

Horizon Shift Analysis

**A Practical Method for Monitoring the
Future and Anticipating Change**

WHITE PAPER

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EXECUTIVE SUMMARY

Horizon Shift Analysis: A practical method for monitoring the future and anticipating change

Organizations invest in strategic foresight to anticipate change, yet many lack a disciplined method for monitoring whether—and when—the futures identified in a project are becoming operationally relevant. As a result, leaders often rely on fixed time horizons or worse ignore the identified signals, both of which can result in lack of action.

This paper introduces Horizon Shift Analysis (HSA), a practical monitoring method designed to help futurists and decision-makers recognize, assess, and anticipate movement between the horizons of the Three Horizons framework. Rather than treating horizons as predetermined time periods, HSA focuses on observable shifts in the conditions that enable an emerging system to challenge, transition from, and ultimately replace the dominant system.

The method provides a six-step process: define the shift being monitored; map the system elements involved; identify scenario-specific indicators; assess changes in rules, policies, and standards; monitor the public and stakeholder conversation; and evaluate the will and resources of the actors advancing or resisting change. HSA organizes these observations through five critical enabling conditions—social acceptance, technological capability, infrastructural support, laws and standards, and entrepreneurial zeal accompanied by will and resources (STILE).

Used as a recurring practice following scenario development, Horizon Shift Analysis enables organizations to distinguish hype from meaningful transition, identify constraints that may delay transformation, and recognize when strategic action is warranted. The paper positions HSA as a bridge between foresight insight and ongoing strategic decision-making, offering a structured way to monitor the emerging future, improve timing, and act more confidently on both opportunities and risks.

Keywords: Three Horizons, Foresight, Strategic Planning, Trends, Future, Monitoring, Trend Analysis

Horizon Shift Analysis. This chart can be printed and used as a working document

HORIZON SHIFT ANALYSIS			
INSTRUCTIONS: Determine the domain of interest. Review the H3/H2/H1 Domain Characteristics to identify which most closely matches the current conditions. Under that horizon's SHIFTS section, identify what is happening within Rules, Conversations, and Will & Resources. Use the "Signs that" column to determine directionality. Finally, determine which actions to take.			
H3 Domain Characteristics			
H3 Characteristics: Led by Visionaries. Known as The New Frontier; Few participants; Laughable; Infrastructure and other supports are not in place; "Ahead of its time". Media: art, fringe media, speeches, personal blogs, fiction, science or technical journals			
H3 Shifts			
Signs that...	What happens with in RULES	What happens with in CONVERSATIONS	What happens with in WILL AND RESOURCES
H3 is stable	No Rules There aren't any rules or policies yet that accommodate the transformation.	Insider Conversations confined to those with specialized knowledge	One-person band or Small Crew Domain may be pushed by one individual or small group of people with belief and enough resources to get things started. Mostly about Will to push through.
H3 is catching on and moving into H2	Ad Hoc Rules Exceptions are made to accommodate specific instances.	Hype Very positive imaginings.	Swim or Sink More resources are needed. If no resources are found, transformation may stall or end.
Actions to take: Investigate/research, learn (include in learning events those who are on the tactical level as development), ideate and pilot, establish partnerships or vendor options and build relationships from cold to warm, determine resource needs and sources (i.e. talent), vet ideas			
H2 Domain Characteristics			
H2 Characteristics: Led by Change Agents. Known as The Battleground; Multiple competing methods to accomplish goal; Discussed in Mass Media (gen pop); Most are aware of it or have experienced it. Media: specialty trade publications, club or organization communications, government reports			
H2 Shifts			
Signs that...	What happens with in RULES	What happens with in CONVERSATIONS	What happens with in WILL AND RESOURCES
H2 is stable	Courting Decisions Deciding "What <i>should</i> the rules be?" Pending court case(s); Proposals for new bills with the advancement domain at the center; Norms and standards reconsidered.	Conflict & Controversy Persuasive arguments are made for and against transformation	Resource Gains Additional resources are provided in the form of people or investment. Shift becomes mostly about Resources (the gaining of and keeping) including governmental investor, and popular support.
H2 is stagnating or could fail	High Profile Loss High profile battle and domain "loses" the fight.	Losing Favor Primarily negative conversation that turns to low or no conversation.	Losing Steam Resources or the will to see the transformation through are becoming depleted without replacement; infusion needed FAST.
H2 is in the latter stages of replacing H1	Winning Hearts and Minds There is enough favorable opinion of the transformation for it to proceed. Moving out of the innovators and early adopters. Regulations and policies standardize.	Silence The conversation that was controversy has died down; the domain quietly and effectively continues about the work of transformation. This work is incremental and not worthy of headlines.	Resource Ready Will is refueled by successes as are other resources. Current H1 players are beginning to put investments in the transformation. The incumbents may co-op the new entrant or compete head-to-head.
Actions to take: Set up operational systems, collect and analyze relevant data, establish "go state" and market test. Determine internal values: organizations that pride themselves on being visionary/first movers should decide and place a bet while the more Risk adverse postpone action by setting clear SMART target such as when penetration reaches x or - when x legislation passes. [Note: Go state is the state in which an organization or individual has in place all the components necessary to do the new thing immediately if required to do so]			
H1 Domain Characteristics			
H1 Characteristics: Led by Managers. Known as The Baseline; Well-known Leaders/Dominant; Heavily resourced; "The way things are done"; Most use or perform this action; Has supportive systems & infrastructure. Media: mainstream media, news, textbooks,			
H1 Shifts			
Signs that...	What happens with in RULES	What happens with in CONVERSATIONS	What happens with in WILL AND RESOURCES
H1 is stable	Favored One Infrastructure is in place; all rules favor and serve as a barrier to some degree to new entrants.	Losing Shine Default choice. May have as many fans as detractors, accused of abusing their victory of being the "winner" or incumbent. In essence, the shine wears off.	Protective Will and resources used to keep the predominant position. This includes quieting opposition, acquiring smaller players, lobbying, settling lawsuits and other "big gun" tactics.
H1 is in decline	New Rules The rules, laws, or structures of the game have changed and no longer favor the incumbent.	What Now Can do nothing right. May begin to serve a new function that is not as predominant as the previous one. New transformative entrant viewed as the reasonable choice.	Not Enough The system has transformed and no amount of will or resources will change the tide. Will and resources will help stay operational but only marginally so.
Actions to take: Monitor the Operating Environment for change, anticipate risk and opportunity, refer to plans that indicate what actions to take when			

Introduction

A key function of the work of the futurist is identifying the evolution of change over time. This function is usually the impetus for embarking upon a foresight project and creating scenario sets. A popular framework for organizing our understanding of change is the Three Horizons, where, in essence, Horizon One (H1) is the current system, Horizon Two (H2) is the transition, and Horizon Three (H3) is the new system.^{1 2} So, we asked whether there are clues to the transitions that occur between each horizon (or the ‘horizon shift’) beyond a rough surrogate of numbers of years. Are there indicators that the industrial giant representing the current system (H1) is poised for a mighty fall? Might we begin to anticipate when an H3 idea is about to enter the consciousness of the mainstream? In short, might we be able to understand these larger patterns in a way that informs decision-making.

The purpose of this paper is to help futurists know “what to look for” in terms of horizon shifts. While the primary assumption is that futurists will most often be the ones responsible for the work, we are also aware that in the current environment, frequently, it is executives or senior leaders in strategy, innovation, or some other internal capacity relating to the future that may be tasked with ‘monitoring the future’ after a project, an activity distinct from the more generalized horizon scanning. Thus, in this paper, we will make fewer assumptions about the reader’s familiarity with foresight concepts and will explain ideas that may seem remedial to the practicing professional. For this, we ask for a measure of patience and understanding in advance.

Why this Research is Needed

Identifying horizon shifts provides a more nuanced and useful approach to understanding how change unfolds over time. Ranges of years are most often used to give a sense of the timing of horizons, e.g., 1-5 years, 6-10 years, and 10 and beyond. These guidelines are better than nothing but not terribly useful. They may even be harmful in providing a false sense of security. For instance, one might think they are firmly in the H1 baseline and years away from a shift, but it turns out that shift is right around the corner.

A starting premise for the paper is that the foresight field needs to do a better job of ongoing monitoring of the future.³ Too often, after a project is finished, the team involved goes back to their “regular” job. They may have a plan or pilot that is being worked on, but the active monitoring of the domain often comes to a halt. Changes in the domain continue to happen, but these changes are

rarely actively evaluated and compared to the hypotheses put forth within the scenario set. Put simply, monitoring the emerging future in connection with project work hasn't been seen as worth the effort.

Background

Oftentimes a proposed method, technique, or framework emerges from multiple paths. Horizon Shift Analysis (hereafter HSA) emerged from three prior research pathways. The first path involved reflection on basic monitoring work carried out for the US Forest Service. The second was a research project which mapped scenario archetypes across the Three Horizons. Lastly, there was a project for an entertainment company where the results were mapped across the Three Horizons without mentioning time periods.

The US Forest Service-Developing a Systematic Approach to Monitoring

The first research pathway comes from previous research on monitoring that was done for the US Forest Service. This work focused on tracking emerging issues that had been identified by a scanning system. It sought to develop a systematic approach to monitoring how the emerging issues matured – or not – over time. The system explicitly used the Three Horizons framework. It developed and tracked indicators to guide us on whether the emerging issues had shifted from H3 to H2 and then H2 to H1. The indicators were specific developments that were determined to be signals of change. For example, tall wood buildings were emerging on the scene, and tall wood buildings were an Indicator we used to monitor change. It was a pilot test that showed some promise. The authors specifically raised the future research question: “What does the shape of the movement across the horizons look like?”⁴

Scenario Archetypes along the Three Horizons

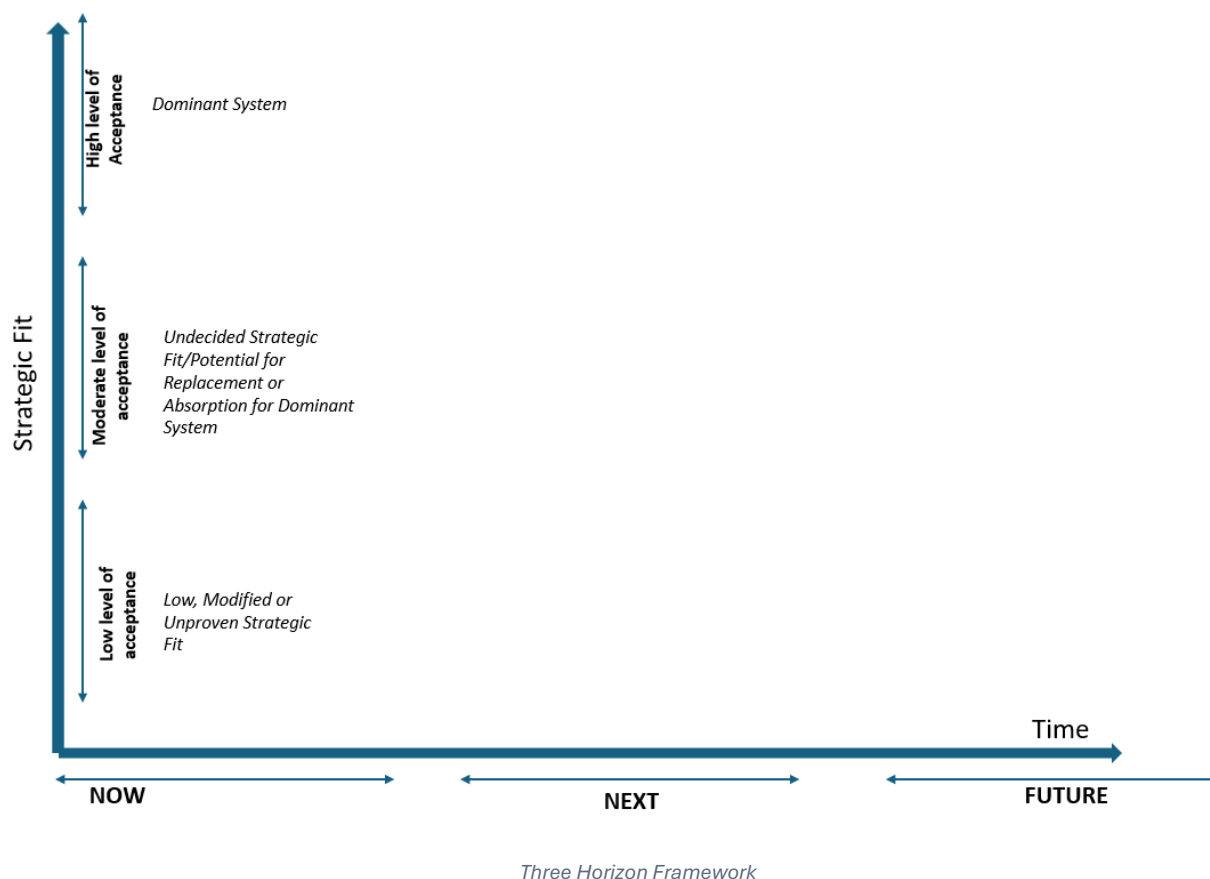
The next pathway emerged from recent research that mapped scenario archetypes across the Three Horizons framework. A key assumption was that, in many cases, a domain can be usefully mapped following a development logic that combines the ideas of the scenario archetype technique and the Three Horizons framework:

- **The domain begins in H1**, described by the Baseline scenario archetype, which eventually declines over time as it loses fit with a changing context.
- **The domain moves into an H2 transition state**, either via the Collapse or New Equilibrium archetypes.
- **The domain moves into H3 Transformation archetype** when the H2 transition is complete and is renewed – a new system with new rules.

This research mapped scenario archetypes to each of the Three Horizons in several dozen historical scenario sets. This approach was indeed found to be useful in understanding changes in domains.⁵ Additionally, the work explored patterns in how domains evolve over time when applied to the Three Horizons framework.⁶ However, repeatedly the question emerged during this research about what the criteria was for anticipating, identifying, or declaring a horizon shift. The team admitted that even in hindsight the “declaration” of a shift seemed highly subjective. In attempting to answer this question, the research team posited several different interesting and useful possibilities but ultimately deemed the scope of developing these ideas too large and decided the inquiry merited separate research and publication. Thus, we take on the challenge here.

Using Horizons Instead of Estimated Timeframes

The third pathway involved an experiment within a foresight project using the Three Horizons model to express the evolution of the scenarios absent an estimated number of years. The hypothesis was that often foresight audiences tended to take the years too literally and sometimes tried to time actions accordingly—frequently resulting in delayed response. Instead, it was reasoned that it is not about the years, which are guides, but rather about understanding the shifts between the horizons. It is not about anticipating a shift in 5 years but rather knowing what that shift looks like so that it can be recognized and anticipated whenever it happens, be it three years, seven years or longer. To some degree, the estimated time periods distract clients from really paying attention to the shifts themselves.



Horizon Shift Analysis: Foundations and Principles

Most of the foresight literature does not focus directly on horizon shifts or for that matter few focus on the overall model of change but rather tends to look at specific problems – how technologies or products evolve, how to probe beneath the surface, how to look more broadly. The Three Horizons literature, of course, is an exception in that it discusses shifts, although we did not find specific advice for detecting or recognizing shifts from a domain monitoring perspective, thus this paper seeks to close this gap.

Let's begin by defining some terms.

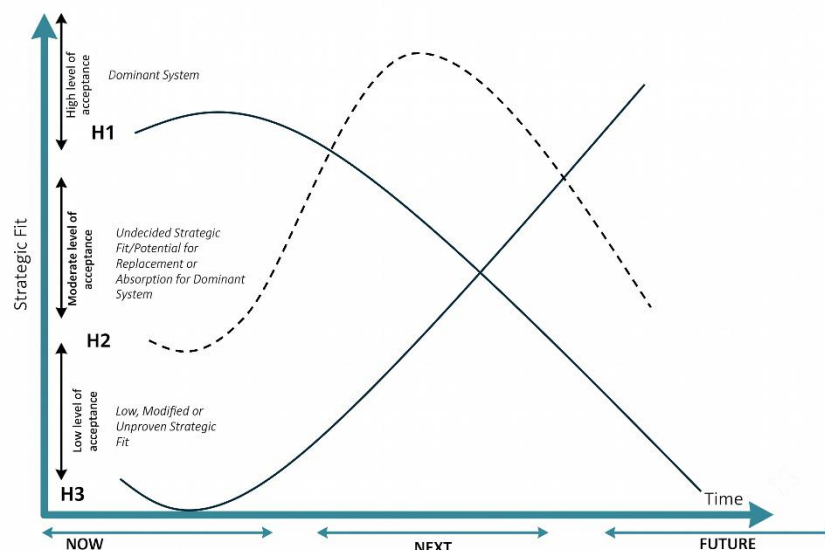
- A **domain** is any topic whose future is to be explored; it may be *geographic*, from a city to a country to the world; it might be an *industry sector*, such as transportation, or relate to government, such as public health, nonprofit with the future of philanthropy; it might be an *institution* such as education; a *technology* such as virtual reality; a *social movement* or an *issue* such as climate change or misinformation.⁷

- A **horizon shift** is when the prevailing characteristics of a domain have changed to the degree that the domain can no longer be accurately described by the identifiers of the prior horizon.
- A **transformation** is when the change in the domain has achieved its most complete expression that is radically different from what came before.

Specifically, in this paper we look at what, within a particular domain, constitutes a shift. We primarily did this from the vantage point of focusing on the emerging H3. In other words, while the existing H1 system is declining, a new H3 system is emerging. We felt that most attention is focused on the decline of the existing system rather than the emergence of the new. In looking for the characteristics that domains go through when moving through the horizons, we found it most clear to describe the evolution of the process of what happens as a new idea emerges, gains acceptance, and finally replaces the old or a transformation has occurred. For example, viewing the shift from the idea for flying cars, to when some people are transported by flying cars, to when nearly everyone uses flying cars as transportation. Additionally, we found this vantage point useful as a way of ‘proving out’ the work as we would then be able to use existing systems that most people would agree to have transformed as a way to verify the research results.

The Patterns of the Horizons

H1, H2, and H3 patterns are distinct but interact. Each horizon is present in the current moment. In the **NOW** (think “present time”) H1 has the position of being the dominant system with a high of acceptance. Yet, in the **FUTURE**, the H1 pattern shows that over time, H1 tends to lose its dominant position, have a lower level of acceptance, and either a low or modified strategic fit. Meanwhile, H3 in the **NOW** has a low level of acceptance and may be ahead of its strategic fit. Over time, the pattern shows the tendency of H3 in the **FUTURE** to gain a much higher level of acceptance and find its strategic fit and become the dominant system. In the **NOW**, H2 has some traction but represents transition and may rise or fall accordingly.



Three Horizon Framework with Pattern Behavior

Dominant Perspectives or Ways of Thinking about the Future

At any given time, each of us puts on a different “hat” when we think about the future.⁸ When we think mostly about the present and current issues, it has been said we are doing H1 thinking. When we think about the transition or the next steps we could take to move away from the status quo, we can be said to be doing H2 thinking and when we are imagining all the possibilities that could happen somewhere in the distant future when a transformation is complete and situations have been righted, we are said to be thinking in H3. These are different perspectives that can take place in the current moment. Consider if you were planning to move. You might have H1 concerns and questions (should I stay where I am because I have employment here and like the neighborhood?); see the possibilities offered in H2 (maybe I will like the new neighborhood better!); and also envision the long-term future in H3 (I could see myself doing a major addition to the house and retiring there). One could take all these perspectives in a matter of moments.

For clarity and to avoid confusion, in this paper, we will avoid referring to both the Timeline (Now, Next, and Future) and the Perspectives (H1, H2, H3) in the same explanation or sentence. We explain this here because these concepts will arise in some of the works that appear later in this text.

Standing on the Shoulders of Giants

This review is intended to provide an overview of published works that directly informed the development of our approach to creating a tool that helps futurists and decision-makers recognize signs of potential horizon shifts. As we were unable to locate literature that directly addressed recognizing the shifts between horizons, rather than aiming for a comprehensive survey of all relevant literature, we selectively focused on those sources that were the most influential in shaping our thinking and approach to detecting and anticipating horizon shifts: Donella Meadow's systems thinking framework which included leverage points for intervention; Sohail Inayatullah's Causal Layered Analysis (CLA), a foresight-specific adoption of anthropologist, Edward Hall's Iceberg Model; and Diffusion of Innovation work by E.M. Rogers and Geoffrey Moore. Additionally, we include literature that, while not directly informing our approach to the characteristics of what happens between shifts, was close enough in substance to suggest that our approach might have merit.

Donella Meadows, System Leverage Points

Donella Meadows' systems thinking framework emphasizes the importance of identifying high leverage points in a system - places where small, focused changes can create a large shift in system behavior.

According to Meadows, powerful leverage points can be found in the rules of a system. Rules define boundaries, scope and degrees of freedom for actors. The laws of physics, for example, influence behaviors in all physical systems. Constitutions set forth laws that citizens and governments are subject to as they go about their lives. Local ordinances, employer policies, religious edicts, social norms, and even family rules can be understood as system components that incentivize behaviors of actors in a system.⁹

Shifting rules can signal that a change is gaining momentum and potentially moving between horizons. For example, a regulatory or legal challenge to an existing law may portend a shift from nascent horizon three to the more socially accepted horizon two.

Sohail Inayatullah, Causal Layered Analysis

Sohail Inayatullah's Causal Layered Analysis (CLA) was designed to analyze issues from four perspectives, or layers of meaning:¹⁰

1. Litany: The most visible level, consisting of quantitative trends, problems, and often exaggerated and disconnected facts. This level is frequently presented by the media and rarely questioned.
2. Social Causes: Focused on the systemic causes and social, technological, economic, environmental, political, and historical factors behind the litany. At this level, interpretation tends to be academic and analytical.
3. Discourse/Worldview: This level explores deeper, often unconscious worldviews and ideologies shaping our understanding of an issue. It investigates how stakeholders construct litany and the system (social causes) and includes an examination of how the discourse itself informs the framing of an issue.
4. Myth/Metaphor: This is the deepest level, representing the deeper, often archetypal dimensions of the issue. This level can be expressed through stories, symbols, and metaphors that tap into the collective unconscious.

According to Inayatullah, Litany is the most visible level of cultural conversation. Monitoring conversations at this level informs the decision-maker about what is top of mind for a particular group. When that group is society-at-large, litany can be found in mass media outlets. The deeper layers (social causes, worldview, and the supporting myths/metaphors) are explored as part of scenario development, therefore, the authors find it sufficient to focus on the litany level during Horizon Shift Analysis without the need to re-analyze the more structural changes that led to the new conversation.

Everett Rogers and Geoffrey Moore, Diffusion of Innovation

The Diffusion of Innovation Theory posited by E.M. Rogers explains how new ideas and technologies spread through cultures.¹¹ It delineates the adoption lifecycle of innovations from fringe concepts to mainstream acceptance through a series of adopter categories: innovators, early adopters, early majority, late majority, and laggards. Geoffrey Moore's technology-centric *Crossing the Chasm* book built on this work by focusing on the transition from early adopter to mainstream acceptance which

he described as crossing the chasm.¹² Crossing the Chasm involves the targeting of a niche opened by the mismatch between current approaches and the needs of users. The innovation may be perceived as an act of aggression by those upholding the status quo, but, in Moore's words, "this is not a time to focus on being nice." If the idea is asserted in a space ready for change by people with the will to push it forward, and adequate resources exist to provision experimental adoption of the idea, it has a chance of reaching adoption. Like our research, these frameworks hypothesize that there are organized patterns and criteria that can be discerned as an innovation transitions from being a new idea to unquestioned standard.

Additional Supportive Literature

There are several other authors whose work proved to be complementary to our approach. While these works were not drawn upon for the development of the HSA methodology, they were supportive of the approach taken. Similar to Moore, Quantitative futurist, Amy Webb talks about the process of a concept moving from "fringe" to "mainstream." She identifies seven stages of acceptance: from *I've never heard of it so why should I care?* to *It's indispensable. How did we ever manage without it?*¹³ Frank Geels's Multi-Level Perspective (MLP) framework suggests that transitions unfold through interactions among three levels: niches (micro-level), socio-technical regimes (meso-level), and socio-technical landscapes (macro-level).¹⁴ A similar thought piece that confirms our thinking is the pace layering framework from Stewart Brand's pace layering framework, which provides an explanation of how adaptable civilizations change in six layers operating at different sizes and pacing. He reminds us that as decision-makers looking for change, we must recognize that different elements are changing at various times.¹⁵

As we look for horizon shifts, path dependency theory reminds us of the strength of the existing system. Path Dependency Theory, which argues that initial conditions, even those established by chance, can become self-reinforcing and can lock societies into trajectories that are difficult to escape.¹⁶

David Snowden's Estuarine Mapping, introduced in 2022, builds on his Cynefin framework and draws inspiration from the laws of physics as well as the complex ecosystems found in estuaries.¹⁷ In this framework, Snowden prescribes multiple small interventions rather than large-scale changes. It also emphasizes distributed interpretation, gathering diverse perspectives on the system's current state. From a decision-maker's perspective, this approach can help to reveal weak signals and emerging

patterns that might otherwise be overlooked when anticipating shifts between horizons. In the context of horizon shift analysis, Estuarine Mapping offers a structured way to assess the present landscape, identify potential leverage points, and monitor for emerging changes.

Actor-Network theory (ANT) was developed by Bruno Latour, Michel Callon, and John Law in the late 1970s. It was originally conceived as a method for studying scientific and technological innovation and has since been applied to a range of fields, including organizational communication and social dynamics.^{18 19} Similar to Snowden's Estuarine Mapping theory, ANT attempts a framework that acknowledges complexity and instability within systems. Actor-Network theory asserts that social and technical systems dynamically emerge from interactions between human and non-human actors (or "actants"). In this framework, the influence of human actants is not privileged over the influence of non-human actants. This idea is part of what differentiates Actor-Network theory from other approaches.

Lastly, Bishop and the author developed the notion of era analysis around the time that the Three Horizons framing was gaining traction in the foresight field. The eras are depicted along an S-curve:²⁰

- The old era that most people expect to continue – the bottom of the S-curve – is time in which the new early H3 future possibilities are forming.
- The transition period is triggered by a discontinuity(s) – the middle of the S-curve – in which the H3 future possibilities are coalescing, gaining strength, and competing with one another.
- The new era that eventually emerges – the top of S-curve – is the time in which the H3 now "winner" emerges from H2.

The key point is that era analysis says that discontinuity is the key to shifting eras, thus providing motivation for monitoring in order to anticipate these shifts.

In sum

Perhaps the most obvious implication from the literature is that there is a lot to look for in detecting horizon shifts. There are many different changes happening at different rates, scales, and depth going on at the same time. The various frameworks explain the change from different perspectives but align on general principles. Lest we throw our hands up and give up, there is a "place to start." The three highlighted frameworks – Rules of the System, Causal Layered Analysis, and Diffusion of Innovation-

are especially helpful tools for helping decision-makers guide their work when identifying horizon shifts.

Yes, there are multitudinous changes taking place, but our scanning and research can help us to focus on the most significant changes relative to the particular domain we are studying and the particular focal issue we are addressing. This bears repeating, perhaps more simply, what to look for in horizon shifts will vary according to the domain and the focal issue. Where to look depends on the key drivers of change identified during the research phase of scenario development.

The Horizon Shift Analysis (HSA) Method

The six steps of performing a Horizon Shift Analysis are:

1. Scope your monitoring activity: Be clear about what you are looking for --from *what* to *what*
2. Map the elements of the shift
3. Identify scenario-specific indicators
4. Look for the rules
5. Monitor the conversation
6. Evaluate the will and resources

The first two are set-up steps to guide the monitoring. The next identifies specific details on the people and places relevant to the change. The last three suggest places and people to look for movement. We will provide examples throughout to help bring the steps to life.

It is assumed that the steps above will follow the completion of foresight work that resulted in the development of scenarios. The raw material for the HSA process comes from those scenarios. While the method of doing the scenario development work could vary, it would be most useful if the activities resulted in the following outputs:

1. A domain or system map.
2. An understanding or definition of the baseline future. This would be a statement of how the domain operates today and how it projects forward without any significant changes.
3. A stakeholder analysis.

In the case that the foresight work resulted in a set of scenarios with each representing a different vision of the future, each scenario would be monitored separately.

Step 1: Scope your Monitoring Activity: Be clear about what you are looking for -- from *what* to *what*

The first step to embarking on monitoring activity using the HSA method is to properly scope the shift of interest. Like a good topic sentence, the main point of the investigation should be clear as it will guide all the work that comes after. It is suggested to complete the following scoping statement to correctly identify what shift will be monitored:

We are looking for our domain to shift from (*where it is today*) to (*where it could be in the future*).

Examples of completed scoping statements might be as follows:

“We are looking for our domain to shift from ***cars being driven primarily by human beings*** to ***cars being driven primarily autonomously***; or “We are looking for our domain to shift from ***the sands of the Sahara Desert continuing to spread southward*** to ***the sands being mitigated by the trees of the Green Wall.***”

In both instances, the shift is clear. The baseline, or current state, is clearly identified as is the end state of the transformation of interest.

Step 2: Map the Elements of the Shift

The scoping statement developed in the last step gave us a high-level view of what the shift looks like, but what remains a mystery is the underlying system of the domain. It is for this reason we next map the key elements of the system. In all our foresight project work, we begin with a domain map, which is a visual outline of categories and subcategories that are important to the domain and serve as a guide to the search for change. A more sophisticated version of the domain map is a systems map, which maps the *relationship* between the elements and is preferred by some futurists, but we believe for HSA a simple domain map is sufficient. In either map, the categories and subcategories are a de

facto guide of where to look for change in a domain and thus, they provide clues to identifying the elements key to a horizon shift.

Why Elements?

As part of our research, we reviewed the domain maps from 22 university program foresight projects, compiling just the primary categories to see what the most common ones were, reasoning that these might provide clues to what are the key, or most common, elements of a domain to monitor. The categories are listed in order from most frequently occurring to least. The number of times they were included in the 22 projects is listed in parentheses – synonyms are grouped together.

1. Governance/Regulation/Policy (12)	6. Design (4)
1. Audience/Customers (12)	6. Technology, Domain-specific (4)
1. Activities/Lifecycle/Function/What They Do (12)	6. Alternatives/Competition (4)
1. Needs (12)	7. Education (3)
2. Infrastructure (9)	7. Location/Place/Facilities (3)
3. Workforce (7)	8. Institutions (2)
3. Channels/Communication/Outreach (7)	8. Data (2)
4. Offerings (6)	8. Funding (2)
5. Business (5)	9. Resources (1)
5. Environmental, domain-specific (5)	9. Risks (1)
5. Partnerships (5)	9. Social, domain-specific (1)
5. Community (<i>might fit with audience/customers</i>) (5)	9. Cross-cutting (1)

Domain Map Categories from 22 Foresight Projects

More than half of the domain maps included Governance/Regulation/Policy, a human service dimension (indicated by the categories Audience/Customers, Needs and potentially Community), and finally, the domain purpose (as described by Activities/Lifecycle/Function/What They Do). In arriving at what our final elements should be, we considered how to phrase the elements in a way that would be most clear to the decision-maker; in addition, we thought it important to include Technology to encompass not only physical technology, but also business models or

organizational/human resource innovations. Additionally, we modified the categories related to domain purpose (Activities/Lifecycle/Function/ What They Do) to reflect the individuals or teams driving the change. Thus, we landed on STILE as a convenient acronym for elements to monitor (**S**ocial Acceptance, **T**echnology, **I**nfrastructure, **L**aws/Standards, and **E**ntrepreneurs/ Change Agents/ Innovators).

Rather than think of the change of a domain as a singular linear process or progressive set of actions moving continually forward, it is more useful to imagine related elements moving through time in a fluid way that allows the elements to advance or shrink back, receive assistance or suffer blowback. Somewhat like the movement of wax globules in a lava lamp.

Each element category is represented by many actors. These element actors move independently of each other, floating closer to or further from the idealized state of transformation where the shift is complete. Change, then, is not just one thing that we are waiting to happen, rather it is a swell of microelements that are together working to bring transformation to fruition. During the process of waiting, our research shows it may be possible to watch these elements of change to detect advancement or regression of the transformation of the domain.

As we were thinking through our elements, we observed that they mapped closely to Geels who identifies “changes in elements such as user *practices*, *regulation*, *industrial networks*, *infrastructure*, and *symbolic meaning*”.^{21 22}, which suggested at the very least that we’re on the right track. Using this thinking, we find that a characteristic of an H3 Now to H3 Next shift is some of the STILE elements are pulling ahead while others are still in development and in order for a domain to be considered to be in H3 Future (or the new H1), all the elements must be present in a relatively fully-actualized state; the shift will not reach that status until any absence is resolved.

A Practical Example of the Elements in Action

Suppose that there are entrepreneurs, innovators or change agents (the E of STILE) that have pushed the idea of autonomous vehicles, the technology (T) is there, and potential customers (S) are excited about the concept of not needing to attend to the wheel while in the car. Further assume that there are rules and laws (L) about how autonomous vehicles are to move about the roads, but the

infrastructure (I) that supports these laws is lagging. The lack of infrastructure (I) will serve as a block to progress of the entire domain, preventing it from moving forward until this element is resolved.

By monitoring the elements, decision-makers can guard against being swept up in a rush of premature urgency caused by a media frenzy about the progress being made, and instead, note with some confidence that the domain has a missing element that has not been properly addressed.

	STILE Element	Challenge	Response
S	Social acceptance	Does anyone want it?	Pilots, small scale test markets
T	Technological capability	Does it work?	Can it be fixed?
I	Infrastructure support	Are the vitals support systems in place?	Work with partners to develop them
L	Legal clearance	Is it legal or are there legal issues?	Talk to the legal office? Lobby? Run a pilot?
E	Entrepreneurial zeal	Does someone have the will and resources to push through the obstacles?	Find them!

Step 3: Identify Scenario-Specific Indicators and Align them with the STILE Elements

One of the few published journal articles about developing scenario-specific indicators, *Monitoring Emerging Issues: A Proposed Approach and Initial Test*, discusses how to monitor issues for the U.S. Forest Service. The article defines an indicator as a “milestones or guideposts one would expect to see along the pathway from emerging to the current issue.”²³ The Forestry Monitoring project developed a process for identifying and tracking indicators that suggested the progress of issues related to forestry, but that process can be easily adapted for tracking elements. Further, it provided some advice on where to look, which we will return to in more detail in Step Five: Monitor the Conversation. For this Step, we will begin with the work from the *Monitoring Emerging Issues* paper but condense the process and integrate the relevance to the STILE elements.

The goal of this step is to attach actors to each of the elements. The actors might be countries, entrepreneurs, social activists, NGOs, or fringe groups- any influential figures related to the advancement of a domain. Attaching actors to the elements provides specific names or topics to

follow during the monitoring process. The actors, then, serve as representatives of each element. In foresight reports, either the scenario(s) or other areas of the report such as a stakeholders list will provide ample names or topics that were uncovered as part of the research. Decision-makers can select from these names to find those actors likely to be representative of or influential enough to describe the system. It is our suggestion to identify at least three actors from the foresight report to represent each STILE element. In some instances, it may also be useful to note what information from the foresight report led to the selection of a particular actor to represent the element. The chart below draws on data from Future Agenda.²⁴

Social acceptance	Robo-taxi fleets the proliferation and public adoption of AVs	World Economic Forum (WEF) AV Car sales, McKinsey projected 15% would be fully AV by 2030.	Car cybersecurity level of concern expressed by consumers
Technological capability	Telsa expansion of technologies related to AVs	Volvo's Vera development of self-driving truck prototype	Mary Barra , GM CEO, predicted a change in the AV space in the next 5-10 yrs; cars in production
Infrastructure support	European Commission plans for digital taxation to pay for upgrades	Liability insurance products or accommodations for AVs	IEEE Shared or Open AV technologies between manufacturers
Legal clearance	ISO.org International AV standard development	United Nations Economic Commission for Europe (UNECE)	Modifications to the 1968 Vienna Convention on Road Traffic which states that a human driver must remain in control
Entrepreneurial zeal	Waymo testing AVs in CA	Lyft driverless cars in NV, expansion probable	Shanghai/Baidu outcome of \$50B invested for EV and AV development

Example of potential Indicators for Autonomous Vehicles organized by STILE element. The actors, also taken from the report, are bold.

Step 4: Look for the Rules

One way to identify Horizon Shifts is to look for the “rules of the game” within a domain. As one moves through this step and the ones that follow, consider that there will always be outliers, what we are looking for is where the preponderance of the energy lies at a given point in time. Here, “rules” is

defined broadly, think processes, laws, policies, standards, etc. To use Meadows's words, we seek to examine the mindset or paradigm out of which the system has arisen.²⁵

The rules of the domain are clear and easily identified, they either exist, are on the way to existing, or they do not exist. Looking at the rules is probably the fastest way to determine if a domain shifted into H1 when you weren't looking! By definition, a transformation (or H3 that has replaced H1) will require an entirely new way of doing things. Thus, if there are supportive laws or policies on the books, if there is funding going in its direction, or if the structure of the system has been rearranged to accommodate this new way of doing things, then a shift has happened.

What kind of rules does one for? If the STILE element indicators have been identified as part of the project, they are the obvious place to start. Look for laws or policies that ease the transition of the nascent H3 idea into the mainstream. Initially, for new ideas, there are no rules, and this no rules status can remain for quite some time until ad hoc rules begin to appear at the local level. As the idea progresses, laws, policies and standards gradually become more widespread. Using our AV example, one might look to look to see:

- is the activity legal?
- are driving tests and licenses still required of humans?
- have traffic laws been adjusted?
- has a decision of ultimate responsibility for accidents been determined?

From the 50,000-foot level, we say that the interventions to H1 will focus on tweaking the metrics, because the system is happy with the current paradigm and rules. Eventually, competing demands for change to the system ignite a focus on rules. As a new "winner" emerges, the rules begin to change, and the paradigm of the winner pulls the entire system toward it.

Step 5: Monitor the Conversation

Many times, we collectively speak of change using radical terms: disruption, discontinuity, etc. Words that describe a lightning bolt of change, as though one day we go to bed, and the world is one way and we wake up and it is another. More often than not, change is slow. Like gaining weight or

children growing taller, we look up, and the world has changed around us. The “disruption” or “discontinuity” was only the start; it was the trigger. Thus, the question becomes, why didn’t a transformation occur?

The place to look that may answer the question of “why not?” is the conversation. For our purposes, “conversation” is the general consensus of the person on the street or subject matter insiders that can be obtained by reviewing social and news media, art, or simple observation. By monitoring the conversation, it may become clear if a H3 idea has shifted to the H2 battleground. Is there any conversation at all about the idea? Is there disagreement about implications? The content of the conversation pattern can be used to help determine where and when a domain has shifted.

Start by looking at the conversation within the masses. Look for the nature of the conversation. If they are not talking about it yet, it is a sign the domain may still be in H3. If they are talking about it, the next step is to explore what aspect they are talking about. If there is controversy as the main topic of conversation, it may have shifted into H2. Interestingly, as an H3 idea is shifting from H2 to H1, the conversation may turn to silence. The silence is representative of the hum of activity required to do the day-to-day work that is needed for success. In “mastery mode” what is happening is no longer exciting enough to be considered newsworthy, so the growth goes largely ignored. Lastly, when conversation shifts towards the negative, this is usually indicative of either a late stage H1 when an idea is losing strategic fit or an idea in another stage that is on the decline.

Look Who’s Talking (Conversation participants vary by horizon)

H3= visionaries/the fringe/innovators

H2= entrepreneurs/subject matter experts/early majority

H1= managers/the public/late majority

Conversation Content

H3 (H3 NOW) passionate manifestos or technical descriptions; very positive about potential

H2 (H3 NEXT) controversies/issues; maybe some backlash, resistance to moving forward

H1 (H3 FUTURE) Complaints about the baseline as it loses fit

Monitor the Conversation. Look at who is talking and the content of what is being said.

This aligns with the work of Amy Webb. She talks about the ways that people think about change and although her stages are not about conversations in the proper sense, we think her work could be applied to the evolution of the thinking of the “average” person, or the mainstream, as the domain shifts through the horizons.²⁶ We hypothesize that her stages might align on our horizons like so:

H3

1. I've never heard of it. Why would I try it/advise it/legalize it? Why should I care?
2. I've heard of it, but I think it's preposterous/dangerous/frivolous/unethical/will never work. It's a horrible idea.

H2

3. I understand what it is, but I don't think it's useful/beneficial/helpful for me, my organization or the broader context.
4. I think it's potentially useful/beneficial/helpful. I'd like to start gathering data to see what traction there is.
5. I've started to accept it as useful/beneficial/helpful, but I still think of it as a novelty. I'd like to see some research on how early adopters are using it.

H1

6. I now use it all the time; it's part of my daily routine! I'm participating in similar projects. I'm looking for ways to collaborate.
7. It's indispensable. How did we ever manage without it? I'm looking forward to the initial implementation. I'm thinking about making a sustainable project. Damn — why didn't I think of that sooner? How did I miss it?

In short, as a new idea emerges, the early conversation in the mainstream is non-existent or disinterested at best. As it gains strength, a discussion emerges about the pros and cons. Later, the conversation quiets down again as the idea becomes an established part of daily life. Meanwhile, the old system loses fit and the conversation about it turns to negative commentary and complaint.

For the decision-maker tasked with monitoring the conversation, the following list may prove a valuable resource for finding conversations as it recommends media to investigate divided by relevance to each horizon. On the list, most social media platforms are not called out specifically as they are contained within the broader term “media”. Further, at its current stage of development, we find generative AI or Large Language Models (LLMs) are best used when the decision-maker has a depth of knowledge in a domain that makes it easier to recognize valid results and is willing to take the time necessary to do the verification of facts. Thus, LLMs are not listed as a resource, but may certainly be employed.

H3: Idea Creation	H2: Elite Awareness	H1: Mainstream Awareness
Specialty/Niche Media Scientific Journal Monographs Specialized periodicals and websites Art Fiction Fringe Media Underground Blogs Speeches Technical Journals Social Movements Fringe Social Media	Scientific Media Industry/Trade/Association Govt/NGO Trade Journal Research Reports Market Reports Newsletters Specialized Podcasts “Dope Sheets” Popular Tech Journals Intellectual Magazines Books Surveys Doctoral Dissertations	Mainstream Media News Programs Periodicals Textbooks

Media Sources

Step 6: Evaluate the Will and Resources

The last step is to evaluate the will and resources of the actors at play in the domain. This step requires the most domain specific knowledge to perform with accuracy. Recall that actors are individuals, organizations, or topics that are relevant to the domain. With this information, make a judgement- are the actors (or any one actor) properly prepared with an adequate amount of will (the sheer determination to see an objective through to its end) and resources (funding, social capital, talent, physical assets or otherwise) to see the shifts through to transformation? It is possible an actor will have one, will *or* resources, but not both. As an evaluator, one looks for an actor with a massive amount of both, with will being the more important of the two since an individual or team with enough will finds or attracts the needed resources.

This approach varies from Geoffrey Moore’s idea of the chasm that needs to be crossed for an innovative technology product to move from early users to mass adoption. Moore asks the following questions focused on *the market*:²⁷

- Can we technically do it?
- Do people want it?
- Is it an easy story to tell?

Whereas we ask these questions from the perspective of *the actors*:

- *Will*: Do we have the will to meet the inevitable pushback?
- *Resources*: Do we have the social, economic, and political resources to see it through?

The battle is one of “will and resources”. Will--can you withstand the pushback and setbacks and keep going? If you don’t, then another future is coming behind it. Resources--all too often amazing possibilities either do not come to fruition or take much longer than expected, due to lack of resources such as social acceptance, funding, regulatory support, the right talent or supportive infrastructure. Uber is a perfect example of this concept. The company began in one city largely ignored and with no system of support. Then, as they gained acceptance and spread to other cities, they faced pushback but forged ahead through sheer determination defying legal threats and fines. By 2023, Uber was a public company that reported 2.6 billion rides and major airports and venues the world has arranged their system around ride-sharing services with designated areas for passengers to meet their ride.²⁸

Bringing it All Together

The following chart can be used to help guide one through the HSA process in a logical manner. The broad characteristics of a domain once it is within H3, H2, and H1 are listed as are recommended actions to take. Additionally, the chart explains what to look for when examining the *rules*, *conversations*, and *will and resources* when the domain is in transition between horizons. The chart can be printed and used as a checklist or working document. While initially, the futurist might find the process simple rather than easy, with practice, it should become easier if not intuitive to recognize the stage of a domain.

HORIZON SHIFT ANALYSIS			
INSTRUCTIONS: Determine the domain of interest. Review the H3/H2/H1 Domain Characteristics to identify which most closely matches the current conditions. Under that horizon's SHIFTS section, identify what is happening within Rules, Conversations, and Will & Resources. Use the "Signs that" column to determine directionality. Finally, determine which actions to take.			
H3 Domain Characteristics			
H3 Characteristics: Led by Visionaries. Known as The New Frontier; Few participants; Laughable; Infrastructure and other supports are not in place; "Ahead of its time". Media: art, fringe media, speeches, personal blogs, fiction, science or technical journals			
H3 Shifts			
Signs that...	What happens with in RULES	What happens with in CONVERSATIONS	What happens with in WILL AND RESOURCES
H3 is stable	No Rules There aren't any rules or policies yet that accommodate the transformation.	Insider Conversations confined to those with specialized knowledge	One-person band or Small Crew Domain may be pushed by one individual or small group of people with belief and enough resources to get things started. Mostly about Will to push through.
H3 is catching on and moving into H2	Ad Hoc Rules Exceptions are made to accommodate specific instances.	Hype Very positive imaginings.	Swim or Sink More resources are needed. If no resources are found, transformation may stall or end.
Actions to take: Investigate/research, learn (include in learning events those who are on the tactical level as development), ideate and pilot, establish partnerships or vendor options and build relationships from cold to warm, determine resource needs and sources (i.e. talent), vet ideas			
H2 Domain Characteristics			
H2 Characteristics: Led by Change Agents. Known as The Battleground; Multiple competing methods to accomplish goal; Discussed in Mass Media (gen pop); Most are aware of it or have experienced it. Media: specialty trade publications, club or organization communications, government reports			
H2 Shifts			
Signs that...	What happens with in RULES	What happens with in CONVERSATIONS	What happens with in WILL AND RESOURCES
H2 is stable	Courting Decisions Deciding "What <i>should</i> the rules be?" Pending court case(s); Proposals for new bills with the advancement domain at the center; Norms and standards reconsidered.	Conflict & Controversy Persuasive arguments are made for and against transformation	Resource Gains Additional resources are provided in the form of people or investment. Shift becomes mostly about Resources (the gaining of and keeping) including governmental investor, and popular support.
H2 is stagnating or could fail	High Profile Loss High profile battle and domain "loses" the fight.	Losing Favor Primarily negative conversation that turns to low or no conversation.	Losing Steam Resources or the will to see the transformation through are becoming depleted without replacement; infusion needed FAST.
H2 is in the latter stages of replacing H1	Winning Hearts and Minds There is enough favorable opinion of the transformation for it to proceed. Moving out of the innovators and early adopters. Regulations and policies standardize.	Silence The conversation that was controversy has died down; the domain quietly and effectively continues about the work of transformation. This work is incremental and not worthy of headlines.	Resource Ready Will is refueled by successes as are other resources. Current H1 players are beginning to put investments in the transformation. The incumbents may co-op the new entrant or compete head-to-head.
Actions to take: Set up operational systems, collect and analyze relevant data, establish "go state" and market test. Determine internal values: organizations that pride themselves on being visionary/first movers should decide and place a bet while the more Risk adverse postpone action by setting clear SMART target such as when penetration reaches x or - when x legislation passes. (Note: Go state is the state in which an organization or individual has in place all the components necessary to do the new thing immediately if required to do so)			
H1 Domain Characteristics			
H1 Characteristics: Led by Managers. Known as The Baseline; Well-known Leaders/Dominant; Heavily resourced; "The way things are done"; Most use or perform this action; Has supportive systems & infrastructure. Media: mainstream media, news, textbooks,			
H1 Shifts			
Signs that...	What happens with in RULES	What happens with in CONVERSATIONS	What happens with in WILL AND RESOURCES
H1 is stable	Favored One Infrastructure is in place; all rules favor and serve as a barrier to some degree to new entrants.	Losing Shine Default choice. May have as many fans as detractors, accused of abusing their victory of being the "winner" or incumbent. In essence, the shine wears off.	Protective Will and resources used to keep the predominant position. This includes quieting opposition, acquiring smaller players, lobbying, settling lawsuits and other "big gun" tactics.
H1 is in decline	New Rules The rules, laws, or structures of the game have changed and no longer favor the incumbent.	What Now Can do nothing right. May begin to serve a new function that is not as predominant as the previous one. New transformative entrant viewed as the reasonable choice.	Not Enough The system has transformed and no amount of will or resources will change the tide. Will and resources will help stay operational but only marginally so.
Actions to take: Monitor the Operating Environment for change, anticipate risk and opportunity, refer to plans that indicate what actions to take when			

Horizon Shift Analysis. This chart can be printed and used as a working document.

Conclusion

A transformation will rarely feel like a transformation. In fact, transformations are most easily recognized by someone unfamiliar with the domain. It is the reason we think that change may actually be slower than it appears. For those closest to the movements within the domain, it does not appear like change is happening at all, until it does!

Performing Horizon Shift Analysis regularly should help any futurist become an astute observer of change. What constitutes a “regular basis” may vary and can be determined by the pace of change typical for the domain of interest. For many domains, quarterly analysis is adequate as three to four months is generally enough time for new major developments or movements within the system to arise. Performing HSA more frequently is usually an indication that one is either following a trend versus a driver that could result in a major transformation of the way things are done or that one is over-investing resources that might be better utilized by doing other futures-related work.

Like any new theory, we welcome others to expand on the work started here. Case studies and longitudinal research using the HSA process might provide additional validation of the methodology and highlight areas for improvement. Additionally, although we researched and included source material from all around the globe, the work could use stress-testing by others who will bring to it a different cultural context.

The starting point and major focus of the research in this paper was to look at the system for clues on how it might be changing. It is our hope this work will serve as a catalyst within the field, as well as empower decision-makers with new insights that will create the ability to seize more opportunities earlier and preemptively avoid foreseeable risks.

ENDNOTES

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