TOPIC 7: EMERGING TRENDS IN INTERNET BASED PROGRAMMING

T7.1) Emerging trends in internet-based programming

As social media, app stores and global availability become standard, many companies are looking to enhance the online customer experience. And while retail and other transactions via Internet are customary, more than ever companies are simplifying the ways in which customers interact with their website and ultimately make online purchases. Here are eight trends happening right now in global e-commerce that seek to enhance the user experience:

1. Micro-payments: Among the most revolutionary changes in the coming months—not years—is the use of micro-payment systems from a variety of financial firms, e.g., Paypal, Visa, WesternUnion, among others, including banks. This trend is facilitated by the W3C working group that approved these protocols and technical standards for the interworking. These systems will change not only how we carry money but how we value money and think about purchases. (Consider how a purchase of $4.99 feels in a mobile app store vs. at Dunkin' Donuts.) Payment systems that make it easier to buy online, coupled with mobile technologies will accelerate the usage of global e-commerce applications.

2. Mobile technologies: More people access the Internet on their mobile devices than on any other device. We are rapidly approaching the time (if we are not already there) where designs must be created for the mobile web first, and for the desktop second. Mobile technologies facilitate comparison shopping; with the advent of barcode reader apps and price-comparison databases, a consumer could snap a bar code in Walmart and quickly reference product reviews and prices on walmart.com (or compare prices with Walmart competitors). Mobile technologies also facilitate impulse buys – especially with the advent of micro-payments tied to the mobile device. Just recently, Starbucks customers can not only place an order with their Smartphone, but also make a purchase.

3. Social media: As Facebook has become the most visited site on the Web, the role of social media, including Facebook and its local clones such as Twitter, is increasingly important. Social media sites increasingly act as points of entry to e-commerce sites, and vice versa, as e-commerce sites build rating, loyalty and referral systems tied to social media. Group buying (e.g., Groupon) is also gaining mainstream ground, with many "deal of the day" sites competing for an increasingly savvy consumer base, but improvements lie ahead as the social aspects and user experience are refined.

4. Fulfillment options: I believe that users will want to have multiple fulfillments and return options when interacting with a vendor: ship to address, courier, pick-up in store, return to store, etc. Having many fulfillment options is how customers view their overall customer experience. Some companies have made a business proposition online by being exceptional in service to the online channel (e.g., Zappos).

5. Global availability: Increasingly, consumers want the availability to buy products from foreign sites and have them delivered locally. Thus, currency and customs will be of growing

concern to many online retailers. Along with this, there will be concerns with local privacy laws and restrictions on related data collection and storage.

6. Localization: While the trend is to globalize, what's often more important is to localize. User Centric's (now GfK's User Experience team) research clearly shows that sites that 'feel' local – with proper imagery, language, time/date, weights/measures, currency, etc. – resonate far more than sites that seem culturally distant or sterile.

7. Customizability: Consumers want control, and want to be able to design the details of the items they purchase.

8. Time-based availability: Some of the hottest and most successful sites are those that have a time-critical response component. Sites like Groupon, Gilt and others capitalize on the perception of limited-time availability. Creating a sense of urgency drives traffic and purchase behavior.

T7.2, T7.3) Challenges & Solution of emerging trends in internet-based programming

1. Job Losses

Computers, robotics, and automation are driving more and more of production. In turn this is leading to an enormous impact on the number and type of jobs. An Australian report released in June 2015 found that 40 per cent of the Australian workforce – or around 5 million jobs – are at high risk of being replaced by computers in the next 10-15 years. This backs up the Oxford Martin School's 2013 study finding 47 per cent of jobs in the United States are at risk of being automated using artificial intelligence. We need to move urgently from a discussion about protecting the jobs of today, to creating the jobs of the future.

2. Commercialization and innovation

There are significant emerging opportunities and challenges for commercialization and innovation resulting from technological changes to becoming a more sustainable, broad-based economy:

1. Reducing the tyranny of distance, boosting trade and creating new business models but also promoting outsourcing of work overseas.
2. Internationalizing labour markets are expanding the skilled labour pool.
3. Developing commercially functional goods and services from new technologies often takes a lot longer than expected.
4. Leveraging clean technologies to improve sustainability.
5. Fostering entrepreneurship and addressing constraints for Kiwi companies.
6. Addressing slow uptake of new technology due to redundancy risks or ease of sticking with the status quo and supporting workforce mobility.
7. Managing business change in a disruptive and dynamic business environment.

4. On-demand economy

Stable, permanent fulltime jobs are increasingly being replaced by an anywhere, anytime work model, facilitated by digital technology which is resulting in a shift towards more contract work and a more rootless and flexible workforce.

The "on-demand economy" is the result of pairing that workforce with smartphones and other devices, which now provide far more computing power than the desktop computers which reshaped companies in the 1990s, and reach far more people.[2]

The on-demand economy is starting to revolutionize commercial behavior in cities around the world. Fast-moving tech companies competing in this arena have developed new models – such as Uber, Handy and Air B&B – that are transforming industries which have been historically slow to innovate. Transportation, grocery, restaurant and personal service industries are seeing hyper-growth in the on-demand world.[3]

However this means a growing gap emerging between workers and their ultimate boss. Ensuring workers retain their voice within their company is crucial to ensuring new business models remain responsive. Emerging technology provides more ways than ever to ensure that this remains possible.

The on-demand economy gives consumers more choice. Consumers may be winners, as can workers who value flexibility over security such as younger workers, those with portable skills in demand who attract higher wages, or those who don't want to work fulltime. But those who value security over flexibility, have families or have mortgages are all threatened. In addition, there are inequities for those who work in the on-demand economy but do not qualify for superannuation and other benefits. Care is needed to minimize the impact of change on employment rights and health, safety and environmental protections.[4]

Smart policy makers can't stand in the way of change. We can't outlaw on-demand firms. But we can improve the ways in which we measure employment and wages, and we must stop treating contractors and freelancers as second class citizens. In effect every contractor is a small business with the insecurities, demands and potential that goes with that title.

5. Redefining work

Increasing use of digital business models alongside automation and computerization of jobs will see organizations shift to a smaller number of highly skilled people with scarce skills working in very different patterns, in order to enhance their competitiveness. Risk and change management will be crucial to ensuring success here. This has implications not just on how we manage work but also on the quality of life for our workforce. An AUT study into mobile technology found it contributes to irregular patterns of work, amplifies social pressures making boundaries between work and non-work indistinguishable, brings more work into personal time, and speeds up the way organizations function. Defining when a person is working and when they are not will be an increasing challenge.

6. Accessibility

Cheap computing power is transforming the way consumers and workers access technology as even more sophisticated and powerful hand-held smartphones become available. This

eliminates some of the barriers for how work is done. Complex tasks such as programming a computer or writing a legal brief can now be divided in component parts and subcontracted to specialists around the world. It also gives greater flexibility – providing an opportunity for workers and workplaces to create flexible working arrangements.

7. Big data

Big data is changing the way big business operates. Big data involves data collection and mining to ascertain consumer preferences and behaviour trends that assist companies to customise their offerings and specifically target their markets. Prompts on Amazon.com for related book titles are one example of this.

Big data creates new markets and new opportunities. It also drastically increases privacy risks and raises issues of resilience of cloud based applications and storage to hacking and other vulnerabilities.

8. Education and Training

Our education system will need to adapt. There is a tension between a model of education which is aligned to current industry demands churning out work-ready drones who will 'hit the ground running' and a model which enables rounded professional development and boosts worker's capacity to learn and think in a world where creative and critical skills are at a premium.

We are not currently training our workforce to be adaptable enough to changes in technology or providing proper lifelong education solutions for retraining. More needs to be done to prepare our workforce for the changes to come including looking at universal teaching computing and coding in schools and improving how we teach technology.

9. Infrastructure

New Zealand is rolling out ultrafast broadband which is transformational. However there are road blocks to UFB roll-out and uptake. There are huge opportunities for smaller geographically distant countries like New world where IT has reduced the tyranny of distance. This raises important issues around getting our infrastructure right inside New world and reducing the digital divides that exist. We must have robust, resilient and future proofed affordable international connectivity.

10. Digital Divide

Many people and businesses still lack basic access to broadband particularly rural, communities. The cost of access to the internet, digital devices, and big data also means many small businesses and lower income households miss out. This means some of our kids don't get the education they need because they can't access the internet at home, our small businesses are held back and too many New Zealanders miss out on their right to enjoy access to emerging technologies. Technology is now essential to modern life and learning. This divide applies not just within society but between countries and New world must ensure it remains on the winning side of that divide. We are failing to deal with the growing digital divide. We are losing ground because of lag in the ultra-fast broadband rollout. Schools, businesses and homes need access to high speed internet as soon as possible while free WiFi access in more community areas would do much to bridge the digital divide. Options like

Google's Project Loon to use high-altitude balloons to deliver internet to rural areas also need to be explored further.