Toward cyber-centric management of policing: back to the future with information and communication technology

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Abstract

A number of external and internal forces are influencing policing efforts to service the community. These external forces include public expectations for traditional services, and the State government’s push towards new public management practices. Internal forces include legacy management practices and inappropriate asset holdings. While there have been a plethora of companies from the private sector that have successfully used information and communication technology (ICT) to address similar influences and ameliorate their performance, this has not been the case in the policing environment. To obtain the strategic, tactical and operational benefits that can be acquired through the adoption and widespread implementation of ICT, a framework is presented to enable virtual policing in Western Australia.

Introduction

During the past decade, change has become a permanent feature of the public sector landscape (Coventry and Nutley, 2001). Policing, in particular, has not escaped the impacts of these changes, with the past 10 years witnessing political moves towards the embracement of new public management (NPM) concepts, which advocate the substitution of public sector management practices with private sector business philosophies (Leishman et al., 1996). This move towards NPM has been marked, on the one hand, by increased policing costs and on the other with decreasing budgets. In addition, police managers have been faced with a decline in political support for increased public spending, which has led to declining human resources, productivity and ultimately reduced police services. This political shift is destined to remain the popular paradigm for the foreseeable future (Murphy, 2002).

Advances in information and communication technology (ICT) are significantly influencing the way in which organizations conduct their businesses and their overall competitiveness (Bai and Lee, 2003). It has been widely acknowledged that to manage change the process can be induced through the adoption of ICT, then a degree of re-engineering needs to be undertaken, which may include a subtle shift in management style within the organization (Hedelin and Allwood, 2002; Irani and Love, 2002). Thus, police managers should change their management style and focus on becoming more acquainted with, and aware of the need for the appropriate identification and application of ICT. Such a shift is all the more important when it is considered that police support services have been utilising ICT to assist the “fight against crime” (Chan et al., 2001), but that acquisitions have not been matched by necessary developments in police managers’ ICT knowledge and skills (Ackroyd, 1993; Enders, 2001). In fact, almost 20 years back when the ICT revolution was seen as an opportunity for police agencies, it was considered a crisis that very few high ranking police administrators were prepared to take advantage of the opportunity (Munro, 1984, p. 5). Munro (1984) argued that in order for police managers to be in a position to meet the future strategic challenges, the following areas of police management development needed attention: program budgeting, strategic planning and ICT. A cursory analysis of police management educational courses nationally and internationally suggests the areas of strategic planning and to some degree financial budgeting have received attention, with a number of police management courses offering such units. However, even though
police agencies investments in ICT have increased significantly over the past 20 years, exposure to educational courses in technology has not been forthcoming. Accordingly, the situation as outlined by Munro (1984) in relation to police managers’ understanding of technology remains very much an issue.

An examination of the role that ICT can play in policing has been limited to a few studies (Ackroyd, 1993; Brown and Brudney, 2003; Chan et al., 2001; Dupont, 2001; Ericson and Haggerty, 1997; Harper, 1991; Hoey, 1998; Hoey and Topping, 1998; Hough, 1980; Home Office Science Policy Unit, 2003; Manning, 1996; Munro, 1984; Rees, 2000). In fact, Chan et al. (2001, p. vii) stated “the literature shows that there has not been a great deal of research into the impact of information technology on police organizations”. While the focus of this paper is not to explain the paucity of research in this area, one reason may be the difficulty researchers have in accessing information within policing organizations. Accordingly, an important finding from the literature review is that the field of ICT and its relationship with policing provides an opportunity for the advancement of knowledge within a relatively uncharted field. In this paper, we suggest that a shift towards virtual organising underpinned by Igbaria’s (1999) virtual society framework model, complemented with current management practices could facilitate the delivery of traditional services within a contemporary context, with particular reference to the Western Australia Police Service.

Policing – from then to now

The history of policing stretches back 5000 years, but probably the most significant date in the history of western society policing was 1829, the year that Sir Robert Peel founded the London Metropolitan Police Force (Edwards, 1999). Since then policing has witnessed many changes, but the underlying principles as espoused by Peel in 1829 remain the same (Enders, 2001). A study of Peel’s nine principles indicates that his overarching philosophy was to ensure that the police exist to prevent crime and disorder through a relationship with the public (New Westminster Police, 2003). Peel’s most enduring and influential innovation was the establishment of regular patrol areas, known as “beats”. Officers were assigned to specific geographic zones and were responsible for preventing and detecting crime within the boundaries of their zones. To implement the beat concept fully, Peel introduced the paramilitary command structure, which has since become the managerial norm of all Australian police services. The fact that the paramilitary structure has become synonymous with policing worldwide and has persevered for so long is interesting, as the concept was initially introduced by Peel mainly because he believed military discipline rather than civilian managerial disciplines would ensure constables actually walked their beats and enforced the law (Patterson, 1995).

Having regard to the NPM practices being currently introduced in police organizations it is questionable if both philosophies can harmoniously coexist without some compromise. In fact, it has been argued that the “rigid-ranked” system encourages the repression of positive activity, the avoidance of responsibility and the veneration of the status quo (Munro, 1984). This application of a strict hierarchical structure may account, in part, for the findings of a recent study of the impact of ICT on policing practices in the Queensland Police Service, which found that while the introduction of technology had transformed some structural and organizational conditions, many cultural assumptions and traditional policing practices remained unchallenged (Chan et al., 2001).

Current policing service delivery model – Western Australia

The Western Australia Police Service is responsible for the largest policing jurisdiction in the world with an area covering 2.5 million square kilometre. While the population spread is relatively concentrated, the indices in relation to race, culture, socio-economics and population fluctuations are diverse (Western Australia Police Service, 2003). This diversity proves problematic from an organizational perspective when deciding the best way to allocate resources and determining the appropriate service delivery for any particular community.

Much of this problem is caused by the current service delivery model which is largely a legacy model dating back to when the location of police stations were determined, in the Metropolitan suburbs, on the capacity of a police officer to ride a bicycle and in rural areas on the estimated distance a horse could travel between water stops. The model has led to a situation where policing services tend to be determined by the location of a police station rather than been driven by the needs of a community or area (Western Australia Police Service, 2002a). This restricts the ability of the Service to manage its resources. Inappropriate property holdings tie up police resources not only in the staffing of a station but also through
significant property investments, recurrent expenditure and maintenance. This, in turn, reduces the Service’s discretionary funding – adversely affecting the provision of more policing services, appropriate facilities for modern policing needs, and capital equipment.

Having regard to the aforementioned, there is a need for police managers to rethink how they do business and re-engineer policing services, which will undoubtedly require the support of ICT. A concept being embraced by a number of organizations to reduce physical assets is to move towards an integration of virtual and traditional practices (Burn et al., 1999; Stough et al., 2000) and virtual organising (Venkatraman and Henderson, 1998; Yu et al., 2001). The concept of virtual organizing has been explicated as utilizing ICT to improve organizational practices while at the same time reducing the need for physical structures (Grenier and Metes, 1995). However, any concerted move towards virtually extended practices requires the adoption of a new management model which must be based upon evolving technological dynamics that re-engineers rather than restrains Gordon (2001). One such emerging model is cybercentrism.

Cybercentrism has been presented as the next evolution in management orientation. It is a new management concept that has been described as the “...management of highly interactive digital economic universe, capturing a ‘real-time’ vision of market realities without physical size limitations to corporate operations or growth” (Gordon, 2001, p. 677). Central to this concept is the suggestion that in order to satisfy customer expectations managers must adopt a new approach to do business. This involves the evolutionary practice of organizations understanding and acquiring virtual skills and integrating and applying the knowledge with current management philosophies.

Earlier organizational profiles, which were developed in the late 1960s were classified as either ethnocentric (E), polycentric (P), geocentric (G) profiles (Perlmutter, 1995). Perlmutter presented these three orientations as the EPG schema, which he claimed was an organizational continuum of evolution ranging from local operational dependence to a worldwide interdependence orientation as follows.

• Ethnocentrism – Home country orientation with overseas operations as secondary. Foreign expansion viewed as an appendage to domestic operations; same strategies are utilized in all countries. Recruitment is based on developing people of home country for positions everywhere in the world.

• Polycentrism – Host country orientation with subsidiaries established in overseas markets. Activities and functions are planned and managed, often by local nationals, on a country-by-country basis.

• Geocentrism – World orientation with complex worldwide interdependence. Develop best people everywhere in the world for key positions everywhere in the world.

While CEOs may espouse the benefits of the evolution from ethnocentrism to geocentrism, the costs of the geocentric style are high and can outweigh the benefits in the long term (Perlmutter, 1995). Such costs are largely related to communication and cultural barriers, travel expenses, educational costs, times spent in decision making due to differences in geographic locations and the corresponding difficulty in gaining consensus. The time is now ripe for cybercentrism to be included in the management-style mix. This new style of management can be summarised as organisations transcending from a “place” or the terrestrially grounded orientation to a “space” or virtually extended orientation (Gordon, 2000).

It can be argued that the EPG orientation relates more to the evolution of multinational enterprises rather than police organizations. This may be true to some degree, but a study of police structures reveals evidence of them employing a mix of the three orientations; as do many organizations (Perlmutter, 1995). There is also evidence to suggest that a number of internal and external forces will eventually compel police managers to become familiar with virtual organising and the cybercentristic management approach. For example:

• police services are experiencing rapid and accelerating change with major innovative advances continually been made in the field of information technology;

• police services rely on an increasingly wide range of ICT to conduct their duties;

• the role of ICT has become a critical success factor within the policing environment. ICT provides police managers with the tools to meet strategic challenges, by facilitating and aiding problem solving, improving service delivery and enabling efficiencies through business process re-engineering; and

• new technologies will continually become available; hence, challenging police organizations to ensure the coherent use of information technology across all policing areas.
In addition, innovations will make technology faster, cheaper, more accessible and easier to use (Rees, 2000). Accordingly, early identification and correct application of such technologies in a policing environment is critical as is the need to learn how to avoid unsuccessful systems and failures (Home Office Science Policy Unit, 2003). However, before police organizations can successfully integrate a cybercentric management style into the current EPG management mix, they must have access to a framework that will assist them in the application of cybercentrism for the benefit of the organization and community rather than for the sake of merely having the technology.

A framework for virtual policing

A move towards adopting Gordon’s cybercentristic concept will require police managers to acquire a virtual “know-how”. A starting point towards this “know-how” is the utilisation of a methodology that will assist police managers to make room within the EPG mix to include cybercentrism. Figure 1 shows a framework, adapted from Igbaria (1999) that has the potential to assist with virtual organising development. Its main strength is that it assists in the identification of drivers within specific environments and challenges managers to select appropriate technological arrangements to address the issues. It differs from Igbaria’s model in that it utilises a micro approach relating specifically to a policing environment. Igbaria’s framework, on the other hand, describes an evolutionary model using macro-driving forces such as global economies, policies and politics, and information technology to study the impact of the ensuing virtual society.

While the examples used in this framework are whole-of-agency drivers, it is flexible enough to be adapted to use drivers, which are divisional, district or unit specific. Such an approach model ensures that the adoption of ICT is not simply about enforcing a common homogenous technology approach across the agency; it is also about identifying individual unit or area technology requirements within the organization. Used in this way, the framework becomes an appropriate ICT environmental scanning tool. The principal benefit of this tool is that it can assist police managers in identifying emerging technologies or trends early enough to implement necessary changes in the current or proposed technology without wasting resources, time and money by overreacting to every possible development. Therefore, this enables police managers to implement appropriate technology that will assist in helping them to meet community and political expectations.

External community forces (expectations)

Although Peel’s beat and patrolling concept is nearly 175 years old, community perception surveys continue to show that the public’s highest expectation is for police visibility and to have more police officers dedicated to patrolling (Western Australia Police Service, 2000a; Ashcroft et al., 2002). In the business environment, customers are demanding more value, at the lowest cost within the fastest delivery time. In other words, customer...
desires can be translated as – free, perfect now (El Sawy et al., 1999). The free, perfect now expectation is not different when it comes to public expectations of policing. While it is accepted that police service could never deliver such an idealistic service, but it is possible through a police and community “shared understanding” (Western Australia Police Service, 2001, p. 2). In addition, by adopting a more customer-centric approach (Hackney and Burn, 2001) the police service may be able to come closer to delivering the right product, in the right place, at the right time, for the right cost (Fisher et al., 2000). It appears, however, that the provision of extra patrolling remains an issue that is evident from the following quote, “We have walked the talk but sadly we have not delivered the services to where they are needed most – the community want to see police on the road and on the beat (Western Australia Police Service, 2000c, p. 5).

Internal forces

This inability to meet public expectations may be blamed, in part, on lack of resources. For example, the steady increase in crimes has not been met with commensurate levels of police numbers. In 1994, there were approximately 255 police officers per 1,000 serious crimes Australia wide. In 2000, this figure fell to below 60 (Billante, 2003).

On the other hand, however, the problem may be attributed to internal forces with officers involved in work that need not be done by them, or work that is duplicated across particular police stations. For example, over 20 per cent of police officers’ time is subsumed through administrative duties (Western Australia Police Service, 2002b). In addition, when training, annual leave, rostered leave, sick leave, court attendance and training are considered police officers’ availability reduces by 40 per cent (Western Australia Police Service, 2002c). The following quotes from two senior WA Police Service officers also give validity to this suggestion:

Too many police officers are not undertaking operational policing. There are too many reserve sergeants, property sergeants, administration sergeants, reserve officers, etc., at police stations (Western Australia Police Service, 2000c, p. 12). In addition, “many personnel have now been taken from active police work to provide administrative support to district officers” (Western Australia Police Service, 2000c, p. 15).

Even though an increase in police numbers may provide resources for patrolling, the constant appeal, by police managers, police unions, the media and the public, for additional police officers is not practicable. Provision of additional officers is extremely expensive. It is estimated that the cost of recruiting and training 1,000 police officers is approximately $70m (Weatherburn, 2002). The most practicable way to increase police numbers on patrol is to enhance the efficiency of the existing police practices through enhanced effectiveness and efficiency in the use and management of physical assets and human resources.

Other internal forces include asset configuration. For instance, in the past it was thought that the best way of providing adequate policing services to a community was by ensuring the physical presence of a police station. In most cases, this meant building a police station in what, at the time, might have been considered a relatively isolated location. The composition and infrastructure of many of these communities has changed markedly since the location of such buildings. This has resulted in the Western Australia Police Service maintaining the provision of stations for no reason other than the fact that they have always been there. An example is the Western Suburbs where a large number of police stations are clustered within a distance of less than 5 km, each subsuming human resources.

Government forces (NPM)

Recent Government reports have been critical of the diverse and fragmented nature of the Western Australia Public Sector and agencies inability to deliver services to the community. Criticisms have centred on the wasteful complexity, overlap and, in some areas, inadequate focus on the needs of the customer (Gallop, 2001). In addition, governments are now seeing the benefits of implementing e-Government initiatives, which require agencies moving away from information-only Web sites to two-way, Web-based communication (Wittkemper, 2003). This move will also be a core component of police ICT strategies requiring an appropriate skill set.

Virtual workplace arrangements

The impacts of the driving forces mentioned above can be controlled by introducing a number of virtual workplace arrangements. The virtual arrangements described below, illustrate the capabilities of technology to address some of the forces earlier identified. With advances in telecommunications, technology, and transportation, it is now possible for the police services, like many other services, to ensure community’s safety and security without requiring a direct physical presence. These advances and improvements in telecommunications, technology, and transportation also provide police services with the ability to better address the safety of officers in remote locations. Through the application of intelligence-driven policing and police management based on outcome-driven
policy and planning that analyses both operational and community data, the police services are now, in many cases, in a position to provide safety and security without the need to comply with the restrictions of physical police facilities duplicated across different locations.

**Information technology**

Table I highlights some of the arrangements possible to address identified drivers. The table has been divided into categories identified as providing the capability to address community concerns and resource allocations. The arrangements used in the list, which are by no means exhaustive, have been selected to illustrate how the framework can guide managers to recognise the appropriate ICT arrangements necessary to address individual driving forces.

<table>
<thead>
<tr>
<th>Driving forces external – community expectations</th>
<th>Arrangements</th>
<th>Benefits</th>
<th>Disadvantages/Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased police visibility and patrols</td>
<td>Mobile data input and retrieval via Internet/satellite</td>
<td>Ability to access information external to police stations. Allows officers to conduct administrative business on the road remain visible to the public</td>
<td>Security of data problems – laptops in cars can reduce interior space. Bandwidth may not be sufficient to allow download of large blocks of data such as pictures. Potential for satellite black spots.</td>
</tr>
<tr>
<td>Software overlay demographic data using social network analysis software to discover social networks and communities of practice and appropriate policing requirements</td>
<td></td>
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<tr>
<td>Detect/Investigate crime</td>
<td>Intelligence analysis systems – GPS</td>
<td>Effective use of intelligence for improved intelligence processes</td>
<td>Few officers with skills necessary to leverage full potential of systems.</td>
</tr>
<tr>
<td>Promote public safety and security</td>
<td>Face recognition systems (Biometrics technology)</td>
<td>Used to identify individuals involved in crime</td>
<td>Mistakes can be costly – civil claims.</td>
</tr>
<tr>
<td>CCTV</td>
<td>Crimes recorded and used in evidence</td>
<td></td>
<td>Crime displacement potential – richer areas may benefit.</td>
</tr>
<tr>
<td>Internal driving forces resources and assets</td>
<td>Internet offers many opportunities for police managers to deliver non-emergency and information services electronically through police portals. Investigations can be conducted virtually across jurisdictions</td>
<td>Provision of greater access to services, allowing online reporting and inter agency virtual alliances – free up officers for patrolling</td>
<td>Isolate some members of the community with no Internet access. Virtual alliances requires an investment in information communication technologies and changes in agency cultures and skills.</td>
</tr>
<tr>
<td>Effective human resource and asset allocation</td>
<td>Development of strategic information management systems</td>
<td>Provision of whole-of-agency management and operational information. KPIs and other efficiency reporting measurements</td>
<td>May not be seen as core policing functions and users may not use or by-pass – system resulting in data validation and integrity problems.</td>
</tr>
</tbody>
</table>

**Virtual alliances and virtual community**

The responsibility for crime and justice in Australia is divided between nine separate
jurisdictions over which seven police services exercise responsibility. In addition, there are three statutory commissions operating in two states with responsibilities in criminal justice areas. Another body, the Australian Crime Commission (earlier known as the National Crime Authority until 2003), has responsibility in relation to what is usually referred to as organised crime. The situation is complicated further by the involvement of a large number of state and federal agencies with various levels of interest in criminal matters. These range from the Australian taxation office, the Australian customs service and the Australian securities and investments commission at the federal level, to a variety of bodies such as the independent commission against corruption and the police integrity Commission in NSW, the Anti-Corruption Commission in WA and environmental agencies in each state. In Western Australia alone, data obtained for the period January to June 2000 from the Ministry of Justice revealed that 129 agencies were engaged in prosecutions (Western Australia Police Service, 2000b).

This divergence of similar responsibilities suggests that police agencies need to rethink how they conduct investigations including overcoming the problem of working across jurisdictional borders. If police agencies are to effectively meet the strategic challenges of ever-increasing globalisation, it is clear that they need to accelerate moves towards interagency, national and international cooperation against crime in all its forms (Davis, 2000). A concept gaining increasing interest to achieve cross-jurisdictional success and global reach is the development of virtual teams. This will be made more achievable by availing of the improved collaborative and communications technologies now possible through the internet (Newell et al., 2001). Regarding globalisation, future investigations and prosecutions will require partnerships between law enforcement agencies; between law enforcement and the IS/IT industry; and between law enforcement and the business and agencies which carry on their business in the electronic medium (Durrant, 2002).

Six models of virtual teaming have been identified to enable organizations develop partnerships in an electronic environment (Burn et al., 1999). One example using the co-alliance model illustrates how a team investigating a money laundering operation could operate across boundaries and across agencies (Figure 2).

In this structure, each investigation unit operates as a shared partnership with each bringing equal amounts of appropriate expertise and commitment to the investigation. Such teams are brought together on a project-by-project basis depending on the complexity of the investigation. A critical success factor for virtual teaming is the concept of a common outcome necessitating a shared purpose, shared risk and a trusting relationship (McKay and Marshall, 2000). Whichever of the six models is selected, Burn et al. (1999) argue that value will only be created if the processes needed to support virtual teaming are understood. This includes identifying expected benefits and pitfalls and the extent to which the organizations already display virtual characteristics and whether current management practices are suitable for sustaining such an approach.

**Figure 2 Co-alliance virtual police team**

**Conclusion**

To meet future challenges, the strategic direction and ICT considerations of police organizations cannot survive in isolation – there must be an alignment and integration of both. However, before the benefits of such integration can be realised and sustained, managers will need to move beyond the current level of technological literacy required of investigators and operational police officers. Managers will have to develop skills that not only enable them to clearly articulate organizational ICT requirements but also to ensure that implementation strategies to manage the various stages of system identification to user acceptability are informed by those requirements. The difference between managers and operational
staff will be the ability to move beyond using and debating who is going to use and maintain the systems to answer questions such as:

- How is ICT influencing the business of policing?
- What are the major impacts of technology on organizational structures, power, resources, supervision and decision-making?
- How can opportunities for using ICT be recognised?
- How can policing operate in a global environment?
- What are the ethical and social issues relating to ICT adoption?

The concept introduces police managers to a new management philosophy that can be used to enhance and complement the existing management models. The framework presented provides a useful heuristic that can be helpful in assisting managers understand the current and future forces influencing policing as well as assist them in exploiting new technologies and establishing priorities for current and future technology applications. It is an important first step towards embracing a cybercentristic management style, in that the framework allows an appreciation of the skills required for such an approach. Most importantly, it provides an overall framework for providing broad directions as a precursor to more detailed planning. A cybercentristic focus will be instrumental in bridging any knowledge gaps, which may exist between the technology people who are endeavouring to re-engineer police work, to one that ensures that the people who actually do police work influence ICT adoption.

As policing realises its increasing dependence on ICT, the adoption of a cybercentristic management style complemented with traditional management practices will prolong police managers’ survival in the 21st century policing environment. The requirement for such skills will also need to be reflected in police management education programs by aligning strategic planning and budgeting educational units with management of information systems modules. Just as the managers engaged in developing the geocentric organization were heralded as probably most important social architects of the latter third of the 20th Century, the same accolades might be bestowed upon those police managers who drive the cybercentric approach. While it is too early to make comment, it is possible that with a strategic cybercentric orientation, that information communication technologies can drive policing practices back to the future.

Virtual teams are not widely adopted in the policing environment, whereas systems to support virtual teams have been. This invites the question; under what circumstances will policing utilise virtual teams and how will work practices change if units or groups work virtually? Providing the police service with appropriate technology and information skills requires a concerted effort to form partnerships between the police service, industry and academia. This paper, while only denting the surface of the future of ICT within the policing environment has highlighted some of the gaps where industry and academia can provide support through the provision of expertise.

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