

# **Path creation and monitoring by cooperative alliances: the entrepreneurial management of future market infrastructures**

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# PATH CREATION AND MONITORING BY COOPETITIVE ALLIANCES: THE ENTREPRENEURIAL MANAGEMENT OF FUTURE MARKET INFRASTRUCTURES

## **Introduction**

In the year 2003 the German Federal Government concretized the establishment of a nationwide health telematics infrastructure (BMG, 2007). This infrastructure is to be the basis of electronic data exchange and inter-sector processes within the extremely disjointed German healthcare landscape. Until May 2007 only fundamental technical and organizational processes, interfaces, and safety standards were specified as obligatory. This is also true for first basic applications (patients' master data and electronic prescriptions) which fall far behind the functional requirements of managed care scenarios.

For this reason there is increasing discontent with the diffusion process so far in the market, particularly concerning the speed of diffusion and the setting of priorities. It is considered too slow, especially for medical applications like Electronic Health Records which are already established in other European countries (e.g. Denmark). Moreover, as a kind of "coopetition" strategy, alliances of competitors in the healthcare market actively try to create and direct their own development and diffusion paths in order to shape future applications which address the needs of inter-sector communication and managed care.

In this context this paper examines "coopetitive consortia" for the shaping and organizing of future market infrastructure, particularly in interaction with the concurrent governmental initiatives. According to the track's theme 'Framing of technologies for market value: The generative dance of collectives', the paper addresses the following research question: *'Why do consortia of competitors temporarily deploy in the course of technological development paths and how do they attain influence on the arrangement of future market structures?'*

For this purpose, a research gap in the intersection of diffusion and change processes on the interdependent levels of market and firm ("organization/environment co-evolution") is clarified first. With the help of an interactive qualitative research framework and on the basis of research programs of path-dependence, competence research, and market process theory, the research question is explored within the German healthcare sector. Validated results are formulated in first propositions. Due to the interactive nature of the research design, the propositions will be the object of further empirical investigations, on the one hand within the ongoing change and diffusion processes of

future market infrastructure in the German healthcare sector, on the other hand within other industries on similar paths.

## **Theory**

There is a huge body of extant literature with research and interesting conclusions in the context of the above-mentioned research question. Summarizing this in a highly selective way, referral to at least the following pieces of former research is necessary:

- Research on the diffusion of vital elements of a changing market infrastructure (e.g. Abernathy & Utterback, 1978; Christensen, 1997; Christensen & Raynor, 2003; Christensen et al., 1998; Henderson, 1993; Hill & Rothaermel, 2003; McGahan, 2000; Rogers, 2003). These elements can comprise interfaces between different information systems, standards for data and business processes as well as legal issues and politically motivated regulation (e.g., Porter & Rivkin, 2000; Reimers et al., 2004).
- Investigations on the emergence and existence of groups of firms (so called “strategic groups“). These groups are characterized by similar circumstances and homogenous strategies (e.g., Bogner et al., 1998; Cool & Schendel, 1987).
- Analyses on various facets of inter-organizational cooperation focusing on motivations to ally (Gersch et al., 2007a), observable institutional settings for collaboration (Gomes-Casseres, 1994, 2006; Gulati et al., 2000a, 2000b), or particular forms of cooperation, e.g. ”coopetition“ (Bengtsson & Kock, 2000; Galvagno & Garraffo, 2007; Mione, 2007; Nalebuff & Brandenburger, 1996).
- Work on the interplay of single agents’ decisions with different levels of analysis, e.g. diffusion or change processes on the market or industry level (Gersch & Goeke, 2007; Porter & Rivkin, 2000; Quinn, 2007).
- Research on the emergence of power in the arena of competition. French and Raven (1959) focus more on sociological power and its origins (legitimate, expert, referent, reward, and coercive power), whereas Anderson and Narus (1990) analyzed power in exchange processes and thereby also in competitive contexts.

If one further reflects whether and which theoretical bases are used for the different works, the broad and heterogeneous picture given in literature expands. There is purely empirical work with a highly inductive research logic or more descriptive work with hardly any link to theories on the one hand. On the other hand there are publications strongly relying on new institutional economics, in-

dustrial organization, market process theory, path dependence theory as well as various papers under the umbrella of resource and competence research.

Without wanting to comment one or the other research concepts mentioned in detail, this work will use a co-evolutionary perspective, applying a competence-based theory of the firm under the umbrella of market process theories as the theoretical framework to the research. First of all, this decision is outlined in the following section before relevant former work in this field is reflected. This outline forms the starting point for deriving propositions formulated in the subsequent sections.

*Cornerstones of the applied co-evolutionary framework: Competence-based theory of the firm as a part of market process theory*

It is argued, that orthodox strategy research fails to thoroughly tackle observable and continuous change processes in the relevant business environment and the accompanying firm challenges (Lockett & Thompson, 2001). With their seminal “Evolutionary Theory of Economic Change”, Nelson and Winter (1982) fostered an evolutionary perspective on strategic management. They directly address shortcomings of orthodox theory when dealing with temporal aspects and change by conducting comparative static analyses as:

‘(...) explicit consideration of the way in which an industry moves from one equilibrium configuration to another should be, in our view, an essential part of any positive theory of firm and industry response to changed market conditions. And since there is in general no guaranteeing that the character of the equilibrium achieved is independent of the time path to it, we do not think that an adequate theory can be achieved merely by adding to traditional equilibrium theory a disequilibrium adjustment dynamic’ (Nelson & Winter, 1982: 164).

Elaborating their theory, Nelson and Winter build on Schumpeter’s (1934) ‘Theory of Economic Development’ and apply biological analogies for simulating routines and selection to describe change processes (Nelson & Winter, 1982: 401). However, using biological analogies is not undisputed (Alchian, 1953; Penrose, 1952: 819). Moreover Schumpeter is embedded into a wider evolutionary school of thought (Witt, 1992), the so-called Austrian School (Gloria-Palermo, 1999; Vaughn, 1994) with Hayek (1978), Mises (1949), Kirzner (1973) and Lachmann (1986) as further main protagonists. Therefore we prefer to follow a general Austrian (market process oriented) approach to analyze incremental transformation processes on the market level, especially with regard to future market infrastructure.

In a nutshell, the Austrian School considers entrepreneurship and agents’ alertness as driving forces for economic development and changes, grounding their school of thought on the following basic

assumptions. Using Lakatos' notion, they could be interpreted as central "hard-core elements" of research programmes under the umbrella of Market Process Theories (Lakatos, 1978; Vaughn, 1994; Freiling et al., 2007; Gersch et al., 2007a; hard core elements = HCE):

- HCE 1: CbTF assumes subjectivism, i.e. every agent is equipped with an idiosyncratic endowment of knowledge, motivation, and skills, as well as individual aims, attitudes, and experience. Ontologically analyzed, individuals differ from one another and the same holds true if we compare teams and organizations.
- HCE 2: Economic agents find themselves in situations of radical uncertainty which opens the door for ex-post surprises in decisions. Exogenous as well as behavioral uncertainties are acknowledged as the drivers of uncertainty in an open future, which does not exist yet.
- HCE 3: Moderate methodological individualism (Foss 2005) is assumed.
- HCE 4: Human action is modeled according to the ideas of von Mises (1949). Decision-makers are acting men ('homo agens'), equipped with alertness and the willingness to change the situation they are in by searching for new options.
- HCE 5: By referring to the fundamental position of moderate voluntarism, CbTF assumes that there is at least some room for discretionary action.
- HCE 6: Time is a factor that is insofar relevant as events and decision made in one point in time influence the alternatives in a later point in time ('time matters', historicity and path dependency; see Arthur, 2000; Teece et al., 1994). Accordingly, decisions are not simply reversible whenever decision-makers would like them to be.

The agents' knowledge is incomplete and asymmetrically distributed. Economic agents gain new knowledge through every market process (e.g., transactions). In this sense, even "small events" in the market process can be influential. On the basis of new knowledge accessed they build new expectations and revise their plans as well as market offerings, always seeking to enhance competitiveness, creatively destroying old ideas or concepts (Schumpeter, 1934) and using competition as a discovery process (Hayek, 1978).

In their inquiries into firm cooperation due to technological discontinuities – as one form of environmental dynamics – Rothaermel and Hill (2005) emphasize the relevance of an interrelated firm and market/industry level scrutiny, as well. In this context they stress the explanatory power of the Austrian School for the market/industry level – by pointing out the significance of firm heterogeneity for the analysis. For a long time scholars analyzing the Austrian School have argued that there is a "missing chapter" concerning this issue, namely the configuration adjustment of firms in order to set up competitive offerings to the market (Fagerberg, 2003; Witt, 1999). The idea that the resource-

based and competence-based view might close this gap has already been suggested (Lockett & Thompson, 2001), followed up by some more detailed papers by Freiling et al. (2005; 2007), Foss and Ishikawa (2007) and Gersch et al. (2007a). Applying the Lakatos' (1978) methodology of scientific research programs, it transpires that the mainstream of the Austrian School is compatible in terms of philosophy of science, even in its hard core assumptions, with a re-conceptualized competence-based approach, resulting in a "competence-based theory of the firm". Economic activity is then embedded into idiosyncratic development paths as a sequence of irreversible decisions and events on both the firm and market level. This may cause path dependencies when developments show momentum and self-enforcing effects due to positive feedbacks and/or increasing returns (Arthur, 2000).

All in all, the Austrian School and the competence-based view of the firm seem to represent a consistent theoretical framework for conducting integrated analyses of the co-evolution of change processes on the firm and the market/industry level and allow for a scrutiny of cooperation decisions in dynamic environments (Foss & Ishikawa, 2007; Gersch & Goeke, 2007).

Resource-based research has become increasingly popular (Barney, 1991; Teece, Pisano, & Shuen, 1997) when examining the nature and causes of firm competitiveness and competitive advantages. Firms are understood as distinct bundles of resources and competences which have evolved over time and are embedded in their relevant business environment. Within a firm, its homogeneous assets are subject to a firm-specific upgrading process. This process is primarily made up of (re-) bundling and learning. Permanently required and arranged upgrades finally contribute to the actual and future firm competitiveness. Furthermore, competences have the character of a repeatable ability of rendering competitive output with these resources, based on knowledge, usually non-randomly channeled by rules and routines (Becker, 2004). They enable goal-directed processes to arrange future readiness for action and potentials to render concrete input to the market (see figure 1). Competences cater for maintaining the firm's competitiveness and, if so, they might even represent a substantial precondition to achieve competitive advantages. Such upgrading processes necessarily follow idiosyncratic, firm-specific paths. They account for firms' heterogeneity in order to explain performance differences not bound to existing market structures.

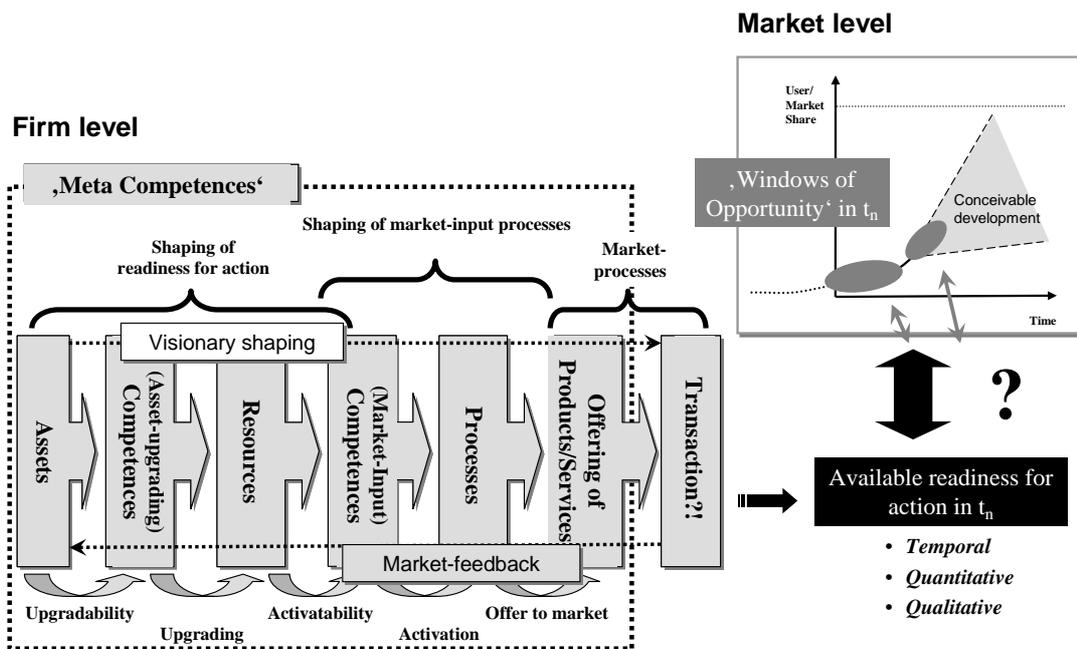


Fig. 1: An integrated analysis on market and firm level (Freiling, Gersch & Goeke, 2005)

While recent endeavors have been made to further investigate the processes underlying the building and leveraging of competences (e.g., Sanchez & Heene, 2004), it has formerly often been assumed that firms “somehow” develop them internally (Gulati et al., 2000b: 207) and more or less autonomously. Recent research sheds light on the so-called ‘firm-addressable’ resources and competences (Sanchez et al., 1996). They are external to a firm and can be levered to other firms by various forms of collaborative arrangements (e.g. Eisenhardt & Schoonhoven, 1996; Gulati, 1999).

The emphasis in literature put on collaboration and cooperation against the background of resource-based and competence-based approaches primarily aims at mechanisms of protection or building up new resources and competences. In this regard, opportunistic behavior as e.g., “races-to-learn” or “ing” of alliance partners is also addressed (Hamel, 1991; Hamel & Doz, 1999). However, the so-called “relational view” (Dyer & Singh, 1998) follows a different path as to the application of a network perspective to resources and competences with a trend of deconstructing the formerly integrated value chains (Bresser, Heuskel, & Nixon, 2000). Thus, the relational view assumes a shift of competition from the firm level to alliances as (at least de-facto) owners of competences (see also Gomes-Casseres, 1994).

Extant resource-based and competence-based work on inter-firm cooperation and firms’ cooperation decisions accordingly seems to lack an explicit consideration of what Gulati (1998) identifies as a shortfall of research on cooperation in general. He criticizes that a one-sided focus on cooperations (as the unit of analysis) does not take into account the moves of other firms or the relationships in which they are embedded, and rather ignores interactive elements of the market through

which participants discover market information via their interactions in the market (Gulati, 1998). He argues that it is not only the interaction with the market that most research contributions on collaborative business lack, but also the broader institutional context in which they are placed and embedded (Gulati, 1998: 302). This is why we take a co-evolutionary point of view as described above when addressing our research question.

*Causal structures and findings of former research as a starting point to derive first context-specific propositions*

The research is also inspired by the following thoughts which have been empirically analyzed in earlier work:

- Agents develop individual conceptions of future market requirements. They will try to secure access to those resources and competences timely which are considered necessary to remain competitive (Hamel & Prahalad, 1994).
- The respective decisions are made in the context of a “dominant logics” (Prahalad & Bettis, 1986) of decision-makers which steer the perception and interpretation process of agents.
- Development and establishment of the required interfaces and process standards for future digital and interconnected market infrastructures are modeled as path-dependent standardization processes (Arthur, 2000).
- Due to network effects and positive feedbacks the necessary communication and process standards are interpreted as so-called “critical mass” systems with their characteristic diffusion challenges (Shy, 2001; Witt, 1997).
- Agents will try different strategies to adjust to a risk they perceive depending upon the specificity of necessary investments, the length of the individually anticipated development and amortization period as well as environmental volatility (Gersch, 2007; Saab & Ehret, 2007).
- Motivations for cooperation, scrutinized in former research, can be found in different phases of market transformation and at different ratios. The central motivations for (temporary) cooperation against environmental dynamics were identified in former fieldwork and comprise a gap closing, creation of options, jointly exerting influence on the relevant business environment (Gersch et al., 2007a):

## **Method**

The empirical-based exploration of the formulated propositions takes place as an “embedded single case design” (Yin, 2003) and is part of a more comprehensive iterative research design (Charmaz,

2006) in order to develop and refine an evolutionary competence-based theory of the firm under the umbrella of market process theory.

Generally, market process theories applied in this work are connected with particular challenges as to empirical research and methodological possibilities. Facing the subjectivist nature and the positioning of market process theory as a part of the interpretative paradigm (Burrell and Morgan, 1979), the traditional anchor point of critical rationalism – as formulated by Popper (1945) – does not fit. The reason for this is the limited possibility to generalize findings when idiosyncrasies occur. Given the above-mentioned basic assumptions, formalized quantitative empirical work does not seem appropriate. For this reason, we found it adequate to borrow qualitative methods from social sciences. They finally enable us to follow Hayek’s (1964) remedy to identify patterns within evolutionary development processes. This way, the set of qualitative methods of empirical research we apply is basically embedded into Maxwell’s (2005) interactive approach to qualitative research designs. Figure 2 depicts a survey on cornerstones of our research visualized in Maxwell’s framework.

In the context of this framework – and embedded in a more comprehensive longitudinal study to

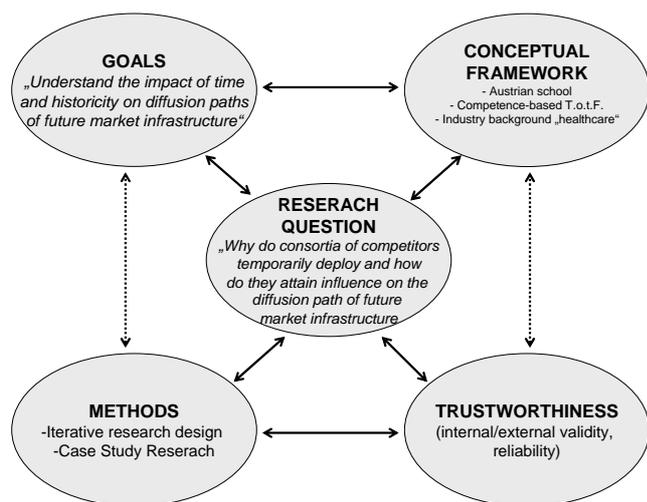


Fig. 2: Interactive framework of research design (Maxwell, 2005)

explore features, entrepreneurial challenges, and conceived solutions to master organization/environment co-evolution in transforming industries – the research question is addressed. To ensure a comprehensive analytical understanding of the subjects of analysis, we followed the recommendation to focus on one industry sector in this study (Charmaz, 2006), namely the German healthcare sector. Because of the early stage of research, we adopted an iterative research design in combination with

case study research (Eisenhardt, 1989; Leonard-Barton, 1990; Yin, 2003) to perform data collection, analysis and theory development as an interrelated process. For economic research questions and through the above-mentioned Maxwell framework, we opted to follow Strauss’ interpretative approach (Charmaz, 2006; Strauss & Corbin, 1998) rather than Glaser’s positivistic one (Glaser, 1978). This allows us to conduct fieldwork following the Austrian School and the competence-based theory (which we are seeking to enrich) and to use our industry background in the sector under investigation.

We chose the German healthcare sector as the context for longitudinal analysis. Besides the fact that this sector is a domain of “cooperative activities under uncertainty” (current and future volatility),

such activities could be observed very well and analyzed in times of the comprehensive healthcare system reform in 2004 (the results of which were revisited for reasons of robustness in the context of another reform debate in 2006/2007). In order to “catch reality in flight” (Pettigrew et al., 2001) when addressing various interdependent research questions as parts of our longitudinal study of organization/environment co-evolution, we set up a panel of 14 upper management executives from relevant value chain stages and special interest groups in the German healthcare market. This panel has been meeting about quarter-annually since the year 2004. Our research was backed up by using multiple sources of data, comprising eight over-all and one directly addressed focus group workshop(s), expert interviews, a Delphi analysis, two further written inquiries and written primary and secondary documents (memos, newspaper articles, analyst reports, internal documents) as well as direct observations for the purpose of triangulation. To improve the quality of the research, a number of procedures were adopted throughout the study. To justify the robustness of the results, we reviewed numerous sets of criteria (Flint et al., 2002; Miles & Huberman, 1994; Yin, 2003) transferring validity (construct/internal/external validity) and reliability criteria to qualitative research. Like other authors in the field of management science (Beverland & Lockshin, 2003), we adopted the fruit of the Flint’s et al. (2002) review on relevant criteria for evaluating the trustworthiness of our work (see appendix).

The current case under investigation in the afore-mentioned context is the project “Fallakte” (Electronic Case Record [http://www.fallakte.de/download/eFA\\_SolutionSummary\\_v1.0.pdf](http://www.fallakte.de/download/eFA_SolutionSummary_v1.0.pdf)). In this project the four largest private hospital chain operators in Germany, amongst others, have joined together in order to set up a unified system for electronic case and patient records, coordinated and moderated by the market-oriented Fraunhofer Research Institute for Software and Systems Engineering.

In this way and despite the competition among them on their traditional markets, the hospital chain operators jointly advance the development and establishment of necessary syntactic, semantic and pragmatic health telematics standards as a basis for future interaction, transaction and inter-organizational business processes. Digitized and inter-organizationally connected patient and case records form the necessary basic applications for new concepts of cooperation concerning health service providers and organizations. Thus they also contribute to the implementation of innovative business systems/business models (e.g. medical centers or integrated disease management programs) with innovative offerings in future market infrastructures.

The solution of an electronic case and patient record developed in the project is one of central applications in the context of the health telematics infrastructure, particularly for hospitals. Characteristic features for a hospitals’ point of view are the decentralized storage of data and the possibility

of getting a comprehensive image of historical treatments for all medical service providers. Not only the economic view is crucial for this solution. At the same time it is considered a central precondition for a legally sound usage by health care professionals and its positioning as service provider for them and other relevant groups in this sector.

The “Fallakte” can therefore be considered as a “proof of concept”. It shall show that relevant patient data can also be stored and provided without central storage facilities, with this task accomplished in a decentralized manner by the modern data centers of big hospitals. This proof of concept has the potential to create arguments for a decentralized solution and to neutralize the arguments of advocates of a central, privately run solution for case and patient records. Figure 3 visualizes the

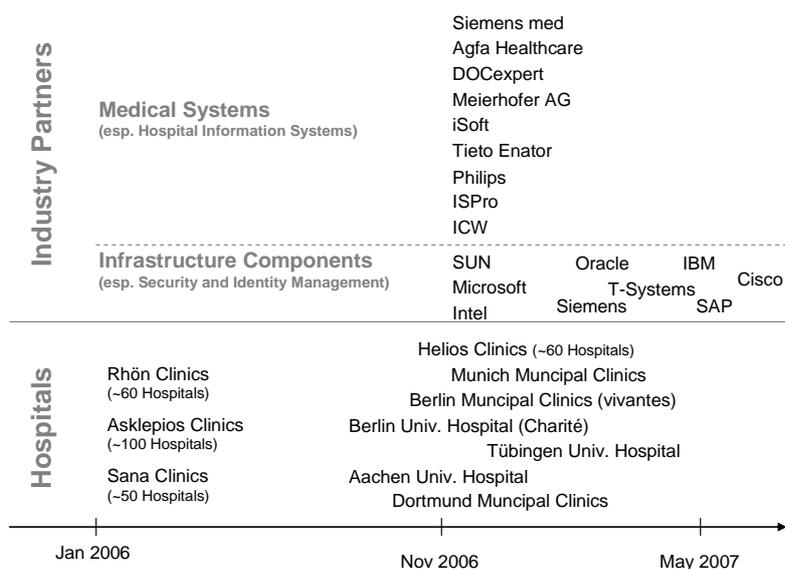


Fig. 3: Partner structure and date of joining the project “Electronic Case Record”

current consortium of project partners and exhibits when they joined the project.

After the successful development and free publication of necessary technical and organizational specifications in the first phase of the project (January 2006 – October 2006), the second project phase (since November 2006) concentrates on the establishment of a “standard derived from the market” for electronic patient and case records, based on, but outrunning the government initiative. Additionally, the „Fallakte“ cooperation also forms an opposition to the increasing dominance of ICT service providers for integrated solutions. Many industry participants argue that these service providers typically do not account for the sector’s needs and requirements sufficiently. In recent years, nearly every small- and medium-sized producer of hospital information systems has been acquired by large, globally acting competitors (e.g., GWI by Agfa Healthcare, ITB by Tieto Enator, GSD by Siemens). Specificities and requirements resulting from the national environment and general conditions (e.g., privacy and data security) or activities (e.g., launches of national health telematics infrastructures) can only be incorporated superficially in standard products. One of the reasons for this is the extremely fragmented German hospital sector. With a turnover of about 2 billion Euros even the largest private hospital chain (Asklepios) only has a market share of about 2%. This is why many IT service and solution providers are much larger and powerful than their biggest clients. Concerning their relevant software, hospitals typically perceive the providers as strongly dominating the market. Process structures in hospitals then often follow the possibilities of available, international software

products rather than having the hospitals' requirements reflected in the software. The "Fallakte" cooperation of national hospital operators serves also as one approach to create a counterbalance.

We explore first propositions via theory-based deduction as well as via industry specific literature, project materials, and especially multiple single expert interviews. A panel expert workshop which took place on the 18<sup>th</sup> January 2007 at the Ruhr-University of Bochum helps to formulate and concretize the latter formulated propositions. They will be subject of ongoing investigations during the next two years.

It is already foreseeable today, that at least an "industry segment value system" (ISVS: Reimers et al., 2004) will evolve on this diffusion path. ISVS are networks with participants of several interdependent industry value chain stages, who work on the basis of compatible business processes and interface specifications. The latter enable an inter-organizational connection and integration of respective applications and information systems. Whether a market-wide standard will evolve from the project is still open and unforeseeable, yet.

## **Propositions**

In the iterative framework of theory-driven analysis on details of organization/environment co-evolution as described above, we addressed the question of why consortia of competitors temporarily deploy in the course of technological development paths and how they attain influence on the arrangement of future market infrastructures from the angle of the competence-based view of the firm. Starting point for this analysis and for the collection of qualitative data was the basic idea that is also mentioned in the extant literature on cooperation and co-evolution: due to restrictions of resources and competences, organizational inertia, and limited influences of single players on self-enforcing paths, single firms are not able to react autonomously or remain competitive autonomously in all scenarios of environmental conditions and especially changes. Therefore, they engage in cooperation (even with competitors).

Motivations for cooperation, scrutinized in former research, can be found in different phases of market transformation and at different ratios. The following three motivations for (temporary) cooperation were already identified in former fieldwork (Gersch et al., 2007a):

- 1) filling resource and competence gaps in "*Gap Closing Alliances*" in order to configure innovative/competitive market offerings and/or to secure the conceived readiness for action which might be needed in the future,

- 2) monitoring basic conditions and expectations of other market participants, as well as development paths of the relevant environment in “*Steering Alliances*”,
- 3) preparing for unexpected developments of the business environment in “*Option Networks*”.

Because of our expectations of also finding these motivations in the current case, we applied these ideas to the special challenges during diffusion processes of future market infrastructures.

### *Gap Closing Alliances*

Every single participant in the “Fallakte” cooperation analyzed in this paper has been aware of the importance of future standards in the area of electronic health care records for their own systems development as well as for conceivable market infrastructures. Long before the project was set up, they knew that necessary investments in such systems had to be made in a timely fashion (the specificity of this investment will be addressed in more detail below). During the last years, large German hospital operators have unified and integrated their ICT infrastructure. However, a complete consolidation of systems was only conducted by a few. The upcoming step is expected to be a modularization of basic functionalities and a re-integration in the sense of a so-called service-oriented architecture (SOA) (Mumma, 2006). This is expected to accelerate new applications and at the same time cater for a reduction of dependencies from single software suppliers. Hospital operators argue that this “paradigm shift” should also be reflected in the offers of the software industry. This means that the still very monolithic systems have to be replaced or at least supplemented by interoperable solutions based on open interfaces. The “service-oriented” set up of “Fallakte” creates opportunities for firms to apply smart software products from other industries, too. Thereby, the open standard is able to weaken the position of established large hospital software providers on the one hand, and on the other hand it facilitates the transfer of existing (industry neutral) infrastructure and ICT security components to an application in hospitals. This effect is already visible in figure 3. While the “Fallakte” project started with a group of health care incumbents, until November 2006 almost every relevant provider of industry-neutral infrastructure and ICT security solutions joined the project. Especially the implementation of “Fallakte” at the university hospital in Aachen can be considered as indicator for the future segmentation of the market. While Microsoft delivers the ICT security infrastructure on the basis of standard software, complemented by products of iSoft, a renowned hospital information system provider, the “Fallakte” architecture is run on the basis of software modules existing in the market.

All participants of the “Fallakte” consortium were aware of their above-average position concerning hospital processes and ICT and their advantages regarding existing resource and competence gaps of competitors even before the project. However, they judged the project and thereby setting up an

open standard for the whole sector and their potential to actively influence this standard as more beneficial than sustaining their edge (cf. also the propositions on “steering alliances”).

In the initiation phase of the project, all project partners held the opinion that ICT and its usage cannot be considered vital for competition between the consortium members (who are basically competitors in their relevant markets). They argue that their competition starts on a different level, namely on the level of realized processes (e.g., clinical pathways und administrative processes) and the creation of new business models/business systems (e.g., networks for managed care and disease management programs). On that level, every project partner considers to be in a good competitive position. From their point of view, ICT solutions only serve as a kind of supportive means to use their personnel more focused and to enhance the external perception of their medical performance to relevant target groups and networks.

A serious reputation problem of the organizations which joined the project in the first phase seems to be even more relevant than bottlenecks in personnel and competences. It was not only the case that many medical practitioners and opinion leaders in Germany have some reservation against privatizations in the health care system in general. Particularly, the municipal hospital in Hamburg was sold to Asklepios (a private hospital chain operator) despite the public decision against going private. A similar case took place in Hessen, where the university hospital Gießen/Marburg was sold to Rhön-Klinikum AG. Having a private consortium of hospitals that initiates and finances an activity, which is potentially beneficial for the entire sector, can be considered as an instrument of improving the public opinion inside the health care sector.

In retrospective it seems that starting the project by the end of the year 2005 was an adequate moment to respond to a perceived „window of opportunity“ (Abell, 1999; Christensen et al., 1998) in the market:

- Other sectors of medical service providers were busy with internal struggles (e.g., protests of medical practitioners) and their own activities, so that there was no serious counter-position when the field of case and patient records was entered by hospitals. Formerly, governmental authorities classified that field as being of low priority so that no counter-activity could be expected from that side.
- The necessity to establish so-called “admission-portals“ for hospitals and other mechanisms for the interconnection of hospitals and further medical service providers was very significant due to legal demands (esp. managed care and disease management programs). This is why many similar projects were initiated for this issue, also by other privately owned hospital chains. By the end of 2005 the respective projects run by private hospital chains had the status of solutions-concepts and prototypes, but were at least half a year from their launch.

As these “points of bifurcation” of every single player nearly coincided, there was only a short strategic window in which a cooperation could be set up without large irreversible sunk investments, namely before the two biggest German hospital chain operators (Asklepios and Rhön) would start to implement their own investment-intensive and proprietary systems. The third initiator (Sana) was about to consolidate various minor activities in that field but had although not started any implementation by the end of 2005.

The above-outlined facts can be summarized in a first, more general proposition:

*Proposition 1: When agents assume individual ‘windows of opportunity’, they will engage in activities in order to secure perceived prerequisites to use these windows. Cooperation is a meaningful option to fill threatening resource and competence gaps.*

### *Steering Alliances*

Embedded in evolutionary and idiosyncratic developments of relevant markets and industries, points in time can be identified which are characterized by their importance for the direction of future developments (e.g., due to fundamental decisions or even by accident). At these so-called “points of bifurcation” for relevant institutional contexts (Arthur, 1989), a positioning of future cornerstones appears to be especially promising. “Forecasting the future or shaping it?” (Simon, 2002) – Instead of passively adapting to changed environmental conditions, some activities directly aim at goal-oriented attempts to exert influence and to steer changes in the relevant business environment, basic conditions underlying every market process, or institutional migration paths at these points of bifurcation. Acknowledging their discretionary potential to act, agents seek to achieve strategic fit this way (Morgan & Hunt, 2002, Volberda & Lewin, 2003, Zajac et al., 2000).

As outlined above, at least the three hospital chain operators who initiated the project had arrived at a point of bifurcation, i.e. they had to decide whether to implement a cost-intensive proprietary option (with all related operational and investment risks) or whether to try to achieve a kind of standardization in the sector (and thereby having the option of using “standard software” products.)

*Proposition 2: When agents identify a conceivable ‘point of bifurcation’ in their relevant business environment, they actively reflect cooperation as a ‘strategy’ to conserve or enhance their own competitiveness.*

Aggregating directions of cooperation activities to a very high level, drivers to engage in such cooperation activities can very well be traced back to basic mechanisms inherent in the evolutionary

character of competence-based theory of the firm. Special attention is given to (1) ‘path dependency in a narrow sense’ as well as to (2) ‘specificity from an evolutionary perspective’ (Gersch & Goeke, 2007; Gersch et al., 2007a) in the following.

The first of these mechanisms comprises path dependencies: One main characteristic of path dependency in the narrow sense is the existence and effectiveness of self-enforcing development processes. So-called “positive feedbacks” (increasing returns) are one reason for self-enforcing developments (Arthur, 2000; David, 1994; Sterman, 2000) when they initiate a kind of automatism of further development. Starting with increasing returns and “asset mass efficiencies” (Dierickx & Cool, 1989) (e.g., by learning curves or secondary benefits of usage or complementarities), self-enforcing development processes emerge – after reaching a so-called ‘critical mass’ more or less automatically and without any further impulses or intervention, or rather initiated by small decisions and events. This can mostly not be anticipated or planned in detail; some agents anticipate aforementioned ‘points of bifurcation’. Self enforcing processes can apply to every level, the environmental, the market, the cooperation, and the firm level. A “war of standards” is a good example for a “fight of critical mass systems” (Shapiro & Varian, 1999). Every project which aims to implement a market-standard will try to reach its critical mass first. In this context, motivations for cooperation activities to initiate, break, or steer environmental/institutional paths can be found in the so-called “critical mass effect” especially, leading us to derive the following propositions confirmed in the fieldwork:

*Proposition 3: Firms will try to initiate, steer and/or break paths as a part of their activities when the value of their own resources and competences depends on the development of specific conditions in their relevant environment within trajectories. Cooperation is a meaningful option to enlarge the chance to reach a “critical mass” right in time.*

Achieving a “critical mass“ of users for the standard to be established is estimated absolutely crucial in the case under investigation in this paper. This can be considered as one of the central arguments for the competitors to work together in the project. The worry to potentially make investments in idiosyncratic infrastructures which can be invalidated through later (unexpected, surprising) diffusion paths drives all project partners not to rely on competitive advantages through individual/proprietary ICT systems and business processes.

As each designated consortium member had already started some activities in the context of patient/case records, the choice was made to employ a neutral third party institution (Fraunhofer Ge-

sellschaft) in order to avoid some typical conflicts which can occur in the case of „coopetition strategies“. Fraunhofer Gesellschaft (FhG) not only possesses the necessary expertise to develop all details of the solution concept in the first project phase. In addition it also acts as a moderator in the current second project phase concerning the necessary coordination of the project partners' activities during the diffusion process. The inclusion of FhG furthermore allows single partners to give input into the group in an anonymous way, if preferred so. The highly renowned FhG additionally allows for a “credible signaling” that the whole project can be expected to become successful, given other market participants' increasing belief in the attractiveness of the venture with every single new partner joining the project.

The joint strategy to achieve a critical mass in this way in order to establish a market standard has at least the following four main motivations:

1. Making sure of having a minimum size in the project

Making sure of having a critical size by the project partners comes with at least two motivations: 1) Each consortium member realizes that setting a standard goes along with all challenges of “critical mass phenomena”. They hope to achieve a minimum size to start a development path through pooling the project partners and thereby significantly raising the probability of success compared to an autonomous strategy. 2) In addition, the anticipated benefits from a future ISVS between the project partners – even without diffusion of the standard – are expected to be another interesting pay back strategy for ICT investments that would have had to be made for future applications and information systems anyway. The larger the basis of project members, the higher the benefits of the ISVS between them.

2. Signaling/Pushing of the “supposed success“ due to the consortium members

In addition to the challenge of overcoming initial inertia in the phase of path initiation, the decision of third parties in the sector whether to adopt the new standards to be established or not is crucial. A credible signaling of a supposed success of the project increases the probability of acceptance and adaptation of the standard by other market participants and thereby constitutes an essential element of path management. The constitution (members) of the consortium and its development over the diffusion process is as important as the monitoring function and moderation by a competent, but independent third party (FhG in this case). This gives a signal to other players in the market that there is a sophisticated and working concept with positive future perspectives. This is complemented by the reputation of all consortium members right from the beginning, as they are famous for being very decisive, assertive, efficient and strategizing.

### 3. Extending the influence in the lobbying process

Concerning political/governmental regulation and interventions in the market process related to the diffusion process of the designated standard as well, a minimum size of project partners increases the chance to exert influence successfully. Through goal-oriented and selective provision of information to political opinion leaders and decision makers, trajectories for future developments can be managed and even narrowed (Gersch et al., 2007b).

### 4. Signaling the consciousness of joint interests

By their cooperation, the consortium members also send a signal to other market participants that they are able and willing to give joint interests a higher priority than competition. In the case under investigation this signal primarily aimed at providers of health care software solutions (Hospital Information Systems, Picture Archiving and Communication Systems, Laboratory Information System, etc.), as their respective business models very much build on achieving lock-in effects through highly individualized and thereby less inter-operational products.

### *Option Networks*

Inertia through temporally interconnected events and decisions can also be initiated through economic rigidities, without any self-enforcing effects. However, through limited transferability diverse forms of rigidities can also have an effective impact on players' decisions-to-come. In this context, specificity is of high importance. The understanding of specificity, for example in transaction cost economics, is usually a comparative static one (Langlois, 1992; Langlois & Robertson, 1995; Nooteboom, 1990), comparing alternative usage of one or two users in one or two points in time. This then leads to an understanding of specificity as the net value difference between first- and second-best usages of investments or created assets (cf. the definition of quasi-rents by Klein et al. (1978: 298)). Interpreting specificity in an evolutionary way (Gersch, 2007), numerous effects are to be considered which have the potential to change an evaluation once conducted for resources and competences over time. Exemplary effects in this respect are changes in the (institutional) environment, new knowledge on alternative uses, or qualitative changes of the assets over time. Hence, players' strategies of "(de-)specification" can lead to an extension or narrowing of available alternatives for action and corridors of development (Saab & Ehret, 2007). Thereby, resources and competences necessary to render a competitive output on the firm level generally show a relatively high specificity concerning partners and/or usages (Ghemawat & del Sol, 1998, Ghemawat, 1991). A change in market requirements or environmental conditions that is accompanied by a changing first-best and/or second-best alternative for use can therefore also be considered as a threat of invalida-

tion of available resources and competences (Gersch, 2007). Seeking competitiveness, agents therefore enforce those environmental development paths, which allow a continuous first-best (or at least an optional second-best) usage of their potentials. This can mean a goal-oriented stabilizing of existing environmental conditions as well as intended changing and/or destabilizing. The latter is especially forced by those with faster reactivity compared to competitors. Again and again, they try to “drive” other (competing) market participants through forced change processes/discontinuities.

*Proposition 4: The higher the specificity of resources and competences from an agent’s point of view and the more likely environmental conditions are subject to changes, the more intensive agents will engage in goal-oriented activities to secure first- and/or second-best alternatives.*

On the other hand, cooperation activities can also be embedded in flexibility strategies in order to “de-specify” resources and competences by paving the way for their exploitation and the creation of new ‘second-best’ usages.

*Proposition 5: The higher the ‘quasi-rent’ of a firm’s existing resource and competence base at a point in time, the more activities it will undertake to create relevant second-best alternatives for their use. Networks are one meaningful instrument to keep options open.*

The extent of necessary investments in necessary ICT systems and business process infrastructures is labeled dangerous by the consortium members, both concerning value and specificity (at least unless the success of the project is not for sure). The partners associate two central motivations with the success of the project: 1) compared to autonomous activity, the probability is enhanced that the cooperative venture will result in a future market standard being accepted by many other players in the market. (cf. ‘Steering Alliances’). The investments for the “Fallakte”, being specific for their partners and certain uses in the beginning, would be “de-specified“ with an increasing success of the project (measured by acceptance and diffusion of the elaborated solution), 2) The consortium members will be able to establish an ISVS independent from whether the created standard is accepted sector-wide or not. The expected operational and strategic benefits from this second issue are expected to be almost sufficient to pay back the investments made.

Furthermore, the expert interviews made clear that the competitive consortium members also consider today’s collaboration as an option for further joint ventures in the future due to the established good relational quality. Without being aware of all relevant conceivable future challenges as well as necessary (re)action in detail today, the project partners judged that the “Fallakte“ collaboration had increased their “cooperability“ (also in terms of speed) for uncertain future challenges, too. The mu-

tual coordination of the “lighthouses” of the sector thereby facilitates the anticipation of future development paths, but at the same time also forms the basis for exerting a higher degree of influence on environmental development paths where and when necessary (cf. ‘Steering Alliances’).

## **Summary/Outlook**

Apart from the exploration, formulation and first empirical testing of propositions, the proposal concretizes a multidimensional and co-evolutionary understanding of diffusion and change processes.

The significance of path dependency with self-energizing effects as well as an evolutionary interpretation of specificity as important mechanisms in change and transformation processes could be revealed and asserted with the case of the “Fallakte” (as one facet in the development process of a future health telematics infrastructure in Germany)

Traditionally competitive players follow remarkable “co-compete strategies” for economically motivated initiation, monitoring and steering of development paths. In the case under investigation this was in order to set up market standards and influencing future general conditions in the market as well as to establish an ISVS (“industry segment value system”) and for weakening the existing dominance of ICT service and software providers in the healthcare sector when it comes to defining relevant specifications. Co-evolutionary common bases for cooperation which could already be identified in former research could also be observed as being relevant in the context of the “Fallakte” case (1) Gap Closing Alliances, (2) Steering Alliances, and (3) Option Networks.

Apart from the perspective of individual agents/organizations, the paper offers an extension of existing research on diffusion, change, and transformation processes. This rests upon a theory-based interpretation of alliances as well as the formation and evolution of network structures over time.

The analysis of mutually causing and effecting development paths on the levels of firms, alliances/networks, and markets/industries facilitates a theory-based and empirically supported approximation to fundamental drivers and mechanisms of change processes as well as of the co-evolution of technologies, institutions and markets.

The propositions formulated in this paper may form a starting point for further expanding an elaboration of theory and empirical investigations within the framework of the above-described iterative research design. This expansion will have to address both, the further development process in the German health care sector as well as comparable change and transformation processes in other markets/industries.

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## Appendix

### Check of trustworthiness applying the criteria of Flint et al. (2002)

Trustworthiness criteria	Method of addressing in this study
<p><u>Credibility:</u> Extent to which the results appear to be acceptable representations of the data</p>	<ul style="list-style-type: none"> <li>- Conducted interviews and over-all market observation continually for 4 years, with the panel-experts for 2 years</li> <li>- Findings and milestones presented for discussion and adjustment of the executive panel on a focus group workshop (which provided the majority of data)</li> <li>- Protocols with interpretations regularly returned to participants</li> <li>- Extraction of results through a research team of three with mutual justification of the results</li> </ul> <p>Result: emergent findings and propositions were altered and expanded</p>
<p><u>Transferability:</u> Extent to which findings from one study in one context will apply to other contexts</p>	<ul style="list-style-type: none"> <li>- Theoretical sampling</li> <li>- Weakness, that results were generated exclusively with data from the healthcare sector was tackled through the abstract development of findings consistent to market process theory basic assumptions. Additional discussions with representatives from the steel, music, and education sector, who basically confirmed the findings for their industry, as well</li> </ul> <p>Result: Findings were represented by multiple data sources and all panelists</p>
<p><u>Dependability:</u> Extent to which the findings are unique to time and place; the stability or consistency of explanations</p>	<ul style="list-style-type: none"> <li>- design as longitudinal analysis (including interviewees focus groups members)</li> <li>- panelists and interviewees reflected on current and recent events and experiences</li> <li>- results not anchored in 'fixed real world events'</li> </ul> <p>Result: Found consistency in the phenomena for multiple points in time; consistency in the participants' stories</p>
<p><u>Confirmability:</u> Extent to which interpretations are the result of the participants and the phenomenon as opposed to researcher bias</p>	<ul style="list-style-type: none"> <li>- milestones of research also presented and discussed with other researchers on conferences and interdisciplinary research workshops at our university</li> <li>- comprehensive industry image through participants from every value chain stage in the German healthcare sector</li> </ul> <p>Result: Findings and propositions were altered and expanded</p>

<p><u><i>Integrity:</i></u> Extent to which interpretations are influenced by misinformation or evasions by participants</p>	<ul style="list-style-type: none"> <li>- trust built with longitudinal participants (interviewees, panelists)</li> <li>- non-threatening nature of interactive elements, motivation to achieve ‘win-win’ situations with the participants</li> <li>- always numerous sources of data</li> <li>- triangulation with comprehensive secondary data</li> <li>- when non-confidential, protocols were returned to all panelists with the request to comment irregularities</li> <li>- eyes open for participants trying to evade the issues being discussed</li> </ul> <p>Result: Participants were very open about issues being discussed; no evidence for missing integrity</p>
<p><u><i>Fit:</i></u> Extent to which findings fit with the substantive area under investigation</p>	<ul style="list-style-type: none"> <li>- through interactive approach always having in mind research goal and research question</li> <li>- through interpretative approach always having in mind the conceptual/theoretical framework</li> </ul> <p>Result: Findings were more deeply described, also backed with extant literature on the topics</p>
<p><u><i>Understanding:</i></u> Extent to which participants buy into results as possible representations of their world</p>	<ul style="list-style-type: none"> <li>- written survey on importance and relevance with the panelists after concluding focus group workshop confirmed relevance of the findings</li> <li>- ongoing presentation of findings and interpretations with colleagues, participants and in industry forums</li> </ul> <p>Result: Colleagues and practitioners bought into the findings</p>
<p><u><i>Generality:</i></u> Extent to which findings discover multiple aspects of the phenomenon</p>	<ul style="list-style-type: none"> <li>- all interactively generated data (interviews, focus group workshops) gave explicit opportunities for new facets of phenomena</li> <li>- repeated (longitudinal) interviews with numerous key informants</li> </ul> <p>Result: Captures multiple aspects of the phenomenon</p>
<p><u><i>Control:</i></u> Extent to which organizations can influence aspects of the theory</p>	<ul style="list-style-type: none"> <li>- panelists and interviewees would have some degree of control over the project (strategic intention), not however on detailed outcome</li> </ul> <p>Result: Involvement of the participants in the issue exists</p>