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LICENTIATUPPSATS

Interaktionsprocesser i byggprojekt

– en studie i partnering som kraft för förändring

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Kapitel 1

Introduktion

1.1 Bakgrund och problemområde

Offentlig debatt har de senaste åren handlat mycket om byggindustrin och de konsekvenser dess inre problem får för medborgarna. Delegationer, kommissioner och utredningar har tillsatts från statligt håll på grund av att kostnader anses för höga, kvaliteten anses vara bristfällig, miljöpåverkan för stor, konkurrensen för liten osv. Bland sektorns olika intressenter har det gjorts åtskilliga insatser för att försöka förstå orsakerna till och komma tillrätta med problemen. Ett missnöje finns också internt i byggsektorn bland dem som är involverade i de komplicerade system som en byggprocess utgör socialt och tekniskt.

Lönsamheten bland entreprenörer har länge varit låg för projekt upphandlade i priskonkurrens. Ändringar och tilläggsarbeten har utvecklats till att bli ett tillfälle för entreprenörer att skapa lönsamhet vilket i sin tur gjort att förändringar upplevs mycket dyra. Hanteringen av ändringar och tilläggsarbeten är ofta konfliktfylld och mycket energikrävande för alla parter. Tid och pengar läggs ned enbart för att i efterhand bevisa för sin kontraktspart vilka kostnader man haft och att detta inte överensstämmer med den ursprungliga överenskommelsen i kontraktet. Denna "kultur" påverkar förtroendet och relationer mellan byggprocessens aktörer. Den bidrar till minskad öppenhet och sänker effektiviteten.

Ett annat viktigt problem i det här sammanhanget är att många aktörer i bygg-processen upplever otillfredsställelse över att deras kunskap inte kommer projekten tillgodo. Beställare kan av olika orsaker ha svårt att definiera vad han vill ha vid upphandlingstillfället och behöver möjlighet att påverka genom hela projektet då omvärldsförutsättningar förändras. Entreprenörer vill påverka projektet tidigt i den teoretiska fasen med kunskap om t ex utförande och om kostnader på samma sätt som projektörer vill delta med sin kunskap så att sena ändringar sker på bästa tänkbara sätt ur ett tekniskt eller arkitektoniskt perspektiv. Drift- och förvaltnings personal är ytterligare en yrkeskategori som med stor sannolikhet har en del kunskap som är viktig att tillföra redan i byggprocessen. Byggprocessen har en tydlig funktionsindelning och många menar att den fragmentisering som uppstår mellan skeden, aktörer och funktioner är en bidragande orsak till problemen. Orsakerna (förmodligen inte heller lösningen) är dock inte så ensidiga och enkla som de kan framstå.

I byggsektorn har begreppet *Partnering* fått fäste som ett koncept för samverkan mellan olika intressenter. Andra varianter på samma tema är t ex nätverk, vertikal integration och allianser. Erfarenheter från andra länder indikerar att problem av den typ som nämnts ovan minskar med partnering som arbetsform. Mellanmänskliga relationer och samverkan i byggprocessen har på senare år rönt ökad uppmärksamhet såväl praktiskt som teoretiskt. Många menar att en del av lösningen på branschens dilemman ligger just i gränsskikten mellan olika aktörer och det sätt på vilket de interagerar. Beskrivningar om partnering tenderar dock att bli ytliga och instrumentellt inriktade. Den rationella synen på organisering lyser igenom trots att avsikten med partnering kan ges motsatta tolkningar. En sådan tolkning är att partnering skapar förutsättningar för att tillåta och ta tillvara olikheter och den dynamik som kan uppstå då människor interagerar. Denna studie handlar om den påverkan som sker när man i fyra projekt försöker samverka enligt det koncept som kallas partnering. Innehållet är en studie av partnering som arbetsmodell i byggprocessen och diskuterar dess teorier och tillämpningar i svenska byggprojekt. Drivkrafter och gemensamma arbetssätt i projekt konkretiseras genom de processer och de strukturer man är en del av.

I minst 40 år har man känt till att kommunikationen i byggprocessen inte fungerar helt tillfredställande. Somliga menar att det är en av grundorsakerna till en rad olika problem som sektorn brottas med. Under sextiotalets första hälft utfördes en pilotstudie av Tavistock Institutet (Higgin & Jessop, 1965). Man identifierade en rad problem i brittisk byggindustri. Ett problem som upptäcktes var att alla de komplicerade kontraktsförhållanden som råder mellan de olika aktörerna gör det svårt att förstå vad som förväntas av varje aktör och vad denne kan förvänta sig av andra. Ett annat problem var att fullständigt och snabbt informationsutbyte saknades inom designteam. Man belyste också bristen på tidig samordning av behov och möjligheter som kan leda till minskad effektivitet i följande steg i projektet samt aktörernas ofullständiga information om varandra.
Studien som är gjord i Storbritannien är relativt gammal. Likväl går det att känna igen sig i dagens svenska byggprocess även om t ex IT-tillämpningar överbryggat något av problemen. Problemen är relevanta även 2002 och på olika håll arbetar man för en utveckling av kommunikationsprocesser och förutsättningar för samverkan.

Problemområden i vår tids svenska byggsektor sammanfattades och analyserades i en omfattande utredning som stod klar i maj år 2000 (SOU 2000:44). Tillsammans med teknik, konkurrens, kostnader och aktörer behandlas byggprocessen ingående kring frågor som rör projektdefiniering, projektutformning och projektleverans. I en senare sammanfattning och utvecklad diskussion kring byggsektorns struktur och utvecklingsbehov (Lutz & Gabrielsson, 2002) framhålls åter den sönderstyckade byggprocessen som ett problem. Byggprocessen beskrivs som sönderstyckad med en värdekedja bestående av flexibla, låsta och osynliga delar. Insyn saknas i de ekonomiskt låsta delarna menar man och då avses t ex vissa entreprenörer, grossister, agenter och materialtillverkare. Med värdekedjans osynliga delar menas t ex förvaltning och servicebolag, kommun, transportföretag och importörer. Då insyn saknas i låsta och osynliga delar går också möjligheten till styrning och samverkan förlorad. Man efterlyser ett gemensamt ansvarstagande från alla aktörer för en omvandling av sektorn mot långsiktighet i produkter, tjänster, processer och arbetsformer och att upphandling också anpassas till detta. Systemtänkande med integrering av aktörer, långsiktiga relationer och styrmedel som beaktar livscykelekonomi och ökar motivation är exempel på förväntade inslag i en sådan omvandling.

1.2 Syfte

Partnering kan kritiseras i många olika avseenden (Green, 1999; Bresnen & Marshall, 2000). I den här studien har jag sett det som mer fruktbart att ta hjälp av de erfarenheter som man hittills gjort på området och försöka komma vidare i förståelsen. Erfarenheter från andra länder har inspirerat mig att också i svensk byggkultur utforska och försöka förstå vad som händer i olika byggprojekt när människor med olika funktioner ska lösa uppgiften gemensamt. Utgångspunkten för den empiriska delen är ett sökande efter ett antal processer och strukturer som jag efter litteraturstudier bedömt som viktiga att uppmärksamma i partneringprojekt. Syftet med forskningen som ligger till grund för den här studien är:

- att öka förståelsen om partnering som arbetssätt i praktiken tillämpat i mer konventionella byggprojekt

- att komplettera den samlade kunskap som redan finns om partnering i byggindustrin med erfarenheter från ytterligare ett nationellt sammanhang, det svenska.

Min förhoppning är att förståelsen för vad som påverkar och är avgörande för samverkan mellan olika organisationer i byggprocessen därigenom också ska öka och höja konkurrenskraften i den svenska byggsektorn. De tidigare empiriska studierna av partnering i svensk kontext kompletteras genom denna studie, (se även Kadefors, 2002, Kemi, 2001). Studien är bred och avsikten är att fånga helheten i konceptet inom ramen för projekt. Aspekterna struktur och process är två viktiga dimensioner vid allt förändringsarbete (Borgbrant, 1990). Bakomliggande förväntningar på partnering härrör från forskning och erfarenheter från främst de anglosaxiska länderna där konceptet vunnit framgång med positiva effekter på kostnad, tid, kvalitet mm (Hellard, 1995; Bennett & Jayes, 1998; Barlow, 1997 m fl).

1.3 Metod

Denna studie är kvalitativ och utgår från helheten av företeelsen samverkan i byggprojekt. Genom tolkning och analys försöker jag förstå situationer och människors erfarenheter av samspel i projekt. Datainsamling har gjorts genom tre fallstudier och omfattar ett femtiotal intervjuer, ett trettiotal observationer, dokumentstudier samt informella samtal i anslutning till observationerna.
Liknande studier har gjorts i andra länder varför den bör klassas som en så kallad *replication study*.

1.4 Bärande begrepp

1.4.1 Partnering

Studiens mest centrala begrepp är 'partnering'. I sin bredaste mening är partnering ett arrangemang där kund och leverantörer söker en gemensam effektiv form av samarbete. Det kan handla om en överenskommelse att arbeta nära tillsammans i ett enstaka eller flera projekt. Beskrivningar som används bland forskare är många och relativt vaga. Ännu fler är troligen begreppets praktiska innebörder för människor. Tekniska nomenklaturcentralen (TNC) använder sig av begreppet *partnerskap* och gör följande definition (ur Sundsvik, 2001):

"Partnerskap är det ledningssätt som används mellan beställare och leverantör för att enligt avtal samverka och ömsesidigt informera varandra i syfte att uppnå ett bättre gemensamt resultat i ett projekt.

Grundläggande komponenter i partnerskap är formaliserade ömsesidiga målbeskrivningar, överenskommelser om problemlösningsmetoder och en aktiv samverkan för kontinuerligt mätbara förbättringar"

Avsaknaden av en enda exakt definition av vad partnering är upplevs av många som ett problem. Min egen uppfattning är att man bör låta begreppet 'partnering' existera som ett så kallat sensiterande begrepp (sensitizing concept)[1] eller spårhundbegrepp[2]. Det innebär att det tillåts påverkas av och få sin betydelse i det sammanhang det existerar i och har med andra ord ingen fast och entydig natur. Alvesson & Sköldberg (1994) menar att sådana begrepp i samhällsvetenskapen bör röra sig om, koncept i omvandling, som mer tjänar som riktmärken och vägvisare än det järnstaket som utgörs av de definitiva begreppen. Sensiterande begrepp i kontinuerlig omvandling, snarare än statiska mätvariabler, gör det möjligt med successivt igenkännande av forskaren i föremålet för undersökningen. I stället för att försöka skapa allt exaktare tekniker, för att mer och mer precisera begreppen, borde samhällsforskarna ägna sig åt att skapa känsliggörande begrepp som stimulerade dem att förnimma nya relationer,

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[1] Blumer (1954), citerad i Aronsson (2001)
[2] Starrin, (1997), citerad i Aronsson (2001)

perspektiv och världsbilder menar de. Andra forskare är inne på samma tanke, dvs. att sensiterande begrepp kan användas för att rikta uppmärksamheten på och underlätta upptäckten av vissa sociala fenomen (Johansson, 1995).

Tekniska nomenklaturcentralens definition kan utgöra ett riktmärke i studien eftersom den har en inneboende och relativt stor möjlighet till omvandling med avseende på ovanstående diskussion. För den här studien kommer dock det engelska ordet partnering att användas pga. att det blivit etablerat i den svenska byggsektorn. Med tekniska nomenklaturcentralens definition som vägvisare för denna studie vill jag göra några förtydliganden kring min tolkning av innebörden i denna studie:

*...mellan beställare och leverantör...*kan i praktiken innebära flera leverantörer (t ex projektörer och olika entreprenörer).

*...bättre gemensamt resultat...*tillåts ha en bred innebörd och syftar inte enbart på ekonomi utan på partnernas upplevelse av det mervärde samverkan skapat.

...i ett projekt... utökas till: *i ett eller flera på varandra följande projekt.* Projekt har i byggsektorn en vedertagen betydelse vilket gör tillägget nödvändigt.

1.4.2 Process och Struktur

'Process' och 'struktur' hänger samman och kan vara svåra att särskilja. Process handlar om ordningsföljd och sammanhang, om vad som kommer först och om vad som kommer sen (Moe, 1996). Ordet process leder tanken till rörelse, utveckling och förändring. Organisationer lever bara i rörelse och deras processer är knutna till olika aktiviteter inom och utom företaget (Bakka et al, 1988). En konkret och enkel beskrivning av vad process innebär i ett gruppsammanhang ges av Nilsson (1996):

"...hur man i en grupp ställer upp och konkretiserar mål, utformar normer, kommunicerar, hanterar problem och konflikter, fattar beslut och uttrycker åsikter."

Struktur kan generellt definieras som en stabil ordning av komponenter inom en helhet (Bakka et al, 1988). Struktur är ofta, men inte alltid, synlig. Förväntningar eller oskrivna regler är exempel struktur som kan vara osynlig och svårtillgänglig medan t ex nedskrivna regler och en projektorganisation är två exempel på synlig struktur. Struktur har med relaterande över tid att göra och rör avgränsning av relationer. Ibland kan struktur ha karaktär av process och dynamik. Man säger då att det sker en strukturering (Moe, 1996). På samma sätt som för grupp-process, gör Nilsson (1996) en enkel och konkret beskrivning av gruppstruktur så här:

"...hur den är uppbyggd med yttre ramar, mål, normer, roller, relationer ledarskap och makt."

1.4.3 Aktör

I den mån begreppet aktör förekommer i samband med resonemang om byggprocessen avses inte den enskilde individen utan snarare de organisationer som är en del av byggprocessen. De olika aktörerna som förekommer i studien är beställare (inklusive ställföreträdande konsulter), entreprenörer, underentreprenörer, projektörer, och brukare.

1.5 Målgrupp och intressenter

Bland dem som bidragit med empirisk data till forskningen återfinns projektorganisationer från fyra olika projekt med tydliga ambitioner att samverka över organisationsgränserna. Projekten är alla upphandlade i konkurrens av vana (dock ej vana vid partnering) beställare där initiativet till partnering var tydligt i förfrågningsunderlaget. Exempel på informationsgivare i projekten är beställarrepresentanter, projekt- och byggledare, entreprenörer, under-entreprenörer, yrkesarbetare och projektörer.

De som förväntas ha intresse av uppsatsen är projektdeltagarna i de projektorganisationer jag studerat. Min egen organisation, Skanska, är självklar i målgruppen. Avd för produktionsledning, Luleå Tekniska Universitet, som formulerat projektet initialt tillsammans med byggsektorns forskarskola, Competitive Building, är andra intressenter. Externa intressenter som kan komma i fråga är beställare, entreprenörer och konsulter i svensk byggsektor som har särskilt intresse av samverkan i byggprocessen eller akademiska institutioner med egen aktivitet på samma eller närliggande forskningsområde. En utgångspunkt för framställningen har varit att de som läser uppsatsen har insikt i byggprocessens förutsättningar, villkor och begrepp.

1.6 Uppsatsens struktur

Uppsatsen följer innehållsmässigt det internationella standardformatet IMRAD (introduction, method, results, analysis, discussion) även om rubrikerna är något annorlunda.

I Kapitel 1 ges en *Introduktion* kring bakgrund och problem, syftet med studien, övergripande metod, målgrupp samt de mest centrala begreppen.

I kapitel 2, *Teoretisk referensram*, byggs den referensram upp som innehåller de teoretiska tankegångar som jag ansett vara relevanta för partnering och forskningsfrågans innehåll. Den befintliga kunskapsfronten för partnering i byggsektorn byggs ut med allmän kunskap om projekt, produktutveckling, lärande, motivation, organisationskultur, förtroende, grupp processer och system.

Problemställning, vetenskapligs synsätt, forskarens förförståelse och detaljer kring den kvalitativa fallstudien som metod redovisas i kapitel 3, *Metod*, tillsammans med en betraktelse över studiens problem och begränsningar, validitet och reliabilitet.

Fallbeskrivningar görs i kapitel 4. De behandlar de fyra byggprojekt som utgjort fallstudier för forskningen om partnering. Karlstad centralsjukhus representerar det största projektet och benämns fortsättningsvis "Sjukhuset". Väg 339 ("Vägen") i Jämtland utgörs av två projekt, etapp I och II och blir i förhållande till de andra två husombyggnads projekten en form av benchmarking mellan hus och väg som olika verksamhetsområden inom byggsektorn. Den tredje fallstudien är en takombyggnad på Luleå Tekniska Universitet i samma storleksordning som Vägen I och benämns i texten som "Taket". Beskrivningarna är komprimerade för att öka läsbarheten och berikas senare genom resultat och diskussion.

Kapitel 5 är en redovisning av *Resultat* som följer forskningsfrågans innehåll och ger möjlighet att särskilja de olika fallen resultatmässigt. Resultatets innehåll motsvarar två tolknings och analyssteg. Det första skedde i intervjusituationen när jag tog ställning till vad som skulle nedtecknas. Det andra skedde när det samlade materialet tematiserats och grupperats utifrån variabler och forskningsfrågor.

I kapitel 6 *analyseras* resultaten både projektvis och processvis. Resultatet framställs i fyra modeller som beskriver mina tolkningar av hur processerna påverkat genomförandet i varje projekt. Den analys som behandlar processerna var för sig inriktas mot vad som förstärker respektive försvagar de relaterade processerna med tillhörande strukturer.

I kapitel 7, *Diskussion och Slutsatser* komprimeras resultatet ytterligare. Partnering i vid bemärkelse diskuteras också ur ett förändringsperspektiv och dess innebörder för praktik och forskning. Kapitlet avslutas med korta betraktelser över studiens bidrag och betydelsen av partnering för en konkurrenskraftig byggsektor. Avslutningsvis ges några allmänna praktiskt inriktade rekommendationer baserade på erfarenheter från studien.

Kapitel 8 är en sammanfattning av uppsatsen på engelska.

I *Bilagor,* återfinns måldokument och andra projektspecifika dokument samt kompletteringar till metodkapitlet.

Chapter 8

Summary

8.1 Introduction

8.1.1 Background and problem

Partnering is an established way of working in the Anglo-Saxon countries. In Sweden it is less common. In the Anglo-Saxon countries the primary driving force behind the development of partnering in construction is the adversarial relation between stakeholders, which leads to high costs for conflict resolution through legal actions. Evidence of partnering as a more effective approach for construction comes from empirical studies in the US, Great Britain, and Australia. Cost, time, and quality are examples of areas where positive outcomes are obtained. In Sweden litigation is still uncommon. Even so, problems exist which affect costs and quality in Swedish construction. In recent years the public debate in Sweden has been intense concerning costs and quality in construction. In the sector there is also an internal dissatisfaction with, for example, low profits, ineffective use, and the transfer of knowledge and attitudes. The interest in partnering is growing in Sweden, and the study intends to contribute to the understanding of the phenomenon in its national context.

8.1.2 Aims and objectives

In its entirety the research project is an empirical replication study with a broad approach to partnering and the overall purpose to understand more of partnering and to explore the effects when the concept is practiced in Sweden. As indicated by Bresnen and Marshall (2000), there is a need to be cautious when attempting to extrapolate experiences of partnering and transfer to other national contexts. The outline of the project is presented in figure 8.3.2

8.1.3 Important concepts for the study

A tentative consensus definition of 'partnering', based on the study of texts about partnering is that at the broadest level it is an arrangement whereby client and supplier seek a mutually effective form of association. It can involve a commitment to working closely together for the duration of a single project or for a number of projects. Components in partnering are often related as common goals, structures for problem solving, and continuous improvements. Research suggests that *partnering* should be viewed as a concept in transformation, what social scientists call a sensitising concept[30]. This means that the meaning of the concept is unstable and indistinct. Instead of locking it into a frame of definitions researchers use partnering as a target which can be sensitive to new relations, perspectives, or phenomena.

'Process' and 'structure' are interrelated concepts and difficult do separate. 'Process' is a concept which is particularly important for partnering. Both process and structure are essential for this study. Group processes are about goal formulation and about giving a concrete form to the goals. Process is also about working out norms and about communicating, dealing with problems and conflicts, about decision-making and the expression of beliefs (Nilsson, 1996). Process makes us think about movement and change. 'Structure' is more stable and often visible. From a group perspective structure is about the group construction of frameworks, goals, norms, roles, relations, leadership, and power (Nilsson, 1996). Unwritten rules and expectations are examples of invisible structures. Sometimes structure has the character of process and dynamics, and we are then talking about structuration (Moe, 1996).

8.2 Theoretical framework

Issues related to partnering in construction represent the main part of the following section, since partnering is the primary area of research. Also discussed, albeit briefly, are inter-organisational collaboration, group processes, systems and cultural change.

8.2.1 Partnering in construction

This section aims initially at reviewing the state of the art for partnering in construction. The review demonstrates the comprehensiveness of the concept which leads to implications for practitioners as well as researchers, concerning partnering in construction.

Since the late 1980s partnering in construction has drawn a lot of attention from academics and practitioners. Most documented work has emerged from experiences in the US, UK, and Australia. One study of partnering in construction (Li *et al.*, 2000) summarises the past 10 years of documented issues published which were published as 29 articles in the highest rated construction management journals. They found four

[30] Blumer (1954). Cited in Aronsson (2001).

major themes of empirical research: project partnering; the examination of a dual relationship, international partnering, and special applications of partnering. Non-empirical research and studies focused on types of partnering, partnering models, partnering processes, and partnering structures. Half of the papers reviewed covered empirical work.

A few studies were based on large samples of projects. Larsson (1995) investigated the contractor-owner relationship in 280 construction projects to measure the degree of success related to alternative approaches. The criteria used to measure project success were cost, schedule, technical performance, customer needs, litigation avoidance, participant satisfaction, and overall results.

Differences between informal partnering (77 projects) and more structured and formalised partnering approaches (59 projects) were significant. Larsson supports the idea of a more structured approach to partnering. The impact of improved interaction on objective performance measures is validated in another study of 209 projects, including 63 based on partnering (Pocock and Liu, 1997). *Degree of Interaction* (DOI) is used as an objective, quantifiable method of approximating project integration. Partnering and combined projects had significantly better performance than traditional projects in three of the four indicators, namely cost, schedule, modifications and design deficiencies.

Results from the study by Larson (1995) of 280 construction projects, emphasise the value of investing in more structured partnering approaches. Superior results in terms of controlling costs, achieving technical performance, meeting customer needs and in the overall results were reached in the formalised partnering projects. No significant differences were found in the study between formal and informal partnering projects related to meeting schedules and avoiding litigation.

The use of different formal tools and techniques is often proposed to support and develop partnering processes. Project managers, however, would benefit from an understanding of the underlying factors that the tools address, as well as the tools themselves (Puddicombe, 1997). In an empirical study of nine cases, Bresnen and Marshall (2000) note that it may still be possible to engineer collaboration in the short term, using formal mechanisms such as incentives and teambuilding. These strategies are most likely to be successful where clients already have appropriate experience and capabilities.

8.2.1.1 Motivation

In observations made in case studies about partnerships and alliances, limitations in the use of incentives are verified. The implication is that systems for enhancing motivation need to be very carefully designed. Motivation and commitment operate at different levels of analysis with respect to the organisation and the individual. The participant evaluation of rewards, the expectation of performance and the perception of equity are highly subjective, and it must be understood that they can differ. Intrinsic as well as extrinsic rewards influence motivation and commitment (Bresnen and Marshall, 2000).

8.2.1.2 Culture

Culture, receives relatively little attention in partnering research although it is often stated as important. Bresnen and Marshall (2000) observed the simplistic way in which partnering has been examined. They mention the existence of subcultures and the complex dynamics associated with changes as two examples of cultural difficulties. A cultural fit between collaborating firms can provide a basis on which mutual confidence and trust can develop (Faulkner, 2000). Lazar (1997) identifies intrusions from the outside world as an external barrier to partnering, one example of which is politics. Externally imposed barriers, which affect climate, culture, and the structure of organisations, are, for example, laws permitting very strict notice provisions. Another example of an external barrier is a reward system for middle management including disincentives for decision-making and risk taking. Remedies for externally generated barriers to partnering need to be developed on a case-to-case basis.

8.2.1.3 Common goals

The formation of a partnering charter has been seen as the single most beneficial tool in developing a cooperative partnering relationship (Thompson and Sanders, 1998). Common goals for involved parties are agreed in a document at an early stage of a project. In order to achieve the alignment of the team, it is important that goals are really shared and clearly understood by everybody. Models to shape and describe the partnering concept and various conditions in relationships are developed for partnering. A partnering continuum has been created to illustrate the benefit of different degrees of objective alignment between the parties involved. Four stages with different applications, each representing a new level of alignment, are described and illustrated. The traditional approach is called competition and is followed by cooperation, collaboration, and finally, coalescence, which represents the ultimate stage of partnering, and includes a total redesign of work processes between parties. In order to provide guidelines to select partners and to determine the type of relationship desired, companies involved in multiple relationships could use the continuum (Thompson and Sanders, 1998). Another conceptual model was created focusing on organisational boundaries used to classify and describe interfaces between entities as flexible and/or permeable. The model enhances the overall efficiency of the partnering technique by defining the objectives, segregating the resources, and establishing a territory for the participants through the modification and addition of new boundaries (Crowley and Karim, 1995).

8.2.1.4 Design-construct integration

Partnering puts special emphasis on front-end decision-making, planning, and the execution phases of projects, as well as the rapid integration of organisations with different knowledge bases (Barlow 2000). Cheng & Li (2001) describe 14 potential factors affecting partnering success. One of them is joint problem solving which is a collective decision made by the partnering team to create alternatives to problematic issues. Another potential success factor is effective coordination which involves that one party perceives the expectations of another party in fulfilling a set of tasks. Both factors can be related to technical problems in construction projects. Design integration becomes important from the aspects of learning from an actor to another in the construction process. DeVilbiss & Leonard (2000) have created a model for the implementation of a learning organization where partnering is the foundation.

8.2.1.5 Evaluation and continuous improvements

Continuous improvements are central features of partnering. The TQM philosophy involves a search for continuous improvements of organisational systems and processes. An understanding of learning through continuous improvements and TQM can make the implementation of partnering more effective according to researchers (Love et al, 2000). Partnering is repeatedly related to TQM (Baden Hellard, 1995). According to Gransberg et al (1999) partnering has become the way in which the construction industry applies Total Quality Management. Through the work of Crane et al (1999) the knowledge of partnering measures becomes practically available. They argue for that measures must be tailored to suit the culture, needs, and abilities of all involved parties. They suggest three different types of measures: result, process, and relationship. Combined with different levels of measures -relationship, project, and discipline- a useful information system is formed for the partnering relationship.

8.2.1.6 Teambuilding and organisation

An important instrument in the process of establishing trust and aligning parties with different perspectives is teambuilding (Barlow et al., 1997). Formal teambuilding with external facilitators do not seem to be evident in the partnering cases studied. Nor is teambuilding repeated at key project stages. The formation of charters and teams are activities that are expected to be managed in the form of meetings or workshops for one or two days at which the key players are in attendance. Follow-up workshops to evaluate progress and induction workshops, when someone is appointed later in a project, are recommended in guides for partnering, alongside final workshops to review project performance (Bennett and Jayes, 1995). No peer-reviewed papers have been found which deal with the special partnering-leader roles as facilitators and champions. They are described in most of the practical guides and in an informative way in some articles. Champions are involved in the selection and monitoring of facilitators and represent each organisation which takes part in large projects. Champions should have a strong link to the next level of command (ECI, 1997). They also should have a central role in helping to nurture and implement the partnering process. They may well be crucial in promoting and distributing an organisational memory of the lessons learned from partnering experiences (Barlow, 2000). Facilitators should be independent, have a basic understanding of construction and a knowledge of the partnering process. They should be skilled in organisation, communication, problem solving, conflict-management and listening. Flexibility, a willingness to become familiar with the project and the people, and accessibility throughout the duration of the project are also important attributes (ECI, 1997).

8.2.1.7 Purchasing and contract

In creating relationships and contracts where every party should feel like a winner, equity becomes a central prerequisite. Equity is one pillar of partnering, to ensure that everybody is rewarded on the basis of fair prices and fair profits (Bennett and Jayes, 1998). Short-term commercial sense is one level of equity; another is the more long-term aspect, which can be a question of attitudes to the kind of rewards that partnering can provide. The concept of equity in social transactions can be traced back to Adams (1965), according to whom a condition of equity exists when the values of outcomes and inputs are perceived as proportional to each party. External major changes influence the perceptions of efficiency and equity which each party may have. In terms of contract, the partners' assessments cause them either to engage in renegotiations or to modify their behaviour unilaterally in an attempt to restore balance in the relationship (Arino et al. 1998).

There is a division between those who see partnering as an informal and organic development and those who regard it as something formal and actively engineered. This separation between formal instrumental views and informal developmental views on partnering is reflected also in attitudes towards to the role of contracts in such arrangements (Bresnen and Marshall, 2000). Commentators often argue for the contract as a critical component of integration efforts in construction projects (Puddicombe, 1997). On the other hand, the argument is that too deep levels of contracting tend to reduce flexibility and the freedom to do what is best to meet the project goals. However, relying on a formal contract alone is not seen as sufficient to promote more deeply desired changes in attitude. Behaviour is not determined simply by formal structures and systems, but instead it is the result of conscious choices and actions and a complex interplay between structural imperatives and their subjective interpretation and enactment (Bresnen and Marshall, 2000).

Pietroforte (1997) noticed a dislocation between the pattern of roles and rules advocated by standard contracts imposing hierarchical structures on the process and the behaviour observed in practice. Building projects are successfully completed through federative mechanisms such as cooperation supported by personal communication and exchange of qualitative and uncertain information. Development of a joint IT strategy to enhance a high level of communication in partnering projects is supported by Bennett and Jayes (1998).

8.2.1.8 Relations and trust

Many researchers identify mutual trust as a key quality in successful partnering. Barlow *et al.* (1997) emphasise the characteristics of individuals and their openness and willingness to accept and share responsibility when it comes to mistakes. Furthermore, the presence of more open and flexible communications for the development of trust is strongly emphasised. Reduced transaction costs through social capital and trust have been argued by Williamson (1975). Lazar (2000) uses game theory to explain how trust-based relations develop and demonstrates that a mixed strategy produces higher scores for all players than unconditionally collaborative (cooperative) or conditionally competitive (adversarial) behavioural strategies. Lazar distinguishes between trust-based and reciprocity-based relationships in partnering arrangements where the latter are the most fragile.

A perspective on the Eastern culture and how it can contribute to project success through partnering is given by Liu and Fellows (2001). In Eastern business, personal integrity is the primary consideration, whilst Western business emphasises legal formalities in the shape of contracts. Management of conflict through self-cultivation and goal-setting yielding goals sufficiently attractive to all participants are suggested as essential issues for the adoption of the partnering process. Culture manifests itself in behaviours that are underpinned by values. The importance-hierarchy of values to the self dictates one's behaviour. According to goal-setting theory, rewards affect the degree of commitment to goals. If individuals benefit from trusting behaviours they will continue their self-cultivation. In such a holistic approach to goal attainment in partnering, the emphasis on a physical structure to dictate the partnering process will miss the point. The emergence of trust is also critical in influencing the scale and scope of knowledge transfer between organisations (Barlow et *al.*, 1997). There are similarities between partnering as a process for effective collaboration and the ideas of learning organisations. DeVilbiss and Leonard (2000) have created an implementation model for a learning organisation where partnering is the foundation.

An experimental, large-scale survey of the contractor and designer relationship illustrates that the areas most likely to contribute to disintegration seem to be those that have the greatest link to the organisation. The designers have an apparent lack of concern for general contractor profitability. Architects, in particular, tend toward a traditional arm's length relationship, whereas contractors favour integration. If the results hold in practice, they imply, that it is not without significant difficulties to improve project performance through integration (Puddicombe, 1997). Kadefors (1999) discusses five identified driving forces and dispositions affecting the client, the design team members and the contractor in negotiations centred on changes (variations). The fairness constraint, economic interests, status aspects, intuitive information processing biases, and civic spirit together make conditions of interaction less transparent and predictable. In the studies, there is clear evidence of complexity when it comes to behaviour. An awareness of these underlying factors is fundamental for progress in partnering research and for partnering implementation.

8.2.1.9 Critical views on partnering

Partnering has yet to mature in construction, which is evident in the diversified nature and scope of the studies that have been undertaken to date. For that reason, a myriad of definitions exist (Li *et al.*, 2000). The lack of an adequate and precise definition of partnering seems to be a problem. Bresnen and Marshall (2000) question if it is possible to define partnering as a coherent strategy that involves the deployment of a more or less universal set of practices, systems and procedures. Alternatively, they question why the term partnering is so diffuse and malleable that it can be ascribed to any form of non-adversarial relationship.

Much partnering literature can be characterised as prescriptive. Empirical evidence has been piecemeal and anecdotal with an absence of counter-arguments

(Bresnen and Marshall, 2000; Li *et al.*, 2000; Green, 1999). The way in which partnering has been conceptualised and investigated is criticised by Bresnen and Marshall (2000), who want to see more pluralistic approaches and explorative studies of the social and psychological aspects of partnering as a mode of organising. Kumaraswamy and Matthews (2000) criticise the fact that the impact of partnering on the main contractor-subcontractor relationships has largely been overlooked. Bresnen and Marshall (2000) support the critique: there is an obvious lack of diffusion of collaborative norms down the supply chain.

Green (1999) views partnering as a crude exercise of buying power and draws the parallel with previous corporatistregimes where different interest groups are bound together by duty and mutual obligations and where interest groups triumph over individuals. The background to the critique is the gap between the rhetoric of major clients in the UK construction industry and their behaviour. The emphasis on continuous cost improvement makes the logic unsustainable. Continuous improvements, in general, associate to management-by-stress according to Green. Construction firms cannot be critical because of the threat of being labelled adversarial, thereby they deny themselves access to a significant part of the market.

In a systematic critique of previously published partnering literature, academics from China and Australia provide suggestions for future research. Of particular importance are: the validation of identified performance measures and critical success factors; the development and testing of partnering models and processes; and formatting and selecting partnering strategies. In order to explain the partnering phenomena and to test existing theories there is a need for careful qualitative and quantitative empirical research (Li *et al.*, 2000).

8.2.1.10 Collaboration in Swedish construction, theory and practice

Partnering in construction is becoming a well-established way of contracting in UK, the US, and Australia, unlike the situation in Sweden. Practical guides to best practice are common in the English-speaking countries. Considerable academic work and practice on partnering have been conducted in UK during the 1990s. Guides to so-called second- and third-generation partnering have been produced (Bennett and Jayes, 1998). A comparison of experiences of partnering between Sweden and UK indicates that, in the former, partnering moves between the first- and second-generation depending on the aspects analysed (e.g. processes, clients and teams). A couple of studies have been carried out in Sweden with emphases on cost reduction through common goals, integrated organisations and the analysis of work processes (Andersson and Borgbrant 1998; Persson 1999). There have been several recent studies focusing on various aspects of collaboration and relations between different interest groups in Swedish construction (Råsled, 1990; Kristoffersson, 1995; Kadefors, 1997; Anheim, 2001; Engwall, 2001; Kemi, 2001).

Partnering includes a set of processes to support collaboration and they can be modelled. Some of them are not new for the construction industry. The advantages of partnering arrangements include the flexibility to organise and the opportunity (and importance) to scale or tailor their application according to specific project characteristics.

8.2.2 Interorganisational collaboration

The term 'alliances' now serves as an umbrella label for a host of cooperative relationships in the increasing number of publications on cooperative activities. Numerous terms in management are used to describe an alliance, e.g. partnering, partnership, strategic partnership network, co-operative partnership integration, strategic alliance, and vertical integration. The alliance phenomenon has drawn a lot of attention from academics.

Faulkner and De Rond (2000) structure the most popular theoretical frameworks used in empirical studies of cooperative behaviour. Among the economic viewpoints the most important are: (1) strategic management theory, especially market power theory, (2) transaction cost theory, (3) the resource-based view, (4) agency theory, (5) game theory, and (6) real options theory. Within the organisation field there are following theories: (1) resource dependence theory, (2) organisational learning, (3) social network theory, (4) the ecosystems view, and (5) structuralist perspectives. The theories listed above are all used as theoretical instruments to analyse cooperative strategy. There is an imbalance in the studies because there is more focus on the rationale for cooperation, partner selection and performance, and less on processes and evolution. The behavioural aspects are added to the structure of theories as three key areas: (1) differing cultures and the management behaviour they give rise to, (2) the quality of trust that is so important for all joint endeavours, and (3) the nature of the commitment to the alliance made by the partners.

8.2.3 Cultural change

Partnering literature often emphasizes the need for cultural change in the construction area. Cultural change can be analytically separated into three versions (Alvesson, 2002):

<u>Change as a grand technocratic project</u>
This version is the most popular and emerges and runs from above. It is assumed that top management is the agent from which superior insight about the needed change emerges and also the chief architect behind the plan for change. The change project portrays or promises the possibility of an intentional large-scale transformation from one particular cultural situation to another, more superior and profitable one, although it is recognized that this change is not easy and often takes place slowly. Phases occurring are often new recruitment procedures, training programmes, performance appraisal systems, the promotion of people, value communication and organisational symbols.

<u>Cultural change as an organic social movement</u>
Groups within the organisation revise their ways of thinking and their values, and they give meaning to phenomena 'spontaneously'. These new ideas may originate in the organisations since many people are discontent with dominant ideas and practices and want to consider other sets of ideas. They may also originate outside the organisation

and gradually take root there. For organic movement changes to have a strong impact on organisations, senior managers need to share and support the new ideas and orientations.

Cultural change is the re-framing of everyday life

Everyday re-framing does not presuppose some broadly shared and collectively carried new understanding associated with broad trends in society. It tends to be driven by one or a few senior actors, frequently a manager. Also informal authorities and small groups of people will be central. Most typically re-framing of everyday life is mainly incremental and informal. It may not be clearly espoused or signalled as a project or a campaign. It is a matter of local cultural change. Everyday re-framing is, in some ways, a weaker version of cultural change, as it is not supported by authority, power, and resources. On the other hand, it is strongly anchored in interactions and natural communication. Everyday re-framing has a potential "realism" and a better connectedness to the level of meaning. It is the most relevant mode of cultural change and calls for creativity, stamina, and insight into one's own beliefs, values, ideas, communicative skills and individual's courage in making sacrifices.

8.2.4 Group processes and Systems

Partnering can be understood as a group phenomenon where members interact to reach a goal or perform a task. The research of effectiveness in working groups are summarised by Svedberg (2001) in the following characteristics:

- Knowledge and competence necessary for the specific work task exist within the group;
- Goals are clear for everyone;
- Atmosphere is relaxed, which means that the group members take time to deal with conflicts;
- There is frequent communication, in which feelings are expressed as well as thoughts;
- Differences are accepted. Personal reactions are shared within the group;
- Listening is widespread independent on who is speaking. Comments build upon each other and people speak in the first person. If you are not certain you have understood, make sure you have;
- Decisions are made in unity;
- Struggle for power is infrequent;
- The group evaluates its own work and can be self-critical.

Systems theory sees organisations as complicated sets of people and groups, and proposes complex processes through which those people and groups organize. A systems approach can provide insights into communication processes. System components deal with hierarchical ordering, interdependence and permeability (Miller, 1999). Keywords for systems processes are exchange and feedback. Case analysis is one technique to study systems. A systems approach involves studies of organisational conflicts. Nelson (1989), for example, studied the communication network configurations of high-conflict and low-conflict organisations.

8.3 Research methodology

The research is addressing the question of which processes and structures that should be related to partnering at the project level. The influence of these processes and structures on performance is investigated empirically in three cases. One of the cases is purchased as two construction projects. To understand more of partnering in construction, a holistic approach is needed. Relations and interdependences between actors and organisations become important, and the project team can be looked upon as an open social system. Individual actions and motives behind actions are fundamental in a social system. The personal system with physical and psychological needs must be integrated as well as the cultural system with symbols, values, norms, and conceptions. This study is neither a cultural study nor a study of individuals but instead a study of the social system and interactive processes at the project level (figure 8.3.1). However, the stress between the different system levels will be briefly discussed in terms of cultural change, motivation and learning.

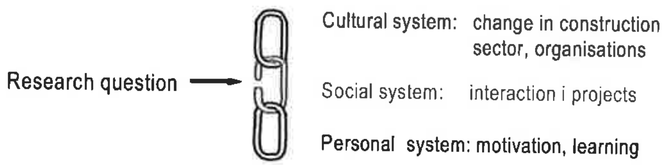

Figure 8.3.1 System levels for the study with a focus on projects

A qualitative approach is used in the study to try to explore the nature of problems and draw inferences from the data provided. Flexibility and options for in-depth analysis are other reasons for choosing a qualitative research method. Case studies are used because the contextual conditions in construction projects are highly related to partnering as a phenomenon. In a case study, it is possible to deal with different sources of evidence and many variables of interest. Furthermore, the form of inquiry does not depend solely on ethnographic or participant-observer data. The reason for this was pragmatic. Money and time spent on data collection could be limited with more of planned interviews than of observations on the construction sites. A multiple-case design was used with variations within the cases as a strategy. One important practical selection criterion was the availability of formalised partnering projects. Cases were also selected so that a study in real time would be achievable to some extent in all cases. 46 interviews with key staff from different projects have been conducted. The study includes 30 occasions with direct participant observation Studies of documentation in each case supplement the data collection.

The interviews were semi-structured and lasted from one to three hours. In an attempt to create a holistic picture of partnering in context, the viewpoints of clients, contractors, designers, and subcontractors were examined. Figure 8.3.2 illustrates the outline of the entire research project.

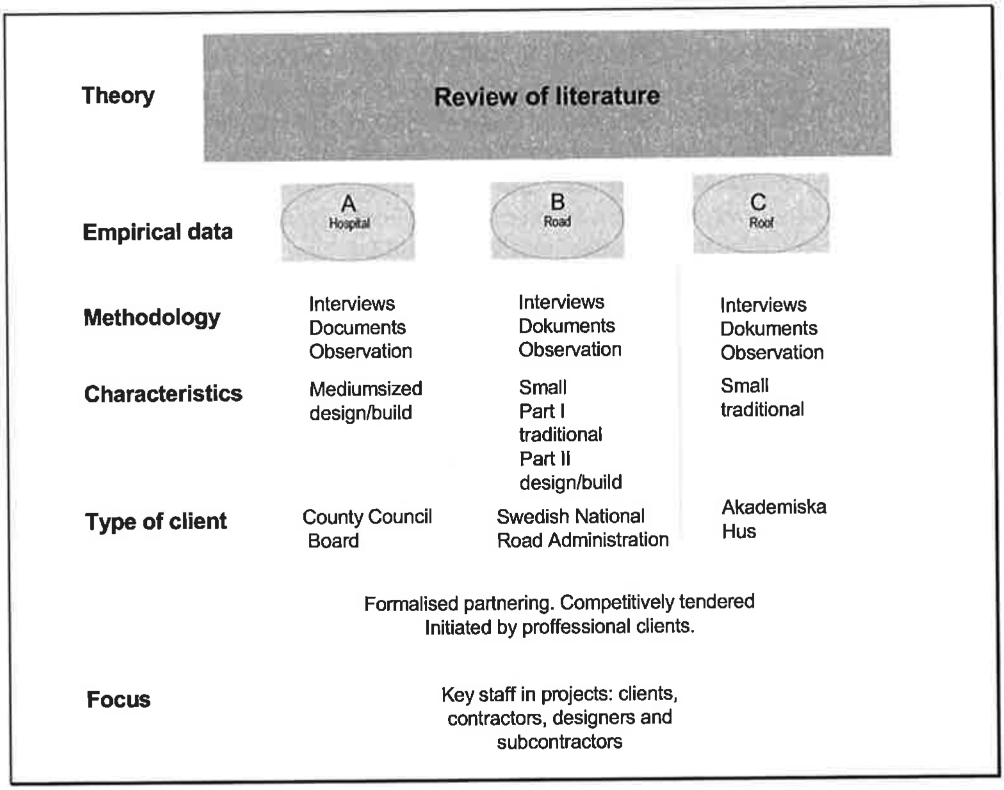

Figure 8.3.2 Research design

8.4 The three cases

8.4.1 The Hospital

Formal partners: Primary level: Skanska and the County Council Board in Värmland.
Secondary level: Skanska and 4 subcontractors.

Duration: 2,5 years.

Value: $35 million.

Market: Karlstad, small and local market.

Contractual agreements: Design/build at both levels follows traditional ideas of responsibility strictly in line with the standard contract.

Incentives: Target cost including a risk/reward element.

Selection process: The price factor in the competitive tendering process was 3%.

Guarantee: The contractor is responsible for indoor climate for ten years and five years for the overall construction.

More: A document with common goals, known as the charter, was established at five formal workshops in the early stage of the project. The charter was given high status among the contractual documents. In order to enhance communication and the handling of project documents, a project network was used.

8.4.2 The Road, part I

Formal partners: Primary level: Skanska and the Swedish National road Administration.
Secondary level: Skanska and 3 subcontractors.

Duration: 1 year.

Value: $ 2,5 million

Market: Jämtland, small and local.

Contractual agreements: Traditional.
Responsibility out of solidarity in decisions is included as a condition of contract.

Incentives: Target cost including a risk/reward element. Client-contractor.

Selection process: The price factor in the competitive tendering process was 33%.

Guarantee: The contractors' responsibilities are for five years.

More: A document with common goals was established at a formal workshop in the early stage of the project. The charter was given high status among the contractual documents. In order to enhance communication and the handling of project documents, a project network was used. The project was a demonstration of partnering supported by The Civil Engineering Construction Forum, a part of The Royal Academy of Engineering Sciences, IVA.

8.4.3 The Road, part II

Formal partners: Primary level: NCC, UVAB design group and the Swedish National road Administration.
Secondary level: no other formal partners.

Duration: 1,5 year.
Value: $ 2,9 Million
Market: Jämtland, small and local market.

Contractual agreements: Design/Build.

Incentives: Target cost including a risk/reward element. Client-contractor-designers, contractor-subcontractor.

Selection process: The price factor in the competitive tendering process was 70%.

Guarantee: The contractors' responsibilities are for five years.

More: A document with common goals was established at a formal workshop in the early stage of the project. The charter was given high status among the contractual documents. In order to enhance communication and the handling of project documents, a project network was used.

8.4.4 The Roof

Formal partners: Primary level: Skanska and Akademiska Hus

	Secondary level: Skanska and 2 subcontractors.
Duration:	1 year.
Value:	$ 2 Million .
Market:	Luleå, small and local market.
Contractual agreements:	Traditional responsibility out of solidarity in decisions is included as a condition of contract.
Incentives:	Target cost including a risk/reward element Client-contractor, Client-designers.
Selection process:	The price factor in the competitive tendering process was 40 %.
Guarantee:	The contractors responsibilities are for two years, in line with the standard contract
More:	A document with common goals was established at a formal workshop in the early stage of the project. The charter was given high status among the contractual documents and was developed by the team into a plan for actions. In order to enhance communication and the handling of project documents, a project network was used.

8.5 Findings

8.5.1 Processes and structures essential to partnering ...

Process and structure are closely related to each other. Process is about movement and change and structure is more static. Social systems develop their own processes and structures. In the following section, important processes in partnering are listed and connected to an example of a structural element. The processes and structures are identified from partnering literature and supported by empirical data from the three cases.

	Process	Structural element
1	Common goals	Partnering charter (goals, norms)
2	Conflict resolution	An established structure for conflict resolution (norms, relations, leadership, power)
3	Design-construct Integration	An established structure for design integration (roles, relations)
4	Evaluation and continuous improvements	An established structure for evaluation and continuous improvements (goals, roles, relations, power)
5	Teambuilding	Organisation (roles, relations leadership, power)
6	Purchasing	Contract conditions (goals, norms, relations, power)
7	Relations and trust	Expectations (norms, roles, relations)

Figure 8.5.1 Interaction processes and structural elements related to partnering

8.5.2 … and their impact on project performance

8.5.2.1 Common Goals

The process where people with different functions established common goals for the project could be identified in all projects. Formal workshops were arranged in the early stages and the documents (partnering charters) were given high status among the contractual documents. The clients' overarching goals formed the base for the work. In the beginning the process influenced performance in terms of increasing commitment. The special goals obviously affected the type of efforts made in each project. However, there was a tendency that the charters became more peripheral for decisions of action in later phases of the projects.

In The Hospital the project team, including client, contractors, subcontractors and designers, spent five formal workshops in the beginning of the project to develop goals, methods for measurement, routines, and principles. The customer goals where broken down into ten subgoals in the following four areas: the participation of end user and operation staff; inner climate; economy; maintenance; and environment. The goal orientation on The Hospital influenced the craftsmen's who worked in groups with mixed specialities and with careful routines for documentation on site. A special document related to the charter was created. The document concerned operation and maintenance agreements and was a consequence of the contractors' long-time responsibilities in accordance with the contract. The document dealt with technical work frequencies, the digital system for operation and maintenance, programme for the delivering phase, and the quality assurance.

In the first part of The Road, the client, the contractor, the subcontractors and the design people met in the initial workshop for two days and worked specifically with the development of goals in small groups. The goals covered the main areas of economy, quality, environment, work environment, competence and client/end user.

Every single goal was measurable. Vision and values were discussed but mainly on the management level. In The Road, part II, the client lead goal formulation that was made in one single mixed group of the client, the contractor, the designers and the subcontractor. Interesting areas for goals were economy, work environment, time, and quality. Later, an environmental goal was added.

During a one-day meeting seven goals were formulated by the client, the contractor and the designers for The Roof. The main areas of goals were economy, aesthetics, technique, work environment, and end-users. Some of the goals were quantitative and measurable, others were more about people's experiences and required a qualitative approach. A couple of goals were more like visions. The management group formulated an action plan related to the common goals. All subcontractors signed the charter too.

8.5.2.2 Conflict resolution

The only project where a structure was established in common for conflict resolution was The Road, part II. The structure included three levels of management and time limits for each level. People involved in the Road, part II, had positive experiences of the commonly agreed conflict ladder. Just the awareness of its existence was important for some of them. The structure was used three times during the project. Daily problems and smaller conflicts were solved relatively quickly in an informal way in all projects. Conflicts of greater importance took more time and were often a matter of change related to target cost or changes in the scope of the project. In general, people in the projects feel that problems and conflicts were solved more easily than in traditional work.

8.5.2.3 Design-construct integration

Collaboration in the design phase or in technical issues in general has evolved differently in all cases. The level of integration differs between projects. Some individuals among stakeholders, especially contractors and subcontractors, are not used to spending time in meetings where they sit on a chair and talk for example about alternatives to technical solutions. For this group of people participation sometimes is experienced as ineffective. Furthermore, many of them are not accustomed to make impact on drawings at all in early stages, which shows that it is a little process in itself to be aware of possibilities embedded in partnering. Nevertheless most of the people involved in the partnering projects are very satisfied with the technical solutions and the performance. The Hospital had a clear focus on the period for the operation and the maintenance of the buildings. Lifecycle costs were calculated for different indoor climate systems, and materials were tested in chemical databases. Mixed groups of specialists, contractors, and subcontractors were established to structure the systems and be innovative. In The Road active design was used which means that the design and the construction of the road were run in parallel. Technical collaboration was a continuous ongoing process. In The Roof the design phase was separated from the construction phase. Contractors and subcontractors participated actively in design. The general designer participated in meetings during the construction phase.

8.5.2.4 Evaluation and continuous improvements

The evaluation of project-specific goals was a routine for all projects. For some of the projects the importance of project goals and the charter seemed to decrease successively. Evaluation was generally made once a month on project goals. In The Road (I and II) and in The Hospital more comprehensive evaluations were made during the projects. Relations and processes were evaluated too. Attitudes, end user satisfaction, collaborators' commitment and working climate exemplify "soft" dimensions in the evaluation procedures. Surveys were used as a tool a couple of times. Lifecycle costs, energy use, and environmental impact are other examples of evaluation in The Hospital project.

8.5.2.5 Teambuilding and organisation

To some extent efforts to create teams were made in every project. The main focus was on informal activities. There was no use of external facilitators for active teambuilding except in The Road II project, part II. This project involved a psychological test[31] focusing on work preferences for everyone in the project, including the client, the contractor, one subcontractor for the excavation, and the designers. Drivers representing the subcontractor made a similar test based on pictures. The test illustrated clearly the differences and complementary roles of individuals in a project team. The group spent some hours to discuss openly the consequences of the results. At the start of The Hospital and The Road a dedicated person with a strong commitment to the partnering philosophy represented the clients' organisations. In every case except The Road II, there were key officials who left the project or changed roles in their own organisation. Reasons for that were not related to the project. It had more to do with the natural movement of people that we can find in the daily life of each organisation. However, the changes influenced relations and the course of events.

8.5.2.6 Purchasing and contract

The experiences of partnering were few among people involved in the purchasing of contractors and subcontractors. For that reason, the process involved an element of experimentation and learning. The purchasing of the four projects involved interviewing people and evaluation according to other parameters than price (section 8.4). The clients were from the public sector or close to it. An extensive amount of work was needed from both clients and contractors in The Hospital to ensure competition and transparency according to regulations set up by the European Union and Swedish government. The four projects were all within the frame of national standard contracts. These standard contracts and regulations seem to be deep-rooted in the stakeholder organisations and among individuals. The most important aspects of the contract in this partnering context have been compensation and responsibility. The establishment of target costs has been on the agenda during several meetings and produced endless discussions. Despite that, many people involved believe that changes could be handled more effectively with a partnering agreement.

[31] TMI, Team management Index.

8.5.2.7 Relations and trust

The partnering projects were carried out at relatively small local markets. Most of the people involved had met before and will meet again in various constellations. They are all dependant on good relations. From that interdependence point of view these projects are about long-term relations even though the specific partnering agreements are for 1-2,5 years. In general, trust is high among individuals in all cases. The trusting relation has formed the basis of the collaborative approach to a higher degree than in traditional projects. However, disappointments exist related to the attitudes of organisations and individuals and their behaviour. Expectations seem to be higher than in traditional approaches.

8.6 Analyses

8.6.1 Effectiveness in groups

Theories concerning group processes recognize some characteristics for effective working groups (Svedberg, 2001). The seven processes of interaction identified in this study (figure 8.5.1) underpin the development of effectiveness in the temporary project organisation consistent with the following analysis.

Knowledge and competence necessary for the specific work task exist within the group.

In construction partnering the primarily supporting processes are:
No 5 Teambuilding
No 6 Purchasing

Goals are clear for everyone.

In construction partnering the primarily supporting process is:
No 1 Common Goals

Atmosphere is relaxed, which means that the group members take time to deal with conflicts.

In construction partnering the primarily supporting process is:
No 2 Conflict resolution

There is frequent communication, in which feelings are expressed as well as thoughts.

In construction partnering the supporting processes are:
No 1-7 All

Differences are accepted. Personal reactions are shared within the group.

In construction partnering the primarily supporting process is:
No 5 Teambuilding

Listening is widespread independent on who is speaking. Comments builds upon each other and people speak in the first person. If you are not certain whether you have understood, make sure you have.

In construction partnering the primarily supporting processes are:
No 3 Design-construct integration
No 4 Evaluation and Continuous Improvements

Decisions are made in unity.

In construction partnering the primarily supporting processes are:
No 3 Design-Construct integration
No 4 Evaluation and Continuous Improvements

Struggle for power is infrequent.

In construction partnering the primarily supporting processes are:
No 2 Conflict resolution
No 6 Purchasing
No 7 Relations and trust

The group evaluates its own work and can be self-critical

In construction partnering the primarily supporting processes is:
No 4 Evaluation and Continuous Improvements

The intentions in the partnering projects are sustained by system theories. According to Nelson (1989) conflicts are effectively handled by a strong communication between

Clients, contractors, subcontractors and designers represent subgroups. One important ground for partnering is striving for the integration of interest groups. Alignment among subgroups through common goals is a recommended action in culture theories (Sherif, 1972).

8.6.1 Reinforcing and weakening factors for the seven processes

The following section embodies the analysis of the four construction projects from the viewpoint of identified interaction processes. Attached to every single process are reinforcing and weakening factors abstracted from experiences in practice. For example, one factor has reinforced the related process in one or in some of the studied projects. Reinforcing means having a positive impact on the overall effectiveness of collaboration. Weakening means having a negative impact or making the collaboration process less effective. From a systems view the following analyses can be interpreted as positive (reinforcing) or negative (weakening) feedback of organisational functioning.

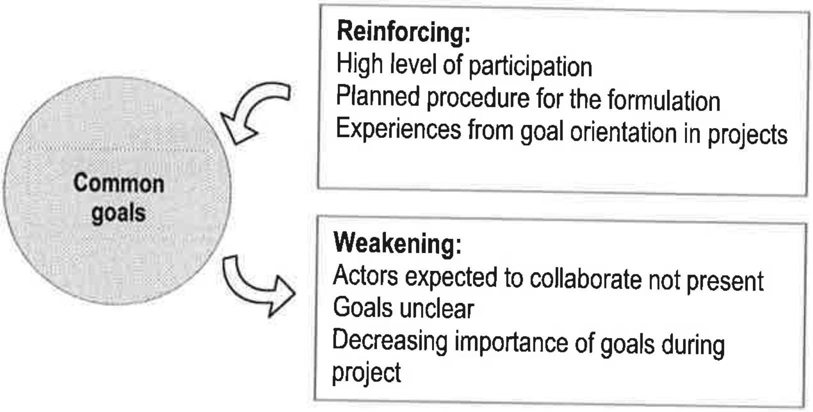

Figure 8.6.1a The process Common goals, reinforcing and weakening factors. Analysis of four projects.

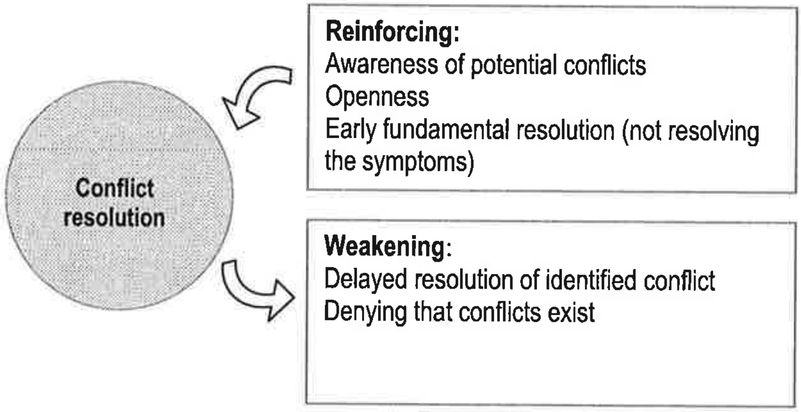

Figure 8.6.1b The process 'conflict resolution', with reinforcing and weakening factors-analysis of four projects.

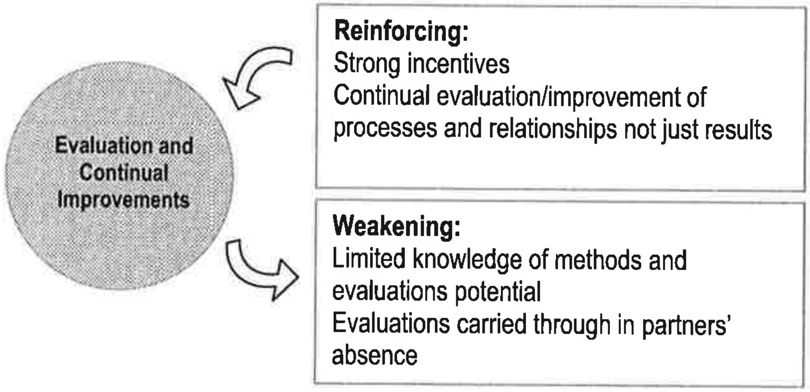

Figure 8.6.1c The process 'evaluation and continual improvements', with reinforcing and weakening factors-analysis of four projects.

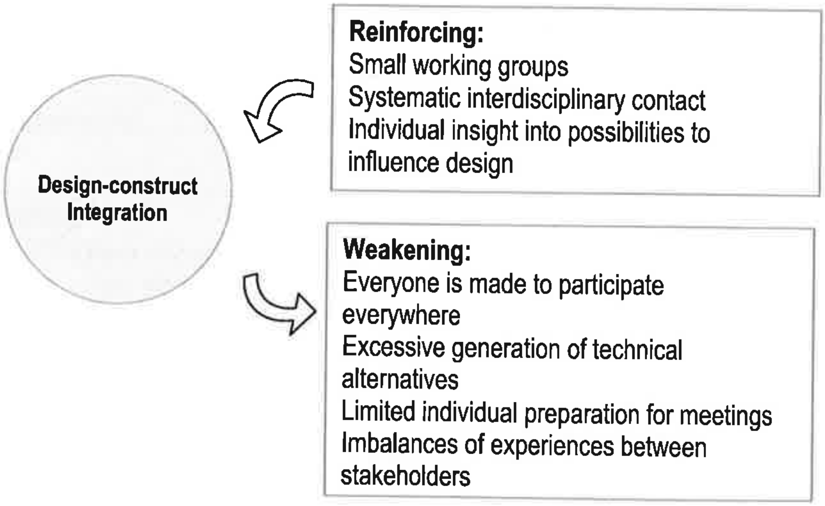

Figure 8.6.1d The process 'design-construct integration' with reinforcing and weakening factors-analysis of four projects.

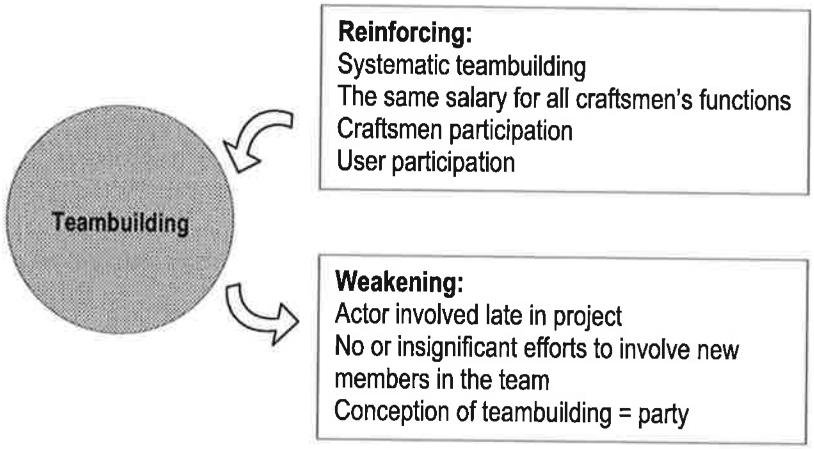

Figure 8.6.1e The process 'teambuilding' with reinforcing and weakening factors-analysis of four projects.

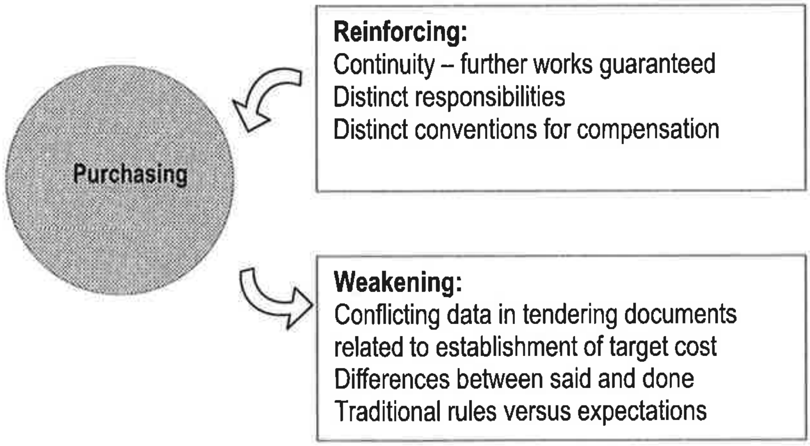

Figure 8.6.1f The process 'purchasing' with reinforcing and weakening factors-analysis of four projects.

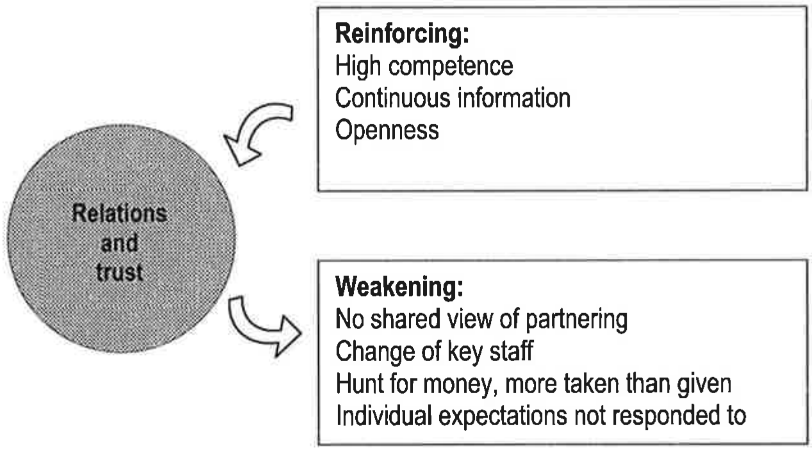

Figure 8.6.1g The process 'relation and trust' with reinforcing and weakening factors-analysis of four projects.

8.6.1 Project characteristics according to impact on performance

One table for each construction-partnering project is exposed below. Each table represents characteristics for one specific project. The tables should be read from left to right, process by process. For example, the common goals process in the hospital influenced the project by giving a strong focus on operation and maintenance and led to efforts supporting user participation. The "personal system filter" has a symbolic function in the table and represents individuals' motives for work and their personal function in the table and represents individuals' motives for work and their personal needs. The "cultural system filter" symbolises values and conceptions embedded in organisational cultures.

Related process and structure	Personal system filter	Cultural system filter	Impact on project
The Hospital			
Common goals	I	I	Operation and maintenance focus and
	I	I	flexibility
Conflict resolution	I	I	A willingness to solve problems
Design-construct integration	I	I	The right level found after a time of
	I	I	collaboration
Evaluation and continuous	I	I	Each organisation separately and all
improvements	I	I	together
Teambuilding and	I	I	Commitment, high expectations and
organisation	I	I	goals
Purchasing and contract	I	I	Uncertainty and changes
Relations and trust	I	I	Successively developed

Figure 8.6.3. a Characteristics for The Hospital related to interaction process

Related process and structure	Personal system filter	Cultural system filter	Impact on project
The Road part I			
Common goals	I	I	Participation in groups
Conflict resolution	I	I	Awaiting decision policy
Design-construct integration	I	I	Strong integration client and
	I	I	contractor
Evaluation and continuous	I	I	Focus on goals
improvements	I	I	
Teambuilding and	I	I	Heavy "external" involvement
organisation	I	I	
Purchasing and contract	I	I	Uncertainty in economy
Relations and trust	I	I	Variations over project time

Figure 8.6.3. b Characteristics for The Road I related to interaction process

Related process and structure	**Personal system filter**	**Cultural system filter**	**Impact on project**
<u>The Road part II</u>			
Common goals	I	I	Commitment, focus on economy
Conflict resolution	I	I	Plainness, security, time savings
Design-construct integration	I	I	Strong integration client, contractor, subcontractor and design team
Evaluation and continuous improvements	I	I	Front end decisions
Teambuilding and organisation	I	I	Openness
Purchasing and contract	I	I	Uncertainty in economy
Relations and trust	I	I	External and internal unity

Figure 8.6.3. c Characteristics for The Road II related to interaction process

Related process and structure	**Personal system filter**	**Cultural system filter**	**Impact on project**
<u>The Roof</u>			
Common goals	I	I	Operation and maintenance focus and users taken into consideration
Conflict resolution	I	I	Spontaneous, ad hoc
Design-construct integration	I	I	Integration contractor, subcontractor, designers
Evaluation and continuous improvements	I	I	Focus on goals, consideration for end-users
Teambuilding and organisation	I	I	Conflict resolution
Purchasing and contract	I	I	Uncertainty, change
Relations and trust	I	I	Established, stable

Figure 8.6.3. d Characteristics for The Roof related to interaction process

8.7 Discussion and conclusions

The seven identified interaction processes have relevance in all stages of the construction process. They can be used in projects at various levels of ambition. The model is general in character and constitutes the base for project partnering as well as strategic partnering. The model does not tell us how to form our processes. The processes are interdependent. They can be modelled and need to be analysed separately and all together. Alone they make less influence on project performance than all together. To develop partnering efficiency there is a need for alignment in efforts. It is important for collaborating parties to be aware of what they are modelling or structuring throughout the whole collaboration process. A prerequisite to adapt the model is the use of reflexive dialogue as a core process.

8.7.1 Processes, structures and their impact on project performance

The questions addressed for this research project were:

Which processes and structures should be related to partnering at the project level?

How can related processes and structures influence performance?

Seven essential processes for partnering are represented by seven circles in figure 8.7.1. General influence on performance in the four construction projects is commented on below and exposed in the form of keywords beside each process in the circle diagram (figure 8.7.1). Project-specific details are to be found in chapters 5 and 6.

- The goal formulation process and related structures have contributed to more focus on, and involvement from, end-users and people working with the operation and maintenance of the product. The process Common goals seems to generate a deeper commitment among stakeholders to the initial phases of a project.

- A pronounced agreement to collaborate in the beginning of the projects has established a willingness to resolve problems before they grow into deep conflicts.

- Different interest groups worked together in the design phase to a greater extent than usual which led to the transfer of knowledge and high-quality solutions.

- A consequence of Evaluation and Continuous improvements was primarily a strong focus on economy and costs control. A greater effort than usual on evaluation was an outcome in most of the projects.

- Teambuilding activities provided for openness in the projects. High ambitions for participation and information led in some cases to more administration.

- Uncertainties with respect to compensation, responsibilities, and changes of project scope led to conflicts. Contract conditions were frequently discussed among stakeholders. Partnering was a new way of working for many of them and caused uncertainties in the purchasing phase.

- Relations and trust were established before the studied projects started. The organisations worked in small local markets. Expectations were embedded in participants' views of how to behave in partnering and this influenced their experiences.

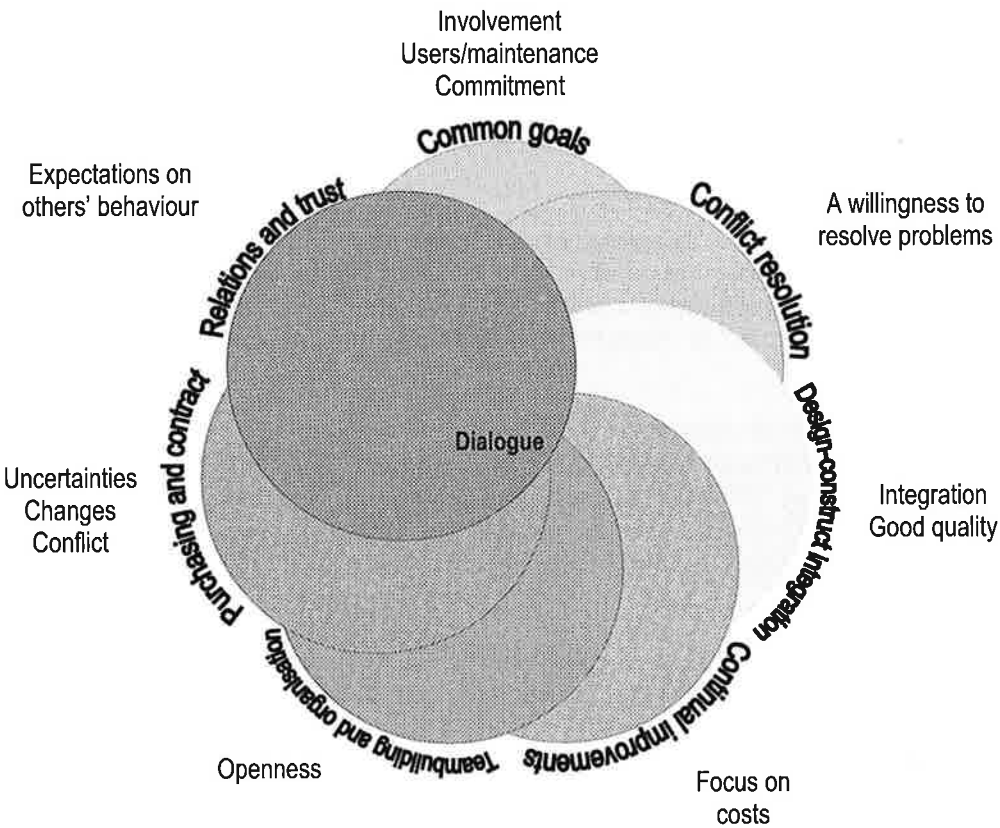

Figure 8.7.1 The seven interaction processes and their influence on performance in four Swedish projects. (Dialogue is the core process).

8.7.2 Cultural change through partnering

From theories about organisational culture we learn that intended cultural changes call for creativity, insight, coherence, considerable persistence, and a combination of culture-focused, more substantive, material re-arrangements and luck (Alvesson, 2002). If employees in the construction industry are receptive and open to new ideas, values, and meanings at the same time that their managers intend to change, there is a possibility for cultural change. Partnering builds upon the belief that what is best for all of the stakeholders in a project is best for me. Another partnering belief is that organisational learning and work motivation are more competitive in the long run. A third belief related to partnering can be that two or more collaborating parties can add more value to a product than the sum of each individual effort. These examples of beliefs are not dominating the Swedish construction culture and Swedish construction has several problems as indicated in the introduction. From that point of view, a wider use of partnering and successful partnering can lead to cultural change through, what Alvesson (2002) calls, organic social movements or cultural change through the re-framing of everyday life.

8.7.3 Future research

To create rigorous empirical research on partnering in construction there is a need for systematic collaboration between researchers from different areas of knowledge. Social scientists are underrepresented and also experienced senior researchers. A deep understanding of interaction processes needs further research with an innovative use of qualitative methodologies.

8.7.4 Implications in practice

A wider use of partnering can be a driving force for the development of the construction process. The phenomenon itself is multifaceted and so are the motives for using it. Principles and practices need to be developed step-by-step and adopted at different levels in organisations. Contextual adjustments and a realistic view of expected outcomes, related to investments in terms of money and time, are crucial for the future acceptance of partnering.