

Singapore Technologies Electronics Limited
@
CommunicAsia 2002
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Sneak Preview of Exhibits

Singapore, 5 June 2002 – Singapore Technologies Electronics Limited's (ST Elect) is a leader in delivering innovative systems solutions to customers worldwide. ST Elect specialises in the design, development and integration of advanced electronic systems such as wireless communications, microwave, traffic management, mobile real-time, intelligent building management and intelligent rail systems.

Our theme for CommunicAsia 2002 is "***M-Powering your Businesses***" and we feature exhibits and solutions in four broad areas of :

- Mobile Track and Trace,
- Communications,
- M-Commerce, and
- Info-Security

together with our subsidiaries and associated companies :

- CET Technologies Pte Ltd
- Agilis Communication Technologies Pte Ltd
- DigiSAFE Pte Ltd
- WizVision.com Pte Ltd
- Intellect Technologies Incorporated
- Mobile Solutions & Payment Services Pte Ltd

MOBILE TRACK & TRACE

ST Elect unveils a new ***Mobile Track & Trace (m-T&T)*** initiative that offers end-to-end secure, seamless and scalable integrated solutions for assets, fleet and total logistics management.

Economy globalisation and real-time information infrastructure have increased the competitive and growth opportunities of enterprises. Increasingly, customers are demanding a seamless, real-time, multi-modal access to their worldwide supply chain and assets at far greater levels of details. Beyond this, service applications such as document automation, payment networks, shipment delays identification and timely resolutions are becoming necessities to compete in the mobile information society.

To compete in the global arena, logistics and transportation management are critical to productivity enhancement and ultimately, bottom-line performance.

Government regulations and security compliance are also becoming an important aspect of intra and inter-country trading.

Leveraging on ST Elect's system and technologies expertise, we are able to provide a secure, seamless and scalable architecture. We provide a total m-T&T system that meets security measures in a increasingly regulated environment, a seamless business process from sellers, logistics service providers, shippers, financial institutions to buyers, and a scalable solution that continues to meet the growth of our customers.

ST Elect's m-T&T provides:

- End-to-end, real time visibility - empower users to obtain accurate and real-time information on the movement or location of assets (eg. inventory, materials, vehicles or human workflow),
- Common workflow - an open-standard, single platform to plan, direct and control the global supply chain and to access information
- Information capture & communications - employing the latest asset identification and wireless communications technologies to provide automated and efficient information flow
- Pro-active management - facilitates exception reporting, real-time decision making with up-to-date information

ST Elect's m-T&T employs the latest system concepts and advanced technologies that are developed in-house to meet the sophisticated and real-time demands of our customers. These include:

- Logistics/warehouse Fleet Management – a robust logistics management information system for complete database asset visibility and tracking
- RFID (radio frequency identification) Tags and Network – With automated identification technologies and RFID tagging and barcoding, CET's CetaG™ RFID solution is a cost-effective solution for real-time assets identification, tracking and data capture. The ultra-thin tag and multiple tag readers is packed with 128-bit memory (lockable) and integrated Electronic Article Surveillance) feature for anti-theft protection.

- GSM, GPRS, GPS, Cell ID – control and tracking is facilitated by applications software infrastructure and reliable and high-speed communication links, including GPS and GIS. The software features a capability for processing asset data, enabling data fusion, data security and presenting the data in a comprehensive manner.
- Mobile ASP Infrastructure – a standardised front-end browser (eg XML-based) for common and easy accessibility across multiple platforms and information systems.

COMMUNICATIONS

- Ceteon 108G GPRS Modem Card
 - Ceteon Mobile Infocomm Appliances (Ceteon 400, Ceteon 840 & Ceteon 700 with a built-in GPRS card)
 - Agilis – suite of products including VSAT, ODU's, Microwave Digital Radios, Flyaway Systems
 - Intellect OmniLYNX Multiplexer
- With CET's **Ceteon 108G GPRS Modem Card**, you can surf, pay, trade and bank wirelessly. This card meets the diverse needs of the mobile workforce as it can be integrated into almost any device such as laptops and PDAs, as well as CET's own Ceteon – Infocomm Appliances. Without cables nor adaptors you can enjoy enhanced data transfer speed of up to 56kbps and conduct mobile transactions such as m-banking, wireless trading of stocks, e-learning and e-commerce anytime, anywhere.

Main Applications:

- Wireless Internet and Intranet Access
 - M-commerce
 - Wireless Banking & Wireless Stock Trading
 - E-learning
 - Location-based Advertising
 - Fleet management
- CET's range of **Ceteon Mobile Infocomm Appliances** offers users an amazing communication system while helping to keep your mobile workforce connected wirelessly anytime, anywhere.

Light-weight, more portable than lap-tops, Ceteon allows professionals quick, convenient access to information and real-time data. Powered with wireless LAN card or GPRS card as an internet or intranet access tool, Ceteon helps the users from varying industries – healthcare, finance, insurance, transportation, merchandising, warehousing, education or even real estate – to better manage their time and resources.

The Ceteon range on show at CommunicAsia include :

- Ceteon 400 a "ruggedised" unit
- Ceteon 700 a new in-vehicle unit, and

- Ceteon 840 with software applications such as e-manual, healthcare applications,

On top of that, visitors will also be able to see the first wireless digital pen which can be used on any writing surface – E-pen™.

Ceteon 400 – *Ruggedised* PDA for communication, navigation, reporting and database access when on the move. It is weather-proof and shock-proof and designed to withstand harsh external environments. Its 3.8”, scratch-resistant, reflective colour and touch-screen LCD panel allows for comfortable reading even in bright light.

Ceteon 700 – A GPRS/GSM-enabled in-vehicle terminal with a large 7-inch TFT display, it is the answer to commercial fleet management and in-vehicle entertainment OEMs. Displaying information clearly even in a bright environment, it is designed to be robust allowing for operations in heat and cold. A *built-in GPRS/GSM receiver* offers convenient data transfer and GSM voice calls within vehicles. Used with the GPS receiver, it is ideal for fleet management solutions.

Ceteon 840 – weighing less than 1kg, ergonomically designed for ease of use, the Ceteon 840 comes with a brilliant 16-bit SVGA touch-sensitive screen for full web-page display.

Main Features

- Pen tablet – on the spot decision and data collection applications
 - Lightweight – less than 1 kg
 - Resistive Digitiser – Touch-sensitive
 - Integrated Audio – ability to record and playback sound
 - SVGA Display – 16-bit color SVGA for full web page display
 - External CF Card Slot – CF card can be used as a mobile disk, transferring data between computers
- **Agilis** – an established name in satellite communications provides a full range of high performance and reliable VSAT, Microwave Digital Radio and Satellite Communications service solutions.

Newly launched at CommunicAsia 2002 will be Agilis’ Hybrid Radio Frequency Transceivers; 60 GHz radio; 3.5 GHz MMDS and Block Up Converter.

Agilis’ Hybrid Radio Frequency Transceiver uses a single RF transceiver to send signals originating in at least two different frequency bands. Signals in the first frequency band are sent for transmission without conversion, and signals in all other frequency bands are converted to the first frequency band before being sent to the RF transceiver. In this integrated unit, two different frequency systems (such as, for example, 70 MHz and L band) can be combined into the same RFT, resulting in cost reduction over system performance in the C or Ku band. Reliability also increases as there is less number of components as a single L band RFT is used at the output, one stage is transferred indoors.

Agilis’ 60 GHz AMMR Series Digital Radio, part of the AMMR series is a millimeter wave Digital Radio that employs the 60 GHz unlicensed frequency band. It comes

with various transmission capacities (4E1 to 16 E1) for different PDH applications in public and private networks. Based on the 60 GHz oxygen absorption band, the AMMR has wide applications in short-haul communications such as secure short-haul link or last-mile access network. Designed for easy and quick installation suitable for quick deployable network applications, Agilis' millimeter wave radio employs state-of-the-art millimeter-wave MMIC for low noise LNA and high power SSPA for the RF-front-end. In addition, with the internal low phase noise DRO, it enables the system for various modulation format such as QPSK or QAM.

Features & Benefits

- Split ODU and IDU construction
- Remote M&C
- Secure short haul link and last mile access link
- Fixed cellular solution - such as LMDS

The Multi-Channel Multi-point Distribution System (MMDS) subscriber units and base station are available in 3.5GHz band. It operates in Frequency Division Duplex between subscriber unit and Base, and the system is suited to TDMA transmission. This radio unit provides a wireless link for wireless broadband connectivity system. A single IF interfacing cable carries a multiplexed IF, Power supply, M&C signal and a single antenna for both Tx & Rx, this is connected by one RF cable to the antenna simplifying the installation process. This Point-to-Multipoint (PMP) system is best suited for users' requirements for broadband, high-speed solutions at a low cost. Additionally, the IF interface can be made to meet users' specifications.

Main Features

- Compact
- High speed
- Reliable
- Easy to install

Agilis's Block Up Converter in both C-Band and Ku-Band, is a highly cost-effective RF Transmitter for Satellite Communications. Suitable for use in data and voice communications, Satellite IP network, SCPC network configurations, *MCPC*, *DAMA* as well as *TDMA* applications. Easy to install, it is redundancy-ready and field-proven under any harsh environment.

- **Intellect** show that unlike the old tradition of building multiple networks (one for voice, one for data, one for video and one for LAN traffic), its OmniLYNX is the new-age multiplexer that delivers all the capabilities and advantages of multi-media communication with a single cost-effective system. It seamlessly integrates voice, data and video in a single shelf making it less complicating and more cost effective.

The advanced technology employed in OmniLYNX, interfaces modules such as channel banks, video codecs, video switching units, incorporating them into the OmniLYNX architecture. OmniLYNX is a multi-access platform that consolidates these multiple networks into a single network backbone, leaving you to maintain and operate only one set of equipment and one network management system. OmniLYNX gives you the flexibility and scalability to maximise services and applications.

With this solution you enjoy more applications and more services through a simpler network. In addition, benefits to users include reduced cost of equipment, streamlined management, higher reliability, increased security and efficient bandwidth management. These translate to increased service levels and profitability. It is the answer to providing real-time information where it's needed – in a transportation centre, a security office, a management centre or a headquarters located miles away.

M-COMMERCE

- Mobile Solutions & Payment Services (MSPS) – Remote and Retail Payment Solutions
- WizVision - WizSSL Enterprise and WizRewards.
- **Mobile Solutions & Payment Services (MSPS)** is building and connecting with mobile payment network infrastructures and other payment systems to provide a full suite of mobile payment modes such as direct debit, credit and stored value/virtual cash card. Consumers can use these modes within various purchasing environments, including at a merchant location or interacting with a virtual merchant. MSPS will showcase its remote and retail mobile payment products.

The Remote Payment application enables consumers to conduct transactions, such as book and/or pay for tickets, goods, services and bills, from anywhere and anytime, with a virtual merchant. Consumers will experience a seamless booking and payment experience, have a greater choice in method of payments, the ability to make purchases with participating merchants anytime and any place, and enjoy greater peace of mind from a more secure method of payment.

MSPS' Retail Payment solution allows consumers to fund retail purchases by tapping into their bank accounts (debit or credit) through their mobile phones or wireless devices. The consumer authenticates himself with his bank for each and every purchase. Consumer benefits are similar to those experienced in a remote payment scenario. Rather than carrying several payment devices including cash, cards and cheques, consumers can utilize a single point of access into all their sources of funding, giving them greater choice of payment methods and increased security.

- With offices in Singapore, China, Malaysia and Indonesia, **WizVision** is expanding its reach in delivering its solutions to the region and to provide comprehensive support for its clients. ST Electronics has invited WizVision to showcase its products that promote secure payments. Built on the Wiz ePlatform, its complete suite of products offer expandability across card-based, mobile devices and online channels, and allows consumers to pay bills and make purchases anytime and anywhere through various means.

WizRewards – Make your online purchases and payments easier, more secure and a little more fun! WizRewards will convert information stored in your data warehouses into sales ammunition that can be used across all channels, including

wireless and the Internet. WizRewards allows retailers to capture details on customer spending using their existing payments infrastructure. This information can then be used by retailers to offer more targeted marketing campaigns. WizRewards's full suite of functions lets retailers design a comprehensive loyalty program that offers member profile tracking; member management; redemption and marketing campaigns.

WizSSL Enterprise –A payment gateway solution that interfaces merchants and credit card authorisation networks. It provides a direct link between the Merchant and the Bank. With WizSSL Enterprise, the user can confidently enter credit card information to perform a transaction on a PC through a secure connection to the Internet. WizSSL Enterprise offers you the flexibility and capability of an eCommerce server, an EDC (electronic data capture terminal), call centers, supermarkets, etc to provide an easy-to-use, secure online credit and debit card payment infrastructure for merchant settlements and other services. With features like multi-tiered access levels, detailed reporting and secure payments capability with SSL encryption, it is no wonder WizSSL Enterprise is the preferred payment solution used by international banks and their merchants.

INFOSECURITY

DigiSAFE Pte Ltd is a solution vendor that specialises in infocomm security products. DigiSAFE will be showcasing the following new products at CommunicAsia 2002 :

- MobileCrypt & PhoneCrypt – GSM voice encryptor
- FaxCrypt
- Digital Watermarking
- The **DigiSAFE MobileCrypt** is a GSM voice encryptor designed to work with commercially available handsets including popular vendors like Nokia. It encrypts the voice communication between two GSM mobile users digitally.

By simply inserting the GSM handset into the MobileCrypt, you activate the IrDA function. Once the receiving party is connected, communication will be carried out in a secure voice mode. The MobileCrypt is unique because it is not handphone dependent and supports handphones with infra-red features. There is no messy cabling between the encryption device and the handset. The DigiSAFE MobileCrypt supports strong encryption algorithms e.g. 168-bit 3DES enabling toll-quality voice. The MobileCrypt also inter-operates with **DigiSAFE's PhoneCrypt** desk-top phone encryptor for GSM-to-PSTN secure voice conversation.

- The **DigiSAFE FaxCrypt** is a compact fax encryptor designed to work with any Group 3 fax machines and is installed "in-line" between the fax and the telephone. This ensures that sensitive fax documents are transmitted securely to their intended recipients. The use of *two-way authentication* protects fax transmissions from inadvertent misdirection or malicious misrepresentation. The fax transmission is *encrypted* to prevent phone line tapping. A comprehensive *Secure Mailbox* function stores received fax documents in encrypted form, which will only be released after successful authentication by the user. Smartcards are used to authenticate users

sending faxes, as well as to retrieve fax from the Secure Mailbox. An Electronic Key Management System (EKMS) is separately provided for the generation of keys and configuration management.

- **Digital Watermarking** can be best described by comparing them with conventional watermarks. One example is found in currency notes. Conventional watermarks are added to the currency notes to enforce proof of authenticity that can be detected by ultra-violet light devices for inspection. Similarly, digital watermarking embedded in the digital content is imperceptible to the human eyes and can be easily retrieved by its proprietary application software.

The digital watermark could contain information of the content creator, time stamp, company stamp, etc. Digital watermarks fall into two different classes, namely, visible watermarks and imperceptible or invisible watermarks. Visible watermarks are visual patterns that are overlaid on digital image or digital content. The intention is for the presence of the visible watermark to be obvious and impossible to be removed without destroying the digital content.

To complete the classification of digital watermarking systems, digital watermarks could be robust or fragile. Robust watermarks are those designed to withstand accidental and malicious attacks, such as content alteration, compression, filtering and cropping. Fragile watermarks have just the opposite characteristics in that they will drastically change in the event of any alteration of the digital content.

Therefore a watermark system can be fragile/robust and visible/invisible. In addition, most watermarking schemes have extra information (secret key) that is required for the watermark to be recovered. Depending on the scheme, these could consist of spatial frequency components selections, cryptographic keys etc.

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