Measuring the effects of the introduction of enterprise social networks on collaborative knowledge-worker business processes

1.1 Introduction

RESEARCH QUESTION: "To what extent can enterprise social networks (ESNs) increase the efficiency of knowledge-based business processes?"

The aim of this project is to establish whether, under what circumstances and to what extent the introduction of ESNs to the workplace results in improved business process efficiency. ESNs are a type of emergent social media platform that apply Web 2.0 features to "the workplaces of organisations to facilitate work-related communication and collaboration" (Richter and Riemer, 2013). A business process can be defined as a "structured, measured set of activities designed to produce a specific output for a particular customer or market" (Davenport, 1993) and a 'knowledge-based' business process as one that is performed by 'knowledge workers' (Aalst et al., 2003). 'Knowledge-workers' can in turn be defined as workers with "high degrees of expertise, education, or experience, and the primary purpose of their jobs involves the creation, distribution, or application of knowledge" (Davenport, 2005). Knowledge-based business processes are often less rigid than, for example, standard manufacturing processes, and they frequently require some form of collaboration (Aalst et al., 2003; Pasi Pyöriä, 2005). As we will see firms face challenges in increasing the exchange of knowledge by knowledge workers (Fulk and Yuan, 2013; Leonardi et al., 2013) and as such this research is expected to show a performance improvement through the introduction of applications optimized for this purpose.

The primary objective of this project is to quantify the effect of the introduction of an ESN on two knowledge-based business processes heavily reliant on communication and collaboration. The approach will precipitate a set of data from which Key Performance Indicators (KPIs) will be derived. The method is described fully below but, in brief, the 'as-is' business processes will be modeled and then re-modeled as 'to-be' processes with the ESN employed as fully as possible. The 'to-be' business processes will be modeled with the assumption that the ESN is fully embedded rather than consider the challenges of implementation within the model. Both 'as-is' and 'to-be' processes will then be simulated using a simplified but materially accurate executable model. Running multiple repetitions and experiments using different versions of the 'to-be' model will generate a set of output data against which hypotheses can be tested and it to be determined under what conditions efficiency increases, for example through changes in average process length, output volumes, average waiting times and average resource utilisation. Actual KPIs chosen will depend on the business process and constraints imposed by the specific experiment. Ultimately conclusions will be drawn in relation to the research question along with recommendations.

This project will add quantitative research on the extent to which ESNs can improve business processes to the qualitative analysis that predominates (Fulk and Yuan, 2013; Richter et al., 2013). It's a step towards being able to

perform cost benefits analyses for ESNs which would allow firms to consider an alternative to email. The analysis will help enterprises make more informed decisions when considering investment in ESNs and provide ESN vendors with an insight into the performance of their product in certain use cases.

1.2 Literature review

A distinction can be drawn between data, information and knowledge. Data is a raw and distinct fact or record while information is a "message, usually in the form of a document or an audible or visual communication" (Davenport and Prusak, 1998). Knowledge on the other hand is what arises when information is processed, combined and understood; it is based on experiences, inferences and other types of cognitive reasoning and it is what a worker draws on to make a decision: other things being equal, the better the knowledge, the better the decision (Davenport and Prusak, 1998). As such knowledge is a valuable asset for the enterprise.

Constant technological advancement since the 1950s has helped create an increasingly complex economy that's seen a "significant increase in the consumption of information goods and services" (Pasi Pyöriä, 2005). Firms have thus increasingly sought workers able to assimilate and create knowledge (Pasi Pyöriä, 2005) and looked for ways to link "knowledge users to each other and to knowledge content" (Fulk and Yuan, 2013). Knowledge Management (KM) systems such as data warehouses, directories and intranets capture explicit knowledge if codified but are "more communal than connective" (Fulk and Yuan, 2013). Tacit knowledge has rarely been captured, that is until social technologies emerged (Davenport and Prusak, 1998; McAfee, 2009). E-mail has been relied on by knowledge workers for the sourcing of both knowledge and information for many years and has been shown to be used three times as widely as any other technology for this purpose (Davenport, 2005). (KM systems fail to register any longer as a widely used information source (McAfee, 2009)).

Email is as ubiquitous as it is easy to use but it offers limited benefits to the knowledge worker. It's platform-independent, fast and cheap but crucially content is not visible to anyone but the sender and recipient(s) (McAfee, 2009). Thus email conversations are only of benefit to those directly involved. Even then the benefit is somewhat limited: email 'refinding', whereby users search for a conversation they were directly involved in, has been shown to be inefficient (Whittaker et al., 2011) and email 'overload', a reference to the chronic stress and lack of productivity that a busy in-box can impose, abounds (McMurtry, 2014). Using email as a store of knowledge is a flawed strategy therefore. Knowledge is also exchanged of course using other 'traditional' methods such as face-to-face conversation, meetings and telephone calls but these exchanges, while possessing a powerful, personal quality, suffer from a similar problem in that they are almost always unrecorded and thus ephemeral. These too can't benefit those not directly involved. These deficiencies are less prevalent in 'social technologies' that "allow people to do things that they could not do before, or to do things that were previously difficult to do without the technology" (Treem and Leonardi, 2012).

The term Web 2.0 entered common parlance in the early 2000s and refers to, among other things, website user participation and interaction (rather than simple static viewing), user driven content (e.g. 'folksonomies'), and the start of mass participation in the internet (O'Reilly, 2007). One of the key technologies that sprung up as a result of this paradigm-shift were social media, a key part of which are social networking services (SNS), allowing users to connect to other users with which they share an interest, display a profile, provide comments and share information, among other things. It was recently reported that 80% of web users access social networks regularly ("The social economy," 2012). The rapid spread of social media was not confined to the consumer space and the term Enterprise 2.0 was coined to describe the application of these technologies to the workplace (McAfee, 2009). While the acronym "SLATES" (search, authoring, tags, extensions, signals) describes the full set of features (McAfee, 2009) we focus here on ESNs (which "put emphasis on social relationships, communication, conversation and ad-hoc sharing" (Riemer and Scifleet, 2012)) i.e. how knowledge workers *connect* to information and knowledge content. We will make the assumption within the approach proposed here that the information or knowledge does exist within the organisation, it just has to be found.

Literature related to ESNs focuses largely on the 'affordances' of ESNs, that is the activity that the technology makes possible rather than the technology itself (Fulk and Yuan, 2013). We will continue to focus on the affordances but adopt a quantitative approach. The first area of benefit that ESN technology can afford the organization is related to the location of expertise. Not being able to locate expertise is a major problem and as a former CEO of Hewlett Packard said: "If HP knew what HP knows we would be three times as profitable" (Davenport and Prusak, 1998). Users display (searchable) profile and expertise information and may connect to others with whom they share an interest. Users may observe both the profiles and the networks of others and thus immediately have multiple options for locating expertise. As users interact within their networks they leave activity trails such as comments and conversations, that allows other users to infer where the knowledge they need resides (Fulk and Yuan, 2013). Rather than being a 'channel' through which (limited audience) communication takes place, ESNs are 'platforms' that host open forms of communication visible to all users where they can "interact with a communication, rather than the communicator, long after the conversation is over" (Leonardi et al., 2013).

A second area in which ESNs can facilitate knowledge workers is through helping motivate users to share expertise. We will be assuming that the user searching for information is motivated but the experts they seek must be motivated enough to contribute in some form. Through a low cost of contribution (no requirement for codification), a high degree of transparency (and therefore potential for recognition) as well as the potential for swift feedback, experts may feel more inclined to collaborate (Fulk and Yuan, 2013). A third area of benefit is through the creation of social capital. ESNs encourage users to form multinational, multicultural and trans-functional/trans-departmental networks that theory suggests precipitate economic benefits (Fulk and Yuan, 2013). Recent case studies have shown

many of these affordances to be in evidence subsequent to implementation (Richter and Riemer, 2013; Riemer and Scifleet, 2012) but in general ESNs have suffered from a relatively slow adoption rate ("The social economy," 2012). Through quantifying ESN benefits we hope to inform the adoption decision more.

So, in summary, modern businesses rely on knowledge, and 'conventional' methods of sharing and growing that knowledge fall far short of the standards required. The evolution of the internet to being an interactive, user-driven set of 'applications' has lead firms to start adopting social networking solutions in the workplace. These networks afford potential benefits in terms of increases to the yield that can be elicited from knowledge resources. This paper intends to quantify these benefits by modeling ESN introduction to a knowledge worker business process.

1.3 Method & Tools

The objective of this paper is to determine to what extent ESNs can improve the efficiency of knowledge-worker business processes. It is proposed that this is done using a simulation model. The idea of this approach is to imitate the operation of the real-world business process (the 'as-is' process) and then reconfigure the model to reflect the proposed change – in this case the introduction of an ESN – to see the impact. Multiple reconfigurations or experiments can be made to provide insight into a variety of alternative processes or conditions. Put simply "a process simulator generates a large number of hypothetical instances of a process, executes these instances step-by-step, and records each step in this execution" (Dumas et al., 2013). Log data is thus collected in exactly the way it could be if it was a real system being observed, for example relating to cycle times, resource utilization and resource waiting time. The proposal is to adopt the case study approach. The reason for this is firstly that we require to understand a limited number of business processes in great depth in order to be able to model them accurately. Secondly access has been made possible to an investment bank that operates the specific knowledge-worker business processes that are of interest. The researcher is employed by this firm and has detailed first hand knowledge of these processes and the inefficiencies that make the prospect of introducing an ESN an interesting one. This access allows the gathering of detailed process data from a variety of sources that would otherwise be very difficult to obtain. There is a risk that generalisation is not possible but the researcher believes that a well-structured and rigorous project will offer a limited but legitimate examination of an important area. There is also a danger that due to the researcher's familiarity with the subjects there could be a distortion in the responses and indeed the researcher's own confirmation bias may be an issue. The researcher is confident though of being able to ensure objectivity through structured data gathering and best practice.

A mathematical approach is required because we are not able to experiment with ESNs in the live environment and are also unable to build an insightful physical model. This leaves only the option of modeling mathematically. Simulation is believed to a valid approach in this case

because the research question cannot be answered using an analytical approach. Complex processes, with a variety of (concurrently employed) resources, processes and events would result in a solution so complex – if possible – it would be beyond the resources of this project (Banks et al., 2013). The simulation proposed here is 'discrete-event simulation' which refers to the modeling of systems that change state only at discrete points when specific events occur (Law, 2014). It is believed that the processes in question are of that type, with demands on the knowledge-workers' time beginning and ending at certain points in time rather than continuously. A simulation project typically has several key stages such as: "model conceptualization", "data collection", "model translation", "experimental design", "production runs & analysis" and "documentation & reporting" (Banks et al., 2013). It is proposed that this project follows a similar course though one closer to an agile approach than a waterfall one. The method combines recommendations made by Banks et al. (2013), Dumas et al. (2013) and Law (2014).

The aim of conceptual design is to ensure the model being is built correctly. It will be separated into preliminary analysis and model specification. In the preliminary stage the 'as-is' business processes will be researched. Interviews will be held with participants and questionnaires distributed, along with a review of available system logs and output. The data gathering strategy will be designed to gather information possible about BPs believed to be heavily reliant on communication and collaboration. Participants will be briefed as to the nature of the study and the terms of their participation, in line with the appropriate ethics guidelines. It is imperative that the right processes are chosen so enquiries will question the precise mode and contexts of communications integral to the BPs. A criterion for selection will be established and a set of processes selected. The chosen processes will then be modeled in full detail using BPMN and validated by users. At the same time ESNs available in the market will be reviewed along with available academic literature and the set of features to be included in the 'to-be' processes will be defined. The 'to-be' business processes will then be modeled. Potential variations in the 'to-be' processes will be noted for the experimentation stage, when they may be tested. The models will be reviewed and uncertain events will be identified. These environmental variables (those that cannot be modified such as the time it takes to locate an expert or the frequency of new work requests) must be identified along with the control variables (those that can be controlled such as the number of knowledge workers working on a particular task). At this point data inputs are known and planning for data gathering can be completed. Actors will be identified and interviews, questionnaires, observations data grabs will be planned. Crucially with simulation the more data that is collected the more accurate the inputs to the model and the more accurate the outputs (Dumas et al., 2013). The data gathered will relate to the environmental variables and the process outputs. This data must be as detailed and be supplied by as many respondents as possible. For the 'as-is' process the live environment can be tapped for data but in the case of the 'to-be' processes most variables will need to be estimated. Research and experimentation will be used but inputs will also be varied in the simulation process to assess different possibilities. Data will then be statistically analysed and the distributions

associated with the random variables will be inferred together with parameters such as mean values.

In the second part of the conceptualisation phase the precise model that is intended to be simulated as an executable model will be specified in detail. Crucially this helps ensure that the model is accurate and involves three steps: The first step is to define the business process. These may not include all the detail of the previously created BPMN models. This model must be detailed enough to be valid (i.e. able to answer the research question) and simple enough to be built correctly (verifiable). A number of notation languages will be considered for this job including Coloured Petri Nets and UML activity diagrams. Secondly a UML class diagram will be used to specify the different classes of objects, the relationships between them and the data that pertains to them. Thirdly – and critically - the transitions i.e. the conditions that cause state changes within the system will be specified (along with other details).

The next step is to build the executable model (within a selected specialist software package) by translating the conceptual model into the language of the chosen package. Once this is done test runs can be performed and validation and verification can begin. Verification will include debugging required and checking that the output is intuitive given the inputs while validation will involve comparing to real-world output and sourcing expert user opinion. The 'as-is' simulation model is likely a simplification of the real-world 'as-is' model and should therefore be expected to deliver superior performance statistics. Verification and validation will be iterative, with models being tweaked through this feedback loop until accuracy is maximized. Finally the full set of production runs will be performed and output data generated and stored (in a database that will be built for this project). Experiments will be performed through varying inputs (possibly by experimenting with different 'user profiles') and processes until a rich set of data is gathered. Statistical analysis will be performed and inferences made.

Clearly this is a long and complex process so the approach that will actually be taken will be to build a simple proof-of-concept (POC) at the outset and then develop that in an agile manner using a series of sprints. For the POC a simple conceptual design will be translated into an executable model which will then incrementally (adding features) and iteratively (adding fidelity) enhanced to match the defined processes. A verified and ultimately valid model is easiest to achieve by taking small steps within which errors are (relatively) easily spotted. This project requires relatively few resources. Simulation software and computing capacity is available. Also data and participants have been made available by the Researcher's employers. The researcher feels the case study approach is valid and that biases can be avoided through careful preparation. Additionally, two key assumptions are being made: firstly that all required knowledge does exist in the firm and it is simply a matter of locating it. Secondly that implementation would realize all of the potential benefits that the ESN could provide. The researcher believes this is valid because the specific aim here is to isolate the effect on performance of full ESN implementation rather than assess whether implementation is possible. The researcher is also confident (based on experience) that sufficient knowledge is available and the primary issue is the

speed at which it can be located. Another potential issue is that the executable model will be a simplification of the real-world business process. Will this simplification be so great the research question can't be answered? Can the complex benefits of ESNs even be captured within two simple business processes? The answer is that we don't know for sure. Great care must be taken in constructing a faithful working model. This will be a challenge. Additionally: the model will assume continuously employed resources; workers productivity may fall with a new distraction; the networks may benefit a privileged few only. All these things are very interesting but not within scope here. The model must be not be overcomplicated. A final legitimate concern is the likely lack of observable data for the 'to-be' process. Estimation will be bolstered by experimentation and 'what-if' analysis to view results under different circumstances.

1.4 Risks

Figure 1: Risk register

Category	Risk event	Likelihood	Impact	Score	Action	Response
Project management	Theory takes too long to assimilate	3	4	12	Mitigate	Build in contingency, start early, seek help.
	Task duration is underestimated	2	5	10	Mitigate	Build in contingency to all tasks.
	Reversal of approval	1	5	5	Mitigate	Ensure appropriately senior mandate secured.
	Issues physically getting data out of the firm	2	5	10	Mitigate	Ensure correct approval secured and teams notified.
Input data	Researcher made redundant therefore: • data can't be collected • model/output can't be verified/validated	1	5	5	Accept	Ensure data gathering completed as soon as possible and data written to database.
	Insufficient data (responses/observations) collected	3	5	15	Mitigate	Provide incentives, approach multiple participants.
	Data gathered does not show any particular reliance on email or potential improvement through ESNs	2	5	10	Mitigate	Ensure data gathering is structured correctly, asks the right questions and correct BPs are chosen
	Gathered data biased due to: • insufficient direct observations • relationship with researcher	2	5	10	Mitigate	Well structured and objective data gathering.
	Estimated data inaccurate due to: • basis for estimation can't be found • estimation inaccurate	3	4	12	Mitigate	Research thoroughly, perform experiments both to derive inputs and then varying them through using multiple executable models.
Conceptual model	Process modelled incorrectly (invalid)	2	5	10	Mitigate	Use agile approach, model carefully, validate regularly.
	Researcher bias (e.g. confirmation bias)	2	4	8	Mitigate	Thorough and careful research/data gathering.
	Simulation approach not appropriate	1	5	5	Mitigate	Ensure BP is chosen carefully with sufficient complexity.
	Business processes don't benefit from ESNs	1	4	4	Mitigate	Ensure BP is chosen carefully with sufficient collaboration dependency.
	Model simplification reduces effect of ESNs	3	3	9	Mitigate	Carefully model to capture key complexities.
	Greatest ESN benefits (e.g. avoiding email overload) not captured by model (underestimates effect)	3	3	9	Mitigate	Carefully model to capture key ESN benefits. Overload may be captured - if justified - through increased productivity.
Executable model	Issues translating conceptual model meaning it is unverifiable and/or invalid (e.g. 'as-is' model does not resemble 'as-is' actual process	3	5	15	Mitigate	Use agile approach, model carefully, verify & validate regularly.
Output data	Results are inconclusive	3	4	12	Accept	Acceptable as long as model is appropriately complex/valid and verified.
	Results can't be generalised due to: • case study approach • too few BPs studied	2	5	10	Mitigate	Ensure research is thorough, plenty of data is gathered, model is detailed, valid and verified, output data comes from varied experimentation.

1.5 Work Plan

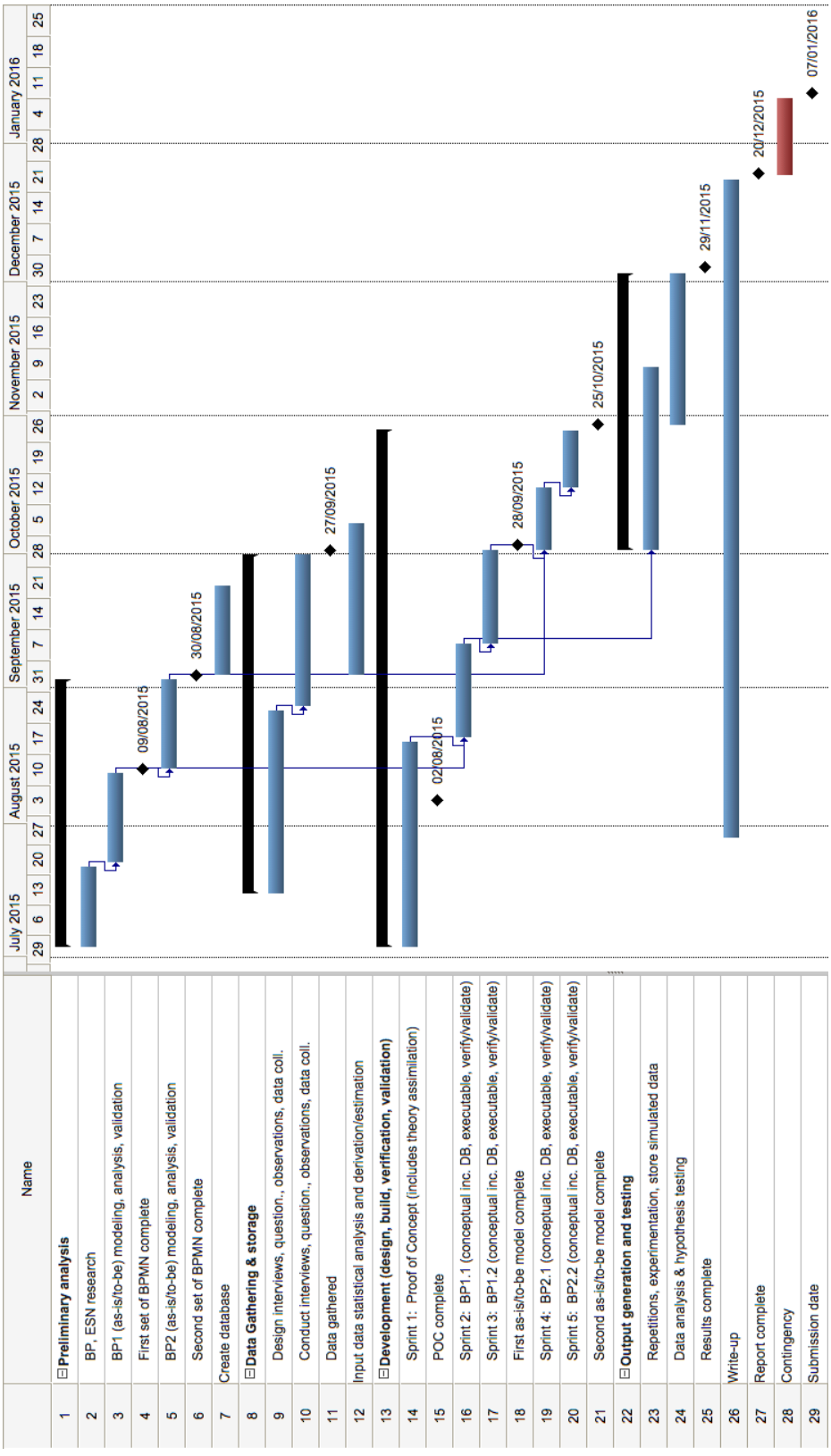

Figure 2: Project Gantt chart

1.6 References

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1.7 Ethics Review Form: BSc, MSc and MA Projects

Computer Science Research Ethics Committee (CSREC)

1.8 Part A: Ethics Checklist

If your answer to any of the following questions (1 – 3) is YES, you must apply to an appropriate external ethics committee for approval:		*Delete as appropriate*
1.	Does your project require approval from the National Research Ethics Service (NRES)? (E.g. because you are recruiting current NHS patients or staff? If you are unsure, please check at http://www.hra.nhs.uk/research-community/before-you-apply/determine-which-review-body-approvals-are-required/)	**No**
2.	Will you recruit any participants who fall under the auspices of the Mental Capacity Act? (Such research needs to be approved by an external ethics committee such as NRES or the Social Care Research Ethics Committee http://www.scie.org.uk/research/ethics-committee/)	**No**
3.	Will you recruit any participants who are currently under the auspices of the Criminal Justice System, for example, but not limited to, people on remand, prisoners and those on probation? (Such research needs to be authorised by the ethics approval system of the National Offender Management Service.)	**No**

If your answer to any of the following questions (4 – 11) is YES, you must apply to the Senate Research Ethics Committee for approval (unless you are applying to an external ethics committee):		*Delete as appropriate*
4.	Does your project involve participants who are unable to give informed consent, for example, but not limited to, people who may have a degree of learning disability or mental health problem, that means they are unable to make an informed decision on their own behalf?	**No**
5.	Is there a risk that your project might lead to disclosures from participants concerning their involvement in illegal activities?	**No**
6.	Is there a risk that obscene and or illegal material may need to be accessed for your project (including online content and other material)?	**No**
7.	Does your project involve participants disclosing information about sensitive subjects?	**No**
8.	Does your project involve you travelling to another country outside of the UK, where the Foreign & Commonwealth Office has issued a travel warning? (http://www.fco.gov.uk/en/)	**No**
9.	Does your project involve invasive or intrusive procedures? For example, these may include, but are not limited to, electrical stimulation, heat, cold or bruising.	**No**

10.	Does your project involve animals?	**No**
11.	Does your project involve the administration of drugs, placebos or other substances to study participants?	**No**

If your answer to any of the following questions (12 – 18) is YES, you must submit a full application to the Computer Science Research Ethics Committee (CSREC) for approval (unless you are applying to an external ethics committee or the Senate Research Ethics Committee). Your application may be referred to the Senate Research Ethics Committee.		*Delete as appropriate*
12.	Does your project involve participants who are under the age of 18?	**No**
13.	Does your project involve adults who are vulnerable because of their social, psychological or medical circumstances (vulnerable adults)? This includes adults with cognitive and / or learning disabilities, adults with physical disabilities and older people.	**No**
14.	Does your project involve participants who are recruited because they are staff or students of City University London? For example, students studying on a particular course or module. (If yes, approval is also required from the Head of Department or Programme Director.)	**No**
15.	Does your project involve intentional deception of participants?	**No**
16.	Does your project involve participants taking part without their informed consent?	**No**
17.	Does your project pose a risk to participants or other individuals greater than that in normal working life?	**No**
18.	Does your project pose a risk to you, the researcher, greater than that in normal working life?	**No**

If your answer to the following question (19) is YES and your answer to all questions 1 – 18 is NO, you must complete part B of this form.		
19.	Does your project involve human participants? For example, as interviewees, respondents to a questionnaire or participants in evaluation or testing.	**Yes**

1.9 Appendices

1.9.1 Part B: Ethics Proportionate Review Form

The following questions (20 – 24) must be answered fully.		*Delete as appropriate*
20.	Will you ensure that participants taking part in your project are fully informed about the purpose of the research?	**Yes**
21.	Will you ensure that participants taking part in your project are fully informed about the procedures affecting them or affecting any information collected about them, including information about how the data will be used, to whom it will be disclosed, and how long it will be kept?	**Yes**
22.	When people agree to participate in your project, will it be made clear to them that they may withdraw (i.e. not participate) at any time without any penalty?	**Yes**
23.	Will consent be obtained from the participants in your project? Consent from participants will be necessary if you plan to gather personal data. "Personal data" means data relating to an identifiable living person, e.g. data you collect using questionnaires, observations, interviews, computer logs. The person might be identifiable if you record their name, username, student id, DNA, fingerprint, etc. *If YES, attach the participant information sheet(s) and consent request form(s) that you will use. You must retain these for subsequent inspection. Failure to provide the filled consent request forms will automatically result in withdrawal of any earlier ethical approval of your project.*	**Yes**
24.	Have you made arrangements to ensure that material and/or private information obtained from or about the participating individuals will remain confidential? Provide details: Data will be anonymised and the final report will be kept confidential.	**Yes**

If the answer to the following question (25) is YES, you must provide details		*Delete as appropriate*
25.	Will the research be conducted in the participant's home or other non-University location? *If **YES**, provide details of how your safety will be ensured:* Research will take place at the case study location, that is the offices of Barclays, The Investment Bank where the participants work every day. This is a safe, comfortable and convenient location for research to take place.	**Yes**

Attachments (these must be provided if applicable):	*Delete as appropriate*
Participant information sheet(s)	**Yes**
Consent form(s)	**Yes**
Questionnaire(s)**	**No – not available**
Topic guide(s) for interviews and focus groups**	**No – not available**
Permission from external organisations (e.g. for recruitment of participants)**	**No – not available**

**If these items are not available or not applicable at the time of submitting your project proposal, preliminary approval through proportionate review can still be given. This will be subject to you submitting the items to your supervisor for approval at a later date. Approval must be obtained prior to the research commencing.

Templates
The University provides templates which should be used as the basis for your participant information sheets and consent forms. These are available from the links below but **must** be adapted according to the needs of your project before they are submitted for consideration.
Adult information sheet:
http://www.city.ac.uk/__data/assets/word_doc/0018/153441/TEMPLATE-FOR-PARTICIAPNT-INFORMATION-SHEET.doc
Adult consent form:
http://www.city.ac.uk/__data/assets/word_doc/0004/153418/TEMPLATE-FOR-CONSENT-FORM.doc

1.9.2 Participant information sheet

CITY UNIVERSITY PARTICIPANT INFORMATION SHEET

Title of study: Measuring the effects of the introduction of enterprise social networks on collaborative knowledge-worker business processes

We would like to invite you to take part in a research study. Before you decide whether you would like to take part it is important that you understand why the research is being done and what it would involve for you. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information.

What is the purpose of the study?
The aim of this study is to identify business process inefficiencies arising from communication & collaboration and examine whether or they can be resolved through the use of enterprise social networks (ESNs).

Why have I been invited?
You have been included in this as a result of your role in one of the business processes being analysed.

Do I have to take part?

Participation in the project is voluntary, and you can choose not to participate in part or all of the project. You can withdraw at any stage of the project without being penalised or disadvantaged in any way.

It is up to you to decide whether or not to take part. If you do decide to take part you will be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason.

What will happen if I take part?

- The participant will be involved for approximately 1 month
- The research study will last 6 months
- The participant will complete an online questionnaire, possibly be interviewed and in a limited number of cases be invited to a follow-up interview.
- Interviews with the researcher will be 15 minutes maximum
- Questionnaires and interviews (semi-structured) will involve no personal data being taken and focus entirely on your experience within the business process
- The data gathering will be used to create business process models and provide inputs to these models. The models will then be simulated to see their performance under varied conditions.
- The data gathering will take place entirely in your work place.

What do I have to do?
Research participants are expected to fill in questionnaires and attend interviews.

What are the possible disadvantages and risks of taking part?
Participation in this study presents is not expected to disadvantage the participant in any way other than through the loss of a small amount of time.

What are the possible benefits of taking part?
The primary potential benefit for you is a greater understanding of inefficiencies that exist within some of the business processes that you participate in. This will provide management with information that they may choose to act on.

What will happen when the research study stops?
Information gathered through this process will be anonymised and stored. Business processes will be modeled and statistics derived from this data will then be used as input data into the models. Models will then be simulated to identify performance characteristics.

Will my taking part in the study be kept confidential?
Data will be anonymised before being stored.

What will happen to results of the research study?
Results of this research will be kept confidential as per agreement with Barclays PLC.

What will happen if I don't want to carry on with the study?
There will be no repercussion of any kind should you exercise your right to cease participation at any time at all.

What if there is a problem?

If you have any problems, concerns or questions about this study, you should ask to speak to a member of the research team. If you remain unhappy and wish to complain formally, you can do this through the University complaints procedure. To complain about the study, you need to phone 020 7040 3040. You can then ask to speak to the Secretary to Senate Research Ethics Committee and inform them that the name of the project is:
.....
……
You could also write to the Secretary at:

Anna Ramberg
Secretary to Senate Research Ethics Committee
Research Office, E214
City University London
Northampton Square
London
EC1V 0HB
Email: Anna.Ramberg.1@city.ac.uk

City University London holds insurance policies which apply to this study. If you feel you have been harmed or injured by taking part in this study you may be eligible to claim compensation. This does not affect your legal rights to seek compensation. If you are harmed due to someone's negligence, then you may have grounds for legal action.

Who has reviewed the study?
This study has been approved by City University London Research Ethics Committee

Further information and contact details
Researcher: matthew.dimmock.1@city.ac.uk
Supervisor: marco.comuzzi.1@city.ac.uk

Thank you for taking the time to read this information sheet.

1.9.3 Consent form

CITY UNIVERSITY CONSENT FORM

Title of Study: **Measuring the effects of the introduction of enterprise social networks on collaborative knowledge-worker business processes**

Please initial box

1.	I agree to take part in the above City University London research project. I have had the project explained to me, and I have read the participant information sheet, which I may keep for my records. I understand this will involve: • being interviewed by the researcher • complete questionnaires asking me about the business processes I'm involved in at work • making myself available for a further interview should that be required	
2.	This information will be held and processed for the following purpose(s): I understand that any information I provide is confidential, and that no information that could lead to the identification of any individual will be disclosed in any reports on the project, or to any other party. No identifiable personal data will be published. The identifiable data will not be shared with any other organisation.	
3.	I understand that my participation is voluntary, that I can	

	choose not to participate in part or all of the project, and that I can withdraw at any stage of the project without being penalized or disadvantaged in any way.	
4.	I agree to City University London recording and processing this information about me. I understand that this information will be used only for the purpose(s) set out in this statement and my consent is conditional on the University complying with its duties and obligations under the Data Protection Act 1998.	
5.	I agree to take part in the above study.	

Name of Participant	Signature	Date
Matthew Dimmock		
Name of Researcher	Signature	Date

When completed, 1 copy for participant; 1 copy for researcher file.