Empowering Governments to Deliver Better Digital Citizen Services, Faster

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Introduction

Over the past twelve months, people and organisations around the world have faced arguably the most condensed period of upheaval in memory—from the pandemic to natural disasters and civil unrest impacting countries on every continent. Governments have been thrust into the spotlight like never before with citizens demanding (and scrutinising) leadership.

In both the public and private sector, we can observe two truths that have been exposed during this time. The first is that adaptability to change is what's separated the top performers from the laggards. The second is that even the world's largest organisations can move swiftly when motivated.

Given that the world around us won't stop changing, and most citizens in APAC have access to a smartphone, digitalised citizen services have proven to be the best option for scalable and effective solutions. But to deliver them swiftly and effectively, governments must lay some foundations to set themselves up for success.

Why modernisation is important for government agencies

Before we get into the "how," let's quickly establish "why" governments need to modernise their approach toward software development.

As mentioned previously, virtually every adult in APAC owns a smartphone and *more than 99 percent of those run a Google or Apple operating system*. Between them, they may be the two organisations who have come closest to perfecting the customer experience (CX). Citizens who have grown accustomed to these user-friendly devices now expect the same experience when accessing other services.

Although governments might not be competing on CX for commercial gain like the private sector, ignoring it can quickly become a political risk. A *recent McKinsey study into CX in government* found that satisfied customers were 9 times more likely to trust the agency delivering the service. Of course, this means the opposite is also true: Citizens whose experience with government is a constant source of friction and frustration will inevitably lose trust in their government's ability to govern.

By committing themselves to delivering an elevated digital experience, governments can create more engaging digital services, make more efficient use of resources, and rapidly respond to any emerging threats.

How can governments deliver modern services more quickly?

In the olden days, software was developed in discrete projects with defined start and end dates. Then that software became dated, clunky, and eventually unusable or even unsafe. Eventually a concept known as agile software development became the preeminent workstyle for engineers everywhere.

At its essence, agile development is about focusing on the continuous delivery of a software product. It recognizes that no piece of software will ever be perfect, so products should instead be launched when they're in a "good enough" shape and continuously improved based on user feedback.

This approach has been adopted by virtually all the young, digitally native start-ups disrupting various industries around the world. Of course, it's much easier to adopt a new approach when starting from scratch, but what about the world's largest organisations? Huge organisations—from governments to banks—already have big, expensive legacy technologies in place.

There are three basic paths to modernisation:

1. **Rehosting**, which means taking an application from its old infrastructure to something new, like the public cloud. This is the easiest approach but isn't always ideal, as you may end up with the same limitations as before.
2. **Refactoring**, which is the best approach when you need to fully modernise a legacy application. Monolithic applications are broken down into little chunks called microservices. Working on individual microservices enables organisations to deliver new features and improve software quality more rapidly. This is the most time-consuming approach, so organisations should prioritize which applications are modernised in this way.
3. **Replatforming**, which represents the happy medium between. It involves updates to help take advantage of a modern cloud platform while avoiding major changes in code or architecture. It's a more involved process, but not quite as resource intensive as refactoring.

VMware Tanzu has helped numerous government organisations around the world evaluate their application portfolios and determine the course of action to modernise them securely and efficiently. This involves working with the organisations to assess each workload:

- **Risk:** What's the potential downside to keeping or retiring this app?
- **Value:** Is this app worth the cost of optimizing the infrastructure it runs on, but not changing the app to improve speed and scale?
- **Opportunity:** Is it worth refactoring, replatforming, or rearchitecting this app to increase the speed of delivery or business agility?

Ultimately, the best path forward for your organisation will depend on its specific starting point and how much weight leadership gives to cost, risk, and speed.

BENEFITS OF APPLICATION MODERNISATION

Regardless of your target application's specific function, the process of app modernisation encompasses a wide range of things you can do to an application:

- Simplify management and maintenance
- Test the app more efficiently
- Ship new versions more quickly
- Scale the app more easily
- Utilize modern infrastructure
- Decrease costs

In turn, modern and well-architected apps will help futureproof your organisation, as the increased cadence of feature delivery will enable it to be more agile in responding to changing requirements.

What steps do government agencies need to take to successfully modernise applications?

1. **Get the people side right.**

   There are three keys to delivering any digital solution: people, processes, and technology. Technology is usually the easiest one to get right.

   To ensure government agencies can set themselves up for success, the key stakeholders must buy into the approach. This starts with the minister presiding over the department. They're unlikely to be involved in anything particularly technical, but as the public face of the department, they'll bear the bulk of the blame if anything goes wrong.

   At an executive level, IT decision makers (and budget holders) should also be on board. The modern, iterative approach to app development means having the freedom to fail and learn from your mistakes. As the interface between the minister and the product team, they'll need to champion this approach to nontechnical stakeholders.

   At a product level, teams should have a strong product owner who has a deep knowledge of customer pain points and can advocate on their behalf, but also articulate these needs clearly to engineers.

2. **Assess where you can afford to take a risk.**

   As mentioned earlier, for teams to innovate effectively, they must have the freedom to fail. For this reason, we recommend teams evaluate the areas where they can afford to take some level of risk—of course, not the type of risk that would lead to a cabinet reshuffle.

   What this usually means is looking away from core systems and towards more peripheral apps, like your department's consumer-facing mobile app. Your product team can then test end-user engagement systems to identify areas in which they can afford to introduce modernisation practices.

3. **Understand the regulatory environment.**

   Governments are subject to even more regulations than private sector companies, and with good reason: The nature and scale of sensitive data government agencies collect means it would be that much more catastrophic in the event of a breach.

   Product teams should understand the regulations they're subject to and consider every option to protect citizen data. Any personally identifiable information (PII) collected—whether from health records to council taxes due—should be anonymized unless identification is necessary. In those instances, end-to-end encryption is strongly recommended.

   Ensure the underlying infrastructure is transparent and can facilitate operations from anywhere. Modern solutions like service meshes can make it possible to capture PII in your system directly, and then leverage hyperscale platforms to anonymizes the data on-premises.

4. **Focus on security and stability.**

   When modernising applications, it's imperative that security is baked into the design of any product from the start and not regarded as an afterthought. Security or stability issues plaguing a product will increase the friction experienced by the customer, decreasing the effectiveness of the solution while increasing the chance of political fallout.

   Government agencies should ensure that whatever technologies they're moving to are secure by default and have a proven track record. Open source-supported technologies are helpful in this respect, as their large developer communities help iron out bugs and security issues in the code.

5. **Plan for success.**

   Perhaps governments aren't motivated by the same drivers as for-profit companies, but when it comes to evaluating whether solutions are successful, there's significant overlap. VMware Tanzu previously developed the *Build to Adapt Benchmark* to help organisations gauge how well they build applications delivering on five key business outcomes: speed, stability, scalability, security, and savings.

   The new approach to software development also requires a renovated set of metrics—otherwise, teams would fall back into old, rigid habits. The indicators on the following page are both specific and measurable and can be continuously improved upon by product teams.

BUSINESS OUTCOMES				
SPEED	STABILITY	SCALABILITY	SECURITY	SAVINGS
Customer feedback frequency How often you collect feedback from the end users of your software products.	**Change failure rate** Percent of software launches / upgrades delayed due to defects.	**Cloud-native applications** Percent of applications running in the cloud (native or refactored).	**Security** Number of disruptions or suspensions due to security concerns.	**Operator to developer ratio** The number of software developers to each operations staff in the organization.
Responsiveness to feedback The elapsed time between user feedback to deployment of change in software.		**Investment ratios** Spend developing and/or refactoring software vs. operating and maintaining IT systems.		**Product to developer ratio** Number of applications per developer in an organization.
Frequency of product deploys How often you deploy software (i.e. continuously, hourly, weekly, monthly, quarterly).		**Scalability and disruption of services** The level of disruption to existing business services and application when doubling workloads.		**Budget flexibility** Degree to which the IT budget is fully committed at the beginning of each budget year or highly flexible to make initiating new projects easy.
Feature development time How long it takes to launch a feature from idea to deployment (time to value).		**Scalability of infrastructure** If doubling workloads on existing architecture requires minimal structural changes vs. a complete redesign of architecture.		**Developer time allocation** Fraction of developer time spent writing code and delivering value vs. maintaining old code.
Team integration / Distribution of skills If you rely on a small number of star developers, or if the skills of your developers are evenly distributed (i.e. teams able to rapidly onboard, unblock and deliver consumer value).				**Automation** Degree of automation for infrastructure provisioning, software build, software testing, change approval governance, software deployment and performance monitoring.
Lead times How long it takes to move a new business-critical application from deployment to production.				

Moving forward

The pace of change in all aspects of society is showing no signs of slowing down, and the high rates of population growth most APAC economies are experiencing only means that demand for services will become more pressurized. Digital solutions are the best way to deliver effective citizen services at scale and can also be adapted quickly as the need arises.

Most governments can agree on the importance of digital solutions, but to succeed in becoming a digital government requires the right approach and organisation-wide support. Modernising applications with microservices can benefit both the technical engineering process, but also the overall organisational strategy. As government leaders adapt to this iterative approach, departments will have the freedom they need to innovate and come up with solutions that can make a difference in their citizens' lives.

Government agencies looking to modernise their software development process and provide engaging citizen services while prioritizing security and resource efficiency can visit *tanzu.vmware.com/industries/government* to learn more.

VMware, Inc. 3401 Hillview Avenue Palo Alto CA 94304 USA Tel 877-486-9273 Fax 650-427-5001 vmware.com