Application Modernization Guidance

Evaluating Technology Lock-In & Exit

Version 7

Introduction

As the GC becomes increasingly reliant on commercially provided services, the risk of lock-in weighs on the minds of departments. However, It is important to have a balanced perspective and properly weigh the risk of lock-in against the opportunities gained when using as-a-service models.

Information Technology has increasingly become commoditized. as-a-Service models and public cloud are at the forefront of this commoditization. Using these services to modernize application portfolios and at-risk technologies involves increasing reliance on private sector providers. This brings with it the fear of lock-in. Lock-in is not unique to cloud, for years the GC has been managing the exit strategy from a variety of technologies such as mainframe, data centres, operating systems, databases, and Enterprise Resource Planning systems to name a few. As this guide will show, the decision to commit to a technology and when to exit cannot be driven by fear and risk alone, but must be weighed against the opportunity gained.

Types of Lock-in

While the IT landscape must navigate many types of lock-in, this document will focus on technology lock-in whether that be product, , architectural, or skills Lock-in. Technology lock-in is focused on the technology choices and the teams who manage those technologies. Commercial lock-in such as legal, provider exclusivity, and contractual lock-in are not covered extensively in this document.

Guidance

Balance Risk with Opportunity When Choosing Technologies

Every technology comes with a degree of lock-in; no technology is without switching costs. Focusing only on the potential future costs and risks of exiting a technology is only part of the story. The opportunities delivered by the technology, over its useful life, must also be factored.

Thought Works suggests keeping this simple equation in mind when evaluating lock-in costs:

Lock-in Cost = Migration or Switching Cost – Opportunity Gain (www.thoughtworks.com, n.d.)

Platform and serverless are good examples of how to evaluate the risks of lock-in against opportunities gained. The lock-in risks of most platform-as-a-service and serverless technologies are not very high and are significantly offset by the opportunity gained by avoiding operational activities such as patching and

upgrading software, lower scope of security management, and offer frictionless deployment and operations. The risk of lock-in can be reduced by avoiding platforms for which other providers have no viable competitive options. For example, most cloud providers have database platforms. The technology itself is not portable, however the data is. The opportunity gained is reduced maintenance, increased reliability, and low lead time to delivery.

When weighing the risks of exiting a technology against the opportunities of that technology, weigh the following:

- Exit cost and risk drivers include the cost of extracting the business logic and business data that will be managed by the technology. Focusing on the portability of the technology itself may be less relevant. Often the undesirability of a particular technology is a driver for exiting the technology, at that point the value of the technology itself is minimal.
- Opportunities gained by the adoption of a technology should include a lower IT lifecycle burden (patching, upgrades, replacement), quicker time to deployment, the ecosystem of support and skills, the technology's roadmap, and business value including improved user experience and adoption.

A useful tools for helping weigh the opportunities of a technology against lock-in costs is provided by Martin Fowler in the form of a 2x2 matrix with switching cost (lock-in risk) on one axis and unique utility (opportunity gained) on the other. Plotting your decisions on this simple 2x2 matrix and help illustrate technology choices to stakeholders.
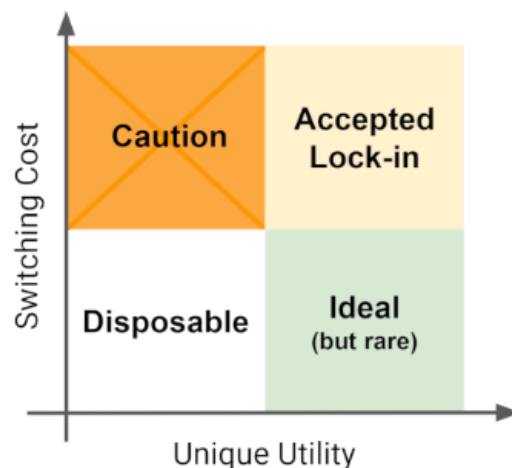

Figure 1 MartinFowler.com 2X2 Matrix

At a high level the four quadrants are:

- **Ideal:** This quadrant represents the ideal weighing of risk and opportunity gain. Switching costs are low and the opportunity gain is high.

- **Accepted Lock-in:** While switching costs may not be ideal, they are offset by the opportunity gains. Many public cloud platform and serverless technologies, fall into this quadrant as the technology itself may not be portable, but the business data contained within them is and can be stored or executed elsewhere.
- **Caution:** This quadrant represents high lock-in risks and low business value. An example is a multi-cloud software that provides neither the opportunity gain of lower operations as the software must be hosted, patched, and upgraded, and requires high switching costs. Exiting may be very challenging if proprietary features have been used extensively.
- **Disposable:** These are low business value technologies, but also easy to exit. An example would be a software-as-a-service solutions that may be used to manage an event for a period of time with few data sets needing to be exported.

Develop an Exit Strategy

Having an Exit Strategy is an effective means of easing the impact of lock-in. An Exit Strategy is often incorrectly viewed as a fire escape plan where at a moment's notice you will need to rapidly exit from a technology or service. In reality, the sudden need to exit a technology is an unlikely event. Far more likely is the slow decline of that technology or supplier with many warning signs along the way. The constant evolution of the technology landscape makes it difficult to predict when exit should occur and what the target technology should be. Instead, an Exit Strategy should:

1. Help gather the indicators that allows decision makers to identify when it's right to exit a technology. In other words, when does the opportunity gains offer by a technology diminish to the point that it offsets exit risks and costs.
2. Focus on the portability of business data, not the technology platforms themselves. It is likely that the technology platforms themselves will be abandoned while exiting a technology.
3. Assess the clauses of service or contractual terms that may impact how business data will be extracted
4. Maintain a skilled workforce that is experienced with new technologies and methods will allow an organization to pivot from one technology or practice to another and remain nimble. The importance of a nimble and skilled workforce cannot be overstated.
5. Avoid bias when evaluating when to exit a technology. Do not over evaluate past investments, commonly known as the sunk cost fallacy. Do not under evaluate the risks of the current environment while overstating the risks of change, commonly known as status quo bias.

Making the Decision to Exit a Technology

All technology undergoes a lifecycle of increasing business value, however over time due to changing market conditions or business needs that value diminishes. An Exit Strategy should include periodic environment scans.
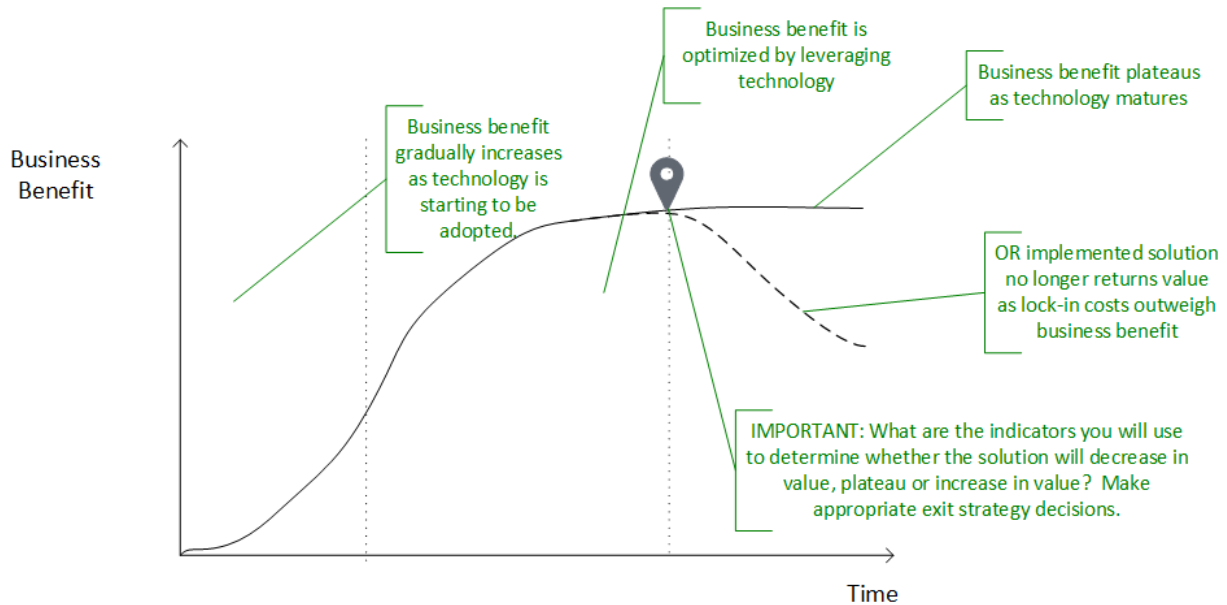

Figure 2 Solution Lifecycle Timeline and Business Benefits

1. Look for signs of a diminishing supporting ecosystem. When the skilled workforce and supplier community supporting a technology begins to diminish, this is an early indicator that the value of a technology is in decline.
2. Look for new technologies that provide higher opportunity gains that may offset the risks and costs of exit.
3. An Exit Strategy is an excellent means of communicating the organization's approach for monitoring a solutions business benefits over time and its decision-making criteria when the solution no longer delivers the desired benefits.

Choices that can facilitate an eventual exit

Choices made adopting a technology can reduce the exit burden years later. Those choices include:

- When contracting, consider the last day of the contract. While it is unreasonable to consider that a provider will retain your data indefinitely, ensure you retain ownership of your data and the ability to extract it.

- When building your own applications, choose a decoupled architecture. For example, leverage the principles in the [12 factor applications](#) when designing your applications. Having a decoupled architecture will facilitate application refactoring and reduce the overall impact on the overall architecture.
- Use open standards. Standards used by multiple vendors will help the portability of data between technologies.

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