Ajou University studied "behaviour prediction that classifies lifelog data and extracts semantic activities to

predict behaviour states effectively" (Kim et. al., 2012, p. 3). The aim of the research was to improve services for daily life, including through the development of search engines.

Research into the health benefits that come from Lifelogs has focused primarily on the usefulness of lifelogs as a memory aid. Clinch et. al investigated the results of lifelogs when used from different sightline perspectives and they note that "Nigro and Neisser [7] identified a set of factors related to memory recall from the observer (third-person) or field (first-person) view: recent memories tend to be recalled in field mode, whilst those with high emotionality and self-awareness are recalled from an observer view" (2014, p. 1399).

2.2.1. The Use of Lifelogs in the Workplace

More recently, companies have recognised the potential for lifelogging but research has not yet caught up: "Corporations are ignored as potential users of lifelogs in the current academic debate on the ethics of lifelogs" (Jacquemard et. al., 2014, p. 394). This is significant as corporations "might be the main users of lifelogs via equipping employees with lifelog devices" (Jacquemard et. al., 2014, p. 394) in the workplace. The potential advantages for the development of lifelogging in the workplace are various and "Seventy-nine percent of adopters agree that wearables are or will be strategic to their company's future success" (Fort et. al., 2016, p. 146).

Lifelogging technologies were first adopted by the military such as in the programme ASSIST (2004) (Advanced Soldier Sensor Information System and Technology). This was a project with the "objective of exploiting soldier-worn sensors to augment a Soldier's situational awareness, mission recall and reporting capability" (Schlenoff et al., 2011, p.1). Stemming from the events in recent years surrounding police brutality, transparency and accountability have been motivators for the police and other public officials to adopt wearable cameras. Freund notes that in addition to using the devices to "reduce police misconduct", other aims are geared at improving the public's response to law enforcement by decreasing the number of "false claims of police misconduct, and assault on officers by civilians" (2015, p. 95).

Health and safety is another large motivator for corporations to use lifelogging devices. Safety of employees can be monitored with technology and their security can be looked after which enables corporations to use the device "as an instrument for the well-being of the employees" (Jacquemard et. al., 2014, p. 394).

The main benefit to companies for incorporating lifelogs into the workplace relates to improved workplace behaviour. “Seventy-six percent report improvements in business performance” and many of the companies “have now developed a short, yet supportable, improvement in efficiency with fewer job-related mistakes” (Fort et. al., 2016, p. 146).

In 2013, Tesco made wearables mandatory for its distribution centre employees in order to gather data such as loading and unloading speeds, trips to the bathroom or water fountain and other information. This resulted in a productivity score which was either lowered or raised according to their behaviour. Tesco has not disclosed the influence on employee morale. However, “the devices reportedly increased productivity and efficiency, resulting in an expanded use of the devices” (Fort et. al., 2016, p. 144).

Monitoring in varying workplaces has now become more complex. Timestamps are now conducted with key cards, login and logouts for PCs, GPS on company phones and cars and even building designs such as air conditioning and electricity. For example, Nobuyoshi Sato conducted an experiment to create a new kind of system which “gathers information from infrastructures” (2014, p. 82) in various areas such as those mentioned above. Situation-specific lifelogging is common within the other workplace settings as well:

> “Most focus on recording activities during meetings, lectures, or other forms of work-related conversation, allowing ‘organisational knowledge’ to be browsed and searched. Early systems involved the simple indexing of recorded audio and pen-stroke data. More recent technology-enhanced meeting rooms capture video from multiple cameras and microphones, combining it with whiteboard content, slide capture, and digital pen strokes. Often included is software that automatically summarizes and extracts key events from the data” (Sellen and Whittaker, 2010, p. 73).

Jean-François Blanchette, citing Bell and Gemmell (2009), recognises the potential for this trend early on by noting that “In the workplace, Total Recall will be simultaneous with emancipation from paper and the mental fatigue that too often accompany it” (2010, p. 3-4).

There is an example of a company who used workplace monitoring to improve the working environment and atmosphere for employees. Bank of America introduced sensors which were worn by employees in their call centres for a period of six weeks in 2009. These sensors monitored body movements, tone of voice, how much socializing occurred etc. showing that

"social employees are more productive, resulting in a change of working environment at Bank of America to encourage more informal socializing" (Fort et. al., 2016, p. 146).

However, no research has been conducted to discover whether employees view these as acceptable justifications for the use of lifelogging at work. This is a context in which there are specific concerns and dangers as well as benefits associated with lifelogging. There is a clear power dynamic between the employer and the employee, and during work hours, the employee's time is not their own. While the benefits for companies have begun to be identified in research, the implications for employees have remained unidentified. If this area remains unexplored from the perspective of employees, the use of lifelogging could shift the balance of power even further in favour of the employer. This research will help fill the gap in identifying clearly the feelings of employees for lifelogging.

2.3 Practical and Ethical Considerations

2.3.1 Lifelogging and Privacy

Warren and Brandeis are responsible for introducing the idea that privacy is a right with the privacy principle (1890, p. 195). Since then, privacy has been viewed and defined in varying ways including to what extent information about ourselves is communicated (Westin, 1967) and as "a sphere separate from government, a domain inappropriate for governmental interference, forbidden views and knowledge, solitude, or restricted access" (DeCew, 2015, p. 4). The concept of privacy is even more important today because of the advancement of new technologies such as lifelogs. This often creates a conflict for privacy issues as "it is possible to make a compelling argument for overriding the privacy intrusions" (DeCew, 205, p.28) with the technologies if, for example, it is for the sake of public safety. Moore has contributed significantly to the research in this area and argues that privacy should be valued above other social principles (2000, p. 701) and that "employee agreements that undermine employee privacy should be viewed with suspicion" (DeCew, 2015, p. 28).

The effects that intrusions of privacy can have on an individual and a society have been researched in general and in light of these new technologies. DeCew, citing Reiman, (2004), Solove (2008) and Nissenbaum (2010) states that "concerns over the accessibility and retention of electronic communications and the expansion of camera surveillance" has focused research in the direction of loss of privacy for individuals as well as privacy protection for the state and society (2015, p. 24). This is important as Rachels (1975)

"defends the view that privacy is necessary to maintain a variety of social relationships" which include "intimate relations, family relationships [and] professional relationships" (DeCew, 2015, p. 20, 25). Up to this point, the authorities that regulate privacy for the UK have upheld the idea that "privacy has critical value in a robust information society because citizens will only participate in an online environment if they feel their privacy is guaranteed against ubiquitous business and government surveillance" (DeCew, 2015, p. 8). This dissertation will help to determine what ideas people have towards technologies such as lifelogging within professional relationships and whether they feel as though their privacy is guaranteed.

2.3.2 Practical and Ethical Considerations for Companies

There are practical and ethical dangers inherent in the use of lifelogging in the workplace. Thus, before implementing lifelogging technologies, Robin England recommends that companies should have a robust policy for two reasons: "(1) to address the level of risk a company's data processing poses to an individual's rights; and (2) to identify what technical and organisational measures are required to manage these risks" (England, 2016).

Very little research has been undertaken concerning how companies collect, keep and access lifelogs. "This is noteworthy as the history of lifelogs demonstrates that companies have a strong interest in holding vast amounts of information about individual people" (Jacquemard et. al., 2014, p. 393). It is important to consider this relationship as "the relation between citizens and authorities or companies may be affected by lifelogs as they could be a source of information for states" (Jaquemard et. al., 2014, p. 386) or company officials.

2.3.3 Participation and Disclosure

Some companies have left adopting a lifelogging device at work as optional for employees. This too can be problematic as the choice may only be an illusion, and "there will be pressure to conform" so that "someone who wishes to retain control of the information about them…comes to be seen as abnormal" (O'Hara, 2010, p. 16). A lifelog could become a prerequisite to show openness and the absence of a lifelog could be seen as wanting to hide negative behaviours and actions. Jacquemard et.al. agree with this concern stating that withholding consent from a lifelogging experience "could be interpreted as signifying the intention of hiding malign behaviour" (2014, p. 386).

A study has been conducted by Tetsuro Kobayashi, Yu Ichifuji and Noboru Sonehara who "quantitatively evaluated how people's decisions to consent or refuse to disclose private lifelogs are influenced by lifelog type and the incentives of either monetary reward or lifelog-based services" (2011, p. 500). They studied whether monetary rewards or the development of better services had a stronger effect on whether participants were willing to disclose private lifelogs gathered by smartphones and the results clearly showed that financial benefits had a stronger effect. "Of the three lifelog types, communication history had the strongest psychological resistance…On the opposite end, location information collected by GPS had the lowest psychological resistance…The effect of Web browsing history and search history fell between…" (Kobayashi, Ichifuji and Sonehara, 2011, p. 501). This study is significant because it provides companies with the information about users' resistance to the disclosure of information and "since a large volume of lifelogs need to be collected before information and recommendations can be presented effectively to users, efficient lifelog collection is a pivotal issue in the further development of services" (Kobayashi, Ichifuji and Sonehara, 2011, p. 498).

2.3.4 Third Parties

There is also a clear ethical concern for how third parties' information can be captured by the lifelogging devices especially in instances where not all third parties are able to give consent. Research has been conducted both from the perspective of bystanders (Denning et.al, 2014 and Nguyen et.al., 2009) and of lifeloggers themselves (Hoyle, 2014, and Chowdhury et.al. 2016b). Chowdhury et. al. discovered that "[lifeloggers] were mostly concerned about self-privacy, followed by privacy of family members and close associates, and least concerned about the privacy of unknown bystanders" (2016b, p. 2). However, Hoyle et. a. and Koelle, Heuten and Boll disagree. Hoyle et. al. found that lifelog users are "concerned about the privacy of bystanders and actively limit the dissemination of images that may impact them (Hoyle et.al., 2014, p. 580). Koelle, Heuten and Boll found that "lifeloggers often take explicit measures to protect bystander privacy" (2017, p. 7) Additionally, their findings show that lifeloggers prefer noticeable cameras as devices which are concealed are unethical "and lifelogging cameras can sometimes even foster interactions by playing the role of a conversation opener" (2017, p. 7). The research in this area, while useful for privacy and third parties, has only been conducted in the context of personal and public settings. Therefore, research still needs to look into professional, particularly corporate, environments and the findings produced from this research will help to fill this gap.

An additional consideration is the change in the way authorities are viewed due to the presence of a recording device. Police officers have had mixed responses with some reporting that certain types of interactions will be more successful without the presence of a camera and that "recording social interactions between police and civilians…creates distrust" (Freund, 2015, p. 105). However, other reports have said that the cameras have not had a negative impact and they have "actually improved community relations" and they cause "both police and civilians to moderate their behaviour, resulting in fewer negative interactions" (Freund, 2015, p. 106).

2.3.5 Access to and Editing of Lifelogs

Once adopted, either as required by policy or willingly, it is necessary to consider whether people are able "to access, manage or even know about various layers of personal information collected by the devices concurrent…with personal experience capture" (Bailey and Kerr, 2007, p. 134). Sharing and editing capabilities must be considered for lifelog users, especially in the workplace since "the level of control that an individual has over these devices can be further diminished when [Digital Rights Management systems] contain a one-sided, standard form End User Licence Agreement through which corporations are able to assert a further level of control over users' records" (Bailey and Kerr, 2007, p. 134). This creates a conflict between keeping sensitive data private for employees and keeping all relevant data available to employers. If there is too much supervision, problems with a spying mentality come into play; however, information that sheds an unfavourable light on an employee may be edited out dishonestly if appropriate regulations are not in place.

Studies have also been conducted to discover how important context is. The idea that data does not necessarily result in accurate understanding, is widely held today. Taylor Owen found that "data does not equal fact" and "context matters enormously" (Harvey, 2016, p. 19). Grudin points out that "the decision what to record and what not to record ''profoundly changes the nature of that information and the contexts created from it... Anything that does not 'make the cut,' (i.e., is not captured) is invisible to someone inspecting the digital record at a different location or time" (2001, p. 277).

The National Institute of Standards and Technology Cybersecurity Framework (NIST Framework) is a set of best practice recommendations for private-sector companies in America. While these are not intended for use in the UK, they may be useful after Brexit has taken place. Fort et. al. discuss the NIST Framework which recommends that all employees

should be able “to access any data coming from provided wearable, to rectify inaccurate information, have control over how the data is shared with the firm and/or third parties, and to retain the right to object to and ultimately erase the information if it is unduly sensitive (2016, p. 166). The NIST Framework also recommends that any company which intends to be a leader for the use of lifelogging devices have explicit and transparent policies.

2.3.6 Consequences of Lifelogging

Harvey touches on the inevitability of capturing private moments while lifelogging. He states that it “raises the risk of accidental disclosure and opens up the possibility of data breaches” (2016, p. 18) even if the information is never intended for disclosure to other parties.

One aspect considered between companies and employees is noted by Chris Brauer of the University of London: “People recognise that effectively they're on the clock, that they're being tracked, and as a result they raise their game” (Fort et. al., 2016, p. 154). Whether or not it is the aim of a company to increase efficiency in the workplace, lifelogging devices often have that effect. While that may not be problematic in theory, it could cause employees to run themselves down and burn out more quickly than usual.

While the devices could improve workplace efficiency, they could also have negative effects such as with the relationship between employees and their supervisors or for morale. For police, Freund notes that constant recording “might create an oppressive working environment” (2015, p. 106), and “they will inevitably record events that are embarrassing or would cause distress for the subject” (2015, p. 100). In some cases, there have been reports of superiors taking advantage of an investigation into one incident to look into an officer’s entire footage history and gather evidence of misconduct. This has been used against officers, even to the point of termination and even in instances where a policy has been in place to try and prevent this (Freund, 2015, p. 107).

2.3.7 Legal Considerations

A range of data security and protection issues, as well as employment laws, were raised by interviewees. However, “It remains unclear how stakeholders, such as companies, authorities, or fellow citizens, are legitimately allowed to use the technology” as we are still unable to “completely legally regulate the technology before it has fully developed” (Jacquemard et. al., 2014, p. 389). However, several Acts and regulations have been put into place which help to respond to privacy and disclosure challenges. These will be discussed below.

The Data Protection Act 1998 (DPA) places a responsibility on employers to manage employees' data in a certain way. This could have serious consequences if not taken into consideration when considering implementing recording processes in the workplace. The Employment Practices Code is a document provided by the Information Commissioner's Office under section 51 of the DPA which details recommendations for how organisations can best meet the requirements of the Act. It "deals with the impact of data protection laws on the employment relationship. The Code covers issues such as the obtaining of information about workers, the retention of records, access to records and disclosure of them" (Information Commissioner's Office, 2011, p. 3). This code is a useful tool in deciphering how to best apply the DPA appropriately in the workplace and has been used here in the discussion of the implementation of policies relating to the Act.

The DPA primarily covers dealings with "personal information" which means that it "is about a living person and affects that person's privacy…in the sense that the information has the person as its focus" (Information Commissioner's Office, 2011, p. 5). The DPA states that the information collected needs to be no more than necessary and willingly given and approved by the person in question for all intended uses. Any personal information which is automated is also covered by the Act as well as if it is "held in any filing system" (Information Commissioner's Office, 2011, p. 5). Employers must "ensure that there is a clear and foreseeable need" (Information Commissioner's Office, 2011, p. 30) for the information that they collect from their employees. This is only regarding data that is retained or data that is considered mandatory by the employer to gather from the employees. It could be possible to interpret the gathering of certain information through lifelogs as necessary to meet the objectives of the company as set out in their corporate plans. However, the extent of use would need to be carefully considered.

A key piece of advice for the management of personal data is to "consult workers, and/or trade unions or other representatives, about the development and implementation of employment practices and procedures that involve the processing of personal information about workers" (Information Commissioner's Office, 2011, p. 12). The validity of freely given consent is questionable within this type of relationship. An employee-employer relationship is not one which is on equal ground as typically employees have a greater need for the job than employers have need for the specific employee. This creates pressure when it comes to consenting to various initiatives in the workplace and should be managed carefully

with clear communication and intent. The consent must be able to be withdrawn once given and it must be as easy to withdraw as it is to consent from the situation.

Subject access is known as the "right to gain access to information that is kept about any individuals, including workers and employees" (Information Commissioner's Office, 2011, p. 27). However, this raises questions about who else has access and how. It is imperative that the line between data protection for an individual and open access to appropriate information is dealt with carefully. The Code recommends that someone should be appointed as the data security officer within the company to deal with subject access requests from employees. This means that an entirely automated system is not possible for the retention of the video footage captured by lifelogs.

The Code further covers access issues as there is an entire section on how to use workers' data for marketing purposes. As the heritage project will be one that is shared with the public, the recommendations made in this section of the Code could prove essential in the risk assessments and planning for the project.

It is clear that the lifelogging devices increase the amount of data captured and the automatic nature of the recording will provide for even less discrimination between what is relevant to the workplace and what is private. Monitoring goes beyond merely carrying out checks. "[It] goes beyond one individual simply watching another and involves the manual recording or any automated processing of personal information, it must be done in a way that is both lawful and fair to workers" (Information Commissioner's Office, 2011, p. 59). The reasons why it needs to be fair to workers are explained by the potential negative effects on the employees: "…It may intrude into their private lives, undermine respect for their correspondence or interfere with the relationship of mutual trust and confidence that should exist between them and their employer" (Information Commissioner's Office, 2011, p. 54). One of the main reasons why monitoring can have these negative effects is that "it is not always easy to draw a distinction between workplace and private information" (Information Commissioner's Office, 2011, p. 54). While monitoring is not an objective of Scottish Canals, the nature of lifelogging may have the same effects as workplace monitoring. Additionally, employees identified health and safety as a possible use of wearable cameras which is identified in the Code as a possible form of monitoring. Therefore, information about workplace monitoring has been provided here.

Another possible factor is the EU Privacy Directive (GDPR) set to come into effect in 2018. "While the recent referendum changes the UK's membership of the EU, it is likely that UK organisations will need to conform to the principles of GDPR nevertheless" (England, 2016). As a result of this directive, "ePrivacy rules are next in line for review" as there are several "concerns regarding the type of data that is collectable by wearable devices, the ability to profile users from such data and the security of these devices and the data collected" (England 2016). Key changes that have been made to the previous, 1995 directive through the GDPR have to do primarily with the extended jurisdiction of the directive, clarifying that the regulation covers data collected about people within the EU regardless of where the company or collector is located. However, other and potentially more relevant changes have to do with consent, right to access, right to be forgotten and data protection officers. For consent, "companies will no longer be able to use long illegible terms and conditions" but instead are required to provide the conditions in "clear and plain language" (*GDPR Key Changes,* 2016). It must also "be as easy to withdraw consent as it is to give it" (*GDPR Key Changes,* 2016). The right to access allows data subjects to receive a free, electronic copy of the personal data that is collected from them. The right to be forgotten, known as Data Erasure, allows data subjects to have their data erased and all further dealings with their data halted due to their withdrawing of consent. However, an interesting power remains with the data controller in that they can "compare the subjects' rights to the 'public interest in the availability of the data' when considering such requests" (*GDPR Key Changes,* 2016). For an organisation such as Scottish Canals which primarily provides a public service, this comparison of subjects' rights to the rights of the public could prove complicated, particularly since one of the purposes is to collect data for heritage reasons.

The Freedom of Information Act (Scotland) 2002 and the Environmental Information (Scotland) Regulations 2004 ensure that the public can access recorded information from public authorities in Scotland. Scottish Canals is included in the list of companies which are subject to FOI requests.[1] This means that public authorities are required to both publish information regarding certain activities and provide information requested by members of the public. This includes information in several formats: paper, computer files including e-mails, video and microfiche (Scottish Information Commissioner, 2015, p. 7). The type of information that must be provided is for example, decisions which affect local services such

[1]http://www.itspublicknowledge.info/YourRights/WhocanIask/Authorities_listed_in_Schedule_1_of_the_Act.aspx

as those with the canals, studies which are carried out before decisions are made, and the number of complaints which are made about certain issues involving the organisation. Some categories are exempt however, and these may be due to "substantial prejudice" which is "where the authority can prove there would be real and significant damage to the authority or to other people if the information were made public" (Scottish Information Commissioner, 2015, p. 21). This means that the public authority needs to determine whether "the benefit to the public from disclosure is greater than the harm to the authority or other people affected" (Scottish Information Commissioner, 2015, p. 21). Through the Environmental Information (Scotland) Regulations 2004, a variety of information can be requested. This "covers a broad range of topics, such as: the environment itself, including air, water, earth and the habitats of animals and plants, things that affect the environment, such as emissions, radiation, noise, and other forms of pollution and policies, plans and laws on the environment" (Scottish Information Commissioner, 2015, p. 31). Once the information is recorded in some way, it becomes important to decide how to manage sharing with relevant parties, including the public. This could cause conflicts where an employee is recorded saying or doing something which they would prefer is kept private and yet, there is a case for sharing it with the public.

2.4 Scottish Canals

2.4.1 The Structure of the Organisation

The system of canals in Scotland used to be governed by British Waterways, which governed the entire canal system for England, Scotland and Wales. In 2012, this then split into the Canal and Rivers Trust for England and Wales and Scottish Canals for Scotland. Scottish Canals is the name which operates for the British Waterways Board of trustees which remains in place within the inland waterways of Scotland. Scottish Canals is now "…a public sector organisation reporting to Scottish Ministers rather than that which might be found in an equivalent private equity company" (Scottish Canals, 2017b, p. 18).

The Chief Executive of Scottish Canals, Steve Dunlop, is a part of the Board and the Management Team. The Management Team is made up of five members, the other four being: Richard Millar, Director of Infrastructure, Katie Hughes, Director of Estates, Josie Saudners, head of Corporate Affairs and Claire Lithgow, Director of Finance. The Chief Executive is directly responsible for the departments of: Corporate Affairs, Estates and Finance. The Director of Infrastructure is responsible for the departments of: Health and Safety, Operational Delivery, Asset Management, Environmental Management and Customer

Operations. Within each department are further heads of the departments, supervisors and then staffed employees with no line management responsibilities. Two documents which outline the organisational structure were provided to me by the records manager which I used to develop a more simplified and anonymous description of the company. This is further explained in section 3.4 below.

2.4.2 The Strategic Plan of Scottish Canals

Two corporate plans are currently available to the public on the Scottish Canals website[2]. The previous plan was active from 2014 until April 2017; the current plan began on April 1, 2017 and is active until 2020. The previous plan was created while the organisation was still a part of British Waterways and subject to influences from the UK Ministers. However, while the organisation is now only subject to Scottish Ministers, the structure of the company has remained relatively unchanged. This is reflected in the corporate plans as the two are very similar with the main difference between them being that the current plan is more ambitious within the allotted time frame Along with the corporate plan, there is also an Organisational Development Strategy (ODS) in place to set out how Scottish Canals will accomplish the goals within the Corporate Plan.

Scottish Canals is conscious that there needs to be a balance between the public-sector mission and the private sector mission.

As far as the public-sector mission is concerned, the priority is "ensuring the canals remain safe and navigable" (Scottish Canals, 2014, p.4). Second, the mission is that of preserving the canals' "historic value to Scotland", "safeguarding the diverse ecosystems they support" and "[making] them more attractive to users, from at home and abroad." (Scottish Canals, 2014, p.4). Thus, alongside the safety side of maintaining the canal network, heritage, community and environmental concerns need to be attended to.

As far as heritage is concerned, it can be noted that "the potential to deliver increased public value is huge…They are also, as they have long been, a remarkable heritage asset, providing inspiration and a sense of wonder to countless individuals of all ages and circumstances." (Scottish Canals, 2017b, p. 6). This is of central importance to the research involving lifelogs as this is a way of preserving heritage information for the future generations.

[2] https://www.scottishcanals.co.uk/corporate

There are three principles linked to the community-side of this mission. The first involves building stronger communities. These communities can be built around the canal-side life and the elements of tradition that comes with this. The second principle is about attracting new customers and income. This could be summarised as involving new people in the communities. The third principle is that of working with empowered & motivated people" (Scottish Canals, 2014, p.8).

The third principle stands out as particularly relevant to the research involving lifelogs and is reflected in the ODS. The outcome of "ensuring that we are making the best use of our employee resource to deliver customer excellence and a more empowered and accountable workforce" (Scottish Canals, 2016, p.3), reflects the intended outcome of the heritage project. The use of lifelogs to capture employee history and knowledge would help achieve the aim of making the best use of employees as a resource. Through the sharing of that knowledge, it would improve the customer experience with Scottish Canals.

To expand on this further, the second corporate plan reads:

> "The theme of Empowering and Motivating People lies at the heart of our purpose…and it aims to harness their innovation, dynamism and drive in all that we do. Concepts of public service delivery have evolved significantly in recent years, but few more so than in relation to maximising the productivity of heritage assets…it is essential that everyone…is motivated and empowered to play their full part in fast moving and innovative ways." (Scottish Canals, 2017b, p. 7).

In addition, as far as the employees are concerned, it may be that lifelogging will attract others to join the company. "We must attract and retain the very best people…Everyone must play their full part, and believe that they are doing so" (Scottish Canals, 2017b, p. 12).

Beyond the heritage and community-building elements of the mission, as a public sector organisation, it must help with wider economic strategy. There is an "Economic Strategy of delivering sustainable economic growth in order to help create a more successful country where everyone who lives, works, visits or does business along our canal corridors can flourish" (Scottish Canals, 2014, p. 3). Thus, Scottish Canals has intentionally aligned its corporate objectives and the strategy for achieving those objectives with the Government's Purpose Targets and National Outcomes so that sustainable economic growth will increase in part due to the influence of Scottish Canals.

Alongside this, there are more commercial aims. One of these is to be more financially sustainable: “If sufficient new capital can be found, to transform Scottish Canals from a subsidised organisation into one that (in the long term) can stand on its own financial feet and potentially generate financial surpluses” (Scottish Canals, 2017b, p. 18). One way to do this is to embrace the possibility of becoming more like a private company: "We have big ambitions to diversify our business. This means becoming much more commercially-minded; generating income which can be re-invested in these scheduled ancient monuments and safeguarding them for future generations." (Scottish Canals, 2014, p. 3). Thus, all of the above-mentioned strategies should be looked at in order to make a profit which can be re-invested into other activities that the organisation performs.

3. 0 METHODOLOGY

3.1 Case Study

I chose to undertake a case study of employees at Scottish Canals. This provided an opportunity to advance the research in lifelogging technology because research has not yet been conducted from the perspective of employees within a corporation. The case study "can be usefully seen as a small step toward grand generalization" (Stake, 2003, p.125) meaning the results of this dissertation will be confined to the context within Scottish Canals and clears the way for further research and wider applications to be made in the future.

The company is unique because it is a "stand alone public body" (Scottish Canals, 2017a), a statutory corporation, whose objectives are to maintain the waterways as a transport network, as a source of tourism and engineering, and to maintain the rich heritage of the canals. Scottish Canals is also seen as a unique part of the community and there are also comparatively minimal safety risks from customer confrontations as opposed to the police or military. The uniqueness of this setting provided benefits and limitations to the work which are outlined below.

The advantages of partnering with Scottish Canals stemmed from the fact that the company was already looking for ways to implement lifelogging. This meant that the heritage and human resources departments were helpful in finding volunteers for the interviews. Furthermore, this meant that there was a project in place to help frame the research. The company has an aging population and so is interested primarily in capturing the heritage and tacit knowledge of their employees. The information gathered is mainly intended for publicly sharing the story of Scottish Canals from the point of view of its employees, however, the team also acknowledges that the work conducted by staff in the field is often very technical and so video could be used to ensure that the work was documented for succession training.

The limitations of partnering with Scottish Canals are as follows:

First, I only collected detailed data from one company rather than ranging more widely and researching lifelogging in the workplace as a whole. Related to this, the structure of Scottish Canals as a public body/company is unique within the UK as has been discussed in section 2.4.1. This means that I cannot assume that my observations may be generally applicable to other workplaces. However, a case study is an appropriate research method as "they tend to be drawn from real life", and they "often lead to recommendations, such as for a business or

an organisation" (Cottrell, 2014, p.163). Thus, case studies are good for gaining particular insights into a situation as opposed to general knowledge that can be widely applied.

Second, as the reasons for volunteering for the interviews were not explored, the volunteers may be those who were more comfortable being recorded and those who were more timid decided not to participate. However, the opposite may also be true, that those employees with the strongest opinions volunteered. Steps were taken to respond to these limitations which are addressed in section 3.4.

3.2 Qualitative Research

I chose a qualitative method as opposed to a quantitative method primarily due to the exploratory nature of the research. As Strauss and Corbin describe, "…qualitative methods can be used to obtain the intricate details about phenomena such as feelings, thought processes and emotions that are difficult to extract or learn about through more conventional methods" (Strauss and Corbin, 1998, p.11). Stern also notes the benefit of qualitative methods "to explore substantive areas about which little is known…to gain novel understandings" (1980, p. 21). Therefore, as the area of research is in its beginning and lifelogging is a relatively new form of technology for the workplace context, a qualitative approach was chosen.

A danger for qualitative research is the tendency to quantify qualitative data. Instead, "the bulk of the analysis is interpretive" and "carried out for the purpose of discovering concepts and relationships in raw data and then organising these into a theoretical explanatory scheme" (Strauss and Corbin, 1998, p.11). The intended outcome was to understand people's experiences of working on a canal and how the lifelogging device would affect this.

3.3 Grounded Theory

I chose grounded theory as the analysis method which enabled me to collect data first and then generate ideas from this data rather than starting with preconceived ideas. Lifelogging is a new area, particularly in the workplace context, and so there was not enough pre-existing literature to provide a coherent overview of themes for the study. As a result, the grounded theory approach enabled me to discover a good overview of significant themes based on the context within one company. Strauss and Corbin again describe the value of grounded theory's "ability not only to generate theory but also to ground that theory in data. Both

theory and data analysis involve interpretation…based on systematically carried out inquiry" (Strauss and Corbin, 1998, p.8).

The grounded theory approach was applied not only in the analysis of the data, but also when ensuring that the fieldwork and data collection measures would provide rich, meaningful data for analysis.

This method also provides the focus to "create new and theoretically expressed understandings" (Strauss and Corbin, 1998, p.8). I chose grounded theory because it narrowed the results of the research into a theory which can be used both by future researchers when deciding on further research directives and by Scottish Canals for the practical implementation and decision-making for their projects.

Other qualitative methods such as thematic analysis and framework analysis were considered. However, the unstructured nature of thematic analysis would not provide enough focus within the context of a case study which requires more focus and a practical result as with the grounded theory approach. Framework analysis requires the researcher to analyse the data with regards to previously developed theories and themes. As the research area is relatively new, it was decided that an exploratory outlook which began without preconceived ideas would allow for a more honest portrayal and categorisation of the data.

3.4 Data Collection - Interviews

Data collection was carried out through semi-structured interviews with twenty employees. It was the goal of this study to interview a sample size which is roughly 10% of the company and which represented a range of job roles and levels within the company's organisational structure. Due to the availability of employees during high season on the canals and the short time frame for the interviews, the representative departments are somewhat unbalanced. No interviews took place with employees from the Health and Safety, Legal or Corporate Affairs Departments, and as can be seen in figure 1.4 there were four interviews with the Asset Management department despite it being a smaller department in the company. However, the original intention was only to interview employees from a range of departments and tiers which has been accomplished as well as the goal to interview 10% of the company. For the scope of this research, it was sufficient to interview employees from a range of roles instead of strategically ensuring that I interviewed a representative from each department. This was because the main distinction to be made was between bank staff and office-based staff. Bank

staff includes mostly employees which spend most of their time working on or around the canals and encounter customers more often than other roles. Bank staff can be described by job titles such as such as waterway operatives, team leaders, maintenance operatives and catering staff. Office-based staff are those which spend little to no time on the canals and can be described by job titles such as HR Adviser, Financial Controller, Head of Estates and Health and Safety Adviser. Seven of the interviews took place with bank staff while ten took place with office-based staff. The remaining three took place with staff who are mostly office-based but also spend a significant portion of their time on the canals.

The sample group did mirror the male and female ratios within the company as seven of the interviewees were female and thirteen were male. This was not done intentionally at first, but as the interviews progressed, enough volunteers were available that this distribution was made possible. I am unaware of how the age range of participants correlates with the population of Scottish Canals as I did not have this demographic information. However, the ages of the participants have been provided here for use by Scottish Canals and for future research. Figures 1.1 through 1.4 outlining the sample group can be seen below.

Figure 1.1

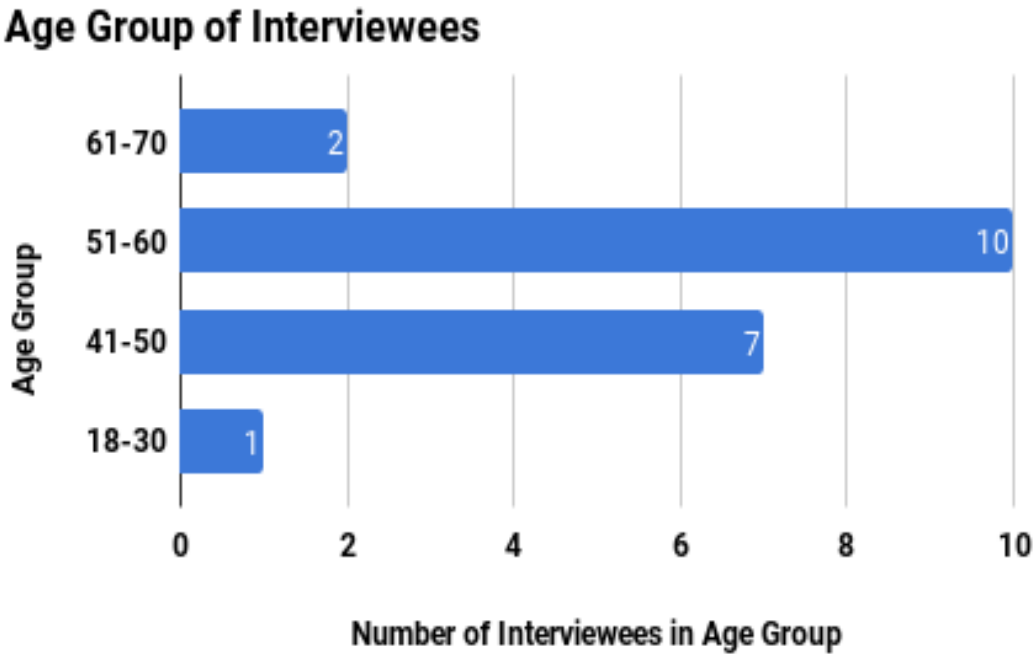


Figure 1.2

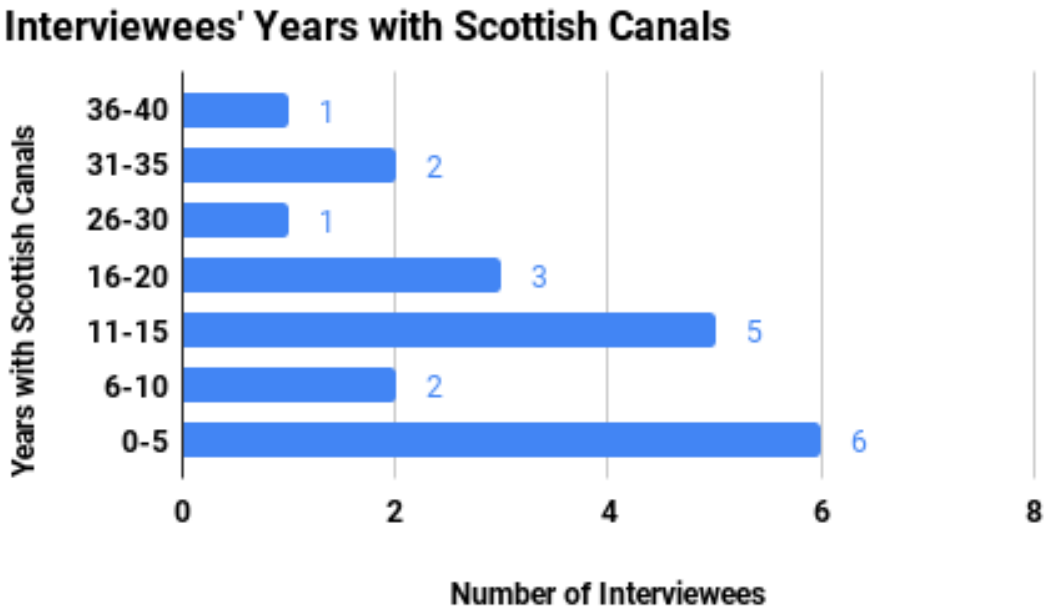


Figure 1.3

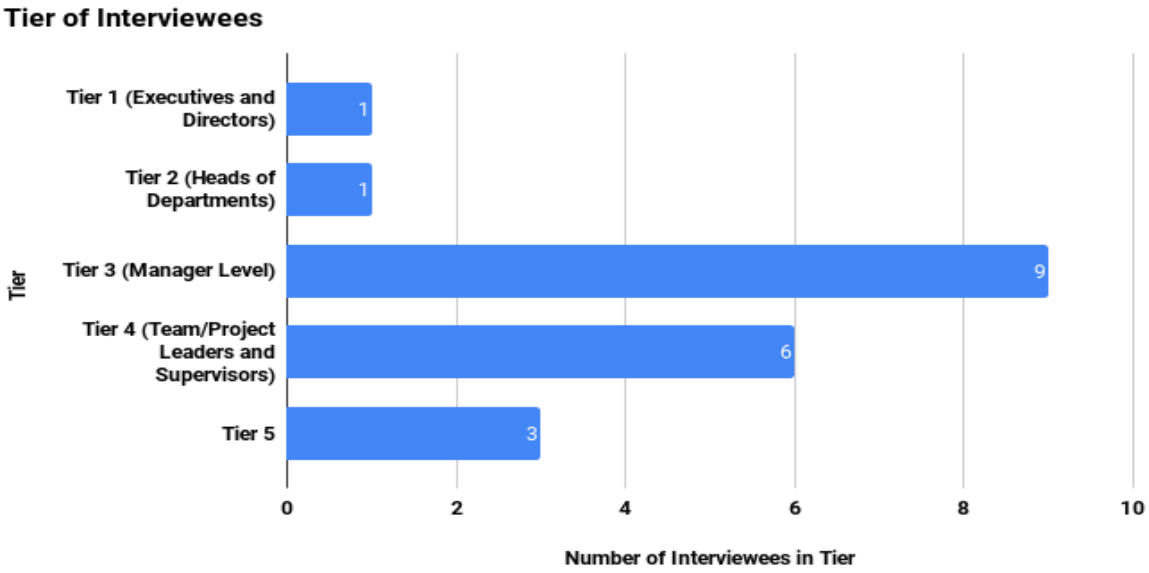
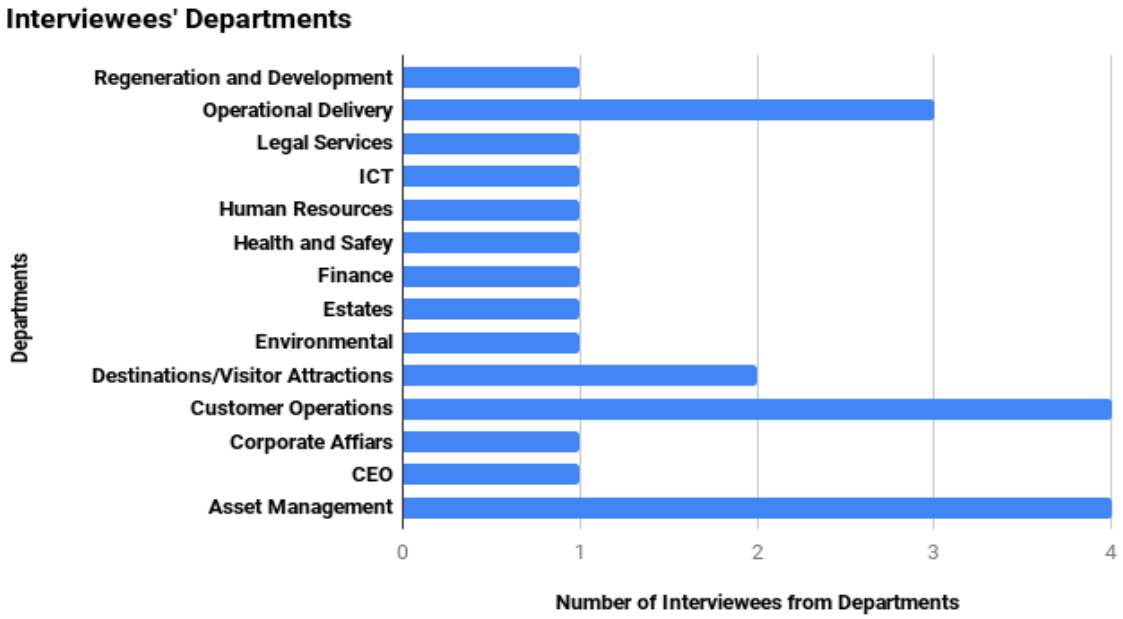


Figure 1.4



I worked with the heritage team, human resources, the CEO and the Director of Infrastructure to ensure that the interviewees covered various levels of the company's hierarchy. In a meeting with the CEO, Director of Infrastructure and Head of the Heritage team, the scope of the interviews was discussed and it was decided to cover the entire width and depth of the company. This was instead of interviewing only staff who worked on the banks of the canals which was a possibility as their point of view is the most unique within the company and essential to capture during the project. However, the full scope of the project has yet to be determined, therefore the project leaders felt that it was important to gain a wider perspective. Human resources was instrumental in providing the organisational documents and data for the number of employees at various canal sites.

It was anticipated that personal involvement in the project would change people's views on the matter. However, I remained open to the idea that a correlation may not exist among either of these employee groups. In addition, choosing interviewees from a variety of levels in the company's hierarchy meant that first I would gain insights from people higher up who were more familiar with the strategic plan for the company and how the initiative conformed to this. Second, I would gain an insight on a more practical level with those who would have to include the recording device into their work routine.

Interviews were chosen as the data collection method because it was important to gain a deep and thorough understanding of concerns which may require trust building and more probing questions. They are good for "developing a working relationship with the interviewees that can lead to them feeling more comfortable talking to you" (Cottrell, 2014, p. 157). Also, interviews enabled me to determine whether participants understood the questions and if not, rephrase so that more accurate information could be collected.

The semi-structured nature of the interviews provided more opportunity for guiding and focusing the direction of the research as opposed to unstructured interviews. Semi-structured interviews were chosen over structured interviews as this left room for interviewees to bring to light aspects of the situation that I had not directly asked about.

My aim was to bring a blend of science and creativity to my research. Strauss and Corbin explain that this creativity "manifests itself in the ability of researchers to…ask stimulating questions, make comparisons, and extract an innovative, integrated, realistic scheme" (Strauss and Corbin, 1998, p.13). The need for creativity places a large burden on the talents of the individual researcher. Therefore, as an inexperienced interviewer, I chose to ask only a few identical questions to each interviewee while allowing flexibility for the rest of the interview. The full interview scripts can be seen in appendices 1 and 2 and are discussed in further detail below.

I presented a definition of lifelogging as described by Techopedia which provided a simple explanation of the foundations of lifelogging: "A lifelog refers to the use of technology to capture and document large amounts of a user's life and broadcast it to an audience" (Techopedia, 2017). I also provided two examples of lifelogs that are used in personal life, FitBits and GoPro cameras. These examples are can be seen in appendices 3 and 4. I also verbally added an example in a professional setting i.e. the body cameras that police are sometimes required to wear. I then asked about the user's personal experience or contact with any of these devices ranging from using them themselves to having noticed them on others to no contact at all.

After briefly assessing the level of use that each interviewee had in their personal lives, I moved to ask questions around three broad topics: how he or she felt about lifelogging cameras in the workplace, what might be necessary in terms of the device hardware for Scottish Canals, and what situations would or would not be appropriate to capture.

Within these topics, I also asked each interviewee about the control they would ideally have post-recording, questions about access and editing, storage and retention. I asked each participant which people within the company could benefit most from the use of the device as well as what within their specific roles might be useful to capture. I also addressed the opposite side of the questions, such as who would the device be least beneficial for and what within their specific roles was considered irrelevant for video capture.

In the interview with the CEO, I kept the opening questions the same for the privacy, situation and practicality sections so that effective comparison with employees' answers could be made. However, I did rephrase some of the questions so that they were asked with the appropriate perspective. In this interview, I asked questions with an "outside looking in" point of view instead of about his views on what it would be like to participate which provided useful responses for comparing the outlook of employees to the perceived outlook of employees. The interview script for the CEO can be seen in appendix 2.

Through this process, I discovered that the interviews worked best when there was a good natural progression to the conversation. After a few interviews were concluded, I realised that changing the order of the second and third themes (the practicality of the device hardware and the concerns about privacy) allowed the interviews to take on a more natural narrative as the interviewees were able to develop more sustained and deeper thoughts on some of the concepts.

3.5 Description-Transcription

Transcription refers to the description phase in the methodology process outlined by Wolcott (1994) of 'description, analysis, and interpretation' (Biggam, 2011, p. 162). I chose to transcribe the interviews as fully and completely as possible following the recommendation by Strauss and Corbin: "better more than less" (Strauss and Corbin, 1998, p. 31).

However, there are academic debates about what should be included in a transcript in order to give an accurate representation of what was said. The two principal concerns are whether some oral language features should be left out in the written transcript and whether the syntax should be arranged differently from what can be heard on the recording. These issues concern the fact that speech and writing are different mediums and so linguistic features which are appropriate to one are not appropriate to the other.

Davidson reports that some commentators advocate for including the oral language features such as “ums” and “ahs” in research using grounded theory and discourse analysis (reported in Davidson, 2009). However, this research did not look at linguistic interactions in such detail and instead focused on the substantive points made rather that the style in which they were made. This meant that for clarity’s sake I removed pauses, repetitions of words and description of the interviewees’ intonation when quoting participants.

Second, “Because the spoken word has a different syntax, structure, and rhythm than written prose, an insistence on the use of verbatim quotes may inadvertently cast research participants as less articulate than if they had been asked to write on the subject” (Poland, 2008, p. 885). Therefore, I have quoted participants in such a way that captures a more truthful interpretation of what was said.

It is also the case though that the clarity of the meaning may come from language signals other than the words that are used:

“It is argued that, as the raw material from which transcripts are generated, even audio recordings cannot be verbatim records of a research interview because they do not capture many elements of interpersonal interaction, nonverbal communication, and interview context that are essential for the interpretation of what is said” (Poland, 2008, p. 886).

Therefore, in analysing the interviews, I made sure to increase my awareness of the context and inflection by listening to the interviews along with reading the transcriptions while carrying out the analysis. Where the inflection or other non-literary elements of communication are essential for clarity, I have included notes within the transcriptions and quotations.

The process of transcription is also subject to concerns of human error. “The first (and dominant) discourse on transcription in qualitative research holds that one must be vigilant in anticipating and reducing sources of error in the production of verbatim transcripts” (Poland, 2008, p. 887). One of the main concerns is that the Scottish accents would present problems and also that technical language could be used which could cause me to be mistaken in what I wrote down.

3.6 Data Analysis

I began analysis with the open coding of the transcribed interviews which I imported into NVivo. “This is unrestricted coding of the data…The aim is to produce concepts that seem to fit the data” (Strauss, 1987, p. 28).

I followed several guidelines for coding as laid out by Strauss. Firstly, I remained open to the possibility of the data answering questions that I had not originally set out to answer. I did this by asking “What study are these data pertinent to?” (Strauss, 1987, p. 30). This allowed me to remain tied to the data as well as present further ideas for research after this project. Second, I aimed to remain as grounded as possible in the data by analysing it minutely. “The more-microscopic approach to open coding minimizes the overlooking of important categories, leads to a conceptually dense theory…and forces both verification and qualification of the theory” (Strauss, 1987, p. 31). Finally, I tried not to assume or force demographic data to correlate to categorisation trends. This goes back to the foundation of grounded theory and yet can still be tempting during analysis. Therefore, I input the demographic data into NVivo before analysis of the scripts began and did not return until after the first code of the data was complete.

After the initial stage of open coding, I reviewed the categories which had formed and the memos that I had written. This means that I read the coded portions within each category. I also noted the number of references that each category had as well as how many sources contributed to the category. After that, I combined several of the coding categories to form broader, less minutely detailed categories than before to focus on the overarching concepts. These concepts are outlined below in section 4.0.

4.0 ANALYSIS

The analysis process produced fifteen main concepts which are outlined below. I will first outline the thoughts of the CEO about the project's intended outcomes, opportunities and risks. The following sections will outline the views of the employees according to the different themes that have been extracted from the research. The quotations in these sections have not been attributed to specific interviewees as it was important that employees remain anonymous.

4.1 CEO Project Perspective

The analysis of this interview was kept separate from the other interviews because it represents a biased view for the project. The CEO is one driver for the exploration of employees' perspectives on data capture due to the interest in moving the heritage project forward. This interview reveals the predicted risks and opportunities for data capture and recording within Scottish Canals. However, as the project is not yet fully formed, it also provides a unique insight into possible further developments beyond the current project objectives. The analysis of this interview will provide a clearer picture of where employees have like-minded ideas and with which ideas major diversions occur.

One interesting idea from the CEO is that the aims of recording employees may alter later if it proves to be a smooth process. The recordings may be used in ways which are not currently anticipated but which are still within the values of the company. This may be a way to test the waters before new purposes for the recordings are explored i.e. "Is it something that's resource efficient to do? Quick and easy and reliable and engaging? Or is it expensive and clunky and slow and it's mired with bureaucracy and controls and security issues. Which is it? You know and we'll only find that out as we go".

The CEO's biggest commitment was to openness and flexibility. This was important because he wanted to ensure that he was cooperating effectively with the employees so that the employees could take ownership of the project: "I'm very relaxed. I think it's, how do you match the technology to the story, the story is what we want and the technology is supplement to capture that".

The second biggest objective for him was to find ways of telling Scottish Canals' story creatively and innovatively: "can we do it on Instagram, can we do it through Twitter, you know, how do we exploit the communication channels that we have today?"

The principal risk to the project that the CEO saw was that there may be a negative perception from the employees. However, he is going to take effort to try to explain what could be achieved to the employees: “I think that context needs to be fully explained. Where people then understand what, why we’re asking…it is their history that we want to capture. Scepticism and distrust was recognised by the CEO as a potential barrier therefore, “we need to create an environment where people are happy and comfortable to talk about things and not think that it’s about something else”.

This commitment to making employees feel at ease follows through to the post recording processes as well. He recognised that control over what is recorded and how it is edited will be important to employees and maintained that “they have their ability to strike all of it, to edit some of it, and to have complete comfort that what they have set aside that they don’t want published is eradicated”.

4.2 Employee Perspectives: Pre-Recording Processes

4.2.1 Employees’ Personal View for Personal Lifelogging

The nineteen remaining interviewees had a range of perspectives on lifelogging devices in a personal context. The contact with lifelogging devices ranged from no contact to active participation with data capture devices and several levels in between such as contact that was intentionally kept at a minimum or unwilling contact. Similarly, some cited secondary contact through either friends or family.

Only three interviewees saw the devices used in personal life, such as Fitbits, as useful for health reasons. However, six interviewees talked about using GoPro cameras for safety reasons: “it offers security for them with regards to the traffic and traffic management and the dangers that can pose to cyclists”. A related idea was that it would be useful as evidence, for example if a cyclist is involved in an accident. Seven interviewees thought that lifelogging devices were a fun and entertaining pastime for social reasons. Employees’ uses for lifelogs for health and social reasons echoes the most common uses of lifelogs today, as was discussed in the literature review.

However, some interesting concerns were raised by the employees about lifelogging usage in their personal lives. Four participants had a negative outlook on lifelogging devices due to their views on the state of society for example: “so it’s what you do with the footage that then could end up in the wrong hands”. This brings forward the idea that society today is

untrustworthy, so much so that footage either needs to be taken for evidence against others or not taken at all because it could be mistreated. Three interviewees showed major concern for the lack of control and choice for data capture today and argued that the unavoidable nature of data capture brought negative effects for society.

It seemed that interviewees sometimes conflated social media and lifelogging. One person commented: “I don’t think people are interested in what I’m having for dinner”. The idea is that people are not or even should not be interested in these mundane details. As part of this, there is the idea that the use of technology today is excessive. Another interviewee said, “I’m not a social media fanatic like a lot of people!”. It is simply “technology for technology’s sake” and it should not be a priority. Furthermore, around a third of interviewees felt that it is not considered by some as necessary for a happy life. An example of this is: “My life is fine without. I could live without the odd app”.

Overall, concerns and interests from the employees’ personal lives were thought relevant to their views on lifelogging in the workplace. There is the clear idea from some that the proliferation of technology in society is bad and this may influence their willingness to participate in the lifelogging program.

4.2.2 Openness and Willingness

This category is essential to the understanding of Scottish Canals employees’ perspectives on the use of lifelogs in the workplace. It refers to direct statements from individuals which state clear feelings towards having personal data or any recording taken in the workplace. This category discusses the variations of open or closed attitudes towards recording and to what degree employees are willing to be recorded at work.

There were three people who had no objections whatsoever with recording in any type of way. Two of these employees spend more time out on the canals with the assets and working with the public and one was office-based. They clearly stated several times that “I’ve got no issues with that at all!” or “It wouldn’t bother me at all and sometimes I come across things that other people wouldn’t see” and finally, “the type of person I am, I wouldn’t be that bothered. I’d probably do it in any form”.

Three more were comfortable with the recording process as long as it remained within the work environment and only captured work related material. One employee put it this way: “From my perspective, if you’re at your work, you should be professional and courteous to

your colleagues and co-workers so from that perspective there shouldn't be anything anybody has any concerns about…, so that's why I don't really have any concerns". Another stated that the boundary should be placed at recording work-related activities, "for me-myself, I would be comfortable with it recording anything work related". These two groups of employees made up just over a third of the interviewees with those in the latter group based in the office rather than out on the canals. Thus, these employees contradict the effect discussed in the literature review in the Employment Code that recording even workplace situations could undermine mutual trust between the employer and employee. This lack of concern may stem from the emphasis for Scottish Canals on working with the employees and taking their suggestions seriously. Other companies which also have the same degree of trust between employees and employers may also be ready to implement lifelogging.

Another third of employees were willing to participate in lifelogging but with more hesitancy and more restrictions. For example, some preferred that it be voluntary as a condition for participation because it is "different if somebody volunteers for it". Additionally, even employees who felt that there may be ulterior motives were not against recording "but what I would do is don't impose it on people". Another condition that interviewees set was the purpose for which it takes place: "I'd be more inclined to help if it was about heritage or training other than monitoring at work". Sharing their story is one of the main ways in which employees opened up and became willing to help. For example, "I don't mind talking. Plus, it's always just amazing the amount of information that you retain and you don't actually remember until you begin to say it". This means that under the right conditions, at least two thirds of the employees would be comfortable with some portion of lifelogging in a workplace environment.

However, about a third of employees, bank staff and office-based staff alike, remain opposed to the idea entirely. Complications due to shyness or discomfort with being on camera were expressed by saying "Well, I wouldn't be the first to sign up, put it that way". Privacy implications were a significant factor when objecting to lifelogging four employees said that is a "bit too intrusive", like "big brother 's watching", and initially beg the questions, "are you being spied on?". Six employees stated that they would not want to take place as it would cause them to be guarded with their co-workers or become unnaturally shy or uncomfortable. These findings support the idea that some may find that it creates an "oppressive working atmosphere" (Freund, 2015). This was said in the context of lifelogging possibly being used by the police officers' superiors to put them under surveillance. As can be seen in the police

context, even where the devices are implemented for one purpose, there is still a concern that they will be used for this purpose of surveillance. The mere possibility of this prevented these employees in Scottish Canals from wanting to participate.

As well as this, two employees predicted that some staff would feel that it is not something which was a part of their original job description. For example, it was stated this way, “from an employee point of view, I’m sure that there’s going to be an element of scepticism as regards ‘hang on a minute. I’m just used to opening locked gates and letting boats through. Now I’m being asked to wear one of the cameras”. It might be too big of a step for some employees to take on top of their current workload and responsibilities. The concern may also be that it is changing the nature of the job from being skills based to being one where storytelling and effective verbal communication is required.

4.2.3 Depending

This category represents the theme which occurred thirty-six times with eleven (over half) of the interviewees during the interview process. Many employees recognised the potential for their opinions to vary depending on certain variables. This includes questions regarding appropriate or inappropriate settings for recording, the device hardware, length of the recording time, access and management of the footage and comfort level with the idea of data capture itself.

Six of these employees were unsure of their comfort level with the recording device without more context because “it would be dependent on the circumstances” and “it depends on why the company wants to bring it in!” Half of the interviewees expressed a desire to have the reasons behind the recording explained before forming an opinion while the other half gave a strong opinion either way from the start and then later realised that he or she might be comfortable in one situation over another. This means that it might be possible to convince employees to participate in the project based on how the idea was presented and sold to them. This topic of the interviews relates closely to the study by Kobayashi, Ichifuji and Sonehara (2011), which found that financial incentives were most effective for encouraging people to share their lifelogs. While the employees were not asked what would encourage them to share their lifelogs, it is clear that the most important thing for them is to have the merits of the project explained so that they know that they are doing it for a good reason rather than being persuaded through a financial incentive.

Seven interviewees thought that the device type and functionality should differ depending on certain variables. This idea was with regards to how the device could be worn: “it depends on where the device was [on the body] and what the device looks like”. Many employees provided different examples for office-based staff and bank staff because of the difference in their work duties and the difference in their clothing restrictions: “However it’s fitted on needs to not compromise the lifejackets and other PPE [Personal Protective Equipment] that they wear, so I don’t know if it needs hardhat attachments or what depending on what the person is doing”. Another interviewee put it this way: “It depends on what you want to capture… I’ve seen them head mounted, so it could be mounted on a safety helmet for example. I’ve seen them body mounted”. One interviewee felt that a helmet camera was preferred because it follows the sight lines better and it fits with the PPE. However, in the office, four interviewees mentioned that it would need to be different because it would look silly wearing a helmet in the office and it would be easier to clip it to clothing. So, this means that both depending on the job role and the setting of the work, it is possible that people will have a different idea of what is expected and sensible for the device.

Additionally, in terms of editing or storage of the footage, four interviewees answered that it would probably “be dependent on why we decided we were doing it in the first place.” This was an even more common response when considering who should have access to and the ability to view the footage. For example, if it was for a study of office behaviour then there would be “a central place and a central either person or department who were responsible for that data and controlling that data and maintaining the data and deleting the data you know” but if it was for a documentary type situation which was portraying a day in the life of an employee, then eventually that would be shared with the public. However, if the company were to use it for training purposes, that would create yet another variation in consumption of the footage because “you’d be looking to create proper training programs out of it”.

Another area where employees expressed varying opinions is whether the recording should be mandatory or voluntary. One mentioned that it is dependent on whether employees’ safety is a genuine concern and three others felt that “it depends on the outcome that Scottish Canals is looking to achieve”.

Overall this shows a rather hesitant tone from the interview candidates. There would have to be both a thorough explanation given to the participants and certain guarantees about what the footage would or would not be used for before employees can truly form an opinion.

However, it also shows that employees are willing to consider multiple perspectives when considering whether lifelogging would be useful and possible within Scottish Canals and it could be that employees in similar companies might have the same flexible outlook towards lifelogs.

4.2.4 Planning

Preparation proved to be a serious concern for many employees. This theme covers the idea that if lifelogging were to be implemented in the workplace, significant planning and preparation would need to take place. This means the creation of a privacy policy, an acceptable use policy for the device, participation with the unions, consideration of the issues surrounding access and storage, and research into compliance with legislation and regulations. The risks as well as the rewards would need to be considered, and employees themselves would need to be consulted.

First, the need to consult with the employees was mentioned by seven participants. "There's a spread of age groups and sex, male female, all sorts of different people, different backgrounds, different, different upbringings etc." so it is important to "get employees' feedback on it and see what their thoughts were on it". It would be important to find out how employees feel about the different objectives, the different ways to capture the recordings and "just to make sure that everybody was aware of the situation".

Nine interviewees noted the importance of making sure that terms are defined as clearly as possible. As one interviewee commentated: "they need to define what training is." It's not enough to say: "oh yeah we're going to use it for training". Thus, it is important to the employees that the terms for the usage of the device are defined from the start. However, this could conflict with the open nature of the project as described by the CEO. If there are not enough boundaries and definitions for how the device is used, employees may be unwilling to participate.

Six of the interviewees mentioned that training would need to be given for using the device. The main concern that interviewees referred to was the substantial training that would be needed in order to understand when to record and use the device in order to capture relevant information for the company's objectives. For example, "it would be useful to know if there are set times that it should be switched off…instead of just me deciding it should be switched off". Another employee expanded on this: "the person who's wearing it may not think a certain part of what they're doing is that important…so I suppose from a technical point of

view, somebody would have to say, 'actually no we want to keep that'". One employee talked about having warning messages flash up if the employees have not done what they were supposed to have done and another mentioned that depending on how skilled with technology the employee is, basic functionality might need to be covered.

The last set of planning processes which were brought up dealt with what resources would be required for the project. Time was the primary resource needed for a third of the employees: "I've got to think first, is it personal comment here or is professional comment. That takes time and it also maybe limits the potential for our projects". While feeling as though they would like to be able to view and possibly even edit the footage, they felt as though there is already not enough time for their daily tasks: "There probably isn't enough time to do that…It sounds good in theory but knowing what day to day working life is like, I'd never get around to it". Other resources which four interviewees considered were IT functionality, the network speed and the storage capabilities for the company which all could be impaired by the amount of data collected.

4.2.5 Permissions Requirements

This leads to further discussions about permissions requirements. This was a recurring theme for employees during the interviews. The main considerations were about the types of permissions which might be required in different settings and who it might be necessary to receive permissions from.

When asked about what permissions would need to be sought, eleven interviewees mentioned the public. Four were unsure about what the legal requirements were for a situation like that as some had experience with photos and GoPros in public and others did not. For example, "my comments on that would be, before anything like that took place or videoing like that, we would really need to do our homework about it to make sure that we were above board and everything was…legal, because we don't want to offend any other parties".

Three interviewees suggested that it would be useful to consider other situations within the company where recording and photography of the public already takes place. For example, "We do have on our Scottish Canals desktops and in our screensavers…members of the public at certain events. We have a video that we use that was kind of a round-up of 2016 and all the things that have happened at the canal…I would've thought that the comms [communications] team would get specific consent forms from those people". It was also

suggested that the CCTV policy would help to inform decisions made about permissions regarding recording.

A key idea for public permissions was also the ability to walk away from the situation with enough warning. Four interviewees suggested that signs around the canals and even on each person could help inform the public of the possibility of a recording device: “you’d have signage up on barriers telling you that there was live recording” and verbally “making people aware of what was happening, that you were actually videoing and recording”. For three others, they thought that “it’d probably be quite a good idea that the person who was wearing it, if he was interacting with anybody, that he told them as well in case they’d got reading difficulties or their English is not very good”. This would provide people with a quick explanation and an opportunity to walk away from the situation if they so choose.

This concern for third parties and bystanders supports the findings of Hoyle et. al. (2014) who state that lifeloggers exhibit concern for the exposure of third parties when capturing and sharing lifelogs. It also supports the findings of Koelle, Heuten and Boll who found that lifeloggers do show concern for third parties’ awareness of lifelogging devices. This partially contradicts the findings of Chowdhury et. al. (2016b) because employees showed slightly more concern for third parties and members of the public than they did their co-workers who can be considered close associates; At least eleven interviewees felt that some form of permissions or signage should be put in place for third parties; only eight mentioned the need to accommodate co-workers.

As for permissions which might be required from employees themselves, fourteen out of the nineteen interviewees felt that in all instances, the recording should be voluntary and “if some people just don’t want to do it for whatever reason, then they don’t have to”. Only three interviewees felt that if lifelogging were to be implemented, that it would need to be mandatory. This is in instances where safety is a concern and also due to the fact that accommodating those employees who would not like to participate would become too complex and burdensome for the company. These findings contradict the findings of O’Hara (2010) in that no employees stated that there may be pressure to conform when consenting to the lifelogging process.

4.2.6 Third Party Perceptions

Concern for third parties was a common theme which was mentioned thirty-six times throughout the interviews. This particularly manifested itself as concern for how any

recording was described, advertised or perceived by third parties including members of the public and business partners with the company.

One key issue is how members of the public would react to finding out that canal workers were filming them and that they may be caught in the recording. Just over a third of employees mentioned that "some of our customers would object" and four mentioned that it might even cause customers to become agitated and confrontational, asking questions about why the recording was taking place, when they would have otherwise passed by without a problem.

However, another third of participants described the opposite advantage noting that some members of the public would react positively to this and it would act as a deterrent to bad behaviour. This is particularly in areas where there might be a conflict between a lone worker and a customer and the presence of a camera would help keep behaviours in check. These two perspectives support the research into the use of lifelogs by the police which has shown that both of these reactions may be valid (Freund, 2015). It also continues to reflect the ideas of Koelle, Heuten and Boll (2017) who found that lifelogging does pose a threat to privacy, although lifeloggers do take measure to protect third party privacy and lifelogging can even foster communication between parties.

Five employees felt that for the public, "it's important that they see it in a positive light you know what we're doing, not a negative light". This is a concern because Scottish Canals is a company that is primarily providing a service for the public, and employees want to make sure that the public is not deterred from supporting the canals and that they continue to enjoy all of the benefits that they have access to. This again supports the findings of Hoyle et. al. (2014) about lifeloggers' concern for the exposure of third parties when capturing and sharing lifelogs and partially contradicts the findings of Chowdhury et. al. (2016b). It is possible that this effect could stem from one purpose of a company which is often to serve and maintain customer relations. Thus, employees would naturally think of third parties more in a professional setting than if lifelogging took place in a personal environment.

The main concern regarding business partners is during meetings. Five interviewees felt that it would be inappropriate altogether to film during external meetings, but for the minority who felt that the information captured in those meetings would be useful, the perceptions of the third parties was still a concern. For them, it was important that their information was

used appropriately and that the permissions sought were clear and their policies for publicity were considered as well.

4.3 Employees' Perspective: Recording Processes

4.3.1 Appropriate Settings

This category refers to the settings which employees identified as being good or useful for using a lifelogging device. Interviewees identified both locations such as at a canal site and purposes which would guide decisions about capturing activities. Out of the nineteen employees who were interviewed, seventeen acknowledged a benefit of some kind from lifelogging and fifteen suitable settings were identified. It is significant to note that even though almost all of the employees identified potential benefits, this does not necessarily reflect a willingness to participate.

First, the benefits concerning locations will be considered. The company's assets are in various areas across Scotland and ten interviewees identified lifelogging as beneficial at these different locations. Six interviewees thought that video-capture could keep a record of the condition of the canal to compare future conditions with that record. One interviewee thought lifelogging would minimise the travel to inspect issues if local bank staff could broadcast their lifelogs. Another suggested capturing recordings underwater in the canals as diving is dangerous and expensive in the shallow water near the underwater pumps. This would benefit the employees and the company both from a financial and safety perspective, as it would be possible to capture problems with the canal on video first to determine if further actions were necessary.

Another idea concerning location is that the canals are in the natural environment which deserves to be appreciated. It is also a responsibility of Scottish Canals to maintain and preserve the environment around the canals and ensure that various building projects and boats adhere to regulations for the environment. A third of interviewees identified lifelogging as beneficial because it would showcase canals' natural surroundings. It would help people to be more environmentally aware, and it would help share the variety of wildlife that exists on the canals with the public. For example, one interviewee stated that the footage could be of "nesting birds, it might be hazardous features of the tree, and that could be quite interesting for people to know about."

The main three purposes which were mentioned when selecting activities for recording were for succession planning, heritage and safety. It should be noted that for some of the interviews, if a person could not think of any benefits for a recording device in the workplace, succession planning and heritage were put forward as possible examples and this may have influenced their responses.

Succession planning was highlighted by sixteen of the interviewees as a beneficial use for lifelogging in a working environment. One interviewee described it as "trying to capture that data before [employees] retire so you bring a more positive look at succession planning," and another echoed this stating "lots of knowledge is draining literally from the canal…and there isn't an adequate enough progression training". Equally the discussion with three interviewees discussed improving Scottish Canals as a whole and using lifelogging to reflect and ask "Is it right? Can it be reviewed? Can it be refined? Do we need to refresh? Do we need to rethink?"

One related idea was recording activities that occur infrequently. Thus, three participants mentioned that the de-watering of a canal would be interesting to catch both from the perspective of current employees, for the public and for future repairs. Two mentioned recording repairs to the Falkirk Wheel. This is the only rotating lock in the world and so without widespread experience, it will be necessary to capture video footage of this being repaired so that it can be carried out more efficiently the next time. The replacing of the gondolas for the Falkirk Wheel only takes place about once every thirty years, and so having as much detail as possible which is not left to interpretation as happens with the written word, will help in the future. One commented that it is unlikely that many employees who work on the first replacement will still be with the company for the second round of replacements.

Fourteen participants suggested lifelogging for heritage reasons would be beneficial for the public and the company. For example, there are employees who have a vast knowledge of the company due to the length of time, sometimes generationally, they have spent on the canals and it would be useful to "download their head basically about the business". Three interviewees mentioned that they would have liked to have video footage of the canals when they were first being built or at least audio of why certain decisions were made. Interviewees could imagine how people in the future might want that kind of information in video format. However, their preference varied between capturing a complete, company-wide perspective

of the day to day activities or choosing specific, targeted moments to capture. This idea is discussed more fully below in section 4.3.3.

The usage of lifelogs for training and heritage supports Bush's (1945) original ideas for recording devices in that they will be permanent records which allow people to learn from their past and improve their behaviours in the future. It could be said as well that lifelogs are accepted by employees in the way predicted by Bell and Gemmel (2009) as replacement and relief from the burdens of paper by bringing to life the training process and the history of the canals.

Safety, especially for staff who are lone working, was a proposed setting for a lifelogging device by twelve interviewees. It was often compared to police or traffic warden devices which record possible confrontations both for the benefit of the customer and the employee. In situations where staff are alone, there is no record of what happens except as "my word against yours". However, where customers might become confrontational, the visible presence of a camera would mean "they would know that what they were saying was being recorded and therefore…that might motivate their behaviour".

A few other common purposes which were suggested were for marketing by nine employees, recording meetings by seven employees and creating "a day in the life" footage by seven employees. Marketing ties in with heritage as it is something that is meant to be shared with the public. It was also suggested that if possible, meetings, both internal and external, would benefit from immediate access to a record of what decisions were made. This would provide context and a fuller explanation that meeting minutes as well as benefit those members who were unable to attend the meeting.

The reasons above have proven to be acceptable to most employees and further supports the idea that technology will help lessen the usage of paper (Bell and Gemmel, 2009), improve safety (Jaquemard et. al., 2014) and play a strategic role in the improvement of the company through training and efficiency (Fort et. al. 2016). However, the limitations of this case study should be considered before applying the findings in other corporate settings which are fundamentally different from Scottish Canals.

4.3.2 Inappropriate Settings

This category deals with comments made by interviewees which identify specific settings as not useful or unethical for a lifelogging device. The settings vary from a physical place to particular activities during which employees feel lifelogging is inappropriate.

One of the standard ideas is that there are physical places where employees may be emotionally or physically unguarded. These are primarily in places where the employees are taking breaks or where the situation is viewed as more personal than work related. Nine interviewees felt that, "if you take a comfort break can you just switch these things off and switch them back on? And again, if you're just going off to have a cup of tea and relax, you wouldn't necessarily want to have conversations like that recorded". It was a key issue because "that's your own free time" and "you maybe wouldn't want that recorded or wouldn't want other people to be able to see it". However, a third of participants acknowledged that separating work life and private life is not always clear as "some work situations can be fairly informal so you might end up having a private conversation at the same time in amongst your day to day work". They made the connection between this and the need for the employees themselves to control when the device is recording.

Another important point mentioned by an interviewee is that "maybe toilet breaks and stuff like that eh you forget to switch it off". Even if the device was not intended for personal situations, it could accidentally be left on and this would then cause an embarrassing situation later. This attitude reflects the concern among some police officers who were aware that when a camera is turned on, it will inevitable capture something which causes the subject embarrassment (Freund, 2015, p. 100).

Apart from places where the employees may feel emotionally vulnerable, there is also the issue that there may be places where the employees do not feel that they can be honest. This includes meetings with more senior members of staff. People may feel less inclined to share their ideas and put themselves on the line if the meeting is being recorded and the effects of sharing are permanent: "I mean people could be a bit guarded and maybe not feel free to comment as much if it was recorded". Again, this feeling reflects the views of some of the police force as found by Freund (2015).

The main location which interviewees viewed as unnecessary and not useful for recording was in the office. Over a third of employees mentioned that recording their work while sitting at a desk would be uninteresting and create problems with privacy by capturing sensitive

documents and information. This idea was put forward by employees in a range of departments as well as by bank staff, most of whom identified activities on the canals as more interesting and useful for recording. Three mentioned that data capture was already used by CCTV cameras or through the tracking on the computers. However, the common theme was as follows: "you've obviously got issues over what data are you looking at, whose data are you looking at…if potentially third parties are going to be able to see it, I don't think it would be appropriate for all of the time in an office setting". This is a new finding as police are not required to wear body cameras unless they are in the field, and lifelogging in an office setting has only been considered as a way to monitor employee behaviour. This may have wider application as more and more companies begin to look at lifelogging in creative ways.

Together, the idea that personal conversations and office-based work are inappropriate for lifelogging proves that Scottish Canals would not be a good place for studies such as the one conducted by Bank of America (Fort et. al., 2016).

The last key, inappropriate setting for recording was around children. Only two employees mentioned this as a potential issue, but due to the implications it could have for Scottish Canals, it has been included here. Children often like to help with the opening of the locks and like to ask questions of employees when along the canals. As one interviewee pointed out, "If you're wandering the toe-path for example you do get a lot of kids cycling, walking, angling".

4.3.3 Selectivity and Significance of Context

This category refers to the difference in opinion between users about whether a device should record the working-day in its entirety or only specific portions of the day. Also discussed is the length of time that the device will be used with the company for any given purpose. An idea related to selectivity is the importance of context. Employees mentioned the benefits of capturing additional context and concern for not capturing enough context, depending on how much recording was done.

Three interviewees were undecided whether it would be better to keep the lifelog running all day or to be more selective. These participants noted that the daily usage of the device might depend on the objectives of the project while nine remained adamant that it should be situation-specific. One interviewee summed it up nicely by saying, "I don't think it would require you to be recording all day…you could do it for a specific period". This could be for several reasons. One is that it would interfere with a person's ability to relax and openly

converse with their co-workers. Another idea is that it would generate too much data that would be too much for people to filter through and manage as well as place strains on the IT department with storage demands. The value of the information captured through constant lifelogging was called into question as well: “It’s like when I’ve got some digital camera photos and it’s like I’ve taken 60 million photos of a sight visit and actually…I just need top shots, 3,4,5 maybe at the most”. In all, ten of the nineteen interviewees thought it would be better to “cherry pick a couple of more interesting projects” and plan ahead “to be focused”.

Only three interviewees would be comfortable with constant lifelogging. Due to the variety of the work for bank staff, the water levels, and to the change in weather from one day and one season to the next, an extended amount of time would give the most accurate and thorough depiction of life within Scottish Canals. One employee noted that without enough context in a situation, it is often difficult to know why something happens. Additionally, it is often unclear what data is useful until some time has passed and there is a need for it. This idea will be explored further in section 4.4.3.

Ten participants felt that lifelogging is significant for the context it provides. Depending on how the device was used, lifelogging could add context to meetings instead of simply relying on meeting minutes, written manuals when training new users or to enhance the understanding of engineers and bank staff when performing complex repairs and inspections. This would be “Technical things that, if they’re written down…different persons can interpret it a different way and the right word can be interpreted wrongly can’t it...But if it’s data logged and there's a guy standing there saying ‘It needs to be this shape and it needs to be that size and it needs to be this colour and it needs to be this type of wood’, we've got this recorded to say that which would be beneficial to the future of the company”.

Another benefit would be that context and evidence would be provided to HR and upper management in case of confrontations or incidents within the company or with third parties. Lastly, a fuller picture of life and work on the canals would be provided and shared with the public. This would align with the company’s goals for sharing knowledge of the canals and its history.

Six people, while recognising the benefits provided, also felt that it was a key issue to ensure that filming is interpreted and edited with enough context: “people would feel restricted in what they say because you would always be guessing that something may come across that could be interpreted differently”. This ties in with whether the lifelogging should be total

capture or situation-specific capture as the interpretation of a situation could be altered quite drastically depending on how much footage is captured, how it is edited and who does the editing. Editing causes context to be lost and so an event which occurred earlier on in the footage which was edited out might have shown why someone made decisions later in the recording. Thus, the consequences of someone's actions would be isolated from the cause which would possibly lead to negative or unfair treatment from authorities. This is a concern not just for the present, but "anything could be misconstrued or used in evidence years down the line". This crosses over with the concern about private conversations because many of the things which were mentioned as being misinterpreted were jokes and other conversations in informal settings.

The findings above support the ideas of Harvey (2016) and Grudin (2001) who found that choices about what to capture and what not to capture can have a significant impact on the interpretation of the footage. This means that capturing and preserving the context of situations requires more than keeping the most edited down, factual bits of the footage. This idea can have implications for companies across a range of sectors as context will be important for accurate health information, historical information and employee monitoring.

4.3.4 Relationship Implications

This category discusses the possible implications for the relationships between colleagues and between employees and customers which may be changed by the presence of a life-logging device.

Eleven participants felt that co-worker relationships would be threatened. Four employees worried about potentially exposing a once private conversation to further people. Nine of the eleven said that it may inhibit natural communication: "if it's getting recorded...I would definitely moderate, I would change my behaviour". In some sense, it could tailor people's behaviour to be more professional. Indeed, some professional relationships, like with those of a line manager, are already formal. Thus, the employees do not have to add an extra layer of thought and filter to the conversations. However, the majority of those who mentioned this viewed it as restricting speech in a negative way: "if there was a meeting or a face to face. I think it would certainly make people think before they say or do anything. In a sense, I think it could be a good thing in certain circumstances and I think in other circumstances it could possibly curtail a lot of fluid speech". This was the most common concern among employees

about the effects of recording in the workplace as there would be an added layer of restriction which would cause inconvenience, shyness and discomfort.

There is also the relationship between the company and the employees to consider: “I think they would be worried that there was a lack of trust. You know ‘are you filming what I’m doing because you don’t trust what I’m doing on a day to day basis?’” Nine interviewees felt that there could be hidden, malign reasons for incorporating a lifelogging device whether it was to catch people doing poor work or to monitor working behaviours. However, another nine interviewees felt that they could trust the company to reveal their true intentions for the decisions: “some people are a bit nervous about the thing ‘ooohh they’re out to get me’ and all that kind of thing. I don't feel that. I don’t think that our company would use it for that reason”. Three employees were even open to the idea that improvements could be made to their work by using the device. It should be made clear to employees that the DPA and other employee protections as well as agreements with unions would prevent companies from using the data in a way which is not communicated or consented to. Therefore, this concern could be addressed by Scottish Canals in the planning stages of the project.

Another relationship that was considered was between employees and customers. As discussed above in section 4.2.6, a third of employees felt that customers would benefit from the presence of a camera “because again it would maybe make individuals think twice about having a reaction to a customer”. There is also the effect of the device as a behavioural deterrent with third parties and this may mean that the canal workers are treated with more respect. While some interviewees saw the presence of a camera as a benefit when meeting with members of the public, another third thought it might have negative consequences. For example, “some people love the fact that they’re getting filmed and talk away for hours and hours where our people maybe just want to walk past them. Others will react you know in a different way and challenge them and get confrontational”. It would be interesting to test and research this idea further with an experiment as police were not unanimous either as to the effects of body cameras on the public (Freund, 2015).

4.3.5 Physical Implications

Physical implications refer to consequences of wearing the device which have a physical effect on the wearer. It includes both interference and inconvenience and is basically anything that changes or affects patterns of working behaviour.

One physical implication involves the placement of the device on the body. This includes practicality and whether it prevents a person from moving as they did before. Thus, according to over half of the interviewees, the device needs to be unrestricting and uncompromising. Four interviewees stated that it needs to be lightweight, portable and waterproof, and it must cooperate with any PPE that is required. This was particularly a concern for the sake of the safety of employees, as one employee states, "from a health and safety perspective, it needs to be safe so it's not catching in anything; it's not going to choke them or anything like that". It is also not simply a case of it being out of the way once it is being worn. The controlling of an on and off switch is another consideration as it would disrupt employees' normal working patterns to have to incorporate managing the device. This supports the ideas of Harvey (2016) and Gurrin (2013) who believe that the device should be small, lightweight and easy to take on and off. Scottish Canals has unique needs for a recording device, such as resistance to water, which will not widely apply to other companies.

As discussed in sections 4.2.6 and 4.3.4, safety was mostly thought to be improved by the presence of a lifelogging device. However, two concerns for safety are worth mentioning. They were important to include here as they were outliers and some of the only opinions that contradicted the benefits to health and safety. One concern is that they could be a distraction to work. It was described by the employee that "as soon as someone is being filmed or filming you…it becomes for me a health and safety concern because we have to be very very focused on what we're doing to ensure that customers, crafts, members of the public, are all acting accordingly and being safe". The other safety concern could be because of the unknown side effects of technology on the body. The employee spoke about the safety concerns in that "if you have a device that's lets say, close to your vital organs, your heart or something like that. We aren't sure what kind of effects it can have" or whether it would be safer to have a device away from essential areas of the body.

Battery life was less of a concern for employees because depending on whether the recording was for a selective time period or all day, it was either less or more important. However, when it was a concern, it was important for the battery to be long enough to capture footage all day and thought needs to be given to who has the responsibility for charging the device.

Three interviewees suggested that a policy be put in place for how the employees are to report issues with the device. One employee put forward the possibility that "you could probably spend two days doing inspections and then discover it didn't record" which

validates the idea that “if there was an issue with it, you report it straight away”. An acceptable use policy, as with the mobile phones that are already used by Scottish Canals, would incorporate how to respond to these issues.

4.4 Employees’ Perspective: Post-Recording Processes

4.4.1 Accessibility

Important considerations were raised regarding how to manage the data once it was captured. A large portion of this deals with who has access to the data and why. Over half of the employees stated that ideally, they would see the footage and have a say in the editing and end result. This aligns with best practice recommendations for companies from the NIST framework as described by Fort et. al. (2016) and requirements from the DPA that employees have a right to know what information is held about them. However, here employees show that they would like to go a step further and have a hand in the editing and interpretation of recordings which involve them.

Half of the interviewees also said that, after themselves, only relevant parties should have access to the recordings: “It’s about having those specific, secure people that can access it so we can give people the confidence it’s not being used in an incorrect way, so it’s not being accessed by somebody who isn’t appropriate”. Depending on the purpose for making the recording, it could go to different teams within Scottish Canals. For example, “I think for heritage it maybe…it would only be accessible by members of the heritage team so I think you would set up almost like data security officers in a way”.

Only two participants felt that the entire process should be automatic and that the footage should remain unedited and eventually automatically deleted. This stemmed from the idea that the footage would be used as evidence for HR or the police in hindsight and therefore would only need to be viewed if an investigation ensued. However, the idea that the recordings would be used by HR or the company to investigate incidents caused most interviewees to be uncomfortable as that was identified as an inappropriate reason to implement lifelogging. It also opens the possibility for consequences to come from footage which otherwise would not have been reviewed or would have been deleted. This thinking reflects the fears of police officers who think that superiors could use the footage in hindsight to intimidate or fire an officer (Freund, 2015, p. 106) and can again be addressed through

clear communication to employees as to the purpose of the recordings and by adhering to that purpose.

Another possibility, which correlates to employees' willingness to lifelog for heritage purposes, was to eventually share the information with the public. Six interviewees viewed this as an important benefit to both the company and the public saying "I think it's right that we should be showcasing and publicising…it's okay telling them in text or putting it down in words, but when you actually see it, it brings a whole different perspective to it, brings it to life". The public's right to the information was also questioned by three participants. As Scottish Canals manages public assets, a case for the responsibility to release some of the recordings could be made as well as through FOI requests.

4.4.2 Storage and Retention

Another consideration is the retention period for the data, and whether it was to be kept permanently or deleted after a certain period. If the information was going to be used for history or the assets for example, "you'd probably want to keep it forever…because that's what we do, we kind of keep these paper records and electronic records to see the changes over the years". As discussed above in section 4.4.1, two employees felt that the data should delete automatically: "I think you only need it for a few weeks, or if you do need to use it you would, you would retrieve it and keep it in another location". However, for those who felt that a permanent retention of the data was appropriate, only the finished products, post editing, would need to be kept. At least half of the employees felt that any irrelevant or unused data should be deleted as the storage and security of that amount of data was a significant concern.

This raises the question of what the data protection or security would look like. It could be an automatic process or controlled by a person. But a third of interviewees believe that, "we would probably need to categorize the different data". If the device is one which is left on for any significant amount of time, then it will inevitably capture more data that is useful or relevant for its original intent. For example, "If it was for heritage, you're probably not looking at something that was confidentially sensitive and it's maybe not personal data" but if you were out on the canals performing a repair, other people or conversations could come into the recording that need to be sorted, most likely by another person. However, three people did not trust that personal or sensitive information would be protected enough: "I definitely think, and the way this organisation's been in the past, where information's been

available to everyone when it's not supposed to be, there would be people that love trolling through files that they could get to".

4.4.3 Value of Data

A central idea which developed during the interviews pertains to the usefulness and necessity for data capture and the value of the data once captured. It is interesting to note that almost all of the interviewees recognised the importance of some data to somebody: "all data is valued to some, certainly". This idea was seen both in a positive and a negative light.

As a positive, the usefulness of data was frequently discussed within the specific context of Scottish Canals, with over half finding some lifelogging data useful for the company. However, these discussions also called into question the process of deciding which data to filter and edit and why. Four employees felt that it is difficult to decide in the present what will be of value in the future. An example of this thinking is: "I don't know what may be important in 6 months' time. So, I'll edit my life if you like based on what I think is going to be important. And more times than not, when I get to the 6-month period and think 'oh, I need to find that', that's the thing I've thrown out". Additionally, another employee felt that "all data is valued to some, certainly".

It is interesting to note that while over half of the interviewees recognised the value of some lifelogging data, fifteen felt that office-based lifelogs would not produce valuable data: "I don't understand the point of having nine people in the department all wearing body cameras that are just going to show a monitor" so "I don't really know if that's valuable information or not". However, this again depends on other factors. For example, seven interviewees felt that if the purpose was simply to capture a day in the life, documentary type footage, lifelogging might be useful. Three participants argued that irrelevant information does indeed exist and that lifelogging would be completely unnecessary for Scottish Canals. For example, "I can't imagine why, in our environment we would need to wear a camera "and "I don't think we're in the business that we would need to do that".

5.0 RECOMMENDATIONS AND CONCLUSIONS

Overall the employees are favourable to at least having discussions about the implementation of lifelogging. However, before any implementation could take place, employees would like to have guarantees about the process of collecting and using the data and measures put in place to manage identified risks. There are three distinct elements to the process: pre-recording, recording and post recording. The main recommendations for each of these areas will be discussed in turn.

5.1 Pre-Recording Recommendations

Pre-recording opportunities and risks involve concepts such as the planning of recording, consulting with employees, permissions requirements and third-party perceptions. Scottish Canals can build trust and rapport with employees in these areas and these recommendations will help Scottish Canals when further consulting with employees.

5.1.1 Clearly outline the purpose for and scope of the recordings.

When asking for the consent from the employees, a clear purpose for the project should be outlined in advance. When defining the purpose for the project, there should be cooperation with the unions as it is important that the employees do not feel that decisions are being made without their approval. Once the scope and limits of the recording process have been defined, Scottish Canals should remain within the boundaries of those limits to give people confidence that the recordings will not be used for malign purposes. This idea is partially in conflict with the ideas of the CEO. He held that there should be flexibility as to the purpose and talked about potentially using it as a way of keeping in contact with the staff or as an alternative to the yearly survey. These purposes may be possible in the future, but for each new purpose or project, discussions should begin anew with employees and recording should remain contained within the new, agreed upon objectives and purposes. This is important because once the recording has been made, employees fear that they will lose control.

5.1.2 Recording should be voluntary for all employees.

Participation in the project should remain voluntary for the employees. While confrontations do occur for some employees, work on the canals is not as high risk an environment as for the police or the military therefore it is not necessary to make body cameras mandatory. It is important for Scottish Canals to recognise that some employees do not want to participate as a lifelogger. Some feel that it is a dramatic change to their job description now having to be a

performer for a camera as well as skilled in their job and others are not comfortable with their lives being experienced from their perspective by an audience. It may be different if the recording takes place in a controlled environment more as a recorded interview setting and it is important to note that lifelogging places different demands on the employees which may make some feel uncomfortable.

A slightly different issue is that some will not even want to be bystanders in someone else's lifelog. The issue of bystanders will mostly be a concern when employees wish to share their story while out on the canal or in another active work environment. If an employee states that they do not wish to be a bystander in someone else's lifelog, this concern should be fully accommodated. However, as there is no standard practice for this issue, Scottish Canals will need to find a solution which works best for them.

5.2 Recording Recommendations

Recommendations for Scottish Canals about recording processes involves the settings where lifelogging would be most accepted by employees and those which would be met with high levels of discomfort. This section will also cover the length of time which employees are open to for data capture in the different circumstances.

5.2.1 Lifelogging should initially take place on the canals.

The majority of employees identified activities on the canals as the primary setting which would be appropriate to implement lifelogging devices. The benefits in this setting include inspections, maintenance work, environmental activities and activities which occur less frequently than others such as the de-watering of a canal. Also of interest to employees was safety, particularly for lone workers and employees who perform dangerous repair work. This might be an area which would benefit Scottish Canals to look in to in the future. As this is already a common usage of lifelogs in professional settings, it is not surprising that employees mentioned it as a benefit, and it could be that this is a common perception among employees of other companies.

However, third parties were a major focus of the interviews. Therefore, Scottish Canals and other companies should carefully consider and investigate what permissions are needed from third parties when recording in different areas. This is especially important for Scottish Canals as some of their assets are tourist attractions while others are in more rural settings. It was also important to interviewees that the public views the project favourably so some effort

should be made to ensure that the reasons for recording are advertised and understood by the public.

5.2.2 Use mostly situation-specific capture.

Lifelogging would best work in a selective environment and during selective activities. Even then, what would produce the most comfort for employees is having control of the on and off switch. This would be better than total capture as that may result in the capture of more inappropriate material including for example the bathroom, personal conversations or documents which contain information about third parties. Selective lifelogging would limit the capturing of sensitive, private information which an employee might come across as well as help manage any interactions with people who have not given permission to appear in the recording. This type of lifelogging will help Scottish Canals, and other companies who wish to implement this technology, to stay within the boundaries of the DPA and other regulations which require that the data which is captured and retained be no more than necessary for the defined purpose.

Selective recording will also help manage the post-recording processes as less video footage will be captured than if an employee or employees were to wear the device for full working days. Thus, the organising and sorting of the data will be more manageable. Additionally, the storage space required on servers would be easier to accommodate if recordings were taken in specific situations.

Overall, employees felt that context was a significant factor for the recording and editing process. Scottish Canals, and other companies, should recognise that once something is recorded, it can be used and interpreted by anyone who sees it. Also, if information is captured which is outside of the original purpose for the project, it may be that companies are unable to act on some of that information. Therefore, substantial thought should go into how much of an employee's working life should be captured on video. Additionally, editing should be done carefully so that the original spirit and message is preserved in the final product.

5.3 Post-Recording Recommendations

5.3.1 Employees should have some control over the final, shared recordings.

Employees should also be able to have a say in the editing process if they want to. This includes the idea that the employee should be able to make sure that no footage is taken out

of context and that it retains the original meaning. This is important in principle but in practice most employees felt like they would not have time to edit their footage. Therefore, Scottish Canals should investigate further how much time employees might need to review and edit footage and how this resource could be made available.

The editing process will again depend on the purpose for gathering the footage. If the boundaries which are set exclude the possibility for workplace monitoring, then editing of the footage will be less sensitive and could be entrusted to the lifelogging subject for the first edit. The editing process should be explored further before the heritage project begins.

5.3.2 Access to unedited footage should remain limited to relevant parties.

First, "relevant parties" needs to be defined and those parties identified within Scottish Canals. It must be decided which departments will edit the data, if there will be separate stages to the editing process among different parties or if it will all be managed by one person with certain input from the lifelogging subjects. This area is one which was not explored in depth in the interviews as there was not enough time nor was there an intent to explore this idea in depth. As a result, employees had a mix of opinions and ideas as to how to manage the editing process. However, over half of the interviewees would ideally like to have a part in the editing process and over half of interviewees believed that the footage should be managed by a person, not through an automatic process.

One recommendation is that a data security officer should be appointed. This is important because once extra data has been collected, there is a potential for its abuse and also for requests from the public to have access to the data. It will be necessary for someone to decide what is appropriate or inappropriate to release in the best interest of the public versus the best interests of employees.

Preparations should be made to prepare for extra data being collected as well. This will bring practical, ethical and legal issues. As far as practical issues are concerned, the data needs to be stored in a way that will not overload the network. As far as ethical and legal issues, it is important to recognise that there will be data that concerns the employees and which they would like to permanently delete. However, there may also be data collected which shows employees breaching company policies so a policy needs to be in place to handle this.

Once the project has been implemented, feedback should be taken from the employees at regular intervals to ensure that they do not feel like it has been too great an intrusion into their working life.

5.4 Conclusion

This dissertation aimed to add to the literature on lifelogging by researching and analysing employees' perspectives about video-capture in a corporate environment. This is significant because the recordings in question would not take place in a high-risk environment and would not initially be for safety or surveillance purposes. This research was a qualitative case study of employees within Scottish Canals, a company which is interested in launching a project where the recording of employees is a possibility. Three research questions pertaining to privacy concerns, potential benefits and suitability for the workplace were addressed during the twenty interviews. The data was then coded and separated into concepts from which recommendations were drawn.

In conclusion, some employees have serious concerns about this being an intrusion to their privacy. However, this research has shown that about two-thirds of employees are open to the idea that lifelogging could be beneficial in a professional environment depending on the circumstances and protections with a smaller proportion feeling fully open to the idea. Therefore, there is room for lifelogging in professional environments outside of professions which primarily use recordings to improve safety, such as with the police. Lifelogging can expand into other areas of professional and public life as with sharing heritage or keeping a record of technical skills for training. However, if lifelogging is to grow beyond the current sphere of use, companies need to prepare to accommodate varying levels of openness to data capture and ensure that appropriate measures are in place to prevent collecting data beyond the means necessary to achieve the objective.

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APPENDICES

Appendix 1: Interview Script for Employees

Introductory questions:

Demographics: Name, job title (description), yeas with company, years in current role, age and sex.

Do you have any experience with or previous knowledge of lifelogging devices? And if so, will you please describe them to me?

If not, why not?

Do you know anyone who has used a device?

Privacy concerns will be explored for employees who are both bank staff and office based:

If a body camera was implemented into your work routine, how do you think you would feel about that?

What would your primary concern be for the lifelogging devices?

What are the benefits of something like this?

In an ideal world, what control would you like to have over the device?

What are your thoughts about who will see and edit the recordings afterwards?

Do you think it would be mandatory or voluntary?

What protection would employees/the employer need?

Any other concerns?

Another potential aspect will be purposes beyond sharing heritage. Other situations will be asked about:

What environment or setting would you think this device is most suited for?

And what settings do you think are inappropriate?

What reasons could you see for using this type of device at work?

Suggest a few (sharing culture and heritage, sharing skills and knowledge with a new employee for training, monitor your work and make sure that it is up to standard) if cannot think of any and see how they feel.

Would your above concerns or positives change if the device was used solely for oral history collection? For training? For work monitoring?

Practicality concerns should be considered (for example how heavy the device is and whether the battery will have to be charged by the employees):

What would some practical concerns for you be when wearing a lifelogging camera on your body? (if needed) For example, would the size or placement of the camera make a difference for you?

What are some other concerns about the practicalities of the device?

What kind of training do you think you might want or need for something like this?

Appendix 2: Interview Script for CEO

Introductory questions:

Demographics: Name, job title (description), yeas with company, years in current role, age and sex.

Tell me a little bit about the project that you'd like to get under way.

What are the goals? What is the purpose of recording employees? What is the purpose of capturing the data?

Do you have any previous experience with this type of project?

Privacy concerns will be explored as well:

What would your primary concern be for the lifelogging devices?

What are the benefits of something like this?

What control do you think employees should have or would like to have over the device?

What are your thoughts about who will see and edit the recordings afterwards?

Do you think it would be mandatory or voluntary?

Another potential aspect will be purposes beyond sharing heritage. Other situations will be asked about:

What situations would you most want to capture within Scottish Canals?

What situations would be inappropriate to record?

What are the perceived concerns that you think employees will have?

What are the risks/opportunities that you see in the project?

Practicality concerns should also be considered:

What type of device to you envision would be best for the project?

What needs would employees have for a recording device in the workplace? (for example how heavy the device is and whether the battery will have to be charged by the employees)

Appendix 3: Fitbit Example

Appendix 4: GoPro Example

Appendix 5: Consent Form

Consent Form for employees of Scottish Canals

Name of department: Computer and Information Science Department
Title of the study: Is lifelogging suitable in professional settings?

- I confirm that I have read and understood the information sheet for the above project and the researcher has answered any queries to my satisfaction.
- I understand that my participation is voluntary and that I am free to withdraw from the project at any time, up to the point of submission of the project for marking, without having to give a reason and without any consequences. If I exercise my right to withdraw and I don't want my data to be used, any data which have been collected from me will be destroyed.
- I understand that I can withdraw from the study any personal data (i.e. data which identify me personally) at any time, including after the interview is completed, up to the point of submission of the project for marking.
- I understand that due to the nature of the study and the limited number of participants, it may not be possible to completely anonymise the data provided but that reasonable measures will be taken to provide confidentiality and anonymity for me (i.e. name, work location, specific job title etc. will be excluded).
- I consent to being a participant in the project.
- I consent to being audio recorded as part of the project.

(PRINT NAME)	
Signature of Participant:	Date:

Appendix 6: Participant Information Sheet

Participant Information Sheet for Scottish Canals Employees

Name of department: Computer and Information Science Title of the study: Is lifelogging suitable in professional settings?

Introduction

My name is Bethany Orick and I am a postgraduate student at the University of Strathclyde studying to earn an MSc in Information and Library Studies.

If you have any questions about this study, you can reach me at the following email address:

szb16150@uni.strath.ac.uk

What is the purpose of this investigation?

The purpose of this investigation is to research employee perspectives on lifelogging in the workplace. Lifelogging devices are those which capture and record personal data which is generated by our own personal behaviour. An example of a lifelogging device is the GoPro camera which is worn on the body and records from a first person perspective.

Lifelogging has been used for a variety of initiatives. The most common use of lifelogs so far is to effortlessly document one's life for personal reasons such as health, as with a Fitbit, or for memories. Lifelogging technologies have also been adopted by the military for mission recall and other reporting capabilities.

More recently, companies and corporations have recognised the potential for lifelogging within the workplace for a variety of reasons. Scottish Canals is looking to implement lifelogging devices in the workplace for its employees.

However, employee perspectives on lifelogging in the workplace has not yet been thoroughly been investigated. Therefore, my research aims to discover the thoughts and feelings of the employees of Scottish Canals about the implementation of lifelogging devices in the workplace. My research will aim to answer three main questions:

1. What potential infringements on employee privacy are a concern for employees?

2. What best practice recommendations should be made for Scottish Canals?

3. How should these recommendations best combine employee perspectives while adhering to legal restrictions and the objectives of Scottish Canals?

The interviews will focus on discovering the employees' thoughts and feelings, whether positive or negative, about the implementation of lifelogging devices in the workplace.

Do you have to take part?

Your participation in this study in voluntary, and if you choose not to participate, it will not have any negative effect on the way you are treated. If you choose to participate but then change your mind, you can withdraw from the study at any point (even after the interview is completed). If at any point during the interview you do not wish to answer a question, you can ask to move on to the next question while still participating in the rest of the interview.

What will you do in the project?

Your participation in this study will be in the form of a single, one on one interview. The interview will be semistructured, meaning I will guide a discussion about lifelogging devices and their potential implications in the workplace while leaving room for you to bring new thoughts and ideas to the discussion.

The interviews will take place at your respective work sites and will not require travel. They will be around 20 minutes long, with time at the end to listen back to the interview, and will take place between 29 May 2017 and 9 June 2017 during work hours.

Why have you been invited to take part?

Any employee that works on site at the Forth and Clyde Canal, Union Canal, Caledonian Canal, Crinan Canal, Falkirk Wheel or as an engineer is welcome to take part in the survey. Both seasonal and permanent workers will be accepted for the study. Additionally, participation is open to office staff as well.

What happens to the information in the project?

The interviews will be recorded with an audio device which will be used to produce written transcripts for further analysis. The recordings will be confidential and then permanently destroyed once the study is complete. Portions of the transcripts will be anonymously referenced in my research, but the original transcripts will be shredded once the study is complete.

Due to the nature and number of participants for the study, complete anonymity may not be possible. However, I will do my best to implement measures, such as withholding your name and your work locations, which will protect your identity within the study results.

This study will not be published, However, as this study will include preliminary advice to Scottish Canals based upon findings, it will be shared with certain staff of Scottish Canals who will have discretion to pass it to whomever they see fit.

The University of Strathclyde is registered with the Information Commissioner’s Office who implements the Data Protection Act 1998. All personal data on participants will be processed in accordance with the provisions of the Data Protection Act 1998.

Thank you for reading this information – please ask any questions if you are unsure about what is written here.

What happens next?

If you are happy to participate in this project, you will be asked to sign a consent form to confirm this. Your supervisor will coordinate with HR to find an appropriate time for the interview.

If you would prefer not to participate in this project, thank you for your time and consideration.

If you would like to see the final results of the study, you can request to view it through Scottish Canals. I do not intend to officially publish this study.

The place of useful learning The University of Strathclyde is a charitable body, registered in Scotland, number SC015263

Researcher contact details:

The researcher for this project is Bethany Orick.

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Chief Investigator details:

The Chief Investigator for this research is Dr Martin Halvey.

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This investigation was granted ethical approval by the University of Departmental Ethics Committee.

If you have any questions/concerns, during or after the investigation, or wish to contact an independent person to whom any questions may be directed or further information may be sought from, please contact the Departmental Ethics Committee using enquiries@cis.strath.ac.uk as the contact email.