

Reading the tealeaves to meet the diverse communications needs of 'baby boomers' to live independently



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by Professor Reg Coutts
Red Button Technologies
www.redbutton.com.au

Summary

The 'baby boomers' are those who were born in the two decades since the end of the Second World War and in their diverse ways have grappled with the evolution of computers, the Internet and mobile phone. The market demand of those born from the 1990's onwards has driven these technologies in further unforeseen directions. This paper framed in the context of generational and technological change and is based on the observation that mobile phone technology will become the 'preferred platform' for enabling an aging population to live independently for much longer in their own home. The paper will draw upon recent research into the understanding of the diverse attitudes and backgrounds of older people that informs understanding of their likely propensity for adoption of these technologies. The paper will also scan technology development and critique the supply side products designed to meet the perceived needs of older people such as emergency pendants and mobile phones with big buttons. This analysis of both supply and demand side has informed the development of a communications service product called Assure Connect™ that can provide an added service feature to any phone system to provide families and groups a communications capability to better support each other. The research approach is akin to 'reading tea leaves'.

1. Introduction

'Baby boomers' are defined as those who were born in the two decades since the end of the Second World War. In their diverse ways they have grappled with the evolution of computers, the Internet and mobile phone technology developments are going in even further unforeseen directions. In this context of generational and technological change it is argued mobile phone technology is becoming the 'preferred platform' for enabling an aging population to live independently for much longer in their own home. Recent [Coutts 2010] research into the understanding of the diverse attitudes and backgrounds of older people informs an understanding of their likely propensity to utilise these technologies.

The fact that the baby boomers are at the centre of demographic ‘bulge’ in the aged population has been widely accepted but the other pertinent observation is that the sector post retirement sector that will likely live some twenty years in their home of choice will rise. The mobile phone and associated applications such as Assure Connect™ can provide this age group greater security and hence provide assurance to their family that want to see them continue to safely live at home. Recent research [Coutts 2010] that the adoption characteristics for mobile phones by older people are very different from those for the Internet. Mobile phone use defies to a significant degree the socio-economic determinants that play such a significant role in Internet adoption.

The paper critiques the evolving supply side products designed to meet the perceived needs of older people broadening from emergency pendants to mobile phones with big buttons. From the analysis of both supply and demand side trends, the paper makes the broad observation that there needs be more focus on better mobile communications solutions for ‘independent seniors living in their home’ over the fixed phone oriented pendent solutions for the more ‘frail aged’. This ‘frail aged’ group should be more correctly termed ‘older people with higher support needs’ due to age related impairments (eg reduced mobility). They are less ‘out and about’ segment of the ageing population where pendent technology will continue an important role but are not the focus for the Assure Connect™ development.

This analysis has informed the development of a communications service product called Assure Connect™ www.assureconnect.com.au that provides added service features to any phone system to provide families and groups a communications capability to better support each other. The research approach described in this paper to inform application development of Assure Connect™ is akin to ‘reading tea leaves’. The research approach to the innovation process emphasises the user inspired innovation cycle [Coutts 2005] where the user is the prime source of innovation.

2. Overview of Wireless Communications for Older Users

The development of wireless¹ communications for older people to add functionality to the home telephone dates back to the 1960’s long before mobile phones were available. This technology focused called ‘pendent technology’ is worn by the user aimed at the ‘frail’ aged to enable them to get emergency help. The pendent is a short-range wireless device that communicates to the home ‘base station’ collocated with the home phone and where the pendent button when pressed initiates a telephone call to programmed numbers.

These pendent systems usually installed by a wide variety of suppliers² are expensive both to install and with respect to monthly costs as they usually call a monitoring service that then calls the respective emergency service. The alert call activates the pendent base associated with the home phone to a specialised call centre provides the monitoring service aspect. The call centre then initiates a predetermined call to action and can attempt to communicate with the user through their home phone. In more

¹ The term ‘wireless communications’ is used to distinguish from mobile communications associated with mobile phone technology.

² The term ‘suppliers’ includes suppliers of the wide variety of pendent devices as well as the many monitoring service providers

recent years, non monitored pendant systems that sequentially dialled programmed numbers from the base have also become available at lower installation cost and no ongoing fee. However, all these systems restrict the user to the vicinity of their home as they link to the home phone using short-range wireless similar to a cordless phone. What is amazing is that this pendant solution with monitoring is very expensive and has seen minimal innovation in fifty years and yet worldwide is the most recognised form of 'emergency alert' systems in the market place. This concept dominance has been in itself is a marketing challenge for an alternative such as Assure Connect™ that works with any phone and is set up on the Web requiring no installation or impersonal monitoring service.

Things are changing but not to the degree you might expect at least for older people who have not been to date the focus for the industry. Until the early 1990's the fixed telephone was the dominant telecommunications service. Therefore the provision of a 'pendant' worn by the frail aged user along with other wireless solutions such as cordless phones was the best way to assure communications access in the home in the case of emergency. By the end of 2000, there were more mobile phones than fixed phones and there are now more mobile phones than the population. [ACMA 2011] Looking at the older population, over 65% of those aged over 60 have a mobile phone and increasing numbers of older people are disconnecting their fixed phone as their primary personal connection. In this rapidly changing evolution it is useful to examine the features that have found user acceptance in the older population.

The rapid increase of penetration of mobile phones becoming ever cheaper is challenging the role of the fixed phone including amongst the older population. From research of the older users of mobile phones [Coutts 2010], greater security and emergency utility are the dominant reason for older people of mobile phones where over 65% of those over 60 have a mobile phone in developed markets where mobile phone penetration across the population exceeds 100%. The 'specialised' mobile phone segment for older people has been slow to develop starting in Japan over 10 years ago [Irie et al 2005] and is only now developing in Australia as discussed later. As well as 'special mobiles' for older people (eg big button phones) the last few years has seen a number of niche mobile phone based products for specific user groups such as those with Alzheimer's disease where the product has features based around inbuilt GPS capabilities to track these users.

It is argued both the supply and demand side are now undergoing disruptive change as a confluence of the age demographic and technology development.

3. Supply Side 'Solutions'

Mobile phones over the last twenty years as well as getting cheaper have progressively become more compact with greatly expanded functionality to include camera, larger colour screen enabling Internet access to social networking, news, search and traditional email. While recent reports both here and the UK indicate that over 50% access the Internet on their mobile phone, this trend is less apparent in the older age segment where voice is still the dominant application. However, SMS the preserve of the young 10 years ago is now common in the older age cohorts. [Coutts 2010]

This trend in mobile phones primarily driven by the younger market has opened the gap in the market for mobile phones for older people who still predominantly use ‘feature phones’ rather than ‘smart phones’ which make up 49% of the market. Japan has an even older demographic than most developed countries and NTT Docomo has developed big button phones from 1999. They are called the ‘Raku Raku PHONE’ [Irie et al 2005] and are specifically for the older market with large buttons and other features. Recently NTT Docomo announced 20 million units sold.

<http://www.nttdocomo.com/pr/2007/001323.html> Similarly in the US, Verizon with Samsung in 2006 launched the Jitterbug <http://en.wikipedia.org/wiki/GreatCall> which (initially) had only three large buttons, one being to a monitoring assistance centre, louder volume and larger screen symbols.

Introducing the world's simplest, cell phone experience – with service as low as \$10 a month.

It doesn't play games, take pictures, or give you the weather

The Jitterbug® developed with Samsung. It's the cell phone that's changing all the rules.

For people like me, who want a cell phone that's easy to use. Over the years, cell phones have become smaller and smaller with so many complicated features. They are harder to program and harder to use. But the Jitterbug® cell phone has simplified everything, so it's not only easy to use, it's easy to try. No crowded malls, no waiting in line, no confusing sales people, or complicated plans. Affordable and convenient cell phone service is only a toll-free phone call away.

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- Available in One Touch or Full Dial mode!
- Comes pre-programmed and ready to use right out of the box
- Large, bright, easy to see display and buttons
- Push "Yes" to call directly from your personal phone list
- An operator is always available to help you, and will call you by name
- Soft ear cushion and louder volume for better sound quality
- Separate Volume Up/Down button and Speaker phone button on cover of phone
- Hearing aid compatible
- Familiar dial tone confirms service (no other cell phone has this)
- Service as low as \$10 a month*
- Access help wherever you go

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Monthly Price	\$10.00	\$12.00
Included Minutes/Month	30	60
Operator Assistance	\$0.75	\$0.75
911 Access	FREE	FREE
Long Distance Calls	\$0.45/min	\$0.45/min
Nationwide Coverage*	Yes	Yes
Trial Period	30 days	30 days

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www.jitterbugdirect.com

Figure 3.1 – ‘Special’ Mobile Phones – USA 2006, Australia 2011

It is only now in 2011, a number of large button phones are becoming available in the Australian market including the big button mobile phone from Telstra which includes a ‘panic button’ which you can programme with up to 3 numbers.

<http://www.telstra.com.au/abouttelstra/media-centre/announcements/telstra-announces-new-phone-for-seniors.xml> In addition to large numbers and display, the addition of a ‘panic button’ is a common feature of the Japanese Rau Raku phone, the Jitterbug now also available in Australia and the Telstra phone. This feature identified in the article Kurniawan (2007) requires the number(s) to be programmed into the phone that greatly limits flexibility compared to the single Assure Connect™ 1300 number. By pushing the ‘panic button’ Assure Connect™ calls several numbers simultaneously where these numbers can be changed on the Web with no change on the phone.

In addition to these ‘special mobile phones’ for older users, Alzheimers WA developed a ‘niche mobile phone’ called Safe2walk <http://www.safe2walk.com.au/> which is uniquely packaged GPS capable phone that will message the users supporter or family member if the user goes outside a desired range and get lost! A similar ‘niche mobile

phone' based watch <http://www.carerswatch.com.au/> has been introduced for this same market. Both these devices have only three buttons which must be programmed with the number of the carer or family member and can only be changed at the device. These 'niche mobile phones' do however go beyond just the design of the mobile phone and utilize communication of the location coordinates from the GPS mobile phone to the designated supporter.

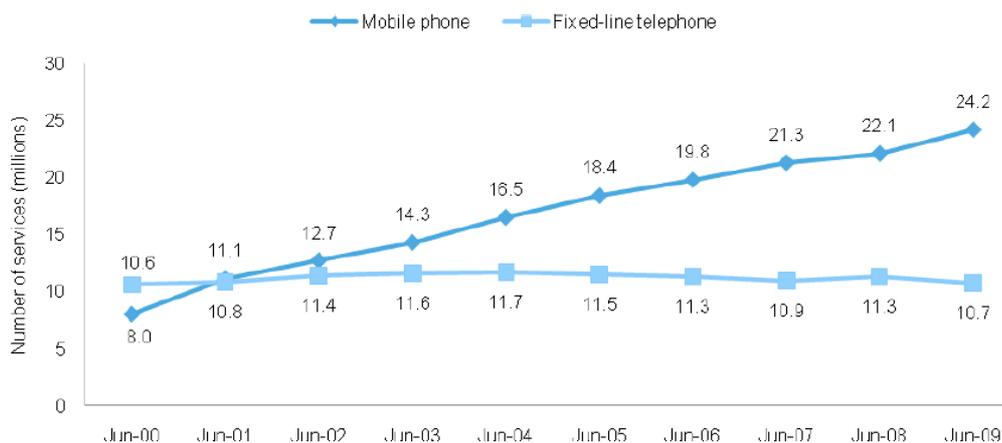
Thus to date there has been negligible innovation by the carriers of their network functionality other than that described above to enhance the functionality for different user groups such as older or even younger users. The underlying Connectivity Server™ which enables Assure Connect™ which is based on Intelligent Network (IN) has the potential to enhance the functionality of both these 'special & niche mobile phones as mentioned.

The key specific observations of the supply side trends are:

- Big button phones that cater for older users in the Australian market have only recently become available here after over 10 years of being available in Japan and 5 years in the US which is a exemplifies the challenge of being a small market from a device innovation perspective
- Niche market 'mobile based pendent' products³ (eg Safe2walk) are now becoming available in Australia but the service is expensive and are unlikely to be the basis for a sustainable business because of the small market size for such hardware products

4. Demand Side 'Perspectives' and Trends

Older users are growing as a % of the population and can expect to live life independently for much longer before they become frail aged and require more intensive support. As can be seen from Figures 4.1 and 4.2 older users like the rest of the population are increasingly looking to mobile communications over fixed phones to enhance their independence but in a safe and secure way and want their diversity to be appreciated.

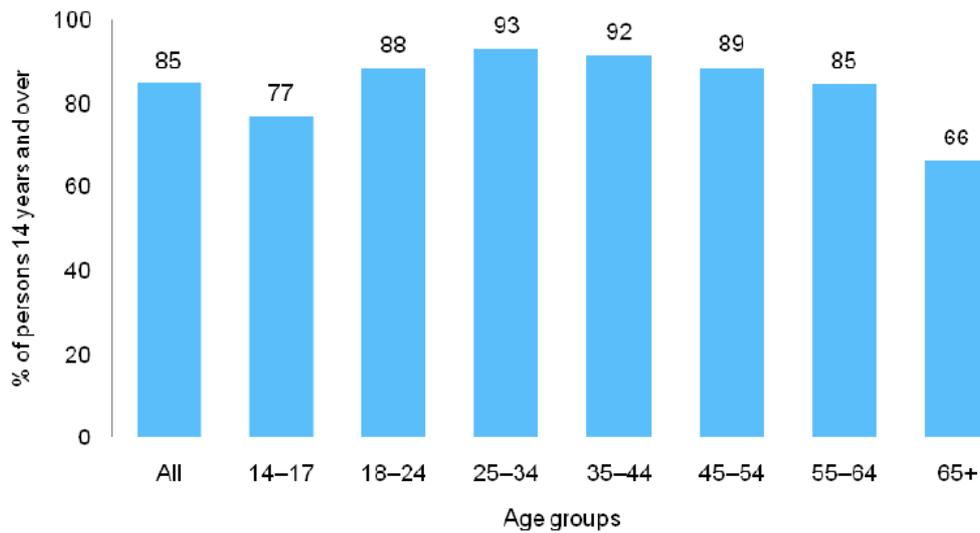


Note: Mobile services from 2007–08 include all services which use a SIM card, including phone and data services.

Source: ACMA/ACA Communications reports 1999–2000 to 2008–09. Includes wholesale services.

Figure 4.1 – Mobile Phone Growth Compared to Fixed Services

³ Red Button Technologies explored this direction in 2007



Source: Roy Morgan Single Source, June 2010.

Figure 4.2 – Variation with Age for Take Up of Mobiles

An important telecommunications social service of particular relevance to older people is access to the national 000 emergency service. Anyone in need of the emergency services of the police, fire or ambulance can call a single easy to remember number: 000 on their fixed or mobile phone⁴ for Australia⁵. A call to 000 gets a human operator who then puts the caller through to the requested service relevant to the caller.

The functionality and sustainability of the national 000 service is also changing to meet several dilemmas over and above the traditional dilemmas of:

- Coping with infrequent situations such as that affect a whole community such as a fire, the 000 service is unable and cannot be expected to cope with the volume and regional concentration of calls.
- A more fundamental dilemma for the 000 service is striking the balance between getting people ‘with real emergencies’ (eg heart attack victims) to call 000 and discouraging frivolous calls to 000 (eg my cat is stuck in a tree). Some 50% of calls to 000 are not ‘real emergencies’.

There are several further dilemmas with the 000 service that were relevant to the development of Assure ConnectTM are:

- One dilemma has been the subject of particular concern for the Heart Foundation.
www.heartfoundation.org.au/SiteCollectionDocuments/National%20Heart%20Foundation%20-251011_MR%20Bystanders%20urged%20to%20call%20000%20-

⁴ Calls to 000 can be made on a mobile that has no SIM card or credit and was incorporated in the GSM technology standard back in the late 1980’s.

⁵ The emergency number is 911 in the US and 112 in Europe.

[%20quick!.pdf](#) They message their target group to ring 000 ASAP as every second to getting help counts towards improved survivability. However, nearly 70% of heart attack victims first phone a relative who often hang up to call 000!! This example was a prime motivation and inspiration for the Assure Connect™ feature⁶ where the user having the attack calls the relative who can push any key to bring in 000 on a teleconference with user who has not been put on hold!

- The second dilemma is that while calls to 000 from fixed phones can be directly matched to the caller's location⁷ whereas increasingly some 63% of calls to 000 are made from a mobile where location information is much more variable depending on the phone and network capabilities
- The third dilemma is that many situations are not clear emergencies and fall into a grey area and the 000 service receives nearly 30% of calls that are genuine but are not emergencies

For all these dilemmas a service like Assure Connect empowers communities/families to be more effective at supporting their aging parents in their home where access to 000 is a last resort that is integrated into the product concept. As the baby boomers get older there will be a growing pressure on our social infrastructure to support the growing numbers.

Further with respect to pendent technology solutions, devices tailored to the 'aged segment' (such as pendants⁸) are regarded by some as a stigma marking the wearer out as 'old' and even 'frail' so that many do not wear the pendant when they should. Secondly, they only work within a limited range of their home so that they in sense imprison the user to their home whereas a mobile phone can provide security for users to go out and about.

Mobile phones are now a consumer technology irrespective of age or other demographic factors. However, from the research literature and experience with older mobile phone users, the two dominant reasons for owning and carrying a mobile phone are:

- Security
- Emergency contact

And this is supported by the results from a questionnaire done in 2010 [Coutts 2010] showing these dominant reasons for owning a mobile phone.

Observations of these trends that have influenced the design of Assure Connect are:

- Mobile phones with big buttons and restricted features are becoming more available in the Australian market even though have been available in larger markets such as Japan and the US over the last ten years. With Assure Connect™ one of the numbers⁹ is set up as a 'speed dial'.

⁶ This feature is one of a number of the claims in the patents lodged in the US, Europe and Australia

⁷ This is a capability of linking the CLI to the IPND data base is overseen by the ACMA

⁸ Even big button phones such as the Jitter Bug have been seen this way

⁹ The '5' key is suggested as it is central to the key pad and has a small pimple to enable this number to be felt without sighting the key pad (eg to activate at night or from a pocket)

- Particular features that emulate the Red Button functionality are the provision of a ‘panic button’, which will dial a predetermined number(s), set by the user for the phone. In the case of Assure Connect™ the numbers are set (and changed) on the Assure Connect Web site without need to change the callers phone
- For such ‘phones for seniors’ multiple numbers can be set where these numbers are dialled sequentially until someone answers. For Assure Connect™ that call all numbers simultaneously where the first person to answer speaks to the caller and the remainder of the support group get an SMS and email telling them who responded to the call.
- There is the potential to combine the features of the large button phone with Assure Connect™ so further increasing overall functionality for the user.
- There is the potential for enhanced community communications innovations such as Assure Connect™ and social networking to reduce community dependence on the 000 service and allow it to be more cost effective.

5. The Innovation of Assure Connect™

The development of Assure Connect™ and the underlying concept of the Connectivity Server™ went through several phases of evolution with a better understanding of the market and technology trends and the optimal focus for commercialisation.

The first phase in 2005 was based on the concept of a pendant device encapsulating a GPS enabled mobile phone, with only 2 buttons (red and black) where the associated calling numbers could be changed on the Web (ie no changes required at the pendant). Red Button Technologies www.redbutton.com.au was founded in 2006 with business partner who had long experience in industrial marketing and IT. The initial provisional patent application was based on this ‘pendent’ and a demonstration prototype was developed based on early Chinese mobile phones as well as an industrial design of the product as shown modelled in Figure 5.1. However, market research revealed that users wanted a variety of such ‘pendent’ products and thus coupled with the manufacturing risks¹⁰ were too high.

¹⁰ Early costing estimates based on manufacture in China showed such a pendant could be manufactured for the target price. Subsequently the Safe2walk product developed for Alzheimers WA launched a mobile phone pendant product in 2009.



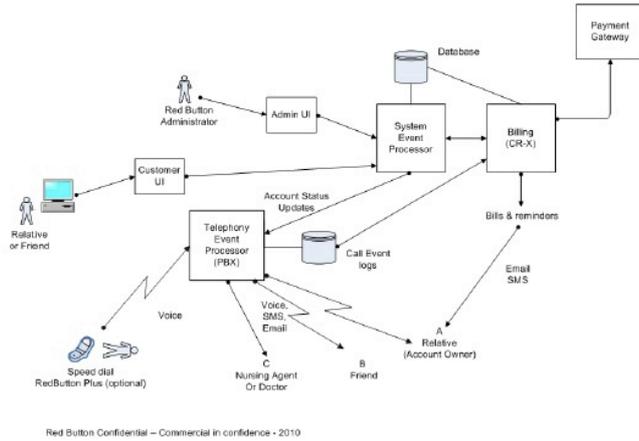
Figure 5.1 – Modelling of Industrial Design of Mobile Phone Based Pendant by Red Button Technologies 2007

In late 2006 as a result of feedback from venture capital groups, a revised commercialisation strategy was developed that focused on voice communications supplemented with messaging. This revised commercialisation followed an assessment of the economics of pendant production and market projections. The new strategy needed to focus on the ‘network smarts’ of the Connectivity Server™. To enable the development of ‘connectivity services’ that complemented the evolution of device alternatives and serves a much larger market. The Connectivity Server™ concept derives Intelligent Network (IN) but outside the telecommunication operators network¹¹ (see http://en.wikipedia.org/wiki/Intelligent_Network) concepts of the telecommunications industry in the late 80’s. It allows innovation in ‘connectivity’ to offer features that could be independent of mobile device. Based on this concept we lodged a new provisional patent and undertook the development of a demonstration prototype with Unico <http://www.unico.com.au/> a well-credentialed partner.

Based on the successful prototype development and revised business plan we were successful in early 2009 to receive a significant COMET grant to support IP development¹² and conduct extensive qualitative and quantitative market research by Harrison Research www.harrisonresearch.com.au. We were subsequently introduced to Melbourne based Optimation <http://optimation.com.au/> for their electronic payment capability who subsequently invested in Red Button Technologies to develop the Connectivity Server™ and the first product Assure Connect™ for commercial deployment in the later part of 2010. A conceptual diagram is shown in Figure 5.2

¹¹ The new service such as Assure Connect™ once proven in the market can be then transported onto an operator’s internal IN achieving scale and reliability improvements.

¹² Currently patents have been lodged in Australia, New Zealand, the United States (US2011/0003601A1 Jan 2011) and Europe and are at various stages of examination.



TEP means "Telephony Event Processor"
 The account owner manages an account through the web-browser based interface.
 When a user makes a call the TEP uses the CLI of the caller to determine who they are, looks at the account details and calls all the guardians according to the accounts calling plan set up by the account owner using the Customer User Interface (continued...)

Figure 5.2 – System Concept of Assure Connect™ by Red Button Technologies 2009

The 'go to market strategy' for Assure Connect has been to engage channel partners to market the product through both their physical and electronic channels also bringing crucial product endorsement. As of November 2011 St John's (SA) have signed up <http://www.stjohnsa.com.au/st-john-embraces-new-emergency-system/> to promote Assure Connect™ and RACV in Victoria have featured Assure Connect™ in their October magazine. <http://www.racv.com.au/wps/wcm/connect/internet/primary/membership/show+your+card+ +save> noting that 50% of our customers to date have come to us via Google where the endorsement of RACV and St John's has been important for sales.

The Web site home page for Assure Connect™ is shown in Figure 5.3 and is the primary contact for new customers to sign up a new account and also for changes to the support group members.



Figure 5.3 – the Web site for Assure Connect™

The front end and back end Websites have undergone several changes in the light of user testing and customer feedback. Based on this experience extensive user testing is now a fundamental stage of the product development process for Red Button Technologies.

6. Conclusions

This paper traces the market and industry trends that have informed the evolution of an innovative telecommunications service product Assure Connect™ which enhances the utility of a phone to contact user's immediate community in the case of concern or emergency. The main reason older people say they use mobile phones is to provide security and access to emergency assistance but are frustrated by the complexity of all the functions, the small buttons and hard to read displays. While part of the solution offered by the telecommunications industry is the increasing availability of 'big button phones' with 'simplified user interface', the telecommunications operators have to date not offered very many innovative network solutions to complement these terminal devices.

The challenge in the development of Assure Connect™ was to 'read the tea leaves' in the sense of predicting the likely development of technology capability along with the growing user feature preferences for solutions to meet the needs of older people and those close to them to support their aspirations of continued independence. For example pendant technology developed in the 1960's is best suited for the frail aged where the user while confined to the immediate area of their home can press the button on their pendant around their neck which activates an emergency call through their home fixed telephone often to a monitoring company to call the appropriate emergency service. However, it is argued that there is a growing need to address the

growing number of ‘independent seniors’ who have a mobile phone and want to maintain an active social life external to the home but need the reassurance as do their family they can call for help with the press of a button on their phone.

The paper describes the architecture of the Connectivity Server™ that underpins the Assure Connect™ service¹³ and how the concept developed from a pendant based on an encapsulated mobile phone through to a service concept that works with any phone based on the development platform the Connectivity Server™. The next and biggest challenge is to convince both the market AND industry that this solution.

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¹³ Many other services are under consideration based on the Connectivity Server™ including business solutions