

Content Production Strategies for E-Government

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INTRODUCTION

The terms *electronic government (e-government)* and *digital government* are used to refer to the utilization of the Internet and other information and communication technologies (ICT) effectively in public sectors. In e-government development activities, the concern is often in building new means to support and strengthen democracy (e.g., Watson, Alselsen, Evjemo, & Aarsæther, 1999). In other cases, the main concern may be in supporting the work of people in public sectors (e.g., Mustajärvi, 2003), or in building new kinds of services for citizens (e.g., Lyytikäinen, Tiitinen, & Salminen, 2000). Common to most development activities is the need to have the content of public sector information repositories available on information networks, including the Internet, extranets, and intranets of particular organizations.

The content production practices have a major effect to what extent digital content is accessible and how well the content supports e-government goals. In planning new kinds of e-government solutions, it is important to understand the different alternatives for producing information assets and the consequences of the solutions. In the digital era, the actors on public sector have to update continuingly their content production strategies and practices for effective ICT utilization.

In this article, we will introduce three strategies for content production and discuss the practices related to the strategies. We will also evaluate the benefits and challenges of each of the strategies. We will demonstrate the strategies and practices by examples from the Finnish

legislative environment. Data about the case environment has been collected during long-term collaboration of researchers at the University of Jyväskylä with the Finnish Parliament and ministries (Salminen, 2003).

BACKGROUND

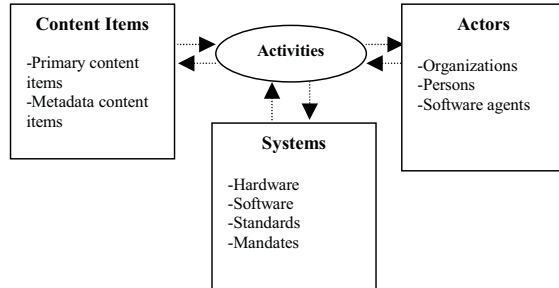
Documents have traditionally been important in public sectors to record rules, applications, decisions, and decision histories. A great deal of the content of digital information repositories is stored either as documents or as metadata related to documents. Information technology has provided powerful tools for authoring and distributing documents in digital form and new document genres have evolved. The Internet has facilitated new kinds of communication both within the public sector and with citizens outside. Digital information repositories are expanding rapidly and more systematic rules and practices concerning content production and organization of the content are needed.

Our analysis of the content production strategies will be based on the content management model depicted in Figure 1 (Salminen, 2003). The model shows two types of entities in a content management environment and information flow between them. The information flow is depicted in the figure by the arrows. All information flows are related to activities depicted by the oval.

An *activity* is a set of actions performed by one or more actors in a process. In the public sector, the process can be, for example, legislative or budgetary process. The

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Figure 1. Information flow in a content management environment



entities depicted by rectangles in the figure represent information resources. There can be three kinds of resources corresponding to their different roles in the activities: actors, content items, and systems. An *actor* is an organization or a person, in the contemporary and future network environments also software agents can perform as actors. In the budgetary process, for example, Ministry of Finance is one of the organizational actors and Minister of Finance is one of the human actors. *Systems* consist of the hardware, software, standards, and mandates used to support the performance of activities. Mandates can be, for example, regulations and legislation governing the content management of the domain. *Content items* are documents and other addressable units of stored data intended as information pertaining to the activities of the domain. Content items may be clustered in *collections* and *metadata* associated with the collections. Metadata provides information about the content items of a collection and about their production, storage, and use environments. If metadata is accessible in the activities of the environment as content items of their own, then it is possible to talk about two kinds of content items in the environment: *primary content items* and *metadata content items*.

In the analysis of the next section, we will consider the Finnish legislative environment as a case of a public sector content management environment. The legislative process is an example of a complex interorganizational process participated by many organizations, among them the government, ministries, the parliament, and the president of the Republic. Hundreds of people in these organizations participate in the work and content production. The time for developing a new law may take from a couple of months to several years. Dozens of different document types are produced within the legislative work, annually thousands of documents and tens of thousands of original pages. In the parliament alone, about 40,000 original pages are published per year. Information about the

legislative activities and results of the activities are available on the public Web pages of the ministries and the parliament. The Otakantaa.fi service provides some opportunities for citizens to discuss and express their opinions related to the legislative activities. ICT is utilized in all organizations involved, and in the communication of people participating in the process. A number of intranet systems, extranet systems, and various software applications are used during the process. Advanced content production and document management strategies are important in the environment to facilitate effective work processes and building flexible e-government services.

CONTENT PRODUCTION STRATEGIES

We have identified three different content production strategies: traditional, structured, and holistic. Table 1 shows the system basis for the strategies. In the *traditional strategy*, word processors, file systems, and database systems create the technological basis of content production. Word processors are used to produce text documents and file systems to store them. In the *structured strategy*, not only the database content but also the document content is in structured form. The Standard Generalized Markup Language (SGML) (Goldfarb, 1990), its more streamlined subset Extensible Markup Language (XML) (Bray, Paoli, Sperberg-McQueen, Maler, & Yergeau, 2004), and the SGML application HTML (HyperText Markup Language) create the basis for the management of structured documents. The *holistic strategy* is based on the use of XML and Semantic Web technologies (<http://www.w3.org/2001/sw/>). The goal in this strategy is to enable the creation of rich metadata and flexible cooperation of computers and people. In the following, we will discuss more of the strategies. At the end, we will evaluate the benefits and problems of each of the strategies.

Traditional Content Production

The traditional content production is characterized by a clear distinction of document content and database con-

Table 1. The system basis of the three content production strategies

Traditional	Word processors, file systems, database systems
Structured	SGML, XML and HTML as document standards
Holistic	XML technologies and Semantic Web technologies

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