Reports from the mobile front

Future Mobile Networks: 3G and Beyond

Alan Clapton (Ed)
IEE
£45, 244pp, ISBN 0 85296 983 X

Geoff Vincent

Future mobile networks have attracted a great deal of attention in recent months, and not always for the right reasons. Yet despite the commercial controversy, there can be little doubt that the next generation of networks will affect everyone's life and work in the decades to come.

This useful book brings together a series of technical articles from authors at BTexact (formerly BT's research laboratory at Martlesham Heath) and BT Wireless (now mmO_2). The engineering task described here is formidable: to create a network that allows not just voice, but just about every type of information and communication to be delivered to and from a wide range of diverse device types, anytime and anywhere.

Many of the devices, and many of the applications, have yet to be designed. The task is at least an order of magnitude more complex than the existing telephone network; and it must work more reliably and much more securely thatn the current internet. Also, it must support the complex multi-way payment and billing mechanisms necessary if organisations are to make money from it. Operators and others are wrestling with the commercial task of making such a network a business success. Meanwhile a huge amount of engineering effort, as described here, is being put into making it technically possible.

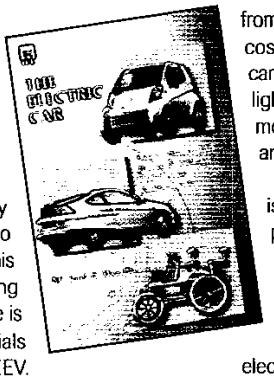
The individal chapteres cover topics ranging from research initiatives and standards forums to product themes, APIs and mobile portals. The radio interface, terminals and the user interface, mobility routing and trials are also covered, and a chapter is devoted to TETRA, in recognition of the fact that mobile is not just about cellular.

A constant theme is the technical and cultural collision between the telecoms network and the Internet. Industry publicity has relied heavily on the 'mobile Internet', but that now seems a concept that has outlived its usefulness. Technically, it is clear that the first 3G networks will represent an evolutionary rather than a revolutionary change, with many parts of the existing network being modified, upgraded and re-used. Evolution will continue with the gradual move to an all Internet protocol network, designed from the ground up to carry not just voice, but a multitude of different services and applications. And in going mobile the Internet will undergo a sea change. IP may be 'under the bonnet', but what is presented to the public will be a new set of services and applications that succeed – or don't – in their own right.

This is timely survey of the current state of the art, a collection of 'reports from the front' originating from one of the world's key centres of expertise that should be required reading for anyone working in the field. It will also be welcomed by anyone wanting to glimpse what must be one of the most complex and significant engineering projects of the current decade, and perhaps even of the century.

Geoff Vincent is the founder of Mediation Technology, an independent consultancy based in Cambridge, and CEO of mTank, an organisation specialising in mobile applications.

Driving force



The Electric Car: Development and Future of Battery, Hybrid and Fuel-Cell Cars

Michael H. Westbrook
IEE/Society of Automotive Engineers
£28.00, 198pp, ISBN 0 85296 013 1

Alan Ward

In his introduction to this book, Mike Westbrook says he hopes to give the reader a good appreciation of where electric vehicle technology is now and where it will go in the future. He succeeds admirably.

After a good introduction and a historical chapter, the focus is on technology that has emerged since 1990 and future developments. The book concentrates on on motors up to 50 kW, voltages of 200–300 V, ranges of 100 km and speeds up to 100 kmph. The tables are particularly useful, with data on power-switching devices, batteries, impact test requirements, and production and prototype vehicles, as well as hybrid drive technologies, hybrid production cars, prototype hybrid cars, prototype fuel-cell cars, and sale and lease costs.

Westbrook clearly decided not to include equations – his only one is for rolling resistance – but there is a glossary of initials from AFC to ZEV. Information is pleasingly up to date and includes a good summary of the direct methanol fuel cell, demonstrated in dramatic form at a recent Daimler Chrysler Research innovation symposium, which Westbrook considers may be the preferred option in future.

The final chapter on future developments begins with the assumption that by 2025 there will be strict regulation of emissions from vehicles in urban areas, and rocketing costs of hydrocarbon fuels. The careful predictions are persuasive: many lightweight low-cost electric cars, some more expensive longer-range electric cars, and fuel-cell and hybrid cars.

An unusually wide range of information is condensed into 193 highly readable pages with a good set of contemporary detailed facts and figures which, as Westbrook predicts, make the reader 'enthusiastic to try these new developments... when sensibly priced electric cars eventually become available'.

Alan Ward and his wife Honor have drivien over 14 000 miles in a 72V 'Enfield' electric car they bought five years ago and instrumented fully. Alan is Vice-Chairman of the Battery Vehicle Society, and has written many notes for their magazine. Contact the Society via Alan at Coasters Cottage, Hermitage, Dorchester DT2 7BB, tel. 01963 210449 or dorset2wards@hotmail.com.uk