



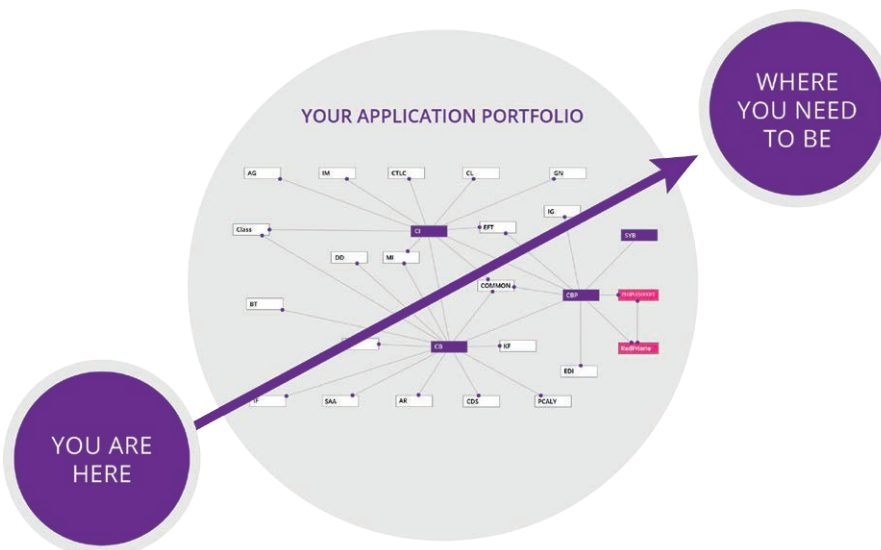
## Providing a Tools-Based Application Portfolio Analysis

### A decision support system to aid in charting a strategic direction

Steven Wright, the mono-toned and rather offbeat comedian of the 1990's, used to tell this joke: "I have an existential map. It has 'You are here!' written all over it."

CIOs and IT Directors live in a less existential world. They can't afford to just live in the moment and let their applications be "here," and "here," and "here" without a solid reason. More importantly, at any given moment, they may require detailed information about their applications in order to chart a new direction (or re-direction) to meet dynamic business needs.

The difficulty is that unless an organisation is in start-up mode, the CIO's IT vision does not have the luxury of starting from scratch. History is important, as is the knowledge of legacy applications, which may have less-than-desirable documentation. Expressed in simple terms, "We were there – we are here now – and this is where we want to go in the future," puts the vision and the journey forward into proper context. Wherever that journey ultimately leads, it must pass through the current state of the application portfolio.



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Knowing an application's current state ("You are here") is a matter of assessing its relevance: its criticality, security, compliance, sustainability, and how it interfaces with other applications. When this is known for every application, evaluating the inherent risks and entropy that exists in the application portfolio – and predicting the impact that each future step will have on the portfolio – becomes more strategic, less tactical, and facilitates drawing a roadmap to the future.

## Real-world navigation

What realities do most IT organisations face today? Most are presented with a mix of strategic and tactical goals for their application portfolio. At the strategic end of the spectrum, there is a drive to move applications to the cloud, move away from in-house developed solutions, reduce the cost burden of some legacy applications, and favor vendor-delivered applications.

At the tactical end of the spectrum, almost all organisations are utilising outsourcing for development and maintenance of at least some applications. Many are also grappling with a number of legacy applications that have become, or are becoming, expensive to maintain. These legacy applications can easily create "technical debt" (the eventual consequences of poor system design, quick fixes, and/or changing standards) that eventually needs to be repaid. If code optimisation has been neglected and/or changes to the legacy applications have not been well-documented, the cost of servicing the debt may prevent investments in new solutions to meet business needs.

Navigating these realities can be complex. IT management has to make decisions about how to support an organisation's strategic goals: even when faced with poor system documentation, tribal knowledge from the "grizzled veterans" in the organisation, and perhaps opinions from outsourced resources who now are responsible for maintaining and developing the applications.

Another part of the complexity is that often there are emotions at play. As one CIO stated it, "I am sure we will have to modernise several of our applications. What I am not sure of is what to modernise first, and when. There is no single person or program I can go to with all the details about the interactions within and around an application. Everybody has a different opinion."

What is needed is a new type of decision support system for developing an application portfolio strategy. A system that provides insight into the current "You are here" condition and delivers data that serve as the foundation for well-informed decisions about strategy.

## Top-down and bottom-up

Many organisations already utilise some form of top-down Application Portfolio Analysis. However, this type of analysis is typically a one-off study that captures only a brief moment in the life of a dynamic organisation. The analysis is done by taking an application inventory where critical information is gathered: functionality, technology profile, size, owner, lifespan, etc. The data are then sorted and categorised, usually in spreadsheets, to feed planning exercises. This is generally a significant amount of manual effort.

While a good starting point, this analysis seldom provides the details needed to make informed decisions about the complexity, cost, and time required to make strategic changes. The inter-application relationships and dependencies are one-time, manual scans, or personal interviews. And, the "You are here" condition in January might be quite different in July. Keeping such an inventory updated is cumbersome. Then, the information becomes outdated and no one looks forward to repeating the process.

To complement this top-down approach with an analysis that adds value for developers, analysts, and project teams, there should also be an understanding of applications from the "bottom-up." This analysis is typically based on parsing source codes to reveal detailed insight into application relationships. Access to source code, data definitions, and dependencies at the programming level become important for change impact analysis and scoping development and testing work.

The advantages of "top down" complemented by "bottom-up" are significant. Metrics can be obtained to show application size, complexity, and quality. Plus, the information collected supports everyday tasks as well as strategic assessments.

This paper discusses how a tools-based approach to Application Portfolio Analysis (APA) provides a decision support solution for IT organisations. There are, fortunately, software tools for

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Application Portfolio Analysis which run in automatic mode to deliver useful information for APA decisions in a dynamic IT environment.

## Using APA to make better decisions

A tools-based APA solution can become a decision support foundation for moving an organisation's applications from being an idea on the whiteboard to being a productive part of the business. These tools provide an internal form of Business Intelligence (BI) for IT organisations by helping collect detailed data and keeping it dynamically current. This repository of intelligence can be accessed by multiple groups with varying depth of information needs to support a range of activities – from strategic decisions down to daily maintenance.

There are many benefits of implementing a tools-based APA solution including:

- > Improving the visibility into the state of the applications portfolio at any time
- > Understanding the pathways to implement change
- > Uncovering potential risks associated with each step
- > Predicting the impact of changes before they are made
- > Lowering the cost of implementing changes by accurately scoping and planning the work
- > Improving the daily efficiencies of on-going development, maintenance, and production

Some of these benefits are difficult to quantify, but it is generally recognised that APA solutions

can improve application development and maintenance productivity by up to 40% and reduce the on-boarding learning curve of new resources by up to 60%. The benefits increase in organisations with larger and more diverse application portfolios – and are especially notable in portfolios with older legacy applications.

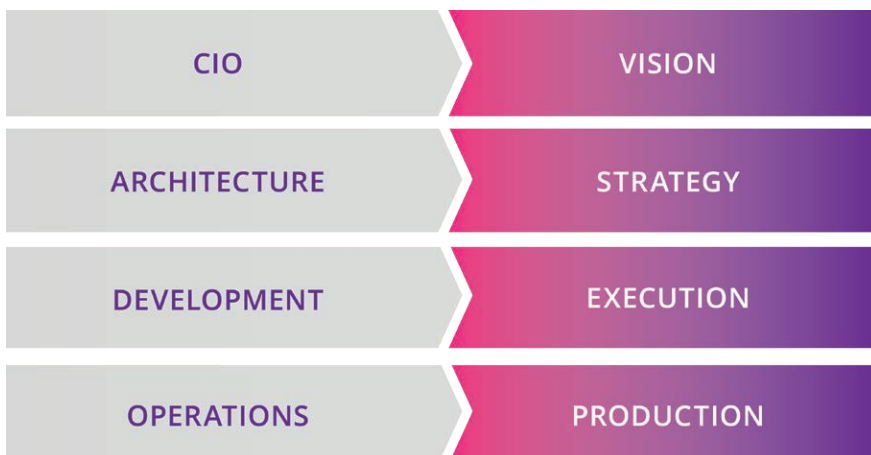
## From vision to execution

Application portfolio strategies (what to retain, what to replace, what to add, what to rebuild – and when) start with a CIO's vision of the functionality required to support the current and future needs of the business.

Typically, this vision is broken down into specific strategic steps and goals based on a timeline (which actions to take first) and resource plan (time, talent, and money) that fit within the capabilities and constraints of the organisation.

At some point, usually early in the timeline, each strategic step will translate to changes at the applications level. This is where "the rubber meets the road" and determines if the end result will have any resemblance whatsoever to the CIO's original vision.

Organisations armed with a current and accurate picture of the "You are here" condition of their applications have a momentous advantage in executing any strategy compared to organisations which have not done their due diligence at the front-end. The time to uncover the true condition of the used automobile you intend to buy is before you hand over the money – not afterwards. Too many IT teams stumble from one potential minefield to another as they uncover the nuances and constraints of their existing applications during project execution.



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It is probable that each stage in developing and executing the strategy will involve different tiers of human resources in the organisation. The informational needs are different and distinct at each level. CIOs and senior managers articulate the vision. Architects and business analysts build the strategy. Development, database, and implementation teams execute the strategy before production and support is handed over to operations people.

Each of these organisational constituencies needs its own "You are here" picture in order to understand the implications of each step in the plan from its point of view.

## The "Hard" and "Soft" of fact finding

The purpose of a decision support system for APA is to determine the key factors that help achieve the IT organisational vision.

These factors might include:

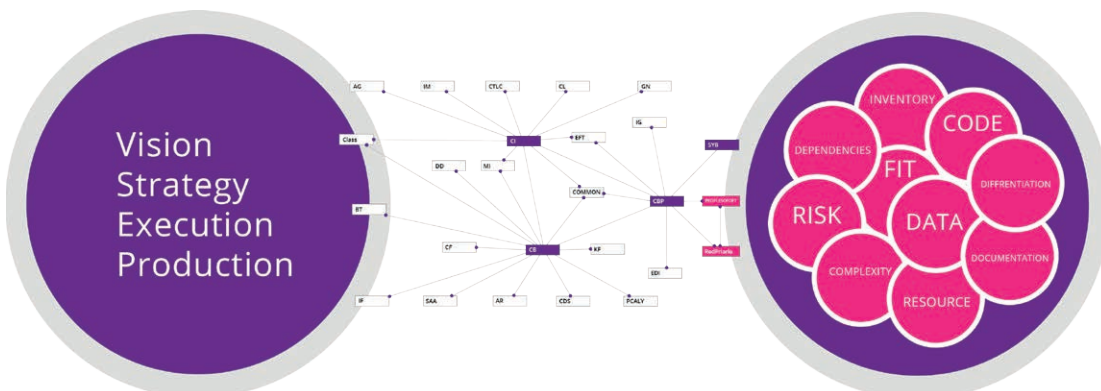
- > Application inventory
- > Technologies employed
- > Application complexity
- > Resource availability
- > Relevance/fit to current and future business needs
- > Dependencies on other applications and data
- > System flow
- > Inbound and outbound integration points
- > Risk potential
- > Security and compliance
- > Costs to operate/support/maintain

Arriving at an understanding of the above factors is accomplished by collecting data about individual applications and the interfaces within and amongst them. While there are a number of known and accepted procedures for doing this work, what is less known are the software tools available to facilitate these activities. Data collection can be thought of as focusing on two levels: the Hard Facts level and the Soft Facts level.

Hard Facts represent the tangible and quantifiable information about the application such as: programming languages and databases used, the number of programs and data elements making up a given application, the number of lines of code that exist for each technology, and the integration points that exist between various applications in the portfolio. By using industry-recognised measurements, it is possible to produce information describing application and portfolio complexity and maintainability.

Such Hard Facts are quantitative and encoded in each application. They can be unlocked by using Application Understanding software to parse source code and data definitions to build a picture of the applications under consideration. Application Understanding software views the structure, architecture, and design of an application even when there is limited documentation available. Dashboards provide metrics and information about the size (lines of code and function points), complexity, code quality, and interfaces. Since source code parsing can be performed automatically with software tools, a repository of information can be kept fresh to reflect the production state at any given moment.

Having collected this information, it can then be stored in a central repository and used to populate the next step – collecting the Soft Facts.



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Soft Facts are qualitative pieces of information that come from people. A good example is a person's view of whether an application meets the current and future needs of the business. Of course basing decisions on a single qualitative view can be fraught with danger. In order to truly understand the relative merit and intensity of Soft Facts, multiple constituencies need to provide input (IT, current users, business planners, forecasters, etc.).

Other examples of Soft Facts that should be taken into account in an Application Portfolio Analysis are views on whether an application provides differentiation or competitive advantage to the organisation, and how much the application conforms to the technology and efficiency standards of the firm. The methodology normally employed for obtaining these Soft Facts is through questionnaires and interviews. Quite often, third-party or outside consultants are used to obtain a more unbiased picture and to encourage frank responses. But, even this Soft Fact gathering can be supported by an Application Understanding software tool which provides a central repository for collecting and accessing this data and providing online collaborative and work flow facilities to streamline the data collection. Tools that provide a weighting and scoring mechanism for soft data turn even this subjective input into valuable quantifiable data from which better decisions can be made.

On the continuum from Hard to Soft are inputs that lie somewhere between the two. A good example of this is analysing the true cost of each application. While it is likely that the IT organisation has a breakdown of its costs, it may not be detailed enough to assign the costs to individual applications. Then too, there are other

organisational costs, outside of IT, that in some way touch the application.

An Application Portfolio Analysis provides an excellent opportunity to identify the components of cost and may lead to better methods of understanding the true lifetime costs of specific applications.

Hard, Soft, or in-between, the facts should be collected into a single collaborative repository where they can be accessed and updated as needed. Any decision support system for Application Portfolio Analysis should have this functionality to support decisions today, tomorrow, and any day in the future. Software tools that automate the collection of Hard Facts and provide a framework for the collection and analysis of Soft Facts makes this continuous approach feasible.

## A layered view

It has been established that a successful decision support system for Application Portfolio Analysis should be broad enough to cover the continuum from Hard to Soft facts and that this work can be automated in part by software tools. The additional requirement for the system is that it support Vision-to-Execution activities – meaning that in addition to being broad, the decision support solution must be deep, too. What is meant by this?

The progression from Vision-to-Strategy-to-Execution requires more and more details about the application portfolio. From a 10,000-foot view, the concerns of CIOs and senior managers are aimed at understanding the application portfolio from a strategic, results-oriented level. Dashboards and overviews are of more interest than knowing the number of lines of code or the McCabe complexity of the application.



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However, as architects and business analysts do their work to translate the vision into an implementation strategy, they need critical information about how the applications co-exist and integrate with each other, what technologies are in use, and where the potential risks reside that may negatively impact the strategic steps.

When it comes time to execute the strategy, development and database teams need to have access to even more detailed information. Access to the source code and data definitions, and understanding the dependencies at the program level, become important. Programmers need to trace component types and relationships, see the call trees and job flows, and develop inheritance diagrams, model diagrams, etc. Lastly, operations teams need to understand peripheral details such as schedules, jobs, and error and exception handling.

## Summary

Developing a tools-based approach to collect and aggregate Business Intelligence for Application Portfolio Analysis is important work. Such a decision support system can provide an important resource for developing and implementing an IT organisation's application strategy.

Software-based tools help IT professionals see a complete inventory of each application and its components – and graphically map the inter-relationships. The integrated information base can be delivered to the desk of every IT worker via a simple-to-use, function-rich, browser-based interface.

An Application Understanding tool shows the structure, architecture, and design from the 10,000-foot view down to the source code level. It is especially useful when there is limited documentation available and when the people responsible for the application development have long since moved on.

The economic payback when utilising an Application Understanding tool is impressive. There are documented savings in terms of programmer efficiency for daily activities – and documented savings in terms of tighter scoping, better estimating, and better insight into development progress for implementing strategic changes.

Using tools to underpin this APA solution will automate the process and allow organisations to continuously keep the analysis current, ensuring a continued return on investment. Not only will this enable better decision-making to support business growth, resources will be freed from highly manual application research tasks so that the brainpower can be focused on turning these decisions into reality.

## About Advanced

Advanced provides solutions that help organisations sustain, manage, and modernise their application and data portfolios. Leveraging proven methodologies, services, and tools, Advanced works closely with organisations to provide insight into their current technology ecosystem and to deliver a customised suite of products and services that meet specific business requirements. The end result is optimal productivity, predictable project outcomes, and reduced risk. Advanced has helped companies around the world achieve their application modernisation goals, including: Chevron, Gap, Citi, Genuine Parts Co., and many more.

## More information

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