

SIM Paper Awards Competition Entry

**MANAGING ONLINE IN PERPETUAL PERFECT STORMS:**

**INSIGHTS FROM INDYMAC BANK**

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# **MANAGING ONLINE IN PERPETUAL PERFECT STORMS: INSIGHTS FROM INDYMAC BANK**

## **EXECUTIVE SUMMARY**

How can an enterprise manage strategically through IT-intensive business models in highly turbulent environments? How can an enterprise best take advantage of IT to enhance its dynamic capabilities in hyper-growth conditions? How does a CIO help lead an enterprise better to manage online in conditions of rapid business change? We liken it to managing online in perpetual “perfect storms.”

This paper draws on the experience and insights of IndyMac Bank to answer those questions. IndyMac is an IT-intensive mortgage bank that conducts most of its business online in a rapidly changing environment, and which grew at a compounded rate of 41% since 1999. Even though it was a relatively small company in the mortgage industry, IndyMac changed the rules of a staid old-line industry through the innovative use of IT and by cleverly weaving IT into the very fabric of the bank and its business ecosystem. In the process it learned how to manage online and gain strategic advantage while working in perpetual perfect storms.

The paper starts by explaining IndyMac’s IT-intensive strategic visions and their implementations from 1998 to the present. It also describes its strategies and initiatives for managing the development of IT applications under its perpetual storm conditions. The paper assesses the business impacts of these IT-centered initiatives from both an operational and strategic perspective. Finally, the paper draws insights and lessons for top managers and CIOs in other industries that would like to improve how they navigate their IT-intensive enterprises strategically through their perpetual perfect storms.



## **INTRODUCTION: PERFECT STORMS IN BUSINESS**

A storm that was three storms rolled into one, and more powerful than any in recorded history hit the Atlantic Ocean coast near Gloucester, Massachusetts in October 1991. It was formed when Hurricane Grace and two strong storm fronts collided multiplicatively, and formed what has now been known through a book and a popular movie as the “Perfect Storm.” This extraordinary storm whipped the sea to insurmountable levels: boats encountered waves 100 feet high and winds of 120 mph. Boats sank and men perished<sup>1</sup>.

Like a storm at sea, the heightened turbulence of the business environment of the 21<sup>st</sup> century with its rapid market changes, structural industry discontinuities, complex global dependencies, and disruptive information technologies brings with it many coincident storm fronts. They often collide multiplicatively to form perfect business storms as well. However, differing from the one-time perfect storm on the Atlantic coast in 1991, the business storm fronts are perpetual. The volatile nature of hyper-growth and cyclical industries further adds to the storm mix, making the challenge even greater for enterprises in those industries.

Boats in stormy seas differ in destination, navigation strategies, equipment and crews, in design and management. Similarly, enterprises in turbulent business environments differ in missions and visions, their business ecosystems, their strategies and business models, their IT infrastructures and operations, and are designed, organized, and managed differently. How does an enterprise intelligently select strategic repertoires and manage changing business models in an IT-intensive business environment with heavily

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<sup>1</sup> For more information, see [www.perfectstorm.org](http://www.perfectstorm.org)

online operations and hyper-turbulence? Furthermore, how does the enterprise manage its IT platform evolution to enable, shape and support the business strategies and business models in such stormy environments? These are the questions addressed in this paper.

For CIOs who must lead IT-enabled strategic initiatives that require online presence in such stormy environments while maintaining the even keel of orderly IT infrastructure development, these are indeed perpetual perfect storms. Gulshan Garg, Executive VP and CTO of IndyMac Bank expressed it like this:

*“There are storms coming at us from various angles: competitors quickly rolling out new successful products, regulatory changes that require capturing massively more data about customers for predatory lending, global IT outsourcing issues with human resource dislocations and role changes, key customers operating in new ways, ... and much more. These are not distractions, but are valid business issues that need to be dealt with and will force you to make mid-course changes and corrections. But, the key to surviving these storms is to stay focused on the business destination defined by the conviction of the strategic vision of the enterprise, and to steer IT to stay the course. When IT is a strategic enabler, that becomes very critical navigation.”*

This paper seeks to answer the question: How does a CIO help better lead an enterprise to manage online in such perpetual perfect storms?

# I. INDYMAC BANK AND ITS STORMS

## ABOUT INDYMAC

IndyMac Bank, based in Pasadena, California, through a fast and turbulent ride rose from near-obscurity to become the 11<sup>th</sup> largest mortgage bank in the US<sup>2</sup>. In 1993, the core of IndyMac Bank's current senior management team was formed. Mike Perry, the CEO, came to Pasadena from Sacramento to assume the leadership of Countrywide Mortgage Holdings' passive Real Estate Investment Trust (REIT) subsidiary, which was soon to become the Independent National Mortgage Company, and later IndyMac.

IndyMac Bancorp, Inc. (NYSE: NDE) is the holding company for IndyMac Bank<sup>®</sup>, the largest savings and loan in Los Angeles County and the 10th largest thrift nationwide (based on assets). IndyMac<sup>®</sup> is in the businesses of designing, manufacturing and distributing cost-efficient financing for the acquisition, development and improvement of single-family homes. IndyMac also provides financing secured by single-family homes to facilitate consumers' personal financial goals and strategically invests in single-family mortgage related assets. The company employed 5,323 people as of December 31, 2004.<sup>3</sup>

In 1999, a Senior Vice President at IndyMac Bank made an unexpected discovery. She found that the letters "INDYMAC" are an anagram of one, and only one, word: "DYNAMIC". This quirk of fate foretold what was to be the Company's continuing story of change amid hyper-growth.

## INDYMAC'S STORMS

IndyMac's continuing storms can be categorized into four types (Figure 1):

- External forces
- Hyper-growth
- Internal change
- IT-embedded business process change

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<sup>2</sup> *National Mortgage News Survey for the First Quarter, 2005*

<sup>3</sup> 2004 IndyMac Bank Annual Report

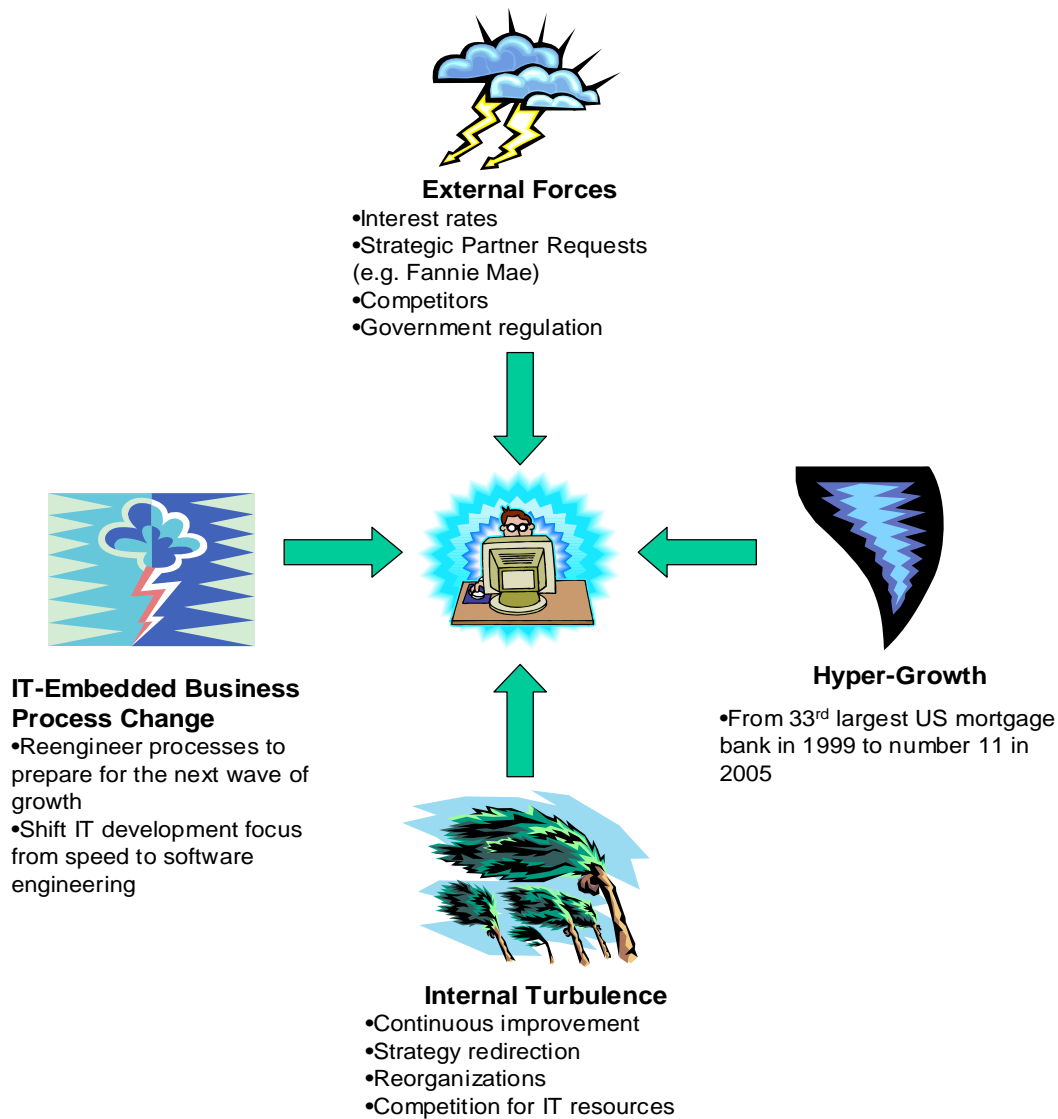


Figure 1: IndyMac's Storms

The **External Forces Storm** refers to storms created by forces outside of IndyMac's control. A volatile interest rate-driven marketplace, competitors offering seductive new products or better pricing, government regulation from the Office of Thrift Supervision, and strategic partner requests (e.g. Freddie Mac retires its old underwriting engine and requires its partners to integrate with its new engine) are examples of this type of storm.

The **Hyper-Growth Storm** is what IndyMac has been experiencing since its current management team came onboard in 1993. Rapid growth comes with turbulence along the way.

**Internal Turbulence** is a byproduct of hyper-growth. With its corporate belief that change can be opportunity, and its “execution culture”, IndyMac was not afraid to try several approaches until it found “what works”. Achieving extreme growth requires setting stretch goals and never falling into complacency. Along the way, strategies evolved and reorganizations occurred. As IndyMac grew with its IT-embedded strategy, IT resources were pulled in multiple, competing directions from time to time as it attempted to achieve individual business units’ goals.

The **IT-Embedded Business Process Change Storm** describes the joint efforts of business and IT to leverage technology to reengineer existing business processes optimally. For example, IndyMac has embarked on multi-year reengineering efforts in its Loan Processing and Funding Office and its Loan Sales Office areas (Section III).

The IndyMac story interweaves these storms throughout. Storms build momentum, make their presence known, and then die out, as new storms gather on the horizon. Many old storms reappear at a later time, and the cycle repeats itself.

## II. INDYMAC'S STRATEGIC VISIONS AND THEIR IT-ENABLED IMPLEMENTATIONS

IndyMac's IT visions changed with time. These visions can be categorized as Brain, BRASS, and Brawn:

- **Brain:** Be the first to revolutionize the mortgage industry with an online website providing the most robust capabilities then available. This strategy was largely implemented by IndyMac's web-based mortgage automated underwriting system e-MITS, whose decision engine was named internally as the "Brain".
- **BRASS:** Once successful with the online underwriting system, rework the system components to allow the flexibility to adapt easily to new market conditions and put the control of the crucial mortgage underwriting rules in the hands of the business users. "BRASS" was the business rules engine created .
- **Brawn:** IndyMac's present and future is about building the IT platform to grow into the top-tier of mortgage banks. IndyMac set a goal of becoming the 8<sup>th</sup> largest mortgage bank by 2008. To reach this goal, IndyMac's systems will be required to handle much more volume than they currently process, and will need to be able to optimize the peaks-and-valleys of the mortgage cycle dynamically. As the first phase of this capability expansion, a program is currently underway to reengineer the Loan Processing and Funding Office (see Figure 2, below) to distribute packets of work digitally to any group of workers in the world, facilitating the most flexible ramping-up and ramping-down of the global loan processing workforce.

### THE BRAIN EPOCH

In the first several years after the current management team arrived in 1993, the little company began growing and dreaming of competing head-on with the giants of the mortgage industry. IndyMac, like most of the industry, used loan acquisition systems from the major mortgage companies. Originally mostly client/server-based systems, many were later ported to the Web.

IndyMac believed that the existing loan acquisition systems could be improved upon, and began to think about building an acquisition system of its own. Of the planning stages of what was to become IndyMac's breakthrough online system,

*“We wanted to have a best-in-class front-office offering. We deal with multiple customer segments, and wanted to give them access to loan approval, pricing, and documentation requirements 24/7 without needing to talk to anyone at IndyMac.” G. Garg*

## **IT As Strategic Enabler**

Enter e-MITS, the Electronic Mortgage Information and Transaction System. e-MITS is an automated loan acquisition system which captures data on a website, sends this data to a proprietary automated underwriting engine, and returns a price and underwriting guidelines back to the website within three minutes rather than the previous three week industry norm. Once the loan characteristics are received by the automated underwriting engine (i.e., the “Brain”), a number of events occur:

- A tri-merge credit report on the borrower(s) is pulled electronically
- The data is analyzed to determine for which loan programs it qualifies (e.g. if conforming balance, send to Fannie Mae or Freddie Mac; if not, determine alternative programs)
- The loan is individually priced based on the loan and credit characteristics
- Underwriting Guidelines are generated stating the conditions under which the loan will be approved
- The information is returned to the website and displayed to the user

Once the user is satisfied with the pricing and underwriting guidelines, he can then ratelock<sup>4</sup> the loan via e-MITS.

Released to a small pilot group of mortgage brokers in 1998, and rolled out to IndyMac’s entire broker community in 1999. e-MITS rapidly became the way that IndyMac did business. For a company like IndyMac, which, unlike most of its competitors, had almost no brick-and-mortar presence, the technology-enabled virtual model was the great equalizer.

Perhaps the key to e-MITS’ success was its “one door policy” that allowed a user to enter loan characteristics once and then wait for e-MITS to return a complete underwriting decision (including pricing) for multiple loan programs within an acceptable timeframe. Previously, a user needed to key information into one mortgage lender’s

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<sup>4</sup> Ratelock refers to the customer’s ability to “lock-in” the rate quoted for a specified time.

application, then re-key the same information for every potential lender until they found the “deal” for which they were looking. The ability to enter data once and be presented with multiple appropriate options for the loan was powerful for users.

As shown in Figure 2, IndyMac’s processes and applications fall into three distinct “office” categories.

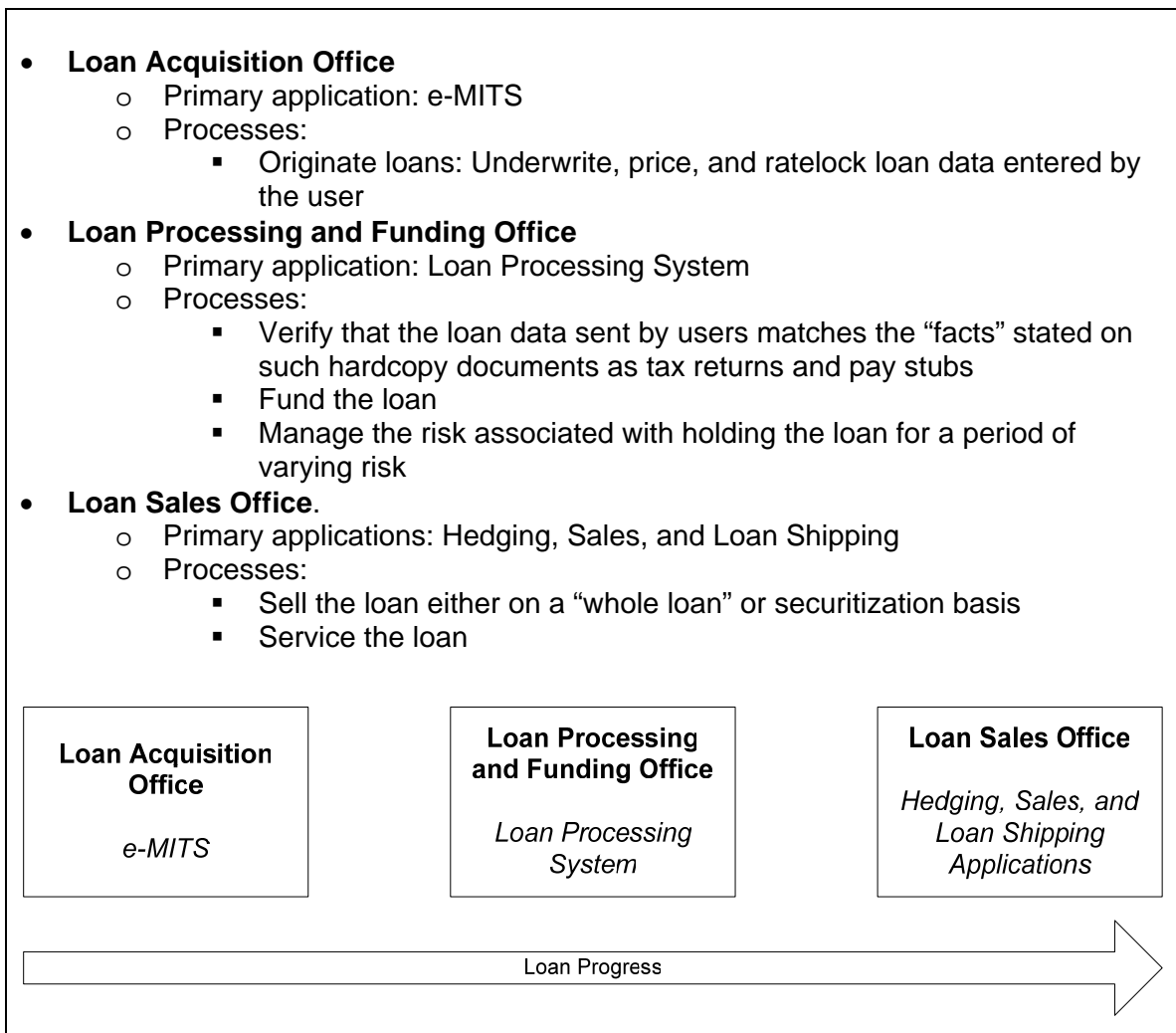


Figure 2: IndyMac’s Processes and Applications

In addition, to the other advantages that e-MITS offered, the virtual model allowed IndyMac to scale its operations as it grew. Unlike its competitors that need to build ever more brick and mortar buildings, IndyMac only added small amounts of office space for

its processing centers. The result was that IndyMac lowered its cost per loan, and could deploy its new loan products rapidly.

Technology also changed IndyMac's customer base.

*"From 1993 to 1995 we had around 50 large correspondent customers. These were high volume/low margin customers. Beginning in 1998 through 2003, these large customers were de-emphasized. e-MITS enabled us to target smaller customers, which expanded our total number of customers and provided a greater potential for profitability."* John Olinski, Executive Vice President

As e-MITS' acceptance in the business-to-business mortgage community grew, the company began expanding into additional business segments. First the B2C consumer website was built, followed by Home Construction Lending (HCL), and Business to Realtor (B2R). Each of these channels provides a website tailored to its unique set of customers. However, the e-MITS automated underwriting engine is used by each channel's website.

When e-MITS was released in 1998, the dot-com phenomenon was at its peak. Web-based competitors, such as E-Loan, were featured on the cover of Business Week <sup>5</sup>. Although IndyMac and e-MITS did not enjoy such widespread publicity, the company always knew where it was heading with its IT-embedded business plan. Many of the dot-coms with less well-planned business models were unsuccessful and either went bankrupt or were acquired by other companies. Many of the larger, more traditional, mortgage firms entered into the electronic mortgage business with a "bricks-and-clicks" model. At the approach of the new millennium, online mortgage systems were beginning to gain momentum.

## **THE BRASS EPOCH**

Because IndyMac made the strategic decision to be the first in the industry to provide e-MITS' robust capabilities, speed was of the essence. It was more important to get the capabilities into the marketplace than to follow software engineering principles. Shortcuts (such as hardcoding rules into the Brain) were taken. Once e-MITS was successful, and

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<sup>5</sup> Cover story, *BusinessWeek*, September 6, 1999

was in the fabric of the way IndyMac did business, the second vision was to rework the critical components of the technology to allow flexibility.

In 2001, a reengineering effort was undertaken: look at the Brain with fresh eyes and optimize the heart of the e-MITS automated underwriting system. Hard coding underwriting rules into the Brain was an acceptable, if temporary, practice when the number of underwriting rules numbered in the hundreds. New business channels (e.g. B2C, B2R, HCL) were launched, new products were introduced, and industry-related events occurred, all of which required rules changes. The number of rules quickly escalated into the thousands. Building a technology solution to facilitate fast and easy rule changes became imperative.

### **BRASS Implementation**

A mortgage is a real estate loan whose approval and pricing is based on a series of rules. If a borrower has a high FICO (credit) score, he will get a better rate. If the loan amount requested exceeds the limit imposed by the Government Sponsored Entities (GSEs) i.e. Fannie Mae and Freddie Mac, then the loan is considered “jumbo” and is underwritten to a different set of guidelines. When external market forces trigger events such as interest rate changes or bond market rallies, these events require changes to the underwriting and pricing rules. The ability to react rapidly and effectively to these events with modified underwriting rules is crucial to the success of any mortgage company.

In 2001, a new underwriting and pricing rules engine, called “BRASS” (Business Rules Automation System), was designed and built in which rule changes could be entered through an editor interface. The BRASS Editor was handed over to the business users who control the underwriting rules in Secondary Marketing. This new tool was liberating for IndyMac’s product development: rule changes that used to require IT intervention and the inherent waiting time for modification/testing/release could now be changed and published in real-time by the business users. Putting the ability to publish rules in the hands of users required process-level controls to ensure that new or modified rules received the proper authority approval. A “trial” region was available for testing new rules to ensure that they performed as designed. In an environment where markets change rapidly and time is of the essence, BRASS allowed IndyMac to weather turbulence better.

In addition to the new BRASS application, other architectural changes were instituted. The Brain was re-architected to optimize process flows and improve throughput times, which ultimately shortened the wait-time from an end user submitting desired loan characteristics on the website until the automated underwriting results were displayed back to them.

Many other infrastructure enhancements were made to the various system components to modularize and enhance flexibility where possible so that changes could be made quickly whenever the uncertain world of the mortgage industry dictated.

## **THE BRAWN EPOCH**

This epoch is a work-in-progress. As IndyMac prepares its infrastructure to meet its goal of becoming the 8<sup>th</sup> largest mortgage lender in 2008, it concentrates much of its energies on applications supporting the Loan Processing and Funding Office (Figure 2). This program is a significant reengineering effort both to redefine the process and to develop the technology to support the resulting process changes.

### **Reengineering the Loan Processing and Funding Office**

Paper documents, required for loan verification but long a constraint on the efficient distribution of work, are being digitized. This is the first half of the solution. The second half is to develop applications that can support breaking up of what formerly was one or two large processes handled by a single worker into standardized, granular processes that can be distributed to the best-suited workers anywhere in the world. Given that the mortgage industry is fraught with peaks-and-valleys (e.g. volumes increase when rates go down and decrease when rates go up) and other turbulence, the ability to standardize and “right-size” the workforce at any given time is essential.

### **Reengineering the Loan Sales Office**

A parallel effort is being undertaken to reengineer the Loan Sales Office (Figure 2). Due to the dearth of industry-standard applications specific to loan trading and shipping, IndyMac through necessity built a number of one-off applications to support the numerous loan sales processes. A multi-year program is now underway to design and build comprehensive processes and applications to automate as much of this office as possible.

### III. MANAGING APPLICATIONS AT INDYMAC BANK

From its inception, IndyMac has always been a culture of change. Visitors to IndyMac's Pasadena headquarters will see IndyMac's Corporate Beliefs and Commitments prominently posted and note:

***Change:*** *Competition and technology will result in constant change. We must be flexible and adapt quickly to change to stay competitive.*

Change was always in the air as the company continued to reinvent itself as it grew. While organizational change and ever-increasing stretch goals were necessary to support the growth spurts that IndyMac was enjoying, these changes often challenged the company's employees. Change also permeates into all aspects of the IT application development group.

*"We expect change. Change is written all over the walls, and it's happening all the time".* Rahul Vishal, a member of the technical staff

While change can mean business opportunity, the structured world of IT application development requires some degree of stability. As IndyMac proceeded through its growth phases, the development groups found themselves asked to act like they were still the small entrepreneurial shop that they had been while building the first incarnation of e-MITS. IT management realized that something needed to be done.

In this section we discuss three specific initiatives that were undertaken to improve IndyMac's management of its application developments.

- Maturing the application development process
- Managing the project portfolio
- Partnering with the business.

All three reflect the work needed to manage IndyMac' from startup through its continuing growth to its present position.

#### APPLICATION DEVELOPMENT MATURITY

IndyMac made a strategic decision to be the first mortgage bank to deliver the robust functionality that e-MITS offered. Building up to the e-MITS launch in 1998, the IT group worked like a start-up: talented and dedicated coders worked long hours to complete the

project. Programmers were co-located in a single room for better communication. Some of the discipline of larger, more established IT shops was foregone to foster speed. For example, rules were hard-coded into the Brain to get the system to production faster.

Once e-MITS became successful, and as more new channels were hosted on the platform, the demand for IT resources intensified. Technology was on the critical path for just about everything: IT was woven into the fabric of the enterprise, and the enterprise was going to seize on its technology-based platform for rapid growth into the mortgage major leagues.

IndyMac's application development groups found themselves besieged by requests from all quarters: from established and nascent channel business managers alike to build new functionality; from strategic partners like Fannie Mae and Freddie Mac to integrate with changes to their automated underwriting engines; from IndyMac training groups to provide working training environments; from IndyMac enterprise security to lock down websites from new hacker threats; and from the mortgage industry itself, which runs in boom-and-bust cycles and is notoriously fickle to changes in the interest rate environment (Figure 3).

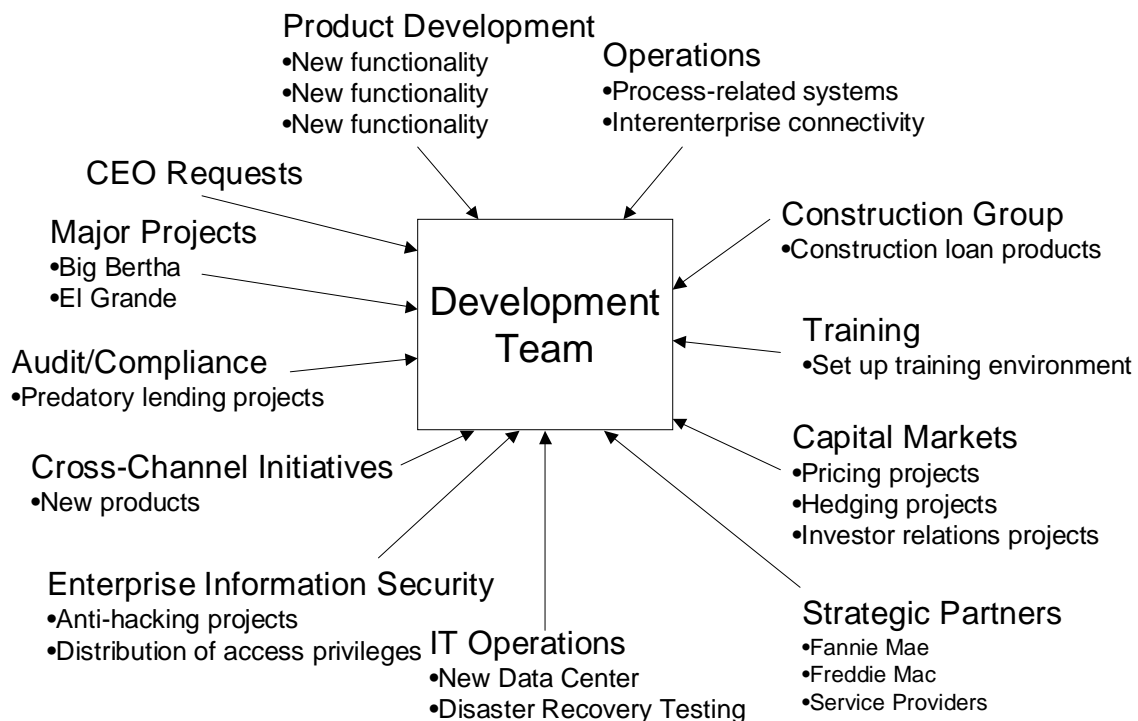


Figure 3: Organizational challenges

The demand for new functionality led IndyMac to release e-MITS projects to production as soon as they were coded and tested. The result was a daily release cycle, something not too uncommon in the Internet heyday of 1999-2000. The net effect, however, was unrelenting pressure on the IT staff (programmers, managers, operations, release management); frustrated business constituents; and “emergency fixes” into the production environment the day after a release. Growth and success came at a price.

Realizing that IndyMac’s application development group could not run a perpetual sprint in the marathon of a years-long enterprise growth cycle, IT senior management took action to begin moving the culture away from the entrepreneurial to more of a software engineering discipline. IT Managers were held accountable for meeting deliverables at weekly project review meetings. Structured walkthroughs increased. Business unit managers were required to sign-off on design documents. All constituencies had “skin in the game”.

## **PROJECT PORTFOLIO MANAGEMENT**

A revitalized Project Management Office (PMO) also played an important role in making projects successful. Project portfolio management was always an issue because almost anything that the business units wanted to accomplish contained an IT component. As illustrated in Figure 3, the development teams were trying to satisfy demands coming from all sides, and often were not able to satisfy those demands. The PMO initiated a review of the many projects in the pipeline and challenged each project sponsor to make the ROI case for their project. The result of this exercise was a prioritized list of projects, broken down into “active” and “future” categories. The “active” list was monitored at weekly development projects meetings. The formerly-besieged application development teams now enjoyed a much more structured queue of projects that allowed them to focus on quality.

## **PARTNERING WITH THE BUSINESS**

*From an idea conception point-of-view, business people are not always aware of what technology can do. For example, rather than taking a tiered approach, we can take a parallel approach. IT is shaping new strategies. Rather than just delivering what is being asked for [by the business users], we can act as a true partner. This helps us anticipate storms and take appropriate measures. G. Garg*

At the root of almost every IT development project is a business need searching for a solution. While the best approach is almost always to work collaboratively with business unit subject matter experts (SMEs), the reality of achieving this cooperation is often elusive.

Business unit SMEs primary job is to make money for the company. It is often difficult to obtain their time for comprehensive requirements gathering or structured walkthroughs. Business people sometimes would prefer to “throw the project over the wall”, let IT work though the details, and then receive a perfectly functional application delivered to production. The sad reality of this option is that the delivered production application often falls short of what the business requester had in mind.

IndyMac, like many companies, struggles with this dilemma. When IT is embedded into the business such as it is at IndyMac, business unit collaboration is crucial. When potential automation benefits are high, some business units do offer their top SME to work full-time with IT.

In addition, IT developers need to learn how the business functions in order to be effective. When business and technology people can speak the same language (ideally the business people will also be tech-savvy), projects are more likely to succeed. IndyMac has long championed mortgage business literacy for the IT development staff.

Consistent with the IndyMac philosophy of designing for change, the IT workforce is built on cross-training and flexibility. In 2000, when many of the technical staff was unfamiliar with the mortgage business, Gulshan Garg instituted an informal training program called “Teach Your Team”. Teams of two members of the technical staff formed to research and then present such seemingly esoteric subjects as “Adjustable Rate Mortgages and Negative Amortization” and “Treasury Yield Curve and Mortgage Backed Securities” to the entire IT team. This emphasis on cross-training continues and facilitates the rapid reassignment of IT resources to areas where the need is urgent from less-urgent areas.

As IndyMac continues to refine its IT-as-Fabric business model, application developers are evolving into business/technology consultants. Job descriptions are changing for many former IndyMac “techies”. As a result of IndyMac’s offshoring pilot program, programmers who formerly were only interested in the capabilities of the latest version of .NET or the nuances of C++ were transformed into their new role as business/technical consultants, whose primary job function is to learn the business process in minute detail,

document that process, and then partner with their business unit counterparts to devise process and technology solutions. These IT consultants then write detailed specifications for the use of the offshore development teams.

Application development at IndyMac has been a profound progression from the entrepreneurial days of e-MITS development to the more structured and planned approach employed currently. The paper began by explaining IndyMac's IT-intensive strategic visions and their implementations from 1998 to the present. In the next section we assess the business impacts of these IT-centered initiatives from both an operational and a strategic perspective.

## IV. ASSESSING THE BUSINESS IMPACTS

IndyMac consistently out-executed its peers with an average 23% annualized total return to shareholders from 1993 through March 2005 (Dow Jones Industrial Average had annualized returns of 12% for the same period). It produced a 41% compound annual growth rate in mortgage production since 1999 while the average growth rate in the mortgage industry was 8%, and it maintained superior earnings per share growth (Figure 4 and Table 1). Its latest 2005 year-to-year volume increase is 68% while the rest of the industry experienced a decline of 5%. It was able to sustain growth and continuously out-perform its competitors over time even as interest rates changed and new storms hit the business.

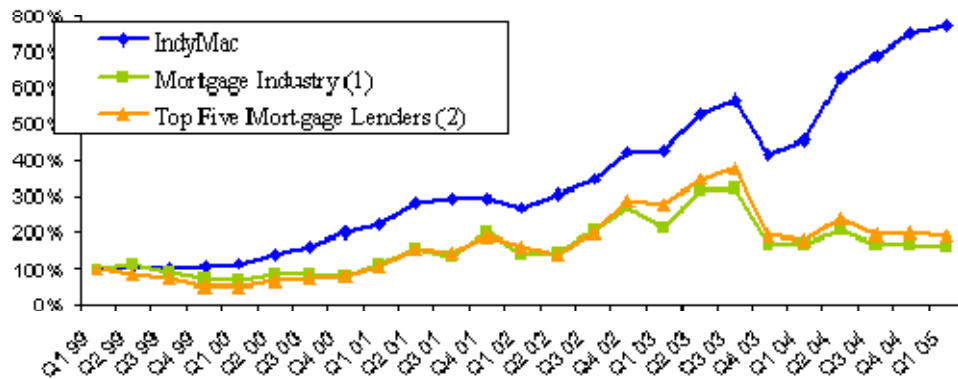


Figure 4: IndyMac's Compound Annual Growth Rate

Table 1. Earnings Per Share and Origination Growth by the Leading Mortgage Banks

Bank	Earnings Per Share Growth 1993-2004	Originations Growth 1993-2004
Countrywide	34	27
<b>IndyMac</b>	<b>32</b>	<b>42</b>
Flagstar Bancorp Inc.	30	19
Golden West Financial Corp.	24	32
Wells Fargo	12	30
Downey Financial Corp.	12	19
Washington Mutual	8	42

To maintain its superior performance in a turbulent business environment, IndyMac formulated a two-pronged business posture: a hybrid “hedging” strategy and an IT-enabled “flexing” strategy. To hedge, IndyMac Bank chose to be a hybrid: a mortgage bank (originate/purchase loans and sell them in secondary market) and a thrift (mortgage-related assets supporting by financing from deposits). This business model allowed IndyMac to deal with its varying interest rate environment: in periods of declining interest rates it allocates more capital and resources to mortgage banking, while in periods of rising interest rates, it spends more capital on investing. To flex, IndyMac launched the IT-intensive business initiatives described in the previous sections to out-execute its competitors in dynamic conditions. The IndyMac IT-enabled value proposition is based on fast response and convenience; the delivery of the offerings through multiple, complex, IT-enabled channels; and a distinctive capability achieved through superior IT platforms that meet ever-changing business needs. The execution model is based on being able to anticipate and detect future trends, while being able to respond quickly to unanticipated movements.

In this section we discuss how much of IndyMac’s business performance can be attributed to its IT-intensive business strategies, visions, business models, and initiatives. We consider the operational and strategic business impacts of these IT-centered initiatives on both IndyMac and the entire mortgage industry ecosystem. We describe new challenges and new opportunities that arise when managing IT-intensive business models for hyper-growth in a perpetual perfect storm environment.

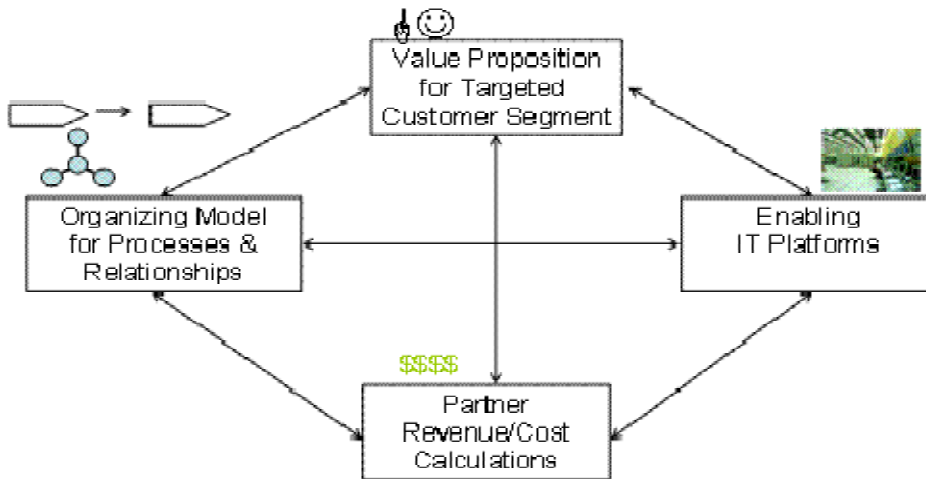
In a turbulent dynamic environment it is more difficult to separate operations and strategy clearly because operations and business models can induce strategies as often as strategies beget operations. For purposes of exposition, we divide the impacts into two categories: business model and operational impacts, and strategic and business ecosystems impacts.

## **IT-INTENSIVE BUSINESS MODEL AND OPERATIONAL IMPACTS**

Managing an IT-intensive business model brings with it benefits, costs, opportunities, and risks. The components of an IT-intensive business model are shown in Box 1. On the one hand it provides new ways of improving value propositions for attracting customers through IT-enabled business processes and information exchange, and it

### Box 1

#### Components of an IT-Intensive Business Model for an Enterprise



While there is much talk about the value of business models<sup>6</sup>, surprisingly little systematic conception and agreement exists on what a business model is<sup>7</sup>. We found that an *IT-Intensive* business model can be systematically articulated and operationalized through four interacting components:

- **Value Proposition for Targeted Customer Segment:** This proposition is usually accompanied by a good story about why particular customer segments would value an enterprise's products and services and be willing to pay a premium price for them.
- **Organizing Model for Processes and Relationships:** This model describes how an enterprise will organize its business processes, value chain, and partner relationships to effectively and efficiently deliver its products and services.
- **Enabling IT Platforms:** These IT platforms enable, shape, and support the business processes and relationships that are needed to deliver the products and services, as well as improve the value proposition. Enabling platforms becomes an increasingly critical component in IT-intensive environments.
- **Partner Revenue/Cost Calculations:** In a good business model, the combination of the value proposition, the way that offerings are delivered, and the investments in IT platforms are such that revenues exceed costs. Furthermore, if there are many partnering organizations involved, then the revenue agreement should be attractive to all partners. Finally, the risk of errors in forecasted revenues and costs should be manageable, and the revenue/cost margin robust.

<sup>6</sup> Margretta, J. "Why Business Models Matter," *Harvard Business Review*, March 2002.

<sup>7</sup> A recent notable exception is Osterwalder et. al, "Clarifying Business Models: Origins, Present, and Future of the Concept," *Communications of the AIS*, June 2005.

provides new ways of organizing electronic channels with partners. It can also reduce operational costs and improve response times, as well as enhance decision making and business transaction processing. However, it also comes with its implementation perils, business process change, IT application development and reorganization stress.

When the strategy and operations of an enterprise hinges on managing online through an IT-intensive business model such as was the case at IndyMac, the costs of technological failure and business failure are high. When coupled with perpetual perfect storms, the risks must be mitigated through effective IT application development discipline, judicious IT portfolio management, IT operational excellence, and close coordination of IT groups with the business (Section III).

### **Improvement in Value Proposition for Customers**

Several classes of customers apply to IndyMac for its home mortgages: mortgage professionals (such as mortgage brokers and correspondent lenders), real estate brokers, home builders, and of course individual consumers. From a customer's point of view, obtaining a mortgage can be a complicated, frustrating, and time consuming transaction. It is a commodity product where differentiation is based on pricing and process execution rather than branding. The customer's measures of effectiveness are centered around obtaining the best pricing, reducing the time required to fund the loan, and minimizing the documentation hassle. The IndyMac e-MITS automating underwriting engine contributed to these goals in a variety of ways:

- ***Immediate Access to Multiple Loan Programs:*** Before e-MITS, the loan approval process was serial: first a type of loan was selected ("slotted") that matched the customer, then pricing was determined, then documentation needed was specified. The e-MITS engine changed that process to a parallel one that also enabled IndyMac to offer "mortgages with a twist" (i.e. niche loan products) at a competitive price. Thus, e-MITS simultaneously considered the type of loan, the pricing, and the documentation needed and came up with the most attractive alternatives for the customer. The ability of e-MITS to do accurate risk-based pricing made this possible.
- ***Rapid Decision on Loan Funding:*** IndyMac's ability, through e-MITS to change the loan decision time from three weeks to under a minute once the mortgage applicant submitted the data to e-MITS changes the dynamics of the mortgage process, allowing brokers to move consumers quickly to the point of sale.

- **Rate Locking of Home Loans:** Through the e-MITS engine, once a mortgage is approved, the interest rate can be locked online for a specified period. This feature is particularly attractive for customers.
- **Mortgage Broker Appears like a Lender:** The speed at which a loan is approved through e-MITS makes the mortgage broker look like a professional lender in front of their customers, rather than a bureaucratic intermediary who is just passing paper up the line. This feature is particularly attractive to mortgage brokers.
- **One-Door Policy:** IndyMac realized quite early on that users did not want to reenter loan data into a multitude of proprietary lender systems to obtain the desired deal. e-MITS offered a “one-door policy”, in which borrower information needed to be keyed in only once and e-MITS would generate a multiple number of loan-appropriate options.
- **On-line tracking:** The mortgage professional or consumer is able through e-MITS to track the status of the loan online, and check any pending closing conditions or missing documents.
- **Increase in Pull-Through Ratio:** The pull-through ratio<sup>8</sup> for traditional loans is about 50%. e-MITS increased that ratio to over 70%, thus minimizing resources used for underwriting loans that do not end up funding. This increase translates into cost savings for IndyMac.

### **Increasing Electronic Channel Adoption**

The B2B channel was the one on which e-MITS had the most impact. Mortgage professionals were repeat customers. They quickly saw the merits of the e-MITS system, and the rate was quite high quite early. The adoption rate -- the number of loans submitted electronically through e-MITS was 80% to 90% of the total (Figure 5).

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<sup>8</sup> Pull-through ratio is the percentage of rate-locked loans that end up funding.

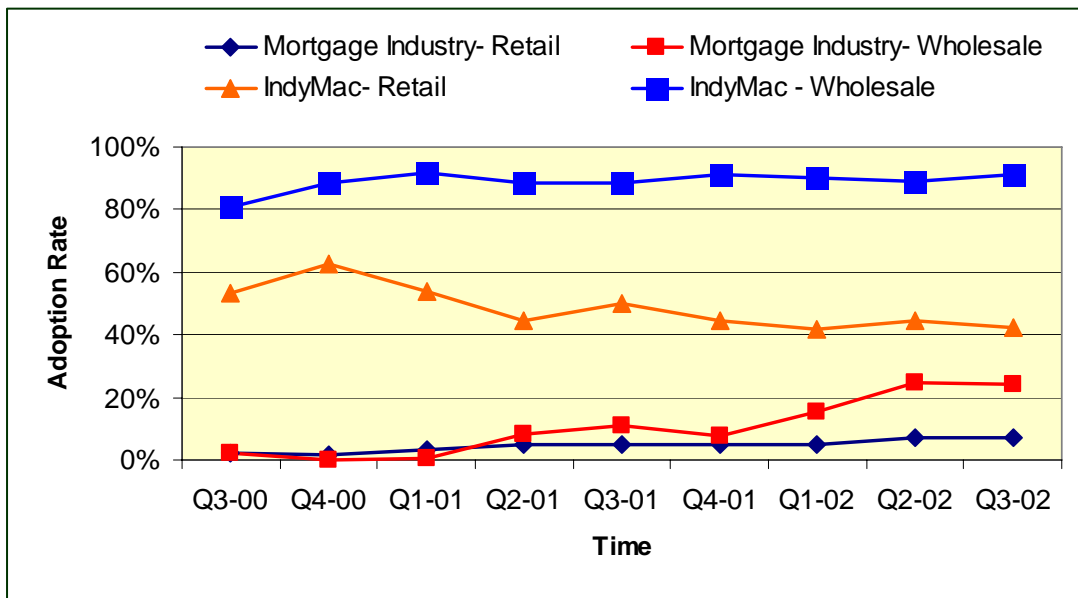


Figure 5: Adoption Rate of IndyMac in Online Segments Compared to Mortgage Industry

Adoption rate is an important measure of effectiveness because the resulting digitization improves efficiency and information gathering for IndyMac as it goes through the documentation necessary for underwriting the loan. While the amount of money IndyMac saved through automated electronic underwriting using e-MITS is confidential, suffice to say that in 2002, Fannie Mae estimated that lenders using automated underwriting systems at the point of sale could save \$1300 to \$1700 per loan.

### Costs of Organizational Stress to Develop and Manage the IT Platforms

When an enterprise's business model is IT-intensive in a hyper-growth environment, not only does it require 24x7 IT infrastructure uptime and customer support, but it imposes massive application development requirements as the business environment changes and grows (Section III). Business initiatives in new customer markets with new product lines that are IT-based and need to be launched quickly impose organizational stress on both the business groups and IT groups. IndyMac is well aware of these pressures and takes pains in recruiting, attracting, and incentivising employees to work in such a high-tempo constant-change environment. Sometimes, burnout occurs. The IT professionals who are recruited at IndyMac are selected because they are resilient, flexible, and able to handle working under constant change and deadline pressure. However, the team camaraderie, advancement opportunities in a high growth environment, and attractive rewards for performance – as well as top management's keen awareness of the issue – more than make up for it. Typically, recruits who are not suited to such a high-

performance and changing environment quit after 6 months, but those that survive their first two years and enjoy riding the perpetual perfect storms, tend to stay at IndyMac. Thus, ironically, the “old-timers” are the ones who most embrace constant change.

### **Costs of Aborted “First Mover” IT Platform Projects**

In an application development and business development environment where there are many pioneering initiatives and “firsts,” it would be foolish to assume that all projects will proceed the way they started. That is the cost that comes with wanting to be a first mover—especially in a hyper-growth environment. IndyMac had its share of those aborted projects, as technology platforms and tools for development were modified, business requirements were changed, new learning emerged, or new product lines were aborted due to environmental change. For example, there have been several projects with partners in different parts of the mortgage industry ecosystem to move towards an “all electronic mortgage” that were discontinued due to partner reluctance (such as title companies) to embark on digitization projects. It is important in such a rapid growth and change culture to also allow failure and support employees who tried hard in good faith, but environmental or technological change required them to abort the project. Ultimately, that is part of how learning occurs and expertise is acquired. The IndyMac culture maintains a healthy attitude towards complaints and identifying areas of improvement. The stated slogan “every complaint is an opportunity” is taken seriously, and there are “Bobble-Headed Doll” awards for employee complainers who offer suggestions for improvement.

### **STRATEGIC AND BUSINESS ECOSYSTEM IMPACTS**

Cumulatively, some operational impacts translate into strategic impacts. For example, the ability to offer competitive rates based on risk-based pricing for mortgages “with a twist” provided one of the most important sources of IndyMac’s market share increase.

### **Risk Based Pricing: Linking Wall Street and Main Street**

The e-MITS engine and the electronic business processes around it also made it possible to calculate prices for loans based on their risk on a loan-by-loan transaction basis, rather than on an average pooled basis prior to e-MITS. Thus, the e-MITS engine was able to calculate accurately what the selling price of the loan would be when it was securitized and sold on Wall Street. In effect, e-MITS provided an electronic link and some transparency between the customer base (Main Street) and the loan securitization

process (Wall Street). This linkage changed the loan processing paradigm from one of manually underwriting a loan, to one of validating a loan – it was priced accurately at the front end in near-real time based on how much it would sell for on the back end, allowing for more precise profitability management. It is a formidable strategic advantage because it allows much more accurate risk-based pricing and limits risk exposure while providing competitive prices.

### **Broadening the Customer Base**

e-MITS technology allowed then-upstart IndyMac to change its focus from approximately 50 large correspondent customers (1993-1995) to thousands of small mortgage brokers all over the country. This has helped IndyMac continue to increase its mortgage market share steadily. The latest results of Q1 2005 show a 76% increase in mortgage market share compared to Q1 2004. This broadening was also a move down the food chain that provided greater potential for profitability, while helping manage the risk associated with smaller customers through the capabilities of the e-MITS technology.

### **Improvement in Response to Competitive Moves and Consumer Demand**

When the rapid, continual change of the business started to overwhelm the capacity of the IT group to respond (Section II), the rules embedded within the e-MITS Brain were made accessible and placed within the control of the business users. IT designed and built an architected solution (BRASS) to provide the business users with a tool that allowed the controlled modification of rules on a real-time basis. This flexibility allowed rapid response in changing rules in the e-MITS engine when regulations changed, new mortgage products were launched, or competitors made market moves that required adjustment in offerings. Gomez Inc. an internet benchmarking and advisory services firm points out that the 4 banks that held top spots on their Internet Mortgage Scorecard since Q1 2002 (IndyMac, Countrywide, e-loan, and e\*trade) were able to quickly respond to changing needs through their online offerings:

*“What sets those firms apart is the continual evolution of their online mortgage offerings to meet changing consumer needs. For instance IndyMac, which has one of the leading online custom rate engines, is consistently adding new features. A recent addition enables the viewing of statistics concerning which mortgage products were being chosen by which customers --- and even how many origination points customers*

*were choosing to pay for products. (which is potentially useful validation data for customers considering those products).” M. Lehman<sup>9</sup>*

### **Building IT-Based Strategic Advantage in Multiple Business Ecosystems**

IndyMac operates in three different business ecosystems within the electronic mortgage industry: the loan acquisition ecosystem, the loan processing and funding ecosystem, and the loan sales ecosystem (Figure 6). As explained above, most of the strategic gains from e-MITS were around the loan acquisition ecosystem and the new process execution modes and relationships with new customer segments that it was able to generate. Strategic gains were also achieved by being able to link the loan acquisition ecosystem electronically to the loan sales and securitization ecosystem on Wall Street through risk-based pricing. IndyMac's next strategic target for IT initiatives is the loan processing and funding ecosystem. IndyMac believes it is the next competitive area for the electronic mortgage industry because this area is the biggest contributor to the borrower's wait between ratelocking and funding.

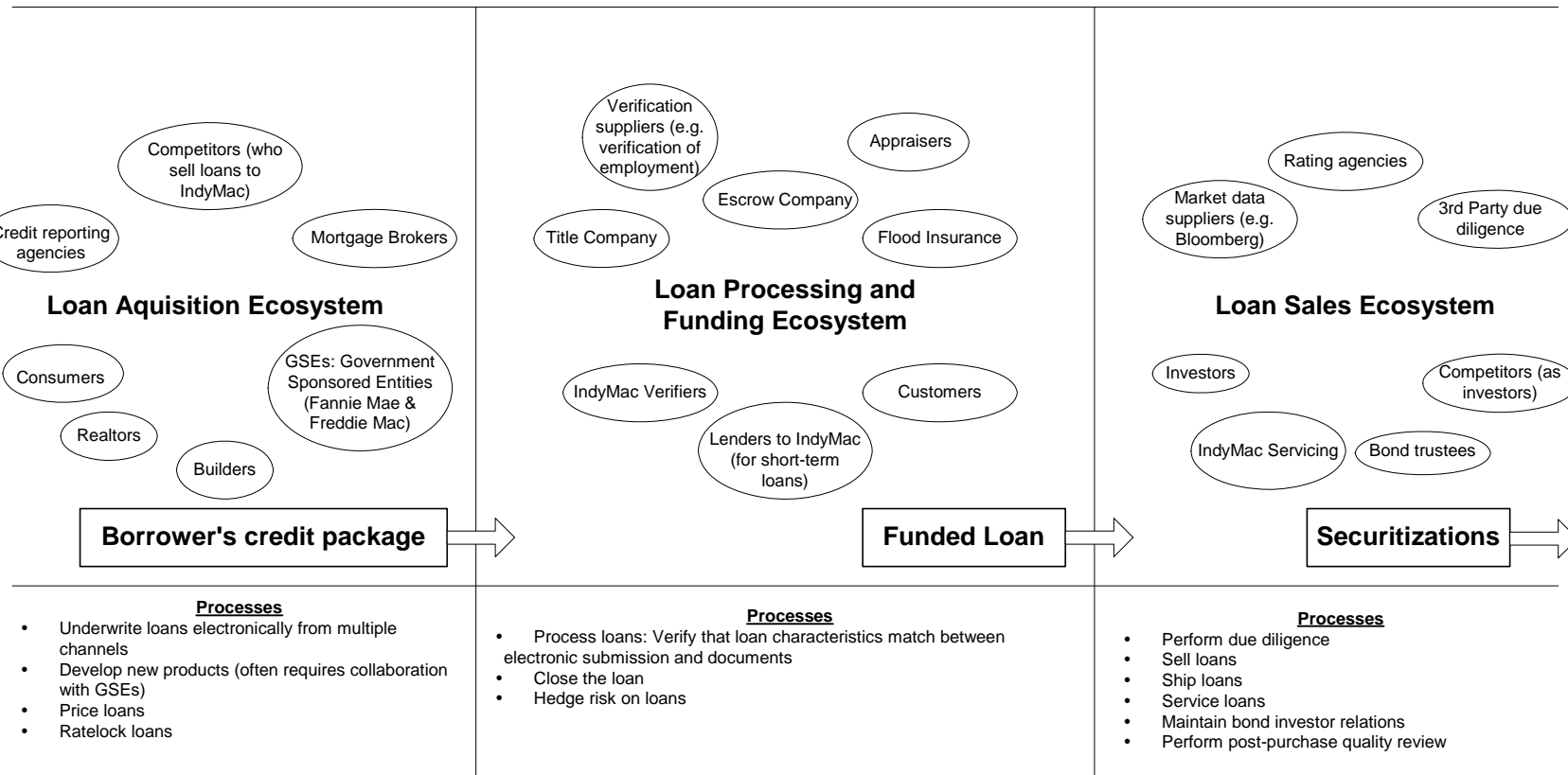
The loan processing and funding ecosystem in which IndyMac operates includes many different participants, such as lenders, appraisers, and title companies, who gather and verify the documents that are required to support the loan characteristics submitted online, and who nurture the loan application until it achieves funding. IndyMac views this process as the factory through which loans are manufactured<sup>10</sup>. The IndyMac strategy focuses on standardizing each task for manufacturing loans and granularizing these tasks into multiple chunks of work. Once done, it will be possible to source these tasks worldwide. The current effort focuses on expediting the funding process by reengineering loan processing to digitize paper documents, make the requisite tasks more granular, and build IT capability to leverage the global workforce. IndyMac firmly believes that by pursuing IT-based strategic advantages in each of these three business ecosystems and having the ability to electronically intermediate across them, it will be able to continue to out-execute its competitors for many years to come.

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<sup>9</sup> Lehman, M. "Re-fi Boom's End Signals Switch In Online Mortgage Banking Tactics," *Bank Systems & Technology Online*, March 9, 2004.

<sup>10</sup> Karmakar, U. "Will You Survive the Services Revolution?," *Harvard Business Review*, June 2004.

Figure 6  
 IndyMac Electronic Mortgage Industry Business Ecosystems



## V INSIGHTS AND LESSONS LEARNED

The IndyMac Bank experience is one which demonstrates how to manage an IT-based business successfully in a turbulent environment– even when starting as a small firm in a traditionally staid industry. It also provides multiple insights and many lessons that we think can be particularly useful to both CIOs and top managers. These lessons are about strategies for managing enterprises through IT in perpetual perfect storms, as well as strategies for managing IT applications and operations in such rocky conditions. We present what we believe are the top 10 lessons:

***Lesson #1: The captains at the helm must have a sharp strategic IT-enabled business vision for the enterprise before embarking on an online journey in perpetual perfect storms or their ship could be broadsided and washed ashore.***

IndyMac experienced perpetual perfect business storms from many different directions and at many different levels. These storms included both externally-generated storms beyond IndyMac's control and internally-generated storms that were often a conscious choice.

These continuous storms need to be responded to, but they can be draining and distracting and debilitating – unless there is a focus on a strategic vision for which there is commitment and conviction that is it the right destination. No matter how heavy the storm, if there is an unwavering sense of purpose, these stormy episodes can be dealt with as part of everyday routines. The IndyMac CEO and CTO's conviction was that they can change the electronic mortgage industry by providing superior value propositions through the strategic use of IT. It is this single-minded top management focus that enabled IndyMac to sail onwards towards its destination. While sometimes it had to head directly into a storm, and sometimes it had to do some strategic tacking around it, it never lost sight of the strategic IT-business vision.

***Lesson #2: Managing strategically with IT-intensive business models in a hyper-growth enterprise will require nurturing an IT professional culture that is resilient and embraces working in perpetual perfect storms.***

IndyMac is keenly aware of the pressures and constant change requirements that IT groups experience to function effectively in its demanding environments (Section III). IndyMac discovered that it must carefully recruit, retain, and provide incentives for IT professionals who can rise to the challenge. It must also nurture a professional culture in which resilience, flexibility, and follow-through under pressure are valued and rewarded. Any enterprise with similar conditions will need to take these human resource issues explicitly into account, rather than assume that it is business as usual.

***Lesson #3: There is no safe harbor from competitors in perpetual perfect storms, even after your major strategic IT initiative has changed the rules of the industry. To outperform competitors who imitate, the continuous and creative enhancement of the IT-enabled capabilities that produced the advantage is imperative.***

IndyMac changed the rules of the mortgage industry when it launched its e-MITS systems, and that provided a definitive strategic advantage to the company. It continued to add capabilities as competitors starting imitating its initiatives. There was no letting down even when it had become successful: the enterprise was perpetually in continuous-improvement mode. While this lesson is not new, it becomes especially important in perpetual perfect storms because strategic advantages can be more fleeting as conditions change quickly.

***Lesson #4: Give up control to gain strategic advantage. As enterprises find themselves managing IT-intensive business models in perpetual perfect storms, they may have to increasingly invoke strategic repertoires over which they have less control. The scope of the strategic focus will shift to include not just the enterprise and its direct supply chain, but also its broader business ecosystem.***

The variety of strategic repertoires that enterprises can exercise in strategy making grew over the past two decades. The classical origins of strategic management started in the 1980s with *Strategy as Positioning*<sup>11</sup> in which corporate strategy centered around gaining sustainable competitive advantage through positional advantage in an industry by erecting effective barriers to market entry by competitors. In the early 1990s there was a shift to execution and *Strategy as Movement*<sup>12</sup> in which strategic advantage was gained through speedy and superior business process execution, and fast response management. The scope of strategic focus was extended beyond the enterprise to end-to-end horizontal business processes from suppliers all the way to customers. At about the same time, there appeared a repertoire of *Strategy as Capability*<sup>13</sup> in which the source of competitive advantage was viewed as residing in the enterprise's inherent acquired skills, knowledge, and expertise (superior resources) that could be translated into unique capabilities and competencies.

More recently as the business environment became more turbulent, dynamic, and complex, the strategic repertoire was extended to cope with these more challenging conditions – effectively searching for strategic repertoires that could better cope with perpetual perfect storms. These strategies involved more complex dynamism and less direct control: the ship would have to learn to reconfigure to roll with new types of waves, and to learn how to collaborate more intelligently and continually with other seafarers and marine life.

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<sup>11</sup> Porter, M. *Competitive Strategy: Techniques for Analyzing Industries and Competitors*, Free Press, 1980.

<sup>12</sup> Stalk, G., and Hout, T. *Competing Against Time: How Time-Based Competition is Reshaping Global Markets*, Free Press, 1990.

<sup>13</sup> Prahalad, C.K. and Hamel, G. "The Core Competence of the Corporation," *Harvard Business Review*, May-June 1990.

In the late 1990s, the view of *Strategy as Dynamic Capability*<sup>14</sup> showed how strategic advantage could be gained through an enterprise's ability to quickly build and reconfigure competencies and exiting resources into new ones. More recently, we have also better understood how IT can enable agility<sup>15</sup> and dynamic capabilities<sup>16</sup>. Simultaneously, enterprises began to emphasize collaborative views of strategic advantage that focused on collaboration in supply chains and value chains. *Strategy as Supply Chain Synchronization* became a strategic repertoire in which the core premise was that in rapidly-changing turbulent environments with fluctuating demand, collaboratively synchronizing the demand and supply side business processes of supply chains in real-time would yield a strategic advantage for the entire supply chain. This was increasingly accomplished through electronic business processes, process integration across supply chains, information sharing, and deep visibility, and the use of real-time dashboards<sup>17</sup>.

Most recently, this view has been extended to include not just an enterprise's immediate supply chain, but also encompass the enterprise's business ecosystem.<sup>18</sup> This strategic repertoire has been labeled *Strategy as EcoPartnering*<sup>19</sup> and is a strategy making mode in which the enterprise has less direct control, but needs to coax the mobilization of resources in its business ecosystem which include all the network of loosely coupled enterprises and organizations that influence the creation and delivery of an enterprise's products and services (including competitors and other supply chains). Strategy in this view increasingly involves managing assets and resources that an enterprise does not own or control (Figure 7). It also involves providing business platforms and IT platforms that other enterprises and entities in the ecosystem can leverage.

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<sup>14</sup> Teece, D., Pisano, G., and Shuen, A. "Dynamic Capabilities and Strategic Management," *Strategic Management Journal*, Vol. 18, No 7, 1997.

<sup>15</sup> Sambamurthy, V., Bharadwaj, A., and Grover, V. "Shaping Agility through Digital Options: Reconceptualizing the Role of IT in Contemporary Firms," *MIS Quarterly*, 27, June 2003.

<sup>16</sup> Pavlou, P. Bharadwaj, A., El Sawy, O.A., Gupta A., Tallon P. "Linking IT and Dynamic Capabilities: The Elusive Dancing Partners?" Panel, *Proceedings of the 25<sup>th</sup> International Conference on Information Systems (ICIS)*, Washington D.C., 2004.

<sup>17</sup> Houghton, B., El Sawy, O.A., Gray, P., Donegan, C., and Joshi, A. "Vigilant Information Systems for Managing Enterprises in Dynamic Supply Chains: Real-Time Dashboards at Western Digital," *MIS Quarterly Executive*, March 2004.

<sup>18</sup> Iansiti, M. and Levien, R. *The Keystone Advantage: What the New Dynamics of Business Ecosystems Mean for Strategy, Innovation and Sustainability*, Harvard Press, 2004.

<sup>19</sup> El Sawy, O.A. "IT-Based EcoPartnering," Keynote Address, *European Mediterranean Conference on Information Systems*, Cairo, June 2005.

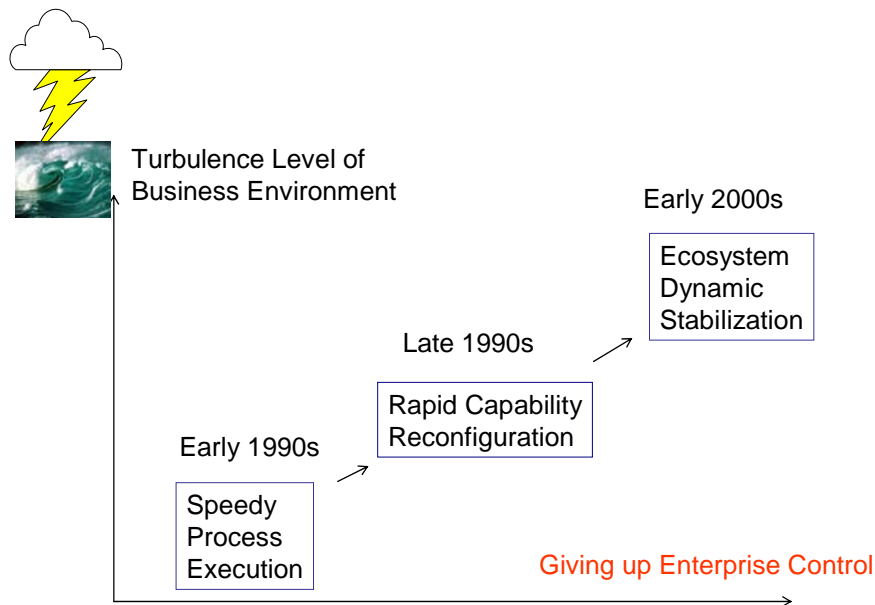


Figure 7. Gaining Strategic Advantage through Giving Up Control

The idea is that in hyper-turbulent environments in which there are many disruptive technologies, many new marketspaces with new rules, new players, and new business models, it is necessary to partner in order for the ecosystem to thrive and dynamically stabilize as perpetual perfect storms keep coming. Eco-partnering means partnering with other enterprises in a way that helps the entire business ecosystem be sustainable and stabilized. It involves actively influencing the way that an enterprise's entire business ecosystem operates, and improving their own performance while doing that. Thus eco-partnering involves both creating value and sharing value. Iansiti and Levien (op. cit) have shown that in the retail business ecosystem, the business and IT platforms and information sharing capabilities that have been created by Walmart for the ecosystem to use and benefit from, accounted for 24% of the margin advantage.

As the environment becomes hyper-turbulent and perpetual perfect storms multiply, this view of strategy is increasingly useful. Furthermore, the complexity of dynamism involved in strategy making requires more rapid moves and more complex reconfigurations (see Figure 8). Again, this will require information sharing and shared knowledge creation that will increasingly mean giving up enterprise control in order to

gain strategic advantage. Increasingly, as turbulence increases, this will only be practically achieved through IT-based business models.

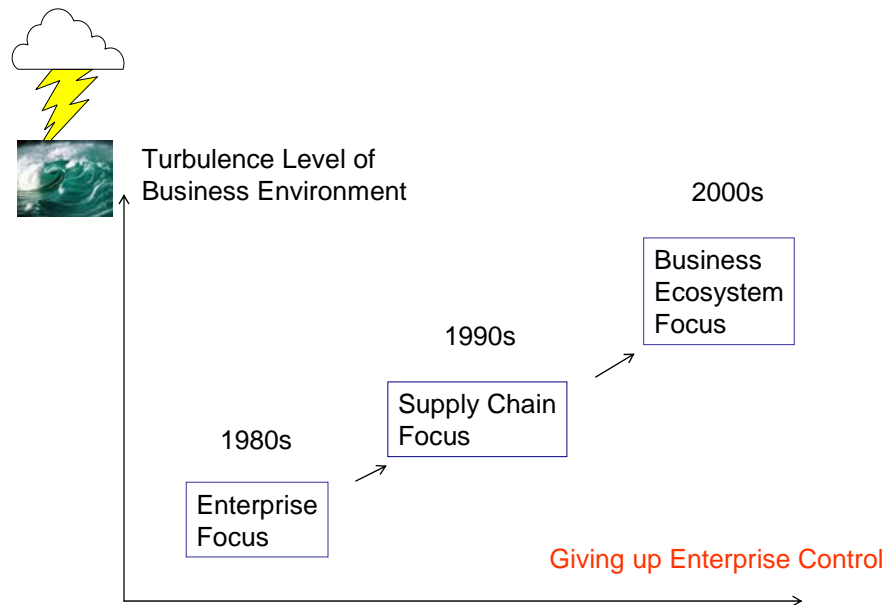


Figure 8. Giving Up Enterprise Control to Gain Dynamic Strategic Advantage

IndyMac top management is keenly aware that the next battleground in IT-based strategy will be in areas where they have less control, and that more creative options will be necessary to sustain their competitive advantage. IndyMac's strategic thrust around the loan processing and funding ecosystem narrated in Section IV is a case in point. IndyMac has realized that in order for it to improve its position in that portion of the business ecosystem, it will have to devise new process designs and IT platforms that enable the entire IT global labor market in that marketplace to thrive, as well as engage participants who are at very different levels of digitization in their business processes, transactions, and documents. IndyMac has also realized that this will require rapid reconfiguration of capabilities at unprecedented levels of dynamism complexity. This will only be achieved by sharing value with others and giving up some enterprise control in order to gain and sustain its strategic advantage.

**Lesson #5: Smaller ships can surprisingly influence ocean tides in stormy seas. In turbulent environments, It is possible for an enterprise to use superior IT-based business models and appropriate strategic repertoires to change the rules of an industry, even if it is an established old line industry and the enterprise is relatively small.**

Each era has IT-based business models that are suited to the business environment and level of turbulence of its time. In the mid 19<sup>th</sup> century there were simple beginnings:

*“The businessman of the present day must be continually on the jump --- he must use the telegraph<sup>20</sup>” New York Merchant, 1868*

In the perpetual perfect storm environment of the 21<sup>st</sup> century, the IT-based business models are much more advanced and the strategic repertoires much more dynamic. IndyMac Bank shows us that a smaller firm can change the rules and gain strategic advantage through IT-based business models, by better understanding how to manage in perpetual perfect storms. There are many strategic options to choose from (Figure 9)

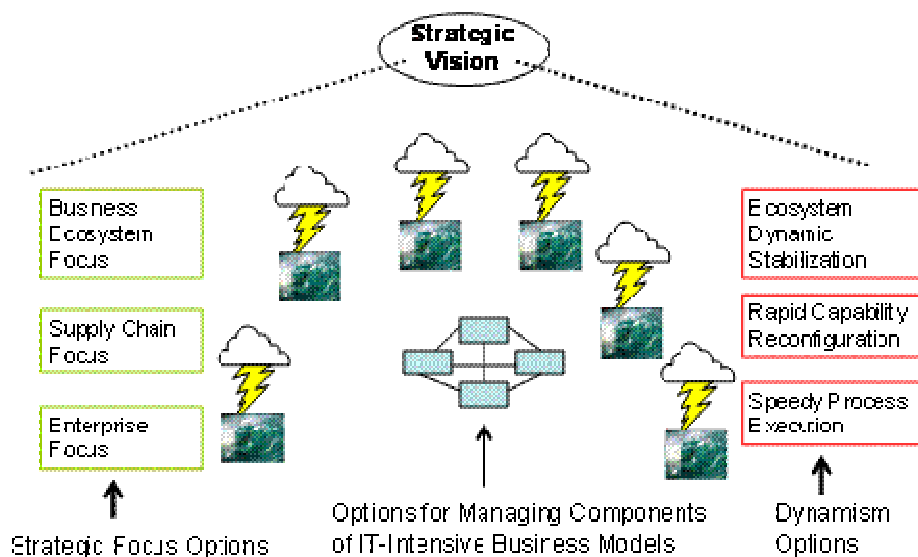


Figure 9. Strategic Portfolio for Managing Online in Perpetual Perfect Storms

<sup>20</sup> Quoted in the “The BlackBerry Backlash,” *The Economist*, June 25, 2005.

but the choice requires a depth of understanding that this paper tries to provide and articulate

***Lesson #6: Managing the digital divide in a traditional industry through automating some paper-based processes is a better strategy than trying to eliminate all paper.***

IndyMac and several other mortgage banks considered implementing an “all-electronic mortgage” initiative, but found many obstacles. It discovered despite different strategic tacks and negotiations that there is a “digital divide” among various parts of the ecosystem, with some participants being highly electronic, while others were slow and paper-based. For example:

- Title companies will not digitize all of their data. Digital title data is available in some large metropolitan areas, but the only way to perform a title search in some rural areas is to go to the courthouse and search through paper records. Furthermore, automating title search may not be in the best economic interests of some ecosystem partners because they make more money on inefficient processes.
- Digital signatures are not yet accepted everywhere. In an industry so tied to legal documents, signatures are a big hurdle.
- Mortgages require proof of income, which usually includes W2 forms. Employers have no incentive to make employee pay verification available digitally to mortgage companies.
- Although the Mortgage Bankers Assn. supports an industry-standard XML format (MISMO), companies are still reluctant to adopt. IndyMac is a proponent of MISMO, but a project to use MISMO with one of its partners in the mortgage market was scrapped because they did not yet support the format.

The digital divide in the industry makes it unlikely that the mortgage market can be fully digitized in the near future. The whole mortgage ecosystem must agree and act if the process is to be completely paperless. The only thing that firms like IndyMac can do at this point is to chip away at the problem by automating additional portions of the mortgage process in “paper-based” form (e.g., OCR scanning of documents) eventually

closing the digital divide while gaining and sustaining strategic advantage at every step of the way. This lesson applies to all industries in which there is a digital divide.

**Lesson #7: “IT as Fabric” requires a different mindset throughout the enterprise for IT management and its relationship to the business.**

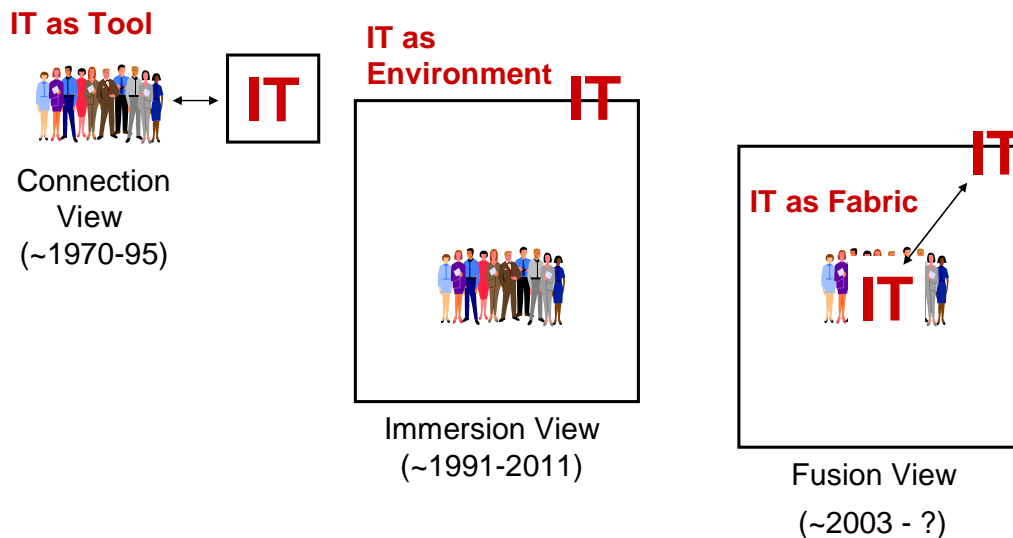


Figure 10. Changing Conception of IT Platforms

Over the last two decades the changing nature of IT and IT platforms induced and rapidly changed the *relationship* between IT and the business (Figure 10)<sup>21</sup>. In its early days, IT was viewed only as a tool. IT was a separable artifact that supported work and decision making, and was connected but not necessarily integral to the business. In the 1990s as network interconnections and the internet became ubiquitous, IT started to be viewed as part of the business environment. People worked and saw themselves immersed in an IT-intensive business environment where work processes and IT were inter-mingled, highly interdependent, and intimately influenced one another. In this immersion view, IT is seen as part of the business environment that changes the way we work and carry out business processes -- and increasingly one could only connect to do

<sup>21</sup> El Sawy, O.A. “The 3 Faces of IS Identity: Connection, Immersion, and Fusion,” *Communications of the AIS*, Volume 12, November 2003.

business with other enterprises and consumers through IT. Most recently, the relationship between IT and the business *fused* even more such that IT is indistinguishable to our perception and forms the *integral fabric* of an enterprise. In this view IT is intimately woven into the fabric of the enterprise such that IT and work cannot be separated<sup>22</sup>.

IndyMac Bank is an example of a progressive enterprise which was able to understand how to weave IT throughout the very fabric of the organization. IndyMac management understood how to leverage that at the corporate strategy level, at the IT strategy level, throughout the line divisions, and in the various IT groups.

The top management of IndyMac starting from the CEO understood what it meant strategically to have IT be an integral part of the business. When IT is fabric, then the concept of alignment between IT and the business is a moot point: they are inseparable. Strategy gets made with both IT and the business in tandem. When IT intensity in an enterprise increases such that IT becomes part of the business fabric, and when the business environment that the enterprise operates in increases in turbulence such that it is that of perpetual perfect storms, then the role and positioning of the CIO will also tend to be very different.

The business culture is deeply ingrained in the IT development groups at IndyMac. Much time was spent learning and understanding the mortgage business and IndyMac's strategy in leveraging its combined technology and mortgage expertise. Systems developers were constantly inundated with the notion and culture that they were business partners, rather than just problem solvers and requirements translators. Training sessions were about business models, rather than IT. What mattered was not whether they were C++ or Visual Basic developers, but whether they knew the retail mortgage product line or the construction loan product line. A rigorous training program called TYT was installed (Section III). As a result, business users in the line divisions at IndyMac are generally IT-savvy, and IT developers are business-savvy. It is that IT-

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<sup>22</sup> Any attempt to do that will just yield finer granularities of IT-enabled work. Certainly, the move to web services and service-oriented architectures is pushing us in that direction, as is the increasing IT intensity of business models in many industries.

blended business fabric that enables the execution culture at IndyMac to work. There are no isolated technologists at IndyMac.

***Lesson #8: In perpetual perfect storms, there is a need to manage simultaneous loose/tight control of IT applications together with the business units.***

In the words of country singer Kenny Rogers in his legendary song *The Gambler*: “*You gotta know when to hold 'em, know when to fold 'em.*” In a perpetual perfect storm environment when business conditions and user requirements change dynamically and rapidly, the management of IT applications architecture requires simultaneous loose/tight control. The core of the IT applications architecture needs tightly controlled specifications and requirements, and a disciplined way of maintaining architectural unity as modifications are made. At IndyMac, the tight disciplined management of the architecture of the e-MITS BRAIN is an example of that. Once changes are specified, they are tightly executed and controlled through the professional project management of the IT development organizations.

However in dynamic turbulent environments, it makes no sense to have

*“IT joined at the hip with the new product development people on everything”* A senior manager in the secondary market business unit

Thus, the BRASS application was designed to allow business users to change mortgage underwriting rules and parameters in the software without the intervention of the IT development groups. With the increased number and complexity of the underwriting rules and the frequency of their change, as well as the need to respond to competitive moves quickly through IT-enabled responses --- it would have been slow and inefficient to route changes through the IT groups, each time that happened – which was often daily. However, with the tight architectural specification and modification discipline for the core, the ability of users to control the application to serve business dynamically was possible. The discipline of the architecture made it possible for users to be at the helm when they had to deal with their own storms without capsizing the ship. This simultaneous loose/tight control of application management became an architectural blueprint for all environmentally-sensitive applications at IndyMac. In perpetual perfect storms, this loose/tight application management structure may become an imperative for dynamic enterprises.

***Lesson #9: Both business process structure and IT development roles need redefinition for sustainable scalable change when managing online in perpetual perfect storms.***

The move from mainframes to n-tier architectures resulted in the increased componentization of infrastructure and made capacity expansion less of a stepped capital expenditure and reduced lead time. However, on the application development side keep costs down in the face of change and scaling up did not fare as well. The integration and re-integration of applications is an escalating cost in most IT development budgets. The promise of web services and service-oriented architectures provides some technological relief through changing the structure of applications to be more modular and componentized, making it easier to reuse modules and make modifications. Furthermore, the increased availability of a skilled global IT labor pool at lower costs in places such as India is also helping substantially lower application development costs substantially and an escalating trend.

IndyMac increasingly takes advantage of application development outsourcing and is re-architecting its applications to be more modular and “Lego-like.” They create smaller modules that are designed to be enabled and activated in flexible configurations. To execute such an application development strategy effectively in a perpetual perfect storm environment, IndyMac also rethought the structure of its business processes and the roles of the IT development professionals.

Business processes were broken up into many smaller activities that can easily be outsourced globally with only a minimal amount of domain knowledge (in this case about the mortgage business). The mortgage industry is notorious for its stormy rises and ebbs in demand<sup>23</sup>, and at times of peak demand competitors raid each others’ application development staff because these people already know the domain. This zero-sum game does not help the stability and prosperity of the electronic mortgage business ecosystem. IndyMac’s high-granularity approach allows much speedier

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<sup>23</sup> Refinancing rushes occur when interest rates or legislation change

development at peak times while able to outsource to an available global labor pool which needs minimal domain knowledge<sup>24</sup> to develop application modules successfully.

This approach required IT development roles to be redefined at IndyMac. Developers who once prided themselves on technical prowess are now heavily involved in business process analysis and writing functional specifications for use by offshore programmers. They also communicate to line division managers what portions of processes can be easily outsourced, and how to modularize business processes. Enterprises who would like to position themselves for sustainable scalable change while managing online in perpetual perfect storms may want to view the IndyMac strategy and experience as a harbinger of things to come in managing global IT outsourcing for application development.

***Lesson #10: For successful IT application development in perpetual perfect storms, it may often be more advantageous to slow down to go fast***

IndyMac prides itself as being an execution culture. Execution is one of its core corporate beliefs and is pasted all over the walls. There is a commitment to excel in execution and to follow through. Change is another of its corporate beliefs, and there is a written commitment that they must be flexible and adapt quickly to stay competitive. In the IndyMac environment, those two values when combined together require a discipline that maintains inner calm while dealing with many storms.

Initially, as a start up, working at feverish speed to get into the market, the IT development groups needed to take many shortcuts. IndyMac's huge first mover advantage could only be sustained through disciplined project management. Although a lack of project management discipline can shorten delivery time by eliminating steps, its results are varied and non-predictable. It resulted in some rapidly-delivered big winner initiatives – but also many less-than-successful projects. Project management discipline is now in place and “slowing down to go fast” is the IT development groups' driving principle.

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<sup>24</sup> or knowledge of a much smaller specialized chunk

## VI. CONCLUSIONS



IndyMac is an IT-intensive on-line business that depends crucially on IT for its competitiveness. Its swift climb from being the 33<sup>rd</sup> largest mortgage company in the USA in 1999 to become the 11<sup>th</sup> largest in mid 2005 with a 41% compound annual growth rate is a remarkable feat given that the average growth rate in the mortgage industry has been 8%. It continues to out-execute its peers as we write this and its latest 2005 year-to-year volume increase is 68% while the rest of the industry experienced a decline of 5%. It continues its track record of both growth and returns to shareholders over fluctuating interest rate cycles and many other business storms. This level of performance could not have been achieved without its continuing strategic use of IT and its deep understanding of how to manage the challenges and opportunities of an online business effectively in turbulent environments on a sustainable basis.

The IndyMac Bank story is one of strategic conviction, IT courage, and unwavering commitment to change and innovation. IndyMac set sail in a stormy sea and on a course with perpetual perfect storms. Even though it was a small firm in the electronic mortgage industry, it changed a staid old line industry through the innovative use of IT and through cleverly weaving IT into the very fabric of the bank and its business ecosystem. In the process it learned how to manage online in perpetual perfect storms in a sustainable way that will continue to help it stay competitive in the coming years.

The insights and lessons that we learned from the IndyMac experience for managing online in perpetual perfect storms can be transferred to enterprises in other industries,

whether in manufacturing or services. Some IT-intensive enterprises will find themselves in business environments that are highly turbulent, while other IT-intensive enterprises will choose turbulent niches in their business ecosystem because they think they are better at weathering storms than their competitors. Others still will encounter perpetual perfect storms in due time as the various parts of their business ecosystems speed up, spawn new market-spaces, and change the rules. The lessons that we drew from the IndyMac experience should help all of these types of enterprises.

When IT intensity in an enterprise increases such that IT becomes part of the business fabric, and when the business environment that the enterprise operates in increases in turbulence such that it is that of perpetual perfect storms, then the role and positioning of the CIO will tend to be very different. When IT is fabric, then the concept of alignment between IT and the business is a moot point: they are inseparable. The CIO's business and IT roles also become fused, and CIOs can run a part of the business equally as well as they can run the IT function. When an enterprise also operates in perpetual perfect storms, then effective CIOs must learn to anticipate on their own rather than react to someone else's anticipation. They need to help mold and steer a robust IT-enabled strategic business vision and keep their eye on the prize amidst the fray.

The IndyMac Bank experience is a harbinger of things to come. Before you know it, perpetual perfect storms will hit your business and IT systems. We hope the insights from this story will better prepare you to steer your IT-enabled enterprise to success in the high seas – even when continuously broadsided by huge tidal waves.

## **ABOUT THE AUTHORS**

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