Evaluating the Role and Effectiveness of an Intranet in facilitating Knowledge Management

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ABSTRACT

The knowledge era, with its increasingly complex and fast changing environment, has forced organisations to re-evaluate themselves in the light of new business models. Consequently, knowledge is coming under increasing scrutiny, as organisations consider how best to manage this intangible and valuable resource.

This paper reports on a research study that examined the role and effectiveness of intranet technology in the process of creating and managing knowledge for the Social Services Department of Surrey County Council, which is one of the largest local authorities in the UK.

The study devised an Intranet Evaluation Model (IEM) that combines both technical (hard) and human (soft) factors. The IEM makes use of an epistemological framework in order to elicit the mental models from across an organisation's landscape.

Via a user survey, the study was able to identify gaps, mismatches and failings in the knowledge management efforts. These were summarised in an easily understandable diagrammatic form, using Knowledge Evaluation Maps, that showed the gap between the current and desired intranet roles for the different user groups within the Council.

The paper concludes by demonstrating how factors, such as the different mental models of the user groups can determine the effectiveness (or otherwise) of an intranet in managing organisational knowledge.

The paper also recommends areas within the Council's services that need attention and proposes the use of the IEM as a consulting tool for organisations seeking to evaluate their own knowledge management work.

1. A CRITIQUE OF KNOWLEDGE MANAGEMENT LITERATURE

1.1 The Changing Business Paradigm

As the business models of the industrial era, in which the operating environment was considered stable, give way to the increasingly complex and fast changing environment of the knowledge era, organisations are being forced to constantly seek new ways of leveraging resources more productively (Quinn, 1992). In the light of these changes, knowledge is coming under increasing scrutiny as the ability to farm and harvest this intangible asset is viewed as a significant source of value (Barney, 1998).

Von Krogh, Roos & Kleine (1998) suggest that this paradigm change is most evident in the literature relating to strategic management, which has historically been dominated by external analysis approaches such as Porter's five forces. However, the last decade has witnessed the increasing profile of complementary resource-based approaches, such as those advocated by Hamel and Prahalad (1989), who view an organisation's knowledge base as critical for gaining a sustainable competitive advantage.

Covin & Stivers (1997) add further support to these views, suggesting that in the uncertainty of this new era, it is unlikely that the traditional structures, command lines and controls, which worked well in stable environments, will do so in the knowledge era. They conclude that in this new environment of knowledge workers, information technology and a resource based emphasis, organisations sense that knowledge is a key ingredient for future success. Consequently, organisations must gain a better understanding of the key knowledge required to support their decision making processes, as well as how to effectively develop and disseminate it.

1.2 A Review of Knowledge Management Literature

Whilst the importance of knowledge for the 21st Century has been elevated, a review of literature on this multifaceted and dynamic subject reveals a complicated and sometimes contradictory topic, capable of being analysed from many angles and levels. The following section provides an overview of this situation, attempting to bring clarity and classification to the vast body of theory on knowledge management.

1.2.1 Understanding the Dynamic Nature of Knowledge

There has been much discussion on the definition of knowledge. Whilst some have suggested it is not productive to attempt a definition (Davenport, 1998), others such as Gourlay (2000a) suggest that managers need to be clear about what they are trying to manage if they are to effectively evaluate their knowledge management projects. Some researchers have provided definitions, but in many cases (Hedlund, 1995); (Myers, 1996), they have merely equated information with knowledge, and subsequently used these terms interchangeably. Checkland and Holwell (1998) attempted to clarify this situation by defining the commonly used *elements* (figure 1a), but in doing so appear to have avoided a definition. To further complicate the situation, there are anomalies relating to what the researchers' theories cover. Whilst some take knowledge as a given *entity* thus concentrating on the management aspect, others such as Nonaka and Takeuchi (1995) argue that the *processes* by which knowledge is created, through the interaction between tacit and explicit knowledge, form the key issue. They refer to tacit knowledge as that which does not take a linguistic or numerical form (broken down between cognitive tacit i.e. values, beliefs and emotions and technical tacit i.e. know how), and explicit knowledge as an objective form of knowledge that can be linguistically/numerically represented. Gourlay (2000a) further expands on this, suggesting that in order to capture the true nature of knowledge creation, a further distinction is required between *contingently tacit knowledge* i.e. knowledge that can ultimately be transmitted through spoken or written forms, just that nobody has taken the time to do this e.g. trade secrets, and *inherently tacit knowledge* i.e. not expressible in words e.g. instincts (figure 1b).

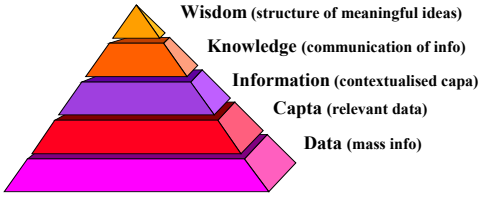

Figure 1a: Knowledge Elements

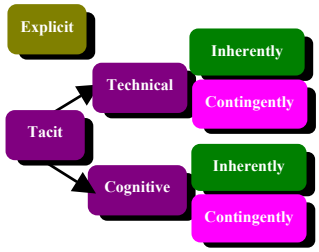

Figure 1b: Knowledge Categories

To further illustrate the dynamic and complex nature of knowledge, from a holistic angle it can be seen that whilst some researchers favour the IT perspective and the notion that knowledge management emerged in the 1950s alongside IT developments, others emphasise the people issues, suggesting that knowledge was an essential ingredient of early civilisation.

What this discussion demonstrates is that such debates appear to be a classic symptom of knowledge management and one which may serve to cause the observed confusion around the issues of knowledge to continue unproductively. Gourlay (2000b) sums up this complex situation by suggesting that none of the above arguments actually advances the understanding of knowledge and that whilst there are many ways to define knowledge e.g. know-how, learning and intelligence, and classify knowledge e.g. as tacit or explicit, the bottom line is that of *manage it better or perish*.

Given this situation, it is not surprising that managers, having rushed to adopt the latest knowledge management solutions, are now struggling to justify their decisions.

1.2.2 Using Epistemological Assumptions to critique Knowledge Management Theories

Von Krogh et al (1998) suggest that the most effective means of bringing order to this rapidly growing body of seemingly contradictory literature is to avoid an attempt at a universally acceptable definition of knowledge and concentrate instead on structuring existing theories, in order to gain a greater practical understanding of the nature of knowledge (table 1). They suggest categorising theories according to their research assumptions (epistemologies).

	Mainstream Cognitivistic	Connectionistic	Autopoietic
View of an organisation	Open systems that collect and store information centrally. Action is steered by top management	Virtual organisations where people are connected through information technology. Self-steered by local rules	Autonomous and observing system that is simultaneously open for data but closed for information
Perception of operating environment	The environment is pre-given, thus main task is to picture the environment and adapt to it	Organisational communities create different pictures of the pre-given world	The environment and the organisation are co-evolving systems
Notion of knowledge	**Fixed Object (explicit)** Knowledge is a fixed and representable entity which can be stored in computers, databases, archives and manuals and is easily shared across an organisation	**Object (explicit)** Knowledge resides in the connections of experts. It is problem-solution orientated and dependent upon the condition of the network of interconnected components	**Process (tacit)** Knowledge resides in the mind and social system. It is observer / history dependent, context sensitive and not directly shared, only indirectly through discussions
Management and development of knowledge	**Standardised Management of Information** Knowledge development through assimilation and dissemination of information based on 'representations' of pre-defined worlds	**Management of standardised Information through communities** Local rules in a community network determine how knowledge is accumulated, thus allowing self-organised groups to develop specific knowledge in order to represent their own environment	**Management of data through individual people** Process of interpreting incoming data is cornerstone of knowledge development, enabling systems to make distinctions and create meaning according to observations and previous experiences
Origins of Approach	Information theory	A developed form of information theory	Philosophy / psychology / sociology concepts
Epistemological assumptions of leading writers	Shannon (49), Deetz (92), Halal (96), Myers (96)	Thayer (97), Heath (94), Schrage (90), Stohl (95)	Nonaka & Takeuchi (95) Lank (97) Checkland & Holwell (98)

Table 1: Effects of epistemological assumptions on knowledge. Adapted from von Krogh and Kleine (1998)

Although von Krogh et al (1998) acknowledge that most researchers' work spans more than one epistemology, they suggest that these epistemologies should be viewed not as mutually exclusive, but as a continuum (figure 2). Furthermore, the epistemologies can be broken down within their own divisions. For instance, there is a split in the cognitivistic epistemology between the *mainstream cognitive sciences* i.e. artificial intelligence with an IT orientation, and the *situated cognitivistic* division which has more in common with the autopoietic epistemology. This categorisation provides a basis for a critique of the literature and a structure into which the position of both academic research and organisational approaches to knowledge management can be situated (see final row of table 1). Von Krogh and Roos (1996) suggest this is an essential step to identifying the limitations of a particular way of thinking.

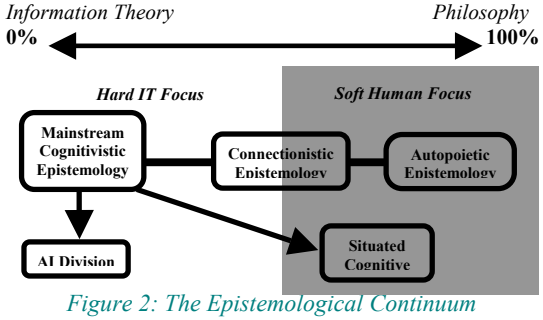

Figure 2: The Epistemological Continuum

2 THE ROLE OF AN INTRANET IN KNOWLEDGE MANAGEMENT

2.1 The Changing Role of the Intranet for Managing Knowledge

There have been many debates on the role and function of an intranet in facilitating knowledge. Figure 3 incorporates both Nonaka and Takeuchi's (1996) and Gourlay's (2000a) models of knowledge creation and management, whilst also expanding on Wood & Varey's (1999) viewpoint, relating to the role of an intranet as an information tool, a communication tool or a combination of both. It illustrates the four main activities involved in creating and managing knowledge and the generic IT functions that may assist these activities, which, depending on the epistemology being applied, may vary an intranet's role (Truch 2001).

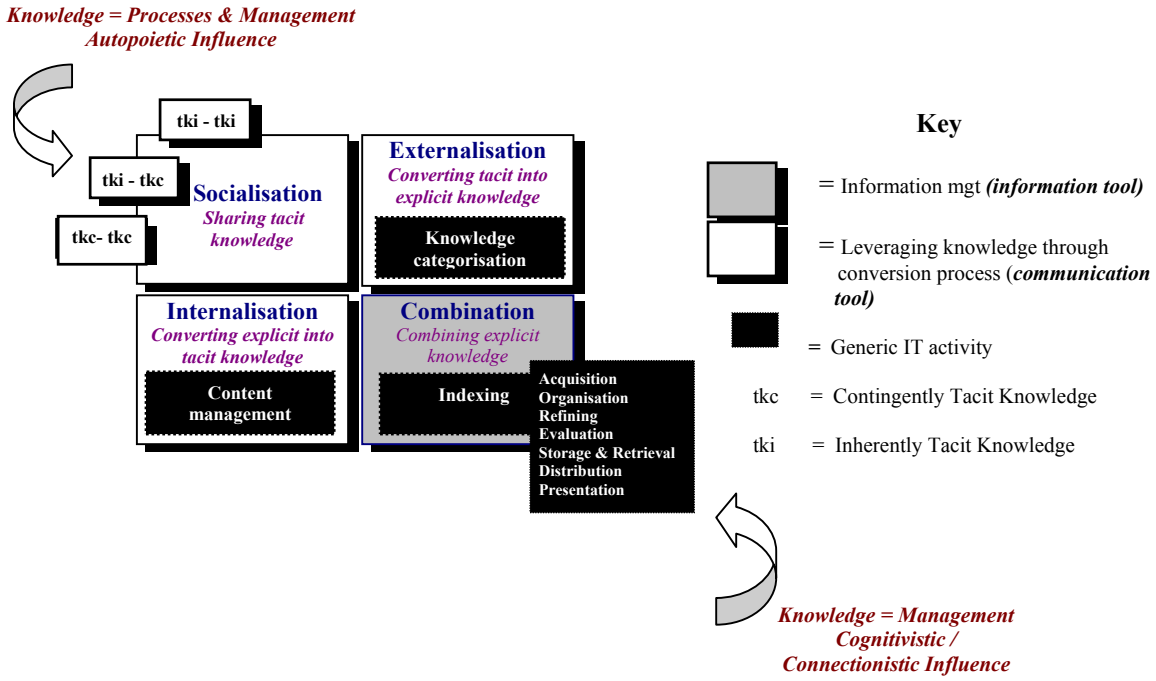

Figure 3: The generic role of IT in knowledge management activities

2.1.1 Cognitivistic View of an Intranet

The artificial intelligence branch of the cognitivistic epistemology (figure 2) perceives an intranet as a culturally/socially neutral tool for representing information through the combination of explicit information i.e. *information management*, as opposed to knowledge management (Vickers 1995). Thus, according to figure 3, an intranet would encompass activities such as the acquisition, organisation, storage, retention, distribution and presentation of information.

Those favouring this epistemology view infrastructures as a critical aspect, and an intranet as a cost-effective standardised technological solution to deal with the *information chaos*. The intranet is then the central building block for robust infrastructures to help facilitate knowledge flows within an organisation and to identify trends and connections based on facts and figures that would be impossible for the human mind to process.

2.1.2 Connectionistic View of an Intranet

This epistemology views an intranet as a tool, not just to acquire, store and disseminate information for their own group, but to assist in making the *right connections* between different groups through the communication of the rules and procedures required to locate hidden organisational information. Thus, an intranet driven by the connectionistic epistemology is essentially an *information tool* designed around community groups who share the same interpretation processes.

2.1.3 Autopoietic View of an Intranet

Supporters of this *people orientated* epistemology, which can be aligned with situated cognitive theory (figure 2), often feel the mainstream cognitive trap of viewing the human mind as a computer has already been experienced through artificial intelligence efforts in the 1970s. This view is supported by the claim that 70% of BPR projects, with their overemphasis on technology at the expense of human involvement, fail to deliver expected outcomes (Malhorta 2000). They argue that an intranet can not directly deal with certain forms of knowledge i.e. tacit knowledge, particularly the inherently tacit form.

Thus, this epistemology places increasing emphasis on an intranet as a *communication tool* to facilitate the direct conversion/creation of both contingently and inherently tacit knowledge. This may be achieved via internalisation and externalisation processes, and indirectly via socialisation. Knowledge sharing may then be encouraged through the provision of *data*, enabling individuals to identify relevant staff and make physical contact.

3 THE INTRANET EVALUATION MODEL (IEM)

An Intranet Evaluation Model (IEM) has been devised in order to establish an intranet's role and effectiveness within an organisation against current theory. It also aims to make recommendations, as to whether an intranet as a knowledge management tool is worth expanding, revisiting or cutting. The IEM (figure 4), which is comparable to Skok and Dhanjal's (1996) work on constructing evaluation models, consists of a framework and process providing a formal evaluation structure, ensuring critical elements are not inadvertently missed, and potential political/personal bias is minimised.

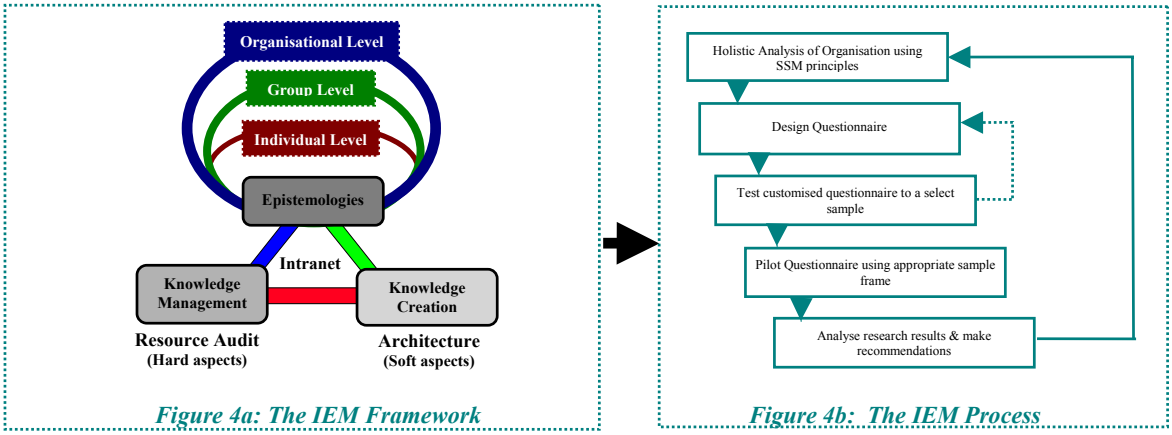

Figure 4a: The IEM Framework

Figure 4b: The IEM Process

Figure 4: The Intranet Evaluation Model (IEM)

3.1 The IEM Framework

The evaluation framework aims to elicit the mental models from across an organisation's landscape. In doing so, it allows users to input into a solution as opposed to having a solution imposed on them, whilst also enabling an organisation to identify priorities and where to focus its intranet knowledge management efforts by highlighting gaps, mismatches and informing the decision making process. The framework makes reference to an organisation's architecture and resource issues (figures 5 & 6), which must be reflected in the accompanying evaluation process to ensure key areas and issues are not avoided or forgotten during the evaluation.

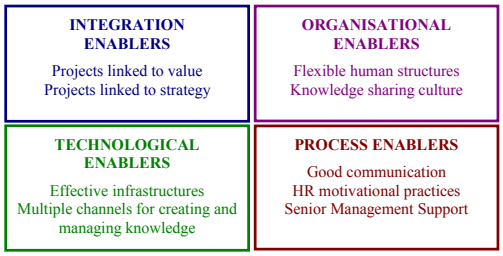

Figure 5: Critical Architectural Issues
Adapted from the Eight CSFs of Davenport et al (1998)

Evaluates the wider organisational architecture for its effectiveness in facilitating the creation of knowledge

Figure 6: Resource Audit
Knowledge Levers, Skyrme (1998)

Identifies an organisation's key knowledge that requires effective management

Although the four enablers (figure 5) are closely integrated, the key determinant of success is often whether individuals are willing and able to use the technological tools to contribute their own knowledge to systems and also access the contributions of others.

3.2 The IEM Process

The framework is operationalised via a two-stage evaluation process. The first stage involves the application of Soft Systems Methodology principles (Checkland and Holwell, 1998) covering key influences, external pressures, identification of stakeholder groups, naturally occurring networks and areas of conflict. The results from this stage can provide a deeper understanding of the issues and areas of conflict pertaining to a specific organisation in order to maximise the effectiveness of the IEM. The second evaluation process consists of establishing six research objectives, classified into four sections. These examine the current situation, human and technology aspects, and future developments, thus forming the basis of a questionnaire that incorporates the critical factors and issues identified in figures 5 and 6.

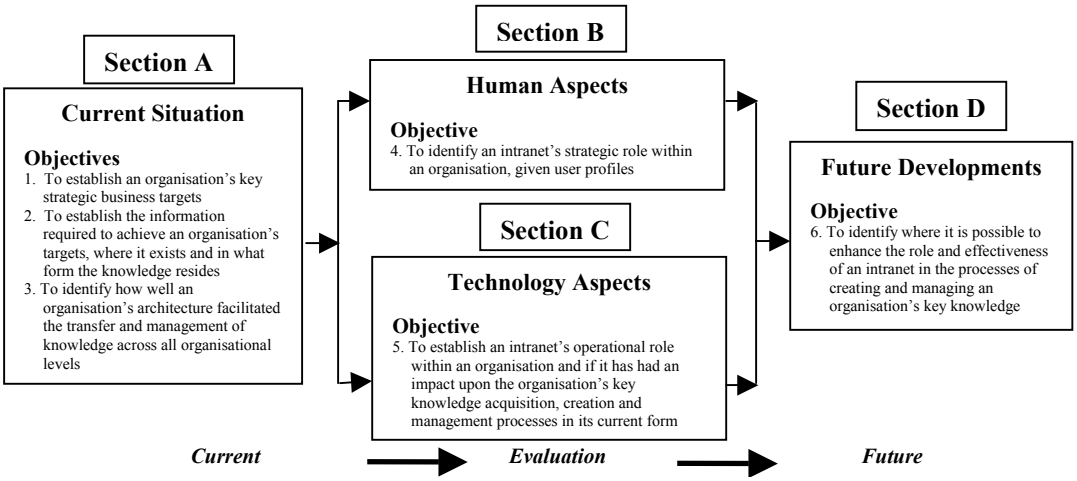

Figure 7: IEM Generic Evaluation Process

3.3 Guidance on the Application of the IEM Process

Although an essential aspect of the IEM is its flexibility, allowing individual organisations to customise the model to suit their unique circumstances, there are a number of key issues (table 2) central to its robustness and validity.

1	The evaluation model must be clearly aimed at assessing an intranet as a strategic ***performance enhancing knowledge investment***. Hence evaluation techniques and questions must consider and assess areas of current performance and future development
2	As an intranet is essentially pull technology, the ***views of the end users are more important*** than in most evaluation studies. The way stakeholder groups are identified for the purpose of this evaluation is crucial to the IEM
3	The intranet is just one of a number of competing information/communication vehicles for facilitating knowledge, thus the IEM needs to holistically explore the organisation's architecture
4	The IEM must ensure coverage of both technological and human perspectives in order to fully evaluate the epistemological tendencies
5	The IEM must not be applied in isolation. The results from the model should feed into an organisation's strategic plans.

Table 2: Key Issues Central to the IEM

4 RESEARCH METHODOLOGY

4.1 Methodology Justification

The IEM's aims can be effectively achieved through the application of a predominantly *phenomenological orientated* evaluation strategy, utilising aspects of the Soft Systems Methodology approach to holistically understand an organisation's situation, and a questionnaire in order to elicit a wide range of views from across an organisation. A pilot can be employed to elicit key trends in respondents qualitative answers in order to close questions to produce a largely structured and cost effective questionnaire, whilst still allowing respondents space to freely express their own perceptions, experience and interpretations of the situation. The responses from the questionnaire stage can be followed up with a series of personal interviews enabling issues to be clarified and probed in more detail.

This evaluation approach is based on the principles outlined by Magrill & Brown's (1998) TEAM methodology, to ensure essential organisational-specific issues such as setting, interdependencies, complexities, idiosyncrasies and context specific observations can be captured by the research in a controlled manner, without automatically imposing a rigid set of pre-formulated expectations on a situation.

The continuous development of an evaluation model, as opposed to a stand-alone questionnaire provides a valuable on-going learning opportunity for an organisation. By transferring control of the IEM to in-house administrators, it also ensures that the evaluation can be readily replicated and that the results are comparable.

4.2 Interviewer Bias

The major weakness of a phenomenological strategy is managing potential interviewer bias. As the administrators of the framework will work for the organisations under review, it is beneficial that a neutral stance is maintained, or at the very least, researchers are open about the assumptions they bring to the evaluation. It is anticipated that the *closing* of questions through a pilot should act, to a certain degree, as a controlling mechanism.

However, the key issue, which far outweighs possible interview bias, is the administrator's ability to draw on *inquiry by observation* through their employed status within the organisation under evaluation. This approach should help address the limitation of qualitative responses, through the researcher's ability to understand a situation to an extent not entirely possible using the insights of others obtained through interviews.

4.3 Sample Frame / Selection

Table 3 illustrates the steps required to ensure an adequate sample for the IEM.

Step	*Application of IEM*
1.	Establish population size from a reliable (up-to-date) source
2.	Identify sample size (minimum 5% of population) and calculate population proportion and confidence interval
3.	Apply a stratified sampling technique to the population sample according to the identified stakeholder groupings and calculate systematic sampling method & interval
4.	Calculate sampling error on respondent sample

Table 3: IEM Sample Frame

4.4 Non-Sampling Errors

Due to the complexities of the information being requested by the IEM, the issues of data validation and cleaning become critical. The use of statistical packages to store and handle data queries, as well as to identify areas of discrepancies in respondents' replies is essential. The use of check questions is also an intrinsic aspect of the IEM, otherwise the validity of the results could be skewed by inconsistent responses. The non-responding population can be analysed via identified stakeholder categories using unique identifier codes, to ensure they are not significantly different from the sample population. For quality control reasons, respondents should be asked to simply identify their job title and location, enabling full control of the stakeholder classification process to rest with the researcher.

5 SURREY SOCIAL SERVICES DEPARTMENT (SSD)

5.1 Background

Surrey SSD employs approximately 3,000 staff to commission or directly provide a wide range of social care services and support for approximately 23,000 vulnerable, disadvantaged or disabled people within Surrey.

The operating market is highly complex (legislatively and politically) and constantly changing, with all social services departments working to both a national framework of strategic imperatives and local issues. With regards to knowledge management, Central Government has highlighted this specific issue within the public sector with *The Green Paper on the National Grid for Learning,* Downing Street's seminal paper *Our Information Age - The Government's vision,* and more recently the DTI's *Converging Technologies: Consequences for the new Knowledge-Driven economy*.

Surrey SSD's strategic intent is *"...to protect and support those in need of care and assistance, enabling them and their families to retain or regain their independence and to take responsibility for decisions affecting their lives..."* This statement can be translated into six key business targets: promoting independence, improving life chances, protecting vulnerable people, making communities safer, supporting carers and working better. These targets take account of the changing operating environment and resultant pressures that must be met within tight budgetary restrictions.

Using soft systems methodology principles, figure 8 provides an holistic overview of the issues and potential barriers to effective knowledge management currently facing the organisation, encompassing external influences, internal structures, processes and cultural issues, reflecting viewpoints, notional activities and outcomes at the various organisational levels.

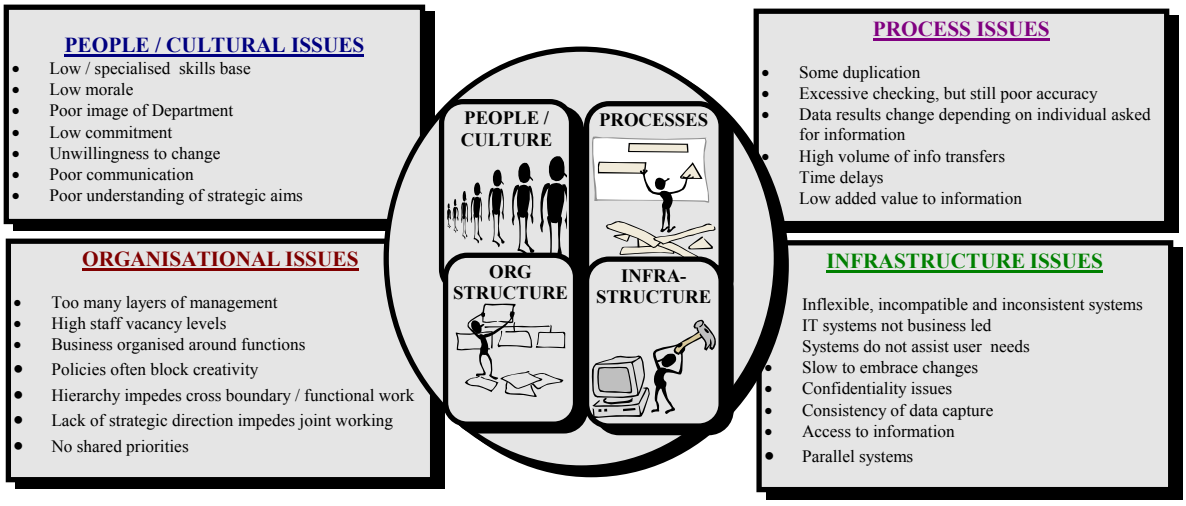

Figure 8: Factor Analysis for Surrey SSD

The results indicate that staff are generally unhappy about the organisation's current architecture, infrastructure and culture.

5.2 Surrey SSD's Knowledge Management Programme and Intranet Application

In line with Tapscott's (1996) definition, Surrey SSD is a *knowledge organisation* in the sense that its main assets are intellectual ones, and the organisation is adopting a focus on knowledge workers and knowledge management strategies. Surrey SSD acknowledges that knowledge is the key service of the organisation's survival and as such should be a vital determinant of the strategic positioning of the business.

However, whilst the organisation has employed a knowledge manager and part time chief knowledge officer, both of whom, against the current trend (Rosen 2001) are based in the IT Department, it is considered that the knowledge management programme is in its infancy (figure 9). The Chief Executive views the installation of an intranet as a key strategic development to assist the Department to strategically manage and grow its knowledge resources, to become what Choo (1998) refers to as a *knowing organisation*, allowing it to manoeuvre with intelligence and creativity, in order to deal with the information chaos arising from the changing business paradigm of the knowledge era.

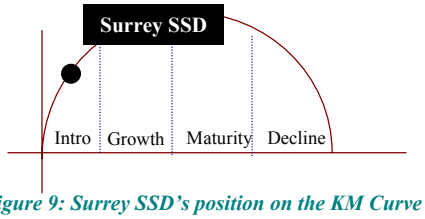

Figure 9: Surrey SSD's position on the KM Curve

6 ANALYSIS AND CONCLUSIONS

6.1 Conclusions for Surrey Social Services Department (SSD)

The application of the IEM provides an essential means for effectively evaluating the intranet's role in achieving the required outcomes. This has enabled *meta* knowledge, that is knowledge about how the organisation creates and manages this intangible resource, to be gathered and analysed. The result has been a practical evaluation on the strategic and operational role of an intranet, based on 49% of respondents across Surrey SSD (figure 4).

	Mgt	Support Staff	Front Line Staff	Admin	Total
Sample Frame	33	56	78	18	185
Returned	45%	55%	45%	50%	49%
Response rate as % of respondents	17%	34%	39%	10%	100%
Response rate as % of total sample frame	8%	17%	19%	5%	100%

Table 4: Response rates by Staff Groups

6.1.1 Surrey SSD's Current Intranet Role

The organisation, whose management's premise resulted in a heavy strategic reliance on technology in their knowledge management strategy, initially adopted a single solution cognitivistic orientated approach, which placed the emphasis upon the management of explicit knowledge as a fixed entity. This resulted in the intranet being implemented predominantly as an information tool, designed for the acquisition, storage, retrieval, distribution and presentation of information, the aim being to prevent the organisation from both re-inventing the wheel, whilst also leveraging knowledge for increased value. When this approach was not seen as delivering the required outcomes i.e. alleviating the issues identified in figure 8, the organisation looked to develop the intranet as a communication tool, without implementing an effective evaluation of user needs and requirements. Skyrme (1998) suggests this two stage strategic response is typical of organisations faced with developing a knowledge strategy to maximise returns on knowledge assets.

6.1.2 The Effectiveness of Surrey SSD's Current Intranet Role

The results from the IEM evaluation (figure 10) provide a detailed insight into the effectiveness of the current intranet role in facilitating knowledge flows across the organisation. It also highlights possible reasons for the failure of the intranet in its current format.

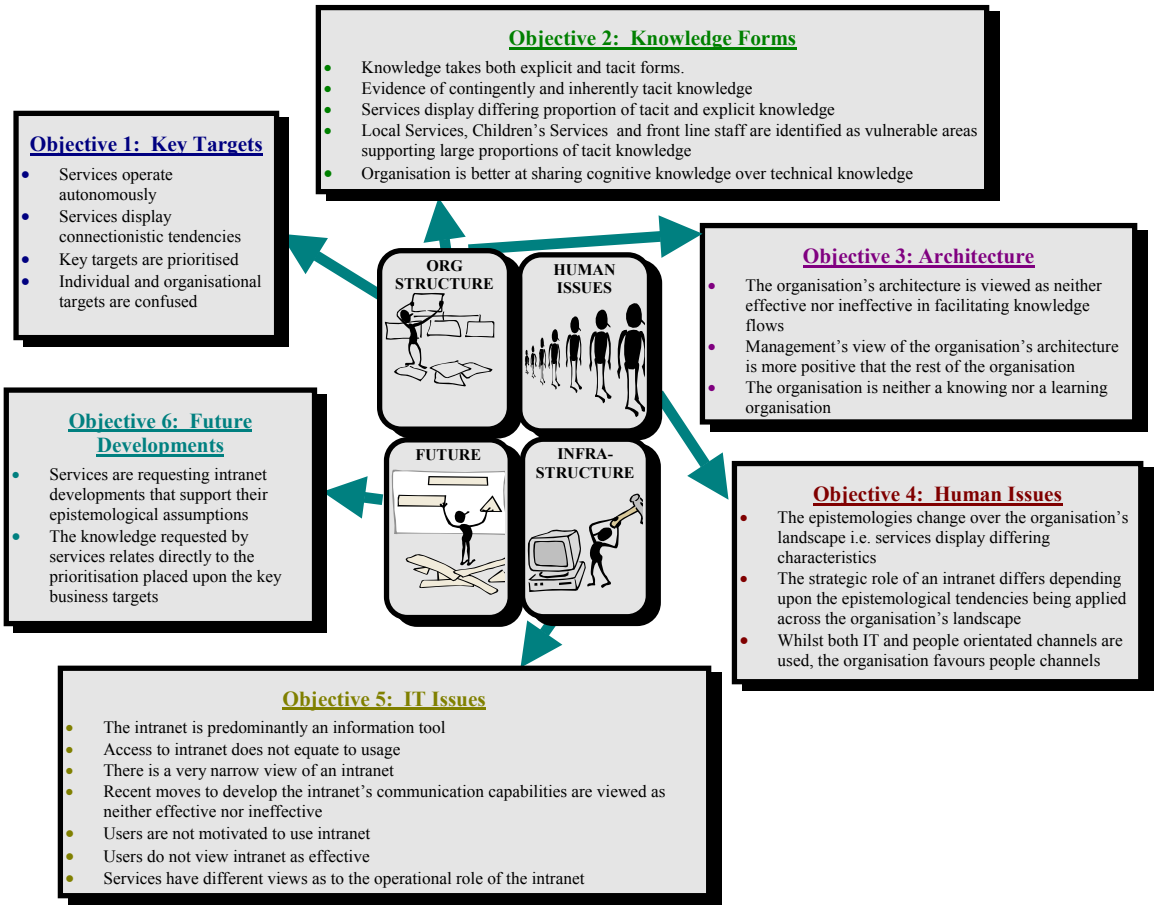

Figure 10: Key Issues for Surrey SSD Emanating from the IEM

Objective One: To establish key strategic business targets

The seven services comprising Surrey SSD are prioritising the organisation's targets according to their own world view and operating environment, indicating a connectionistic epistemology with services forming *community groups*. This provides an example of a major mismatch between user needs and the single intranet solution.

In addition, there is some confusion relating to organisational and individual targets, suggesting that individual aims are in danger of being pursued over and above the organisational aims.

Objective Two: To establish information required to achieve organisational targets

Three fifths of the organisation's knowledge required to support the six key targets takes an explicit form, whilst two fifths take a tacit form, broken down evenly between contingently and inherently tacit knowledge. The mix between explicit and tacit knowledge changes throughout the services in line with their differing epistemological orientations. Areas of particular vulnerability for the organisation have been identified as Local Services, Children's Services and front line staff, who all display high proportions of tacit, particularly inherently tacit knowledge, which can not be directly expressed. Thus with the current intranet role there is a danger that a substantial proportion of the organisation's knowledge may be ignored.

Objective Three: To establish current organisational setting

A holistic evaluation of the organisation's architecture indicates that the formal structures, infrastructures and culture are viewed as neither effective nor ineffective in facilitating knowledge flows. The degree of this dis-satisfaction generally differs in line with the services' epistemological orientations. Thus, those supporting a more autopoietic epistemology expressed a greater degree of disquiet at the current situation than those supporting a cognitivistic approach (to which the current architecture is orientated). The exception to this finding was Adult Services, who despite their strong cognitivistic orientation, rated the architecture as highly ineffective. The outcome is that any knowledge management tool, not just an intranet, is in danger of being ineffective as the appropriate support from the organisation's architecture is not present. This presents a major barrier to the transformation of Surrey SSD into a *knowing organisation* and specifically the effective development of any knowledge management tool.

Objective Four: To identify an Intranet's strategic role

Whilst the organisation appears to hold the premise that technology, in particular the intranet, is the key strategic tool in its knowledge management strategy, the analysis indicates this does not hold true across the services. In line with the services' epistemologies, they all display differing degrees of reliance on people and IT channels for facilitating knowledge. Thus the organisation's current approach in which the intranet holds a strong strategic role is largely mismatched with the services identified needs and requirements, highlighting the need to provide multiple channels to facilitate the flow of knowledge throughout an organisation.

Objective Five: To establish an intranet's operational role

There is a mismatch between the organisation's view of the intranet as a single solution information tool and the actual requirements of the services, which differ depending on their epistemological orientations. Thus, whilst those services supporting stronger cognitivistic epistemologies e.g. Adult Services, are theoretically better matched with the current intranet application as an information tool, those supporting autopoietic tendencies e.g. Children's Service and the Directorate, would be better supported by an intranet designed as a communication tool. Also, those supporting aspects of both cognitivistic and autopoietic epistemologies e.g. I&R, Commissioning and Resources would benefit from an intranet which acts as both an information and communication tool. This mismatch between the existing intranet and service requirements manifests itself in a low perceived effectiveness and use of the intranet, despite widespread access to this tool.

By using the IEM to engage service users in an evaluation to establish their needs and requirements, it has been possible to identify an effective strategic and operational role for an intranet for each service (figure 11). Tailoring areas of the current intranet in a meaningful way for individual services through engaging with, and motivating users may increase usage of this tool, thus facilitating effective knowledge flows.

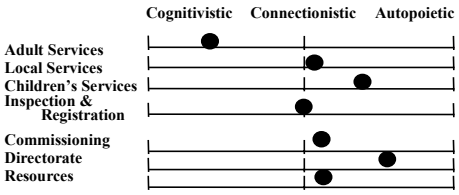

Figure 11: Epistemological Tendencies by Service

Objective Six: To identify areas for improvement

Aware that the current intranet is ineffective, the organisation is now looking to develop its knowledge management strategy by changing the existing intranet from an information tool into a communication tool. However, in line with the theory, desired intranet developments vary in line with the services' epistemologies. By ensuring services have the opportunity to use an intranet in a way which supports their epistemological mix, its impact as an effective knowledge management tool is likely to be enhanced.

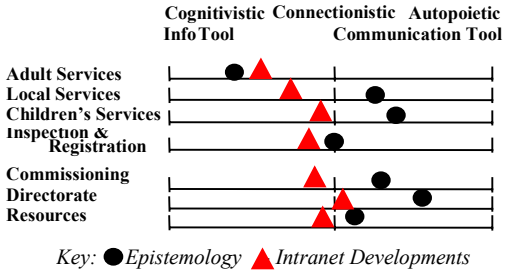

Figure 12 : Epistemological Orientations Compared to Intranet Developments

Analysis indicates all seven services place differing degrees of priority on future developments, thus highlighting the danger of attempting to apply a single solution approach to the intranet. Figure 12 compares the service's epistemological orientations against their varying priorities for future developments, illustrating relative consistency between desired developments and their identified epistemology. In addition, when the issue of content was explored, there was a direct correlation between a service's prioritisation of the organisation's targets and the knowledge content, and form i.e. data or information, required from the intranet.

6.2 Recommendations for Surrey Social Services Department (SSD)

It is recommended that Surrey SSD *revisit* their intranet application. By separating the existing single departmental site according to *naturally* forming community groups i.e. into service areas, and developing these according to their individual needs and knowledge requirements, it is anticipated that the main issues relating to the intranet (figure 10) can be effectively addressed.

The results of the IEM are presented in knowledge evaluation (KE) maps (figure 13), which graphically represent the existing intranet solution and planned developments against the needs and requirements of the services. In doing so, this highlights areas where reconciliation is needed in order to increase the effectiveness of the intranet in facilitating knowledge.

The KE maps outline the current intranet role whilst also highlighting the users requested developments against the organisation's existing intranet. The *difference* between the two elements illustrates where an effective change management programme should concentrate, whilst also providing an indication of the scale of change required to achieve the desired outcome.

Five key areas have been used to plot the current and desired intranet roles along the epistemological continuum. Firstly the intranet's strategic role provides an indication of the importance attached to people and IT channels, thus providing an overall benchmark as to an intranet's role against a wider suite of KM tools. The intranet's operational role is then plotted according to the design of the intranet as either an information tool, communication tool or combination of both aspects. The knowledge classifications identified within the services are then plotted according to their orientation towards either tacit or explicit knowledge. The services' underlying epistemological assumptions are then identified, and finally, the services' requested development of the intranet in terms of it communication/information capability is plotted.

Figure 13 illustrates the degree of change required by the services to ensure that their intranet provides effective support. Thus, whilst it can be seen that The Directorate, Local Services and Children's Service require relatively major changes, Adult Services, whose desired profile relates closely to the intranet's existing profile requires little direct change. The findings for Adult Services illustrate that effective knowledge management requires more than sophisticated KM tools. This demonstrates the importance of the wider architectural issues to support and foster a knowledge sharing culture, as well as content issues.

This finding also highlights the limitations of the KE maps in that they have a narrow focus on the KM tool under review i.e. at present they have no mechanism for providing an indicator of the wider architectural or content issues. It is therefore essential to combine the KE maps with a wider contextual analysis to gain a true holistic perspective.

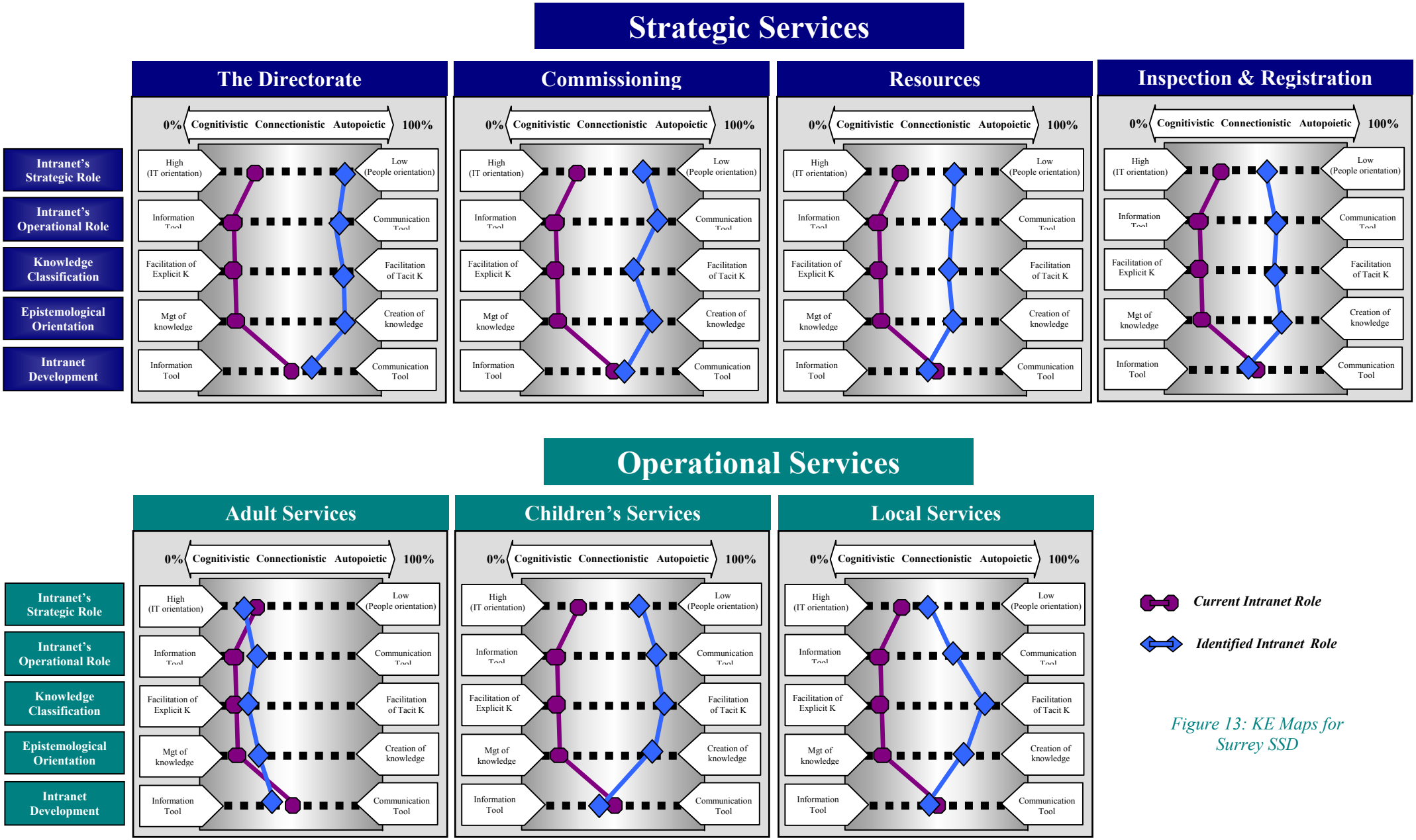

Figure 13: KE Maps for Surrey SSD

The KE maps (figure 13) also explore the anomalies between service requirements and theory e.g. Children's Services, who identify the need for both communication and information facilities from an intranet may benefit more from the communication capabilities of an intranet.

These recommendations require careful implementation and a sufficient support structure (human and financial). Table 5 provides a structure for an effective change management programme for an intranet development strategy for Surrey SSD.

Service	Epistemological Orientation	Effective Operational Role of Intranet	Desired Intranet Facilities	Desired Intranet Content
• Children's Service • The Directorate	Strong Autopoietic (process of creating knowledge)	Communication Tool (facilitating conversion of explicit and tacit knowledge)	Yellow Pages Push Technology On-line communication / discussion database	***Data*** Staff Info Environmental Info Service Provision
• Adult Services	Strong Cognitivistic (management of knowledge)	Information Tool (combination explicit knowledge)	Improved search facilities Development of database Devolved control over posting info	***Information*** Client Info Staff Info Stakeholder Info
• Local Services • I&R • Commissioning • Resources	Autopoietic / Cognitivistic mix (creation and management of knowledge)	Combination of Information and Combination tool (both combination and conversion of knowledge)	All above facilities	***Data & Information*** Staff Info Environmental Info Business Processes

Table 5: Recommendations for Change Management Programme

6.3 The Intranet Evaluation Model (IEM)

In general, the IEM, when combined with a wider Soft Systems Methodology analysis, proved to be a robust and valid IT evaluation tool capable of evaluating the role and effectiveness of an intranet in facilitating knowledge flows.

The research process, which incorporated check questions proved robust in validating the results by exposing inconsistencies in respondents' replies.

Despite some weaknesses highlighted from the initial pilot, the results have been successful in both confirming existing knowledge management and IT theories, whilst also providing an application of knowledge management theories to a practical problem. The pilot and subsequent analysis indicated areas where questions could be removed from the evaluation process questionnaire in order to ease the burden upon respondents.

It is therefore recommended that the IEM is developed and further piloted across a range of organisations as part of an on-going monitoring and evaluation cycle. The IEM could also be used as a consultancy tool to assess organisational areas prior to the development and installation of an Intranet, or any other knowledge management system i.e. as part of a feasibility study.

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