

Optimizing Today's Complex IT Landscape

A CIO approach to simplify the application portfolio, drive cost savings and minimize risk.



Reduce Cost and Risk Through Application Portfolio Optimization

Media are constantly extolling the virtues of the nimble start-up culture that “just gets stuff done,” while flagellating the traditional large organization for their slow ambling response to existential threats. Today’s global CIO is in the unenviable position of having to explain why it is going to take longer and cost more to recreate the experiences that innovative start-ups are able to rapidly churn out.

The modern CIO is confronted with a Faustian bargain. One can recreate the elegant, integrated experience offered by a start-up, but it will require significant time and resources. By the time these ideas get to market, the opportunity may be lost.

Alternatively, the IT chief can carve out innovation teams that rapidly create new concepts that don’t integrate with an organization’s existing systems and processes. Unfortunately, this just propagates the application sprawl that inhibits agility in the first place. Therefore, more and more global CIOs are turning to application portfolio optimization efforts to simplify their complex IT landscape and power-up enterprise agility.

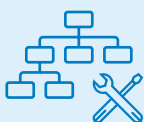
Key Objectives of Application Portfolio Optimization:



Reduce Cost – Simplifying the IT landscape by reducing the number of business applications is an effective way to create sustained cost savings. When an application is retired, also is the development, support, infrastructure, and licensing costs associated with it.



Retire Technical Debt – When enterprises fail to keep up with technical upgrades of their hardware and software they often carry significant technical debt. Understanding where this exists and the risks associated with it become a priority once hardware and software vendors stop supporting it.



Eliminate Functional Redundancy – Organizations that have grown through M&A, or via a decentralized approach to IT governance, can end up with a highly fragmented and redundant application landscape. Increasingly large enterprises require globally harmonized systems.



Improve Situational Awareness – The prevalence of shadow IT, 3rd party cloud solutions, vendor hosted solutions, public cloud infrastructure, operations technologies run by the business, and decentralized governance can make it difficult for IT leaders to understand what they have in their network. Thus, troubleshooting becomes extremely complicated.



Reduce Risk – Calibrate the level of investment in risk mitigation strategies (high availability, business continuity planning, disaster recovery, architecture and security reviews, etc.) based on the criticality of a given application to the business. An understanding of the likelihood and impact of any given risk, as well as existing mitigation strategies, is critical to identifying potential gaps.

When is an Optimization Approach Right?

Application portfolio optimization is a great technique, but it isn't the solution to every problem. Enterprises that will benefit the most from an optimization initiative often have the following characteristics in common:

- 1. Application Count** – The ideal candidate for an optimization exercise would have over 500 business applications, but it can be effective with as few as 200. Application counts that get into the thousands can naturally offer significantly more benefits.
- 2. Technical Debt** – Enterprises with significant technical debt (legacy programming languages, out-of-support software versions, legacy architecture patterns, legacy hardware, etc.) are likely to find more benefits than organizations with modern enterprise architectures using the latest software and design patterns.
- 3. Functional Redundancy** – Companies with a high degree of functional redundancy as a result of decentralized decision making, or mergers and acquisitions, are great candidates for optimization.

- 4. Poor Situational Awareness** – Organizations lacking an up-to-date and accurate application inventory and configuration management database are likely to realize significant benefits just from understanding what they have.
- 5. Lack of EA Standards** – A firm with weak enterprise architecture standards, that has a proliferation of different technologies and standards, will likely benefit from an increased understanding of their current installed base.
- 6. Data Center Migration** – Optimization initiatives are a great way to maximize the benefits of any data center migration by ensuring remediation of technical debt concurrently with the migration effort.
- 7. Technology Enabled Transformation** – Organizations embarking on a large transformation initiative will likely replace a significant number of legacy systems. Scoping this in such a way as to simplify the application landscape will help realize maximum benefits of systems that will be decommissioned.

Portfolio optimization is a powerful technique for reducing IT costs, simplifying the IT landscape, reducing risk, retiring technical debt and improving situational awareness. However, such initiatives should be undertaken with a rigorous methodology and a well-architected plan if the aim is to sustain momentum and to realize the full benefits potential.



Going Granular with an Optimization Program

Traditional application optimization efforts have historically been too narrow in their focus and often leave value on the table. The starting point for most optimization efforts is to gather information about an enterprise's existing application portfolio and use it to make recommendations for retaining, enhancing, re-platforming or retiring.

However, the results of such an exercise often lack specificity in their recommendations. Without very clear outcomes and supporting business cases, these initiatives tend to stall out over time as executives lose patience with high-level strategy in favor of wanting to see results.

Application portfolio optimization (APO) implies a much more granular approach to developing cost and risk reduction recommendations.

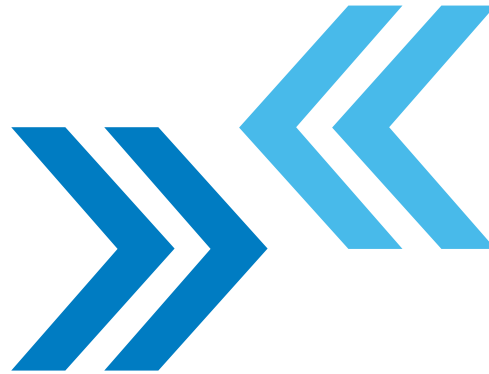
Why Portfolio Optimization Fails

Far too frequently, IT organizations kick off a rationalization initiative in response to external pressure to reduce IT costs. Efforts often lose momentum after year 1 and the inventory information grows stale until the next initiative is kicked off some years later. Such well-intentioned initiatives often fail to achieve their stated objectives due to:

Unrealistic Expectations – Many portfolio optimization initiatives won't break even until 1-3 years out. It takes time to renegotiate contracts, redeploy unused licenses, achieve cost avoidance and realize savings.

Lost Momentum – Functional consolidation is expensive and time-consuming, and thus rarely pays off based purely on IT cost savings alone. Without a compelling business imperative and benefits (e.g., single view of customer, integrated S&OP, global process harmonization), initiatives will often lose momentum.

Poor Planning – Failing to adequately think through exactly what information is required to make and act on decisions can result in multiple data requests that can quickly try the patience of the application owner community.



An Approach to Success

1. Start with End Goal – By carefully thinking through each of the potential application disposition patterns and the information required to recommend and act on a specific pattern, leaders can avoid multiple follow-ups and keep the APO initiative on track. To think through every scenario, decision trees can be helpful. To understand how decision trees work, [click here](#) for an example for easy reference.

2. Only Collect What's Needed – When compiling inventory it is tempting to ask a group of experts, "what data should we collect about each application?" Resist the temptation to take this approach. The key is to minimize your data collection requirements by only asking for what you absolutely know you are going to use. A few guidelines will help avoid over-engineering decision trees:

- **Limit questions to what's on a decision tree** – If the information isn't on one of your decision trees, ask yourself why you need it and how you are going to use it. An application inventory questionnaire should take no more than 1 hour and no more than 100 questions per application.
- **Avoid fast-moving data** – Avoid collecting information that will change quickly and be outdated before you can use it (e.g. ticket counts, downtime, etc.).
- **Pre-populate data** – If you can pre-populate answers to questions for some applications based on existing inventory information, it will reduce the amount of data collection effort expended by the application owners and improve your data quality.

3. Data Collection – Getting hundreds of application owners to complete application surveys can be a daunting and time-consuming task. To help increase the quality and timeliness of the survey responses:

- **Strong Sponsorship** – The vocal and enthusiastic support of the CIO is critical to the success of any APO initiative.
- **Define What Is and What is Not a Business Application** I like to define a business application as a combination of software components used with a persistent data store with multiple concurrent users that solves a business problem. This helps focus the effort on applications that optimization patterns are applicable to. Things that are not applications include end user applications, system software, integrations and BI technology.
- **Identify Application Owners** – Organizations are constantly striving to better align IT with the business. Therefore, consider identifying both an IT owner and a business owner for each application – and then assign the IT owner the task of following up with the business owner to collect the required information.
- **Leverage Transition Efforts** – APO initiatives will sometimes run concurrently with an outsourcing effort to a managed service provider (MSP). The MSP will often need to complete an application information document as part of the knowledge transfer, so it is fairly easy to extend the knowledge transfer activity to include the application survey data.
- **Use Low-Cost Locations** – If an IT organization is globally-distributed or already makes extensive use of low cost location strategies, it can be efficient to co-locate a portion of the APO team in a low cost location.
- **Escalating Follow-ups** – A four-staged, five-week approach to application survey response follow-ups works well, with ongoing escalations up the organization with each follow-up (CC'ing the respective managers to ensure accountability).

4. Create a Common Language – A functional architecture that all business applications can be mapped to is key to identify potential functional redundancies.

Qualities of a Functional Architecture

At the Appropriate Fidelity

Too high level and you end up with too many applications mapped to the same capabilities, ending up with lots of false positives. Too detailed and application owners won't fill it out correctly. A capability map should have three levels with a total of 200-300 sub-capabilities and no more than 15 sub-capabilities per capability.

Easy to Understand

A well-designed functional architecture should allow an application owner to quickly identify all the capabilities that their application supports. Each capability should be expressed as a two-word noun/action combination. (e.g., Opportunity Management, Account Management)

Capability Based, Not Process Based

A process represents 'how' you do something (the steps); A capability represents 'what' you do. The idea behind business architecture is to segregate those capabilities that are common across processes into a common capability that can be leveraged by multiple processes.

MECE (Mutually Exclusive, Collectively Exhaustive)

Each capability within an enterprise functional architecture should be mutually exclusive (no overlap), and when taken as a whole they should be collectively exhaustive (cover the entirety of what the enterprise does).

5. A Mile Wide and an Inch Deep – To make efficient use of time and resources, it is best to start out with a high-level analysis that goes a mile wide (looks for all potential opportunities) but only an inch deep (keeps the analysis fairly mechanized without any hands on the code or detailed architecture analysis). By first identifying promising opportunity areas before taking a second pass where you can go a mile deep but only an inch wide, you can avoid lots of wasted effort.

APO provides a much more pragmatic approach to addressing the application sprawl endemic to large IT organizations. By taking a much more systematic approach in identifying optimization opportunities, such an effort focuses on tangible recommendations with measurable cost and risk reduction.



Leveraging Portfolio Optimization to Drive Benefits at Scale

There is a wide variety of cost reduction levers available to today's IT chief to try to optimize the enterprise application portfolio. This is a complex undertaking, but one that can realize significant benefits if approached smartly.

Cost Reduction Strategies

In our experiences having advised a number of large companies on streamlining costs across the IT landscape, elements of these five strategies have all played a key role in creating significant business benefits for an organization.

1. **Application Retirement** – One of the most effective (and obvious!) strategies is to shut down applications no longer in use. However, this isn't enough. In order to realize the full benefits of application retirement it's imperative they are fully decommissioned. This includes re-claim un-used software licenses, archive historical data, re-deploy freed-up hardware capacity and release support and maintenance budgets.
2. **Functional Consolidation** – Consolidating functionally-redundant applications can be time-consuming and expensive, so it is best accomplished in conjunction with other business-driven initiatives. To align IT technical debt retirement with business objectives, first identify those capability areas with a high degree of redundancy, and then map those areas to existing business transformation efforts.

3. **Maintenance & Support Operating Model Optimization**

An APO initiative can help to identify which of the four basic application maintenance and support operating models is most appropriate for each application by creating a "risk fit" matrix that assesses outsourcing risk versus global delivery fit. Each application would fall into one of four basic quadrants:

Retained Onsite – Appropriate for systems of innovation or differentiation where there is a high degree of user interaction required and it is supporting a core competency.

Captive – In order to be viable, this model should support a minimum 250 employees. If you are pursuing a captive strategy, it can be a very cost-effective way to support applications that don't require the same level of user interaction.

Staff Augmentation – Applications that don't lend themselves well to support through a global delivery model, but for which there is no competitive advantage achieved by keeping knowledge in-house, they can be supported with a staff augmentation model. This is ideal for applications with high variable or seasonal demand.

Managed Services Provider – Applications that do not create a competitive advantage can often achieve significant savings by moving to a managed services model. It can also drive additional efficiencies through incident elimination, automation, deflection and shift-left strategies.

4. Software License Optimization – The average IT organization spends 13% of their IT budget on licensing – with the vast majority of that spend going to the top 10 software vendors. The topic of software licensing is complex, but for APO the most important elements to have a clear handle on include:

Understanding Total Cost of Ownership – Each layer of software or hardware represents another layer of costs. Too often, teams make decisions about deployment without understanding the true cost of those decisions. Making those costs visible should be one of the primary tasks of APO. Exposing that information to IT and business leaders can quickly remove resistance to retiring applications that aren't really meeting a key need.

Install Base vs. Entitlement – Software licensing optimization tools from vendors like CA Technologies, Eracent, Flexera, Hewlett Packard, Landesk, Scalable Software and Snow Software help organizations understand both their current license position (what they own) as well as what is installed so that they can identify opportunities to recycle licenses and avoid new purchases.

Lower Cost Software Alternatives – It is important for procurement and the enterprise architecture organization to stay on top of industry dynamics and continually re-evaluate the economic competitiveness of 3rd party software solutions in their portfolio.

License Entitlement Optimization – Enterprises are frequently over-licensed for functionality they never end up using. As more organizations move towards the cloud, it is becoming easier to adjust subscriptions to more closely match actual consumption.

Open Source Software Alternatives – There are a variety of open source software solutions, particularly at the system software level that have gained significant traction with enterprise customers because of the significant cost advantages they offer.

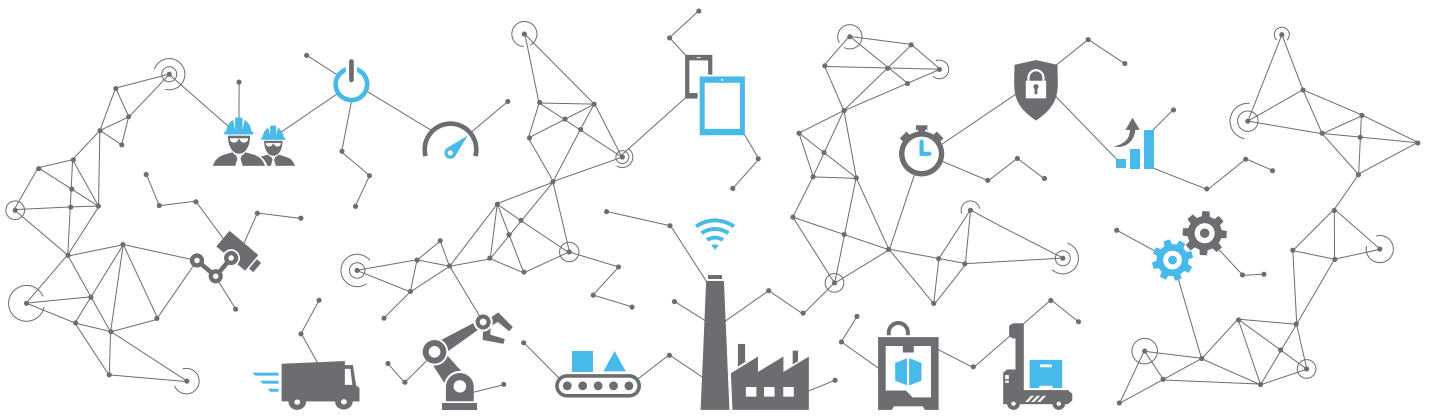
5. Tiered Storage – Applications with significant data (> 2TB) that have been in service for more than 5 years and don't have a data archival strategy can benefit from implementing a tiered storage strategy that moves infrequently accessed data to lower cost storage solutions.



An Approach to Reduce Risk

Risk reduction strategies are generally difficult to support with a traditional cost/benefit justification, but are equally if not more important to drive value around. Typical strategies employed include:

- 1. Platform Alignment** – If an enterprise already has a defined technology reference architecture, an APO initiative is a great way to identify applications that may not be in compliance. At a minimum, the initiative can be used to identify operating system, database, application server, integration, authentication, data archival, security, and resiliency standards.
- 2. Performance** – An APO initiative can be used to identify and mitigate against potential performance bottlenecks related to usability, response time, or batch job performance.
- 3. Scalability** – For organizations anticipating significant organic or in-organic growth, an optimization initiative is a great way to be proactive in identifying potential bottlenecks.
- 4. Resiliency** – It is important to not over or under invest in infrastructure. Business critical applications that lack a high-availability (Active-Active) architecture represent a significant risk, while non-critical ones that have been architected for high-availability are likely over invested in.
- 5. Security** – An optimization exercise is a great time to identify any potential security vulnerabilities or compliance issues.
- 6. Business Alignment** – IT organizations may want to scale back their investments in legacy applications that are failing to meet the current or future business needs if a major re-platform is going to be required in the future.



Keeping Optimization Investments Evergreen

APO initiatives present a great opportunity for the CIO to simplify their IT landscape, reduce risk, achieve cost savings and improve situational awareness. However, many of these well-intentioned initiatives are plagued by the same failings, notably portfolio governance. Thus, uncontrolled application sprawl returns bigger and better than ever, and a new APO initiative kicks-off again in several years.

The following are a set of best practices that can keep an APO initiative evergreen for the long-term.

Governing the Application Inventory

Once a company has gone through the tiresome effort of cataloguing its portfolio inventory, creating a structure and system for maintaining and governing that information is crucial. Three key components to be incorporated into this governance include:

- **Application Ownership** – Each application should be assigned both a business and IT owner who is responsible for maintaining the application inventory information.
- **Release Management** – This process should be updated to ensure evolutions to the application and its architecture are properly reflected in the inventory.
- **Architecture Review Board** – A board is responsible for reviewing new solutions or major upgrades before released into production. This governance represents a key control point in avoiding the introduction of non-standard technologies into the enterprise ecosystem. The board is responsible for defin-

ing and governing changes to enterprise architecture standards and associated decision trees.

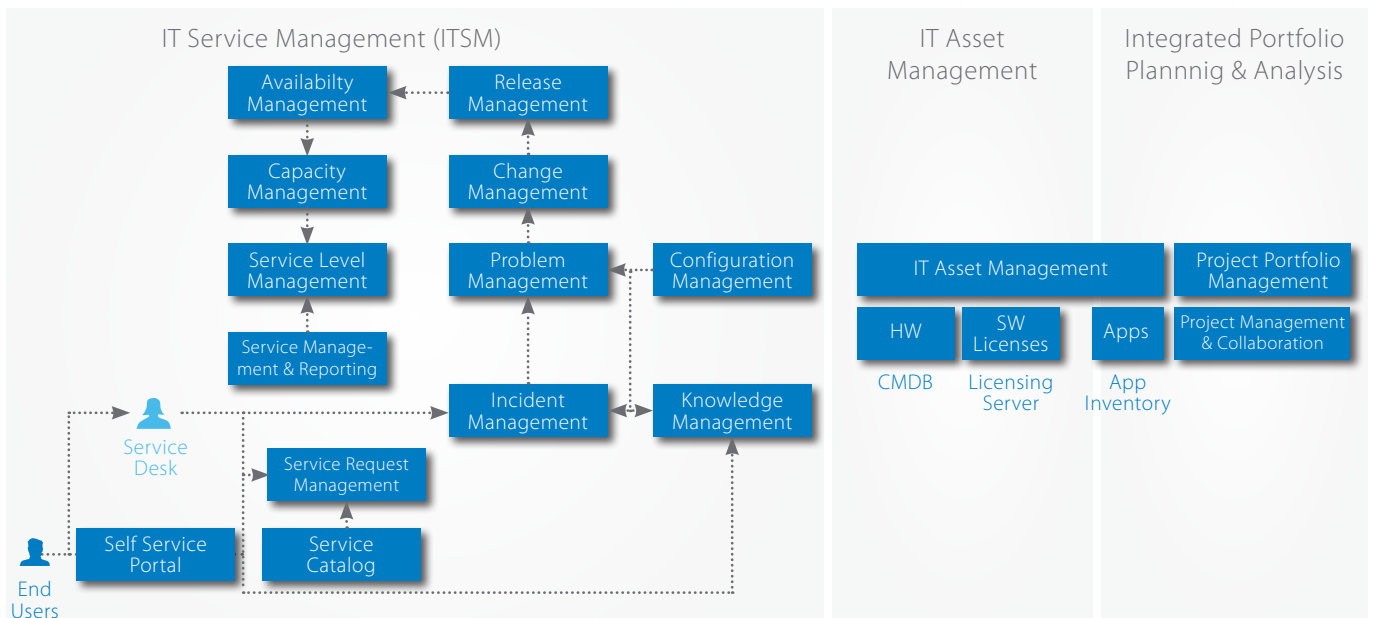
What IT Management Tools Support APO?

Specialized software and expensive tools aren't necessary to drive real insights from an optimization investment, and they can often be an impediment to getting started if you make implementation a pre-requisite. That said, a mindful IT tools strategy is important for the effective governance of the enterprise IT ontology in the long term.

There are several categories of IT tools that support effective IT governance portfolio optimization:

Integrated Inventory Planning & Analysis (IIPA) – Tools in this space by Software AG, EOS Software, Planview, CA Technologies and HPE represent the most logical place to store information about the application inventory. While an IIPA solution is a great place to start, a number of other systems may be involved in providing a complete view of an organization's application information.

IT Service Support Management (ITSSM) – Service support management tools from the likes of Service Now and BMC Remedy provide a set of tools designed to enable ITIL v2011 compliant processes. Of particular interest for practitioners of APO is the connection between service asset and configuration management, and the applications inventory. The ITSM solution will typically contain transient data related to application quality like incident volume, unplanned downtime, open problems and known errors.



Configuration Management Database (CMDB) – A configuration management database is a metadata repository of IT assets (commonly referred to as configuration items), and the relationships between items. Information related to the configuration of a specific server logically belongs in the CMDB, rather than the IIPA solution, as it is quite possible for a complex business application to have different operating systems, databases and servers. Most ITSM vendors offer a CMDB solution as part of their product portfolio.

Software Asset Management Tools – The typical IT organization spends 22% of their annual budget of software licensing. Software asset management tools like Flexera Software, Snow Software and HPE provide tools for managing asset costs and legal compliance. By linking software license purchase order information, with installed base information, IT managers can identify areas of over and under licensing. By linking this information with the application inventory information within the IIPA solution, and the server inventory within the CMDB, teams can plan for and manage licensing costs very effectively.



Sustained Momentum is Key

In conclusion, application portfolio optimization is a powerful technique for reducing costs, simplifying the IT landscape, reducing risk, retiring technical debt and improving situational awareness. However, such a program needs to be undertaken with a rigorous methodology, a well thought-out plan and strong ongoing governance in order to sustain momentum and realize the desired benefits.

About Infosys Consulting

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Joshua is a U.S.-based partner with Infosys Consulting where he leads the Enterprise Strategy & Architecture practice for a number of our industry verticals. For the last 22 years he has focused on helping clients leverage technology to transform business models and unlock value. His experience is focused on the most pressing issues on the CIO agenda, including AI and automation, IT cost reduction, application portfolio rationalization, managed services transformation and technology modernization. He is a regular contributor to the firm's digital publications and is often sought-after to speak at client events. Joshua graduated from the University of California, Berkeley and currently resides in Seattle, Washington.

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