

1

Prelude – The Next Generation Experience

1.1 WHAT IS ‘NEXT GENERATION’ ANYHOW?

In a moment, we shall take a fictional tour in the day of a life of a mobile user. This will largely serve to illustrate what is meant by wireless applications within the context of this book. Before that, what do I mean by ‘Next Generation’, as used in the title of the book? In the first edition, I explained how a large number of technologies were going through significant ‘upgrades’ to newer versions. The most anticipated at the time was the evolution of mobile networks to their *Third Generation*, called 3G. Chapter 12 explains what 3G means, but Next Generation is more than just 3G. We can build mobile services using a mixture of technologies, many of which have also evolved. For example, we hear a lot about the so-called ‘Web 2.0’. This book also talks a lot about these technologies, too.

What I have come to realise is that apart from versioning of specifications, when we need precise referencing and indexing of information, the concept of generations in mobile technology has become increasingly meaningless. This is because technological *solutions* use a variety of evolving technologies and it is difficult to talk about discrete versions in relation to the whole solution. The generational idea, like everything ‘2.0’ these days, gets used a lot by marketers and publicists to convey ‘newness’ and thereby generate interest in new products. Given that some of these themes, like Web 2.0, have become important, I have included some of them in this book, all within the Next Generation theme.

When I first wrote this book, the evolution of many technologies and their confluence in the mobile world represented a significant departure from the conventional mobile experience; thus, I felt the need to document what this new and emerging landscape was like. This is still my intention.

What then, do I mean by ‘Next Generation’? It is still a convenient way of saying ‘latest’ and is the intended meaning in the title. Hence, that’s why in this second edition, I have

2 PRELUDE – THE NEXT GENERATION EXPERIENCE

included some new technologies that didn't really figure in the mobile landscape a few years ago, such as IMS. We shall get to that in due course (in Chapter 14).

An unintended meaning, which I have grown to like in recent project experience, is the *next generation of mobile user*, as in 'the youth'. Mobile telephony clearly started out as a business tool without a youthful user in sight, unless we include the Yuppies of course. Over time, especially after the clever move to pre-pay accounts, younger users have become increasingly instrumental in influencing the thinking of innovators and strategists in the mobile world. In some circles, mobile service discussion is almost entirely about young people. Mobile puberty starts at an increasingly early age. Unofficially, one operator I worked with told me that their target market starts from the age of five! This is no longer shocking. Five-year-olds can and do use mobiles¹.

Today, we are still using mobiles mostly to talk and send messages, both of which are very communications-centric. We are used to a *mobile telephony* experience. Where we are headed is towards a *mobile computing* experience, and it will be strongly influenced by the next generation of users. Understanding the users is an important consideration in the mobile services landscape and we shall return to this theme throughout the book, starting with an exploration of the 'mobile mindset' in the next section.

1.2 THE MOBILE MINDSET

In the previous section, I discussed the meaning of 'Next Generation'. Now, I turn our attention towards the word 'application'. A *mindset* is a way of thinking, or a state of mind. Why is it important to talk about mindsets in a book about technology? Over time, technologists have slowly realised that technology isn't developed for its own sake, but to carry out tasks. Furthermore, the users intend certain results from carrying out those tasks. It is in achieving these results that technology has an application.

The issue of mindset is about how we perceive these applications. A small example is useful here. Jitterbug² is a brilliant mobile service in the United States. Essentially, it is aimed at users who are 'technically challenged'³. One category of such users might be the elderly or infirm who are not dexterous or confident with mobile telephones. A mobile service provider might think that *we sell phones, we send out bills and we support these activities*. In other words, *we are in the mobile phone business*. This is their mindset.

Not so Jitterbug. They appear to have a different mindset, which we might capture as *we are in the making-it-easy-to-complete-calls business*. There is a difference, perhaps subtle, but potentially significant than being in the *mobile phone business*. Making it easy to complete calls, with the target users in mind (i.e. technically challenged), leads to a particular set of service features. For example, the phones have simplified and easy-to-use interfaces. The phone presents a familiar dial tone, just like a landline. And – my favourite feature – the address book on the phone can be configured by the operator before and after the handset is shipped to the customer.

Clearly, mindset is important. It affects how mobile services are perceived and then designed. It is not just the job of a marketing person to develop these insights into the

¹ Although the operator was looking at how 5-year-olds play games on their parents' mobiles, not how they make calls.

² www.jitterbug.com

³ This is my own wording, not the official Jitterbug marketing position.

application. Any technologist worth his or her salt should be able to think in this multi-disciplinary way, too.

The mobile mindset is simply thinking about the *application of the mobile technology* with insight and then designing the application accordingly. Indeed, I tend to think that this approach has been largely ignored. Mobile operators and equipment providers have become institutionalised in their way of thinking about technology, which is largely equipment-centric – networks, protocols and devices dominates the thinking. The revolution on the Web has shown us a very different mindset. People dominate the Web. Yes, it is built on an internet of networks, protocols and devices (i.e. routers), but nobody in the Web applications business talks of networks and protocols. They talk of social networks, blogs and other *applications*.

Despite being what people of common sense call obvious, the mindset of ‘think application’ versus ‘think technology’ is not as commonplace as it ought to be. However, this is changing and we are slowly moving into a new generation of ideas, applications and technologies, which is why we can talk of *next generation wireless applications*. In truth, there probably needs to be a companion book, about next generation wireless businesses, but that’s another story.

1.3 THE FUTURE’S BRIGHT, THE FUTURE’S UBIQUITY

Let’s take a trip into an imagined future. It’s a fine day for lunching outside of the sultry office. Although warm and slightly humid outside, the air stirs with a wonderfully cool breeze that could easily carry away the morning blues. Imagine you are standing in a bustling shopping plaza at one of the popular meeting points where you are soon going to join up with three of your closest friends for lunch. You have in mind a cool crisp salad, perhaps a *salade nicoise*⁴, but as of yet, you don’t know in which restaurant you are going to eat, just when, or thereabouts.

The meeting time was suggested after a flurry of interactive picture messages popped up on everyone’s *communicators* when earlier you had sent a ‘let’s eat’ invitation initiated by pressing a ‘let’s eat’ hot button⁵. One of your friends received the invitation via their wrist-based ‘sleek device’ that connects using Bluetooth to their smartphone. This is why the word *communicator* has gradually replaced the word *phone*, it no longer being the best word to describe some of the new devices, often barely resembling phones at all. When exchanging information, sending a message or placing a call, you can never be sure what device is on the other end of ‘the line’; it might be someone’s watch, a pendant, a pen or even a fridge magnet! Kids on the street have taken to calling these devices ‘commies’, short for communicator (not communist⁶).

Whilst standing still for a moment, the shoppers swarming around you, your own wrist-pad commie alerts that you have an incoming call. It gently squeezes your wrist and vibrates, the outer ring glows and an agreeable glide of ‘mood tones’ emits forth. You notice hoards of other cohabitants of the meeting place, also seemingly engaged with their wrists, bracelets, pendants, eyewear and other forms of commies – all shapes, sizes and colours, by now a perfectly familiar sight. Being preoccupied with another world is no longer a novel sight;

⁴ A French dish: tuna salad with olives and boiled egg, in case you didn’t know ☺.

⁵ A kind of widget that you can load onto your phone from an online library of hot buttons.

⁶ They can’t remember what commie used to mean, anyhow.

4 PRELUDE – THE NEXT GENERATION EXPERIENCE

across all ages, there is no shyness. Your wrist pad is a fabric cuff that wraps neatly around your wrist and has a curved semi-flexible pop-up display. Like your friend's connected watch, it also breaths via a Bluetooth lifeline to your Personal Mobile Gateway (PMG). Unlike the old-fashioned world of binary call handling in Global Systems for Mobile Communications (GSM) – accept or busy – you have all kinds of options to process the inbound call. This is thanks to IP-Telephony (Internet Protocol Telephony) and the new world of IMS (IP Multimedia Subsystem).

With IMS, your device doesn't just alert you with the call and the caller-ID, you also get a tag line introducing the call, like the subject field in an email. Not just that, but up pops an athletic looking avatar for Kim. She's your personal trainer. From the tag line you know that it's your personal fitness-training instructor calling to 'fix our next spinning session' – words that tell you that this is a call you would like to take, words that your trainer probably didn't type, but were most likely translated from voice-to-text before she started the call.



Figure 1.1 Kim's avatar. (Reproduced by permission of GoFigure mobile.)

There is no awkward conversation with your cuff as you have the latest-design Bluetooth earpiece snuggled discretely in your ear, much smaller than the earlier models. This one has been custom sculptured like a prosthetic for your ear, just like the earpieces that stage musicians such as Bono have used for years, but cheaply done using a laser-modelling scanner at a walk-in booth in one of the mobile phone shops. It is light and has a long battery life thanks to the latest generation Zinc-Air cell, which is convenient as you use your earpiece often. It also charges wirelessly whenever you take it out and place it on your induction-coupled *charger mat*. You make calls with it in the office via your tablet laptop that has Bluetooth built-in and can handle audio from the headset to a Session Initiation Protocol (SIP) client running on Mac OS X – total wireless freedom. It also has a noise-cancelling feature to blot out any background noise, which is great for calls in busy places and also good for use in aircraft.

Your visit to the office was necessary only to hold a face-to-face meeting. Otherwise, there's no need to come to work anymore. Most of the time you're talking, texting, messaging, chatting and emailing with people who are somewhere else, or you simply meet them

online in a virtual world of one form or another, perhaps in *Second Life*. The detachment can sometimes be quite unbalancing. Time and space feels different than before, merging 'there' with 'here', 'private' with 'public' and other such fuzzifications.

Just prior to arrival, in the taxi ride to the plaza, you had received a call from a colleague who textually announced the call with 'wanting to discuss the latest sales figures', which you didn't have time enough to process as the taxi ride was coming to an end. You were tempted to hit the 'call back in 1 hour' response that would have sent the same words back to the caller's SIP client (probably on their desktop PC), but you diverted (forwarded) the call to a subordinate who you had previously primed with the task of looking over the figures. As it happened, your subordinate was in a meeting and they handled the call by converting it to an Instant Messaging (IM) session (still using SIP) for a brief and discrete chat with the caller, deferring the voice call to later. You then switched your *presence state* to 'out at lunch' to let callers know ahead of time that now might not be a good time to talk shop.

After forwarding the call from your colleague, you remembered that you had not yet reconciled the latest sales figures for European accounts. The easiest way to inform your colleague was to bring up their number on your wrist commie, simply by flicking your wrist back, and then saying 'Send voice message'. Speaking into your Bluetooth headset, you recorded a voice message that would go straight into their voicemail box without the need to chat. Your avatar would lip-sync the message at the other end.

Before setting out to lunch, a hot button labelled 'let's eat' initiated the upcoming gathering. You downloaded the hot button from a mobile mash-ups site. You pressed it, entered a start time and an end time and then selected invitees, which you did easily from your 'cool friends' list.

When browsing the list you also noticed that one of your friends had sent you an email, yet unread, and another had left you a voice message, whilst another had posted to their weblog a new entry that you ought to read. On the way through the list, you marked some of these tasks with the 'do next' command so that you didn't have to interrupt your current task flow. Later on, you may choose to resume these 'do next' tasks or receive a gentle reminder to look at them in your 'to do' list.

Your 'cool friends' folder is not confined to people you have met in person, far from it. There are people you have met online, via email, chat rooms and by tracking their daily weblog entries. There are people whose reputation you value, perhaps as particularly good soulmates on Amazon with a similar taste in books and films, or those with a similar taste in domestic products like washing machines – the most mundane information requirements are often the most valuable. These virtual soulmates will come in handy later when you drop by the bookstore whilst waiting for your friends to arrive.

Next, you clicked on the 'where?' option and you could elect to choose a place from your favourite places list; you could 'air write' using your finger in mid air, you could chose the 'nearby places' option or you could go for 'place-finder'. You went for nearby places and found Orbital Plaza, drilled down, went for 'meeting places', and chose 'Dancing Fountain' which is one of those synchronised water fountains that kids can run through. It's a popular meeting place and exists in the menu because other users of the 'let's meet' service use it often: social influence constantly shapes the user experience.

It didn't matter if your friends had never been to the fountain before, they'll be able to use the digital map to home in on this regular rendezvous point. On their commies they received a 'let's share food' invitation that popped up with your avatar in a tongue-licking hungry composure combined with a 'let's eat' speech bubble and a brief matching audio

6 PRELUDE – THE NEXT GENERATION EXPERIENCE

snippet. The avatar posed the question: ‘Want to eat at 1:00 p.m. at Orbital Plaza?’ which you didn’t have to type, 1:00 p.m. being your suggested start time. Your friends could select ‘available’, ‘not available’ or ‘change time’ in response to the invite. If they changed the time, then it could only fall within the range you had suggested.

Once all the votes are in, the acceptances and the convergence time are notified to you for your confirmation. One-twenty is the agreed union time, which is why you arrived early as you already decided you would start your lunch break from 1:00 p.m. anyway, real-office fatigue having kicked-in early that day.

You have arrived early at the rendezvous point, having found where to go using the map and directions on your phone, not having been to Orbital Plaza before. Sitting on the seating next to a children’s play area you check a few emails. In the play area, mums are pointing their camera phones, taking short video clips of little kids whooshing down slides. Moments later a clip pops up in daddy’s email box at work, perhaps on the other side of the world. Dads everywhere are proud and happy.

You already know that an important client has sent you mail. Earlier, a notification pinged up on your phone accompanied by a soothing glide of musical notes with a softly announced ‘you have mail from . . .’ spoken in a natural voice, biometrically tuned to be assuring and comfortable to your psycho-acoustic appetite. It’s the same voice used by your life-coach avatar. The notification occurs only because your phone automatically sensed that you are away from your desk where you would otherwise be checking your mail. You read the email and reply. Back at the office, or home, the reply is sitting in your ‘sent items’ folder and the email is marked as read: everything fully synchronised without the need to sync up.

Your commie detects that you are near a bookstore and brings up your Wish List on Amazon for a quick review. Via the world of Resource Description Framework (RDF) Site Syndication (known as RSS) feeds, your list neatly appears in your task manager, appropriately formatted for the device display – no messing around on Amazon’s website. If you wanted to surf, you could bring the wrist display close to your eye and it would switch to pupil-projection mode and project a large-format screen into your field of vision.

Armed with your Wish List and enthusiasm for your next good read, you eagerly scuttle over to the nearby bookshop. You visually scan the bookshelf for the title you’re after. It doesn’t appear to be available but you notice something that seems similar. However, taking risks on buying books is something of the past. You consult your ‘hive mind’, namely those members of your online social network whose opinion you value, mostly people you have never met before but whose reputations figure highly in your estimation from past cyberencounters. They are most likely fellow reviewers on Amazon and elsewhere. Your phone is equipped with an optical bar code reader⁷ and you scan the book’s code and wait for a response.

Three opinions are available, one from ‘Max32’ who is a valued virtual soulmate on superfoods. She – or he – gives a five-star approval and even though you can see that Amazon is reporting a saving of 20% on the shop price, the book from them is on a 3–5 day lead. Your urge to read tells you that the extra amount is worth it: instant information, instant decision, and instant gratification. Thankfully, anxieties about buying goods are ephemeral these days, leaving plenty of time for you to worry about life’s other uncertainties in the *post-mobile* age.

Before buying the book, you remember that you have a coupon from the store previously sent to your phone. You present the coupon as part of the checkout process using your

⁷ The camera used for taking pictures also doubles as an optical scanner for 2D bar codes.

mobile wallet service. Swiping your phone over the NFC reader authorises the transaction and registers the coupon.

Leaving the bookstore, you notice a kid in the skate park using his commie to film his friend's skateboard trick. The clip is uploaded directly to YouTube with a tag 'Orbital Skate Crew' automatically appended based on the location of the trick. If you 'scanned for videos' in the vicinity, you would be able to pick it up, except that the skate crew are sharing the tag privately. You feel like having a go, but remember that you haven't been skateboarding for about ten years.

Time marches on and you notice that the lunch appointment is approaching. You would like to pop into the clothing shop next door, but you are not sure if there's enough time. You pull up your buddy-finder map on the screen and can see that your nearest friend, Joe, is showing on the map five minutes away from the rendezvous point. There's just enough time to have a quick perusal of the latest fashion lines, but just in case you get distracted you hit 'push to talk' on your buddy's icon and, just like with a walkie-talkie, your voice blurts out on their device (or ear piece):

'Hi Joe, I see you're nearly here. I'm just popping into EJ's. See you at the fountain or in EJ's.'

Joe replied, 'OK – see you in a minute.'

Neither of you had to dial and wait for a connection. Push-to-Talk⁸ (PTT) happens instantly. For Joe the sound came out on their loud speaker built into their PMG. You heard the response in your headset.

You feel satisfied that you have this degree of control that let's you confidently decide that time can be used productively whilst waiting for the friendly come together.

You return to the Dancing Fountain next to the children's play area and the lunchtime gathering convenes. Next, your party talks about where to eat. There's a new bistro just opened along one of the polished walkways in the plaza. There is a consensus to try it out, but first you all check for ratings. Finding the bistro in the food listings is easy. It's immediately accessible via the 'nearby places' menu, your phone having sensed where you are. Looking at the entry for the bistro, one of your friends sees that a friend-of-a-friend (FOAF) in her social network has already tried it out. Unfortunately, it gets a low rating due to a scant vegetarian menu and this worries your friend. No problem. Her reviewer FOAF has posted an alternative venue that has a fantastic array of vegetarian options. You all head there with tummies rumbling.

In the eatery, the food is great and you all agree that it was worth a visit. It's time to pay the bill and get back to work. In the past, you would have spent the next five minutes working out how to split the bill. This time, thanks to mobile commerce, it's not a problem. The bill is 'swiped' from the waiter's Electronic Point of Sale (EPOS) terminal and then shared with the group. Each agrees to their share, including suggested gratuity, and the job is done.

Upon clearance of the bill, a courtesy message pops up on everyone's commie announcing a coupon offer on future meals. The coupon is only valid if within the next day *all of you* post a review of the restaurant. Communal offers like these are common. These reviews will be pinned in *space*⁹ near the restaurant. Other friends who will pass by in the future might soon be reading them.

⁸ Don't write PTT off just yet. Once IMS networks become more widely deployed and text messaging revenues become less previous, PTT shall most likely become a standard service.

⁹ See the concluding section of the book for a discussion of *spatial messaging*.

8 PRELUDE – THE NEXT GENERATION EXPERIENCE

For a while, you mingle outside the restaurant with the usual reluctance to part from each other and head back to stuffy cubes in the office. Two of you agree to meet later in the week for a book-reading event at the nearby bookstore. You ‘beam’ the appointment, along with its whereabouts and details, to your co-bookworm. Swapping electronic items in person has become a common social habit thanks to Bluetooth, but it doesn’t have to be done face-to-face. Exchanging nuggets of information can take place just about anywhere and anytime, but often doesn’t have the same exciting buzz generated in those irresistible spur-of-the-moment exchanges that you get when face-to-face.

You say your goodbyes and everyone melts back into the teeming milieu of shoppers. On your way back to the taxi rank, your wrist commie alerts you with a ‘throbbing brain’ graphic; a tiny animated cartoon brain pulsates below a glowing light bulb. This tells you that someone with a potentially similar interest profile is nearby. It could be someone potentially useful to ‘mesh with’ – the term used to indicate techno-assisted socialising purely for the sake of social networking. Meshing has become commonplace in this hypercompetitive world where the maxim ‘network or die’ isn’t far off. As with many other pools of your personal digital information, you have assigned part of your contacts folder to be publicly accessible. Things have come a long way since the private and jealously guarded pride-and-joy address book. You have many public information trust zones in your digital vault, including much about your professional and social life.

Tapping the graphic reveals more information about the alert from your ‘neighbourhood watch’ agent. Many times before, you had made interesting new acquaintances in your nomadic neighbourhood, a circle of interest that floats around like an imaginary X-ray beam illuminating the area all around you, virtually penetrating into the ‘public persona’ of willing networkers who happen to pass through your cloud with their mobile devices.

Upon inspection, you see that the nearby cohort is someone who you might want to partner with in your latest venture. It seems an interesting opportunity, so you call them without having to know their number or reveal yours. A *networking agent* automatically records the call for protection against malicious intent, just in case. The person takes the call, having already seen your profile pop up on their commie. You agree to meet for a coffee. The networking agent recognised the keywords ‘meeting’ and ‘coffee’. It has already found the nearest coffee shop and popped it up on both commies. You both agree to meet there. It’s also got WiFi¹⁰ and will be a good chance to upload some pictures that you took earlier at the restaurant. You already selected ‘send to gallery’ when you took them earlier, but the device waited for a cheaper and faster network to complete the task automatically in the background.

You finish your meeting at the coffee bar. You speak ‘taxi’ into your commie and a request is made for the nearest taxi in your area to pick you up at your current location. The taxi driver gets the request and you are automatically connected via PTT to confirm details. The taxi soon arrives displaying your name on its roof-mounted electronic signboard. You enter the air-conditioned cab and sit back with the sun on your face and relax for the 20-minute journey back to work. You begin to watch the latest episode of a popular TV show that you noticed advertised inside the cab. You jumped straight to the channel by ‘blinking’ the ad’s 2D bar code into your device. As the video player starts up, you see a message that one

¹⁰ Just in case you didn’t know, Wi-Fi is the abbreviation for Wireless Fidelity, a group of technical standards enabling the transmission of data over wireless networks.

of your friends has just uploaded their latest photo album and you click to view them as a streamed slide show, just before watching the TV episode.

You arrive back at the office and reflect on the events of that lunchtime with a sense of satisfaction that you seemed to get so much done in a lunch ‘break’. You start wondering how you ever got by without the wireless umbilical of so many mobile services. You ask yourself ‘how did I used to cope without my commie?’ As hard as you try, you simply can’t recall how you ever did.

1.4 OUR MULTITASKING MOBILE FUTURE

The point of the story is not to invent a new buzzword – commie. I admit, it does sound a rather unlikely name. I think the word ‘mobile’ will pervade, although the name isn’t particularly important. The point is that new devices will continue to emerge that don’t fit the traditional mobile phone form or function. Moreover, as the story tells, devices will be used for an increasing number of tasks besides talking, so the name ‘phone’ will become outdated.

The key message from the story is that the mobile experience will grow to include a number of tasks that can be easily carried out using a handheld device, or devices, and fully integrated into our daily routines. Perhaps your reaction to some of the mobile tasks in the story is a mixture of agreement and scepticism. You will see yourself doing some of those things and not others. Some you might think of as being just plain nuts. I agree with you. This is the normal reaction. However, there is one important consideration to keep in mind. It can best be summed up by McLuhan’s famous aphorism – ‘A fish doesn’t know of the existence of water until beached.’ In other words, we get used to services that we once didn’t think we needed and only realise their value after they’re removed, like losing a mobile phone. Remember life without the Web? When I worked on the very first GSM systems, nearly all my friends and associates clearly told me that they couldn’t see themselves using a mobile phone. Here we are today with many people claiming that they simply couldn’t imagine being without one. We all know this story.

The notion of doing so much ‘on the move’ – including watching TV – isn’t so crazy any more. In fact, we might be better saying ‘on the mobile device’. With the emergence of new technologies like Femtocells¹¹, it is possible that users shall use their mobile devices *in the home* – not on the move at all – for an increasingly wide range of tasks besides calling and texting.

Of course, we should be wary of hype. At the time of writing, the current fad is the ‘2.0’ frenzy. Gosh, I should have called this second edition *Next Generation Wireless Applications 2.0*. There have been many false dawns in mobile services and I have seen most of them. I have participated in many of them. In the story just told, nearly all of the services could be implemented today using widely available technology. Some of them will pervade and some will fizzle out, or never see the light of day. We still don’t know what the future mobile services landscape is going to look like, but this book charts most of the territory covered so far and tells us a good deal about where we are headed. Just for the record, my own favourites for the future are mobile TV and mobile commerce.

¹¹ *Femtocells* are very small mobile phone base stations for use inside the home.

