ITIL-Based Service Management Empirical Case Study

Mihyar Hesson, Okan Geray

Abstract—**more and more governments around the world are using the World Wide Web gateways to provide their services online in what is known as e-Governments. This is meant to improve the delivery of public services to citizens, business and governmental departments alike. Different strategies are used to build e-government infrastructure and deliver its services to the public. The degree of success that is achieved by different e-Governments in terms of service level and quality of service varies significantly. Strict measures are required to help e-Governments evaluate the service level and assess the quality of service. In this paper we introduce the e-Government strategies, perspectives, implementation, transformation and their major problems. In this context, ITIL—Information Technology Infrastructure Library—is introduced. ITIL is a set of best practices standards for Information Technology service management that provides businesses with the best practices to achieve quality service and overcome difficulties associated with the growth of IT systems. Dubai e-Government (DEG) which was officially launched in December 2001 is selected as a case study for service management assessment based on ITIL standards. It is important to emphasize that ITIL is not a fixed methodology, but rather a customizable framework. It is more important for the organization planning to implement ITIL to have a clear vision about the expected achievements and the potential risks of failure. Designing and applying the appropriate framework is a major task. Two main areas of DEG service management were selected; service support and service delivery.**

I. INTRODUCTION

The advances in the Information and Communication Technologies (ICT) have raised new opportunities for the implementation of novel applications and the provision of high quality services over global networks [1]. The aim is to utilize this 'information society era' for improving the quality of life for all citizens. This is in terms of disseminating knowledge, strengthening social cohesion, generating earnings and finally ensuring that organizations and public bodies remain competitive in the global electronic marketplace. e-Government is the term reflecting the use of ICT in public administration in an attempt to ease access to governmental information and services for citizens, businesses, and government agencies. Furthermore it is always a target to improve the quality of the services and to provide greater opportunities for participating in democratic institutions and processes.

A number of definitions for e-government have been offered in the existing literature. For instance, e-government is considered as a guiding vision towards modern administration and democracy [2]. According to them, e-government is concerned with the transformation that government and public administration have to undergo in the next decades. Lawson [3] suggested that e-government is one in which the public service operates in a ''one-stop, non-stop'' way, does ''more for less'', and ''power is transferred to people''. Moreover, Tapscot [4] defined e-government as an ''internetworked government'', and Nadler and Tushman [5], on the other hand, emphasized that technology is only ''one of the structural materials''. Sprecher [6] considers electronic government as any way technology is used to help simplify and automate transactions between governments and constituents, businesses, or other governments.

Simply speaking, e-government means the communication between the government and its citizens via computers and a Web-enabled presence. The advantages in timeliness, responsiveness, and cost containment are outstanding [7]. The United Nations Online Network in Public Administration and Finance (UNPAN) defines e-government as, ". . .utilizing the Internet and the World Wide Web for delivering government information and services to citizens" [8]. The importance of e-government practices cannot be overstated, as it will focus the direction of government technology funding for future years.

Generally, e-government activities can benefit government agencies, businesses, and citizens [9]. E-government involves the use of information and communication technologies to provide government information and services, most prominently through the around the clock availability of the World Wide Web [10]. E-government activities involve managerial, consultative, and participatory interactions between the sectors of government, businesses, and citizens [11].

II. INFORMATION TECHNOLOGY INFRA STRUCTURE LIBRARY—ITIL

ITIL Background

ITIL (Information Technology Infrastructure Library) is a set of best practices standards for Information Technology service management (Figure 1). It took its name from a series of publications written by dedicated IT professionals and industry experts. ITIL provides guidance on Best Practice IT-Service Management—ITSM [12].

Dr. Mihyar Hesson is with College of Information Technology, Al Ain University of Science and Technology, Al Ain, UAE (Email: m.hesson@alainuniversity.ac.ae)

Dr. Okan Geray is with Strategic Planning, Dubai e-Governmen, Dubai, UAE (Email: Okan-Geray@dubai_egov.ae)

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The United Kingdom's Central Computer and Telecommunications Agency (CCTA) created ITIL in response to the growing dependence on Information Technology to meet business needs and goals. ITIL provides businesses with a customizable framework of best practices to achieve quality service and overcome difficulties associated with the growth of IT systems. ITIL is organized into sets of texts which are defined by the following related functions:

[1] Service Support
[2] Service Delivery
[3] Security Management
[4] The Business Perspective
[5] Applications Management
[6] ICT Infrastructure Management
[7] Planning to implement Service Management

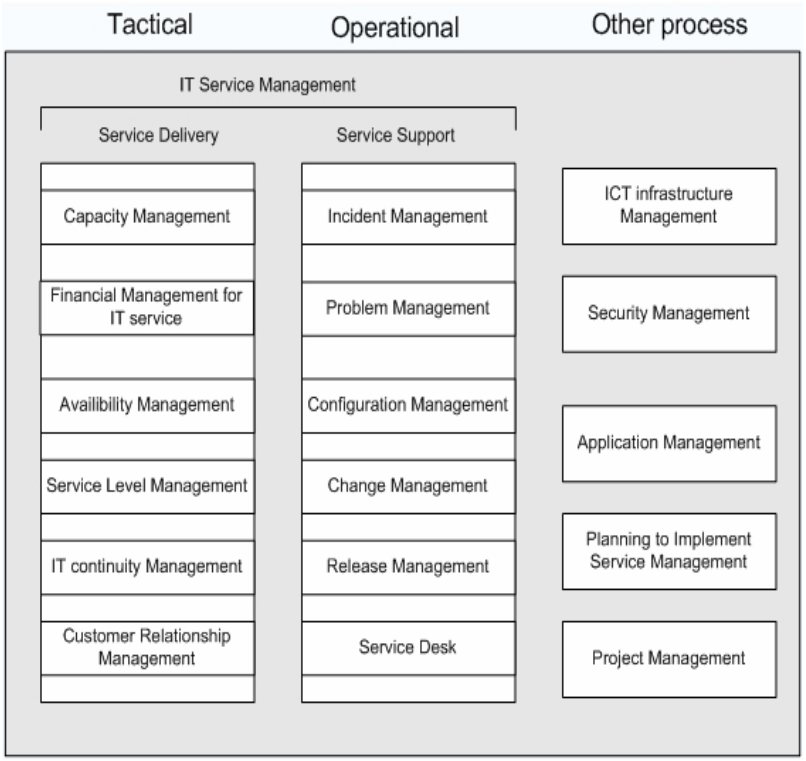

Figure 1 ITIL Structure

ITIL and e-Government

e-Government enables provisioning of public services over innovative channels. e-Government services require certain service levels to be achieved as they replace services over the traditional channels. e-Government also increases the dependence of government agencies on information technology based services. High quality services entail high performance, availability and scalability among other service characteristics. Defining the requisite service levels for such service characteristics is a key activity. ITIL provides a systematic approach for achieving pre-defined service levels for various service characteristics. The processes identified, designed and implemented as part of ITIL framework can be considered as a tool or means to achieve the pre-defined service levels for e-Government services. The actual ITIL processes can be thought of as strategic trade-offs among different alternatives.

III. DUBAI E-GOVERNMENT AS A CASE STUDY

Dubai e-Government

In December 2001, with an official portal and some government departments offering services online, the e-Government was officially launched [13].

The real challenge for the departments is meeting the target of 50% of government transactions on electronic channels. This demands that departments reach a unique level of quality, and make these services compete with their conventional counterparts [14].

Self Assessment Plan

The aim of the assessment plan is to evaluate the level of service of DEG and to find out how well it is performing compared to ITIL best practice. The assessment plan also aims to create awareness of management and control issues that may be addressed to improve the overall process capability. Table 1 illustrates how the assessment is categorized.

Level	Service Delivery	Service Support

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	Service Level Manag-ement	Financial Manag-ement	Capacity Manag-ement	Continuity Manag-ement	Availability Manag-ement	Service Desk	Incident Manag-ement	Problem Manag-ement	Configuration Management	Change Manag-ement	Release Manag-ement
1	Pre-Requisites										
1.5	Management Intent										
2	Process Capability										
2.5	Internal Integration										
3	Products										
3.5	Quality Control										
4	Management Information										
4.5	External Integration										
5	Customer Interface										

Table 1 Assessment Categories

The assessment is based on a generic framework which recognizes that there are a number of structural elements which need to be in place for process management and for it to satisfy the overall intent and meet the needs of the customer.

Eleven different categories were evaluated; six of them under Service Delivery and the other five under Service Support. Each category has nine different levels starting from level 1 and ends at level 5. At each level a number of service criteria are identified. This number varies from a level to another and from a service to another.

Assessment Analysis Highlights

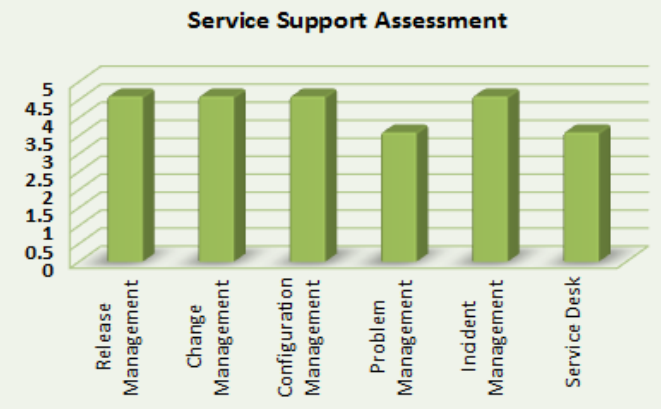

Figure 2 Service Support Assessment

The self-assessment of Dubai e-government with respect to ITIL standards gives very mixed results. On one hand it has scored fairly well in Service Support categories while on the other hand it didn't do well in Service Delivery. For instance, it achieved level 4.5 for Configuration, Change and Release Management, and level 3.5 for Service Desk and Problem Management (Figure 2). The status is different with ITIL Service Delivery. Dubai e-government has achieved level 2 for Capacity Management, level 1.5 for Service Level Management and Continuity Management, and level 1 for Financial and Availability Management (Figure 3).

To fairly rank Dubai e-government Service Support based on ITIL, we propose to give one point by each achieved level and divide this by the total number of levels for all components as follows (First level is 1 and maximum number of levels is 9):

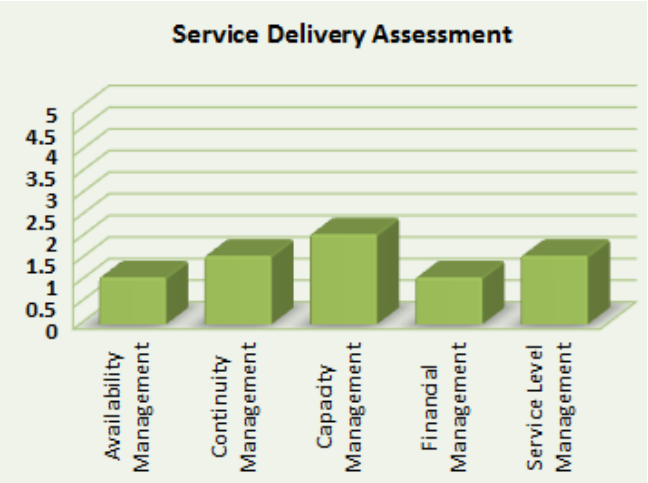

Figure 3 Service Delivery Assessment

Total Number of Achieved Levels / Total Number of Levels = 44 / 54 = 81.5%

To mark Dubai e-government Service Delivery based on ITIL, we propose to give one point by each achieved level and divide this by the total number of levels for all components as follows(First level is 1 and maximum number of levels is 9):
Total Number of Achieved Levels / Total Number of Levels = 9/45= 20%

More Detailed Assessment Analysis

In the above highlight analysis we only showed if a particular service has achieved a specific level or not. It is not clear how good or how bad the service is. The reason we are saying that is that the range between the minimum accepted level for a pass and the maximum level that can be achieved can be wide. In many cases the achieved levels are on the minimum side while some of not-achieved levels are just below the minimum. This is actually not very helpful for the people DEG to judge how much work is required at each level whether it is achieved or not. Therefore a detailed analysis for each service at the different nine levels is required. This is shown in Figures 4 to 14. The achieved level of service is shown in the thick bold line while the maximum possible level is in thin bold. The minimum level is given in broken thin line. These graphs indicate precisely the current level and the amount of work required to improve it.

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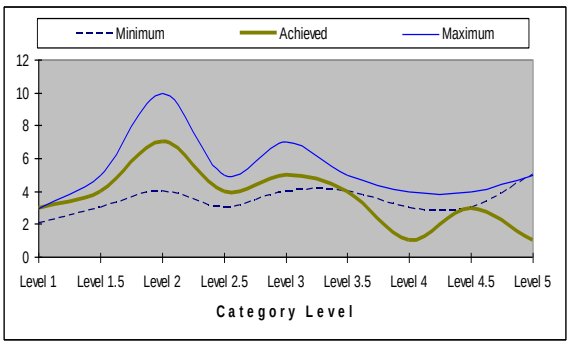

Figure 4 Service Desk

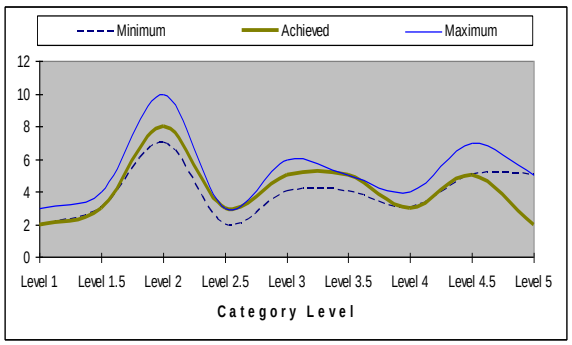

Figure 5 Incident Management

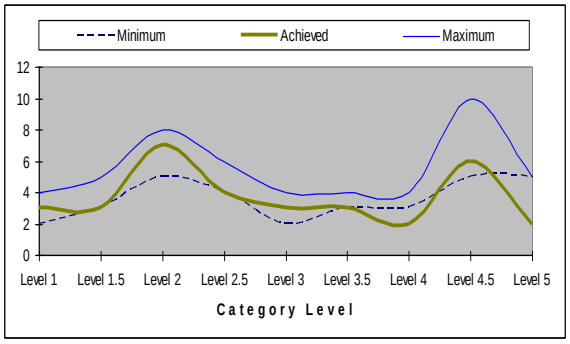

Figure 6 Problem Management

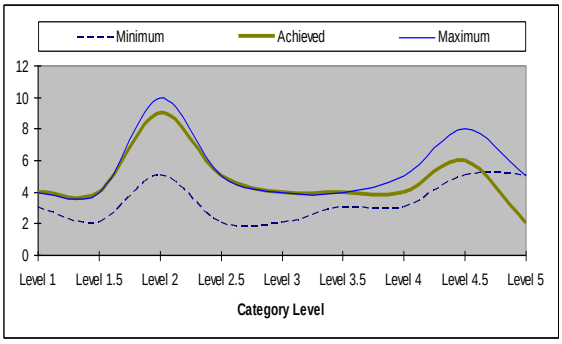

Figure 7 Configuration Management

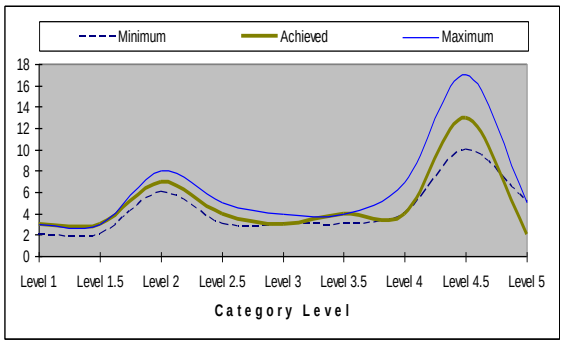

Figure 8 Change Management

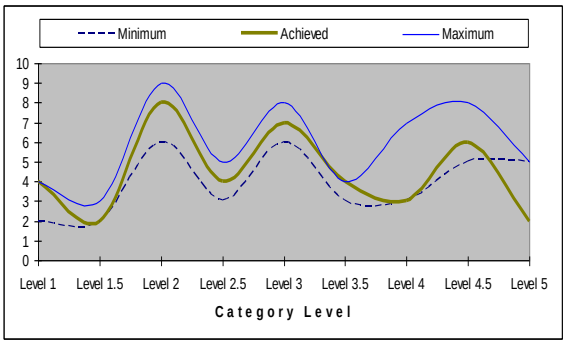

Figure 9 Release Management

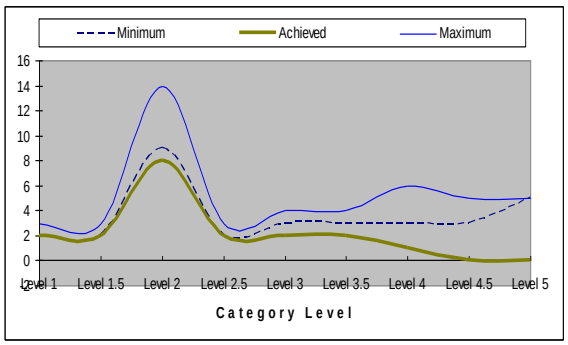

Figure 10 Service Level Management

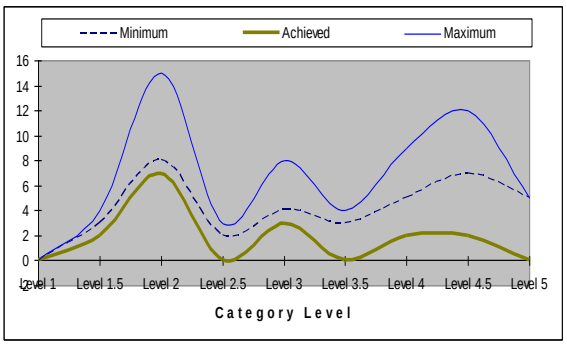

Figure 11 Financial Management

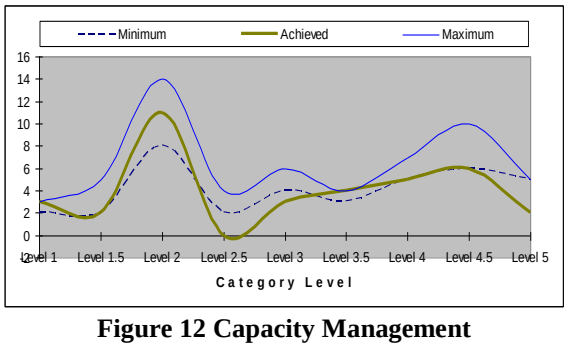

Figure 12 Capacity Management

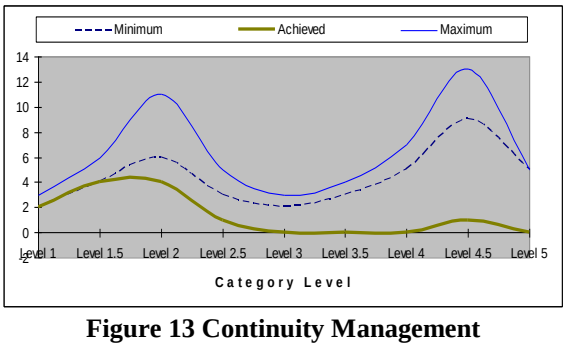

Figure 13 Continuity Management

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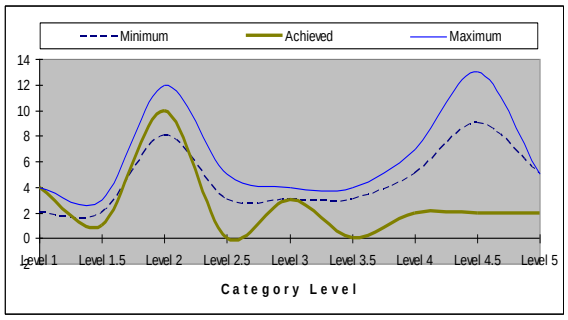

Figure 14 Availability Management

Recommendations for Implementation

The following are some common wrong practices in the implementation of ITIL that DEG should avoid:

- Running the implementation as an IT project instead of an organization change project.
- Improper balance between strategic efforts and short-term wins.
- Sole focus on one or several ITIL processes instead of all service support and delivery processes.
- Over-designing the ITIL process solutions.
- Scoping the implementation to one processing location.
- Lack of implementation governance.
- Too much emphasis on process maturity as a goal or end state.
- Treating the implementation as a one-time project.
- Staffing the implementation effort with people in the wrong positions.

The above assessment enables DEG to determine where their IT service operations on the ITIL continuum are, and how their current operating practices compare to ITIL best practices. The following are some *Critical factors* for successful ITIL implementation for DEG:

- Full management commitment and involvement with the ITIL implementation.
- A phased approach.
- Consistent and thorough training of staff and management.
- Making ITIL improvements in service provision and cost reduction sufficiently visible.
- Sufficient investments in ITIL support tools.

IV. CONCLUSION

This work is aimed to assess the level of service management of Dubai e-Government as a case study of the application of ITIL in e-Governments. This requires that DEG e-Services will have to match the international standards of e-Government service management, both in Service Delivery and Service Support. We started with investigating the e-Government implementation phases, transformation and associated problems. This was followed by investigating the international best practices standards used for service management of e-Government around the globe. We found that the ITIL standards adopted by some e-Governments among other IT services represent a leading edge in that field. A major part of the work was devoted to draw a comprehensive self assessment plan that can be used to evaluate the DEG current and future e-Services. This plan was carefully drawn after a thorough investigation of the quality standards of the e-Services of e-Governments and other IT services worldwide. This plan represents the core of the DEG Gap Analysis that is conducted by the authors of this project under the full cooperation of the DEG officials.

Eleven different categories of service management were evaluated; six of them under Service Support and the other five under Service Delivery. DEG scored fairly well in the Service Support with a score of 81.5%. Prerequisites, Management Intent, Process Capability, Internal Integration, Products and Quality Control requirements of ITIL Service Support are satisfied by Dubai e-government. Service Desk, for instance, has achieved level 4.5 but failed to achieve level 4. Therefore the recognized level is set to 3.5. Similarly, Problem Management has achieved level 4.5 but failed to achieve level 4. Little work is required to raise these two categories to level 4.5 and hence raise the overall score to 88.9%.

When it comes to the performance of the Service Delivery, the picture is completely different. None of these remaining five categories has scored well. The overall performance of DEG Service Delivery could not achieve more than 20% on ITIL standards. DEG is required to do a hard work to improve their Service Delivery to an acceptable ITIL level. All the steps that DEG needs to do are detailed in the implementation plan that was based on the DEG Gap Analysis.

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REFERENCES

[1] Lambrinoudakis, C. et al " Security requirements for e-government services: a methodological approach for developing a common PKI-based security policy", Computer Communications 26 (2003) 1873–1883.
[2] Wimmer, M., Traunmuller, R., "Trends in electronic government: managing distributed knowledge", Proceedings from 11th International Workshop on Database and Expert Systems Applications, Springer, New York, 2000, pp. 340– 345.
[3] Lawson, G. NetState, Demos, London, 1998.
[4] Tapscott, G. "Digital Economy", McGraw-Hill, New York, 1996.

[5] Nadler, D. Tushman, M. Competing By Design: The Power of Organizational Architecture, Oxford Univ. Press, New York, 1997.
[6] Sprecher, M. H., "Racing to e-government: using the Internet for citizen service delivery", Government Finance Review 16 (5) (2000) 21– 22.
[7] Evans, D., Yen, D. C., "E-government: An analysis for implementation: Framework for understanding cultural and social impact." Government Information Quarterly 22 (2005) 354–373
[8] United Nations Division for Public Economics and Public Administration. (2002, May). Benchmarking e-government: A global perspective: Assessing the progress of the UN member states.
[9] Jaeger, P. T., "Deliberative democracy and the conceptual foundations of electronic government", Government Information Quarterly 22 (2005) 702–719
[10] Hernon, P., Reylea, H. C., Dugan, R. E., & Cheverie, J. F. (2002). United States government information: Policies and sources. Westport, CT: Libraries Unlimited.
[11] Chadwick, A., & May, C. (2003). Interaction between states and citizens in the age of the Internet: E-government in the United States, Britain, and the European Union. Governance: An International Journal of Policy, Administration, and Institutions, 16(2), 271–300;
[12] Axios Systems, "Why should you adopt ITIL", 2005, http://www.axiossystems.com/six/en/best_practice/itil-benefits.php
[13] Al-Shaer, S., "From Vision to Reality", e4all, the Official Magazine of Dubai e-Government, 2003, Issue No. 1, p. 1
[14] DEG-e4all, the Official Magazine of Dubai e-Government, Papers from the "House of Excellence": DEG eServices Standards, issue 33, July 2006, pp. 12.

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