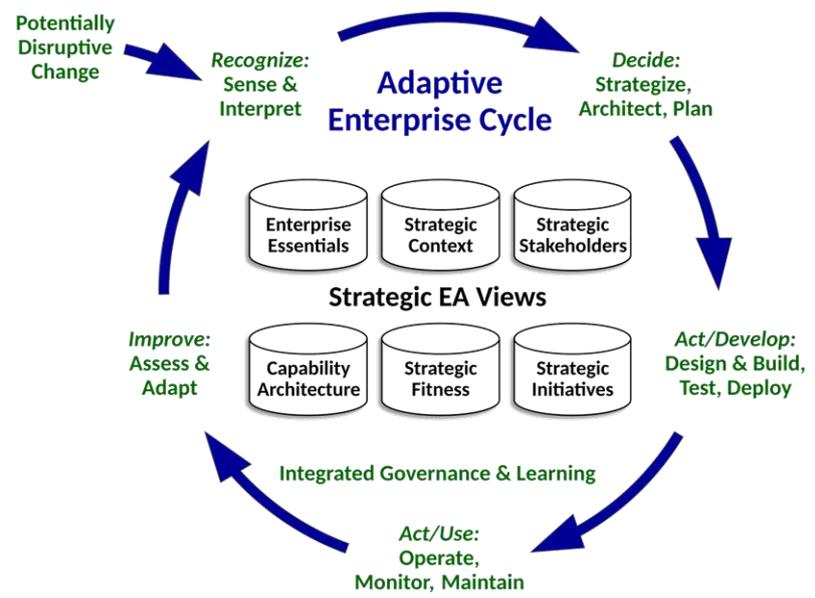


THE STRATEGIC ENTERPRISE ARCHITECT'S DILEMMA

Balancing
Fitness for Today's Purpose
with
Fitness for Tomorrow's Context
Disruptive



Alex Conn and Leo Laverdure

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Praise for *The Strategic Enterprise Architect's Dilemma*

“Alex and Leo have done an outstanding job analyzing, organizing and consolidating decades of enterprise architecture experience gained from solving significant real-world problems in many contexts. Their book extends familiar enterprise architecture techniques in alignment with strategic planning approaches to make pragmatic recommendations on how to understand, balance and address the many challenging aspects of sustainability that all enterprises must (continually) address. I highly recommend this handbook for anyone interested in creating, building or evolving complex systems that can survive and thrive in our ever-changing environment.”

—Vik Muiznieks, Ph.D., Director of Enterprise Architecture, MIT Lincoln Laboratory

“Enterprise architects face many dilemmas because EA is such a broad, umbrella discipline. For many architects the biggest dilemma is often the ‘now or later’ debate. We certainly need enterprise architecture as a discipline more than we ever did in the past - not just for enterprise management, but as a way to plan the future of our planet and species, and many of the things that we value. The Strategic Enterprise Architect’s Dilemma is a thoroughly researched, well-written, practical and useful book that will certainly help a lot of practitioners struggling with this ‘now or later’ dilemma and want to apply architectural thinking to both long- and short-term change.”

—Roger Evernden, Enterprise Architect, author, and musician

“With the rapid proliferation of digital technologies, sustainability and vulnerability are now paramount concerns in enterprises, and enterprise architects must be able to make responsible choices quickly. Enterprise architecture becomes nearly irrelevant when it focuses narrowly on fitness for purpose, a paradigm that served yesterday's businesses for years. The new disruptive digital context, where business models and values change constantly, calls for architectures that work for both current and future scenarios. This book continues where conventional ways of practicing enterprise architecture have left off. The authors have created a unique and effective approach that emphasizes fitness for context, resulting in greater strategic contribution and value for enterprise architects.”

—Dr. Peter Beijer, Chair of the Digital Architects NetWork

“The concepts, ideas, and approaches to Strategic Enterprise Architecture described in this book from Leo Laverdure and Alex Conn are both critically important and timeless. Technology is disruptive, so are the rapid business changes that it enables – and its disruptive effect will only increase over time. This is the book you need to have on your top shelf to understand, in practical terms, how to use Strategic Enterprise Architecture during these disruptive times.”

—Roberto Rivera, Architecture Capability and Profession Leader

Table of Contents

Preface.....	viii
Introduction.....	1
Part I: Overview.....	9
Chapter 1: Why Strategic Enterprise Architecture.....	10
Chapter 2: Basic Strategic EA and Disruption Concepts and Terms.....	16
Chapter 3: The Challenge in Brief.....	49
Chapter 4: The Dilemma in Brief.....	62
Chapter 5: The Solution in Brief.....	69
Part II: The Solution.....	93
Chapter 6: The Discipline—Strategic Enterprise Architecture.....	100
Chapter 7: Introduction to the Strategic Enterprise Architecture Views.....	122
Chapter 8: The Enterprise Essentials View.....	137
Chapter 9: The Strategic Context View.....	147
Chapter 10: The Strategic Stakeholders View.....	178
Chapter 11: The Capability Architecture View.....	189
Chapter 12: The Strategic Fitness View.....	222
Chapter 13: The Strategic Initiatives View.....	252
Chapter 14: The Methodology—the Adaptive Enterprise Cycle.....	264
Chapter 15: Key Tools and Methods.....	324
Part III: Practice: Using the Views and Methodology, With Examples.....	359
Chapter 16: Using Strategic EA to Improve Strategic Fitness.....	360
Chapter 17: Architecting and Disruptive Change—Proactive and Reactive.....	370
Chapter 18: Populating and Using the Views.....	403
Chapter 19: Using Principles to Clarify Architecture.....	427

Chapter 20: Making IG&L Effective—Growing Strategic Enterprise Architects 453

Chapter 21: Four Practical Examples 467

 Example 1: iPhone Disrupts IT Mobile Device Base..... 471

 Example 2: The NotPetya Ransomware Worm 479

 Example 3: Electronic Healthcare Records (EHR): Views and Methodology 485

 Example 4: COVID-19: An Examination of Capability Shortfalls 516

Part IV: Next Steps 531

 Chapter 22: Making Strategic EA Work in Your Enterprise 533

Bibliography and Recommended Reading 553

References 554

Index 569

Acknowledgements 576

About the Authors 578

Preface

The Preface contains the following sections:

- What This Book Is All About
- How this Book Is Organized
- How to Read This Book
- How to Read Hierarchical Concept Maps

What This Book Is All About

This book is about insights based on decades of interactions with customers and developing and teaching courses to help architects understand a key concept:

It's not just about building the thing right;
it's about building the right thing!

However, “the right thing” keeps changing! What we need to build is a capability that is—and remains—fit for the changing, often disruptive, context.

We both began our careers writing computer programs, developing code that met the specifications as accurately as we could. Unfortunately, these specifications were often based on deficient requirements, documents that were typically incomplete, sometimes incorrect, and usually contained generic information (called “boilerplate”) that obscured what was important. And the context was rarely, if ever, mentioned.

Architecture offered the opportunity to articulate more general characteristics and constraints beyond just the detailed specifications. A good architecture could ensure that systems would not simply operate without errors, but also interoperate with other systems to achieve an overall

capability having well-defined system qualities such as reliability, usability, security, and so forth.

Decades of experience as architects taught us that to build the right thing, the architecture has to:

- Meet business goals,
- Define the essential use cases for the capabilities that the enterprise needs to provide, and
- Specify constraints on how they should be realized, including how to remain fit for the changing context.

These ideas apply to non-profits and government enterprises as well as for-profit businesses.

While developing and teaching courses to architects about these enterprise concerns beyond the traditional scope of IT—and involving customers in the teaching process—we gained a number of insights, which were gradually added to classes taught at Digital, Compaq, HP, Alcatel-Lucent, and others. We communicated a number of these insights in journal articles (Laverdure & Conn, 2012), a book chapter (Laverdure & Conn, 2013), and seminars, and have organized and extended these ideas in this book.

Who Should Read This Book

- Anyone studying or intrigued by both strategy and enterprise architecture
- Anyone interested in maximizing the value of enterprise architecture to their organization, especially:
 - Experienced enterprise architects with a “big picture” focus (what we call Strategic Enterprise Architects)
 - Professionals who collaborate with Strategic Enterprise Architects: strategists, business process owners, and enterprise project managers
 - Clients and funders of Strategic Enterprise Architects: C-suite officers, senior managers, and other strategic stakeholders in business, government, and non-profit organizations, and those in the extended enterprise and ecosystem
- Anyone interested in maximizing their Enterprise’s strategic readiness to survive and thrive in our disruptive times
 - In particular, those interested in methods that help their enterprise:
 - Make sense of important new information
 - Navigate emerging challenges
 - Create flexible capabilities and systems, readily adapted to the changing context

Readers don’t need to understand The Open Group Architecture Framework (TOGAF®) or other EA frameworks, but familiarity with these would likely help them follow some of the detailed discussions.

How the Book Is Organized

The book has an Introduction and four main parts:

- The **Introduction** outlines the role of Strategic Enterprise Architect and the critical need it addresses: keeping the enterprise fit for the changing strategic context. It also summarizes what we consider the six major themes of the book.
- **Part I: Overview** addresses why Strategic Enterprise Architecture is needed, its basic concepts, and its fundamental challenge. It then describes the dilemma it poses for Strategic Enterprise Architects—balancing enterprise fitness for today’s purpose and fitness for tomorrow’s disruptive context—and how we propose solving it.
- **Part II: The Solution** covers in more depth the Strategic Enterprise Architecture discipline, the six views that describe the enterprise and its fitness, and the Adaptive Enterprise Cycle methodology (an agile approach) and recommended tools.

In Part II there are many **concept maps** that explain the views (partial descriptions of an architecture from distinct perspectives that together, provide the complete architectural description).

These concept maps can be challenging, especially for those relatively new to enterprise architecture. Only some readers will be interested in exploring these maps in detail.

The Strategic Enterprise Architect's Dilemma

We have simplified the maps in many ways, including:

- Using progressive disclosure (a series of maps moving from simplest to most detailed),
- Showing only the most important concepts and relationships, and ensuring that these are named appropriately and consistently, and
- Introducing hierarchical maps to group concepts.

Still, we're left with some irreducible complexity. Despite our efforts, we have not found a better way to convey such a large body of related concepts.

- **Part III: Practice: Using the Views and Methodology, with Examples** focuses on concrete steps that architects can take to address the dilemma, including how to understand current and future capability needs (as identified by strategists and other strategic stakeholders) and how to incorporate the requisite flexibility to maintain fitness for the ever-changing context. Finally, we provide four extensive examples to illustrate how the views, methodology, and tools can be applied to real-life enterprise disruption scenarios.
- **Part IV: (Next Steps)** first summarizes what has been covered in the first three parts. It then includes a single chapter about how to introduce Strategic Enterprise Architecture into a given enterprise and offers suggestions for dealing with obstacles and avoiding pitfalls.

How to Read This Book

How readers approach the book will depend on why they are interested in Strategic EA.

- **All readers** should read the **Introduction** and **Part I: Overview**—at least the Key Points, figures, and tables. We also suggest reading the introductions to each part and the “Key Takeaways” at the end of each chapter. Those reading further will likely find it easiest to read—or skim—the parts in order. (See the “Book Format” section on the next page.)
- **Strategic Enterprise Architects.** We expect that enterprise architects in strategic roles will be the primary readers of the book. As such, most of the book should be relevant to them. While much of Part I will be familiar to them, the discussions on fitness for the disruptive context will likely be novel. The methodology and tool mashups will likely provide some new insights, as well. Since most architects are familiar with entity-relationship diagrams, the concept maps of the Part II views should be relatively easy to follow. That said, it is NOT important to understand all of the view details when first reading this part. Likewise, for the Adaptive Enterprise Cycle, it is not important to pay close attention to all of the Checklist questions or the method and tool details when first reading this part. Parts III and IV should be of particular interest to architects wishing to put the book's ideas into practice.

- **Professionals who collaborate with Strategic Enterprise Architects:**
 - **Strategists.** Since strategies have to be translated into effective operational systems to be useful, many strategists work closely with enterprise architects to plan how these systems need to be structured and realized. As such, their approach to reading the book should be similar to that of the Strategic Enterprise Architects. Their particular interests, however, will likely focus more on how to understand the strategic context, fitness, and initiatives rather than on crafting effective Capability Architectures. (But the architectural principles discussions in Chapters 11 and 19 should definitely interest them.)
 - **Business process owners.** These readers are, to a large extent, responsible for creating operational systems for their enterprise’s capabilities, using both people-based and automated resources. In Part II they should focus on Chapters 9, 11, 12, and 14 (on the Strategic Context, Capability Architecture, and Strategic Fitness views, and The Methodology, respectively). In Part III they should focus on Chapters 17 (Architecting and Disruptive Change—Proactive and Reactive) and 19 (Using Principles to Clarify Architecture).
- **Enterprise project managers.** Project managers lead the initiatives to create new and updated capabilities. They look to architects to describe what is to be done, to what specifications, interconnected with what other systems, in what order, and how (if needed). They should skim most of Part II, focusing on Chapter 13 (Strategic Initiatives) and 14 (The Methodology). They should then skim Parts III and IV, going deeper according to their interests.
- **Clients and sponsors of Strategic EA.** These readers would likely be interested in the potential for Strategic EA to help the enterprise survive and thrive in disruptive times. Those responsible for strategic decisions need to know if the investment of time and resources in this approach is worth it. In addition to the Introduction, Part I, and “key takeaways” for the chapters, they should read at least the “key points” for any topics of interest to them. Part IV may be of interest to those considering how to introduce or improve the practice of Strategic Enterprise Architecture in their organization.

Introduction

It's great when the enterprise is making steady progress in providing its capability to its customers. But occasional disruptions are unavoidable. Being fit for adapting to new realities—being both resilient enough and adaptable enough—is key to surviving and thriving under disruption.

- Resilient enough means having sufficient resources to recover from the negative impacts of the disruption.
 - This includes having adequate redundancies so that if some part of the value chain is disrupted, the enterprise can continue to provide its capabilities with little impact.
- Adaptable enough means being able to recognize misfits between capabilities and emerging needs to change capabilities, evolving to fit the new needs.
 - It starts with realizing that the job to be done has changed, and moves on to changing enterprise capabilities accordingly. The importance of the “job to be done,” was highlighted by Christensen and Raynor (*The Innovator's Solution*, 2003, pp. 74-78). See page 30 for further discussion.

Key points:

- There really is such a role as Strategic Enterprise Architect (even if that job title isn't used).
- Strategic Enterprise Architects are always concerned with fitness, but fitness has two aspects:
 1. Fitness for purpose—what the enterprise is trying to do (e.g., mission, goals, objectives).
 2. Fitness for context—the situation(s) the enterprise may find itself in (e.g., stable vs. volatile conditions, changing customer or stakeholder expectations, disruptive shifts, etc.).
- It's a balancing act, and the trade-offs are always imperfect: How much to focus on meeting the immediate needs versus anticipating future needs?
- And for those Enterprises skilled at anticipating what's coming next, there can be a huge upside in acting to disrupt business as usual, forcing competitors to play catch-up.

The Strategic Enterprise Architect's Dilemma: Background

Key Points:

- For an enterprise to deliver value over time, it must continuously adapt its capability to maintain its fitness for the changing strategic context.
- Enterprise architecture focuses on improving the holistic system that provides the enterprise's capabilities.
 - The overall system of an enterprise has many systems and sub-systems.
 - Each system typically includes people, processes, technologies, information, and other resources.
 - Holistic improvement is important and often urgent, especially when adapting to—or creating—disruptive shifts in the enterprise's context.
- Increasingly, the enterprise architect's job has become **strategic**. For example, it includes:
 - Anticipating long-term trends in people, information, technology, and resource systems in a complex and often chaotic global *context*, and
 - Articulating and championing an effective *strategy* that evolves the enterprise to maintain and improve its *fitness*.
- Enterprise architects already have many demands on their time, setting up **The Strategic Enterprise Architect's Dilemma: Balancing fitness for today's purpose with fitness for tomorrow's disruptive context**.

Discussion:

Our definition of **capability** is similar to that of the Open Group Business Architecture preliminary standard (The Open Group, 2022). However, while they refer to “business capability,” we refer to the overall “enterprise” capability. We also emphasize the notions of “over time” and adapting to “maintain fitness for the changing strategic context.”

A **system** is a coordinated set of elements and processing that realizes some capability. **Systems architecture** is the description of the fundamental concepts of a system and its environment (context) embodied in its purpose(s), capabilities, properties (qualities), structures (elements and their relationships), and in the principles of its design, operation (processing), and evolution. Adapted from ISO 42010 (ISO/IEC/IEEE 42010:2011: Systems and software engineering — Architecture description, 2017).

In our experience, most enterprise architects focus on improving the automated and people systems that support the enterprise's capabilities, including eliminating silos and other inefficiencies. Much of their work is both important and urgent.

Ross et al. (Enterprise Architecture as Strategy: Creating a Foundation for Business Execution, 2006) take a somewhat longer-term focus: they target the strategic value of a well-architected, foundational set of capabilities and systems that support the ever-evolving enterprise strategy. We think of this view as strategic flexibility.

We go beyond Ross et al. to say that enterprise architects should help *define* strategy—focusing on the context, including the full range of strategic factors and their disruptive potential, and how enterprise capabilities and systems must adapt, exploiting innovations to provide value. We call this perspective on enterprise architecture “Strategic Enterprise Architecture” (or “Strategic EA”) and the architects who do it “Strategic Enterprise Architects.”

Others have noticed the importance of automated or “digital” systems, for example, as evidenced by this quote: “IT is no longer just about keeping the lights on—you’re now expected to build digital strategy, deliver next-generation capabilities, and become a true value center to your business.” (Gareiss, 2015)

While we strongly agree that enterprise architecture is (or should be) an important part of an enterprise’s strategy, many EA teams are severely limited in how much attention they can devote to strategic issues. They must constantly struggle with allocating resources across short-term, urgent needs while attempting to keep in sync with the longer-term strategy, as they understand it.

We find it helpful to think of this struggle as a question of fitness and balance: fitness of the capabilities and systems to support the enterprise’s immediate needs (“today’s purpose”) balanced against their fitness to meet plausible future needs quickly. Since the future needs only become clear as the future unfolds, we call this “tomorrow’s context,” which includes both the enterprise’s external environment as well as its internal state.

This sets up a dilemma for enterprise architects, forcing a difficult choice: How much of the enterprise’s limited resources to expend on each? The dilemma is ongoing, because as the context changes the enterprise has to actively rebalance. And, if the enterprise does not act in a timely fashion, it may have lost the opportunity to be a leader—or even a player—in its field.

“Fitness” reminds us that enterprises are living organizations that must adapt and evolve in a complicated dance with the enterprise’s environment. Sometimes it’s the enterprise that takes the lead; more often, it’s the environment that does whatever it’s going to do, forcing the enterprise to keep up if it is to survive and thrive.

Major Themes in This Book

We consider the following to be the major themes of the book:

1. Technology and enterprise architecture are indeed strategic to many enterprises, but what this entails needs to be reconsidered.

We have found that the best approach to building the right capabilities and supporting systems is to engage enterprise architects in strategic discussions so that they can:

- Understand the true, evolving needs of the enterprise, ensuring that systems are developed and operated to support the changing capabilities, and
- Provide guidance on emerging technologies and ways of doing things, including potential opportunities afforded by existing systems.

While many enterprises have already embraced strategic EA, a number of EA concepts and methods must now integrate fitness for the ever-changing, disruptive context.

2. Sudden, disruptive changes in the context require rapid adaptation. Enterprises need to embrace just-in-case thinking and build in flexibility to adapt capabilities for plausible scenarios.

In order to survive and thrive in the presence of potentially significant disruptions, an enterprise must re-evaluate its lean, just-in-time processes to understand what they need to survive and continue to provide their key capabilities. This would include:

- Sufficient margins of safety for inventories, supply chains, physical structures, rainy-day funds, etc. Safety margins will vary depending on the difficulty of obtaining replacements, safety of supply chains, etc.
 - Built-in flexibility to address multiple plausible scenarios. Scenarios are addressed extensively in the book, and diverse business models, supported by compelling user experiences, are necessary to address them.
 - Ability to rapidly adapt to and thrive in disruptive crises. We introduce the FUSERS System Qualities Framework model to evaluate system qualities and the overall fitness of the enterprise capabilities. (FUSERS is an acronym for Function, User/stakeholder experience, Safety/security, Economy, Responsiveness, and Sustainability.) The ability to monitor fitness deficiencies and adjust FUSERS categories rapidly is key to returning to "good enough" fitness after disruptions. Disruptive crises can provide major opportunities to improve fitness.
- 3. Day-one mistakes can have large and lasting consequences. A major day-one mistake is to act before understanding the uncertainty inherent in the context.**

Common day-one mistakes include faulty mental models, desirability biases, going along to get along (forbidden topics, elephant in the room), group think or

group fragmentation/polarization, and avoiding inconvenient facts.

Our cycle starts with recognizing and interpreting contextual signals, especially those indicating potential disruptions. Thus, on day one, the stakeholders consider all of the relevant changing context, the evolving customer needs, and indeed the entire ecosystem.

4. Strategic enterprise architecture begins with people, not technology. Every successful architectural initiative starts with engaging key stakeholders, including those with different technology-adoption profiles, and reaching a consensus.

The technology—including its risks and opportunities—must be clearly understood by all participants in the enterprise’s ongoing strategic conversation. Strategic enterprise architects must be adept at educating non-technical participants. Often the use of metaphors, such as urban planning as a way to think about enterprise architecture, can help stakeholders understand how technology needs to mesh with business thinking.

Our approach focuses on identifying and dealing with the mental models and biases, engaging stakeholders to understand what success and fitness for context must mean. Key to success is understanding the technology adoption profile—how an enterprise thinks and feels about new technology (mental models and culture) and how it will likely act or react. Influential stakeholders may have different technology adoption profiles that will impact the direction of the enterprise and its readiness to survive and thrive in the changing context.

5. Architects must balance fitness for today’s purpose with fitness for tomorrow’s disruptive context. Fitness is the key to surviving and thriving in disruptive times.

This is the fundamental Strategic Enterprise Architect’s Dilemma: how to ensure that capabilities and supporting systems are architected to meet present-day needs and to be flexible enough for future contexts identified by scenarios.

Sustaining this balance is likely to be challenging, especially in organizations in which architects are already addressing urgent issues. We employ “essential checklists” to help key stakeholders, including enterprise architects, consider important operational readiness and longer-range questions to ensure ongoing fitness of the capability and supporting systems.

6. Because ongoing fitness is key, enterprise architecture must focus on adaptability!

The enterprise needs to be fit for the changing context, and the scenarios represent the strategic stakeholders’ best guess about the plausible futures they need to be ready for—and the capability adaptations that will be required. In essence, the scenarios drive the evolution of the Strategic Enterprise Architecture.

We call this concept “scenario-driven Strategic EA.”

We introduce six Strategic Enterprise Architecture views and an Adaptive Enterprise Cycle methodology that emphasizes capability fitness, including continuous learning and adaptation. The views and methodology “mash up” concepts and approaches from many

The Strategic Enterprise Architect's Dilemma

disciplines, helping practitioners make enterprise architecture strategic and actionable.

The Strategic Enterprise Architecture views

Each architecture view is a partial description of an architecture from a distinct perspective. The full set of views together provide the complete architectural description.

Each Adaptive Enterprise view applies to any kind of enterprise, outlining what it needs to consider to be viable in today's and tomorrow's context. The views can be analyzed at various levels of detail, from a cursory review to an in-depth exercise. The six key views, along with our reason for including each, are:

- The **Enterprise Essentials** view captures what the enterprise is and why it exists, including its unique value, vision, and capability, and the business model, culture, and strategy for providing those.

Strategic EA is all about the enterprise. Everybody needs to know what the enterprise is all about.

- The **Strategic Context** view describes the environment that stakeholders consider might plausibly impact the enterprise now and in the future. It includes conditions (e.g., trends, disruptions, and underlying structures) for different scopes, timeframes, and strategic factors (e.g., society, economics, politics, technology).

Fitness for what? Context! (Not just the often mentioned "fitness for purpose.")

- The **Strategic Stakeholders** view characterizes the key stakeholders and their concerns. It includes their roles, expertise, influence, interests, needs, goals, perceived risks and opportunities.

This makes explicit who the strategic contributors are and their concerns. It helps uncover the important issues to be discussed and identify who needs to participate. (This can be key in reaching consensus, following the maxim: "Without participation there is no buy-in.")

- The **Capability Architecture** view describes the systems that provide the enterprise's capabilities now and in the future. It includes models of the enterprise's capabilities, systems and their components, and ecosystem.

Only by getting the strategic stakeholders actively participating can you architect (and build) the right thing.

- The **Strategic Fitness** view shows the likely fitness of the enterprise capabilities in the current and emerging contexts. It includes stakeholder evaluations of the enterprise's past, current, and future ability to survive and thrive based on contextual and enterprise factors.

Fitness is the key to surviving and thriving in disruptive times.

- The **Strategic Initiatives** view describes and prioritizes the initiatives needed to adapt the systems to improve the fitness of the enterprise capabilities for the current and emerging contexts.

It defines enterprise architecture updates and investments needed to reduce or eliminate misfits.

The Adaptive Enterprise Cycle

Enterprise architecture traditionally includes development cycle phases of Plan, Develop/Implement, and Manage/Operate. We add two new phases, Recognize and Improve. We also add an ongoing Integrated Governance and Learning activity. The two new phases are, in summary:

- **Recognize (Sense & Interpret)** begins with each new potentially disruptive change.

Achieving fitness for context requires continuous monitoring of new developments, especially strategic signals of possible disruptions that would require new flexibility and/or adaptation.

- **Improve (Assess & Adapt)** analyzes operational issues and attempts to make adaptations without starting a new cycle.

Complex adaptive systems like enterprises require that architects actively adapt the systems throughout their lifetimes. (No reliance on "big architecture up front"!)

The continuous **Integrated Governance & Learning** activity operates across all lifecycle phases.

A thriving organization learns from both the good and the bad decisions—at each phase.

A continuous, iterative, and adaptive approach to the cycle phases ensures rapid, agile responses to disruptions, using the built-in flexibility, whenever

possible, to adapt to—and seize advantage from—what may well become a “new normal.”

7. Adaptation must be rapid enough.

Being recognized as a leader in its domain is critically important for most enterprises. Preserving that recognition requires that an enterprise adapt its capability effectively enough to remain relevant and attractive to its clients. Not only must the enterprise make the right adaptations with the right qualities, it must make them in a timely manner, that is, as quickly as the context requires—but no quicker. (Bringing new or adapted offerings to market before the market is ready for them can be costly, sometimes ruinously so.)

Being ready with updated capabilities and offerings when the market is ready requires intelligence and wise investments in R&D, which must often be started many years ahead of operational deployment at scale.

Some things, however, cannot be anticipated, e.g., natural disasters and pandemics. Accordingly, the enterprise must also be able to launch a major, urgent effort to react quickly and decisively to a new disruption.

Enterprises can adopt the following strategies to help them adapt in a timely manner:

- General responsive capability
 - Keeping adequate resources on hand to deploy in emergency situations
 - Designing their operations to avoid single points of failure, using resources (including

The Strategic Enterprise Architect's Dilemma

- substitutes) that are likely to be available under a broad range of disruption scenarios
- Paying attention to strategic signals (including those associated with scenarios, safety/security emergencies, operational outages, etc.)
- Practicing situational complexity analysis and decision making
- Flexibility
 - Building a variety of capabilities and expertises that can be tapped if and when needed
 - Creating parameters and operational options to address all relevant scenarios rapidly
- Modularity
 - Architecting and building systems with loosely coupled components that are easily reconfigured (many of which will be off-the-shelf "building blocks")
 - Architecting robust integration mechanisms for components. For technical systems these include adopting well-defined standards (e.g., platforms, stable APIs to services as the only communication mechanism allowed) and ensuring that that modules are readily replaceable without causing cascades of change.
- Autonomy
 - Organizing projects with relatively small, nearly independent teams that can work in parallel, coordinating only on essentials. This is the often-overlooked governance needed for effective agile development, and a key insight from the Open Group's *Open Agile Architecture (OAA)* standard.

Part I: Overview

Part I provides an overview of *The Strategic Enterprise Architect's Dilemma* in five chapters:

- Chapter 1: Why Strategic Enterprise Architecture
- Chapter 2: Basic Strategic EA and Disruption Concepts
- Chapter 3: The Challenge in Brief
- Chapter 4: The Dilemma in Brief
- Chapter 5: The Solution in Brief

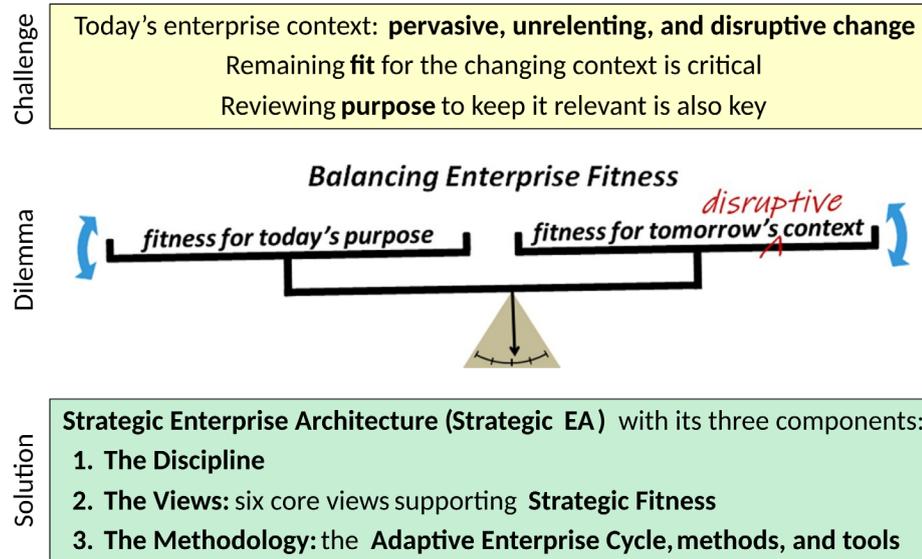


Figure 1. Balancing Enterprise Fitness: the Challenge, Dilemma, and Solution.

Chapter 1: Why Strategic Enterprise Architecture

What Is Strategic EA?

Strategic Enterprise Architecture is a new discipline that unifies strategy and enterprise architecture (EA) to focus on helping the Enterprise survive and thrive in disruptive times.

This means that participants in the strategic conversation must continuously:

- Monitor the strategic context,
- Identify possibly important changes, and
- Prepare for what may well be coming (including having sufficient resources in reserve).

A long-standing architect's saying is "Don't just build it right, build the right thing." Our updated Strategic EA version:

- Define the right capabilities, adapting them constantly to align with emerging needs.
- Build the systems that realize these capabilities right, with enough flexibility to adapt readily for the changing capabilities.

What's different about Strategic EA?

Traditional EA provides the "big picture" of how initiatives come together to improve enterprise capabilities, making it an ideal tool for keeping the many contributors to the initiatives on the same page.

While there is no single agreed-to definition of traditional EA, some common aspects include:

- Standardization of IT infrastructure at multiple levels to eliminate "islands of automation" and facilitate a "building blocks" approach to system development.
- Interoperability across enterprise applications and across organizational boundaries.
- Modernization of IT to improve performance and lifetime cost of ownership.
- Alignment of IT with business goals.

Combining Strategy with EA adds:

- Transforming the idea of a standard IT infrastructure into a strategic, adaptable platform for capability and systems development.
- Ensuring that enterprise strategy and architecture are continuously aligned and synergistic:
 - EA is guided by a deep understanding of strategic needs. Based on the principle of adaptive architecting, it builds in the flexibility to adjust enterprise capabilities and systems to plausible changes in the context.
 - Strategy fully exploits EA knowledge and abilities. It leverages the built-in adaptability to respond rapidly to emerging challenges and seize opportunities.
- Articulating a digital strategy that covers key topics, including best use of information and automation, technology readiness, and virtual capabilities.

- Monitoring the strategic context continuously for potential disruptions, both anticipated and unanticipated.

Benefits of Strategic EA

Our experience using enterprise architecture for decades has taught us:

- The systems that support major enterprise capabilities are long-lived and require continuous maintenance and adaptation to evolving needs.
- While EA is critically important for integrating enterprise systems, Strategic EA also focuses on addressing big problems—things that affect the entire enterprise and beyond.
- Some specific, pressing problems can be reframed to address underlying, general issues.
 - See Delta Airlines in the sidebar Examples.

Strategic EA captures the attention of the C-suite and budget owners—the strategic players needed to champion the initiatives—because it provides a compelling narrative of what success looks like and how to achieve it, even with disruptions.

- To be sure, Strategic EA is not simple—it addresses complex problems with many parties, uncertainties, and moving parts. However, successful Strategic EA can provide a large payoff—it may be transformative.

Examples of Winning EA Proposals That Address True Enterprise Needs

- Examples from the authors' experience:
 - **A global shipping company.** A modernization effort for their logistics enterprise application was structured to deliver quick results while kicking off a longer-term effort to modernize the overall EA.
 - **A government library information system.** The winning bid was the only one to make clear what the overall problem was and how it would be addressed.
 - **A large merger.** A strategic EA team with members from both pre-merger enterprises was formed and charged with determining how to integrate the two companies so that the merger would actually increase benefits and lower operational costs. For example, thousands of systems needed consolidation, with the number of enterprise applications going from over 7,000 to around 1,500 over several years. The team outlined the full scope of the effort and the multi-year path forward.
- **Delta Airlines.** The airline used Y2K as a driver to solve their broader issues of business integration and usability (Ross, Weill, & Robertson, 2006)

Why Frame Strategic EA as a Dilemma?

- Because all Strategic EA has the urgent-important dilemma at its core
- Because Enterprise Fitness also includes a dilemma:
 - The “fitness for purpose” test of architecture is not enough.
 - “Fitness for context” becomes increasingly important with time and the change it brings.
- These observations lead to our framing of the Strategic EA dilemma:

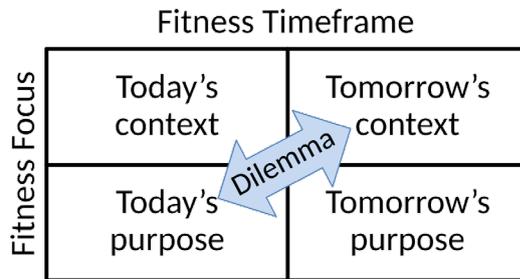


Figure 2. The Strategic EA Dilemma.
How much to focus on fitness for today's purpose vs. fitness for tomorrow's context?

There are really four (overlapping) cases to consider:

1. In relatively stable times, most architects tend to focus on fitness for Today's purpose (as currently understood), with less focus on the context.

Urgent vs. Important

“What is important is seldom urgent, and what is urgent is seldom important.”

– Dwight David Eisenhower, US President

Important Urgent	Important Not Urgent
Not Important Urgent	Not Important Not Urgent

The Eisenhower Priority Matrix

Highly productive people spend most of their time working on top-row activities, usually preferring to work on important matters before they become urgent (top-right quadrant).

2. If disruptions are on the horizon, however, we need to pay more attention to fitness for what is coming (Tomorrow's context).
3. When we find ourselves in the middle of a disruption or a need to modernize systems, we need to focus on fitness for Today's context.
4. Finally, if we have a strategic plan that envisions a future change in purpose, we may have to spend some time thinking about Tomorrow's purpose.

Defining Enterprise Fitness

Enterprise fitness: the ability of an enterprise to survive and thrive in its environment by:

- Providing capabilities needed to meet the challenges of the context
- Using its capacity to adapt whenever, wherever, and however those challenges arise

Discussion:

Surviving and thriving is not just about maintaining the enterprise's current status. Often thriving requires seizing new opportunities.

What are some key challenges the enterprise must be able to survive?

- Interruptions (relatively short duration), requiring operational buffers, spares, and/or restorative action
- Disruptions (permanent or long-lasting), requiring adaptation
- Paradigm shifts: surviving a changed game, a new context with different values, etc.

The capacity to adapt (whenever, wherever, and however challenges arise) is critical to survival.

The Boxer Analogy (see sidebar) is adapted from the Harvard Business Review (HBR) article, "How to Thrive in Turbulent Markets" (Sull, 2009). Based on this analogy, the enterprise must:

- Bob and weave: have the requisite variety—repertory of responses diverse enough to address the full range of

problems that might arise (Wikipedia, Variety (cybernetics), 2020).

- Take a punch: have sufficient resources in reserve to maintain viability and adapt effectively in the face of interruptions and disruptions.
 - Includes avoiding single points of failure

A third component, not mentioned in the HBR article: Doing the research. This may involve finding out about the other party's abilities, strategy, tactics, etc., so the enterprise can tailor its approach to address them. (In the analogy, knowing that a right-handed boxer also has a powerful left-handed jab could be critical to surviving a fight!)

The Boxer Analogy: Fitness, Adaptation

The capacity to survive and thrive in a challenging environment has four major components:

1. The ability to "bob and weave"—having the agility to avoid or adapt
2. The ability to "take a punch" (resilience)—having sufficient resources available to survive a setback
3. Physical and mental preparedness—being ready and able to throw an effective punch in the right situation
4. Winner's mindset—going on offense whenever opportunity arises

The Strategic Enterprise Architect's Dilemma

A fourth component, also not mentioned in the HBR article, is the mindset that actively seeks ways to enhance the enterprise. These winners engage in ongoing reviews of the context for signals that indicate a potential opportunity.

Note that this is a discussion of what the overall enterprise must do, *not* the responsibilities of the enterprise architect. The architect is responsible for a subset of these, which we will describe on the following pages. Other enterprise functions, of course, also contribute to enterprise fitness.

Key Takeaways for Why Strategic Enterprise Architecture

- Strategic EA focuses on **surviving and thriving in disruptive times**, an increasingly important aspect of the current and emerging enterprise environment.
- It prioritizes building **flexible IT platforms** that support **rapid adaptation of capabilities** to meet emerging needs.
- It ensures that **enterprise strategy and architecture** are continuously aligned and **synergistic**.
- **Strategic Enterprise Architects participate in the enterprise's strategic conversation** to maximize the value of the enterprise's investment in Strategic EA.
- Strategic EA is framed as a **dilemma** to call attention to the need to **work on important-matters before they become urgent**.
- The **boxer analogy** highlights **fitness—for whatever may happen—along with resilience, preparedness, and looking for opportunities**, not just threats.

*“Without strategy, execution is aimless.
Without execution, strategy is useless.”*

– Morris Chang, founding chairman, Taiwan Semiconductor Manufacturing Company

Chapter 2: Basic Strategic EA and Disruption Concepts and Terms

This book deals with many concepts that may be familiar to strategists and enterprise architects. However, in our experience, the terms used for these concepts and what people understand them to mean often differ. Accordingly, we start by defining the basic terms and concepts we use. In addition, we believe that many readers may need to revisit strategic EA to analyze what needs to change when we prioritize fitness for a changing context.

This chapter includes the following topics:

- Enterprise Concepts
 - What is an Enterprise?
 - Enterprise Fundamentals
- Disruption Concepts
 - Basic Disruption Concepts
 - The Internet as a Game-Changing Disruption, including the world-wide web, search engines, Internet commerce, crowd-sourced information, virtual interactions, social media, and cloud computing
 - Rise and Fall of Some Notable Enterprises in the Internet Era
 - Summaries of Selected Internet Enterprise Disruptions
- Examples of Non-technical Disruptions
- Frequent Questions About Disruptions for Enterprises
- What Does Disruption Really Mean?
- Stages of Disruption (Versus Disruptive Innovation)
- Uncertainty and Risk Concepts
 - Uncertainty and Risk Basics
 - Dealing with Uncertainty and Unprecedented, Disruptive Risk
- Strategic Signal and Scenario Concepts
 - Strategic Signal Basics
 - Scenario Basics: Situational Awareness and Preparedness
 - Making Scenarios Work: Discovering Misfits and New Principles of Operation
- Fitness Concepts
 - The Essence of Enterprise Fitness: Surviving and Thriving in Disruptive Times
 - Basic Concepts and Relationships for Enterprise Fitness
 - Basic Fitness Concepts and Their Mode

Ways of Thinking About Fitness. What Is an Enterprise?

Enterprise

An organization that uses its resources to pursue a mission

Key Points:

- Common types of enterprises are: for-profit and non-profit businesses, governments, and non-governmental organizations (NGOs).
- A large enterprise is typically composed of many constituent organizations, including divisions, departments, functions, and other wholly-owned enterprises.
- Enterprises have relatively stable identities and distinctive characteristics.
- Enterprises exist within an ecosystem that often includes an extended enterprise, especially if the enterprise is large.

Discussion:

NGO: a nonprofit organization that operates independently of any government, typically one whose purpose is to address a social or political issue

- There are many different classifications of NGOs in use. For example, political parties and trade unions are considered NGOs only in some countries.
- An NGO's orientation refers to the type of activities it takes on. These activities might include human rights, protection of the natural environment, improving health, or development work.

Enterprise ecosystem: The network of organizations — including suppliers, distributors, customers, competitors, government agencies and others— involved in the development, delivery, and use of a capability (specific products and/or services) through both competition and cooperation. These organizations coevolve their capabilities and roles, and tend to align themselves with the directions set by a dominant organization.

Enterprise Fundamentals

Key Points:

- **Capabilities and systems.** An enterprise provides capabilities and uses a variety of systems to deliver those capabilities.
 - **Components.** These systems can be made up of various combinations of people, processes, technology, information, and other resources.
- **Context.** An enterprise operates within a context.
 - **Uncertainty.** Our understanding of the context is always limited, with uncertainty increasing the further out we look.
 - **Disruptive impact.** The context changes continuously in many dimensions, sometimes quickly or slowly, sometimes with little or highly disruptive impact.
- **Surviving and thriving.** The enterprise's ability to survive and thrive depends on:
 - **Awareness.** How quickly it recognizes disruptive changes
 - **Adaptation.** How effectively it adapts

Discussion:

The key test for enterprise **capabilities and systems** is that they do a good-enough job of meeting stakeholder expectations, where “stakeholder” refers to all impacted parties, from end customers to enterprise support personnel and communities where the enterprise operates.

Contextual uncertainty example: an enterprise does not know what competitors or even collaborators actually intend to do, whether they will stay on their current course, when supply chains may be disrupted, etc.

Surviving and thriving depend on awareness and adaptation:

- Some enterprises do it better than others; they thrive despite the uncertainties and disruptions of our times.
- Successful enterprises continuously monitor both performance and the emerging context, and adjust their portfolio and systems as needed.
- The imperative to adapt effectively is emphasized by systems thinkers when they refer to enterprises as “complex adaptive systems.”

Basic Disruption Concepts

Disruptions

Large, permanent or semi-permanent shifts in context requiring adaptation by the enterprise and other impacted parties

- Disruptions may trigger a cascade of additional disruptions.
- Fundamental disruptions, often referred to as “paradigm shifts,” may cause broad and deep changes, requiring ongoing adaptations.

Interruptions

Familiar, temporary abnormal conditions that do not result in permanent shifts of context

- While interruptions do require planned operational alternatives (e.g., for business continuity) and possibly insurance, they do not require adaptation.

Stabilities

Conditions that are expected not to change in any significant way

- Stabilities are sometimes ignored in strategic planning.
- Strategic assumptions about stabilities can be a major source of risk if the assumptions are wrong.

Discussion:

Technical innovation disruptions, by definition, are also unprecedented. In addition, they usually include a disruptive business model.

There is a **spectrum** that covers things that are **simple interruptions through massive disruptions and disruption cascades**. Some examples:

- At the interruption end of the scale is a power failure.
- In the middle of the scale might be a large natural disaster that interrupts supply chains for months, perhaps even prompting some rethinking of those chains, disrupting the previous arrangement.
- The COVID-19 pandemic has been even more disruptive, changing not only healthcare policies and procedures but also how economies and societies function around the entire world. (COVID-19 also interrupted some activities, such as school attendance. But even there, the hybrid model of in-person and virtual attendance may in fact become the new normal.)

In the technology realm, it is often difficult to predict what combination of factors will enable an innovation to take off. How much better must a new entrant’s offering be to disrupt the incumbents? Is the new business model the

An interruption allows a return to the existing “normal” after a recovery period. A disruption forces a new normal.

The Strategic Enterprise Architect's Dilemma

decisive factor? Is there a need for a broad convergence around a new standard, including both suppliers and consumers? Is the infrastructure ready to support the innovation at scale?

In all realms, it is often much easier to recognize the disruptive potential of some trend or structural change after some tipping point has been reached.

- At the massive disruption end of the scale might be a new weapons technology (like atomic bombs in the 1940s) that changes not only how wars are fought but entire cultures and international relationships.

Both interruptions and disruptions are discontinuities in some trend or stability. One enterprise's interruption may be another enterprise's disruption. For a given enterprise, the impact will depend on their resources—including their creativity—and operational margins, that is, their resilience.

*“No plan survives contact with reality.
What matters is how quickly you adapt.”*

– (Adapted from) Helmuth von Moltke the Elder

basic Concepts and Relationships for Enterprise Fitness

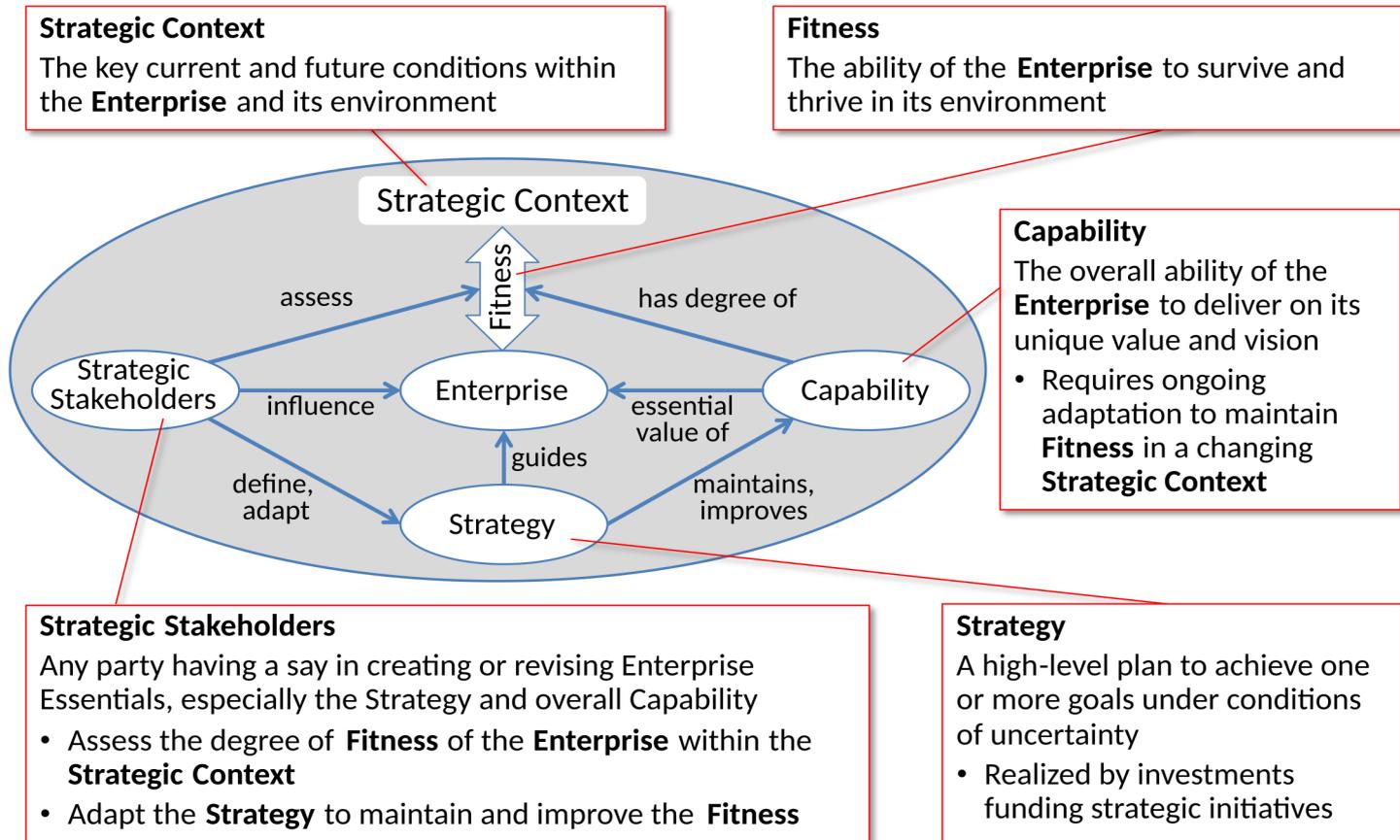


Figure 4. Basic Enterprise Fitness Concepts and How They Are Related.
Each of these concepts has an associated view used in Strategic Enterprise Architecture.

Basic Fitness Concepts and Views

Basic Concept	Strategic Enterprise Architecture View Name	View Contents
Enterprise	Enterprise Essentials	The core, relatively stable elements of an enterprise that define its identity and distinctive character, including its purpose, unique value & vision, capability, business model, culture, and strategy
Strategic Context	Strategic Context	Conditions (trends, disruptions, shifts, signals, etc.) for different scopes (internal and external), timeframes, and strategic factors; considerations (e.g., limits and constraints), drivers, and scenarios
Strategic Stakeholders	Strategic Stakeholders	Their roles, expertise, influence, interests, concerns, needs, mental models, expectations, perceived risks, opportunities and initiatives
Capability	Capability Architecture	Models of enterprise capabilities, systems, ecosystem (current and planned), including their use cases, qualities, principles, standards, and adaptations
Fitness	Strategic Fitness	Stakeholder evaluations of the enterprise's past, current, and future ability to survive and thrive based on contextual and enterprise factors; used to update strategy, EA; shortfalls addressed by strategic Initiatives
Strategy	Strategic Initiatives	Improvement initiatives and investments for adapting the enterprise to accomplish its purpose and remain fit for context, success models, priorities and dependencies

Table 3. Basic Fitness Concepts and Their Associated Views.

Note that the View Contents column describes the most important topics for each view, but these are not intended to be a complete list.

Chapter 3: The Challenge in Brief

This chapter explores the challenge of pervasive, unrelenting, and disruptive change introduced at the start of Part I:. It includes the following topics:

- The Challenge: Fitness for Pervasive, Unrelenting, Disruptive Change
- The Challenge: Understanding Contextual Change
- Five Key Challenges in Architecting for a Disruptive Context
- The Challenge: Beyond Technology
- An Emerging Social/Political/Economic Challenge
- The Challenge: Key Actions and Questions for Clarifying Disruptions

Challenge

- Enterprises today face a context characterized by **pervasive, unrelenting, and disruptive change**
 - Fitness for purpose (focused narrowly on your ability to accomplish your mission) is not enough!
 - Contextual awareness—and remaining **fit** for the changing context—are also critical

Figure 5. The Challenge: Fitness for Pervasive, Unrelenting, Disruptive Change.

Chapter 4: The Dilemma in Brief

This chapter explores the central dilemma of the book introduced at the start of Part I: balancing fitness for today's purpose with fitness for tomorrow's disruptive context. It includes the following topics:

- Five Key Challenges that Inform the Dilemma
- Why is Balancing Fitness for Purpose and Fitness for Context the Key Dilemma?
- Why Focus on Fitness for Tomorrow's Disruptive Context?

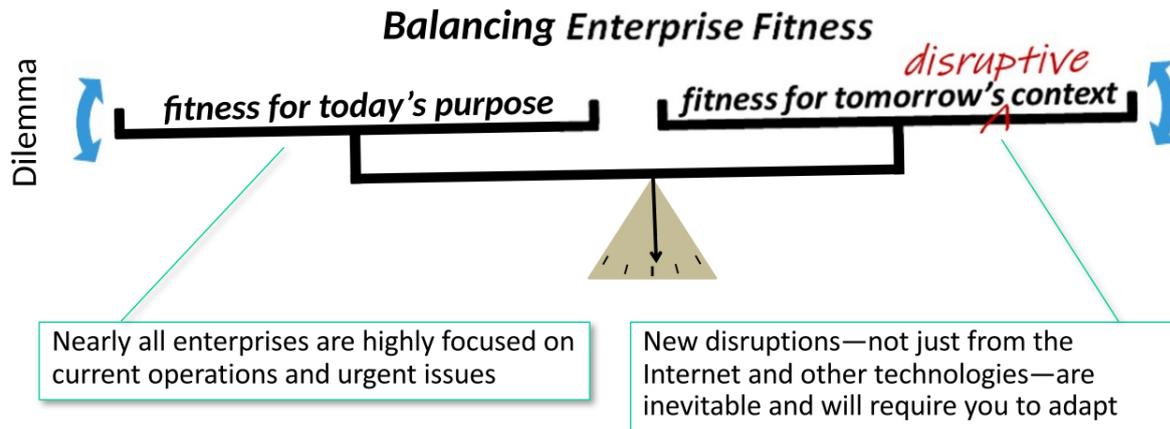


Figure 6. Balancing Enterprise Fitness.

Successful enterprises continuously rebalance their relative focus on:

- Fitness for purpose (important and urgent)
- Fitness for tomorrow's disruptive context (important but less urgent)

Why Focus on Fitness for Tomorrow's Disruptive Context?

Key Points:

Being fit for the emerging and plausible future context is essential:

- **To survive:** Avoiding future expense and/or risk
 - Addressing some contextual risks and disruptions now could avoid more expensive efforts or possibly disastrous consequences later.
- **To thrive:** Exploiting opportunities
 - Knowing what disruptions are likely helps an enterprise understand what will likely be valued.
 - What will be in short supply or no longer needed?
 - What needs will be unmet or poorly addressed?
 - What new capabilities will be needed?
 - What collaborative opportunities are likely to arise?

Discussion:

Enterprise architects have a long history of dealing with disruptive technologies. Indeed, one of the key skills of the architect is to recognize:

1. Which emerging technologies are likely to yield business benefits, and
2. When it is time to embrace them.

Architects also understand how business events, such as mergers, acquisitions, and divestitures, can drive new architecture development. What is less familiar, however, is the importance of using enterprise architecture as a tool to address general business context risks.

Avoiding Future Expense and Risk

“Pay me now or pay me later” is more than a choice of when to pay, of course:

- Addressing some contextual risks and disruptions in the short term could avoid more expensive efforts later.
- Failure to address serious future risk in a timely manner could change the familiar adage to: “Pay me now or place the enterprise at risk.” Some disruptions could have a serious negative impact on the enterprise, possibly even threatening instability.

Evaluating future fitness requires considering a range of plausible future contexts, which we believe are best represented by scenarios. Strategists actively reevaluate future fitness as the future emerges by using strategic signals to indicate important contextual shifts and by re-evaluating new information as it becomes available and periodically assessing existing information.

Thriving by Exploiting Opportunities

The time it takes an enterprise to recognize and seize an opportunity can be critical. Readiness and rapid reaction—

The practice of recognizing, preparing for, and rapidly responding to strategic signals improves agility and long-term performance.

and accuracy—can result in significant competitive advantages. This gives another variant of the adage: “Pay me now or miss significant opportunity later.”

Many enterprises use “red-ocean” and/or “blue-ocean” thinking to frame strategies and identify likely opportunities.

- Red-ocean thinking envisions a bloody, zero-sum competition within an inflexible existing industry structure. Red-ocean thinking is typically associated with paradigm fill, that is, enhancing the existing offerings.
- Blue-ocean thinking considers untapped market space, unconstrained by existing industry structure. Blue-ocean thinking is typically associated with innovation and paradigm shifts that may open up large, novel opportunities.

"Luck is what happens when preparation meets opportunity."

– Seneca, Roman philosopher, mid-1st century AD

In summary, Strategic Enterprise Architecture—architecture that focuses on fitness for pervasive, unrelenting, disruptive change—is invaluable.

Chapter 5: The Solution in Brief

This chapter presents the solution to the central dilemma of the book introduced at the start of Part I. It includes the following topics:

- Solution: Key Things Strategic Enterprise Architects Need to Know How to Do
- The Adaptive Enterprise Cycle Methodology
- Adaptive Enterprise Cycle Phases & Activities
- Adaptive Enterprise Cycle Partial Iteration
- Strategic Enterprise Architecture: Views and Methodology
- Adaptive Enterprise Cycle: Key Tools and Methods (Hierarchical Concept Maps, Essential Checklists, Systems Thinking, Situation Complexity Analysis, Scenarios with Strategic Signals, Strategic Factors and System Qualities Framework, Fitness Heat Maps)

Solution

Strategic Enterprise Architecture (Strategic EA) with its three components:

- 1. Discipline:** to help architects survive and thrive in this environment
- 2. Views:** six core views supporting **Enterprise Fitness**:
 - Enterprise Essentials, Strategic Context, Strategic Stakeholders, Capability Architecture, Strategic Fitness, Strategic Initiatives
- 3. Methodology:** the **Adaptive Enterprise Cycle**, combining:
 - A core loop: Recognize, Decide, Act, Improve (RDAI)
 - **Recognize** the current context and likely disruptive changes
 - **Decide** on needed initiatives to address the changing context
 - **Act** to carry out the initiatives rapidly, effectively, and efficiently
 - **Improve** the accuracy of the initiatives by adapting as you learn what works
 - An ongoing activity: Integrated Governance and Learning (IG&L)
 - A set of **key tools** and **methods**

The Adaptive Enterprise Cycle With Activities

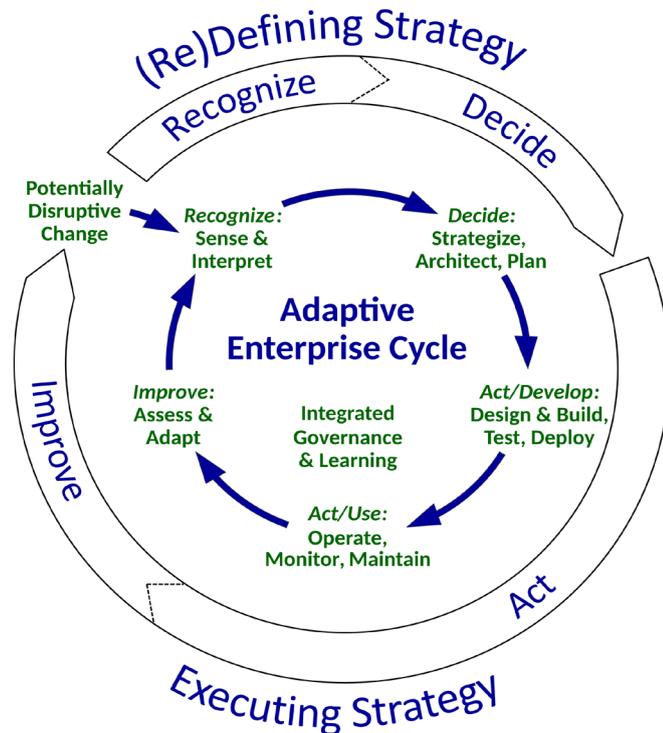


Figure 9. The Adaptive Enterprise Cycle, With Activities.

The Act phase is divided into two sub-phases: Act/Develop and Act/Use. Each phase includes two or three major activities (in green). The Integrated Governance & Learning activity is associated with all of the phases.

Key Points:

- The Adaptive Enterprise Cycle includes a number of activities aligned with the phases.
- The Integrated Governance & Learning activity spans all of the phases and all levels of management.

Discussion:

This more detailed version of the Adaptive Enterprise Cycle shows the activities that take place in each phase. These activities are described on page 74.

Although the cycle phases have an overall sequence with earlier and later activities, practitioners can:

- Complete many cycles in a short time period; agile methods are desirable.
- Backtrack/loop as needed.
- Have cycles that correspond to partial systems (that are part of the overall, composite system).
- Work on more than one phase at the same time (for different aspects of a system).

Note that “Potentially Disruptive Change” means contextual change, whereas, change in the Act/Use activities (Operate, Monitor, and Maintain) refers to operational change, which could be caused by an unseen contextual change, or something could simply be broken in the internal system.

Hewlett-Packard introduced the overarching strategy of the “Adaptive Enterprise” in 2003. One of the authors of this book served as the lead architect of the framework for

creating Adaptive Enterprise services and solutions. Indeed, many organizations have similarly embraced adaptiveness. An early book on the adaptive enterprise concept is Stephan Haeckel's *Adaptive Enterprise: Creating and Leading Sense-and-Respond Organizations* (Haeckel, 1999), which was republished as (Haeckel, 2016).

As we will describe later, the Strategic Enterprise Architect contributes to all of these activities. While the architect's main focus is on the Strategize, Architect, and Plan activities, all of the activities benefit from an understanding of the capabilities, the intended purpose of the architecture (including the rationale behind particular approaches and constraints), and the plan for realizing the strategy and the architecture.

"Every success story is a tale of constant adaption, revision and change."

– Richard Branson, businessman and author,
founder of the Virgin Group

The Adaptive Enterprise Cycle addresses the continuous, iterative, and adaptive nature of enterprise architecting.

Strategic Factors and System Qualities Frameworks

Purpose: To enable fitness analysis by making contextual conditions and system qualities explicit

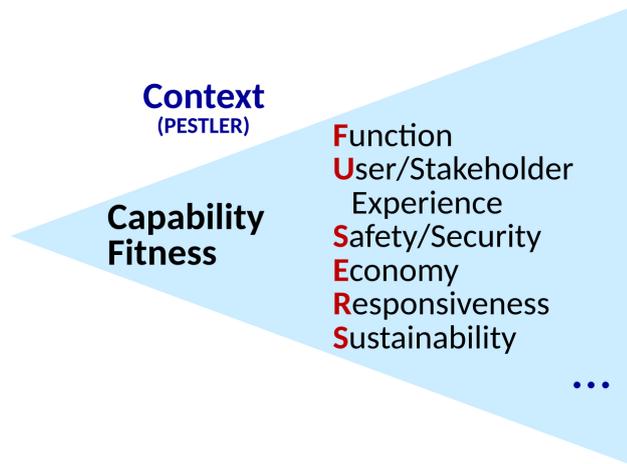


Figure 18. The FUSERS System Qualities Framework of Capability Fitness.

The PESTLER Strategic Factors Framework describes the Context within which Capability Fitness is determined.

Strategy groups often use some variant of PEST (Political, Economic, Social, and Technological) analysis (Frue, 2017). Over the years, many strategy groups have tailored the PEST categories; our personal favorite is PESTLER, adding L=legal, E=natural environment, and R=resources. (The R often refers to Regulatory, but we assume that Legal can cover that category.)

The six FUSERS categories (shown in Figure 18) help architects focus on an essential set of top-level system

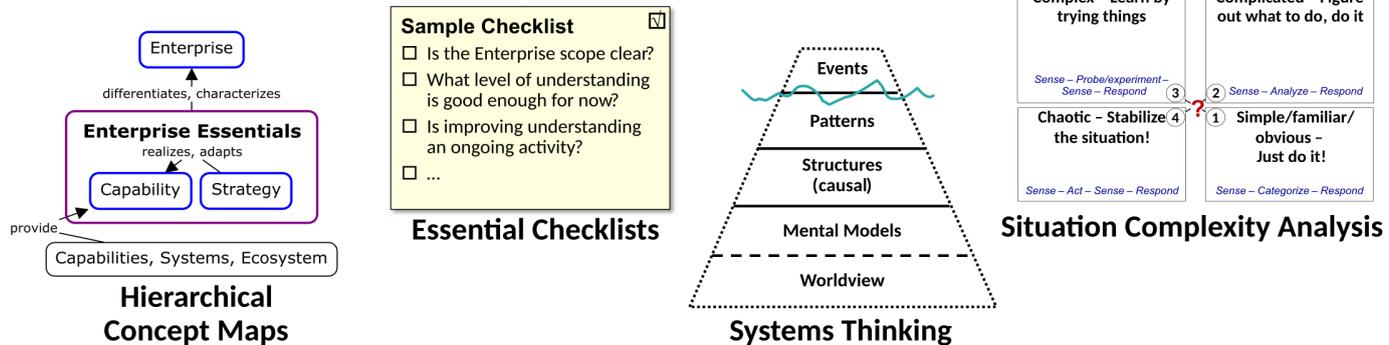
Key Points:

- What they are
 - Strategic Factors Framework: a scheme for categorizing contextual influences having a significant impact on enterprise plans and systems, e.g., PESTLER (Wikipedia, PEST analysis)
 - System Qualities Framework: a scheme for categorizing and quantifying attributes or properties of systems, e.g., FUSERS
- Why we like them
 - They simplify consideration of strategic success factors in architecting.
 - They make it clear that Capability Fitness is the overarching quality.
- How we use them
 - Primary inputs to be compared in fitness analysis and visualized in Fitness Heat Maps (see Figure 19)

qualities, which in turn can refer to any relevant system quality. A full discussion of system qualities and FUSERS starts on page 200. For additional information, see Tips and Insights on Strategic Factors & System Qualities Frameworks, on page 353, and Capability Fitness: The FUSERS System Qualities Framework, on page 436.

Adaptive Enterprise Cycle: Key Tools and Methods—Graphic Summary

Key Tools



Key Methods

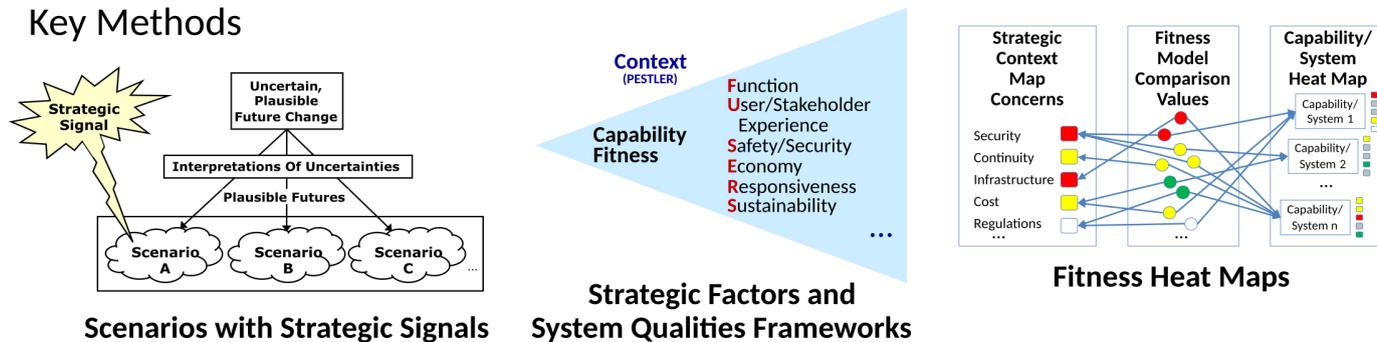


Figure 20. Graphic Summary of Adaptive Enterprise Cycle Key Tools and Methods.

Part II: The Solution

This part includes the following sections:

1. **The Discipline: Strategic Enterprise Architecture**

We cover the discipline first to outline the scope and responsibilities of the Strategic Enterprise Architect role. This section comprises a single chapter:

- Chapter 6: The Discipline: Strategic Enterprise Architecture

2. **The Views: Six Strategic Enterprise Architecture Views That Describe the Enterprise and Its Fitness**

This section includes seven chapters:

- Chapter 7: Introduction to the Strategic Enterprise Architecture Views
- Chapter 8: The Enterprise Essentials View
- Chapter 9: The Strategic Context View
- Chapter 10: The Strategic Stakeholders View
- Chapter 11: The Capability Architecture View
- Chapter 12: The Strategic Fitness View
- Chapter 13: The Strategic Initiatives View

These seven chapters define and relate the concepts and terms used in Strategic Enterprise Architecture. They also show how the strategic stakeholders update and use the information in the views to drive the evolution of the enterprise's capabilities, systems, and ecosystem.

3. **The Methodology: The Adaptive Enterprise Cycle**

This section includes two chapters:

- Chapter 14: The Methodology: The Adaptive Enterprise Cycle
- Chapter 15: Key Tools and Methods

These two chapters describe how to create and use the Strategic EA views to define architectures. They also cover performing analyses, developing and evolving architectures, and using the architectures to realize systems and capabilities.

This introduction to Part II finishes with two short discussions:

- How to balance the fitness dilemma
- How to use the Capability and Resource Viability model in determining what is "good enough"

Capability and Resource Viability

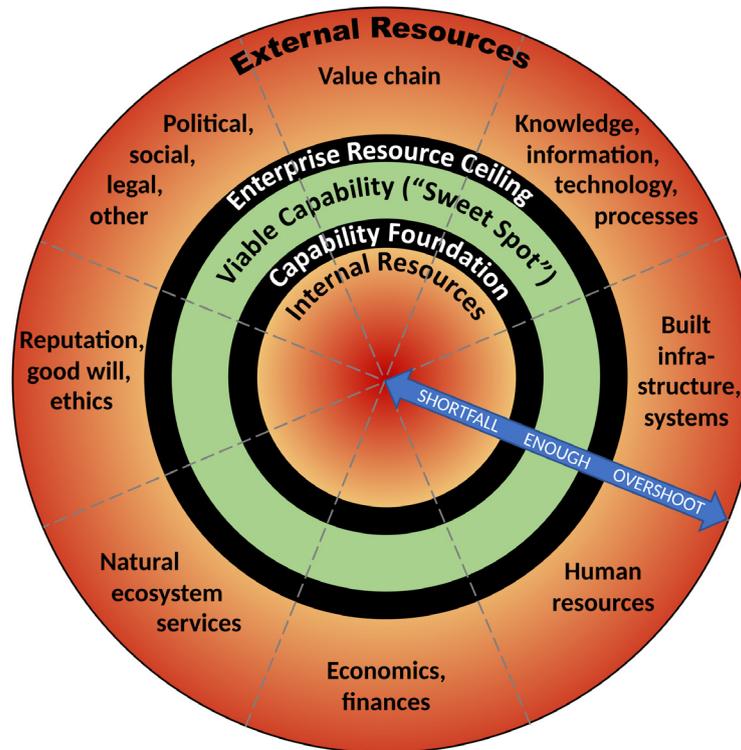


Figure 21. Capability and Resource Viability Model.

Good enough use of resources to provide a Viable Capability over time is the fundamental strategic balancing act of all enterprises. The enterprise continuously avails itself of External Resources, transforming them into Internal Resources that it uses to provide value. If an enterprise has insufficient resources at its disposal (Shortfall, below the Capability Foundation), the Capability it provides will be deficient. If, on the other hand, it consumes too many resources (Overshoot, above the Enterprise Resource Ceiling), it will be vulnerable to disruptions, e.g., by more efficient competitive offerings. This model, inspired by the “Doughnut of social and planetary boundaries” (Raworth, 2017), helps strategic stakeholders visualize the Viable Capability “Sweet Spot” across many resource categories.

How Does Strategic EA Practice Differ From Traditional EA Practice?

Attribute	Traditional EA Practice	Strategic EA
Scope	Systems for the enterprise, extended enterprise, industry. May include capabilities (valued offerings and practices).	Traditional EA Practice + capabilities (valued offerings and practices) + full enterprise ecosystem + synchronization with other strategic stakeholders
Context	Focused on applied technology, including disruptions	Focused on full range of strategic factors + disruptive potential + ability to survive and exploit disruptions
Relationship to strategy	Execute: architect flexible foundational systems to realize the strategy (tactical)	Help define strategy with focus on capability, platforms, systems, exploiting innovation
Planning horizon	Short to medium	Short to long
Expected contributions	Operations, improvements, structural changes (e.g., mergers and acquisitions)	Traditional EA Practice + competitive advantage, fitness for context, digital transformation
Fitness focus	Fitness for purpose of systems	Fitness for context of capabilities and systems, including ecosystem interactions

Table 9. Comparing Traditional EA Practice and Strategic EA.

Discussion:

We use the term “enterprise ecosystem” as a broader phrase for the more common “business ecosystem.”

“Execute: architect flexible foundational systems to realize the strategy” refers to (Ross, Weill, & Robertson, 2006), which we believe is now quite common EA practice. This is

really architecting for flexibility rather than architecting with a clear eye on strategy formation.

Too short a planning horizon is actually tactical rather than strategic. Depending on the industry, “short” and “medium” could have very different meanings. For example, a

Rationales for Strategic EA Views

Strategic EA View	View Content	Rationale
1. Enterprise Essentials	The core, relatively stable elements of an enterprise that define its identity and distinctive character	Facilitates reasoning about these core elements, especially Capability and Strategy
2. Strategic Context	Conditions (trends, disruptions, signals, etc.) for different scopes (internal and external), timeframes, and strategic factors; considerations, drivers, and scenarios	Focuses and structures the complex strategic context so that strategic stakeholders can identify areas of interest and their importance
3. Strategic Stakeholders	Their roles, expertise, influence, interests, concerns, needs, expectations, perceived risks and opportunities	Models key strategic stakeholder aspects to highlight their concerns and evaluations of the enterprise’s fitness
4. Capability Architecture	Models of enterprise capabilities, systems, ecosystem; current and planned; qualities, principles, standards, adaptations	Focuses on how to improve the enterprise’s capability and its supporting systems consistent with the Strategy
5. Strategic Fitness	Stakeholder evaluations of the enterprise’s past, current, and future fitness based on contextual and enterprise factors; used to update Strategy, Capability Architecture, Strategic Initiatives	Helps the strategic stakeholders quickly spot the areas of unfitness that need improvement
6. Strategic Initiatives	Investments and initiatives for adapting the enterprise to accomplish its purpose and remain fit for context	Organizes, prioritizes, and tracks initiatives to improve the enterprise capability in the near and longer term

Table 11. Strategic EA Views, Their Contents, and Rationales.

The first two columns of this table appear in the Overview in Table 3, page 44. This table numbers each View in the first column and adds the Rationale column.

Strategic Enterprise Architecture Views in Context (Summary)

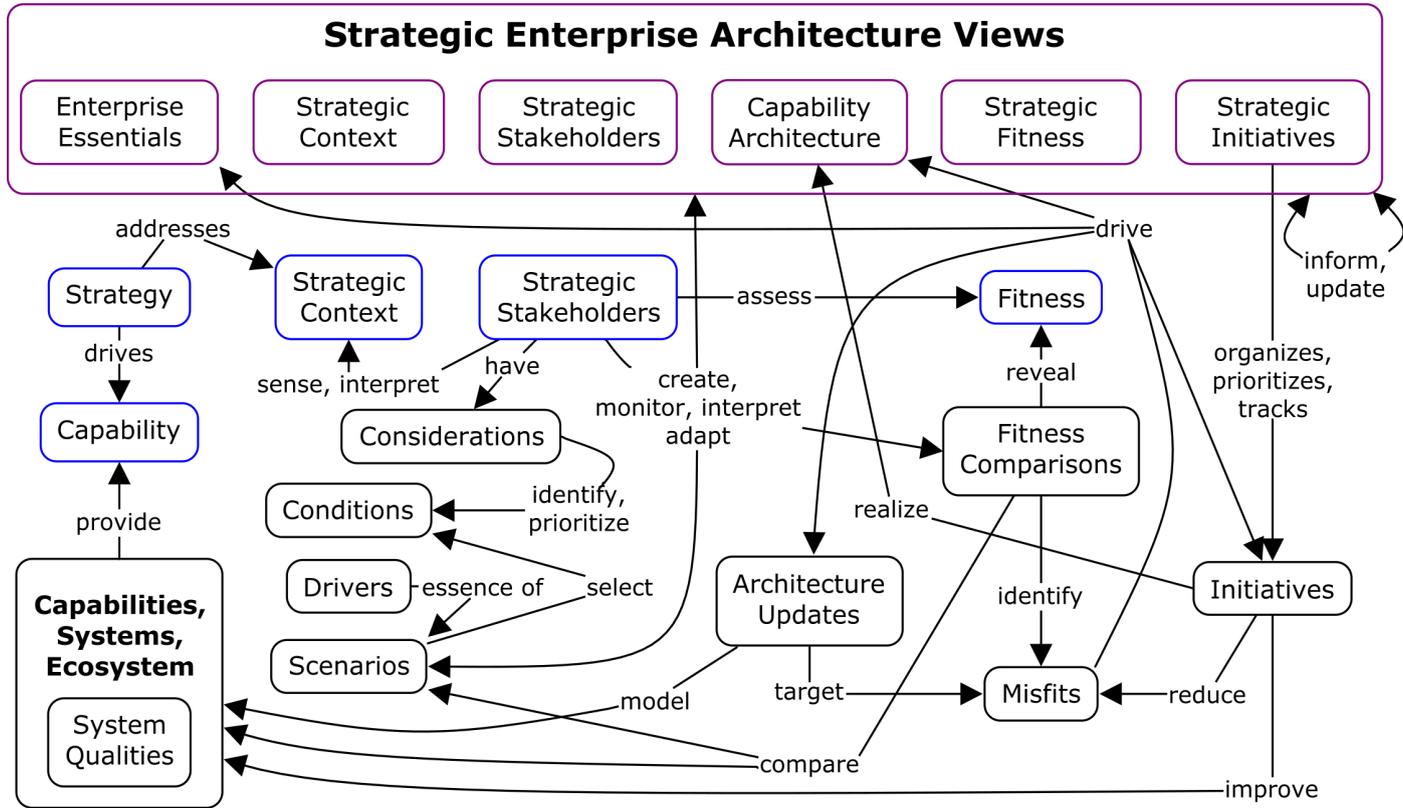
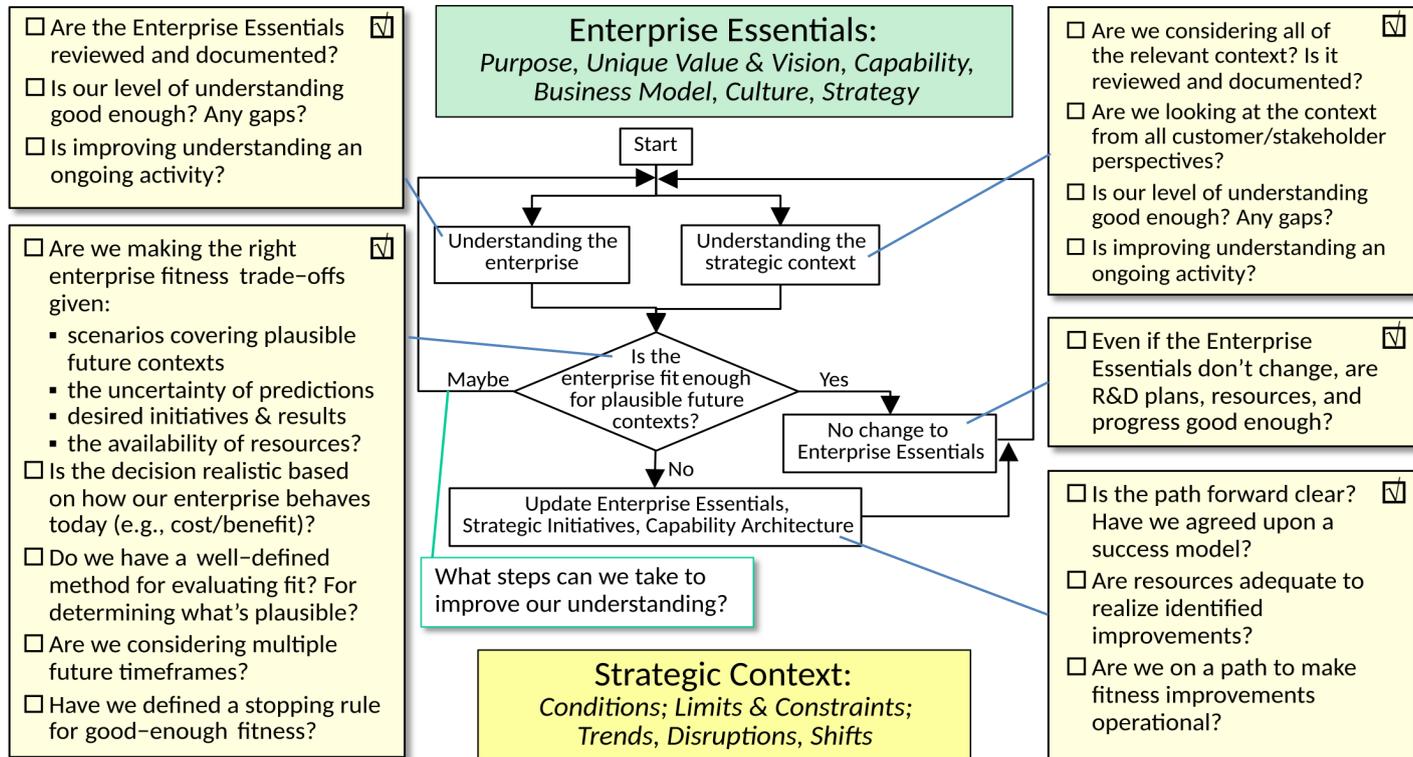


Figure 28. Concept Map Showing Key Relationship Among the Strategic Enterprise Architecture Views.

This diagram shows only the most important concepts and relationships. These are introduced, built up, and discussed in detail for each view, in Chapters 8 through 13. (See “How to Read Hierarchical Concept Maps” on page xii.)

Fit Between Strategic Context and Enterprise Essentials: Key Questions Checklist



Checklist 1. Key Questions Checklist for Enterprise Essentials Fitness.

First we need to understand the Enterprise Essentials and the Strategic Context. The basic question is whether the Capability we are proposing in the Strategy will be fit enough for each of the plausible future contexts (which can be represented by scenarios). If not, some aspect of our Enterprise Essentials needs to be revised—most likely our Capability. If we don't know for sure, we need to figure out what more we need to know to determine future fitness.

Adaptive Enterprise Cycle Methodology Details

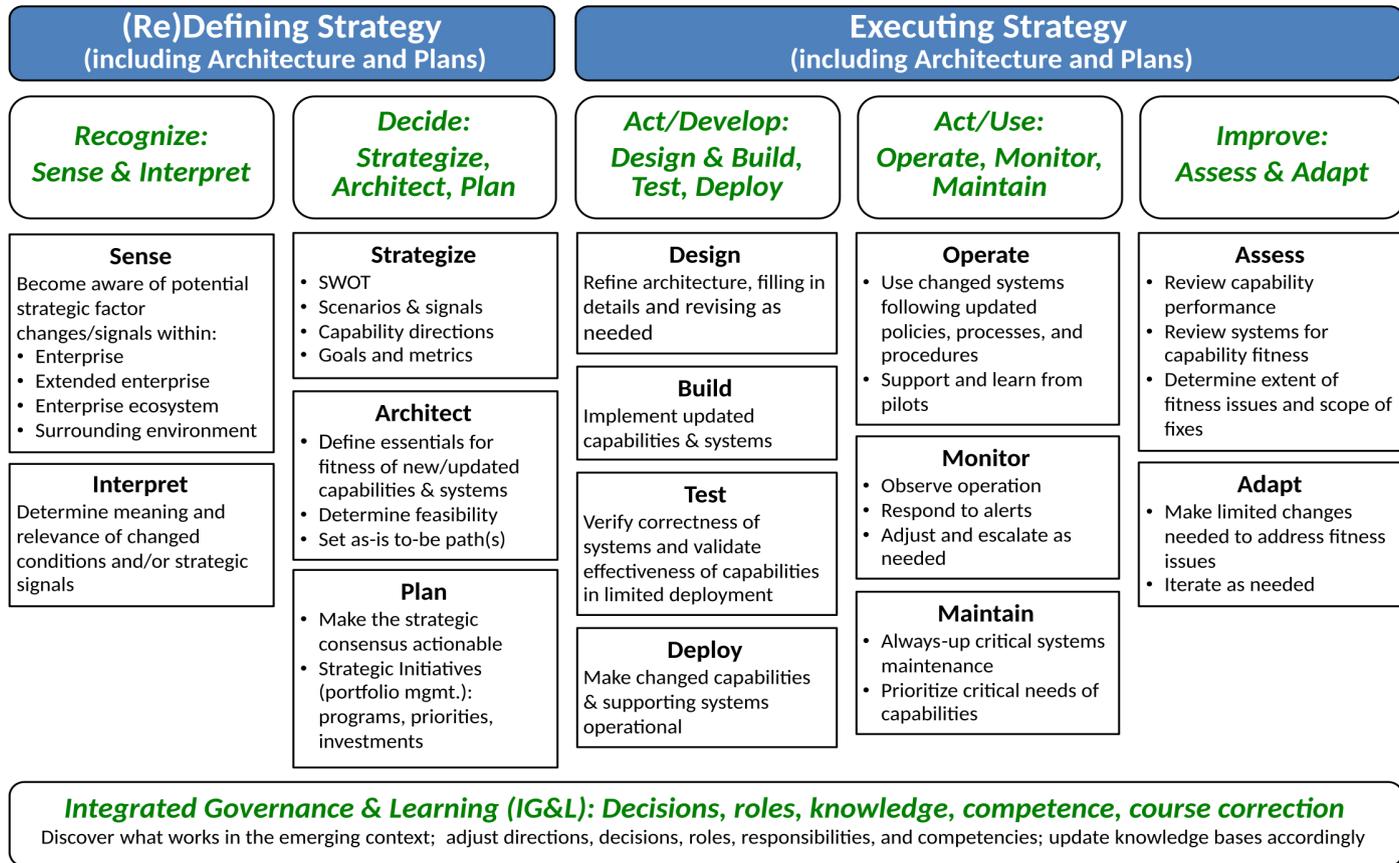


Figure 79. Details of the Adaptive Enterprise Cycle Phases.

This diagram lists the key activities within each phase of the cycle.

Part III: Practice: Using the Views and Methodology, With Examples

In Part II, we described the six major views and the Adaptive Enterprise Cycle methodology that support Strategic Enterprise Architecture. We also provided a map of the relationships among the key concepts and the views (see Figure 28, on page 129). In addition, we detailed seven key tools and methods that help navigate the dilemma of an uncertain disruptive future context that architects must address while still ensuring support for the current purpose and capabilities.

Part III focuses on concrete steps that architects can take to address the dilemma, including how to understand current and future capability needs (as identified by strategists and other strategic stakeholders) and how to incorporate the requisite flexibility to maintain fitness for the ever-changing context.

Finally, we provide four examples to illustrate how different aspects of the views, methods, and tools address the dilemma.

Part III includes the following chapters:

Chapter 16: Using Strategic EA to Improve Strategic Fitness

Chapter 17: Architecting and Disruptive Change: Proactive and Reactive

Chapter 18: Populating and Using the Views

Chapter 19: Using Principles to Clarify Architecture

Chapter 20: Making IG&L Effective—Growing Strategic Enterprise Architects

Chapter 21: Four Practical Examples of How the Ideas Could Be Applied

Example 1: iPhone Disrupts IT Mobile Device Base

Example 2: The NotPetya Ransomware Worm

Example 3: Electronic Healthcare Records (EHR): Views and Methodology

Example 4: COVID-19: An Examination of Capability Shortfalls

“We believe the future will remain unpredictable and the world unstable for the rest of our lives.”

— Jim Collins and Morten T. Hansen,
*Great by Choice: Uncertainty, Chaos, and Luck—
Why Some Thrive Despite Them All*

Disruptive Enterprise Leader's Capability Change: Disruptor's Perspective

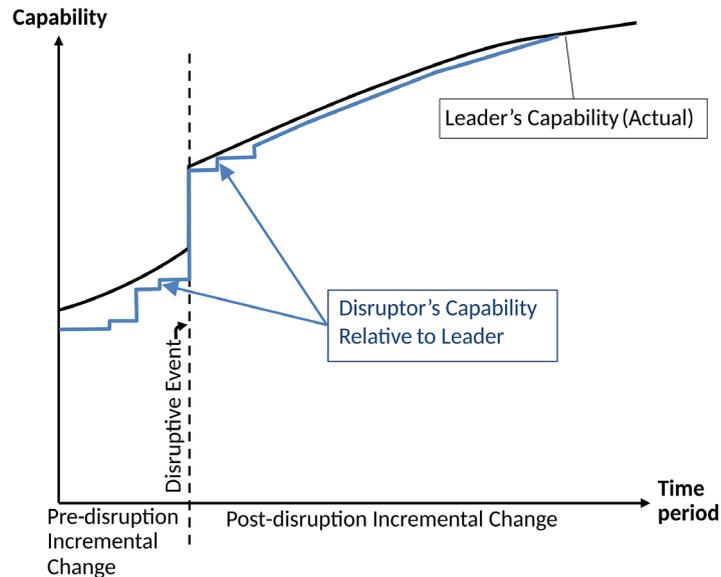


Figure 100: Disruption From the Disruptor's Standpoint.

The Disruptor makes a jump in Capability and becomes the new Leader; enterprises that compete directly must find a way to respond to the challenge. Even enterprises that are not business-oriented can be impacted due to increased expectations or

Discussion:

An enterprise may attempt to disrupt the context with a new or substantially upgraded capability. If it succeeds, and makes ongoing corrections to its capability (as shown by the blue line), it can become the new leader.

However, the intended disruption might not succeed, and the enterprise context may not shift the way the disrupting enterprise expected. It may then fall below the curve. That's

Pre-disruption, the Disruptor is making incremental changes to stay close to the overall rate of change in Leader's Capability.

The Disruptor then creates a disruptive change ("**Disruptive Event**").

Post-disruption, if the disruption is effective, they will be the only enterprise on the new, higher Leader's Capability curve for some period.

why close monitoring is so important—including well-designed strategic signals that indicate the status of the disruption.

It may be helpful to understand what constitutes leadership and how it is measured. Just a change in measurement can change what is considered leadership capability and who is considered to be the leader.

Competitive Disruption Considerations

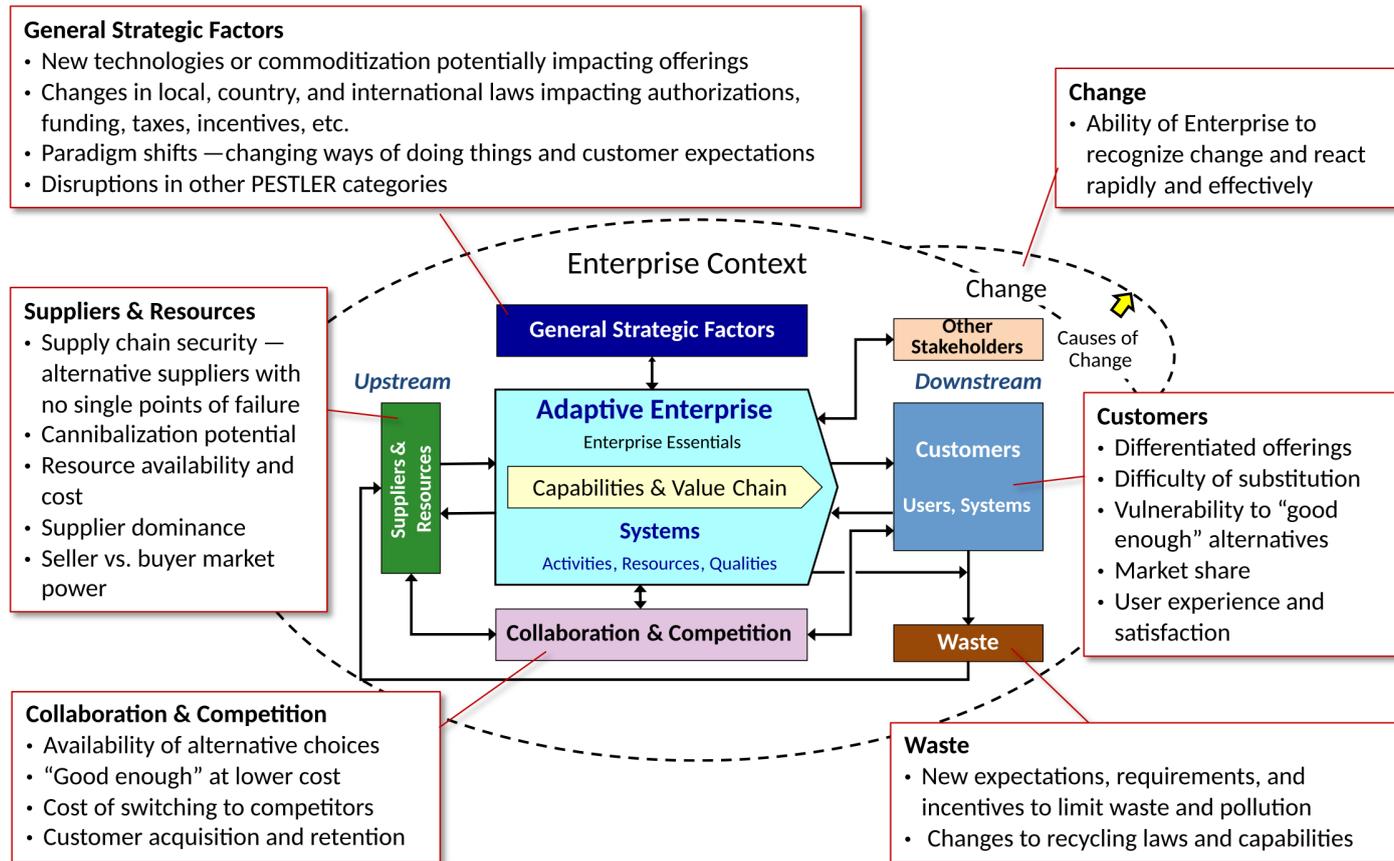


Figure 101. Some of the Disruptive Challenges Faced by Enterprises.

Not shown in this diagram are the potential disruptions caused by Other Stakeholders who were not engaged in the decision-making process. Some Enterprises focus primarily on shareholders, ignoring the need for broader buy-in.

Discussion:

Figure 101 provides a model of competition within the Economic domain. The diagram includes a sampling of issues that might arise from disruptions—including disruptions initiated by the enterprise.

Note that economic rivals may use other domains (e.g., political, regulatory) to seek advantage. For example, a competitor might dominate a group that is defining a new standard so that competitors' approaches are no longer approved.

The diagram is not intended to be complete. Examples of what is not shown in the diagram are:

- Some of the means for competing, e.g., in the political arena, capturing some of the regulators.
- Stakeholders not recognized in the planning process do not buy into capability changes, threatening the success of a strategy.
- The “General Strategic Factors” box covers only some of the PESTLER dimensions. Disruptions from other dimensions might include political factors that could result in regulatory modifications, serious economic changes such as recessions, social factors such as pandemics, environmental factors that affect the viability of a capability, and resource issues impacting the cost of a capability and even the ability to provide it.
- Supply chain issues might include, for example, a powerful supplier who manipulates the market to

eliminate competition (e.g., selling at a loss until smaller firms drop out). This disrupts the ability of enterprises to achieve supply chain security.

- Enterprises also need to consider the threat of substitution of a capability by a competitor. Generally, this occurs when the substitute provided is good enough to get the job done at a lower cost or with a better user experience.
- In the diagram, there is no notion of bad actors and the need for monitoring the system to see where the loopholes are. In recent years, theft of personal information has become a major threat, including stored credit card details and information needed for identity theft. Major enterprises have also undergone ransomware attacks at great cost. Disinformation attacks can also do significant damage.

Virtually everyone is familiar with spam and online scams. Counterfeit substitutes are common in almost every industry. We discuss the NotPetya worm in the examples in Chapter 21 on page 467.

In the security area, knowledge of so-called “zero day” vulnerabilities (flaws that can be exploited by cyberattacks) is often not shared so that governments or other enterprises can exploit them to support an attack or defensive response. See (Zetter, 2014). Anyone who discovers a security hole is theoretically supposed to notify the vendor.

Some Examples of Successful Disruptions

Key Points:

Disruption of the holistic experience, changing the paradigm:

- iPod
 - Customizable music selection (playlists that cross artists, labels, genres, etc.)
 - Piracy-free at a reasonable cost (legal alternative to Napster-type piracy)
 - High-quality sound (disrupted existing MP3 and CD players)
 - Portable (actually smaller than existing portable music players)
 - Multiple music sources: legal ripping of CDs supplemented by legal downloads
- iPhone
 - To music, adds: phone service, mail and messaging, internet browsing, camera, and GPS
 - Ecosystem for apps for small things users need/want to do, including games
 - Display high-quality visual experience in small form factor
 - Gestures and on-screen keyboard (avoiding the need for other hardware)
 - Voice recognition

- Pretty good security and privacy built in from the beginning
- Cloud backups and extended storage, transfer to other devices, sharing

Disruption by technical innovation:

- Google
 - World-class searching with relevance scoring
 - Pervasive email
 - Translation
 - Maps and GPS travel assistance
 - Added other features (e.g., shopping)

Discussion:

These disruptions are intentionally focused on technical and Internet disruptions caused by innovations. We suggest that these be used as starting points in discussions across the Strategic Factors Framework.

For example, for enterprises in the financial area, brainstorming the kinds of “innovations” that caused the global financial crisis of 2007-2008 might be particularly instructive. What steps were taken afterwards to try to avoid a repeat of the crisis?

In another example, innovations in the creation and use of electricity as a resource are disrupting not only the industries that generate electricity but also the transportation industry with electric vehicles.

Chapter 21: Four Practical Examples

In this chapter we introduce four examples of enterprise disruptions to illustrate different facets of the Strategic Enterprise Architecture views, methodology, methods, and tools.

The four examples are:

- **iPhone Disrupts IT Mobile Device Base**
This example compares the potentially proactive and reactive approaches of an enterprise faced with a technological disruption.
- **The NotPetya Ransomware Worm**
The NotPetya worm is considered to be the most destructive worm in terms of aggregate costs to enterprises. We consider the impact on the large shipping company, Maersk, and how scenarios with just-in-case planning might have avoided or at least mitigated the costly impact.
- **Electronic Healthcare Records (EHR)**
One of the most serious issues facing medical personnel is burnout, caused in part by the electronic healthcare

systems that they are required to use. The success of an enterprise capability is largely based on the impact on key stakeholders. Architecting based on FUSERS considerations can significantly affect the success of the capability and supporting systems.

- **COVID-19: Using Views to Prepare for and Recover from Disruptions**

The COVID-19 pandemic was not a surprise for those who had been watching earlier pandemics. In March 2015, Bill Gates famously predicted a global pandemic and included scenario planning in his call to action (Gates, The next outbreak? We're not ready, 2015). Yet many healthcare facilities and governments were seriously unprepared. We discuss the pandemic in terms of the Capability and Resource Viability model introduced in Figure 21, on page 96.

We start by considering some general questions enterprises might ask about disruptions at each stage of the Adaptive Enterprise Cycle.

Part IV: Next Steps

Overview

The views and methodology presented in Parts I through III (summarized below) will only be effective if the enterprise actually recognizes the importance of fitness for future disruptive contexts, and values the role that Strategic Enterprise Architecture can play.

Chapter 22, the only chapter in this part, focuses on the efforts needed to get an organization interested in following the ideas presented so far, from convincing management to give it a try, to the steps needed to carry out such a program—including dealing with obstacles and avoiding pitfalls.

The enterprise may well wish to adapt the methodology to their particular industry or domain. We expect that most enterprises, for example, will need to modify the checklists to suit their way of doing things.

Summary of Parts I through III

Part I introduces the need for Strategic Enterprise Architecture, its basic concepts and terms, and the overarching challenge of pervasive, unrelenting, and disruptive change. It then frames the dilemma—the Strategic Enterprise Architect's need to balance fitness for purpose with fitness for context—and outlines how to solve it.

Part II goes into more detail on the solution, covering the following:

- **The discipline of Strategic Enterprise Architecture** and the **role of Strategic Enterprise Architect** in ensuring **fitness for purpose and context**
- A set of **Strategic Enterprise Architecture views** that capture important information in the six areas critical to enterprise success:
 1. **Enterprise Essentials:** the enterprise's purpose and unique value, its capability, and the strategy for providing it
 2. **Strategic Context:** the scope and kinds of potential disruptions and ongoing trends which the enterprise needs to monitor
 3. **Strategic Stakeholders:** key stakeholders who assess future conditions and fitness, determine strategy, and create and direct strategic initiatives
 4. **Capability Architecture:** the essential design of the enterprise's systems—including the people, processes, technology, information, and other resources—that support the desired capability and ensure strategic fitness
 5. **Strategic Fitness:** The assessment of the enterprise's ability to survive and thrive in plausible future scenarios, and the identification of misfits—areas in which the enterprise capability does not match the

The Strategic Enterprise Architect's Dilemma

characteristics and needs of the current and emerging context

6. Strategic Initiatives: the identification and prioritization of initiatives (including architecture updates) to improve fitness and address misfits
- The **Adaptive Enterprise Cycle**, a methodology that:
 - Starts with disruption and other changes in the context.
 - Requires meaningful sensing and interpreting of changes.
 - Is capability-based: focuses at every phase on achieving fitness of the capability for the context.
 - Is driven by scenarios: strategy, architecture, and initiatives build in flexibility to address each plausible scenario.
 - Emphasizes continuous, iterative, adaptive, and agile approaches to capability and system (re)definition, development, deployment, operation, and improvement.
 - A set of **tools and methods** that help in creating and assessing the Strategic Enterprise Architecture:
 - Scenarios with strategic signals
 - Strategic factors & system qualities frameworks
 - Fitness heat maps (good-enough analysis)
 - Hierarchical concept maps
 - Essential checklists
 - Systems thinking, especially the iceberg model
 - Situation complexity analysis & decision making: Cynefin with the iceberg

Part III provides guidance on how to use the views and methodology to achieve strategic fitness in a disruptive context, including four detailed examples.

About the Authors

The authors are avid believers in the criticality of systems thinking for understanding the many global challenges we face. They are particularly interested in how enterprises can make the right trade-offs to balance short- and long-term needs. While at Digital Equipment Corporation and Compaq, they formalized the Compaq Solution Architecture Methodology, which became known as HP's IT Strategy and Architecture method when HP acquired Compaq. At DEC and Compaq, they developed and delivered highly successful workshops and training symposia that often included high-profile customers. These workshops and training were highly valued by HP, which continued offering them for well over a decade.



Alex Paul Conn, Ph.D., has extensive experience as both a practitioner and professor in computer systems architecture and engineering, beginning early in his college years. His primary interest is technology-based architectures that provide

the integration necessary for interoperability and ongoing adaptability. His expertise includes system qualities (security, usability, internationalization, etc.) and compound document architectures.

In addition to his work in developing and teaching solution and enterprise architectures at DEC, Compaq, and HP, Alex developed a solution architecture methodology for telecommunications into courses that he delivered worldwide for Alcatel Lucent. In these courses, he explored the need to recognize and respond to threats from disruptive technologies and contexts, including major paradigm shifts and value chain security.

Alex received his doctorate from the University of California, Berkeley in computer engineering with earlier degrees in engineering and computer graphics at Dartmouth College and Dartmouth's Thayer School of Engineering.



Leo Laverdure has deep experience in IT and its application to business needs. He has led a number of Enterprise Architecture and Solution Architecture programs at HP, Compaq, and Digital Equipment. He served as lead architect for HP's Adaptive

Enterprise/Adaptive Infrastructure initiative. For many years at HP, Compaq, and Digital Equipment, he headed up the Enterprise/Solution/IT Architect profession, with worldwide responsibility for research and development of services and methodology, professional development and support of architects, and leadership of "lighthouse" (key client) engagements.

Leo was the lead architect and author of Digital's Network Application Support distributed middleware services book. He also has an extensive background in software engineering, including transaction processing monitors, operating systems, and file management.

Leo holds a BA in physical sciences from Harvard University and has done graduate work in computer sciences at the Massachusetts Institute of Technology and Worcester Polytechnic Institute.

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