

## CHAPTER 2: A BRAVE NEW CONNECTED WORLD

Networks and telecommunications are the transmission of signals over a distance for the purpose of communication. In modern times, this process almost always involves the sending of electromagnetic waves by electronic transmitters, but in earlier years it may have involved the use of smoke signals, drums or semaphore. Today, network and telecommunication is widespread and devices that assist the process such as the television, radio and telephone are common in many parts of the world. There is also a vast array of networks that connect these devices, including computer networks, public telephone networks, radio networks and television networks. Computer communication across the Internet, such as email and instant messaging, is just one of many examples of telecommunication.

### SECTION 2.1: OUR CONNECTED WORLD

- The Web changed the world
- The Internet changed business
- Benefits of a connected world
- Challenges of a connected world

### SECTION 2.2: THE INTERNET AND THE WEB: A TECHNOLOGY REVOLUTION

- Disruptive and sustaining technologies
- A Web evolution
- Web 1.0
- Web 2.0
- Web 3.0

## SECTION 2.1 THE BUSINESS VALUE OF A CONNECTED WORLD



### LEARNING OUTCOMES

**Learning outcome 2.1:** Examine the benefits of a connected world.

**Learning outcome 2.2:** Examine the challenges of a connected world.

Wireless technologies are transforming how we live, work, and play. Handheld devices are continuing to offer additional functionality and cellular networks are advancing rapidly in their increased speed and throughput abilities. These enabling technologies are fuelling widespread adoption and creation of new and innovative ways to perform business. There are new technical and social challenges from a connected world.

**Learning outcome 2.1:**  
Examine the benefits of a connected world.

Before networks, transferring data between computers was time-consuming and labour intensive. People had to physically copy data from machine to machine using a disk. Networks offer many advantages for a business including:

- sharing resources
- providing opportunities
- reducing travel.

## Classroom opener 1

### How the Internet infrastructure works

Start the class by asking students who understands how the Internet works. How does email go from the University of Sydney to the University of Melbourne? Or how does a web page go from client to server back to client?

For an overview of how the Internet infrastructure works, including diagrams and easy-to-understand explanations, go to: [https://www.youtube.com/watch?v=ZonvMhT5c\\_Q](https://www.youtube.com/watch?v=ZonvMhT5c_Q)<sup>50</sup> (4 minutes)

## Classroom opener 2

### Amazing items made with 3D printers

Watch this video on these uses of 3D printers:

<https://www.youtube.com/watch?v=dcX41EQ1JTo><sup>51</sup>

## Classroom exercise 2.1 (LO 2.1)

### Corporate management tool: a decade of stories and lessons in crowdsourcing (CSW Global 2015)

[Joanne Celens talks about making changes in large organisations using crowdsourcing, including seven key success factors and the top five dos and don'ts.](#)

<https://www.youtube.com/watch?v=iI30ZrCpee4><sup>52</sup> (25 minutes)

## Classroom exercise 2.2 (LO 2.1)

### Showing TV news viewers where the stories are happening by using Google Earth

This video shows how News TV programs use Google Earth to help viewers locate and visualise news stories:

[www.gearthblog.com/blog/archives/2012/07/using\\_google\\_earth\\_to\\_geo\\_relevance.html](http://www.gearthblog.com/blog/archives/2012/07/using_google_earth_to_geo_relevance.html)<sup>53</sup>

## DISCUSS: The end of business as we know it

The advantages of a business having (1) an online business only are:

- global access, 24 hours a day, 7 days a week
- improved client service through greater flexibility
- cost savings
- faster delivery of products
- increased professionalism
- less paper waste
- opportunities to manage your business from anywhere in the world.

See <https://www.business.qld.gov.au/business/starting/business-startup-options/business-online-basics/benefits-business-online><sup>54</sup>

The advantages of a business having (2) a bricks and mortar business only are:

- it can control security of physical buildings and stock using conventional means
- there is no need for the set-up and maintenance costs of an e-commerce site
- face-to-face interaction with customers means there is opportunity to form real-life relationships with them and create good word-of-mouth advertising

- customers can look at and try on products in real life and experience the social side of going out shopping
- staff can up-sell to customers while they are in the store talking to them
- there are no extra expenses for shipping items or worries about online payments.

See [www.punchbowl.com/trends/blog/post/pros-cons-online-retailers-vs-brick-and-mortar-stores](http://www.punchbowl.com/trends/blog/post/pros-cons-online-retailers-vs-brick-and-mortar-stores)<sup>55</sup>

The advantages of a business having (3) both an online and a bricks and mortar business are:

- A combination of all of the above plus the added advantages of crossover selling through your multiple channels (online *and* bricks and mortar).

### **Learning outcome 2.2:**

Examine the challenges of a connected world.

Networks have created a diverse, yet globally connected world. By eliminating time and distance, networks make it possible to communicate in ways not previously imaginable. Even though networks provide many business advantages, they also create increased challenges in (1) security, (2) the legal implications of copyright and intellectual property, and (3) social, ethical and political issues.

## **Videos (LO 2.2)**

### **Security challenges in a connected world**

Our devices are connected everywhere and at any time in ways we could not have imagined 10 years ago. But this connectivity brings serious security risks as well:

<http://chipdesignmag.com/sld/blog/2014/02/20/security-challenges-in-a-connected-world/><sup>56</sup>

### **Save the Elephants uses GPS to track elephants**

What are the dangers of poachers using this information to track the elephants?

[www.savetheelephants.org/video.php?file=gps](http://www.savetheelephants.org/video.php?file=gps)<sup>57</sup>

### **Wikileaks**

Wikileaks has changed the way we find information by releasing information from government sources without permission or controls. Discuss the ethical and legal implications of the release of the Wikileaks data with the students.

<http://wikileaks.org><sup>58</sup>

### **The Dallas Buyers Club case and pirating movies**

This important case highlights how a movie approached charging people who pirated the movie *The Dallas Buyers Club*. Tracking the computer address which downloaded the movie is 'relatively' easy, but how can they prove who actually downloaded the movie?

## Classroom exercise 2.3 (LO 2.2)

### Click fraud

Have students read the following articles:

- Overcharging per click and Microsoft:  
[www.mediapost.com/publications/article/178632/microsoft-sued-for-overcharging-pay-per-click-mark.html](http://www.mediapost.com/publications/article/178632/microsoft-sued-for-overcharging-pay-per-click-mark.html)<sup>60</sup>
- Microsoft and click fraud:  
[www.microsoft.com/security/sir/story/default.aspx#!botnetsection\\_clickfraud](http://www.microsoft.com/security/sir/story/default.aspx#!botnetsection_clickfraud)<sup>61</sup>  
<http://blog.clickdimensions.com/2012/02/protect-yourself-with-a-click-fraud-detection-dashboard.html><sup>62</sup>

## Classroom exercise 2.4 (LO 2.2)

### How a group of researchers tried to use social media data and algorithms to find breaking news

This article examines the success or otherwise of news companies using algorithms to shift through social media for breaking news stories:

[www.niemanlab.org/2015/06/how-a-group-of-researchers-tried-to-use-social-media-data-and-algorithms-to-find-breaking-news/](http://www.niemanlab.org/2015/06/how-a-group-of-researchers-tried-to-use-social-media-data-and-algorithms-to-find-breaking-news/)<sup>63</sup>

Amazon's Mechanical Turk business is mentioned in the article. There is an interesting discussion to be had on this business and how it functions on the web and how it treats its workers. Students can find out more about Amazon's Mechanical Turk workers here:

[https://en.wikipedia.org/wiki/Amazon\\_Mechanical\\_Turk](https://en.wikipedia.org/wiki/Amazon_Mechanical_Turk)<sup>64</sup>

## PowerPoint presentations

The core chapter material is covered in detail in the PowerPoint slides. Each slide contains detailed teaching notes including exercises, class activities, questions and examples. Please review the PowerPoint slides for detailed notes on how to teach and enhance the core chapter material.

## SECTION 2.2 BUSINESS AND THE INTERNET



### LEARNING OUTCOMES

- Learning outcome 2.3:** Compare disruptive and sustaining technologies, and explain how the Internet and WWW caused business disruption.
- Learning outcome 2.4:** Explain Web 2.0 and identify its four characteristics.
- Learning outcome 2.5:** Outline how social media technologies can assist in business networking, communicating and collaboration.
- Learning outcome 2.6:** Critique Web 3.0 and its impact on the next generation of business.

Section 2.2 discusses different disruptive and sustaining technologies and how they disrupt the existing business models and operations. This is a great opportunity for instructors to discuss how learning about technology can impact people's careers and help them achieve success. Opening students' eyes to how technology can help them in their marketing, finance, accounting and other careers can even help students become more engaged in the course and perhaps elect MIS as their major or minor.

### Learning outcome 2.3:

Compare disruptive and sustaining technologies, and explain how the Internet and WWW caused business disruption.

Disruptive technologies offer a new way of doing things that initially does not meet the needs of existing customers. Disruptive technologies redefine the competitive playing fields of their respective markets, open new markets and destroy old ones, cut into the low end of the marketplace and eventually evolve to displace high-end competitors and their reigning technologies. Sustaining technologies produce improved products that customers are eager to buy, such as a faster car or larger hard drive.

## **GREAT BUSINESS DECISIONS: Jeff Bezos decides to sell books over the Internet**

Jeff Bezos owns 41 per cent of Amazon and is estimated to be worth over \$900 million. Bezos graduated from Princeton and was the youngest vice president at Banker's Trust in New York. Bezos had to make a decision to stay and receive his 1994 Wall Street bonus or leave and start a business on the Internet. 'I tried to imagine being eighty years old, looking back on my life. I knew that I would hardly regret having missed the 1994 Wall Street bonus. But having missed being part of the Internet boom—that would have really hurt,' stated Bezos. The first books ordered through Amazon were dispatched in the fall of 1994 (personally packaged by Bezos and his wife). Amazon.com is now the biggest bookstore on the planet. It is the exemplar of electronic business.

Watch this video with the students to stimulate discussion on disruptive technologies:

<https://www.youtube.com/watch?v=tfAhTtBlb2Q><sup>65</sup> (25 minutes)

## **Classroom exercise 2.5 (LO 2.3)**

### **Twenty-five startups from 2007: where are they now?**

It's getting crowded on the Web 2.0 frontier, but there are still some startups that truly stand out. *Business 2.0* magazine identifies the ones most likely to strike gold in 2007:

<http://money.cnn.com/galleries/2007/biz2/0702/gallery.nextnet.biz2/index.html><sup>66</sup>

I like to discuss the funding for these start-ups. For example, the average funding for enterprise e-business start-ups were \$33 million. It is a great way to show students how much money is being invested in IT. I also like to reflect on where these startups are today—is what we thought was hot in 2007 still hot? Ask the students to find out from the web where the 2007 hot businesses are now going. What happened to the 'hot' companies? What companies are hot today? How can you identify new trends? This website from Shopify suggests looking at marketing reports and consumer spending information:

[www.shopify.com.au/blog/16582168-how-to-identify-and-cash-in-on-consumer-trends-and-3-products-trending-right-now](http://www.shopify.com.au/blog/16582168-how-to-identify-and-cash-in-on-consumer-trends-and-3-products-trending-right-now)<sup>67</sup>

## **Classroom exercise 2.6 (LO 2.3)**

### **Bad bosses collaboration**

Below is an interesting website with stories on bad bosses: a great example of the power of collaboration!

[www.workingamerica.org/badboss](http://www.workingamerica.org/badboss)<sup>68</sup>

## **Classroom exercise 2.7 (LO 2.3)**

### **Fair use of the Internet**

Video of the World's Fair Use Day seminar on fair use in hip-hop culture:

[http://youtu.be/4\\_T9RgpUR\\_c](http://youtu.be/4_T9RgpUR_c)<sup>69</sup> (1 hour)

## Videos (LO 2.3)

### 25 Disruptive technology trends 2015–2016

Good for discussions about how these will disrupt existing businesses:

<https://www.youtube.com/watch?v=xKzFM87R57w><sup>70</sup> (2:30 minutes)

### Cloud Computing Advantages and Disadvantages

How cloud technology can help and hinder business:

<https://www.youtube.com/watch?v=V3apBZAQzZo>, accessed 6 July 2015.<sup>71</sup> (8:20 minutes)

#### **Learning outcome 2.4:**

Describe Web 2.0 and identify its four characteristics.

Web 2.0, is the next generation of Internet use—a more mature, distinctive communications platform characterised by new qualities such as collaboration and sharing. Web 2.0 encourages user participation and the formation of communities that contribute to the content. In Web 2.0, technical skills are no longer required to use and publish information to the World Wide Web, eliminating entry barriers for online business. The four characteristics of Web 2.0 include content sharing through open sourcing, user-generated content, collaborations inside the organisation and collaborations outside the organisation.



## Classroom exercise 2.8 (LO 2.4)

### Content sharing through open sourcing

Ask the students what apps they have on their smartphones or iPads. Then get them to research their apps on the Internet and report back to the class on how many of the apps are open source.

Good websites on open source and open source apps are at the open source organisation:

<http://opensource.org/><sup>72</sup>

Wikipedia has an excellent video illustrating open source (using Lego) at:

[https://en.wikipedia.org/wiki/Open\\_source](https://en.wikipedia.org/wiki/Open_source)<sup>73</sup> (5 minutes)

## Classroom exercise 2.9 (LO 2.4)

### User-generated content

Insights on user-generated content from Jimmy Wales, CEO and Founder, at Wikipedia:

<https://www.youtube.com/watch?v=V3apBZAQzZo><sup>74</sup> (11 minutes)

#### Learning outcome 2.5:

Outline how social media technologies can assist in business networking, communicating and collaboration.

Providing individuals and businesses with the ability to network is by far one of the greatest advantages of social media. Social networks can also become business networks.

It can be said that social networking sites provide two simple functions. The first is the ability to create and maintain a profile that serves as an online identity within the social networking environment, and the second is the ability to create connections between other people and businesses within the network itself.

## Classroom exercise 2.10 (LO 2.5)

### Collaborative tools for business

Social media expert Suw Charman talks about the good the bad and the ugly of social media for business:

<http://youtu.be/c4HVVdLeijo><sup>75</sup> (53 minutes)

## Mobile business devices with collaboration tools to help your business boost productivity

This video is an IBM advert but shows the potential for collaborative tool use in business:  
[https://www.youtube.com/watch?v=gECfByT\\_gHI](https://www.youtube.com/watch?v=gECfByT_gHI)<sup>76</sup> (3 minutes)

## Professional fashion blogger Diana Opoti named as outstanding trend South African communicator of the year for 2014

Read her blogs at:

<http://dianaopotipr.com/?p=207><sup>77</sup>

## Mashups can be used to combine information for business

[https://www.youtube.com/watch?v=43GwNBJ\\_YBY](https://www.youtube.com/watch?v=43GwNBJ_YBY)<sup>78</sup> (11 minutes)

## Classroom exercise 2.11 (LO 2.5)

### The hundred most creative people in business in 2015

Fast Company ranked the hundred most creative people in business. Ask your students to look at the website and answer the following:

- Do you agree with the ranking? Who would you rank in the top 10? Rank the people in order from greatest to least creative—one being greatest.
- Which person do you think has the best creative ideas and explain why?
- Which person has the least creative idea and why?
- How many of these used social media for business?

[www.fastcompany.com/section/most-creative-people-2015](http://www.fastcompany.com/section/most-creative-people-2015)<sup>79</sup>

## DISCUSS: anti-social networking

Before the Internet, angry customers could write letters or make phone calls, but their individual power to find satisfaction or bring about change was relatively weak. Now disgruntled customers can create a website, comment on someone else's website or upload a video 'flaming' a product or service, and their efforts can be instantly seen by millions of people. Though many companies monitor the Internet and try to respond to such postings quickly, power has clearly shifted to the consumer.

Create an argument for or against the following statement: 'Social networking has given power to the consumer, benefiting society and creating socially responsible corporations'.

Answer: Students opinions may vary on this topic. Some useful resources on the power of customers are below:

Black Milk company social media fail: [www.dailydot.com/geek/black-milk-social-mishap/](http://www.dailydot.com/geek/black-milk-social-mishap/)<sup>80</sup>

Reddit: [www.dailymail.co.uk/news/article-3149348/Reddit-CEO-founder-apologize-discussion-board-site-thrown-revolt-following-firing-popular-employee.html](http://www.dailymail.co.uk/news/article-3149348/Reddit-CEO-founder-apologize-discussion-board-site-thrown-revolt-following-firing-popular-employee.html)<sup>81</sup>

### Learning outcome 2.6:

Critique Web 3.0 and its impact on the next generation of business.

Web 3.0 is based on 'intelligent' web applications using natural language processing, machine-based learning and reasoning, and intelligent applications. Web 3.0 is the next step in the evolution of the Internet and web applications. Business leaders who explore its opportunities will be the first to market with competitive advantages. Web 3.0 offers a way for people to describe information such that computers can start to understand the relationships among concepts and topics.

## Classroom exercise 2.12 (LO 2.6)

### Dynamic content

Dr James Canton talks about the future of business and the connected economy:

[www.youtube.com/watch?v=Jbf4ekW7Vcl&feature=share&list=UUxk\\_qTog2C-cPndFaMpem1w](http://www.youtube.com/watch?v=Jbf4ekW7Vcl&feature=share&list=UUxk_qTog2C-cPndFaMpem1w)<sup>82</sup>  
(3 minutes)

## Classroom exercise 2.13 (LO 2.6)

### Process of collaboration

Collaboration is always operating through certain group processes—processes of communication, coordination and cooperation, but also information sharing.

Divide students into four groups, each representing one of the processes above. Ask each group to make a list of the collaborative technologies differentiated by the collaboration processes they support.

These processes do not work independently of one another but are usually intermingled and determined by each other. True collaboration tools will try to provide help for all those collaboration processes, but their main focus is mostly on one of these areas.

### DISCUSS: is it Web 1.0 or Web 2.0?

Review the following websites and categorise them as Web 1.0, Web 2.0 or both. Be sure to justify your answer with the characteristics that classify the website as Web 1.0, Web 2.0 or both.

The characteristics of Web 1.0 are that:

1. it is primarily a 'read-only' web
2. it is a place that enabled searching and reviewing of information with very little user interaction or content contribution
3. it is nothing much more than an online catalogue or brochure
4. shopping cart applications became a sophisticated add-on to Web 1.0 sites.

The characteristics of Web 2.0 are:

1. content sharing through open sourcing
2. user-generated content
3. collaborations inside the organisation
4. collaborations outside the organisation.

Students answers may vary, but most of these sites will be Web 2.0.

- www.ebay.com; www.amazon.com; www.facebook.com; www.foursquare.com; www.paypal.com; www.vatican.va; www.twitter.com; www.google.com; www.youtube.com
- your university's website; your credit card's website; your bank's website.

Why would certain types of businesses choose to remain Web 1.0 and not offer collaboration or open-source capabilities?

Answer: Because their Web strategies do not encompass the added complication of a Web 2.0 site. They are happy with the lack of interaction with their customers over the Internet.

## **DISCUSS – A Web 3.0 disruption**

Today, businesses need to move with the times or be left behind; resulting in loss of revenue, customers or alienation. Corning is one of the world's leading innovators in materials science, especially glass and ceramics. It is a company that is a first-mover with its combination of innovative glass properties combined with Web 3.0, resulting in a realistic future for the Internet of Things.

Watch the YouTube video (<https://www.youtube.com/watch?v=PfgmIVxLC9w>)<sup>83</sup> (5 minutes) produced by Corning to show off how it envisages everyday life to be in the not too distant future. What other 'things' do you see that could be connected and accessed through glass?

## Videos

### Web 2.0/3.0

What is Web 2.0/3.0 for business? This video explains the differences for business:

<https://www.youtube.com/watch?v=oZQd1c3YVul><sup>84</sup> (5 minutes)

Entertaining video on Web 1.0, 2.0 and 3.0:

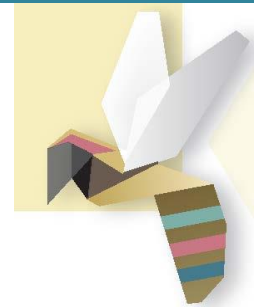
<http://youtu.be/9ndQWJbbzos><sup>85</sup> (3 minutes)

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# CHAPTER 2

## END OF CHAPTER SOLUTIONS



### OPENING CASE STUDY

#### Disruptive technologies shape the world

##### 1. How does 3D printing disrupt the manufacturing industry?

The ability to print your own design in 3D is a disruption to the manufacturing industry as it has the potential to cut out the middle man. This could have either a positive or negative effect on the manufacturing industry.

Positively, it could:

- enable products to be manufactured and delivered to your door without going through legal services, red tape or a long waiting period (these products could be anything from a gun to a medical device such as a knee cap replacement)
- bring products to the market in a shorter amount of time
- allow innovative developers to create prototypes of their products for less capital, with shorter lead and reduced quantities
- create the ability to have on-demand manufacturing rather than high levels of inventory (and therefore, high cost of product and warehousing)
- allow small businesses to get one-off or small-run products to market quickly

Negatively, however, the use of 3D printing brings the same workforce issues as those that were raised during the industrial revolution and, more recently, with the use of a robotic workforce in certain manufacturing industries.

##### 2. What, if any, are any intellectual property or design and copyright infringements that need to be addressed with 3D printing by the general public?

Just as the downloading of movies, books, music and art can often result in the lack of payment of royalties to their original maker, 3D printing can infringe the IP, copyright and patents of the original maker or royalty holder. There is little or no policing of what is 3D printed, and with the advent of personal 3D printers, there is no way that these royalties or acknowledgements can be addressed. There are good and detailed articles on this topic to be found at [www.whitecase.com/publications/article/3d-printing-implications-intellectual-property-rights-ip-rights](http://www.whitecase.com/publications/article/3d-printing-implications-intellectual-property-rights-ip-rights) (accessed October 2015) and [www.zdnet.com/article/3d-printing-overcoming-the-legal-and-intellectual-property-issues/](http://www.zdnet.com/article/3d-printing-overcoming-the-legal-and-intellectual-property-issues/) (accessed October 2015).

##### 3. Is 3D printing healthy competition or the death of some businesses?

Healthy or death? Glass half full or half empty? Depends on which way you look at it. Certainly 3D printing has its challengers and can represent threats to the manufacturing industry, but looking at it from a positive view, it can bring new opportunities to businesses that are willing to face the technology with a vision of what it could bring to them, rather than what it could take away.

##### 4. What are forecast as the next disruptive technologies for business in the next decade?

Forecasts are always a little dangerous as there are many secrets out there that innovators are not yet ready to share. However, some of the predictions can be found at:

- [www.mckinsey.com/insights/business\\_technology/disruptive\\_technologies](http://www.mckinsey.com/insights/business_technology/disruptive_technologies) (accessed October 2015)
- [www.inc.com/ilan-mochari/seismic-shifts-change-business.html](http://www.inc.com/ilan-mochari/seismic-shifts-change-business.html) (accessed October 2015)
- [www.briansolis.com/2015/01/25-disruptive-technology-trends-2015-2016/](http://www.briansolis.com/2015/01/25-disruptive-technology-trends-2015-2016/) (accessed October 2015)

## **CLOSING CASE STUDY 2.1**

### **LIKE US ON FACEBOOK! THE RISE OF SOCIAL BUSINESS INNOVATION**

#### **1. What factors contributed to the ABC's successful adoption of social media?**

Being a government-funded organisation, the ABC enjoyed a significant budget which provided resources for research and development, and experimental activity with the use of social media. Being publically funded they have responsibilities to the taxpayer to perform and deliver value for money. Their CEO was a strong supporter of social media and set the vision from the top. The innovation process was enterprise wide and included the creation of new jobs and titles, and employing staff with experience with social media. New policies that were created were flexible and agile, yet enabled the management of core threats. They leveraged early the visibility of social media and identified the BBC as a role model to follow. They represented an industry that was threatened by digitisation and Internet Web 2.0 and moved quickly to adapt and secure an early mover advantage in the new environment.

#### **2. What value does Facebook and other social media sites have to businesses?**

Organisations were caught unaware with the algorithm changes. Many found their content was not being served to followers and they had to pay to 'boost' their content. This seemed hypocritical, as the reason given by Facebook was to ensure quality of content for users; however, paying to deliver content was inconsistent with this objective. This created mistrust and concern about future changes as an entire industry had been established around the previous version of the platform. On the other hand, the user experience was being eroded by large volumes of business promotional content which was considered 'noise', and users were migrating to alternative social media platforms to escape the commercialisation. Keeping all stakeholders satisfied obviously became a critical issue for Facebook, and remains so to this day.

#### **3. Who wins and who loses in the decision by Facebook to charge a fee for organisations to reach more users with their content? Is this revenue-raising model sustainable?**

Winners:

- Facebook raises enormous revenues from organisations paying to boost content
- Users are less exposed to 'noisy' content
- Business content innovation
- Competitor social media platforms

Losers:

- Organisations having to pay to reach customers
- Users, by not getting every post from who they elect to follow
- Facebook loses trust and confidence of many organisations and the established industry

In terms of the sustainability of this business model, after an initial backlash by organisations, Facebook is still performing exceptionally well from a financial perspective. It is, therefore, difficult to determine how things will progress from here given the captured market of Facebook at this stage.

## **CLOSING CASE STUDY 2.2**

### **Barcelona smart city**

1. Barcelona Smart City provides an opportunity to develop exciting smartphone apps based on the City OS network. What mobile applications do you think can benefit the city's university students?

There is usually a very limited number of parking spaces in universities. A 'smart uni parking app' can be very useful. It can help students with finding parking spaces faster and more easily based on the availability of parking spaces across campus, as well as free spaces in the nearby streets using sensors. It can also have ability to predict when parking spaces will become available according to the class times of those students who have already parked their cars.

2. Data privacy is a key issue in the IoT-driven smart cities. Identify and discuss different types of sensitive and personal data that can be collected in a smart city.

From all different types of data collected by sensors and other devices, the location and health-related data can be very sensitive and requires following appropriate data privacy policy. Sometimes if the data is de-identified, it can be aggregated with other users' data and used for data analysis to provide a better understanding of a certain population. There are other types of data that are gathered from sensors in parks/gardens or rubbish bins. Such data is not sensitive and personal.

3. Building smart cities like Barcelona will bring changes to the job market. What types of new jobs do you think will be created as a result, and which existing jobs will no longer be required?

To install and maintain sensors, to control all the networks, and to manage data and communications, there will be a need to employ new people with expertise in ICT, networking, data analytics, wireless sensors and engineering. There might be also certain jobs that will not be needed as they were before. Monitoring of parking spaces and rubbish bins, watering gardens and parks and turning streetlights on and off will be done automatically via sensors so there will be no need for humans to do those jobs.

4. While the world has started to embrace the smart cities movement, critics suggest that the future of smart cities can result in a 'Big Brother is watching' position. Discuss the positive and negative impacts of future smart cities on people's lives.

The positive impact is that a number of smart systems can be created and used to better manage the city and to improve the quality of life. However, in future smart cities, the control of information can be taken away from citizens, and companies providing services will most likely find ways of generating revenue from the data they collect. People will then be unable to control the ways they are monitored or how their information is used. For example, *The Guardian* reported that Nordstrom (an American upscale fashion retailer) was using sensors in their stores to monitor customer activity via signals from their smartphones. This is just a simple example of how companies can use our data without our knowledge. Jesse Berst, Chairman of the Smart Cities Council, has stated: 'A city tracking its citizens, even for helpful reasons, encroaches on the personal liberty we count on in public spaces.'



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## CRITICAL BUSINESS THINKING

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**Instructor note:** There are few right or wrong answers in the business world. There are really only efficient and inefficient, and effective and ineffective, business decisions. If there were always right answers businesses would never fail. These questions were created to challenge your students to apply the materials they have learned to real business situations. For this reason, the authors cannot provide you with one version of a correct answer. When grading your students' answers, be sure to focus on their justification or support for their specific answers. A good way to grade these questions is to compare your students' answers against each other.

### 1. ANYTHING BUT ONLINE

**Project purpose:** To understand the benefits of e-business

**Potential solution:** Of course Susan can expand her business by taking it to the Internet. And the best part is that putting her business online is essentially free, hence low risk. If she wants to grow her business she must expand by creating an online presence. Of course she will face numerous online security issues such as identify theft, false credit card information, and hackers and viruses. Many T-shirt businesses allow customers to submit their own T-shirt designs and choose the top one to be created into a T-shirt of the week. Susan could easily allow her customers to customise or personalise their T-shirts.

### 2. THE FUTURE OF WIKIPEDIA

**Project purpose:** To understand the dangers of open source and open sharing

**Potential solution:** Wikipedia's greatest ability is that it can be changed and updated quickly—it really is one of its best features. You can only update an encyclopedia every few years. As Jimmy Whales moves towards greater information reviews and accuracy, checking changing content should become an easier process. I don't think the majority of people realise that *anyone* can just go in and change Wikipedia. I think communicating this fact would be the first thing Wikipedia should do. Then, they should use technology to verify—for example, coloured backgrounds for verified by an expert versus a different colour if not verified. The trick is who decides on the expert and verifying Wikipedia might become a full-time job.

In terms of the higher purpose of Wikipedia—to supply a free encyclopedia—it makes great sense. In many countries, the thought of paying thousands of dollars for a set of encyclopedias is not an option. Wikipedia, although somewhat unreliable and untrustworthy, is a great alternative. I find much of the wiki information on MIS to be very accurate. Wikipedia is an attractive alternative if you have no other options for an encyclopedia.

There are so many technological things that Wikipedia could do to help track changes and accuracy such as tracing revisions or allowing users to rank posts and their accuracy that allows users to vote how relevant or useful the information was—similar to Digg.com. This democratic method allows input from across the population to provide feedback on what pages are helpful and what are not. These can be very useful when using collaboration tools to help improve the efficiency and effectiveness of the tool. There are also additional collaboration tools that can help by keeping a history of revisions. This could allow your team to review the changes and

who made each change—so you can gain insight into the history of the post. There are also ranking technologies that accompany each collaboration tool that allows users to vote how relevant or useful the information was—similar to Digg.com. This democratic method allows input from across the population to provide feedback on what pages are helpful and what are not. These can be very useful when using collaboration tools to help improve the efficiency and effectiveness of the tool.

### 3. THE TOUGHEST UNI TEST TO TAKE

**Project purpose:** To understand technology dependency

**Potential solution:** This is such a fun exercise to do in the classroom. Of course, this will vary depending on how technologically savvy your students are, but for the most part many of your students have cell phones and are on Facebook. I highly recommend performing this exercise in class. Then extrapolate the exercise to how a business needs to stay in contact 24/7. Just imagine what can happen when a CEO doesn't get a sales answer as soon as possible or a sales representative does not get an inventory count on the spot. People today want instant access to information and to other employees, which is both good and bad. No more vacations!

### 4. CONNECTIVITY BREAKDOWN

**Project purpose:** Raising awareness of businesses' dependency on the power supply and connectivity

**Potential solution:** Redundant systems will keep some connectivity, and mission-critical places like hospitals will have backup generator systems. Many businesses also have plan Bs including portable electricity systems and generators. It would be good to examine the hurricane Katrina aftermath with your students, and to read through some of the resources below. Managers will need to know exactly how well prepared their businesses are to handle power and connectivity outages: they need to have tested policies and procedures and they need to have tested them at non-optimum times, such as Friday afternoons or holiday times when technical staff may well be absent on holiday.

<https://gigaom.com/2011/11/23/96-hours-to-the-stone-age-how-our-connected-lives-crumble-when-the-power-goes-out/><sup>86</sup>

<https://www.business.qld.gov.au/business/running/risk-management/business-continuity-planning/business-continuity-plan-management><sup>87</sup>

### 5. 48 HOUR MAGAZINE

**Project purpose:** Demonstrating the power of Web 2.0

**Potential solution:** This is such an interesting business model for a magazine that it is highly recommended to discuss it during your class. The lines between a weekly magazine, a 48-hour magazine, a daily newspaper and RSS feeds are blurring as we are bombarded with news 24/7. Why would someone choose *48 Hour Magazine* over a daily newspaper? Why would someone choose *48 Hour Magazine* over a weekly magazine? How will weekly magazines such as *Time* and *Newsweek* compete with *48 Hour Magazine*?

### 6. BUILDING NATIONWIDE BROADBAND

**Project purpose:** To understand the government's role in broadband

**Potential solution:** To kick-start this activity, ask your students to view the following website:

National Broadband Network – Connecting Australia to a Better Future:  
<https://www.communications.gov.au/what-we-do/internet/national-broadband-network><sup>88</sup>

## 7. THE DIGITAL REVOLUTION

**Project purpose:** To understand the business impact of the technologies driving the digital revolution

**Potential solution:** The basic principles behind the four technologies driving the digital revolution are data and connectivity anytime, anywhere and on minimal cost technology for as many people as possible, especially those in the developing world. The Internet of Things extends our connectivity to nearly every aspect of our lives, including wearable technology. The automation of knowledge work supposedly will free people to act on the information rather than spending their working lives collecting and collating data and information.

A good discussion point might be the *Terminator* series, where the Skynet AI system becomes self-aware and destroys humanity:

The Terminator: The Skynet Funding Bill is passed. The system goes on-line August 4th, 1997. Human decisions are removed from strategic defense. Skynet begins to learn at a geometric rate. It becomes self-aware at 2:14 a.m. Eastern time, August 29<sup>th</sup>.<sup>89</sup>

The students' answers to the second part will depend on their choice of business. They should show an awareness of the disruptive effects of these technologies, especially on their own employment prospects.

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## APPLY YOUR KNOWLEDGE

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### PROJECT ONE: BLOG OR WIKI – THAT IS THE QUESTION

A primary concern with collaboration tools (for students and in business) is getting people to share, contribute and post. Imagine how you would feel if you spent 10 hours working on a section of a group project and a team member came in and changed all of your material—for the worse. (Interestingly, the topic area that receives the most changes to its materials is Star Trek.) This is a big issue with collaboration software. You must be an avid lover of the topic to spend your time continuously changing and updating that material!

There are also additional collaboration tools whose functionality can help businesses when communicating and collaborating. Wiki software can typically keep a history of revisions. This could allow your team to review the changes and who made each change—so you can gain insight into the history of the post. There are also ranking technologies that accompany each collaboration tool that allow users to vote on how relevant or useful the information was—similar

to Digg.com. This democratic method allows input from across the population to provide feedback on which pages are helpful and which are not. These can be very useful when using collaboration tools to help improve the efficiency and effectiveness of the tool.

Also, businesses are creating corporate wikis where all common business terms are defined, especially for international organisations. For example, what Americans call a 'sale' may be called 'an order booked' in the United Kingdom, an 'order scheduled' in Germany and an 'order produced' in France. When users are in an application, they can consult the corporate wiki if they have any questions on a business process or data definition.

Businesses can use a blog as a marketing tactic, defining their image and enhancing it regularly by blog posts, reaching out to their customers and providing a two-way communication channel for them via the blog, and letting the business link to promotions and events elsewhere on the Internet.

1. What are the determining features for the choice between a blog and a wiki?

Answer: The determining features would be whether the business strategy involves using communication and collaboration tools to share documents etc., within the business, in which case a wiki is the answer, or it is a marketing approach to communication, using an interactive blog to reach out to customers. A blog allows their customers to communicate with the business.

2. What ethical and security concerns would you have with the external customer site?

Answer: The site must be moderated, there must be acceptable use policies, and privacy and discrimination laws must be observed on the site. The business will be liable to backlash from customers if the site becomes a home for trolls. The business 'brand' will be damaged if the site is not carefully curated.<sup>90</sup> See what happened to the Black Milk company when their external customer site made one poorly thought-out post:

[www.buzzfeed.com/alyssajayne/how-not-to-use-social-media-101-pgg2#.vbWz8dOeQ](http://www.buzzfeed.com/alyssajayne/how-not-to-use-social-media-101-pgg2#.vbWz8dOeQ)<sup>91</sup>

3. What could you do to minimise these concerns?

Answer: Businesses should have a public acceptable use policy and moderate/curate their sites to ensure contributors comply with the policies. A customer site which is not carefully watched by the business is a big liability as history has shown.

4. Using an open-source application, design a prototype customer or employee blog or wiki for The Financial Level using a tool of your choice.

Answer: There is WordPress, Blogger and Tumblr, and there are also these open source blogging platforms: <http://sixrevisions.com/tools/open-source-blogging-platforms-for-developers/><sup>92</sup>

5. How could your site help your customers and employees?

Answer: Customers: by keeping them up to date with new products or recalls, giving them discounts and announcing special events and sales.

Employees: by allowing versions of documents and programs so that employees always work on the latest version. By giving employees secure communication and collaboration channels dedicated to their projects.

## PROJECT TWO: THE 18TH ANNUAL WEBBY AWARD NOMINEES

Student answers to this question will vary depending on the Webby awards.

1. Which nominations were you unfamiliar with but will now use?

2. List the Web 2.0 features of the winning sites.
3. Were there any examples of Web 3.0 winners? List their Web 3.0 features.
4. Of the websites that you encounter in your everyday life, which five do you think could be in the running to win a Webby. Why?

### PROJECT THREE: GOOGLE DOCS SPEEDS UP COLLABORATION

Google Drive is open source software and its revenue model is simply to attract more individuals to the world's greatest search engine website. Create and share your work online with Google Drive. Upload your files from your desktop: it's easy to get started and it's free! Access anywhere: edit and view your docs from any computer or smartphone. Share your work: real-time collaboration means work gets done more quickly.

You can work with documents, spreadsheets, presentations, drawings and forms. There are so many great capabilities in Google Drive—just watch the video or review the functionality website.

[www.youtube.com/docs](http://www.youtube.com/docs)

[www.google.com/google-d-s/whatsnew.html](http://www.google.com/google-d-s/whatsnew.html)

### PROJECT FOUR: INSPIRATION FOR INNOVATION

Students will identify a number of Web 3.0 features in the video and film. Web 3.0 is based on 'intelligent' web applications using natural language processing, machine-based learning and reasoning, and intelligent applications. Students will identify different advanced technology concepts from the films, and should attempt to explain how data would be received, processed and transmitted, allowing for movie 'magic' (i.e. there may not be an explanation). Their predictions on the next innovations could be implanted technology and more wearables. See this site:

[www.wired.com/2015/02/frog-design-predictions/](http://www.wired.com/2015/02/frog-design-predictions/)<sup>93</sup>

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