ABSTRACT

The aim of this paper is to present experiences and lessons learnt from the use and contribution of Information and Communication Technologies (ICT) to the development of the MuNet Program and one of its implementation instances in Patzún (Guatemala). With 94% indigenous population from the Maya Kaqchikel ethnic group, Patzún economy is based on agriculture and handicraft. Since 2005, Patzún Municipality is part of the Efficient and Transparent Municipality (MuNet) Program of the Organization of American States (OAS). Due to the MuNet Program, Patzún citizens and the local government were empowered through the use of ICT and ICT-based applications. As a result, citizens’ quality of life and governance processes were improved.

Categories and Subject Descriptors
H.4 [Information Systems Applications]; J [Computer Applications] - J.1 Administrative Data Processing – Government

General Terms
Performance, Experimentation, Human Factors

Keywords
MuNet; Modernization; Local Government; Digital Divide; ICT; Indigenous Population; Guatemala

1. INTRODUCTION

Located in the central part of Guatemala, Patzún has a population of 52,000 - 94% of them indigenous from the Maya Kaqchikel ethnic group. Agriculture products are the main income for 90% of the population. Before 2005, the community had poor access to ICT services. Informing citizens was not a priority for the local government and citizen’s participation was restricted to development tasks and community councils.

The rest of this paper is structured as follows. Section 2 presents the MuNet Program; while Section 3 one of its instantiation - Patzún Municipality. Challenges and lessons learnt from Patzún experience are discussed in Sections 4 and 5, respectively. Conclusions are drawn in Section 6.

2. MUNET PROGRAM

Continuous developments of ICTs have opened new opportunities to transform governments. Electronic Government (e-Government) refers to the ICT-based transformations of government structures and processes aiming at improving efficiency in government operations, enhancing interactions with citizens and other social actors, reducing transaction costs and incrementing users’ satisfaction on public services [14].

In Latin America, municipalities are the government level where most social development activities take place. Therefore, actions oriented to enhance relationships between citizens and public administrations should start at the municipality level to guarantee immediate perceptible changes. Following this principle, the MuNet Program was designed as part of the cooperation activities among the Canadian International Development Agency (CIDA) [15], the “Andes Foment Corporation” (CAF) [16] and the Executive Secretariat for Integral Development (SEDI) [17] from OAS. The aim of the MuNet program is to help Latin American municipalities in the adoption of ICT, as a tool to increase transparency, efficiency and citizen participation.

The Program was launched in Latin America in 2005. Comprising two phases, 11 countries and 22 municipalities, including Patzún, participated in Phase I. The Program methodology comprised achieving political support from the mayor or local authority, creating a MuNet team with municipality personnel and developing e-Government strategies. In 2010, the Phase II of the Program was started, with four participating countries - Panama, Guatemala, Paraguay and Costa Rica, and 179 municipalities.

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3. MUNET IMPLEMENTATION
PATZÚN EXPERIENCE

The execution of the MuNet Program in Patzún lasted for four years. In such time frame, the municipal budget was USD 6M, from which USD 32,000 were dedicated to ICT. Despite the scarce resources, the municipality was able to achieve its ICT-related strategic objectives due to international cooperation and optimal management. The implemented ICT initiatives are explained below.

3.1 Municipality Modernization
Initially, the Municipality had five old computers. The new municipal government purchased new hardware and software. Currently, 25 computers are available.

3.2 Internet Installation
The Municipality used to have a non-stable 256 kbps Internet connection. This service was only available to the Mayor, the Treasurer, and the Secretary. To improve the service, a telephone company (Telgua) was hired to provide a service of 1 MHz. Wiring of all municipality offices was made and currently 30 staff have Internet access. Due to the increase in personnel, more installations are being made in new offices.

3.3 Employee’s Training
One feature of Patzún Municipality is the continuous renewal of its staff. Therefore, new personnel have to be trained to acquire the required skills. 35% of the personnel do not have email accounts or do not use them properly. To overcome this difficulty a corporative email platform “@patzun.gob.gt” was deployed. In addition, personnel has to be trained in the focused use of internet and its applications to improve the services provided to citizens, and to work with others government departments. To promote a correct use of ICT, a user manual has been developed and is shared with the new staff. In addition, more communication devices are planned to be adopted.

3.4 MuNet Team
When the MuNet Program started, a MuNet team of consultants was assembled and trained. Over time, this team has been restructured with the incorporation of new members. Nowadays, the team has a Program Manager, who leads and defines the strategy.

3.5 Free Internet Access to Community
A part of the strategy to close the digital gap, Internet access has been provided by the Municipality to the community. Two free access points were installed equipped with donated computers. The time for the use of computers is restricted so more users can benefit from the service.

3.6 Community Digital Center
To reduce the digital gap, citizens need to be educated in the use of ICT. In order to contribute to this task, national and international institutions helped to create a Digital Community Center. Opened in 2010, the Center offers free ICT-basic courses (office and communication tools) to the community and government institutions.

3.7 Government Website
A very important element of the Municipality ICT-driven development has been the deployment of its website - www.patzun.gob.gt. The website provides information about the history, culture and geography of Patzún; as well as information about the government’s agenda and how citizens can be involved. Some sections, particularly those dedicated to history and culture, include multimedia materials, relying on free tools as Picasa and YouTube.

3.8 Language Stimulation
To promote and protect the Kaqchikel language, a team is creating a Wikipedia version of the municipal website in Kaqchikel. The team members are linguistics, Kaqchikel speakers and local and international collaborators. Social development is tightly related to the promotion and protection of their culture. For this reason the content of the municipal website is presented in Spanish and Kaqchikel.

3.9 Inter-Institutional Coordination
The success of the project mainly relied on the support received from the Municipality, various public institutions and private companies, as well as individual contributions of collaborators from Guatemala and other countries. Mainly, the project was developed and coordinated by MuNet OAS, public institutions at Patzún and the National Secretary of Science and Technology (SENACYT) [18], Guatemala.

3.10 Other Initiatives
Some other experimental ICT-related initiatives are being developed in Patzún in specific vertical domains: e-Health, e-Safety, e-Learning, and e-Prevention. Results obtained so far are positive, show the potential of ICT use.

4. CHALLENGES
After presenting the overview of the MuNet Program and concrete examples of one implementation instance – the case of Patzún Municipality, this section discusses some of the main challenges faced during the project implementation and the adopted approaches to overcome it:

- **Resources** – The Municipality faced difficulties to allocate resources to the project. Resources are limited or needed for other initiatives. *Approach*: To implement small actions with great impact on the population and thus convince the authorities about the benefit of investing on the project.
- **Human capital** – The community lacked qualified human resources able to teach informatics. *Approach*: To foster international cooperation and appeal to national organizations to contribute with such resources.
- **Resistance to change** – Municipal staff showed resilience to change and adopt new working practices. *Approach*: To manage cultural change and show how community members become familiar with the use of ICT.
- **Adoption of new practices** – The team was uncertain about the acceptance from public employees to adopt ICT as a tool to enhance their efficiency, and apply it for creating new applications. *Approach*: To show enhanced efficiency in the management, leading and showing by examples how staff can innovate on their daily work.
5. LESSONS LEARNED
The following two sections present some lessons learnt from Patzún Municipality (Section 5.1) and from the MuNet Program (Section 5.2).

5.1 Patzún Municipality
- **Strategy for Digital Divide** – The first important aspect to consider is to create a strategy to reduce the digital divide. Two mainstream topics of such strategy should be indigenous people development and inclusion.
- **Inter-disciplinarity** – The project would have benefitted more from a multidisciplinary team.
- **Motivation** – Part of the success of the project relied on the highly-motivated team.
- **Communication** – The effective communication of both strategy and implemented activities is crucial to raise the interest of other institutions, creating the awareness and support that the program requires.
- **Stakeholders’ Participation** – To enrich the opportunities and benefits of the program, participation of representatives from different areas - i.e. health, education, youth, is required.
- **Continuous Training** – The support of local authorities is needed to ensure continuous efforts to building human capacity.
- **Efficiency** – The program proved the efficiency to change traditional styles of working, reducing costs through the use of ITC tools.
- **Awareness** – After taking the online e-Government course delivered by the MuNet Program, the awareness raised and competencies developed among government staff constituted a key factor to design and implement e-Government strategies.

5.2 MuNet Program
Community development in any municipality must be accompanied with the provision of access to ICT. Since indigenous populations have fewer resources and opportunities, their inclusion in the knowledge society requires the implementation of e-Government initiatives. However, implementing such initiatives much rely on the political will of community leaders and national authorities.

Major qualitative impacts of the MuNet Program include:
- Identifying municipal government strategic objectives in the short, medium and long term
- Inspiring municipalities to improve their ICT infrastructure to enhance connectivity
- Implementing online services for citizens
- Contributing to increase citizen’s trust in the municipal government
- Expanding team members’ perspective beyond the local context, stressing the importance of ICT in global development.
- Deploying ICT applications to monitor the execution of project-related tasks.

Lessons learnt from the execution of Phase I of the MuNet Program are classified into the following perspectives:
- **Program Planning** – It is important to define the terms of reference of project consultants and local stakeholders, and to establish local teams ensuring that interdisciplinary and multiple skills are represented.
- **Training** – Officials and municipal workers should have a preparatory phase for the program implementation.
- **Technology Adoption** – A wide gap was identified among cultural and social diversity across teams. To overcome differences, required and essential organizational changes were implemented and a record of the identified technical challenges was maintained for future improvements. Additionally, as long as the program implementation progresses and ICT becomes embedded in the administration, new ICT demands emerged from specific areas – health, education, etc.
- **Political Management** – Top-level leadership is essential for project success. Such leadership should manifest abilities in management and communication to share the achievements with project stakeholders, and maintain the e-Government strategy according to the municipal development plan.
- **Dissemination** – Document all facts and events and dedicate special efforts to internally and externally disseminate the project progress. Moreover, awareness should be raised among project stakeholders on the opportunities offered by ICT.
- **Sustainability** – It’s essential to create legal, financial, and political instruments as well as building national and international networks to provide project sustainability.
- **Collaboration** – MuNet contributed to strengthen collaboration among government authorities and officials, guaranteeing autonomy in the long term.
- **Methodological Approach** – MuNet offered a comprehensive methodological framework for the municipalities to use.
6 CONCLUSIONS
This paper introduced the MuNet Program and the experience of its implementation in Patzun Municipality. The Patzún experience - called “Patzún, all its information in a click” has participated in several competitions; winning a third place in the call to the best local innovations organized by the Executive Secretariat of the Presidency Coordination (SCEP). In addition, it has being nominated in the category of e-Inclusion for the World Summit Awards 2011 Guatemala.

Next steps for Patzún Municipality include presenting the program and its progress to the Municipal Corporation and obtaining their commitment to continue the activities under the Modernization Commission, led by a Councillor. To raise more visibility, there will be an official re-launch of the website and presentation of the actions carried out by the Municipality to reduce the digital divide. Finally, the Municipality will continue its efforts to publicize its actions in this field, both nationally and internationally.

Next steps for the MuNet Program include seeking allies in government who are committed to implementing e-Government strategies and updating and improving several methodologies.

7 REFERENCES
[18] National Secretary of Science and Technology (SENACYT), http://www.concyt.gob.gt/