

Integrated Criminal Justice System Design: Designing an Appropriate Governance Structure

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ABSTRACT

In this paper we discuss interim findings from an ongoing comparative case study of the Automated Regional Justice Information System (ARJIS) in San Diego, CA. Significant attention had been given to the need to integrate information systems across organizational boundaries in the criminal justice domain. We employ a social informatics lens in this research that views the technological artifact as embedded in cultural and institutional context. In our examination of ARJIS we have found that the adoption of a Joint Powers Agreement (JPA) as a governance structure has impacted system design and organizational practices significantly. Specifically, the JPA facilitates participation by member agencies and, allows the ARJIS management team autonomy and flexibility in developing and managing the ARJIS information system.

Keywords

Integrated criminal justice systems, social informatics, joint powers agreement, governance structures, inter-agency collaboration

INTRODUCTION

Through this paper we present preliminary findings from an ongoing case study of the Automated Regional Justice Information System (ARJIS) in San Diego, California¹. This case study is one of a set of comparative case studies that is examining integrated criminal justice systems in the United States and Europe. Integrated criminal justice systems (ICJS) are technological, organizational, and governance systems designed to facilitate information sharing and collaboration across both agency and jurisdictional boundaries.

We engage this work to gain a better understanding of the socio-technical design principles for ICJS. We use a social informatics approach that accounts for the impact of institutional and cultural context on the design, uses, and consequences of ICT (Kling et al., 2005). Our view of ICTs is that they are embedded with social context, shape human social context, and are shaped by human social context. From this perspective, neither the technology nor the user is without agency. Nor is the user an abstraction that engages the ICT in a social vacuum. Rather, both the technology and the user are embedded in highly complex and evolving that is constituted and shaped by both. Through this research we seek, to inform ICJS design practices resulting in systems that more closely align with the organizations they are intended to serve.

In the United States, the law enforcement and criminal justice community is characterized by a highly localized, federalist system. Individual law enforcement agencies have specific jurisdictional boundaries, organizational and governance structures, and missions. Information and communications technologies (ICT) in law enforcement are often developed or procured in an ad hoc manner specific to particular organizations (Dunworth, 2005, National Association of State Chief Information Officers (NASCIO), 2003). A result of this localized institutional orientation is lack of vertical and horizontal system integration across jurisdictions within the law enforcement community. This leads to a situation where regional or cross-agency inter-operability is difficult if not occasionally impossible, a particularly vexing state in an emergency.

The move to integrate across individual agency systems to foster interorganizational collaboration is not new (Dunworth, 2005). However in the wake of the attacks on September 11, 2001, and a renewed focus on homeland security, increased attention has been given to realizing the goal of integration by policymakers (General Accountability Office, 2004, General Accountability Office, 2005).

INTEGRATED CRIMINAL JUSTICE SYSTEMS

Integrated criminal justice information systems (ICJS) encompass technological infrastructures, governance policies and structures, and work practices and procedures intended to facilitate effective communication and sharing of information both within and across organizational and jurisdictional boundaries. Projected benefits of using ICJS include improved data quality, time and money savings, timely access to information, improved safety, greater efficiency and information sharing (Dunworth, 2005, Gil-Garcia et al., 2004). Some have posited second-order benefits to ICJS use such as deterrence as a result of a perception that law enforcement is more knowledgeable of who commits crimes (Agrawal et al., 2003).

Claims that the benefits of ICJSs are now well-established (Dunworth, 2000, Dunworth, 2005) are contested by empirical studies that make clear many of the benefits of ICJS initiatives are still unrealized (General Accountability Office, 2004, General Accountability Office, 2005). For example, the National Conference of State Legislatures (NCSL), a major advocate of the deployment of ICJSs, states explicitly that agencies should not expect to realize a financial savings as a result of their ICJS initiatives (Morton, 2004). This echoes findings from studies of ICJS initiatives in law enforcement that note efficiency gains are often offset by the costs of the increased resources required to support the ICT (Nunn, 2001).

¹ Portions of this paper relating to methodology and ARJIS were incorporated from another of our paper: *Organic Development: A Top-Down and Bottom-Up Approach to Design of Public Sector Information Systems*, submitted to DGO 2006.

In spite of the documented difficulties and ambiguous results, agencies continue to press on with their ICJS initiatives, and new initiatives continue to proliferate both in the United States and globally (Northrop et al., 1995). Each of these initiatives has its own design methodology, governance structures, and system components (Morton, 2004). The move is to integrate disparate information systems: but, the level of integration has been in many ways limited to the scope of the project. It would be too easy, and sad, if this were allowed to negate the overall goal of nationally integrated systems.

MOTIVATION

The practical value of studying ICJS makes these worthy objects of study. Conceptually, these systems are an ideal example to study inter-organizational systems. Such systems are complex due to the relationships among technical elements (their computing architecture) and the institutional structures in and across which they exist and influence (the broad range of agencies, levels of government and stakeholders in and out of the public sector) (Northrop et al., 1995). The nature and effects of the relations among technical architectures and institutional structures links various social science and computing research areas, and the theorizing in this area, while nascent, is quite active (Markus and Robey, 1988, Law and Bijker, 1992, Northrop et al., 1995, Rudman et al., 2003).

METHODOLOGY

Since this research is part of a larger, comparative, study a common framework is critical. The common framework we used builds on that reported on in Sawyer, et al. (Sawyer et al., 2004) and focuses attention to:

- Computing infrastructure elements to include nature and structure of wired and wireless connection, throughput, coverage, reliability, and costs.
- The types, uses and characteristics of the devices being used.
- The functionality, feature sets, design principles, and development efforts regarding applications and systems software. This includes attending to issues with security and authentication.
- Information sharing, uptake, distribution, and needs. This includes sources of information, cross-system and cross-boundary information sharing, and the volume, types, and uses of information
- Work activities of stakeholders from both task analysis and work structuring perspectives. This includes a range of stakeholders (such as mobile and fixed-location users, dispatch, developer, administrators, etc.) and a range of work environments.
- Governance structures and processes. This includes both operational governance (of the work being done and of the systems development efforts) and inter-organizational governance (problem-resolution, policy-setting and decision-making).

We used five forms of data collection. Two focus on gathering primary data: interviews (face-to-face, by phone, and via email, depending on the point of the interaction), ride-alongs with – and other direct observation of – users. We also gathered secondary documents such as reports, memos and locally-relevant material (we, of course, have done and continue to do extensive web and library research to support the field work) as well as data about device uses, data transmission, and ARJIS usage via unobtrusive means (such browser logs, server logs, and telecom activity logs).

Data from the sources are transcribed into digital format or collected at source in digital format. Data from the usage logs came in digital format. This supported our analysis across different data sets and data collection approaches. To do this analysis we are using traditional qualitative/case study data analysis approaches (see Miles and Huberman, 1984). In particular, we are focusing on three techniques: interim analysis of the data to guide data collection and interpretation in the future, explanatory event matrices, and content analysis of the interview/focus group transcripts and field notes.

We are currently completing the case study of ARJIS. When the study is complete we expect to have fifteen (30 hours) interviews, six officer ride-alongs, and analysis of over 650 pages of documents. At the end of this research we expect to have a comprehensive and in-depth understanding of the ARJIS system both technologically and institutionally.

LIMITATIONS

There are a number of limitations to these results. First, data analysis is still in progress. As a result some new relevant fact regarding ARJIS as a joint powers agency may emerge that changes our initial analysis. Second, while the joint powers agreement (JPA) framework appears to be successful for ARJIS, it is not clear whether it is a framework that would achieve equal success in analogous but contextually different scenarios. For example, it is not clear to what extent particular personnel, organizational history, or local government culture play a role in translating the JPA into a successful outcome. Third in order to compare the JPA governance mode that fosters the development of a law enforcement community, comparisons have to be made to other forms of governance structures. This is one element of planned future research.

ARJIS

The Automated Regional Justice Information System (ARJIS) of San Diego, California is one of the preeminent criminal justice information systems initiatives in the United States. ARJIS is both a computerized information system, and a government organization. Initially the technological component consisted of a mainframe records management system accessible by multiple jurisdictions in the San Diego area, ARJIS has evolved over the past 20 years both organizationally and technologically. Organizationally ARJIS has become its own organization embedded in the county government structure. Currently, ARJIS is in the process of developing wireless communications systems, global query application, and public safety cable television channel.

Beyond its established record of success, ARJIS is an ideal system and organization to study is that is both horizontally and vertically multi-jurisdictional. ARJIS is horizontally jurisdiction-spanning because it (the organization and the system) spans numerous local jurisdictions such as the San Diego and Carlsbad Police Departments among many others. Vertical jurisdiction spanning results from ARJIS' spanning of multiple of government including the San Diego Sheriff's Office (county), the California Highway Patrol (state), and the U.S. Border Patrol (federal) (Scanlon, 2004). More than ten law enforcement agencies with over 10,000 law enforcement officers policing a population of over 38 million citizens are participants in the ARJIS system (Bureau of Justice Statistics, 2000).

Technologically, ARJIS is equally robust. The ARJIS system includes over 2,500 workstations and printers, and 10,000 registered users. Over 35,000 transactions accessing 2.9 million recorded incidents, 5 million digital photos, and 4.4 million map and crime statistics occur daily. With its sheer scope, ARJIS provides a unique opportunity to study an ICJS initiative in an institutionally complex environment.

INTERIM FINDINGS

A key finding that emerged from our ongoing data analysis is the utility of the governance structure ARJIS has chosen. Our data indicates that the governance structure plays a key role in the success of ARJIS as a system and an organization. The selection of a proper governance structures is key to effective design and implementation of ICJS because the technologies are embedded in larger institutional contexts. Law enforcement agencies tend to be highly myopic and battles over turf are a common impediment to the development of ICJS (Gil-Garcia et al., 2004). An effective governance system serves to ameliorate issues of turf and break down barriers between participating organizations.

ARJIS employs a Joint Powers Agreement (JPA) as the foundation for its governance structure. A JPA is "a contract between a city, a county and/or a special district in which the city or county agrees to perform services, cooperate with, or lend its powers to the special district or other government entity²." In the case of ARJIS, the organizational component of ARJIS was created as a joint powers agency, and the participating agencies agreed to lend their powers or cooperate with ARJIS. We identify two key benefits in organizing ARJIS via a JPA.

² See

<http://dictionary.law.com/default2.asp?typed=joint+powers+agreement&type=1&submit1.x=0&submit1.y=0&submit1=Look+up>

First, creating ARJIS as unique entity within the regional government structure, yet distinct from any individual member agency allows ARJIS management some autonomy in making decisions regarding technical infrastructure, application selection, and daily operations. For example, in developing a wireless system accessed by handheld devices in the field, ARJIS management and developers solicit the bids for contracts, build the system, test the system, and choose which combination of infrastructure and application works best.

This autonomy also allows ARJIS management to suggest possible new applications or devices to the member agencies, obtain grants to test new projects, enter into contracts and participate in other initiatives such as the federal government's initiative to develop communications standards: Project SAFECOM. In essence, the ARJIS organization acts as a representative by proxy for the individual member agencies.

A second key benefit is the JPA distributes policymaking power across the individual member agencies. A number of different committees have been formed to cover different aspects of ARJIS operations. For example, there is a technical committee, a business committee, and a public safety committee. These committees are comprised of members of ARJIS management and representatives from the individual member agencies. The committees coordinate their activities and pass policy – technical and management – decisions up to a management committee comprised of the chiefs of the member agencies. Approval from the chiefs is then forwarded to the Board of Directors comprised of representatives from each member agency which has final approval.

By incorporating the participating agencies in the different levels of decision making, ARJIS is able to ensure that individual agency interests – which may be and often are competing – are accounted for in the process. Further, with the previously discussed autonomy, ARJIS management is able to act as a broker that guides the negotiations between individual committee members and the committees themselves since they participate in every committee. Brokering for individual agency interests and requirements helps to maintain support and level of participation among the participants as well as keep the individual member agencies focused on ARJIS objectives.

CONCLUSION

In this paper we have discussed preliminary findings from our ongoing case study of the ARJIS system and organization in San Diego, California. Our initial analysis indicates that constructing the ARJIS organization as a joint powers agency using a joint powers agreement between participating agencies has had two key benefits towards realizing ARJIS' goal of integrating agency systems to foster collaboration. One benefit is ARJIS' relative autonomy in implementing organization initiatives such as infrastructure procurement, grant solicitation, and contractor selection. The second benefit is the JPA helps ensure that individual agency interests are adequately represented in ARJIS policy and design decisions with ARJIS management acting as a broker in member negotiations and focusing member agency actions around ARJIS objectives.

The ARJIS governance structure has had a direct impact on system design. ARJIS has an overall strategic plan that consists of modernizing to new technologies and eventual replacement of legacy systems. However, ARJIS management's role as a broker between JPA member agencies has resulted in a parallel emergent approach to system development: adding applications and functionality as individual member agency request them in a manner that is consistent with the overall strategic plan. By taking this approach to system development, ARJIS management is able to retain "buy-in" from member agencies and demonstrate a return on investment by delivering services incrementally.

In the near term, the data analysis will be completed and refined. The findings of this case study will then be compared to two other case studies that have been completed of Pennsylvania's JNet system, and the Washington D.C. metro-area's CapWIN system. The expectation is that the comparison of governance structures will yield useful informative insights that can better inform future integrated criminal justice system development efforts.

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REFERENCES

1. Agrawal, M., Rao, H. R. and Sanders, G. L. (2003) In *Journal of Organizational Computing & Electronic Commerce*, 73-89.
2. Bureau of Justice Statistics (2000), *Local Police Departments 2000 Census*.
3. Dunworth, T. (2000) *Policies, Processes, and Decisions of the Criminal Justice System*, **3**, 371-426.
4. Dunworth, T. (2005) In *Information Technology and the Criminal Justice System*(Ed, Pattavina, A.) Sage Publications, Inc., Thousand Oaks, CA, pp. 1-28.
5. General Accountability Office (2004), *Project SAFECOM: Key Cross-Agency Emergency Communications Efforts Require Stronger Collaboration*.
6. General Accountability Office (2005), *Homeland Security: Agency Plans, Implementation, and Challenges Regarding the National Strategy for Homeland Security. Report to the Chairman, Subcommittee on National Security, Emerging Threats, and International Relations, Committee on Government Reform, House of Representatives*.
7. Gil-Garcia, J. R., Schneider, C. A. and Pardo, T. A. (2004) In *Center for Technology in Government*, Albany, NY.
8. Kling, R., Rosenbaum, H. and Sawyer, S. (2005) *Understanding and Communicating Social Informatics: A Framework for Studying and Teaching the Human Contexts of Information and Communications Technologies*, Information Today, Inc., Medford, New Jersey.
9. Law, J. and Bijker, W. E. (1992) In *Shaping technology/building society: studies in sociotechnical change*(Ed, Bijker, W. E.) MIT Press, Cambridge, Mass., pp. 32-50.
10. Markus, M. L. and Robey, D. (1988) *Management Science*, **34**, 583-598.
11. Miles, M. B. and Huberman, A. M. (1984) *Qualitative data analysis: a sourcebook of new methods*, Sage Publications, Newbury Park.
12. Morton, H. (2004), *Integrated Criminal Justice Information Systems*, (Ed, National Conference of State Legislatures).
13. National Association of State Chief Information Officers (NASCIO) (2003), *Concept for Operations for Integrated Justice Information Sharing Systems*.
14. Northrop, A., Kraemer, K. L. and King, J. L. (1995) *Journal of Criminal Justice*, **23**, 259-275.
15. Nunn, S. (2001) *Public Administration Review*, **61**, 221-234.
16. Rudman, W., Clarke, R. and Metzel, J. (2003) In *Report of an Independent Task Force Sponsored by the Council on Foreign Relations*.
17. Sawyer, S., Tapia, A., Pesheck, L. and Davenport, J. (2004) *Communications of the ACM*, **47**, 62-65.
18. Scanlon, P. (2004) *ARJIS*.