Integrated Criminal Justice Systems: Designing Effective Systems for Inter-organizational Action

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ABSTRACT

In this paper we provide a summary of the poster presented at the 2005 Digital Government Conference. Our research is motivated by the twin goals of (1) developing a set of principles the support the design of inter-organizational information systems and (2) guidance to organizational leaders for how to adapt their organizations to leverage these systems. We focus on integrated criminal justice systems because of the value such principles will have for both homeland security and the effective uses of information and communications technologies to support governmental action. Here we highlight the nature and current state of the field relative to integrated criminal justice (ICJ) systems. In doing this we raise three design considerations relative to the operational pressures that users of ICJ face. First, the need to simplify system/user interaction and improve the system's reliability. Second, to better account for norms of policing behavior in the design of these systems. Third, to take advantage of the role of dispatch in the design and use of ICJ.

Keywords

Integrated criminal justice, systems, mobility, governance, design.

1. INTRODUCTION

We are studying the development, deployment, and use of integrated criminal justice information systems (ICJs). In doing this we are focusing on the effects and impacts that ICJ are having on law enforcement agencies, and, more broadly, homeland security. Beyond the potential value and implications of use in law enforcement and criminal justice, ICJs are also an example of the potential for digital government activities to have a hand in transforming the ways that government agencies and public sector organizations work collaboratively. Our goals are to be explicitly seeking sets of design principles that will lead to better inter-organizational information systems and to better structuring of organizations to leverage such collaborative systems.

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An integrated criminal justice system is comprised of information and communication technologies (ICTs) in conjunction with governance and operational structures designed to facilitate the access to and sharing of mission critical information. An ICJ, by this definition, is a system whose users come from a number of organizational (and geographic) jurisdictions. This means that ICJ are developed in complex webs of institutional connections and have no singular line of authority. The institutional complexity of an ICJ is typically matched by the complexity of the technological architecture. An ICJ is characterized by the uses of multiple data sources, bringing together both web-based and legacy systems, relying on mobile and fixed infrastructures, supporting both multiple devices and a range of computing platforms. These systems must properly support a range of security and authentication needs, support inter-agency collaborative interactions and messaging, and respect the political and legal constraints that help to define the environments in which they are designed, developed, deployed and used.

Initially inspired by the need to deal with jurisdiction-spanning incidents, increased attention has been given to the design and development of integrated criminal justice systems as a result of the attacks on September 11, 2001. Capitalizing on this increased interest, our motivation for studying integrated criminal justice systems is twofold: One, to inform practice by identifying governance structure, operational planning, and work arrangement design principles that can be generalized to future ICJ projects; and two, to extend theory on the role of institutions and technology in complex organizations. An anticipated outcome of this research is improved system design resulting in improved homeland security, public safety, and e-government.

There are two general approaches to developing and deploying ICJ: purchasing vendor-made systems or developing them specifically. There are several vendors, such as Motorola and COPLINK, who provide systems that take on many of the roles that ICJ can play. The specialized development approach taken by many who are engaging in ICJ development tend to be a public–private partnership. These systems tend to rely on open architectures and public standards (such as the Justice XML data sharing standards). Our focus is to study systems who are focused on open-standards (implying by this focus an underlying belief that this is an important technological characteristic for systems that support and enable digital government.

2. CURRENT STATUS

To date we have completed case studies of integrated criminal justice systems in the United Kingdom and Pennsylvania, USA. The focus of our case study of the United Kingdom's effort were the systems supported by their national police technology office, the Police Information Technology Organization (PITO). The focus of our case study of the Commonwealth of Pennsylvania's efforts was their Justice Network (JNET). Our current efforts are directed at completing a third case study of the Automated Regional Justice Information System (ARJIS) system currently being developed and deployed in San Diego, California. We intend to follow the ARJIS work with a fourth case study of the DC area's Capital Wireless Integrated Network (CAPWIN)

When the ARJIS and CAPWIN case studies are complete we will then be able to compare our findings across all three studies with the goal of drawing some generalizable conclusions. To do this we will also draw on sources of secondary data on the deployment and uses of ICT by police and public safety officers in the USA. This combination of case studies and secondary data analysis provides a means to triangulate our findings and better theorize on the needs of inter-organizational information systems and the organizations that will be using them.

3. INTERIM FINDINGS

As part of our research approach, we are doing interim analysis as a means of guiding our research [1]. Here we report on four findings from the interim analysis of the PITO and JNET case studies.

Our first finding is that both the JNET and PITO-designed ICJ systems are designed with limited functionality and simple interfaces in an effort to account for the operational needs of the officers. Officers operating in the field are limited in the attention they can safely give to system operation which in turns constrains system design.

A second finding we have made is that social norms within individual agencies impede information sharing. Local agency norms are often implicit and powerful. This results in subtle but important operational differences among agencies, even when they are relatively close geographically. Transcending these differences is a critical design issue [2, 3].

A third finding is that the computing infrastructure on which new integrated criminal justice systems are built of is chaotic and often outdated. System developers and agency managers will be better served modernizing the existing infrastructure rather than focusing on new and interesting technological gadgets. Focusing on the development of new applications on top of the existing infrastructure will significantly constrain information sharing efforts.

Our fourth finding is the important roles the police dispatcher plays in supporting both routine and emergency activities. In the PITO-designed systems, police dispatch is a critical element and dispatch officers serve as a central hub in the sharing and uses of information. In contrast, the JNET system bypasses the dispatch center, and this leads to some operational problems [3, 2].

4. CURRENT ACTIVITIES

Currently, we are in the initial stages of our ARJIS case study. Our efforts are currently focuses on reviewing the literature and document collection. Our review of the literature consists of analyzing previous studies of policing and information and communication technology and how those studies can inform our current research efforts.

Our document collection efforts have consisted of collecting and analyzing publicly available technical, policy, and operational documents generated by ARJIS and articles from the popular and industry press. This analysis will provide a foundational knowledge of the ARJIS system which we will expand during the on-site phase of our research. On-site analysis will consist of a variety of qualitative methods including semi-structured interviews, internal document analysis, and car 'ride-alongs.' This on-site phase is scheduled to begin in April or May 2005.

This abstract has detailed the motivations for our current research on integrated criminal justice systems, some findings we have been able to make to date, and our current and future research plans. Integrated criminal justices systems are an area of significant interest in the law enforcement, digital government, and public policy domains. In performing this research, we seek to inform practice by identifying design principles that are generalizable across law enforcement agencies; and to inform theory by enhancing our understanding of the interaction between complex social institutions and information technologies. Achievement of both goals will result in a significant contribution to the body of knowledge.

5. ACKNOWLEDGEMENTS

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6. REFERENCES

1. Miles, M., and Huberman, A., *Qualitative Data Analysis: A Sourcebook of New Methods* (2cd). Thousand Oaks, CA: Sage (1994).

2. Sawyer, S., Reagor, S., Tyworth, M. and Thomas, J., "From Response to Foresight: Managing Knolwedge and Integrated Criminal Justice," in Newell. S. and Galliers R. (eds.) Proc. 2005 Organizational Learning and Knowledge Capabilities Conference, Cambridge, MA, (March, 2005).

3. Sawyer, S. Tapia, A., Pesheck, L, and Davenport, J., "Observations on Mobility and the First Responder," *Comm. of the ACM, 47*(3), 62-66 (March, 2004).