

UNIVERSITY OF CALGARY

EXPLORING ARTICULATION CAPABILITIES IN NEW TECHNOLOGY  
VENTURES

by

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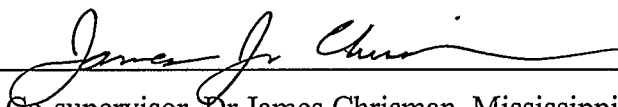
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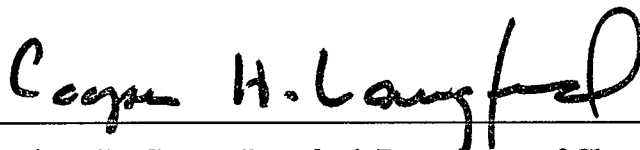
The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "Exploring Articulation Capabilities in New Technology Ventures" submitted by Terry Ross in partial fulfillment of the requirements for the degree of Masters of Business Administration.



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## **Abstract**

This thesis examines what role articulation capabilities play in new technology ventures' development of strategic plans and their effect upon resource flows, including flows from investors. Research was conducted using key-informant interviews with entrepreneurs, investors and industry experts. The results suggest that new technology ventures need a certain level of capabilities relating to their strategic plan before investors will engage with them. It is suggested that intentionally developing these capabilities may prove beneficial to strategic plan development and implementation, but are not without risk. Future research can delve further into exploring these capabilities and their impact upon the resource flows in new technology ventures.

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# Chapter 1 Introduction

This thesis is about understanding the capabilities that a new technology venture uses to develop and implement their strategic plan. Furthermore, this thesis examines the relationship between these capabilities and the involvement of an investor.

To succeed a venture needs to create and implement a strategic plan and, if necessary, convince internal and external agents about the nuances of the current strategic plan so that they may effectively contribute resources. It is suggested that the ability to implement the strategic plan is affected by the new technology venture's capabilities for verbalizing, codifying and assimilating information. However, NTV's may have difficulty utilizing these capabilities, especially if inexperienced entrepreneurs lead the NTV. It is argued that competence in these three capabilities is a pre-requisite for the involvement of investors and offers benefits to an NTV in the form of organizational flexibility and resource flows.

This thesis examines how the capabilities involved in verbalizing strategic plans, codifying strategic plans and assimilating feedback on strategic plans (known as *articulation capabilities*) evolves in NTV's. The concept of articulation capabilities is built upon the work of Zollo and Winter (2002) and Sanchez and Heene (2002) who argue that verbalization, knowledge and feedback are important organizational learning mechanisms that affect the development of organizational flexibility. Furthermore, this thesis examines how articulation capabilities and the relationship with outside investors co-evolve.

Drawing on resource-based theory, dynamic capability concepts and strategic logic concepts this thesis argues that articulation capabilities have a generally positive impact upon the overall flexibility of the venture. Furthermore, it is argued

that effectively developing articulation capabilities is an important step for securing resources from outsiders such as investors. Evidence suggests that many young NTV's face challenges developing these capabilities and any perceived articulation gap can be fatal to the involvement of investors.

## **1.1 Theoretical Overview**

### **1.1.1 Strategic Resource Theory**

Firm-specific attributes, in relation to their environment, are the primary contributors to venture performance (Hansen and Wernerfelt; 1989)<sup>1</sup>. The resource-based view (RBV) suggests a venture is a collection of interconnected resources and that *the valuable and exclusive resources* the venture can access are the source of competitive advantage (Penrose, 1959; Wernerfelt, 1984; Collis and Montgomery, 1995; Barney, 2001). A complimentary perspective to the RBV is the dynamic capabilities view of the venture, which suggests that the ability of a venture to *sense opportunities and reconfigure* their resources (more effectively than their competition) is a source of competitive advantage (Eisenhardt and Martin, 2000; Teece et al., 1997; Zollo and Winter, 2002). The reconfiguration is the result of new resources flowing into the venture (Dierickx and Cool, 1989). Expanding the RBV and the dynamic capabilities perspective is the view of Sanchez and Heene (2002) who present the concept of strategic logic to describe the processes *that direct the venture's actions for acquiring and coordinating resources* as a source of competitive advantage.

Thus, one can postulate that competitive advantage in a venture is affected by 1) the ability to access valuable, exclusive resources (RBV), 2) the ability to adapt and reconfigure resources (dynamic capabilities), and 3) the strategic ideas and processes that direct the acquisitions and coordination of resources in the venture (strategic logic).

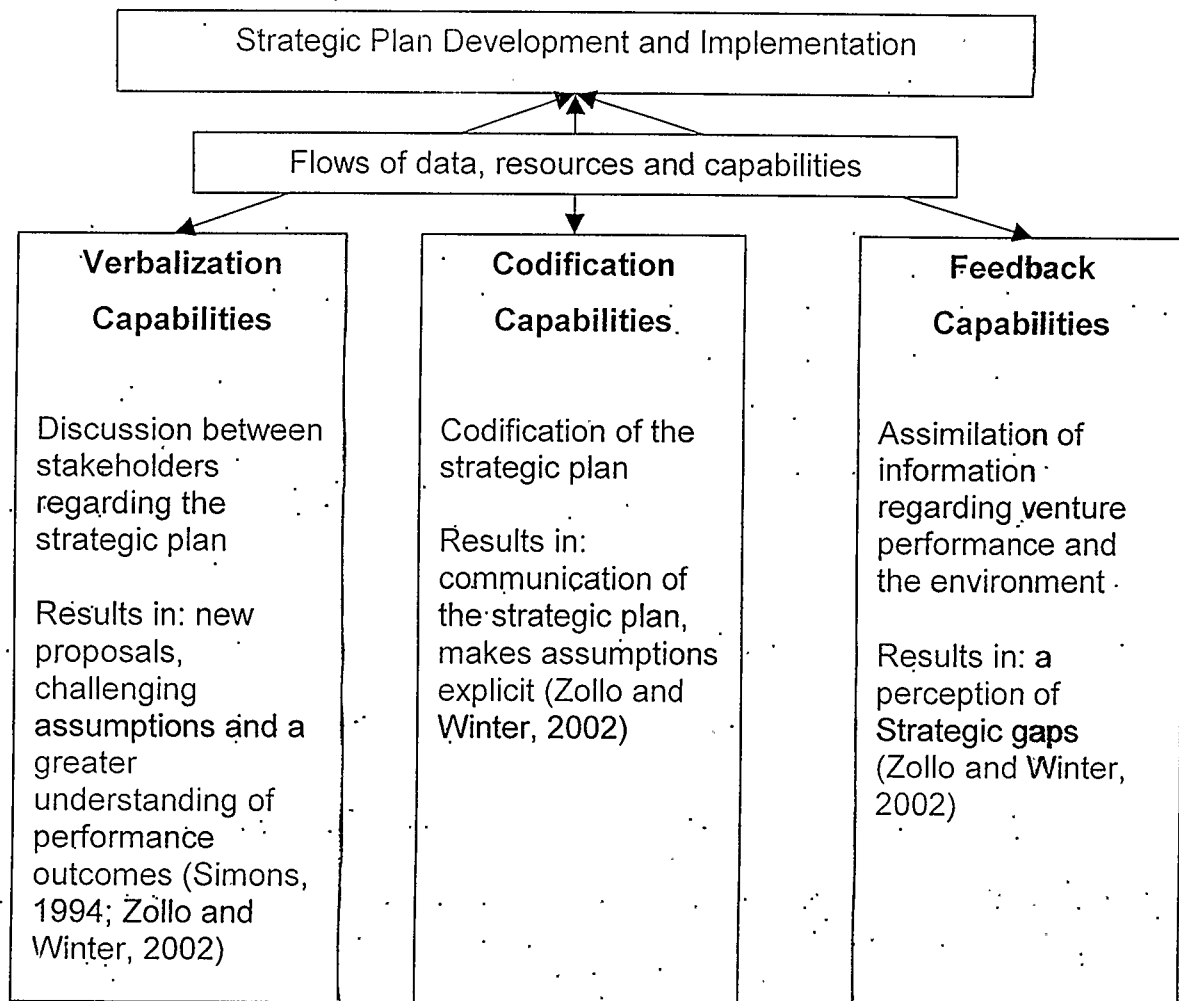
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<sup>1</sup> Performance being a concept that combines venture survival (remaining a going concern) with success (enjoying sustainable competitive advantage) (Chrisman et al., 1998).



Two important manifestations of the NTV's strategic logic are explored in this thesis, the strategic plan and articulation capabilities. The strategic plan is defined as the NTV's hypothesis about their current position and what actions are required to attain success in the future (Kaplan and Norton, 2001). Drawing on the work of Teece (2001), Sanchez and Heene (2002) and Zollo and Winter (2002) this thesis introduces the term 'articulation capabilities'. To understand

Figure 1 : Articulation Capabilities and the Relationship to the Strategic Plan



articulation capabilities one must realize they have three components:

- 1) strategic plan verbalization (referred to as *verbalization capabilities*, i.e. ways for discussing the strategic plan)

- 2) strategic plan codification (referred to as *codification capabilities*, i.e. processes for writing down strategic plans) and
- 3) strategic plan feedback (referred to as *feedback capabilities*, ways of assimilating information about strategic plan execution)

### 1.1.2 New Technology Venture Theory

NTV's are small organizationally simple ventures focused upon commercializing a product with a significant technological aspect (Andersen et al., 2001) that face the following challenges:

- Succeeding in a dynamic environment filled with uncertainties (Sanchez and Heene, 2002)
- Constructing resource bases that suit their future environment (Lichtenstein and Brush, 2001)
- Leading a growing group of staff (Hanks and Chandler, 1994)
- Collaborating with outsiders (especially investors) to contribute their resources to the venture (Stone and Brush, 1996; Hadjimanolis, 2000)

NTVs often require cash from outside investors, particularly at the crucial early stages of the venture's development (Bygrave and Timmons, 1992; Bartlett, 1999). An investor contributes financial and, of particular interest to this thesis, intangible resources in exchange for shares in the venture. A considerable body of literature suggests that outsiders can positively affect the resources available to the NTV, their dynamic capabilities and their strategic logic (Bygrave and Timmons, 1992; Robinson, 1982; Chrisman, et al, 2003). It is the contention of this thesis that outside investors are a potential source of assistance that provides capabilities and resources that directly affect the flexibility of the NTV and can indirectly affect the flexibility of the NTV by catalyzing the development of articulation capabilities.

## **1.2 The Need for Research**

The accumulation of resources and the development of dynamic capabilities can have a major and positive influence over the long-term survival of the firm (Teece et al., 1997; Chrisman et al, 2003). This is particularly the case for NTV's given the uncertain and dynamic environment with which they operate (Sanchez and Heene, 2002). As discussed above, early outside assistance can be a valuable contributor towards these aims, and financial investors are potentially one such early source of knowledge. However, the involvement of investors is partly contingent on the NTVs ability to articulate their strategic plan to the investor and the ability of the NTV to develop and implement their strategic plan.

This investigation has important implications for entrepreneurship and strategic management theory as it suggests that articulation capabilities affect the flexibility of a new venture and its resource flows. Organizational flexibility is perhaps the only pragmatic method by which to reduce the risk of a forced exit in a dynamic environment laden with uncertainties (Sanchez and Heene, 2002). Articulation capabilities affect organizational flexibility and the implementation of the strategic plan by enhancing communication across organizational layers. Articulation capabilities also affect the perception of the NTV's legitimacy by investors.<sup>2</sup>

To our knowledge there has been little research regarding the deliberate investments NTV's make in developing their capability to verbalize, codify and assimilate feedback on strategic plans. Furthermore, there has been little research about how articulation capabilities and the relationship with outside investors co-evolve.

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<sup>2</sup> It is not suggested that articulation capabilities are a primary area for investors to examine when making their investment decision. In our opinion, articulation capabilities are better thought of as a pre-requisite for investment consideration.

### **1.3 Research Objectives**

This thesis explores the dynamics of articulation capabilities based upon interviews with agents in the new technology venture industry. It follows a theory-building approach incorporating the approaches of Glazer and Strauss (1967), Yin (1993, 1994), Eisenhardt (1989b) and Schulz and Hofer (1999). The specific goal of this research study is to begin understand the real theoretical and managerial issues surrounding articulation capabilities and the new technology investment cycle.

The goal is to understand how NTV's approach articulation capabilities for enhanced venture performance and investor involvement. The following three questions summarize the research objectives of the study:

- 1) What form do articulation capabilities take in NTV's?
- 2) What are the main factors that affect the emergence of articulation capabilities?
- 3) What are the benefits (and the hazards) of developing articulation capabilities?

### **1.4 Outline of Thesis**

Chapter 2 sets the theoretical foundation by presenting the NTV as a collection of resource stocks, resource flows, capabilities and strategic logic (Dierickx and Cool, 1989; Nelson and Winter, 1982; Teece et al. 1997; Sanchez and Heene, 2002). Chapter 2 highlights the role of the strategic plan and articulation capabilities.

Chapter 3 discusses the NTV and the role of the investor. The chapter begins with a discussion of the NTV and its growth, the investor, and the investment cycle (i.e. the process of the NTV and investor developing an equity-based alliance). These concepts are important as they affect the development of

articulation capabilities. The chapter suggests how investors and the NTV's articulation capabilities interact.

Chapter 4 will review the research strategy. A key informant interview approach was used to assimilate qualitative data. The interview participants included three subject groups, five Entrepreneurs, two Investors and four Industry Experts.

Chapter 5 presents the findings about articulation capabilities. Articulation capabilities are informal in most of the NTV's interviewed for this project, although there were significant examples of formalized capabilities that should be studied further. The articulation capabilities are affected by the size of the NTV, the experience of the entrepreneur and by the stage of investor involvement (i.e. the investment cycle). The development of articulation capabilities may present hazards to NTV such as a loss of flexibility (in certain circumstances) and opportunity cost where the time/energy/money used intentionally developing articulation capabilities would better serve the NTV in some other way. There were many useful aspects of articulation capabilities including the enhancement of organizational focus, communication across organizational layers and learning opportunities.

Chapter 6 presents the analysis and conclusions. The theoretical implications, the implications for management and suggested further research are presented. It is suggested that articulation capabilities are important to the performance of an NTV. Investors often view a lack of articulation capabilities as a fatal flaw, or at best a situation that needs to be addressed.

## **Chapter 2 Resources, Logic & Capabilities**

This chapter examines the NTV from the point of view of its resources and articulation capabilities. This perspective will provide a foundation for the chapters to follow. To achieve this goal this chapter incorporates resource based, dynamic capability and strategic logic theory.

The NTV is defined as a coupled group of resources with a purpose of exploiting a technological opportunity (Wernerfelt, 1984; Doyle, 1997; Barney 2001; Teece, 2001). NTV's exist in rapidly changing environments where the best approach to survival requires organizational flexibility (Sanchez and Heene, 2002). It is proposed that the ability of the NTV to change the resources they can access is a source of competitive advantage (Dierickx and Cool, 1989; Teece, et al., 1997; Eisenhardt and Martin, 2000). Also of importance is the process by which the NTV determines how to change their resources, referred to as strategic logic (Sanchez and Heene, 2002). This process includes the strategic plan, which is the NTV's hypothesis about their current situation, their desired future situation and the actions required for success (Kaplan and Norton, 2001). The strategic plan is affected by the way the NTV verbalizes it, codifies it and collects feedback about it. Verbalization, codification and feedback are three capabilities that are suggested to have direct impact upon the resource flows into an NTV through the development and implementation of the strategic plan and thus affect the NTV's competitive advantage.

### **2.1 Dynamic Environments**

One of the main reasons why flexibility is a crucial factor affecting the performance of an NTV is the nature of the NTV's environment. Sanchez and Heene (2002, p. 71) summarized the dynamic environment that faces many NTV's:

*Dynamic environments are characterized by rapid technological changes, the frequent emergence of multiple (and often conflicting) market opportunities and threats, and resulting high levels of irreducible uncertainty about the long-term direction and extent of strategic change in the environment. These uncertainties may apply not just to future scenarios, but to present circumstances as well. Even current market needs and customer preferences may be unclear often forcing an organization to pursue rapidly changing market demands and opportunities.*

Due to the inherent strategic uncertainties the NTV must have the ability to be strategically flexible in order to respond to changes (Sanchez and Heene, 2002)<sup>3</sup>.

## **2.2 Resource Stocks and Flows**

A key concept to understanding the performance of a NTV is the concept of resources. The term 'resource' is used in this thesis to describe anything tangible or intangible that is available and useful in helping a venture reach its objectives. According to Morecroft et al. (2002), resources can be firm specific (i.e. within the boundaries of the venture) or firm-addressable (They are accessible to the venture but are beyond the venture's direct control).

The 'stocks and flows' concepts explain how ventures accumulate resources. A *stock* of a resource is an existing inventory of that resource, which is easily accessible by a venture. A *flow* of a resource is an addition or a subtraction to the resource stocks of a venture. Choosing appropriate resource flows over a period of time accumulates resource stocks (Dierickx and Cool, 1989). Flows of resources can be adjusted instantaneously, whereas it takes a consistent pattern of resource flows to accumulate a desired change in strategic resource stocks (Dierickx and Cool, 1989). The previous choices the NTV has made affect the type of resource flows available and their cost, a concept known as path

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<sup>3</sup> Performance is a term that embodies two constructs: survival (the venture remains a going concern) and success (the venture is enjoying competitive advantage) (Chrisman et al., 1998). The paper will refer to survival and success individually when appropriate.

dependency (Teece, et al, 1997; Eisenhardt and Martin, 2000; Dierickx and Cool, 1989).

RBV theory suggests that superior venture performance is a result of more-or-less exclusive access to a stock of unique, valuable resources (Wernerfelt, 1984; Barney, 1989). Ventures with strategically useful stocks of resources are more likely to sustain their advantage if competing ventures are disadvantaged by legal protection or inherent challenges in developing comparable resource stocks (Dierickx and Cool, 1989)<sup>4</sup>. The venture will enjoy an extended competitive advantage if it is able to fruitfully redirect resources flows in order to create valuable new stocks faster and more effectively than its competitors (Eisenhardt and Martin, 2000).

### **2.3 Strategic Logic**

A key concept to understanding resource flows is the concept of strategic logic (Sanchez and Heene, 2002) which describes the holistic rationale that a venture deploys as a means to coordinate their resources and capabilities in search of competitive advantage. Strategic logic is a set of ideas that guides the cognitive processes of decision makers throughout all levels of the organization. These ideas find expression in assimilating feedback and adapting available resources within the management processes of an organization. The strategic logic of an organization includes all of the ideas that influence decision makers that determine the composition of resource stocks and flows in the organization and the way in which the resources will be coordinated and used (Zollo and Winter, 2002; Sanchez and Heene, 2002).

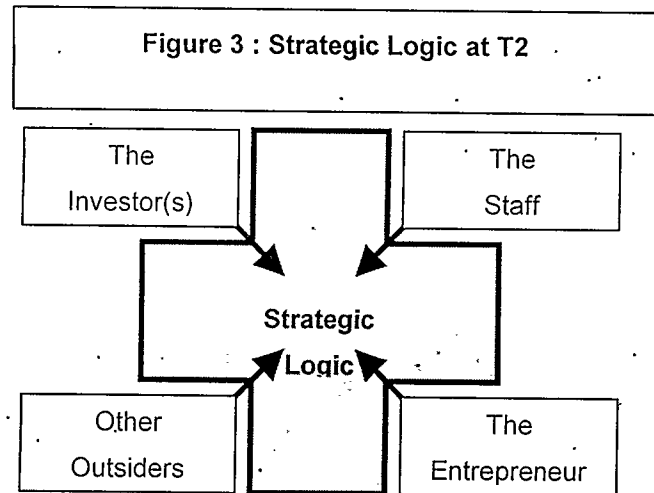
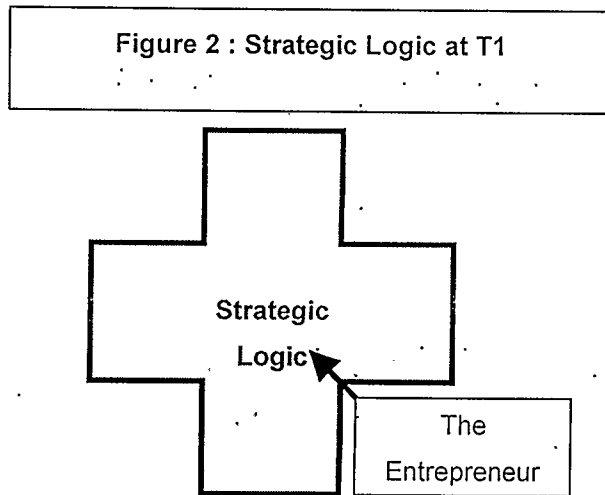
Strategic logic may vary widely between organization and within organizations as they mature. For example, NTV's typically begin with strategic logic that is 'top-

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<sup>4</sup> Dierickx and Cool (1989) suggest that time-compression diseconomies, asset mass efficiencies, inadequate asset interconnectedness and causal ambiguity are barriers to competing ventures about how to develop comparable asset stocks

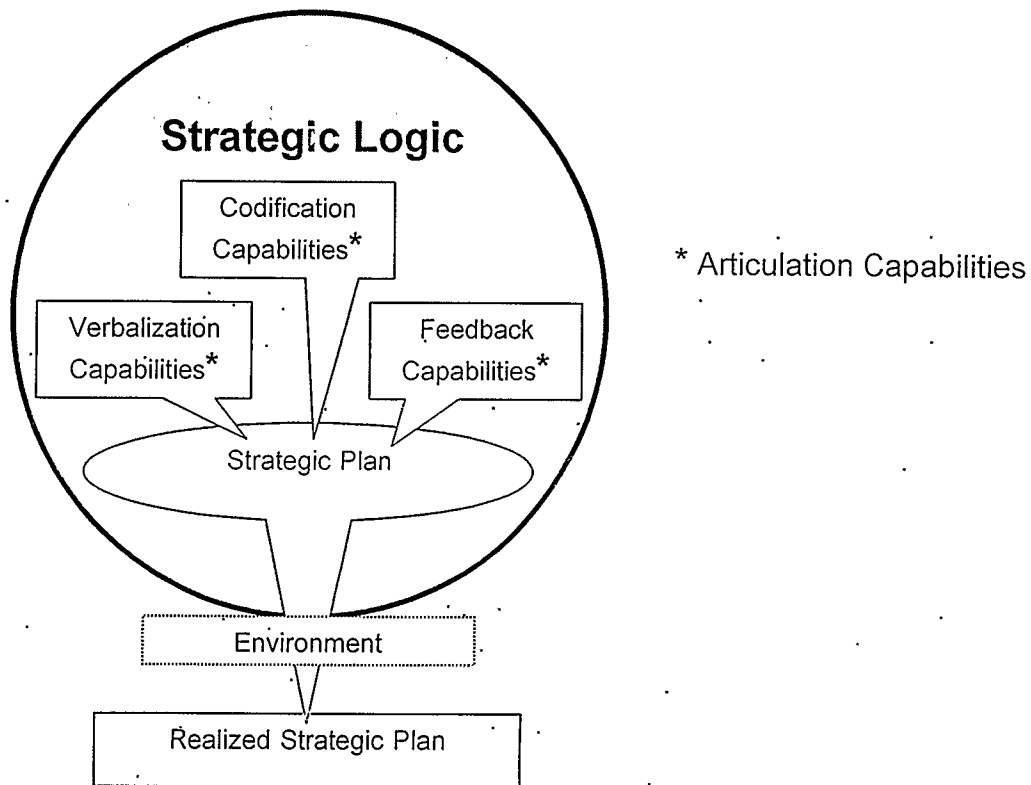


down' with the strategic logic being determined through a clear hierarchical structure (e.g. the entrepreneur)(See Figure 2). As the NTV grows and incorporates more actors the logic will change, as there are more agents with the authority to make strategic decisions (and more agents to understand decisions) are incorporated into the organization (Sanchez and Heene, 2002; Mintzberg, 1985)(See Figure 3).



Two organizational expressions of logic examined in this thesis are 1) the strategic plan and 2) articulation capabilities. The strategic plan and articulation capabilities are elements of strategic logic that affect the initiatives the NTV undertakes in implementation of strategy (See Figure 4).

Figure 4 : Strategic Logic and Articulation Capabilities



## 2.4 Strategic Plans

A strategic plan is defined as the entrepreneur's hypothesis about the NTV's strategic position including:

- Resources, opportunities and skills available,
- Which are most salient to acquire/develop,
- Where the resources and capabilities will come from,
- Initiatives required to execute given the understanding of the environment, and how they will be used to achieve a lasting competitive advantage

(Chrisman et al., 1998; Schulz and Hofer, 1999; Eisenhardt and Martin, 2000; Kaplan and Norton, 2001).

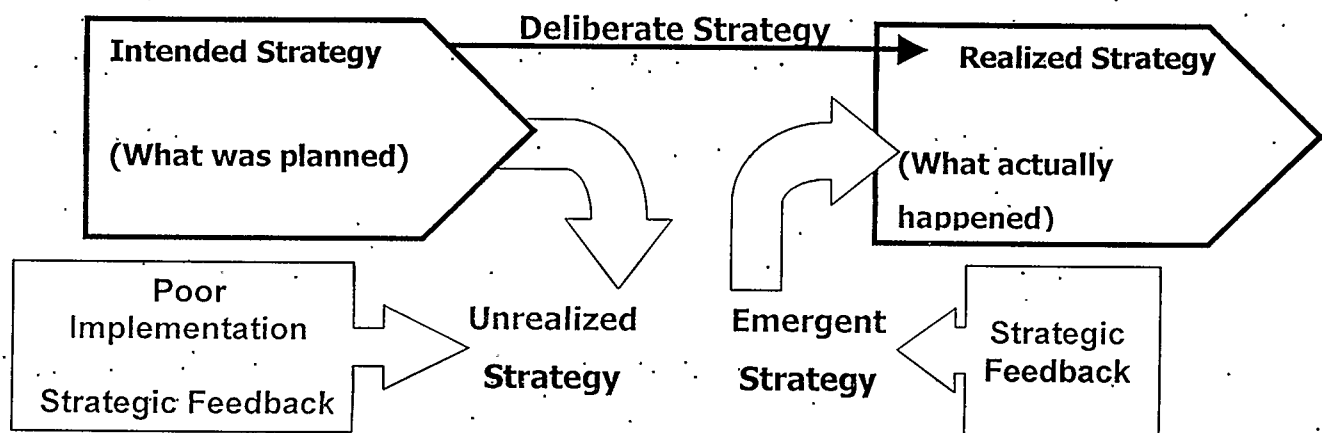
The strategic plan is an aspect of strategic logic (See Figure 4) that emerges from the cognitive capabilities of the venture's leadership and the information available to them.

The intended plan of the NTV and the realized plan of the NTV are not the same thing (Mintzberg and Waters, 1985). The realized plan will may vary from the intended plan due to:

- Poor implementation
- More-or-less deliberate alteration based upon new strategic information
- New acquisitions of resources
- Changing environmental conditions

The strategic plan is dynamic and is continuously modified as new information is observed or when unforeseen events affect the NTV (Mintzberg and Waters, 1985)(See Figure 5).

**Figure 5 : Types of Strategy**



Source: Adapted from Mintzberg, H. and Waters, J. (1985)

Research studies have suggested a positive relationship between the presence of strategic planning and venture performance. For example, Bracker and Pearson (1986) found statistically significant financial performance differences

between small firms who were structured strategic planners and ventures who engaged in other categories of strategic planning (unstructured, intuitive, structured operational). Powell (1992b) examined performance in a 'planning equilibrium' economy (i.e. everyone plans) and a 'planning dis-equilibrium' (only some plan) and found that only in dis-equilibrium economies did formal strategic planning have a relationship to financial performance. To our knowledge there is no study suggesting a negative correlation between strategic planning and performance.

## **2.5 Articulation Capabilities**

The organizational capabilities relevant to developing and implementing a strategic plan are referred to as *articulation capabilities*. Articulation capabilities include capabilities for verbalizing strategic plans; codifying strategic plans; and assimilating feedback related to the strategic plan. Articulation capabilities are concepts based mostly upon the work of Zollo and Winter (2002) and Sanchez and Heene (2002) in knowledge verbalization, knowledge codification and organizational learning.

### **2.5.1 Verbalization Capabilities**

Verbalization capabilities refer to explicit discussion of the strategic plan regarding key resources, initiatives and assumptions that underlie the strategic plan. This definition is consistent with Zollo and Winter's (2002) concept of knowledge verbalization which is a cognitive effort more-or-less explicitly directed at understanding the causal mechanisms intervening between the actions required to execute a given task and the performance outcomes produced. Verbalization capabilities involve having leaders engage in active dialogue with stakeholders regarding the strategy and strategic implementation of the venture. Verbalization capabilities can be informal (i.e. a discussion around the water cooler) or they can also be formal (i.e. facilitated strategic discussions). The pacing of Verbalization capabilities can be facilitated by a perception of a strategic 'gap' and/or can be temporally based (Gersick, 1994).

Verbalization capabilities are important because they focus attention and dialogue throughout an organization, resulting in a process of challenging assumptions and debating strategic issues (Simon, 1994). By sharing individual and collective experiences and opinion through discussion with colleagues members of the NTV can facilitate the generation of new proposals and achieve a greater understanding of their actions and performance outcomes (Zollo and Winter, 2002).

### 2.5.2 Codification Capabilities

A codification capability refers to the explicit transcription of the strategic plan or of an aspect of the strategic plan. The creation of written documentation has been identified as a major factor in the formalization of the strategic planning activities in NTV's (Robinson and Pearce II, 1983). Zollo and Winter (2002) suggest that codification is a step beyond verbalization as codification incurs additional costs but also provides increased opportunities to learn about the strategic plan. Specific examples of the outputs of codification capabilities include the business plan, investment presentations and strategy maps.

Codification capabilities affect the strategic plan because they facilitate the generation of new proposals as well as the identification of the current strengths and weaknesses of the current plan (Zollo and Winter, 2002). Through codification capabilities one is forced to expose the logic of one's strategic hypothesis, reveal hidden assumptions and make causal linkages explicit (Zollo and Winter, 2002). Codification may reveal to outsiders the nature of the assumptions the entrepreneur is not even aware of. Thus, codification can reveal the limits of the NTV's knowledge and the sophistication of the entrepreneur.

Codification capabilities also communicate the content of the plan between internal and external stakeholders. In most cases the plan is not codified in an

NTV until the catalyst of the investment cycle (see Chapter 3) takes effect (Stone and Brush, 1996).

### 2.5.3 Feedback Capabilities

Feedback capabilities are the processes by which the NTV gathers information about the implementation of the strategic plan.

The purpose of internal feedback is to 1) measure performance; and if needed 2) adjust the strategic plan. Feedback provides a basis for understanding the dynamic resource system within NTV's (Morecroft, 2002). Feedback provides flows of information regarding the stocks, processes, purposes and goals of a venture. Internal feedback capabilities can be applied in four areas of an NTV (Arveson, 2002; Simons, 1994):

- 1) Strategic feedback - Feedback around the performance of strategic initiatives. This leads to an organizational learning system where the data collected provides information that can be used to assess the current strategy and the assumptions upon which it is based;
- 2) Diagnostic feedback - Feedback around the NTV's internal operational performance. These provide feedback about the NTV's health. They only drive action when the value falls outside a normal control limit, hence, restoring performance towards the original strategic plan.
- 3) Metrics feedback - Feedback around the choice of what to measure; and
- 4) Methodology feedback - Feedback around the measurement methods.

A key output from feedback is the perception of an undesirable 'strategic gap'.

### 2.5.4 Strategic Gaps

Information gathering and feedback activities shape the management's perception of strategic gaps. Perceived gaps may take the form of 1) the ventures current stock of resources; 2) capabilities 3) the way resources are

used; and 4) the venture's overall strategic goals (Sanchez and Heene, 2002).

Internal feedback information flowing to an NTV's management is subject to increasing ambiguity as the origin of the data moves from tangible operational processes (i.e. machine yields, sales) to higher order intangible processes (i.e. the impact of a change in the strategic plan performance). Thus, understanding the cause-and-effect relationships and gaps between 'intangible' components of the venture can be extremely challenging (Sanchez and Heene, 2002).

#### 2.5.5 Costs of Developing Articulation Capabilities

The development of articulation capabilities and the advantages they afford do not occur for free. The direct costs of developing these capabilities include the time, entrepreneurial attention and resources invested in the development of articulation capabilities. Indirect costs include the opportunity costs of the time, attention and resources plus the possible cost of 'misfire' (Executing the capability poorly and causing more harm than benefit) (Zollo and Winter, 2002).

## **2.6 Summary**

Chapter 2 discussed how the environment that faces most NTVs is subject to dynamic changes and irreducible uncertainties. In order to survive and succeed the NTV should be competent at responding to changing situations by reconfiguring themselves and their resource stocks. NTVs accomplish this largely by means of their strategic logic. One important aspect of strategic logic described in this chapter is the concept of the strategic plan, which refers to the NTV's hypothesis about what needs to be done given the understanding of their situation. The other aspect of strategic logic is the articulation capabilities, which refer to the NTV's approach towards: 1) articulating the strategic plan thereby facilitating discussion and understanding. 2) codifying the strategic plan thereby making assumptions explicit and 3) assimilating feedback relating to strategic issues, operational issues or measurement issues. The approach to developing

articulation capabilities is important since there is a risk from opportunity costs and potential misfires that actually cause the NTV harm.

Verbalization, codification and feedback efforts can produce an increased understanding of links between action and performance of an NTV. They can increase the understanding of the plan across organizational layers. Thus, these efforts can affect the flow of resources and NTV performance.



## **Chapter 3 NTVs & Investors**

Having established the role of resource accumulation, dynamic capabilities, strategic plans and articulation capabilities for organizational flexibility in the previous chapter, Chapter 3 will examine the New Technology Venture and the role of a key outside provider of resources, the investor.

This chapter is divided into four sections. It begins with a description of a model for the stages of growth for a NTV. It then explores how the strategic logic of the NTV is affected by growth and the involvement of more actors, the role of the investor, and finally the relationship between the NTV and the investor (i.e. the investment cycle). Understanding the dynamics of how an NTV grows and the relationship with investors is important for understanding how and why articulation capabilities evolve in NTV's.

Chapter 3 suggests how articulation capabilities affect the ability of the NTV to attract the interest of the investor through the investment cycle. It also examines how the involvement of the investor can affect the development of articulation capabilities in the NTV.

### **3.1 The New Technology Venture (NTV)**

The NTV usually begins as a simple organization with a small group responsible for all activities (Hanks and Chandler, 1994; Stone and Brush, 1996; Andersen, 2001). This group is referred to in this thesis as the entrepreneur.

#### **3.1.1 The Entrepreneur**

In this thesis, the term entrepreneur refers to the lead management of the NTV and can refer to a team as well as an individual. The entrepreneur is a key agent in the strategic logic. They can control strategy directly by developing the

strategic plan that evolves from the NTV's vision (Sanchez and Heene, 2002). The entrepreneur also affects the planning process indirectly by controlling how the plan is formulated, including the process by which it develops (Mintzberg and Waters, 1985). The entrepreneur affects the implementation of the plan through the management processes the NTV adopts to support the execution of the plan (Sanchez and Heene, 2002). The influence of the entrepreneur is particularly important to the NTV, since it is their role to shape the resource and capabilities of the NTV, its strategic plans, articulation capabilities and the resulting resources (Stone and Brush, 1996). The resources related to the exploitation of technology consist mostly of the knowledge, expertise and energy that resides within the entrepreneurs' heads (Doyle, 1997).

### 3.1.2 The Growth of the NTV

The NTV has several distinct phases of development that are important to discuss because the nature of the strategic logic (and the articulation capabilities) can be affected through growth. This thesis will use a four stage model for describing the NTV suggested by Hanks and Chandler (1994): 1) conception and development; 2) commercialization; 3) expansion, and 4) maturity. The following lists the key concepts of the stages as well as the author's suggested implications for articulation capabilities.

#### **3.1.2.1 Stage 1: Conception and Development**

At this stage the NTV is extremely small, it has informal organizational systems, and is focused on R&D and product development (Hanks and Chandler, 1994; Andersen, 2001). All capabilities, including articulation capabilities, generally are quite informal at this stage of the NTV's life.

#### **3.1.2.2 Stage 2: Commercialization**

In this early growth period the issues facing the NTV revolve around the initial commercialization of their product and establishing an organizational structure for the NTV.

According to Hanks and Chandler (1994), it is at this phase where the NTV may begin to seek resources from outside investors.

#### **3.1.2.3 Stage 3: Expansion**

Assuming that the NTV has survived the first two stages, the NTV moves into the expansion stage, which is characterized by a dramatic increase in demand based upon market acceptance and the challenges of expansion (Hanks and Chandler, 1994).

During the expansion phase the NTV's resource base expands and more sophisticated capabilities are needed to implement the activities relevant to the strategic plan (Mintzberg and Waters, 1985).

#### **3.1.2.4 Stage 4: Maturity**

Also known as the stability stage, its purpose is usually to increase the efficiency of the organization mostly through resource allocation versus acquisition. Ventures that have reached this phase are beyond the scope of this thesis. However, articulation capabilities are still important to the mature NTV for questioning strategic assumptions, communicating strategic plans and for identifying strategic gaps.

#### **3.1.3 Strategic Logic and Growth in the NTV**

The strategic logic in an NTV can be indirectly affected by the stage of development of the NTV. In the early-stages of existence, the NTV is typically exclusively directed by the entrepreneur's intentions (Stone and Brush, 1996). In this context the formulator of the strategic plan is also the implementer of the strategic plan, and thus can react quickly to the demands of the environment (see Figure 2). Since the entrepreneur is both the formulator and the implementer of the strategic plan there is little need to explicitly specify or

articulate the nuances of the strategic plan (Mintzberg, 1985). As the NTV grows and more 'actors' become involved, (employees, suppliers, investors, directors etc.) the entrepreneur begins to lose some of the previously tight control they had over the mass of actors. Hence, the entrepreneurs can no longer be responsible for planning and implementing all the precise details of the NTV's strategic plan (see Figure 3). In order to strategically manage the NTV the entrepreneur establishes strategic processes within the NTV that allow the NTV to respond to the environment (Mintzberg, 1985). Thus, as the NTV grows the entrepreneur requires articulation capabilities in order to develop the nuances of the strategic plan for the growing number of actors involved with the organization and the resulting complexity. Evidence assimilated during the research phase suggests that articulation capabilities, or lack thereof, can be a bottleneck affecting growth.

The entrepreneur has a choice in how to develop the articulation capabilities that communicate and develop the strategic plan in the NTV. In many early NTV's the strategic logic is 'top-down' emerging from the entrepreneur. As the NTV grows larger the strategic logic may incorporate an empowered workforce with the authority to make decisions that may impact the strategic plan (Sanchez and Heene, 2002).

In regards to codification capabilities, for many early NTV's the verbalization of the strategic plan does not develop into a precise codified document that outlines the vision of the entrepreneur's mind (Mintzberg, 1985). This situation often remains until the catalyst of the investment cycle takes effect (Stone and Brush, 1996). Because in order to access resources from beyond firm boundaries the NTV will need to communicate the nuances of their strategic plan.

### **3.2 The Investor**

NTV's in their early stages lack direct control over many resource flows, and often must depend upon others for access to strategic resources (Stone and

Brush, 1996). They have little positive cash flow from operations<sup>5</sup> and are also faced with the expenses ('burn rate') to establish their resource bundles (i.e. to conduct R&D, to initiate production, to expand manufacturing, and to develop distribution channels, etc.) (Hanks and Chandler, 1994; Triantis, 2001; Bartlett, 1999; Shepard et al., 2000). To ensure that the NTV has funds necessary to survive and develop their opportunity they may sell equity of the firm to external investors<sup>6</sup>. In essence, an equity-based alliance is formed with the investor to address the NTV's vulnerable strategic positions by acquiring access to resources (Eisenhardt and Schoonhoven 1996; Das, 2000).

Bygrave and Timmons (1992) and Amit et al. (1998) argue that investors are a significant development vehicle that provides equity-based financing and intangible resources (such as experience, legitimacy or access to networks) to NTVs. The financing provided by investors is extraordinarily valuable to start-up firms, whose value is locked in growth options, and who produce too little cash flow or earnings to have internal capital at their disposal (Triantis, 2001).

In many cases, investors are successful entrepreneurs, and possess tacit business acumen that has come through their experiences within the field. Specialized investors, like VCs and Angels, distinguish themselves from other finance providers through their aptitude for tolerating and managing the many risks associated with NTVs (Amit et al, 1998).

There are two types of external Investors<sup>7</sup> that are of interest to many NTVs: 1) Angel Investors (hereinafter called Angels) and 2) Venture Capital Investors

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<sup>5</sup> The main exception to this are ventures who operate a parallel service offering which provides revenue. For example, a software venture may have revenue from consulting services, which could be used to fund product development.

<sup>6</sup> This sale of equity usually happens more than once. Successful ventures are rarely developed in one round of investment (Bartlett, 1999).

<sup>7</sup> An external investor is an investor not directly related to the venture. Internal investors include the Entrepreneur and the Entrepreneur's family.

(hereinafter called VCs). A general comparison between Angels and VC's can be found in Table 1.

<b>Table 1 : A Loose Contrast of Angels and Venture Capitalists</b>		
	Angels	Venture Capitalists
Representing	Self	Investors
Responsibility	Personal	Fiduciary
Stage of Investing	Typically Early	Typically Later
ROI Sought	~100%	~50%
Focus of Attention	Entrepreneur and Vision	Business plan and probabilities
Reasons for Investment	Many	One
Term of Contract (Engagement)	Easy	Complex
Due Diligence	Amateur	Professional
Length of Investment Cycle	Weeks-Months	Months-Years
Source: Adapted from Ken Olsens presentation (2003)		

This thesis will use the collective term investors to refer to both Angels and VC's.

The intangible resources and knowledge that investors provide is a potential catalyst for the development of flows of resources into ventures, which can affect the venture's performance (Bygrave and Timmons, 1992; Amit et al., 1990b; Chrisman et al, 1998). In addition to cash, the equity-based alliances between the NTV and an Investor can provide the NTV with numerous strategic resources including:

- Cash<sup>8</sup>,
- Access to networks,
- Specific venture-development skills such as assistance in obtaining additional rounds of financing<sup>9</sup>, strategic planning, and operational planning,

<sup>8</sup> It should be remembered that, although cash is crucial to survival and for accessing other strategic assets, cash is itself not a unique asset upon which sustainable competitive advantage can be based.

<sup>9</sup> This assistance in obtaining financing may come directly in the form of operational assistance in financing activities. It may also come indirectly in the form of increased legitimacy for the NTV (another Investor may join an NTV based on the Investors the NTV has already attracted).

- Legitimacy that can affect strategic position,
- Introducing new customers and suppliers,
- Recruiting key employees,
- Management recruitment,

(Gorman and Sahlman, 1989; Bygrave and Timmons, 1992; Sahlman, 1994; Eisenhardt and Schoonhoven, 1996; Amit et al., 1998; Das, 2000).

Investors are important agents to the growth of NTV's as they contribute key financial and intangible resources. The thesis now examines how investors and NTVs become involved in an alliance through the investment cycle.

### **3.3 The Investment Cycle Between the NTV and the Investor**

According to Bygrave and Timmons (1992) and Fried and Hisrich (1994) the investment cycle is a four-step process, which this thesis has called the four E's: 1) Establishing; 2) Evaluating; 3) Engaging; and 4) Exiting. Investors become primarily involved with NTV's in the last three stages; Evaluating (I and II), Engaging and Exiting. The four processes are discussed below along with their relationship with the development of articulation capabilities.

#### **3.3.1 Stage 1: Establishing:**

This stage is where the investor collects the money needed to invest in the NTVs of interest. For Angels, this is the accumulation of personal wealth. For VCs, it is the creation of a fund for which they are legally responsible for managing. The capital for the fund may come from institutional investors, wealthy families, governments, or pension funds to name but a few (Bygrave and Timmons, 1992).

#### **3.3.2 Stage 2A: Evaluating I:**

This is where the investor screens out the NTV's that do not match the investor's basic criteria. This is a quick screen that involves a minimal amount of time (Fried and Hisrich, 1994). NTV's with sub-par articulation capabilities may be screened out at this point.

### 3.3.3 Stage 2B: Evaluating II:

This is the first in-depth analysis of the proposal. Information assimilated by the investor is compared to the information provided by the entrepreneur's business plan. This phase of evaluation usually starts with a meeting of the entrepreneur and the investor. These meetings allow the investor to better understand the nuances of the proposal. It also provides an opportunity for the investor to further evaluate the entrepreneur. Further investigation may examine the entrepreneur's previous business relationships, formal market studies, technical feasibility analysis, interviews with current and potential customers, pro-forma financial statements, and interviews with family members (Amit et al., 1990b, Fried and Hisrich, 1994).

This is the first phase where investors affect the development of articulation capabilities in the evaluation phase by assessing the outputs of NTV's verbalization, codification and feedback capabilities. Investors require strategic plan verbalization and codification capabilities in order to assess the feasibility of involvement with the NTV. Usually the NTV must produce at least a business plan and an investment presentation. Evidence suggests that a perceived deficit in the NTV's capabilities will usually be fatal to the investment

### 3.3.4 Stage 3: Engaging:

Should the investor see potential value in the NTV then they negotiate the purchase of equity with the entrepreneur, thereby engaging in an *equity-based alliance* (Jarillo, 1989; Eisenhardt and Schoonhoven 1996; Das, 2000). In most cases, the investor receives a seat on the board of directors with their purchase of equity. From this board position the investor has the ability to influence the strategic plan, contribute to the value-adding activities and monitor the performance of the NTV. Thus, the investor becomes involved in the management [strategic logic] of the NTV to varying degrees. (Sahlman, 1994; Amit et al., 1998).



During the engagement stage, the investor's relationship to the flow of the funding is based upon the entrepreneur's completion of 'milestones'. These are agreed upon goals, which are usually heavily influenced by the investor. For example, if an NTV requires \$10 million dollars to completely commercialize their product, the investor may give the NTV \$500,000 up front in order to complete the early prototype and to complete a business plan. Once these milestones have been achieved the investor may contribute another lump of money for the NTV to complete the next set of milestones, and so on. By staging the investment the investor gathers new information about the NTV and the environment, thus preserving the ability to abandon the NTV or alter the management should the risk increase too much (Salhman, 1994).

In the engagement phase of the investment cycle investors directly affect articulation capabilities because they require information about the ongoing performance of the NTV. These reporting requirements help to catalyze the development of feedback capabilities in the NTV.

Investors indirectly affect the emergence of articulation capabilities by contributing resources to an NTV that enlarge the resource-base of the NTV and thus the need for capabilities to communicate strategic plans and coordinate those resources towards strategic goals.

In many NTV's the investor can contribute knowledge, which can directly affect the way that capabilities are executed in the NTV.

#### 3.3.5 Stage 4: Exit

In order for the investor to realize the value on their purchase of equity in the NTV they must be able to sell that equity at a profit (otherwise known as 'exit'). In this situation information asymmetry (i.e. ignorance) is an issue. This is because the potential purchasers of the investor's equity can be uninformed

about the true value of the NTV, thus the equity may be difficult to re-sell (Amit et al., 1990a). This poor liquidity of the investor's equity is a source of risk (Fried and Hisrich, 1994). The NTV's articulation capabilities may impact upon this situation as well, however this topic goes beyond the scope of this thesis.

This thesis suggests that the investor will indirectly evaluate the articulation capabilities in Evaluation phases I & II through the ability of the entrepreneur to create a logical and compelling business plan and through their ability to articulate a viable strategic hypothesis.

During the engagement phase, the investor becomes involved with the strategic planning of the NTV, and thus affects the direction of the strategic routine development. In addition, the investor contributes resources. This can directly affect the development of articulation capabilities (i.e. through knowledge contribution and creation of milestones) and indirectly affect the development of articulation capabilities (i.e. by contributing resources that facilitate growth the NTV must develop articulation capabilities to manage growth and retain flexibility).

### **3.4 Summary**

This chapter introduced the NTV/Entrepreneur and the investor. The NTV is a venture that faces a process of growing and acquiring an resource base from which successes can emerge. In their early lives, NTV's are focused upon identification and acquiring resources needed to offer a product. In their later stages of development, NTV's have acquired resources and capabilities and the NTV is focused upon the deployment and allocation of resources, as well as identification and acquisition (Lichtensein and Brush, 2001).

The entrepreneur is the leader(s) of the NTV, which is largely responsible for creating and implementing the strategic plan. As the NTV grows, it acquires resources that require new capabilities to support their use toward achievement

of the NTV's goals. Since the NTV has major expenses to cover before revenue can occur, they usually require outside financing from an investor.

Investors are specialists in dealing with the risks associated with a new venture and have specialized resources and skills for implementing a successful enterprise. In addition, the investor is faced with the challenge of establishing a pool of money to invest. Therefore, the investor must enter a relationship with NTV's that they consider worthy. By engaging with these NTV, the investor is more likely to help the NTV survive and succeed, thereby increasing the chances of entering the exiting stage, selling the equity that they purchased in the NTV.

The thesis will now turn to the empirical research as a means to provide some current insight into the dynamics of articulation capabilities within new technology ventures.

## Chapter 4 Research

In chapter 4 a detailed overview of the research strategy and methodology is presented. It provides an account of 1) how theory was developed; 2) how research was conducted; and 3) justifies the research methodology used to explore the research topic.

The thesis researches three topics.

1. What do articulation capabilities look like in NTVs?
2. What are factors that affect the emergence of articulation capabilities?
3. How do articulation capabilities affect NTV performance?

This is an exploratory theory-building study whose purpose is to gain insights into the phenomenon that can be used in future research. The thesis is not designed to test propositions or test a particular hypothesis. It is designed to enhance our current understanding of NTV behavior, particularly the phenomenon of articulation capabilities in NTVs.

### *4.1.1 Overview of Research Design*

Research design outlines how a researcher will proceed with their study. A multiple key-informant interview approach is used to explore and enhance the current theory of the development of articulation capabilities in new technology ventures. The research design was conducted in four phases.

In phase one a broad literature review identified the relevant factors that affect the strategic logic of the NTV, the resource performance of ventures and the nature of the NTV and investor relationship. Phase one also involved the initial development of the research protocol. In phase two the initial pilot study was conducted to refine the data assimilation procedures and case-study protocol. In phase three the remaining key informant interviews were conducted. The

purpose was to explore how NTVs develop their articulation capabilities and how they co-evolve with the involvement of an investor. In phase four the information assimilated in phase two and three was enfolded with the relevant literature and a theory of articulation capabilities in new technology ventures is then presented.

## **4.2 Research Methodology**

### **4.2.1 Phase One**

In phase one an in-depth review of the academic literature was conducted in the fields of resource-based view, dynamic capabilities, high-technology entrepreneurship, balanced scorecard and strategic management. This literature review helped to create the theoretical foundation, the vocabulary for the theory-building research and the initial research protocol. During the literature review the following sources of data were used: electronic library catalogues, electronic journals and references suggested by academic advisors. In addition, the proceedings of several relevant conferences and workshops (Banff Venture Forum, 2002; Ernst and Young Entrepreneurial Boot Camp, 2002 & 2003) led to insights that were incorporated into the project. The literature review and workshops led to the initial construction and refinement of the research protocol. The goal of this phase was to assess the current literature with respect to organizational resources and theories of the firm, high-technology entrepreneurship, strategic management and the development of the research protocol.

#### **4.2.1.1 Research Protocol**

The research protocol provides an overview of the project, specifies the field procedures used for identifying interviewees (including the pilot study site), assimilating data, and includes the questions and tools for ensuring the systematic assimilation of evidence (Yin, 1994; Schulz and Hofer, 1999). The criteria for interview selection can be found in table 3 and table 4.

**Table 2 : Criteria used for NTV selection**

1. The NTV must be easily accessible to the researcher.
2. The NTV should be a start-up (i.e. in the conception and development, commercialization or expansion phases of growth).
3. The NTV should be small enough so that the key leaders can be identified and interviewed.
4. There should be willingness by the entrepreneur to talk about the NTV openly.
5. The entrepreneur should possess some level of entrepreneurial ability<sup>10</sup>.
6. The NTV must be commercializing a technology-based product or service.

**Table 3 : Criteria used for Investor and Industry Expert selection**

1. The Investor/Expert must be easily accessible to the researcher.
2. The Investor/Expert should be interested in working with NTV in the start-up phases (i.e. in the conception and development, commercialization or expansion phases of growth).
3. There should be willingness by the Investor/Expert to talk about the NTV openly.

The key informant interview approach was the primary research methodology for this project because of its flexibility in compiling information relating to the strategic routine phenomenon within NTVs. In addition, the key informant interview approach was chosen because it was interactive with the participants and allowed our emergent theory of articulation capabilities to be closely linked to the qualitative data (Eisenhardt, 1989b). The key informant interview protocol was developed in parallel with a literature review. The multiple key informant interview approach focuses upon the dynamics present within several settings

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<sup>10</sup> The proxy for ability was that all entrepreneurs (except COMPANY C) were legitimate enough to present at the Banff Venture Forum. The entrepreneur at COMPANY C was a 'hired-gun' CEO who had previous NTV leadership experience.

and provides multiple sources of evidence related to the research questions (Yin, 1993; Tellis, 2002).

The research began with an *a-priori* understanding of the objectives of the study and research questions and the range of inquiry was quite broad. Interviews are considered one of the most valuable data gathering techniques (Tellis, 2002).

The flexibility of the open-ended interview questions allowed interviewees to elucidate their opinions regarding articulation capabilities in NTVs. Given the exploratory nature of this project this research strategy is appropriate, because it allows flexibility in exploring the emerging topic.

The interviews initially consisted of three sections. The first focused on demographics of the interviewee and consisted of structured questions (e.g. 'How many new ventures have you founded?'). The second section consisted of open-ended questions focused upon the articulation capabilities in the NTV and their perceived usefulness for NTV performance and the investment cycle. The third section was a series of Likert questions about articulation capabilities based on an instrument developed by Sapienza and Gupta (1994). The interview protocol can be found in Appendix A.

#### 4.2.2 Phase Two

The purpose of phase two was to conduct a pilot study and refine the key informant interview protocol (Yin, 1994; Eisenhardt, 1989b). The research protocol was used to select the initial informant interview for the pilot study. It was important for the pilot study to examine a NTV that would provide an example of articulation capabilities and would be accessible to the researcher. It was decided that the best NTV for this purpose would be COMPANY E that was easily accessible and also a large NTV. COMPANY E also had significant involvement with VC's and was rated as one of the top investment opportunities at a recent American Investment forum. For these reasons, COMPANY E was an appropriate choice for the pilot study.

The third section was a series of likert-scale questions used to describe the interviewee's perception of articulation capabilities. After the pilot study the thesis evolved, and these questions were dropped, mainly due to time and reliability concerns. The remaining sections were also revised to make the instrument more succinct.

The instrument used in phase two of the research has two sections.

#### **4.2.2.1 Research Instrument Section 1: Demographic section**

All interviewees were asked about their level of experience in founding NTVs, investing in NTVs and working in NTVs (none, 1, 2, more than 2).

Investors were asked which stages of development were the NTVs they typically financed (Conception & development (i.e. seed), commercialization (i.e. early-growth), expansion, (i.e. later-growth).

Entrepreneurs were asked to describe: their business, the length of time spent with their current venture, the number of staff in the NTV, and the next round of financing for the NTV (i.e. would the next round of outside investment be the first round, second round, etc. Will it come from Angels or Venture Capitalists?

#### **4.2.2.2 Research Section 2: Information on articulation capabilities**

The second section explored the articulation capabilities in NTVs. These questions were posed to suit the perspective of the interviewee, the phrasing of the questions would vary between an entrepreneur, investor and industry expert. The research asked these questions:

- What are devices and capabilities for describing strategic plans to internal agents (example: executive leadership, employees, Board of Directors)?



- What are devices and capabilities for describing strategic plans to external agents (example: potential investors)?
- What are capabilities for linking strategic objectives in a cause-and-effect format?
- How do NTVs review their strategy and assimilate feedback?
- What are examples of explicit documentation used to codify the strategic plan (other than the business plan)?
- How regular and formal are strategic planning meetings?
- How does the strategic planning process (including articulation capabilities) impact the ability to get financing?
- How has (will) the involvement of investors change the NTV's articulation capabilities?

#### 4.2.3 Phase Three: Data Collection

In phase 3 the rest of the subjects were interviewed. The purpose of additional subjects is to gain a greater understanding of the phenomena of articulation capabilities. Investors and industry experts were included in the study to provide a diverse viewpoint on the emergence of articulation capabilities in NTVs. By incorporating subjects from different points of view the validity of the finding was to be increased through triangulation (Eisenhardt, 1989b).

Subjects were contacted in person, by phone or through e-mail and asked if they wished to participate in an MBA-thesis study. Subjects could participate in face-to-face interview or telephone interviews. Previous to the formal interviewing, the researcher explained the general topic that was to be explored. In order to avoid confusion the interviewer provided key definitions of some constructs, such as strategic planning, articulation capabilities etc. Each interviewee was asked if the interview could be transcribed for further analysis, to which all subjects agreed. Before the interview commenced subjects were informed about the ethical protocols of the study. Subjects in personal interviews were given an ethics form

to complete, subjects interviewed over the phone were read the pertinent ethical topics and asked for their verbal agreement.

Occasionally, interviewees provided an artifact that demonstrated an aspect of the NTV's articulation capabilities. These artifacts provide a rich source of data for further research and were examined (albeit briefly) with the current methodology. The thesis utilized qualitative data collection methods, combining interviews and occasional opportunistic observations as suggested by Eisenhardt (1989b).

#### 4.2.4 Phase Four

Analyzing data is the heart of developing theory (Eisenhardt, 1989b). Our analysis involved a detailed analysis of each NTV, investor and industry expert interview and its purpose was to familiarize the researcher with the data and provide preliminary theory generation.

Each interview was transcribed and the findings were analyzed as suggested by Eisenhardt (1989b). This allowed detailed between-interview comparisons to be made. This synthesized the empirical and the theoretical findings to develop a richer understanding of the phenomenon under study.

For each interview, the researcher took note of comments relating to articulation capabilities. This highlighted articulation concepts such as; how these capabilities develop, what do articulation capabilities look like in NTVs and what are the hazards and benefits of articulation capabilities for NTVs.

### **4.3 Subjects**

Selection of participants is a crucial aspect in developing a theory. An appropriate population will attempt to control for extraneous variation and thereby define the limits for generalizing the findings to a greater population (Eisenhardt, 1989b). When choosing cases for the theory-developing research theoretical

sampling is considered an appropriate approach (i.e. samples are chosen for theoretical versus statistical reasons). The cases were chosen for their expertise in the field and ability to extend the theory on articulation capabilities and resource flows in NTVs (Yin, 1994).

There were a total of 11 interviews conducted (5 Entrepreneurs, 2 Investors and 4 Industry Experts). Interviews were conducted between Nov. 15, 2002 and Jan. 21, 2003. All interviews were scheduled to last 45 minutes, and only two were cut short due to time constraints. Interviews were conducted either at the environment of the interviewees' choice or over the telephone. All interviewees contacted in person signed a consent form. All interviews conducted over the telephone were read the ethics form and provided verbal agreement. All interviews were recorded so that data could be re-analyzed at a later date. A copy of the consent form can be found in Appendix B.

Cases were placed into three groups: 1) entrepreneurs/NTVs, 2) investor's and 3) industry experts. By assimilating data from individuals with different perspectives on the NTVs articulation capabilities our research were triangulated which affects the validity of our findings (Eisenhardt, 1989b, Yin, 1993; Tellis, 2002). The entrepreneurs give an internal viewpoint of their specific NTV, while the investors and industry experts gave an external viewpoint about NTVs.

The three categories chosen for the subjects are only reflective of their current activities. Most subjects had experience from another perspective, for example an investor could have been involved as an entrepreneur in previous years, the industry expert could have entrepreneurial and investment experience etc. An investor by definition is an industry expert. Thus, the categories of subjects are not mutually exclusive, which is acceptable for this thesis because the purpose of this thesis is not to contrast the different viewpoints, but to include them to provide the most complete picture of articulation capabilities possible.

#### 4.3.1 Entrepreneurs/NTVs

Entrepreneurs that were chosen for this research were considered key sources of resources and capabilities in the NTV. Their attitude towards developing articulation capabilities will be crucial in determining the trajectory of future articulation capability development (Sanchez and Heene, 2002). The insights of entrepreneurs were considered extremely important to the understanding of the emergence of articulation capabilities.

As previously mentioned the samples for this study were chosen to maximize the learning opportunities available in the thesis. The entrepreneurs were all experienced entrepreneurs who had started at least one venture before their current NTV. It was expected that inexperienced entrepreneurs would pay little attention to articulation capabilities and thus contribute little to the development of theory relating to the development of articulation capabilities.

The stage of a NTV's development is a construct that should affect the emergence of articulation capabilities, thus the sample included NTVs that were at different stages of the development continuum, with the exception of the mature stage of development. By choosing NTVs from different stages of growth so we aimed to explore a wide variety of articulation capabilities.

The role of outside financing is considered an important construct in the emergence of articulation capabilities. Every NTV in our sample had reached a phase where they had presented their strategic plans to investors (i.e. they were at least in the evaluation phase). Thus, all of the NTV's possessed articulation capabilities sufficient enough to enter into the evaluation phase of the investment cycle (See Chapter 3). Some of the NTV's (COMPANY E, COMPANY C, COMPANY B) had reached the engagement phase of the investment phase. Two NTV's (COMPANY D, COMPANY A) had no outside financing.

Table 4 : Entrepreneurs				
Interviewee Position	Company Name	Investor Involvement	Number of Employees	Date of Interview
CEO	COMPANY A	No	12	Nov. 22, 2002
CEO	COMPANY B	Yes: Angel	14	Nov. 28, 2002
CEO	COMPANY C	Yes: Angel	21	Dec. 09, 2002
CEO	COMPANY D	No	27	Dec. 27, 2002
CTO	COMPANY E	Yes: VC 3 rounds	120	Nov. 15, 2002

#### 4.3.2 Investors

Investors were examined because they are a direct provider of tangible and intangible resources for the NTV. They indirectly act as catalysts affecting the development of articulation capabilities in many NTVs.

Investors directly or indirectly assess the articulation capabilities of the NTV when making an investment decision. Investors distinguish themselves from other financial providers with their ability to deal with the dynamic high-technology investment environment and the challenges of an 'immature' NTV. Investors typically have some in-depth knowledge of the environment of the NTVs, which is important for understanding the value-proposition of the NTV's offering and the proper path to commercialization and have specialized knowledge in evaluating and working with NTVs in these early stages (Amit et al, 1998).

Investors were chosen if they were currently or recently involved with investing in NTV's (see Table 2 for criteria). Investment could be as an Angel or as a General partner in a Venture Capital fund. Within the investor category, we interviewed four investors that are involved with investing in Alberta NTVs. While

some of the investor's were currently not active general partners (i.e. they were not currently seeking investment opportunities) they all had multiple experienced investing and working with NTVs. The industry specialization of the investors was not assessed in this study because 1) the potential sample group accessible to the researcher was modest 2) the construct of industry and its influence on the emergence of articulation capabilities was not within the scope of this thesis.

#### 4.3.3 Industry Experts

Industry experts were chosen because their expertise involves facilitating the growth of the NTV, and in many cases act as a key source of resources such as knowledge (Chrisman, et al., 2003). The industry experts that were interviewed worked primarily with conception & development phase NTV's. This provided valuable insights because the industry experts were involved with the NTV while the articulation capabilities were just beginning to form. Industry experts were considered relevant to this study because they assist the NTV in preparing for investment.

**Table 5 : Investors and Industry Experts**

Description	Date of Interview
Expert A	Dec. 10, 2002
Expert B	Nov. 27, 2002
Expert C	Jan. 21, 2003
Expert D	Jan. 08, 2003
Expert E	Jan. 18, 2003
Investor A	Jan 09, 2003
Investor B	Dec. 11, 2002

#### 4.4 Summary

The credibility of the results and the inductive theory that will result from this project are related to the research strategy and the methodology used. This study used an exploratory key informant interviews approach with multiple subject groups, each with a valid perspective on the phenomenon of articulation capabilities in NTV's.

The research was divided into four phases. The first phase involved a literature review to develop an understanding of relevant theory for the construction of a research protocol. The second phase involved conducting a pilot study to test the research protocol, which turned out to be suitable for this thesis after minor revisions. Phase three involved conducting multiple key informant interviews for the assimilation of data relating to articulation capabilities in NTV's. Phase four involved analyzing the findings and evaluating the findings with our current understanding of the literature.

The subjects in this study were from three groups, entrepreneurs, investors and industry experts. By assimilating data from these perspectives, it was believed that triangulation increased the validity of our findings. Subjects were interviewed using a semi-structured interview format.

We believe that the building a theory of articulation capabilities in NTVs from case studies is an appropriate research approach because:

- It provides description of phenomenon
- It is appropriate for developing theory
- It allows an iterative comparison between literature, qualitative data and emerging theory
- It allows examination of phenomenon in several settings

Through this strategy this project generated some interesting findings to our research questions, which are the foundations for our conclusions and recommendations in chapter six.

## Chapter 5 Findings

Chapter 5 presents the findings from the research conducted in this thesis. The findings are grouped together in three sections related to the three main areas of inquiry:

1. What do articulation capabilities look like in NTV's?
2. What are factors affecting articulation capabilities? and
3. What are the hazards and benefits of articulation capabilities for NTV's?

Six key concepts were found that described articulation capabilities in NTV's.

- 1) In early NTV's the entrepreneur largely directs the articulation capabilities. However, as the NTV grows and more agents become involved (such as employees and investors) the articulation capabilities change in nature.
- 2) Verbalization capabilities are generally conducted informally, although formal temporally driven planning sessions were common.
- 3) The development of codification capabilities were catalyzed by the NTV's need to access outside resources.
- 4) It was common to find codification capabilities used to support the strategic planning process.
- 5) Feedback capabilities are simple outcome based processes.
- 6) The board of directors and investors are important sources of information relating to feedback capabilities.

It was found that there were three factors affecting the development of articulation capabilities:

- 1) The size of the NTV-- as the NTV grows it has more resources to apply to articulation capabilities. In addition, the acquisition of resources can drive the need for articulation capabilities.
- 2) The experiences of the entrepreneur.



- 3) The involvement of investors, in the evaluation phase the investor indirectly affects articulation capabilities while in the engagement phase the effect is direct.

There are two hazards and four benefits that the interviews suggested were relevant to NTV's. The main hazards were:

- 1) Codification efforts may cause the entrepreneur to hesitate changing their strategic plans, due to the sunk costs associated with codification,
- 2) The purposeful development of articulation capabilities could utilize energy that could be better used to develop other capabilities.

The main benefits associated with the development of articulation capabilities include:

- 1) Enhanced strategic focus through the visualization of opportunities
- 2) Ability to communicate the strategic plan across organizational layers
- 3) A simple codification capabilities can be used to cost-effectively update the NTV's business plan
- 4) Building experience and capabilities

## **5.1 Articulation Capabilities**

Articulation capabilities are defined as the NTV's approach to strategic plan articulation, codification and feedback. This section focuses upon describing articulation capabilities in NTV's. It describes how the articulation capabilities begin as centralized within the entrepreneur and expand as the NTV grows. This section then explores what verbalization capabilities, codification capabilities and feedback capabilities look like.

### 5.1.1 Verbalization Capabilities

Verbalization capabilities refer to the NTV's capabilities for discussing the strategic plan, for example strategic planning meetings. This definition is consistent with Zollo and Winter's (2002) concept of knowledge articulation, defined as a cognitive effort more or less explicitly directed at understanding the causal mechanisms intervening between the actions required to execute a given task and the performance outcomes produced.

In the smaller NTV's we found that the verbalization capabilities were largely informal in their regularity and formality. It seemed that the articulation process was often initiated by a perceived crises or perceived 'strategic gap' (see Chapter 2), although many NTV's had some type of regular strategic planning meeting:

*[Strategic development] It's not very concrete or planned. There is no real process... It's not like we sit down and say 'hey we need to strategize'. (COMPANY A)*

*Whenever we hit a milestone or we start to waffle a little bit we get the group together to strategize... And other than that, we have monthly meetings with the extended management... it's not formal like "Once a year we nail down the vision and twice a year we nail down the strategy and every month we visit our tactics" It's a much more fluid process but all the elements are there. (COMPANY B)*

*The senior management team meets daily. What we do is have weekly meetings, with the entire company. So all 21 of us get together in our small little board room and we discuss the direction of the company for this month, the things that we need to accomplish... we are taking the strategy from something that is very long-term to something that is very bite sized something they can absorb. (COMPANY C)*

Verbalization capabilities were predominately informal but became more formalized as the NTV grew. It seemed that the verbalization activities are both crisis driven and in some NTV's temporally driven. Generally, the strategic

verbalization capabilities were fluid but regular strategic articulation meetings with the top-level executives at the NTV were common.

### 5.1.2 Codification Capabilities

Codification abilities refer to creating explicit documentation of the strategic plan or sub-aspects of the strategic plan. This includes the NTV's business plan, but also includes supplemental strategic documents, such as a marketing plan.

Industry Expert interviewees suggest that codification capabilities are rare in early NTV's. It was found that in many cases that a NTV begins a codification routine in order to acquire access to outside resources, which is consistent with Stone and Brush (1996):

*Successful companies are driven by one founder who is basically processing everything in their head and may, or may not, create a document. Usually what will trigger the development of an outside document is the need for outside funding. So what triggers the capture of the strategic plan onto paper is... 'I need money.'*  
(Industry Expert C)

Our interviews and observational data suggest that many NTV's had formalized codification capabilities for certain aspects of their operations, for example linking marketing and product development. They were less formal than the business plan as they were generally for internal purposes only.

*I have a document called the business opportunity roadmap (BOR). The BOR is what I continuously update, but it is founded from those original meetings, which are what do we want to be when we grow up? We set our vision at those meetings: what are we good at, where should we be going, where can we make a difference in the world? And from that we look to see strategically what will it take to get us to the vision ... each of those [initiatives] becomes a box on this map, and each box... gets a technical assessment...and an assessment on how much the initiative will increase our sales... then each of those [boxes] becomes a*

*business opportunity that we will decide whether to move ahead with the opportunity or not. (COMPANY B)*

*We do have a top-level vision of where the technology is going that is documented. We do have planning documents in terms of the implementation of other technology... We have account plans and market segment plans that talk about the various tactics and strategies for taking over various segments. Are they all tightly linked together? No. We have a business plan that pretty poorly reflects upon all of that. (COMPANY E)*

*We have different areas of the business client services, finance, marketing, sales... with strategic plans that are all separate from each other. We have a process for linking them together towards the common vision, we have two people that put them all together into one document. That one document is then used to update the business plan. (COMPANY D)*

The outputs from these codification capabilities served various purposes, from a visualization tool to keep strategic focus, to a tool to communicate strategic plans to investors, and as a tool that is used to update the business plan.

#### **5.1.2.1 Clarity of Codification**

Interviews with Industry experts and investors demonstrate the importance of succinct outputs from codification capabilities in NTV's. Clarity is highly sought after by investors and may affect the perceived legitimacy of the NTV:

*... your overall vision should be described with a template. You should have the 1-3 objectives of the company there and a 1-pager could describe how we are going to get there and the business plan goes into detail about how we are going to get there. (Investor B)*

*A good business plan will show you a flow of logic from "here is a statement of our industry and our offering" to "here is our position". If they can't*

*show that, and they may not have one, or can't articulate it, either one of those is fatal in the investment decision. (Industry Expert B)*

*There is a probably a direct relationship between the level of experience and how much you are looking for Entrepreneurs to be able to articulate. And with experience Entrepreneur's don't go into writing an elaborate business plan. The inexperienced Entrepreneur will write an elaborate plan that is full of bull. . A good BP can be 2-3 pages. (Investor A)*

The codification of strategic plans is catalyzed by the need for outside resources. For an inexperienced Entrepreneur the need for investment is usually the first time they codify their strategic plan in the form of a business plan. For young NTV's the codification capabilities are typically undeveloped.

It was common to find supplemental documents for codifying aspects of the strategic plan. These supplemental documents would relate to many areas of the NTV and serve a wide range of purposes. Investors and industry experts suggested that having succinct outputs from codification capabilities is highly desirable.

### 5.1.3 Feedback Capabilities

Feedback capabilities are activities for collecting information relevant to the NTV's intended strategic plan. Information gathered from feedback is an important factor in organizational learning and emergent strategy. In this section we explore the importance of feedback capabilities, their nature, metrics and the way that they change as the NTV grows.

The interviews also highlight that the feedback mechanisms available to NTV's are typically very simple outcome-type measures. It seems that some of the desired outcomes are not cost-effective to measure, and in such cases the inputs are the best proxy. It is recognized by a NTV that the feedback process in a NTV is fairly simple, but will increase in complexity as they grow.

Entrepreneur and industry expert interviewees emphasize the need to have feedback capabilities aligned to the drivers of NTV performance.

*[The keys to measuring performance are] What are the key elements that need to be in place for us to succeed? And how are we going to know [measure] whether we are making progress on them? ... People tend to measure the outcome, which is much easier to measure than the activity... If the key element of success is that we have to have three customers in three key areas how will we know? We will have 3 signed contracts. But if the key success factor is general market awareness, that is a tough one, and if nothing else we can tell which activities we have spent our energy in, and whether they were in the right areas. (Industry Expert C)*

*[How do you measure performance?] Simple results, if you can attract people, customers and capital then you are probably headed in the right direction. These are the simplest and most direct way of knowing whether you are getting anywhere. (Industry Expert E)*

*Knowing if we meet our sales goals is one way. Same with development, we need to have this done by this date, with development something always crops up, sometimes things take longer, sometimes shorter. There are no formal deadlines, no big whiteboard, where we say this must be done by this date. (COMPANY A)*

*At the stage we are at it depends upon timelines. We have a plan. Certain things needs to be done... and there are certain dates 'by this date we expect to have this many deals or this marketing program or new website'. It is pretty simple for us to measure... it's a lot easier and more tangible than I think it will be when we out there with all of these tools on the open market. Then it is going to be a lot tougher.*

*[currently] we can meet on a weekly basis and get reports from everybody to see how they are doing...is going to get a lot more difficult as we grow. (COMPANY D)*

### 5.1.3.1 Sources of Feedback

These two NTV interviews discuss how the perceptions of customers are a prime source of feedback information. These quotes suggest that the resources available to the NTV affect the nature of the feedback that they can acquire:

*We base our formal plans on talking to customers, then getting an intuitive gut feel from that (COMPANY A)*

*We do a lot of measuring we also have external consultants that measure things like our analyst reactions so we can in fact see how industry analysts, financial analysts are perceiving us. We have run studies on how customers perceive our product, not just in terms of raw perception, but also in terms of conjoint analysis. (COMPANY E)*

Another source of information for feedback is the Board of Directors, although one interviewee believes that the importance of the Board of Directors is over-estimated:

*We sit down at our Board of Directors meeting every month to assess the progress of the company and make recommendation about how we think we need to adjust the strategy and/or the execution of that strategy in the short term. So we are... generating ideas internally and then throwing those ideas back at the BOD to get a reality check on them (COMPANY C).*

*I guess in the younger start-ups they need a lot more help setting strategy and monitoring to follow that up. I find that when you have a CEO or management team that knows what they are doing they are setting the strategy and the BOD is more of a sounding board. He [the CEO] comes to the board and says this is where I am going this is what I see out there (Investor B).*

*... forget the whole board thing ... issues are always decided before you go into the BOD meeting, there is no votes at a BOD meeting it is all consensus built. No one ever votes to block a vote, by the time it goes to a vote it is either unanimous or it isn't. If it*

*isn't then you have more trouble than you did than before the vote. (Industry Expert A)*

#### 5.1.4 Summary

Assimilating feedback properly requires that feedback is being collected properly. Feedback is needed in the areas related to key success drivers. Performance measurement in NTV is typically outcome based and is related to the accomplishment of milestones, very simple and easy to measure. As the NTV grows and acquires more resources they may develop more intricate and abstract feedback capabilities. For example, COMPANY E, resource bundles allowed them to collect feedback from sources such as market analysts. COMPANY D understood that as they grow collecting strategic feedback will create new challenges. Developing feedback capabilities is an iterative process; crude or absent feedback measures are replaced as the NTV gains more insights and resources.

For all NTV's examined the customers and outsiders (Investors and the Board of Directors) were a key source of information and feedback. The following table summarizes the key concepts described in this section.

**Table 6 : Descriptions of Articulation Capabilities**

Components of Articulation capabilities:	Entrepreneurs	Investors Industry Experts
Articulation Capabilities	<ul style="list-style-type: none"><li>-In some there is no deliberate process for strategizing</li><li>-When they realize they are starting to wander (i.e. identify a strategic gap) they get together and strategize</li><li>-Some have daily meetings with management and weekly meetings with the entire company. All have some regular meeting schedule.</li></ul>	



Codification Capabilities	<ul style="list-style-type: none"> <li>- One codification capability created a document that mapped and assessed the strategic opportunities available to the NTV</li> <li>- Another codification capability assessed the activities of the divisions within the NTV but was not used to update the business plan.</li> <li>- Another codification capability created strategic plans for different areas and linked them to the business plan</li> </ul>	<ul style="list-style-type: none"> <li>- Young NTV's rarely engage in codification</li> <li>- Codification seems to be common just prior to investment</li> <li>- The more succinct the outputs from codification the better</li> <li>- Succinct codification may affect the NTV's perceived legitimacy in the eyes of investors</li> </ul>
Feedback Capabilities	<ul style="list-style-type: none"> <li>- Measurement of sales targets is one way to measure performance</li> <li>- Feedback is collected in young NTV's by the measurement of goals</li> <li>- Performance measurement will be more difficult as the NTV grows</li> <li>- The BOD is an important source of information/validation for the strategic plan</li> </ul>	<ul style="list-style-type: none"> <li>- It is important to measure progress in the areas that are crucial for success</li> <li>- It is challenging to measure the outputs of some activities</li> <li>- Performance is measured by the achievement of goals</li> <li>- When you have an experienced entrepreneur the BOD is a sounding board.</li> <li>- The BOD does not typically affect the direction of strategy</li> </ul>

## 5.2 Development of Articulation Capabilities

The research suggests that there are three constructs that affect the way that articulation capabilities emerge in NTV's:

1. The size of the NTV,
2. The experiences of the entrepreneur and,
3. The involvement of investors in the evaluation phase and engagement phase

These three constructs are not exhaustive. However, the research suggests they are significant factors affecting the development of articulation capabilities in NTV's.

### 5.2.1 The Size of the NTV

In the research there seemed to be a relationship between the size of the venture (as measured by number of employees, which can be used as a proxy for

resources available to the NTV) and the sophistication of the articulation capabilities.

Some industry expert interviews suggested that articulation capabilities were very undeveloped in early NTV's. The first interview suggested that the creation of articulation capabilities is a major activity of early investors:

*A common characteristic of [early stage] companies is that there is no management rigor per se. And there is very little strategic planning in a structured way or even in an ad hoc way... Later stage investors particularly Venture Capitalists are going to see a higher quality of management and therefore a much deeper understanding and execution of strategy... companies at the get go typically don't have it, so that is one thing that investors have to develop.*  
(Industry Expert B)

*It is rare that when there is a company of 30-40 people that there is a lot in terms of structure.*  
(Industry Expert E)

*In most cases there is no formal document for internal strategic communication and there is very little in the way of a formal [articulation capabilities] until the company grows over 35-100+ people* (Industry Expert C)

As NTV's grow, functional specialization occurs and the NTV's staff groups into clusters, that revolve around a function related to the business (Hanks and Chandler, 1994). Thus, there arises a new need for internal strategic communication capabilities that does not exist when the NTV is a small, integrated group. These capabilities are needed to keep the NTV organized and aligned:

*[NTV's] become like little [clusters], what will happen is that the senior management becomes one [cluster], each member of that group leads another [cluster] and so one [cluster] will be sales and*

marketing (business development), one [cluster] will be product development... [Each cluster engages in strategic articulation]...until they have a consensus, beating each other up a lot, then that [cluster] reports back to person that takes it all back to the management [cluster]. (Industry Expert A)

When you have a 30-person company you can effectively have [informal] communication [about strategic plans] but you get over 100 then it gets a lot harder. (Investor B)

When the company evolves there are no norms, but I would suggest that up to 75 employees the strategy still resides in the head of the leader of the organization. They may consult with others they may hold meetings they may or may not share with others but at the end of the day they make the decision. (Industry Expert C)

These NTV interviews suggest that a major factor affecting the development of articulation capabilities is the increasing amount of resources available to the NTV. This was discussed earlier in the feedback routine section as well.

The biggest difference is that we have more resources now: We've got a lot of great people on the management team, contributing and offer a lot of value and the scope of it is far greater. It's not [co-founder] and I sitting in a room doing it together, there are a lot of people doing their own things making mistakes and learning (COMPANY D)

[Articulation capabilities] are not as formal as they should be, they are becoming more and more formal as we get bigger. (COMPANY D)

Amongst the industry experts and investors, the general consensus was that articulation capabilities are extremely informal in conceptual and early-growth NTV's. It is the growth in size and functional specialization, which is a catalyst for articulation capabilities.

### 5.2.2 The Entrepreneur

In the research we found that the capabilities of the entrepreneur is a factor affecting the development of articulation capabilities in NTV's. It is possible that entrepreneurs intuitively realize the value in developing articulation capabilities, based upon learning gained from previous entrepreneurial experiences. Such experience seems to have a relationship to the perceived importance of articulation capabilities:

*We are a little spoiled. This is [my partner's] fifth start-up company and this is my second or third. It was [our CFO's] fifth start-up company. There is a little bit of a grey-hair syndrome here. As a young CEO when I first started on here I didn't know what the hell I was doing. (COMPANY E)*

*A lot of Entrepreneurs are leery or wary of the concept and practice of strategy. It seems like something that is for the blue-chip corporate guys. 'cause they have luxury of people and time to go through that whole process. Sometimes you have to bring it down and show how important it is and easily implemented it is in a small business... A lot of [Entrepreneurs] are like 'I don't have time for strategy' or 'that is something for someone else who has time for it' (Industry Expert B)*

*That is not to say that it [strategic articulation] cannot happen [in small NTV's] because in some cases the NTV has been started by an experienced entrepreneur and this is their 2<sup>nd</sup> or 3<sup>rd</sup> shot at it. So they know from experience that they need to do this. (Industry Expert D)*

*If it turned out that in their last venture they were unsuccessful, or they thought they were successful because of some strategic planning then they will adopt that the next time around, but if they never used it last time and there was nothing experientially that made them think that they need to use it this time. (Industry Expert E)*

The data suggests that the entrepreneurial experience affects the perception of the importance of articulation capabilities. Some interviews suggest that inexperienced entrepreneurs are often unfamiliar with strategic planning. Experience may provide the entrepreneur with strategic articulation skills that allow the development to become less onerous, for example the skill of cogently articulating the relevant aspects of the NTV's strategic plan or efficiently codifying only the aspects of the plan that are relevant for the task at hand.

### 5.2.3 The Investor

The development of articulation capabilities is affected by the investor in several ways. The first is before or during the evaluation phase of the investment cycle. The NTV engages in developing their articulation capabilities, especially codification, in order to access the resources of the investor through the evaluation stage of the investment cycle. In a previous section the need to access outside resources was discussed as a catalyst for the development of articulation capabilities.

The second way that investors affect articulation capabilities is in the engagement phase. The investors directly affect articulation capabilities by altering the NTV's strategic plan by altering codification or feedback requirements. The investors also directly contribute resources and capabilities into the NTV. Investors indirectly affect the development of articulation capabilities by providing information to alter their strategic plan or by providing resources that require the development of capabilities.

### 5.2.4 Investors Contributing Resources

The following NTV had investors that were well respected in the investment community, and their involvement adds legitimacy in the eyes of other investors and analysts:

So we are fortunate because of the involvement of the XXXX folks, the two founders had a lot of experience founding a company and had been successful with it. They also had a lot of credibility with the investor community and so because they are involved in our strategic planning the investor community takes what they say at face value. We don't have to justify everything that we do. In many companies you don't have that kind of an asset and you are constantly trying to juggle the perspectives of the investor as well the employees and these kind of things. We are saved a lot of time and effort by the fact that the founders of XXXX are on our board of directors, they can backup everything that we say. I think that very valuable. (COMPANY C)

In this interview with COMPANY E the VC provided the NTV with an opportunity to work with another venture and explore a different customer niche.

A VC that I had worked with over the years was looking for me because they wanted me to work for one of their other portfolio companies. I did... an on-the-spot repositioning of the company to meet the needs of the portfolio of the VC. Quite frankly I could see where there was a growth space, based on their analysis. (COMPANY E)

The VCs provided this NTV with valuable strategic information.

VC's can also be a very large resource, in that many venture capital companies their own [?] research resources. [Our VC firm] has a full-time market analyst that tracks zillions of things and where the trends are going and so to use that to drive your tactics or your strategy is a useful resource. (COMPANY E)

Investors assess the flexibility of a conceptual or early-stage NTV, and a perceived rigidity in the NTV can be fatal in the investment decision. This is an example of Investor assessing the cognitive flexibility of the entrepreneur.

What happens is that the investors get injected into the [clusters], mostly the senior [cluster] and they shake it up. They say 'I don't believe where you are going, I want to see another niche analyzed' and that

*is how it affects investment. If they don't think they are flexible enough ... be strategic and evolve as things change the NTV is not getting funding (Industry Expert A)*

#### 5.2.5 Investors Catalyze Feedback Capabilities

This entrepreneur perceives future involvement of investors as requiring their NTV to develop more sophisticated articulation capabilities. They seem to understand that the involvement of an investor will require the development of feedback capabilities:

*I think [the involvement of Investors] will result in external pressure to meet goals, which there isn't right now, and there will be less understanding. Because I am intimately involved with the company and it is largely my money that has developed the company, if the developers don't meet a deadline I know what is going on there. So there will be a communication process if we fail to meet deadlines, and will result in less understanding, so there will be extra pressure. (COMPANY A)*

Another industry expert suggests that investors play a hands-on role in the articulation capabilities of the NTV, especially in the development of feedback capabilities. This is especially true of NTV-Investor relationships where the NTV is early-stage or is led by a less-experienced entrepreneur:

*In an investor-investee relationship particularly in the early-stages, that responsibility [of measurement] falls more to the investor, in a coaching, quasi-management, quasi-consulting role. Because there are a lot of things that need to get done, with an early-stage-investment, the reviews tend to be monthly as opposed to quarterly or episodically. And you say 'here is our performance, here is our targets and what do we do with the differences?'. In early-stage companies until the management has gotten rid of its training wheels the investors (or the investors rep) is usually leading that operational review process. (Industry Expert B)*

Milestones are the objectives towards which performance is measured in the NTV, and are important aspects of feedback capabilities. They are important in the investment cycle because they affect the flow of financial resources into the NTV. The investor heavily influences the choice of milestones, which affect the content and implementation of the strategic plan:

*I would say that the investors have a very heavy influence on what the milestones are. (Investor B)*

#### **5.2.6 Investors Catalyze the Development of Capabilities**

Investors can affect the development of articulation capabilities by providing resources that require articulation capabilities. This Industry Expert discusses how the inflow of capital required some 'on-the-job' training.

*The next thing that happens is that if I give you money I'm saying 'Now it's time to go and execute, Do the things that you were looking for my money to do' and you got to go through the process of on-the-job training. I've now got half a million bucks to do marketing, I don't have a lot of experience in that area I'm going to start to make mistakes, or I'm going to have to start shopping for some marketing expertise and service. (Industry Expert B)*

#### **5.2.7 Summary**

The following table summarizes the main findings on the factors that affect the development of articulation capabilities in NTV's.



**Table 7 : Development of Articulation Capabilities**

<b>Factors Affecting Articulation Capabilities :</b>	<b>Entrepreneurs</b>	<b>Investors &amp; Industry Experts</b>
NTV size	<ul style="list-style-type: none"> <li>- Articulation capabilities become more formal as the NTV grows.</li> <li>- The growth in personnel makes a large impact on articulation capabilities</li> </ul>	
Entrepreneur experiences	<ul style="list-style-type: none"> <li>- Experience is important for developing articulation capabilities</li> </ul>	<ul style="list-style-type: none"> <li>- The development of articulation capabilities in a NTV will be affected by the success/failure of the Entrepreneurs last NTV and its articulation capabilities.</li> <li>- Experienced entrepreneurs know what kinds of articulation capabilities are needed.</li> <li>-Inexperienced entrepreneurs may overlook the importance of articulation capabilities</li> </ul>
Investor involvement	<ul style="list-style-type: none"> <li>- Involvement of investors will result in more reporting pressure</li> <li>- Investors provide strategically useful information</li> <li>- Investors can provide legitimacy to the NTV through association</li> </ul>	<ul style="list-style-type: none"> <li>- Influx of resources provided by investors requires development of new capabilities</li> <li>- Investors demand flexible strategic thinking from the Entrepreneur</li> <li>- Investors affect the targets, and thus feedback capabilities</li> </ul>

### **5.3 How Articulation Capabilities Affect NTV Performance**

This section describes the information collected relating to the positive and negative ways in which articulation capabilities can affect the performance of the NTV.

### **5.4 Hazards of Developing Articulation Capabilities**

#### **5.4.1 Codification and the Loss of Strategic Flexibility**

This thesis has suggested that articulation capabilities are an important aspect of developing dynamic capabilities and organizational flexibility. However, it is possible that strategic codification capabilities can negatively affect strategic flexibility, by affecting the cognitive flexibility of entrepreneurs. This is what Zollo

and Winter (2002) refer to as a development 'mis-fire' where the organization is hindered by developing a positive ability poorly:

*I think that they [NTV's] should have a strategy but they need to be flexible enough to throw it out the window, and when they have documents together then they have a harder time letting go. (Industry Expert A)*

#### 5.4.2 Opportunity Costs

There are opportunity costs involved with the development of every routine including the direct costs: time, resources and the Entrepreneurial attention involved in the development and updating of capabilities (Zollo and Winter, 2002). The opportunity costs are all the forgone benefits the time, the resources and the Entrepreneurial attention would have afforded the NTV if applied to a different area. Strategic plan codification is a step beyond strategic plan articulation and bears additional costs. Needless to say, care must be taken that descriptive efforts are not too costly to maintain (Zollo and Winter, 2002). In the early-stages of an NTV there may be more important issues for survival and the development of articulation capabilities should not interfere with them:

*Many times they are so consumed with getting to next Tuesday that the whole integrated strategy is beyond their capabilities. Sometimes you have you focus on putting really practical things in place so that the company can function on a day-to-day basis and then work into this longer term strategy. (Industry Expert D).*

*If I had a CEO say to me 'Should I direct my resources towards developing a [Strategic Articulation] system or should I pursue sales' I would choose sales. (Investor B)*

*Articulation capabilities may be wonderful but it may be well beyond their scope at the early stages, they need practical hands-on boring stuff that has to be put into place. How they manage their money, how they manage their research. (Do we have the protocols in*

place for managing the research effectively), is our reporting functions correct? ...basics things like getting financial system in place. They don't have financial controls, they don't have a good accountant, they don't understand how important it is to manage their money, they don't know about SRED [?] tax credits. You sometimes are shaking your head because they are in there saying 'We are going to raise money, we're going to do this and make a million dollars' and they have a chequing account at the Royal [Bank] and that is their entire financial system. Very pragmatic basic things are often missing. (Industry Expert D)

## **5.5 Benefits of Developing Articulation Capabilities**

Although articulation capabilities may present some hazards, they can affect NTV performance in a positive way. The research suggests that there were many potential benefits to the articulation capabilities that emerge in NTV's, four of which are presented based on the data:

1. Balancing strategic priorities
2. Enhancing external communication, internal communication and organizational alignment
3. As a framework for updating the business plan
4. For building experiences and capabilities

### **5.5.1 Balancing Strategic Priorities**

Throughout the research, one of the most common benefits of articulation capabilities was the impact on strategic focus. Strategic focus refers to relevant stakeholders being aware of salient aspects of the current strategic plan. Many of the interviewees suggest that early-NTV's usually have an issue relating to strategic focus:

*If they are going to raise serious money 'Do they know who they are? Do they know how they are going to get there? How do we measure that we have gotten there? They need to think about how they are going to get there, what are the mechanisms. So that they don't get distracted because they can get diverted quite easily. (Industry Expert D)*

*[Strategic focus is] absolutely essential, and I think it is a major stumbling point of young companies, you waste a lot of time, energy and money not doing it properly... they run from 'hey I got an idea lets go this way and follow it' to 'let's go THIS way and follow it'. (COMPANY B)*

This NTV interviewee discussed the value in having a supplemental strategic planning document to visualize opportunities, provide increased focus, and communicate strategic plans to investors:

*I found I was drowning in opportunities... So I needed a way to visualize all of these 'balls' that are in the air, so I wouldn't drop any of them. And decide which balls should I handle first, which are going to have the best bang for the buck. Because in a small-startup company you only have a small amount of resources, and that is people, dollars and time. And there is a very limited quantity of those so you have to decide that "if you go after everything, you will succeed at nothing". (COMPANY B)*

#### 5.5.2 Communication Across Organizational Layers

During the research, examples were found of NTV's who were using their codification capabilities as a way of describing their strategic plans cogently. It was also beneficial as a way of demonstrating to the investor that the entrepreneur is legitimate and aware of strategic issues.

The following NTV interviewee discusses their multipurpose tool that they use to explain their strategic plan quickly and visually to potential investors. This interviewee also suggests that simply by developing such a document that codifies the NTV's strategy can affect the investor's perception of the entrepreneurs competence:

*... this is a tool that I use when I am talking to VC's and going after VC money, 'If I get \$5 million from you then all these boxes will begin to happen in*

parallel, if I don't get it then they are going to happen in series. (Researcher: How do you feel a device like this affects the reaction from VC's?) Very positively, because the VC's often find that a lot of technology entrepreneurs try to handle it all in their heads. And don't have a really good solid understanding [of what they are going to do]. They are excited about what they are going to do, but excitement does not translate into competency. And so what this shows is that you have a way of processing your opportunities, and focusing your energy on those opportunities which are most likely to provide a solid return to the investor. (COMPANY B)

Several of our interviewees alluded to the articulation capabilities of many NTV's as being hierarchical and driven by the entrepreneur, which is consistent with the logic presented by Mintzberg and Waters (1985).

Anything a company does to capture and communicate its strategy is helpful to its successful implementation. It seems obvious but people don't seem to get it. The more elegant thing is to involve people in the creation of the document, and the creation of the strategy. But the minimum is to communicate it downward on a regular basis, because then people have a frame of reference, and they know what it is they are there to do. (Industry Expert C)

[At my previous company] we started doing [formal strategic planning] when we were about 35 people, and we brought in a facilitator to show us how to do it. It was a hugely valuable thing... it made everyone a participant in the broader vision, it regained our focus on what we were doing, gave everyone a sense of ownership in the process. (COMPANY E)

This industry expert talked about a codification process that investors use to conduct early evaluation of the NTV. This process essentially asks the NTV to codify their strategic plan and by doing so reveal the NTV's bounded rationality. This may be common with investors. Since these interviews, the researcher has discovered other related devices that investors use to facilitate the communication of the NTV's opportunity and demonstrate the limits of the NTV's

bounded rationality. Several examples of angel investor networks have application forms available on their websites that require that the NTV answer pre-set questions. This is an example of a stage I evaluation procedure discussed in Chapter 3:

*[My previous fund] developed and used a scorecard [for investment evaluation] and then started to share that with folk that had called inquiring about our investment activity. And we said 'look this is what we are looking for, and if you can answer these questions in your business plan, saying:*

- o I've got the answer;*
- o I don't have the answer, and I am working on it or;*
- o I don't have the answer and I need the money to work on it'.*

*That's great and it removes a lot of the risk, because there is:*

- o What I know I know;*
- o What I know that I don't know and;*
- o What I don't know I don't know.*

*And you want to eliminate the last as much as possible...professional investors look at a range of things, those things cover the breadth of business issues they are looking for a minimum strength in each of those areas; and a significant strength that has competitive advantage. A scorecard approach would be a very useful tool for an investee to say 'hey look this is how we have developed ourselves and scored ourselves' (Industry Expert B)*

#### **5.5.2.1 Internal Communication and Organizational Alignment**

During the research, data suggested that poor internal communication about strategic issues was a factor that could limit the growth of the NTV. It was also found that investors consider any strategic plan information asymmetry to be extremely negative. This industry expert interview suggests that neglecting capabilities for internal communication of strategic plans can limit the scope of potential success and act as a cap for growth:

*[Internal strategic communication] Depending upon the skill of the Entrepreneur and the pace of the business it can run up to about 100 people without great communication internally. But it will not in my opinion succeed or remain competitive because it will not be able to respond fast enough. With only the one person at the top understanding the framework, it's a self limiting situation. However, many successful entrepreneurial earnings based private ventures can run that way, but they are not going to continue to grow. [The lack of formal communication] does not mean that they will fail; my experience is that the opportunity for success is decreased and the degree of success is decreased when there is no internal communication about the strategic plans. (Industry Expert C)*

This industry expert and investor interviewees succinctly discusses how investors evaluate internal articulation capabilities. If the investor receives information that the management team has differing opinions regarding the strategic plan, they may perceive this NTV's strategic logic as dysfunctional and thus, an unacceptable source of risk:

*One of the sad things that happens is that companies will have a document that they are circulating to investors, that the people inside the organization haven't seen. Then the investors will come in and ask a few questions and it will become apparent to them that the people are not lined up with that strategy and that is because they have never read it, let alone participating in its development... All you have to do is to interview five people who report directly to the president. If what they are saying [about the strategy] has significant dissonance from what the president says then you must have concern for the organization. (Industry Expert C)*

*If I talk to the reception and she is talking about things that are not really that important to the company it is like 'Well does everybody have this message is everyone marching to the same tune?' Simplicity is beautiful... to have the strategy simple*

enough so that everyone can get the general impression of the company. That is what you want to see. I want to see that even the receptionist has a reasonable idea of what is going on. That the programmer has an idea why the software he is programming is so important.' (Investor B)

The other way that [articulation capabilities] affects [Investment] is if there is not unanimity in the [Leadership]. The CEO says 'I think we should go after automobiles' and the other guy says 'yeah well I think we should go after aerospace'. The VC will go 'Why do you like aerospace?' and then he will watch the face of the CEO (who liked automotive)... and then they are done and are not getting funding. Any breach in the uniformity, outside of the room where [leadership] make those decisions, is deadly. (Industry Expert A)

### 5.5.3 As a Framework for updating the Business Plan

This NTV interviewee discusses how they communicate the strategic plan throughout the organization. They talked about their process of linking separate corporate objectives together and using that document for updating the business plan.

We take [our strategy and goal plan] and put that into the BP [Business plan]...Strategic plans are updated every two months, updates are based upon: 'we did succeed in this', 'we didn't succeed in this' and 'here is how it affects the future'...It is a working document, that we put onto our intranet and people can access it... We have different areas of the business with strategic plans that are all separate from each other. We have a process for linking them together towards the common vision, we have two people that put them all together into one document. That one document is then used to update the business plan. (COMPANY D)

#### **5.5.3.1 Building Experience and Capabilities**

Zollo and Winter (2002) discuss how the nature of a task affects the organizational learning gained. Articulation capabilities related to strategic



planning are expected to improve with experience. This NTV Interviewee discusses the competence building aspect of strategic planning:

*I look at my first business plan and I just laugh, its just hilarious. But it was an absolutely essential exercise to build the skills and has led to the person that I am today. If you never go through that process you are two years down the road and you have to do a business plan. Well that is your first business plan, you have nothing to learn from nothing to build from and you are not going to get financing, especially today. You are not going to have people who are going to work for you for more than two years because you are not going to be a good leader. Even if you have the best idea in the world, without a plan [and the ability to plan] its going to be a fraction of what it could have been. (COMPANY D)*

*Startups and Entrepreneurs [should] take this approach earlier, because they inevitably will get forced into it; by an investor, by a VC, or by the hard knocks of reality, they get forced into it. But if they do it sooner they will make more efficient use of their resources in the earlier stages of the project. (COMPANY B)*

In early NTV's the creation of strategic plans is seen as a means for accessing resources rather than a process with inherent value:

*Unfortunately with many early-stage companies they see the drafting of the document as the item rather than the development of the strategy. The drafting of the document often leads to the thought process that is necessary for them to develop their strategy. [Codification] helps founders separate out 'What exactly are we going to do' and the second thing is 'How are you packaging that for the outside world'. Many of them are driven by the packaging for the outside world [versus an opportunity to develop their articulation capabilities]. (Industry Expert C)*

When it comes to the knowledge benefits gained from articulation capabilities there is a possibility that the newer NTV's gain a proportionally greater amount of knowledge, due to the dearth of initial information. Therefore, even though articulation capabilities may be less formal in early ventures, they may have a more dramatic impact upon the NTV's knowledge base because the assumptions of the NTV could poorly reflect reality:

*[Organizational learning] may happen faster with a young company because it starts with such a dearth of information, and picks up so much information in a hurry.. (Industry Expert B)*

*The more we do this we become more focused in certain protocols and certain areas of the sales process... We probably redefine our goals on a monthly basis, so we do it a lot. We can be more tangible as we have success in various markets and experience sales... Understanding of a niche helps us to make our goals more tangible and realistic (COMPANY D).*

**Table 8 : Articulation Capabilities and NTV Performance**

How Articulation capabilities Affect Performance	Entrepreneurs	Investors Industry Experts
Loss of Flexibility		- Effort placed into strategic plan codification may reduce the entrepreneur's willingness to adjust strategic plan
Significant Opportunity Costs		- Integrated strategic planning may be beyond the NTV's capabilities - Energy and attention may be better directed at developing other capabilities such as sales or financial management
Strategic Focus	- Strategic focus is essential and is a problem for many young NTV's - A codification capability can be used to focus and manage resources	- The typical NTV can get distracted from their overall goals

Communication across organizational layers	<ul style="list-style-type: none"> <li>- A codification capability can be used to communicate with investors and may positively affect the perceived legitimacy of the NTV</li> <li>- Involving the staff in the creation of strategy gave the staff a sense of ownership, participation and helped to regain strategic plan focus.</li> </ul>	<ul style="list-style-type: none"> <li>- Investors sometimes use a template for potential NTV's to describe their opportunity (i.e. use codification). This template communicates the NTV's strategic plan to the investor and can communicate areas of bounded rationality (i.e. ignorance) of the entrepreneur on strategic issues.</li> <li>- Anything a NTV does to capture and communicate strategy is useful.</li> <li>- Capturing and communicating strategy is often overlooked in NTV's</li> <li>- Communicating the strategic plan on a regular basis from the top-down is a minimum requirement because it gives staff an understanding of their role</li> <li>- Involving the staff in the creation of the strategic plan is more elegant process</li> </ul>
Internal Organizational Alignment		<ul style="list-style-type: none"> <li>- Lack of capabilities for communicating the strategy can be a limiting factor for NTV growth</li> <li>- It is a major concern for investors if the leadership of the NTV demonstrates dissonance around their understanding of the strategic plan</li> <li>- Investors like to see that everyone in the organization basically understands the current strategic plan</li> </ul>
Updating the business plan	<ul style="list-style-type: none"> <li>- A codification capabilities is used to track the current implementation of the strategic plan and is a framework for updating the business plan</li> </ul>	
Creation of experience	<ul style="list-style-type: none"> <li>- Building a business plan early is the key to gaining experience</li> <li>- NTV's should develop their articulation capabilities early because they will be forced into it eventually by either an investor or by the demands of reality</li> </ul>	<ul style="list-style-type: none"> <li>- Many NTV's view the creation of a strategic document as only a means to access resources and overlook the benefit of the development of strategic planning capabilities</li> </ul>

## 5.6 Summary

In this chapter the research findings were presented answering the research questions: what do articulation capabilities look like, how do articulation

capabilities develop in NTV's, and what are the hazards and benefits of articulation capabilities for NTV's.

Verbalization capabilities were found to be quite variable in terms of their formality and regularity. Most NTV's had regular strategic meetings with the lead management or even the entire staff. Verbalization activities were catalyzed by the perception of a Strategic gap. Codification capabilities were found to be rare in early stage NTV's. The investment cycle was described as a major catalyst for codification abilities. Some of the codification capabilities found in NTV's were used to describe the strategic plan for internal stakeholders and external stakeholders. Cogent codification of the NTV's strategy is a highly desired attribute by investors. Feedback capabilities were found to be simple outcome measures in NTV's. The main feedback mechanisms were the achievement of strategic targets, contact with customers and interaction with the board of directors.

The constructs that affect the development of the articulation capabilities were 1) the size of the NTV; 2) the entrepreneurial experience of the entrepreneur and; 3) the involvement of investors.

There were some unexpected suggestions about how articulation capabilities affect an NTV's performance. Codification capabilities were a potential risk against organizational flexibility in an immature NTV. The sunk codification costs could create resistance to emergent strategy. Purposefully developing articulation capabilities may overshadow more important activities and thus have an unacceptable opportunity costs for the NTV<sup>11</sup>. The NTV may be better served spending the energy/money/time developing capabilities for managing money or developing customers.

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<sup>11</sup> With the development of any ability or routine, there is a certain causal ambiguity about the outcome. Thus, truly understanding the opportunity costs may prove difficult to understand.

On the positive side, articulation capabilities were found to be useful for integrating strategic perspectives, keeping the NTV focused upon achieving their objectives, creating a document for updating the business plan as required, and articulation capabilities provide valuable learning opportunities. Articulation capabilities are useful for increasing the understanding of the strategic plan within the organization. If an investor suspects that the staff of the organization does not understand the strategy it can be fatal in the investment decision. Codification capabilities were useful for describing strategic issues to investors and efficiently updating the business plan of the NTV. In addition, codification capabilities identify the NTV's bounded rationality, as codification reveals the entrepreneur's understanding of strategic gaps.

## **Chapter 6 Analysis and Conclusions**

The purpose of this chapter is to review the main findings of this thesis, to discuss theoretical and managerial implications, and to discuss further research.

### **6.1 Review of Thesis**

Chapter 2 introduced the resource-based view (Penrose, 1959; Wernerfelt, 1984; Barney, 2001), dynamic capabilities view (Dierickx and Cool, 1989; Teece et al., 1997; Eisenhardt and Martin, 2000), strategic plan concepts (Mintzberg and Waters, 1985; Kaplan and Norton, 2001) and strategic logic concepts (Sanchez and Heene, 2002). Articulation capabilities were introduced as the NTV's capabilities for verbalizing, codifying and collecting feedback on the strategic plan. Articulation capabilities affect the performance of the NTV by encouraging the NTV to challenge assumptions, to make the strategic hypothesis explicit, to encourage communication and to identify strategic gaps.

Chapter 3 introduced the new technology venture, its pattern of growth and the relationship it has with a key provider of resources, the investor. Investors indirectly affect the emergence of articulation capabilities by requiring the NTV to possess a certain level of articulation capabilities during the evaluation phase. Investors can directly facilitate articulation capabilities by contributing resources and supplying or demanding information that facilitates the development of articulation capabilities.

In this thesis, we have introduced several concepts that are related to the dynamic capabilities and resource flows of the NTV. The strategic plan is part of the strategic logic of the NTV and refers to the hypothesis of the NTV. The term articulation capabilities refers to three components of strategic logic that affect the development and implementation of the strategic plan. They include

verbalization capabilities (discussing the strategic plan), codification capabilities (writing out the strategic plan) and feedback capabilities (collecting information about strategic plan performance). Articulation capabilities are extremely important to NTVs as they affect the implementation of the strategic plan and the involvement of investors.

Chapter 4 presented the research methodology. This thesis used key informant interviews to explore the following topics:

- What do articulation capabilities look like?
- What are factors that affect the emergence of articulation capabilities?
- How do articulation capabilities affect the performance of the NTV?

Qualitative data was collected through a series of semi-structured interviews with three groups: Entrepreneurs, Investors and Industry Experts. The data collected in these interviews was used to expand our knowledge of articulation capabilities in NTV's and to generate theory that can be used as a foundation for further research.

Chapter 5 presented the findings from the research. When examining the query 'What do articulation capabilities look like?' the results suggest that the scope and thoroughness of these articulation capabilities can vary dramatically. The research found that articulation capabilities were generally informal and were driven by perceptions of a strategic gap, as suggested by Gersick (1994).

However, there were also formal articulation activities in most NTV's in the form of regular strategic planning meetings with their leadership. It is not known how formal the articulation process is within those meetings. Codification capabilities were common in NTV's that were in the evaluation or engagement phase of the investment cycle. This reinforces the suggestion that the investment cycle is a significant catalyst for the initial development of codification capabilities (Stone and Brush, 1996). Feedback capabilities are largely outcome measures related

to achievement of a pre-set goal. Investors and the NTV's board of directors were important sources of feedback when it came to assessing the strategic assumptions underlying the strategic plan. Additional sources of feedback included customers and industry analysts.

When examining the topic of 'What affects the emergence of articulation capabilities?' the results suggest that there are several main factors; entrepreneurial experience, involvement of investors and the amount of resources that are accessible to the NTV (i.e. size).

- The entrepreneur's experience in previous entrepreneurial efforts affects their ability to develop articulation capabilities and/or the importance attached to developing articulation capabilities. It is believed that experience plays a role in the succinctness of articulation and codification of the strategic plan<sup>12</sup>.
- The investment cycle catalyzes the NTV's articulation capabilities in two ways, indirectly and directly. Investors indirectly affect articulation capabilities because NTV's must develop a minimum level of articulation capabilities in order to be evaluated. Investors directly affect articulation capabilities post-investment through the contribution of intangible resources (i.e. such as mentoring); through governance demands (e.g. demanding progress reports); and by contributing tangible resources that facilitate NTV growth (e.g. an investor provides \$1 million which is used to grow the NTV's staff. The NTV will need to develop articulation capabilities to communicate the strategic plan to the staff.)
- The size of the NTV affects the development of articulation capabilities in two ways. 1) As the NTV grows it has more resources to support articulation.

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<sup>12</sup> It is possible that the succinctness of articulation and codification will affect the investor's perception of experience as well.



capabilities and 2) As the NTV grows the effective management of the resources requires the development of articulation capabilities.

The final query investigated in this thesis was “What are the perceived hazards and benefits associated with articulation capabilities”. NTV’s must ensure that the pursuit of articulation capabilities does not overwhelm initiatives that may be crucial to NTV performance (e.g. ‘let’s rewrite our business plan instead of following up that customer lead’). Another hazard to be aware of is codification may cause resistance to emergent strategies (e.g. an inexperienced-NTV may resist an appropriate change to their strategic initiatives if they spent 100 hours codifying their current strategic plan). On the positive side, articulation capabilities can reduce a major hazard resulting from poor an understanding of the strategic plan. Such a poor understanding can affect the NTV directly (i.e. can lead to poor strategic plan execution) and indirectly (i.e. investors assess the NTV awareness of the strategic plan)

## **6.2 Implications**

### **6.2.1 Theoretical Implications**

This research has provided some insights into the theoretical role that articulation capabilities play inside an NTV and in the interaction between the NTV and external providers of resources. We suggest there are two main theoretical implications from the research:

- 1- Articulation capabilities are factors that affect dynamic capabilities and resource flows and;
- 2- Articulation capabilities may provide the NTV a source of competitive advantage.

Articulation capabilities affect resource flows by affecting the involvement of investors. Thus, they are an important aspect of understanding the early flow of

resources into the NTV. If articulation capabilities are below a certain threshold, or more accurately are perceived by investors to be below a certain threshold then the chances of investor involvement (and the accompanying resource flows) are likely to decrease. Furthermore, evidence suggests that articulation capabilities affect the creation and implementation of strategic plans in NTV's. Since the content of the strategic plan affects the type of resources sought by the NTV it follows that it affects resource flow and dynamic capabilities. Supporting this line of thought is the model of Sanchez and Heene (2002) which identifies the capabilities of the entrepreneur to create a strategic plan as a factor affecting organizational flexibility.

Secondly, NTV's in the early stages with well-developed articulation capabilities are atypical (remember that the NTV's examined in this thesis were selected for their learning potential and thus were believed to possess above-average articulation capabilities). This suggests that well-developed articulation capabilities in early-NTVs may be a source of competitive advantage over other NTV's that are seeking financing from the same venture pool. Thus, articulation capabilities may constitute a valuable, rare resource in this context. However, articulation capabilities are not necessarily a source of *sustainable* competitive advantage because articulation capabilities are expected to emerge as NTV's survive and learn (Zollo and Winter, 2002). Thus, articulation capabilities are not exclusive and are replicable. Still, they may be a source of differentiation in the early-stages of a NTV's life (Powell, 1992b).

#### 6.2.2 Managerial Implications

This section discusses some of the managerial implications that have resulted from this research. This section is divided into three parts: benefits of developing articulation capabilities, hazards of developing articulation capabilities, and a methodology for NTV's to develop articulation capabilities.

### 6.2.2.1 Benefits of Articulation Capabilities

There are obvious benefits to cost-effectively developing articulation capabilities. Directly, they influence the content and implementation of the strategic plan. Furthermore, by collecting information and challenging assumptions they can also affect the emergence of new strategic plans. Indirectly they can affect the flow of resources by affecting the relationship with the investor. Our research suggests that articulation capabilities can affect the investor's perceptions of the NTV's legitimacy and competence thereby affecting their involvement.

Articulation capabilities, by definition, affect the understanding of the strategic plan across organizational layers. This can affect the NTV in two important ways. Firstly, any perception by an investor that the leadership of the NTV is not in alignment in terms of the content of the strategic plan usually causes the investor some concern. Investors reportedly like to know that the strategic plan is simple enough to be understood throughout the organization. Secondly, research has suggested that internal alignment itself can be a rent-producing factor (Powell, 1992a). This follows the logic that a strategic plan cannot be implemented effectively if it is not understood, and it cannot be understood unless it is clearly communicated (Kaplan and Norton, 2001).

Simple codification capabilities that can be easily updated to reflect emerging strategic plans may prove beneficial to an NTV. Specifically, such codification can provide a framework that can be used for updating the business plan and insuring its flow of logic. In addition, such codification can be used to describe strategic plans across the organization and to investors. For example, if the strategic issues facing the NTV are codified into a simple document it can be used to focus discussion during meetings.

Cost effectively developing articulation capabilities may be difficult for the entrepreneur achieve, partly due to the causal ambiguity of their efforts (Zollo and Winter, 2002). For example, monitoring the performance of a venture

(involving data production analysis and presentation) can be costly and oppressive to an entrepreneur (Sapienza and Korsgaard, 1996). However, young NTV's need to realize that these capabilities are necessary to grow and to access resources. Path dependency concepts suggests that developing such capabilities earlier through intentional consistent effort will result in a higher stock of the capability to draw upon when needed (Dierickx and Cool, 1989; Teece, et al, 1997; Eisenhardt and Martin, 2000).

#### **6.2.2.2 Hazards to Developing Articulation Capabilities**

NTV's should be aware that the development of articulation capabilities does not come without risk. There are other activities that an NTV must address that should not be overlooked in the pursuit of articulation capabilities, such as financial control capabilities and sales capabilities. Furthermore, NTVs should be aware that the content of their strategic plan needs flexibility. Since codification capabilities involve significant effort (Zollo and Winter, 2002). NTV's should not cognitively resist altering their strategic plan because of any sunk codification costs.

#### **6.2.2.3 Methods for Developing Articulation Capabilities**

The effectiveness of capability learning efforts is affected by the nature of the given task; its frequency, its homogeneity, and its degree of causal ambiguity (Zollo and Winter, 2002). Given the findings of this research and our understanding of articulation capabilities, we believe that a tool for assisting the development of articulation capabilities may be of benefit to some NTV's<sup>13</sup>. Specifically, we suggest that NTV's examine a tool developed by Kaplan and Norton called the balanced scorecard. In essence, the tool provides a framework for a venture to codify its strategy. The codification makes the hypothetical links between knowledge, organizational processes, customers and financial

performance explicit. As the scorecard is reviewed and updated by the venture the hypothesis can be easily updated and feedback capabilities added.

By adding a balanced scorecard process in an appropriate manner the NTV may be able to affect the frequency, homogeneity and causal ambiguity of the articulation capability development process and thus, its effectiveness. Industry Expert B used the balanced scorecard approach with the early-stage NTV's they worked with and had this to say:

*[The Balanced Scorecard] does a few things, one is that it educates the founding management into the various issues that have to be managed concurrently within the company and to insure that those issues are aligned. The second thing is that the Balanced Scorecard (in my opinion) has been very effective for operationalizing strategy, putting some specific focus and specific goals and objectives to the work of a business. So we use it a lot, it is very well received there is a bit of a learning phase to implementation, but it is all good. (Industry Expert B)*

The ability of the NTV to utilize a tool like the Balanced Scorecard will be affected by their existing articulation capabilities and the cognitive openness to adopting new business processes (Sanchez and Heene, 2002). It is entirely possible that adopting a tool like the Balanced Scorecard in an NTV may act as a catalyst for the development of articulation capabilities, by providing an existing framework for the NTV to use.

### **6.3 Model of Articulation Capability Development in a Hypothetical NTV**

To describe the path of Articulation Capability development in a NTV we present a model that represents the 'sophistication' of articulation capabilities in a hypothetical NTV. We define the term sophistication as the upper level of a scale

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<sup>13</sup> Of course there are other mechanisms that are very effective in developing capabilities in new

describing the level of competence in utilizing a capability. This concept of sophistication is built upon the concept Winter (2000) presents in his paper on capability learning. He suggests that when it comes to capabilities it is not a matter of whether or not an NTV possesses a capability or not, it is a matter of degree. Furthermore, Winter (2000) suggests that there is a decision to be made when deliberate investments are being made to develop a capability in a NTV, the point being that at some point the NTV will believe that they have satisfactorily developed the needed capability and that further investments are no longer required. The reverse is conceptually true, and perception of a deficiency in a capability will inspire the NTV to begin development of the needed capability.

The model that is presented below describes how an NTV's articulation capabilities increase in sophistication in relation to several key events relating to their growth and the involvement of investors.

The X axis in the model represents time. The Y axis represents sophistication of the articulation capabilities. The trajectory of line represents the overall sophistication of the articulation capabilities in the hypothetical NTV.

We assume in this model that the NTV is pursuing an technological opportunity that is of interest to investors and that the NTV is remains going concern. We also assume that the NTV begins with a deficiency in articulation capabilities, perhaps due to an inexperienced entrepreneur composing the strategic logic.

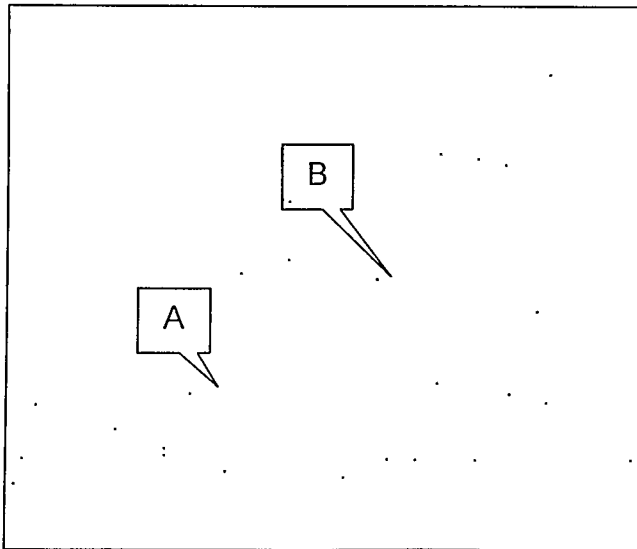
Generally the line slopes on a trajectory upwards, this represents a gradual increase in articulation capabilities that occurs due to organizational learning. This slope will theoretically become steeper if the NTV intentionally develops articulation capabilities in a cost-effective manner versus a laissez-faire approach.

In some NTV's there are two discrete events that significantly affect the trajectory of articulation capability development. Both of these events are related to the involvement of investors.

The first event **A** is the Entrepreneurs realization that they require outside financing and that investors require a level of sophistication before they will evaluate the NTV. The rate of articulation capability sophistication increases as the NTV focuses upon developing their strategic plan and their ability to present it to investors.

The second event **B** is the point where the investor becomes engaged with the NTV. The trajectory of articulation capability sophistication increases again due to the demands the investor places upon the NTV and the increased growth that occurs with the infusion of tangible and intangible resources.

**Figure 6 : Model of Articulation Capability Sophistication in a Hypothetical NTV**



This rudimentary model describes how articulation capability sophistication increases over time, reflecting increases in organizational learning and the

accumulation of experience. It also suggests that the involvement of outsiders, such as investors, also affect the sophistication of articulation capabilities.

## **6.4 Further Research**

In conducting future research it is suggested that several modifications to the current research methodology be made. The current research methodology was sufficient for developing a grounded theory of articulation capabilities. However to expand and confirm the validity of the theory a more robust approach to the data collection is proposed. The modifications fall into two general categories: data collection methods, and subject selection.

### **6.4.1 Revisions to Data Collection**

It is suggested that future research expand the data collection methods beyond key informant interviews. Self-reported data from interviewees is a technique that has some important weaknesses. Interviews are weak because they are subject to biases resulting from poor questions, response bias, weak recollection and the interviewee may express what they think the interviewer want to hear versus what is the actual case (Yin, 1994; p.80).

Future research methodology could collect evidence of articulation capabilities through examination of physical artifacts utilized by the NTV. By adding an examination of documentation to the interview method further research could provide a much richer collection of data for analysis. This data is valuable because it is stable, unobtrusive (it exists prior to study), and it is insightful into NTV culture and operations. This data source is weak because it may be difficult to access and selection may be biased (Yin, 1994). Examples of this data could include an examination of the NTV's business plan, schedule of strategic planning meetings, and detailed examination of any parallel strategic planning documents or tools. Documents can be used to corroborate evidence that is gathered from other sources (Tellis, 2002).



Another improvement to the present studies data collection methodology would involve direct observation of the articulation capabilities in the NTV's. This data source is advantageous because it covers events in real time and provides a context to the event. Some of the drawbacks to direct observation is that it is time-consuming, it can be expensive and the presence of the investigator(s) may influence subjects (Yin, 1994).

#### **6.4.2 Revision in Subject Selection**

The current research used a judgment sample of NTV's, investors and industry experts who were chosen for their ability to contribute to the theory and their accessibility to the researcher. In future research a longitudinal study could begin with a selection of NTV's that are beginning the evaluation phase of the investment cycle. The study would collect data over time as the relationship between the NTV and the potential investors evolved and blossomed into the engagement phase. At that point the NTV-Investor dyads becomes the unit of analysis, much like the study conducted by Sapienza and Gupta (1994). This would allow research to focus in on a set of articulation capabilities, yet still allow triangulation by using data from different sources.

Additionally, the emerging theory would be more robust if NTVs that choose not to involve outside investors are also examined. The comparison between these NTV's and NTV's with investors may reveal worthwhile insights into the articulation ability process in NTV's.

### **6.5 Conclusion**

Articulation capabilities are an important firm-specific aspect of an NTV that affects access to the resources needed to create and implement their strategic plan in a dynamic environment. This research suggests that there are good reasons to believe that articulation capabilities are important for developing and communicating the nuances of the strategic plan across organizational layers, thereby affecting resource flow and dynamic capabilities. Furthermore, there is

reason to believe that investors have minimum thresholds for articulation capabilities for the NTV's with which they wish to be involved. These thresholds vary widely as investors are a heterogeneous group who, in many cases, are aware of the fact that they will be facilitating the development of their articulation capabilities.

Many NTV's struggle with articulation capabilities that negatively affect their performance. It is suggested that future research delve deeper into the phenomenon of articulation capabilities in NTV so that insights into the process may gained and diffused into the next generation of NTV's.

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## **Appendix A : Research Instrument**

### **Objectives**

The purpose of this research instrument is to examine the in use processes for measuring, describing and creating strategic objectives (with a particular focus on non-financial). This instrument is divided into four parts.

The objective of part 1 is to assimilate demographic information about the venture.

The objective of part 2 is to explore the ventures strategic planning cycle, which refers to processes for:

- determining objectives,
- measuring objectives and/or assimilating feedback,
- describing objectives to stakeholders (both internal and external),
- the cause-and-effect linking of objectives (understanding the role the objective plays in the path to profitability)
- reassessing strategy and testing assumptions.
- The involvement of investors on the strategic planning and measurement process

### **Introduction to Subject**

Academic purpose of study

- Master's thesis project
- We are studying the action of scorecarding in early-stage Alberta technology ventures. By scorecarding we are referring to the organizational systems present for measuring, managing, describing and targeting strategic objectives.
- The focus of this project is on the non-financial
- Include goal of trying to figure out HOW early-tech entrepreneurs should be measuring non-financial strategic performance cost-effectively.
- Consent form
- Is it OK to record?
- They can stop at any time
- This is a DRAFT questionnaire

### **Part 1: Demographics**



Date:

Company name and URL:

Interviewee:

Position within company:

New Venture Experience: (None, 1, 2, more than 2)

Worked in \_\_\_\_ new Ventures

Founded/Co-founded \_\_\_\_ new Ventures (Including this venture)

Invested in \_\_\_\_ new ventures

Number of months (or years) with current venture \_\_\_\_

Description of Business:

Get from web page before interview summarize in 2-3 sentences and confirm with interviewee.

Stage of development

What is the next level of professional outside financing for this venture?

A-First round

B-Second round

C-Third round or greater

How many employees (including contract workers and consultants) does this venture have?

1-5 \_\_\_\_  
6-25 \_\_\_\_  
25+ \_\_\_\_

## Part 2: The Strategic Planning Cycle

Vision: What we want to be

Strategy: Our Venture's Game Plan

Articulation Capabilities: Devices for implementation, description, measurement,  
focus and reassessment

Strategic Initiatives: What we need to do

### Section A: Goal Setting and Strategic Education

Please describe the process in your venture for creating strategic goals? How often? Who is involved?

Please describe how you insure that all employees understand the current strategy of the venture. What devices are used to describe the strategy to your employees?

### Section B: Goal Integration and Linking

During your strategic planning do you specifically link your goals together?

### Section C: Formality of Strategic Planning

Are the strategic actions in your venture based on formal plans or intuitive plans?

And why do you feel this way?

### **Section D: Sensing, Measurement and Analysis**

Please describe your venture's procedure for anticipating and detecting differences between your plan and actual performance? How is your strategy reviewed?

Please describe your strategic planning meetings? (May be covered in part A), are they regular and formalized?

Please describe any documents that your venture has outlining plans and objectives for the next 12 months or more?

How do you measure progress towards your goals and achievement of your strategy?

### **Section E: Involvement of Investors**

How did the involvement of investors affect the way in which you develop strategy?

How did the involvement of investors affect the way in which you measure performance?

Please describe how you insure that all Venture Capitalists (and/or Angels) understand the current strategic objectives of the venture. What devices are used to describe the strategy to your Venture Capitalists (and/or Angels)?

How would the formal strategic planning process be beneficial to a small start-up technology company and how would the process have an impact on financing.

### **Part 3: Strategic Planning Scale**

*Please indicate on a scale of 1-5, the ACCURACY of the following statements concerning your strategy-making activities. The scale is as follows:*

*1=Not at all accurate*

*3=Somewhat accurate*

*5=Very accurate*

#### **Section A: Goal Setting and Strategic Education**

We have broad long-range goals known to all our staff

1      2      3      4      5

We have specific short-term goals known to all our staff

1      2      3      4      5

#### **Section B: Goal Integration and Linking**

We have a process for linking our goals together in a cause and effect chain

1      2      3      4      5

We have a document that describes our goals in a cause and effect chain

1      2      3      4      5

#### **Section C: Formality of Strategic Planning**

Our venture's actions are based more upon formal strategic plans than upon intuition

1      2      3      4      5

#### **Section D: Sensing, Measurement and Analysis**

We hold regular meetings to discuss and evaluate our overall strategy

1      2      3      4      5

We have an explicit document that outlines our goals and initiatives for at least the next 12 months

1      2      3      4      5

We have a process for measuring our progress towards our goals

1 2 3 4 5

### **Section E: Involvement of Investors**

Our investors have had a major impact upon our strategic plans

1 2 3 4 5

Our investors have had a major impact upon the process for formulating strategy

1 2 3 4 5

Our investors have had a major impact upon the process for measuring performance

1 2 3 4 5

## Appendix B: Consent Form

### Consent Form - Study on Strategic Planning in New Ventures

This research project involves the questions of: 1) how strategy is measured, managed, described and reassessed in early-stage technology ventures in Alberta 2) does this process affect an investors decision to invest. The project will investigate how early-stage technology ventures approach the process of strategic planning, including how an equity-based alliance with an investor can affect the strategic planning process. To what extent - and in what ways – does the process of managing venture strategy affect an investors decision to invest? You are being asked to participate because of the involvement of your organization in early-stage technology commercialization process. While there will be no immediate benefit to you for participating in this study, the goal of this research is to gain insights that can be applied to foster successful research collaboration in the future. We will be pleased to provide you with a copy of resulting outcomes from this project.

We are asking you to help by consenting to an interview. These interviews will be scheduled to meet your time constraints. The interviews will, with your permission, be recorded on audiocassette.

Please note that all information gathered from you will be treated a confidential. Your participation is strictly voluntary and we assure you that neither your identity nor that of your organization will be revealed by us in any presentation or publication that result from this research without your written permission. If you have any questions regarding the study, please feel free to contact the principal investigator.

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I, \_\_\_\_\_, agree to participate in the study outlined above. My participation in this study is voluntary and I understand that I may withdraw at any time. Should I withdraw, all information collected will be destroyed.

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Participant's signature

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Researcher's signature

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Date

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Date

Principal investigator: Terry Ross, MBA Thesis Candidate, Innovation and Entrepreneurship program.