

Proactive e-Governance: Flipping the Service Delivery Model in Taiwan

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ABSTRACT

Taiwan's fourth e-government strategy is shaped around the vision of "service without boundaries, providing a better life to all citizens." A core component of this strategy is to harness IT innovations to move towards "proactive" service and information delivery. The aim is to flip the service delivery model by shifting from the "pull" approach of traditional e-government—whereby the citizen must seek out government services—towards a "push" model, whereby government proactively and seamlessly delivers just-in-time information and services to individual citizens based on needs, preferences, circumstance, life events, and location. The article will share how Taiwan is conceptualizing and implementing this model of proactive e-Governance through mini case studies of initiatives across the strategic pillars of: (1) Service Excellence, focusing on the implementation of personalized push notifications to citizens and (2) Digital Inclusion, focusing on the "Door-to-Door e-Services" pilot program that proactively bridge the digital divide by physically delivering virtual services using roaming frontline civil servants equipped with connected tablets. The concluding section discusses what lies ahead as Taiwan further evolves this proactive approach by harnessing emerging innovations in cloud, social, and big data technologies.

Categories and Subject Descriptors

K.5.2 [Legal Aspects of Computing]: Governmental Issues.

General Terms

Management, Human Factors, Standardization, Legal Aspects.

Keywords

e-Governance, e-Government, service delivery, digital inclusion, m-Government, open data, big data.

1. BACKGROUND & CONTEXT

Taiwan is perhaps best known as the world's "IT hive," with its companies producing an estimated 89% of the world's laptops and 46% of desktop PC's—and with ICT products accounting for a third of GDP [1]. This commitment to information technology extends to Taiwan's public administration, which has sought to strategically infuse ICT into the day-to-day operations of the government so as to provide more effective public services and a better quality of life for citizens. Government adoption of ICT is

guided by the Research, Development, and Evaluation Commission (RDEC), which holds primary responsibility for performance management and e-government as Taiwan's "facilitator of good governance."

Over the past 15 years, the RDEC has taken e-government from vision to reality through three successive national ICT Plans: (1) the implementation of a government network infrastructure (1998-2000); (2) the promotion of online government services and service integration ("e-Taiwan", 2001-04); and (3) the advancement of ubiquitous access through a range of channels—from computers to cell phones to kiosks ("m-Taiwan" and "u-Taiwan", 2005-11). These e-government advancements have provided a robust platform for improving administrative efficiencies, service quality, and national competitiveness, while contributing to the consolidation of Taiwan's democracy. This commitment to ICT as an enabler of better government has positioned Taiwan at or near the top of international rankings. The World Economic Forum, for instance, consistently ranks Taiwan in the top 10 globally in Networked Readiness, including among such sub-indicators as the social impact of ICT and ICT for government efficiency [2], while the most recent Waseda University e-Government Ranking places Taiwan 8th globally [3].

1.1 From E-Government to E-Governance

While there is always room for improvement, Taiwan and others have today realized many of the efficiencies and administrative improvements promised by e-government, with the full implementation of everything from e-Procurement and e-Taxation systems to standardized e-Payment and e-Document platforms. Building from this foundation, the advent of social media, mobile connectivity, and big and open data today present new strategic possibilities not only to make government more efficient but to fundamentally change the way government functions, delivers services, and solves public problems—in a way that is more open, participatory, and responsive to the needs and aspirations of citizens. In fact, prominent technologists and government leaders see in these technological innovations the seeds for what UK Prime Minister Cameron has called the "Next Age of Government"—and what RDEC Minister Sung has described as the shift from e-government to "Citizen-Oriented e-Governance," whereby ICT innovations are harnessed not just for operational efficiencies but primarily for social impact and citizen empowerment, including by moving beyond government's traditional role as a one-way service provider.

The paths that governments take to realize this shared vision of ICT-facilitated governance will take many different forms as each experiments with new tools and approaches to see what works and what does not. With few proven implementation models, it will be essential they share their experiences with one another so that,

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together, we can identify emerging best practices and share lessons in real-time. Excitingly, the maturity of e-government in Taiwan and other newly developed economies means that this sharing of best practices will no longer flow exclusively from North-to-South as economies from the Global South move from a model of “catch-up” to one of shared innovation, as they simultaneously embark on the path to cloud, social, and big data.

1.2 Towards “Proactive” e-Governance

In the case of Taiwan, the RDEC has launched its Fourth E-Government Phase (“Intelligent Taiwan”, 2011-16) around the vision of “service without boundaries,” with the direct goal not just of boosting government efficiencies but, far more ambitiously, of “providing a better life to all citizens” [4]. A core component of this strategy is to harness IT innovations to move towards what it terms “proactive” service and information delivery. The aim is to flip the service delivery model by shifting from the “pull” approach of traditional e-government—whereby the citizen must first know, decide, and seek out government services—towards a “push” model, whereby government proactively and seamlessly delivers just-in-time information and services to citizens based on their needs, circumstance, personal preferences, life events, and location. So as to facilitate a discussion on the future of e-services and to solicit input from the global e-government community, the remainder of this article will share Taiwan’s conceptualization of and approach to proactive service and information delivery—as captured through in-depth interviews with RDEC staff and illustrated via mini case studies of representative initiatives across two e-Government strategic pillars: (a) Service Excellence and (b) Digital Inclusion.

2. SERVICE EXCELLENCE: FROM VIRTUAL ONE-WINDOW GOVERNMENT TO PROACTIVELY EMBEDDING E-GOVERNMENT INTO EVERYDAY LIFE

2.1 Baseline: Virtual One-Stop Government

Before diving into Taiwan’s approach to proactive e-governance, it is important first to provide an overview of the enabling infrastructure. Taiwan’s e-government efforts have been driven by a relentless pursuit towards shrinking the time, resources, and inconvenience required to obtain public services by using e-government solutions to deliver a friendlier, more competent, and streamlined government. “Government as a whole, services as a team” has served as the core organizing principle behind this transformation towards a virtual “one window” government.

At the center sits the MyGov portal that provides a unified, “one-stop” access point for citizens to access government information and services and voice their opinion. Underneath sits the Government Service Platform which provides a common, shared infrastructure on which agencies can build, manage, and deliver their online services using reusable modules that range from a common e-payment system to a unified authentication system. The implementation of this physical infrastructure has been accompanied by significant efforts to simplify and integrate administrative processes; to cut down on regulations and forms (“there is no page 2”); and to generally streamline services and back-office functions. This focus on service integration and simplification was followed by a shift towards mobile. Today, for instance, the MyGov portal provides a unified government apps store with a comprehensive set of mobile applications that help improve the lives of citizens through such wide ranging functions as: a mobile game to teach citizens about the importance of stocking emergency supplies; a breast feeding room locator; a 3D

virtual tour of the National Palace Museum; a water pollution reporting app; and a Job Bank for the unemployed (see app.www.gov.tw for more). Apps and mobile connectivity are also used to better listen to citizens and improve the responsiveness of government, particularly at the local level through centralized 1-9-9-9 (i.e. 311) call centers tied to sophisticated Citizen Relationship Management systems [5]. Research by the Taiwan e-Governance Research Centre aims to evolve this further by exploring the potential of mining social media platforms to more proactively “listen” to the public.

Behind the scenes, the government is also aggressively consolidating data centers and moving its IT infrastructure into the “cloud,” both to promote more efficient resource sharing but also to enable new types of government services. For instance, the Ministry of Finance has launched an e-Invoice platform that gives citizens the option to bypass paper receipts and instead store a digital version in the cloud (in Taiwan, all store receipts are processed using a central government system). With 8 billion receipts issued every year, this digitization has the potential to annually save 80,000 trees [5] while also opening up a powerful new dataset on consumption patterns—providing citizens with cloud services to analyze their own personal expenses and potentially enabling data analysts to mine every purchase made on the island for novel insights on the state of the economy.

Collectively, Taiwan’s digital investments have achieved much of the promise of e-government to cut costs and serve citizens anytime, anywhere. But with the advent of ubiquitous mobile connectivity, web 2.0 interactivity, and big data analytics, RDEC saw an opportunity to move beyond “one-window” government by adopting a model of “proactively” embedding public services into the everyday lives of citizens. The goal is to transform from a model of passive and static information repositories towards proactive, integrated service and information delivery personalized around a citizen’s profile, needs, and daily habits.

2.2 Towards Proactive Delivery: From “e-Housekeeper” to Digital “Life Dashboard”

To explore the potential for greater personalization and proactive dissemination of government information, RDEC launched the “e-Housekeeper” initiative (e 管家, msg.nat.gov.tw) in 2008 to implement an integrated messaging platform for push-notifying citizens of useful information from across agencies and layers of government. Today, “e-Housekeeper” provides a unified notification platform for over 200 different services—everything from license renewals and benefits notices to the due dates for fines, fees, and taxes. For instance, car owners are notified when they must pay their toll fees, renew their registration, or schedule an emission inspections; are issued a parking fine or had their car towed; and when an accident impedes traffic, the price of gas changes, or the government temporarily closes a road for maintenance. Similar sets of services are provided in such domains as healthcare, home ownership, and social welfare.

The “e-Housekeeper” also provides proactive support during major life events, from sitting for exams to getting married. For instance, students needing to take the college entrance exam are notified when they can register; when and where their exam has been scheduled; and when their exam scores are made available. In so doing, the service simplifies government for the user by proactively guiding them through what can otherwise feel like a bureaucratic maze—guidance which is particularly important for helping vulnerable populations in accessing needed services such as social welfare and healthcare, which often require interactions with a multitude of agencies at different levels of government.

RDEC has continued to evolve “e-Housekeeper” over time, following its iterative “think big, start small, continuously improve” implementation model. To further improve the convenience and usefulness of the tool, RDEC partnered with and opened up the platform to private sector organizations to include notifications for such services as cellphone bills—recognizing that, for citizens, there is little distinction between paying government or commercial fees. RDEC has also continued to evolve the ways in which the service can be accessed. Specifically, citizens can today receive notifications in four different ways based on personal preference: (1) via the website; (2) via a PC-based, unobtrusive notification app modeled on the popular MSN Messenger (Windows, Mac, Linux); (3) via mobile phone applications (iOS, Android, WP8, and WAP); and (4) via commercial messaging clients and widgets (Yahoo, MSN, iGoogle). The team plans to expand this further to “Smart TV’s” and kiosks at convenience stores to better reach offline populations. This diversity of access points tailored to different personal habits enables the government to proactively “go to where the citizen is” to better meet their needs. Today, the service benefits over 700,000 members, with more joining every day.

With the first iteration coming to a close, RDEC aims to transform e-Housekeeper into a digital “Life Dashboard” (數位生活儀表板) by continuing to work with ministries, local governments, and the private and third sector to further improve the underlying technology, access points, and range of value-adding services. RDEC will continue to work across government ministries to better integrate service and information delivery around core user-centric—rather than ministry-centric—themes (such as health, employment, and social welfare). To further improve the convenience to the user, the Dashboard will also include a new cloud-based “Citizen Box” feature providing integrated electronic document management that will support citizens from “end-to-end” through traditionally paper-heavy government processes, such as those related to household registration, conscription, and labor and health insurance. Second, the Life Dashboard will take advantage of the location awareness of modern consumer communication devices to provide Location-Based Services via a “Life Map” function—tailoring and delivering information to citizens based not only on their personal characteristics but also on their geographic location. For instance, citizens can access the dashboard from their smart phone or tablet to find out where the nearest open parking lot, museum exhibition, or healthcare facility is located or to see what events are taking place in town that day. The use of location-based services also presents significant opportunities for improving emergency response and preparedness, such as by issuing individualized notices to citizens about risk-prone areas, evacuation routes, and emergency services during Typhoon season. Taken together, the Life Dashboard will enable the government to proactively embed highly personalized services and information into the everyday lives of citizens—seeking to fit the whole of government in the citizen’s pocket to seamlessly provide “just-in-time” services.

2.3 Looking Ahead: Big and Open Data

Following this same citizen-centric philosophy, the Executive Branch (*Executive Yuan*) has adopted a “people-centered data first” policy as part of the roll out of the national open data initiative that prioritizes the opening of data based on its potential to “facilitate and enhance the quality of life” of everyday citizens—such as data on employment opportunities; real-time transportation feeds; flood risk, water disruptions, and environmental resources; real-estate prices; food (safety, agricultural prices, etc.); and healthcare. RDEC will encourage

ministries to take a holistic approach to disseminating such data, given the obvious synergies between making government information available in a user-friendly, citizen-centric format via the Life Dashboard and making government information available as open data in a machine-friendly, developer-centric format on the national Open Data Portal (www.data.gov.tw).

To further maximize the value of government data and proactively deliver insights to the public, the government is also making increasing use of big data analytics. For instance, the Council of Agriculture has leveraged big data analytics for real-time estimation of agricultural damage and key agricultural commodity price fluctuations. In support, 60 scattered agricultural databases with 3.65 million entities were brought together between 2008-11 and mined to produce close to 1.1 million messages to farmers via the “Mobile Agriculture Platform” (which has a satisfaction rating of 95.6% [2]). For instance, the plant pest management network reported over 12,972 hazardous organisms with 355 warnings issued for recommended preventative measures [6]. To provide a more robust foundation for such “big data” analytics, the government has launched a “Core Databases” initiative to aggregate and consolidate disparate ministerial databases into comprehensive information resources on critical themes such as Healthcare, the Environment, Social Welfare, Gender Equality, and Disaster Preparedness that can then be mashed up and mined to uncover new insights and trends. These consolidated databases when combined with the unprecedented processing power of emerging government clouds promise important new opportunities to proactively uncover the needs of society and individual citizens—from healthcare to recreation—and proactively deliver highly tailored services shaped around the citizen’s personal preferences, habits, and needs.

3. DIGITAL INCLUSION: FROM DIGITAL DIVIDE TO DIGITAL OPPORTUNITY

3.1 Baseline: Leaving No Citizen Behind

While Taiwan benefits from high connectivity rates—with a household internet penetration rate of 84% and a mobile Internet usage rate of 51% [7]—its e-government strategies have long recognized that some sectors of society have fewer opportunities than others to access electronic services, whether due to age, disabilities, location, or personal preference. Influenced by Taiwan’s democratic developments and seeing internet access as a basic human right, the government has therefore included “digital inclusion” as one of the core driving values undergirding its e-government efforts for over a decade. To improve physical access, the government has partnered with the private sector to make government e-services available via user-friendly kiosks in convenience stores (7-Eleven, etc.). Such stores are open 24/7 and number over 9,600 (or roughly 1 store per 2,500 people)—allowing citizens to interact with their government while, say, picking up the milk or generally going about their daily lives. The government has likewise partnered with local governments, civil society, companies, universities, and citizen volunteers to launch Digital Opportunity Centers (DOC) that form the cornerstone of the government’s e-inclusion efforts. Sponsored by both RDEC and the Ministry of Education, the DOC program not only provides physical access to computers and the Internet but also convenes volunteers (“information agents”) to help improve citizens’ digital literacy through free training tailored to different user profiles such as the middle-aged, the elderly, women, and recent immigrants. This training is provided at DOC’s, mobile service vans in very remote areas, and library stations and churches in indigenous villages. There are now close to 300

DOCs in rural communities across the island as well as over 100 overseas launched by Taiwan in partnership with 10 developing countries to help narrow the digital divide at the international level. The goal of the DOC's is to increase internet access for rural residents in Taiwan from 57% in 2010 to 73% by 2015 [8]. RDEC has further complimented Taiwan's digital inclusion efforts by making available the government's own Internet infrastructure to the public free-of-charge via over 4,500 iTaiwan WiFi hotspots located in government buildings, public spaces, and transit points (capped at 1Mbps so as not to compete with commercial offerings) that supported over 8 million connections in its first year alone. In addition, a new RDEC pilot program partners with libraries to loan out 3G-equipped laptops to those lacking connectivity in the home.

3.2 Flipping the Service Delivery Model: "Door-to-Door" e-Services

No matter how many DOC's are built and trainings are provided, some segment of the population will continue to lack reliable access to e-services. E-Government's "last mile" problem of reaching all citizens can be reduced but never completely eliminated. Even in a hyper-connected society like Taiwan, many rural communities have yet to attain full membership in the information society. Requiring rural residents to travel potentially long distances to visit a DOC also runs against the government's commitment to proactive and convenient service delivery.

The RDEC therefore asked itself: how can we adapt the proactive service delivery model to those without frequent access to the Internet? The idea is again to flip the service delivery model by having the government go to the citizen—but this time not via social media and mobile phones but via in-person, door-to-door interactions. The problem, of course, is that citizens interact with a wide range of different government agencies, and so it is simply not realistic or cost-effective for dozens of agencies to send out their specialized civil servants to go knock on doors on the off chance that a citizen may need assistance from their particular agency. This is why governments have traditionally outsourced the navigation of complex bureaucratic processes to citizens, holding them responsible for visiting the right government agencies in the right sequence at the right time. Yet, today, e-government has significantly tamed this complexity by providing a virtual "one window" government for a wide range of services. This means that generalist frontline civil servants, armed with a tablet connected to the country's e-government infrastructure, could be empowered to essentially serve as the interface not for a specific agency (as in the traditional model) but for all of government. This promises to make the "door-to-door" model more viable, because whereas citizens may be unlikely to need help from any one particular agency, there is a good chance that they are in need of some form of assistance from government.

To explore the potential of flipping the service delivery model and more proactively bridge the digital divide, the RDEC launched a 5 year "e-Services to the Home" pilot program (to be completed in 2016) that is targeted at under-privileged groups such as the elderly, recent immigrants, and the mobility-impaired by joining forced with front-line civil servants (including household registration officials, surveyors, village officers, and social workers) as well as volunteers (such as retired civil servants). The feedback from the program to date in rural areas has been quite positive, not only because it improves convenience and access to government but also, perhaps more importantly, because it signals to the disconnected and the under-privileged that the government genuinely cares about them and will not leave them behind. This

program, together with the more traditional efforts of the DOCs and the free iTaiwan WiFi, are essential components in Taiwan's integrated and proactive approach to ensuring that the government continues to serve the needs and aspirations of *all* citizens.

4. DISCUSSION AND LOOKING AHEAD

This article has presented the way Taiwan is conceptualizing and operationalizing its commitment to flipping the service delivery model from "pull" to "push." By proactively going to the citizen rather than passively waiting for the citizen come to the government, Taiwan aims to embed e-government into the everyday lives of its people, enabling it to deliver just-in-time services and information when and where these may be of help—whether based on need, circumstance, or personal preferences. Moving forward, cloud computing and big data will play a key role in advancing this transformation by helping to uncover new patterns and insights and by better enabling the government to target and personalize services based on the needs and aspirations of individual citizens. Taiwan's service delivery model is likely to evolve further as social media, mobile connectivity, and open data increasingly enable government to look beyond its own boundaries for solutions by becoming catalysts for collective action and citizen empowerment. The public response to the devastating Typhoon Morakot in 2009 very much foreshadowed this fading of boundaries, as citizens took to social media to help neighbors and share collective intelligence on the storm's destruction at a far greater volume and velocity than official channels—demonstrating the power of social media to enable citizens to also take a more proactive role in co-delivering public services. With new ICT innovations holding immense potential for government transformation but with few best practices yet identified, it is essential that the e-government community openly experiment and share the successes, failures, and lessons learned from ongoing initiatives. Accordingly, the RDEC is committed to carefully and systematically evaluating Taiwan's e-government initiatives—both to protect the tax-payers' dollars and to learn what works and what does not—and to share this with the e-government community and the public at large so that, together, we can uncover new models for governance in the 21st century.

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