

Chapter IV

Information Resource Integration

1. INFORMATION RESOURCE INTEGRATION

If a region or nation is to make the best use of its information assets and reduce duplication in gathering data, information sharing across the public sector is essential. For example, from tracing the origins and spread of foot and mouth disease to locating crime hot spots for law enforcement, geographic information systems have become indispensable for effective knowledge transfer within both the public and private sector. The potential importance of GIS is indicated in recent studies. For instance a recent US study showed that projects, which had adopted and implemented geospatial interoperability standards had an ROI (return on investment) of 119%, which means that for every dollar invested, there were annual cost savings of more than a dollar (Cabinet Office, 2005).

Integrating information resources governments are challenged by several important issues, such as data information quality, information asymmetry that cause imbalance, and identity management (i.e. privacy of data about natural persons and legal entities). These topics are covered in the beginning of this chapter. These issues are followed by examples of inter-organizational information integration in emergency medical services, urban planning, and a regional E-Procurement project. In this chapter we also discuss several theoretical approaches to inter-organizational

integration. Managing integration projects is an important issue because many E-Government initiatives have a project orientation. At the end of the chapter two cases—the case of state funded tourism marketing and the case of national registers—are presented.

1.1 Semantic Integration of Government Data

Many normative models of E-Government typically assert that horizontal and vertical integration of data flows and business processes represent the most sophisticated form of E-Government, delivering the greatest payoff for both governments and users. With this sophistication, might come great complexity of design and implementation that spans the domains of information systems, information policy and public administration.

Research has illustrated how the integration of data supporting water quality management addresses this complexity in setting and implementing water quality policy (Chen, Gangopadhyay, Holden, Karabatis, & McGuire, 2007). Data integration problems arise from water quality sources such as states, territories and agencies. Data integration creates unique data needs and problems, such as how to interpret information derived from multiple sources, of variable quality, using different formats, and collected according to different protocols and procedures.

Existing tools for managing these data are not integrated nor do they provide any sort of data analysis capability to allow water resource managers to make informed decisions. The combination of both organizational and data complexity creates fundamental challenges to developing policies, based upon a robust information stream, which are responsive to a wide range of stakeholder interests. Such a problem setting represents the kind of challenge that sophisticated E-Government systems are supposed to address (Chen et al., 2007).

In the case of water quality data described by Chen et al. (2007), numerous organizations and individuals (e.g., volunteers) collect water quality data. Ideally one should integrate all possible data into a uniform format, but in practice this is difficult to accomplish because data sources do not agree on a universal format. Therefore, a hybrid approach was developed, that integrates the metadata (including information on how to access data sources, when and where the data are collected, which parameters are monitored, etc.) of all data sources. The approach only fully integrates data from key sources, such as data from the Environmental Protection Agency (EPA) and the U.S. Geological Survey. Thus, this approach enables water quality managers and policy makers to search the integrated metadata, to locate any source of interest, and to manually download data from that source; or access the fully integrated data as if the data were from a single source.

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