

INSPIRING DISRUPTIVE CHANGE: A NOVEL APPROACH TO MODELLING THE VALUE CREATION PROCESS

Manuel Au-Yong Oliveira

*Universidade do Porto, FEUP/DEIG, INESC Porto / UITT; Universidade de Aveiro, DEGEI
Faculdade de Engenharia da Universidade do Porto
Rua Dr. Roberto Frias, s/n 4200-465 Porto PORTUGAL*

João José Pinto Ferreira

*Universidade do Porto, FEUP/DEIG, INESC Porto / UITT
Faculdade de Engenharia da Universidade do Porto
Rua Dr. Roberto Frias, s/n 4200-465 Porto PORTUGAL*

ABSTRACT

This methodology paper puts forth a novel process with which to portray the value network and enterprise asset creation. Real cases which involved field research by the authors are used to present and better illustrate certain concepts. Organizations involve intense human interaction and require novel ways which make evident variations in performance, a central aspect of management today and in the near future. Our contribution is in combining the use of the narrative / storylines, game design patterns, value network analysis and the dynamic capabilities paradigm to reduce the complexity of the strategy debate. Our modelling tool is also pictorial and so simple to grasp. The primary value of graphical notations lies in their communication and understanding possibilities (Fowler, 2004). The importance of the dynamic capabilities paradigm (Teece *et al.*, 1997) is emphasized in which ICT plays a central and strategic role (Pavlou, 2004) in the creation of value and consequently enterprise assets. Geertz (2000) brought attention to the fact that research is performed in order to clarify or usefully revise our own or someone else's ideas and we see this clarification and revision as being necessary given a heightened need to motivate and inspire people to carry out actions of disruptive change (Denning, 2004).

KEYWORDS

Narratives, Game Patterns, Value Network, Innovation

1. INTRODUCTION

An objective of the study is to describe the process of organizational innovativeness (Deshpandé *et al.*, 1993), defined here as *the ability of organizations to generate new product sales* albeit drawing on various sources of sense making methods namely narratives/ storylines (Czarniawska, 1999; Brown and Currie, 2003; Denning, 2004; Salmons, 2006; Brown, 2006; Serrat, 2008; Landrum, 2008), game design patterns (Bjork and Holopainen, 2005), value network analysis (Allee, 2000, 2002, 2008) and the dynamic capabilities paradigm (Teece *et al.*, 1997; Zott, 2003; Pavlou, 2004). Geertz (2000) brought attention to the fact that research is performed in order to clarify or usefully revise our own or someone else's ideas and we see this clarification and revision as being necessary given a heightened need to motivate and inspire people to carry out actions of disruptive change (Denning, 2004). Organizations involving intense human interaction also require novel ways to make evident variations in performance, a central aspect of management today and in the near future.

Another focus of the study will be ICT (information and communication technologies), namely *how do ICT promote the necessary dynamic capabilities which lead to increased innovation within an organization competing in a rapidly changing environment?*

ISO (2009) defines an international standard for assessing the ability of an enterprise to interoperate (communicate and interact) with other enterprises and technology can be an important barrier (or facilitator) of interoperability. In the case of I-Company (an alias for a real company which we have studied)

interoperability between subsidiaries located all around the globe is greatly facilitated by ICT, as we shall see below.

So, how does ICT (digital connectivity) contribute to knowledge and information management and how does ICT contribute specifically to the creation of collective mind? Collective mind, defined as being able to use collective input dynamically to contribute to the group outcome (Weick & Roberts, 1993; Pavlou, 2004; Bonabeau, 2009), is dependent on social skills, indeed a capable and reliable organization mind “is thoroughly social” ((Weick & Roberts, 1993, p.378). For collective mind to occur across geographical barriers, new tools must be used to “tap the crowd” (Bonabeau, 2009). I-Company is seen to be a good example of this and their knowledge-sharing platform is crucial to their continued growth.

The article continues below with a discussion of the concepts organizational innovation and innovativeness. Storylines and the narrative are then analysed and portrayed as tools for describing reality. Game design patterns are in turn a form of structuring the narrative and its analysis, discussed in the following section. We then move on to value network analysis and its relation to ICT assets. Dynamic capabilities and their relation to narrative patterns follow. Finally, before we conclude the article, we discuss two cases. The first case involves the creation of an innovation culture at I-Company and how social interaction leads to increased innovation output. The second case discusses how strategy can be discussed using visual representations of story lines and game patterns which can be re-interpreted using enterprise ontologies found in the literature.

2. BACKGROUND AND CONCEPT DEVELOPMENT

2.1 The Concept of Organizational Innovation and Innovativeness

The Compact Oxford English Dictionary defines innovative as “featuring new methods; advanced and original: innovative designs”. It goes on to state that innovative people are “original and creative in thinking”. It is our objective with this study to analyse how different organizations go about achieving their goal of bringing innovative products to the marketplace. We assume that it is the objective for the majority of companies involved in mature, competitive, and turbulent markets to be innovative. For example, Deshpandé *et al.* (1993) conclude in their study that organizational innovativeness is strongly related to performance – being innovative is very important and positively impacts organizational effectiveness. For the purpose of our study we define organizational innovativeness as being able to introduce new ideas, translated into new products and services, to the marketplace (by introduction we mean “sale of”, as the market will ultimately determine whether novel concepts and products have value by deciding, or not, to acquire those products and services (Tsai, 2009)). In practical terms, innovativeness at the organizational level involves:

- 1 – Often, and consistently, being first-to-market with new products and services (Deshpandé *et al.*, 1993); products and services for which the market shows a subsequent demand (Tsai, 2009);
- 2 – Being at the cutting edge of technological innovation (Deshpandé *et al.*, 1993);
- 3 – Being preoccupied with growing rather than mature or even declining markets (Deshpandé *et al.*, 1993).

The tools we have chosen to analyse and describe reality are storylines (Denning, 2004; Salmons, 2006) and the narrative in particular (Brown and Currie, 2003; Brown, 2006; Landrum, 2008; InPoint Language of Film, 2009). Game design patterns (Bjork and Holopainen, 2005) aid also in the structuring of the narrative and its analysis.

2.2 The Storyline and the Narrative as Tools for Describing Reality

The power of storytelling has been focused upon in the literature namely that “storytelling is fundamental to the human search for meaning” (Mary Catherine Bateson as quoted in Denning, 2004, p.2). Analysis may excite the mind (Denning, 2004) however leadership (defined as “the ability of an individual to influence, motivate, and enable others to contribute toward the effectiveness and success of the organizations of which they are members” (House *et al.*, 2004, p.15; see also Schein, 1992; Kotter, 1996)) in rapidly changing markets increasingly requires “the vivid description of ideas, beliefs, personal experiences, and life-lessons through stories or narratives that evoke powerful emotions and insights” (Serrat, 2008, p.1) thus offering a route to the heart which will inspire action and disruptive change (Denning, 2004).

Storytelling is about communicating/ telling what in our case are true happenings (as opposed to fictitious) in a narrative form (Salmons, 2006).

There has been a “resurgence of interest” in the narrative (Brown and Currie, 2003) and there is an increasing body of literature defending that the narrative is an appropriate means with which to interpret and understand organizations (Czarniawska, 1999; Brown and Currie, 2003; Brown, 2006; Landrum, 2008). Indeed Czarniawska (1999) defends an approach drawing on the multi-perspective narrative, cultural studies (Geertz, 1973) and anthropology (Bernard, 2006) rather than an approach using more positivist methods (Remenyi *et al.*, 1998) of analysis to portray organizational life.

2.3 Game Design Patterns as a Form of Structuring the Narrative and its Analysis

Game design patterns (Bjork and Holopainen, 2005) aid in the structuring of the narrative in so far as they are a collection of choices, an inspiration for ideas, providing a structure of interaction within organization systems (Bjork and Holopainen, 2005). Game design patterns, in sum, allow us to talk about the essence of organizations in as much detail as we wish in the form of a dynamic language.

Examples of game design patterns, aimed to support analytic as well as creative work, are: communication channels, cooperation, team play, mutual goals, individual rewards and penalties, shared rewards, negotiation, bluffing, conflict, collaborative actions, bidding, dynamic alliances, betrayal, and shared resources, among others (Bjork and Holopainen, 2005).

For instance, in an organization high social interaction exists (as there is communication between members), even though there may also be some competition between those participating in the organization. On the other hand, cooperation means coordinated actions and shared resources in order to achieve goals (Bjork and Holopainen, 2005). If throughout the narratives the cooperation level and the number of collaborative actions are high then one might conclude that collective mind exists (using collective input dynamically to contribute to the group outcome (Weick & Roberts, 1993; Pavlou, 2004; Bonabeau, 2009))

For the purpose of our research, each pattern will describe a perspective of the interaction within organizations, occurring between roles in a value network (Allee, 2000, 2002, 2008). Value networks however hide a story. Role results depend on people and as such on the narrative that they author for themselves. As narratives are energized by culture (Brown and Currie, 2003) and culture varies considerably from person to person (culture is “learned behaviour” (Geertz, 1973, p.5)) this means that as roles are not always performed by the same person that role results will vary, indeed significantly at times, due to uncontrollable factors such as education and child-rearing practices which define personality (Usunier and Lee, 2005) and so can lead to personality clashes between participants (especially between those who interact on a regular basis), thus affecting role outcomes. Variability will now be more visible due to the narrative approach. Introducing the narrative means introducing a reason for things to occur.

Value networks are the subject of the discussion in the next section.

2.4 Value Network Analysis and its Relation to ICT (Information and Communication Technology) Assets

Value networks, for example business webs or virtually any type of organization for that matter, are fluid structures (Allee, 2000). Figure 1, showing exchanges and deliverables, is an example of a value network (Allee, 2002). A value network, as in figure 1, shows how a business really operates. This modeling method is a true picture of the whole business system, portraying both tangibles (solid lines in the figure) and intangibles (dotted lines in the figure) and how they flow from role to role. Note the absence of hierarchy, a characteristic of networks, even though leadership is still a critical element (Allee, 2002).

Much of the flow in a value network can be achieved via ICT, especially in Electronic Data Interchange organizations (EDI).

However, exchanges in a value network involve much more than tangibles (contractual transactions (Allee, 2008)) such as orders and payment. Indeed, it is the intangible exchanges that interest us, “those “little extras” people do that help keep things running smoothly and build relationships” (Allee, 2008: p.7 of online version) such as technical know-how, market insights, collaborative design work exchanges, and

marketing innovations, which don't involve the exchange of money (Allee, 2008). We are interested in how information is used to build a value network. What interactions occur, and why? What reactions are there? We are also particularly interested in value creation, which Allee (2000, 2002, 2008) portrays so well, but we would like to take a step further and analyze value networks using narratives. A narrative is regarded as a series of sequential events connected by causal links (Wu, 2008). Man, it is assumed, is a story-telling animal, a *homo narrans*, and both individuals and groups define identities at work by authoring narratives (Brown and Currie, 2003). It is these stories that we intend to capture with our research.

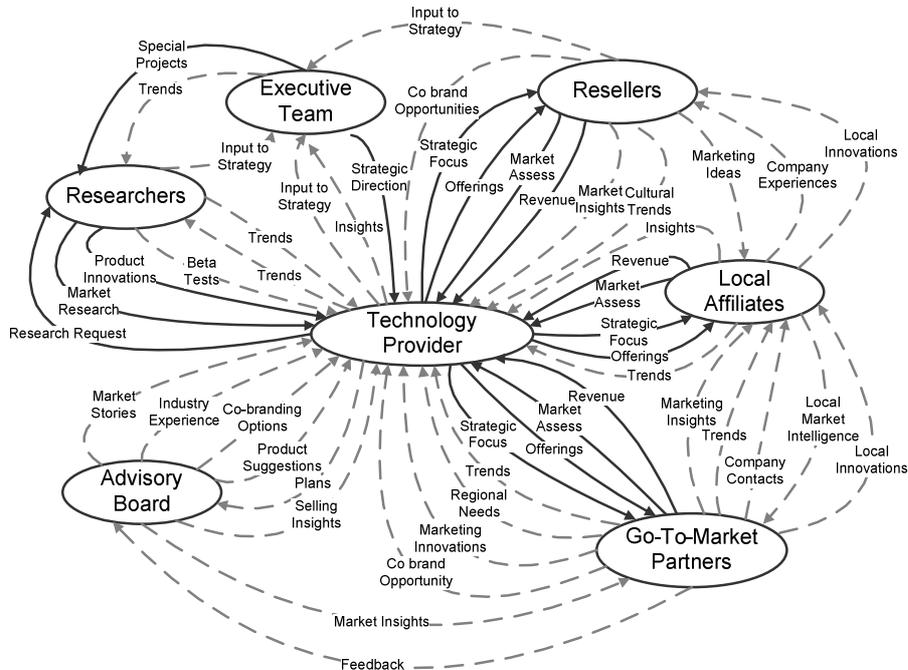


Figure 1. A value network (reproduced from Allee, 2008, with permission)

2.5 Dynamic Capabilities and their Relation to Narrative Game Patterns

Four paradigms of strategy are considered by Teece *et al.* (1997: 527): 1) Attenuating competitive forces; 2) Strategic conflict; 3) Resource-based perspectives; 4) Dynamic capabilities perspective.

The dynamic capabilities paradigm addresses private enterprise strategies to create wealth in rapid technological change environments (Teece *et al.*, 1997) such as that of I-Company, our example to be addressed below.

“A fundamental question in the field of strategic management is how firms achieve and sustain competitive advantage. We [can] confront this question by developing the dynamic capabilities approach... to analyze the sources of wealth creation and capture by firms.” (Teece *et al.*, 1997, p.509).

Dynamic capabilities (such as coordination competence, absorptive capacity, collective mind and entrepreneurial alertness (Pavlou, 2004, p.11)), represented at a higher level by the resource reconfiguration construct (Pavlou, 2004) make collaboration possible via advanced information processing routines, which lead in turn to increased innovation (Pavlou, 2004).

Dynamic capabilities are evermore seen as a potentially integrative manner through which to improve the understanding of how competitive advantage is renewed over time. Dynamic capabilities guide “the evolution of a firm’s resource configuration” (Zott, 2003, p.97). Dynamic capabilities are defined as the “ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments.” (Teece *et al.*, 1997, p.516). This concept is central to our research.

Landrum (2008) has shown that a narrative analysis can unveil strategic intent (defined as the planned direction pursued by a company (Landrum, 2008)). We believe that I-Company follows the dynamic capabilities paradigm, on the one hand by adhering closely to a corporate strategy, on the other by fomenting

internally generated innovation as well as innovation generated as a result of close relationships with key customers, thus ensuring a match between functional competencies and changing product market needs. The role of ICT is to avoid rigidities setting in by promoting the flow and processing of information, which will lead to increased innovation (Pavlou, 2004).

3. INTEGRATING THE CONCEPTS IN AN ILLUSTRATIVE EXAMPLE

3.1 The Creation of an Innovation Culture at I-Company

This paper continues the line of research started by Teece *et al.* (1997) who sketched an outline for the dynamic capabilities approach to strategy. These researchers left the following challenge to academia: to tighten their framework and undertake empirical research to help us understand “how firms get to be good, how they sometimes stay that way, [and] why and how they improve” (Teece *et al.*, 1997, p.530).

Recognizably we find ourselves in the realm of strategy but also in the realm of “innovation, manufacturing, and organizational behavior and business history” (Teece *et al.*, 1997, p.530).

Business history or the narrative of the firm is important as “history matters” (Teece *et al.*, 1997, p.522). First of all, how do firms get to be good?

A company we have researched is called I-Company. I-Company for Region A was visited and the CEO interviewed on various occasions, in-depth. I-Company Region A N°2 (financial director and director of control and management) was also interviewed. The company Web site, I-Company documents, reports, e-newsletters, and I-Team – the I-Company Intranet platform, were also analyzed. I-Company is one of the largest management software companies in the World and much of their success is due to an innovation culture which they have developed. Note in figure 2 the role of dedicated facilitators (digital communication channels), I-Team – the powerful Intranet platform, the electronic Newsletters, and the annual company-wide innovation expo.

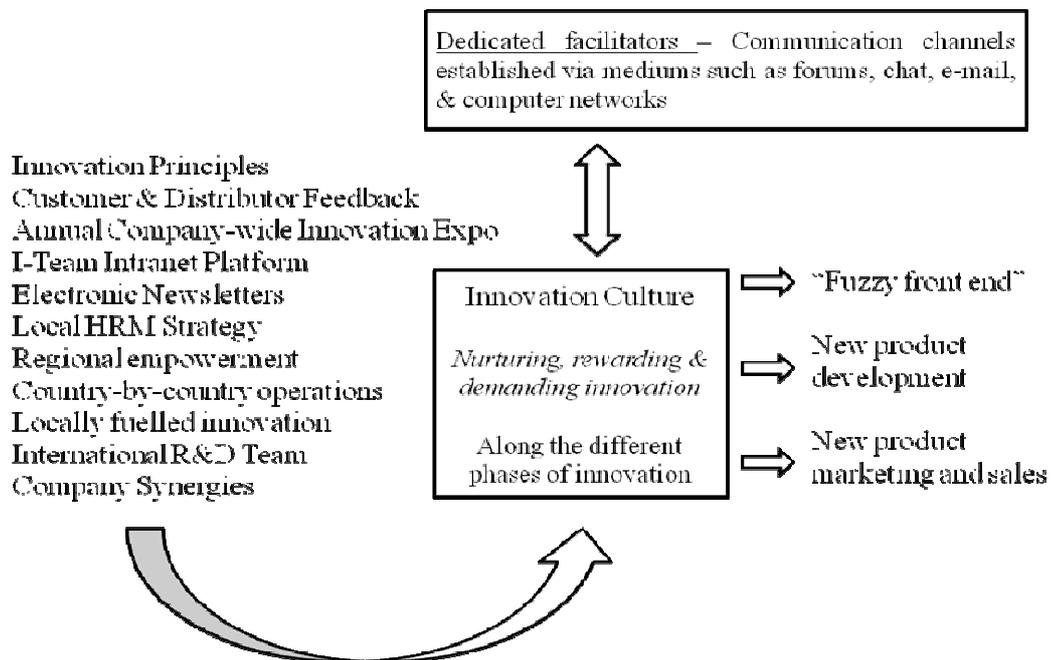


Figure 2. The creation of an innovation culture

An innovation culture can be defined as a culture “in which innovation is nurtured, rewarded, even demanded” (Zien and Buckler, 1997, p.274), along the three critical albeit very different phases of innovation – the “fuzzy front end”, new product development, and new product marketing and sales (Zien and Buckler, 1997). I-Company is a good example of how innovation principles pervade the organization.

3.2 Social Interaction Leading to Increased Innovation Output at I-Company

Our study intends to focus on the social interaction process and on how collaborative technologies play a strategic role in the innovation process, leading up to a firm’s sustained competitive advantage.

Figure 3 below integrates storylines/ narratives, game design patterns, the value network and the dynamic capabilities approach, each of which will play a role in our research namely into the core of the innovation process.

A narrative captured at I-Company is exemplified below:

“Innovation with software is reasonably easy”, stated I-Company Region A CEO, “as customer and distributor feedback helps immensely in that area. Customer and distributor suggestions are listened to and evaluated and then are implemented... Product innovation isn’t that difficult, the process of innovation is pretty well set up here, unless we are talking not of incremental improvement innovation but of radical innovation... In that case things are different, the “music” is different... Copies of innovations are available upon request on I-Team, the I-Company Group Intranet platform. We all have access to innovation projects via our knowledge sharing platform. So, today, before thinking of innovating, I start by using my access to all of this innovation that I-Company has generated in all of the different countries all over the World.”

This core narrative is portrayed in figure 3.

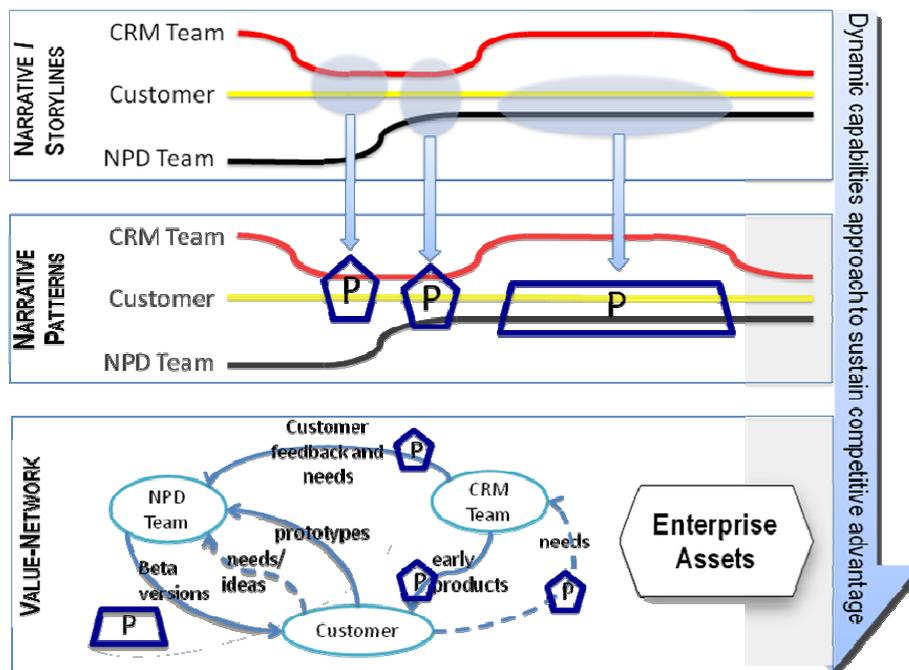


Figure 3. Integrating the Narrative/ storylines with Narrative Patterns and the Value Network (NPN diagram)

Figure 3 shows how members of the CRM team (customer relationship management) will interact with customers and with members of the NPD team (new product development), as the top of the diagram shows. The horizontal axis is time and where the groups come together, vertically (indicated by a grey cloud), we witness “character” interactions during a given period. These character/ organizational member interactions are then to be explained by us using social interaction narrative patterns as in Bjork and Holopainen (2005) (as can be seen in the middle section of figure 3 – three patterns such as Collaboration Action, Idea Exchange, and Constructing Knowledge). Finally, the bottom part of figure 3 shows the network roles (Allee, 2008), the exchanges and deliverables occurring quite naturally, with the social interaction patterns then explaining how value is created in the network. The result is enterprise assets which are in turn linked to the notion of collective mind (Weick and Roberts, 1993) which is deeply dependent on social skills used within the social interaction patterns.

In terms of the value network exchanges (bottom section of figure 3) the customer first gives needs information to CRM (using a specific pattern called Gain Information). The feedback is passed on to NPD by CRM in another pattern (Document Knowledge). Beta versions are developed by NPD for the customer who responds with ideas for prototypes (a major activity in the value network as the grey cloud emphasizes – Team Play pattern). Finally, early products are sent to market via CRM (Shared Reward pattern). During this whole process, enterprise value is created.

The process described in figure 3 comes across as being quite simple. However, in practice, this may not be the case. The innovation process is not expected to be smooth, linear and “well behaved” (Kline and Rosenberg, 1986), thus the grey cloud in the bottom left section of figure 3, reflecting especially the process of radical innovation as opposed to “just” incremental innovation.

To further stress these points we will use two sentences stated by interviewee Alan MacCormack, Visiting Associate Professor of Technological Innovation, Entrepreneurship, and Strategic Management at MIT (however interviewed while at Harvard Business School¹), in one of his interviews with us: “Concerning incremental versus radical innovation I think there really is a continuum and so sometimes products actually fall in the middle and defy categorization... When you look at the uncertainty in innovation some of it can be reduced by having a better understanding of customers, a better understanding of technology but there’s kind of this core uncertainty which is always going to remain.” (Alan MacCormack’s research examines the management of innovation and new product development in high-technology industries, with a particular focus on the software sector, which is the sector of our illustrative case).

4. THE CASE OF DIAFRESH – RE-INTERPRETING GAME PATTERNS IN VIEW OF EXISTING ENTERPRISE ONTOLOGIES

The case we address now is that of diafresh, an SME (small and medium enterprise) with approximately ten employees, operating in the food distribution industry. diafresh (the real name of the company we have studied) has a shop open to the public and a warehouse (including a “clean area” and refrigeration capacity to store food as well as offices and a loading dock area) from which it distributes food products to customers in the Greater Porto area (in Portugal). Both locations were visited numerous times during the study.

diafresh was founded in 2002 and has grown steadily since, except over the last year or so, due mainly to the economic downturn. Their sales volume is currently around half a million Euros per year. Dia-Fresh is currently struggling for survival. Boyd (2000) has focused upon survivalist entrepreneurs (entrepreneurship defined as simply being a process that leads to the creation of new enterprises (Cromie, 2000)), an avenue many individuals who have certain talents (such as “a superior capacity for execution” (Bhide, 1994); a capacity for “opportunistic behaviour” (Chell, 2000); and “fierce energy and confidence and... perseverance” (Locke and Baum, 2007)) follow as they lack an alternative and desirable “door” through which to enter into the labour market.

The literature is lacking in references to (ICT and) SMEs (and especially survivalist SMEs) despite SMEs making up the majority of enterprises (Schmiemann, 2008). Just short of 20 million active enterprises within the EU-27 in 2005 were SMEs (99.8 % of the total in the non-financial business economy). SMEs defined as having less than 250 persons employed. Indeed, SMEs in the EU-27 in 2005 employed an average of just over 4 persons. It follows that the case of diafresh analyzed herein is seen to be quite typical.

Our research here, probing ever deeper into the reality of organizations following ICT-related growth strategies (e.g. potential new diafresh customers will be contacted digitally, for example by e-mail and using Facebook, leveraging a data base created for this purpose, and a corporate website will be created with the possibility of receiving and processing orders online, the above strategies quite different to the reality found to date at diafresh), intends to result in the production of a new ontology (a model of the World using meaning-based concept representations). We intend to re-interpret game patterns in view of existing enterprise ontologies present in the literature, such as the enterprise ontology of Uschold *et al.* (1998) (“a collection of terms and definitions relevant to business enterprises” (Uschold *et al.*, 1998, p.31)) and that of

¹ Alan MacCormack was interviewed for his views on innovation twice, in-depth, over the telephone (in January and in June of 2008); the interviews were recorded.

Osterwalder (2004). Figure 4 exemplifies the type of visual output which this line of research entails. In relation to figure 3 we can see that now game pattern names have been added to the visual representation (such as New Abilities, Team Play, Constructive Play, and Trading) and that tangible and intangible assets (for example, an updated customer data base (tangible asset) and ICT leveraging competence (intangible asset)) are the result of ‘gameplay’ or organizational activity. Our framework exists to stimulate creativity but, furthermore, in using the narrative and game patterns, we wish to both systematize qualitative research as well as to bring the discussion of strategy ever closer to practitioners who are in the case of survivalist (and other) entrepreneurs (and indeed corporate executives) often estranged from modern management theory. We feel that a new framework speaking in easily accessible terms will benefit management practice, which is, in our view, the objective of management research.

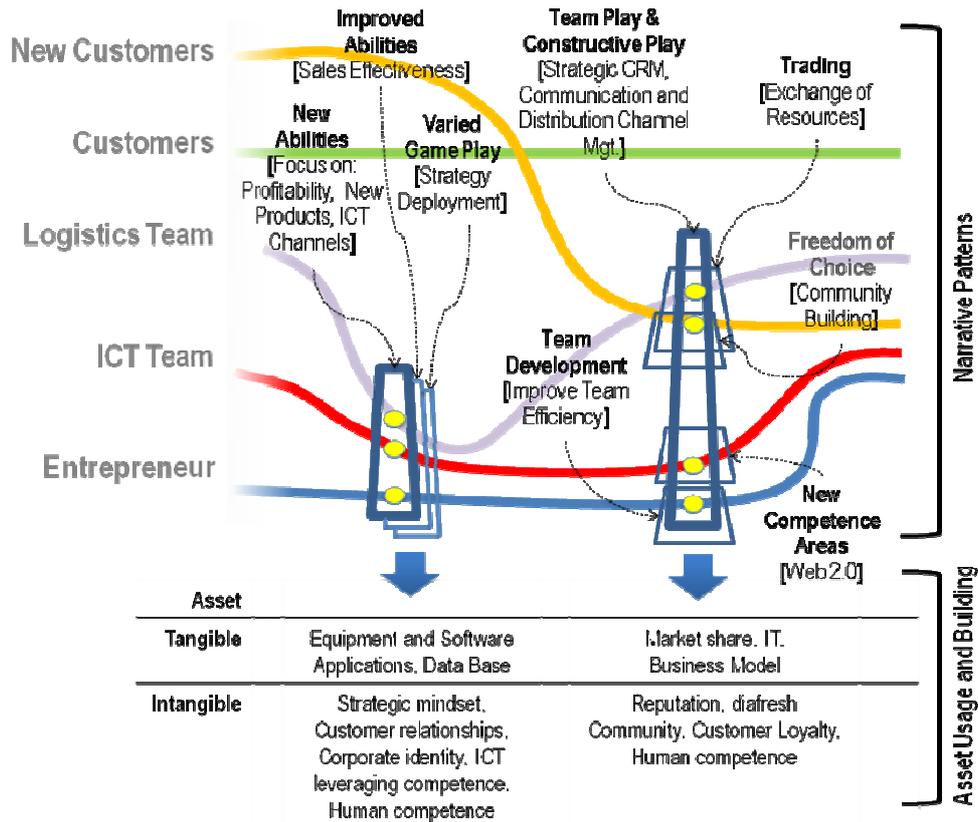


Figure 4. The case of diafresh – Storylines, narrative patterns and asset usage and creation

5. CONCLUSION

We have discussed a novel method for portraying the innovation process. Our contribution is in combining the use of the narrative / storylines, game design patterns, value network analysis and the dynamic capabilities paradigm to reduce the complexity of the strategy debate. Our modelling tool is also pictorial and so simple to grasp. The primary value of graphical notations lies in their communication and understanding possibilities (Fowler, 2004). The importance of the dynamic capabilities paradigm (Tece *et al.*, 1997) is emphasized in which ICT plays a central and strategic role (Pavlou, 2004) in the creation of value and consequently enterprise assets.

The narrative can be seen as different granular levels and in this paper we looked at detailed narrative game patterns. A higher-level analysis reveals that I-Company can be seen to be the hero in this epic hero strategic narrative (Landrum, 2008) in which I-Company triumphs in the software industry by gaining market

share through successive and strategic innovations. ICT are seen to be crucial in the process to avoid information loss and rigidities. ICT reduce abstractions and build value connections. Collaborative learning, the sharing of new knowledge using ICT, is an essential aspect of I-Company's growth (and learning) process, providing the basis for its strategic position (its specific technological, financial, structural and reputational assets) and path ("history matters" as it constrains future behavior) (Teece *et al.*, 1997). The dynamic capabilities approach, as it improves information processing routines, leads to increased innovation and sustained competitive advantage (Pavlou, 2004).

Furthermore, dynamic capabilities such as coordination competence (the managing of knowledge assets in order to achieve synchronization), absorptive capacity (involving learning/ assimilating of knowledge), collective mind (heedful contribution to the group outcome), and entrepreneurial alertness (the capability to continuously discover novel market-oriented opportunities) (Pavlou, 2004) can be related to narrative game patterns as follows: coordination competence – coordination; absorptive capacity – smooth learning curves; collective mind – constructive play; entrepreneurial alertness – re-playability. So, in this article we have introduced game patterns to structure the narrative and in order to identify organizational behavior attributes.

The diafresh case in turn shows how an ICT strategy can be leveraged even by survivalist entrepreneurs as long as the communication of the strategy occurs in easily accessible terms. The development of an enterprise ontology might further contribute to the desired simplification of the strategy debate.

By integrating narrative storylines, narrative game patterns, the value network concept and dynamic capabilities we intend to contribute with a novel mode of interpreting organization activity, a dynamic capabilities approach related to value creation and to the production of innovative products which are to be absorbed in the marketplace.

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