

SELECTING APPROPRIATE COMMUNICATION TECHNOLOGIES WITHIN VILLAGE INDEPENDENT LIVING UNITS (ILUs)

INTRODUCTION

The size and constant growth of the aged and health care market continues to attract the interest of a growing army of both large and small communications and IT companies. They all seem to have one thing in common whereby they place supposedly exciting Baby Boomer IT scenarios ahead of the need for economical, reliable and future-proof outcomes.

1. AVOIDING LITIGATION – WHO IS RESPONSIBLE FOR THE DEATH OF A RESIDENT?

Professional Care Providers understand the objectives relating to the care and security of residents and staff within an aged care facility; however, to deliver fast, cost effective and litigious-free outcomes, it is also necessary to be cognizant of the Australian Standards and to carefully select the most appropriate electronic communications techniques to safely achieve those various objectives.

There are eight official categories of Resident/Patient dependency; however, this article refers only to residents within the so-called Self Care or Independent Living (ILU) categories. There are also two or three significant Australian Standards directly relating to communication technology, which, by their precise specification, clearly identifies the most appropriate technology for each level of dependency, including Independent Living.

These Australian Standards are not mandatory in law, however, in the event of resident or family complaint, dispute, litigation or Coronial Inquest, the professional care provider is in a much stronger position if seen to be complying with industry rules and recommendations that have been established by a national authority using a committee of professionals. These professional organizations include Health and Aged Care Service Providers including RVA, the Health Department, Department of Veteran Affairs, Work Cover, Insurance Companies and Technical Organizations. The author, as a member of that Committee, fits within the latter category.

1.2 LOOKING AHEAD

Having established the prime appropriate technology for a particular application, (in this example, Independent Living) one must then recognize that nothing is fixed. The medical frailties and ad-hoc incidents with self-care and low care residents are constantly worsening with the 'ageing-in-place' process. Similarly, government rules and other regulations and standards are also subject to ongoing change, which can also impinge on the need for future investment and corresponding income.

Meanwhile, on the other side of the ledger, technology progresses with startling speed having both good and bad effect. Some, however, will regret having been influenced by glossy brochures from inexperienced suppliers that expound the potential virtues of some or other new and perhaps inappropriate technology or application thereof.

In this respect, this article will endeavour to look beyond the sweeping promises of 'high tech for the few' and to find that happy medium that will satisfy all parties and all levels of resident profile within the safety of the Australian and Industry Standards, with maximum flexibility and forward planning and at an affordable price.

1.3 PRO'S AND CON'S OF ENCOMPASSING NEW TECHNOLOGY (e.g. VoIP)

Dealing firstly with the negative aspects, there has been a tendency for some Aged Care facilities to become smitten with the prospects of VoIP (voice over IP protocol) and there is no doubt that VoIP offers many leading edge benefits to commercial users and to the administration of a large aged care organization.

VoIP cannot, however, deliver the desired outcome for the vast majority of aging and frail predominantly female ILU residents and is not allowed within the higher dependency levels of an aged care facility.

There are alternative, better quality, more reliable and less costly techniques to satisfy today's needs along with the predictable future needs of so called 'Baby Boomer' couples.

Table 1 herein lists some of the Standard's mandatory requirements for ILU emergency-call and response facilities, which also identifies the limitations of a VoIP facility, as it exists today.

In summary form, the prime areas of non compliance are as follows:-

- There is currently no VoIP phone that is designed to meet the mandatory (or even basic) requirements of Standard AS4607 (Personal alarm Systems) or AS 2999 (Alarm systems for the Elderly) as described within the Standards and existing purpose-designed equipment.
- Residents reject the small button commercial VoIP phones that do not provide the usual aids for the aged such as hearing loss, sight impairment, mobility restriction, inactivity detection etc.
- The level of reliability and voice quality of communication via IP techniques is far below that necessary for life saving applications.
- The mandatory requirement for redundancy provisions are currently prohibitively expensive,
- Each ILU system to operate from ILU mains power source with 40 hour battery backup

Now addressing the positive issues, one can be assured that the major local and International 'Traditional' aged care communication specialist companies are working on 'application specific' solutions for general release during late 2010.

Unlike entertainment facilities, the emergency-call communications infrastructure is an essential service. Therefore these newly developed industry specific solutions will, by necessity, require the use of redundancy paths using alternative and independent technologies to overcome the real and unavoidable power and reliability limitations encountered within IT based infrastructures. This will add to the cost and complexity of initial 'Greenfield' installations but will provide a future-proof and Standard's compliant outcome.

1.4 ACCOMMODATING FACILITIES FOR FUTURE INTAKE OF 'BABY BOOMERS'

Having recognized or pre-empted the demographic profile of a typical 'Baby Boomer Couple' as they enter into the Village community lifestyle over the next 5 to 7 years, one must also consider and be prepared to accommodate those persons that do not fit that profile. This must also include those that suddenly suffer predictably changed circumstances such as those resulting from the loss of a Resident's life-long partner.

Consequently, it is necessary to conceive an overall system to include ILU specific design that, on the one hand, meets the expectations of the up-market retirees, whilst also accommodating the unsophisticated requirements for those other, indeed 'higher risk', Residents situated towards, and at the other end of the Resident profile spectrum.

The latter category currently comprises the bulk of the market and will continue to be a predominant part of that market with continual profile 'creepage' always moving towards the unsophisticated end of the profile spectrum. For example consider the elderly Widow who, during the aging process, will predictably suffer occasional hospitalisation, consequential frailties and perhaps hearing, loss, sight impairment, limited mobility, memory loss, general aging frailty, tendency to fall and, most certainly, an inevitable and severe aversion to complicated electronic devices.

The system must therefore transparently, and with ease of operation, accommodate all conceivable needs between these two extreme requirements both within the overall site system design and, more importantly, within the living space of the incumbent resident where, in the fullness of time, each ILU will accommodate a variety of incumbent Residents.

Finally, one cannot disregard the Industry and Australian Standards (i.e. AS4607) relating to such personal alarm systems for the elderly and it all has to fit within a capital expenditure budget that will accommodate the overall objective whilst maintaining a financially competitive outcome within the competitive village industry market.

1.4.1 Communications Facilities – Retrofitting existing sites

Recognizing the anticipated demand for broadband data, digital Video and (high quality) voice communication requirements for the emerging 'Baby Boomer' residents it would seem that one of

the many D-SLAM (*Digital Subscriber Line Access Multiplexer*) or EDA (*Ethernet DSL Access*) techniques would be the logical choice for existing Villages. This ensures the ability to comply with the Australian Standard AS4607 and avoids being locked into a proprietary range of equipment, protocols and attendant ongoing license fees.

This typical PSTN adopted ADSL2+ broadband access technique simply overlays the reliable, well tried, low cost and proven telephone copper pair or (within a new installation) Category 5 or 6 cabling infrastructure from the PABX and/or PSTN to each ILU.

The Village Operator can then effectively Plug & Play the enhanced facilities into the Resident's standard phone line on demand thereby introducing the cost and corresponding revenue stream for those residents that require such facilities if and when required. This also allows the Resident to continue using their "Standards Compliant" analogue 'big-button' emergency-call phone plus the use of their ever-present domestic DECT portable phones, fax machines and other accumulated analogue telephone devices.

1.4.2 Communications Facilities – Greenfield Sites

The consulting services available from both consulting companies and major communication system suppliers becomes the prime source of advice, however, one has to steer clear of those that have no experience in the aged care industry, are not cognizant of the Standards or who are dedicated to selling their equipment rather than providing a suitable outcome, in particular for the Resident without which there would be no Village sites.

In essence, do not inflict VoIP telephone handsets on the aged but by all means ensure that digital convergence is readily available at the point of entry to each ILU to accommodate future Baby Boomers.

It costs little more to run a copper pair or Cat5 alongside a fiberoptic conduit, so why not do so and provide each ILU with the ability to operate the preferred and more reliable analogue facility along with the FTTH ability to deliver a digital suite of facilities if and when required in the future.

Some prospective residents or their subsequent 'rollover' replacements will insist on a Telstra line let it, and the redundancy facility that it also provides, be available from the head-end MDF from the outset.

2. AUSTRALIAN STANDARD AS4607 "PERSONAL RESPONSE SYSTEMS"

Largely superseding the prior Standard AS2999 entitled "Alarm Systems for the Elderly" this more recent standard does not prohibit any particular technology. However, having listed the mandatory and recommended specification criteria it does quickly determine that no technique can comply, other than the use of a purpose designed device connected to the Resident's analogue PSTN or PABX telephone line.

The Standard's 'Preamble' and 'Scope' identifies that it is applicable to "Private Dwellings" "Residential Care Facilities", and refers to "Persons living in Group homes (Apartments and Condos) and "Retirement Villages". The following table identifies and interprets some pertinent clauses of Standard AS4607

TABLE 1

Clause 3.1.1	Mandatory Voice Communication Requirements (b) Local unit with a means of hands-free voice communication...etc....
Clause 3.7	Trigger Devices -Wireless (Para 6) A selection of trigger devices should be available for people with different needs...etc
Clause 3.10.7	Reassurance Facilities Shall be audible and continue until the call has been accepted ...etc...
Clause 3.10.8	Confirmation of Received Alarm Call Confirmation shall be audible and preferably in the form of voice communication. etc..
Clause 3.10.10	Local unit fault condition indication Indications of fault conditions shall ...etc...
Clause 3.10.11	Voice-to-Voice Voice communication with a person at least one room removed from the...etc...
Clause 3.11.2	Redundancy Path to alternate destination/s. The emergency-call facility shall not be dependent on a central computer or similar logging and distribution process and shall seek alternate destinations in such event.

Clause 4.1.7	Power Fail Reporting The ILU local communication unit shall report a power fail condition the central monitoring facility at a random time to allow a spread of such reports to be received without system congestion. It shall continue to operate via battery back up thereafter.
Table 4.4.1 (B)	Battery Backup The local unit within the ILU shall be local mains power operated and have at least 40 hours of battery back-up and shall continue to operate as a voice to voice communication device indefinitely should the battery back-up have depleted
Other Clauses	Refer to Standard for:- Wireless devices, Inactivity Monitoring, Lightning Protections, Central equipment etc..
AS3811 Clause 2.2	Independence from other Building Management System Buses The system should be independent and without reliance on any other system such as a building management system bus.

3. CONCLUSIONS

In conclusion and before embarking on the investment of a new and untried alternative technology within an aged care nurse-call environment we suggest that the following consideration and steps be taken:-

- (a) What are the salient benefits available to the average resident with a profile typically being an aged widow where complicated equipment or processes are to be avoided,
- (b) What are the salient benefits that can be offered to the up-market retiree couple?
- (c) How best to economically accommodate both requirements within a single ILU system design?,
- (d) How do I establish cost recovery rates where the Baby Boomer couple may require full functionality whereas pensioner widow Smith next door has simple needs and funds?
- (e) To satisfy your OH&S obligations, does the proposed system provide a site-wide wireless safety-net capability for your attending after hours care staff?
- (f) To avoid litigation, have you fully explored the requirements of applicable Aged Care, security and OH&S standards?
- (g) Have you compared the point by point offerings of the new supplier against the listed specifications of a traditional and therefore experienced supplier?
- (h) The 'hi-tech' glossy brochures from inexperienced suppliers are interesting, but who, other than a sponsoring user, can provide proof of such system designs achieving a promised outcome and, if so, would that outcome be worth the typically 10 times financial outlay of achieving the same objectives with proven technology?
- (i) If migrating to a new or different technology is the facility then subject to periodic license or service fees?
- (j) In the above, how many new staff should I budget for to support the new technology or what is the hourly rate and availability of supplier specialist support staff?

4. CHOICE OF PROVIDER

One can select a 'start-up' technologist who plans to bring various third party technologies together to create a new promised design scenario or, in the alternative select an experienced manufacturer who uses such technology to enhance existing proven and reliable techniques that already meet requirements and Standards.

To ensure duty of care obligations to Residents and Staff alike, it is important to work within the Industry guidelines and standards as clearly detailed within the appropriate Australian Standards and to avoid the Glossy brochure promises of new technologies or applications thereof until they have matured and can be seen to give the desired outcomes at recoverable expense and without investing in large number of specialist staff to make it happen and keep it going.

Paul Long
Managing Director
Smart-Caller Pty Ltd

Issued February 2009