

6-1-2013

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Recommended Citation

Jane Bailey and Jacquelyn Burkell, "Implementing Technology in the Justice Sector: A Canadian Perspective" (2013) 11:2 CJLT.

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Implementing Technology in the Justice Sector: A Canadian Perspective

*Jane Bailey and Jacquelyn Burkell**

ABSTRACT

Despite the many technological advances that could benefit the court system, the use of computers and network technology to facilitate court procedures is still in its infancy, and court procedures largely remain attached to paper documents and to the physical presence of the parties at all stages. More and more research is focusing on the use of technology to make the legal system more efficient and to reduce excessive legal costs and delays. The goal of this exploratory research project is to examine the experience of justice sector technology implementation from the perspective of individuals involved first-hand in the implementation process. This study will provide insight into the political and cultural factors that support and hinder the implementation of technologies in the justice sector. Unstructured interviews were conducted with individuals involved in the planning and implementation of technological change in Canadian courts in order to gather their perspectives on the change process. These key informants were asked to discuss the process of technological change in their courts, the barriers that they experienced to such technological change, and the factors that promote or support the implementation of technology by courts. A grounded theory approach was used to identify emergent themes related to these questions. The results provide insight into the factors that promote and impede the implementation of technologies by Canadian courts.

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INTRODUCTION

Access to justice has been labeled a crisis for the Canadian legal system,¹ and Canada is not alone among nations in this respect.² The growth in self-represented litigants,³ the inaccessibility of justice for citizens living in areas remote from courts and lawyers and for those whose first language is neither English nor French,⁴ the physical inaccessibility of court services and courtrooms,⁵ escalating costs, and significant delays⁶ contribute to growing citizen disaffection with the legal system.

Some have argued that the growth of technology and the internet will fundamentally alter the justice system and related professions, suggesting that new technologies will assist people in identifying and understanding their legal rights and duties and that information technologies will improve the capture, preservation, and dissemination of legal knowledge, resulting in improved access to justice.⁷ A growing body of research suggests that technology could and should be harnessed by the justice system to address the access to justice issues that contribute to public disaf-

¹ Rt Hon Beverley McLachlin, Chief Justice of Canada, “The Challenges We Face” (Remarks delivered at the Empire Club of Canada, Toronto, 8 March 2007), online: Supreme Court of Canada <<http://www.scc-csc.gc.ca/court-cour/ju/spe-dis/bm07-03-08-eng.asp>>.

² Law Council of Australia, *Inquiry into Access to Justice*, Submission to the Senate Legal and Constitutional Affairs Committee (30 April 2009), online: Law Council of Australia <http://www.lawcouncil.asn.au/shadomx/apps/fms/fmsdownload.cfm?file_uuid=7E2D7CEB-1E4F-17FA-D28C-1DAEBEB362B8&siteName=lca>; “Legal aid cuts in England will bring justice ‘crisis point’”: Genn “The Journal of the Law Society of Scotland” (13 November 2012), online: Law Society of Scotland <<http://www.journalonline.co.uk/News/1011903.aspx#.UcCYSo6i0mw>>; United States Department of Justice, *The Access to Justice Initiative*, online: United States Department of Justice <<http://www.justice.gov/atj/>>.

³ Michael Trebilcock, Anthony Duggan & Lorne Sossin, “Introduction” in Michael Trebilcock, Anthony Duggan & Lorne Sossin, eds, *Middle Income Access to Justice* (Toronto: University of Toronto Press, 2012) at 4.

⁴ Karen Cohl & George Thomson, “Connecting Across Language and Distance: Linguistic and Rural Access to Legal Information and Services” (December 2008), online: Law Foundation of Ontario <http://www.lawfoundation.on.ca/pdf/linguistic_rural_report_dec2008_final.pdf>.

⁵ Lorne Sossin, *Research Priorities Report: Submitted to the Board of Governors of the Law Commission of Ontario* (2007) at 3, online: Law Commission of Ontario <<http://www.lco-cdo.org/SossinResearchReport.pdf>>.

⁶ McLachlin, *supra* note 1.

⁷ Richard Susskind, *Transforming the Law: Essays on Technology, Justice and the Legal Market Place* (New York: Oxford University Press, 2000). See also Vanessa Beaton, “Literature Review” (23 October 2012) Towards Cyberjustice Working Paper No 3 at 8, online: Cyberjustice Laboratory <http://www.laboratoiredecyberjustice.org/Content/documents/WP003_LiteratureReview200121023.pdf>.

fection.⁸ In particular, research⁹ has focused on the use of distance mediating technologies to reduce cost and delay¹⁰ and to facilitate better access to translation services,¹¹ courtroom technologies to facilitate digital evidence presentation and digital recording,¹² digitization of court records and filing systems,¹³ various digital systems for increasing public accessibility to courts and court processes,¹⁴ online dispute resolution,¹⁵ and systems facilitating knowledge management, including statistics related to case processing by courts.¹⁶ However, the literature in the area also identifies numerous concerns relating to the digitization of court processes, including issues of privacy (especially for litigants when judicial decisions are released online), security of information systems,¹⁷ the importance of

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- ⁸ Karim Benyekhlef & Nicolas Vermeys, “Premiers elements d’une methodologie de reformation des processus judiciaries par la technologie” (2010) 30 Cahiers du CRID.
- ⁹ For an excellent overview of some Australian and EU court digitization initiatives, see Marco Fabri & Giampiero Lupo, “Some European and Australian e-justice services” (19 October 2012) Towards Cyberjustice Working Paper No 1, online: Cyberjustice Laboratory <http://www.laboratoiredecyberjustice.org/Content/documents/WP001_EU_Australia_e-justice_IRSIG20121019.pdf>.
- ¹⁰ Nancy Gertner, “Videoconferencing: Learning Through Screens” (2004) 12:3 Wm & Mary Bill Rts J 769.
- ¹¹ Martin Gruen, “The World of Courtroom Technology” (2003), online: The Legal Technology Center <<http://www.privacy.legaltechcenter.net/media/whitepapers/gruen.pdf>>.
- ¹² *Ibid.*; Fredric I Lederer, “Symposium: International Conference on the Legal and Policy Implications of Courtroom Technology — Introduction: What have we Wrought?” (2004) 12:3 Wm & Mary Bill Rts J 637; Luigi Benetton, “E-Trials in Canada” (16 November 2011), online: Luigi Benetton, Technical and Business Writer <<http://luigibenetton.com/2011/11/e-trials-in-canada-bringing-the-courtroom-into-the-future/#more-2590>> (extended version on the author’s personal website, apart from what was published by the CBA).
- ¹³ Gruen, *supra* note 11.
- ¹⁴ Tony Mauro, “Let the Camera Roll: Cameras in the Courtroom and the Myth of Supreme Court Exceptionalism,” *The National Law Journal* (14 November 2011), online: <http://www.law.com/jsp/nlj/PubArticleNLJ.jsp?id=1202532222249&Let_the_cameras_roll&slreturn=1>; Alexei Trochev, “Courts on the Web in Russia” in Agusti Cerrilo I Martinez & Pere Fabra I Abat, eds, *E-Justice: Information and Communication Technologies in the Court System* (United States: IGI Global Publishing, 2009) at 196.
- ¹⁵ Karim Benyekhlef & Fabien Gelinat, “Online Dispute Resolution” (2005) 10:2 Lex Electronica, online: <http://www.lex-electronica.org/articles/v10-2/Benyekhlef_Gelinat.pdf>; Pablo Cortés, *Online Dispute Resolution for Consumers in the European Union* (New York: Routledge Publishers, 2011).
- ¹⁶ Pompeu Casanovas et al, “Judges as IT Users: The Iuriservice Example” in Martinez & Abat, *supra* note 14 at 38.
- ¹⁷ Lucille M Ponte, “The Michigan Cyber Court: A Bold Experiment in the Development of the First Public Virtual Courthouse” (2002) 4:1 North Carolina Journal of Law and Technology 51; Eltis Karen, “The Impact of Technology on Courts and Judicial Ethics: An Overview” in Lorne Sossin & Adam Dodek, eds, *Judicial Independence in Canada and the World* (Toronto: University of Toronto Press, 2009).

modification and development of rules to reflect and accommodate technological change,¹⁸ and the impact of video conferencing on courtroom rituals such as confronting the witness, assessment of demeanour, and impact on cross-examination,¹⁹ and the potential differential effects of technology on different user groups. The literature also emphasizes that courts have not, to date, come close to reaching the level of digitization that is common in both private and other public sectors.²⁰

The Canadian justice system is under growing pressure to modernize by incorporating new technologies in a variety of ways.²¹ As the Access to Legal Services Working Group of the National Action Committee on Access to Justice in Civil and Family Matters stated in its 2012 report:

While technological innovations are transforming much of modern life, they appear to be bypassing the justice system. But there are opportunities for justice reform to capitalize on these developments. For example, the widespread access to the internet means that even in remote communities (with few and decreasing exceptions), people can access exactly the same information that is available in large centres.²²

Clearly, technology is viewed as a potential contributor to resolution of access to justice issues. However, determining how to *successfully* implement justice system technology, and indeed even defining success with respect to technological change, is not a simple matter. Technological change has been studied in both private and public enterprises, and within the latter category there is an emerging literature focused more specifically on justice systems. For the purposes of this article, we will discuss a few of the key findings within this literature in an effort to highlight those that are particularly apposite to our study of technology implementation in the Canadian court system.

¹⁸ District Court of Western Australia, “Practice Direction Gen 1 of 2010: Taking of Evidence by Video Link” (2010), online: District Court of Western Australia <http://www.districtcourt.wa.gov.au/_files/Practice%20Direction%20GEN%201%20of%202010%20Video%20Links%2015.3.10.pdf>; Roberto Fragale Filho & Alexandre Veronese, “Electronic Justice in Brazil” in Martinez & Abat, *supra* note 14 at 135.

¹⁹ See Jacquelyn Burkell & Lisa di Valentino, “Literature review summary on videoconferencing on courtrooms” (23 October 2012) Towards Cyberjustice Working Paper No 4, online: Cyberjustice Laboratory <http://www.laboratoiredecyberjustice.org/Content/documents/WP004_VideoconferencingLiteratureReviewSummary.pdf>.

²⁰ Janet Walker & Garry D Watson, “New Technologies and Civil Litigation Process: Common Law General Report” (2007), online: Osgoode Hall Law School <<http://research.osgoode.yorku.ca/iapl2007>>.

²¹ National Action Committee on Access to Justice in Civil and Family Matters, *Report of the Court Processes Simplification Working Group* (May 2012), online: Canadian Forum on Civil Justice <<http://www.cfcj-fcjc.org/sites/default/files/docs/2013/Report%20of%20the%20Court%20Processes%20Simplification%20Working%20Group.pdf>>; Alison MacPhail, *Report of the Access to Legal Services Working Group* (May 2012), online: Canadian Forum on Civil Justice <<http://www.cfcj-fcjc.org/sites/default/files/docs/2013/Report%20of%20the%20Access%20to%20Legal%20Services%20Working%20Group.pdf>>.

²² *Ibid.* at 3.

The literature relating to technological change in organizations suggests the importance of taking multiple factors, and the interactions between them, into account. Factors of particular importance include system design and engineering as well as psychological and political/power aspects.²³ Numerous studies suggest that the success of any technological change depends only partially on the technology itself, and is also affected by individual characteristics and user practices²⁴ and organizational structures and relationships.²⁵ Thus, technological change must take into account interactions between organizations, individuals, and technology, with resulting requirements for “visualizing entire work processes, real-time/flexible product and service innovation, virtual collaboration, mass collaboration, and simulation/synthetic reality.”²⁶

The literature suggests that staged development and implementation of technological change may be important to success, with implementation of a new process ideally preceded by steps such as: process identification, review and analysis of the current process, and new process design and testing.²⁷ Furthermore, early consideration of the implementation process along with system design appears to be preferable to an approach in which implementation occurs first, so that resistance issues are left to be dealt with afterward.²⁸ Such an approach may coordinate well with focusing on creating workable solutions that accommodate disparate interests of different stakeholders, rather than focusing upon gaining an overall consensus on a common aim to be achieved.²⁹ An iterated approach that merges design and imple-

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- ²³ Carolina Luisa dos Santos Vieira et al, “ICT implementation process model for logistics service providers” (2013) 113:4 *Industrial Management & Data Systems* 484; Panos Constantinides & Michael Barrett, “Large-Scale ICT Innovation, Power, and Organizational Change: The Case of a Regional Health Information Network” (2006) 42:1 *Journal of Applied Behavioral Science* 76; André Andrade & Luiz Antonio Joia, “Organizational structure and ICT strategies in the Brazilian justice” (2012) 29 *Government Information Quarterly* S32.
- ²⁴ Marie-Claude Boudreau & Daniel Robey, “Accounting for the contradictory organizational consequences of Information Technology: Theoretical directions and methodological implications” (1999) 10:2 *Information Systems Research* 167; Olga Volkoff, Diane M Strong & Michael B Elmes, “Technological Embeddedness and Organizational Change” (2007) 18:5 *Organization Science* 832 at 846; Paul M Leonardi, “Activating the Informational Capabilities of Information Technology for Organizational Change” (2007) 18:5 *Organization Science* 813 at 813; Gerardine DeSanctis & Marshall Scott Poole, “Capturing the Complexity in Advanced Technology Use: Adaptive Structuration Theory” (1994) 5:2 *Organization Science* 121; Wanda J Orlikowski, “Using Technology and Constituting Structures: A Practice Lens for Studying Technology in Organizations” (2000) 11:4 *Organization Science* 404.
- ²⁵ Constantinides & Barrett, *supra* note 23; Andrade & Joia, *supra* note 23.
- ²⁶ Raymond F Zammuto et al, “Information Technology and the Changing Fabric of Organization” (2007) 18:5 *Organization Science* 749 at 749.
- ²⁷ dos Santos Vieira, *supra* note 23 at 484.
- ²⁸ D Miller & PH Friesen, “Structural change and performance quantum versus piecemeal-incremental approaches” (1982) 25:4 *The Academy of Management Journal* 867.
- ²⁹ Erica Wagner & Sue Newell, “Repairing ERP: Producing Social Order to Create a Working Information System” (2006) 42:1 *Journal of Applied Behavioral Science* 40.

mentation has been demonstrated to be effective in technology implementation.³⁰ Finally, incremental implementation is seen to afford benefits when compared with taking a “big-bang” approach, since the former allows for building a knowledge base, learning from experience, an increased potential for acceptance, and new opportunities for ongoing motivation by building on small successes.³¹

With respect to the human/psychological dimensions of technological change, the literature stresses that “soft organizational features” such as managerial skills, shared values, staff traits,³² user participation and satisfaction,³³ and user perceptions of the fairness of the change³⁴ and any associated compliance practices³⁵ can all have an important effect on successful implementation. In this regard, demonstrating top leadership’s perception of the change as being in the organization’s best interests, generating mutual trust, and motivating users are described as best practices.³⁶ Further, involving stakeholders in the development and implementation process using language and processes that speak to the diversity of their interests may increase ownership in and championing of the success of the project.³⁷ Inclusion of stakeholders in meaningful developmental training sessions is thought to be an important enabler of success.³⁸

Finally, more than one study has emphasized the importance of understanding the ways in which networks of power within organizations can affect technological innovation and organizational change. Constantinides, for example, underscores the centrality of ensuring that key user group acceptance is gained *before* technology is

³⁰ A Bailey, “Uh-Oh. It’s a Computer Systems Project . . .” [Winter 1998] *IEEE Engineering Management Review* 21.

³¹ dos Santos Vieira, *supra* note 23 at 487.

³² Mladen Čudanov, Ivan Todorović & Ondrej Jaško, “Correlation between soft organizational features and development of ICT infrastructure” in *BCI '12 Balkan Conference in Informatics* (New York: Association for Computing Machinery, 2012) 150.

³³ dos Santos Vieira, *supra* note 23.

³⁴ Kailash Joshi, “A Model of Users’ Perspective on Change: The Case of Information Systems Technology Implementation” (1991) 15:2 *MIS Quarterly* 229.

³⁵ Yajiong Xue, Huigang Liang & Liansheng Wu, “Punishment, Justice, and Compliance in Mandatory IT Settings” (2011) 22:2 *Information Systems Research* 400.

³⁶ dos Santos Vieira, *supra* note 23 at 488.

³⁷ Bill Harley et al, “Management Reactions to Technological Change: The Example of Enterprise Resource Planning” (2006) 42:1 *Journal of Applied Behavioral Science* 58; Zahid Hussain & Khalid Hafeez, “Changing Attitudes and Behavior of Stakeholders During an Information Systems-Led Organizational Change” (2008) 44:4 *Journal of Applied Behavioral Science* 490 at 509; Emmanuelle Vaast, “What Goes Online Comes Offline: Knowledge Management System Use in a Soft Bureaucracy” (2007) 28:3 *Organization Studies* 283.

³⁸ Laura J Black, Paul R Carlile & Nelson P Repenning, “A Dynamic Theory of Expertise and Occupational Boundaries in New Technology Implementation: Building on Barley’s Study of CT Scanning” (2004) 49:4 *Administrative Science Quarterly* 572; Sharath Sasidharan et al, “The Effects of Social Network Structure on Enterprise Systems Success: A Longitudinal Multilevel Analysis” (2012) 23:3 *Information Systems Research* 658.

introduced, and that an IT team attentive to changing uses and user needs for support is well-established.³⁹

Many of these insights that were articulated with respect to private enterprise also appear in technology change literature in public organizations, including courts. Writing with respect to technological change in the Brazilian judicial system, Andrade emphasizes the ways in which the complexity of public organizations can complicate the implementation of e-government initiatives involving stakeholder groups with differing “institutional goals and objectives.”⁴⁰ The Brazilian experience suggests the importance of engaging in policy reform concurrently with technological innovation, ensuring a fit between IT strategy and “organizational (infrastructure, processes and organizational culture) components,”⁴¹ widespread consultation with stakeholders in recognition that “each court has its own identity, values and culture, leading it to develop different workflows,”⁴² recognition of the power and politics at play, and creation of a body focused on integration that can assist with getting autonomous units to adopt common standards that may be essential to full integration.⁴³

Similarly, case studies of existing EU and Australian initiatives suggest that court digitization project success is positively related to simple architectural design that takes into account existing institutional and technological factors, open communication and dialogue with a broad group of stakeholders throughout the life of the project, the prior existence of a robust and efficient IT network, and amendment of procedural law to maintain foundational legal principles, but also to “enable technological capability.”⁴⁴

Justice ministries and courts from various parts of Canada are increasingly investigating technological options intended to streamline operations, increase efficiencies, and make information about courts more accessible.⁴⁵ However, different jurisdictions are at quite different places in terms of the state of digitization of their processes. British Columbia and Ontario were relatively early experimenters with digitization of court processes, but have had fairly different experiences with im-

³⁹ Constantinides & Barrett, *supra* note 23.

⁴⁰ Andrade & Joia, *supra* note 23 at S33.

⁴¹ *Ibid.*

⁴² *Ibid.* at S41.

⁴³ *Ibid.*

⁴⁴ Fabri & Lupo, *supra* note 9 at 56–58.

⁴⁵ Jane Bailey, “Digitization of Court Processes in Canada” (23 October 2012) Cyberjustice Laboratory Working Paper No 2, online: Cyberjustice Laboratory <http://www.laboratoiredecyberjustice.org/Content/documents/WP002_Canada_DigitizationOfCourtProcesses20121023.pdf>; Allison Jones, “No Internet, no Blackberrys: Are Ontario Courts the Place Technology Forgot?” *The Canadian Press* (15 March 2011) online: <<http://www.thecanadianpress.com>>; Justice Thomas B Granger, “Using Litigation Support Software in the Courtroom: Better Lawyer, Better Judge, Better Justice — The Need For Judicial Leadership” (2003), online: Practice Pro <<http://www.practicepro.ca/practice/PDF/UsingLitigationSupportSoftwareinCourtroom.pdf>>.

plementation.⁴⁶ Factors suggested to have been determinants of the degree of success of these experiences include challenges relating to set up and maintenance costs, concerns primarily attributed to the judiciary around issues of credibility, jury reaction,⁴⁷ and maintaining the security of judicial information,⁴⁸ as well as the scale and complexity involved in public-private partnerships oriented toward integrating otherwise disparate components of the justice system (e.g., police, courts, prosecution, corrections).⁴⁹

To date, we are not aware of any case study of Canadian judicial system technology initiatives that has sought to provide a more general overview of the factors that contribute to success or failure in the implementation of technology in the justice sector. Our study is intended to begin to address that gap by gathering and reporting on the perspectives of those directly involved in implementation of digitization initiatives in the Canadian justice sector about the challenges confronted, barriers faced, successes achieved, and factors contributing to those successes, not only in relation to economic issues, but with respect to cultural, social, and organizational issues as well.

I. METHODOLOGY

This article and the research upon which it is based were undertaken as one of the initial research initiatives in a multi-year Social Sciences and Humanities Research Council-funded MCRI project entitled “Rethinking Processual Law: Towards Cyberjustice.”⁵⁰ The Project itself is aimed at providing concrete responses to numerous issues of concern in the Canadian justice system, particularly: cost, delay, conservatism, and citizen disaffection. The research reported upon in this article represents a first step in a multi-disciplinary and contextual analysis of the digitization of court processes in Canada. This research proceeded in two phases: (i) an online review of publicly available information; and (ii) unstructured interviews of 8 key informants involved in the implementation of technology in courts in 6 jurisdictions in Canada. We report here on the results of the unstructured interviews.

On the basis of our review of publicly available materials relevant to the digitization of court processes in Canada,⁵¹ we identified a number of oversight committees for implementing technology in various courts across Canada. We used a

⁴⁶ Bailey, *supra* note 45 at 26–29.

⁴⁷ Julian Borkowski, “Court Technology in Canada” (2004) 12:3 Wm & Mary Bill Rts J 681.

⁴⁸ Canadian Judicial Council, “Blueprint for the Security of Judicial Information”, 3d ed (2009) (first edition published in 2004), online: Canadian Judicial Council <<http://www.cjc-ccm.gc.ca/cmslib/general/JTAC-ssc-Blueprint-Third-edition-finalE.pdf>> [Blueprint].

⁴⁹ Carl Baar, “Integrated Justice: Privatizing the Fundamentals” (1999) 42 Canadian Public Administration 42; Michael Jordan, “Ontario’s Integrated Justice Project: profile of a complex partnership agreement” (1999) 42 Canadian Public Administration 26.

⁵⁰ For more information on the project see, online: <<http://www.laboratoiredecyberjustice.org/en/Research/GetData/GetVersCyberjustice>>.

⁵¹ Bailey, *supra* note 45.

purposive sampling strategy to select key informants participating in a subset of these technology implementation committees. In particular, our sampling strategy was designed to ensure that we interviewed key informants involved in technology implementation committees for: (a) both trial and appeal courts; (b) courts with varying lengths of experience with implementing technology; (c) courts with a breadth and diversity in terms of the geographic regions served (including courts serving both urban and rural populations from eastern, central, western, and northern Canada); and (d) courts with a breadth of diversity in terms of communities served.

We identified committees from eastern Canada, central Canada, western Canada, and northern Canada and were able to identify key members of those committees through our review of publicly available materials, on the basis of follow up telephone calls with publicly identified committee members, or as a result of information provided by other interviewees. Each informant contacted was a key member of a technology implementation committee for a court or courts in Canada. We telephoned or emailed each of the contacts identified with an invitation to participate in our study. All of the people we contacted agreed to participate in the study.

In total we interviewed 8 key informants from technology implementation committees in 6 Canadian jurisdictions. We interviewed 1 key informant from 1 eastern Canadian committee, 3 key informants from 3 central Canadian committees (including 1 appellate court), 3 key informants from 3 western Canadian committees (including 1 appellate court) and 1 key informant from 1 northern Canadian committee.

Informants participated in semi-structured interviews in person, by telephone, or by Skype. Interviews lasted up to 2 hours. Interviews focused on the implementation of court technologies, including discussions about successes, challenges, and barriers to technological innovation in the courts, along with other related issues. Some informants shared publicly available documents relating to the subject matter of the interviews. All interviewees consented in writing to participation in the study and to having their interviews recorded and transcribed. Information that could identify the individual or the particular committee with which they are affiliated was removed from the transcripts, and in this document interviewees are referred to by reference to the number assigned to the jurisdiction in which they were a member of a technology change committee.

II. RESULTS

(a) Importance of the Judiciary

Justice system technology implementation involves many stakeholders: government, court administrators, lawyers, and the general public, to name but a few. In our discussions with key informants, however, one stakeholder group was front and centre: the judiciary. The following comments are typical:

If you don't have the judicial buy-in, you're done. Before you start. And everybody has learned that lesson over the last decade. [Quote 1]

There was never any direction from on high . . . because at the end of it, it is judicial discretion. [Quote 2]

There was widespread recognition that members of the judiciary have specific and important knowledge regarding the workings of the court and the justice system,

and many comments stressed the importance of incorporating this knowledge and expertise in the technology planning and implementation. The members of the judiciary also have specific needs, often not shared with or understood by other stakeholders, as indicated in these comments:

There are some situations where things get done without taking any judicial needs into account. For instance, the province is [introducing a new technology] and the way that was handled didn't properly account for the security of judicial information, and we're struggling with how to deal with that, because the project was well advanced before they brought it to the committee . . . So it is a case [of] not understanding the role and function and special needs of the judiciary. [Quote 3]

When the computers got rolled down to the judiciary, they were buggy as anything, the central image was a mess, and they were all still learning what they needed to do. So, there was a lot of reaction, there were a lot of issues that the judiciary foresaw, which was IT services provided to them that were not configured to support the way they worked and were not configured to secure or segregate their data. [Quote 4]

In this sense, the members of the judiciary are like other stakeholders, with specific knowledge and needs that are critical to the technology enterprise.

What makes the judiciary different, however, is their control over technology use, particularly those technologies that are deployed directly in the courtroom. Key informants noted that judges have the final say over the use of courtroom technologies, and therefore many technologies would fail without the active support of the judiciary:

But once we got into video remand, we went on a tour of [province's] video with their folks and everybody quickly realized this is a judiciary driven project. So the money the policy whatever may come out of government, but ultimately if it's going to be used in a courtroom, judges are going to have to agree with it. [Quote 5]

Success was something [that] happened locally . . . video is at the direction of the justice of the peace. So where the judiciary was enthusiastic video was very active, where they were not engaged, it wasn't. [Quote 6]

As a result, there was significant emphasis on the involvement of judicial representatives, particularly Chief Justices, in technology planning and implementation processes.

Finally, given their critical role in the justice systems, judges were identified as valuable and even necessary "champions" of justice system technology. Judicial leadership in the process of technology implementation was identified as critical for the success of technology:

Whenever I saw a presentation at a conference of a court that made big progress there was always at least one judge, if not more, who was actively involved in the project. Then often they were even making the presentation at the conference. And so, what I noted in [jurisdiction] was that while we had judicial participation, we didn't have judicial leadership. [Quote 7]

In those cases where judges "led the way" with respect to technology, things tended to go well. This not only reflects the status of the judiciary, but also the importance of recognizing judicial independence.

(b) Recognizing Judicial Independence

Technology implementation, like other forms of planning for and administration of justice, can involve complicated and multi-level decision-making and reporting structures that can include multiple ministries, government departments, committees and sub-committees, such as court services divisions, ministries of justice and/or attorneys general, IT departments, and courts themselves.⁵² While economies of scale may weigh in favour of sector- or province-wide IT solutions and systems (e.g., email), inclusion of judicial information within these systems raises concerns with respect to maintaining judicial independence — the separation of the judiciary from the executive and legislative branches of government. As one informant described the situation in their jurisdiction:

[T]he promise is when you combine IT across your entire organization there is savings to be had in consolidation. So that push happened. Most . . . desk side support . . . got taken straight into [a combined government services and IT ministry] but the proposals were all there so [court services] consulted with the chiefs. . . . And they pushed back and said it is not appropriate that people who would manage our information would not be accountable to us. And in fact or even accountable to the minister. And the minister has . . . responsibilities under the law etc for ensuring judicial independence. [Quote 8]

Many of our informants referred to the Canadian Judicial Council's Blueprint for the Security of Judicial Information⁵³ as a seminal document in terms of raising awareness of and methods for addressing the judicial independence-related matter of judicial information security as it arises in connection with technological change. As one key informant described it in relation to the judicial information technology office in their jurisdiction:

[T]hey have a blue print document the Canadian Judicial Council worked on about 10 years ago, that they update every couple of years that is the bible as far as they're concerned; it is the blue print for security of judicial information and it's quite extensive and it stipulates some guidelines for organizations supporting judges. [Quote 9]

Our key informants conceptualized concerns about judicial independence and judicial information security in relation to technology in three sorts of ways: (i) considerations around the separation of judicial information from other government users; (ii) protecting against hacking; and (iii) the importance of separate judicial information technology experts.

Addressing the separation of judicial information from that of other government users came to the fore as each jurisdiction began to implement single digital

⁵² For a recent analysis of these structures, see Karim Benyekhlef, Cléa Iavarone-Turcotte & Nicolas Vermeys, *Comparative Analysis of Key Characteristics of Court Administration Systems* (6 July 2011), online: Canadian Judicial Council <<http://www.cjc-ccm.gc.ca/cmslib/general/AJC/Comparative%20Analysis%20of%20Administration%20Systems%202013-03.pdf>>.

⁵³ Blueprint, *supra* note 48.

communications systems, such as email, throughout the jurisdiction because, as one informant noted with concern, at that time:

in most jurisdictions they'd implement an email system and everyone [including the Crown and the judiciary] was on the same system. [Quote 10]

Another noted a similar current trend toward consolidation:

[T]here's a big push right now [in the government of a particular jurisdiction] for shared services, you know like consolidation of infrastructure services, we're not part of that and you've got court administration services who actually fought to the death to get out of that and it was recognized that judicial independence was a factor to consider . . . when you started standardizing or streamlining common services from an infrastructure perspective. [Quote 11]

As a result, our informants emphasized the importance of taking judicial independence into account in successful planning and implementation of IT in the justice sector:

But then in the end we still have to get the approval of both the courts and the judiciary and it's important for them to understand . . . how are these [new IT projects] going to help ensure things like judicial independence, their information only being available to people who it should be etc. [Quote 12]

[T]he province is migrating to a new [communications technology] system and the way that that was handled didn't properly account for the security of judicial information and we're just struggling with how to deal with that because . . . the project was well advanced before they brought it to the committee . . . [Quote 13]

At least one jurisdiction physically separated judicial communication systems from those of the related ministry and court services division:

[The judges are] on their own network, called [name of network], so they're not tied into the government system. They wouldn't have access to our registry information on their current system because it's tied into the government network. So there is separation already of that. [Quote 14]

One of our informants noted that judicial independence and security of judicial information was also important from the perspective of protection against hacking:

[A] big focus for me anyways it's much more around IT security as much as anything else so it's not something that's fancy but when it comes to an environment as sensitive as the [name of court], when it comes to our information, it's something that's a constant battle and it's taking a lot of . . . time. I would say that we spend more time and money and energy fighting that. [Quote 15]

Finally, a number of our informants referred to the Blueprint as instrumental in encouraging creation of separate IT advisory bodies for the judiciary:

Federally, the Canadian Judicial Council . . . began recognizing that unlike every other issue that they deal with IT is something they're actually not trained to deal with. And so the Canadian Judicial Council creates the Judicial Technology Advisory Committee where they actually bring aboard their first non-judge because they need somebody who knows the law and does technology. And they start realizing as they look at all the things they need to do, they need to start creating some policies and they need to start giving

judges tools to ensure that judicial independence isn't being compromised in the IT area. So the Blueprint for the Security of Judicial Information started to be birthed in the early 2000s. . . . One of the things they called for is a Judicial IT Security Officer (JITSO).

So in trying to figure out what to do next a series of emails got exchanged. And the JITSO at the time . . . got some backing on both sides for a larger IT organization, which would be more than just an IT security officer but one that would be directly accountable to [the judiciary] as the JITSO role is. [Quote 16]

One informant described the benefits of having separate judicial IT advisors in place as follows:

[W]e thought it would benefit judges and it would benefit us, if there was a position that was in place to kind of be an advocate and a liaison between the ministry proper, the centre of government, IT services, and the judiciary. . . . The [name of liaison organization has] . . . a number of folks in it and their job is to work with judiciary on their strategic IT plan, their operational plan, liaise with other service providers and government like my branch . . . There are probably 6–8 people in that group who are dedicated to supporting judges, masters in the [name of court], justices of the peace in the [name of court] and advocating for them on various things. The judges in [name of jurisdiction] use a lot of systems that government uses. They use our email system with certain precautions and certain things we do to make sure everything is supported by known people and people who understand the role of judges and why it is important to treat their information and treat them a certain way. Part of the group's role is to advocate this to service providers who might not understand the judicial function and requirements for certain precautions around information. [Quote 17]

The same informant noted the judicial preference in their jurisdiction for separate IT advisory support for judges:

[Name of court] have a real position on . . . judicial independence and they . . . prefer that their services are supplied by the [name of separate organization for judicial information], whereas before I had systems officers who would work on their systems, and support their systems, much of that has been transferred to this [name of separate organization for judicial information]. [Quote 18]

(c) Widespread Stakeholder Involvement

Among stakeholders, judges were the key group, but our informants identified other critical stakeholder groups as well, including government, court administrators, technology experts, court staff, lawyers, police, prison officials, and the general public. Although it was recognized that different leadership was required for different stages of technology development, inclusivity was a core principle: successful technology initiatives involved all key stakeholder groups, and those that did not tended to fail. One initiative was going “off the rails” until this principle was enacted:

Anyway we're here and the judges are getting on board, and taking an active role, so everybody's now back engaged. We don't just have a systems place running back and forth telling us that we need to do something to match their system that we know nothing about. So that was, there was a

real block there. So that block we hope, has been at least a bit uncovered and that we're doing something actively about it, and there's lots of questions being asked. [Quote 19]

Late involvement of stakeholder groups can result in significant challenges, especially when the needs and requirements of the stakeholder group are not broadly recognized. Building from the outset a system that accommodates these needs could be relatively simple, but retrofitting a system well under development is a more challenging process, and one that technology developers would rather avoid:

Had the consultation [with judicial users] happened earlier or had there been earlier involvement, then planning, around the needs of the judiciary, [those needs] could have been quite easily accommodated. But now it's rather late in the progress, so it's a challenge to try to address these issues. [Quote 20]

One recurrent theme was the importance of involvement of each stakeholder group at multiple levels of the technology implementation process. Specifically, it was noted that it was important to get stakeholder buy-in at the general planning level (e.g., on oversight advisory committees) as well as the implementation level.

We then hold workshops. So my business analysts arrange workshops with all of the key stakeholders who are involved in the [process], and so that would include people from the ministry side as well as from the court, from the judiciary as well as external stakeholders. So, for example, we do bring in representatives from defense counsel because they are the people who have to go into the courtroom . . . so it is important to get all of these different organizations at the workshop. We go into that workshop with some straw models already created. [Quote 21]

This often required the involvement of individuals with different roles in the stakeholder community, with oversight or advisory decisions made by those at a higher level:

So, the advisory committee was more the decision-makers. As an example, it would be the lawyer who would decide "is my firm going to e-file". But the working committee was more their legal secretaries who would actually be the people doing the e-filing. [Quote 22]

Similarly, key informants stressed the importance of the involvement of Chief Justices at the governance and planning levels, where they could provide overall approval for technology initiatives.

Our number one issue is around governance. Even though we had all of the courts behind [the technology] as well as the minister and the ministry, not have the Chiefs [Justices] at the governance table, not clearly demonstrating there was a partnership, was the biggest issue that caused us 90% of the headache that we've had. [Quote 23]

This higher-level judiciary participation was coupled with consultation with "advisory panels" of judges "one step lower down" who would be active users of the technology. The role of the judiciary on these panels or in similar consultations in other jurisdictions was to provide their end-user perspective on the technology, and while upper-level committees met infrequently to approve high-level governance decisions, lower-level implementation committees required much more frequent meetings to achieve their goals.

Successful technology projects depend on close attention to end user needs and experience, and insights gained from less successful projects support this con-

clusion. For example, digital audio initiatives ran into difficulty when end users were not closely consulted in the development and deployment of the new systems. From an administrative perspective, the substitution of digital for analog recording technology appeared straightforward, but “on the ground” it was quite a different story:

So [court administrators] decided they were going to do away with the tape machines and do digital audio, so almost overnight the computers appeared on the court clerks’ desks in the courtroom . . . now, from the employer’s perspective they just thought it was a replacement, you know, one form of taking the record to another form of taking the record. What they hadn’t realized was that they had a large [number] of court clerks that couldn’t type . . . so suddenly they were faced with a big issue, a training issue — so that had to be dealt with . . . They collected all of this digital audio recording in a very secure location . . . they didn’t think that the judges would want access to it — they had never talked to the judges about what they were doing . . . So it completely changed the dynamics in the courtroom, completely changed the type of work that the court clerk was doing. It completely changed the way the judges interacted with the record and how they could get access to it. [Quote 24]

So, we started to introduce standards for court clerks on how to enter data into the [digital audio] system and that was just a horrible project . . . A lot of them didn’t even use a computer at home . . . there was such a fear of even touching [the technology] and here we came along and said “oh, and by the way, now we’re going to set standards for the data you have to enter.” . . . We were the bad guys and we didn’t do a very good job of designing the interface [in a way] that really appreciated the real-time nature of the court. [Quote 25]

Avoiding this kind of problem requires consultation with front-line workers who will be actually using the system:

We brought in user experience, we brought in design consultations who are experts in designing user interfaces that are easy to use, and we’ve had over 100 clerks [involved in] the design of the system. [Quote 26]

One of the things that you have to do is involve all the parties . . . When we were developing [technology] we involved the staff in the screen shots. We would say “so what do you think about this? This is how it would work. Is it helpful? Is it working?” and get feedback on how it was. So not only are you developing a system with input from the people who are going to use it, but, once you implement the system you have people who are already familiar with it. [Quote 27]

Consultation with end users can also help to identify places where the system can be improved, or ways in which the technology can actually reduce work. In fact, one valuable outcome of widespread stakeholder consultation was the opportunity to document and potentially suggest improvements to existing work processes.

I’m not sure how it’s going to change the workflow — looking at how people do their jobs. I think you have to have a great appreciation before you implement something of what the paper flow is. You know, be able to document that and be able to talk to the staff — see if they can come up with ways that it could be made a lot easier. [Quote 28]

Throughout those workshops, we basically identified and documented the process and we put some narrative on how a more efficient process would work: what sort of data would need to be gathered for reporting purposes, because there's always the danger you can create a process that is so efficient you're not gathering the information you need to be able to report on it. [Quote 29]

There were often quite a number of "wins" that came up out of those committees because everyone was so used to having to run their work flow on the assumption that one of the other three parties would fail on something . . . We found, as people on the sidelines just sort of giving this information and watching them work out their processes, they end up solving other things at the same time. [Quote 30]

One key informant went so far as to declare:

What ideally should happen is you start off by mapping out what it is you do . . . because the people who are pursuing this money are at the center — it is not the people who are at the court houses who see day to day "this is how we do it at this level, how it really works" . . . because when people do take the time to map that out before they even start thinking about the technology, they're usually finding duplication, they're usually finding things that could be run smarter or better. [Quote 31]

Workflow modeling and consultation also helps to correct mistaken assumptions about working practices and conditions — assumptions that can lead to mistakes in technology implementation. One key informant described the process of identifying computers to recommend to the judiciary. A consultation process with technologists led to the recommendation for portable laptops with docking stations in each chambers. When presented with the option, however, the judges indicated

"Well, I'm almost never at Chamber. I'm almost always in another judges' room so what about that?" [Quote 32]

The docking stations were quickly reconfigured from units dedicated to a specific judge to universal stations, so "no matter where you go you can plug in", with the dual positive effect of saving money and increasing usability.

One important outcome of end user involvement was the identification of "champions" who could be counted on to promote an initiative at the ground level.

These things are not the kind of projects that are done at corporate any more and then laid at the feet of those poor souls in the field. We involve people, they're part of the teams. And many of them take on enhanced roles, you know local champions . . . building local champions, respected people who can generate buy-in with others in the courthouse . . . That is a radically different way to deal with things — that's actually respectfully dealing with folks instead of telling them how it's going to be . . . People prefer to be involved and engaged and consulted and respected. [Quote 33]

We take the people who are actually going to be using this, to work on it, they are our champions. [Quote 34]

Effective technology champions are people who are knowledgeable about the technology and respected in the workplace, allowing them to promote the technology to co-workers and other stakeholders.

(d) Don't Forget Training and Support

One issue that can be overlooked in technology implementation is training and support. The introduction of new technology often changes workflow, requiring end users to adapt to a new way of working. It cannot be assumed that the transition will be seamless, and end users often require training and support to effectively use new technology.

In some cases, training can be incorporated into development and implementation. When end users are involved in system design, they become familiar with the system and thereby reduce the training requirements. In some cases, the process of migration to a new system can be used for training purposes:

We decided not to do any automated data migration. We also decided that one of the best ways to train the staff was to get them to actually input existing files. [Quote 35]

Even with appropriate and exhaustive training, however, users can experience problems with technology, and when they do so there should be immediate and dedicated support available. This is particularly critical for technologies, such as videoconferencing, that are used “real-time” in courtroom processes; indeed, in some cases dedicated support was essential for technology acceptance:

One of the things that was critical in the original agreements with the judiciary to proceed was they did not want to have . . . their gear poorly supported. So they began to talk about “justice grade video” . . . they would maintain a desk that would be in operation not only for court hours but also for the weekends and statutory holidays. There would always be somebody you could talk to, well on court days within 15 minutes you were connected directly to somebody who was looking down the wires at your gear. And in the first years it was [name of telecom provider] so there was literally somebody that you would be dealing with, in [City1], a technician who had a copy of the gear at their location was able to troubleshoot and work things out. So that was a big part of the training . . . So we had to take the approach in training you know “we promise you will be confident users of this video system. You will get all the practice so that you won't be nervous and secondly things go wrong and when they go wrong here's the number that you call.” And . . . we ended up fighting the beast that is centralized support desks who wanted, who insisted that the call go into the centralized support desk for [province] but . . . we won from them the concession that they could immediately . . . patch that call through to [City1] because there was nothing that we wanted to have them try and guess — “have you tried this, have you tried that?” We wanted them to go directly, straight to a video expert. So yeah that was . . . a big condition for judicial acceptance. There was also always a speaker phone in there, which was the last resort. [Quote 36]

There was a strong suggestion that “glitches” in technology implementation could be overcome, but only if problems were acknowledged and appropriate actions were taken to address them:

As far as problems . . . we were always very clear and upfront when we saw problems, and we addressed them, and we talked to other sites about what was going on. In part because we always knew that this was at the discretion and the goodwill of the judiciary and you can't have a program in their environment where you say “and, yeah, everything is going wonderfully”

when it's not. When something happens, you step up and figure out what's going on and tell everyone "we're seeing this and we're going to try this."
[Quote 37]

(e) Learning from the Experience of Others

When discussing technology initiatives, most key informants identified outside consultation as a key first step. The first question often is "what do other people do?", and a wide variety of consultation practices are used to answer this question, including examination of white papers and other documentation, court tours, consultation with national and international organizations, and even data gathering from experts:

We did a fair amount of jurisdictional analysis. And that jurisdictional analysis looked at general trends within jurisdictions as well as, through contacts we've got through organizations like the National Center for State Courts . . . basically we had some discussions, some site visits, to explore some of the specific developments. So, for example, looking at a jurisdiction down in Arizona that was very heavily into e-filing and basically having paper only where it's needed. A jurisdiction down in Texas that has done some absolutely stunning things with regard to jury duty . . . [Quote 38]

And so sometimes we'll just throw out an ACCA survey and say "what's everybody doing around this? And do you have any policies in place, if you do can you send them?" So ACCAs got a great sharing network for court administrators and they usually will . . . give out their person's name as a contact and if we need more information we can dig deeper. If something they've given us twigs, some similarity or really pronounced flags or whatever — we can go looking. [Quote 39]

We're constantly getting requests from other jurisdictions . . . looking for information or documents relating to processes that they are using to deal with technology and information challenges — so there's quite a generous environment for the sharing of information across jurisdictions. [Quote 40]

At the same time, there was caution against wholesale adoption of existing technologies, recognizing that individual courts have individual needs:

So that was a really big gap and it started just, we figured it out when we started to convert our filing system to match [jurisdiction]'s and it didn't work on so many levels. So that's when we said, we've done this wrong and it's because the people . . . that went and looked at this didn't identify, you've got a round peg in a square hole. So there needs to be some more flexibility around their adaption of the system and our workflows so we had to identify the workflows. [Quote 41]

But for sure [jurisdiction], they were extremely innovative and extremely risk-taking compared to what our judiciary want to see. [Quote 42]

Key informants tended to identify outside consultation as an important first step in technology implementation. In many cases, they identified valuable outcomes from such consultation, including avoidance of pitfalls and the ability to capitalize on strategies and benefits encountered by others in the process of their own implementation.

(f) Quick Wins and Bite-Sized Chunks

There was widespread agreement that technological innovation or renewal should proceed in small, “bite-sized” chunks. While overall technology planning required multi-sector involvement and system-level thinking, successful projects were smaller in scope, implementing identifiable and separable pieces of an overall technology plan. Projects that are less ambitious are in general preferred over more complex initiatives:

[The initiative] was cross-cluster, it concerned policing, courts, and corrections. It was far too complicated and they didn’t approach it in bite-sized chunks. [Quote 43]

You can get into that situation where you try to provide a solution for all kinds of needs. You can over-buy, I guess, and overdevelop something to deal with a relatively simple issue . . . I think sometimes larger jurisdictions get caught in that: trying to buy or create a process that will deal with not only immediate needs, but maybe the unforeseeable needs down the road. Where a smaller jurisdiction, which may not have the resources to do that, can do something quite specific which can later be adapted to those needs that arise. [Quote 44]

Simple solutions are preferable, in part because they allow for the “quick win”, and in part because the demonstration of success provides a “foot in the door” for larger initiatives:

What tends to work . . . it’s kind of what we talked about before taking the smaller bite with the bigger picture in mind and trying to find a solution that’s specific to that issue as opposed to you know an entire range of things — I think that’s been incrementalism I guess. Doing things incrementally has been a success. [Quote 45]

[We] demonstrated that change could be good, got people involved, learned some lessons, as well as addressed some of the really important things. [Quote 46]

Small successes were often identified as critical groundwork for larger and more complex initiatives. In one jurisdiction, successful implementation of videoconferencing for the purposes of remand led to positive “function creep” into other areas of court practice:

Video . . . started as bail and remand and as it progressed turned into weekend and statutory holiday bail courtrooms — in which a region would designate one courthouse with a couple of courtrooms as the weekend statutory courtroom and any police force in the region could deal with their arrests over the weekend with that courthouse using video. Video then started to expand into other areas: civil, family, psych assessments . . . [Quote 47]

Another key informant cited the importance of lower cost “test markets” for technology initiatives, specifically discussing the implementation of videoconferencing in an urban area testbed before rolling the technology out to remote areas where the installation required a greater capital investment.

(g) Developing the Big Plan

At the same time, however, an overall “vision” was viewed as critical for long-term success of justice system technology. Creating a vision and “putting it to

paper” was the impetus for useful discussion. One key informant referred to this vision as a “compass” that helped to define and guide individual technology projects; others used terms such as “roadmap” or “blueprint.” Technology visions or plans were typically created by planning committees with representation from the higher levels of the judiciary (often Chief Justices), court services representatives, and government representatives. In some cases, earlier (and unsuccessful) versions of planning committees lacked direct input from the judiciary, but experience revealed this to be a mistake:

In the last few years we recognized the lack of direct input from judges and the need to have them directly on the committee. [Quote 48]

We really started the initiative after the business case . . . [and] the governance structure was more biased toward the ministry. We had representation from the courts, but it was a single member of the judiciary who wasn’t really empowered to make decision on behalf of all the courts. And after less than 2 years [the process] ground to a halt . . . and it took us, then, almost a year after it grounding to a halt to come up with a new governance structure which is truly representing all the courts. Having the chiefs there being able to make decisions . . . to me this was absolutely imperative to get the chiefs at the table. [Quote 49]

Technology planning provides a strategic plan for technology implementation, allowing the justice system to be responsive but not reactive to opportunity (e.g., available funding) or crisis (e.g., aging technology):

[The technology working group] was launched, probably over a year ago, now. It was launched because we were preparing: if there happened to be some funding come available, we wanted to have a plan for in-court technology. Because the history on in-court technology has not been entirely strategic — It has been year-end serendipity in some cases. So best to be prepared. [Quote 50]

They needed to develop a plan to phase that out because it was old technology. [Quote 51]

We’re hoping to launch a judicial IT strategic planning exercise . . . other jurisdictions have done this — that would help to guide government especially in this time of fiscal restraint to understand what the priorities of the judiciary are in terms of IT needs. That’s one sort of newer approach that we’re going to try to take to deal with that type of thing, as opposed to reaching to developments that happen to us, instead of being planned purchases or implementations of technology. [Quote 52]

One respondent referred to this type of planning as “foundational work”, planning for system-level changes and technology renewal.

(h) Policy Considerations

Key informants insisted that policy should be developed in anticipation of or along with technology implementation, and noted that problems often arose when policy issues were considered only after the technology was in place. A number of our key informants identified the importance of a “policy first” approach. In some

cases, technology could not be implemented until and unless the policies were in place to support the technology changes:

There's lots of things like policy, court rules and even legislation that have to be created or updated to enable [information technology] . . . And that's one of the things we present when we go to conferences in our lessons learned . . . is you actually have to start on some of that stuff before the technology, because, number 1, it is going to tell you what you're allowed and not allowed to do, and, number 2, sometimes that stuff takes longer than the technology — especially if it's going to take some legislation. [Quote 53]

At the same time, problems can arise with attempts to develop policy in the absence of relevant technology, and the best advice was to develop the two in concert:

We find it's a bit of back and forth because in one sense if you just go straight to policy without starting to look at your technology, it sometimes becomes too theoretical. And sometimes it's easy for the policy folks, you know they'll often say "well, tell me what you're planning to do and I'll tell you if we're OK or not." And so you get this back and forth . . . you know in an ideal world the policy's there, but the policy, sometimes it's hard to talk about unless you have a bit more tangible solution. [Quote 54]

So, once they're getting it [a test solution] working and I get people that are visual they can get in there, see how it works and then we can start penciling in the policy. And I told them I wasn't going to do that work until it was here and in place. Because it's a waste of time if you're guessing. [Quote 55]

In some cases, the policy needs arise precisely because the technology changes the nature of work or the nature of information. Thus, for example, the move to e-filing requires the development of new policy for document storage and retention, since the possibilities and requirements of digital document storage and retention are entirely different from the considerations with respect to paper files.

Do you want to stay with the rule you have for paper? . . . Because some of the rules that were made for paper were actually driven by space requirements. So you have to look at that — where you don't have the same kind of space requirement electronically . . . [but] over time electronic storage can become more expensive than physical storage because once you start keeping stuff long enough that standards change, then you have big data conversion projects or hardware becomes obsolete and you have to migrate to new hardware. Those migrations and data conversion projects can be quite expensive. So initially the thought was "oh, when we go to electronic let's just keep everything forever." Well, that actually doesn't make sense . . . at a certain point if you want to keep things longer it could be cheaper to have paper. [Quote 56]

(i) Unexpected Consequences

The introduction of new technology often has unexpected consequences and places unanticipated demands on the system or the individuals working within it. Although consultation helps to identify some of these issues so they can be addressed prior to or in the initial stages of implementation, one important aspect of successful projects was the ability to respond to these unexpected challenges at all stages. Thus, for example, in some jurisdictions the migration of court proceedings

to the online context has resulted in dramatically increased public interest in and access to those proceedings, creating technological issues in the form of overwhelming system demands and policy issues in the form of privacy concerns:

When we created [a system] that enables you to go online and search public court files, we started to notice that . . . computers were trying to access it rather than people, and we were afraid that people were going to try and mine the data and make their own sort of data warehouse of court records. And start using it for purposes that aren't in the best interests of the public. [Quote 57]

In response, some jurisdictions have implemented charges for this access, coupled with security features that prevent automated harvesting of the associated content (e.g., by news “bots”); they have also recognized and are beginning to address the associated policy issues.

One issue that arises with the introduction of hardware dependent technology is scheduling. In one jurisdiction, the very success of mobile evidence display units was a problem: one courthouse director said they were a “great idea but not manageable in a busy court” because of scheduling conflicts. The same issue arose with respect to video remand, when multiple courts were competing for the same videoconferencing facilities set up for defendants in local prisons. Similarly, another jurisdiction reported that the introduction of videoconferencing for remand led to an unexpected “skyrocketing” of remands:

So, what happened was that video was introduced and while video got very busy, thousands upon thousands of uses — the overall number of remand appearances was skyrocketing. . . . the irony is that the program, the video project was launched, all this gear was put in place, but all of these other issues . . . pretty much left things a fair bit worse off. [Quote 58]

In some cases, initiatives that have benefits for one stakeholder group present problems or challenges for another, highlighting again the importance of broad stakeholder consultation when considering technology initiatives. While some initiatives can help to resolve access to justice issues, there is also the possibility that technology requirements can exacerbate access issues for certain individuals and stakeholder groups. In discussing e-filing, one key informant offered the following comment:

You'll get your bigger firms with the bigger clients who are very much interested in everything, but the person they are in litigation with may be self-represented, and may have no access to any of that information, and so balancing all of that is a real challenge. The technology exists and it can be used, the question is how much it is, and then how do you deal with all the other access to justice issues, where you have such divergence in the ability of persons appearing before the court to deal with technology, or to have the resources to purchase the equipment to access electronically transmitted stuff . . . It's a real challenge. [Quote 59]

The end result can be a decrease in efficiencies and a downloading of costs to the court system:

For firms it would be terrific for them not to have to print all the paper and send all their stuff electronically, and for some individuals it is as well. But then if you get to the courthouse and it all has to be printed and bound, multiple copies and so on, you have a downloading of costs right to the

department or government and away from the litigants or participants . . . if the stuff has to be stored two ways, both electronically and then you also have to maintain a paper file in order to accommodate one or more of the participants in the system . . . where's the efficiency in that? [Quote 60]

Not all unexpected consequences are negative: in some cases, the introduction of a new technology introduces efficiencies or other benefits that were not anticipated:

[O]ne interesting innovation that came out of the video system, in that . . . legal aid would . . . go to the correctional institution facilities and they'd sit down . . . and go through the forms with the accused and all of that to . . . determine if they would get legal aid. And they'd go back and punch it all into the computer and there was a program that it would measure and yes or no they don't get it. They got video units and started connecting into the correctional facilities. Corrections was happy because they didn't have to escort civilians through the building . . . Legal aid instead of filling out a form and then going back and banging it into a computer was a literally putting the information into the computer on the spot. And the accused was finding out that moment rather than 3 weeks later that they had legal aid and at that point could then go out and get a lawyer. So that was . . . where everyone said you know that is probably the greatest thing they've seen out of the video system. [Quote 61]

The ability to respond to unexpected challenges and to take advantage of unexpected benefits depends on flexibility. One key informant identified this as "agile development", where "you have a lot more user engagement", and a focus on "user feedback". In some cases, this approach requires a longer period of "rollout", but this allows for better user training and the possibility of system redesign in response to user feedback:

People were very enthusiastic, there were the usual kind of change concerns, but there was an excellent training plan, the implementation took place over a year and a half so it wasn't harried, we worked very closely with the judiciary. [Quote 62]

(j) Smaller May be Better

There appears to be a move away from larger, expensive, and complex hardware solutions to smaller, more flexible software solutions to technological issues. One respondent distinguished these as the U.S. and Australian models, noting that he was

Looking more to a software solution. At the end of the day, you still need hardware, you need displays. [But] to control who can view an exhibit or not, you can have a physical switch to do that or you can have software that controls it . . . And hardware is much more expensive in the long term and harder to manage remotely. [Quote 63]

The respondent went on to discuss the expense of maintaining hardware installations in multiple geographically dispersed locations, noting that while they could not afford to support the geographically distributed hardware, support for software solutions could be deployed centrally and thus delivered at a far lower cost.

Hardware, like software, can quickly become dated. The difference, however, is that hardware is much more expensive to maintain, and technology implementa-

tion budgets rarely include what one key informant termed “evergreening” funds: money for technology renewal.

So one of the key sort of lessons is, whatever technologies you look to implement . . . you also have to have the budget to be able to put the money aside every year for evergreening. [Quote 64]

Another issue with complex hardware installations is the possibility of “white elephant” technology: technology that is expensive, complex, and not widely available, creating challenges for use because few have the required skills. One key informant describe this situation with respect to digital evidence display:

And so what happened, because they weren’t used to their potential, often there were issues with training, people would forget how to use it . . . those electronic courtrooms, I wouldn’t say they ended up being white elephants . . . but there have been challenges with digital evidence. [Quote 65]

[Regarding fixed technology in the courtroom] it’s just not widely used. I don’t know what’s there now, which must have been state of the art when it was purchased . . . it may be an older piece of equipment that is not used — it wasn’t adopted for whatever reason. [Quote 66]

In general, the most successful technology implementations were well-integrated into and with existing practices.

(k) Legacy Practices

In some cases, new technologies conflict with existing “legacy practices”, creating implementation issues. At times, this leads to a duplication of effort and resource deployment, such as when paper files are kept in parallel with electronic documents to satisfy the specific needs of individual user groups (e.g., self-represented litigants who may not have access to the technology and expertise required for e-filing). In one jurisdiction, an e-filing initiative ran into problems when submitted documents were not in the form anticipated by the system and requested by administration.

Part of what we’re fighting against is just habit, the way things are always done . . . When we did e-filing we said “all we want you to do is create the document and attach it in an email to us and send it to us through this portal, basically” and we couldn’t understand why we were getting so many scanned documents . . . we can’t read them, and they’re all pictures, they’re very large, they’re sort of clogging up the system, we can’t process them properly. Well it turned out that, internally, what the assistants did with their lawyers — they had to prove to the lawyer that he or she had seen the document so they needed to get the signature on it. So he or she would take the document, they’d create it electronically, they’d print it out, they’d get the signature, they’d scan it back in and send it to us. Even though we said “you don’t have to do that”. So they can’t break that habit, we’re still struggling with that, about how to change that workflow in the law firms. [Quote 67]

In this case, as in others noted by our respondents, a conflict between existing practice and the demands of new technology, coupled with differing needs across levels

of court and other stakeholder groups, created challenges for newly implemented technologies.

Key informants noted that simply instantiating existing practices into new technologies could, in some cases, lead to less than optimal outcomes:

To do this in our current environment where you know it's, it's a manual process that's in place, it would be way too much work for nothing because at the end of the day you don't want to automate a process you know, without considering why you're doing this because it was originally designed based on receiving a paper file. Why would you automate something whereas you need to think completely different in the way you do it to begin with, like why do you need that in the first place? And it's been you know 100 years right, it's, it's been a long time right and it's just very, very old fashioned. [Quote 68]

A better approach, identified by a number of key informants, is the careful documentation of existing work practices prior to the introduction of any new technology. This process allows for review of existing practices to identify opportunities for increased efficiency and tailoring to fit the requirements and affordances of the technology.

(I) Standardization

For the most part, key informants emphasized the local nature of technology development and implementation, stressing that technological solutions are not “one size fits all”, and should instead be developed in response to user needs and requirements. There was, however, recognition that standardization could help various levels of the court to:

. . . share information without having to repackage, reproduce, reprint, re-send, rescan, recreate . . . [Quote 69]

Relevant issues include the development of document standards such as neutral citations. This is a long-term planning issue, part of the “foundational work” identified above. As one key informant puts it:

What I'd like to see is standards for document creation, metadata that's not just for courts, but it has to involve the whole judicial system, including lawyers, community, the bar association . . . that sort of thing. It's huge. The courts are one of the players. But they can't do something without consulting with the legal community as a whole and coming up with standards. So I think that the system will be much better off if it focuses first with document standards, metadata standards, information transfer protocols . . . After that, once you've got your standard base, then the technologies can just lay right on top. [Quote 70]

The vision is an admirable one, and institution of these types of standards would certainly increase system efficiency.

III. CONCLUSION

Our key informants were associated with technology implementation initiatives across Canada and at different levels of the judicial system. Despite these significant variations, there was substantive overlap in their identification of factors that contribute to the success or failure of any initiative to introduce or update tech-

nology in the justice system. We summarize here the key factors that were identified.

First, *involve the judiciary at all levels of technology planning and implementation.*

The importance of the judiciary in planning for and implementing technology in the justice system cannot be overestimated. Key informants stressed two points: first, that judges have both particular information and particular needs that are relevant to the digitization of the justice system; and, second, in many cases judicial support can make or break a technological innovation. Successful projects tend to have the judiciary involved at all levels of planning and implementation, and throughout the whole process. “Buy in” from the judiciary was seen as critical for successful implementation of technology, and judicial input was valuable for the identification of policy and implementation issues and solutions. In general, the most successful initiatives involved the judiciary both at the broadest levels of technology planning, setting overall direction and policy, and at the more detailed implementation level where they were able to direct decision making about specific technologies. Chief justices were often engaged on committees with other key decision makers for overall policy and direction decisions, while other members of the judiciary were involved early in the planning process for specific technology implementation.

Second (and related to the first), *ensure recognition of and respect for judicial independence.*

As jurisdictions move increasingly toward centralized, jurisdiction-wide IT systems in an effort to gain efficiencies and improve interconnectivity, understanding the importance and implications of judicial independence from the executive and legislative branches of governments is critical to successful planning and implementation. Our informants focused in particular on three key IT-related implications for judicial independence: first, as set out by the Canadian Judicial Council in its Blueprint, protecting judicial information security may include design and/or implementation solutions that separate judicial information from that of other government users; second, maintaining and protecting the security of judicial information from external hacking is also a key concern; and third, there was strong emphasis on creation and maintenance of a separate IT expert position or group devoted to addressing and advocating for judicial IT needs and requirements, particularly those related to protecting judicial independence.

Third, *develop an overall plan for technology implementation.*

The implementation of technology in the justice system is a long-term project, involving many different interventions at many different levels. There was widespread agreement that the larger project should be approached in “bite-sized” chunks (see point 6, below). At the same time, however, key informants stressed the importance of an overall “vision”, “plan”, or set of priorities for justice system technology implementation. Participation from multiple stakeholders, particularly the judiciary and governmental representatives, was seen as critical to plan development. A strong and well-considered technology plan is critical for a nimble organization that can take advantage of arising opportunities (including the availability of funding) and challenges (including the challenge of aging technology).

Developing an overall plan also allows for goal setting, for being clear about the aim of technology implementation. In so doing, it may be necessary to break

down goals like “improving access to justice” to identify which aspects of access to justice are being addressed by a new or replacement technology. Goal setting should allow for better matching of technology to objectives, as well as more meaningful evaluation of technology once implemented, since technology performance can be assessed in relation to stated objectives.

Fourth, *policy and technology development should progress hand in hand—one without the other tends to lead to problems.*

Some of the most successful technology implementations identified in our consultations, particularly those with implications for trial and appellate courts, benefited from early policy development. Key informants stressed the value of considering policy implications before introducing or renewing technology in the justice sector. Most suggested that policy and technology be developed in concert, citing implementation problems that arise when policy precedes technology or (more commonly) vice versa.

Fifth, *recognize and address standardization issues.*

In some sense, this principle is in tension with the prescription that projects should “start small and go for the ‘quick win’”, in that it requires consideration of the entirety of the court and associated justice system components in order to ensure maximum usability of technology across various parts of the justice system. Key informants recognized the importance of technology solutions that are responsive to local needs and practices; at the same time, however, they noted the value of standardization that allows for appropriate integration across (e.g., between courts and lawyers) and within (e.g., across various levels of court) stakeholder groups.

Sixth, *start small and go for the “quick win”.*

Implementing technology in the justice system is a massive, multi-layered, and multi-faceted issue. Some jurisdictions have embarked upon enterprise-level solutions, while others pursue implementation on a project-by-project basis. Although the former approach has advantages, particularly with respect to interoperability and integration, there is widespread agreement that user-facing changes should be relatively small, flexible, and iterative projects, allowing for redesign in response to pre-implementation feedback as well as field testing of results. “Quick wins” are identified as important for gaining stakeholder support, and smaller projects can be more responsive to end-user needs and requirements.

One variation on the “start small” theme was the move away from “hardware-intensive” technology to the use of smaller, more flexible software solutions. Infrequently used and overly complex hardware tended to languish, unused, as the expertise required to take advantage of the installation was lost. Smaller, less hardware-intensive solutions tended to be used more heavily by stakeholders.

Seventh, *consult early, consult widely, and consult often.*

Success depends critically on early and intensive involvement of all stakeholder groups. Initiatives that are driven solely or primarily by one group without early involvement of and consultation with other stakeholder groups are likely to fail. In practice, it is end users who are most likely to be excluded from early planning, and the absence of the judiciary and other end users from these early stages typically results in significant policy and implementation challenges.

One key reason for this end user consultation was to develop an understanding of the “business” and practices of the court. This is critical because technology experts may not understand what the court does; furthermore, this consultation pro-

vides an opportunity for internal review of current processes and identification of how these could be improved. The understanding of court processes can be fostered by modeling the existing process (through consultation with key players) prior to making decisions about whether to implement technology, and if so which technology to implement. The modeling process itself provides an opportunity for thinking about the way in which technology could be used to simplify and improve the current processes; it also provides opportunity to ensure that existing bad practices don't simply get coded into technology solutions.

Eighth, learn from the mistakes and successes of others.

Successful technology projects typically begin with a review of existing initiatives to identify factors contributing to success and/or failure. Consultation methods included site visits, review of white papers and other published documentation, attendance at meetings of national and international organizations involved in court technology, and direct consultation (e.g., through surveys) with experts. Key informants noted that some implementation challenges could be addressed or avoided as a result of these consultations.

Ninth, never assume that technology is a simple substitute for existing mechanisms or processes.

Although this issue can be addressed by some of the practices identified above, particularly consultation with stakeholder groups including end users, it is worth noting separately: there is no such thing as a simple substitution of new technology for old technology or for existing practice. The introduction of a new technology inevitably introduces unexpected issues and problems, and rather than being surprised by these, it is better that we plan for them. Thus, for example, the move from analog to digital information storage introduces new issues with respect to the retention of digital content (e.g., ensuring that older content continues to be accessible); introducing video remand into the courtroom creates unexpected scheduling conflicts for remote videoconferencing sites; e-filing breaks down when the court expects e-filed documents in one form (as text document) and law firm practices demand an alternative form (signed pdfs transmitted as much larger images). Small, flexible technology implementations and iterative design processes were practices that promoted resilience of technology implementations in the face of these inevitable and unexpected challenges.

The principles we have identified here are entirely consistent with those discussed in other studies of technology implementation, especially studies that examine the implementation of technology in the justice sector. Our results emphasize the key role of the judiciary in the implementation of justice system technology, focusing on the importance of involving various levels of the judiciary at all points in the process, and the importance of taking specific judicial needs and judicial understanding into account when designing and implementing justice system technology. Without the participation of these key stakeholders, justice system technology is unlikely to succeed. Another important factor is the complex organizational structure of the justice system, in which various and to some extent independent levels of court interact with each other and with other stakeholders including government, lawyers, and the general public. Given this complexity, enterprise-level technological solutions appear impracticable, and technology implementation must focus on smaller initiatives while maintaining both an overall technology implementation plan and attention to interoperability.

These principles arose naturally in the descriptions of individuals who are involved in, and often responsible for, the implementation of technology in Canadian courtrooms. The collective experience of our key informants attests to the importance of these principles in the management of technological change in the justice system. The fact that these principles are consistent with those identified in studies of technology implementation that examine other contexts and other jurisdictions should add to our certainty that these are important underpinnings for success.