

# **Knowledge Management in Small and Micro Organisations: Case Study on Knowledge Retention in Arts Consultancy**

Rauli Rinnekangas

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<b>Author(s)</b> Rauli Rinnekangas	
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<p>Knowledge management is a set of processes of acquiring, creating, sharing and using information resources in an organisational context for the benefit of specific organisational objectives. The role of knowledge as part of organisational decision making has increased during the past couple of decades, especially due to the need for gaining a competitive advantage in increasingly complex business environments and facilitated by various technological advancements in information technology. The mainstream research on and practical application of knowledge management has traditionally focused on mid-size to large organisations where various knowledge barriers are more widely commonplace. Small organisations, such as consultancy firms which are run by few persons only, have been less in focus, partly because of non-existence of the barriers typical to larger organisations. However, small organisations can benefit from having knowledge management practices as well, as such activities can allow gaining significant advantages in competition, reaching out new opportunities, and better management of the organisation in overall. Furthermore, special cases such as business transfer of an organisation to a new owner are highly dependent on having sufficient processes and systems for knowledge management in place: besides of facilitating and enabling smoother transition of key activities of an organisation, knowledge may have vital role in ensuring the overall success of such transition, hence affecting the further continuity of the organisation.</p> <p>In this thesis, the knowledge management in small organisations will be examined. As a case example on examining and developing knowledge management in a small, micro-sized organisation, an arts consultancy business run by one person was selected for in-depth study and development focus. The case example is reflected according to existing knowledge management research and related frameworks for conducting transfer of tacit-oriented knowledge of the organisation in organizational transition scenarios: in particular, transforming tacit knowledge into easily transferable explicit forms will be examined while taking the overall resource-constrained nature of the organisation into consideration. The use of recording mediums combined with modern information technology (IT) for the purpose will be examined and their usability as solution options for the case in respect to its specifics will be outlined in detail. The final outcomes of the study include a development plan which proposes measures for knowledge management activities required for knowledge retention in the case organisation, as well as insights on how knowledge management can be applied in cases similar to the example organisation: other small organisations may find the applied methodologies as well as their results useful in analysing knowledge management specifics of organisation, extracting and defining related requirements, and accordingly determining knowledge management actions in organisation for further development.</p>	
<b>Keywords</b> Arts Consultancy, Information Technology, Knowledge Management, Micro Organisation, Small Organisation	

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# 1 Introduction

Knowledge management is a set of processes of acquiring, creating, sharing and using information resources in an organisational context for the benefit of specific organisational objectives. The role of knowledge as part of organisational activities and decision making has increased during the past couple of decades, especially due to the need for gaining a competitive advantage in increasingly complex business environments and facilitated by various technological advancements in information technology. Knowledge management is used as a systematic way of utilising existing knowledge in organization which can have many forms: besides of knowledge held by the employees, different processes and tools used within an organization can contain knowledge as integral part of them.

The mainstream research on and practical application of knowledge management has traditionally focused on mid-size to large organisations where various knowledge barriers are more widely commonplace: such barriers are considered as a result of the size of organisations especially when organisations grow larger, as the new structures introduce various forms of knowledge blockages which hinder the flow of knowledge across the organisation. Small organisations, such as consultancy firms which are run by few persons only, have been less in focus, partly because of non-existence of the barriers typical to larger organisations. However, small organisations can benefit from having knowledge management practices as well, as such activities can allow gaining significant advantages in competition, reaching out new opportunities, and better management of the organisation in overall. Furthermore, certain special cases such as business transfer of an organisation to a new owner are highly dependent on having sufficient processes and systems for knowledge management in place, and especially when the continuity is tied to generational change in business organisations: for instance, in Finland the majority of business organisations (93,4%) are either small (organisations employing less than 50 employees), or micro-sized (organisations employing less than 10 employees), hence making the matter topical and of wider importance (Suomen Yrittäjät 2017). While continuity of such organisations as a result of generational transfer, whether carried out by family member(s) of the owner or external successor(s), is highly dependable on personal qualities including motivation, determination, and ability to hard work and to change according to circumstances by the successor(s) (Lahti et al. 2012, 34), transfer of organisational knowledge can effectively facilitate the process by enabling smoother transition of key activities of an organisation, hence having a vital role in ensuring the overall success of such transition and further continuity.

Given the previous outlining, knowledge management in small and micro organisations will be examined in this thesis. As a case example on knowledge management in a micro-sized organisation, an arts consultancy business run by one person was selected for in-depth study and development focus. The case example is reflected according to existing knowledge management research and related frameworks for conducting transfer of tacit-oriented knowledge of the organisation in organizational transition scenarios: in particular, transforming tacit knowledge into easily transferable explicit forms will be examined while taking the overall resource-constrained nature of the organisation into consideration. The use of recording mediums combined with modern information technology (IT) for the purpose will be examined and their usability as solution options for the case in respect to its specifics will be outlined in detail. The final outcomes of the study include a development plan which proposes measures for knowledge management activities required for knowledge retention in the case organisation, as well as insights on how knowledge management can be applied in cases similar to the example organisation: other similar organisations may find the applied methodologies as well as their results useful in analysing knowledge management specifics of organisation, extracting and defining related requirements, and accordingly determining knowledge management actions in organisation for further development.

The structure of thesis is as follows: first, the objectives and research motivation are outline in chapter 1. Chapter 2 introduces the study methodology used in the thesis. In chapter 3, the theoretical framework on knowledge management as well as the role of IT in knowledge management will be examined. As a prelude to the case and its specifics involved, chapter 4 provides a brief introduction on arts (and visual arts in particular), and reflects the importance of knowledge in respect to arts. In chapter 5, the case organisation will be introduced based on the answers provided to questions on Appendix 1, and the organisation will be analysed and reflected accordingly the framework on chapter 3: as follow-up, further analysis by using Bloom's taxonomy and SWOT analysis will be conducted to define specifics in knowledge related to the organisation in-depth, which can then be utilised in crystallising the requirements for knowledge retention activities as part of a development plan. Chapter 6 introduces a development plan which suggests concrete measure for implementing a knowledge management solution for business transfer purpose in mind. Finally, chapter 7 closes with conclusion, and by outlining the limitations of the study and discussing further potential and future research directions.

## 1.1 Research objectives

The main objective of the thesis was to study how knowledge management is and can be applied in certain organisational settings, and in particular as part of potential business transfer scenarios. Knowledge management encompasses a set of different activities, out of which especially knowledge transfer was considered as of particular importance given the scenarios of potential business transfer involved. As precondition for determining the requirements for such knowledge management activities, the following generic questions were used in guiding throughout the study:

- What types of knowledge exist in small and micro organizations?
- What specifics need to be considered in knowledge management in small and micro organisations?
- What options (tools/methods) there exist to facilitate the knowledge transfer processes by small and micro organizations?

As further, case-specific objectives, application of knowledge management in small, arts consultancy oriented organisation was chosen for finding specifics in cases where transfer of business is to take place.

- What kind of knowledge exists in small and micro organisations in the field of (arts) consultancy?
- How to ensure the success of business transfer by utilising knowledge management means such as knowledge transfer in the field of (arts) consultancy?
  - What specifics in respect to the knowledge which is to be transferred need to be considered?
  - How the specifics can be addressed to ensure the success of the transfer?
- What limitations exist in the knowledge management in respect to the findings of the case?

## 1.2 Research motivation

The motivation behind of this research originates from the personal interest for understanding on how knowledge management and its introduction in smaller (i.e. small and micro) organisational context is done. This is expected to serve the purpose of development of several skills in personal level, in particular, insights and wider perspective regarding knowledge management as well as the dynamics between different types organisational settings and technology, and acquisition of relevant competencies for facilitating the overall process. This development of skills works as an important basis in various professional

roles in the field of information and communication technology (ICT) and beyond, where knowledge management as specified in the scope of this study is needed.

## **2 Study methodology**

In order to meet the specified research objectives, the thesis was constructed in following sections and their activities: first, preliminary data collection for constructing theoretical framework as well as for defining the application setting and application options; case study where the previously acquired information gets reflected with; and action plan for implementing knowledge management with the case study specifics in mind. Accordingly, the data collection forms the basis for analysing the case and application options available for the case organisation, hence outlining details of the action plan for developing knowledge management in the organisation.

### **2.1 Data collection**

The data collection was conducted in order to establish understanding over knowledge management: more specifically, two types of knowledge management literature was studied for the purpose. First, research on knowledge management was studied to define the theoretical framework over the subject scope, which would then be applied later on throughout the thesis as perspective and for reflecting with the case example. Second, in order to introduce a practical side of knowledge management which would fulfil the requirements by theoretical framework in a practical context (i.e. the case study), a review on the role of IT for facilitating knowledge management was done.

#### **2.1.1 Knowledge management research**

In order to build the theoretical framework as the starting point, key definitions, theories and assumptions over the topic area needed to be defined. Related literature over knowledge management research was acquired to formulate these. In addition, relevant information on knowledge management in small organisations was acquired based on existing research.

### **2.1.2 Role of information technology**

While the knowledge management research provided the theoretical framework which can be used in reflecting with the case example, information on role of information technology and modern IT based application solution options in knowledge management was acquired on practical side of knowledge management. The purpose of this information was to outline the potential knowledge management solutions applicable in the organisational context of the case example based on the specifics outlined as result of reflecting the case example with the framework.

### **2.1.3 Definition of arts as form of knowledge**

Due to the case specifics involving arts as a form of consultancy business, information on arts specifics especially from knowledge perspective was gathered to provide a brief introduction over the matter. The relationship of arts knowledge in respect to theoretical side of knowledge management was examined as part of the introduction to arts.

## **2.2 Case study**

An example organisation for the case study and resulting development purpose for knowledge management activities was chosen from the field of arts consultancy.

### **2.2.1 Interviews**

In order to evaluate the case organisation, interviews with the organisation's owner was conducted. The questions covered about background of the organisation, the role of knowledge and knowledge activities in the organisation, and the role of technology (IT) in the organisation.

### **2.2.2 Reflecting the case with theoretical framework**

The selected case (i.e. answers to the interview questions) was reflected in respect to the theoretical setting of knowledge management which was specified accordingly on '2.1.1 Knowledge management research', hence allowing analysis of the case and its specifics in terms of the given theoretical framework and providing information on the nature of knowledge and further inputs for application solutions.

### **2.3 Creating development plan**

Following the analysis of the case study, a development plan dedicated for the development of knowledge management activities in the case organisation was drafted. The plan focuses on acquiring the existing knowledge in the organisation and turning it into transformable forms, setting up a knowledge management system for retaining the transformed knowledge, and defining the maintenance activities of the introduced system.

### **3 Knowledge management in organisations: key theories, organisational specifics and applications according to research**

Knowledge management as a discipline has evolved since the beginning of early 1990s when it was introduced. Originally defined by Nonaka (Nonaka, 164-165) as individual knowledge which gets transformed as organisational knowledge, knowledge management encompasses several sub-disciplines according to different academic schools, with other fields and sciences contributing them as well. Most of the modern research underline the importance of people, processes (or techniques), and technology in knowledge management within an organisational setting, and interaction of these different areas as the key success factor for sustaining the expected competitive and other advantages (Bhatt 2001).

Application of knowledge management is hence dependable on the chosen perspective and the relation of the key factors in organisation involved. Here, a set of perspectives based on the existing research will be introduced for defining a theoretical framework further utilisation later in the case study. Furthermore, knowledge management in small organisations according to knowledge management research will be considered to provide organisational characteristics and specifics for the defined study scope. In addition, to complement the theoretical research on role of knowledge in organisations, a review on role of technology in knowledge management and technological solutions in form of IT according to existing research will be conducted. Before introducing these topics, definitions on certain key concepts related to knowledge management (knowledge, organisation, technology and process) will be conducted next.

#### **3.1 Definitions**

Knowledge management is a set of process of acquiring, creating, sharing and using information resources in an organisational context, often facilitated by modern technology. Given this definition, a set of key concepts which are related to and relevant in the context of knowledge management will be introduced first together with definitions related to the specifics of the case involved.

### **3.1.1 Knowledge**

Knowledge has many definitions and classifications, usually referred as being fuzzy by nature and closely attached to the individuals that hold it (Ipe 2003, 339). As Ipe refers on different definitions (Ipe 2003, 340), Davenport and Prusak (1998) defined knowledge as "a fluid mix of framed experience, values, contextual information, and expert insights that provides a framework for evaluating and incorporating new experiences and information. It originates in and is applied in the minds of knowers". Nonaka and Takeuchi defined knowledge as "a dynamic human process of justifying personal belief toward the truth"., where information as the "flow of messages" interacting with the beliefs and commitments of its holders result in creation of knowledge. They identified three characteristics that distinguished information from knowledge. First, knowledge is a function of a particular perspective, intention, or stance taken by individuals, and therefore, unlike information, it is about beliefs and commitment. Second, knowledge is always about some end, which means that knowledge is about action. Third, it is context specific and relational and therefore it is about meaning. (Ipe 2003, 340) In respect to organisations, knowledge can be viewed as residing within the individual, and the primary role of the organization is knowledge application rather than knowledge creation (Grant 1996, 109).

### **3.1.2 Organisation**

Organisations can be roughly defined as business organisations and non-business organisations which are also known as non-profit organisations. Using a more formal definition, "an organisation is a unit of formal positions, usually held by individuals, with explicit objectives, tasks, processes and assets (for example people, buildings and machines)." (Bouwman et al. 2005, 40). Furthermore, as defined by Bouwman et al. (2005), "the leading principle of every organisation is its goals. The goals can be commercial (profit, customer satisfaction, continuity), social (governing society, providing collective services), or idealistic (political, cultural or religious organisations). In its strategy the organisation decides how to use its various resources in order to achieve its goals. The aim is to work as efficiently and effectively as possible." (Bouwman et al. 2005, 41). To reach its goals, the organisation has a number of tasks that have to be performed by its individual members using the tools that are available and dedicated for the purpose.

Most organisations have a top management level, a staff, a middle management level and a work floor. (Bouwman et al. 2005, 42) However, that is not always the case, as smaller organisations with limited staff such as the consultancy firms demonstrate: in such cases the organisational setting is usually lower i.e. without hierarchy levels, and organisational

context and activities are closely related to the personnel (i.e. the owner(s)) involved. As related to such organisations, the term of micro organisation, or micro enterprise, has been recognised internationally as mostly as family businesses employing one or two persons, and primarily interested in earning a living to support themselves and their families (Wikipedia 2017b). Similarly, Federation of Finnish Enterprises draws distinction between small and micro-sized business organisations based on employment rate, small organisations employing less than 50 employees, and micro-sized organisations employing less than 10 employees (Suomen Yrittäjät 2017). In this thesis, both small and micro organisations are in focus of study and hence the terminology is used interchangeably in describing smaller organisations in theoretical and empirical parts of the study given the close linkage of organisational context in question: for example, the case example of the thesis represents a micro organisation, yet the findings of the case may be applicable to small organisations as well.

### **3.1.3 Technology**

Considering technology beyond of its limited functional purpose(s) for solving particular technical problem(s) and putting it into wider picture, technology is "a tool to organize things differently, streamline processes and carry out tasks more easily. Technology is an enabler. "(Bouwman et al. 2005, VIII) As Bouwman et al. (2005) point out, technology has become increasingly important for organisations during the past decades: for instance, the execution of tasks is being constantly fed by information and communication channels, which highlights the importance of ICT in organisations nowadays (Bouwman et al. 2005, 42). Information communication technology is used nowadays in modern organisations. According to Bouwman et al. (2005, 43), "more than ever before, organisations are systems that communicate and process information, and information communication technology is a technology that is perfectly suited to make organisational processes more effective and efficient." Technologies which come in question as ICT include software, hardware and their combinations known as systems. These definitions can be applied across organisations of different types and sizes, with obvious variance on the extent of technology is adopted and used by organisations: besides of line of business and size of organisation defining the level of adoption, availability of financial resources and the necessary skills of members of organisation set the limits for acquiring technology by the organisation.

### **3.1.4 Process**

In general, process is a set of actions to achieve a specific outcome. It can be used to describe the concrete elements of an organisation which can be considered as a combination of primary and supporting processes where values are being transformed, for instance from production via distribution to consumption (Bouwman et al. 2005, 42).

As previously defined, during the past decades technology has become increasingly important for organisations. From process perspective, this has two meanings: first, technology can have a supporting role for a process. One of the best examples of the supportive role is ICT, which is virtually pervasive in every process in most of today's organisations and provides services such as information feeding of internal monitor systems based on sales figures. Second, the way how technology is introduced can be seen itself as a process which consists of subsequent stages of adoption, implementation, use and effect measurement (Bouwman et al. 2005, 43).

### **3.1.5 Consultancy**

A consultant is a person who gives professional or expert advice (Dictionary.com 2017). According to a traditional definition in organisational management consultancy, consultants are recognised as knowledge actors who trade knowledge, expertise and experience, and through consultancy as a relational transfer process, they impact on structures, systems and organisational goals (Gunter et al. 2015, 518). Such process usually involves the consultant who combining the knowledge and tools of the profession with the client-specific information, knowledge and perceptions in order to reach tailored judgements, involving interaction between consultant and the client: in the lead type of consultancy, the client is usually unable to put information, knowledge and perceptions in a fully recursive manner together due to unclarity involved, which calls for the consultant to reach out. In other cases, the client may be able to articulate the items clearly, allowing an ideal form of interaction between the consultant and the client. Additionally, the trust and good chemistry between the parties facilitates the process (Tordoir 1995, 140).

The previous definitions can be used in generalising consultant as an expert in particular, specialised field(s), usually possessing wide range of different types of knowledge as well as ability to apply it, for instance, by using certain processes and technologies. The possession of such knowledge and its application by a consultant is often result of extensive accumulation of different knowledge and related personal experience over long period of time: for instance, an engineering consultant usually acquires years of formal education

and skills together with hands-on application of them at service of different organisations prior to entering in consultancy business. Given that in many fields of business and professions there does not exist official consultancy degrees or certificates as such, it is the accumulated knowledge, gained experience, and their various forms of demonstrations which effectively provide information on the degree of expertise provided by a consultant to potential customers: in the engineering consultancy (and depending on the type of engineering in question), outputs produced by an engineer, i.e. mostly different kinds of products, can provide the information which is present in various forms part of the product, such as visually sensible quality factors of the product which are available for everyone to evaluate, and which can be used by the potential customers as basis for evaluating the competencies of the engineering consultant.

### **3.2 Knowledge management: key theories and frameworks**

The previous definitions are reflected by majority of research on knowledge management and provide the conceptual basis for defining knowledge management itself and scope of its application as result. In this chapter, key theories and frameworks on knowledge management will be introduced alongside with its role/application in small organisations specifically according to existing research.

#### **3.2.1 Why knowledge management?**

There exist many definitions on knowledge management. According to Huysman & de Wit (Huysman & de Wit 2004), knowledge management is perceived as organizational practices that facilitate and structure knowledge sharing among knowledge workers. According to another definition by McInerney (McInerney 2002), knowledge management is an effort to increase useful knowledge within the organization by encouraging communication, offering opportunities to learn, and promoting the sharing of appropriate knowledge artifacts. Bhatt defines (Bhatt 2001) knowledge management as a process of knowledge creation, validation, presentation, distribution, and application, which allow an organization to learn and reflect as well as unlearn and relearn, which are usually considered essential for the building, maintaining, and replenishing of core-competencies.

Besides of outlining knowledge management, the previous definitions indicate about the nature of knowledge as well: knowledge is perceived as an important resource which is to be made of use within and for the benefit of an organisation. More specifically, knowledge is nowadays considered important for organisational strategy especially because of three

major developments: first, as the foundation of industrialized economies has shifted from natural resources to intellectual assets, executives have been compelled to examine the knowledge underlying their businesses and how that knowledge is used (Hansen et al. 1999, 106). At the same time, the rise of networked computers has made it possible to codify, store, and share certain kinds of knowledge more easily and cheaply than ever before (Hansen et al. 1999, 106). Finally, and partially influenced by the previous two developments as well, organisations are facing increasing global competition and increasingly dynamic environments, which drive organisations to employ diverse talent and expertise to new access to new markets and talents (Bhatt 2002, 31): accordingly, knowledge is perceived as means for gaining strategic competitive advantage by the organisation.

In essence, knowledge plays important role in modern organisations as part of supporting decision making, formulating organisational strategy and its execution, together with knowledge management activities being supported by modern information technology capabilities. However, in respect to other resources such as physical materials and production equipment, knowledge tends to be more complex to be utilised easily. As the previously provided definitions itself indicate, knowledge can stand for different things for different people. Consecutively, it is because of the very intangible nature of knowledge which has proven to be most challenging to be dealt with, as traditionally people in organisations have worked with physical and tangible resources for long-term forecasts and future schedules on production (Bhatt 2002, 31). It is for this reason why the knowledge management exists as discipline to begin with. Moreover, the complexity in using knowledge as a resource is related to the different forms of knowledge, traditionally classified as tacit and explicit knowledge.

### **3.2.2 Explicit and tacit knowledge**

Managing knowledge, which is perceived as an intangible resource, in organisation requires specification of types of knowledge which are to be managed. According to knowledge management research, most commonly used knowledge types are explicit and tacit knowledge. Tacit knowledge is more intangible by nature than explicit knowledge: originally defined by Nonaka, tacit knowledge is subjective, owned by individuals who have gained it by largely experience over periods of time, and which allows obtaining expected outcomes by knowing what to do and how to do it/them; given its personal nature, it is hard to formalise and communicate easily, usually requiring context-specific settings and hands-on application which demonstrates the existence of the knowledge in practice. Explicit knowledge, by contrast, is explicit by definition: usually perceived as objective in

respect to tacit knowledge, explicit knowledge is formally expressed by language, easily acquired, shareable, processed, and stored. Given its nature, explicit knowledge can function as basis for further knowledge creation (including tacit knowledge) and knowledge transfer between individuals.

In terms of organisations using these two major types of knowledge, studies and research on knowledge management highlight the importance of tacit knowledge which is to be harnessed for the benefit of organisational goals: as Nonaka points out (Nonaka 2007, 163), creating new knowledge is not simply a matter of “processing” objective information (i.e. explicit knowledge), but, rather, it depends on tapping the tacit and often highly subjective insights, intuitions, and hunches of individual employees and making those insights available for testing and use by the organisation as a whole. The key to this process is personal commitment, the employees’ sense of identity with the organisation and its mission, while mobilizing that commitment and embodying tacit knowledge in actual technologies and products require managers who are as comfortable with images and symbols as they are with hard numbers measuring market share, productivity, or return on investment (Nonaka 2007, 163). Making personal knowledge available to others is the central activity of type of organisation depending on knowledge, which Nonaka defines as the knowledge-creating company (Nonaka, 165). Harnessing knowledge into use for organisational benefit is dependable on the type of knowledge and the efficiency of the applied means used in the process. In particular and in respect to explicit knowledge, knowledge management activities such as knowledge acquisition and sharing of tacit knowledge usually require additional effort due to the sticky nature of tacit knowledge. Stickiness is the incremental expenditure involved in moving, transforming or converting (tacit) knowledge into a form that is useable and easily understood by the information seeker (Ipe 2003, 344). Therefore, tacitness of knowledge is a natural impediment to the successful sharing of knowledge between individuals in organizations (Ipe 2003, 344).

As the previous definitions by Ipe indicate, the different nature of knowledge types has further implications in respect to knowledge management activities within organisation involving sharing and acquiring knowledge in particular. The process of sharing knowledge to others successfully (and for the overall benefit of the organisation) is dependable on the recipient’s ability to acquire, understand and apply it as result of the process, and here the applicable methods based on the knowledge type in question have the most pivotal role. Lam (2000, 490) has outlined three areas involving knowledge management activities and their applicable methodology required according to the knowledge types. The areas are codifiability and mechanisms for transfer, methods for acquisition and accumulation, and the potential to be collected and distributed (Ipe 2003, 344):

- codifiability and mechanisms for transfer: in terms of formalisation and communication of knowledge (i.e. knowledge transfer), unlike explicit knowledge which can be formulated, abstracted and transferred across time and space independently of the knowing objects, tacit knowledge is difficult to transfer as it is action-oriented and has a personal quality aspect involved, requiring close interaction and the build-up of shared understanding and trust among the interacting parties. (Lam 2000, 490)
- methods for acquisition and accumulation: the methods for acquisition and accumulation of knowledge differ as well, as explicit knowledge can be generated through logical deduction and acquired by formal study, whereas tacit knowledge can be acquired through practical experience in relevant context (i.e. learning-by-doing). (Lam 2000, 490)
- potential to be collected and distributed: in terms of potential for aggregation and modes of appropriation, explicit knowledge can be aggregated at a single location, stored in objective forms and appropriated without the participation of the knowing subject, whereas tacit knowledge is personal, contextual, and distributive, and hence cannot be easily aggregated; instead, the realisation of its full potential requires the close involvement and cooperation of the knowing subject. (Lam 2000, 490)

Accordingly, the differences in methodology approaches in knowledge management activities indicate the distinctive nature of the knowledge types on high-level, and, at least in theory, allows the formulation of concrete knowledge management measures in respect to knowledge types per se. However, in reality the division of knowledge types is not always as clear as defined, as in some cases both types of knowledge may be at present and used at same time, in different degree, and applied in complementary manner. Further classification of forms of knowledge can be used in explicating the dependencies and contexts determining the types of knowledge and their degree, which in turn can be utilised in introducing knowledge management activities for dealing with the complexities in managing tacit and explicit appropriately.

### 3.2.3 Embrained, embodied, encultured, embedded and encoded knowledge

The distinction of knowledge types into tacit and explicit knowledge provides a highlight-level definition on the complexities involved in managing knowledge. A more in-depth classification based on this distinction provides further detailed specification of knowledge types, which can be utilised further in defining the interrelationship of tacit and explicit knowledge: first, as the previous chapter outlined, occasionally both types of knowledge are present and used together at same time. Additionally, conversion of knowledge from one type to another is calls for more detailed distinction and definition on the existence of the knowledge types. For the purpose, one useful classification suggested by Blackler summarizes (Blackler 1995) five types of knowledge involving tacit and explicit knowledge, namely embrained, embodied, encultured, embedded and encoded knowledge.

- **Embrained knowledge** is knowledge that is dependent on conceptual, skills and cognitive abilities, and abstract by nature. It is usually perceived as high-level knowledge of explicit type, yet may be tacit as well. (Blackler 1995, 1023)
- **Embodied knowledge** is action oriented and is likely to be only partly explicit. It depends on peoples' physical presence, on sentient and sensory information, physical cues and face-to-face discussions, is acquired by doing, and is rooted in specific contexts. (Blackler 1995, 1024)
- **Encultured knowledge** refers to the process of achieving shared understandings via sub-processes of socialisation and acculturation, hence making it tacit knowledge with social dimension involved. The understandings are likely to depend heavily on language, and hence to be socially constructed and open to negotiation. (Blackler 1995, 1024)
- **Embedded knowledge** is social tacit knowledge which resides in systemic routines. It is analysable in systems terms, in the relationships between, for example, technologies, roles, formal procedures, and emergent routines. Individual's skills are composed of sub-elements which become co-ordinated in a smooth execution of the overall performance, impressive in its speed and accuracy with conscious deliberation being confined to matters of overall importance; thus, they maintained, an organization's skills can be analysed. (Blackler 1995, 1024)

- **Encoded knowledge** is information conveyed by signs and symbols, traditionally perceived as books, manuals and codes of practice, and nowadays increasingly considered as information which is encoded and transmitted electronically. (Blackler 1995, 1025)

As the definitions by Blackler demonstrate, besides of the types of knowledge there exists degrees of knowledge, which means that introduction of the knowledge possessed by members of the organisation into the use for organisational benefit is dependable on the various conditions and factors involved in the context of knowledge. Moreover, the definitions enable in identifying existing sources of knowledge in organisational contexts, enabling further acquisition, using, sharing, storing and refining of existing knowledge as well as creation of new knowledge from it. In short, by identifying the types of existing knowledge and the related elements involved as starting point, the knowledge contained by various sources can be converted to organisational knowledge and hence harnessed for organisational benefit.

#### **3.2.4 Converting knowledge: SECI model**

Using the introduced types of knowledge, tacit and explicit knowledge, as well as the more in-depth classification provided previously, feasible models for knowledge management activities can be considered. In particular, the activities of interest resolve around harnessing the existing knowledge held by members of organisation into the use and benefit of organisation, involving knowledge retention as the primary activity: the introduction of usable models provides the theoretical methods for the purpose as well as facilitates in understanding the case specifics in respect to knowledge and related activities involved.

Among others, in SECI model defined by Nonaka et al. (Nonaka et al. 2000, 7) knowledge is created through interactions among individuals and/or between individuals and their environment via continuous process consisting of four conversion modes of socialisation, externalisation, combination and internalisation. The authors claim that there is need to recognise that tacit and explicit knowledge are complementary, and that both types of knowledge are essential to knowledge creation: explicit knowledge without tacit insight quickly loses its meaning, and hence new knowledge is created through interactions between tacit and explicit knowledge, rather than from tacit or explicit knowledge alone (Nonaka et al. 2000, 8). Accordingly, the four modes, or processes, can be used for the purpose as follows (visualised in Figure 1):

- **Socialisation** is the process of converting new tacit knowledge through shared experiences, that is, from tacit knowledge to tacit knowledge. Due to the nature of tacit knowledge, it can be acquired only through shared experience, such as spending time together or living in the same environment which is commonly applied in a traditional apprenticeship involving hands-on experience rather than using written manuals or textbooks. Socialisation may also occur in informal social meetings outside of the workplace, where tacit knowledge such as world views, mental models and mutual trust can be created and shared. Socialisation also occurs beyond organisational boundaries: for example, firms often acquire and take advantage of the tacit knowledge embedded in customers or suppliers by interacting with them. (Nonaka et al. 2000, 9)
- **Externalisation** is the process of articulating tacit knowledge into explicit knowledge. When tacit knowledge is made explicit, knowledge is crystallised, thus allowing it to be shared by others, and it becomes the basis of new knowledge. Concept creation in new product development is an example of this conversion process. The successful conversion of tacit knowledge into explicit knowledge depends on the sequential use of metaphor, analogy and model. (Nonaka et al. 2000, 9)
- **Combination** is the process of converting explicit knowledge into more complex and systematic sets of explicit knowledge. Explicit knowledge is collected from inside or outside the organisation and then combined, edited or processed to form new knowledge. The new explicit knowledge is then disseminated among the members of the organisation. Creative use of computerised communication networks and large-scale databases can facilitate this conversion. New knowledge gets created via synthesising knowledge from many different sources in one context. The combination mode of knowledge conversion can also include the 'break-down' of concepts, for example converting a corporate vision into operationalised business or product concepts which hence creates systemic, explicit knowledge. (Nonaka et al. 2000, 9)
- **Internalisation** is the process of embodying explicit knowledge into tacit knowledge. Through internalisation, explicit knowledge created is shared throughout an organisation and converted into tacit knowledge by individuals. Internalisation is closely related to 'learning by doing'. Explicit knowledge, such as the product concepts or the manufacturing procedures, has to be actualised through action and practice. For example, training programmes can help trainees to understand

an organisation and themselves. By reading documents or manuals about their jobs and the organisation, and by reflecting upon them, trainees can internalise the explicit knowledge written in such documents to enrich their tacit knowledge base. Explicit knowledge can be also embodied through simulations or experiments that trigger learning by doing. (Nonaka et al. 2000, 10)

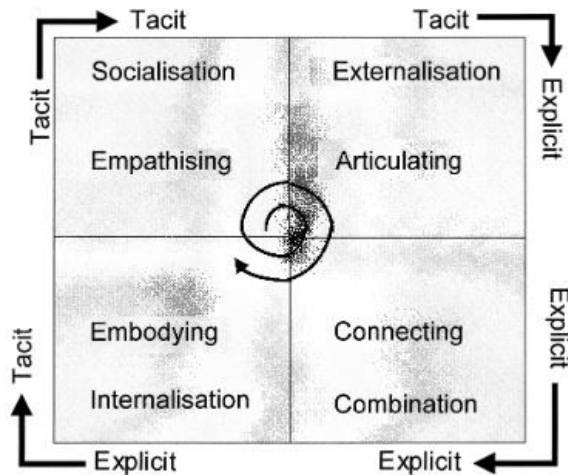


Figure 1. The SECI model (Nonaka et al., 12).

By taking the previous outlining on conversion types as theoretical starting point and basis for further actions, we can consider implementation options on turning case specific knowledge into adoptable forms for successful knowledge transfer and other knowledge management activities required as part of knowledge retention. As part of the processes, organisations need to consider the specifics in organisational contexts involved, and especially those which are likely to affect on knowledge management activities as potential bottlenecks.

### 3.2.5 Challenges in knowledge management

According to the research on knowledge management, there exists different types of challenges which impact on ability to manage knowledge effectively in the organisational context. As defined under "3.1.1 Knowledge", knowledge can be viewed as residing within the individual, and the primary role of the organization is knowledge application rather than knowledge creation (Grant 1996, 109). This definition reflects the very issues involved: the organisation can be as successful in knowledge management as far as it is able to utilise the knowledge of its knowledge sources, the personnel of the organisation. In other words, the potential barriers involved in knowledge management activities such as knowledge sharing are related to organisation (not supporting sufficiently sharing activities

in terms of resources, management commitment or organisational culture), or individuals (lack of contacts in organisation, unwilling to share knowledge due to internal competition etc.). Additionally, technology can be a barrier as well: for instance, there may be lack of integration between IT systems or support for using them in the organisation, hence limiting efficient knowledge transfer between individuals. Sometimes these barriers cumulate together: for instance, using technology for sharing gets hampered or blocked altogether by the lack of required technological skills of the individuals working in the organisation. The role of the three barriers, i.e. organisation, individuals and technology, in knowledge sharing in organisations have been extensively covered by Riege (2005) who has proposed synergy of three factors accordingly the defined barriers for successful knowledge management:

- motivation, encouragement, and stimulation of individuals to capture, transfer, and apply existing and newly generated useful knowledge, especially tacit knowledge
- flat and open organisational structures that facilitate transparent knowledge flows, processes and resources that provide a continuous learning organisational culture, clear communication of company goals and strategy linking knowledge sharing practices and benefits to them, and leaders who lead by example and provide clear directions and feedback processes; and
- modern technology that purposefully integrates mechanisms and systems thereby providing a suitable sharing platform accessible to all those in need of knowledge from diverse internal and external sources. (Riege 2005, 31)

The previously defined challenges in knowledge management in organisations are especially common when knowledge plays significant role in creation of products or services. As Carlile (2004) has pointed out, creating complex product or service often requires differences in the amount and type of knowledge, and this in turn creates differences in levels of experience, terminologies, tools, and incentives that are unique to each specialized domain (Carlile 2004, 556). These differences, which are effectively differences in knowledge of the parties involved, are then experienced between the parties working together within the organisation, and hence effectively demonstrating the existence of knowledge boundaries between them. Carlile (2004, 558-559) defines three knowledge boundaries of significance for knowledge management, which are syntactic, semantic and pragmatic boundaries: The syntactic, or information-processing, approach refers to the need to have a common language for different parties to communicate, so that the knowledge can be transferred between them. Given the chance of misinterpretation of the

language however, the transferred knowledge must be translated as well in order to spot differences to generate common meanings, which is achieved over semantic or interpretative boundary to provide means of sharing and assessing knowledge at boundary (Carlile 2004, 558, 560). Finally, at pragmatic boundary the parties must be able to represent the current and more novel forms of knowledge, learn about their consequences, and transform their domain-specific knowledge accordingly for sharing and assessing knowledge at the boundary (Carlile 2004, 559). However, although the common ground gets established as result, it is customary that parties tend to reuse the acquired knowledge, hence generating further mismatches between the parties (Carlile 2004, 565). To overcome this and to ensure that the knowledge management across the boundaries will be carried out effectively, Carlile suggests an iterative approach involving knowledge processing based on the boundary types where actors get better at developing an adequate common knowledge for sharing and assessing each other's knowledge (Carlile 2004, 563).

### **3.3 Knowledge management in small organisations**

The mainstream focus of knowledge management research such as those on the previously defined topics has primarily focused on mid- to large-sized organisations traditionally. However, there exists research studies which have taken focus on small organisations specifically. In this chapter, small organisations will be specifically discussed based on the applied terminology according to existing research, however, the content is applicable in respect to micro organisations (as outlined under '3.1.2 Organisation') as well.

Small organisations in terms of business organisations can be defined as independent businesses which are managed by owner or part-owners and which have a small share of the market (Wong & Aspinwall 2004, 43). Wong and Aspinwall (Wong & Aspinwall 2004, 46) have identified certain roles and functions which define small organisations (in terms of small businesses) in respect to larger organisations: they provide entrepreneurship opportunities to individuals who are not inclined in working large organisations, hence being a route to expressing their skills and abilities, and preferred way of working; they are sources of innovation in new products, services, processes and work practices; they contribute by supplementing products and services offered, often operating in niche and specified markets which are not expedient for larger firms to enter, and hence providing something different from the more standardised products and services of others; and they function as specialists in the fields of business which contributions benefit larger organisations as part of their activities.

Small organisations are profoundly different in terms of organisational size in particular, and this has had impacts in respect to knowledge management as well. As Wong and Aspinwall point out (Wong & Aspinwall 2004, 47), while benefits such as improvement and value creation from knowledge management are commonly shared by organisations regardless of their size and form, it is the small organisations which are especially more dependable on knowledge and its management than the large ones as it gives them a way to leverage vital benefits such as improved competency, efficiency, decision making, innovation, responsiveness to customer and knowledge sharing. However, as Wong and Aspinwall point out (Wong & Aspinwall 2004, 48) on various researches, majority of small organisations lack understanding on knowledge management, and they have been slow in adopting the related practices. They point out a set of advantages (and disadvantages) for implementing knowledge management (KM) in small organisations as shown on Table 1.

Table 1. Advantages and disadvantages of small businesses in knowledge management (KM) implementation (Wong & Aspinwall 2004, 52).

	<b>Advantages</b>	<b>Disadvantages</b>
<b>Ownership and management</b>	<ul style="list-style-type: none"> <li>• Centralised decision making and control enables efficient drive for KM</li> <li>• Close to the level of implementation enables deeper understanding on KM</li> </ul>	<ul style="list-style-type: none"> <li>• Difficult to recognise need for change, limited time to focus on KM</li> <li>• Lack of skills and competences may limit KM implementation</li> </ul>
<b>Structure</b>	<ul style="list-style-type: none"> <li>• Simple structure, easier to implement</li> <li>• Shorter, direct communication, faster implementation</li> </ul>	<ul style="list-style-type: none"> <li>• Low degree of specialisation may limit KM implementation</li> </ul>
<b>Culture and behaviour</b>	<ul style="list-style-type: none"> <li>• Unified, fluid culture and corporate mindset: foundation for and understanding on KM goals in organisation</li> </ul>	<ul style="list-style-type: none"> <li>• Authoritative, uncommitted and knowledge unfriendly owner-managers may limit KM implementation</li> </ul>
<b>Systems, processes and structures</b>	<ul style="list-style-type: none"> <li>• Simple, people dominated systems and flexible processes, agile implementation</li> </ul>	<ul style="list-style-type: none"> <li>• Less formalisation and standardisation, resistance of introducing formalised KM</li> <li>• Lack of formal procedures may impede efficient working of KM system</li> </ul>
<b>Human resources</b>	<ul style="list-style-type: none"> <li>• Fewer people, faster initiation of change</li> <li>• Intimate relationship, better for gaining support for KM</li> <li>• Better collaboration, easier to organise KM initiative</li> </ul>	<ul style="list-style-type: none"> <li>• Staffing constraint limit assignments to implement KM</li> <li>• Lack of experts/educated employees to initiate KM</li> <li>• Lack of training can result in employees having less KM skills</li> </ul>

As the information on Table 1 indicate, small size of organisation is both an asset as well a limitation for introducing knowledge management. Accordingly, as Wong and Aspinwall conclude, the existing resources ultimately define implementation of knowledge management in small organisations, and they redefine knowledge management in the context of small organisations as 'the management of knowledge-related processes or activities,

based on realistic resources in order to create competence, value and continual success for the organisation' (Wong & Aspinwall 2004, 58).

It is therefore of essence that transfer of existing knowledge in organisation, or knowledge conversion as specified by the SECI model, considers this profound organisation-dependent requirement. For the purpose, small organisations need to leverage various means which can make up the resource limitations and facilitate conducting knowledge management activities. One of the means which is suggested by recent knowledge management research is modern information technology and its options which are nowadays available easily for adoption regardless of size or other features of organisations.

### **3.4 Role of IT in knowledge management**

Introduction of knowledge management as a discipline in 1990s coincided with the emergence of major technological enablers in information technology (Wikipedia 2017a). Since then technological advancements in information technology have resulted in various disruptions over the past couple of decades, for example, evolution of networking technologies and wireless area networks have enabled fast and ubiquitous access to Internet, and computers have become commonplace due to the development of smaller yet increasingly powerful microprocessors. This has resulted in increasing utilisation of IT as part of knowledge management as well: in fact, modern IT has enabled the creation of software-based knowledge management systems which are customisable and scalable for the use of different types of organisations. Many of these systems are effectively facilitating knowledge management activities such as knowledge transfer, or conversion as specified by the SECI model. Most importantly for this thesis, the systems present an option to consider in order to implement the required means for knowledge management.

In this chapter, modern IT options for knowledge management systems will be introduced and evaluated for the purpose of their application as the example organisation of the case in mind. Before doing so however, we will briefly examine role of IT for knowledge management in organisations according to existing research.

#### **3.4.1 Role of information technology in knowledge management strategies**

Given the technological developments during the past couple of decades, the rise of networked computers has made it possible to codify, store, and share certain kinds of

knowledge more easily and cheaply than ever before (Hansen et al. 1999, 106). This has, in turn, resulted in adoption of knowledge management strategies where utilisation of IT plays different parts. For instance, Hansen et al. (Hansen et al. 1999, 106-107) noticed in their studies that in some consultancy firms the strategy centers on the computer: according to this codification strategy, knowledge is carefully codified and stored in databases, where it can be accessed and used easily by anyone in the company. Knowledge is codified using a “people-to-documents” approach, that is, it is extracted from the person who developed it, made independent of that person, and reused for various purposes (Hansen et al. 1999, 107). This codification strategy can be reflected with another strategy used by consultant firms known as personalisation strategy which represents more of the traditional form of tacit-oriented knowledge transfer, as shown on the Table 2. The personalisation strategy takes advantage of IT as well, however instead of turning tacit knowledge into explicit knowledge as it is the case with the codification strategy, the personalisation strategy makes use of IT in enabling interpersonal interaction and communication for tacit knowledge activities.

Table 2. How Consulting Firms Manage Knowledge (modified from Hansen et al. 1999, 108).

	<b>Codification</b>	<b>Personalisation</b>
<b>Competitive Strategy</b>	Provide high-quality, reliable, and fast information-systems implementation by reusing codified knowledge	Provide creative, analytically rigorous advice on high-level strategic problems by channelling individual expertise
<b>Economic Model</b>	Reuse Economics Invest once in a knowledge asset, reuse many times	Expert Economic Charge for customised solutions to unique problems.
<b>Knowledge Management Strategy</b>	People-To-Documents Develop an electronic document system that codifies, stores, disseminates, and allows reuse of knowledge	Person-To-Person Develop network for linking people so that tacit knowledge can be shared
<b>Information Technology</b>	Invest heavily in IT to connect people with reusable codified knowledge	Invest moderately in IT to facilitate conversations and exchange of tacit knowledge
<b>Human Resources</b>	Hire graduates who are suited to reuse of knowledge and implementation of solutions Train people through computer-based learning	Hire graduates who like problem solving and can tolerate ambiguity Train people through one-on-one mentoring
<b>Examples</b>	Andersen Consulting, Ernst & Young	McKinsey & Company, Bain & Company

The previous outlining by Hansen et al. (Hansen et al. 1999), while reflecting major consultancy companies, provides a more generic definition on the role of IT for organisations in knowledge management: that is, according to codification strategy, IT in form of information systems is perceived as means for turning tacit knowledge held by individuals in organisations into explicit knowledge forms which will be effectively organisational knowledge available for other members of organisation. On the other hand, IT can also play (although lesser) part in personalisation strategy as well by facilitating the communication between parties involved in transfer of tacit knowledge.

Saito et al. (Saito et al. 2007), as part of their research for distinguishing and describing knowledge management technologies according to their support for strategy, have used the previous strategies as basis in classifying knowledge management component technologies, or ICT tools, according to their support for two main knowledge management activities (defined as knowledge strategies by the authors), i.e. knowledge transfer and creation.

Table 3. Component technologies according to the type of support for strategy (Saito et al. 2007, 107).

	<b>Personalisation</b>	<b>Codification</b>
<b>Creation</b>	<i>Collaboration</i> Connectivity Communication Authoring Collaboration Community Creativity Workflow	<i>Discovery</i> Storage Search Analytics Data mining Text mining Web mining Visualisation
<b>Transfer</b>	<i>Dissemination</i> Connectivity Communication Authoring Distribution E-learning Collaboration Community	<i>Repository</i> Connectivity Storage Authoring Search Workflow Organisation Reasoning

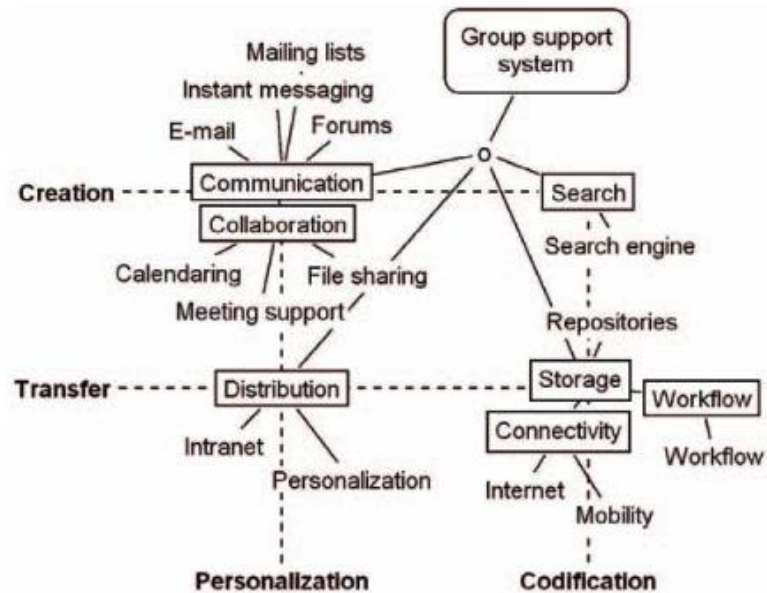


Figure 2. Component technologies integrated into knowledge management applications (Saito et al. 2007, 107).

The mapping of the use of the technologies in knowledge creation or transfer and in terms of either personalisation or codification is shown on Table 3 and in Figure 2 according to Saito et al. The high-level definitions of the technologies involved are defined in detail as follows (modified listing according to Saito et al. 2007, 107-108):

- Storage: Databases, repositories, file-servers, data warehouses, data marts.
- Connectivity: Internet, security, authentication, wireless networking, mobile computing, peer-to-peer.
- Communication: E-mail, mailing lists, discussion groups, chat, instant messaging, audio/video conferencing, web seminars, voice over IP.
- Authoring: Office suites, desktop publishing, graphic suites, multimedia.
- Distribution: Web, intra/extranets, enterprise portals, personalization, audio/video streaming.
- Search: Search engines/agents, indexing, glossaries, thesauri, taxonomies, ontologies, collaborative filtering.
- Analytics: Querying, reporting, multi-dimensional analysis (on-line analytical processing, OLAP).
- Workflow: Process modelling, process engines, etc.
- E-learning: Interactive multimedia (computer-based training, CBT), web seminars, simulations, learning objects.

- Collaboration: Calendaring, file sharing, meeting support, application sharing, group decision support.
- Community: Community management, web logs, wikis, social network analysis.
- Creativity: Cognitive mapping, idea generation.
- Data mining: Statistical techniques, multi-dimensional analysis, neural networks.
- Text mining: Semantic analysis, Bayesian inference, natural language processing.
- Web mining: Collaborative profiling, intelligent agents.
- Visualization: 2D and 3D navigation, geographic mapping.
- Organization: Ontology development, ontology acquisition, taxonomies, glossaries, thesauri.
- Reasoning: Rule-based expert systems, case-based reasoning, knowledge-bases, machine learning, fuzzy logic.

In general, use of IT as part of knowledge management in organisations is nowadays mainstream in enabling the SECI model-oriented conversion of knowledge in various organisational contexts, and supporting both codification of tacit knowledge into explicit forms as well as the personalisation strategy for facilitating interpersonal communication. In respect to organisational specifics, the use of the listed technologies in implementing knowledge management strategies depends of the size of organisation: larger organisations are likely to depend on the use of wider set of organisation-specific customised communication methods such as mailing lists, discussion groups and web webinars in increasing collaboration as part of implementing personalisation strategy across the organisation, whereas in smaller organisations it may be sufficient to utilise email and chat provided by ICT companies as standard tool sets. The size of organisation also defines the extent of which the IT can be adopted; after all, as indicated on '3.3 Knowledge management in small organisations', the resources (financial, personnel) available define the adoption rate and use of IT. In addition, the targeted scope of use for knowledge management determines the level of introduction.

Accordingly, key requirements stand out as elementary for implementing IT based knowledge management systems in different organisations: first, the knowledge management systems need to be scalable based on the size of organisation in question. Ease of use is another crucial factor, as not every organisation will have the resources to hire experts for running knowledge management systems, hence requiring them to utilise existing human resources and their capabilities for developing sufficient IT competencies for

using knowledge management systems. Pricing of the solutions needs to match the organisation's financial resources. The latest developments in IT have been paramount in fulfilling these requirements.

### **3.4.2 Cloud-based solution options**

Innovations in IT during the past couple of decades have been introduced to meet the previous requirements, hence facilitating adoption of IT with ease, matching pricing and enabling scalability especially for knowledge management of growing amount of data of different sizes. In particular, cloud computing and its solutions have become one of the paradigms which fulfils these requirements while also supporting and enabling the component technologies specified by Saito et al Saito et al. (Saito et al. 2007, 107) for implementing knowledge management strategies. According to Sultan (Sultan 2012, 161), cloud computing is a modality, that uses advances in ICTs such as virtualization and grid computing for delivering a range of ICT services through software, and virtual hardware (as opposed to physical) provisioned (by data centres owned and operated by cloud providers and/or end users) according to user demands and requirements and delivered remotely through public (e.g., Internet), private networks or a mix (i.e., hybrid) of the two delivery modes. The provided ICT services include:

- business-related computer programs (software as a service, SaaS)
- fast and almost unlimited processing capabilities and large and almost unlimited storage facilities (infrastructure as a service, IaaS)
- development tools and hosting options for clients preferring to create and manage their own Web applications (platform as a service, PaaS). (Sultan 2012, 161).

Cloud computing services can be provided by cloud vendors through their data centres (public clouds) and end users (i.e., client organizations) using cloud software installed on their own data centres (private clouds) or installed on their own and other cloud vendors' data centres (hybrid clouds). The authors also draw attention to "community" clouds (often touted as another possible addition to the other three modalities). These types of cloud can be provided (often by one organization) and consumed by groups of organizations in businesses or professions similar to that of the providing organization. (Sultan 2012, 161). Given the potential provided by cloud computing in form of the ICT services which can meet the requirements of different organisations, several major IT companies and other organisations have started to provide cloud-based solutions which can be tailor for implementing knowledge management systems and related activities according to the specific

needs of organisations. For instance, Microsoft and Salesforce have each branded their own knowledge management solutions which address the component technologies defined previously. In addition, there exists open-source based solutions such as Moodle, Drupal, MediaWiki and WordPress (Powerful Media Management) which can provide sufficient features for implementing a custom knowledge management system based on Web 2.0 technology. Here, solutions applicable specifically for small organisations by Microsoft and Moodle will be examined more in detail.

### Microsoft SharePoint Online

Microsoft's SharePoint Online is a cloud-based knowledge management software tool which allows users to create and publish websites without any programming involved, just by selecting or modifying components such as themes, templates, Web parts (widgets), and data structure elements available within this platform. With little effort and technology expertise, site administrators can create sophisticated structures such as blogs, wikis, newsfeeds, discussion boards, surveys, and email distribution lists that are commonly found in the best Web-based communities and portals. (Sultan 2012, 163) It can be purchased in the cloud as a standalone offering or as part of an Office 365 suite, where one also gets access to Exchange, OneDrive for Business, Skype for Business, the Office clients, and web apps (SharePoint 2017). Accordingly, among key pros are integration with other Microsoft tools like Outlook Office (both cloud-based and local versions), and extended design customisation via development tools such as SharePoint Designer and/or Visual Studio (Sultan 2012, 163).

Currently there exists three different plans for customers to consider: among the key features, the cheapest option (\$5 user/month), which is specifically targeted for small and mid-sized businesses, provides 1 TB of OneDrive storage per user, sharing files securely inside or outside of organization, sync local copies of files or folders offline, co-authoring in real time in familiar Microsoft Office apps, connecting with others with intranets and portals, using team sites to connect teams to content, expertise, and processes, organization and management of content in libraries and lists, and records management (Office Products 2017). The other two plans are extended with further features such as unlimited OneDrive storage, the expensive one (Office 365 Enterprise E3, \$20 user/month) providing all Office applications and services as part of the package. (Office Products 2017)

### Moodle

Moodle is an open source knowledge management system that is specifically meant

for learning content management. It is a modular system, and an enterprise can create plugin-based solution in order to solve individual needs for an enterprise. Moodle is Web based solution that can be deployed on cloud infrastructure, so it can be called cloud-based learning management solution. (Balina et al., 131) The features include interface which is easy to use both desktop and mobile devices, collaborative tools and activities such as forums, wikis, glossaries, database activities, file management which allows drag and drop files from cloud storage services including MS OneDrive, Dropbox and Google Drive, simple and intuitive text editor for formatting text and conveniently adding media and images with an editor that works across all web browsers and devices, automatic notifications and private messaging. Furthermore, besides of the previous Moodle includes advanced administration features such as user management, language selection, integration with external applications and plug-in management, and educational management features. (Moodle Features 2017)

Using Moodle is free of charge, with open source under the GPL licence. It requires own web server with PHP and a database, which stands for need of having related IT competencies in order to set up the system, and a server computer to run them all. (Moodle Downloads 2017) There exists range of development documentation, demonstrations and other material to support the creation and use of Moodle-based knowledge management systems, hence facilitating the introduction and further adoption.

## **4 Arts and knowledge**

As an introduction and to the characteristics and specifics on the example organisation of case study which involves arts as form of business, the topic of arts (visual arts in particular) will be briefly covered here in respect to the concept of knowledge in mind.

Arts encompasses wide range of creative activities such as painting, sculpture, music, theater, literature, etc., considered as a group of activities done by people with skill and imagination (Merriam-Webster 2017). According to Wikipedia, the arts represent an outlet of expression that is usually influenced by culture in society and which in turn helps to change culture: in the most basic abstract definition, art is a documented expression of a sentient being through or on an accessible medium so that anyone can view, hear or experience it, while the act itself of producing an expression can also be referred to as a certain art, or as art in general (Wikipedia 2017c). Besides of skill and imagination, in the field of visual art usually some form and types of physical material are involved as input for the arts creation process in producing works of art which as output reflects the artistic intent, interpretation or vision. As Solinger (2015) has pointed out, the Western psyche holds onto the belief that the arts are not demanding intellectually and are meant for amusement, while according to research it is well known that art classes teach students to “think visually, analytically, critically, and creatively” (Solinger 2015, 99).

### **4.1 Visual arts as form of knowing**

As the previous definition by Solinger suggests, thinking is elementary in arts creation. According to Sullivan (2010), visual arts involve thinking, and imaginative thinking is never fixed as it embraces what is known and unknown. By doing so, artists are versatile in using insights and intuitions to bring ideas to fruition in ways that might initially appear strange or novel but in retrospect can seem entirely appropriate. For many artists, imaginative thoughts may arise in planning, during the process of making, as a consequence of critical reflection, or through meanings made by others. The significant others can include art writers, cultural critics and art teachers, for when artworks are made and displayed, they open up an opportunity to think and learn, not only about visual arts, but also about other relevant issues of personal concern and public importance. (Sullivan 2010, 133)

In terms of understanding thinking related to visual arts, Sullivan has introduced the term of visual arts knowing: it describes visual cognition as a biological and cultural construct where mindful practices are structured, framed, and embodied, and which take place

within, across, between, and around the artist, artwork, viewer, and setting as an ongoing dialogue for co-constructing meaning. Therefore, the process of coming to know is recursive and purposeful in nature as meaning is created and critiqued. Sullivan describes this capture of the movement of artistic mind as transcognition: it is a process of visual arts knowing where the forms, ideas, and situations are informing agents of mind that surround the artistic self during visual arts practice, involving iteration and negotiation as individual purpose is mediated by situational factors over time. Due to the dependency on different forms of interaction involved as part of the process, the emphasis is on metacognition, as reflective processes are invoked in a dialogic manner. (Sullivan 2010, 133)

As part of defining visual arts knowing by using general domains of research associated with empiricist, interpretivist, and critical paradigms, Sullivan has proposed a visual arts framework (Figure 3) which is a model of perspectives and practises which capture visual arts knowing as intersecting the different related forms of thinking involving language, medium, and context. Accordingly, the interpretivist tradition emphasises metacognition as reflective processes are dialogic; within empiricist traditions, the relationships between the form and content of thinking within mind-body mix is distributed cognition and the thinking structures are symbolic; and where critical purposes are paramount, thinking occurs as situated cognition and the thought processes are responsive. (Sullivan 2010, 134)

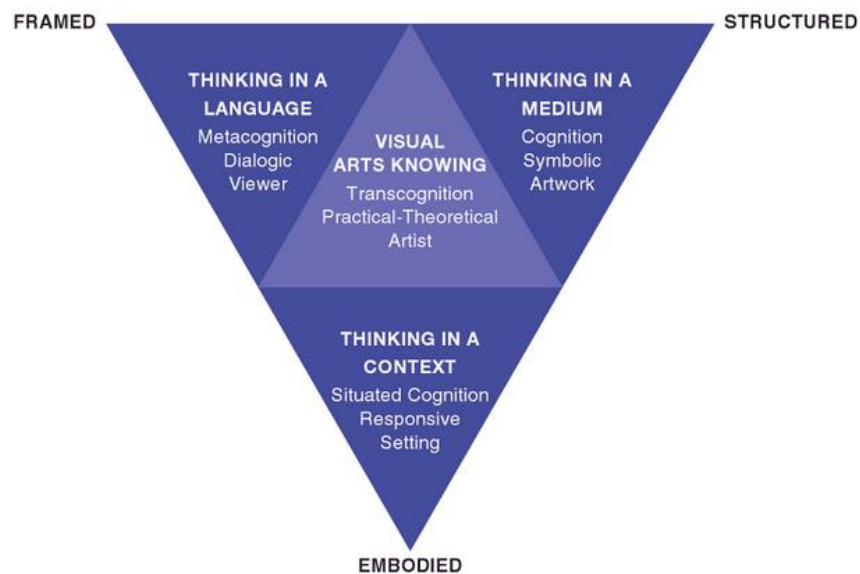


Figure 3. Framework of Visual Arts Knowing (Sullivan, 134).

According to Sullivan (Sullivan 2010, 135, 137), characteristics of the different forms of thinking perspectives are as follows:

- Thinking in a medium: artistic thinking is the consequence of thought and action that is given form in a creative product
  - art product is an outcome of artistic thinking, forming a basis for answers on how art knowledge is acquired and represented
  - artists think in a medium, particular dispositions and habits of mind help individuals give form to meaning during the process of making
  - thoughts are structural bits of cognition that help grasp the meaning of relationships, which exist empirically in the world
  - using empirical inquiring, studying perceptual processes is the best way to understand visual thinking (Sullivan 2010, 135)
  
- Thinking in a language: artistic thinking is based on language and its application (discourse, critique) in respect to arts
  - cognition as a socially mediated process
  - focus is on making sense out of intrinsic way language is used to construct stories and meanings through art or discourse sparked by encounters with art (language and narrative constructions with images and objects)
  - meanings are made through encounters with artwork that generates art talk (Sullivan 2010, 137)
  
- Thinking in a context: artistic thinking is based on context as an informing agency in learning and understanding
  - context encompassing human involvement, situational factors, physical features, and other environmental and cultural cues that become part set of factors influencing thinking
  - context-based thinking as situated cognition where thinking takes place within a mediated system that includes the self, others, and the artefacts we use
  - also called as socio-cultural cognition: reality as a social construct, understandings emerge as consequence of common-sense transactions in language and other forms of communication
  - acknowledging art practices as distributed cognitive processes offers opportunity to capture the scope of thought and action that artists generate (Sullivan 2010, 137)

## 4.2 Arts in respect to knowledge types

The previous definitions inherently indicate that arts can be perceived as combination of explicit and tacit knowledge: particular theories, techniques and styles of arts as defined by arts literature represent the explicit form traditionally, whereas their application by artists involves a complex set of tacit-based creation processes involving individual thinking of the artist which is reflected by the world around her/him. With the two forms of knowledge involved, the previous definitions also indicate that tacit knowledge is the most important in artistic endeavours, as it is the tacit based knowledge which allows to utilise the means of arts creation including explicit knowledge which results in producing unique works of art. And, again, as the definitions indicate, extracting that tacit knowledge as input and for the benefit of arts creation process usually involves additional elements beyond personal boundaries of the artistic individual. As result, lots of tacit knowledge is involved in the process as input, and similarly tacit knowledge will be introduced, especially in embrained, embodied and embedded forms as output in forms of created works of art.

The essence of the framework by Sullivan (2010) is in describing visual arts knowledge as form of thinking which gets reflected by multiple factors besides of and in interaction with the artist, the creator of art works. As related to one of the most common situation in sharing and acquiring arts knowledge in practice, the importance of this interaction is highlighted when the learning process in arts creation takes place between the art teacher and student(s): in fact, the process involves the knowledge conversion processes as specified by the SECI model, especially socialisation and internalisation processes. In contrast to the different forms of teaching such as online lectures, teaching visual arts has traditionally taken, and still nowadays is taking, place in location contexts where both teacher and students are physically present at same time. Besides of teaching theories, techniques and styles together with usually related questions and answers involved, this form of teaching serves the purpose of allowing teacher to provide immediate feedback towards student(s) during the arts creation processes where the theories, techniques and styles are put in practice. To view it differently, this socialisation-based interaction in teaching and learning visual arts can be perceived as a form of co-creation which involves several knowledge dimensions and processes which are based on different forms of knowledge held by the teacher and student(s) as well as demonstrated by the works of art. In describing the complexity of modern design processes involving user, technological, business and knowledge domains which are combined by and managed by methodological knowledge (as visualised on Figure 4), Alamäki has indicated that socio-constructive knowledge co-creation plays a crucial role in the design processes (Alamäki 2017, 16). Similarly, arts creation process via learning and teaching is heavily dependable on the co-

creational activity where students provide arts creation works as outputs of the formal explicit theories, techniques and styles which have been provided as inputs prior the creation process, and in turn these creation works function as inputs towards the teacher to reflect on one's own, tacit-like knowledge as well as the student's ability to consume and apply the formal learning as well as reflect that learning in respect to prior experience.

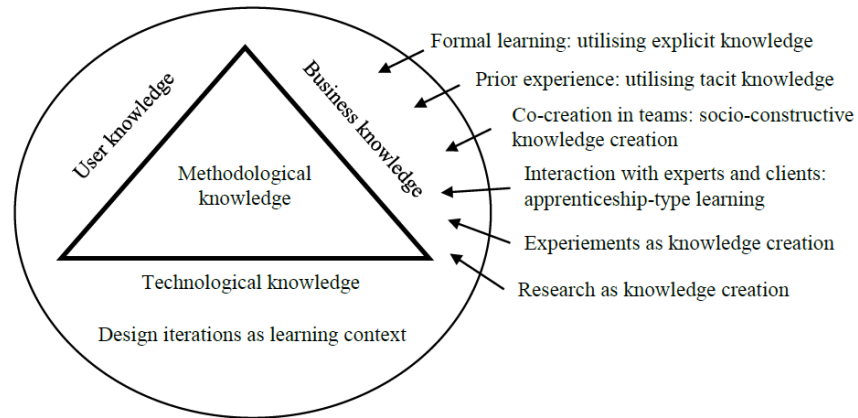


Figure 4. The knowledge dimensions and processes in the educational context where students learn by designing technological products and services (Alamäki 2017, 16).

## **5 Case study: Arts consultancy by Marja-Liisa Rinnekangas**

The review on key theories, knowledge management specifics in small organisations and application solutions according to existing knowledge management research as well as introduction to arts on previous chapters have provided informational basis on knowledge management and specifics which can be reflected on when conducting the case study. In the case study, accordingly the information basis the interest is placed on small and micro organisations consisting of one or more persons, and applicability of the knowledge management theories and solutions in the context: in particular, the interest focuses on maintaining existing knowledge and developing methodology for further knowledge management activities, especially for the cases where knowledge transfer forms a pivotal part of organisational continuity such is the case of business hand-over from owner to another.

As application context for the purpose, a private business organisation was chosen for the case study. The organisation is run by one person and it functions in the line of visual arts which involves a variety of different specialized arts skills-based activities. The interest is focused on learning how and what knowledge processes take place in the organisation, what kind of technological or other means are or could be used as part of the processes, and how new methods for them could be introduced given the resource-constrained nature of the organisation in mind. In order to examine these areas of interest, an interview with the owner of the organisation was conducted: the interview encompasses questions on background of the organisation, knowledge management activities, marketing and awareness creation, and role of IT in respect to knowledge activities of the organisation (as shown on Appendix 1). The answers over to the questions will be outlined together with analysis against the knowledge management theories and frameworks which were introduced previously. As follow-up activity to deepen understanding on the types of knowledge involved in the organisational activities, Bloom's taxonomy (Appendix 2) was applied to extract further details on knowledge such as prerequisites involved. The outcomes of these analysis can be utilised in determining the knowledge specifics as related to the organisational context and field of business, which provides inputs in deciding further activities for knowledge retention of the organisation.

### **5.1 Background**

Marja-Liisa Rinnekangas has been practising as arts professional and private entrepreneur since 1989. During three decades, the areas of practice have included variety of areas of creating visual arts such as painting, sculptures, art graphics, space arts, event

decoration, postal cards and photography, as well as providing teaching and other forms of arts consultancy in drawing, painting, art graphics, advertisement and colour psychology, among others. She has held over 100 private art exhibitions, and about 80 co-held art exhibitions. She has taught approximately 5000-6000 students, both privately as well as in public education organisations. Furthermore, she has been active in local art society activities. Given the length of professional experience, she has gained extensive knowledge on various fields of visual arts.

### **5.1.1 Key activities and processes**

According to the answers to the questions on Background (Questions on “1 Background” on Appendix 1), the lines of business of organisation can be roughly divided into categories: arts creation (or, art production) and art consultancy. The art consultancy encompasses variety of activities particularly in teaching art which effectively is about teaching arts creation by using specific techniques and styles of painting and sculpturing, for instance.

In terms of process categorisation, the arts creation activities encompass following areas (and techniques):

- painting (watercolour, oil, acrylic)
- hand-made paper creation (cotton-linen)
- art graphics (intaglio by etching, monotypes, carborundum)
- painting construction (framing complete art graphics and hand-made paper)
- sculpturing (plaster, clay, paper clay)
- video editing (VHS, computer based)
- design, creation and illustration of post cards, invitation cards, posters, advertisements
- graphics designing (computer based)

Arts consultancy activities encompass following areas:

- teaching of arts creation activities
- curating and designing of art exhibitions
- visual consulting

Each of the processes vary in degree of complexity and specialisation involved: for instance, arts creation by using paper clay technique requires degree of training by doing with phases involved, guided by detailed instructions from a teacher to ensure the expected outcome. As another example, the creation of art graphics requires hands-on practicing with relevant tools like printing press and plates, with the teacher showing how the

entire printing process with various phases is conducted. Setting up an art exhibition requires visual sense in placing the items according to the facilities available while theming of the exhibition and items. Furthermore, the defined top categories are interconnected, as skills and expertise in arts creation are acquired first in order to be able to provide the variety of arts consultancy skills in turn. This has impacts in defining the nature of the organisation and its primary line of business: while the arts creation encompasses wide range of activities, it is the arts consultancy where they are put in use i.e. in teaching in particular. Given that the activities in arts consultancy form the major part of the two high-level categories, the organisation can be described as functioning primarily in the field of arts consultancy.

As an essential support activity of the top categories, organisation has conducted promotional and marketing activities in various ways (Question on “3 Marketing / Awareness creation” on Appendix 1). Contacting other, private and public organisations via advertisement for promoting the art exhibitions have been used, previously via physical letter invitations and interviews to radio and newspaper media but nowadays mostly using email. Art exhibitions provide an opportunity to present the arts creations and also to promote the arts consultancy services to the visiting audience and getting touch in them in person. Here, the ability to create a compelling promotion via use of visualisation means plays essential role in storytelling, hence signalling about the level of expertise to the potential customers and consecutively gaining their attention: in other words, the art exhibitions can be utilised indirectly to promote the courses and the skills and competencies of the artist towards potential customers. Having opportunity to meet the artist personally at the exhibitions allows the audience to personally meet the creator of the art works who can provide further information over the works and courses: this allows the audience to gain knowledge on the authenticity of the information, which has importance in ensuring authenticity of the art works for instance.

## **5.2 Key knowledge management activities**

Given the level of expertise involved in the arts creation and arts consultancy as well as the range of specialisation areas, knowledge forms an essential basis for running the lines of business by the organisation. In addition, since the organisation is run by one person only, it can be deduced that the different types of organisational knowledge in the case are interconnected with personal knowledge of the owner and the related activities involved. According to Marja-Liisa Rinnekangas, knowledge processes in terms of methodology have evolved since she first started studying the trade in 1988. Accordingly with this

as starting point, relevant topics over role of knowledge in organisation will be discussed next (Answers to Questions under “2 Knowledge related activities”).

### **5.2.1 Knowledge acquisition**

Based on the account by owner, knowledge acquisition which has spanned over three decades has included different methods. In late 1980's, the main methodology for the acquisition was self-learning by acquiring bibliography from local libraries, which was rather limited at the time. Participation in private art school, classes and coursework have been the key learning contexts, where arts creation techniques and theories have been taught and applied practice, and involving artist(s) as teacher(s) who provide the knowledge basis for application as well as feedback to students during the application of the knowledge. Additionally, art related bibliography over theories, techniques and art history have provided further information to support the coursework learnings further. Later increasingly other forms of knowledge acquisition started to take place: accordingly, media which have been used for knowledge acquisition during the recent years include physical slides and VHS videos, and nowadays Internet which provides rich and abundance of information, which is also varied and hence requires ability to distinguish its validity.

According to the owner, acquiring knowledge, adopting and putting it into application has been relatively easy throughout the years. The importance of personal motivation and characteristic called as natural talent by the owner have had importance in facilitating the overall process.

### **5.2.2 Knowledge sharing**

According to the answers on question on knowledge sharing (Appendix 1), knowledge sharing in the context of the case organisation takes place especially in providing different forms of arts consultancy, such as giving lectures over arts creation techniques and their application to student audience. In such scenarios, knowledge sharing takes place in person, involving physical presence of the audience and teacher at same premises: as it is the case with knowledge acquisition, this enables quick feedback on application of the techniques from the teacher as well as practical demonstrations. This process is not straightforward however, as there usually exists differences in background information and skills related to art (techniques, styles, terminology), personal motivation and basic

understanding on arts creation among the students: as an example on difference in background information and skills in art, a student had challenges in painting pictures according to existing model item (photograph) unless the item was inverted other way around. These differences have placed barriers in adopting the information provided by the owner who has taken additional measures to facilitate the process: besides of providing details to the informational gaps, alternative forms of providing information has been introduced by the owner by using different forms of visualisation for instance.

Additionally, the provision of arts consultancy activities as services to customer audience require sharing information on their existence, content and pricing as prerequisite information. This form of knowledge sharing is usually done by increasing awareness during art exhibitions for instance. Furthermore, personal web pages are used for providing details on the latest, privately arranged courses on Internet.

### **5.2.3 Knowledge creation**

Knowledge creation can be divided into two areas: first, knowledge creation in the organisation, i.e. the knowledge created by the owner as result of knowledge acquisition, and knowledge creation as result of knowledge sharing by the organisation to others. As a general guideline according to the owner, sharing the best, that is, the most recent knowledge on art available to the students serves the purpose and benefit of creating new knowledge by the students, which in turn will benefit the teacher as well.

Both of the knowledge creation areas can be exemplified by creation of sculpture works for instance, which as physical items embody knowledge artefacts and hence demonstrate the materials used and techniques applied, style involved, and, ultimately, originally intended idea for representation in the form of created sculpture work. Knowledge creation has also involved producing physical documentation on various art techniques, especially in the beginning of the career when there was only limited amount of information available and lots of activities in arts creation were conducted mainly by practicing under supervision by the teacher. As an example, the owner produced documentation on creating art graphics by etching, which was later adopted at Department of Teacher Education in Hämeenlinna (some of the students who participated the graphics course were also students of the department).

### **5.3 Role of information technology in knowledge management activities**

According to the owner on question on the importance of IT for the organisation in general (Questions on “4 Role of IT in increasing knowledge and awareness”, Appendix 1), IT has a pivotal role as part of knowledge management activities covering marketing, documentation, and teaching for instance. Sending invitations to art exhibitions was previously done with physical letters, nowadays it is done predominantly by using email like Gmail. Similarly, besides of traditional physical documentation information is increasingly created and stored in electronic form on local computer such as designs, instructions, customer details.

When the organisation was founded in 1989, the role of IT in general was limited to the use for internally in organisational contexts only, without external connectivity in forms of Internet today. This was reflected in the case organisation where Apple Macintosh and desktop PCs were adopted in 1990s to support design, documentation creation, and contact information. Later, as related to development of Internet and Web 2.0 technologies especially, the organisation started using Internet as the basis of knowledge activities. The owner has created on personal web pages which are used in promoting art works (paintings, etchings, cards) as well as courses on art techniques and styles. Similar to art exhibitions, the web pages allow promoting the skills and competencies of the owner to wide audience irrespective of time and place, hence demonstrating specific areas of expertise of the artist. According to the owner, during the past 15 years approximately 90% of the course orders have been done via contacting the artist via email or telephone instead of the artist contacting potential audience, and the role of web pages in these enabling these contacts have pivotal.

In respect to the personalisation and codification strategy forms, the organisation bases the use of IT predominantly according to codification strategy: the reuse of knowledge involving codifying, storing, and disseminating of information as specified on Table 2 is clearly on focus. In terms of component technologies and their relation to the strategy options, it is clear both personalisation involving collaboration and dissemination are in focus of IT-based knowledge activities, involving connectivity (Internet), communication (email), distribution (web pages) in particular. In respect to codification strategy, the technologies used in storage (local repositories) and search (local indexing) are at the core of repository and discovery activities. In terms of software technologies, the Microsoft based tools are mostly utilised in the activities.

## **5.4 Knowledge types and their conversion**

The previously described knowledge management activities provide information the types of knowledge which exist in the case organisation. By evaluating the previous information in respect to the definitions on “3.2 Knowledge management: key theories and framework”, the knowledge types existing in the organisation can be identified, allowing identification of potential issues in knowledge management and introducing solution options.

### **5.4.1 Explicit and tacit knowledge**

Most of the knowledge management activities indicate that the main type of knowledge in the organisation is tacit knowledge: especially the activities of acquiring, sharing and creating knowledge involve tacit-oriented phases which are needed as part of them. For instance, creation of art works during course involves interaction between the student and teacher where feedback gets provided based on the progress of art work creation. The work of art which is produced by the student and reviewed by the teacher functions as medium or platform for both evaluating the ability of the student to apply the techniques and styles as instructed by the teacher, as well as allowing teacher to bring in focus further aspects involved in more concrete manner and which would be difficult to articulate without a physical manifestation. Hence the actual demonstration process in arts creation involving the teacher and student reduces the stickiness of knowledge related to applying techniques and styles in particular manner.

Besides of the tacit form of knowledge, lots of information as explicit knowledge exist in the organisation either as physical documentation or electronically in local computer or online on personal web pages. The use of this form of information is highly dependable on the owner of the organisation, as the owner is the only person who can access and locate specific information without major effort.

### **5.4.2 Embrained, encoded, embodied, encultured and embedded knowledge**

Further specification of knowledge types can be introduced based on the in-depth definitions on “3.2.3 Embrained, embodied, encultured, embedded and encoded knowledge”.

Lots of the information on art techniques and styles which is documented as study material for instance represents encoded knowledge, which is available as physical documents and in electronic form. However, the application of such knowledge includes elements of embrained, embodied, encultured and embedded knowledge: besides of embrained

knowledge which has been acquired through conscious learning processes in coursework and studying encoded forms of knowledge, the tacit nature of the knowledge acquisition and sharing activities involve social aspects in forms of interaction between teacher and student, which are required to make the process outcomes (knowledge) complete. Embodied knowledge is primarily represented in the form of this interaction, whereas encultured and embedded knowledge become introduced as result of coded, embrained and embodied forms of knowledge together intervening in the process: as the owner indicated, the latest knowledge which she teaches to students gets applied by them in the works of art in practice, which then becomes refined further by the feedback of teacher to the students, and later as result of this iterative process introduces potentially new knowledge by the students to the teacher as well. The created art works itself provide indirect knowledge on applied techniques, styles involved, and original ideas as embodied knowledge artefacts.

#### **5.4.3 Knowledge conversion**

Based on the account by the owner, the knowledge conversion processes involving tacit and explicit knowledge as defined by Nonaka et al. (2000) take place in different ways.

In the beginning in 1980s and throughout 1990s, socialisation was the main form of learning arts creation. Throughout the courses, lots of information was provided directly by the teachers to the artist verbally, without using explicit forms, and hence it was responsibility of the artist to make necessary notes. The application phase where the learnings were put in practice involved direct feedback from the teachers, forming the basis for socialisation.

Socialisation of tacit knowledge is usually exemplified when the teacher and student are interacting in an arts creation situation taking place on a course. As precondition for this, teacher has provided the knowledge on the techniques, styles, etc. in an explicit form prior to putting them into practice, that is, the student who has adopted the provided knowledge and has effectively internalised it and adopted it according to subjective understanding. It is through the socialisation process when the adopted knowledge will be refined further in the interaction where the teacher provides feedback to the student on the applied techniques and styles, while the work of art in progress functions as the basis for the interaction and hence facilitates the socialisation process: this reflects the idea on visual arts thinking and knowing as defined by Sullivan on chapter 4.1. The explicit knowledge has been provided by the teacher first, usually involving externalisation and combination processes done by the teacher: for instance, before the course or teaching lecture starts the teacher produces written guidelines and documentation on theories, techniques, styles,

etc. by combining the existing tacit and explicit knowledge by the artist and the most recent updates and the related developments. Externalisation takes place when all the knowledge combined gets delivered to the students for adoption and consecutive application. As the artist has described previously, some of this conversion work has involved introducing additional forms of representing the knowledge, such as was the case in converting textual information on colour psychology into visual form.

Due to the rise of use of IT as an integral part of the activities of the organisation, lots of knowledge activities are nowadays conducted electronically and knowledge gets converted into explicit forms and externalised. Despite of this, given the nature of the case organisation where organisation is effectively same as the owner, lots of information is held by the owner only as tacit knowledge: for instance, while there exists information as explicit knowledge in encoded forms such as physical documentation and in electronic form, the use of such knowledge in great extent is highly dependable on the owner of the organisation. For instance, the owner is the only person who can locate specific knowledge in explicit form with ease, whereas others are less likely to find the required knowledge without major effort.

## **5.5 Analysis using Bloom's taxonomy**

The previous analysis on knowledge types and their conversion in the case organisation provide the basis for understanding the specifics involved in knowledge management activities in the organisation on high-level. The findings reflect the theoretical framework on tacit and explicit knowledge and confirm the definitions on specifics involved in arts creation and related interaction outlining according to existing research. However, what is missing is an in-depth understanding on the degrees of knowledge, or knowledge dimensions, involved as part of the processes, particularly in the arts creation processes (including both teaching and learning). The chapter 4 explicated that there are different types of knowledge affecting the arts creation, and that ability to adopt explicit knowledge of formal learning as well as prior experiences reflect the ability to contribute in co-creation (Alamäki 2017, 16). Similarly, the descriptions on embrained, encoded, embodied, encultured and embedded knowledge types indicate that they are involved as part of the arts creation processes, in particular in teaching where the arts creation processes have additional dimensions involving interaction of student(s) and the teacher who holds the mastery and expertise of the arts creation process in question. Having further understanding on the degrees of knowledge involved would be required for in-depth perspectives on the processes and forms of knowledge in them, which in turn can be utilised in explicating the requirements related to knowledge management activities, and their development and improvement.

To overcome this deficiency, additional analysis by using Bloom's taxonomy was used for analysing the key processes of the organisation as follows: first, the owner of the organisation was asked to provide example uses cases on the processes in arts creation and arts consultancy, and to describe the role of knowledge in each of them in the own words of the owner. As follow up, analysis together with the owner was conducted by utilising the revised version of Bloom's taxonomy by Kraftwohl (2002) to extract the role of knowledge in each of them (Appendix 2).

The outcome of the analysis can be used further in determining the prerequisites in the field of arts consultancy: that is, what kind of knowledge requirements should be considered as preconditions for running the organisation and the related processes in question. This evaluation can then increase understanding on the requirements for knowledge transfer and sharing and other knowledge management activities in the organisation, and facilitate their development and further improvement.

### **5.5.1 Bloom's taxonomy**

Bloom's taxonomy of educational objectives is a framework for classifying statements of what we expect or intend students to learn as a result of instruction (Krathwohl 2002, 212). Classification of the educational objectives is done based on their levels of complexity and specificity (Krathwohl 2002, 215-216). Besides of the measurement purpose, it can be used in introducing common language about learning goals to facilitate communication across persons and subject matter; basis for determining for a particular course or curriculum the specific meaning of broad educational goals, such as those found in the currently prevalent national, state, and local standards; means for determining the congruence of educational objectives, activities, and assessments in a unit, course, or curriculum; and panorama of the range of educational possibilities against which the limited breadth and depth of any particular educational course or curriculum could be contrasted (Krathwohl 2002, 212).

According to the revised version by Kraftwohl, the taxonomy consists of two dimensions, the knowledge dimension and the cognitive process dimension (full details involved are shown on Appendix 2). The knowledge dimension consists of four categories which are:

- **Factual Knowledge:** The basic elements that one must know to be acquainted with a discipline or solve problems in it.

- Conceptual Knowledge: The interrelationships among the basic elements within a larger structure that enable them to function together.
- Procedural knowledge: How to do something; methods of inquiry and criteria for using skills, algorithms, techniques and methods.
- Metacognitive Knowledge: Knowledge of cognition in general as well as awareness and knowledge of one's own cognition. (Krathwohl 2002, 214)

The cognitive process dimension consists of six categories as follows:

- Remember: Retrieving relevant knowledge from long-term memory.
- Understand: Determining the meaning of instructional messages, including oral, written, and graphic communication.
- Apply: Carrying out or using a procedure in a given situation.
- Analyse: Breaking material into its constituent parts and detecting how the parts relate to one another and to an overall structure or purpose.
- Evaluate: Making judgments based on criteria and standards.
- Create: Putting elements together to form a novel, coherent whole or make an original product. (Krathwohl 2002, 215)

The taxonomy utilises the previous dimensions in form of a table where the knowledge dimension would form the vertical axis of the table, whereas the cognitive process dimension would form the horizontal axis. The intersections of the knowledge and cognitive process categories would form the cells. Consequently, any objective could be classified in the taxonomy table in one or more cells that correspond with the intersection of the column(s) appropriate for categorizing the verb(s) and the row(s) appropriate for categorizing the noun(s) or noun phrase(s).

Given these definition, we can extend the use of taxonomy from evaluating the requirements for the owner of the organisation to understanding the specifics involved in provision of arts consultancy services involving customers such as the students participating an arts course. The following use cases demonstrate how the goals of these specific activities can be accomplished in terms of specific knowledge dimensions involved and their emphasis in respect to specific cognitive dimensions involved.

### 5.5.2 Use case 1: Creation of art works

The primary activity of the case organisation involves creation of art works, both because of the creation itself but also because the acquired skills and competencies are the basis for art consultancy activities such as teaching. The chapter 5.1.1 has described the main arts creation processes by the organisation, whereas the chapter 4 has given generic outlining on arts and visual arts including the model by Sullivan on visual arts knowledge.

According to Marja-Liisa Rinnekangas, there is always a background reason or idea involved in art works which introduces personal insight by taking stance to a topical matter for instance; this commentary is in line with the definition by Sullivan on versatility by artists as described on “4.1 Visual arts as form of thinking”. Besides of having idea however, the conversion of the idea into work of art involves adoption of theories, techniques and styles which are applied in the work. This adoption involves various knowledge related aspects. In order to exemplify this, the creation of work of art by monotyping into hand-made paper will be covered. Monotyping is an art technique that lies midway between painting and printing, and which product output, that is, a work of art, is called a monotype which is a direct transfer to porous paper of a picture printed on a non-absorbent surface (Benke 1940, 27). Oil paint, water colour, or printers ink may be used for a monotype which is painted on a hard, smooth material such as glass, celluloid, or metal which functions as the printing plate (Benke 1940, 27).

As starting point for applying the technique, it is essential to grasp the use of chosen materials and the work phases involved, hence highlighting the importance of remembering them as factual knowledge comprising of the materials and phases as well as their interplay which form the conceptual and procedural knowledge types (objective 1): furthermore, understanding of the latter two types of knowledge in constructing of a work of art as a whole form the essential basis for applying them altogether, with analysis for conducting review on the application of the parts involved on conceptual knowledge level (objective 2). For instance, besides of assembling the materials for the monotyping process, one needs to understand that the outcome of the printing will be in reverse order in respect to the painted one (Benker 1940, 27). The work of art will be created by applying the technique and materials altogether, involving procedural and metacognitive knowledge types: besides of constructing in accordance of the interplay of idea, techniques and materials, there is also need to step back from the overall setting of arts creation and have an outsider look into the whole, hence requiring ability to possess metacognitive knowledge (objective 3). Here, as part of the objectives 2 and 3, experimentation may take place in

order to find right amount of paint in respect to the expected outcome for instance. Evaluation involves the analysis on whether or not the activities so far are reflecting the original idea or not, again involving conceptual knowledge level (objective 4): if something must be changed, the printing plate will be wiped cleaned and the process will be started anew (Benke 1940, 27). Table 4 summarises the knowledge and cognitive dimensions in respect to the previously outlined objectives involved.

Table 4. Knowledge and cognitive process dimensions in creation of work of art by using monotyping technique.

**Cognitive Process Dimension**

<b>Knowledge Dimension</b>	Remember	Understand	Apply	Analyse	Evaluate	Create
Factual Knowledge	objective 1					
Conceptual Knowledge	objective 1	objective 2	objectives 2 and 3	objective 4	objective 4	
Procedural Knowledge	objective 1	objective 2	objectives 2 and 3			objective 3
Metacognitive Knowledge						objective 3

**5.5.3 Use case 2: Sharing knowledge to arts students**

As another example on the importance of different knowledge dimensions in arts consultancy, teaching presents additional aspects due to the various forms of interaction taking place. Effectively this stands for sharing knowledge, or knowledge transfer, from a teacher to student(s).

The previously defined creation of works of art can be perceived as a precondition in forms of skills and competencies which the teacher is expected to possess in order to be able to teach student on the same (objective 1). In addition, the teacher needs to consider target audience for which knowledge is about to be presented, i.e. the students, first (objective 2): that is, sharing knowledge by the teacher to the students is dependable on the technical knowledge competencies (factual knowledge), yet it is equally important for the teacher to understand the cognitive basis of the students who are the audience of the teacher (metacognitive knowledge). These two factors define how effectively the application of the factual knowledge adopted by the students will take place, that is, applying the

factual knowledge such as materials together with techniques as procedural knowledge in the arts creation by the student (objective 3). The analysis of the teacher on the procedural knowledge applied by the student, together with the metacognitive knowledge involving evaluation provide information to the teacher on whether or not the student has been able to adopt the shared knowledge and reflect in respect to previous background knowledge (objective 4). It is the synthesis of these different knowledge types involved in the sharing process which are effectively required in creation of the work of art. Table 5 summarises the knowledge and cognitive dimensions in respect to the previously outlined objectives involved.

Table 5. Knowledge and cognitive process dimensions in sharing arts knowledge from teacher to students.

**Cognitive Process Dimension**

<b>Knowledge Dimension</b>	Remember	Understand	Apply	Analyse	Evaluate	Create
Factual Knowledge	objective 1					objective 1
Conceptual Knowledge	objective 1		objective 3			objective 3
Procedural Knowledge	objective 1		objective 3	objective 4		objective 3
Metacognitive Knowledge		objective 2		objective 4	objective 4	objectives 2 and 3

**5.5.4 Use case 3: Acquisition of knowledge as an arts student (adult)**

In the interaction between the teacher and student on an arts course, the knowledge acquisition from the teacher by the student is dependable on the existing knowledge base, which is mainly conceptual and procedural by nature (objective 1): in other words, there is a basis which consists of previous experience, which supports and is supported by ability to understanding new knowledge on arts which involves new theories, techniques and styles (factual knowledge) as well as their interrelation (conceptual knowledge) and application (procedural knowledge) (objective 2). Application of the factual and conceptual knowledge areas allows determining how they are applicable by the student (objective 3). Analysing and evaluation are to be used for reflecting and comparison of the new knowledge with the previous knowledge base by the student (objective 4). The final outcome of the knowledge acquisition would be creation of art works (and hence new knowledge involving encultured, embedded, coded, embrained and embodied forms knowledge) by the student, which effectively combines the objectives 1, 2, and 3 and

which in the optimal case gets turned into metacognitive knowledge allowing the student evaluate the previous knowledge in combination and in respect to the recently acquired knowledge. Table 6 summarises the knowledge and cognitive dimensions in respect to the previously outlined objectives involved.

Table 6. Knowledge and cognitive process dimensions in acquiring knowledge by arts students.

**Cognitive Process Dimension**

<b>Knowledge Dimension</b>	Remember	Understand	Apply	Analyse	Evaluate	Create
Factual Knowledge		objective 1	objective 3			objectives 1 and 3
Conceptual Knowledge	objective 1	objectives 1 and 2	objective 3	objective 4	objective 4	objectives 1, 2 and 3
Procedural Knowledge	objective 1	objectives 1 and 2				objectives 1, 2, and 3
Metacognitive Knowledge						objectives 1, 2 and 3

**5.5.5 Use case 4: Computer-based graphics design**

The previous use cases exemplify traditional arts creation processes, whereas computer-based graphics design represents the utilisation of modern IT in arts. While IT facilitates the arts creation activities, it involves own set of knowledge requirements as well. For instance, there is need to grasp wide set of factual knowledge as precondition (objective 1): graphics creation must synthesise details provided by the customer such as sizes, colors, textual formats, and how these forms of factual knowledge get together as whole (conceptual knowledge, objective 2) and with what means provided by the tools (procedural knowledge, objective 2). This involves having the cognitive processes of remembering, understanding and applying tightly involved together, as often actual creation of the graphics design is usually expected to be done as quickly as possible by the customer (objective 3). The phases of analysing and evaluating (objective 5) will be conducted throughout the application and creation phases (objective 4) (and as final analysis) to ensure that the used techniques and styles are accordingly aligned with the customer expectations in detail and the whole. Table 7 summarises the knowledge and cognitive dimensions in respect to the previously outlined objectives involved.

Table 7. Knowledge and cognitive process dimensions in creation of graphic design by using computer.

**Cognitive Process Dimension**

<b>Knowledge Dimension</b>	Remember	Understand	Apply	Analyse	Evaluate	Create
Factual Knowledge	objective 1		objective 4	objective 5	objective 5	
Conceptual Knowledge	objective 1	objective 2	objective 4	objective 5	objective 5	objective 4
Procedural Knowledge	objective 1	objective 2	objective 4			objective 4
Metacognitive Knowledge		objective 3			objectives 3 and 5	objective 4

**5.5.6 Conclusion of the analysis**

As the previous use cases demonstrate, the processes depend on various degrees of knowledge and one's ability to reflect the task at hand in respect to them. The knowledge acquired by doing i.e. by creating art works which synthesises the acquired factual, conceptual and procedural knowledge types functions as further knowledge basis of tacit-based knowledge, which the owner of the organisation can transfer via teaching to students onwards, and which then gets acquired by them and reflected on in their respective works based on their cognitive abilities. Given the tacit nature of the knowledge in the processes due to the field of arts, the results indicate the need for common understanding in certain knowledge transfer situations in particular: in terms of Carlile's boundary theory, for instance in the teaching scenarios this would indicate that the teacher and student would share at least some common language and meanings, so that the knowledge transformation in the form of art works can successfully take place and related knowledge sharing between the parties over boundaries can be conducted. As the differences in degree of knowledge between interacting parties in such situations are common (i.e. the potential barriers in knowledge transfer and sharing are related to interacting individuals), especially due to the experience of teacher involved in the interaction, facilitation of the knowledge transfer by the teacher via different forms of externalisation (turning tacit knowledge into explicit knowledge) plays significant role in enabling its acquisition and application by the students. This conclusion can be generalised to other knowledge management contexts involving the field of arts and where knowledge management activities such as knowledge transfer and sharing are applied.

## 5.6 Synthesising findings: SWOT analysis

The previous study on knowledge activities and forms, knowledge conversion and use of IT in the case organisation have defined the specifics involved on nature of knowledge in the organisation. As an additional in-depth analysis on the degrees of knowledge in relation with forms of cognition in certain organisational activities, Bloom's taxonomy was used in extracting further information which demonstrated that the knowledge in the organisational context of the case is mostly tacit by nature, highlighting the importance of forms for explicating the knowledge when the owner as art teacher is interacting in teaching situations with students, a conclusion which can be seen applicable in general in other contexts as well. Besides of the field of art itself, the tacitness of the knowledge is due to the fact that the organisation is effectively run by one person only, hence the acquisition of knowledge and its use have been limited accordingly: for example, besides of teaching where interaction involving knowledge sharing happen as part of the learning process, there does not exist knowledge sharing within in the organisation as it is customary in larger organisations. This also means that the owner of the organisation alone holds access to the different forms of explicit knowledge. Furthermore, the knowledge has been accumulated during three decades, and lots of knowledge acquisition has been done via tacit-based means involving interaction in arts creation and co-creation. In addition, the field of arts by itself, as was outlined on chapter 4, involves tacit-like elements and is heavily dependable on demonstration in forms of works of art where explicit knowledge is applied together with transcognition of an artistic mind as concrete means of extracting the knowledge.

To illustrate the overall state of knowledge in the organisation as a synthesis of the previous findings in the chapter 5, a simple SWOT analysis on Strengths, Weaknesses, Opportunities, and Threats related to knowledge in the organisational context can be conducted as follows and shown on Table 8:

Table 8. SWOT analysis on the overall state of knowledge in the organisation and opportunities and threats involved.

<b>Strengths</b>	<b>Weaknesses</b>
<p>Professional skills of the owner, 30 years of extensive experience:</p> <ul style="list-style-type: none"> <li>• Wide range of knowledge on different arts creation processes</li> <li>• Strong knowledge base enables teaching arts and other arts consultancy activities</li> <li>• Ability to create new knowledge based on the knowledge base</li> </ul> <p>Strong motivation to learn new knowledge and apply it in practice</p> <p>Use of IT in knowledge management activities</p> <ul style="list-style-type: none"> <li>• Acquisition of new information</li> <li>• Communication (email)</li> <li>• Documentation (study materials)</li> <li>• Creation of new knowledge</li> </ul>	<p>Organisational knowledge is effectively held by one person (the owner)</p> <ul style="list-style-type: none"> <li>• Heavy emphasis on tacit knowledge</li> <li>• Explicating the knowledge in detail requires hands-on demonstration (f.ex. teaching contexts)</li> <li>• Access to tacit and explicit knowledge is held by the owner</li> </ul> <p>Knowledge transfer processes depend on ability to cover various degrees of knowledge and cognition processes as precondition by the knowledge recipient</p>
<b>Opportunities</b>	<b>Threats</b>
<p>Ability to adopt new knowledge involves ability to adopt new means of handling knowledge as well</p> <ul style="list-style-type: none"> <li>• Enables different formats for knowledge creation and transfer using technological means</li> </ul> <p>Use of IT in knowledge management activities</p> <ul style="list-style-type: none"> <li>• Enables knowledge conversion into electronic form</li> <li>• Allows introduction of knowledge management system(s) to enable large scale knowledge transfer f.ex. in case of business transition</li> </ul>	<p>Organisational knowledge held by the owner is in danger to disappear once the owner quits working</p> <ul style="list-style-type: none"> <li>• No basis to continue the business activities in the current organisational context by externals</li> <li>• Access to rich amount of tacit and explicit knowledge will be lost forever and cannot be recovered</li> </ul>

The factors indicate that knowledge management activities in the organisational context involve the tacit knowledge as the main form of knowledge, and hence the development of

knowledge management activities and their methods need to be introduced accordingly: this aspect gets highlighted especially in major knowledge transfer situations such as in business handovers, which is likely to take in place at some point in future in the case organisation as well. In short, in order to retain the established knowledge base so that the continuity of the business and organisation can be ensured, knowledge management activities need to develop further in respect to the existing status. Paramount in achieving this goal in practice can be described twofold as follows: first, the existing knowledge base need to be converted into retainable form, and, second, the retaining of the converted information needs to be done by introducing a knowledge management system in the organisation. Having outlined these development goals for knowledge management in the organisation, a development plan which describes the practical means for the purpose can be outlined in detail.

## **6 Development plan for introducing knowledge management system in case organisation**

The study has previously covered theoretical side of knowledge management and related specifics of small organisational context, and implementation options for knowledge management systems in small organisational contexts as specified by existing research. As follow-up activity, the case study in form of interviews was conducted in order to validate and apply the theoretical framework in respect to a case organisation setting: the theoretical framework on knowledge management has been used in specifying the nature of knowledge existing in the case organisation, and additional analysis of cognition in relation to knowledge was conducted for in-depth evaluation about the role of knowledge and its specifics as part of key activities in arts consultancy.

As was indicated in regards of the SWOT analysis, the existing status in respect to the organisational knowledge is highly dependable on the tacit-based knowledge of the owner, which stands for challenges in terms of retaining the knowledge base of the organisation in case of business transfer situations. As a solution to overcome this challenge, a feasible knowledge management system should be implemented: in essence, this system would contain all the knowledge of the organisation which is needed to ensure the continuity of the organisation after its transfer to a new owner.

Accordingly, in this section a practical development plan will be drafted for introducing a knowledge management system and related practices in the case organisation: first, key targets and requirements of the development plan on high level will be outlined. The following planning phase defines the principles in defining the knowledge which is to be retained, and is extended to defining the conversion forms for the retention. As third step, a solution option (SharePoint Online) will be presented to demonstrate how the implementation of the system could take place and what key features would be needed in implementing it in respect to the retention requirements. Finally, the maintenance of the rolled-out system and related knowledge management activities will be discussed.

### **6.1 Key targets and requirements**

Given the tacit nature of most of the knowledge in the organisation, the main target of the development plan is about turning the knowledge into forms and types which allow its acquisition without major effort by external parties. In terms of SECI model, the interest is fo-

cused on converting the tacit knowledge into explicit form so that it can be passed on-wards easily: according to the conversion modes of the model, this involves externalisation (converting tacit to explicit knowledge) of the knowledge especially, and touches also combination as the owner of the organisation has gathered lots of information on arts down the years and used it as basis for creating new informational setups which have been used as part the arts consultancy activities. Additionally, the methods and processes part of knowledge management should fulfil the requirement of ease of use in order to ensure that the knowledge transfer is facilitated efficiently, which is also related to the fact that the organisational context presents own restrictions given the small organisational setting.

The previous requirements are also interleaved in the sense that running knowledge management activities should not overcome the key activities in the organisation: this needs to be considered at very beginning since potential operations such as knowledge updates are likely to take place during the system's lifetime and hence to occupy some additional time beyond the main activities.

Accordingly, knowledge management activities in the organisational context can be outlined as high-level and detailed sub-targets as follows:

- knowledge conversion from tacit to explicit forms and types as the main knowledge management activity
- implementation of knowledge management system in the organisation which
  - considers resource-constraints of the organisation
  - enables knowledge management without major effort
- roll-out of the knowledge management system
  - the system has been created for use, upload the converted knowledge into the system
- introduction of maintenance activities of the system
  - ensure that the knowledge stored in the system is valid (minimum requirement), carry out create, read, update, delete (CRUD) activities in respect to the knowledge as required.
  - reiterate knowledge conversion activities as part of the activities as needed.

Figure 5 visualises a proposed order (from left to right) for conducting the defined high-level activities.



Figure 5. Proposed order for conducting knowledge management (KM) activities.

While the activities are part of a single project, that is, roll-out of an electronic knowledge management system, each of them can be considered as sub-projects which take place in a consecutive manner: knowledge conversion should be conducted first, then the system implementation, and finally the maintenance of the system. It should be highlighted that this operation is particularly about introducing the knowledge management system, whereas some of the activities are applicable following the introduction: for instance, knowledge conversion is likely to be carried out after the introduction of the system, as additional information may be found and created.

## **6.2 Planning knowledge retention and conversion**

Initial planning should be conducted in order to outline the scope of the knowledge retention and conversion. The following key questions would need to be answered as part of the planning:

- what kind of knowledge should be retained?
- how the knowledge could be retained?

The basis for all following activities of the development plan should be to define the knowledge of different types which is to be retained and converted to explicit forms which then can be transferred into the knowledge management system. The processes defined on chapter 5.1.1 can be taken as the high-level starting points for the purpose, and further information related to them such as sub-processes and work phases involved could be then extracted and categorised accordingly as follow-up in iterative manner. This listing could be then used in finding and retrieving the existing knowledge formats, and potentially utilised in defining the structure of the electronic knowledge management system.

The definitions on the knowledge which is to be converted and retained should be complemented with clarifications on what types of knowledge currently exist: that is, which knowledge is available in explicit forms such as physical documents, and which knowledge is available on tacit forms such as works of art, or, ultimately, known by the owner only. As part of the process, the details on access should be clarified as the owner of the organisation only knows the details on storing currently existing forms of explicit knowledge as well. The classifications can be then used as input in defining the conversion activities, that is, the means for converting knowledge into explicit forms for retention (hence answering to the question on “How the knowledge could be retained?”).

## **6.3 Knowledge conversion**

Having identified and classified the types of knowledge in the organisation, different options for converting the knowledge into explicit forms should be considered next.

As part of implementing knowledge management in the organisation, different types, forms, and formats of knowledge (information) available can be applied for the purpose. Given the technological evolution during the past decades, nowadays there exists various technological means which can be used for the purpose. Accordingly, conversion of the existing knowledge into recordable form from tacit to explicit form could be achieved by using documentation, process visualisation, videos on key processes, and photography in general. These record formats can be converted into electronic forms, which can then be retained and saved into the knowledge management system.

### **6.3.1 Textual documentation**

Traditionally recording arts-related tacit knowledge into explicit forms has been conducted by utilising textual documentation, and that format continues hold its position as starting for studying theories, techniques and styles in visual art.

The ultimate goal is to convert existing knowledge in physical paper documentation into electronic format due to the following benefits involved in knowledge management:

- easy to create, read, update, and delete by the administrator(s) as all knowledge is under one electronic management system
- easy to share electronically to customers, business partners, etc. via technological means of communication and distribution (for example via email)
- ability to copy information (backups, etc.) and convert into physical format (paper prints) as needed

Common formats such as Microsoft Word and OpenOffice could be used in writing the documents, whereas PDF format would come in question when storing and sharing the documents. Alternatively, documentation could be produced by capturing images of the existing physical documentation and storing them electronically via USB connection to the electronic memory: however, this option would need to be considered with the available memory resource in mind, since electronic images are likely to consume more memory when stored.

Besides of written documents in commonly used formats, electronic slide sets could be constructed to support the written documents as well as for independently presenting

and learning purposes.

### **6.3.2 Process visualisation with images**

As a profound limitation of the format, textual documentation cannot cover all the aspects which are required in the creation of art works, as lots of knowledge in the field of arts is tacit by nature and hence can be acquired by the means of interaction and mutual feedback in arts creation processes: as the use cases of Bloom's taxonomy indicated, the various degrees of knowledge in arts consultancy activities are heavily involved arts creation processes, and the overall process of coming to know as suggested by Sullivan with the concept of Visual Arts is recursive and purposeful in nature as meaning is created and critiqued. Hence, additional forms for knowledge conversion should be considered. Since the interaction in arts creation is pivotal part of the learning process, the next best thing would be to provide arts creation examples in tangible visual forms and formats: while such solutions lack the personal and subjective elements in respect to the consumer of the information, they nevertheless provide more concrete methods for adopting knowledge easily.

Process visualisation in form of still images show arts creation processes as consecutive phases step-by-step. Complemented with textual explanations, process visualisations provide a concrete way of presenting arts creation, allowing the readers to grasp the essentials without major effort or reducing chances of misinterpretation of the processes. Process visualisations could be created separately as independent documents, or as part of the textual documentation where processes would be visualised to support the textual definitions of the document. Still images could be taken with a camera while the art processes of interest are taking place, and the images could be transferred to a computer for modification and placement into the process visualisation chart. Alternatively, process visualisations could be drawn with a computer-based visualisation programs such as Gimp or Adobe Illustrator.

### **6.3.3 Video recording of processes**

As an alternative form of process visualisation, recording the actual process phases into video is beneficial as it provides the combination of visuals and commentary in audio format, which effectively puts together all the elements of the process in hands-on manner, similar of a real-life arts creation process. Especially recording of authentic teaching/learning situations would provide examples of how the combination of different knowledge and its sharing between students and teacher take place, and hence showcasing concretely

the knowledge processes of socialisation and internalisation taking place as part of the interaction. Additionally, video format would capture the types of embrained, embodied and encultured knowledge in particular on each of the arts creation phases, demonstrating the evolution of the art works and how originally explicit knowledge gets transformed into other forms as work of art gets created as result involving the co-creational interaction with the student(s) and teacher: as related to use cases 2 and 3 which were analysed by using Bloom's taxonomy, video examples would provide hints for the viewer on the knowledge processes in action between the parties, especially about the role of teacher and the knowledge transfer which he/she conducts in the process, but also about the student(s) who is transforming the acquired knowledge into work of art, and consecutively the process which modifies both the work of art and the knowledge base of the parties.

#### **6.3.4 Photography in general**

Photography can be used in retaining knowledge on the works of art which have been created in arts creation processes, and the resulting images can be then transferred into the system in electronic form.

#### **6.4 Implementing knowledge management system: SharePoint Online**

As key requirements, implementing of a knowledge management system in the organisation should be considered with resource-constraints of the organisation in mind, and the system should enable knowledge management without major effort. The system will be used in retaining the organisational knowledge which has been acquired from the owner of the organisation (consisting of tacit and explicit forms of knowledge) and converted into explicit forms of knowledge (as specified in the chapters 6).

Based on the information provided by the owner of the case organisation, one feasible option for implementing the system would be to use an existing solution option which fulfils the requirements. One of such options could be Microsoft's SharePoint Online (as described under chapter "Solution options"), since it can be integrated with the existing Microsoft based tools which are used by the owner. SharePoint Online can be used in implementing a scalable knowledge management system based on cloud computing, providing dynamically sufficient memory and processing resources dynamically for hosting the converted knowledge forms.

In this chapter, the essential features, properties and characteristics for knowledge management provided by SharePoint Online will be introduced and considered in respect to

the requirements of the case organisation. The information on SharePoint Online has been acquired from existing documentation and educational material online. The purpose of the chapter is to provide a brief introduction on using SharePoint Online, hence functioning as a quick start of technology and giving the implementers of the system a knowledge basis from where to continue from further and to acquire additional information as needed.

### 6.4.1 Structure

SharePoint Online consists of set of sites, each of which can contain several number of apps with individual functionality such as Documentation Library, Calendar, and Contacts as shown on Figure 6. A site can also contain sub-sites: for example, the main site could be available for all users, whereas sub-sites accessible from the main site could be accessible to the specific users only (Accounts site for account personnel, HR site for HR personnel, etc). All sites are contained in a site collection: in other words, the site collection root is a top-level site.

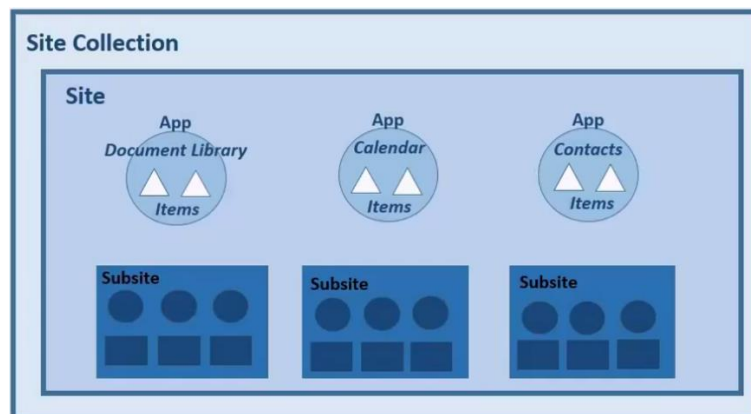


Figure 6. Structure (Dicker Data Microsoft Training Academy 2017).

Accordingly, the knowledge management system for the organisation can be created with a structure as follows:

- main page: the landing page for accessing the resources
- sites for the main activities: the main page should contain links to the main activities of the organisation. According to the definition on chapter 5.1 the main activities of the organisation are arts creation and arts consultancy. Furthermore, the supporting activities i.e. promotion / marketing activities should have own site for information on the activities, contact, etc.

- the main activities should contain links to the sites for each of the processes: for example, arts creation site should contain links to painting, sculpturing, hand-made paper creation, and so on.
- each of the process sites would maintain relevant documentation and media assets (images, videos) accordingly the process in question.

The high-level model of the structure is shown on Figure 7.

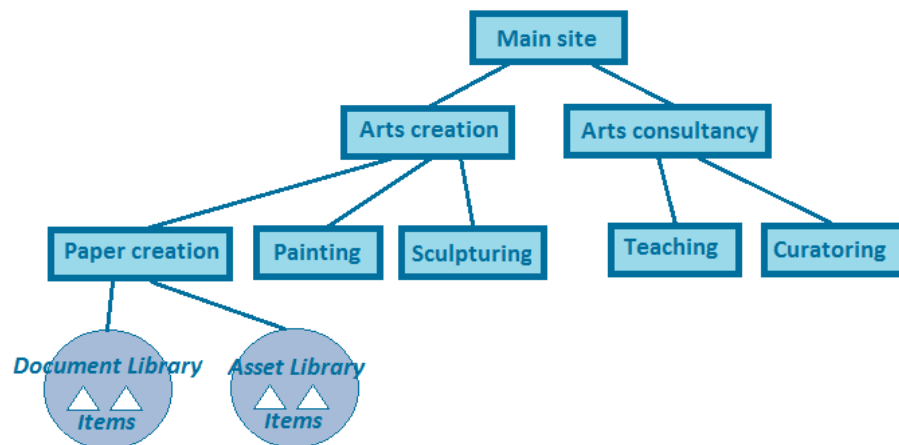


Figure 7. High-level structure of the knowledge management system for the organisation implemented on SharePoint Online.

The structure will logically follow the outlining on the chapter 5.1.1 on the lines of business of the organisation, which facilitates the adoption of the system by its users. As the description here indicates, the system will need to have certain key features in place so that the transfer of the converted knowledge into the system can be started: these include creation of the relevant sites and file repositories, which implementation using the features, properties and configurations of SharePoint Online will be introduced next.

#### 6.4.2 Site Settings

Before introducing site creation and relevant features for the case, Site Settings (Figure 9) will be presented first. Site Settings is an administration tool for managing and configuring sites and their settings and properties such as language and regional settings, user permissions (Figure 10), look and feel, and search properties. It is also the starting point when creating new sites. Figure 8 illustrates accessing Site Settings from the Settings dropdown list.

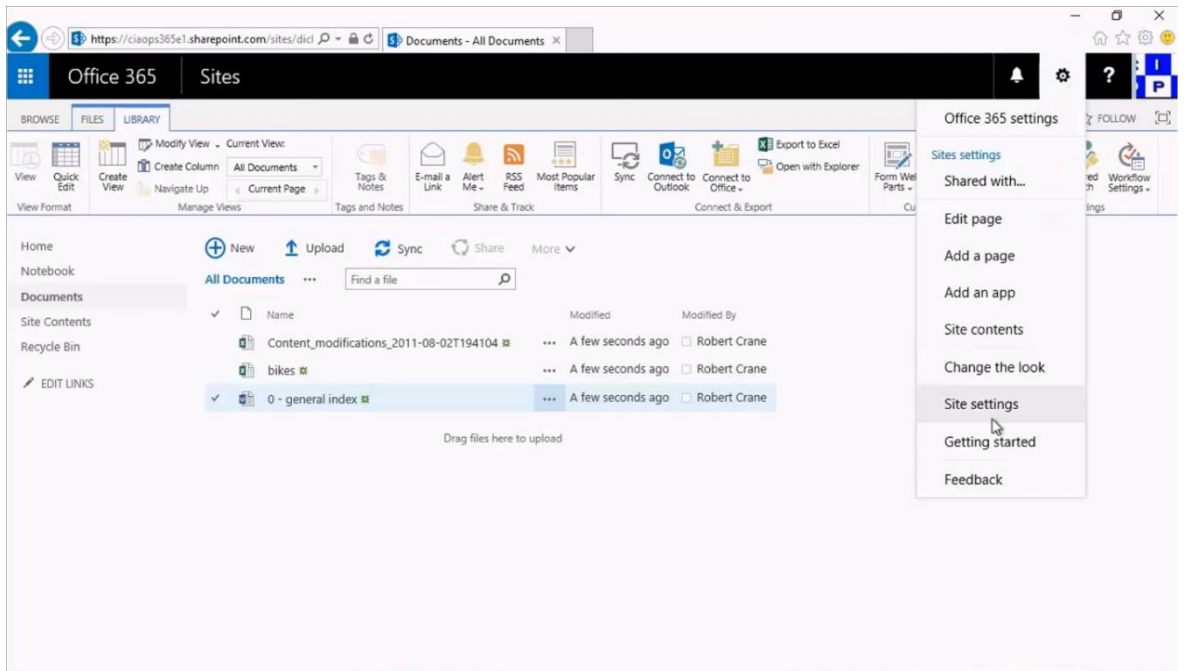


Figure 8. Accessing Site Settings (Dicker Data Microsoft Training Academy 2017).

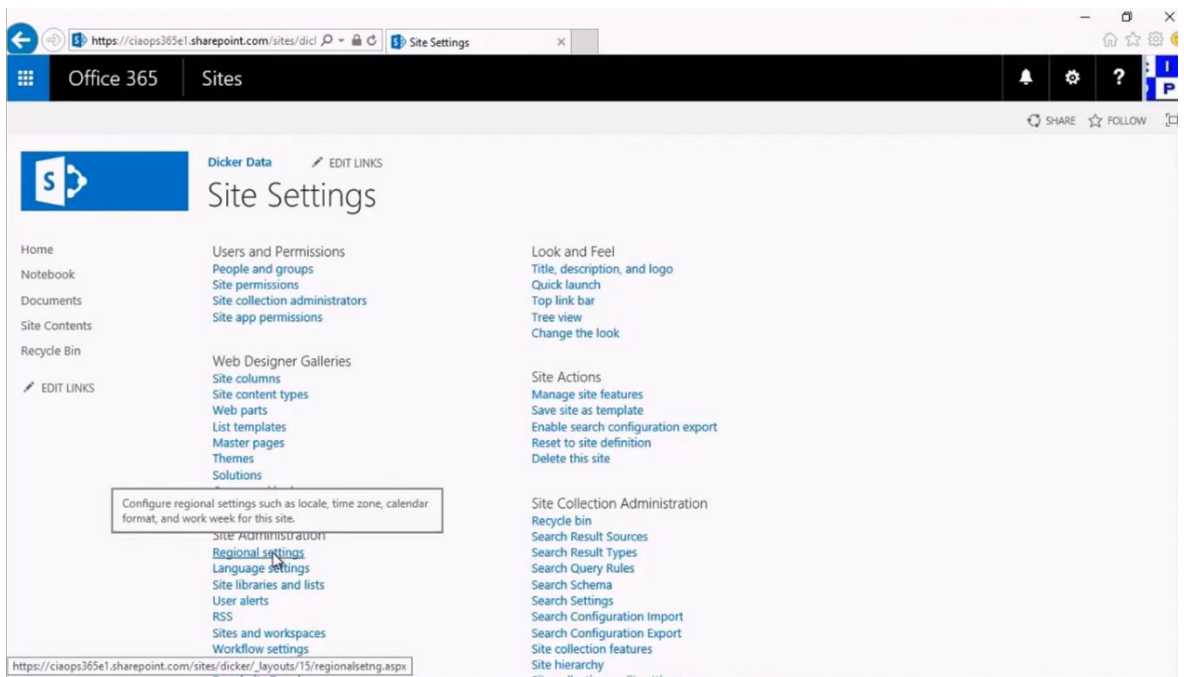


Figure 9. Site Settings (Dicker Data Microsoft Training Academy 2017).

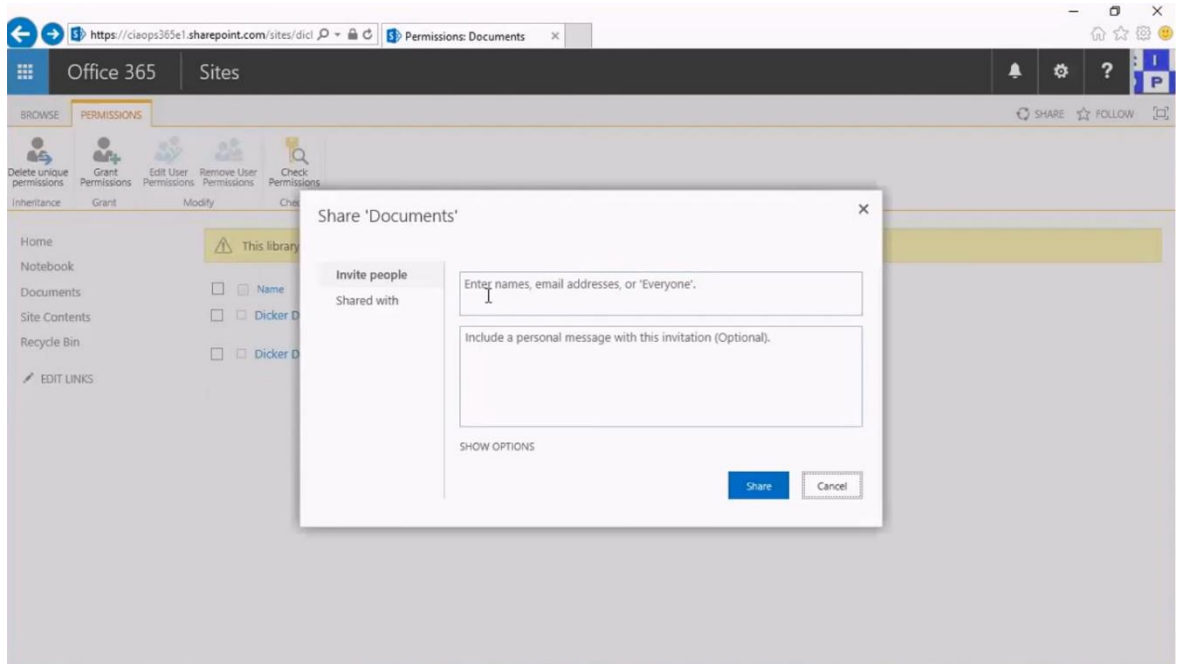


Figure 10. Managing permissions to the Documents Library with Share 'Documents' dialog (Dicker Data Microsoft Training Academy 2017).

### 6.4.3 Site Collection

A site collection is effectively the root site. In our case, it will be the landing page (titled as main site on Figure 7) where the rest of the pages and their sub-pages can be accessed from.

A collection can be created according to Microsoft Office Support (Office Support 2017b) as follows:

Sign in to Office 365 as a Global or SharePoint Online admin. Select the app launcher icon in the upper-left and choose Admin. Choose Resources in the left navigation and then Sites (Figure 11). Then choose Add a site (Figure 12) and select New to create a new site collection (Figure 13).

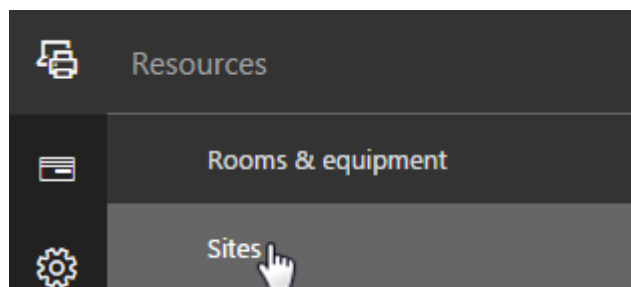


Figure 11. Accessing Sites from Resources (Office Support 2017b).

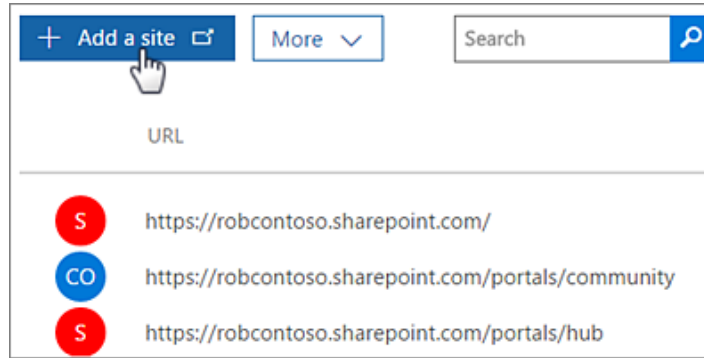


Figure 12. Adding a site (Office Support 2017b).

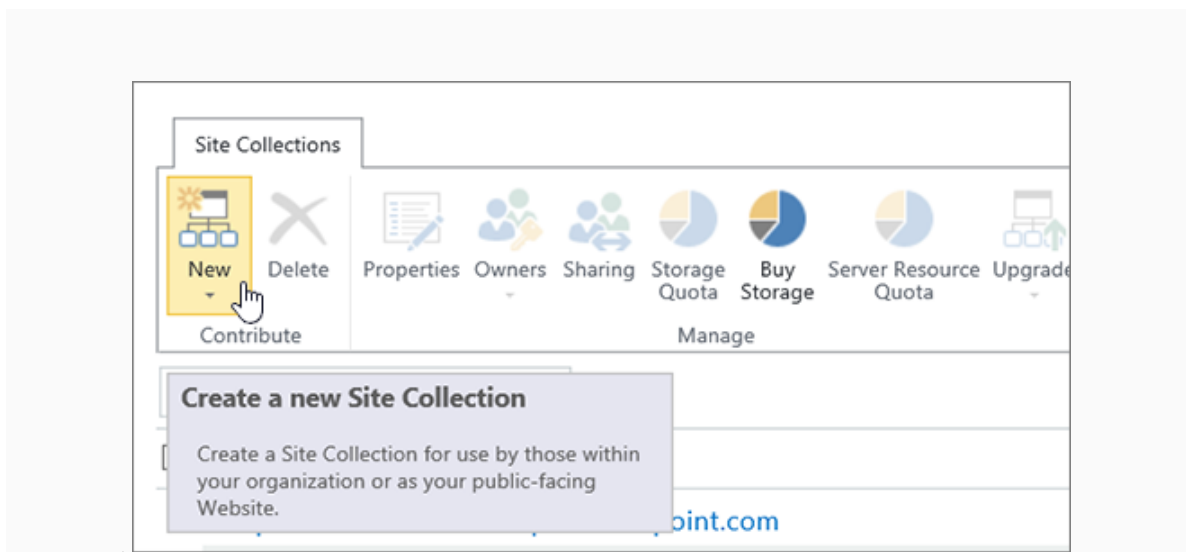


Figure 13. Creating a new site collection in SharePoint admin center (Office Support 2017b).

Finally, the new site collection properties needs to be filled out (Figure 14).

new site collection

**Title**

**Web Site Address**

**Template Selection** 2013 experience version will be used

Select a language:

Select a template:

Collaboration Enterprise Publishing Custom

Team Site  
 Blog  
 Developer Site  
 Project Site  
 Community Site

A place to work together with a group of people.

**Time Zone**

Figure 14. New site collection properties (Office Support 2017b).

#### 6.4.4 Sites

Having created the site collection (Figure 15), new sites can be created as sub-sites of the collection by selecting site contents from Site Settings first (Figure 16). The site contents view holds Subsites title where New subsite can be created (Figure 17). As the figure 6 on the structure of the system indicates, the main page will be holding two subsites, named as Arts creation and Arts consultancy. Consecutively, these sites will be holding further sub-sites, for example, Arts creation site holding subsites for arts creation activities such as Painting, Sculpture, etc.

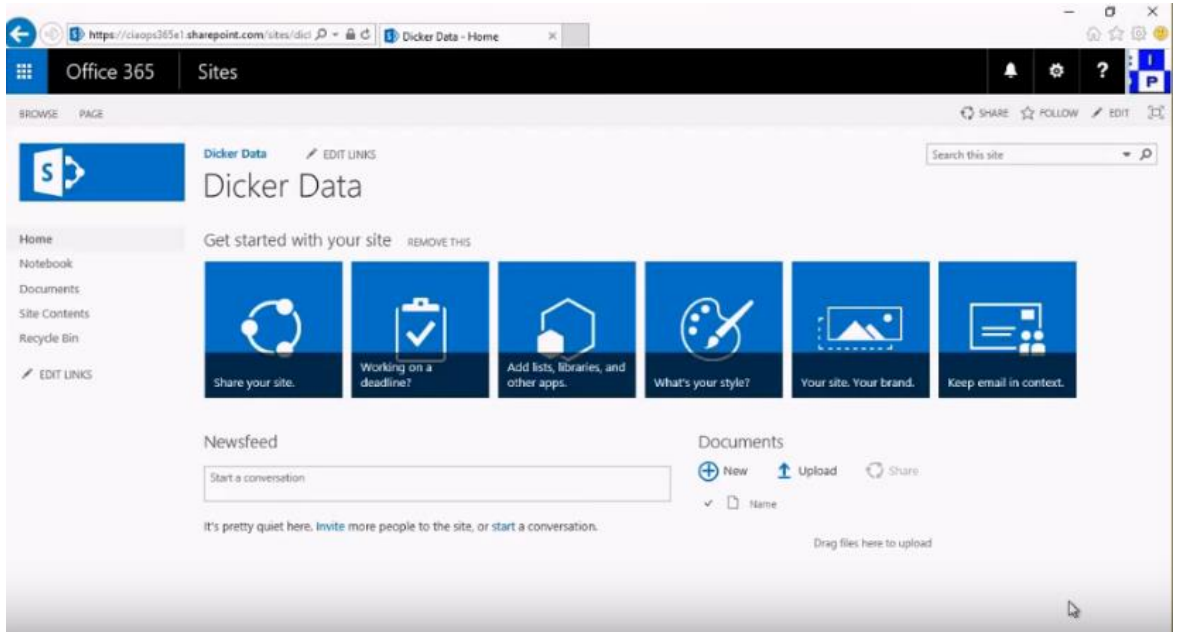


Figure 15. Standard SharePoint site collection without sub-sites (Dicker Data Microsoft Training Academy 2017).

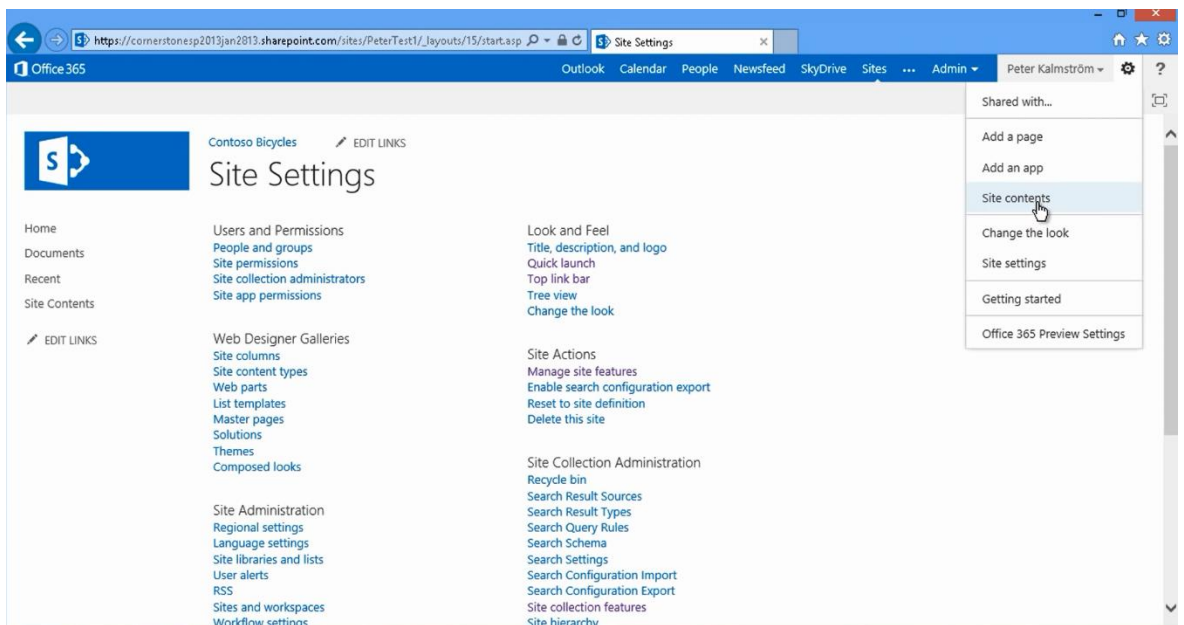


Figure 16. Selecting site contents from Site Settings (Kalmstrom.com 2017).

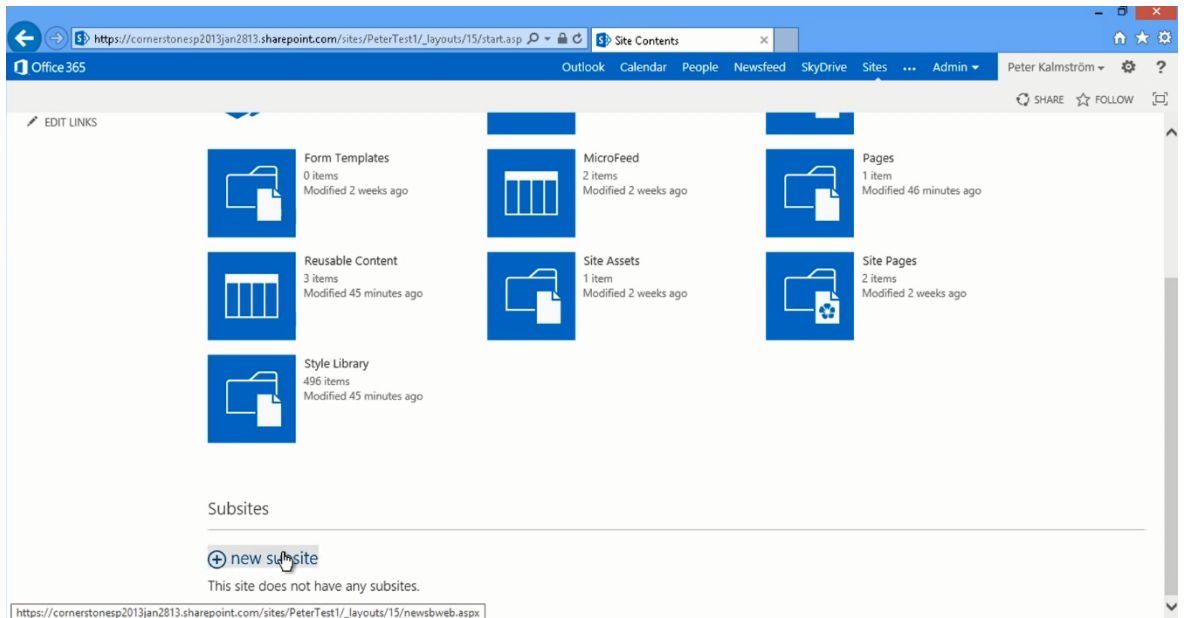


Figure 17. Creating a new site from Site Contents (Kalmstrom.com 2017).

On the New SharePoint Site page (Figure 18), details will be asked such as the name of the page, the Web site address i.e. URL name. For the template of the site, using a team site would be sufficient. Before clicking create, the navigation inheritance on 'Use the top link bar from the parent site?' should be set as 'Yes', so that the link to the created site will be shown on the main page (landing page, i.e. a site collection).

Contoso Bicycles EDIT LINKS

## Site Contents > New SharePoint Site

Home Documents Recent Site Contents EDIT LINKS

**Title and Description**

Title:

Description:

**Web Site Address**

URL name: [https://cornerstonesp2013jan2813.sharepoint.com/si...](https://cornerstonesp2013jan2813.sharepoint.com/si.../)

**Template Selection**

Select a language: English

Select a template:

- Collaboration
- Team Site**
- Blog
- Project Site
- Community Site

A place to work together with a group of people.

**Permissions**

You can give permission to access your new site to the same users who have access to this parent site, or you can give permission to a unique set of users.

Note: If you select **Use same permissions as parent site**, one set of user permissions is shared by both sites. Consequently, you cannot change user permissions on your new site unless you are an administrator of this parent site.

**User Permissions:**

Use same permissions as parent site

Use unique permissions

**Navigation**

Display this site on the Quick Launch of the parent site?

Yes  No

Display this site on the top link bar of the parent site?

Yes  No

**Navigation Inheritance**

Use the top link bar from the parent site?

Yes  No

Create Cancel

Figure 18. New SharePoint Site page for filling the details (Kalmstrom.com 2017).

### 6.4.5 Document Library

A document library is a place to store files where you one can find them easily, work on them, and access them from any device at any time. The default site in SharePoint Online includes a document library and one is created automatically when a new site is created. Additional document libraries can be added to a site as needed. In a document library, one can add (Figure 19), edit, delete, co-author, download and upload (Figure 20, Figure 21) documents, control access rights, track activity of files, share files and folders to others, add links to something outside of the library, and highlight a link, file or folder for quick access. Acceptable file formats for storing in the library include Word, Excel, PowerPoint, OneNote, and links. (Office Support 2017d)

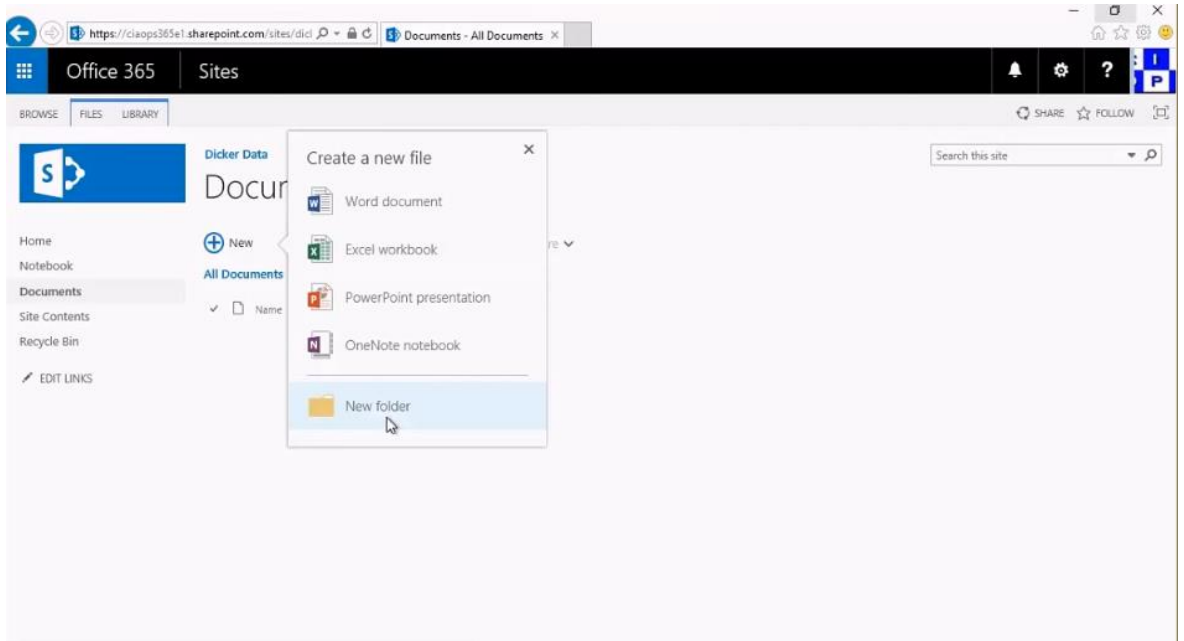


Figure 19. Creation of new document in the Documents Library (Dicker Data Microsoft Training Academy 2017).

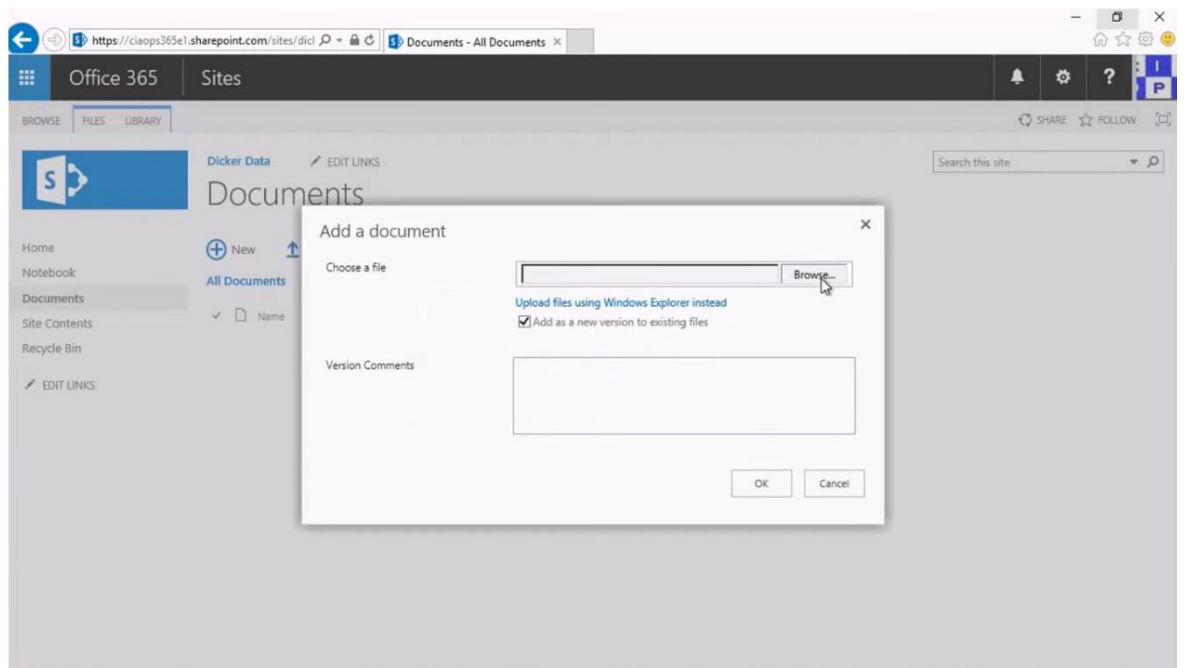


Figure 20. Uploading to the Documents Library (Dicker Data Microsoft Training Academy 2017).

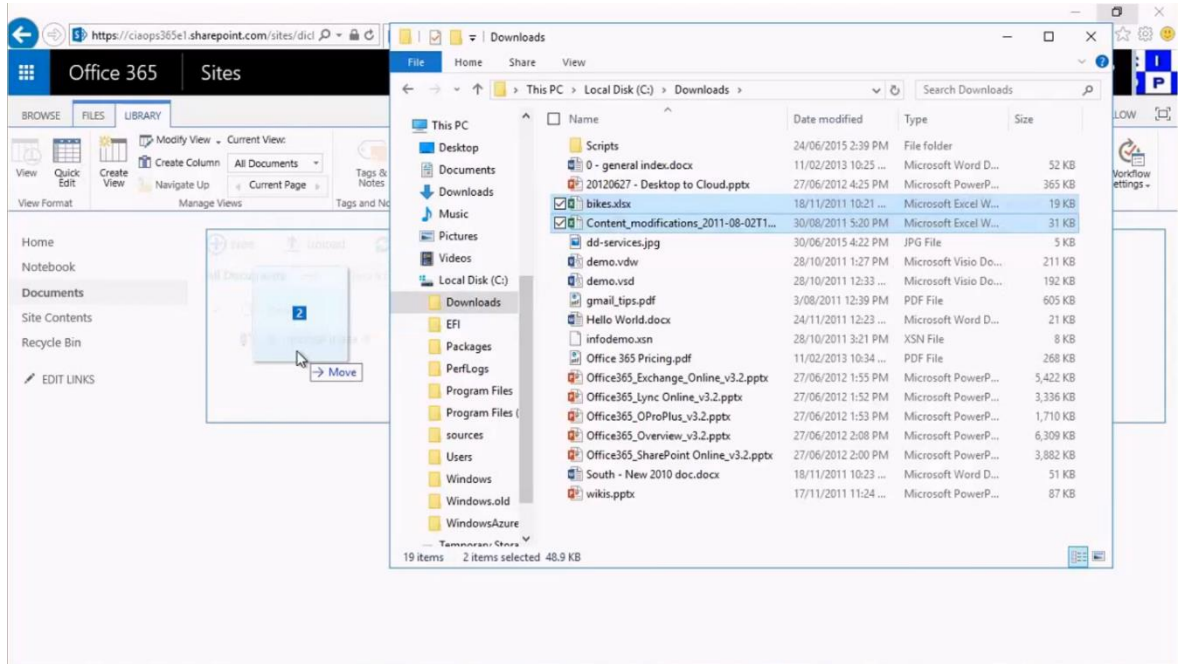


Figure 21. Drag and drop files from local computer to Documents Library on SharePoint Online (Dicker Data Microsoft Training Academy 2017).

All the documents related to the arts creation processes, that is, guidelines in Word format or PowerPoint presentations on arts creation processes, should be stored in the library. In case the processes involve visual presentations with images or video only, the files of related formats should be placed in separate picture and/or media libraries of the site.

#### 6.4.6 Media libraries

Document Library can be used in storing documents with textual and media content, for instance, PowerPoint presentations with text and images. For media files, separate libraries should be created as file repository: the files can be then linked between the libraries as needed. For instance, the libraries will host the individual images on works of art (not part of any documents) as well as videos demonstrating the arts creation processes.

The media libraries can be added to the site as apps. First, Site contents need to be accessed (Figure. Selecting Site contents from Site Settings). On Site contents, selecting Your Apps prompts a search box which can be used in finding Picture Library. Clicking the Picture Library icon prompts a dialog for naming the library (Figure 22).

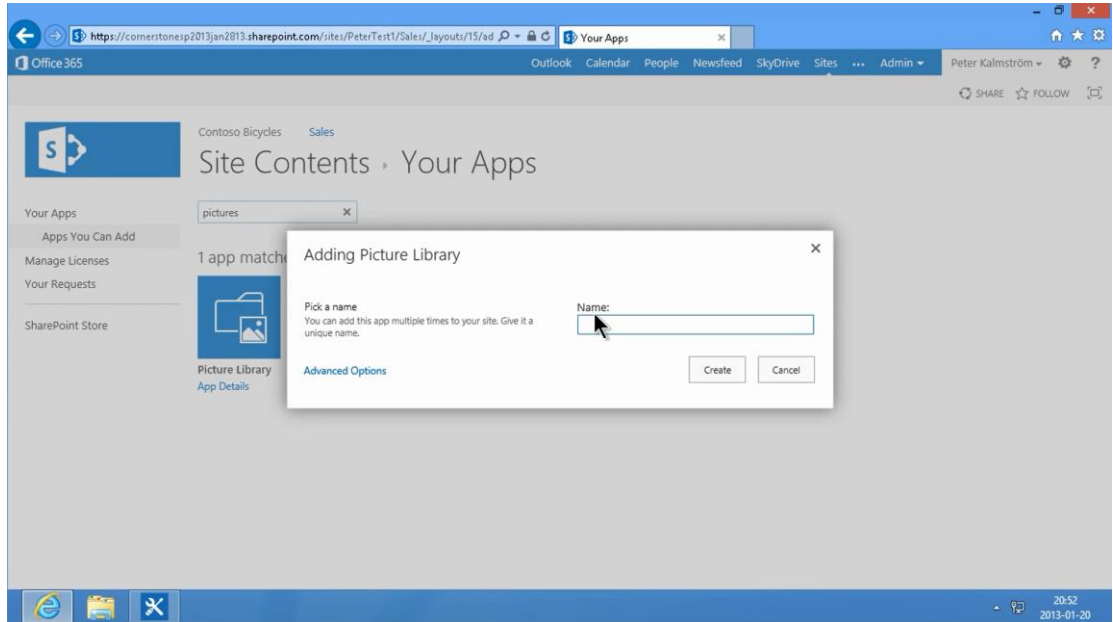


Figure 22. Adding a Picture Library from Site Contents (Kalmstrom.com 2017).

Similarly, media library for videos can be introduced via Site Contents: in SharePoint Online, there is a library form called Asset Library which can hold videos and images as well. An Asset Library is a type of document library that you can upload video, audio, or pictures and have additional functionality to support the storage and organization of rich media (Office Support 2017c).

For uploading media content, using Asset Library for the purpose will be used here as an example. Once the Asset Library has been created, it can be selected from the Launch bar on the left.

After selection, clicking New prompts a dialog for file creation. Image, Audio, or Video formats can be selected (Figure 23). Once a file format has been selected, a dialog (Add a document) is prompted. Here, clicking Browse allows locating the file which is to be uploaded. Once uploaded, user can modify the file metadata (Figure 24).

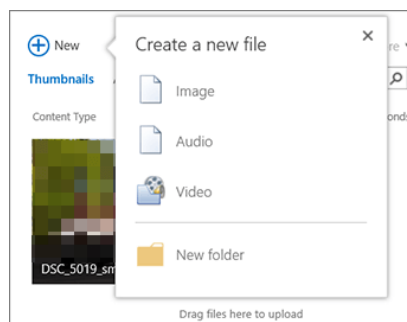


Figure 23. Create dialog for uploading (Office Support 2017c).

## Add a document

EDIT

Save Cancel Paste Copy Delete Item

Commit Clipboard Actions

**The document was uploaded successfully. Use this form to update the properties of the document.**

Content Type  Upload an image.

Name \*  .jpg

Title

Keywords

For example: scenery, mountains, trees, nature

Comments

A summary of this asset

Author

The primary author

Date Picture Taken

Copyright

Created at 4/20/2016 7:49 AM by  Last modified at 4/20/2016 7:49 AM by

Save Cancel

Figure 24. Metadata of uploaded file (Office Support 2017c).

### 6.4.7 Links

A link in a document library can be added to an item that is located outside the library. For example, one can add a link to a file or folder located in a different library or add a link to a website. When one adds a link in a library, the link shows up in the list of items in that library. (Office Support 2017a) Using links will be of importance in the knowledge management system for the case organisation, since Document Libraries are to hold all the Word, Excel and PowerPoint documents, whereas media files such as images and videos are going to be stored in Picture and/or Asset Libraries.

According to Office Support (Office Support 2017a), linking can be done as follows:

To add a link in a library, go to the library where you want to add a link. In the top left menu, click New and then select Link (Figure 25).

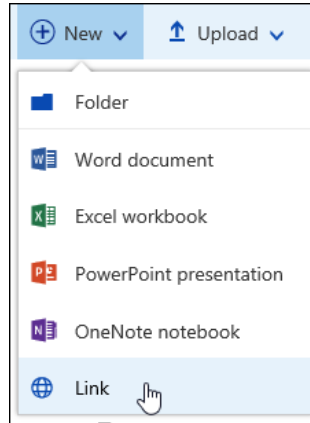


Figure 25. Adding a link from a library (Office Support 2017a).

The link will be entered in the Create link to dialog box. For example, if one wants to add a link to a file that is located in another library, first navigate to that library. Right click the file that should be linked to and click Get a link. Choose the type of link and then copy the link. Return to the library where the link should be added and enter that link in the Create link to dialog box. After entering the link in the Create link to dialog box, the File name box will appear. In the File name box, enter a name for the link and then click Create.

## 6.5 Roll-out of knowledge management system

Once the system has been introduced as specified on '6.4.1 Structure' and the relevant sites and libraries are in place, the system can be taken into use for its original purpose.

The converted knowledge in various formats (documents, images, video) can be uploaded to the system as specified on chapters "6.4.4 Document Library" and "6.4.5 Media libraries".

Additional configurations to the system in terms of permissions and theming can be conducted as needed from the Site Settings (Figure 8).

## 6.6 Maintenance of knowledge management system and further knowledge management activities

Once the knowledge management system has been rolled out, that is, the system has been created and the converted knowledge for retention has been stored in the system as

expected, the consecutive maintenance of the system and knowledge management activities takes place. This is to ensure that the introduced knowledge management system will not get reduced into to the status of a static knowledge maintenance repository. On the other hand, given the small size of the organisation where such responsibilities will continue to be shouldered on one or two persons only, the activities should be scaled to be manageable i.e. not taking too much time and effort in respect to the main activities of the organisation.

Given the previous requirement, these aspects should be considered already before any actions of the development plan take place, as part of planning, as it involves determining the expected life cycle of the system: in general, organisations should use life cycle for technologies in use, which takes into account the phases after the technology introduction process such as deployed, maintenance and ramp down. In respect to the case, this touch alternatives for the system life cycle: that is, is the system expected to be maintained beyond the business transition phase, or is it going to be part of the transition phase only and hence consecutively phased out after completion of the transition? Given that the answers to these questions is linked to the potential (i.e. yet to materialise) business transfer scenario where participation new business owner(s) has a pivotal role in formulating the answers, the final conclusion on the matter will be left for later time for now (i.e. outside of this thesis); similarly related to this topic, a detailed scheduling for carrying out the development plan is yet to be considered in detail in future. However, certain general principles related to maintenance and active knowledge management can be outlined for the rolled-out system in the case organisation:

- ensure that the system is operational: as the system is cloud-based and hosted outside of the organisation by an external service provider, there is need to ensure that it will be operational when used. The potential downtimes and even loss of data should be considered, and backup plans to have in place both for pre-emptive measures and for the materialised situations: although details of these actions are beyond this thesis, in general it is recommended to maintain backup copies on external disks and storage mediums as minimum.
- ensure that the knowledge stored in the system is valid: the knowledge should be up-to-date to reflect its usability for its original purpose and scope of use.
- carry out Create, Read, Update, Delete (CRUD) in respect to the knowledge as required: when the retained knowledge does not serve its purpose anymore, it should be either updated or deleted altogether. In addition, new knowledge may be

created during the system's life cycle, i.e. either through the knowledge conversion processes or by using the system's own tools for knowledge creation.

- ensure smooth transition of the system: once the business transition takes place, its success is dependable on ensuring the transition of the system to new owner. After all, the knowledge maintained on the system will be at the core of ensuring the organisational continuity and carrying on the line of business. Accordingly, the use of the system and relevant details on structure and policies should be documented to facilitate the transfer process.

Once the transfer of the business as well as the system to a new owner takes place, all the activities except the smooth transition will be determined by the new owner.

## 7 Discussion

In this thesis, examining of knowledge management in small and micro organisations resulted findings which together with their applicability will be discussed here. First, the questions which were originally outlined will be evaluated in respect to the answers provided by the findings. Additionally, the implications of the findings in terms of the organisational size scope will be considered. Finally, the limitations of the study and its outcomes will be defined, and suggestions for further research will be considered.

### 7.1 Conclusion

The original questions on knowledge types, knowledge management specifics, and tools and methods for knowledge transfer processes in small organisations were answered by conducting an overview on existing knowledge management research, as well as by reflecting the information by the research with the organisation of the case study.

Regarding the question on knowledge types in small and micro organisations, the answer is tied to the existence of knowledge management activities in the organisations. Based on the theoretical frameworks and existing research on small and micro business organisations the existence of knowledge management activities (and hence lack of them thereof) is dependable on the owner(s) of the organisation. Given the general lack of knowledge management activities in small organisations according to the research, most of the organisational knowledge is held and access to it is controlled by the owner(s) in small organisational settings. This stands for that most of the knowledge in such organisations is predominantly tacit knowledge, whether the knowledge is related to running the key business processes in the organisation or processes for accessing the knowledge which can be used as part of running the business processes. The theoretical findings to the generic question were further on backed by the findings from the case study and their answer to the question on types of knowledge existing in small and micro organisations in the field of (arts) consultancy, as both tacit and explicit knowledge were identified as existing in the case organisation, however it is the tacit knowledge which is predominantly present in the organisational activities: in light of the case, the analysis by reflecting the case against the theoretical framework as well as with Bloom's taxonomy proved that the tacitness of knowledge in the case organisation can be generalised to other smaller organisations as well, while noting that and the field of the business (arts consultancy) of the case organisation itself as such involves strong tacit characteristics.

Regarding the question on knowledge management specifics in small and micro organisation, the definition on tacit knowledge as the most predominantly existing and important form of knowledge in and for the organisations clearly calls for means which enable explicating the knowledge by turning it into other forms for easier adoption, i.e. turning the tacit knowledge into explicit knowledge, should the retention of the knowledge be considered pivotal for continuing running the organisation in future. The identification of the forms of knowledge in the organisation by utilising knowledge characterisations such as those defined by Blackler on embrained, embodied, encultured, embedded and encoded knowledge can help in the process, while models like SECI allow determining the knowledge conversion activities accordingly the identified forms of the knowledge types. Application of these methods, however, depends on the owner of the organisation first, i.e. the role of owner of the organisation in enabling and supporting knowledge management in the organisation is the precondition for any knowledge management activities: as the research on small organisations indicated, agreement by the owner to introduce knowledge management is not always self-evident as there may exist resistance to knowledge management practices, potentially because of authoritative and control-oriented nature of the owner. In the case, the role of the owner was underlined in running the arts consultancy activities including those of knowledge management, while the motivational factors in running the organisation was determined among the most significant determinant in respect to carrying out any organisational activities, and hence in ensuring the overall success in running the organisation.

As for the question on options regarding tools and methods to facilitate the knowledge management and, in particular, knowledge transfer processes by small and micro organisations, modern IT was considered as promising for the purpose given the emergence of feasible IT options for different types of organisations: in particular, the cloud-based solutions was found feasible in enabling implementation of knowledge management systems which provide scalability on-demand, while being affordable for smaller organisations to acquire and relatively easy to use. However, although recognised as important in the use of the organisations in enabling knowledge management activities, the role of IT can vary in small and micro organisations: as was indicated on chapter “3.3 Knowledge management in small organisations”, according to the research the knowledge management activities in small organisations tend to be largely non-existent, hence suggesting that the use of IT for properly organised knowledge management is yet to make its way in small organisations. One decisive factor according to the research is resources, that is, resources for acquiring knowledge management tools as well as the expertise needed to use them: as the research indicated, currently there exists affordable and even free-of-charge IT-based

tools which can facilitate the knowledge management activities including knowledge conversion in particular. Besides of the price factor, the technological learning curve would need to be overcome in order to take the full advantage of them, and, again, considering the stand of the owner(s) in terms of the required competencies and opinion in knowledge management in general.

The previous findings provided indicative answers in respect to the case specific question about ensuring the success of business transfer by utilising knowledge management means: in the case, the recognised specifics related to the field of business, i.e. the field of arts, highlighted the existence of tacit knowledge as being integral part of the business, affecting the knowledge acquisition and sharing methods which often involve forms of co-creation and related thinking processes involving arts medium, language and context. As was indicated by further analysis using the revised Bloom' taxonomy, arts knowledge in its different tacit forms is covered in arts creation processes, and conveying such knowledge via knowledge acquisition and sharing processes effectively requires interaction and co-creation of arts to take place, as it is the case in arts teaching between the teacher and student(s). To transfer such knowledge as part of the business transfer requires methods which capture the entire knowledge conveying scenarios: the teaching situations, for instance, would need to be recorded fully, given that the interaction in the situations is likely to introduce different forms of tacit knowledge which would not be made available and attainable otherwise. Recording with photography and video can provide such means for attaining the demonstrated knowledge, converting it into explicit forms and formats for transfer and storage into the knowledge management system. Having recognized the importance of turning the existing tacit-oriented knowledge base into explicit and transferable forms, concrete methods for converting the knowledge into explicit forms were introduced as part of the development plan together with cloud-based IT solution for the main target, i.e. the knowledge transfer: Microsoft's SharePoint Online was considered as a feasible and promising option for implementing a knowledge management system for hosting the tacit-knowledge-turned-to explicit forms of knowledge, given the familiarity of Microsoft-based software tools by the owner and the relatively affordable price to match.

## **7.2 Applicability of the study and its limitations**

The study provided a set of guidelines on how to establish knowledge management in a small, micro-sized organisation with relative ease and without major effort or investments involved. While the scope has involved knowledge management with the use of IT in a business transfer scenario, the guidelines can apply in cases where IT based knowledge

management is introduced with the existing owner(s) maintaining the ownership in the foreseeable future: introduction of the knowledge management activities might be applied to retain valuable knowledge in explicit forms for future utilisation and development, or to retain special circumstances and other factors involved in the knowledge acquisition situations and hence allowing means for comparison when the retained knowledge gets applied in different situations. For instance, these activities would undoubtedly serve the purpose in future in ensuring smoother business transfers of small and micro organisations when they introduce the change of generations (i.e. owner(s) retiring from running the business and passing it onwards to the successor representative(s) of the next generation).

While the previous suggestions on turning the existing tacit-based knowledge into explicit form by combining the modern recording means and scalable IT with cloud computing were suggested as the option to retain the existing knowledge based of the organisation in ensuring successful business transition of the organisation, it should be nevertheless acknowledged that the suggestions for action plan have their limitations as well and putting them in practice can be challenging as minimum due to various reasons involved. The implications of the limitations should be noted when the study and its findings are considered for applying by small and micro organisations similar to the case, and which are planning business transition activities.

First and foremost, retaining all knowledge in the organisations such as the case organisation will be extremely difficult if not impossible. When businesses are carried out for decades without continuous participation of others than the few owner(s) only, it is very likely that some knowledge will be left out when the business transition takes place: without strict knowledge retaining policies in place in the organisation and carrying them out involving recording every piece of information systematically down the years, the chances are that something will be inevitably left missing. The actions such as suggested in this study will mostly record only partly the knowledge which have been gained down the years by the owner, usually representing knowledge which has been iteratively accumulated: while this represents the most recent and up-to-date knowledge, it leaves missing the process of acquiring knowledge, which may have involved numerous sub-processes and tacit-like phases of learning which may have been important in achieving the current state of the knowledge.

As related to the previous challenge, some of the forms of knowledge retaining are dependable on factors beyond the organisation or the owner. For instance, should the teaching situations involve external parties such as students, any kind of photography or video

recording is subject to the law and hence dependable on the permission by the persons who are to be recorded by using the media. Such recording introduces copyright issues to consider, that is, does the recorder have rights to record to begin with and use the recordings further on as expected (Mediakasvatus.fi 2017). The persons who are recorded have right to decline of being recorded by using the media, hence making the knowledge retaining dependable on their explicit permissions. To gain that permission, they should be informed in detail why the recording takes place and what for the records are going to be used in future.

Finally, as the study introduces the means for knowledge retaining as a proposed action plan based on the review on the case organisation and the established opportunities involved, its actual success in action is yet to be seen: given that the use of the plan is dependable on the timing of the business transfer (which planning itself is not currently at sight, not to mention its execution), the usability of and potential modifications to the plan are yet to be acknowledged. The execution of the plan will be the source for further knowledge on how the plan was carried out, and what kind of modifications to it were needed and why.

### **7.3 Further potential and research directions**

As the previous chapter on limitations defined, this study was limited to introducing a set of suggestions in form of an action plan to convert and retain the existing tacit-oriented knowledge base into explicit forms for storage and management in a knowledge management system for potential business transfer situation in future. Carrying out of the plan will evidently provide further knowledge for analysis and resulting directions for new research.

Additionally, conducting a wider research involving several arts oriented organisations and the applicability of knowledge management by using modern IT-based methods would provide additional information on the specifics involved in the defined organisational context. Among others, such studies could cover in greater detail for example the processes involved in knowledge transfer and transformation, i.e. how the boundary effects described by Carlile take place in various organisations functioning in the same line of business, and the role of IT in terms of opportunities and challenges in them. Similarly, more informative studies for practical purpose involving the defined organisational context and scope could be done over the successes and challenges in the business transfers conducted by the organisations while using IT in knowledge retention specifically: given that similar studies exist on mid- to large-sized organisations mainly and in many countries the generational change of small and micro organisations is currently topical matter, there is a

recognisable need for the studies which address the issues and concerns related to business transfers in respect to the role of knowledge retention as part of the process in small organisational contexts.

Another interesting topic for future research is related to the knowledge conversion methods by technological means in the use of smaller and larger organisations alike. As we are currently experiencing the emergence, development and introductions of new technologies such as artificial intelligence and the technological means are becoming available to wider audience at reasonable price, undoubtedly there exists potential which is yet to be discovered and to make its way to the use of knowledge management in organisations. For instance, in respect to the organisations which are oriented in creativity and design based activities such as the case organisation, innovation means for visual presentation such as virtual reality represents one interesting form of knowledge retention of explicit type. As an enhanced form of visualisation which has been introduced rather recently, virtual reality might become alternative in recording arts creation processes: instead of 2D based forms of visualisation which are still the commonplace, virtual reality would allow different angles to be viewed in a 3D setting, and providing real-world experience. Another interesting and more futuristic topic of mind-reading technology involves converting the in-brain knowledge directly to explicit-forms: considering the potential for different kinds of applications which encompass various thought-to-text or thought-to-images scenarios for instance, such technology would be applicable across various needs and organisational types, and would allow retention of different types of knowledge without involving interfacing with the knowledge retention technologies as they are known to us today.

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## **Appendices**

### **Appendix 1. Questionnaire questions**

#### ***1 Background***

Could you describe the lines of business which your organisation has engaged during the years (1989-2017)?

#### ***2 Knowledge-related activities***

Regarding knowledge acquisition, what kind of methods have you used during the existence of your business?

Regarding knowledge sharing, what kind of methods have you used during the existence of your business?

Regarding knowledge conversion, what kind of methods have you used during the existence of your business?

Regarding knowledge creation, what kind of methods have you used during the existence of your business?

#### ***3 Marketing / Awareness creation***

What kind of activities you have conducted in order to increase awareness on the lines of business which your organisation offers?

#### ***4 Role of IT in increasing knowledge and awareness***

Could you describe your general impression / attitude / etc for using IT as part of organisational activities?

Are any IT-based methods used and if so, how / in what way?

## Appendix 2. Bloom's Taxonomy (Revision by Kraftwohl)

<p><b>Table 1. Structure of the Knowledge Dimension of the Revised Taxonomy (Kraftwohl 2002, 214)</b></p> <p><b>A. Factual Knowledge</b> - The basic elements that students must know to be acquainted with a discipline or solve problems in it.  <b>Aa. Knowledge of terminology</b>  <b>Ab. Knowledge of specific details and elements</b></p> <p><b>B. Conceptual Knowledge</b> - The interrelationships among the basic elements within a larger structure that enable them to function together.  <b>Ba. Knowledge of classifications and categories</b>  <b>Bb. Knowledge of principles and generalizations</b>  <b>Bc. Knowledge of theories, models, and structures</b></p> <p><b>C. Procedural Knowledge</b> - How to do something; methods of inquiry, and criteria for using skills, algorithms, techniques, and methods.  <b>Ca. Knowledge of subject-specific skills and algorithms</b>  <b>Cb. Knowledge of subject-specific techniques and methods</b>  <b>Cc. Knowledge of criteria for determining when to use appropriate procedures</b></p> <p><b>D. Metacognitive Knowledge</b> - Knowledge of cognition in general as well as awareness and knowledge of one's own cognition.  <b>Da. Strategic knowledge</b>  <b>Db. Knowledge about cognitive tasks, including appropriate contextual and conditional knowledge</b>  <b>Dc. Self-knowledge</b></p>
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<p><b>Table 2. Structure of the Cognitive Process Dimension of the Revised Taxonomy (Kraftwohl 2002, 215)</b></p> <p><b>1.0 Remember</b> - Retrieving relevant knowledge from long-term memory.  <b>1.1 Recognizing</b>  <b>1.2 Recalling</b></p> <p><b>2.0 Understand</b> - Determining the meaning of instructional messages, including oral, written, and graphic communication.  <b>2.1 Interpreting</b>  <b>2.2 Exemplifying</b>  <b>2.3 Classifying</b>  <b>2.4 Summarizing</b>  <b>2.5 Inferring</b>  <b>2.6 Comparing</b>  <b>2.7 Explaining</b></p> <p><b>3.0 Apply</b> - Carrying out or using a procedure in a given situation.  <b>3.1 Executing</b>  <b>3.2 Implementing</b></p> <p><b>4.0 Analyze</b> - Breaking material into its constituent parts and detecting how the parts relate to one another and to an overall structure or purpose.  <b>4.1 Differentiating</b>  <b>4.2 Organizing</b>  <b>4.3 Attributing</b></p> <p><b>5.0 Evaluate</b> - Making judgments based on criteria and standards.  <b>5.1 Checking</b>  <b>5.2 Critiquing</b></p> <p><b>6.0 Create</b> - Putting elements together to form a novel, coherent whole or make an original product.  <b>6.1 Generating</b>  <b>6.2 Planning</b>  <b>6.3 Producing</b></p>
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