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Our Phygital World and Information Management

A human-centric approach

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Information Management in a Phygital World

Introduction

To say that managing information in today's increasingly complex world is a challenge would be an understatement. Information technologies have advanced so rapidly and become so deeply embedded in our daily personal and work lives that we can now say we live in what we can truly call a "phygital" world; the blending of physical and digital. Often, on the devices we use, from smartphones, laptops, tablets, watches and voice-controlled devices; the line between personal and work information is increasingly blurred and intermingled. For those in information and records management, this is not new. But new approaches and ways of thinking about information and communications technologies are needed.

These advances in technology have had and are having, a profound impact on workplace cultures and processes as well as society on an organisational and global scale. Before the internet and our always-on, hyper-connected world the issues of understanding how humans interacted with Information Communications Technologies (ICT) in regards to managing information within the organisation, workplace culture and rituals wasn't deeply considered, for the most part, beyond the surface. Now, these factors will play an increasingly vital role to the management of the organisation. Successful management of ICT and information within the organisation means a more human-centric approach. More than ever, software and hardware companies are taking a much more human-centric approach in the very design of the tools they make. An example is smartphone manufacturers such as Google and Apple who have designed their devices to capture peoples' attention to use them more. Not many of us would use a smartphone today that had a black and white user interface.

In just the past decade we have seen the rise of the UX (User Experience) and UI (User Interface) designer taking a front seat in software development. The old software development approach of consult, build, release, and revise in long cycles is over, replaced by agile methodologies and constantly released iterations. This was especially so for software tools delivered in the browser, known as Software-as-a-Service (SaaS), but even Microsoft is now constantly delivering updates to desktop software rather than releasing entirely new versions every year or two.

My work as a design anthropologist is seeking to understand the intersection between technology, society, business and culture to help solve complex problems from a human-centred perspective. This paper takes a brief look at why a more human-centric approach to understanding and designing information use and ICT tools in the organisation has become critical.

Context. From the bronze axe to the smartphone.

For many of us in the technology world, we simply use the tools we have or are presented with at home or work. Two generations have grown up using computers and software, especially Microsoft Office and the Windows operating system. The current generation is growing up with touch interfaces on smartphones and tablets and a new one will grow up with voice activated devices. We often look at the problems and challenges of information management from a place of “now” and where we are. Understanding the context of ICT’s in society and the workplace will help frame why it is critical to understanding the role that culture, ritual and inclusivity take when maintaining, designing and implementing ICT’s and information management policies and procedures.

The Bronze Axe and Cave Drawings

Two key facets of humans are that we communicate to survive and that we use tools that enable us to employ the strategies we communicate to each other to survive. For thousands of years a worker had to know how to socialize and communicate with co-workers and use tools to stay employed, thus earning a salary and putting a roof over their head and food on the table. How we communicate has evolved significantly as have the tools we use to survive.

As humans evolved, we developed language to communicate and we learned how to manipulate information. Along the way, we started to draw images on cave walls; the cave walls were dry and thus images lasted, and it was a relatively safe place where a lion was less likely to make dinner out of you and your tribe. We went on to create multiple complex languages and writing. Symbols became an important part of how we communicate. Symbols are evolving still, such as emoji’s; love them or hate them.

At some point we also developed tools - first spears and later knives, swords and other tools. The bronze axe played a very large role in human societies that could make them. It was the first time in human history we could build complicated things. The bronze axe is akin to today's smartphone. The axe, like the smartphone, was a social signal. If you had a bronze axe as opposed to Axe Version 1.0 which was a cheap stone that chipped, it meant you were either wealthy or strong/clever enough to take it from someone else. Either way, you had status and thus influence. It also meant you could make shelter faster and easier, catch your dinner and do other things that most likely kept you alive somewhat longer than the chap with Axe 1.0.

The rise of digital tools

A wee bit later we invented the printing press, then the radio and television. Now we have our smartphones with TV show access and podcasts. Some suggest that with the vastness of today's information, we have become overloaded with information. Arguably, we achieved information overload when we printed more books than a human could read in a lifetime. Humans invented libraries and archives to store and manage information. Before that, we used stone and wood. In a sense, a library was humanity's first database. Just in analog format. Over time, the ability to read and write and communicate with broader audiences became both a status symbol and necessary for societal and species survival.

ICT's are tools that integrate our ability to communicate and organise more deeply than ever before. A key aspect of ICT's is that they reduce friction (friction arises in communicating when more steps are needed to communicate information; it is less friction to send an email than a mailed letter) and the ability to organise. Software and hardware are simply the bronze axe and papyrus reed of long ago, slightly updated.

For a long time, communications methods were largely broadcast in nature; TV, radio, print, with little to no immediate feedback ability. Even for a time, the internet was a place we went to. To access the internet you needed to use a very defined device, a computer. You also needed a fair degree of skill to operate a computer, which at one time, we very functionally specific. They weren't connected. Once computers became connected and the Personal Computer (PC) was invented, things started to change. But for a very long time, the internet remained a separate place. We often called it Cyberspace. It was a space, separated from the space that the real world occupied. Our physical and digital worlds were distinct in nature.

While early mainframes were (and are) expensive, so were early desktop PC's and they took up a fair bit of table or desktop real-estate, had to be plugged in and connected to other computers by cables. A certain degree of education was also required to interact

with these earlier devices. Even laptops until recently, still required a physical connection to the internet and to access other computers or peripherals such as printers and a mouse. Most information technologies were, essentially, a fixed artefact.

In homes, special locations were set aside for computers; a spot in the kitchen or a special desk in a study or living room. Rituals evolved around when we would spend time on the internet, the software we would use and how the computer was treated, especially in family settings. For organisations, the initial PC investments were expensive, but IT had control over what software was available and when, so ICTs were more easily managed.

We understand today, looking back, that the internet as a tool, has had a profound impact on human society and how we communicate with each other, both good and bad. All technologies, or tools, have, throughout history, been good and bad. A bronze axe helped you make shelter and dinner, but it could also be used as a weapon to be nasty to other humans. While we see great benefits in Artificial Intelligence (AI), we also recognize that it can be weaponized by rogue states or generally bad people who want to do bad things.

Now, our world is hyper-connected, always on; phygital. Today, there are more devices connected to the internet than there are people in the world. Increasingly, technologies are becoming more assistive and invisible yet ever more pervasive. In most everything we do today, some form of information technology plays a role, sometimes without us realizing it is happening. As NYU professor and author of the book, *Here comes everybody,* Clay Shirky has stated, “When technology becomes invisible is when it gets interesting.”

No longer can we separate ICT’s from our work and personal worlds or our daily lives in general. Connectivity is everywhere and always on. This is why, as information management professionals, it is increasingly important to understand ICT’s as tools and see them from a more human-centric angle, not just as productivity tools. For so long, ICT’s were viewed as tools to manage information within the systems that they were designed to support. External connections were rare and they were not often designed to play with other tools.

The very language we have used in developing these tools is abstract and dissociative from humans. The ICT tool (software and hardware) was at the forefront, the human as a “user” and the user conforms to the intent of the tool and the business system it is being designed to work in. This, in essence, is placing function before form. The problem with all tools throughout human history however, is humans. When something goes wrong with a software tool we are using, we blame the human. We can also blame

the human that figured out a bronze axe could also be used to thump some poor chap over the head. Someone always tends to do something with a tool that the creator never intended, such as forgetting to plug it in. Additionally, all technologies have a duality. They can be used for good and bad. Add in the human propensity to do the unexpected and we introduce the law of unintended consequences. When social media tools hit the world, the expectation was for democracy to sweep the world and life to be wonderful. Instead, democracies have shrunk and we have a new meaning for trolls and new words such cyberbully and hacker. On the upside, movements like #MeToo were enabled. We're a quirky bunch.

An excellent example of this in an information management context is Dropbox. A brilliant concept as a tool to enable people to easily share files. Humans love to share information as we know. It's how we survive. That was Dropbox's intent and it worked very well. There were also a lot of knowledge workers who had better computers at home than at work (this is still very often the case) so they'd upload the file to their Dropbox account to work on at home or their personal laptop at a coffee shop. Before that, it was USB sticks. But services such as Dropbox, Google Drive and Box have led to a bit of a nightmare for information management.

Policies were put in place, sometimes they worked. Some organisations simply adopted Dropbox as their primary document management system. Some a hybrid of on-premise and Cloud solutions.

Humans will always find ways to work around organisational policies and rules as well. One rather significant example is the U.S. Marines in Iraq and the battle of Falujah during the Gulf War. The command officers came up with a battle plan, giving the orders on what weapons and tactics to use, all of which was communicated over the Army's secure networks. The line soldiers who would be fighting the actual battle, however, had other ideas. They'd established their own secure network over top of the command one. They also determined they'd use slightly different tactics and which were communicated on their own network. They won the battle and likely would not have had they abided by the command network.

All of this is to say, the domain of creating, managing and operating ICT tools today is no longer exclusive to the IT department and those responsible for information management. In many organisations, we see departments using SaaS based tools they access via the internet without ever telling the IT department. In one recent technology audit of a firm who thought they were spending about $40,000 a year on various SaaS and related services, we found they were actually spending $320,000. It is a well managed firm with a strong IT department and firm policies and procedures in place. Yet this still happened and happens often.

Because ICT tools are increasingly easier to use and technology is so pervasive in both our personal and work lives, those in IT and information management will have to take a more human-centric approach to governance, management and deployment in the coming years. Next we explore the cultural, ritual and inclusivity aspects of our phygital world.

Understanding culture with information technologies

Technology, information and culture

As computers and PC's began to enter organisations in a meaningful way in the late 1980's, they were mostly for very defined activities; word processing and accounting. Finding a senior executive who had a PC monitor on their desk was a rare sight indeed. At that time, computers were simply seen as a tool used by line workers, not those with seniority. They held little social currency and were not seen as a signal of power. Into the 1990's, as computers became networked, easier to use and purchasing costs lowered, they crept into more and more roles within the organisation.

Companies like Microsoft and Apple updated their operating systems from command lines to using Graphical User Interfaces (GUIs).) Rather than having to know code, one had to learn how to interpret symbols. In lock-step with PC's came connected photocopiers that copied and printed from computers. Monitors became colour as well. The cost of networking became less, but required significant infrastructure investments such as ethernet cabling and networking equipment. Then, with networking advances came the internet. Once the cost of computers started to come down and the internet evolved to connect consumers, things really started to shift. PC's began to gain social status both at home and at work. Laptop PC's started to become cheaper as well. The cost to create information became much lower as did the friction.

Where previously, from the late 70's to the late 90's it was secretaries and other administrative staff who had to know how to use a computer, by the late 90's sales people and even middle-level management also had to know how to use a PC. For sales people, the laptop became a primary working tool. The black leather or nylon laptop bag became ubiquitous at airports and on subways. This was also a boon for physiotherapists for all those workers with shoulder and neck problems from lugging heavy laptops around. Now, senior executives wanted a computer on their desk. The PC had become a status symbol at work. This is also, arguably, when we lost the work/life balance.

What type of device you had often indicated your seniority within an organisation for it indicated how much information you had access to. Seeing a large monitor on an

executive's desk implied they knew how to use technology and that they had access to and control over, important information. If you used a laptop, it conveyed that you were someone who was mobile and worked more outside the organisation's walls. It suggested importance. The computer had now begun to establish itself in the organisational culture.

It was also around this time, the early 00's that cell phones became more ubiquitous. Smaller, lower cost to operate and a key business tool. But until the launch of the Blackberry and then the iPhone in 2007 cell phones were more of a business tool than a consumer device. Having a Blackberry prior to the iPhone sent an even bigger signal of social importance within the organisation. When the iPhone launched, it put the device into the hands of the consumer. PC's became far cheaper as processing power, memory and displays dropped significantly in cost. Then of course, came tablets, the Cloud and Software-as-a-Service (SaaS) companies exploded.

This is also when email become very popular; a tool that still hasn't been replaced. It is also another example of us quirky humans. While it was intended as a work productivity tool, humans found email to be an excellent way to share jokes leading to many embarrassing incidences of people hitting "reply all" by accident and office romances were unhappily discovered. To this day, email etiquette remains a hot topic in the workplace.

The combination of lower cost PC's, ubiquitous and high-speed internet (and Wifi), smartphones, tablets, the Cloud and social media have had a profound effect on corporate cultures. The latest devices to impact the workplace are the smartwatch and fitness trackers. Again, owning an Apple Watch sends a signal of status versus a simple FitBit fitness tracker. While few organisations see the value in a smartwatch for employees, they still connect to corporate smartphones and networks and send a signal of a person's income level.

The advances of ICT tools have led to increased collaboration between departments and across different organisations. This has also resulted in friction between younger and older workers in an organisation. Many of those who are in their mid-40's and above, are used to an information environment that had more silos and departments that rarely shared amongst each other. Information is power.

The power dynamics of information

The power dynamic of information within the organization is important to understand. Senior executives are seen to have access to any and all information. Access wanes as the roles perceived importance declines. This also plays into inclusivity, which we

discuss later. For those in information management, understanding the dynamics of power in regards to ICT's and information is a key part of forming policies and developing or employing new tools in the organisation.

ICT operations have developed from a largely administrative role with minimal social and cultural status within an organisation, to playing a key role culturally. Along with devices, information access and what tools you use to create, manipulate and manage information have also come to hold cultural significance. For instance, consider the communications tool, Slack. It is supposed to be a productivity tool that enables teams to collaborate far easier and to some degree it does. Slack's creators seemed to think it would eliminate email, but not so far. While it is an excellent tool, Slack has added yet another layer to the complexity of information management today, most specifically in the area of document management. Slack enables communication outside of the organisation, thus creating an added area of cybersecurity worries for IT departments and those trying to manage information. Slack has also evolved its own culture within organisations, as have other tools.

Another often overlooked or missed power dynamic in the workplace is the "Fixer" as we will call them. This is the one person (and there may be one or two in various functional units) who know a particular app or database extremely well. They're the resident expert and they fix peoples' problems. This provides them with a degree of power within organisational culture. Changes to such tools, or the introduction of new ones, change this person's power dynamic. They may be highly resistant to new tools because of this. Often Fixers feel that because they know these tools so well, they are more valuable to the organisation and have a greater degree of job safety. Fixers can be major roadblocks or they can be turned into champions. When they are recognised and made a key part of a transition, selection or policy development team, Fixers may be a significant benefit to a project's success.

As mentioned, many organisations are often unaware of how many tools like Slack are being used. When an employee in one department is invited to collaborate with another department, they may end up using a tool that the other department uses. This may lead to a feeling of being included in a special way, which has an impact on the organisational culture. And inclusivity, which we address later.

Understanding the cultural impacts of ICT within an organisation, may lead to deeper insights regarding how people create, manage and share information. Such insights assist in creating better policies and procedures. Often, policies are ignored or worked around because they don't align with organisational culture. Employees may feel alienated by some policies or tools and others may feel that the policies hinder workflow and reduce efficiencies. Culture can have a significant impact when considering major

projects such as digital transformation or selecting and implementing new database or software tools.

Understanding the role of ritual with information technologies

When we hear the word “ritual” we tend to think of religious ceremonies and while it can be a version of ritual, it isn’t the definition of ritual. Think of your own morning routine when preparing for work, it is a form of ritual. Perhaps first you put on the kettle for tea or brew a coffee, feed your pets and begin getting ready for work during the work week. On the weekend, you may have a different routine. These are rituals.

People have similar rituals with their devices, from smartphones and tablets to their PC. From where we set up the device in our workspace and how we begin our day, to how we arrange apps on our smartphones and tablets. Perhaps checking email, which we often do on a smartphone before we even get to work. With the different software apps we use, we often have a ritual in the way that we use them as well as other productivity tools. Chances are you have a desktop wallpaper on all your screens and you’ve customized the apps as much as you can to your preferences. Changing these ritualistic behaviours can make us angry and frustrated. Part of the reason we don’t like changes in apps is because it interferes with our rituals. To a large degree these rituals play a part in our workflows.

Rituals also take place due to the volume of information created and stored. A new app or perhaps a change in the SharePoint structure or an SAP tool means a change in how an individual finds and manages information; this means a change in ritual. The bigger the change, may lead to e more resistance to the change, such as we’ve discussed with Fixers. Ritual is important to the individual worker and helps in understanding issues of inclusivity and culture, but play a lesser overall role. But are still valuable to acknowledge and understand.

Inclusivity in a Phygital Organisation

Tied to organisational culture is inclusivity. Information technologies have no opinions and are agnostic. How they are deployed within an organisation however, can impact employees’ sense of inclusivity. For example, management handing down their laptops to lower functioning roles could lead to a sense of people not feeling included as part of the organisation, or as less important. Even colours used in applications can impact some cultures. A heavy usage of yellow for example, may make some of Indian culture think of funerals as yellow is a colour representing death in India as blue is in Chinese culture. Expectations regarding the use of the organization’s information technologies may impact how employees feel included in the organisation. For example, the expectations on the use of an organization’s technology on weekends; are there

expectations to answer emails on a Saturday or Sunday, when some employees, for religious reasons believe they should not be using these devices..

One example of inclusivity that may seem trivial, yet had a huge impact on how employees' saw themselves within an organisation, was in regard to email addresses. In this example, senior management had an email address that represented the parent brand, while employees and lower management had email addresses for different brands. The employees feel undervalued and not part of the main brand they felt more empowered by. This caused ongoing friction between employees and management. Management resisted making any change for a long time. Eventually, with the intervention of the CIO and HR executive, all employees were given the same email address. The impact on morale was profound in a positive way. Small things can lead to big things.

In any organisation where information technologies are a key part of an employee's job performance, issues of culture, ritual and inclusivity will play a key role in how people perceive, accept and work with the tools they are provided.

For decades, the development and deployment of information technologies has been made from the perspective mostly of the developer of the tools and the requirements of the buyer. People have been seen simply as "users" rather than humans. As mentioned earlier, the word "user" is an abstract term that creates a sense of disassociation between the human designing the technology and the human that has to use it every day at work. The user has simply been viewed as a functional part of the system, yet it is the humans which cause the most problems with information technologies. And as we've touched on, humans are quirky and will do unexpected things with technology.

A more human-centred approach to information management, changes how software and hardware are designed, developed and deployed within an organisation. This is in part, the role of the U (User Experience) designer and the UI (User Interface) designer. To better understand the impact of human behaviours on software or an overall ICT system, more organisations are using the anthropological process of ethnography before and during the development of solutions, whether they be hardware or software. A certain tension always exists in how an information management person sees the best solution and the humans on the other end who use the tools.

Emerging trends in software and hardware

Earlier, we mentioned when technologies become invisible they become more interesting. This is starting to be the case with software. Hardware has become increasingly invisible (many people over the past 20 years have grown up using a

computer and over the last decade, a smartphone) and somewhat plateaued in terms of capabilities. For decades hardware evolved significantly every year. This is known as Moore's Law, where computing power doubles about every 18 months. Today, we are reaching the end of this evolution. We see minimal advances in storage, processing power and screen quality. This is very good for software and the humans who work with software.

For decades, there was a constant tension between software and the hardware it worked with. It led to high development costs and significant impacts on organisations ICT budgets and how they invested. With plateauing most PC's and even smartphones and tablets, and the rise of Cloud computing, software now has an opportunity to become much, much better. And we see this with ever greater emphasis on a more human-centric approach to software development. Using what is called Agile Methodologies, software updates are more iterative and constantly improving whereas before it was all about strict version control and what was known as waterfall methodologies. In some cases, waterfall methods still apply, but are not as prevalent as they once were.

Increasingly, software tools are being developed from the outset to be more connected to other tools. This is done through Application Protocol Interfaces (API's) to the point where some pundits refer to the "API Economy" where entire business models for software products and their very survival, are based on connecting to a major platform. Tools like Trello, Monday (visual project management), Dropbox and others work best when they connect to platforms such as Slack, Google's GSuite or Microsoft Enterprise and Microsoft Azure.

Many years ago, platform companies like Apple and Microsoft made a point of not enabling their software to work on each other's platforms. This is no longer the case. While in certain instances Apple, Google or Microsoft may not enable certain features? to play well with each other, they increasingly interconnect with each other. Microsoft Office and OneDrive for example, work across Apple OS's and Android.

Many software and hardware companies are also leading development today from a human-centric design perspective. This is especially so with regard to IoT (Internet-of-Things) device makers who study human behaviours more than ever before. Software is about to get a lot better, but it is also going to be more complicated for organisations to implement and manage so many variables and layers. Sorry about that; humans are quirky that way.

A quick look ahead

While predicting the future is impossible, we can see to some degree, where information technologies are going. Some will have a significant impact on information and records management.

Artificial Intelligence (AI): The use of AI may be very helpful to information management, or it may not. AI could, for example, be used to monitor how information is managed within an organisation and recommend or make, changes. The risk is in attempting to fully automate this process which could result in more problems elsewhere within the structure of the organisation. AI will play a vital role in managing ever more complex systems that go beyond the human ability to comprehend.

Blockchain: This is a very promising technology, especially in records management. It will enable the stamping and confirmation of records in that they cannot be altered or tampered with, thus better guaranteeing contracts and document security. While blockchain offers key advantages, it is not a perfect system. For example, there is the 51% exploit whereby a hostile entity gains control of 51% or more of the power in the blockchain and can force the other participant systems to agree to a change, such as transferring funds to a fraudulent account.

Internet-of-Things (IoT): These are devices with sensors that connect to the internet. They can range from the common light bulb all the way up to complex manufacturing devices. The most well-known consumer IoT device is the Nest thermostat for the home. Some companies are developing IoT devices that fit in the toilet and will be able to monitor sugar levels and bacterial infections among other human maladies. A significant value of IoT devices isn't the function they perform, rather it is the data they collect. IoT connected home devices can, for example, help power companies understand and manage energy loads on the grid.

Augmented and Virtual Reality: Still fairly expensive and a new technology, augmented reality (AR) is already being used in industrial settings with smart glasses that can overlay information and we are seeing it deployed in some smartphones and vehicles. Virtual Reality (VR) remains expensive in terms of the hardware and content development. Both AR and VR reside mostly in commercial applications and those being mostly industrial and military.

Autonomous vehicles, augmented and virtual reality, drones and biotechnology are all other tools that are emerging. They will add new layers of complexity for information management professionals. They will require new workplace and organisational policies and procedures and governance approaches.

Concluding

Our world is more complex and it's not going to become any less complex, anytime soon. It is increasingly harder to draw the blurring line between information within and without the organisation, especially in terms of managing it. No doubt, better tools to accomplish this Herculean set of challenges will come along. Those that take a human-centric approach however, will have a greater chance of success.

For those in the field of information and records management, taking a more human-centred approach to understanding how and why information technologies are used within the organisation can be extremely helpful. By understanding power dynamics, one can see how information is viewed within the organisational structure, which can help in suggesting, recommending and defining new technologies, policies and procedures and governance. By understanding culture, it makes digital transformations easier and invites new ways of introducing not just new technologies, but gaining acceptance of new policies by employees. Looking at ritual helps with designing and deploying new policies, processes and tools to anticipate challenges and acceptance. And by taking inclusivity into account, this helps with messaging and policy planning as well as workplace morale and culture.

For decades, with the development of information technologies, the human was seen as being in the loop of the system, but they were seen as a functionary that would perform in predictable ways, and the tools themselves were designed for organisational systems that worked for the organisation internally. And as discussed previously, both software and hardware suffered from paying more attention to the humans using the tools and focused largely on the user. In the late 1970's we saw the rise of the Human Computer Interface (HCI) practice, but as computers were larger, interfaces restricted (GUI's were a dream at XEROX Parc).

Such a dissociative approach to developing information technologies is changing. Now we have Agile development Methodologies, rapid deployments, iterative processes. Data moves across organisational functions, resides within and without the organisation and is increasingly difficult to manage, secure and control. How people use the tools and consider information has evolved significantly over just the past decade. While the technologies have blended the result is that culture, ritual and inclusion play a more significant role in how humans perceive information and use information.

Information technologies are evolving rapidly and as we live in a phygital world, where devices and information creation and sharing accelerate, a human-centred approach to developing policies and new tools is key to successful development, implementation and management.

For this paper, I used my own laptop, keeping the document in the Cloud as I was working on it. Some of this I wrote in cafes, some at my desk, parts on my smartphone and some on the couch in the quiet of the evening. I also accessed documents in other organisations systems where I had permission to do so. In other words, though this is a single document, the information collected to bring it together, resided in many places with various rules and it was written in various locations across multiple devices.

Information technology and management is less about “users” today and more about humans as we evolve our understanding of how humans interact with technology at work and at home. It is increasingly hard to separate the two, especially with smartphones that may have both a corporate and personal credit card on them and mixed personal and work documents. Such a device may have music that is connected to the employee’s vehicle and home network where we increasingly see people with internet connected thermostats and other household appliances. It may also connect to IoT devices in the office and move various types of personal and work information.

All of this requires new approaches to how we consider and manage information within the organisational context. A design-oriented approach that is human-centric helps build a more contextual awareness in the development, planning and implementation of information management and ICT tools within the organisation. As we see more devices enter the organisation and as collaboration features become more prominent in almost every ICT tool and software application, new pressures on existing systems will occur and new challenges will emerge.

Employees can work almost anywhere. Information lives in multiple locations. Devices are becoming ever easier to use just as the software is becoming easier and ever more interconnected. Traditional approaches to information management and ICT tools are having to evolve. Complexity of systems and tools will increase. Artificial intelligence is creeping into ever more organisations just as analytics tools struggle to bring value. As we know, humans are quirky in how they see tools and use them in their everyday lives.

For thousands of years, information was largely static. Today, it has become fluid and ever shifting.

About the author, Giles Crouch

Giles has been working at the intersection of humans and technology for over 25 years, initially in a more marketing communications focus and over the past decade as a design anthropologist. In 2009 he started a Big Data analytics firm focusing on analysing social media and open source digital content in the area of foreign and public policy working with organisations such as UNDP, Global Affairs Canada, Freedom House, Medicins Sans Frontiers and others. He was on the board of directors for the Big Data Congress for Atlantic Canada and has worked in the areas of data governance and privacy.

In his marketing capacity, Giles brought several innovative new technologies, both hardware and software to international markets. He has deep experience and understanding relating to how humans use and live with technology and has been regularly interviewed by Canadian news media on the topic of social media and technology. Giles is currently principal and design anthropologist of Ekspansiv, a design anthropology firm based in Halifax, Nova Scotia.