

WDGPH – The Modern Enterprise

To: Chair and Members of the Board of Health

Meeting Date: November 6, 2019

Report No. **BH.01.NOV0619.R22** Pages: 6

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Recommendations

It is recommended that the Board of Health:

1. Receive this report for information.

Key Points

- Digital transformation is an integral element to successfully satisfy changing organizational requirements.
- Wellington-Dufferin-Guelph Public Health (WDGPH) employs several digital transformation initiatives to position itself as a modern organization.
- WDGPH has invested in and implemented IT infrastructure to set the stage for emerging technologies and applications.
- The implementation of cloud-based solutions has allowed WDGPH to conduct key internal business processes seamlessly.
- WDGPH has implemented next-generation technologies to defend against cyber threats.

Discussion

WDGPH employs several digital transformation initiatives to position itself as a modern enterprise. Digital transformation is an integral element for any organization aiming to create new or modify business processes, culture and client experience to meet changing organizational requirements.

As WDGPH staff and client expectations continue to shape the definition of the modern enterprise, it is also important that the organization stay up-to-date with emerging technologies that can enable services within the healthcare sector to evolve and adapt as requirements change.

IT Infrastructure

One of the strategic directions at WDGPH indicates the need to implement and maintain a comprehensive and reliable information technology infrastructure. In taking an integrated systems approach, WDGPH has invested in and implemented IT infrastructure to set the stage for emerging technologies and applications. Key networking and server equipment have provided the foundation for one of the latest technological trends – virtualization.¹ Building a virtual environment has enabled the organization to contribute to the high-availability of services that WDGPH provides to its clients. Virtualization has also enabled the organization to contribute to disaster recovery and business continuity planning efforts with the implementation of an off-site system. This system can enable the recovery of critical services rendered by WDGPH in the event of organizational disruption in a timely manner in order to ensure Agency downtime is kept at a minimum.

In addition to upgrades to core networking and server equipment, staff computers have all been upgraded to improve productivity and efficiency. Installation of wireless projection technologies, wireless audio systems and high definition screens have further enabled both staff and community members to collaborate with ease. Improvements to the video conferencing technology have simplified its use resulting in easier collaboration with both internal and external stakeholders. WDGPH is poised for future growth and adaptation to a “modernized public health system” supported by current IT infrastructure combined with a strategic hardware refresh cycle.

Cloud Architecture

Over the past two years, WDGPH has taken a guided approach to the utilization of cloud platforms. One such platform is that of Microsoft Office 365 for business. This productivity tool facilitates opportunities for collaboration, scalability, reducing capital spend, compliance with retention regulations and information security. WDGPH's email services now reside within Microsoft Office 365. Currently, email is one of the organization's main forms of communication with internal and external stakeholders. Hosting the organization's email system on a cloud platform addresses key security vulnerabilities and challenges of maintaining system hardware and software over time.

From a sustainability standpoint, transitioning onto the Microsoft Office 365 cloud platform has prepared the organization to integrate with its futuristic enterprise resource planning software known as SparkRock 365. The emergence and adoption of cloud-based solutions have given WDGPH the opportunity to significantly improve the efficiency of key internal business processes. Several disparate systems will be eliminated and staff will be able to access key resources from a single portal.

From a telecommunications standpoint, WDGPH upgraded all staff cellular devices, in the past year, in order to increase productivity and convenience with features such as facial recognition technology. This upgrade fosters both collaboration and security with a wide array of mobile productivity applications to support the mobile worker.

Business and Artificial Intelligence

IT infrastructure and cloud architecture provide a foundation that supports innovative projects across the Agency. Much of the recent work by the Health Analytics department has been made possible by this strong foundation.

One example is the use of business intelligence technology, which has contributed to the expert delivery of interactive reports. These online reports showcase local data used to build healthy communities, strengthen collaboration and support local health system planning. Sharing information in this innovative and technical way has key advantages:

- The information can be quickly updated as data sources are refreshed.
- This format allows for flexibility.
- The visualizations of the data support end-users in identifying patterns and trends of interest.
- Interactive reports can be quickly and easily shared.
- Access to shared data results in increased opportunities for collaboration.

A second example is the FAST Overdose Alert Platform. This platform is an award-winning, real-time early warning system to track and report on opioid overdoses in WDGPH communities. Quarterly reports are built and shared using business intelligence technology.

Lastly, WDGPH is in the early stages of implementing advanced analytics, including predictive analytics and machine learning, to enhance programs. For example, the organization is in the process of developing an automated service that will allow people to submit photos of ticks to see if the specific species is a potential vector for the bacteria that cause Lyme disease. Currently, members of the public bring in preserved ticks to our facilities for manual identification by staff in Health Protection. If successfully developed, this automated service will allow people to take a photo of the tick with their phone and the software will identify the tick without human intervention. WDGPH is also investigating the possibilities of artificial intelligence-based techniques that would allow WDGPH to predict who will miss clinic appointments to provide greater efficiency of clinical resources. Finally, the use of an artificial intelligence based chatbot is being investigated to allow the public to get answers to health questions and information about Public Health services.²

IT Security

Confidentiality, integrity and availability are the three tenets of information security. Inestimable damages can be incurred by an organization if these tenets are not protected from the increasing sophistication of today's threat landscape. Keeping up-to-date with emerging information security technologies and security models to defend against cyber threats is pivotal for business continuity at WDGPH. WDGPH has implemented next-generation technologies to improve perimeter security through intrusion prevention and detection analysis. Further investment has been made into a cyber artificial intelligence solution to detect anomalous behaviours on the WDGPH network. Staff's devices continue to be protected by a global leading endpoint security solution with powerful detection capabilities and anti-ransomware protection. To further improve the organization's security posture, annual third-party IT security penetration tests are conducted and reported to the Board of Health.

In the protection against cyber threats, the human element at any organization is considered the point of greatest vulnerability. As such, user education and awareness has been a focus to ensure staff is aware of risks. Updated IT security awareness training campaigns are set to be launched across all offices in 2020.

Conclusion

WDGPH has embarked on digital transformation over the past several years to ensure we can meet the current and future needs of public health. Investments in the IT infrastructure has allowed for the use of emerging and innovative technologies. The implementation of cloud-based technologies has improved internal business process efficiency while ensuring strong value for money. Business and artificial intelligence techniques are used to solve problems that previously proved to be challenging. Next-generation technologies have been implemented to defend against an ever-growing cyber threat landscape. Through continued diligence and long-term strategic planning, WDGPH will continue to be a strong modern IT enterprise.

Ontario Public Health Standard

Not applicable.

WDGPH Strategic Direction(s)

- Health Equity:** We will provide programs and services that integrate health equity principles to reduce or eliminate health differences between population groups.
- Organizational Capacity:** We will improve our capacity to effectively deliver public health programs and services.
- Service Centred Approach:** We are committed to providing excellent service to anyone interacting with WDG Public Health.
- Building Healthy Communities:** We will work with communities to support the health and well-being of everyone.

Health Equity

The IT infrastructure supports WDGPH programs and services in the work they do for WDG communities. For example, interactive reports are shared with local partners and agencies to better support data-driven decision-making processes. These reports highlight information about health inequities in specific populations to support service providers in responding to identified needs.

References

1.Virtualization Technology. [Internet]. 2019. [Cited 2019 October 30]. Available from:
<https://www.vmware.com/ca/solutions/virtualization.html>

2.Chatbots explained. [Internet]. 2019. [Cited 2019 October 30]. Available from:
<https://www.ibm.com/cloud/learn/chatbots-explained>

Appendices

None.