



Enterprise wide Mobile computing platform

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Enterprise wide Mobile computing systems

- Main requirements:
 - Data collecting terminals are required for the following:
 - Collect the personal data of every individual at their door steps
 - Capture the photograph of every individual along with the data
 - Collect the Fingerprint of every individual (optional)
 - Generate the printout of the data captured for verification and authentication at the door step
 - Upload the data through communication media (Satellite, Telephone line, Wi-max or GPRS) to the central server.
 - The data collected must be stored and maintained regularly using online process (addition /deletion /modification)

Enterprise wide online Data collecting system

- Need of Real-time system for data capture:
 - The system must be working 24x7 for 365 days
 - The system must consume less power
 - The system must work with battery
 - The system must be able charge through Solar Power
 - The system must work with various communication modes
 - Satellite, GSM/GPRS, Modem, Ethernet(LAN) etc.,
 - The system must work in remote places
 - The system must be user friendly to operate
 - The system must upload and download data online
 - The system must be easily serviced (as plug and play device)
 - The system must have high data redundancy
 - The system must support the latest technology with future upgradation
 - The system must have high level security including Biometric, Encryption and Decryptions technologies.
 - The system must be able to address large users to collect the data in a short period of time (must be mobile units)
 - The system must have built-in camera to collect the photographs
 - The system have built-in printer to generate the printout

Enterprise wide online Data collecting system

■ Infrastructure:

- Real-time system data capture needs proper Infrastructure based on the modern Technology.
- The infrastructure must be Enterprise wide to collect the data from remote places and update in the central server
- The Enterprise wide infrastructure must support Real-time systems for online activities
- The Enterprise wide real-time system consists of the following:
 - Communication systems
 - Power supply systems
 - Computing systems
 - Database systems
 - Security Systems

Enterprise wide online Data collecting system

- Communication Systems:
 - Communication is the back bone of the entire system
 - Online operations using Real-time systems needs connectivity at all time (24x7, 365 days).
 - Villages are scattered across the state including the remote places.
 - The main challenges are:
 - Delivering the data collected by the terminals to central server using online process
 - Frequent updation of data from remote places during the maintenance
 - The total number of villages are large and they are spread across wide geographical area.
 - Since the number of villages are large therefore, the amount of data transfer on day-to-day basis is very large

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- These wide spread villages with large amount data transfer, demands multiple communication modes.
 - Satellite communications
 - Telephone systems (Modems)
 - Mobile Cellular Network (GSM/GPRS)
 - Wi-max systems (RF)
 - Interface to Kiosks for data upload
- All communication modes must co-exists to transfer data between servers and terminals used in the village.



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- Conclusion on Communication systems:
 - All types of communication systems must co-exists to address the needs
 - The Hardware and Software system must support these communications mode to address the needs.
 - All these communication modes must transfer data between the terminals at villages and Servers on real time basis

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- Power Supply systems:
 - This in one of the prime requirements for successful operation of the system
 - Power supply must be available all time to keep the equipments ON to perform real-time operations.
 - Equipments (Hardware and communication systems) must work with low power, using battery
 - Power supply requirements must be addressable using Solar power system at low cost.
 - The low power devices work efficiently all time due less heat generated.
 - This reduces maintenance problems and
 - Enhances the life of the product
- Traditional computers consumes more power and need larger battery for longer duration operations.
 - They are not suitable for real-time applications.

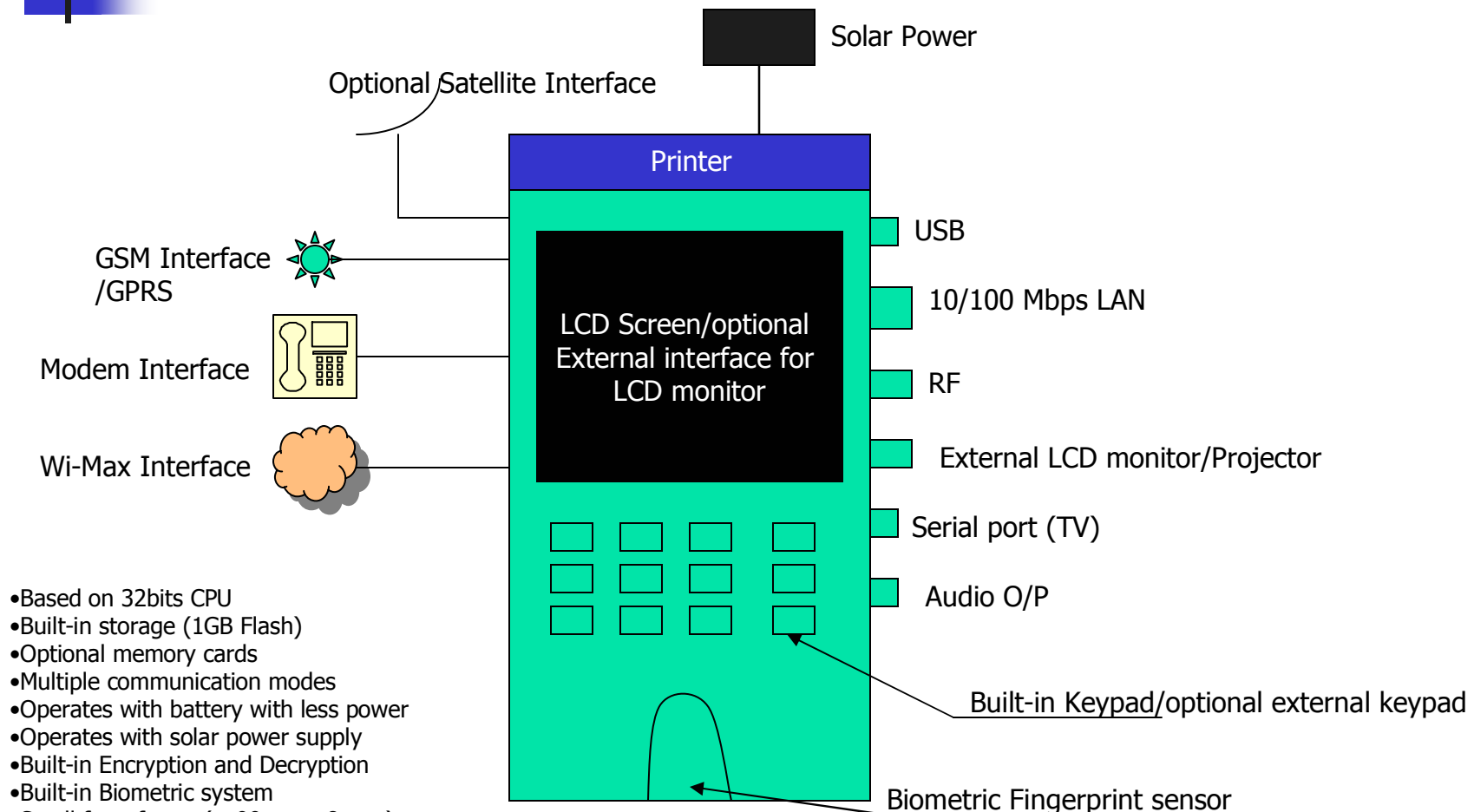
Enterprise wide online Data collecting system

- Computing Systems:
 - A special computing system with Hardware and Software is required to address the Real-time needs.
 - This special computing system is designed and developed by using Embedded technology
 - This device is a computer with many advanced features suitable for Real-time applications.
 - This Special computer is called eLearning and eMIS Data Terminal (MiFaun). It is basically Single Chip Computer with advanced technology.
 - This device operates with Linux OS
 - This device consumes less power (5-15 Watts) and operates with battery

Enterprise wide online Data collecting system



MiFaun



- Based on 32bits CPU
- Built-in storage (1GB Flash)
- Optional memory cards
- Multiple communication modes
- Operates with battery with less power
- Operates with solar power supply
- Built-in Encryption and Decryption
- Built-in Biometric system
- Small form factor (~ 90mm x 8 mm)
- Multiple applications can be loaded based on the applications
- Supports RF keyboard
- Supports MPEG2 multimedia
- Built-in printer (optional)
- Built-in camera (optional)

- Reliability of the system is high
- No moving parts in the unit. Hence the failure rate is very very low
- Consumes less power, therefore the life is very high
- Embedded system, therefore functions well as real time system

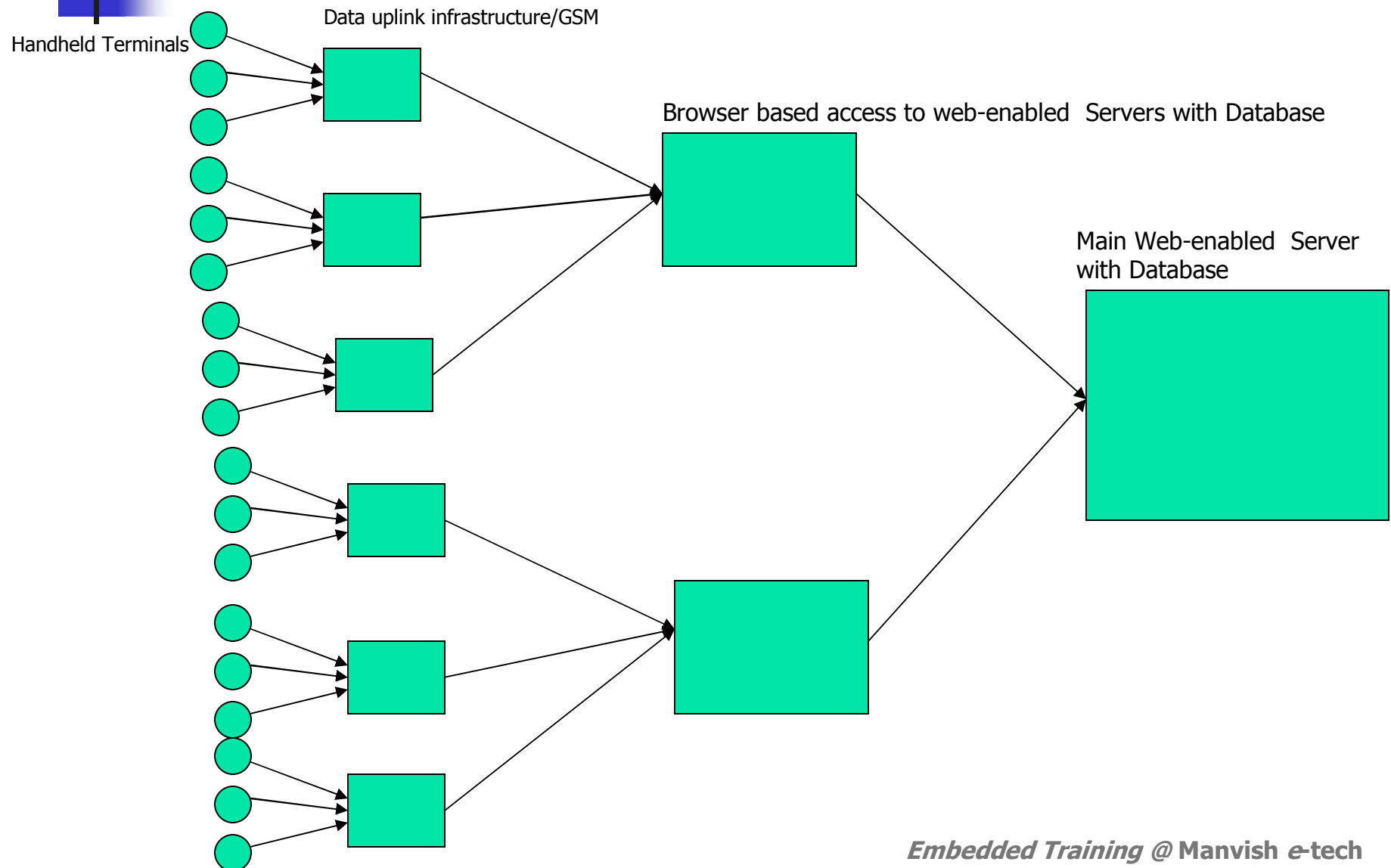
Embedded Training @ Manvish e-tech



Enterprise wide online Data collecting system

- Database Systems:
 - The amount of data generated is very large
 - Since, the system is online and transactions are very large, a stable and reliable database is required
 - Also, the database must support enterprise model to connect to other system for data exchange
 - The database should not be attacked by virus easily
 - In order to address the above needs, the entire system is designed using Oracle database
 - Database is designed with distributed database architecture to address the needs of block level, district level and state level
 - This architecture provides very strong backbone database for multiple applications.

Database Architecture





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- Security Systems:
 - Security system is very essential to operate the entire system
 - Data Encryption and Decryption techniques have been used to protect the data while transferring
 - Access to database is restricted through Biometric Fingerprint system
 - Biometric Fingerprint authenticator is integrated to MiFaun.

Enterprise wide online Data collecting system

- Solutions Developed by Manvish:
 - Manvish has developed a complete solution to address the requirements of Institutions from end-to-end.
 - The total enterprise solution covers the following:
 - Design and Development of MiFaun using Freescale CPU
 - Design and Development of web-based application software for eMIS activity
 - Design and Development of communication systems for data integration
 - Integrated database design for various applications using Oracle database.

Enterprise wide online Data collecting system

- MiFaun:



- This product is fully developed by Manvish
- It works with Linux OS (open source)
- It has built-in Web-server
- It has built in (Oracle) BDB Database
- It has built-in LAN (10/100Mbps)
- It has optional built-in modem interface
- It has built-in RS232 port
- It has built-in Fingerprint Authenticator
- It has built-in RFID/smart card interface
- It has bar-code interface
- It has printer interface



mifaun
Biometric fingerprint
authenticator

- **Alternate MiFaun Models**
- Model can be used
 - On the field
- Has photograph
 - With other personal details.



MiFaun Other Models



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MiFaun Other Applications

- **The various uses of these devices**
 - Time / attendance transactions
 - Field POS/t for retail/microfinance systems.
 - Loyalty tracking solutions for retail.
 - Field-force automation.
 - Supply chain management.
 - Inventory and stock audit
 - Vehicle entry/exit/security
 - Census, Logistics, market research etc. and other research oriented activities.
 - Seamless integration across geographies for enterprise-wide multiple points of transaction
 -and a host of other applications.



MiFaun Other Applications contd

- MiFaun Other Applications contd

Industries that will find these devices useful:

- Rural Transactions for Govt and Private players
- Banking and NBFCs,
- Retail, FMCG,
- Pharmaceuticals
- Logistics and couriers companies.
- Very large inventory carrying organizations
- Dealers/Distributors of all products for
 - Portable field Point of sales
-and many such industries.



Comparison between PC and MiFaun

PC

1. Needs more resource
2. Power requirement is high
(200 –250 Watts)
3. Needs KEB power supply
4. Needs UPS
5. Can not be operated with battery
6. Solar power will not be sufficient to operate
7. Not fit for real time operations
8. Technically skilled people are required to operate
9. Service and maintenance is very difficult
10. Expensive with all the features

MiFaun

1. Needs less resource
2. Power requirement is very low
(5 – 15 Watts on full load with Built in LCD)
3. Can be operated without utility power supply
4. UPS is not required
5. Can be operated with battery
6. Can be operated with solar power
7. Highly fit for Real time operations
8. Technically skilled people are not required to operate
9. Service and maintenance is very simple
10. Not expensive with all the features



Technical specifications:

- All units operates with Linux OS(optional WinCE available)
 - More secured and stable
 - Linux is free (Huge Saving in OS cost)
 - Free from Virus
- Oracle database to manage the data
 - The data size is very large (it may go to few Terra bytes)
 - Highly reliable and stable relational database for large database
 - Virus cannot attack Oracle easily
 - Online encryption and decryption are possible
- Hardware system:
 - MiFaun is designed and developed by Manvish using High performance ARM core CPU
 - Product Life cycle of CPU is very long
 - Provides upward compatibilities for future enhancements

Technical support /partnership

- **Manvish:**
 - Design and developer of entire solution
 - Hardware and Software
 - Porting Linux
 - Web based application software
 - Remote servicing and monitoring
- **Oracle:**
 - Provides technical support for database design for Enterprise application
 - Designing the tables to tune for eMIS educational applications
- **Freescale:**
 - Provides technical back-up support for hardware and software design and product availability and future upgrades



THANK YOU

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