PHILIPPINE DIGITAL TRANSFORMATION STRATEGY 2022
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PART ONE: EXECUTIVE BRIEF

This document discusses the strategy to be adopted by the government in its pursuit of digital transformation that will greatly improve Philippine governance, socio-economic development and services to people.

The Philippine Digital Transformation Strategy (PDTS) picks up from previous efforts to establish an electronic government in the country using development and innovations in information and communications technology. These efforts include the Philippine Digital Strategy of 2011-2016, the Government Information Systems Plan, the Philippine Strategic ICT Roadmap of 2006-2010, and the E-Government Master Plan of 2012, among others.

The creation of the Department of Information and Communications Technology (DICT) in 2016 was a major development. As the lead agency on ICT, it gave focus on the overall goal of establishing a transparent, efficient, and citizen-centric e-government.

The PDTS aims to achieve genuine citizen engagement by 2020 through available communication channels, e.g., Facebook, Twitter, and other social media platforms on the internet. It is a three-year development plan aimed at transforming the government into a digital platform providing transparent and accountable governance, efficient operations, direct citizen engagement, and innovation.

The E-Government Master Plan of 2012 laid the foundation for the government to pursue its goal of improving the way it provides services and how it interacts with the general public through the use of ICT. It built the infrastructure and integrated the whole of government by providing connectivity, harmonizing information systems, and promoting interoperability.

Through these, the country was able to gain some traction in terms of online services and human capital development. It showed in the 2018 UN survey on e-government development. The Philippines jumped 48 steps in e-participation, from 67th place in 2014 to 19th in 2018. Due to lack of telecommunications infrastructure, however, the country slipped four steps, from 71st in 2014 to 75th in 2018, in the overall e-government development ranking, although this is still within the High-EGDI range. The country is actually faring well, and, as a lower-middle income country, is considered among those outliers in the general trend wherein there is a positive correlation between a country’s national income and its e-government ranking.

The PDTS builds on the successes in the application of e-government programs. In short, it focuses on the next stage of digital transformation. It will take advantage of lessons learned and best practices, continue to improve on them and find new ways of providing online services to people.

It hopes to fix some problems like the lack of organizational structure and sound strategic plan on onboarding, low awareness on DICT’s services and applications, inadequate change management initiatives, and lack of funds.

From providing information and transactional services, the PDTS will ensure that the government makes use of ICT to enable public participation.

Technology is merely a tool in governance, which, in essence, is public service. It, however, makes government operations faster, simpler, and more efficient; and is therefore desirable and imperative.
PART TWO: BACKGROUND AND OVERVIEW

“Previous studies highlighted that e-Government promotes civic engagement by enabling the public to interact with government officials (Susha and Grönlund 2014; Cheng et al. 2015), providing greater access to government information, making government more accountable and reducing corruption (Andersen 2009; Andersen et al. 2011), and delivering higher quality services to citizens (Sá et al. 2016).

Therefore, the implementation and adoption of e-Government has many advantages for governmental organizations around the world, given that it can support integrated services delivery in the economic, social and environmental dimensions of sustainable development, while also supporting integration across these three dimensions (UNDESA 2016; Estevez and Janowski 2013). (Muñoz and Bolivar 2018)

The ASEAN Context

The 2015 ASEAN ICT Master (AIM 2015) plan defined six strategic thrusts for ICT consisting of three pillars and three foundations. The three pillars are “economic transformation”, “people engagement and empowerment”, and “innovation”, while the three foundations are “infrastructure development”, “human capital development”, and “bridging the digital divide”.

The 2020 ASEAN ICT Master Plan (AIM 2020) provides a calibration to its strategic thrusts. From its 2015 pillar of “economic transformation”, it has re-stated the 2020 thrust to “economic development and transformation”. The 2020 thrust added “development” as integral to this specific pillar.

The 2020 AIM also modified the 2015 pillar from “people engagement and empowerment” to “people integration and empowerment through ICT”. AIM 2020 also added two additional thrust areas or pillars.

It is noteworthy that the ASEAN collective currently views ICT as integral to the improvement of its competitive posture. It further recognizes the importance of enabling people (as opposed to limiting the beneficiaries to the economy) with ICT solutions. AIM 2020 recognizes that it is insufficient for ASEAN Member States (AMS) to limit the scope of its ICT initiatives to providing next generation ICT systems, given the established relationship between ICT to that of economic development and people integration and empowerment. AIM 2020 recognizes the explicit role ICT plays in interconnecting areas of economic development, people integration and empowerment, and human capital development.

Furthermore, due to the advancements of trade facilitation and single market relationships, and the agreements now in force among member states achieved over the past two years, the 2020 AIM also modified the 2015 pillar from “people engagement and empowerment” to “people integration and empowerment through ICT”. AIM 2020 also added two additional thrust areas or pillars.

1 International E-Government Development, Policy, Implementation and Best Practice, p.3 (e-ISBN 978-3-319-63284-1)


years since the publication of AIM 2015, AIM 2020 now includes the “single market” agenda as a pillar that will be advanced through the use of ICT.

The generation of new media and content as well as promotion of information security and assurance as necessary pillars were also added to AIM 2020.4

The underlying motivations implicit within the published AIM 2015 and AIM 2020 pillars figures prominently in the first version of the Philippine e-GMP and will continue to form part of the Philippine Digital Transformation Strategy (next generation e-GMP) but developed to prioritize the national interests of the Philippines while remaining responsive to the ASEAN economic agenda.

The Evolution of the Philippine Digital Transformation Strategy

In 2012, the then Information and Communication Technology Office of the Department of Science and Technology, now the Department of Information and Communications Technology (DICT) e-Government Master Plan of the Philippine Government, through the Medium-Term Information Technology Harmonization Initiative (MITHI), launched its e-Government (e-Gov) and Integrated Government Philippines (iGovPhil) programs.

The e-Government Master Plan

The 2012 e-Government Master Plan provided the foundation for the government to pursue its goal of improving the way it provides services and how it interacts with the general public through the use of information and communication technology systems, as well as making the means of exchanging data and information secure, efficient, and seamless.

From its initial implementation, the e-GMP was designed to provide the foundational roadmap to advocate globally accepted e-Government practices using a whole of government approach.

The e-Government program covered the building blocks or important elements traversing the full technology stack, providing the critical infrastructure, the software systems to enable frontline and mission critical systems, the means and standards essential to sharing and exchanging data and information including basic messaging and electronic mail facilities. It provided the data repositories, data enrichment and management environments, encryption systems through the Philippine National Public Key Infrastructure, network and cyber-security facilities, along with the incentive policies needed to promote adoption by introducing and promoting standards of interoperability spanning the spectrum of technology standards, data harmonization, and procedural interoperability.

These building blocks now serve as the foundation for government to pursue the next stage of digital transformation.

As the Philippine’s comprehensive and government-wide, technology enablement program, implementing the e-GMP not only established the critical technology infrastructure but more importantly, it has allowed the government to identify gaps and deficiencies that need to be addressed as it pursues a more advanced and aggressive digital transformation program.

E-Gov and iGovPhil Programs

The e-Gov and iGovPhil programs laid the requisite foundation or groundwork necessary for the country to progressively build-up its technology capabilities which included
establishing the government data centers, constructing and terminating the government fiber-optic network to pre-defined government POP facilities and agencies (currently connecting 135 government agencies), installing initial Wi-Fi facilities, and deploying initial open-source software systems to provide government agencies with internet-based shared services. These shared services include the Philippine National Public Key Infrastructure (PNPKI), government email, document and records management system (ARMIS), and Single Sign-On (SSO) system.

The Philippine Digital Transformation Strategy 2022
Department of Information and Communications Technology

The first release of the PeGIF provided a catalog of prescriptive technology standards intended to guide and help government agencies sort through issues of compatibility and interoperability in the design of software and data management systems.

The PeGIF was designed to be a living compendium of standards. It is naturally expected to expand and scale as new technologies are introduced by the private sector and adapted by government.

The PeGIF is available in compendiums specifically covering:

- Technology and Communications Interoperability (currently referred to as PeGIF 1.0);
- Data and Information Interoperability (currently referred to as PeGIF 2.0);
- Procedural Interoperability (currently referred to as PeGIF 3.0);

While the various infrastructure-related components continue to be implemented, the iGovPhil program expanded the coverage of the PeGIF model to include a framework to standardize and harmonize data and information exchange between government entities and between government and the private sector.

The Philippine e-Government Interoperability Framework (PeGIF)
The iGovPhil program produced the initial interoperability framework, also known as the Philippine e-Government Interoperability Framework or PeGIF.

The Philippine Government Network (GovNet) and the National Broadband Program (NBP)
The Philippine Government Network or GovNet provides high-speed connectivity to government agencies through a network of fiber optic cables. This is done in phases with some 160 government agencies in Metro Manila completing the first phase. As of September 2018, the network has connected 319 agencies in seven regional centers across the country.

The GovNet is part of the National Broadband Program (NBP), which continues to lay out the infrastructure for the eventual interconnection of the whole of government, using fiber optics, submarine cables and wireless systems.

It has completed the construction of two submarine cable landing stations in Baler, Aurora and Poro Point, La Union and four repeater stations between the two.

The Philippine Government Common Platform (PGCP)
Cognizant of the fact that data harmonization and information exchange between agencies will have to hurdle data structures (proprietary and open), compartmentalized environments, database designs, and deployed schemas that are tightly coupled to existing proprietary platforms and software systems, the standards development team and technical working group recommended that a standard enterprise architecture be created to introduce standards to guide government agencies on the design of
their data and software application environments.

PeGIF 2.0 is a product of close collaboration of representatives from government, academe, and the private sector.

The technical execution of the Philippine e-Government Interoperability Framework on Data and Information Exchange or PeGIF 2.0 was realized through the Philippine Government Common Platform or the PGCP.

The focus of PeGIF 2.0 through the PGCP was to explicitly establish unifying or “common elements” rather than amplify the uniqueness that differentiates between agencies.

The PGCP, as the technology execution of the interoperability framework on data and information interoperability, provided the requisite data management environments for both structured (SQL) and non-structured (NO-SQL) data, shared software services, data enrichment and business analytics services, integration, exchange, standard data registries, augmented the availability of government data center, cloud, and VM facilities; and, also increased the compute, memory, and storage capacities available to the whole of government.

The PGCP stratified the data and information interoperability environment of government into four specific domains or contextual zones: agency-specific, collaborative/inter-agency, authoritative registries and shared application, and the data enrichment domains.

The stratification using collaborative groups or sectoral clusters allows data and information interoperability and exchange to remain specific and context-driven, avoiding the use of a one-size-fits-all model while simultaneously ensuring that standards are vigilantly observed. Furthermore, it allows each data and information context to progressively evolve within its own contextual domain (such as trade, social services, health, business, environment, transportation, etc.).

These data repositories will serve to enrich the information environment made available to the whole of government to enhance decision-support and business intelligence, statistical analysis, planning activities, the crafting of policies and legislation, and all such data analysis activities as will be required by government.

The government data repositories consist of data marts (context-specific) and data warehouses. These data repositories house both structured and non-structured documents and images. Structured data resides in conventional enterprise SQL databases, while images and documents are stored onto CEPH storage appliances, and the metadata for both SQL and images and documents are stored in the NoSQL databases.

The National Government Portal (NGP)
The National Government Portal or NGP serves as both a URL aggregator of government online resources and as a container for deploying government frontline or content management systems.

The objective of the NGP is to provide the public sector with a single online address to access government services without the need to memorize a different web address per type of application government agencies are maintaining. With the NGP in place, a single web address will provide users with a menu of available online government content and services using any end-point device connected to the internet.

The National Application Programmable Interface (API) Gateway
The National API gateway (api.gov.ph) provides a central, scalable, and extensible
environment to eliminate the unnecessary expense and complexity associated with the prevalent practice of node-to-node data integration.

The prescription is for government entities to implement interconnectivity for their G2G, A2A, G2C, and G2B systems through the National API Gateway.

The National API Gateway provides a compendium of technical resources such as catalogs, wikis, and blogs to help facilitate a secure, credential and standards-based data and information exchange between local, regional, international, private, and public data exchanges.

Coupled with the Single Sign-On (SSO) and federated enterprise LDAP identification management systems and services of government, when fully rolled out, agencies just need to have the adequate level of authority to grant or terminate user connection privileges to the API gateway instance.

The API gateway aims to reduce the level of complexity involved in enabling data exchanges between open and proprietary systems, between legacy and current technologies, between simple applications and enterprise applications, between line of business applications and shared application services, data registries, and data warehouses provided by government.

The National API gateway also serves an important cybersecurity function. As the abstraction layer that sits between connection points across connecting government entities, DICT could more effectively monitor and immediately terminate compromised connections to prevent the lateral spread of weaponized payloads from spreading or from further penetrating into interconnected critical government network infrastructures and servers.

The National API gateway serves as the principal connectivity channel to secure and encrypt inter-government data exchanges between the Philippines and other countries such as those connections that enable secure data exchanges for law enforcement and border protection, education and research, health, social services, cross-border paperless trade and trade facilitation, foreign affairs, science and technology, and tourism.

The vision of the National API Gateway is to extend the service across all public and private sector data exchange environments.

The Philippine National Public Key Infrastructure (PNPKI)

The PNPKI system is a production-ready, shared service system managed and administered by DICT that provides government agencies with the ability to provide trusted authentication facility for web applications, virtual private networks, wireless networks, as well as the ability to digitally sign and encrypt documents and electronic mail messages through the use of digital certificates or digital tokens.

The PNPKI is a service that is available for use by private individuals as well as by government agencies.

The Government Common Platform

Authoritative Registries

The Authoritative Registry environment provides the government with the capability to harmonize common data related to persons, transportation, business, and land, as well as reference data widely used as a standard across multiple domains such as those pertaining to industry, occupational and commodity classifications, tariff, geographical information, as well as regional and international data standards that are bound to unilateral or bilateral treaties or agreements.
The objective of implementing an environment that will house authoritative registries is to eliminate the need to have each government agency capture and maintain data already captured by another agency by providing the principal custodian with a secure facility to expose common data elements for the use of other agencies without the need to have the general public submit data more than once, or have another agency implement unnecessary measures or processes to validate the veracity of the data submitted by the transacting public, institution, or agency.

To reduce the amount of time required for agencies to begin migrating and consuming the available database facilities prepared for their authoritative data, DICT developed a De-duping and Matching Application (DMA). The DMA allows government agencies to match data from all their available (internal) data sources for de-duping as part of their data scrubbing and cleansing activities. The DMA is capable of processing or matching more than 100 million records in a matter of minutes when running on its own dedicated server.

With the Data Privacy Law now in full force, direct engagement with the owners of data, whether natural or juridical persons, is now a necessity and government agencies, particularly DICT, has to provision for the requisite environment to enable direct engagement with data owners.

The first version of the e-GMP targeted the build-up of an initial set of registries, namely: persons, business, transportation, facilities, and land. The present strategy will structure the registry environment with more granularity, distinguishing between registries that contain standard reference data, from registries that contain sensitive data that falls under the mandate and direct custodianship of a specific government agency. This effectively expands the number of registries that must be housed under a secure authoritative registry environment.

The authoritative registry, once fully deployed and in full use, will play a vital role in the implementation and sustainability of the National Single ID program of the national government as well as play an important role in establishing context-based digital trust framework.

The Philippine National Single Window (Tradenet.gov.ph)
The framework on operations and procedural interoperability (PeGIF 3.0) was executed through the Government Operations Management Platform or GOMP with the Trade Facilitation or National Single Window of the Philippines becoming the first large-scale, inter-agency tenant of this collaborative environment.

Under the standard framework on procedural interoperability (PeGIF 3.0), government operations were structured into standard process stages common across all agencies regardless of charter or mandate. These process categories are as follows: capture, store, route, dispense, pay, issuance, and measure.

Tradenet.gov.ph as the new Philippine National Single Window was a system designed and developed by DICT and is owned by the Philippine Government. It replaces the previous proprietary NSW system operated and maintained by the Bureau of Customs.

From the onset the Tradenet.gov.ph system was designed to allow the Philippines to leapfrog its automated trade facilitation capabilities. It was designed and built to cater to the specific needs of trade facilitation, increased transparency, procedural accountability, compliance with the World Trade Organization (WTO) and the World Customs Organization (WCO) data exchange standards. Furthermore, Tradenet.gov.ph was built to enhance the user experience of traders.
Unlike other government systems that focused on software-enabling existing agency procedures, Tradenet.gov.ph was built by the DICT to make the experience of the general public when transacting with government agencies pleasant, transparent, faceless, cashless, convenient, and eventually completely paperless.

Tradenet.gov.ph was scheduled to go into production release or general availability by July 2018. By this date, it was expected that the system could allow the agencies and the general public to transact seven regulated commodities with at least seven trade regulatory agencies trained in the use of the system.

The Government Operations Management Platform (GOMP)
The GOMP augments the capabilities of the iGov Infrastructure by provisioning: (a) a dedicated hybrid cloud environment by coupling a private cloud appliance with virtual private cloud virtual machine instances; (b) the provisioning of standard software development and deployment tools to help agencies automate workflows and processes; (c) technology environments integrated to National Government Portal, Business Intelligence and Analytics, Cybersecurity tools and, (d) access to authoritative registries and standard reference data repositories. These registries are intended to support the rapid development and deployment of applications for collaborative frontline (inter-agency), citizen-facing functions, giving subscribing departments or agencies as in the case of the National Single Window access to data common or standard across the whole of government such as harmonized tariff tables, business, and reference data such as standard industry classification, standard geographical codes, and so forth.

Lessons Learned and the Journey Forward
“The main challenge for introducing e-Government in developing countries is the lack of a well-planned strategic plan. In this sense, developing countries’ governments should understand the potential of ICT in introducing changes to domains far beyond structural tools. They are facing huge difficulties in developing technological capacity, allocating sufficient financial resources and adjusting institutional contexts accordingly.” (Muñoz and Bolivar 2018)5

e-Government is a journey that necessarily takes several years to fully implement and fully realize. As with every other country, whether developing, emerging, or advanced, what is important is that every country had to take that first step, and the Philippines has taken the step forward and started on this journey and continues to remain committed to the realization of the aspirations of the program.

As a country we have learned important lessons which we can collectively draw from as we move to the next stage of sophistication and development.

Change Mindsets, Change Behavior
Among the lessons we learned while implementing the different components of the program is that the key to successfully implementing e-government is bound to first changing mindsets and behavior.

When the government first embarked on this journey as early as 2000, most of the technologies that were to be adopted were at the leading edge of ICT and were consistent with the models employed by the private sector at the time the program was designed.

However, it must be noted that due to the prevailing mindset and behavioral constraints

5 Ibid., p.10
existing within the bureaucracy at that time, it took the government more than four years to fully execute “parts” of the program, so that by the time these programs were ready for use, most of these technologies that were implemented had already undergone numerous version releases.

To date, there remain agencies that continue to use proprietary legacy systems that were implemented more than a decade ago. These systems, being closed and proprietary, are in most cases, no longer supported by the developer or manufacturer of the product, but due to the nature of the services or data it houses, agencies are reluctant to change. Some of these systems took over five years to acquire and implement adding to their hesitation to modernize.

It is important for DICT to move faster than any other agency when it comes to the design, implementation, and roll-out of new shared services, and transform its internal operating mindset from a bureaucracy to a service-oriented, and service-driven professional services organization if it is to create real value.

Increase Technology Environment Utilization

It is also important to note that the absence of an organizational structure to promote and support agency onboarding has resulted in lower-than-expected utilization of iGov services.

The low utilization rate, as we learned during the focus group discussion conducted in the initial data gathering stages of developing the digital transformation strategy, is attributable to the conditions cited below:

- Agencies were not made fully aware of the existing services, do not fully understand how these services will benefit their organization, or do not know how to move forward with the information they received about the services. In most observed cases, agency personnel that participate in DICT sponsored technical updates are either too inexperienced, new to the organization, or motivated by personal development;
- The lack of training and capacity development programs, and/or the lack of funding on the part of the agency to sustain the use of available services was also a factor. This is further aggravated by the high attrition rates of qualified technical personnel leaving the agency;
- While agencies welcome the innovations introduced by the program, they are not convinced that government could handle production support requirements and sustain service level commitments they require to sustain public facing systems and services;
- Agencies (particularly the bigger and well-funded ones) remain hesitant to leave the proprietary technologies for the open-source systems advocated and offered by DICT. Their reasons range anywhere from avoiding the complexity of migration, preventing operational disruption, to reasons involving available staff competencies.
- Implicitly, maintaining the status quo is the safest posture as there are no explicit incentives for agencies to challenge or disrupt the status quo.

Invest in Increasing Speed of Acquisition, Implementation, and Improving Support Capabilities

Moving forward, it is important for government to put more emphasis on increasing the speed of acquisition and adoption of solutions by introducing essential programs that will systemically address the challenges it faces today. It is likewise important for government to invest heavily into developing organizational capability and
staff competencies that are well-suited to support national digital transformation. Most agencies resort to third-party managed services to support even the most basic of systems or programs.

Explicitly defined and designed use cases also need to be crafted in order to secure executive buy-in. As such, more emphasis on solutions architecture needs to be made so that digital transformation programs are sufficiently granular to address specific contextual needs of the different government agencies.

These persistent solutions modeling activities form part of a quality management process that institutionalizes a mindset of continuity integral to the culture of the operations environment. By doing so, quality management and continual improvement practices are no longer construed as mere project initiatives but as mainstays in the way government agencies work.

Invest in Awareness and Communication Campaigns
Out of sight, out of mind. Government must invest heavily in awareness and communication campaigns if it is to increase utilization.

This could be done by systemically enjoining the Presidential Communications Office to communicate the availability of services that are in production across the different departments, agencies, bureaus, colleges, universities, different sectoral clusters, as well as engage private sector channels to create public awareness.

How government communicates the availability of technology-enabled services within its ranks and to the private sector should take a form similar, if not completely emulating, the methods and tools employed by private sector companies to create public awareness of their products.
PART THREE: DIGITAL TRANSFORMATION AS A NATIONAL STRATEGY

The 2016 United Nations E-Government Survey groups the Philippines among ten countries\(^6\) that have made the leap in its E-Government Development Index from a mid-EGDI to a high-EGDI score (U.N. Department of Economic and Social Affairs 2016).\(^7\)

The improvements in the country’s EGDI ranking is due, in large part, to the ICT programs executed and implemented by both National and Local Government Units within the same period.

Moving forward, it is important for the government to orchestrate enabling programs and for the government to establish the requisite operational capabilities for it to sustain a progressive momentum, and for it to surpass previous achievements in the country’s EGDI ranking.

Sustaining a progressive momentum requires that we build on existing successes and avoid the temptation of “re-inventing” what is already in existence, since doing so will only introduce disruptive elements that stifles progress. The focus must be calibrated toward continual improvement rather than eradication.

To sustain progressive momentum, the country needs to view digital transformation as something more than just a temporary or expedient program or series of programs, but as its desired future state and as the national strategy.

Promoting digital transformation as a national strategy and not just a program is expected to provide the following outcomes:

1. Bring cohesion to the various automation and technology infrastructure development programs of the government. Given a top-down model most agencies are accustomed to, it has the potential of permeating the strategic and tactical areas of government operations by using learned behavior to the advantage of the country;
2. Rationalize the need for all software automation and infrastructure development initiatives across government to converge into a standards-based framework;
3. Promote opportunities for acculturation and re-habituation (mindset formation) to affect the way government executives and employees think and how they view their services—forcing them to view transformation as the rule rather than as an exception to the rule—persistently identifying areas for continual improvement.

Digital Transformation as a Platform of Government

The Mission

The mission of digital transformation as a national strategy is:

To embed the pursuit of service-orientation, procedural efficiency, and behavioral transformation into the very fabric of government operations.

This will be achieved by building upon the learnings and successes of its initial e-
Government programs towards the next level of sophistication in the areas of technology, process and procedural interoperability, data harmonization and standardization, service delivery and support capabilities, and transparent governance.

The Approach to Transformation
Digital transformation is a systemic, continual, and progressive process that must, out of necessity, build upon the successes of past initiatives for the simple reason that anything multiplied or divided by zero is zero.

By its nature, the underlying elements that comprise the foundation for digital transformation must evolve and change over time. Digital transformation initiatives must ideally employ the best of what ICT can offer. However, none of these elements should be bound to any single technology, process model, or management methodology—these elements are also subject to continual improvement and change.

It is a dynamic, evolving, shifting, impermanent and closed-loop process that needs to remain resilient and malleable if it is to remain relevant and responsive to the needs of its target beneficiaries, whether whole of government or by contextual domain.

What needs to remain consistent despite all the expected or planned changes is the continuity of government programs. The continuity of government programs hinges on the ability of both technocrats and bureaucrats in government to view digital transformation as an enabler. When all is said and done, digital transformation is about making things we have better. It is about taking an original idea and transforming the same into an end-product that is superior than when it was first implemented or adopted.

It is important to note that the e-government agenda we continue to pursue today were formed through a collaborative effort over which no single individual could claim credit for. In fact, the ideas we are now working with are mere improvements from past “government online” initiatives that evolved and were refined into what we now refer to as “e-Government”.

The End-States of Digital Transformation
Looking back at available extant materials published on the subject for the past decade, we could easily identify commonalities that revolve around motivations to: a) improve the efficiency and delivery of government product and services to its citizens and communities; and, b) promote and support the trade, economic, education, health, social welfare, infrastructure development, and security interests of the nation and its citizens.

Digital transformation envisions the following “end-states”:

a) Digital Transformation as a Platform of Transparency and Accountability in Governance;

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Figure 1 - Government Transformation Platforms in Perspective

8 The Government Information Systems Plan, Philippine E-Government Master Plan, pp. 5, 6
b) Digital Transformation as a Platform of Efficiency and Agility in Government Operations;

c) Digital Transformation as a Platform of Direct Citizen Engagement;

d) Digital Transformation as a Platform for Innovation;

Digital Transformation and Government 2.0

Applied Definition

E-government 2.0 refers to the inclusions of features like social web, user-generated content, the delivery and use of open data, and network effects through more user engagement (Boughzala, Janssen and Assar 2015).9

Many studies investigating e-Government have posited that many initiatives failed due to lack of consideration for the local contextual characteristics in the area in which it is implemented; limited consideration of the would-be users; inappropriate legal and institutional frameworks; incompatible government structures and e-Government solutions; limited consumer readiness (willingness to adopt and use the available services); a general lack of adequately and appropriately trained e-Government personnel; lack of sustained public leadership, commitment and institutionalization; lack of involvement of all stakeholders in the design of e-Government solutions; shift in the power relationships leading to ultimate failure in many of the e-Government initiatives; lack of responsive evaluation and monitoring, etc. (Gil-García and Pardo 2005; Kumar and Best 2006; Luk 2009; Wade and Grant 2010; Elkadi 2013; Joseph 2014; Anthopoulos et al. 2016)11

Figure 2 - E-Government evolution framework and maturity model (EUC 2009)10

The Objective

The objective of the Philippine Digital Transformation Strategy is to achieve genuine citizen engagement by institutionalizing closed-loop, multi-dimensional, and multi-directional communication channels. This is consistent with the OECD proposed model that involves information dissemination, consultation, and active participation (Muñoz and Bolivar 2018).12

Government 2.0 Characteristics

e-Government 2.0 or Gov2.0 is said to possess the following characteristics (Dimaio 2009):13

- It is citizen-driven
- It is employee-centric
- It keeps evolving
- It is transformational
- It requires a blend of planning and nurturing
- It needs pattern-based strategy capabilities; and,
- It calls for a new management style

Gov 2.0 dovetails from the use of Web 2.0 capabilities that heavily depends on social networking tools to create more intimate channels of communication, giving government agencies real-time feedback on

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9 Case Studies in e-Government 2.0, Changing Citizen Relationships, p.1
10 (Boughzala, Janssen and Assar 2015)
11 (Muñoz and Bolivar 2018)
12 Ibid, pp. 236, 237
the relevance and quality of service it provides the general public.

Boughzala (Boughzala, Janssen and Assar 2015) offers a more succinct enumeration of government 2.0 characteristics, as follows:

“Main characteristics of e-government 2.0 characteristics can be summarized as follows:

Community-driven: with social interactions among citizens, the government and citizens interact as equals. They are cooperating and co-creation in networks in which all parties contribute.

User-generated content and development. Users generate data in social networks or make use of open data by developing apps. Businesses and citizens outside the government become involved in crowdsourcing, provide suggestions for improvement, add ideas, and develop new applications, which can ultimately result in new type of business models.

Openness. Openness is a basic building block in e-Government 2.0. Public sector data is opened to the public and can be used to give insight into government operations, policy effects, and can also be used for private-sector innovation. If the opening of data creates transparency, it also generates new business.

Collaboration. Both citizens and government generate content, and interact with each other. The government becomes platform-based. We speak about Government as a platform (GaaP) in order to enable the development of communities for sharing, collaboration, co-creation and innovation.”

Lathrop states: “Across North America and around the world, citizens and public servants — influenced by social media, Web 2.0, open source software, and other social and technological developments — see growing pressure on governments to evolve. Seeking to respond to increasing citizen expectations around service delivery and effectiveness, these reformers envision governments that act

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Figure 1 - Comparing between characteristics of e-Government 1.0 from e-Government 2.0 (adapted from CITATION Bou15 ∩ 1033 (Boughzala, Janssen and Assar 2015), p.6)
as a platform: that share information (particularly raw data), are transparent in their operations and decision making, enable and leverage citizen-led projects, are effective conveners, and engage citizens’ requests, ideas, and feedback more intelligently” (Lathrop and Ruma 2010).14

Challenges Facing Gov 2.0
Despite the lack of a common agreement on a standard definition and implications of Gov 2.0, countries like Australia have widely embraced Gov 2.0 ideals as demonstrated in its wide adoption of both Facebook and Twitter as real-time communication channels connecting government to its citizens and constituents. Australia has over 370 official Facebook accounts and 400 official twitter accounts. For practitioners, Gov2.0 currently has no systematic means to determine the way it should be used to achieve public value. In addition, efforts of government agencies to use citizen engagement as a vehicle for public value will have meaning only if citizens know how such a relationship is likely to benefit both parties (Muñoz and Bolivar 2018) (Boughzala, Janssen and Assar 2015).15

Gov 2.0 mechanisms are not without its problems as most social networking channels remain unmoderated channels and are not equipped with the facility to credibly establish the identity of individual accounts using methods or standards that are acceptable or are widely in use by government or by enterprises that depend on credible and government validated identity.

Unlike most western countries that have the funds, technological maturity, and capability to validate identities, or whose legislative environment provides the government with the explicit authority to do so, the Philippines is just now slowly developing capabilities in these areas.

Below is an enumeration of some the more prominent issues that will require further research and study as the Philippines pursues a higher maturity level toward Government 2.0 and beyond.

- Security and hacking – due to the introduction of Web 2.0 technologies, the government exposes itself more to a lot of security/hacking issues such as identity theft, fraud, forgery, data leakage, insider trading, etc.;
- Labor effort – fostering exchange and participation with and among citizens, the government may encounter limitations in its ability to respond to all the requests;
- Network operations – government and citizens/businesses operate in loosely coupled networks. These networks need to be managed and orchestrated. Changes might be outside the government boundaries and need to be monitored;
- Sustaining a community – fostering common interests to encourage active participation needs to be reinforced (“who do we keep citizens/businesses interested enough to remain engaged?”);
- Loss of control – there is a need to define the degree of transparency (moderated transparency) as too much transparency may lead the government to lose control over the mastery of its information systems and legitimacy in its relationships with citizens;
- New systems and processes – E-Government 2.0 requires the development of new systems


15 International E-Government Development, Policy, Implementation and Best Practice, p.345 (e-ISBN 978-3-319-63284-1)
operating within a larger organizational network and new processes for facilitating Government 2.0;

- Institutional change – the introduction of openness and transparency will force institutional changes in the way government operates and is organized;
- Intellectual rights – collective intelligence raises the problem of intellectual property which is difficult to prove within a mass of efforts;
- Personal data and privacy – Web 2.0 has always raised the lack of protection of private data. The risk with e-government 2.0 is even more since it deals with the personal identity and identification;

In addition to the aforementioned, the following areas need additional research and study:

- Infrastructure and procedural interoperability;
- End-user adoption and trust
- Anonymous access provision
- Format interoperability
- Business models
- Quality issues
- Juridical implementation issues
- Linkage between identification and credential authentication;
- Organizational transformation
- Citizen-centered design
- Elicitation of best practices (from design to continual improvement);

While a lack of agreement on the definition and implications of Gov 2.0 exists, most academics and government practitioners agree that the implicit agenda of Gov 2.0 has to do with value co-creation. Gov 2.0 provides interactive platforms whereby multi-dimensional sharing and co-creation of public value may exist.16

**Government as a Platform**

This body of work on Gov 2.0 tends to focus on the government-citizen relationship, and as such describes them as demand versus supply dimension, government-to-citizen (G2C) and citizen-to-government (C2G) collaborations (Jaeger 2003).17

In an article published by the online magazine *TechCrunch* in 2009, contributing writer Tim O’Reilly argues that, “the real success of Government 2.0 is thinking of government as a platform.” Although related, acquiring technology platforms is only a means to an end. The end being for government to become a platform.

Under the current e-Government related programs of the Philippines, as championed by DICT, much of the work focused on acquiring technology platforms that traverse the physical to software tiers of the ICT stack. In the push toward Government 2.0, the push will be to transform government into a platform.

**Rapidly Build Content and Relevance**

The next logical step is to calibrate the focus of the next generation e-Government programs to rapidly developing and delivering materially beneficial functions and content. It is important to focus on delivering relevant content in the form of applications that aim to make the lives of citizens and the transacting public better, rather than on focusing heavily on generating data as an end-all. Data taken out of context is a pre-text. In other words, it is just plain noise. Useful data is a product generated from the use of relevant and beneficial services, whether these be public facing or inter-agency enabling.

16 *Ibid, p. 236*

17 *Ibid, p. 236*

Digital Transformation as a Platform of Transparency and Accountability in Governance

Applied Definition
Transparency and accountability in governance requires more than just the publication or conspicuous posting of a citizen’s charter on the walls of a government agency’s reception area.

Transparency involves process and procedural accountability.

Deficiencies in Current Practices
The conventional method where an agency simply indicates the amount of time it requires to complete a step toward the delivery of their service was never sufficient. All this does is tell the general public how the internal bureaucracy of the agency works.

In this regard, despite all the updates made to an agency’s citizen charter, agencies still fail to view their service levels from the perspective of the customer. It is one-sided and with no transparent channel for customers to provide real-time feedback. It tends to strengthen the bureaucracy rather than reduce it, as it does nothing to ease the overall transactional experience of the general public when dealing with the agency.

Current practices are introverted and institutionalize latency in the delivery of services. Instead of targeting the immediate fulfillment and delivery of a service and increasing the output of what can be immediately delivered per person per hour, the publicly posted duration stating how long the transacting public would have to wait to expect to have their request fulfilled or delivered only benefits the agency and does not by any means benefit the transacting public.

Agency service level durations were crafted as a convenience to the agency (and in most cases, in response to some political clamor) and not necessarily with the better interest of the general public in mind.

Service Extroversion through ICT
There is a pressing need to continue to advocate procedural accountability by transforming the way work is done. Government agencies need to transition from a highly manual and agency-centric way of doing things, to an ICT-enabled and customer-centric way, enabled with workflows that track details of how work is performed, who performed it, and when it was performed. Tracking must provide granular level details in real-time—allowing the transacting public to know the status of their requests at any given point in time.

This level of transparency will force procedural accountability given that work behaviors and output (departmental or individual) becomes visible to multiple actors or stakeholders across several layers of the organizational hierarchy (transacting public, staff, supervisor, head of agency, and even the president) and across the spectrum of each value-chain.

Procedural accountability answers questions such as: “What is the task?”, “Who is doing it, or who is responsible for it?” and, “How long did it take to accomplish the task?”.

More importantly, it provides the transacting public or citizens with information that is actionable from their end, empowering them to act, rather than being forced to wait for the agency to find the time to respond to their requests. It transforms the bureaucracy into a service-oriented organization.

By enhancing transparency in governance, the government, as a whole, can more than conform to the provisions and prescriptions of RA 9485 (also known as the Anti-Red Tape Act of 2007) which aims to not only to reduce
the bureaucracy in government but more importantly improve the efficiency, quality, speed of disposition, and delivery of government services to the general public.

Digital Transformation as a Platform of Efficiency and Agility in Government Operations

Applied Practices
Increasing the speed and agility of government agencies in the delivery of its services to the general public will remain the heart of the government’s anti-red tape programs. It isn’t about how government does it that matters but that it gets done as quickly as possible.

Opacity in Government Operations
Government needs to liberate itself from maintaining a double standard when it comes to managing its service level commitments. The service levels agencies commit to when dealing with the general public is different from what they use when dealing with another government agency.

This disparity reinforces opaque practices which then reinforces perception problems particularly for government services that are dependent on inter-agency collaboration.

How could an agency commit to deliver a frontline service in less time than the number of days it takes to interact with another agency?

In the current environment, a government agency delivers its services in a manner far removed from the vantage or better interest of the transacting public.

Agencies argue that complying with a provision of law they are bound to remains of paramount importance to them.

Making Efficiency and Agility Integral
Efficiency and a sense of expediency need to be made integral to the way government agencies design their service processes and procedures. Government agencies must understand that unnecessary delays from their end could result in material consequences detrimental to the security, health, and well-being of persons, families, communities, businesses, and industry at large.

Agility in operations must also be made an important performance indicator of the agency in the dispensation of its duties.

Government needs to quickly pivot and respond to the dynamics driving the various conditions within the country be it security, economic, health, social welfare, law enforcement, peace and order, disaster or natural calamity.

Service efficiency and agility in the delivery of a service are naturally and inextricably bound to the levels of transparency of governance employed by government agencies. Process and procedural opacity reinforces inefficiency. The more transparent the process and procedural environment, the more efficient the operating environment becomes.

Digital Transformation as a Platform of Direct Citizen Engagement
Digital transformation programs made outside the context of serving and interacting with its citizens and general public will remain a novelty—a pretext.

Applied Principle
“e-Government has the potential to involve citizens in the governance process by engaging them in interaction with policymakers through the policy cycle (Callanan 2005). Strengthening civic engagement contributes to
building public trust in government” (Muñoz and Bolivar 2018).

Direct engagement provides citizens with the highest value proposition from government as it not only serves as a facility for citizens to participate in the governance process, but also gives them [citizens] the near real-time ability to manage and control how government uses and shares their personal data. Providing secure channels for data owners to control access to their personal data is a sustainable way of addressing data privacy concerns given the “direct” involvement of the data owner in providing consent to store and share their details with other government agencies.

Mutually Beneficial Opportunities

Direct engagement offers mutually beneficial opportunities for both the citizen and government.

From the vantage of the citizen, channels for direct engagement promote a spirit of inclusion and active participation. Furthermore, it provides a convenient way for citizens to establish a portable, credible, and valid online persona allowing them to maximize the use of available online transactional systems of the government while eliminating the need to submit physical documents (usually certified true copies) to support their identity.

Direct citizen engagement provides government with up-to-date data to populate its authoritative registries and improve data enrichment capabilities. Authoritative registries provide a neutral facility for inter-agency data sharing without requiring agencies to directly expose their data environments to external parties including other government agencies.

Current Capabilities

The environment housing the government’s authoritative registries were implemented with the capability to securely store transactional and and/or activity metadata. Used effectively, these facilities will allow agencies to store activity logs to help agencies check for consistencies and/or inconsistencies between the data provided to them by the transacting public. Validation could be an entirely automated process that consumes stored metadata (in much the same way as most social media applications do today) without the need to expose sensitive elements of the citizen’s personal data.

Protecting Citizens’ Personal Data

It must be noted that RA 10173, also known as the Data Privacy Act of 2012, does not inhibit or discourage data sharing. It does not work against transparency embodied in open data principles. What it does provide, however, is a set of general principles to guide individuals or corporations (public or private) on the use and proper handling of sensitive personal information (SPI) or personally identifiable information (PII).

Also noteworthy is the fact that by eliminating personally identifiable information from the data set, what remains is no longer considered sensitive personal information. The resulting sanitized data set then becomes usable for statistical modeling and analysis purposes and can be shared internally among authorized government agencies. Certain caveats still need to be observed even when handling sanitized information. This is due to the reality that even sanitized information, when bound to an identifiable domain or context, can provide a basis for extrapolation and could, even unintentionally, expose national security interests—disclosing details about trade, the local economy, law enforcement, the movement of goods, and even activities related to border protection and national defense.

Government protection of citizens’ privacy has two dimensions. The first one involves the privacy statements on local government websites, clearly informing public users how

19 Ibid, p.5
their personal information is collected, stored, and used. The second dimension relates to how governments adopt laws and technologies to protect the safety of public users’ personal information and data after governments collect this information. Although privacy statements are not the whole of privacy protection, they are the primary and foundational step, as it is the “contract” between government and public users. Privacy can only be well protected when users clearly understand how their data is collected, stored, and used. (Muñoz and Bolivar 2018)²⁰

Most government agencies capture and store sensitive personal information from the transacting public for them to perform their functions. Whether these be to record a birth, death, or marriage; maintain records of education, health coverage, social security, or tax identification. Agencies that regulate these activities append additional transactions-related data such as payments, service acquisitions (such as health or pensions), contributions, or liabilities owed to the government to the personal record of the private individual.

Reddick and Zheng argue that: “There are many different definitions of privacy but at its core the central element is the ability of individuals to choose if, when, and to what extent they interact and reveal information about themselves to others (Wu 2014). Information privacy is the desire of individuals to control, or at least have some influence over, data about themselves (Bélanger and Crossler 2011). Advances in e-government have created more concerns about information privacy and its impact on individuals. Bannister (2005) argues that information privacy is the right to privacy of one’s personal information.” (Reddick and Zheng 2018)

²⁰ International E-Government Development, Policy, Implementation and Best Practice, p.97

Government agencies are bound to impose rigid propriety and privacy safeguards as prescribed in their respective charters. These safeguards restrict them from sharing the data even with other government agencies. Past attempts to enjoin agencies to expose a limited number of data elements about a person’s record were naturally met with resistance, not because they refuse to share, but because they are legally prevented from sharing these elements without proper legislative support.

Proper classification must be made when it comes to what aspects of “personal” record could and could not be shared. The data record set of any agency database could easily be classified into two primary types: personally identifiable, and transactional. From an agency’s perspective, the “common” elements pertain to the personally identifiable records, leaving only the transactional records as agency-specific in nature.

The moment we remove the personally identifiable data elements from a tax payment transaction, for example, we can immediately even use the specific and granular values of tax liability and actual payments without violating data privacy principles.

All it takes is employing a method of abstracting or obfuscating the transactional values from the unique tax identification numbers. This will give both BIR, DOF, and even the Economic Development Cluster of the country, a near real-time, credible, and accurate view into the performance of each Revenue District Office (which is technically a public record) without violating privacy laws, without disclosing individual financial details, and without violating BIR specific mandates (Bureau of Internal Revenue 2014)²¹.

A Practical Approach
The government can avoid the circuitous, and often complex, protocols involved in getting

its agencies to expose their data by sourcing “common” data directly from the citizens or the owner of the data. By sourcing “source data” directly from the owners of data, via the Department of Information and Communications Technology\(^{22}\), and establishing consent before data elements are transmitted and appended to an agency’s transactional records, government could, through DICT, avoid legal interpretations that may construe the sharing of data illegal the moment the same data gets stored onto an agency’s database.

The collected information could then be securely checked against existing but more restricted environments using web services that employ a Boolean response method so as not to require the systems of custodian agencies to disclose any more than a “yes” or “no”.

The onus of providing accurate data rests on the shoulders of the transacting public whose responsibility it is to provide government with accurate data.\(^{23}\)

Government must provide and maintain a secure environment that assures immutability (using available encryption-at-rest capabilities) across all registries or repositories.

Government must also provide a well-defined and well-designed ecosystem enabled by a supporting technology infrastructure, policies, processes, procedures that promote a contextual trust framework.

Furthermore, government will be able to boost and scale-up systems that promote inter-agency collaboration and data cross-checking which serve as a persistent mechanism to validate specifics about a transactional record thereby progressively improving the quality, credibility and accuracy of shared data, person identification, as well as enhance the quality of data of the interactions between citizens and government agencies regardless of geography.

Digital Transformation as a Platform of Innovation

“The Philippine economy posted a 6.9 percent growth in 2016, from a 6.1 percent growth in 2015 driven by the faster growth of Industry and Services…Industry grew by 8.4 percent in 2016 while Services recorded a 7.4 percent growth.” (Philippine Statistics Authority 2017)

The recorded upward trend in non-agriculture related areas with respect to the overall GDP performance of the Philippines provides insight into the areas of strength and weakness of the Philippine economy that need support from government.

Taking this data and framing the same within the context of digital transformation, it could be argued that by becoming a platform of innovation, government could systemically orchestrate its resources to build on the economy’s current strengths while simultaneously providing intervention strategies in the economy’s weak points.

Open Collaboration

By openly engaging citizens and businesses government is in a unique position to moderate and facilitate the open collaboration across the economic value chain with the desired end of creating new knowledge that become the basis for creating new products.

At present, innovation is generated exclusively by the private sector whose end-products are packaged and exported externally, then re-packaged again to be imported back in-country at a higher price point.

The underlying dynamics that inhibits our ability to create new knowledge and/or products are due to our inability to provide

\(^{22}\) Sections 3 and 6 III (f), Republic Act 10844.

\(^{23}\) This is the only practical way of successfully delivering on the aspiration to have citizens submit their data to government only once.
local engineers, scientists, domain experts, and inventors with a suitable platform (or incubation facility) to develop and build on their ideas with the end-goal of positioning the country as a competitive player in terms of innovation.

Learning Laboratories
A system of learning laboratories, in partnership with both private sector companies and qualified academic institutions (public and private), needs to be established and moderated by government if we are to promote the type of innovation that materially benefits the marginalized sectors of the economy and country. These learning laboratories will provide a platform from which theoretical and applied disciplines can converge, and from which new areas of knowledge could be mapped and developed. By providing a platform where agriculturists, for example, could create new products and/or services using ICT as a tool, government will be able to pave the way for local and foreign investors involved in agriculture, to actively invest in government-backed development programs.

Strengthening R&D
Becoming a platform of innovation also allows government to institutionalize genuine research and development work in targeted areas without the need to force fit the design of a program only to secure the necessary funding.

Moving toward the desired end envisioned by the Government 2.0 model, and given the reality of local political cycles, it is essential for government to execute simultaneous and parallel programs that traverse the functional, administrative, and technological spectrum and to execute the same within the shortest time possible if only to avoid the protraction that accompanies current modes of procurement and/or acquisition.

Targeted Innovation
Targeted innovation equips the government with the tools and capability to future-proof its enterprise in a proactive manner by leveraging the use of intellectual and physical assets it would have produced through these transformation programs and learning laboratories to address both the current and emerging requirements of government.

The emergence of new requirements in an ICT-enabled government is perpetual in nature. As such, government must be able to foresee future requirements at least 3 years before those ideas become a real-world requirement or before the general public demands it.

There is much research work that must be accomplished covering the inter-related and inter-disciplinary areas of policy, technology, and process as stated in the earlier section on Challenges Facing Gov 2.0—each affecting the efficacy and sustainability of digital transformation as a national strategy.

Also, as enumerated earlier, research and development work are not restricted to producing only the technological components but also involves work on how to close the gaps between policy, process, and technology.

Boughzala argues that, “Web 2.0 is not a technical standard or an update to the early standard (i.e., Web 1.0), but it reflects the changes in the way people use the Web.” As such, this opens up several additional areas of research requiring innovation involving the behavioral aspects affecting policy, development, implementation, organizational design, and lifecycle management.

24 (Boughzala, Janssen and Assar 2015)
PART FOUR: QUALITY DIMENSIONS OF DIGITAL TRANSFORMATION

Introduction
Having established the context of the Philippine Digital Transformation Strategy, as the platform for: a) transparency and accountability in governance; b) efficiency and agility in government operations; and c) direct citizen engagement, we now lay out the critical-to-quality dimensions of digital transformation that needs to be comprehensively addressed throughout the effective life of the same, or until 2022.

These critical-to-quality dimensions will provide the necessary context for government to craft and execute programs to meet its “government as a platform” objectives and fulfill its mission to build toward the next level of sophistication in government.

Overview of the Quality Dimensions
The critical to quality dimensions pertain to areas within the scope of a defined strategy or procedure that deliver the highest value or immediate benefit.

With regard to digital transformation, these dimensions are as follows:

- Government and Society;
- Economy; and,
- Technology

It must be noted that these dimensions do not necessarily reflect the way government has currently structured its programs into the 13 clusters defined under MITHI.25

Instead, these dimensions condense the effort required to achieve the objectives of its digital transformation program into a more calibrated focus.

While remaining sufficiently broad to allow flexibility in prioritizing which programs or projects have to first be implemented, it must also provide sufficient granularity to allow executives to monitor performance and progress of agencies under their supervision.

Figure 4 illustrates the intersecting and reinforcing relationships each dimension shares with the other. It further illustrates how converging these three dimensions under a common agenda of digital transformation provides strategic cohesion which will naturally reinforce the capability of each dimension to deliver the expected quality-driven and value-based outputs critical to digital transformation.

Condensing the collaborative clusters into three dimensions paves the way for government to more effectively pursue an Open Government model.

It is important to note that these dimensions are integral to the function, mandate, and service portfolio of each of the 20

25 Source: http://mithi.gov.ph/clusters/
departments, 223 government agencies, and 87 government-owned and controlled corporations or GOCC’s.

Regardless of mandate or service charter, all agencies have a responsibility to safeguard society, contribute to the well-being of people and the economy, and must adopt technology to better serve the people.

**Executability of Strategy**

An important consideration in the formulation of any strategy is its executability. The ability to execute a plan from paper to the realization of its full potential is an important performance metric an enterprise needs to measure itself against when crafting a strategy.

Government enterprises have to reckon with their limitations in terms of management and physical resources that are at their disposal. Awash with “strategic documents,” a government needs to be cognizant of its inherent limitations.

Focusing on executability this strategy aggregates the governance into the stated critical-to-quality dimensions to enable DICT to more effectively deploy dedicated resources and organize the governance of each dimension in a way that avoids functional overlaps, disparity in resource utilization, while simultaneously reinforcing inter-agency collaboration and cooperation.

This structural calibration is important to increase the program footprint of each MITHI cluster. A persisting problem is the ratio between the available number of resources DICT could dedicate against the number of defined MITHI clusters—each cluster being dependent on DICT to provide technology guidance and leadership. By consolidating MITHI clusters into defined dimensions, DICT resources could be more effectively distributed across three groups instead of 13 groups.

The composition of each MITHI cluster, however, will remain unchanged, as these clusters reflect the explicit and dominant areas that affect the national development agenda.

This structural calibration also sets in place a way to promote value co-creation across interacting agencies and sectoral clusters. Agencies that work together in a defined governance structure or within a collaborative group, stand to benefit more than if they were to work in isolation from each other. Furthermore, under this aggregated structure, the government could increase the potential of maximizing re-use or utilization of available technology infrastructure and shared resources made available for the whole of government.

The resulting interaction between each dimension creates a reinforcing loop (positive and negative) that will make the necessity of close collaboration between agencies a tactical requirement. Collaboration will bring about a progressive improvement in the levels of trust between collaborating agencies, the applied levels of transparency, the procedural accountability not only between agencies, but also in the levels of transparency and process accountability extended or exposed to the transacting public.

**The Dimension of Government and Society**

The dimension of government and society encapsulates into a single dimension the governance, as well as the regulatory and service functions government provides its citizens and the country as a whole involving the security, health and well-being interests of citizens. This is inclusive of government administrative and frontline operations, social welfare, consumer protection, food safety, environment, justice and law enforcement, national defense, disaster risk management, education, and health services.
The Dimension of Economy
The dimension of economy encapsulates into a single dimension the regulatory and service functions government provides its citizens and the country as a whole that are essential to economic development and related to business, trade, manufacturing, tourism, banking and finance, infrastructure, and revenue generation.

The domain areas encapsulated in this dimension are areas measured under the World Bank’s Global Competitiveness Scorecard (Department of Trade and Industry - Competitiveness Bureau 2018). As such, it would be more efficient if these interrelated domains were governed as a single dimension to ensure that each agency tasked to improve a specific domain are able to develop cohesive strategies alongside other agencies to systemically and collectively address and improve the competitive environment of the country.

The Dimension of Technology
Technology is without question a strategic enabler of government. It enables the government to efficiently deliver the expected services encapsulated in the two other dimensions.

The dimension of technology encapsulates into a single dimension the ICT-enabled regulatory and service functions (traversing the dimensions of government and society as well as the dimension of economy) government provides its citizens. This includes the communications infrastructure, and internet access as embodied in the National Broadband Plan or NBP, as well as the ICT shared services infrastructure, database environment, integration engine, and the policy frameworks as implemented by the Integrated Government Philippines (iGov) and the National Government Portal programs of government.

Muñoz provides the following observation: “Current thinking is that failure of e-Government projects occurs right at the design stage and not the implementation stage (Anthopoulos et al. 2016). On the other hand, success has largely been achieved by designing e-Government solutions that are non-rigid and able to transform given the evolution of technology or citizens’ needs, highly integrated e-Government solutions into government business processes, robust teams of experts, etc. (Jaeger and Bertot 2010; Joseph 2014). It is anticipated that successful e-Government design needs to consider all the individual, organizational, managerial and technological issues in a given context and should, at the onset, incorporate all these in its design” (Muñoz and Bolivar 2018).

As the common and persistent dimension traversing the dimensions of government, society, and economy, the technology dimension is uniquely positioned to provide a non-rigid, resilient framework to support current requirements and adapt to the changing needs specific to each of the specified dimensions.

Quality Dimensions in the Context of Government Transformation Platforms
Figure 5 represents the nuclear role of digital transformation as a dimension that permeates the different CTQ dimensions framed within the context of the four targeted government transformation platforms.
Also, digital transformation, as illustrated in Figure 5, could be viewed as both a permeating element and glue that binds together the various dimensions into a cohesive and holistic strategy in the delivery or realization of the targeted government transformation platforms.

The Systemic Whole and the Parts that are Simultaneously Functional Wholes

While variations will surface in the way agencies implement the four targeted transformation platforms, clustering the execution into orchestrated activities of agencies by quality dimension will provide an opportunity to harmonize designs that deliver a cohesive and unified output.

If we were to visualize the structural intricacies that result from clustering designs according to quality dimension, the resulting representation will look more like a fractal structure (see Figure 6) rather than a hierarchical one with each fragment of a fractal being an exact replica of the larger composite image, and where each fractal fragment, being a part, is simultaneously itself a whole.

Each agency is a fragment of the larger, composite fractal that is government. The role of each agency, as a fragment of government, plays a part in completing the overall mandate of the people to government. Deviation from this overall design results in a distortion that affects the symmetry of the whole, and perception of people as a whole.

Neger in his introduction to fractal geometry writes: "I find the ideas in the fractals, both as a body of knowledge and as a metaphor, an

26 An Escheresque fractal by Peter Raedschelders (Frame, Mandelbrot and Neger 2018)
incredibly important way of looking at the world.” Vice President and Nobel Laureate Al Gore, New York Times, Wednesday, June 21, 2000 (Frame, Mandelbrot and Neger 2018).

Emphasis must again be given to the importance of designing the desired future states of transformation from the perspective of the citizen as opposed to crafting designs that serve to reinforce the interests of the bureaucracy existing within government agencies.

Appreciating this “fractal” characteristic that will lead process architects and analysts to design or re-engineer the operations environment of a government agency to manifest predictability in the way the agency interacts or transacts with the general public, with their employees, and with other government agencies.

**Predictability**, in general, is a constructive characteristic when it comes to the quality, agility, and efficiency of government service. Although there are several essential characteristics that must be subjected to reform, understandably it is the predictability of service that influences public perception since when all is said and done, the general public is not at all that interested in how things are done but that it gets done. The emphasis on the “how” is a matter that concerns quality managers but is one that must remain transparent to the general or transacting public. When the general public requests for a service, they simply expect to receive that service at the quickest time possible.

Although deviations in transactions are expected to occur, deviations must remain an exception rather than the rule when dealing or transacting with government.

Service predictability is a palpable characteristic the general public (citizens and/or tourists) immediately evident in the experience and is most often what people reference when comparing one country from another. Predictability is implicit to the Global Competitiveness Report Card (GCRC) published by the National Competitiveness Center (NCC). Listed below are the metrics that comprise the GCRC:

1. Doing Business Report (IFC)
2. Economic Freedom Index (HF)
3. Corruption Perceptions Index (TI)
4. Global Competitiveness Index (WEF)
5. Global Enabling Trade Index (WEF)
6. Travel and Tourism Report (WEF)
7. Global Innovation Index (WIPO)
8. Global Information Technology Report (WEF)
9. E-Government Index (UN)
10. Fragile States Index (FFP)
11. Global Gender Gap Report (WEF)
12. World Competitiveness Report (IMD)
13. Logistics Performance Index (WB)

These indices are meant to be systemic in coverage and nature. This means that every indicator, measured at the national level, has to factor in the interactions or transaction between respective government agencies and the transacting public along with the reforms and/or transformation programs government entities are individually pursuing as a function of ranking the performance of government within the parameters of each index.

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27 **IFC** - International Finance Corporation ([www.ifc.org](http://www.ifc.org))
28 **HF** - Heritage Foundation ([www.herdage.org](http://www.herdage.org))
29 **TI** - Transparency International ([www.transparency.org](http://www.transparency.org))
30 **WEF** - World Economic Forum ([www.weforum.org](http://www.weforum.org))
31 **WIPO** - World Intellectual Property Organization ([www.wipo.int](http://www.wipo.int))
33 **FFP** - Fund for Peace ([www.fundforpeace.org](http://www.fundforpeace.org))
34 **IMD** - International Institute of Management Development ([www.worldcompetitiveness.imd.org](http://www.worldcompetitiveness.imd.org))
The performance of even the most remote agency reflects on the state of the whole government whether positively or negatively. This is again particularly pronounced with government services and products that are commonly or frequently accessed by the general public. The performance of a single agency frequently accessed by the general public always reflects on the condition of the whole of government. This is why predictability of service and output must be practiced across the whole of government.

The impact of rankings issued by each index proponent has the potential of severely impacting an entire country, as in the case of Chile’s 2017 World Bank ranking.36

Systemic Reinforcement of Positive Loops

Figure 7 frames the reinforcing loops or cycles of an agency’s activities occurring within the context of each dimension, and how each critical-to-quality dimension provide a related context of execution equally essential to achieve digital transformation.

This reinforcing positive loop occurs as follows: As an agency directly engages citizens, the agency is made aware of areas that require enhanced transparency and accountability in the way it operates.

The knowledge derived from working to enhance transparency will consequently result in, or open up, opportunities for the agency to objectively streamline its operations and disclosures so that it is able to deliver its products and/or services in an extroverted, agile, and efficient manner always with the advantage of the transacting public in mind.

The lessons learned from streamlining activities will subsequently trigger opportunities for innovation that will in turn trigger a new cycle of improvement as information is looped-back and applied to each respective critical-to-quality dimension.

Figure 7 illustrates the relationship each dimension plays in reinforcing holism in the way activities and the underlying relationships between each are viewed and understood, where transformation programs that seek to transform government- and society-related product and services reinforce economic viability, and how the quality dimension of technology mutually reinforces the other two dimensions.

government to strengthen its collaboration, control, and coordination functions in working together as a system of government and not as isolated compartments within government in pursuit of progressively accomplishing the stated mission of digital transformation: “to embed the pursuit of service-orientation, procedural efficiency, and behavioral transformation into the very fabric of government operations…”

Innovation will reinforce a culture of learning not only in determining what agencies need to learn, but also in designing how they learn, and defining how they source and produce materials. The use of learning laboratories will provide a platform for innovation that promotes an active and participatory learning environment that could be made specific to the operational context or domain of expertise of the participating agency or collaboration of agencies. As stated in an earlier section, learning laboratories will involve active participation from three primary sources: industry, academe, and the agency.

A culture of learning reinforced by learning laboratories (see Figure 8) brings together learning materials from multiple sources to bear on providing sustainable solutions to business problems that are both persistent (behavioral and policy driven), and dynamic (market/environment driven) in nature. The collaboration between these sources is a wellspring for value co-creation that promotes the generation of new knowledge which in turn leads to the development of new products or services.

Learning laboratories are as naturally self-propagating as they are self-organizing. A single subject matter area, for example, naturally consists of several related topics or area of expertise, each able to generate a substantial amount of content to support its own learning ecosystem.

The challenge government often encounters when dealing with learning is the myopia that accompanies a learning program. Due to archaic methods of measuring output and the reality of resource limitations, topics that are

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37 Collaboration, coordination, and control are core constructs of organizational cybernetics and the Viable Systems Approach.

38 Learning Laboratories, p.

39 In a collaborative structure, such as the learning laboratory, the intellectual capital generated by shared efforts would be shared between collaborating entities.
considered beyond the scope of a learning program are typically set aside and forgotten almost always to the disadvantage of “learners”. Learning laboratories encourage and promote cognitive diversity, development domain specialization, and the progressive development of applied methodologies to create, as Leonard describes it, “wellsprings of knowledge” (Leonard 1998). As such, it presents a more sustainable alternative, or replacement, to the archaic methods currently used by government.

Given the fact that learning is an important component that needs to persist within each of the targeted transformation platforms, government needs to explicitly define, fund, support, and sustain a learning program that promotes the development of cognitive diversity and domain specialization and a program that supports natural self-propagation and self-organization.

These learning laboratories will produce, as a benefit to the people, a rich wellspring of knowledge and an abundance of research materials the learning collaborative could use to generate new knowledge and new products.

Informed and Intelligent Policy Development
Policy is the “glue” that binds the various dimensions described in this section into a cohesive and systemic digital transformation strategy.

The current policy environment in support of e-Government is lacking and fragmented. Much of the existing policies in the area of e-Government produced prior to the creation of DICT are limited in the scope of its functional coverage, its mandate, and therefore limited in its efficacy.

Government will need to produce policies or enabling legislation that explicitly bind the relationship between the stated quality dimensions and establish the interdependencies between each as reinforcing mechanisms that promote national interest and enabled by the digital transformation strategy.

The resulting set of policies or legislation, as a matter of differentiation, must provide explicit metrics supported by a measurement algorithm that covers the full process environment—from the creation of policy down to its procedural execution.

Data transformed into actionable information is key to developing informed and intelligent policies. In order to produce informed and intelligent policies, policy developers at the department or agency levels must have access to enriched and up-to-date data/information repositories along with the essential modeling and visualization software that provide policy developers with essential business intelligence tools they will need to support their policy development initiatives efficiently—without having to ask each agency to submit reports on the state of its operations.

The development of intelligent policies also depends on a well-informed public achieved through the open data program of government. However, it is insufficient for government to provide raw data for the general public to consume. It is important to ensure that elements available in raw format could be
understood in its proper context for the data to be useful. Without an understanding of context, data remains raw. The danger here is that outside its context, raw data could be made to convey information crafted in pretext.

Open data promotes the development of an intelligent and well-informed constituency—an essential characteristic of a participatory model of government espoused by the general constructs of Government 2.0. And more importantly, an informed constituency promotes the development of intelligent policies and legislation.

The Systems and Technology Environment Supporting the Quality Dimensions of Transformation

The systems and technology environment that supports the quality dimensions of digital transformation will be a compilation of context-driven technology platforms.

Deliver Technology Platforms, not Software Applications

To achieve the goal of digital transformation it is important for this strategy to deliver the requisite technology platforms designed to support the needs, operational requirements, and information exchange of collaborative groups to deliver solutions across the targeted government transformation platforms within the context of the quality dimensions defined earlier.

As such, the focus should not be on delivering applications per se, but on delivering an environment that will house the various applications to support the objectives of each agency, and for agencies within each collaborative to deliver the requirements in the context of each dimension and government transformation platform.

Value Co-Creation

Figure 9 illustrates how the delivery of context-driven technology platform serves as the intersection point where value co-creation is realized. Noticeably absent is any reference to a specific line of business software application.

To promote and expedite the deployment and use of context-specific line of business software applications, it is important to provide a “launch pad” of sorts, where both private and public-sector entities can genuinely collaborate to deliver meaningful and valuable software systems within the shortest possible time. This, however, cannot be achieved efficiently if each line of business software application needs to support and sustain its own underlying stack, or if government platforms have to deliver frontline business software applications.

Once again, the objective is to provide agencies and/or a collaboration of agencies a set of common technologies suited for each respective context. This is to avoid a “cookie-cutter” or “one-size-fits-all” approach to transformation. The technology platform will serve as the glue that binds a common technology foundation to a common set of functions or services that will be made accessible as common components to specific line of business software applications of individual agencies or collaboration of agencies.
While there will be similar and common technologies underpinning the technology stack (such as those already provided through the government common platform and iGov infrastructure of DICT), grouping technology stack into context-sensitive platform or platforms will allow government to more efficiently address complexity and uniqueness within each respective context. It must be noted that in much the same way that a single enterprise architecture cannot apply to the whole of government, a single technology platform cannot address the varying quality dimensions and government transformation needs.

Effective Governance
The approach also addresses the propriety issues when it comes to exposing what agencies or collaboration of agencies consider as “sensitive” by their respective mandates. This approach will allow government collaborative groups to sufficiently govern the conditions specifically affecting their operating context without waiting on a single agency to craft a “catch-all” policy statement. This will also allow the governance structure to independently pursue the development of intelligent policies and support legislative measures to strengthen each specific context and reinforce clear measures for harmonization of procedures and data in pursuit of interoperability.

It is important to note that complexity in governance occurs when the steering committee or technical working group focuses on transforming the specific functionalities of a software application into something common across all entities of government. In fact, attempting to do so will only result in futility.

By managing standards at the quality dimension level, each governance body can focus consistently on delivering the objectives and expectations of the digital transformation strategy using a language that is shared and understood between the participants of collaborative groups within the scope of each dimension.

Baseline for Internal Continual Business Process Improvement and Quality Management Programs
Furthermore, this approach sets into proper context the harmonization of procedures and data to institutionalize interoperability. Admittedly, each agency will naturally have a level of uniqueness that distinguishes its services and function from other government agencies. However, by clearly identifying what makes each agency unique within the context of a quality dimension, each agency can now internally undergo continual improvement initiatives to streamline their internal procedural and data management environments adopting requisite standards, and fulfilling specific objectives defined in the national strategy of digital transformation.

Enumeration of Context Sensitive Technology Platforms
The following targeted technology platforms are in order:

1) Quality Dimension: Government and Society Enabling
   a) Society Enabling
      i) National ID Technology Platform
      ii) Secure Citizen-Managed Information Technology Platform
      iii) Integrated Frontline Services Automated Processing Technology Platform
      iv) Secure Social Engagement Technology Platform
      v) Overseas Filipino Citizen Registry and Well-Being Management and Monitoring Technology Platform
      vi) Integrated Social Services and Welfare Management and Monitoring Technology Platform
      vii) Integrated Law Enforcement Management and Monitoring Technology Platform
viii) National Environmental Resources Management Technology Platform
ix) National Traffic Planning, Monitoring and Control Technology Platform
x) Secure Citizen-Managed Health Information Technology Platform
xi) National Disaster Risk Intervention Planning and Mitigation Management Technology Platform

b) Government Enabling
i) Business and Policy Orchestration Technology Platform
ii) Integrated Physical Infrastructure Development Management and Monitoring Technology Platform
iii) Automated Government Performance Management and Output Monitoring Technology Platform
iv) Government Personnel Activity Monitoring and Oversight Technology Platform
v) Secure Government Employee-Managed Information Portal
vi) Government Personnel Information and Biometrics Management Technology Platform
vii) Integrated Critical Infrastructure Development Information Management Technology Platform
viii) Unified Government Administration and Financials Management Technology Platform
ix) Learning Management, Training and Competency Development Technology Platform
x) Government Personnel Asset Declaration and Information Management Technology Platform
xi) Enterprise Risk Management Technology Platform

2) Quality Dimension: Economy
a) Integrated Ease of Doing Business Technology Platform
b) Integrated Revenue and Finance Management and Monitoring Technology Platform
c) Integrated Local Government Technology Platform
d) Integrated Industry and Economic Development and Monitoring Technology Platform
e) Integrated Trade Facilitation Technology Platform (TradeNet)
f) Integrated Payment Management and Transactions Monitoring Technology Platform
g) National Economic and Industry Accreditation and Certification Technology Platform
h) National Land Registry Technology Platform

3) Quality Dimension: Technology
a) Private Permissioned Distributed Ledger Technology Platform
b) Public Free Wi-Fi Access
c) Government Personnel Wi-Fi Connectivity Technology Infrastructure
d) Federated Data Centers / Secure Ubiquitous Distributed Network
e) Contextual Trust Infrastructure and Technology Platform
f) National Telecommuting Technology Platform
g) National Video Conferencing Technology Platform
h) National Secure Paperless Technology Platform
i) Government Harmonized Products and Services Registry and Catalog Technology Platform
j) Government Asset Utilization Management and Monitoring Technology Platform
k) National Cybersecurity Technology Platform
The different technology platforms defined within each dimension may intersect any single government transformation platform, or traverse several government transformation platforms (please refer to Figure 10 - Society Enabling Technology Platforms, Figure 11 - Government Operations Enabling Technology Platforms, Figure 12 - Economy Enabling Technology Platforms, Figure 13 - Whole of Government Enabling Infrastructure and Technology Platforms).

Matrices of Value Intersections
The matrix structure represents the manner by which initiatives (to implement the defined technology platforms) are to be executed according to relevance and context. Hence, each platform is logically grouped under a specific quality dimension. The agenda each of the different technology platforms (which are classified under a quality dimension) will intersect one or several government digital transformation platform that constituting the entirety or a part of the national strategy of digital transformation.

Not all line items (technology platform) categorized under each quality dimension will have a direct effect on every area of digital transformation in terms of its applied strategy since not all items traverse the defined transformation platforms. Nevertheless, it is important to explicitly map how each of the quality areas contribute to the fulfillment of digital transformation as a whole.

These matrices provide a visual abstraction to help guide decision makers in the way certain initiatives are prioritized and funded—helping them distinguish which affect Filipinos as a whole, from those that affect only a limited cluster or group, or government agency.

Furthermore, it provides decision makers with a tool to visually distinguish between initiatives that are intended to address process and organization reform within government agencies, from those intended to improve the quality of service government agencies extend to the general public.
Figure 10 illustrates technology initiatives that affect society as a whole. Figure 11 illustrates technology initiatives that address government reform and transformation. Figure 12 illustrates technology initiatives that cater specifically to the economic sector, while Figure 13 illustrates technology initiatives that are all-encompassing, affecting or benefiting both government agencies and the service capabilities extended to the general public.

Moreover, it will guide the DICT in calibrating its activities—focusing not on the delivery of software applications but on the institutionalization of technology platforms to harmonize data and promote interoperability across the whole of government.
Organizational Requirements: Program Implementation, Continual Development Operations, Production Operations and Support

The design of the organization or organizations required to support the digital transformation strategy of government needs to be structured to match the multi-faceted, multidisciplinary, multidimensional, and dynamic nature of digital transformation (see Figure 14 - Organizational Ecosystem).

These organizations must comprise primarily of experts who specialize in technology, domain or subject matter, process and quality, behavioral science, law and legislation, and policy development.

The structure emulates a fractal and is designed to promote, institutionalize, and sustain collaboration, coordination, and control mechanisms across numerous initiatives that will either be executed as serial or parallel projects.

Cognizant of the fact that most identified initiatives will likely end up as multi-year projects, and that there will likely be the need to manage several projects concurrently or simultaneously, and that projects will likely consist of several sub-projects, it is important to establish an orchestration facility to coordinate the closed-loop, single instruction, multiple execution capabilities in the delivery of pre-defined outputs or commitments of each fractal group.

This framework enables government to move in an asynchronous, tempered, but expeditious manner as it leverages the wisdom of crowds.

According to Surowiecki, “the wisdom of crowds,” is at work in the world in many different guises. It’s the reason the Internet search engine Google can scan a billion Web pages and find the one page that has the exact piece of information you were looking for…The wisdom of crowds has something to tell us about why the stock market works (and about why, every so often, it stops working). The idea of collective intelligence helps explain why, when you go to the convenience store in search of milk at two in the morning, there is a carton of milk waiting there for you, and it even tells us something important about why people pay their taxes and help coach Little League. It’s essential to good science. And it has the potential to make a profound difference in the way companies do business (Surowiecki 2004). Similar benefits could be derived when applying this principle to the structure of governance.

The current governance model applied in most government programs, in an attempt to granulize the management of projects for efficiency and to provide an allegedly higher
degree of accountability, tends to fall short of those expectations.

The structure introduced by this strategy compels programs to adopt an all-hands approach where participants weigh-in on the need to effect transformation in the areas of transparency and governance, efficiency in operations, direct citizen engagement, and innovation that is set within the context of a quality dimension. Most important of all, it creates an environment that promotes and reinforces the benefits derived from the collective intelligence of the group.

Each group, being a collaboration of government agencies will consist of multiple sub-organizations (as illustrated in Figure 14).

The structure consists of the following components:

- The Steering Committee Group;
- The Collaborative Program Task Force Group;
- The DICT Program Support Group;
- The DICT Shared Systems and Services Group; and,
- The Private Sector Support Group;

The Collaborative Program Task Force Group

The composition of the collaborative program task force group is made up of several expert working groups, namely:

a) the architecture and standards group;

b) the program coordination group;

c) the program management office group;

d) the project implementation team or teams; and,

e) the communications group.

Any of these sub-component groups could consist of several other expert sub-groups depending on the varying levels of specialization required by the program or respective projects teams.

The functions of the collaborative program task force group involve activities that span the full spectrum of work from design, implementation, deployment, communication, and post-implementation support activities.

The architecture and standards group, a differentiating component of this transformation strategy, is essential to the work of transforming government following Gov 2.0 models and transforming the mindset of government from one that seeks to provide technology services or solutions that are limited to “applications” to one that servers as an actual solutions platform.

While DICT occasionally confers with industry specialists and experts, these consultations are made on an ad hoc basis—convened only when there is a need to have
specialists review specifications or craft new ones.

Essential to digital transformation, this unit or subgroup needs to be a permanent fixture of government. It will serve as a channel for government to achieve tighter collaboration and cooperation with the private sector covering all value and supply chains and service domains traversing the spectrum of government and private sector services.

Moreover, this group will enable government to leapfrog capabilities from the knowledge, expertise, and insights provided by members of the group by as much as three years into the future.

The DICT Program Support Group

The DICT program support group consists of the following:

- The Project Implementation and Management Group
- The Development Operations Group
- The Production Systems Management Group
- The Training Group; and,
- The Communications Group (Technology)

The design intentionally mirrors several component sub-groups existing in the collaborative task force group to ensure continuity, consistency of communication, and knowledge transfer between projects and organic government personnel.

“In today’s rapidly evolving Application economy, it is widely recognized that, driven by the evolution of digital channels—across both the business-to-business and consumer segments—many organizations are reinventing or recasting themselves as providers of software and digital services (Ravichandran, Taylor and Waterhouse 2016).”

Among the essential groups that need to be established at the onset is the DevOps group. The DevOps group will need to mirror the classification, roles, and skillsets of developers and administrators of the counterpart project implementation team.

Development Operations (DevOps) is a management approach that takes the following into consideration:

- Technology is indispensable in the conduct of business;
- Innovations in technology will outpace the ability of any organization to adopt and scale using conventional methods;
- Organizations need to establish an explicit method of identifying, designing, developing, testing, and releasing new features and functions to its systems with a short period of time or risk becoming non-relevant.

Unlike a conventional IT organization that separates the project, development, and product environments under separate groups managed by different executives, a DevOps environment consolidates these functional units under a single business unit. This structural change is a necessary step to transform the service capabilities and agility of government agencies, such as DICT, to respond to rapidly changing demands of the country as a whole.

Ravichandran posits: “The underlying concepts encompassed by DevOps are, at first glance, straightforward, but represent seismic reformulation within the context of software production and support. Rather than maintaining discreet applications engineering (“Dev”) and IT management (“Ops”) competencies and organizations, DevOps dictates use of smaller teams with cross-functional expertise to improve software functionality and the processes used to deliver it (Ravichandran, Taylor and Waterhouse 2016).”
High Level Prescriptions for Contextual Platforms

These high-level prescriptions are intended to guide the design, development, and deployment of contextual platforms based on quality dimensions discussed earlier: government and society, economy, and technology (refer to PART FOUR: QUALITY DIMENSIONS OF DIGITAL TRANSFORMATION).

These prescriptions build on the foundations of the Philippine eGovernment Interoperability Framework or PeGIF (Volumes 1 and 2) program. In keeping with standards set by the initial versions of PeGIF 2, contextual platforms:

1) Must be fully abstracted, layer agnostic, and designed based on a micro-services, cloud-native, multi-cloud capable, and orchestrated architecture;

2) Must have fully abstracted repositories to make different dimensions of personal data ambiguous to ensure that no single database or repository will contain complete personal information by employing distributed surrogate key structures and methods to compartmentalize and contextualize the storage and use of personal data domiciled across distributed databases or repositories;

3) Must employ data-in-transit and data-at-rest encryption to protect sensitive data;

4) Must provide facilities for data subjects to directly manage and control personal data and facilities to directly notify and secure consent from data subjects whenever their data will be used;

5) Must allow the secure on-boarding of additional micro-service extensions or applications;

6) Must employ secure API gateway services to pass communication between application front-end systems with databases, and between tenant platform applications to other shared government services;

7) Must incorporate policy, rules, and workflow routing features as native capabilities of the platform; and

8) Must be designed to take advantage of high availability architectures and must allow for hot updating of systems with minimal to zero system downtimes.
SUMMARY

The UN defines e-government as “the use and application of information technologies in public administration to streamline and integrate workflows and processes, to effectively manage data and information, enhance public service delivery, as well as expand communication channels for engagement and empowerment of people.”

The World Bank defines it as “government agencies’ use of ICTs (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government.”

“These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth and/or cost reductions.”

The goal of the Philippine Digital Transformation Strategy (PDTS) then is to build from previous experiences of delivering digital information and services to citizens, and propel the country to the next level; that of creating communities where people can participate in governance.

The objective is to promote digital transformation as a national strategy to achieve genuine citizen engagement by institutionalizing closed-loop, multi-dimensional, and multi-directional communication channels.

Promoting digital transformation as a national strategy and not just a program is expected to provide the following outcomes:

1. Bring cohesion to the various automation and technology infrastructure development programs of the government.
2. Rationalize the need for all software automation and infrastructure development initiatives across government to converge into a standards-based framework.
3. Create a culture of collaboration that affects the way government executives and employees think and how they view their services.

Approach to Transformation

Digital transformation is a systemic, continual, and progressive process. Its foundation must evolve over time and the initiatives must ideally employ the best of what ICT can offer, but none of the elements should be bound to any single technology, process model or management methodology.

The continuity of government programs needs to remain consistent.

E-Government 2.0

E-Government 2.0, the target outcome of PDTS, is a platform-based government that is community-driven and promotes user-generated content, openness and collaboration.

It focuses on transparency and accountability in governance, efficiency and agility in government operations, and direct citizen engagement.

40 UN E-Government Survey 2014: E-Government for the Future We Want (UNDESA, 2014)
41 Ibid.
‘Executability’ of Strategy
An important consideration in the formulation of any strategy is its “executability” or the ability to execute a plan from paper to the realization of its full potential.

Each agency must contribute to the overall effort of producing standard processes for the whole of government.

A central culture of learning in government and continual improvement is imperative. A culture of learning, reinforced by learning laboratories, brings together learning materials from multiple sources that can provide sustainable solutions to problems of governance.

The government must also consider prioritizing policies that enhance the “executability” of the digital transformation strategy.

Organizational Requirements
The design of the organization or organizations required to support the strategy needs to be structured to match the multifaceted, multidisciplinary, multidimensional, and dynamic nature of the digital transformation.

The structural design must promote collaboration and coordination among agencies and set up control mechanisms over programs and projects. It adopts an all-hands approach where participants weigh-in on the need to effect transformation in the areas of transparency and governance, efficiency in operations, direct citizen engagement, and innovation.

The structure necessitates the creation of collaborative groups with each group consisting of the following components:

- Steering Committee;
- Collaborative Program Task Force;
- DICT Program Support Group;
- DICT Shared Systems and Services Group; and
- Private Sector Support Group.

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