6 Super-Flexible Execution: Experimenting, Iterating and Recalibrating

How can knowledge workers execute new initiatives when they have limited information, little time, and minimal resources? How can they decide between competing options when there are no clear recipes and blueprints for success? How can they change direction and revise expectations? How can they be systematic and consistent, when uncertainty is an everyday fact of life? We explore these questions to better understand how knowledge workers embark on, and execute pioneering initiatives in dynamic settings.

This chapter is about developing the capability for super-flexible execution. We define super-flexible execution as the capacity to make real-time adjustments as new realities unfold. At an operational level, we present the "recalibration" framework in order to explain how effective teams we have observed engage in action when they face moving targets. Recalibration is about exploring by probing and experimenting, generating fact-based feedback, and making the necessary revisions. Analogous to the scientific model of discovery, we describe the interlinked stages of experimentation, escalation, and integration, as a phased approach to dynamic execution. We conclude the chapter by putting forward a few practical guidelines for implementing the recalibration framework.

6.1 Conceptual Underpinnings

There is an extensive body of research on decision-making and execution. For our purposes, the dominant themes can be clustered into two broad categories: those that emphasize the deliberate, the intentional, and the top-down processes that guide action; and those that highlight the emergent, the spontaneous, and the bottom-up initiatives that coalesce over time.[1]

According to the "deliberate" models, strategies are formulated, on the basis of clear intentions, conscious choices, and careful planning. As depicted in Figure 12, first, objectives are spelled out and preferences clarified. Next, relevant information is collected and analyzed; alternatives are generated and their pros and cons are assessed. Finally, the optimal solution is selected, and the chosen option is implemented. The implicit assumption is that implementation follows planning, and that collecting and analyzing relevant information early on can reduce uncertainties.

[1] This chapter draws on several classic streams of research. These include descriptive models of the innovation process (Utterback 1971; Burgelman 1983); features of successful innovations (Rothwell et al. 1974; Maidique and Zirger 1984); factors that impede effective commercialization of innovations (Teece 1987); sources of new innovations (von Hippel, 1986); characteristics of innovative organizations (Kanter 1983, Quinn 1979); organizational arrangements for nurturing innovation (Burgelman and Sayles 1986, Roberts 1980, Romanelli 1987); and profiles of high technology enterprises (Cooper and Bruno, 1977, Maidique and Hayes 1984; Meyer and Roberts 1986). Recent studies of innovation that have influenced our thinking include Christensen (1997) Chesbrough (2003) Christensen & Raynor (2003), Estrin (2009), Kelley (2005).

H. Bahrami, S. Evans, *Super-Flexibility for Knowledge Enterprises*, 2nd ed.,
DOI 10.1007/978-3-642-02447-4_6, © Springer-Verlag Berlin Heidelberg 2010

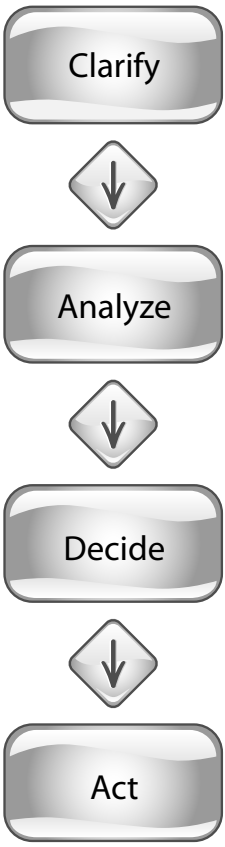

Figure 12. The deliberate model

The "emergent" viewpoints present the other extreme. Drawing on studies of "radical innovations" and new ventures in established firms, this school of thought suggests that new initiatives typically "emerge" spontaneously through actions of autonomous actors.[2] If the appropriate cultural norms and the right incentive systems are put in place, innovative initiatives will follow. As illustrated in Figure 13, front-line champions, those closest to action, are empowered to act entrepreneurially and are rewarded accordingly.

[2] Classic studies on the emergent perspective include: Allison (1971), Lindblom (1959), March and Olsen (1976).

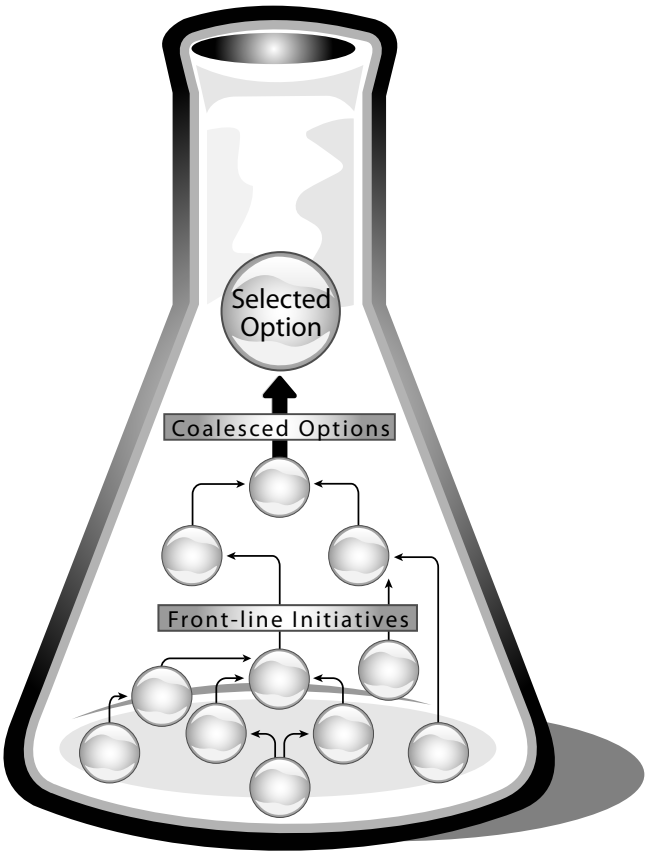

Figure 13. The emergent model

The emergent and the deliberate approaches portray ‘pure” modes, at the extreme ends of a spectrum. In reality, our observations suggest that effective execution in dynamic settings is a blend of both. In the emergent mode, there is no intentional effort to create options. Options may be generated through random events, accidents, luck, or individual initiatives. Sole reliance on purely emergent modes can leave an enterprise highly vulnerable. It assumes that effective outcomes depend on luck, serendipity, and forces beyond a firm’s control. The purely deliberate mode, on the other hand, does not accommodate spontaneous developments or unique events that may come up unexpectedly. Assumptions embedded in elaborate plans and detailed analyses may become irrelevant by unexpected surprises, such as the departure of a key executive, sudden competitive moves, or the unexpected loss of a critical account.

Executing new initiatives in dynamic settings is challenging. On the one hand, leaders have to be decisive and act quickly. Opportunities are short-lived and competitive advantage is typically ephemeral. On the other hand, it takes time to gather input and to get the buy-in of various stakeholders. Decisions have to be taken in the context of limited information and fluctuating parameters. So how do executive teams move ahead when faced with uncertainty and complexity?

These challenges can be illustrated through a case vignette that demonstrates the limitations of traditional approaches in dynamic settings. Consider the situation facing Shugart Corporation, the disk drive pioneer, discussed in earlier chapters, during the 1980s. With sales of over $250 million, at the time it was the world's largest supplier of low capacity disk drives. The management team was anxious to extend its leading position. From a competitive standpoint, the company was in a difficult position. It was squeezed in the middle, between niche start-ups, as well as large Japanese electronic manufacturers. In addition, unit prices had started to fall in the low capacity floppy end of the market.[3]

This rupturing of the price umbrella had become a major source of pressure on margins. As a result, procurement and manufacturing costs also had to be reduced. Shugart had taken steps to cut costs by setting up a procurement office in Singapore. Attention had shifted to the manufacturing front, so it could provide additional capacity at lower cost. Four options had been seriously considered; creation of a highly automated capability in the U.S.; expansion of its existing manufacturing facility in Mexico; partnership with a major manufacturer (such as a Japanese firm); and establishment of a company-owned manufacturing facility in Singapore.

The parent company, Xerox, had insisted that, according to its own planning procedures, the relevant information about every option should be systematically collected and analyzed, highlighting the costs and the benefits associated with each alternative. This would enable its executives to make an "optimal" decision.

However, the "relevant" information was constantly changing. For example, projected sales price was declining, almost on a weekly basis, due to the rapid penetration of low cost Japanese disk drives in the U.S. market. Component costs (a significant portion of total product cost) were fluctuating. The cost of setting up an offshore facility was increasing because of changing tax laws and rising cost of land and building. Nonetheless, Shugart had to convince its parent, through a detailed strategic and financial plan, that the favored option, the Singapore facility, represented the most optimal solution for lowering manufacturing costs.

The process went on for about 18 months as corporate staff asked for more detailed information and fine-tuned the financial analysis associated with each option. In the meantime, the competitive landscape was being transformed. A

[3] For historical details, see "Industry Note: Disk Drives for Small and Microcomputer Systems" (case #S-MM-6N), Stanford University, Graduate School of Business, 1985; and "Planning Manufacturing Capabilities" (case # S-MM-8), Stanford University, Graduate School of Business, 1985).

number of start-ups had already moved to Asia, and Japanese manufacturers were making aggressive inroads into the U.S. market.

No tangible action had yet been taken. The search continued for the "perfect information" on which an "optimal" decision could be based. During the intervening period, Shugart lost a number of its key accounts. This resulted in a significant loss of market share in the low-end floppy disk drive market, where it had traditionally retained a leading position. By 1986, Xerox divested Shugart and the company ceased to exist. Portions of its business were sold to different investors. Although with the benefit of hindsight, it is easy to speculate, many experts believed that if decisive action had been taken early on to lower manufacturing costs, the outcome may have been different.

6.2 The Framework: Recalibration

While there is an abundance of managerial literature on how to make "optimal", "best" or "correct" decisions, there is relatively little attention focused on how to revise a decision if it turns out to be unsatisfactory, or if the assumptions underpinning the original decision change unexpectedly.[4] Many successful innovations or winning business strategies result from many revisions, driven by unfolding circumstances. In technology settings, the challenge is to embark on action and to adjust in evolving circumstances (Brown & Eisenhardt 1998, Burgelman 2002). The imperative is to be decisive, yet surf dynamic waves of uncertainty.

Effective initiatives we have observed over the years share several characteristics: *clear intentions, a distinct point of view, openness to new data, fact-based assessment, and swift revisions.* They can be described as a montage of deliberate intentions, rapid adjustments and emergent learning. While they are not entirely chaotic, elements of luck, timing and spontaneity are clearly important. Nor are they purely deliberate and systematically planned, a priori, although clear preferences and distinct points of view determine their overall direction. Moreover, experiential learning along the way, together with the development of new competencies, highlight their partially emergent character:

"*There is a certain way of looking at the world and processing information that is unique to those who are good at dynamic execution. The mistake is to assume that if someone is really smart, they'll figure it out...but you need execution intelligence, not just raw smarts. A great example is Apple's turnaround. The core of what made Apple bounce back was Steve (Jobs') original point of view about user interface and how human beings interact with technology. His point of view on that subject has never changed, ever since Apple designed the first Mac user interface; even at NeXT, he was bringing that point of view to Unix...then as the video/music distribution was changing, he came back to Apple and brought back that original point*

[4] For a practical perspective on making optimal decisions, see Hammond, Keeney & Raiffa (1999).

of view…you don't need to be a famous entrepreneur to benefit from that lesson.. start with a thesis, gather data, constantly challenge your assumptions, test and experiment, discover things you never thought of before, and re-assess...the worst of all worlds is a leader who wonders from business idea to business idea, and loses a sense of purpose and direction...the truly great entrepreneurs have the ability to have an intense focus and a clear point of view, but are open to testing their assumptions, assimilating new information, and re-thinking the business real-time."[5]

The emphasis is on having a clear point of view, testing, probing, experimenting, learning by doing, seeking new fdata, and continuously re-calibrating.[6] Recalibrations are made as new information is brought to light and as the original technical premises and market assumptions evolve. Following the initial pilots, an idea may be rejected altogether. The deciding factor is practical "relevance" and fact-based assessment, rather than theoretical elegance and informational consistency. As depicted in Figure 14, the recalibration model blends elements of the deliberate and the emergent approaches, with its own unique features.

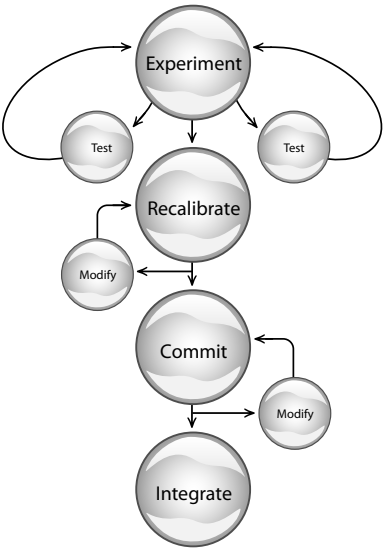

Figure 14. The recalibration model

[5] Personal interview with the General Partner of a leading venture firm.

[6] This emphasis on the importance of learning has been noted by other studies. In describing the birth of the video recorder industry, Rosenbloom and Cusumano (1987) discuss how the development of Betamax and VHS by Sony and Japan Victor Corporation were "the tangible results of fifteen years of learning by trying." (p.66). Similarly, Maidique and Zirger (1985) characterize the new product development cycle in high technology firms as a learning process in which innovators learn not only by doing, but also by failing. This in turn results in the development of new alternatives and product concepts.

The process is similar to the scientific method of discovery. Scientists formulate hypotheses and assess their validity by conducting experiments and collecting data. If the evidence does not support the original hypotheses, new hypotheses will be framed, and tested yet again. However, scientists are not in full control of all the salient parameters. A new discovery, or unexpected results, can change the embedded assumptions and even make the work obsolete.

Similarly, in the recalibration framework, the processes of strategy formation and implementation are closely linked together in an iterative process, especially during the early stage of a new initiative. In unpredictable settings, it is impossible to iron out all the uncertainties and "de-risk" strategies through detailed planning and elaborate analyses. Relevant information is not only limited, but also in a state of flux. It may be difficult to establish the technical feasibility of a novel idea, or the viability of executing a new initiative, through "theoretical" planning. By engaging in action, new information can be brought to light, and unforeseen limitations, and new possibilities, identified.

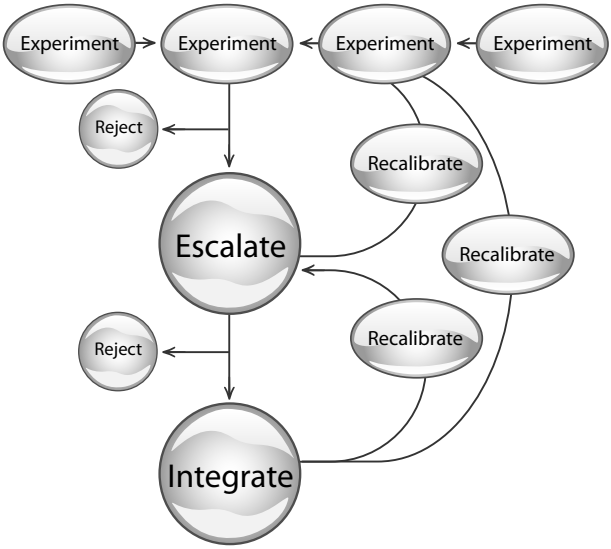

Figure 15. The three phases of the recalibration process

The recalibration process starts with articulating a clear thesis, a bounded hypothesis, or a distinctive point of view around a value proposition. As illustrated in Figure 15, the initial thesis can be rapidly tested through experimentation, piloting and prototyping; the critical factor is to retain the flexibility to modify, iterate and adapt the idea as new developments unfold. The emphasis is on continuous iteration and recalibration through guided experimentation.

6.3 Case History: ROLM Corporation

The recalibration framework is illustrated by drawing on the strategic evolution of ROLM Corporation, a pioneer in the telecommunications industry during the 1970s and 1980s. Later in this chapter, we will describe how a storage company used the recalibration process to enter a new market; in addition, through the perspective of the lead investor, we will examine the iteration and adaptation of the business proposition that eventually became the success formula for Netflix's rise to prominence.

ROLM was a pioneering Silicon Valley company, blazing the trail in uncharted territories. It was the first firm to introduce the concept of off-the-shelf commercial computing to the military market during the early 1970s, an early challenger to AT&T's dominance in the telecommunications equipment field, and a pioneer of "integrated office of the future" during the early 1980s. It was acquired by IBM in 1984 and later become part of Siemens, the global electronics giant.

ROLM was founded in 1969. Its four founders had known one another first at Rice University, and later at the Stanford Engineering School. The founding team's first business venture was to pioneer a unique commercial approach in selling minicomputers to the tradition-bound military establishment. Although the team established a viable business base in this niche market, their overriding goal was to build a sizeable "commercial" concern. Minicomputers had been a timely opportunity to get the business off the ground. However, after 3 years, the founders became concerned about the limited size of that market and its long-term potential for building a sizeable commercial enterprise.

In the early 1970s, the founding team embarked on a pre-emptive search for a new business opportunity and decided to enter the telecommunications business. The 1968 Carterfone decision of the Federal Communications Commission had partially deregulated the US telecommunications industry, opening up the vast telephone equipment market to a host of new companies. The intention was to leverage ROLM's core skills by developing a computer-controlled telephone switching system, with enhanced capabilities, compared with the traditional electromechanical units.

ROLM had to be navigated through the uncertain and stormy seas that characterized the industry. Computing technology was changing the nature of telephones and telecommunications. There was considerable debate about the eventual deregulation of the industry, despite AT&T's concerted efforts to retain its long-standing position as a regulated monopoly. The interconnect distribution channel was just beginning to get off the ground, and competition had intensified with the entry of Japanese and European giants in the field. In short, the industry was in a state of chaos and confusion.

At the time, many expert observers questioned the ability of a young, unknown player, like ROLM, to survive, let alone to prosper in a different arena. Despite the initial, often grave, misgivings of many expert observers, ROLM managed to become a leading telecommunications firm during the next 5 years. By the late 1970s, telecommunications products accounted for almost 70% of its total revenues.

ROLM consolidated its strategic position during the early 1980s by making selected forays into the "office of the future", focusing on integrated voice/data terminals, and computerized voice messaging systems. IBM acquired ROLM in the aftermath of AT&T's divestiture in 1984. At the time of the acquisition, ROLM was called "the ship that is creating the wave of innovation in the field" and a "forerunner in the fast-paced (telecommunications) market."[7] These tributes were clearly reflected in its impressive market performance. After only 10 years in the business, ROLM had managed to capture 15% of the market for office telephone switches, only 9% behind AT&T. Another measure of its remarkable success was the dramatic increase in its stock price. Compared with the 1,920 companies that had gone public since 1975, ROLM's stock had produced the largest long-term relative gain over its initial offering price.

ROLM's pioneering moves were not based on detailed analyses and elaborate plans, but on a few fundamental principles, many informal discussions, and a series of experiments, designed to test the validity of their business propositions. These were initially tested on a small scale. They were later re-calibrated, and either executed on a large scale, with resource commitment and organizational momentum, or discontinued altogether. Recalibration is the hallmark of ROLM's strategic evolution during a 16 year time frame; from military computers, to telecommunications, to energy management, and finally to office systems:

"*In building ROLM as a company, we experimented in a number of different areas, people, technology, markets, organization, products and cultural policies… we gave a chance to those whose experience and tangible expertise did not, at least on paper, qualify them to take on certain assignments. For example, our first CFO, took on the assignment to build our direct sales organization during the late 1970s. We were also constantly experimenting with new organizational arrangements. Some worked and some didn't. For example, in 1980 we set up a 3-person top management team to run the company, and before entrepreneurship became popular, we set up a self-contained autonomous division to build and develop our family of digital telephones. But perhaps the biggest experiments involved our strategic diversification, from Mil-Spec computers, to PBXs, to energy management, and finally office systems*."[8]

[7] San Francisco Chronicle, September 26, 1984; For additional perspectives on the ROLM/IBM merger see the Economist, September 29, 1984 and the Wall street Journal, September 27, 1984.

[8] Personal communication with ROLM's co-founder & CEO.

The approach that ROLM and many successful technology pioneers we have observed can be characterized as a continuous process of engaging, probing, testing, prototyping, and recalibrating. As depicted in Figure 16, the "experimentation" stage clarifies intentions, generates options, assesses feasibility, and tests the stakeholders' initial reaction. The initiative is speeded up and brought into a sharper focus during the crucial "escalation" phase, with greater visibility, concentration of effort, and concerted use of resources. During the final "integration" phase, attempts are made to blend the initiative into the broader strategic and organizational context.

6.3.1 Phase 1: Experimentation

The desire to launch a new initiative may be triggered by several factors. These may include market opportunities, competitive moves, technical breakthroughs, management choices, or random events. ROLM's move into telecommunications, for instance, was initially triggered by the top team's concern over the limited size of the military computer market and its long-term viability for a commercial entity.

"*ROLM's objective is to grow to be a large profitable company, in an atmosphere where everyone contributing to that growth, learns, grows and is financially rewarded...The military computer business is currently a good, stable base...however, it has not satisfied our objective of broad customer appeal…our freedom to develop products on our own funds is severely limited…stability and growth are essentially dependent on one…customer…worst of all is our limited flexibility due to business practices that we would undoubtedly sink into…we should (therefore) not sacrifice strategy and principles just for short term growth in the military market..let's realize that that business is good, but limited, and accept it for what it is.*"[9]

The experimentation phase enables a leadership team to formulate value propositions, test them on a small scale, and generate rapid feedback. Early experimentation has other advantages. It inculcates an organizational mindset willing to embrace new information. It fleshes out viable options, and provides a vehicle for recursive learning. For example, ROLM's technical experiments in office systems during the early 1980s developed its capability base in terminals and information systems, where it had limited prior experience. The over arching objective during this phase is to clarify intentions, develop capability, and create viable options.

Just as scientists use experiments to check the validity of scientific hypotheses, pilots and prototypes can be used to assess the validity of a value proposition. Initiated as deliberate moves, pilots are especially valuable when there are no existing blueprints or proven methods for success. They can be set up in parallel to speed up the learning process. Effective experimentation provides a basis for selecting viable pathways, testing the feasibility of proposed ideas, managing stakeholders' expectations, and re-casting the forged vision.

[9] Internal memorandum, ROLM Corporation.

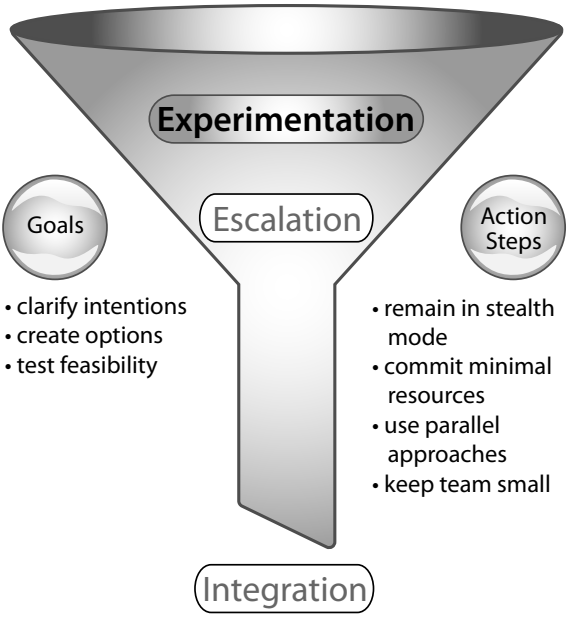

Figure 16. The experimentation phase

For example, technical and marketing experiments were the prelude to ROLM's entry into the telecommunications business during the early 1970s. During this time, there was considerable uncertainty about the eventual deregulation of the industry, the future role of computer technology in telecommunications, and the viability of the emerging interconnect industry as a viable distribution channel. The ROLM team hired a technical consultant, Jim Kasson, to put together a simple prototype. The goal was to find out if it was even feasible to develop a computer-controlled PBX system. The team also recruited a marketing expert, Richard Moley, as the first PBX product manager. Kasson and Moley had both worked for Hewlett Packard and knew each other well.

One of Moley's first initiatives was to interview a number of potential customers about their needs. He also wanted to find out whether they would be willing to buy a PBX system from a young upstart like ROLM. It was these lead user interviews that convinced the team that the opportunity was worth pursuing. It was not just a unique "nice to have"; the idea had traction with lead users. The PBX team could envision the enhanced capabilities that a computer could bring to the plain old telephone:

"*Clearly we had the capability, the computer technology, to solve meaningful customer problems, and save them a lot of money ... we could optimize call routings, or handle toll restrictions ... and handling moves and changes would simply*

be a matter of re-programming the computer … no one would have to visit the customer's site."[10]

Different arrangements can be used to set up the initial experiments. These include using contractors and consultants, as was the case with ROLM's PBX, creating internal project teams, and fostering spin-offs. A financial software company, for example, used an external contractor and temporary consultants to staff an aggressive development project for a new product. The entire process, from initial pilot to full launch, was completed in 100 days. Use of contractors was a flexible, fast, and de-politicized approach to a project that was critical to its future success. ROLM used an internal venture team to develop its pioneering line of digital phones.

In summary, the experimentation stage helps refine the initial vision. The process enhances learning, develops organizational momentum, reduces uncertainty, and can help assess the feasibility of different options. However, speed of feedback is crucial during this phase since time is limited and resources are scarce. Effective experimentation requires a small, dedicated, team of thinkers and doers, who can work in a stealth mode and emulate the best qualities of a start-up.

The experimentation phase poses several challenges for entrepreneurs and business leaders:

- It is not feasible to experiment continuously. Leaders need to ensure that time triggers are built into the process, and that there is a definite time line for experimentation.
- They need to keep the ultimate goal in mind, and have a clear idea about "what success looks like". This minimizes problems associated with analysis paralysis and consensus at any cost. Clear end goals and concrete success metrics enable business teams to have a sense of shared reality, yet incorporate different points of view over time.
- Sufficient flexibility should be built in, so the process can adapt over time; this involves setting, and re-setting stakeholder expectations at the outset, and at critical junctures along the way.

6.3.2 Phase 2: Escalation

An experimental attitude and a flexible posture cannot be maintained indefinitely. Once the level of market uncertainty is reduced and the technical feasibility of a new idea is verified, a team must move beyond experimentation and focus on ramping-up promising options. Whereas option generation, action-based exploration, and recursive learning are critical during experimentation, the escalation phase is about focus, speed, momentum and concentration of resources.

[10] Personal communication with ROLM's Vice President of Marketing and its first PBX Product Manager.

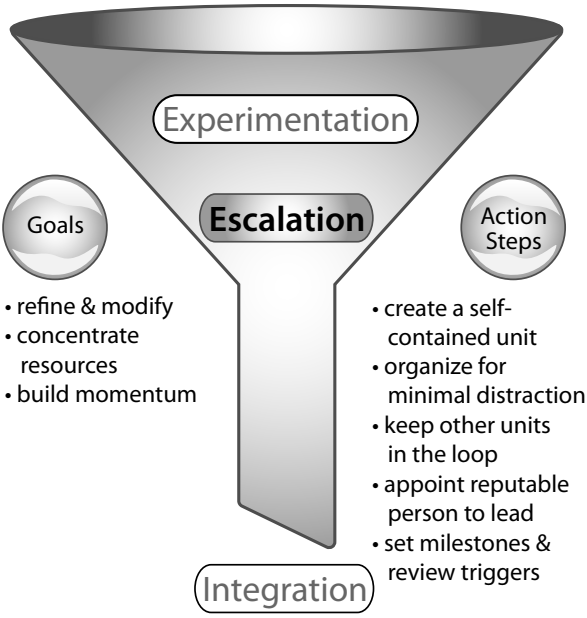

Figure 17. The escalation phase

This stage represents concerted efforts to select and build momentum around the most promising options. It also signals senior management's commitment to a promising initiative. The primary objective is "to put the foot on the gas pedal" and to ramp-up a project that may have a short life cycle.

In the cases we have observed, the decision to escalate, to discontinue, or to revise a project depends on several factors. These include industry dynamics, experiential learning, and organizational expediency. For example, ROLM's initial "grand" strategy in office automation encompassed several products. These included an application processor, a common engine for the telephone switching equipment and the office products, a proprietary, intelligent workstation to integrate voice and data, and various software modules to provide voice messaging, text messaging, and word processing capabilities. These building blocks were to be integrated over time. The total package was expected to provide a comprehensive office automation capability for the end-user.

However, after the initial pilots, it became clear that the strategy was far too complex to execute in its original form. As Bob Maxfield, ROLM's co-founder and the senior executive in charge of the program commented:

"*Every time we reviewed the projects, they had slipped another 3 months ... we realized that we weren't getting very far with implementing the grand strategy ... and had underestimated the magnitude of what we had taken on...if (the*

strategy) was going to happen, it would have to happen in bits and pieces...so we had to change our approach, prioritize, and focus on those projects that were feasible to implement and were most critical for our competitive positioning."[11]

The original strategic assumptions had changed during the intervening period with the introduction of the first generation of IBM Personal Computers. This development had radically changed the word processing business and undermined the rationale behind developing a proprietary workstation. The "grand strategy" was modified to take account of evolving market dynamics and the experience gained during the early exploratory moves. The concept of a proprietary workstation was modified into an IBM-PC compatible integrated voice and data terminal, and the word processing project was discontinued. Resources were refocused instead on the voice-messaging project, and the modified version of the voice/data terminal.

Escalation beyond experimentation often results in the development of new organizational arrangements. The imperative is to deal with two critical challenges; first, to buffer the new initiative from existing activities; second, to accommodate the growing scope and complexity of a new program. For example, escalation of ROLM's office systems project led to the formation of a separate division with an exclusive focus on new product development initiatives.

Effective project management is also a critical capability during this phase. After all, the initiative is now visible and consumes organizational resources and executive attention. Typically, review triggers are built in to monitor the progress made in implementing pre-defined milestones. These may result in minor revisions or major modifications of the action plan.

New leaders may also emerge during this phase. Since the initiative is no longer a simple pilot, it may need to be guided and 'protected" from internal political realities. A project leader, who may have been effective during the experimentation phase, may not have the skills, the experience, or the network to be an effective bridge-builder and stakeholder manager during escalation. Even in a young start-up, the guru scientist, who may be the visionary behind a technical prototype, may have to give way to an experienced project manager during the escalation phase.

6.3.3 Phase 3: Integration

Once an initiative has been successfully launched, it has to be blended into the mainstream organization. As depicted in Figure 18, the objectives during the "integration" phase are to ensure strategic cohesion across the business portfolio, and to leverage the existing resource infrastructure. A critical task is to devise organizational arrangements that can integrate the new activity into the mainstream organization.

[11] Personal communication with ROLM's co-founder and Executive Vice President.

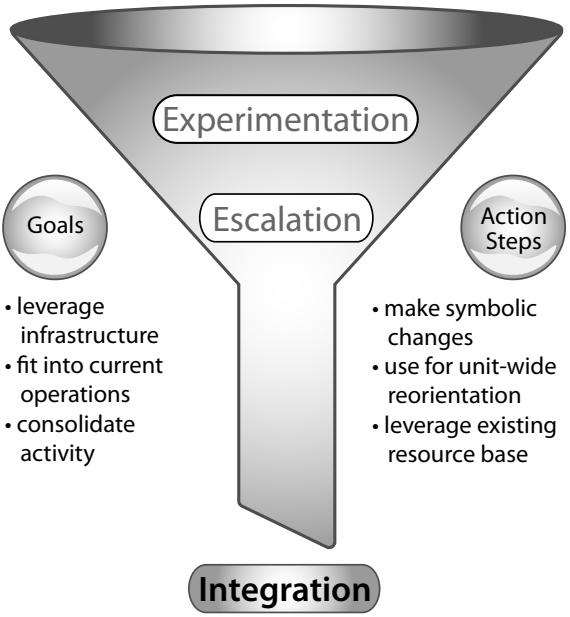

Figure 18. The integration phase

The choice of integration mechanisms depends on two critical factors: first, the expected growth rate for the new business; second, the degree of interdependence between new and existing activities. If, the new business grows rapidly, a separate unit should be set up to focus on its ramp-up; in some cases, the unit may be spun off as a separate business. Well-known examples include Apple's Claris and Sun's Java Divisions. Similarly, if there is limited interdependence between new and existing activities, an autonomous unit may be appropriate. However, if interdependence is high, or if the new business does not grow as rapidly as expected, it can be integrated into the mainstream organization.

For example, ROLM formed an autonomous division to consolidate its PBX business when it had generated enough revenues to warrant the formation of a separate unit. A self-contained unit was appropriate because there was limited interdependence between the minicomputer and the telecommunications businesses. The office systems initiative, on the other hand, was closely linked to the telecommunications business. The two products had to work together and were sold through similar distribution channels to the same customer base. The need for extensive coordination prompted a company-wide re-organization and led to the formation of a hybrid structure.

After a new initiative "goes live", symbolic changes are also needed to signal the birth of a "new baby". These may include a change of name, location, logo, leader-

ship, or a broader re-organization. The objective is to emphasize the inflection point and to highlight the need for transition.

In summary, deploying the recalibration process enables executive teams to be decisive and to move forward, and to keep their options open. Additionally, the process can be helpful in managing expectations and minimizing premature commitment to a high-risk course of action. Critical challenges include customized staffing and the timing of each phase. Who should lead the project during experimentation, escalation, and integration? When should a project be initiated and when should it be discontinued? When should a project move on to escalation, with higher levels of investment and commitment? How much time should be allocated to the initial pilots? Should an initiative be put on a "back-burner", and reconsidered at a later stage?

6.4 Recalibration in Action

Implementing the recalibration framework is challenging. Many companies are used to the top-down, deliberate, approach, with an emphasis on planning, data gathering and information analysis. Others favor the bottom-up or the "emergent" approach. The assumption is that innovative ideas emerge, when the environment and the incentives encourage individual champions to initiate new projects.

In technology settings, resources are scarce; time frames are compressed; yet action has to be taken, even when there is limited information. The recalibration framework enables teams to move quickly from idea to action, and to revise expectations based on fact-based feedback. A major trade-off is how to be consistent, yet remain flexible and responsive to new realities.

Consider the use of the recalibration process by a computer storage company in launching a new initiative. The process was kicked off during the annual leadership conference, bringing together its top 100 executives. The objective was to reflect on industry changes and to consider future strategic moves. The explosion of the Internet had opened up new growth options for the company. The leadership conference was focused on how best to leverage emerging market opportunities. Following a series of heated discussions, where contrasting views were presented and debated, the CEO decided to set up two parallel teams. The goal was to explore two different product/service opportunities.

Each team included top performers from different functions. They were given 8 weeks and a small budget to conduct research, listen to experts, interview potential lead users, and brainstorm options. Their findings were later presented to the executive team, laying out different alternatives that could be further explored. The executive team decided to set up two pilot projects to explore the feasibility of the proposed options.

The follow-up experimentation phase lasted for ten weeks. During this time, both teams talked to potential customers and developed technical prototypes. After communicating their findings, it was decided to blend together "the best of both efforts" since neither pilot had generated conclusive results. The recalibrated project later led to the launch of a major new service business for the company and has since become a significant revenue and profit generator.

Another example of recalibration in action is the evolution of Netflix, the pioneer of online, subscription-based, DVD rental service. The story began in 1998 when DVDs were just coming to market. Frustrated by paying $40 in late fees to Blockbuster, the dominant player in the movie rental business, its founder, Reed Hastings, had the insight that there could be a better way to provide the service:

"*His thesis was that, unlike the CD, the electronic components that were going to be used in DVD players were also being used in PCs, so the cost curve was going to fall steeply as the components were being commoditized. (The assumption) was that if you could get to the $199 DVD player, consumers would adopt it..but you faced a circular problem..the DVD players were coming out at very high prices, around $700-$800 for the early versions, and there was limited content..Blockbuster wasn't even renting DVDs..why would I buy content if there is no player and why would I buy a player if there is no content. Reed's belief that you had to stimulate this market led him to go to the electronic DVD manufacturers, the content owners, companies like Sony and Toshiba, and presented them with a proposition..we'll aggregate all the content inside one repository called Netflix and we'll create a rental store for the early adopters of DVDs..he was able to put a big red movie ticket called Netflix inside the device and on the reverse side was a free offer..so he aligned the interests of the DVD manufacturers, so they would perpetuate this phenomenon.. but for Netflix, there were several problems. We know (at the time) consumers rented from brick and mortar companies (like Blockbuster); 95% of rentals happened on Thursdays and Fridays but Blockbuster made its margins on late fees, so (Reed's proposition was) if I can rent movies out on DVDs, charge no late fee, and keep the cost down, (then it may work) but consumer behavior is spontaneous..people don't plan ahead and don't want to wait for 2 days to get the DVD in the mail. Then we came up with the subscription idea..you can have so many DVDs at a given point in time and had pretty good uptake. As business became more successful, we had to buy all this content from studios, costing hundreds of millions of dollars. Reed learned that consumers wanted access to an entire catalogue of movies and loved the DVD format; it was about superior quality and no late fees..but how do you scale that? That led to the pioneering notion of revenue sharing..put a little money up front, but studios could share in downstream revenue.. he understood the synergies with content owners and could negotiate those deals..that was the fundamental enabler for scaling the business. Great entrepreneurial leaders always iterate, they look at new data and challenge their own assumptions. At Netflix we were constantly looking at customer satisfaction data, by region, how they checked things out, how reviews were presented..this process of iteration also led to a process of discovery*

and yielded new insights….in order to make the subscription business work, you need to develop a preference engine so you can recommend movies based on earlier behavior; second you need a queuing system so you can have video on demand; then the service to customers became seamless..despite these iterations, the cost of customer acquisition was high..when we looked at the data, we noticed that the cost of customer acquisition was a lot lower in the Bay area than in other parts of the country..we were mailing the DVDs from the local post offices and people got their DVDs overnight….word of mouth spread and we got many more customers.. we realized that we needed to set up regional distribution centers..we started one in Idaho, and one in Sacramento, by constantly analyzing the data and iterating the strategy, we moved the business forward..this is an interesting story because it shows how the process of iteration yields new insights and possibilities. Reed's initial thesis "to provide an entire library of movie content to users" has never changed; what changed were the constant refinements on how you deliver that proposition. He was 100% correct about the thesis but 50% right about how to make it happen.[12]

6.5 Guidelines for Implementation

As the ROLM and the Netflix stories indicate, the recalibration framework can be used in several contexts: to start new initiatives; to move beyond an idea towards its execution; and to de-risk pioneering moves in dynamic markets. Our observations point to several guidelines that should be considered when implementing the recalibration process:

Keep the big picture in mind, but implement in small, bite-sized steps.

New initiatives are typically a response to user needs, competitive gaps, pressures for growth, and performance problems. In the absence of a major crisis or an urgent market need, they can languish and get stuck in endless internal debates.

Effective approaches we have observed follow a similar path. There is intense discussion early on, but these conversations move on to focus on pilots and experiments. The emphasis is on generating fact-based feedback by embarking on action. The information can be used to assess the go/no go-decision and to revise the original idea.

Two sets of ground rules are crucial during the early phase: first, it is impor-

[12] Personal Interview with an early investor in Netflix, and a member of its Board of Directors; Also see Anita Elberse "Should you invest in the Long Tail?" Harvard Business Review nos 7/8 (July Auhust 2008) pp: 88-96: Anita Elberse and Felix Oberholzer-Gee "Superstars and Underdogs: An Examination of Long Tail Phenomenon in Video Sales. Harvard Business School Working Paper, HBS 07-015, January 30, 2008.

tant to map the tough challenges and the easy tasks, or the "low and the high hanging fruit". This process can create alignment, provide a sense of shared reality, and keep the stakeholders on the same page. However, effective use of the recalibration framework starts with simple tasks that have a quick payoff.[13] Quick wins build confidence, generate credibility, and provide the foundation for taking on tougher challenges.

Develop focused pilots/test a single hypothesis.

New initiatives can turn into political battles. Each faction fights for its own agenda. The pilot is doomed to fail if it is designed to "build consensus", appeal to the lowest common denominator, and minimize criticism from vocal skeptics. In other words, it can get diluted and lose its focus. Although this approach may be politically expedient, it does not generate timely and relevant feedback that can be used to escalate, to curtail or to recalibrate an initiative. As illustrated by the Netflix story, constant iteration is crucial for the success of a new idea.

To avoid this problem, it is important to focus on testing a single value proposition, so the pilot does not get "muddied" by different objectives. When the ROLM team first considered entering the digital PBX business, the main objective was to learn about the risk appetite of telecommunications managers in Fortune 500 companies, their target customers. Would they be willing to give up the relative safety of buying an analog system from AT&T, in favor of using the latest digital technology from an unknown player?

This idea was initially tested by a number of lead user interviews. The PBX product champion talked to 50 telecom managers in Fortune 500 companies. Their response was overwhelming. If the digital PBX could help them account for each department's telephone usage, so they could be billed directly, they would buy the new system, despite the inherent risks. By testing a single critical hypothesis, the ROLM team received first-hand user feedback on a topic that could impact the viability of the entire project.

Keep a low profile early on and express intentions in general terms.

There is a trade-off between being consistent and steadfast on the one hand, and having the built-in flexibility to revise decisions as new realities unfold. This can pose a problem. Leadership teams often limit their ability to recalibrate by raising a venture's profile too early, and by committing to a "specific" course of action prematurely.

[13] This is similar to the findings of other studies that have examined profiles of successful change initiatives (see Kotter 1996).

It is easier to recalibrate if leaders keep a low profile early on, and express their intentions in broad, general terms, This enables them to manage stakeholders' expectations, pursue several options within the broader frame of reference, and have the flexibility to recalibrate at a later date. The original idea can even be abandoned, if the expected benefits do not materialize.

This trade-off is reflected in the approach of a new generation of entrepreneurs whose ventures are known as "stealth start-ups". They prefer to "boot-strap" their ventures, maintain a low profile and keep their options open during the crucial early stages. They are more reluctant to raise venture capital during the early phases, and prefer not to disclose their specific intentions to a broader community. Similarly, serial entrepreneurs often stay with their original investors as a way of maintaining "stealth" because they don't have to show their business plan to a broader group of investors.

Stealth start-ups increase their chances of being first to market. They retain the flexibility to recalibrate and change tack, without appearing "inconsistent". Investors are not easily convinced that change is good, when it was the original idea that appealed to them in the first place.

In summary, adopting a stealth posture has two benefits; first, it shades new activities from public view and keeps options open; second, it allows the necessary revisions to be made, without having to justify these to a broader group of stakeholders.

Set up parallel pilots with rapid feedback loops.

Real-time information is critical when operating in dynamic environments. It is no good marching down a path that has become irrelevant or obsolete. Pilots should be set up in order to generate quick feedback, at least before the original assumptions become obsolete. The most successful pilots we have observed tend to have a 30-90 day time frame. If they linger for much longer, the feedback they generate may be interesting, but irrelevant. In the process, the target initiative may lose momentum.

Setting up parallel pilots, to test alternative hypotheses, can speed up the learning cycle. It can also accommodate the views of different stakeholders. The approach can help teams learn from diverse experiences in compressed time frames.

This is how ROLM orchestrated the implementation of its direct sales and service strategy during the late 1970s. At the time there was no "ideal" blueprint. Some favored the acquisition route; others preferred building the sales team from the ground up. The ROLM team adopted a three-pronged approach. They acquired a number of their distributors; they formed joint ventures with a few distributors; and

they set up their own direct sales force in major metropolitan areas: "*There was no magic answer ... it had to happen based on given options in each territory ... we tried all three and learned a lot in the process.*"[14]

Darwinism is OK — anticipate "worst case" scenarios early and prune out ineffective initiatives.

The dilemma is how to balance emotional and rational drivers when launching a new initiative. On the one hand, fact-based feedback should be used to assess the feasibility of an idea. On the other hand, people have rationalizing tendencies and become emotionally committed to their own ideas, even when there is evidence to the contrary (Staw 1983).

To minimize problems associated with escalation of commitment, it is important to anticipate worse case scenarios ahead of time, to develop a bandwidth of expectations, and to plan contingencies, just in case. What if the technical prototype does not perform according to specification? What if the target market evolves more slowly than expected? What if we lose some of our key technical talent?

These questions should be addressed during the early stages, before stakeholders become committed to a given trajectory. The process enables core teams to consider back-up plans, to discontinue failed initiatives, or to put them on hold.

6.6 Recalibration and Super-Flexibility

The recalibration framework incorporates the importance of rational and emotional drivers in launching new initiatives. It is predicated on the assumption that managing expectations and generating rapid feedback are critical to the ultimate success of a pioneering initiative. If used effectively, the process can help build resilience, enhance agility, and develop versatile capabilities.

Deploying the recalibration approach does not guarantee success. It provides an opportunity to test the feasibility of an idea before escalating financial and psychological commitment. If the experiment turns out to be infeasible, losses can be minimized, without branding it as a failure. An experimental approach can also build resilience by managing stakeholder expectations.

For example, venture capitalists often invest in several start-ups in a "new category". Even with the most sophisticated forecasts, it is difficult to predict which venture will ultimately succeed. By seeding and investing in several start-ups in the same category, they can increase the odds of winning, especially when only one in 30 start-ups, on average, succeed.

[14] Personal communication with ROLM's CFO and the senior executive responsible for setting up the sales and service organization.

This approach has other benefits. It can increase the range of experiments and speed up the learning process. It can help develop the experience base of technical professionals. It can encourage variation in product features, and the ability to meet diverse customer needs. It can expand the lead-user base whose feedback is crucial for product iteration. As indicated in chapter 4, some ventures are discontinued, and the most promising elements of others are fused together. This is an illustration of "flexible recycling" at work.

Second, as indicated in the ROLM vignettes, the recalibration approach speeds up the execution process by focusing on several tactical options. This enables a team to take account of diverse situational needs, and speed up the learning cycle. By entering several different areas as a "new category" evolves, or by embracing different standards in a device, start-up teams develop the agility to quickly regroup behind the evolving dominant standard.

Third, generating different options is critical in dynamic settings. An option that may seem ideal one day may be irrelevant when the original assumptions are no longer valid. Exploratory experiments, in the form of action learning, can help develop a range of options, and in the process, enhance the capability base of knowledge workers. They can learn by trying, failing, iterating and recalibrating.

The recalibration approach allows deliberate intentions to be tested against emergent realities. It facilitates dynamic adaptation, especially when embarking on new initiatives in unchartered domains. Actions can be framed in the context of a broad vision. Yet decisions evolve as teams develop new capabilities through experimentation, iteration and prototyping. The approach entails several phases: developing a testable point of view, generating alternatives, experimenting and prototyping, escalating commitment to the most viable option, and integrating the initiatives into the mainstream organization. It is important to iterate and recalibrate during all three phases based as new realities unfold.

It is in this context that super-flexibility is crucial. Recalibration contributes to the development of super-flexible capabilities in several ways:

- It creates versatility by broadening the range of options up front. It also enhances knowledge workers' capabilities by exposing them to a wider range of experiences.
- It instills resilience by removing the stigma of failure and by encouraging recycling and recalibrating. Initiatives are not viewed as being totally right or exactly wrong, but as 'shades of grey" with many different trade-offs.
- It provides liquidity and mobility by recycling failed experiments, re-deploying resources, and channeling knowledge workers towards promising options.

There are clear parallels between the recalibration approach and the process of scientific discovery. Scientists update assumptions and hypotheses by taking account

of new discoveries and related breakthroughs (Popper 1972, Feyerabend, 1968). Knowledge workers have to ensure that their intended plan of action is congruent with emerging technological, competitive and market realities. Scientific hypotheses have to be corroborated by experimental data. Forged visions of technology entrepreneurs need to be effectively realized, and corroborated by market feedback:

"*...It is better to loosen things because nobody knows the answer...give people more space to experiment...then after you figure it out, we pull in the reins and march in a particular direction.*" (Andrew Grove, Outlook magazine, 1997).