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# Identifying Micro Projects for Improvement of E-Readiness of Sri Lanka

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**Abstract:** This paper focuses on identification of micro projects for improvement of e-readiness of Sri Lanka. First, the proposed strategy by the Government of Sri Lanka is presented. Second, from the proposed strategy, requirement analysis is done to draw a set of requirements, using two approaches: a) E-readiness measurement, b) System analysis using the theory of connection. Third, from the requirements, a set of projects are identified that can improve e-readiness of Sri Lanka; though different types of projects are identified, emphasis is given to micro projects that are people-centric, low-cost, and sustainable.

**Keywords:** E-government, e-Sri Lanka, e-readiness, micro projects.

## I. Introduction

In November 2002, the government of Sri Lanka launched *e-Sri Lanka* – the information and communication technology development roadmap to achieve e-governance by the year 2007. According to the official document, the main purpose of e-Sri Lanka is to achieve the desired levels of development by enhancing national competitiveness, and to reduce or eradicate poverty by realizing enhancements in the quality of life of its citizens [5]. The government of Sri Lanka believes that the vision will take the dividends of information and communication technology (ICT) to every village, to every citizen, to every business and also transform the way Government works. However, studies show serious shortcomings in the proposed strategies [4]. Studies also reveal that proper measures for improving e-readiness of Sri Lanka has not been identified or put into practice [4].

The main purpose of this paper is to identify micro projects that can improve e-readiness of Sri Lanka. To do this, a scientific approach is used in this paper that consists of four steps: First, the proposed strategy by the Government of Sri Lanka is presented; this serves as the needs analysis. Second, from the proposed strategy, requirement analysis is done to draw a set of requirements; this is done using two approaches: a) E-readiness measurement, b) System analysis using the theory of connection. Third, from the requirements, a set of projects are identified that can improve e-readiness of Sri Lanka; though different types of projects are identified, emphasis is given to micro projects that are people-centric, low-cost, and sustainable.

The uniqueness of this paper lies in the scientific

analysis of the proposed strategies for e-Sri Lanka in order to identify the projects that can be implemented to raise the e-readiness.

**Structure of this paper:** Section-2 presents the need analysis; in this section, the proposed strategy for e-Sri Lanka is presented. Section-3 presents the requirement analysis, analyzing the proposed strategy. Section-4 identifies the micro projects that can give a lift to e-readiness of Sri Lanka.

## II. Need Analysis

This paper starts with the need analysis for e-Sri Lanka, as the authors believe that any system cycle or system engineering process should begin with the identification of a need based on a want or desire for something arising from a deficiency [1]. The need in this case is the gap between current and desired (or required) level of e-readiness or the gap in results between what is now and what should be after (successful) completion of e-Sri Lanka. Needs analysis is a process of determining the reasons and causes for a need so that appropriate interventions may be identified and later selected.

Rather than using surveys, questionnaires and interviews for the needs analysis, we present or restate the government of Sri Lanka's strategy for e-Sri Lanka. However, the strategy is presented in a highly intelligible format so that requirement analysis and implementation can be done in later sections.

### II. 1 The Needs Assessment

In November 2002, the government of Sri Lanka launched *e-Sri Lanka* – the information and communication technology development roadmap to achieve e-governance by the year 2007. Sri Lanka's first ever e-government conference was held in May 2003. The event was given utmost importance by the government of Sri Lanka, and was supported by some of the inter-governmental organizations such as the United States Agency for International Development (USAID) and the Swedish International Development Agency [9].

According to the official document, the main purpose of e-Sri Lanka is to achieve the desired levels of development, by enhancing national competitiveness, reduce or eradicate poverty by realizing enhancements in the quality of life of its citizens [5]. The government of Sri Lanka believes that the vision will take the dividends of information and communication technology (ICT) to every village, to every citizen, to every business and also transform the way Government works [9].

Zhou [12] identifies that in a model of e-government, a

society has three constituents: government, citizens, and businesses. Accordingly, we classify the benefits of e- Sri Lanka pointed out in [5] into three different category; the benefits of e-Sri Lanka are:

For the government:

- Empower civil servants with information and communication tools, to facilitate coordination across government agencies, and to improve competition and transparency in public procurement.
- Integrate marginalized regions and communities within an equitable resource distribution framework, to facilitate effective decentralization and broadening of public participation in development policy formulation and program implementation, and to transform government services cost-effective and citizen-centered.
- To provide quality education at all levels and to all parts of the country. To provide students and teachers throughout the country access to world-class educational curriculum via the Internet.

For businesses:

- To revitalize Sri Lanka's main and traditional industries like agriculture, tourism, and apparel, so that the share of value-addition to the end product is increased, and to penetrate into new markets via Internet-based sales channels.
- To emerge as a major transportation hub for air and sea cargo, by modernizing ports and by developing a modern trade net that dramatically reduced the transaction costs for importers and exporters. To enable businesses to become increasingly competitive and to attract foreign investors.
- To reduce transaction costs to businesses.
- To create a communication environment that allows optimal opportunities for businesses to engage in all forms of e-commerce

For citizens:

- To improve the delivery of public services, and knowledge and education to all, and to make government accessible and accountable to the average citizen
- To create a communication environment that allows optimal opportunities for all Sri Lankan citizens to participate fully in the global information economy, and for all citizens to support their economic, learning and personal needs.
- To facilitate inexpensive contact with family abroad via email and voice over Internet via Cyber Cafes in all towns.

### III. Requirement Analysis

This section starts with the results of the needs analysis done

in section-2, and performs the requirement analysis. By the requirement analysis, we are trying to establish a statement about the proposed system that will make all stakeholders agree to it so that the system can be adequately solved [6].

The requirement analysis is done in two steps:

1. Identifying the primitive system: We further dissect the need assessment from section-2 further so that the primitive elements (or the basic building blocks) of the system become visible. This is done in subsection-3.1.

2. Identifying the current status of the system: For this purpose, we measure the e-readiness of Sri Lanka. This is done in subsection-3.2.

From these two steps, we identify corrective measures that can lead to a better solution

#### III.1 Dissecting the Proposed Strategy

The implementation strategy for e-Sri Lanka is further dissected in order to find the primitive system; a primitive system consists of the primitive elements or the fundamental building blocks of a system [3]. Dissecting the strategy into programs, subprograms, and actions, is presented in Table-1.

From the analysis given in table-1, we can already recognize some of the primitive elements: government officials and employees, experts and technologists, computer hardware and software resources, entrepreneurs, and general public. To see how the individual programs influence the primitive elements, we check each program and subprogram of the five-program strategy against the primitive elements; the results are summarized in table-2. In table-2, abbreviations HRD, GO, T, GP, IE, BIF, HID, SID, ICTP, SMEs, CCs, BF, EDU, RF, S, and ER stands for human resource management, government officials, technologists, general public, investors and entrepreneurs, building information infrastructure, hard infrastructure development, soft infrastructure development, ICT parks and cyber zones, small to medium-sized enterprises, Internet service providers and telecenters, banking and financial institutions, educational institutions, regulatory framework, Source, and E-readiness, respectively.

Table-2 indicates that the proposed implementation strategy is very influential on human resource development, especially on ICT education. This has two effects, a positive one – the population becomes more IT-literate, and a negative one – surplus computer professionals but lack of inventors and entrepreneurs. A country's capability for innovations and internal improvements cannot be flourished by IT education alone; production technology, supply- and demand chain management, economics, and psychology are all too important in the digital economy era.

#### III.2 Measuring the E-readiness

Figure-1 (taken from the authors previous paper [4]) depicts detailed benchmarking of e-readiness of Sri Lanka based on the eight major factors. For comparison, values for Norway are also shown in the figure. In Sri Lanka, demand forces

(capability of the people) are about the average value. However, supply forces and societal infrastructure are poor. In some of the areas (English language usage, tertiary enrollment, high-tech exports, GDP per capita, computers per 1000 people, and telecom costs) Sri Lanka performs poorly.

Some other indicators (political stability = 1.0, and government effectiveness = 1.0) show that there is a serious problem in running the country. In addition, investment in ICT sector is low. After many technology investment debacles, private investors are not so enthusiastic about telecom ventures. The government has also problems in investing in technology sector mainly due to ever increasing health care costs.

### III. 3 The Requirements Analysis

The analysis done in subsections 3.1 and 3.2 shows that the policy makers have not given proper consideration to the concept of “domestic digital divide”. For example, from figure-1, it is clear that e-readiness measures gauge disparities that exist between countries (the “international digital divide”). Thus, improving e-readiness of Sri Lanka means improving its stand on the ICT usage compared to the developed countries. However, figure-1 indicates nothing about the domestic digital divide - the gap between citizens of a country in knowledge, access, usage, and mastery of ICT and the Internet. E-readiness improvements may push a country to a better position in competing with the other countries, but it is not clear whether all the citizens of that country will enjoy the benefits due to the improvements. The following examples are on the effects of e-readiness improvement on domestic digital divide:

- Sri Lankan example: Though the government of Sri Lanka believed in reduction of both international and domestic digital divide by its e-government initiatives, however, two official reports recently published prove the opposite results on domestic digital divide, though effects on international digital divide is on Sri Lanka’s favor [3][11]. For example, the share of national income of the poorest 10 percent of the population fell from 1.3 percent in 1997 (before the induction of e-Sri Lanka) to 1.1 percent in 2004. For the richest 10 percent, their share rose from 37.2 percent to 39.4 percent over the same period [3].
- Indian example: Referring to e-government implementation processes in India, Sharma and Soliman [8] reports similar unintended negative effects on India’s domestic digital divide.

From the above examples, it is clear that e-readiness improvements should benefit all the citizens of a country, especially if it is developing country.

## IV. Micro Projects

Figure-2 shows a classification of e-readiness improvement projects. Based on the magnitude of the project or on the size of the projects, the projects are broadly classified as

national level projects and community level projects. Also, depending on the complexity or newness of the adopted technology or mechanisms, the projects are classified as incremental projects, innovative projects, and radical projects. We define micro projects as the community level projects that fall into incremental and innovative types. It is the micro levels projects that mainly uplift the lower masses (“don’t-haves”) of a country; thus, the micro projects not only improve e-readiness of a country, it also reduces the domestic digital divide of that country.

Given below are some of the micro projects that could improve e-readiness of a country [10]:

- Community Restoration and Development Projects
- Women's development, rehabilitation, and job training
- Rehabilitation efforts of Irrigation development project
- Skill Development Programme
- School building projects
- Micro Projects on income earning
- Village upliftment projects
- New technology adoption (e.g. solar power, wind mill)
- Grid supplied electric power to everyone

## V. Conclusion

This paper proposes a scientific analysis to identify micro projects that can improve e-readiness of Sri Lanka. By this approach, while improving national e-readiness, domestic digital divide that exist between the citizens can also be minimized.

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| Program   | Subprograms                    | Actions  |
|---|--------------------------------|--|
| A:Building implementation capacity                      | (A)                            | Forming control and coordinating committees, to advise the Cabinet of ministers: A top-level consultative committee will be formed, made up of secretaries of key ministries, industry leaders, etc., to advise the cabinet. In addition, an agency will be established to look into the intricacies of capacity building. |
| B:Building information infrastructure                   | B1: Hard infrastructure        | Building <i>hard</i> infrastructure to provide affordable telecommunications services for various users.   |
|   | B2: Soft infrastructure        | Building <i>soft</i> infrastructure to support the Sri Lankan software companies, such as stimulation of domestic demand for software applications, establishment of ICT parks and ICT development zones.  |
|   | B3: Learning capacity          | The government will recruit multinational companies to invest and partner with the local counterparts  |
| C:Development of human resources                        | C1: Software industry          | To increase the supply of ICT professionals, a new policy will be devised on issuing of visas for foreign ICT professionals; Providing incentives for leading ICT multinationals and training institutions to invest in Sri Lanka  |
|   | C2: Educational establishments | Training programs on ICT tools in primary and secondary schools for students and teachers; Increased undergraduate intake for ICT courses in universities; Increased training to university staff  |
|   | C3: General public             | ICT awareness programs for general public; Tertiary education on ICT, and e-learning   |
| D:Delivering citizen services through e-government      | D1: G2G                        | Establishing a government wide-area-network supporting email linking every government institution and employee; Development of fundamental databases of citizen data; Establishing a Sri Lanka Portal for global front-end as administration and service delivery channel  |
|   | D2: G2B                        | Establishing G2B interface that will facilitate interaction between businesses and the government  |
|   | D3: G2C                        | Establishing G2C service delivery infrastructure; establishing a government call center for voice based interactive support to citizens  |
| E: ICT as a key lever for economic & social development | E1: Rural development          | Establishing a national fund to support new technology adoption <a href="#">Skill development programmes</a> , Vill <a href="#">job training</a> establishment of telecommunication centers for public access to information and communication services  |
|   | E3: Mass media                 | Sri Lanka's mass media and multi media policy will be revised so that they adhere to internationally established principles  |

Table-1: Dissecting the proposed strategy

| Program/<br>subprogram | HRD |   |    |    | BIF |     |      | Units |     |    |     | S<br>ER |    |
|------------------------|-----|---|----|----|-----|-----|------|-------|-----|----|-----|---------|----|
|                        | GO  | T | GP | IE | HID | SID | ICTP | SMEs  | CCs | BF | EDU |         | RF |
| A                      | X   | X |    | X  |     |     |      |       |     |    |     |         |    |
| B                      | X   |   |    |    | X   | X   | X    |       | X   | X  | X   | X       |    |
| B-1                    |     |   |    |    | x   |     |      |       |     |    |     | x       |    |
| B-2                    | x   |   |    |    | x   | x   | x    |       | x   | x  |     | x       |    |
| B-3                    |     |   |    |    |     |     |      |       |     |    | x   |         |    |
| C                      |     | X | X  |    |     |     |      |       |     |    | X   |         |    |
| C-1                    |     | x |    |    |     |     |      |       |     |    |     |         |    |
| C-2                    |     |   |    |    |     |     |      |       |     |    | x   |         |    |
| C-3                    |     |   | x  |    |     |     |      |       |     |    |     |         |    |
| D                      | X   | X |    | X  | X   | X   |      |       |     | X  |     | X       |    |
| D-1                    | x   | x |    |    | x   | x   |      |       |     | x  |     |         |    |
| D-2                    | x   | x |    | x  | x   | x   |      |       |     | x  |     | x       |    |
| E                      |     |   | X  |    | X   | X   |      |       | X   |    |     |         |    |
| E-1                    |     |   | x  |    | x   | x   |      |       |     |    |     |         |    |
| E-2                    |     |   |    |    | x   | x   |      |       | x   |    |     |         |    |
| E-3                    |     |   | x  |    |     |     |      |       | x   |    |     |         |    |
| All programs           | X   | X | X  | X  | X   | X   | X    |       | X   | X  | X   | X       |    |

Table-2: Effect of programs and subprograms on primitive elements and units

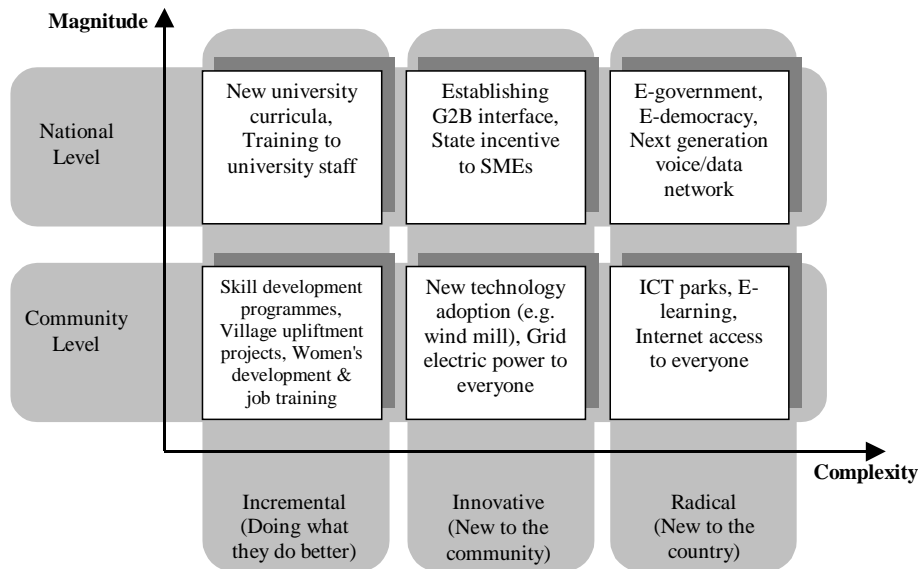
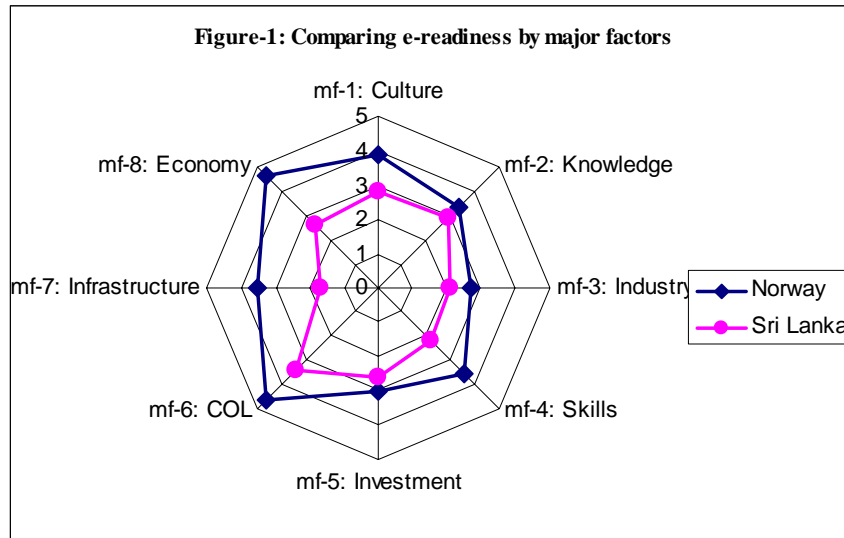


Figure-2: Classification e-readiness improvement projects for Sri Lanka