

**It's reference, Jim, but not as we know it:
using the Vocera communications system to
support mobile customer service
at the State Library of Victoria**

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Abstract

In January 2009 the State Library of Victoria implemented a new model for delivering reference and customer services, based on the principles of mobility, communication and teamwork. To support this new model, it became the first library in Australia to implement the Vocera wireless communications system. This paper outlines the impetus for change, describes the use of the Vocera system and provides an analysis of the pros and cons of this implementation.

Introduction

In recent years the refurbishment of the State Library of Victoria has provided visitors with a series of wonderful public spaces for research, study and leisure. Ten reading rooms, four exhibition galleries, foyer, café, baggage area, all interconnected over several levels, create a physically complex space that simultaneously invite exploration and defeat navigation. The space is also very big – covering half of a Melbourne city block, stretching 160 metres from the front entrance to the far corners of the most distant reading room, and covering over 10,000 square metres. Being large and complex, the public spaces also present a challenge in how to effectively and efficiently allocate staff resources across them. This paper describes a recent project at the Library to change the way we provide our front-of-house services, with a greater emphasis on mobility and communication, and how we became the first library in Australia to implement Vocera communications technology to support this new way of working.

New Challenges

Apart from the increase in the size of the Library's public spaces as a result of the Museum of Victoria moving to new premises over a decade ago, the Library has faced other challenges that have forced a re-think about the way that front-of-house services are staffed. Foremost amongst these have been changes in our visitation patterns. In the space of two years, from 2005/06 to 2007/08, visitor numbers to the State Library increased by over 70%, from 900,000 to over 1,500,000. Whilst the numbers of visitors coming to use the Library's collections for research purposes has grown over this period, there has been an even greater increase in the number of visitors for non-research purposes: coming to the Library for free internet access, especially and increasingly for access to the free wireless network; for cultural tourism purposes, to view both exhibitions and the building; for events and learning programs; and for many, just to use the Library's spaces as an attractive and central study environment. The increase in visitor numbers has been driven both by the greater prevalence of students (especially from overseas) living in or studying in the central business district, and also by a greater awareness of the Library as a destination for interstate and international tourists.

These changes had a significant effect on the sorts of assistance our front-of-house staff (mainly librarians) were being called on to provide. An increasing number of our visitors were either first time or very occasional users, and required either directions, or explanations of our systems for ordering books, printing, copying and using the public wireless network. Staff were routinely being asked to troubleshoot problems with laptops and wireless connections.

It was clear to the Library – even as this growth in visitors was beginning – that we needed to re-examine not only the way that we staffed the site, but broader issues about the usage of different spaces, the location of service points and the types, location and language of signage across the site. As part of a four-year library-wide strategic initiative called SLV21, a project called `slv@swanston` was set up to examine everything that might contribute to user satisfaction with a trip to the State

Library of Victoria. This project commenced with a “Visitor Experience Review” that analysed existing site usage patterns, visitor demographics, customer feedback, statistics on inquiry numbers and types and so forth. It also established a blueprint for space usage within the site that was designed to support the increasingly heterogeneous range of visitor needs: from quiet individual research to conversational group study, visiting exhibitions or using the internet, or from checking a quick reference to engaging a librarian in a complex research request.

Whilst the Visitor Experience Review developed the user-centred rationale for changes to our front-of-house staffing, there was also an internal imperative. As part of the SLV21 program the Library was embarking on a series of projects to put online access to collections and services at the heart of the Library’s activities. The time of librarians was increasingly required to support digitisation programs, the development of the Digital Object Management System, new search functionality, website redevelopment and the extension of online inquiry services. As part of the service model redesign it was intended to reduce the amount of time that librarians were spending on non reference inquiries such as equipment support, in order to redirect time back to these higher value online projects, and support our visitors instead (where appropriate) with an expanded pool of customer service staff.

The Way We Were

Prior to the slv@swanston project our approach to staffing the site was somewhat fragmented. Each reading room was staffed separately; librarians were responsible for service within that room and would rarely be able to venture out of it. There could be a queue of several people at one service point, whilst unoccupied staff waited at desks elsewhere in the building, unable to see what was happening in other spaces and whether colleagues might need assistance. Although the Library could be extremely busy, there was always some extra capacity in the staffing on the floor – we just didn’t have a way of utilising it properly. In addition to this, whilst some staff were proactive and enthusiastic ‘rovers’, who moved out from behind reference desks to assist users in the spaces themselves, this was not a uniform or ingrained component of the service culture. This meant that users within the Library who (for whatever reason) were reluctant to approach a librarian behind a large desk, were not always being well served or provided with opportunities to seek assistance. As well as librarians and technicians at reference desks, we also had several different groups of customer service officers who were responsible for specific functions or areas (e.g. Foyer or book deliveries) and managed from different parts of the Library. This resulted in differing understandings of library processes, policies and service standards amongst front-of-house staff, and a reduced capacity to work effectively as a single team in providing a visitor with the most appropriate assistance required at the time.

Looking at our staffing of the site, we further discovered that whilst 70% of front-of-house staff time was provided by librarians and technicians and 30% by customer service officers, only about 30% of our inquiries needed a librarian, and the other 70% were of a customer service nature. Whilst it was not simply a matter of swapping our staffing ratios to match the inquiry types (a complex research question

takes considerably longer to answer than a directional inquiry for example), it was clear that the right balance had not yet been struck.

A New Service Model

The development of a new front-of-house service model was a collaborative process in which staff were heavily involved. The result was a tiered service model that consolidated several existing customer services roles and established a new front-of-house Library Officer position, the functions of which are primarily to support users with equipment and library systems, registrations, directions and general explanations of how the Library works. Library Officers work as part of an integrated team with librarians and technicians, who are primarily responsible for reference inquiries. These changes were supported by moving several of the Library's service points to better support the "flow" of user activities, from meet/greet and baggage storage in the Foyer, through registration, directional and "introduction to the library" assistance, to research help at the Information Centre reference desk and subject specific reading rooms. A separate "Offsite" inquiries room has also been established, combining phone, chat and email reference into a single service point contiguous with the Information Centre, so that staff can also move between onsite and offsite service spaces depending on levels of user demand.

There are several key principles which underpin the State Library of Victoria's new service model:

- One team: staffing the library as a whole rather than as discrete individual teams, working with colleagues to refer visitors seamlessly to the most appropriate assistance.
- Mobility: rather than being constrained to work within a specific room, staff are encouraged to use their judgement to move across the site as required, in order to meet demand where it arises and to get right staff to right place at the right time.
- Communication: in order to have a service model based on mobility, it is necessary to have a communication system used by all front-of-house staff where people can be called to assist a user where needed or at service points where the demand is greatest.
- Proactive Service: we will seek to get out from behind service desks to assist visitors, and approach users who look in need of help rather than wait to be asked.
- Flexible model: the new model would need to be flexible enough in the way it rostered different staff numbers and skill sets to allow for easy adjustment based on new levels of demand, either by increasing or decreasing staff numbers or changing the skill mix available.

Roving

The provision of reference and customer services by 'roving' through library spaces rather than waiting at a service desk is increasingly employed by many libraries, reflecting a willingness to engage with users at their point of need, and to connect

with users who may (for a number of reasons) feel uncomfortable approaching a reference desk to ask for assistance. Whilst the theoretical rationale for roving is sound, it was still one of the more challenging concepts in discussions with staff about a new service model. Whilst roving within a room to which they had been rostered had been practised by some staff, it was clear that staff had different views on what roving reference and customer service meant, and the scope of what was entailed. For instance, roving within a single room was seen as different to having the licence to rove across multiple spaces, as it raised the issue of rooms being unattended for substantial periods of time. Roving can also be seen as either an on-call or proactive practice: there is a difference between working at one service point and moving to another only when called to do so, or actively seeking to move to other spaces looking to assist people – the Library's preference was very definitely for the latter. There was also a concern amongst some staff that roving reference would mean the abolition of all reference desks: however, we have been clear throughout the process that service desks are convenient for many library users as well as staff, as they provide a focal point for service within a space. Whilst some Library Officers in the new service model are purely roving staff and assist users at their point of need rather than at a desk, reference staff provide service both at service desks and out on the floor, depending on what is of most convenience to the user.

We did not make the assumption that roving is something natural and straightforward that requires no discussions with staff about how best to undertake it. Being proactive is one thing, but staff had understandable concerns about interrupting users and disturbing their privacy. Training sessions were run for staff where they could discuss potential problems with a roving model of service, get some tips on what works and what doesn't from staff who were already more experienced and comfortable with the practice and also learn some useful ways of engaging users in conversation. It is fair to say that staff have different levels of comfort with approaching users, so having conversations about scripts and strategies was a valuable way to help those who found it more difficult to approach users directly.

Vocera

We knew we wanted to work better as a team, knew that we wanted to be able to be more mobile when required, and to be able to refer equipment and systems support to trained customer service staff. What we needed was a way to be able to communicate with each other so we knew when and where we were most needed, and in a way such that it wouldn't matter whether we were at a service desk or out on the floor. Communication was a particularly critical issue given that we have up to fifteen staff providing front-of-house service at the same time in our busiest periods, out of a pool of approximately 120 staff who can be rostered to undertake this work. We considered a number of options, such as mobile phones, pagers and walkie-talkies. Mobile phones for front-of-house staff had previously been tried with little success: apart from reception dead spots within the library, even the action of finding the right number and dialling another staff member seemed to be too awkward to allow for regular and easy use. None of these options particularly appealed in having low barriers to use and the sort of functionality we were looking for, problems that

were highlighted when we started looking at Vocera, a mobile wireless communications system based on voice recognition technology.

We had first become interested in Vocera as a technology to explore in 2007, but awareness of its potential capacity to support a more mobile service model was enhanced significantly through Ellen Forsyth's paper on Vocera and roving reference at the VALA 2008 conference (Forsyth, 2008). On a VALA Travel Scholarship Ellen had visited several public libraries in the USA that had implemented Vocera, and her paper not only provided a very positive review of the technology, but also indicated in detail how different libraries were using it, including some of the benefits that had been achieved as well as the challenges faced. Getting such an early report on the technology was extremely useful: Vocera is an American company that released the technology in 2002, but until recently use of the technology had been mainly in the health care sector, both in hospitals and aged care facilities, and the earliest implementations in Australia have been in this area. Usage in libraries was a relatively new phenomenon, and Ellen's initial work in documenting this was confirmed further for us through an internal report from Aileen Weir at the National Library of Australia, who visited two American public libraries using Vocera in June 2008. Again, the information about these installations of Vocera was very positive about the way it had helped these libraries provide roving reference and customer service. On the basis of these reports, the State Library of Victoria set up a trial of Vocera in November 2008, prior to the launch of the new service model.

How Vocera Works

Vocera runs over the same wireless network that many libraries use to provide internet access, so in our case the physical infrastructure needed was already largely in place. Staff wear "badges" (a bit bigger than the size of a large USB drive), generally around the neck on a lanyard: these badges communicate with each other over the wireless network via a separate server on which the Vocera software is installed. The badges are very simple to operate: pressing the single button on the front opens a line, and all further operation of the device is based on voice commands, in a hands free manner. They are designed to pick up a user's voice whilst sitting several inches below the mouth without needing to be held and spoken into directly. Other Vocera users can be called by individual name or by group names: all staff initially log in to Vocera using their own names, and then join specific groups depending on which shift they have been rostered to, so for example I could call "Bob Smith" directly, or if I didn't know who else was working on a shift, I could call a functional group such as "Rover" (for site-wide equipment support), "Genealogy" (for staff rostered for their genealogy expertise), or "Shift Leader" (to contact the staff member who acts as the overall coordinator for the shift). At our busiest times we can have up to seventeen staff working both front of house and on our offsite inquiries services (phone, chat and email) and who would be on Vocera, so being able to call people by group name rather than individual name is critical.

Other functionality includes:

- the ability to set up call flows (if the person you are calling is not responding, generally because they are assisting another user, the calls can be set up to divert to other groups)

- the capacity to broadcast a message to an entire group, including to all staff who are logged in (theoretically ideal for getting messages out quickly)
- leaving messages for staff who are not available
- locating other staff on the floor (Vocera will tell you the name of the wireless access point that someone's badge is connecting to, enabling you to go and find them if needed, but sometimes a face to face conversation is needed rather than a call).
- integration with the phone system, which is very useful, bearing in mind that it does not work in our back-of-house environment, where there is no wireless network coverage. This means that staff working front of house can call colleagues who may be at their desks for advice, and also that it is easy for staff working back of house to contact their colleagues on the floor.

The main lesson that we learnt from trialling Vocera was that it requires a good wireless network to operate effectively. Whilst it uses very little bandwidth and does not seem to be affected if the network is running slowly, good coverage is essential. Vocera badges have much smaller antennae than laptop computers, so we discovered that in some areas, although wireless internet access was working for users, we were not getting adequate signals on Vocera. As a result we installed several extra wireless access points, and whilst this has improved our network coverage to a generally acceptable level, further improvements still need to be made to ensure that we have proper coverage across all of our public areas.

Vocera in Operation

Vocera became a core part of our front-of-house operations in January 2009: all front-of-house staff now pick up a badge at the start of their shift, log in, and wear the badge until their shift has concluded. This is a cheaper method than buying one unit for each person, and the cost of implementing Vocera is highly dependent on both the number of individuals who will use the system, and the number of badges purchased. With a pool of about 120 staff providing front-of-house services, training was a significant component of the implementation process. All staff attended one hour hands-on training sessions, and senior front-of-house staff (shift leaders) were given additional training as "power users" to ensure that they had the skills to assist staff with any queries or problems they might have. A further four staff were trained as system administrators.

We have seen several major benefits of using Vocera. The roving Library Officers have been a great success, with two staff on any shift who are able to work across the site to assist visitors to use library equipment and systems. Librarians have found that being able to call these staff through Vocera has meant that they spend far less time on these sorts of inquiries which has freed them up to do more reference work.

Library users have also seen benefits, in that the rovers are fully trained to assist with wireless, copying and other equipment problems, and through regular exposure to these issues build up knowledge that enables them to be much more expert than staff who were previously dealing with these problems on a less intensive basis. Another benefit has been a significant reduction in queues at service points across the library. This is due both to the ability to call for assistance from other colleagues on the floor, and through the rovers' practising triage, where they will check with

people waiting what sort of assistance they need, and are often able to help them directly or take them to other reading rooms where they might receive the appropriate assistance rather than waiting for a reference librarian. Vocera has also assisted the senior librarians who coordinate shift activities on the floor to get messages out to staff and help to ensure that different parts of the library are being serviced effectively. This is especially useful on weekends, when staff numbers are tighter and the capacity to make on-the-fly decisions about where to deploy staff is very useful.

Finally, the shift to the new service model has seen a greater development of a culture of communication between staff providing front-of-house services. Partly this has been due to the bringing of previously separated groups into a single front-of-house team, and partly due to the change in the location of some service points bringing librarians, technicians and Library Officers physically closer together. In addition, it seems that the ready availability of other staff via Vocera has helped to normalise the concept of regular communication. There are times when staff might choose to walk across a space to talk to a colleague directly rather than call them on Vocera, and desk phones are still widely used, so Vocera is not the only, or even the most widely used, way for staff to communicate with each other, but the message that it sends – that you can ask for assistance from any of your colleagues at any time – is a powerful one.

Issues with Vocera

Of course, no new technology project is without its difficulties, and the following section gives some account of the problems that have arisen in our Vocera implementation and how we have gone about trying to resolve them. As previously indicated, the coverage of our wireless network was a major hurdle, and one that we are still grappling with, but aside from this there are a number of issues that have arisen:

- Voice recognition: Vocera relies on voice recognition to work, and several staff had problems getting this to work. The software does however have the capacity to learn how individuals say different words, so you can train it to recognise speech patterns. We have found that voice recognition improves significantly once someone has gone through this training process. It is however also reliant on people speaking at a normal volume, without holding the badge up to their mouths. To the impartial observer, this can look remarkably like a staff member is talking to themselves, and the natural reaction therefore is to try to keep one's voice down (an even more natural reaction in a library), but unfortunately, speaking softly does impair the capacity of Vocera to recognise commands. It takes a certain degree of practice and confidence to stand in the middle of a room and say for example "Call Genealogy" at sufficient volume. When Vocera fails to recognise a voice command it can also start a bit of a downward spiral, as the badge responds with a very polite voice saying "I'm sorry, I did not understand" in a manner that manages to increase the frustration of the staff member, who responds by repeating the command in a slightly strained tone, which means that their voice patterns are further removed from the norm and the software is even less likely to recognise what they are saying the second time. The other

situation where voice recognition seems to be particularly problematic is in noisy environments, where the microphone can pick up ambient noise.

- Vocera can also cause problems in particularly quiet spaces, where talking into the badge or the sound of the badge going off (it makes a little chirruping noise as a call comes in) can disturb users, as can the fact that both sides of a conversation can be heard. This of course also raises the privacy issue, and given that the person you are speaking to on Vocera may be standing next to a library user, greater discretion is required than when using normal phones.
- Vocera can also take some getting used to in managing incoming calls when you are dealing with another library user. When you receive a call, Vocera identifies the caller and asks if you can speak to them, and you can press a button for “no”, if you are not available because you are speaking to someone else. More difficult is when a user approaches you and begins to speak whilst you are having a Vocera conversation, as (unlike mobile phones, which everybody recognises) it can be hard to easily indicate that you are already talking to someone else.
- We initially thought that the broadcast function would be regularly used in getting messages out to all front-of-house staff, for example to let people know if there were problems with one of our systems. However, we have found that because badges receiving a broadcast give their wearers very little indication that they are about to hear a message, people tend to miss the first half before they realise that someone is speaking to them. Broadcast messages can also be quite “choppy” and hard to understand, but this is very likely due to our local wireless network rather than the technology itself.
- A small number of staff have been concerned about wearing the badges because they emit EMF (Electric & Magnetic Field) radiation: much like mobile phones, but at about 5% of the levels. Other staff dislike wearing badges around their necks, and wherever possible we have tried to find other methods for staff to wear them, such as using lapel clips.
- Battery life: whilst the battery life is perfectly adequate for a standard three hour shift, we have found that sometimes the batteries will fail on an eight hour weekend shift.
- Finally, we would love to have Vocera in the stacks back of house, where it would be extremely useful, but because it runs on a wireless network we do not have coverage in back-of-house areas. Whilst this is something that we could explore in the future, the likelihood of getting usable wireless signals whilst actually amongst the metal compactus shelves would seem to be remote.

Project Evaluation and Moving Forward

Despite these problems, it is still very much the case that the advantages of Vocera outweigh the disadvantages, and we have implemented further enhancements that should provide further benefits for both users of the library and our front-of-house staff. For example, we are currently trialling phones within the library that visitors can use to call for assistance. One of the concerns of the new model was that with staff moving across the site, some reading rooms may be unattended for considerable periods. We are aiming to address this by placing highly visible phones at service

points, inviting our users to call for assistance if the room is unattended. It is possible to set these phones up so that on lifting the receiver a specific extension number is automatically dialled, and it is also possible to assign extension numbers to Vocera groups. Our original plan was to this up so that a designated group of staff may be called directly through Vocera by members of the public, and either be able to assist them remotely or move to help them as soon as possible. Having had difficulties implementing this, the phone is now directed through to our Offsite service, who either answer the question directly or dispatch a roving staff member to assist via Vocera.

Conclusion

Implementing a new front-of-house service model at the State Library of Victoria has been a significant change for us. Vocera has been integral to its success, helping front-of-house staff work together as a single team inside a tiered service framework, and allowing a service model based on mobility and communication that allows us to get the best assistance for a user to their point of need as quickly as possible. Despite having fewer staff on the floor there has been no decrease in user satisfaction in staff being available, and queues have noticeably diminished. By enabling librarians to focus more on providing reference services rather than equipment and systems support we have been able to put more resources into expanding our online reference services and supporting (for example) digitisation programs. A stronger culture of front-of-house communication has been critical to this, and the implementation of Vocera has played an important role.

References

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