This chapter addresses issues raised in Chapter 1 in more detail. First, it looks at the history of satellite provision. As indicated earlier, this is no longer expected to play a major role in mobile communications despite the high hopes, not to mention heavy investment, of five years ago. It is a salutary story in that it emphasises the point yet again that the development of technology tends to outrun the delivery of working networks based on existing technology, so that what appears to be an entirely sensible, economic proposition one year can prove to be an economic disaster a mere couple of years later.

The following sections deal with what is known as 2.5G. In Europe, 2.5G started out as WAP and has evolved in conjunction with GPRS. GPRS is now with us, but has taken time to become established. Although almost all mobile networks will become GPRS-enabled by some point in 2003 – or enabled by its equivalent, cdma2000 1xRTT – not all will necessarily move on to 3G. Equally, whereas i-mode is well-established in Japan where 3G will definitely become the norm, its role elsewhere, either as an intermediary stage to 3G or as an end point in its own right, is far less clear.

The chapter concludes with a brief review of personal digital assistants (PDAs). So far, the mobile terminals in common usage are almost all some variant of a standard handset. However, such a device has limitations in a broadband world given, for example, the restricted screen size and the need to key-in inputs using the multi-purpose keys on a handset. These limitations can readily be removed if a full ‘qwerty’ keyboard can be utilised in some way or instructions can be given without using a keyboard at all, in conjunction with a full-length display – precisely the virtues of PDAs. On the other hand, these cannot get progressively smaller and lighter until the point is reached where they can be slipped unobtrusively into, say, a trouser pocket.
Satellite communications

Introduction

Satellite communications are more correctly known as the global mobile satellite systems market (GMSS) where satellite personal communications services (S-PCS) are provided. Alternatively, the term global mobile personal communications via satellite (GMPCS) is in usage. The definition, agreed at the GMPCS MOU meeting in October 1997, is:

any satellite system (i.e., fixed or mobile, broadband or narrow-band, global or regional, geostationary or non-geostationary, existing or planned) providing telecommunications services directly to end users from a constellation of satellites.

Satellite communications, often using a very small aperture terminal (VSAT) that picks up signals via a dish antenna, can carry voice, data and video. The service can be one-way, for example the transmission of financial data by Reuters, or two-way involving telephony for the return path. Satellite communications form a necessary part of a fully developed mobile telephony system because of the need to extend linkages beyond the range of economically viable land-based networks. However, some analysts see their main potential lying in their ability to provide high-speed data delivery and multimedia, including Internet provision, to company branches.

In a terrestrial system, either the call recipient is using a fixed link to the public telephony system or both sender and receiver have to be in range of an earth station, the size of which has shrunk as a result of modern technology but remains fairly bulky. In a satellite system, where the receiver is not within range of a base station, the signal is diverted through a ‘gateway’ and bounced down to the receiver via a satellite. In some satellite systems, the signal is passed between satellites until it reaches the gateway nearest the intended call recipient. This serves to reduce the number of gateways needed to ensure full coverage, but it is a matter of commercial judgement whether to opt for additional satellites or additional gateways.

Historically, satellites were in a geostationary, and sometimes geosynchronous, orbit (hence GEOs) – that is, they appeared to be stationary when viewed from the surface of the earth – and only certain parts of the globe were covered. Their stationary appearance reflected the very large distance from the earth at which they needed to be located, which, in turn, meant that there would be a delay in signal transmission – rendering