CHAPTER 4
FUTURE TECHNOLOGY IN THE PAYPHONE INDUSTRY

4.1 MAXIMIZING PAYPHONE FUTURE POTENTIAL

Even though so much have been talked about the declining trend in payphones usage, it is difficult to go almost anywhere in the world without bumping into a public payphone somewhere. They have become commonplace, and in many countries they are still an essential tool for cheap reliable communications. But this is only a fraction of what a public payphone could do. The same wires that carry the speech from one phone to another could at the same time carry millions of bits of data and signals to facilitate all sorts of additional features both in and around the payphone booth.

As technological change in telecommunication industry has evolved rapidly, there is a definite need to specifically look into the aspect. This chapter aims to look into the possible future of the public payphone in the not too distant future, and speculates what additional features could be added to the payphone to cope with its increasing threat from the upcoming generation of personal mobile phones and other telecommunication products/services. The pair of wires that carry the speech signal to and from the common payphone are in reality under-utilized. In fact, technically, spare capacity on these communication line wires can carry high-speed digital signals, as well as radio and television signals. This leads us to the inevitable question, "What else could be provided?"

4.1.1 Hub for Cellular Communications

Mobility mostly relies on either satellite or cellular radio technology. The bandwidth available on these systems is usually limited, so some services will be slow. This presents

the first opportunity for the payphone booth. The booth of the future could act as the center of a wider zone in which it will offer high-speed wireless communication services as well as low data rates transmission. Many valuable services only need low data rates, so even with a conventional connection a booth could act as a center for low-speed services. Nevertheless, if there is a need for much higher data rates, payphones could also be utilized as the point of signal distribution. This will allow people to send or receive large files and software, synchronize their computers or access internet services at high speed. With a compatible terminal, just walking within hundred meters of a payphone booth may be sufficient to ensure that e-mail transactions are carried out. This new role for phone booth would give a valuable halfway point between full mobility and the fixed network, supporting mobile telecommunications instead of competing with it. The high bandwidth of the fixed network will be accessible from a zone near any payphone booth, enabling fixed-mobile convergence. In remote areas where a mobile signal may otherwise be very weak, the payphone booth may act as a telecommunication oasis (Reid; 2000, Gammino and Giardelli; 1999).

4.1.2 Urban Positioning

A common characteristic of payphone booth is that they do not move around. Many are located at good positions in town centers. These booths could host a local positioning system (Marconi; 2001). Based on radio, radar, video or ultrasound devices, they could provide the means for positioning within millimeters, perhaps in conjunction with other devices on lampposts or walls. Together with these other local sensors, it could maintain a map of the vicinity that is updated every second or even more frequently, so that the map can include the positions of all the moving objects such as people and cars in the area.

There are many uses for such dynamic local positioning and mapping. For example, blind people could walk around with audio signals telling them exactly where they are and warning them of people or other obstacles nearby. They could easily find their way around, avoiding collisions, and have a smart system providing them with appropriate

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information wherever they go. This information could be provided from a remote system over a telecommunication link via the payphone booth. As they wander through a shop, they could be guided to exactly the place they want to get to, and be informed about the goods that they are interested in. These information services could be valuable to sighted people too of course, allowing personalized information and advertising to each shopper, according to exactly where they are. A portable electronic map would enable navigation much more accurately than is possible currently with Global Positioning System (GPS). Linking these urban positioning systems to mobile terminals would allow a wide range of navigation, social, business and tourist information to be offered. (Marconi; 2001)

These positioning systems have a safety benefit too. Being able to pinpoint a problem would speed up the response of emergency services. When a person pushes the distress button on their mobile, the services would know exactly where they were, not just to the nearest hundred meters. Automated 'care in the community' systems in a hospital could monitor a person's activities, recognizing much more quickly when unusual behavior indicates a potential problem.

Positioning systems could facilitate everyday services such as taxis. A simple button on the booth could be linked to a local taxi agent and call a taxi automatically to the payphone booth. Taxi companies might have the option to give their regular customers mobile devices that call a taxi to wherever they are, using the same system.

Certainly, being able to broadcast an exact location might make it easier for people to use payphone booth as meeting points. If a child gets lost and goes to a payphone booth and pushes the appropriate distress button, its parents could be automatically called and given automated directions to the booth. Eventually, identification could be an issue, but in the near future the child might simply carry a card with the appropriate numbers stored on it. The cellular system would be able to pinpoint the location of the mobile phones in order to provide accurate directions.

At present, prototype-flying cars have just been announced. Their mass-market success would seem unlikely, but we might eventually see a few for specialist purposes or for the rich. If so, these will need very sophisticated navigation and positioning systems to avoid colliding into things and each other. Satellites will almost certainly play the major part in this, and payphone booth might be able to play a minor role too. (Reid; 2000)

4.1.3 Electronic Cash Exchange

Electronic cash will become a common payment media sooner or later. Various forms may exist in parallel; some based on smart cards, others in networked accounts, others as certificates on mobile computers or other devices. Interchange between these various forms, and indeed between people, may sometimes need special terminals. Phone booths may be able to provide this functionality. Currency could be exchanged, and cash moved between devices and people. Phone booth might even offer electronic banking services. Other obvious services in this category are topping up monetary value into smart cards. By being connected to banking system with certain security element put in place, payphone booth can act as e-banking stop center, similar to the Automatic Telling Machine (ATM). (Marconi; 2001)

4.1.4 Radio LAN

Payphone booth, with its multiple zone capability, could provide a LAN to link together any devices in its area. People sitting on a nearby bench might be able to network their equipment this way, although of course, most portable equipment should be able to set up communications with other devices directly. The speed of connection would of course vary according to distance from the booth. The phone booth could provide protocol conversion capability to allow incompatible devices to communicate across network. Depending on nearby obstructions and buildings, it may also be feasible to offer radio LANs for nearby buildings, capturing some of their internal communications markets. (Reid; 2000)

4.1.5 Security Tagging Support

Shoplifting remains a large problem in cities. Tagging is becoming a more popular means of controlling the activities of offenders instead of imprisonment. Phone booth could play a role in detecting the presence of tagged offenders and monitoring where they go. Nearby shops could be warned so that they can monitor their behavior closely. The video cameras in the phone booth might be able to send up-to-date pictures instead of just a stored photo. As well as tagging shoplifters and other criminals, expensive goods could be tracked too. A thief may manage to remove it from the shop and begin an escape, but still have his movements tracked by means of chips in the goods. (Marconi; 2001)

4.1.6 Entertainment

With a large number of channels available on digital television, it is expected that some of these might be used for live coverage of interesting events in city centers. Cameras hooked up on the phone booth may monitor traffic or weather, in fact anything that people are interested in, and relay it to the viewer. In the shoplifting example, perhaps video cameras could zoom in on the escapee. Apart from assisting in criminal apprehension, this could provide valuable real-time entertainment. Certainly, there is no reason for phone booth cameras to be idle. When they are not being used for a higher purpose, they could be remotely controlled by remote viewers on digital TV or the Internet.

4.1.7 Emergency Support

Phone booth could include emergency buttons that call the appropriate services to the booth, or enable lost children to be re-united with their parents. However, if a loudspeaker were included in the booth, it would now be able to give audio assistance to people nearby. If a medical emergency occurs nearby, the speaker could relay advice to nearby people until the emergency services arrive, such as first aid instructions. A video camera in the booth would help greatly for the remote experts to see what the problem is,

and directional microphones may allow two-way audio communications too. Phone booth with such speakers would make good public announcer and/or alarm stations too.

4.1.8 Secure Services

Electronic cash needs security, so digital signatures and encryption can be assumed in all its forms. A third component of security is authentication of identity. An iris-scanning unit in phone booths might be of great assistance for a wide range of other secure services. For instance, buying tickets, downloading electronic cash onto a smart card, buying and downloading information products, or even printing off photographic identification could all be done in future payphone. Of course, these services all rely on appropriate security during iris scan registration.

The high quality printing that would be needed for ticketing and so on would perhaps be too expensive for most payphone, but might be appropriate for a more deluxe offering in strategic locations, such as hotels. Housing such equipment might seem to make such booth an attractive target for vandals but this threat would presumably be diminished by the knowledge that any vandal would appear on high-quality video, and even if wearing a mask, an iris scan would make good evidence. (Marconi; 2001)

4.1.9 Maps, Vouchers and Shopping

The benefits of these booths may well offset these potential problems. As well as printing tickets, such booths could provide local maps, personalized according to what the recipient is an interested in, complete with voucher for local shops. If the customer tells the phone what he is looking for, an agent could electronically shop around and find which local stores have the item with the best deal, or even arrange to buy it from the net. In this way, payphone could act as a shopping terminal, spanning both electronic and physical shops. When it has done the shopping around, it could print off a map and directions, highlighting the places of interest. If the customer has an electronic navigation device, the booth may communicate with this and download appropriate information.

This would allow operators to provide a personal shopper service, continuing the service via a mobile device long after the customer has left the booth.

This could be much more lucrative than it might initially sound. It is not simply a matter of directing people to the nearest appropriate retailer, though this might sometimes be all that is needed. By making such directions, payphones operators are put firmly into the value chain process and might at the very least attract commission from the retailer. But the phone booth could really be just the front-line terminal giving access to a complete shopping service that could be offered. This could harness a database with the entire product offerings and terms from every supplier. We could thus put customers in contact with appropriate suppliers directly, finding customers a good deal and ensuring healthy competition between suppliers. Of course, payphones operators could attract a commission from each of these sales. Furthermore, we could leverage automated logistics systems to run a virtual distribution business too. Payphones operators could arrange collection and delivery at an appropriate time for the customer by linking together warehousing and transportation services, while minimizing costs by means of efficient processes. Becoming involved in so much of the value chain could put us in a powerful and lucrative position. This 'one-stop-shop' service could put operators centrally in the customer's focus, where their brand becomes much more elastic, a completely cross-industry lifestyle brand for both domestic and business customers. Payphone operators could become the source of not just telecommunication, but of anything that can be arranged by using any form of IT. And all starting in the phone booth. (Marconi; 2001)

4.1.10 Email and Dial-up Services

It would be possible to provide Internet services in phone booth, for many people who do not have access from home. Some terminals in airports already allow customers to send e-mails after inserting a credit card. People might occasionally need to access the wider internet and a payphone might be a convenient location for such a service. For some people who live next to a phone booth, collecting their email from the box could be almost as easy as lifting letters off the doormat.

4.2.6 Advertising

The screens may be used for advertising purposes, and this could offset some of the cost of the calls being made. These could of course be personalized to the interest of the user. It may even be possible to have video advertisements on the outside of the booth. Using special effect display screens, different adverts could be seen by different passers-by. These screens would also allow people to preview video games or movies before downloading them on to their mobile devices at high speed. (Payphones Magazine; 1987, Marconi; 2001)