E-GOVERNMENT DEVELOPMENT MODELS: CONCEPTS OVERVIEW

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Abstract- E-Government effect the government's visions towards their public administration's plans and practices in order to make a real change. However, e-Government is not simply an on-line information service. In fact, it requires a comprehensive, creative and evolutionary architecture to perfect its own infrastructure, develop and integrate its existing separate practices.Using Communication Technology and its implementation, thegovernmentwill not only transform the traditional methods of processing documents and information into thedigital content of bits and bytes accessible over the Internet. But it also renovates existing government's functions and increases its transparency and reliability.

Keywords –E-Government, ICT, Life-Cycle, Project, Phases, Models

I. INTRODUCTION

The e-Government projects main goal is not just to implement the usage of computers and high, advanced technologies to automate old practices, focusing solely on technological solutions will neither bring a change the bureaucratic systems that do not consider nor understand the citizen as a valuable customer and an effective participant and stakeholder. Accurately, e-Government utilizes technology to achieve more transparency, empowering citizens participate in political decisions and eliminating divisions amongst people. Governments build up various plans and strategies for their e-Government projects. Effectively, few set long-term successful plans. While others prefer to concentrate on some key areas with specific projects. However, countries mostly prefer affordable and less complex initiatives with small projects.

Governments are initiating endeavors for sustainable projects worldwide to achieve the adopted 2030 Agenda for Sustainable Development with other major international commitments on global issues such as Poverty, Human Rights and Climate Change [1].

In order to help policy-makers organize and divide these initiatives, concerned organizations and researcherscategorize implementation of e-Government projects into three phases. These phases are independent of each other, nor rely on any ordinal sequence, rather conceptually offering a more goals oriented vision for governments. This paper overviews studies including some e-Government development models.

II.GARTNER STUDY - FOUR PHASES MODEL

Gartner research study (2000) titled "Gartner's Four Phases of e-Government Model" tries to measure e-Government initiatives progress and designing a road map to constituency service achievement. It classifies a distinct four phases (Figure 1) identifying where a project may fit in e-Government's overall strategy [2-3].

• *Presence:* A phase where simply information is provided through a website in passive nature, it is also known as "brochure-ware," indicating that it merely functions as a printed brochure.

• *Interaction*: In this phase, basic interactions are offered between citizen/business and government in forms of e-mail contact and interactive feedback forms that generate a type of responses.

• *Transaction*: Project at this phase will enable transactions such as tax payment,license renewals and even applying for contract procurement bids.

• *Transformation*: This is the highest phase. Projects at this stage are mature enough to bring changes that reinvent government's existing process and functions. These transform systems as whole to e-governance and add values.
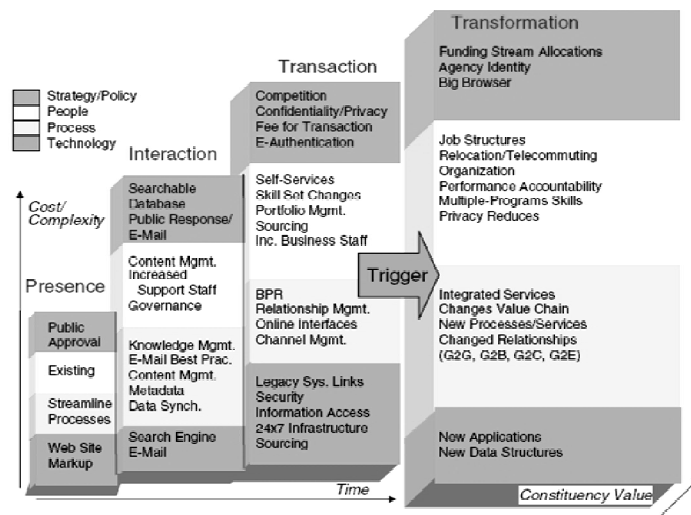

Figure 1.   Gartner's Four Phases Model [3]

III. LAYNE & LEE STUDY – FOUR STAGE MODEL

As an attempt to help to understand the complexity of e-Government projects Layne and Lee (2001) introduced their four-stage model and proposing 'stages of growth' model for full functionality(Figure 2) [4].
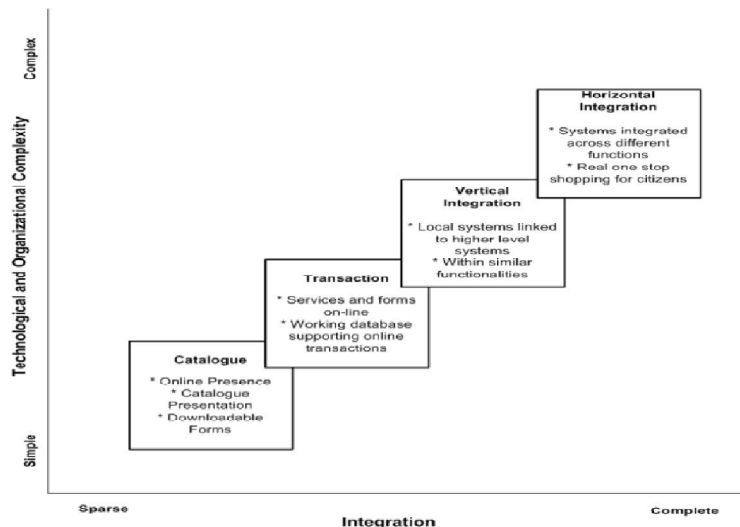

Figure 2.   Layne & Lee's Four Stages Model [4]

• *Catalogue*: The main government's goal at this stage is having an online presence where efforts are focused on theestablishment.

• *Transaction*: Government's initiatives at this stage will concentrate on providing online interfaces that connect and interact with internal systems enabling user transactions.

• *Vertical integration*: Interaction among local, state and federal e-Government systems, connecting and updating higher or level systems once changes occur.

• *Horizontal integration*: Unlike vertical integration, horizontal integration is accomplished by interacting independent systems of different services and functions on the same level. While vertical integration interacts systems of different services and functions across different levels.

IV. UN STUDY – FIVE STAGES MODEL

United Nations; under its division for Public Administration (2001) published a study titled "Benchmarking E-Government: A Global Perspective, Assessing the Progress of the UN Member States" introducing five stages model that helps in determining theprogress of e-Government. Furthermore, the study explains how e-Government projects can play as measurements for government's development level examining deliverables and services available in their official online portals [5].

• *Emerging*: Government's presence online at this stage is limited to self-reliant, independent and static websites.

• *Enhanced*: Here the effort is increased to make more dynamic and frequently updated websites.

• *Interactive*: At this stage, the user will be able to canprovide feedback, contact officials, download forms, apply for services and even request for appointments.

• *Transactional*: This stage is where projects financial transactions are made available online, enabling users to pay for services they obtain.

• *Seamless*: This stage assimilates all processes within a department boundary to an integrated e-service providing administrative function.

V. WORLD BANK STUDY – THREE PHASES MODEL

Centre for Democracy and Technology in World Bank (2002) try to provide assistance for policy makers in their e-Governments' plans and project with their own tree phases model. The phases are conceptual and independent, introducing adistinctionbetween e-Government goals [6].
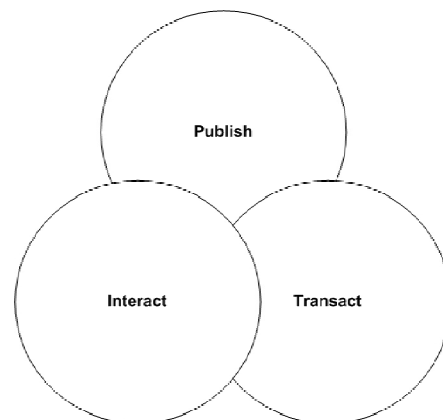

Figure 3. World Bank's Three Phases Model [6]

- *Publish*: By publishing an online site, thegovernment is to convey information by broadcast or circulation is the main goal. Uniquely, it serves well if it is merely the purpose.

- *Interact*: Interaction should be two-ways communication. E-Governments sites that enables users contacting officials, submitting forms and express their views on several policies.

- *Transact*: This is a phase where citizen/business obtains the actual government service using its own portals. Transaction-allowed sites are making e-Government more productive and less time-consuming by providing direct links to specified services at any given time.

VI. IBM STUDY – FOUR WAVES MODEL

In order to provide more goal-oriented and flexible e-Government projects, thegovernmentneeds to understand and upgrade its demand capabilities according to the uprising economic needs. To achieve a demand-ready environment, systems have to implement recent technologies, re-engineer existing processes and scale their infrastructure[6-7].

In this model by IBM, four waves of e-Government evaluation determine the change (Figure 4). Each wave is simplified by characteristics which group similar activities and deliverables.

• *Automate*: In this wave, the main focus is delivering right of information to citizens through anonline presence.

• *Enhance*: To reach thesecond wave, Governments don't necessary re-engineer existing processes and policies. Making certain modifications that enable user interaction is sufficient.

• *Integrate*: Moving towards thethird wave will require a radical change, planning more integration of business processes.

• *On demand*: It is a demand-ready wave where a significant leap requires a transformation and re-engineering of working culture, infrastructure and business processes to adapt the forecasted demand [8].
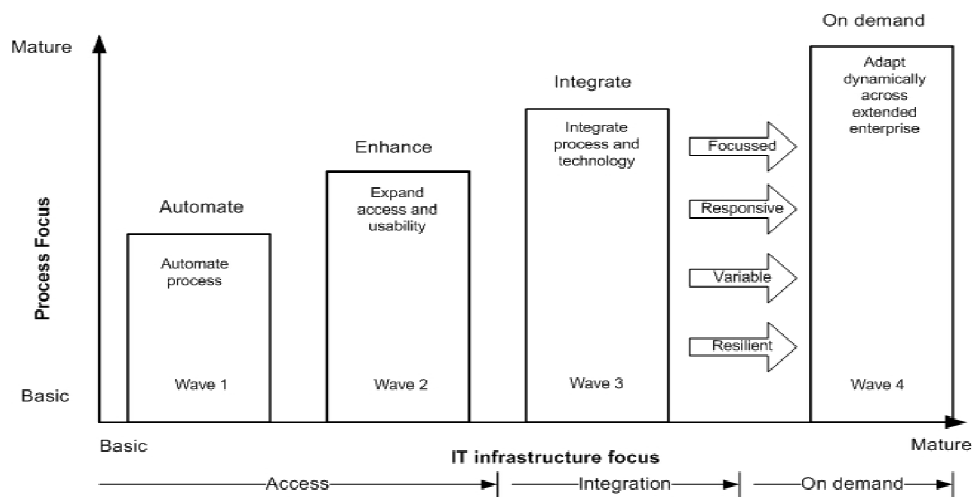

Figure 4.   IBM's Four Waves Model [7]

VII. COMPARISON OF MODELS

The five discussed models are trying to assimilate e-Government initiatives and endeavors relating it to common Product Life-Cycle. However, e-Government projects are more complex and involve multi-dimensional and multi-level planning since these are meant for sustainability. As shown in table 1, a more comprehensive levelingcategorization is suggested for grouping:

•   *Accessibility:* First level, comprehended by thesimple presence of online website for the purpose of providing information; It has been found that all the discussed models contain the same stage/phase under different names (Presence, Cataloguing, and Publish) except UN. Model and IBM Model where it has been sub-divided into two stages/phases expressing same achievements.

•   *Interaction:* Second level, grouped by efforts to interact with citizens, enabling them to send e-mails, feedback and express their views and opinions. It is common level for all discussed models. However, Layne &Lee's has included it within the Cataloguing stage.

•   *Transaction:* Third level, expressed by providing various transactions online (Financial or delivery of service). This level is exclusively common for all models. However, IBM's names it as 'on demand'.

•   *Integration:*TheFourth level, explained by integrating various services offered by a government organization within and with different other government organizations on different levels. This is not a common level as World Bank and IBM's models do not include it. However, Gartner's model names it 'Transformation', UN's Model names it as 'Seamless', where only Layne &Lee's addresses it under two separate stages 'Vertical Integration' and 'Horizontal Integration'.

Table -1 The five discussed models grouped by level indicator

Level Indicator	Gartner	Layne & Lee		UN		World Bank	IBM	
Accessibility	Presence	Cataloguing		Emerging	Enhanced	Publish	Automate	Enhance
Interaction	Interaction			Interactive		Interact	Integrate	
Transaction	Transaction	Transaction		Transactional		Transact	On demand	
Integration	Transformation	Vertical Integration	Horizontal Integration	Seamless				

VIII.CONCLUSION

According to these studies, e-Government projects is not as easy as one step where government invests in bringing new computer system and load it with dozens of software packages, expecting it to bring a noticeable and lasting change. In fact, it is more complex; involving different independent levels (Access, Interaction, Transaction and Integration) stages and phases. Each of the discussed models tries to explain on how to determine and measure thelevel of development accomplished in certain e-Government project. However, these models are just attempts to help policy makers in setting plans and re-engineering existing processes to remark and it is not standardized to which one's should refer or apply.

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