

# Chapter 29

## Building Semantic Webs for E-Government with Wiki Technology

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### ABSTRACT

*E-government webs are among the largest webs in existence, based on the size, number of users and number of information providers. Thus, creating a Semantic Web infrastructure to meaningfully organize e-government webs is highly desirable. At the same time, the complexity of the existing E-government implementations also challenges the feasibility of Semantic Web creation. We therefore propose the design of a two-layer semantic Wiki web, which consists of a content Wiki, largely identical to the traditional web and a semantic layer, also maintained within the Wiki, that describes semantic relationships. This architectural design promises several advantages that enable incremental growth, collaborative development by a large community of non-technical users and the ability to continually grow the content layer without the immediate overhead of parallel maintenance of the semantic layer. This chapter explains current challenges to the development of a Semantic Web, identifies Wiki advantages, illustrates a potential solution and summarizes major directions for further research.*

### INTRODUCTION

The effectiveness of any governments is reflected by its efficiency, better services to citizens and improved governmental processes. Many governments therefore have embarked on aggressive campaigns to vastly increase the number of online interactions with citizens, and to provide large

amount of online information and knowledge to citizens (as well as to government employees). A review of government pages available through the Google search engine demonstrates this reality, as shown in Figure 1.

The largest contingent of government pages, from the USA and represented by the .gov top-level domain, accounts for 368 million pages. No other government comes close. But even smaller e-government sites, such as .gov.uk (9.28 million

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*Figure 1. Page count of selected e-government sites available through Google (June, 2005)*

<i>Country</i>	<i>Government domain</i>	<i>Number of web pages</i>
USA	.gov	368,000,000
Canada	.gc.ca	12,100,000
UK	.gov.uk	9,280,000
Australia	.gov.au	7,200,000
China	.gov.cn	2,630,000
New Zealand	.gov.nz	1,290,000
South Africa	.gov.za	816,000
Hong Kong	.gov.hk	887,000
Thailand	.gov.th	728,000
Slovenia	.gov.si	388,000

pages) or.gov.au (7.2 million pages) exceed the size of major company sites such as IBM (3.93 million for ibm.com), eBay (3.14 million for ebay.com) and dwarf sites of companies such as Ford (55,700 for ford.com) or Barclays Bank (24,200 for barclays.co.uk).

Even Slovenia, a country with only 2 million citizens, maintains a vastly larger e-government website of over 380,000 pages.

To encourage usage of all this information and knowledge, an e-government must be able to provide a convenient way for its citizens to access and obtain the information and knowledge they desire, without having to manually filter out too much content that is not needed. Some governments try to do this by building aggregator sites or portals to capture the content created by multiple government sources. For example, Hong Kong's government has individual portal solutions (ESDLife) for almost every government department, as well as a portal for electronic content and service delivery to citizens (<http://ESDlife.com.hk> and <http://esd.gov.hk>).

Other than portals, as in the case of ESDLife, there are several technologies governments can use to provide useful information to its citizens through the internet, such as special KM portals, CRM software, content management systems, e-mail broadcasts, listservs or discussion forums. All these solutions can help to disseminate and exchange information, each of which with its own

strengths and weaknesses. Overall however, they face the same difficulties, namely the management of too much information, created by too many heterogeneous, distributed sources. Resulting issues such as inconsistent terminologies, information overload and too little maintenance of outdated knowledge are only too frequent.

Hence, to handle knowledge organization and access in a more feasible way, an e-government needs to add some 'logic', a semantic structure, to organize its knowledge offerings. Hyperlinks can be used to provide information to citizens by allowing them to access information with a relatively little effort. However, to organize the links in a manageable way is a great challenge to the websites developers, and hyperlinks in conventional HTML do not have a definable meaning.

One approach to solve this problem is the development of a Semantic Web for e-government. Such a web can be used to develop a more effective and transparent e-government. As with any Semantic Web, site developers would annotate the web pages with semantic markup, semantic links and metadata so as to enable machines to follow the links and ideally to facilitate the integration of knowledge and information from many different sources. Semantic markup refers to a markup language whose name spaces, vocabulary and relationships are meaningfully definable. Semantic links are pointers between web objects, which can be meaningfully interpreted because of their

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