

Making Sense of Enterprise 2.0

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Abstract:

Purpose – This paper seeks to demonstrate how the capabilities of Enterprise 2.0 tools align to the tasks knowledge workers perform. The objective is to provide knowledge workers and information architects with a framework that enables the development of a suite of Enterprise 2.0 tools in support of knowledge management across the full knowledge lifecycle.

Design/methodology/approach – The capabilities of Enterprise 2.0 tools were mapped against the requirements associated with each of the four main domains (chaotic, complex, knowable and known) of the Cynefin framework.

Findings – The Cynefin model provides a useful framework for illustrating how the various tools within an Enterprise 2.0 suite support the different activities/tasks knowledge workers perform. Aligning Enterprise 2.0 tools based on the domain requirements of the Cynefin model allows the classification of these capabilities based on a task based framework rather than the traditional feature/function based ones.

Practical implications – Application of this framework will help knowledge workers and information architects understand the relationship between technical capabilities and business tasks. This understanding will help both in tool selection with respects business problem (architects) and also provide clarity of purpose in support of change management/adoption (knowledge workers).

Originality/value – Much of the literature around understanding Enterprise 2.0 tools has focused on a classical feature/function classification. The analysis presented here provides a classification based on the Cynefin model of knowledge creation. This classification model provides a valuable tool to those interested in developing environments that enable collaboration and knowledge generation/capture using these capabilities.

Keywords: social computing, enterprise 2.0, cynefin, knowledge management, framework, information architecture

In the last 10 years we have seen a massive transformation in the way we access, interact with and create information. These changes are a direct result of the move from paper as the primary means of information distribution to a digital one i.e. the internet. Traditional methods for managing information in the paper world are constrained by the simple reality of paper being a physical object. Digital information is by its nature very different and in particular networked digital information (Shirky, 2005; Weinberger, 2007; Wesch, 2007). As a consequence if we are to realise the opportunities inherent within networked digital information we needed to develop new tools and approaches to managing it. To paraphrase Michael Wesch “As we increasingly move towards an environment of instant and [almost] infinite information, it becomes less important for [us] to know, memorize, or recall information, and more important for [us] to be able to find, sort, analyse, share, critique, and create information. [We] need to move from being simply knowledgeable to being knowledge-able” (Wesch, 2009). In response to the opportunities presented by information becoming primarily digital and to the challenges mentioned above we have seen the development of various tools often referred to as ‘Web2.0’. These tools blogs, wikis, social bookmarking, social networking, etc have led to an “information revolution” (Wesch, 2007) and new opportunities for tackling the challenges of knowledge management.

Traditionally knowledge management systems attempted to capture tacit and explicit knowledge and are generally based on the Socialisation, Externalisation, Combination and Internalisation (SECI) model (Nonaka, 1991). It is now widely accepted that the promises of these knowledge management systems have largely not been realised. In a survey of knowledge workers conducted by Thomas Davenport in 2005 knowledge management systems didn’t even show up (Davenport, 2005). In fact he found that knowledge workers generally used communication *channels* (email and instant messaging) where content can be created and distributed by anyone but is only available to those on the distribution list over knowledge *platforms* (intranets, knowledge bases and information portals) where content is controlled, or at least approved, by a small group but is widely visible. There are many reasons behind this observation however in many cases *platforms* often require the knowledge worker to perform additional steps/tasks that *channels* do not. Hence it is easier for them to utilise *channels* and can see *platforms* as impediments to them getting their work done. The hurdle for contributing to the *platforms* is too high and as a consequence content is not updated/created in the normal run of things, only in response to an external stimulus/need. The net result is that in reality knowledge is captured in the *channels* which cannot be widely searched and the *platforms* are poorly populated often with out of date information. Ironically these systems which were developed to support unstructured working in fact imposed pre-designed workflows on knowledge workers (McAfee, 2006 & 2009).

In contrast the core tools of Web 2.0 do not impose a workflow on the user and are at their heart *channels* but with the wide visibility/search ability of *platforms*. As evidenced by the success of Wikipedia, the proliferation of blogs and growth of social networking we can see that people intuitively utilise these tools and like to share information. Ward Cunningham, the inventor of wikis, recalls, “I wanted to stoke the story-telling nature in all of us I wanted people who wouldn’t normally author to find it comfortable authoring, so that there stood a chance of us discovering the structure of what they had to say” (Venners, 2003). The point here is not that everyone is a great author but that most people have something to contribute be it a small insight, an experience, an opinion, a fact or a link and these tools are designed to allow this to happen.

More recently we have seen a subset of these tools start to be deployed and utilised by business. The term Enterprise 2.0 was coined by Andrew McAfee to describe this transition and he defined the key features of these tools with the acronym SLATES (Search, Links, Authoring, Tags, Extensions & Signals) (McAfee 2006 & 2009). From a knowledge management perspective the Enterprise 2.0 tool set can be considered, in general, to be made up application providing the of the following capabilities; blogs, wikis, GTDware (Getting Things Done software – a subgroup of tools that provide lightweight project management functionality i.e. group calendars, announcement notices, to do lists, shared Gantt charts, etc), social bookmarking, RSS readers, social networking and search. These tools are important because they offer a new approach to knowledge management by enabling knowledge workers to communicate, collaborate and innovate in ways that were not possible previously. Each of these capabilities individual provides the user with a tightly focused set of functionality. However the real power of these capabilities is realised when they used in combination and information created in one is surfaced in another. This means that user are able use these capabilities in a modular fashion to ‘build’ solutions to their business issues, as discussed by Andrew McAfee, 2006. As a consequence describing how best these capabilities fit together or how they add value to user has proven to be challenging and complex. A typical approach to making sense of these capabilities has been to adopt a categorisation system based on functionality. For example these capabilities can be divided into three distinct groupings; *social content creation tools*, *social information management tools* and *social networking tools* plus search.

Social Content Creation - Capabilities such as wikis, blogs and GTDware all provide means of content creation within a shared/social environment. The objective of these capabilities is to enable a user or group of users to generate content and make it available for consumption. Others are then able to edit, comment or act on this information. In addition to wikis, blogs and GTDware enterprise equivalents of YouTube.com and SlideShare.net (YouTube for PowerPoint) are emerging in this class. Finally we can also add mash-ups to this group as while these are tools that allow the manipulation, transformation and visualisation of disparate data sets they also allow user to annotation and enrich the information just as seen with wikis and blogs.

Social Information Management - Capabilities such as RSS readers and social bookmarking are ideally used in tandem. These tools work best in partnership and the combination provides synergistic value to the user. They provide the means where by a user can monitor and store links to the content generated by *Social Content Creation* tools and as the result of searches performed. The RSS reader provides the user with awareness, while the social bookmarking service plays the role of memory.

Social Networking - Social networking tools provide users with a means of creating and maintaining a profile of themselves and the ability to managed relationships with other users. Simplistically social networking tools display a description of “who I am”, “what skills I have” and “who I’m connected to/work with”. In general this is defined by users entering and maintaining information about themselves, a *static* profile. The *static* profile is made up of what the user considers to be important facts about themselves, or the information they want to highlight. However in addition to the users *static* profile there is also the user’s *tacit* or *social* profile. This represents the sum of the content the user has created using *Social Content Creation* tools and the content they have read and stored using *Social Information Management* tools (Figure 1). These tools enable users to maintain and manage their network of contacts. Through the sharing of users social profiles across their network of

contact they are able to be kept aware of the activities of their contacts. This allows user to maintain larger networks and to strengthen the ties within the network.

This classification approach allows the comprehension of the functional similarities and differences between these capabilities. It provides an appreciation that these capabilities can be used to create content while these are used to manage content but it does not help in understanding how they combine to support a type of workflow i.e. enable a community of practice or stimulate innovation. This disconnect highlights the need for an alternative approach that maps these capabilities to the different aspects of knowledge building and decision support. This perspective can be achieved if we utilise the Cynefin framework (Snowden, 2002) to align the relationship between these capabilities and the requirements of knowledge space. To date this framework is best known for the work Dave Snowden has done in applying it to sensemaking and the development of new approaches to decision making (Snowden & Boone, 2007). However it can also be used to breakdown and contextualise the way knowledge is constructed. This perspective is illustrated in figure 2, where the process of knowledge building is broken down into four domains:

Chaotic – This domain is a turbulent/disorganised space where all information is equal, there is no concept of value or weighting of information. Each piece of information is considered a fragment with no relationship to any other fragment. The only response when working in this domain is to act and impose order.

Complex – This domain is the arena of ambiguity, the information in this space is related but we do not yet understand the way fragments relate to each other. In this space we are looking for patterns and/or insights and the appropriate response here is to explore/experiment with ways of combining the information fragments. Out of this come emerging ideas/hypothesis. In the context of this space these ideas are nascent and ephemeral by nature. We see informal collaboration within trusted networks occurring as we look to define the ‘bones of an idea’. Inherently the information in this domain is still highly unstructured and highly transient. Any patterns may only be apparent to the individual who created them.

Knowable – This is the domain of the expert, we now have the kernel of an idea/hypothesis and we are looking to add ‘flesh to the bones’ to test, refine and expand the hypothesis. In this space we see the formation of formal collaboration between multi discipline teams consisting of subject matter experts. The information in this domain possesses a high degree of abstraction.

Known – This is the domain of established fact, we believe we fully comprehend the relationship between pieces of information in this space and are confident we can make predictions based on our understanding. The information in this domain is formally structured and formatted for easy consumption by those external to the team that produced it.

If we map the process of knowledge building on to this framework we are able to conceptualise it as a flow or spiral from chaotic to complex onto knowable and finally to known. At the start of this process we are operating in the chaotic domain and we look to impose order by identifying a set of fragments that may have something in common. We next look to identify patterns in the

relationship between the information fragments in the set, here we have moved in to the complex domain. As patterns are identified we seek to understand the meaning within the patterns, often we bounce ideas off trusted members of our network looking to add new perspective to the emerging understanding. At some point we transition into the knowable domain and at this stage we start to formally build on the idea and define its relationship to established knowledge. We look to aggregate understanding and determine how this new learning fits into the bigger picture. In this and the complex domain we are in all probability asking new questions of the chaotic domain based on the observed patterns/predictions we are identifying. These iterative loops result in the aggregation of understanding. Finally this new knowledge needs to be 'translated' from the highly abstracted 'language' of the experts into a format that is more widely consumable. This could take the form of an academic publication, a report or presentation. As David Snowden puts it "We can now see the sensible pattern of flow of knowledge within an organisation. Communities form in the complex domain to create, through the process of formalisation, more natural and sustainable communities in the knowable domain.... A limited amount of codified knowledge can be fully separated from its owners and transferred to the best practice domain, that of the known... From this perspective we see knowledge as flowing between different states, with different rules, expectations and methods of management" (Snowden, 2002).

At this point we have deconstructed the knowledge building process into four domains and have identified the activities and requirements associated with each. Thus we now possess a clear framework onto which we can map the capabilities of information systems/tools and hence understand how they support this process, where strengths and weaknesses are in our current tool set and to develop future state road maps. This has been exemplified for the Enterprise 2.0 tools in figure 3 and table 1. In this case we are now able to see how the capabilities of the different tools combine to meet the requirements of each of the domains:

Chaotic – As discussed this is a turbulent/disorganised space where all information is equally weighted and no relationship between information fragments can be perceived. When operating here the knowledge worker needs to impose order and does this by identifying a subset of information, i.e. performs a search, and moves the resulting hits into the complexed domain for analysis. Hence Search capabilities logically map to this domain.

Complex – In this domain we see ideation taking place, the knowledge worker is looking for patterns and/or insights within a set of information fragments. They have two key requirements; i) the needs to explore/experiment with ways of combining the information fragments and ii) the need to share the emerging patterns/insights with trusted members of their network. From the perspective of the Enterprise 2.0 tool set mash-up capabilities align closest with the first requirement while blogging, microblogging and social networking meet the needs of the second. In this space we can imagine the scenario whereby a knowledge worker takes the results of a search on which they performs a network analysis that appears to indicate a new relationship. Having completed the analysis they publish the observation as a blog post, along with the raw data set enabling alternative analysis, and a microblog tweet that is cross populated into the knowledge workers social networking activity stream. Essentially asking their network of followers "Do you think this observation makes sense? Do you have any insights that support/refute the observation?". In response to this activity colleagues are made aware of the new observation and are able to comment, reinterpret or

combine with other observations leading to insights that support or contradict the observation. If the observation resonates a social discussion group can be created that would develop the idea further. This group forms a seed that can develop the idea into a more formal state that at some point may become a project and transition over to the knowable domain.

Knowable – Project teams and communities of practices operate in this domain. The need is to formally bring together experts often from across multiple business lines to work on a problem/opportunity. The team require an online workspace that supports three key needs i) aggregation and sharing of decision making information created/identified by individual team members i.e. team wiki, ii) project and workflow management tools i.e. GTDware and iii) a communication channel for intra-team conversations i.e. team blog. The first two capabilities, team wiki and GTDware, are ones that are purely focused on enabling the internal operation of the team. These capabilities support the team in managing the day to day transactional activities associated with delivering the teams goals. The third capability, a team blog, provides both a communications channel within the team but also a route that enables participation for those not formally part of the team to contribute/challenge the emerging thinking of the team. This is important as a way of disrupting the teams thinking helping to mitigate the risk that group think emerges.

Known – Within this domain the objective is to share content whose audience is external to individual teams/communities of practice. Typically this content might include status reports, policy documents, standard operating procedures, training/learning materials, etc. This content needs to be formally structured and formatted for easy consumption. In this case a corporate wiki meets these requirements. A corporate wiki provides an environment tailored towards standardised reporting/sharing across the company. This capability can be further supplemented with tools that enable the sharing of rich media content i.e. audio and video. The aim is to share information that is of interest to a wide audience or a summary of specialist information along with links to more details information. If this is considered from a team's perspective they would maintain a page in the corporate wiki that summarise the progress or status of the project, utilising a standard template along with links to the projects team space that those interested in more detail can follow. The team are producing structured information for consumption by an audience distant to the day to day working of the project.

In addition to illustrating how Enterprise 2.0 capabilities align to the requirements of each domain it is also apparent that information must flow across domain boundaries. Here RSS readers and social bookmarking capabilities play a pivotal role. In the case of RSS readers these enable the knowledge worker to monitor and be alerted to changes across the domains. For example when a new item matches the criteria of a saved search, when someone comments on the analysis they posted, a team member has completed a task or a project of interest has updated their status report in the corporate wiki. In contrast social bookmarking provides the knowledge worker with the capability to save links to key information they discover for retrieval later i.e. a shared analysis of interest, a project team space or a page in the corporate wiki. In addition to these tools providing individuals with valuable functionality they also enable the sharing of information across a social network, within a team or a minable resource for the corporate whole. In either cases knowledge workers

only monitor or bookmark content that is of value to them. Thus in the act of subscribing to a RSS feed or bookmarking a page the individual is tacitly indicating that they consider this is information of value. Hence by monitoring the RSS feeds and bookmarks of those within a social network or a team a knowledge worker can leverage the combined efforts of that network/team to enhance the triage of information and the sharing of important information. In this way RSS Readers and Social Bookmarking capabilities provide the means for sharing information within and across domains and an easy way to mine the tacit knowledge of fellow knowledge workers.

Finally this approach of mapping enterprise 2.0 capabilities to the Cynefin framework provides both information architects and knowledge workers with a common frame of reference. From the information architects perspective they can now appreciate that knowledge is a flow and that the tools that support this process need to support not just the events occurring within the domains but also the transition of information between domains. They are able to comprehend the inputs and outputs of each domain and ensure they deploy solutions that allow seamless integration of information across the domain interfaces. A central question they should now be asking, in light of this new understanding, is can these tools be developed to not just support working in the four domains but also to mitigate the risks associated with each of the domains (Snowden and Boone, 2007). For example how do we engineer serendipity into the complex domain, introduce disruptive/challenging thinking to the knowable domain or allow decent and challenge within the known domain.

From the knowledge workers perspective there is now a clear line of sight between the capabilities and the tasks they perform. Generating this clarity of understanding is critical to helping knowledge workers understand why a new capability should be adopted. Obtaining network effect, scale of adoption, is central to realising the wider benefits of these tools and moving knowledge workers beyond simple models of file sharing to ones of rich collaboration. Critical to this is the personalisation and contextualisation of these tools to the jobs/tasks that knowledge workers perform. If workers are unclear as to which tools they should use or the value provided they will resist change. Providing clarity in the purpose of these tools, how they support the user's workflow and the benefits they bring are key elements in any change management program. The simple act of moving from a classification approach based on functionality to one that maps the capabilities to a knowledge building/sensemaking model, as described here, provides a powerful framing device for driving adoption that will help bridge the gap between early adopters and the early majority (Moore, 1991).

At the beginning of this discussion we looked at how the transition from paper as the primary means of information distribution to digital has had profound game changing affect. In terms of the Cynefin framework this represents a catastrophic collapse from the known domain into the chaotic domain. The rules that have previously constrained us have been removed and we need to develop new constraints to allow us to make sense of this new situation. In response to this challenge we have seen the emergence of the web2.0 tools that have developed in the complex domain. As we have derived a deeper understanding of these tools and their application we have seen these tools and the thinking around them move into the knowable domain. This discussion attempts to codify learning's from the knowable domain into the known domain. Hence contextualising these tools for a wider audience allows us to understand how they fit together to support the knowledge building process. In addition we are now able to explicitly see the potential for synergy between these

technologies and sensemaking strategies. As Jim McGee has suggested “...those promoting Enterprise 2.0 technologies [should] investigate the sensemaking planning techniques and practices and map points where the technologies enable, simplify, or improve the techniques” (McGee, 2007). Indeed I have shown here that by visualising the knowledge building process in terms of the Cynefin framework we are able to comprehend how the various components of the enterprise 2.0 tool set support the different activities associated with each of the domains. Armed with this understanding we are able to see that the blueprints for knowledge management systems in the digital age have been defined. We now have the understanding that will allow us to exploit the power of digital information and empower knowledge workers in the digital age.

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Research Methodology

My past research has been based around practical application of enterprise 2.0 tools within Pfizer Group Research and Development. The focus has been on developing safe fail experiments aimed at understanding how these tools can be employed to deliver business value. The first step has been to understand the benefits delivered by individual tools (wikis, blogs, GTDware, social bookmarking, RSS reader and social networking) and how these tools, alone or in combination, can be used in combination with knowledge management/innovation methodologies. The overall goal has been to build up an appreciation around how these tools can be combined into a lightly integrated suite that can drive innovation, collaboration and decision making. These investigations have led to this article.

Table 1: The relationship between Domain, Activity, Requirement and Enterprise 2.0 tools

Domain	Activity	Requirements	Enterprise 2.0 tools
Chaotic	Impose order	Identify sets of information fragments	Search
Complex	Identify patterns	Combine and explore data/information sets Informal collaboration	Mash-up, Blog/Microblogging, Social Networking, Social Bookmarking, RSS reader
Knowable	Test and refine	Aggregate and share knowledge from multiple disciplines Coordinate activities of expert team Provide channels for the exchange of ideas with those outside of the team	GTDware, Team Wiki, Team Blog, Social Bookmarking, RSS reader
Known	Codify learning's	Teaching/Learning Publish	Corporate wiki, Podcast/Vodcast/Slidecast, Social Bookmarking, RSS reader

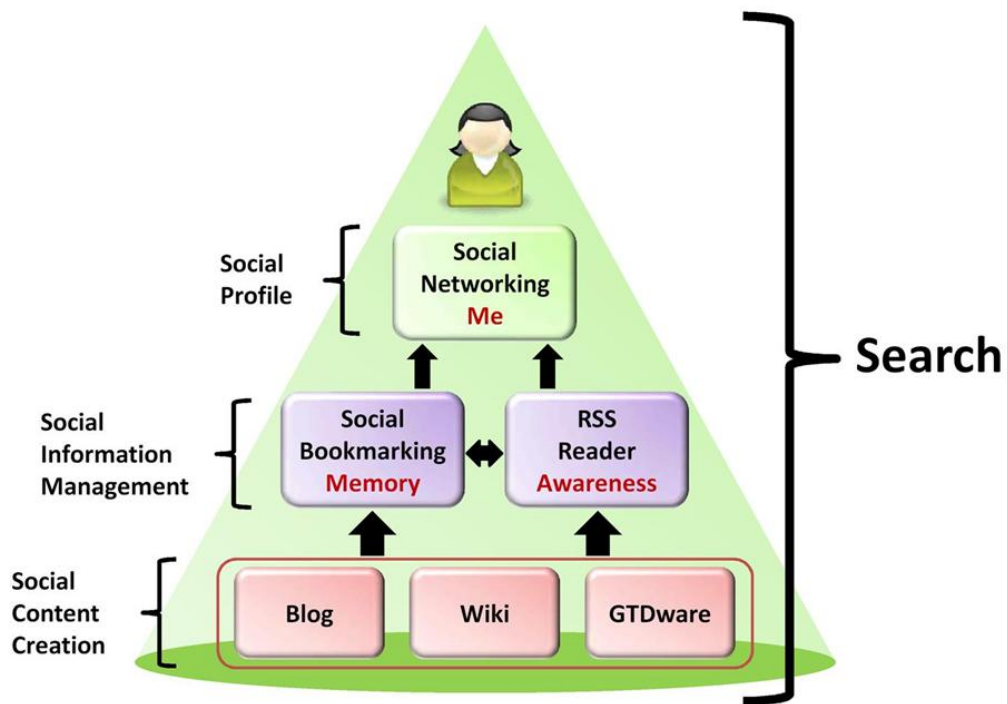


Figure 1: Relationship between the various capabilities that make up the enterprise 2.0 tool set. In this diagram we see that in the bottom layer we create content, in the middle layer we consume content and at the top is the user. What this diagram illustrates is that a user is described by both their *static* profile and by the sum of all their activity in the two layers below. This summed activity can be considered a *social* profile. The *social* profile is a transactional descriptor of the current interests and activities of a user and provides a time bounded snapshot of the user.

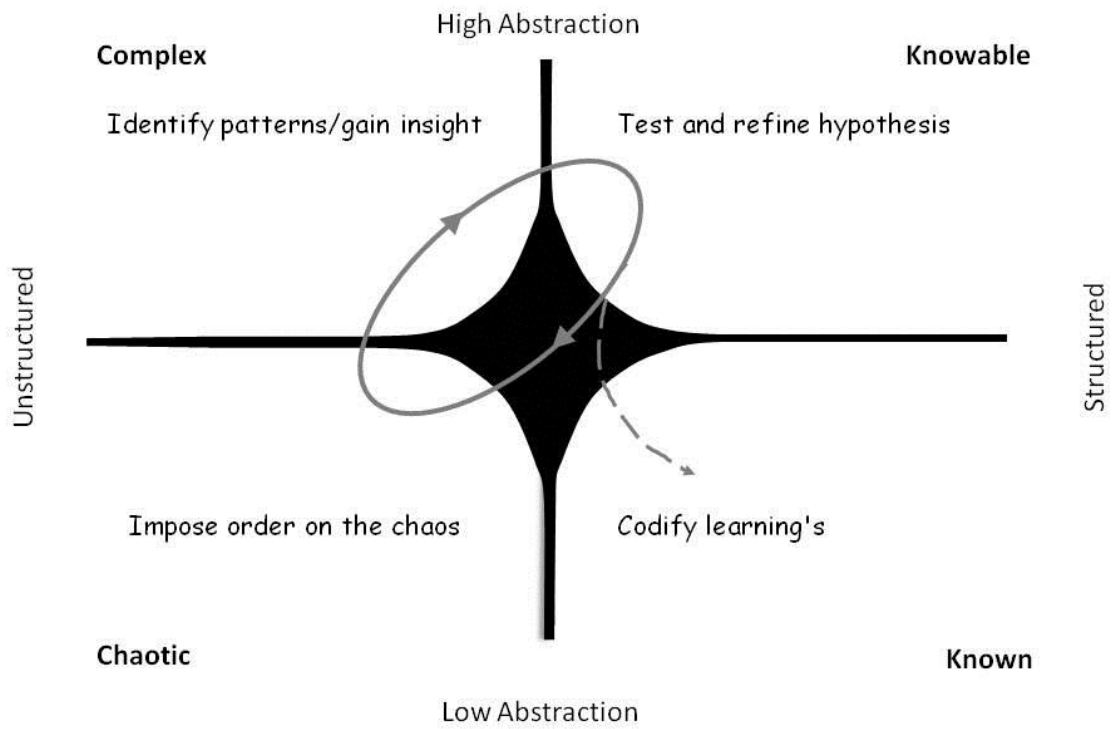


Figure 2: The Cynefin framework as applied to knowledge building. Note this diagram has been simplified and the fifth, central domain of disorder has been excluded as it is outside the scope of this discussion.

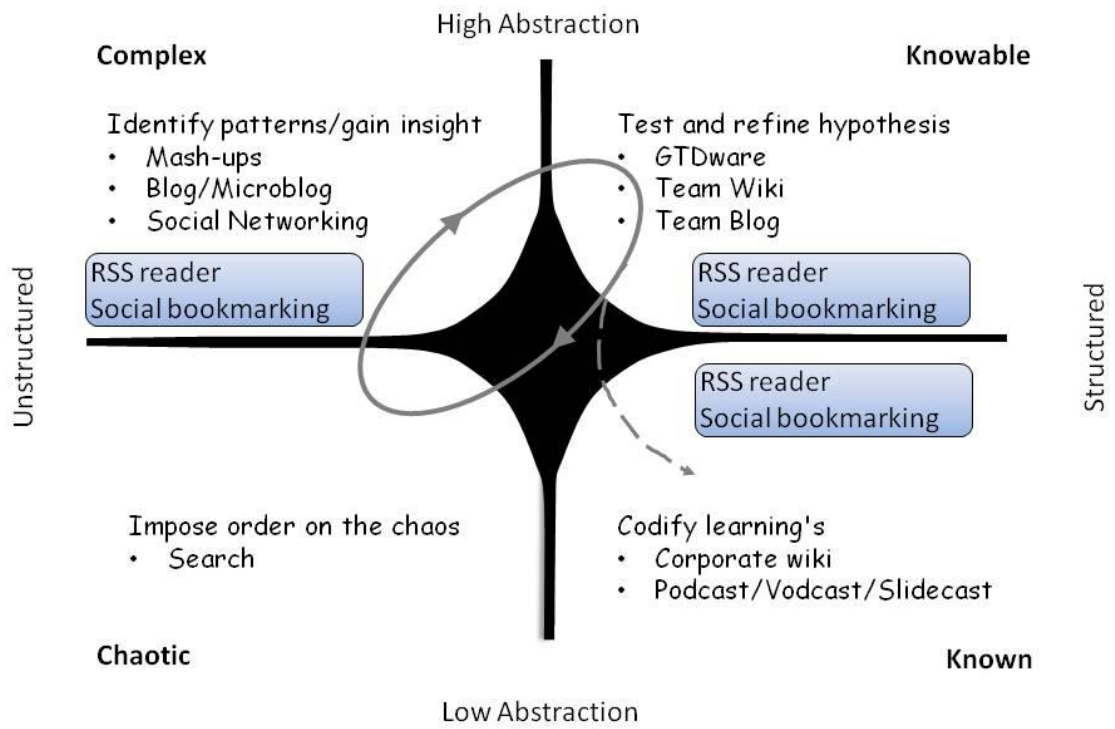


Figure 3: Mapping enterprise 2.0 tools to the Cynefin framework