

Mobile Computing and Commerce – ECOM410

**Assignment 2:**  
**Project Report – Mobile Lawyering**

Prepared by:  
Jennifer Lee  
Athabasca University Student  
ID# 2634263

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## **MOBILE LAWYERING:**

Using M-LAW to Conduct Legal Services Via the Internet  
More Efficiently and Securely

## EXECUTIVE SUMMARY

Without embracing a new approach to solving people's legal issues through the use of mobile technologies, the legal system is now bound to crumble in upon itself. There is hope however. The Canadian legal industry can solve a ballooning legal crisis by adopting the future of lawyering - M-LAW - a new framework for mobile, or what's known as "virtual lawyering".

Within this report are recommendations on how mobile computing and wireless communications can be utilized in the legal field to improve service delivery, reduce risks to the legal practitioner, and increase efficiency and profitability. A technical background on the most current wireless technologies and applications exists within, for the purpose of integrating an all-encompassing mobile legal services framework. A detailed analysis outlines the needs of the legal community and typical lawyer, including business processes and workflows. Market and social research is provided to support a strong business case for developing M-LAW, with a focus on the sole practitioner lawyer who needs to maintain a competitive advantage in their field of law and experience, or niche practice area.

Three technological components are recommended for the M-LAW solution:

- 1) The use of a robust device, such as the Blackberry® Z10 or Q10.
- 2) Creation of a solid middleware environment that can link and integrate applications that already exist within the legal market via partnerships with various service providers and organizations, and through use of Enterprise Application Integration (EAI) and Oracle's Fusion Middleware.
- 3) Use of the best wireless network in Canada - Rogers Wireless - by partnering or contracting for service delivery in order to ensure longevity and adoption of M-LAW in the legal market.

# CONTENTS

1	Introduction .....	6
2	Strategic Planning For M-LAW .....	7
2.1	M-Business vs E-Business .....	8
2.2	Mobile Law is Better Than Wired Law.....	9
2.2.1	Finding a Wired Connection is Extremely Difficult .....	9
2.2.2	Wireless Connections are Everywhere.....	9
2.2.3	Cloud Computing .....	10
2.2.4	Billing by the Hour and the Overall Cost to the Client.....	10
2.2.5	Customers Will Benefit from M-LAW .....	11
2.2.6	Social Networking and Marketing .....	11
2.3	The Legal Marketplace and Potential Market for M-LAW .....	12
2.4	Business Strategy Analysis.....	13
2.4.1	Porter’s Models .....	13
2.4.2	Creating Value Through M-LAW .....	16
2.4.3	The Entire Industry Can Benefit from M-LAW.....	18
2.4.4	How M-LAW Will Make Money .....	21
2.4.5	Is the Value of M-LAW Worth the Costs?.....	21
2.4.6	The Income Potential for M-LAW.....	22
2.4.7	Is it a Head in the Right Direction? .....	22
2.5	Analyzing Business Processes and Business Workflows.....	24
2.5.1	Processes and Workflows that M-LAW Can Achieve for Lawyers.....	25
2.6	Mobile Application Identification and Selection .....	29
3	Capability Planning.....	30
3.1	Wireless Infrastructure Planning .....	30
3.2	Local Platform Services.....	30
3.2.1	Blackberry®.....	31
3.3	Middleware Services .....	33
3.3.1	Integrated Architecture of M-LAW.....	34
3.3.2	Enterprise Application Integration .....	35
3.3.3	The Framework for M-LAW’s Integrated Architecture .....	36
3.4	Network Transport Services .....	37
3.5	M-LAW Architecture Design .....	39
3.6	Capacity Planning and Traffic Engineering .....	42

3.7	Resources and Cost Estimation .....	42
<b>4</b>	<b>Development and Deployment .....</b>	<b>43</b>
4.1	Mobile Application Development.....	43
4.2	Managing Data and Information .....	43
4.2.1	Establishing an Information Policy .....	43
4.2.2	Ensuring Data Quality .....	44
4.2.3	Documentation .....	45
4.3	Wireless Infrastructure Development .....	45
4.3.1	Renting vs. Building the Wireless Infrastructure .....	45
<b>5</b>	<b>Monitoring and Control .....</b>	<b>47</b>
5.1	FCAPS Management for Wireless Fault and Performance .....	47
5.2	Production and Maintenance .....	48
5.3	Wireless Security and Configuration Management.....	48
5.3.1	Wireless Link .....	48
5.3.2	Middleware Level .....	49
5.3.3	Application Level .....	50
<b>6</b>	<b>Organizing and Staffing .....</b>	<b>52</b>
6.1	Collaboration with Industry Participants.....	52
6.2	Mobile Virtual Teams .....	52
6.3	Mobile Real-Time Enterprises .....	53
<b>7</b>	<b>Conclusion .....</b>	<b>54</b>
<b>8</b>	<b>Works Cited .....</b>	<b>55</b>

# 1 INTRODUCTION

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**ABC Communications**, a company offering wired Internet services, has decided to move towards offering wireless Internet services to a niche market – lawyers in Alberta, Canada. ABC has approached **ROAM IT**, an information technology consulting firm specializing in wireless solutions, to develop this new mobile business service – **M-LAW**.

M-LAW is an all-encompassing solution to be marketed to lawyers who wish to use mobile technologies to practice the law, otherwise known as mobile lawyering. M-LAW is designed to be user-friendly, all-encompassing, and has a robust security platform. Thus, lawyers and their clients will feel confident in their private interactions over the Internet on their mobile devices.

In addition, using M-LAW can reduce the cost of legal services for those who desperately need a lawyer, including government spending on lawyers who take clients via legal aid and pro bono law programs. It can also alleviate the demands and stresses upon the court system as more people look to M-LAW to find a lawyer who can solve their problems more quickly, avoiding drawn-out legal battles.

**But can mobile lawyering be completely private and secure?** This has been the main hurdle for the legal industry in adopting mobile technologies. ROAM IT believes that M-LAW can be.

## 2 STRATEGIC PLANNING FOR M-LAW

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Strategic planning for the M-LAW solution was based on identifying the role of mobile applications and wireless communications in satisfying business and industry goals within the legal community as a whole, with a focus on **m-business** (mobile business).

**m-Businesses** use the Internet, wireless devices and wireless networks, as well as an electronic business (e-business) infrastructure to achieve business goals.<sup>1</sup>

<b>m-business = Internet + wireless + e-business</b>
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There are many products and services now available for lawyers who wish to adopt e-business into their practice, such as word processing software, e-mail, websites, electronic banking, and law practice management software such as Enterprise Resource Planning (ERP) and Customer Relationship Management (CRM) software packages. But an e-business approach is not enough in this new era of mobile technology.

More recently, there is increasing demand for mobile solutions as consumers in Canada use their mobile devices to gather information online from the Internet in order to meet their needs. “Mobile” means that they can perform their work from a mobile device (ie: a laptop, smartphone, or tablet) using wireless technologies that allow connection to the Internet. Canada is a world leader in Internet adoption, time spent online and electronic banking and bill payment. Furthermore, Canadians are heavy users, with around 90% of users using e-mail at least weekly. This is good news for the legal industry, because Canada’s mobile industry has experienced rapid growth since its inception and demand is expected to remain strong for the

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<sup>1</sup> Umar, Amjad. *Mobile Computing and Wireless Communications*. NGE Solutions. 2010. p 1-41.

foreseeable future.<sup>2</sup> Thus, the legal industry in Canada is ripe for integrating their e-business and advising process into the mobile realm.

Faced with so many choices of applications on the market today for lawyers, ROAM IT found that simply creating the most robust security platform and computing environment and using sophisticated middleware to integrate already-existing applications into a portal-based framework is the answer in creating M-LAW, the future of mobile lawyering.

## 2.1 M-BUSINESS VS E-BUSINESS

Why use an m-business and not just an e-business approach? This question is justified by the fact that some companies, including the legal industry as a whole, perceive m-business as costlier and less secure (due to, presumably, lower security of the wireless communications)<sup>3</sup>.

This is not entirely true. In fact, **not using mobile and wireless can be costlier to the legal industry** as customers, who expect better quality of service, move away from the traditional in-person legal approach to meet their needs faster. This is what has been happening within the legal industry as Canadians choose to represent themselves in legal and court proceedings, even using online tools to draft their own documents.

Real estate agents are a comparable example of professionals who also provide “legal” services in drafting contracts between consumers who are buying or selling a home. Real estate agents are organized and managed in a similar fashion in that they belong to a real estate brokerage (such as Re/Max or Royal LePage, managed by a “broker”).

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<sup>2</sup> See: <http://www.internetworldstats.com/am/ca.htm>

<sup>3</sup> See above, Umar.

The real estate industry is no different than the legal industry in being highly competitive, skill-based and reputation-seeking. Similar trends have been occurring in the real estate industry as consumers are listing, marketing, selling and buying their own homes through MLS services, cutting out the agent. In order to market themselves better and add more value, real estate agents rely on advertising (online and offline) and on websites and technologies that allow them to remain on-the-go and mobile at all times and also to provide details about their area of services (ie: Sherwood Park properties or million-dollar listings).

## 2.2 MOBILE LAW IS BETTER THAN WIRED LAW

Lawyers who use M-LAW will have a competitive edge because M-LAW helps administer business objectives for the justice system better than using wired communications. Using wireless communications and mobile devices to deliver the law is far more advantageous than wired computing for a number of reasons.

### 2.2.1 Finding a Wired Connection is Extremely Difficult

Many lawyers, despite adopting these types of “practice management” technologies, still find that they are not able to easily “unplug” from the office. They must attend to additional matters, such as meeting clients in their homes or attending court. It’s virtually impossible to take a “wired” computer on the road (one that requires a connection via a cable. Even if the computer is a laptop, one must have a wireless adapter card and access to a wireless connection (which may or may not be private and secure).

### 2.2.2 Wireless Connections are Everywhere

These days it is not complicated to integrate a mobile solution, as it was before. Sole practitioners can use cellular or wireless networks that offer roaming (supports the mobile device in changing cells in a network), address persistency of mobile units when repeatedly

turned on/off or in sleep mode, can use cloud computing to store Simple Network Management Protocol (SNMP) agents for use on mobile devices to avoid reaching data and memory capacity limits, and can integrate seamlessly into MANETs (mobile ad hoc networks) to perform functions such as conversations while driving (Bluetooth-enabled vehicles) and printing/ scanning/ faxing (with automatic connection to such devices when set up on the device and in the proximity of a lawyer).

### 2.2.3 Cloud Computing

Waiting until one arrives back at the office to retrieve client information from a paper-based file should now be a thing of the past. It's not necessary these days with the advent of online file systems that can be accessed more securely via the Internet, known widely as "cloud computing".

In fact, having data saved to "the cloud" is better as it poses less risk. Security and regular data backups of law office data is automatic with M-LAW and it is arguable that the data backups on the Internet are actually more reliable than data back-ups within the office.<sup>4</sup>

### 2.2.4 Billing by the Hour and the Overall Cost to the Client

Clients are normally billed by the hour, and can balk at legal fees that are anywhere between \$84 (for legal aid files) to over \$500 an hour. A lawyer needs to be efficient when handling the administrative tasks that accompany managing a legal file, even if most of the administrative tasks are handled by a secretary, legal assistant or paralegal.

Using mobile tools and technologies brings the cost of administering a legal file down dramatically, just as it has done with e-business technologies. Computers have replaced the

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<sup>4</sup> Granat, Richard S. "Cloud Computing", Solos and Small Law Firms, and Consumer Access to Affordable Legal Services. Found at DirectLaw: <http://www.directlaw.com/cloudcomputing.asp>

typewriter and e-mail has replaced (for the most part) traditional postal delivery or “snail” mail. Mobile computing has replaced the paper file, and the need to meet in person, thus reducing costs for the client.

### 2.2.5 Customers Will Benefit from M-LAW

M-LAW facilitates a faster turn-around time in regards to communications and document preparation. This results in greater productivity, increased revenues, better communication and documentation, all aimed at improved customer service, resulting in higher customer loyalty.

### 2.2.6 Social Networking and Marketing

Social networking - with over 2.2 billion users, one of the unintended consequences of the internet is the proliferation of networks of human beings connected to one another in ways that were unimaginable in the past. These services have provided platforms for new ways of socializing and working, and their effect has been transformational and, it is reasonable to suggest, irreversible.<sup>5</sup>

It is noticeable, however, that the legal profession, in Canada and across the world, has been slow to embrace social networking. Many lawyers regard these systems as sources of entertainment for their children rather than life-changing utilities. While it is true, for example, that applications of Facebook in the law may not be immediately apparent, the same cannot be said of Twitter — law firms should surely take seriously the fact that many General Counsel and in-house lawyers are already tweeting regularly. This means that they are letting their followers know what they are thinking, where they are going, with whom they are meeting, and so forth. It is hard to imagine that any law firm that wants to keep close to its clients should not

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<sup>5</sup> Susskind, Richard. *CBA Legal Futures Initiative: Key Trends in the Legal Marketplace*. Canadian Bar Association. Ottawa, ON. September 2013. Retrieved from: <http://www.cbafutures.org/CBA/media/mediafiles/PDF/Reports/Susskind-Linked-eng.pdf?ext=.pdf>

avail itself of this channel of communication. Even if clients above the age of 30 can see limited scope for social networks in the delivery of legal service, the same cannot be said of younger clients and younger lawyers.<sup>6</sup> M-LAW can help lawyers create and maintain a professional social network by integrating with already-existing social platforms, including LegalOnRamp.com<sup>7</sup>.

## 2.3 THE LEGAL MARKETPLACE AND POTENTIAL MARKET FOR M-LAW

The legal market in Canada is progressing through a period of considerable change and will be remarkably different within ten years' time as it undergoes a transformation. Social and technological factors are giving rise to an evolution (better described as a revolution) in the way legal services are provided.<sup>8</sup>

On average, more than 40% of law firms are comprised of sole practitioners and over 60% of practices have three partners or fewer. Many sole practitioners and partners in small firms say that it's increasingly difficult to earn a fair living from conventional legal work, with the hardest hit being general legal practitioners (as larger firms do the same work in higher volumes).<sup>9</sup>

The legal marketplace is becoming more standardized and systematized with the online delivery of forms and legal information. Small firms with niche specialist practices (ie: technology law and patents), or those that offer a highly personalized service that is deemed important by their client base (ie: mergers and alternative dispute resolution), thrive today.<sup>10</sup>

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<sup>6</sup> See Susskind, above.

<sup>7</sup> See: <https://www.legalonramp.com/>

<sup>8</sup> See Susskind, above.

<sup>9</sup> See Susskind, above.

<sup>10</sup> See Susskind, above.

## 2.4 BUSINESS STRATEGY ANALYSIS

Successful deployment of any technology application requires not only a good technology but also an appropriate business model. Beyond the technology that makes mobile computing and lawyering a reality, what is M-LAW's m-business strategy?

For ABC Technologies to explore new horizons and introduce this new wireless service to new m-business customers such as lawyers, it will be an extremely risky proposition. But explaining the reasoning for adopting wireless to folks such as lawyers will be a huge part of the strategy, many of whom are not familiar with Porter's Models.

### 2.4.1 Porter's Models

Businesses that succeed often use business strategies that focus on two factors: **products/ services** (existing and new) and **customers** (existing and new). There are a number of business strategy models used today, the most well-known being the Porter Models, introduced by Michael Porter in the 1980s.<sup>11</sup>

Porter, indisputably recognized as the father of modern business, is the world's most influential thinker on management and competitiveness. His overarching business strategy is simple and clear: **value creation**. In his words, ***the firm is the only organization that can create values, versus other organizations*** (ie: government and non-profit organizations) ***that can only distribute values.***<sup>12</sup>

Porter's background across engineering, economics and business administration has proved to complement his development of scientific and comprehensive solutions to issues in modern

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<sup>11</sup> See Umar, above. p 13-7.

<sup>12</sup> Cho, Dong-Sung. *From Adam Smith to Michael Porter: Evolution of Competitiveness Theory*. World Scientific and Imperial College Press. February 2013. pp xix to xx.

business, thus his diverse background allows him to view the world from an economist's viewpoint, analyze it scientifically, and provide useful business implications. The Porter Models are not specific to a certain time period or industry, but are applicable to a variety of industries over a long period of time.<sup>13</sup> This is important for the legal community to embrace, and ABC Technologies must appreciate this as they choose to move towards mobile.

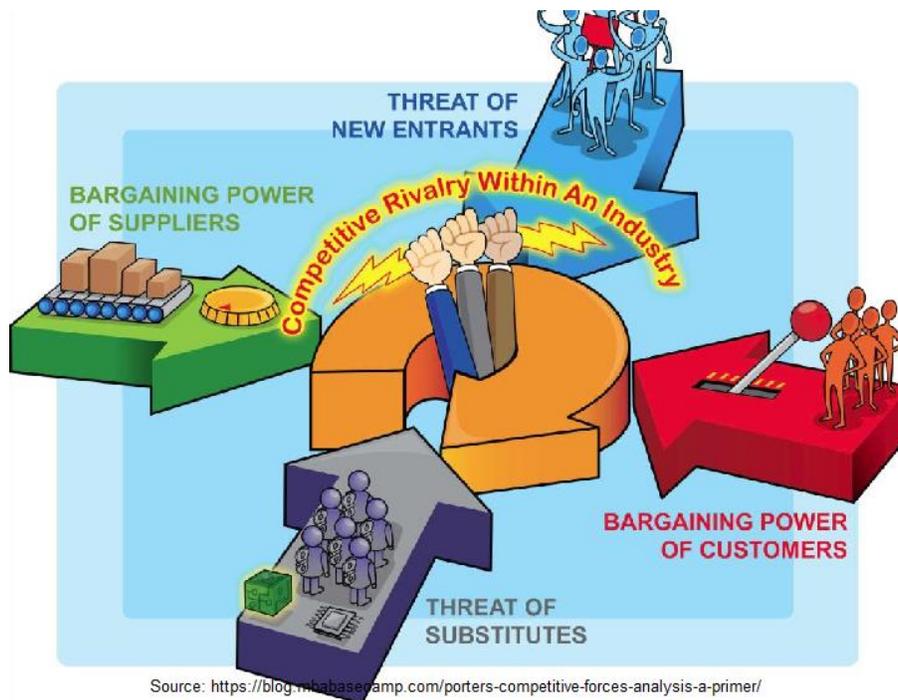
The first Porter Model is known as the **competitive forces model** (see Figure 1) and is heavily relied upon by organizations that aim to be most profitable. The legal community could take notice of how technology can help (or hinder) their law practice by examining the basic foundation of strategic planning that Porter imparted – that companies must contend with five competitive forces:

1. the threat of new entrants;
2. the bargaining power of customers and buyers;
3. the buying power of suppliers;
4. substitutes for a company's products and services; and,
5. the intensity of rivalry among competitors.<sup>14</sup>

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<sup>13</sup> See Cho, above. pp xix to xx.

<sup>14</sup> See Umar, above. p 13-7.



**Figure 1 – Porter’s Competitive Forces Model**

Porter proposes three strategies to succeed in a highly competitive market:

- differentiate your products and services;
- be the lowest-cost provider; and,
- find a niche.

With the legal marketplace being so cutthroat and competitive, M-LAW can help lawyers utilize one or all three of Porter’s strategies in order to sell their services and generate greater profits for both ABC Technologies and the legal community.

Following the competitive forces model, Porter suggested a **value chain model**, indicating to organizations that **in order to be successful, companies must add value at every step of**

**creation, development, sale and after-sale.**<sup>15</sup> Lawyers can use mobile tools through M-LAW to create a value chain that adds more value for their clients.

## 2.4.2 Creating Value Through M-LAW

Mobile computing applications create business value. M-LAW will create value to those lawyers that become an approved “Legal Services Provider” (LSP) with M-LAW and to those “Member” clients who engage an M-LAW “LSP”.

The real value, however, is in the integration of a variety of applications and services through the use of middleware, offering seamless mobility between M-LAW partner sites. This makes it the most comprehensive, scalable and customized solution on the market, creating value in many ways.

### 2.4.2.1 *Helping Lawyers Become Next-Generation Enterprises (NGEs)*

Lawyers can create a Next-Generation Enterprise (NGE) by becoming **real-time enterprises**; that is, by adding mobility, intermediaries, and real-time business monitoring and control to their e-business in the following ways:

1. **Become e-business focused.** This could be achieved for lawyers who adopt e-business tools (aforementioned). E-Business helps tremendously with repetitive and necessary tasks such as billing, scheduling and communicating with clients. Lawyers can also **create a personal website**. Most sole practitioners lack a website that identifies who they are (including a photo that can speak volumes), what area of law they practice (as to eliminate unnecessary inquiries), how they can be contacted (so clients can expect a response to their inquiries) and how they can be found (using online maps

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<sup>15</sup> See Umar, above. p 13-7.

or location-based services). Lawyers can use e-business to manage their reputation and image amongst potential clients and the public. For instance, M-LAW can provide lawyers with a custom Internet address (such as ThomasRoth.legal) that redirects to the M-LAW portal Website, and tells the public more about the area of law that the lawyer practices within, including their achievements and specialties.

2. **Become m-business focused.** Lawyers can now use wireless networks and mobile devices as tools to manage their e-business practice.<sup>16</sup> There are numerous benefits to becoming mobile in the legal industry.

#### *2.4.2.2 Manage Mobile Media and Marketing for Lawyers*

M-LAW can solve the marketing needs that legal professionals have in finding paying clients. Mobile media is one way to achieve this for lawyers, as it is more advantageous over traditional (print, radio or television) media because:

- Advertising can be directly delivered to target audiences similar to direct mail;
- Mobile devices have the portability of print media;
- Mobile media is more time-sensitive, providing continuous on-time delivery of media; and,
- Mobile media provides the richness of TV.<sup>17</sup>

M-LAW could help lawyers design media campaigns that follow three essential steps:

1. **Create impact** – where the media campaign is relevant to the target audience. Lawyers can select an area of law where they can provide experienced, sound advice to consumers.

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<sup>16</sup> See Umar, above.

<sup>17</sup> Wesley, David. (2004). *The Brand in the Hand: Mobile Marketing at Adidas*. Ontario: Northeastern University.

2. **Create involvement** – Lawyers can create campaigns that have personal relevance and interactivity features for the consumer, by giving potential customers a view of the information they should know about the law and their legal rights (for free) along with online forms to request personal advice.
3. **Provide activation** – M-LAW provides a seamless activation mechanism which involves the purchase of the legal service as a direct result of advertising and promotion. By allowing potential clients to submit payment or set up a payment plan to become represented or get personal legal advice, M-LAW overcomes a huge barrier for lawyers in finding paying clients.<sup>18</sup>

It's important not just to provide information to the client, but also to combine it with product and brand messaging.<sup>19</sup> For a lawyer, they *are* the brand that they want potential client to choose, and their product is expertise in a particular area of law in a specific jurisdiction. M-LAW takes care of the branding and image management for the lawyer, and when lawyers are marketed together, their “brand” becomes more professional and cohesive through M-LAW.

### 2.4.3 The Entire Industry Can Benefit from M-LAW

The courts throughout Canada are overwhelmed with activity and demand. The justice system is increasingly pressed to solve even the most simple of legal disputes, such as landlord-tenant claims or uncontested family law divorce proceedings.

Much of this activity in the courts is partly due to a growing body of self-represented litigants (SRLs) – those individuals without legal representation - due to financial reasons and/or a

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<sup>18</sup> See Wesley, above.

<sup>19</sup> See Wesley, above.

general distrust of the legal profession.<sup>20</sup> The rise of SRLs has put tremendous stress on the legal system, which could be alleviated through M-LAW. ABC Technologies can develop M-LAW to help answer the needs of those who are not being served well by the “traditional” legal approach and system.

A well-known advocate and law professor who has researched the self-represented litigant phenomenon and runs The National Self-Represented Litigants Project<sup>21</sup>, Dr. Julie Macfarlane<sup>22</sup>, explained the SRL issue as such: *“I am blown away by the numbers of self-represented litigants in our courts today. I think it’s more fitting now to say that it’s the inmates who are running the asylum.”*<sup>23</sup>

Macfarlane has found as many as 80 per cent of family court cases in Canada involve self-represented litigants through her study<sup>24</sup>. *“The numbers are absolutely astonishing,”* she says. Macfarlane says those numbers follow a North American-wide trend. She notes only one per cent of litigants in family courts in California in 1971 were self-represented. That figure jumped to 46 per cent in 1993, and to 77 per cent in 2000. *“It’s likely over 80 per cent now, but it’s almost certainly the same here (in Canada) because we’ve been trending in the same direction.”*<sup>25</sup>

The fact is, self-represented or not, folks can now utilize the Internet to conduct their own research to meet their needs through the assistance of online facilities and information. For

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<sup>20</sup> Macfarlane, Dr. Julie. Final Report – *The National Self-Represented Litigants Project: Identifying and Meeting the Needs of Self-Represented Litigants*. Windsor, ON. May 2013. Retrieved from:

<https://representingyourselfcanada.files.wordpress.com/2014/02/reportm15-2.pdf>

<sup>21</sup> See: <http://representingyourselfcanada.com/>

<sup>22</sup> See: <http://www.uwindsor.ca/law/juliem/>

<sup>23</sup> Cardwell, Mark. The ‘scourge’ of self-represented litigants. Canadian Lawyer Magazine. January 7, 2013.

Source: <http://www.canadianlawyermag.com/4463/The-scourge-of-unrepresented-litigants.html>

<sup>24</sup> Macfarlane, Dr. Julie. Identifying and Meeting the Needs of Self-Represented Litigants. May 2013. Found at:

<https://representingyourselfcanada.files.wordpress.com/2014/05/nsrlp-srl-research-study-final-report.pdf>

<sup>25</sup> See Cardwell, above.

example, people in Canada can now draft their own contracts, bills of sale, last will and testaments, power of attorneys, and set up business corporations themselves by using guided online questionnaires that automatically populate customized forms and automated templates.

Although these online tools are not guaranteed to help or serve the legal needs that SRLs commonly have (such as how to defend themselves against criminal accusations, conduct their own court hearings and trials), these facilities are creating fierce competition for lawyers who have typically charged hundreds, or even thousands of dollars for services that only lawyers historically provided.

Internet users, including lawyers themselves, can now browse the Web through their mobile devices to find free and low cost subscription services to legal information, services and products. LegalZoom.com<sup>26</sup> (US-based), LegalZoom.ca<sup>27</sup> (in Canada), and LawDepot.ca<sup>28</sup> (in Canada) are all examples of highly-marketed legal websites for consumers to tap into to create personalized legal forms online. Wikivorce.com<sup>29</sup> is an online community in the UK, and was developed for those facing a divorce or family break-up in order to get more timely support and information, reducing the overall expense for family disputes in the UK. Hire An Esquire<sup>30</sup> in the US, is an example of how M-LAW could be integrated in a Canadian setting to link lawyers with potential clients (including other corporations or businesses that wish to hire a contract lawyer for a period of time).

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<sup>26</sup> See: <http://www.legalzoom.com/>

<sup>27</sup> See: <http://www.legalzoom.ca/>

<sup>28</sup> See: <http://www.lawdepot.ca/>

<sup>29</sup> See: <http://www.wikivorce.com/divorce/>

<sup>30</sup> See: <https://hireanesquire.com/>

#### 2.4.4 How M-LAW Will Make Money

With many of the apps (applications) and SaaS (software as a service) providers on the market today, M-LAW could easily generate profits by charging subscription fees to the lawyers who use M-LAW, or use a pay-per-use billing model. M-LAW could also take a small percentage of a lawyer's gross earnings. There are a variety of strategies that could be tested during the initial stages of implementation when M-LAW is ready to be rolled out to the public.

An example comparable to M-LAW would be Just Answer Medical<sup>31</sup> where one can pose a medical question, along with their credit card number, to have an online doctor perform a "second opinion or clarification of a medical issue". Although medical care is largely free in Canada with a provincial or territorial health care account, legal services are not. Lawyers can take the same approach in billing potential clients for their services, with M-LAW doing all the background payment processing.

#### 2.4.5 Is the Value of M-LAW Worth the Costs?

Absolutely. When faced with a legal issue, time is of utmost importance, much like a medical issue. Lawyers who value their time and wish to be competitive often look for ways to resolve problems faster for their clients. For those legal practitioners who still believe clients have no choice but to continue tolerate waiting long periods to discuss their legal matter with a lawyer, those lawyers are not considering the realities of the market and the potential risks, such as losing a client to a more tech-saavy (and available) practitioner, or the choice a client may make by becoming an SRL and handling the legal matter themselves.

This approach of specialization, or niche law practicing, will be what is required of lawyers in the near future, as general practitioners cannot possibly know everything there is about the law,

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<sup>31</sup> See: <http://www.justanswer.com/>

nor serve every type of client imaginable. The future of M-LAW could see the development of a full-blown, technology-enabled legal marketplace, including virtual law firms.<sup>32</sup> Thus, looking to Porter's Models for a strategy, lawyers must differentiate their products and services and find a niche. Some will offer lower-cost services, known as unbundled services, and M-LAW can help them achieve this.

#### 2.4.6 The Income Potential for M-LAW

The legal industry is so massive in Canada that even Industry Canada is not able to compile precise figures on the value of legal services in Canada.<sup>33</sup>

Therefore, in this type of service industry, it can be concluded that the potential to earn massive profits are quite possible for ABC Technologies, including the legal industry, especially so once lawyers shift towards adopting M-LAW as a mobile lawyering solution.

#### 2.4.7 Is it a Head in the Right Direction?

Lawyers, and their respective bars (law societies), need to take heed and listen to what consumers and the public are saying through their adoption of mobile technologies. Clients want value for their money, and they expect timely delivery of legal advice and services. As mentioned, people already use the Internet to do their own legal research. But Google is not a lawyer.

Adopting a mobile approach is what consumers are already doing in other areas of their lives, such as with personal health diagnoses (WebMD<sup>34</sup> is free) and personal finance management

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<sup>32</sup> CBA Legal Futures Initiative: *The Future of Legal Services in Canada – Trends and Issues*. Canadian Bar Association. Ottawa, ON. June 2013.

<sup>33</sup> Canada Industry Statistics (CIS): *Legal Services Financial Performance Data*.

Source: <https://www.ic.gc.ca/app/scr/sbms/sbb/cis/financialPerformance.html?code=5411&lang=eng>

<sup>34</sup> See: <http://www.webmd.com/>

(online banking, now also free through companies such as Tangerine<sup>35</sup>, President`s Choice Financial<sup>36</sup> and Implicity Financial<sup>37</sup>). In fact, M-LAW`s security systems will model those of the online banking sites. Thus, there is no reason for the legal industry to not move forward now and adopt a mobile solution. While the bar societies (the legal government) continue to wait or resist mobile lawyering, consumers and the industry continue to suffer as new competition enters the market in Canada.

The fact is, there are more data security risks in not adopting M-LAW as a solution for the industry. Managing information through paper-based systems also poses greater security risks to lawyers. How the files or data are kept and disposed of, whether locked up or destroyed through a shredding process, can somewhat mitigate certain risks in handling sensitive data and information, but not entirely.

Because there is little control of, or good management of client data through the traditional file method, access to and dissemination of information may put lawyers at risk of losing data, or having customer`s private data breached.<sup>38</sup>

Furthermore, with privacy laws in Canada, such as PIPEDA (*The Personal Information Protection and Electronic Documents Act*)<sup>39</sup>, customer data must be managed in a responsible, private and secure way so that security of sensitive data is of utmost priority. Precisely why the Canadian Bar and provincial law societies should promote the use of M-LAW by revisiting policies on how lawyers can practice law this new way in Canada.

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<sup>35</sup> See: <https://www.tangerine.ca/en/index.html>

<sup>36</sup> See: <http://www.pcfincial.ca/>

<sup>37</sup> See: <https://www.implicit.ca/>

<sup>38</sup> Laudon, Kenneth C., Jane Laudon, Mary Brabston. *Management Information Systems: Managing the Digital Firm*, 6th Edition. Pearson Learning Solutions. July 2013. p 180.

<sup>39</sup> See the *Office of the Privacy Commissioner of Canada* website: [https://www.priv.gc.ca/leg\\_c/leg\\_c\\_p\\_e.asp](https://www.priv.gc.ca/leg_c/leg_c_p_e.asp)

## 2.5 ANALYZING BUSINESS PROCESSES AND BUSINESS WORKFLOWS

Providing legal services via the Internet is somewhat revolutionary for lawyers that have traditionally used paper-based systems, an approach to ensure client-solicitor confidentiality. Perhaps lawyers have resisted mobile and wireless computing because they do not fully comprehend, nor appreciate, the inner-workings of mobile technologies. The fact is, many people also do not understand how electricity works, yet they still benefit from this technology that has dramatically improved the world, bringing us literally, out of the dark-ages.

Business processes in the legal industry are sets of logically-related tasks performed to achieve a defined business or legal outcome. Business workflows are the steps required to complete business processes and the rules which determine what steps should be performed when. Both need to be examined in order to improve business processes and maintain competitiveness for lawyers by using mobile devices.<sup>40</sup>

Managing a legal file and providing legal services does not follow a specific process every time. However, other repetitive tasks such as creating a client base and managing a file can be automated now to a certain degree, while still being overseen by a lawyer. The typical M-LAW processes and workflows are described next (see Table 1 – Processes and Workflows Involved in Mobile Lawyering).

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<sup>40</sup> See Umar, above.

## 2.5.1 Processes and Workflows that M-LAW Can Achieve for Lawyers

**Table 1: Processes and Workflows Involved in Mobile Lawyering**

### MARKETING & LAWYER PROFILE MANAGEMENT

1) Lawyer <b>registers</b> at M-LAW.com <sup>41</sup> to become an approved “Legal Services Provider” (LSP)
2) After lawyer approved, M-LAW <b>assigns lawyer a “.legal” Web page</b> <sup>42</sup> where lawyer can personalize their own profile, add a photo, upload a digital signature, check off specialty areas in which they practice law, determine their hourly rates and add other details such as experience. Integration with LinkedIn and Facebook is possible to populate the M-LAW profile.
3) M-LAW’s <b>LSP Community</b> gives lawyers the opportunity to collaborate on projects and work with other lawyers who are registered with M-LAW. A social network exists (similar to Facebook, but only for M-LAW LSPs) where research papers, legal news, job or contract work advertisements, and events can be shared amongst the LSP Community.
4) M-LAW allows lawyers to <b>add a Personal Assistant</b> to their LSP account, so that their legal secretary, assistant or paralegal can also perform work on the LSP account. Information about each individual that uses M-LAW is required to access M-LAW client files, applications and tools.
5) Lawyer can set up M-LAW <b>Mobile Media Campaign</b> to attract potential clients by simply selecting preferred types of clients they wish to assist (ie: demographic characteristics) and/or legal packages offered (ie: estate planning or business formation). Banner Ads, YouTube videos and GoogleAds are examples of available marketing tools offered through M-LAW that a lawyer can choose from.
6) M-LAW <b>manages incoming traffic</b> through Mobile Media campaigns, gathering potential client emails and storing the data in secure M-LAW databases for those site visitors who may be interested in legal services.
7) M-LAW <b>generates automated emails to qualify potential clients</b> through a questionnaire, along with information sourced from websites such as LegalTree <sup>43</sup> (through

<sup>41</sup> This is a hypothetical Web domain for the purposes of this report.

<sup>42</sup> <https://ca.godaddy.com/> now offers .legal extensions for sale in Canada.

<sup>43</sup> See: <http://legaltree.ca/>

algorithm software) in order to **prepare and educate the visitor about their legal issue**, prior to speaking with a lawyer.

8) Once the visitor views all the information and links provided in the email (such as videos outlining what's involved in a divorce), M-LAW provides a pop-up response: *"After you have reviewed this information and still need assistance, please provide the following..."* To continue through the process of speaking to a lawyer, **the visitor must "register"** to be a Member by providing personal information, identification, names of other parties involved in the legal issue, ability to pay information/ financial details.

9) M-LAW **processes all the data provided by the potential client**, including the financial means to pay (or provides legal aid or pro bono approval for services) and **creates a "Member" file** on M-LAW. The client file is **sent for a conflict check** on behalf of the lawyer. If no conflict exists, the "Member" file is sent to the lawyer through the encrypted M-LAW email system. If a conflict exists, the "Member" file is sent on to another lawyer, advising Member of the conflict.

## **CLIENT & FILE MANAGEMENT**

10) The lawyer **reviews the client file and confirms they are interested** in the file. M-LAW helps the lawyer **schedule appointments** with the client through the M-LAW diary calendar tool. An email is sent to the Member to provide possible dates and times of lawyer availability.

11) The **client selects an appointment that suits them** and confirmation emails and reminders are sent to both lawyer and the client.

12) The appointment takes place via **call routing (call centre technology)** that uses encrypted video or telephone applications to conduct a secure and private mobile interview between the lawyer and client. **Payment is made for the legal appointment** via credit card or PayPal, facilitated through M-LAW's payment processing system.

13) A client **Feedback/ Service Survey** is sent to the client at the conclusion of the appointment. Additional feedback and service surveys are also sent after each interaction to provide the lawyer with information on their service and client satisfaction levels.

14) M-LAW has **Reminder Systems/ Alerts Tools** that can advise the lawyer if certain activities are bringing the file close to pending dates and/or timeframes, maximum budgets, and M-LAW can send automated emails to clients in order to approve work over budget. Also, **Status Reports** can be automatically generated through M-LAW according to a diary system that send status emails to the client, the lawyer and/or legal team.

15) If legal documents are to be prepared, the lawyer uses **standardized templates** (based on forms approved and provided by the Courts in their jurisdiction) and then proceeds to create them through M-LAW's integrated apps and tools. The lawyer can also keep their own **customized forms and documents** in a personalized M-LAW **document library**. M-LAW can also integrate with lawyer's client and business databases that may exist prior to registration as a LSP.

16) If legal research is required, it is completed through M-LAW's online legal database partners (such as Canlii<sup>44</sup>, Westlaw<sup>45</sup> and Carswell<sup>46</sup>). **Legal research can also be delegated** to the lawyer's personal assistant, or outsourced to "approved" legal researchers, law librarians, and paralegals who partner with M-LAW.

17) If additional information or outside services are involved, M-LAW is also integrated with **Registries Online**<sup>47</sup>, **Alberta Corporate Registries**<sup>48</sup>, the **Alberta Courts**<sup>49</sup> (M-LAW can tie into the **Remote Courtroom Scheduling** application<sup>50</sup> and the daily Judicial Scheduling listings<sup>51</sup>), and **Alberta Transcript Management Services**<sup>52</sup>. Lawyers using M-LAW can also access transcripts from their mobile device.<sup>53</sup>

18) M-LAW allows seamless **access to e-filing** in the Alberta Courts<sup>54</sup> and Federal Court<sup>55</sup>.

19) **Mediation and Alternative Dispute Resolution**<sup>56</sup> meetings can be set up via M-LAW through mobile devices, with **video conferencing**<sup>57</sup> and **tele-conferencing** capabilities.

## **BUSINESS ADMINISTRATION & LAW PRACTICE MANAGEMENT**

20) Lawyers can **capture their activities in real-time** through M-LAW, which provides the ability to **enter and track activities and expenses via voice recognition software and**

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<sup>44</sup> See: <http://www.canlii.org/>

<sup>45</sup> See: <http://www.westlaw.com/>

<sup>46</sup> See: <http://www.carswell.com//products/carswell-ereference-library/>

<sup>47</sup> See: <http://www.servicealberta.ca/1005.cfm>

<sup>48</sup> See: <http://www.servicealberta.ca/812.cfm>

<sup>49</sup> See: <https://albertacourts.ca/>

<sup>50</sup> See: <https://albertacourts.ca/provincial-court/court-case-management/remote-courtroom-scheduling>

<sup>51</sup> See: <https://albertacourts.ca/provincial-court/judicial-schedules>

<sup>52</sup> See: <https://www.albertacourts.ca/resolution-and-court-administration-serv/transcript-management-services/>

<sup>53</sup> Apps such as "Mobile Transcript" can be downloaded and used with M-LAW. See: <http://mobile-transcript.com/>

<sup>54</sup> See: <https://forms.albertacourts.ca/>

<sup>55</sup> See: [http://cas-ncr-nter03.cas-satj.gc.ca/portal/page/portal/fc\\_cf\\_en/E-Filing](http://cas-ncr-nter03.cas-satj.gc.ca/portal/page/portal/fc_cf_en/E-Filing)

<sup>56</sup> See: [https://justice.alberta.ca/programs\\_services/mediation/Pages/default.aspx](https://justice.alberta.ca/programs_services/mediation/Pages/default.aspx)

<sup>57</sup> See: <https://www.albertacourts.ca/resolution-and-court-administration-serv/video-conferencing>

**camera integration.** Lawyers can upload receipts or incoming payments made by cheque by simply taking a photo and adding details via voice or text.<sup>58</sup>

21) **Billing and Financial Management** – Lawyers can conduct online banking through their mobile device, manage client trust accounts, release funds, submit Canada Revenue Agency tax and GST payments online<sup>59</sup> through M-LAW m-commerce tools.

22) M-LAW will offer **first-class technical support and customer service**, including **automated and hourly synchronization** of mobile devices to the M-LAW secure **cloud-based storage service**.

23) **Offers will be made periodically to existing clients who opt-in for emails**, giving the impression of the lawyer keeping in touch and showing they have interest in managing other legal aspects of their client`s lives. This could include additional offers and discounts for services such as wills, real estate conveyancing, or setting up and registering a business.

The aforementioned processes are not an exhaustive list of what a lawyer may need M-LAW to do from a business standpoint. The important point is that the lawyer can do so much more for clients using mobile devices and applications that integrate and “speak to” each other. Lawyers can make better use of their time when waiting for court hearings and meetings and increase billable hours significantly as they have their device with them at all times.

M-LAW is the tool to choreograph the lawyer`s practice and all of the processes that a lawyer has to manage with a client file.

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<sup>58</sup> It`s important to exploit voice support as much as possible. 50-80% of CRM implementations failed because entering sales data is time-consuming and expensive. See Umar, p 2-29.

<sup>59</sup> See: <http://www.canada.ca/en/services/taxes/businesses/index.html>

## 2.6 MOBILE APPLICATION IDENTIFICATION AND SELECTION

To address the aforementioned business processes and workflows, sets of applications must be used and integrated in order for M-LAW to work. Therefore, the main components or mobile applications required for M-LAW consist of an m-portal application, an m-ERP (mobile enterprise resource planning) application, an m-Social Community Manager application, a knowledge library search tool (proprietary algorithm software) and an m-Commerce application, all described below (see Table 2 – Mobile Applications to Support Legal Practice Processes).

**Table 2: Mobile Applications to Support Legal Practice Processes**

	Business Process 1: M-LAW Portal	Business Process 2: Mobile Enterprise Resource Planning (ERP) System <sup>60</sup>	Business Process 3: Mobile Social Community Management	Business Process 4: Knowledge Library Search	Business Process 5: Mobile Commerce
Application 1 (Website)	Mobility-Capability and Device Scaling Required <sup>61</sup>				
Application 2 (ERP)		Mobility Required			
Application 3 (Online Purchasing System)					Mobility Required
Application 4 (Knowledge Library Search Algorithm Software)				Mobility Required	
Application 5 (Social Community)			Mobility Required		

<sup>60</sup> **The Mobile ERP system will cover the following functional areas:** Financial Accounting, Management Accounting, Human Resources, File and Project Management, Salesforce Management and Customer Relationship Management, Order Processing, Knowledge and Data Services, Social Networking.

<sup>61</sup> All of the above applications require mobile device functionality and device scaling in order to work on a variety of mobile devices. For example, LegalTree.com is not mobile-compatible at this time, thus is difficult for users to navigate and read the text and information offered on sites and applications that are not mobile-friendly. M-LAW will encourage sites and providers to switch over to backend programming languages that support mobility.

### 3 CAPABILITY PLANNING

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This stage includes evaluating the wireless infrastructure – the wireless networks and mobile computing platforms – that are needed to support the mobile applications and m-business initiatives identified in strategic planning, as well as an analysis of capacity planning, traffic engineering, and cost estimation.

#### 3.1 WIRELESS INFRASTRUCTURE PLANNING

To provide interconnectivity services between the applications and services that partner companies provide, and to transfer information between lawyers and their clients in a secure and efficient manner, mobile computing platforms will be used. ABC Technologies will ensure that the wireless infrastructure is in place for M-LAW to provide services in the following way.

#### 3.2 LOCAL PLATFORM SERVICES

Local platform services are programs that reside on the mobile device and consist of operating systems, database managers, transaction managers and utility programs. There are a variety of operating systems on the market today for mobile devices. Every operating system has the following five functions:

- Handle user commands;
- Allocation and assignment;
- Scheduling;
- Monitoring; and,
- Security.<sup>62</sup>

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<sup>62</sup> See Umar, above.

Local platform services will support the M-LAW application on various individual mobile devices, which can be an Android, an iOS, a Palm, or a Blackberry® device.

For the purpose of promoting M-LAW to the legal profession, two Blackberry® devices known as the Z10 (a full touchscreen device), and the Q10 (a device equipped with a physical keyboard) will be promoted and offered at a discount through M-LAW.<sup>63</sup>

### 3.2.1 Blackberry®

BlackBerry® 10 is a robust and reliable platform that is smooth and responsive. It has a modern design and a gesture-based interface that is highly discoverable. It is designed to support, learn, and adapt to the way lawyers work with features such as:

- The BlackBerry® Hub (a single place to manage all conversations whether personal or work email, BBM™ messages, social media updates or notifications);
- BlackBerry® Flow, enabling features and apps to flow seamlessly together;
- A touchscreen or Qwerty keyboard that understands and adapts to the user, learns what words are used and offers them up to type faster and more accurately;
- BBM (BlackBerry® Messenger), which includes voice calling and video chat, and introduces the ability to share a user's screen with another BlackBerry 10 contact;
- BlackBerry® Balance™ technology, which elegantly separates and secures work applications and data from personal content on BlackBerry devices;
- BlackBerry 10 browser, which sets the industry benchmark for HTML5 support on smartphones, and is incredibly fast. Scrolling or zooming is fluid and responsive. The browser includes many advanced features, supports multiple tabs, lets users browse sites privately and includes a reader mode, and integrates easily for sharing content;

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<sup>63</sup> See: <http://press.blackberry.com/press/2013/blackberry-10-re-designed-re-engineered-and-re-invented.html>

- BlackBerry® Remember, which combines memos, tasks and much more into a single experience. It helps the user organize and manage information on their smartphone around projects or ideas, letting the user collect content such as websites, emails, photos, documents, and other files, and then like a To-Do list, lets the user create tasks, assign due dates, and track progress. BlackBerry 10 smartphones can be set up with a work account, so Microsoft® Outlook® Tasks will automatically be wirelessly synced with BlackBerry Remember. If a user also has an Evernote account configured on the device, BlackBerry Remember will sync Evernote workbooks as well;
- BlackBerry® Safeguard technology that helps protect what is important to lawyers and the confidential nature of their client dealings and communications;
- Built-in support for Microsoft Exchange ActiveSync® so the Z10 or Q10 device can be simply connected and managed as other ActiveSync devices within a company, or enabled with BlackBerry® Enterprise Service 10 to gain secure access to work email, “behind the firewall” applications and data, and benefit from other security and enterprise mobility management features.
- The BlackBerry® World™ storefront, which now includes 70,000 BlackBerry 10 apps and one of the most robust music and video catalogs in mobile today. In addition, Facebook, Twitter, LinkedIn and Foursquare apps for BlackBerry 10 are preinstalled, and BlackBerry 10 customers will have access to leading applications from across the globe. Leading application providers including Disney, Cisco, Foursquare, Skype and Rovio have committed to the platform. Cisco is a leader in providing videoconferencing capability.<sup>64</sup>

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<sup>64</sup> See: <http://press.blackberry.com/press/2013/blackberry-10-re-designed-re-engineered-and-re-invented.html>

BlackBerry® 10 smartphones are elegant and distinctive, and the fastest, most advanced BlackBerry® smartphones yet. They are the best fit for the legal profession as they feature 1.5 Ghz dual core processors with 2GB of RAM, 16GB of internal storage, and an expandable memory card slot. They include the latest enhancements in high density pixel and screen technology to display clear, sharp, and incredibly vivid images. Both feature a micro HDMI out port for presentations, and advanced sensors such NFC (near field communications) to support mobile payments and the exchange of information with a tap of the smartphone. They have a removable battery.<sup>65</sup>

Models of the BlackBerry® Z10 and BlackBerry® Q10 are also available for purchase through other cellular network carriers as well and support 4G LTE or HSPA+ networks. All the available models include connectivity support for global roaming.<sup>66</sup> This is a key feature for the mobile lawyer, who may also travel internationally and use the phone or videoconferencing features while connected to M-LAW's platform via the Internet.

The advantage to promoting the BlackBerry® is that they are the most secure local platform service and hardware device available on the market today.

### 3.3 MIDDLEWARE SERVICES

Middleware services interconnect the mobile users, databases, and applications for M-LAW. The most important challenge that M-LAW must work on in creating a functioning architecture that can survive the changes in technologies, standards and market needs through middleware. Using wireless middleware services such as WAP (wireless application protocol) can shield ABC Technologies and the M-LAW's developers from the underlying network details.<sup>67</sup> It's also

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<sup>65</sup> See: <http://press.blackberry.com/press/2013/blackberry-10-re-designed-re-engineered-and-re-invented.html>

<sup>66</sup> See: <http://press.blackberry.com/press/2013/blackberry-10-re-designed-re-engineered-and-re-invented.html>

<sup>67</sup> See Umar, above. p 11-4.

important that uniform application and user interfaces are developed to provide a seamless look and integration amongst all the applications that M-LAW will tap into through its partner providers, and provide access to back-end systems and databases. This component of the wireless infrastructure, the middleware, is what M-LAW will need to work on the most, using components, component-based platforms and finally, Mobile Web Services to build a flexible, robust, secure and integrated legal platform for the future generation of lawyers.<sup>68</sup>

### 3.3.1 Integrated Architecture of M-LAW

Integrated Architecture combines two heavily loaded terms: architecture and integration, and simply stated, an architecture shows how individual components tie together to satisfy the overall system requirements.<sup>69</sup> It is a structure that describes three things:

- Components of the system (what the pieces are);
- Functions performed by the components (what the components do): and,
- Interfaces/ Interactions between the components (how the components work with each other).

M-LAW demands an integrated architecture that consists of components, in this case numerous applications and software packages, which will be seamlessly combined to support similar conventions or styles. For example, the user interface will appear similar no matter what application the lawyer is using while in the M-LAW portal. These integrated systems will maximize the effort needed by the lawyer, meaning less effort as the system is somewhat

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<sup>68</sup> See Umar, above. p 11-4.

<sup>69</sup> See Umar, above. p 11-5.

programmed to share and exchange information amongst applications without external intervention.<sup>70</sup>

It's also important that M-LAW's middleware be designed to survive attacks and intrusions, so good security and fault-tolerant features must be designed into the overall system architecture.

### 3.3.2 Enterprise Application Integration

ABC Technologies will have to use Enterprise Application Integration (EAI) to bring together all of the disparate applications and business processes as needed to meet the needs of lawyers, clients, and partners through M-LAW.

EAI is the unrestricted sharing of data and business processes throughout the networked applications or data sources in an organization. EAI will be used in order to streamline processes and keep all the elements of the enterprise interconnected. There will be four parts to the EAI process:

- **Database linking:** databases share information and duplicate information as needed.
- **Application linking:** M-LAW shares business processes and data between two or more applications.
- **Data warehousing:** data is extracted from a variety of sources and channeled into a specific database for analysis.
- **Common virtual system:** all aspects of M-LAW computing are tied together so that they appear as a unified application.<sup>71</sup>

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<sup>70</sup> See Umar, above. p 11-6.

<sup>71</sup> See Umar, above. p 11-8.

### 3.3.3 The Framework for M-LAW's Integrated Architecture

The integrated architecture for M-LAW is based on a continuum of services that go from low-level network interconnection technologies to business applications and processes. There will be integration at the following levels (see Figure 3 – A Framework for M-LAW's Integration):

- **Physical communication level** – The devices themselves (Blackberry, Android, iPhone, Palm, etc.) will all have adapter cards that can recognize various signals to operate on the various hybrid wireless networks (different users may be on different networks which must all transfer the data and signals amongst each other). Also, network protocol converters and gateways are needed between networks.
- **Handoffs and roaming support between multiple networks** – Mobile IP, also known as IPv6, is the means to supporting the handoffs as mobile devices roam from one network to another. IPv6 allows for unlimited assignment of unique IP addresses that follow each device as users are mobile and changing service areas on a frequent basis. (IPv6 also provides excellent security in that it mimics a VPN, or virtual private network in using methods to ensure encryption, known as IPSec, or IP Security)
- **Mobile computing platforms for integration** – A mobile application server will be needed, the best candidate being Oracle's Fusion Middleware<sup>72</sup>, in order to combine the several applications and middleware services into a single platform.
- **Application and user interfaces** – Microbrowsers and specialized markup languages such as WML (Wireless Markup Language) will be needed to support M-LAW and provide access to back-end systems.<sup>73</sup>

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<sup>72</sup> **Oracle Fusion Middleware** is "the digital business platform for the enterprise and the cloud. It enables enterprises to create and run agile, intelligent business applications while maximizing IT efficiency through full utilization of modern hardware and software architectures". See: <https://www.oracle.com/middleware/index.html>

<sup>73</sup> See Umar, above. pp 11-9 to 11-10.

At each layer, a protocol/ data converter may be needed if the protocols of the senders and receivers do not match. The EAI platform will package all the converters and translators into a single “bus” that can be used by multiple applications to communicate.<sup>74</sup>

### 3.4 NETWORK TRANSPORT SERVICES

Network transport services are responsible for shuffling the messages over the wireless (and wired) networks. Wired Internet services, which ABC Technologies has operated successfully in the past, connect users via cables, while wireless services use frequencies that are transmitted through the air. There are two options available for ABC – to use an unlicensed frequency band or to use a frequency that is regulated. Although there is a greater expense for ABC, we suggest the use of a licensed frequency because unlicensed bands are typically congested and result in greater loss and interference.<sup>75</sup>

The best way for ABC Technologies to use a licensed frequency band is to team up with a wireless provider that already exists: Rogers Wireless. Rogers has an Enterprise Solution<sup>76</sup> that ABC Technologies can employ in providing the M-LAW platform on a wireless network.

Rogers Network Infrastructure solutions deliver the flexibility, speed and security that legal practitioners need. ABC Technologies can use Rogers to control how mobile and computing devices access the ABC’s network and leverage defined access and security policies. With Roger’s, ABC can configure connected solutions for redundancy, and ensure availability for M-LAW’s remote and mobile lawyer. Rogers can help ABC deploy an infrastructure that meets

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<sup>74</sup> See Umar, above. p 11-10.

<sup>75</sup> See Umar, above.

<sup>76</sup> See: <http://enterprise.rogers.com/ab/en/>

ABC's current needs and will adapt to an evolving mobility environment.<sup>77</sup> Roger's is Canada's largest wireless carrier, with 9.45 million subscribers as of Q4 2014, and revenues of just under \$7.3 billion in 2013.<sup>78</sup> Roger's Business Solutions announced it is expanding its hosting business in Western Canada through a newly expanded data centre in Edmonton and a new Western Canada flagship data centre in Calgary, following its acquisition of Pivot Data Centres in early October 2013.<sup>79</sup> This means that ABC Technologies can work in close geographic proximity to Rogers. Also, Rogers was named both the fastest broadband Internet service provider and the fastest wireless network in Canada in October 2013 by PCMag.com, a leading US based technology website.<sup>80</sup>

Rogers offers the solutions and services that ABC Technologies needs to be successful in bringing M-LAW to the legal industry in Canada. Rogers offers:

- Wireless connectivity<sup>81</sup>
- Network design and build services<sup>82</sup> (using the BB10 Ecosystem<sup>83</sup>)
- Network management services<sup>84</sup>; and,
- Fibre and cable services and infrastructure<sup>85</sup>.

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<sup>77</sup> See: <http://enterprise.rogers.com/ab/en/solutions-services/network-infrastructure>

<sup>78</sup> See: <http://www.newswire.ca/news-releases/rogers-communications-reports-fourth-quarter-2013-results-513717641.html>

<sup>79</sup> See: <http://www.newswire.ca/news-releases/rogers-communications-reports-fourth-quarter-2013-results-513717641.html>

<sup>80</sup> Segan, Sacsha. *Fastest Mobile Networks in Canada*. PC Magazine. October 16, 2013.

Found at: <http://www.pcmag.com/article2/0,2817,2425457,00.asp>

<sup>81</sup> See: <http://enterprise.rogers.com/ab/en/solutions-services/network-infrastructure/wireless-connectivity>

<sup>82</sup> See: <http://enterprise.rogers.com/ab/en/solutions-services/network-infrastructure/network-design-build>

<sup>83</sup> See: <http://enterprise.rogers.com/ab/en/solutions-services/network-infrastructure/network-design-build/rogers-bes10-rapid-deployment>

<sup>84</sup> See: <http://enterprise.rogers.com/ab/en/solutions-services/network-infrastructure/network-management>

<sup>85</sup> See: <http://enterprise.rogers.com/ab/en/solutions-services/network-infrastructure/fibre-cable> . It is also possible that ABC Technologies could sell off their existing wired services business to Rogers Wireless as part of a partnership deal.

As well, Rogers is the first in Canada to launch Voice over LTE (VoLTE) technology, giving our Wireless customers across the country access to higher-quality high-definition voice and video calls, faster call setup and connection times, and the ability to simultaneously place calls, browse the web, and stream video at considerably greater LTE speeds.<sup>86</sup> VoLTE will be a valuable feature for lawyers and clients to conduct videoconferencing in real time, especially for use in alternative dispute resolution, which will assist in bringing legal matters to closure and lessen demand on the court system to resolve conflicts.

All of the above reasons make the choice of using Rogers Wireless the best in regards to being a competitive and technical advantage for ABC Technologies. It is best to partner with Rogers, or at the very least use their Business Solutions product, rather than try to compete against them.

### 3.5 M-LAW ARCHITECTURE DESIGN

Described in this section are the core building blocks within the conceptual view of how M-LAW's web contents are accessed from regular Web browsers and mobile devices. They include:

1. The Internet traffic between Web browsers on PC and Web servers;
2. Non-Web contents that can be accessed through the portal;
3. Roger's wireless network that carries the data for the mobile devices operating on M-LAW;
4. Web browsers that display the content on PCs;
5. Mobile devices that display the content on mobile devices; and,

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<sup>86</sup> See: <http://www.newswire.ca/news-releases/rogers-communications-reports-second-quarter-2015-results-518270691.html>

6. Wireless gateways that translate Internet protocols to wireless networks and convert the Web content to be displayed on handheld browsers.<sup>87</sup>

The bridge between the traditional (non-mobile) Internet model and the wireless (phone/ device) data network model are the **wireless gateways** that perform the necessary conversions. Wireless gateways package several wireless middleware services, which use protocol adapters (to translate wireless network requests to the Web protocol stack) and content encoders/ decoders (that translate Web content into compact encoded formats, reducing the size and number of packets travelling over the wireless data network). They offer connectivity services between remote partners on a network so they can locate each other, open connections, and transfer information between remote partners. They also offer directory, naming and location services for remote partners as well as security services in order to identify, authenticate, ensure confidentiality, authorize and provide access control. Another feature involves performance enhancements such as caching and compression.<sup>88</sup>

In this case, we will need to go beyond the implementation of a wireless gateway to include a mobile application server (MAS) to integrate wireless gateway, development facilities and operational (deployment) facilities needed for this project. The key components of an MAS are mobile applications, back-end (general purpose) and wireless middleware services, the mobile device(s), the wireless network transport services and the wireless software development and monitoring/ control facilities, all mentioned above.<sup>89</sup>

The architecture then becomes easier for ABC Technologies to integrate when using the local platform services and network transport services suggested above. Besides the proprietary

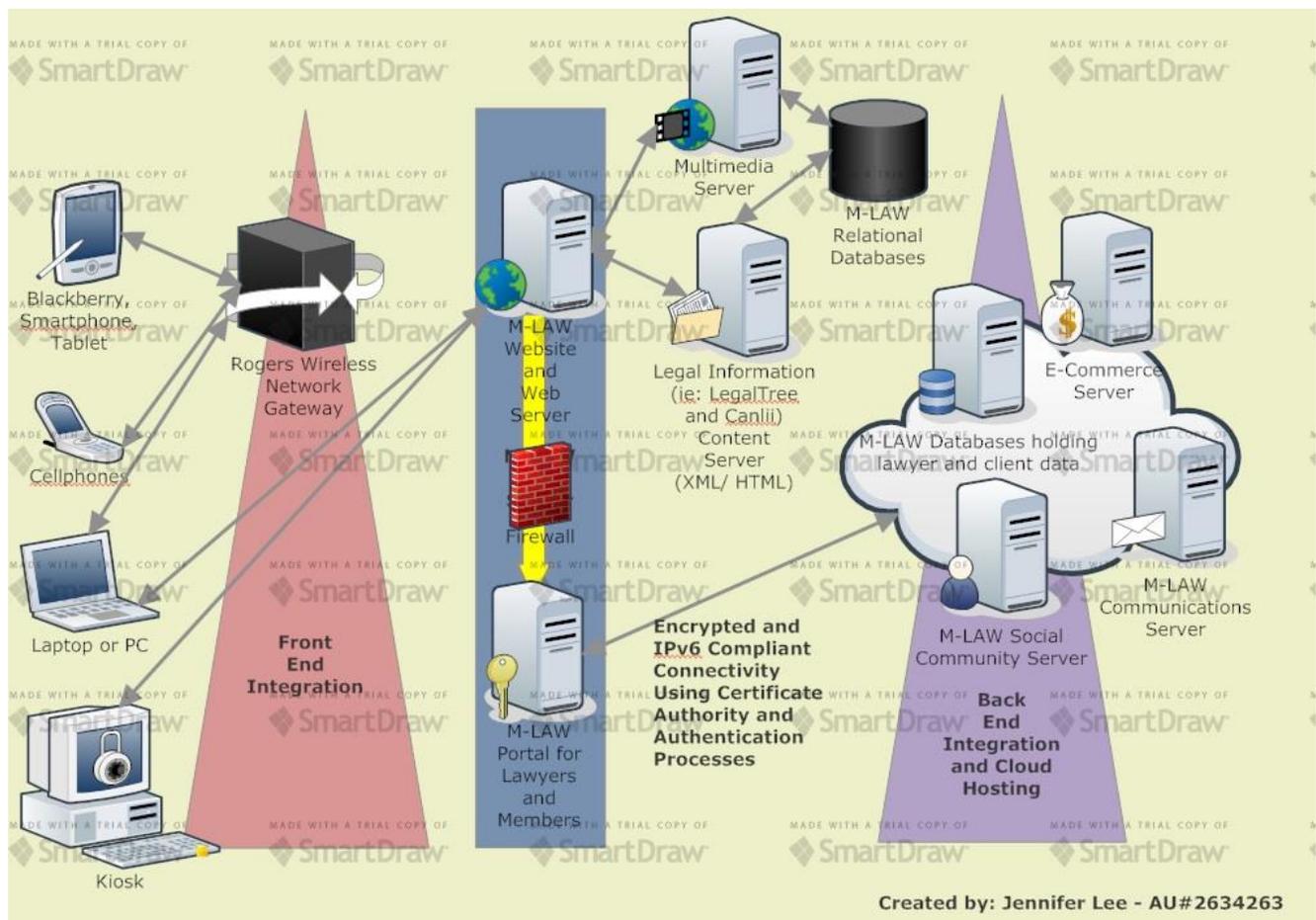
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<sup>87</sup> See Umar, above.

<sup>88</sup> See Umar, above.

<sup>89</sup> See Umar, above.

work that ABC Technologies will need to do to develop and implement middleware to link all the applications and services together, the solution can be designed and configured as described below (see: Figure 2 – M-LAW Architecture Design).



**Figure 2 – M-LAW Architecture Design**

In this configuration, the website, web portal and applications reside in the middle tier that is accessed directly by the users via Rogers Wireless Gateway or other cellular network gateways. The back-end and external applications are accessed through a back-end integrator, otherwise known as an Enterprise Application Integration (EAI) platform. The technical capabilities required to develop this solution will be the EAI and middleware services in order to link the mobile devices and local platform services used on Roger’s network.

### 3.6 CAPACITY PLANNING AND TRAFFIC ENGINEERING

Will M-LAW's system handle the traffic expected? Yes, Rogers Wireless is the most capable network in Canada to achieve the goal of handling many users simultaneously. All of these concerns can be managed through Roger's Business Services. As well, Roger's can authenticate and control network traffic with Rogers Access Point Name (APN) configurations for M-LAW.<sup>90</sup>

### 3.7 RESOURCES AND COST ESTIMATION

The costs of deploying this solution are dependent on a number of factors. First, costs can be affected by market demand and availability. Secondly, costs will be dependant on the types of product and service agreements that can be set up between Research In Motion (who manufactures the Blackberry), Oracle (who will provide the middleware infrastructure) and Rogers Wireless (for access to the network).

The main known costs at this juncture would be the costs of staffing the project (management, technologists, developers and contractors) and the licensing costs to use various software packages. To mitigate or reduce costs, it would be advisable to develop working partnerships to get the most "for free" in exchange for using the various proposed partner applications and hardware.

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<sup>90</sup> See: <http://enterprise.rogers.com/ab/en/solutions-services/network-infrastructure/network-design-build/access-point-names-apn>

## 4 DEVELOPMENT AND DEPLOYMENT

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This step reviews how all the capabilities identified above will be developed and delivered. The M-LAW solution requires a mix of purchasing, developing in-house, and renting the technology needed. Following the development of the M-LAW solution, this section also outlines how to deploy the hardware and software systems needed for the portal to work properly.

### 4.1 MOBILE APPLICATION DEVELOPMENT

This is the key process that ABC Technologies will need to complete on its own. This process involves developing middleware to integrate all applications together to work on the network with the mobile devices and provide seamless functionality for the business processes and workflows described in both Tables 1 and 2 above.

### 4.2 MANAGING DATA AND INFORMATION

The most important process that ABC Technologies can work on is the management of the data to ensure the data resources are managed effectively within M-LAW and so that it remains accurate, reliable, and readily available to those who need it. ABC Technologies will need special policies and procedures for data management. The following activities are part of the management process for a database management system (DBMS).

#### 4.2.1 Establishing an Information Policy

Every business, large and small, needs an information policy. M-LAW's data will become an important resource, so ABC needs to maintain control over how it's used, with rules on how the data are to be organized and maintained and who is allowed to view the data or change them. An **information policy** can specify M-LAW's rules for sharing, disseminating, acquiring, standardizing, classifying, and inventorying information.

An information policy lays out specific procedures and accountabilities, identifying which users and business areas within M-LAW will share information, where information can be distributed, and who is responsible for updating and maintaining the information. For example, a typical information policy that M-LAW would enforce is that only lawyers or clients have the right to change and view sensitive data (such as client's date of birth), and that lawyers themselves are responsible for making sure that client data are accurate.<sup>91</sup> With M-LAW, an information policy should be established and implemented by ABC Technologies.

#### 4.2.2 Ensuring Data Quality

Well-designed databases and an information policy goes a long way toward ensuring that lawyers have the information they need. However, additional steps must also be taken to ensure that data is accurate and reliable. For example, when a customer's email changes or their telephone number is incorrect, the lawyer may never be able to reach them, losing an important asset – their client. There could be other impacts of poor data quality that affects customer service and market competitiveness, such as listing the wrong price for a will or hourly rate in an advertisement online. Data that are inaccurate, untimely, or inconsistent with other sources of information lead to incorrect decisions and financial losses.<sup>92</sup>

If the M-LAW databases are properly designed and enterprise-wide data standards established, duplicate or inconsistent data elements should be minimal. Most data quality problems, however, such as misspelled names, transposed numbers, or incorrect or missing codes, stem from errors during data input.<sup>93</sup> Having the ability for the client to enter in their own data and verify it, as well as establishing better routines for editing data once the M-LAW portal is in

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<sup>91</sup> See Laudon, above. p 195.

<sup>92</sup> See Laudon, above. p 195.

<sup>93</sup> See Laudon, above. p 195.

operation will reduce errors. A process known as a data quality audit should be performed regularly on the M-LAW data, by surveying entire data files, surveying samples from data files, or surveying end users for their perceptions of data quality.<sup>94</sup>

#### 4.2.3 Documentation

Moving from an old way of doing things to a new system requires that end users be trained to use the new system. Detailed **documentation** showing how the system works from both a technical and end-user standpoint is necessary for training and everyday operations. Lack of proper training and documentation contributes to system failure, so this portion of the systems development process is very important for ABC Technologies.<sup>95</sup>

### 4.3 WIRELESS INFRASTRUCTURE DEVELOPMENT

As described above, the wireless infrastructure will use the already-existing network and services offered by Rogers Wireless.

#### 4.3.1 Renting vs. Building the Wireless Infrastructure

When developing a mobile business application, several types of issues should be addressed. There are trade-offs in purchasing off-the-shelf applications, building applications, re-engineering or reusing existing applications, or renting/ outsourcing from service providers.<sup>96</sup>

In this case, ABC Technologies would be better off renting the infrastructure from Rogers Wireless (for reasons aforementioned), but “building” (programming the integration of the various partner applications) through the use of middleware applications already developed (by

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<sup>94</sup> See Laudon, above. p 196.

<sup>95</sup> See Laudon, above. p 421.

<sup>96</sup> See Umar, above.

a leading company such as Oracle), then promoting purchases of the robust mobile device (the Blackberry Z10 or Q10).

This approach will result in a rapid, but a less risky, deployment of M-LAW for ABC Technologies. The only risk and “technical” work involved is in the integration of various partner company applications, such as described in Table 1. The rest is primarily social, that is, relationship-building and teamwork.

## 5 MONITORING AND CONTROL

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Day-to-day monitoring and control of the deployed systems assures smooth customer service, network availability or failures, performance bottlenecks, security breaches and other problems in wireless systems. This section will provide the means to achieve this.

### 5.1 FCAPS MANAGEMENT FOR WIRELESS FAULT AND PERFORMANCE

After deployment, the wireless system or m-business must be monitored and controlled. This is necessary to detect any possible failures or performance bottlenecks in the systems. Monitoring and control also ensures that security is properly enforced, and that changes in the system are being transmitted everywhere necessary. This is referred to as **FCAPS management**, which includes:

- **Fault management** - the activity concerned with detecting, isolating and correcting faults in the networks as well as the application systems.
- **Configuration management** – the activity concerned with facilitating the normal and continuous operation of mobile applications and the underlying wireless networks.
- **Accounting management** - the activity involved with recording usage of system resources and generating billing information.
- **Performance management** - the activity concerned with maintaining system performance to satisfy user response time requirements.
- **Security management** – the activity concerned with defining and enforcing PIA4 considerations (privacy, integrity, authorization, authentication, accountability, and availability – see more on PIA4 below) for various components at the wireless network, platform and application levels.<sup>97</sup>

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<sup>97</sup> See Umar, above.

ABC Technologies can choose to manage FCAPS on their own, or alternatively pay Rogers Wireless to manage the network and platform. There is also the option of engaging a “Managed Service Provider”, on a subscription or contract basis, to manage the infrastructure resources and applications. Tools are either externally hosted or hosted within the customer environment, with the MSP shouldering the implementation.<sup>98</sup>

## 5.2 PRODUCTION AND MAINTENANCE

After the new system is implemented, the system will be said to be in **production**. During this stage, it’s important that the system is reviewed by both users and IT staff to see if it has met its original objectives and/or to decide whether revisions or modifications are necessary.<sup>99</sup>

After some fine-tuning, the system should be maintained to correct errors, meet requirements, and/ or improve processing efficiency. **Maintenance** can involve changes in hardware, software, documentation, or procedures to correct errors, meet new requirements, or improve processing efficiency.<sup>100</sup>

## 5.3 WIRELESS SECURITY AND CONFIGURATION MANAGEMENT

There are various technologies that are used in wireless security to protect data transmission at various levels.

### 5.3.1 Wireless Link

At the wireless link, there is cellular network security through Rogers Wireless. Rogers is IPv6 compliant, meaning that at the TCP/IP level, they have IP Security (IPSec) on their network applications and their hardware is brought up to IPv6 standards. IPSec is typically implemented

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<sup>98</sup> See Umar, above. p 13-34.

<sup>99</sup> See Laudon, above. p 421.

<sup>100</sup> See Laudon, above. p 421.

at the network router level or in a “firewall” that serves as the main entry point into a system, in this case M-LAW’s portal server.<sup>101</sup>

### 5.3.2 Middleware Level

At the middleware level, SSL (secure socket layer)/ WTLS (wireless transport layer security) and WAP (wireless application protocol) are commonly used.

SSL is pre-packaged on all Web browsers and servers, and runs on top of TCP/IP, managing secure messaging on the network. The SSL protocol provides data encryption, server authentication, message integrity and optional client authentication for a TCP/IP connection. Banks use SSL, for example, because it ensures that communications between a client and server remain private based on user requirements, seen when a lock appears in the bottom left of a browser.<sup>102</sup> Thus, if the legal industry feels that their private communications can be intercepted, the understanding of SSL technologies should ease their concerns. Using a banking security model, M-LAW can have multiple steps of authentication, including:

- 1) A user name and password to enter the portal;
- 2) A key question, picture or user-generated answer to confirm the user; and,
- 3) A PIN or numerical code consisting of six digits.

The online banks mentioned above use these types of security mechanisms, as should M-LAW.

WAP is a set of protocols to enable the presentation and delivery of wireless information and telephony services on mobile phones and other wireless devices, and it’s been designed in a way that is independent of the air interface used. A WAP gateway will be used with M-LAW to

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<sup>101</sup> See Umar, above. p 12-33.

<sup>102</sup> See Umar, above. p 12-36.

serve as a “middleman” for WAP by translating the WAP to non-WAP (Internet-HTTP) protocols through adapters. WAP also enforces security.

WTLS is based on the industry standard Transport Layer Security (TLS) protocol, which is also known as SSL (above), but is not SSL because it cannot directly communicate with SSL-enabled servers. WTLS works between the WAP client and the WAP gateway and is intended for use with the WAP transport protocols, optimized for use over narrow-band communication channels, and can provide end-to-end security between WAP protocol endpoints.<sup>103</sup> The main purpose of using WTLS security is to make low CPU-powered wireless devices secure by making the cryptography efficient. WTLS however, does not provide for end-to-end security between WAP clients and Web servers.<sup>104</sup> This is why a mix of security protocols such as IPSec, SSL, WAP and WTLS are required on wireless or cellular networks.

### 5.3.3 Application Level

At the application or software level, S-MIME is used for email with M-LAW and SET is used for electronic transactions.<sup>105</sup> SET (Secure Electronic Transactions) was developed jointly by Visa, MasterCard, IBM and other technology providers for secure credit card processing. Unlike SSL that encrypts all communications using TCP/IP, SET is highly specific to credit card processing and contains logic that is based on a “choreography” between the consumer, merchant, merchant bank, and consumer bank.<sup>106</sup> M-LAW will have a certificate authority to be SET enabled and compliant.

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<sup>103</sup> See Umar, above. p 12-39.

<sup>104</sup> See Umar, above. p 12-40.

<sup>105</sup> See Umar, above.

<sup>106</sup> See Umar, above. p 12-46.

Using Rogers Wireless Managed IT Services<sup>107</sup> will ensure that data transmission is kept secure at all levels, addressing the following risks:

- **Data rate limitations** – not being able to load up large documents, save them, or send them can be of concern, including when they do not reach the intended destination (ie: e-filing service with courts).
- **Device limitations** – must have a device that can save all data to a cloud as legal documents can be very large.
- **Possible overload of requests** – The system can crash when too many inquiries are requested at once. Once the public is aware of M-LAW, the demand for mobile legal services will be massive.

Therefore the solution must be PIA4 compliant. PIA4 stands for privacy (ensures the data will not be retrieved when transmitting), integrity (ensures information will be modified when transmitting), authentication (verifies who you are talking to and who you are during wireless communication), authorization (determines access permissions), accountability and assurance (provides time stamps to prove data was sent and received, addressing non-repudiation).<sup>108</sup>

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<sup>107</sup> See: <http://datacentres.rogers.com/managed-services/>

<sup>108</sup> See Umar, above.

## 6 ORGANIZING AND STAFFING

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Developing a new system such as M-LAW for the legal industry is one kind of planned industry change. The introduction of new technologies and information systems involve much more than just new hardware and software. It also includes changes in jobs, skills, management, and the organization.<sup>109</sup> The objective of organizing and staffing the M-LAW project entails creating an organizational structure at ABC Technologies that will adequately support the wireless project, mobilizing mobile virtual teams to support real-time enterprises.

### 6.1 COLLABORATION WITH INDUSTRY PARTICIPANTS

The organizational structure at ABC Technologies will support the wireless project by employing an experienced management team (in wireless technologies) and forming teams of lawyers and service providers that can provide input through the development and deployment process. There are already a number of key players that have been looking to develop an online portal in Alberta, known as **Reforming The Family Justice System Initiative**<sup>110</sup>. ABC Technologies should approach this working group that already has a number of collaborative resources<sup>111</sup> and working groups to obtain the information required to make this project a success. The Initiative consists of justices, benchers, lawyers, and industry leaders in the legal field who understand the need to take the delivery of legal services a step up and deliver them within a one-stop portal. It will be a win-win scenario for all, including those who need services.

### 6.2 MOBILE VIRTUAL TEAMS

Most lawyers are oblivious to the fact that they can become a virtual enterprise (VE) easier than they realize. A VE is a network or loose coalition of a variety of value-adding services in a supply

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<sup>109</sup> See Laudon, above. p 410.

<sup>110</sup> See: <http://www.rfjs.ca/theinitiative>

<sup>111</sup> See: <http://www.rfjs.ca/resources>

chain that unites for a specific period of time for a specific business objective and disbands when the goal is achieved.<sup>112</sup>

Mobile virtual teams can help the legal industry and those who required legal services in a huge way. No longer do lawyers need to be tied to a desk, or their office, to help clients. They can telecommute, even work from another country on the M-LAW platform (Roger's has the best international coverage through agreements with international providers). There is no reason a lawyer cannot use M-LAW beyond the Alberta borders. Saying this, in person teams should also be formed (consisting of a lawyer and a ABC technologist) in Alberta metropolitan centres in order to promote and train users in M-LAW to provide support and buzz. The recommended areas should include Calgary, Edmonton, Red Deer, Fort McMurray, Medicine Hat and Lethbridge.

### 6.3 MOBILE REAL-TIME ENTERPRISES

Can the next generation of real-time enterprises be managed through mobile computing? Yes, as discussed lawyers can become real-time enterprises through the use of e-business tools and by adopting M-LAW in order to be m-business-focused, thus become the next generation of real-time enterprises who help people with legal issues, instead of hinder them.

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<sup>112</sup> See Umar, above.

## 7 CONCLUSION

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This report answered many questions and concerns that come up when considering the use of mobile devices and wireless communications in the field of law.

The fact is, mobile applications and wireless technologies provide value for both lawyers and consumers of legal services. Mobile, when designed with high-levels of security in mind, ensures greater privacy in client-solicitor communications and protection of data via protocols and encryption methods, as well as cloud storage. Although an argument may be made that wired applications are also secure, they lack mobility and efficiency, a necessity for today's legal practitioner who wishes to remain profitable.

ABC Technologies should use the specific technologies and infrastructure recommended in this report because they will reduce risk in the overall design and deployment of a system that is slated to be somewhat massive and sophisticated. There is no point in "reinventing the wheel" when it comes to the mobile devices, or the wireless network.

ABC Technologies should focus mostly on developing the partnerships and integrations necessary to achieve a working, seamless operating platform that's easy to use for lawyers and those that require legal assistance. A portal is the best way to provide a working entry-point for all users of the system, and whether they decide to register to become Legal Services Providers or Members, the portal is open and all-inclusive to meet the needs of Canadians, thus increasing the likelihood of use and adoption.

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### Mark Breakdown

The assignment was assessed according to the marking guide provided through the online course.

Topic	Expectation	Comments	Mark	Out of
Writing	Spelling, grammar, organization, and report structure.	Is appropriate, in general, with some minor issues. Figures and tables borrowed from elsewhere should indicate the respective references. The title could include the company’s name (fictitious, if necessary) as the analysis appears to be related to a company and not to a service in general.	9%	10%
Executive summary	Summarize the report, stressing your recommendations (business and technical) to make a favourable impression on the reader.	Good work. Should try to avoid strong statements (e.g., “the best wireless network in Canada - Rogers Wireless”) that need more explanations and references to support	10%	10%

		them (and there is no room in this section for that).		
Define the problem/question; clear research objectives	Clearly define the mobile business service and your research objectives (i.e., business strategy, technology).	This is a bit puzzling. While, according to the title and executive summary the focus of this report is a mobile service, according to the introduction and other statements in the report the focus is a company aiming to adopt this service. This is a fundamental issue that influences the logic of the report. So, there should be consistency on its purpose everywhere, starting with the title.	4%	5%
Introduction	Introduce your report topic to give the readers a good sense of the content. Establish the importance of the topic (i.e., is the mobile business service you propose important? Why? Does it make sense to use a mobile/wireless application for that service?	Is relatively OK.	5%	5%
Comprehensive background	Thoroughly review literature/research papers as well as Web information related to the mobile business you suggest. Bring in concepts and theory from the course and textbook, where necessary.	Good work.	15%	15%
Business analysis/discussion	Critically analyze the information reviewed. It is important not to simply tell the reader what the literature says but also to assess and criticize what is	Generally good and complete discussion. One important issue to remember is that strong statements (e.g., "The courts throughout Canada are overwhelmed with activity	24%	25%

	being said. Identify gaps in the mobile services and technology solutions now on the market, discuss emerging trends, consider areas of growth and opportunity, and so on. Follow the textbook's recommendations for developing wireless projects. Bring in concepts and theory from the course and textbook, where appropriate.	and demand.") and sentences with business figures (e.g., "Clients are normally billed by the hour, and can balk at legal fees that are anywhere between \$84 (for legal aid files) to over \$500 an hour.") should indicate references supporting them.		
Technology analysis/discussion	Evaluate options and select the mobile service and wireless technology to be used for the proposed mobile business. Bring in concepts and theory from the course and textbook, where appropriate.	Good and comprehensive discussion.	25%	25%
Conclusion	Stress the main contributions of your paper. What should the reader learn from reading the paper? Summarize your business and technology recommendations.	Good and precise conclusions.	5%	5%
Total			97%	100%

#### Overall comments

This is a good and very informative paper. However, it tends to be too long and deal with too many problems and these affect focus and clarity. No marks were deducted for this aspect, though.

As there are also some relatively minor issues, I provided feedback that may help improve your work for similar manuscripts in the future. Please see my comments and recommendations in the table above.

If you have questions on my assessment, I will be happy to answer. Congratulations for your entire work in this course!

Mihail Cocosila, PhD

Course Coordinator

September 10, 2015