



COMPANY OVERVIEW OUR EXPERIENCE & CAPABILITIES

TERAS Teknologi Sdn. Bhd.

By

Shamsul Izhan Abdul Majid

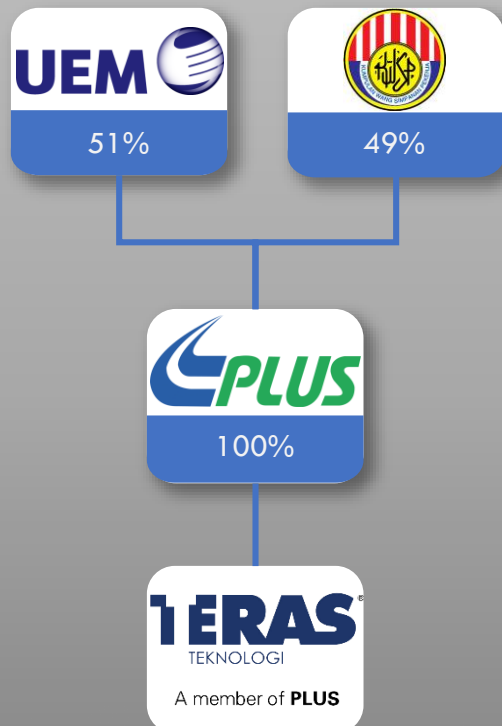
Chief Executive Officer

TERAS Teknologi Sdn. Bhd.

TERAS[®]
TEKNOLOGI

COMPANY OVERVIEW

A CORPORATE STRUCTURE



B CORPORATE INFORMATION

- Malaysia's **leading technology services provider** for the e-payment system: **70% Market Share** in Toll Collection System (Malaysia)
- Revolutionized Malaysia's e-payment systems in **expressway segment** and **expanded into parking and public transport segment**
- 24 years experience since it was founded in 1994
- Over **140 personnel**, more than **60%** are skilled IT and Engineers
- Over **30 personnel** in R&D works
- **100% Subsidiary of PLUS Malaysia Berhad** and **Bumiputera Status**

COMPANY CAPABILITIES



EXPRESSWAYS

TRAFFIC CONTROL & SURVEILLANCE

- Traffic Monitoring Center (TMC)
- Variable Messaging Information System
- SCADA
- Emergency Telephone
- Fleet Management
- Video Monitoring and Capturing System
- License Plate Recognition

TOLL COLLECTION SYSTEM

- Toll Collection System:
- SmartTAG
 - TnGo
 - RFID

Back End Office

Application Development



INTEGRATED CONTROL & SURVEILLANCE

SMART BUILDING MANAGEMENT

Security and Surveillance

Building Security and Access Management System

- Access System
- Visitor Management
- CCTV
- Parking System in Gated Security
- RFID Automated Community Access



PUBLIC TRANSPORT

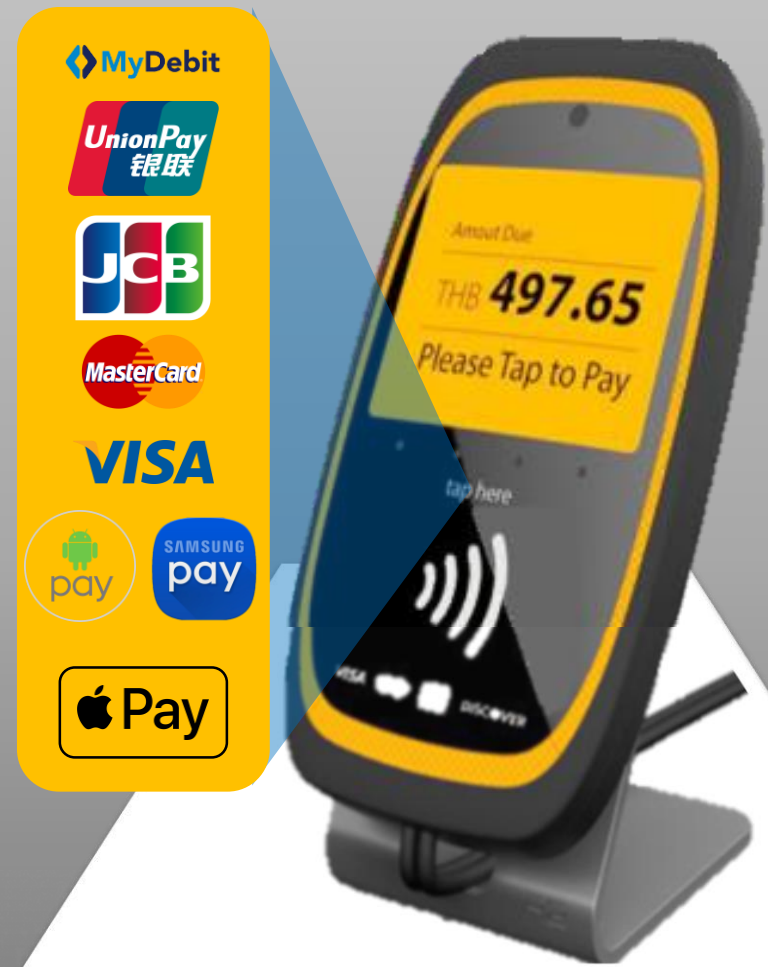
AUTOMATED FARE COLLECTION SYSTEM

- Automated Gate
- Ticket Vending Machine
- Office Ticket Processor (OTP)

SMART PARKING SOLUTION

- Cashless/TNG Parking Solution
- Park 'n Ride
- Parking Guidance

MULTI-BANK READER DEVELOPMENT BY TERAS



MAIN FEATURES

- Multi protocol supportive: ISO 14443, Mifare series, DESFire, Felica.
- NFC (ISO18092) full function support.
- Multi-purpose design – unattended, desktop stand.
- Contactless EMV certified – Visa, Master, Apple Pay, Samsung Pay



APPLICATIONS

- Contactless payment – open and closed loop payment.
- NFC application – mobile wallet i.e Samsung Pay, Apple Pay.
- Unattended machine – kiosk, ATM, CDM.
- Transportation.

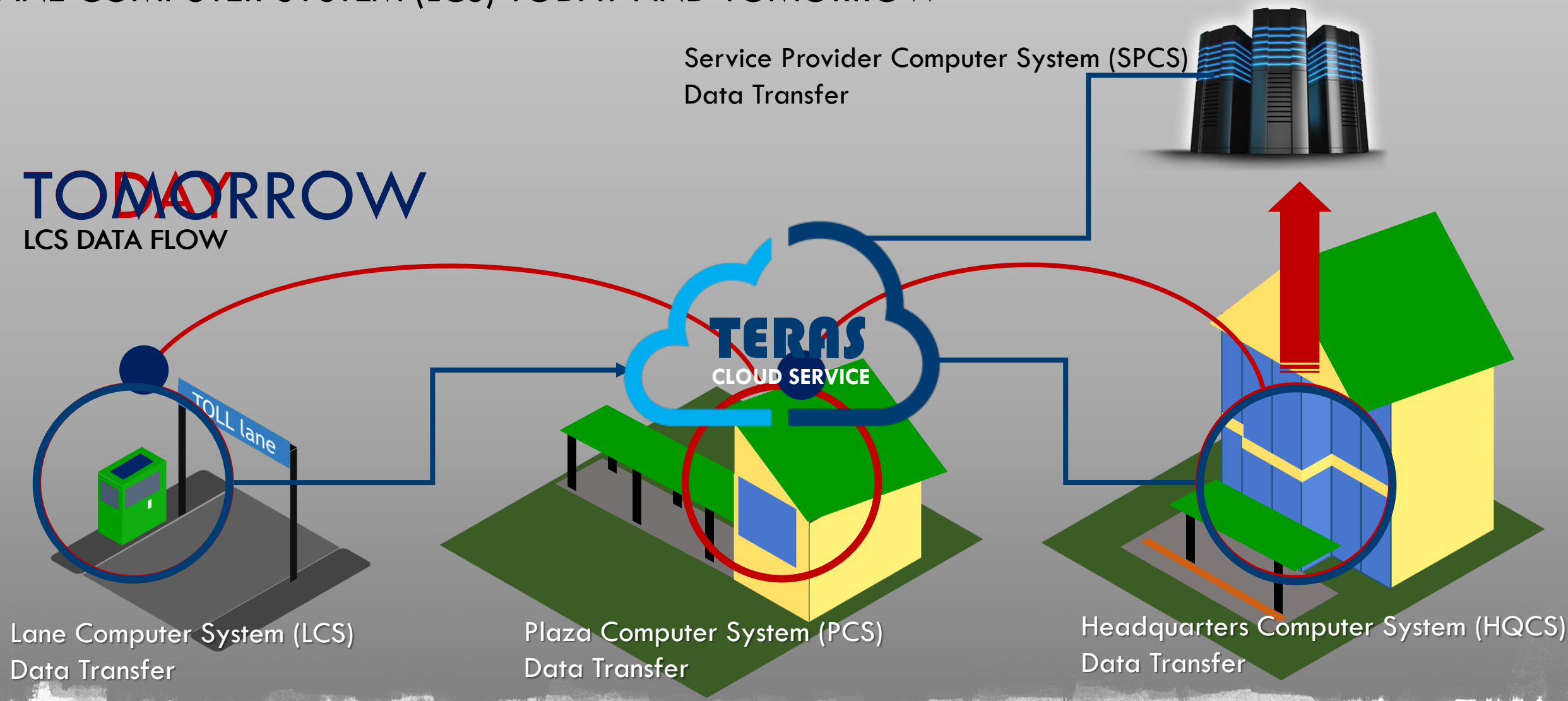


SPECIFICATIONS

- MCU ARM 32-bit Cortex M4.
- 1-Mbytes Flash, 192-Kbytes SRAM.
- USB 2.0, Serial, TCP/IP
- ISO 14443 A/B, Mifare, NFC (ISO18092), DESFire, Felica.
- ISO-7816 SAM Smartcard x 6.
- RF @ 13.56MHz.
- Speed 106/212/424/848 kbps.
- Read Distance 5cm.
- PC/SC or Proprietary protocol.
- Power 5VDC or USB.
- 4 LED Status.
- 3.5" TFT LCD.
- Frequency Control Buzzer.
- Certification: FCC, CE, EMV L1, L2 – Visa, Union Pay

LANE COMPUTER SYSTEM (LCS) TODAY AND TOMORROW

TOMORROW
LCS DATA FLOW



Lane Computer System (LCS)
Data Transfer

Plaza Computer System (PCS)
Data Transfer

Headquarters Computer System (HQCS)
Data Transfer

Service Provider Computer System (SPCS)
Data Transfer

TERAS's INVOLVEMENT IN MLFF (Multi-Lane Free Flow) JOURNEY OF MALAYSIA

Appointed by Malaysia Highway Authority (MHA) for First Proof Of Concept (POC) with partners.

2008

2013

TERAS Second POC at PLUS Highway

2016

TERAS Received Approval to do POC at Other Highway Concessionaires

2017

Pilot Test for Klang Valley Police Cars and Other 18 Concessionaires

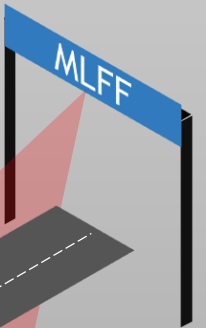
2015

Receive Approval to Install RFID at DUKE Highway.

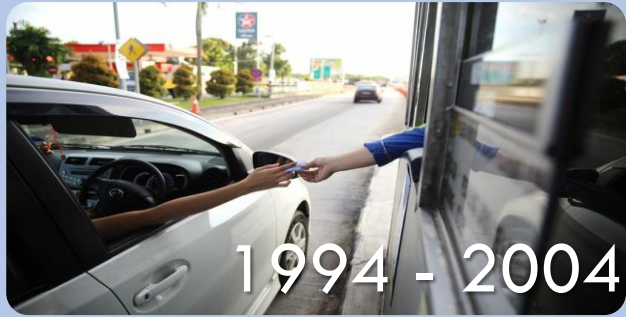
2015

TERAS POC with MHA for Police Cars

2018
MLFF Ready



TERAS LEADERSHIP IN MALAYSIA TOLL ETC (Electronic Toll Collection System)



1994 - 2004

LOCALISATION

- 1996: Installation of TRACS for PLUS
- 1997: Implementation of TNG Lane
- 1998: Implementation of Smart TAG Lane
- 2004: Standardization of SmartTAG

Electronic Toll Collection (ETC) System with local development capabilities & hybrid collection mode: Cash, Smartcard & OBU.



2005 - 2011

UPGRADING

- 2005: Introduction to VMCS
- 2009: License Plate Recognition
- 2010: Multiclass TNG Lane
 - : Multiclass SmartTAG Lane
 - : Full ETC Plaza
- 2011: Implementation of recyclable transit ticket with enforcement
 - : Implementation of Portable Reader

ETC upgrade with complete cash/smartcard collection convergence & OBU with single lane free flow capability.



2012 - Onwards

FUTURE DIRECTION

- : MLFF with Microwave & RFID
- : MIFARE PLUS Reader
- : Back End office solution
- : Integrated solution for payment, surveillance & safety
- : NFC payment by phone
- : International Market TRACS (India, Indonesia, Bangladesh, Kazakhstan)
- : Partnering

Multi-lanes free flow capabilities AND Area Road Pricing (Congestion Charges)

