The Evolution of Framework Foresight

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Evolution of Framework Foresight

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1. Introduction

Framework Foresight is a method for carrying out foresight projects developed by the University of Houston Foresight Program. (Hines and Bishop, 2013). The method is a systematic way to develop a "start-to-finish" future view of a domain or topic of interest, to explore its implications, and develop proposed responses. Framework Foresight could be viewed as an approach or meta-method in that it is a modular approach that accommodates a substitution of, or supplementation from, other methods or techniques at various steps.

Pieces of the method were introduced in the late 1990s with graduate students. The first prototype was produced in 2000. Bishop originally developed the method for mapping or describing the future as Framework Forecasting. In 2005, the authors turned to their colleagues first at APF and then from the broader futurist community to solicit ideas on how practicing futurists organized their project work. The response was enormous. The hundreds of suggestions clustered into six categories of activities. The categories and advice in the form of guidelines were published in the 2007 edition of *Thinking about the Future: Guidelines for Strategic Foresight*. There are always some minor tweaks and refinements that are made as a method is applied. A significant upgrade led by the author extended framework forecasting to include influencing the future (implications, plans, and actions). Thus, Framework Forecasting was rechristened Framework Foresight and captured in the journal *Futures* in 2013. Further refinements appeared in the second edition of *Thinking about the Future* in 2015, which added a chapter on the integrated process. In short, the method will never be finished but is continually evolving.

Students are required to carry out at least two framework projects, so that they learn the essential steps involved in a foresight project. They are also taught to understand how different methods can be invoked for carrying out the different steps. Several graduates reported using Framework Foresight in their jobs over the years and that it worked well in practice. When the organization established a research program in 2014 involving client projects with faculty, alumni, and students working together, Framework Foresight was put to the test in the "real world," with similar good results. It worked well in practice.

The method classifies information and captures it in templates arranged in a logical flow. It works best with a clearly defined client, but one can "make one up" as our students often do, and that works fine as well. It starts by describing the domain, characterizing its present status and reviewing the relevant recent past. It then identifies changes through scanning and specific types of futures information (trends, inputs, plans, and projection) that are synthesized into drivers of change, that in turn are synthesize into a baseline and alternative futures. Next, it explores the implications of those futures, and identifies the resulting strategic issues or opportunities they suggest, and ties it all together with an integrated strategic approach. Finally, it identifies leading indicators to track the progress of the domain going forward.

A lot has been learned a lot about what works and what does not since the method's initial introduction in 2013. This article highlights these lessons and the subsequent changes made to the method.

2. The method and changes

Since the steps of the method have been published elsewhere, this article will briefly summarize the steps, and focus on the lessons learned and improvements since "adopting the method in 2013. The work in each step is captured in templates, shown in Table 1.

Step	Templates
Framing	1. Domain description
	2. Current assessment
Scanning	3. Scanning & inputs
	4. Drivers
Forecasting	5. Baselines & alternative futures
Visioning	6. Implications analysis
Planning	7. Options & strategic approach
Acting	8. Indicators

Table 1. Framework steps and templates

2.1 Domain description

The method begins by identifying the domain or topic to be explored. One of the key challenges in any project is bounding and scoping, with the goal being a description that is neither too broad nor too narrow. The activities of the domain description include:

- *Key issue(s) or key question(s)*: A focal issue to guide the project
- *Domain definition*: A domain is any topic that can be forecast. The definition includes the title and a paragraph or two description of the topic.
- *Geographic scope*: The geographic scope of the project
- Time horizon: Specifies how far into the future that project extends
- Domain map: A visual representation of the categories and sub-categories

The key upgrade has been the addition of the Three Horizons model (Curry & Hodgson, 2008) to the time horizon component. Horizon One (H1) is the baseline future of continuity, which is most often set as the next 3-5 years. Horizon Two (H2) is the transition zone of disruptions to the baseline. Most of the organization's projects focus on H2. Since the clients are often newto foresight, the timeframes are typically about 10 years out, which is often about as far into as new clients are willing to go. Thus, the end of H2 is typically 10 years out. The arbitrary nature of selecting a specific number of year is recognized. It could be that the H2 transition is shorter or more often longer, but for practical purposes, ten years works. To get a glimpse beyond H2, mechanisms such as mini-vignettes that describe "over the horizon" or "coming soon" can be

employed. Horizon Three (H3) is anything beyond H2, which is described as the realm of weak signals indicating the next new system. In our experience, most clients are not deeply concerned about H3.

Sometime a project timeline is set to focus on describing the new system of H3. For instance, the organization did a *Future of Work 2050* project for NASA's Langley Research Center (Author et al., 2017). This project looked out to 2050 because the client wanted to stretch the organization to think well beyond the baseline.

The Scanning step will include a description of using Three Horizons model for tagging scanhits.

2.2 Current assessment

Any foresight approach benefits from taking stock of where the domain currently stands and how it got there. Framework Foresight calls this out in the current assessment. It identifies and assembles the pieces and the recent history of the domain and provides a snapshot as itexists in the present. They can be thought of as the topics that will come up at industry events, or at cocktails or dinner with a client. The project team needs to be aware of them to craft relevant views of the future.

- *Current conditions*: These are the current "hot topics" in the domain; what are people in the domain concerned and talking about?
- *Stakeholders*: The internal and external individuals and organizations that work in and could affect the future of the domain.
- *Recent history*: The significant events of the recent past. No significant changes were made here, other than adding the modifier "recent" in front of history, as too often students and to a lesser extent clients would go back to ancient history, which is interesting but not particularly helpful to constructing futures.

2.3 Scanning and inputs

One ongoing challenge that has persisted since the initial six-step framework dubbed this second step scanning, was that it also included research. For purposes of simplicity and memorability, scanning was selected to keep each step characterized as a single world. But it would have more accurate to call it scanning and researching. These two activities are carried out in parallel. There have been some tweaks to scanning and more significant changes to researching. A surprisingly useful modification to how these two activities is modifying how they are characterized:

- Scanning is the search for any signal of change.
- Researching is the search for specific types of information about the future, which are called the inputs, aka TIPPs: trends, issues, plans, and projections.

Scanning

Scanning hits capture "signals of change" in a domain. The three basic activities are:

- *finding*: searching for and identifying signals guided by the domain map categories;
- *collecting*: gathering the scanning hits
- *analyzing*: criteria for assessing their value, as needed (in most projects this is not necessary)

The first change to scanning was the addition of tagging the scanning hits according to which of the three time horizons they are indicating. Admittedly, selecting which horizon they indicate is a very subjective choice. In the early days, scanners would often use two tags: H1 and H2 for example, and they are now asked to pick one.

The second change was developing an electronic library for collecting scanning hits. The organization settled on Diigo. It allows for private groups by invitation. As it is cloud-based, it enables asynchronous entries from anywhere. Perhaps most importantly, it provides a convenient bookmark icon and data entry form that requires less than two minutes to enter the required info. This solved a major historic problem of it taking too much time to collect the info, thus discouraging participation. It also provides a handy tag count that enables the team to assess whether the three horizons and principal domain map categories are being adequately covered.

Research: Inputs (TIPPS)

The changes here are significant enough that is easier to simply describe the new approach than summarize the old one and note changes.

Inputs (TIPPS) inputs: The major shift here was that the old approach specific a different set of inputs for the baseline and the alternative futures. Our experience was that people new to foresight struggled with the relatively large number of inputs and rather vague components, as well as the difference between those in the baseline and the alternatives. With the respect to the idea of a framework -- the essentials rather than "everything -- the number of inputs was streamlined from nearly a dozen to just four, the TIPPS (trend, issues, plans, and projections).

This simplification was aided by the addition of a drivers activity as well as the adoption of an archetype approach for developing the baseline and alternative futures.

- *Trends*: trends are a useful types of futures information that has the added benefit of being easily understandable to clients. A typical trend inventory may capture somewhere between 75 to 150 trends.
- *Issues*: issues were previously only included in the baseline inputs. To accommodate alternative futures, the component of emerging issues those issues that have not yet appeared on the public agenda was added to enable a more robust set to work with.
- *Plans*: Plans are the announced intentions of key stakeholders to act. While they are obviously not always acted upon, they at least provides clues to future developments.

• *Projections*: Projections are publicly available forecasts made by others that can be mined for useful insights.

2.4 Drivers

One of the more significant changes to the process was the addition of drivers, as a bridge between the scan hits and inputs and the futures. Drivers are defined as thematic clusters of related inputs and scan hits that are, or are likely to, influence change in the domain.

There were two principal reasons for adding this activity. First, students and those new to foresight often struggle with how to synthesize a large set of inputs into the alternative futures. Second, in most of the author's prior project work included drivers both as a bridge to scenarios and a useful deliverable in and of themselves.

A dozen or so drivers are crafted in a typical foresight project. The drivers are subsequently used as the key building blocks of the futures.

2.5 Baseline and alternative futures

The previous approach involved using the baseline or alternative inputs to create a scenario summary:

- *Title and one-liner*: a memorable title and one-sentence summary
- *Description*: Two or so paragraphs that capture the essence of the story
- *Key Drivers/Key Differences*: For the baseline, key drivers were identified (not in the same sense of the new drivers activity, but a distillation of key inputs; for the alternative futures, the key differences from the baseline future were identify.

The major shift was the adoption of a modified version of Dator's (2009) four futures archetype approach. The principal tweak to his approach was to genericize his archetype stories of the future of the world by extracting their underlying patterns of change. This way, the archetypes can be applied to explore the future of any domain. A key assumption is viewing the domain as a system. The system is operationally definition of system as "the way things are done or the established rules of the game." A domain/system is likely to follow one of the fourarchetypes, which are essentially common patterns of change.

Table 2. The Four Archetypes

Archetype	Pattern of Change	Example (automated
		vehicles in 10 years)

Continuation	The present trends and forces (inputs in our terminology) within the domain continue without any major disruptions or surprises. The system/domain continues along its current trajectory.	Growing number of pilots and experiments, mostly in major metropolitan areas and some freeways with conflict over standards and regulations.
Collapse	The system/topic "breaks" or falls into a state of dysfunction. The established way of doing things no longer works, and there is a decline in the "health" of the system/topic.	Backlash against automation and high profile hacks and accidents puts the concept on the back burner.
New Equilibrium	The system/topic is confronted with a major challenge to how it has been operating, and is forced to adapt and comprise in order to "save itself" keep the basic structure of the current system intact	Growth of AVs is slowed due to safety and technical issues, but this brings previously competing parties together that enables standards-setting and agreements on basic approach that builds excitement for a re-launch.
Transformation	Entails fundamental change to the system/topic. The rules of game are "scrapped" and new ways of doing things emerge.	Major regional coalition(s) roll out first operational systems and several cities launch downtown projects relying on ridesharing approach.

Table 2 explains the patterns for each archetype, and includes an example using automated vehicles. The archetypes provide the framework or structure for developing the baseline and alternative future stories. Note that the continuation archetypes is the equivalent to our concept of the baseline.

The approach is to take the set of drivers developed in the previous step, and project their outcomes in each of the four archetypes. This provides a set of building blocks or plot elements upon which the scenarios stories can be constructed. This is a simple and straightforward approach that immediately got good results with from both students and others new to foresight. It provides a robust set of scenarios to work with.

It is recognized that the four archetypes currently employed by Framework Foresight are not the only potential one. The increasingly chaotic nature of change indeed suggests further experimentation not only in refining the current archetypes, but considering the addition of

additional ones.

Another addition to this step was to address the frequently asked question: "which future should we focus on?" Our previous response was to explain the principle behind alternative futures. This response often generated on question around assigning probabilities for each. While most futurists discourage this practice, some techniques allow for this (Millett, 2009). But now the client has been disappointed on two counts. The solution adopted by the organization is a quick-and-dirty rating exercise – roughly 30-60 minutes in a workshop -- to test the participants' views on the scenarios by rating them on the dimensions of likelihood and unpreparedness. Experience suggests that about 80% of the time, the scores are very similar, which reinforces the concept of paying attention to all futures. In a few cases, there is an "existential threat" scenario, that is a highly likely scenario that the client is highly unprepared for. In this case, it merits that special attention be paid to it. The other exception comes from a scenario that is judged not to be likely and the client already has a plan for it. No further action is the typical recommendation in this case.

This simple exercise has increased engagement with the scenarios by addressing concerns as well as influencing how strategic attention is allocated later in the process.

2.6 Implications analysis

A key concern was how to link futures or scenarios more tightly into organizational processes, whether in the form of strategic issues, new business or service offerings, policy alternatives, etc. It had often been the case that the forecasting side of the house was often not talking to, or at least not tightly integrated with, the planning side. Even in foresight education they were once taught in separate classes. In developing Framework Foresight, a key goal was to link them more tightly.

Starting with a set of forecasts or scenarios, visioning, the first step of influencing focuses on the implications of the scenarios for the organization. The organization had long used Futures Wheels as a tool for generating implications so this was incorporate as the standard approach for generating implications (Gordon & Glenn, 2009). The organization also uses Joel Barker's Implications Wheel. The major change here was to put some process in place to help guide the Futures Wheel brainstorming. Previously the Futures Wheel was described and the groups were set on the task. It turned out that far too often, groups would struggle and not generate enough useful implication. Thus, steps were added before and after to provide a more step-by-step approach.

1. *Choose a future* (baseline or one of the alternatives): It is helpful to do one at a time or, if multiple small groups are involved, to divide the futures among the small groups.

2. *Choose the categories*: The categories to focus on for the implications depend on the client. Sometimes the focus will be clear from the purpose of the project. If the purpose was to identify

innovative new products or services, then new business development would be a key focus. Or if the goal is to identify policy alternatives, there may be a specific agency or department in the government that would be a natural focus. Absent that specific guidance, it is helpful to start by listing at a high level the types of activities or functions the client is involved in. Examples for a business organization might include: supply chain, R&D, human resources, manufacturing, communications, legal/regulatory, finance, marketing, facilities, new business development, etc. Another approach is to start by looking at the stakeholder analysis. It is also helpful to refer back to the domain map and see if there is a category of interest that may not have emerged from the activity or stakeholder viewpoint.

3. *Identify key changes in each category*: For each of the categories that have been selected, brainstorm potential changes that the scenario suggests. The future is assumed to occur—the task is to brainstorm the changes it would suggest in the category. It is best to generate a list of such changes and then prioritize perhaps one or two; the time available will suggest how many are practical. These implications (implied changes) will then be explored further using futures wheels.

4. *Identify additional implications using the Futures Wheel*: Identify implications suggested by the initial change. One possibility is.... The process keeps flowing until the ideas run out. The futures wheel is a brainstorming technique; it is not analytical truth. As with other brainstorming techniques, most of the material is either well-known or highly questionable. But a few nuggets of insight usually emerge, elements of the future that were not immediately evident on first impression. The process is repeated for each of the changes.

5. *Most important and provocative implications*: When the futures wheels are complete, they are displayed in a way that makes them easy to see. Then two sets of implications are prioritized (in a group setting, often flip-charted and posted on the wall). The first set are the "most important": those implications whose impact is judged to be of such importance that the client must pay attention to them. The second set are the "most provocative": those that may be less likely to occur, but if they do they will have a significant impact, such that they merit further attention. These lists are captured in a template.

2.7 Issues or opportunities

Groups then select individual or clusters of implications and reframe them as either issues or opportunities. If the project is concerned with strategy, the most helpful format is as strategic issues. If the project is concerned with identifying new offerings, such as new products for business or new services for a government agency, the most helpful format is as opportunities. Potential responses to the issues or opportunities are then developed using an Elevator Speech tool. The key idea is to quickly get at what the essential information is to understand the intended response in the shortest amount of time possible. The goal is to come up with a highlevel outline of a response to the issues or opportunities answering basic questions of why, what, how, and who. They are typically answered that order, first why is there a need for a response, then what does the response look like, how is it enabled or brought to action, and who in the organization can help make it happen.

This activity has been extremely helpful for clients. Rather than leaving them a handful of problems to solve, they develop a sense of what they can do. This tends to inspire confidence in the clients and also brings a more concrete conclusion to the process – although there is one more step to consider.

Develop an integrated strategic approach: This is the most recent addition to the process. Asis typical in developing a new application, it was first tried it in the project world, refined, and then adopted in the teaching practice. The approach is borrowed from the old Global Business Network, and involves looking across the scenario landscape as a whole and considering four potential approaches to it. The options range as follows, from safest to riskiest:

- A robust strategy looks for elements common to all four options and focuses on these commonalities.
- A hedge-your-bets strategy gives equal weight to all four options; that is, it assumes all four are equally viable and divides the action equally across them.
- A core-satellite strategy emphasizes one option as the most likely and pays the most attention to it, but also pays lesser attention to the other options just in case.
- A bet-the-farm strategy selects one option as the best and invests all its energy in pursing that option.

The organization's experience is that clients most often select a core-satellite approach. This suggests a goal of focusing most of its strategic attention and resources on a particular scenario (or scenarios) and developing contingencies for the others.

This addition has proven valuable in providing a sense of strategic direction toward the future. The options developed previously are folding into the strategic approach as appropriate.

2.8 Indicators

While futurists revel in the uncertainties of the long-term future, those items will not be uncertain forever. As the future gets closer, they will resolve themselves into a singular present (or at least that is the way it is thought to be). At any rate, events that do not happen, issues that do not appear, ideas that are not created pass off to the side much like the hazards to navigation (rocks, buoys, other ships) that pass off the side of a vessel underway. So knowing as early as possible how the uncertainties are resolving themselves is the key to navigating the waters of the future.

Indicators are the focused information that will tell how uncertainty is resolving itself. It is a set of precursor events or statistics that point toward one alternative rather than another. What are the signs of impending recession? What indicates whether or not the have/have-not gap is growing or shrinking? How does one tell whether other countries resent the US's position in the world more or less? As opposed to scanning, which takes in everything relevant to change in the domain, leading indicators are very specific, targeted pieces of information with a clear link to one alternative future or another. In this method, the baseline, since it is present trends continued, is assumed to be happening. Thus it is the alternatives that must be monitored.

Monitoring is the common term used for tracking leading indicators. Scanning uses the radar image; monitoring uses the image of pilot or nurse who monitors their instruments for any signs of change. Change (or stability) in the leading indicator gives a clear signal toward the increasing likelihood of one alternative future or another. Indicators are the signposts along the way to whatever future ultimately prevails.

3. Discussion

The changes to Framework Foresight method have increased it value both as a teachingtool and a means for practice. Students have found it helpful for identifying and analyzing the information required in carrying out a foresight project and arranging it in a logical flow. It helps them to see how the pieces of a foresight project fit together. And in providing a consistent set of steps and framework, they are able to see how the steps of other methods "fit" with it.

It is important to note Framework Foresight was deliberately built to accommodate and incorporate other methods and approaches to avoid the appearance that the authors were teaching a "one-right-way" of doing foresight. It provides a basis of comparison of how various practitioners and methods do the work, enabling them to assess the strengths and weaknesses of each. The steps in the Framework Foresight method, for instance, aim typically at getting to the essential points, thus routinely trade off depth for speed. Students or practitioner aware of other methods for accomplishing the same step, can substitute in an approach that provides greater depth -- if that fits the needs of a particular project.

The role of clients and stakeholders are mentioned throughout the paper. It is useful to call out here that the degree of client participation in projects using the method varies considerably. Daheim and Hirsch (2015) in the excellent paper on trends in foresight practice noted more open and participatory approaches as one of the four major developments in foresight practice. Indeed our experience with Framework Foresight corroborates this point. In general, clients are becoming increasingly interested and involved in co-creating foresight projects. The flexibility of the Framework Foresight approach has enabled us to accommodate this trend.

Practitioners are likely to make modifications to the method based on their experience and preferences. The authors encourage this innovation and have found this to be part of their own experience in using the method in practice. They would be grateful for feedback in how others apply and innovate around the method.

Looking ahead, the next significant update is to finish incorporating the language and refinements from the new APF Foresight Competency model (Hines et al., 2017) Forecasting becomes "futuring," planning becomes "designing," and acting becomes "adapting. The conversion work has been ongoing the last couple of years. For now, we've been keeping the together: forecasting/futuring, designing/planning, and acting/adapting. At some point, we'll make the conversion complete to the new language. As noted earlier, the work in refining our approach to the future will likely never be done.

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