UMD ICADA

UMD CHARIOT

UMD REAP

UMD VAST

UMD BOC

UMD PASSPORT

CARDGATE

Introduction to UMD's Solution Architecture

UMD Version 4.0
Full-Stack Solution Provider

UNIQUE MICRO DESIGN
...Engineering IoT Solutions

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Rev 27

UNIQUE MICRO DESIGN
...Engineering IoT Solutions

Mission Statement

- Since 1983 Unique Micro Design (UMD) has been more than just a supplier of hardware, software and services to Customers; we *solve their problems*.
- And in many cases, solving very tough and challenging problems via our dedicated and diverse team of skill professionals who have a *“can do attitude”*.
- We are passionate about creating innovative solutions using our expertise in “*engineering IoT solutions*”.
- Our solutions are for Customers that are looking for a *point of difference*, and understand technology innovation will help them succeed.
- Once we have a Customer, we like to envelop them and *become part of their team* and continue to help drive their success.

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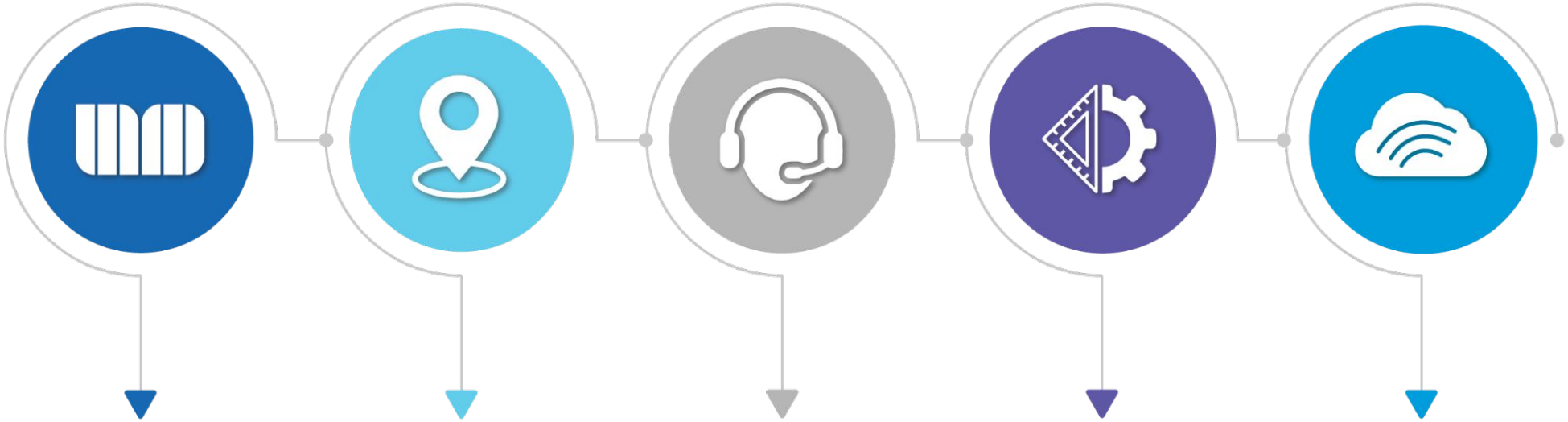
About UMD



Founded 1983

Geoffrey Ramadan:
Managing Director
Harry Ramadan:
Chief Technology Officer/Director

Clayton, Vic

Head office location.
Part of the Monash Precinct, Australia's largest concentration of ICT industries

30+ Staff

More then half in technical roles, solving customer's needs for productivity improvement

Edgeware

Edgeware focus means **efficiency, effectiveness, ease and empowerment**

IoT Solutions

Our engineering IOT solutions skills enables us to enhance products and their operations

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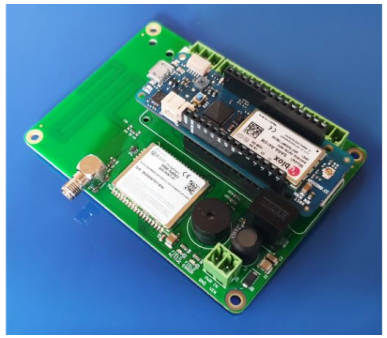
What businesses are we in?

- Since 1983 UMD has been solving customer's needs for **productivity improvement** by adding real time visibility and control to software, using **Edgeware**, **IoT** and our **engineering IoT solution** skills, which reflects our "Unique" ability to:
  - **Design** and manufacture IoT devices and Interface electronics
  - **Source** & Integrate ICT products from our agencies
  - **Support** through our professional engineering, software and support services
- In simple terms "we add eyes and ears" to software



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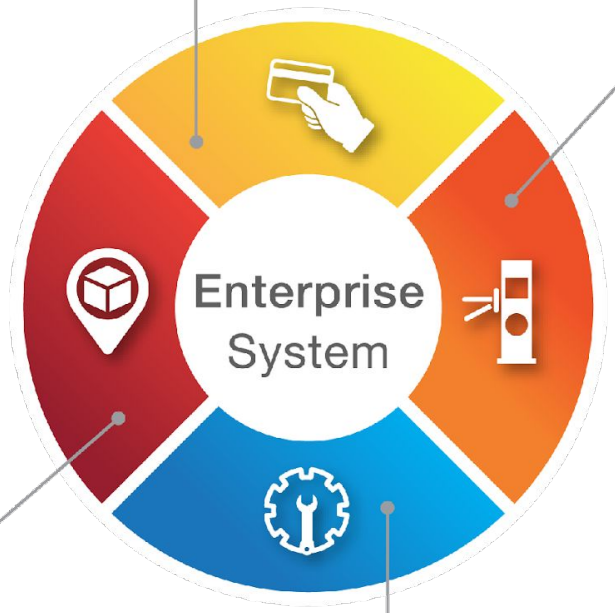
Our Technology Verticals

Retail & Payment Technologies

UMDREAP

- Retail Edgeware Application Platform
- Adds enhanced functionality: RFID, IoT, redemptions, loyalty, cashless, payments, kiosk, and mobility using lightweight infrastructure
- Interfaces to POS in agnostic way with no software changes
- Manages and report inventory data



Patron Access & Ticketing

UMDVAST

- Patron access control for venues, events, attractions and stadiums
- Supports fixed and mobile validators
- Ticket lifecycle management
- Extends ticket functionally to enhance the customer experience

Data Capture Systems

UMDICADA

- IoT Control and Data Acquisition
- Adds eyes and ears to manufacturing, logistics and warehousing
- Production, inventory and asset tracking

Business Support Systems

UMDBOC

- Business Operations Central
- Business Support Software
- Scalable and modular cloud based solutions

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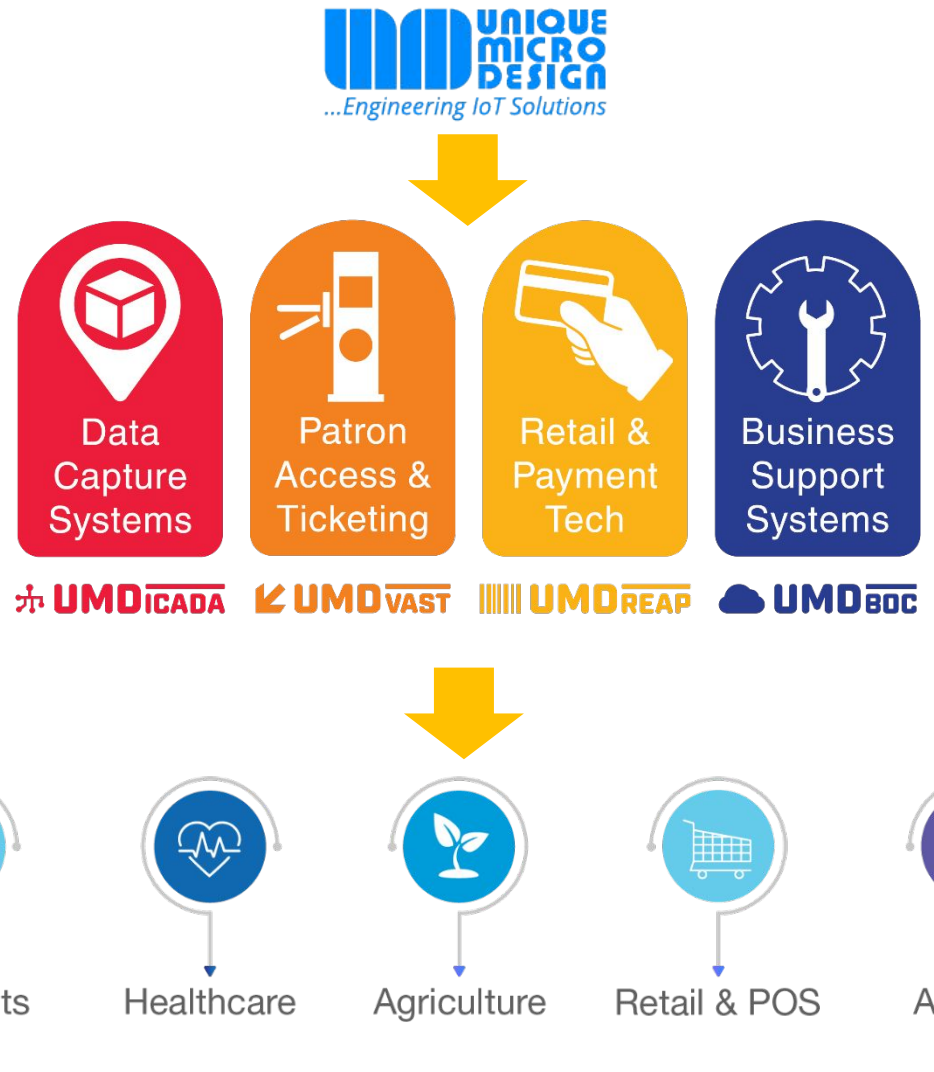
Markets & Platform Framework

UMD – Engineering IoT Solutions

Technology Verticals

Vertical Platforms

Market Segments



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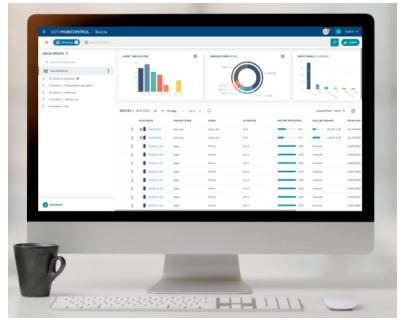
Technologies

- Barcoding
- Cloud IT Services Hosting & The Internet
- Digital Communications (eg. Wifi, BLE, Cellular, Ethernet, LoRa, etc)
- Electronics and physical Interfaces
- Embedded Computing
- IT (computers, networks, servers, peripherals etc)
- Mobility software and hardware devices
- Payment Gateways (Credit Card, EFTPOS, Payment API Integration)
- Point of Service / Point of Sale
- Radio Frequency Identification (RFID)
- Software (embedded, mobility, application and cloud)



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Our Services

Software

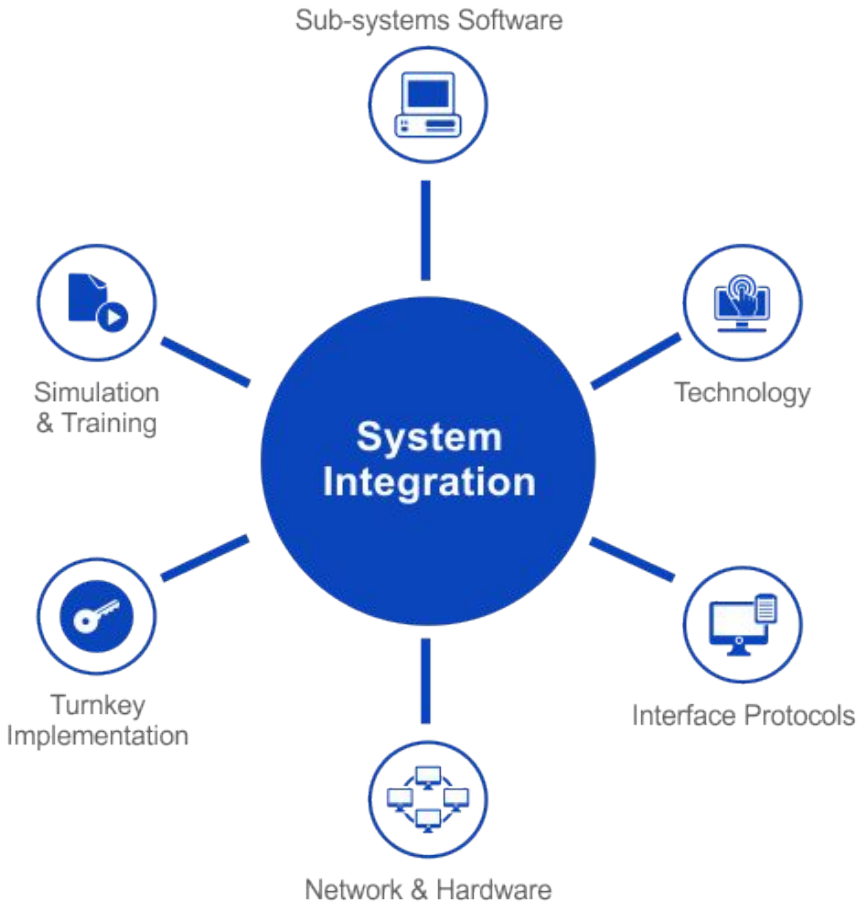
- Software Development (Embedded, Mobility, Applications & Web)
- Solutions Architecture

IT & Services

- Systems Integration
- Systems Engineering
- Networking & Wireless Infrastructure
- Installation & Commissioning
- After Sales Support & Service

Electronics Engineering

- Electronic Design
- Industrial & Mechanical Design
- Rapid Prototyping (3D Printers, Laser Cutters..)
- Manufacturing and Assembly



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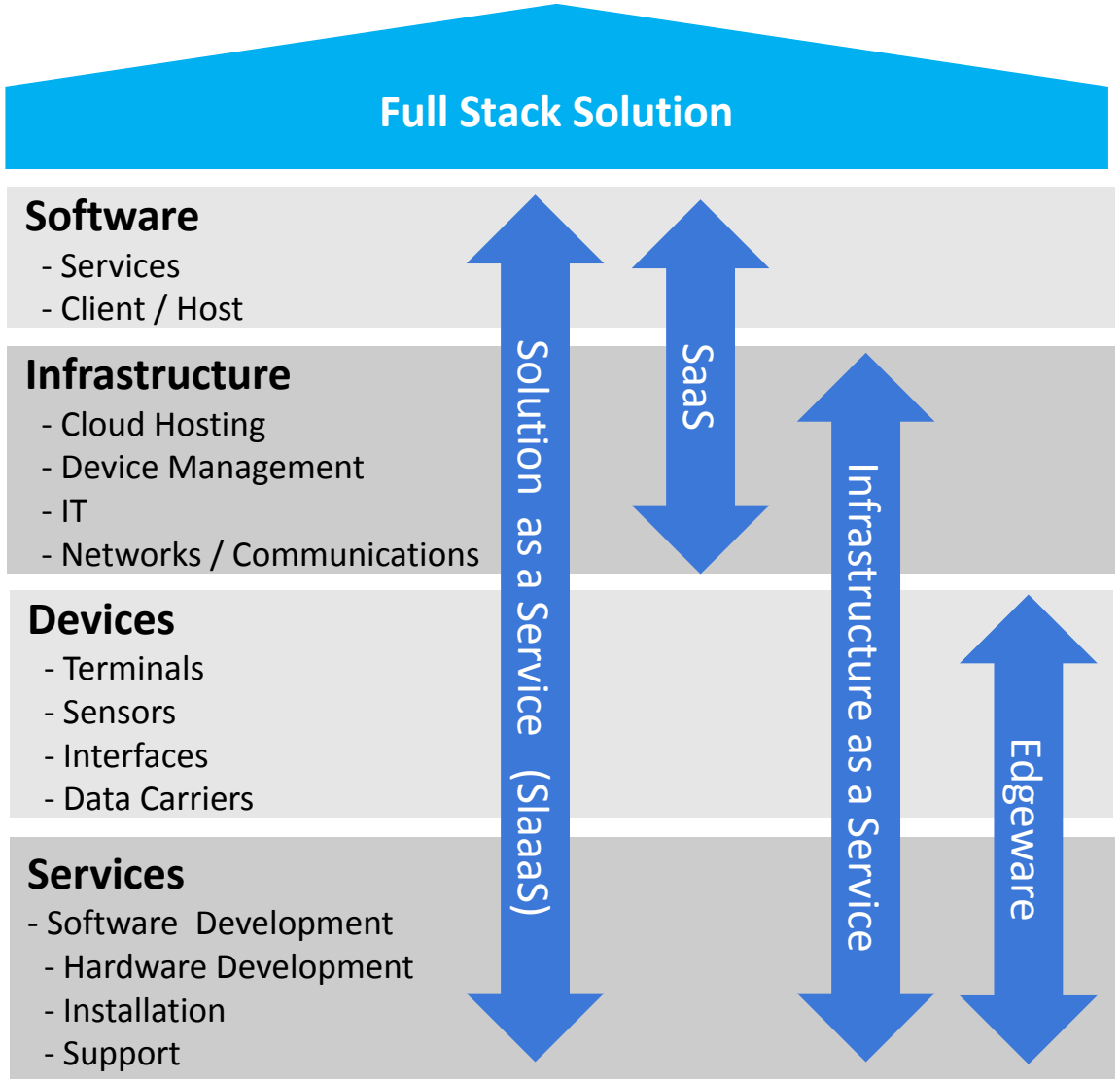
Our Key Agencies

Unique Selling Proposition

- UMD provides "*full-stack*" Solutions using Edgeware and IoT technology.
- UMD can also supply solution components and subsystems.
- Combine
  - Electronics & Sensors
  - Information & Communication Technology
  - Software
  - Services
- Exceptional experience in "*Protocols*" and "*Interfacing*"



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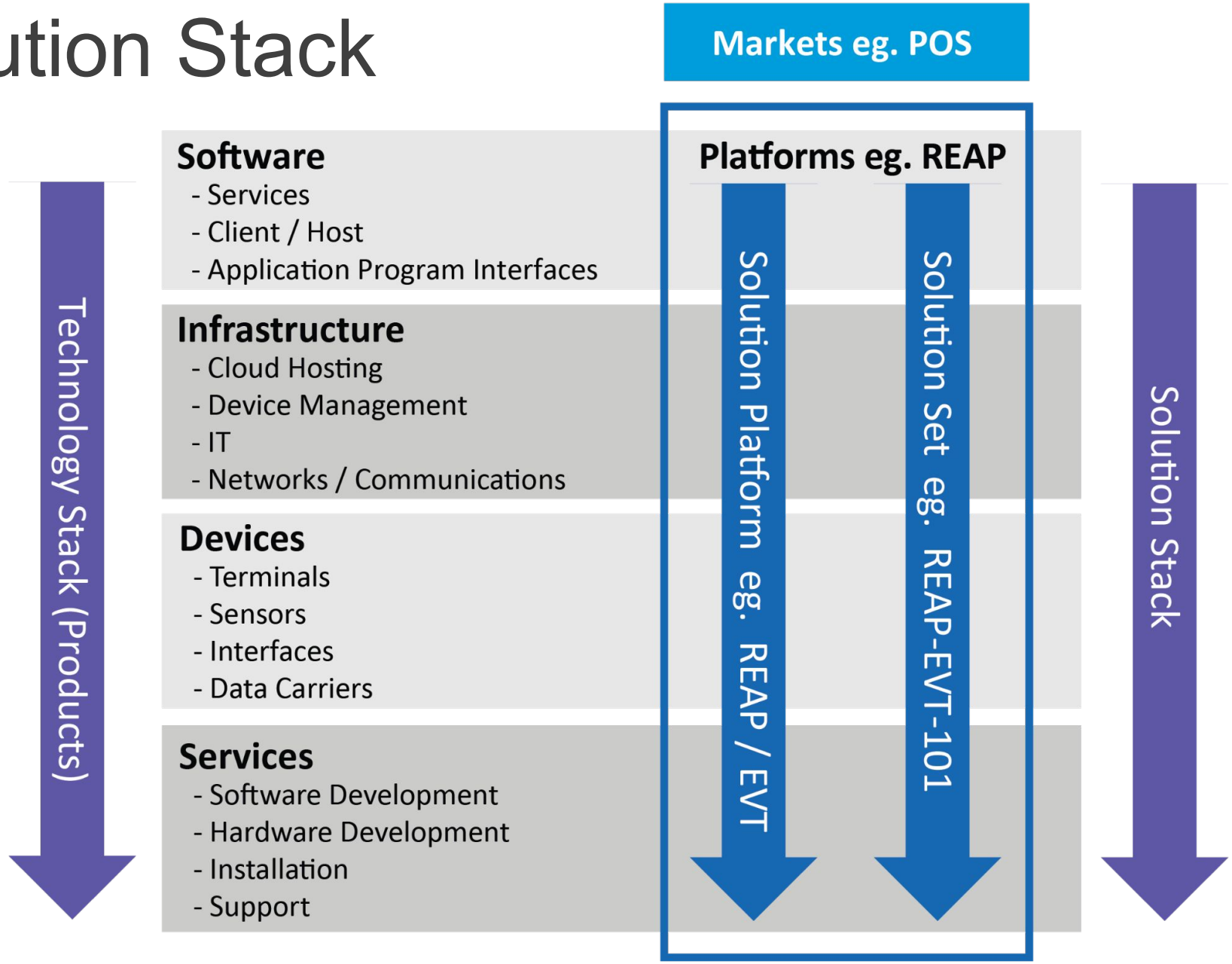
Technology/Solution Stack



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Our Channels

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DIRECT
- Data Capture Systems
- Retail & Payment Technologies
- Patron Access & Ticketing
- Business Support Systems

RESELLERS
- Dealer
- Authorised
- Industrial
- Solutions
- Systems Integrator
- OEM
- Business Solutions Consultant

SERVICE PROVIDERS
- Registered
- Independent
- Authorised

ALLIANCES
- Independent Consultants
- UMD Consulting Group
- TXP Consultant

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Software - Device Management

- Device Management
  - Enables remote access and management of a fleet of devices
- UMD Chariot
  - For managing UMD IoT devices
- SOTI
  - Device management of mobile (Android, IOS and Windows) & kiosk devices
- IVANTI (Wavelink)
  - Device management of wireless networks

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Infrastructure

- UMD Web Services (UWS)
  - Secure Cloud Hosting Service
    - PCI Compliant
  - High reliability and redundancy
- IT
  - Computers
  - Networks
- Networks & Communications
  - Wifi (Industrial)
  - 3G/4G
  - Long Range Wireless (LoRa)

UMD WEB.SERVICE

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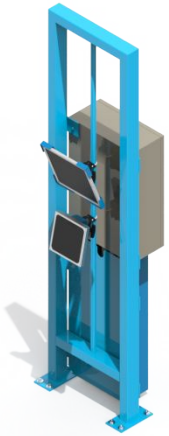
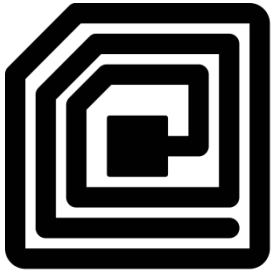
Devices

- Terminals (end devices)
  - Custom designed
  - CoTS (Commercial off the Shelf)
- Sensors
  - Environmental
  - Motion
  - Machine Status
- Interfaces
  - Custom interfacing
  - Machine Interfaces
- Data Carriers
  - Barcodes (1D, 2D, QR Code)
  - RFID (LF, HF, UHF, NFC)
  - BLE (low power)





NFC

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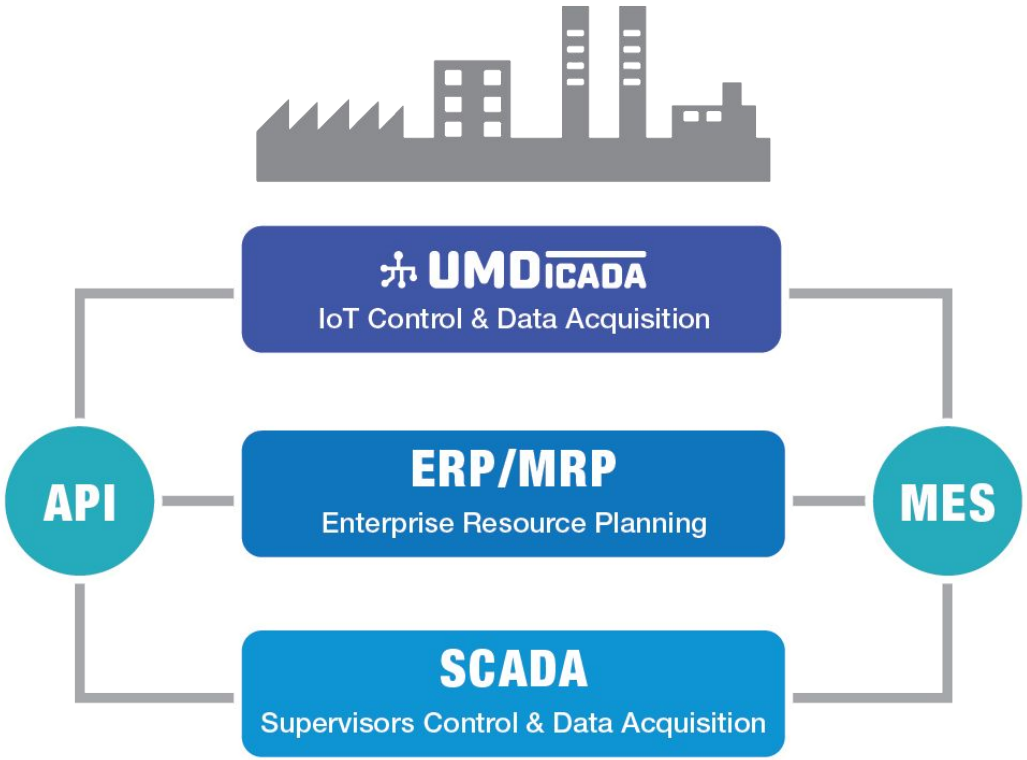
Vertical - Data Capture Solutions

- **Platform: UMD ICADA™**
  - IoT Control & Data Acquisition
  - Industrial IoT Monitoring & Control Network
  - Provides real time visibility across disparate systems
  - Provides additional inventory visibility & control beyond existing systems
- **Solution:**
  - ICADA/RACE – RFID Data Capture
  - ICADA/OEE – Overall Equipment Effectiveness
  - ICADA/RATS – Returnable Asset Tracking Systems
  - ICADA/WMS - Warehouse Management System

UMD RACE

UMD ICADA



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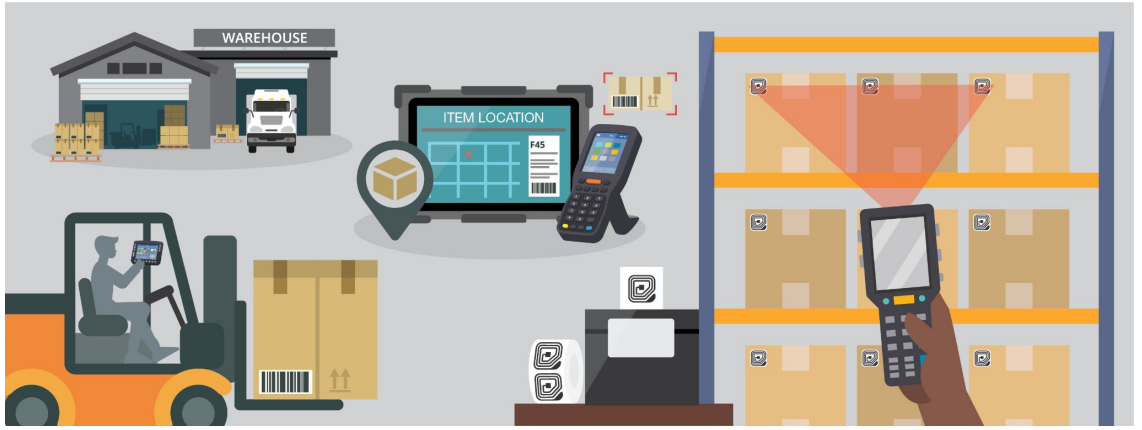
Vertical - Data Capture Solutions

- **Platform: UMD SCM™**
  - Supply Chain and Mobility
  - Provides a range of products, systems and solutions for a range of industries that utilise specialised mobile devices
- **Solution:**
  - Mobile touch screen terminal with integrated barcoding and/or RFID scanning
  - Tablets and laptops
  - Voice based terminals
  - Vehicle mount terminals
  - Fixed terminals for HID applications



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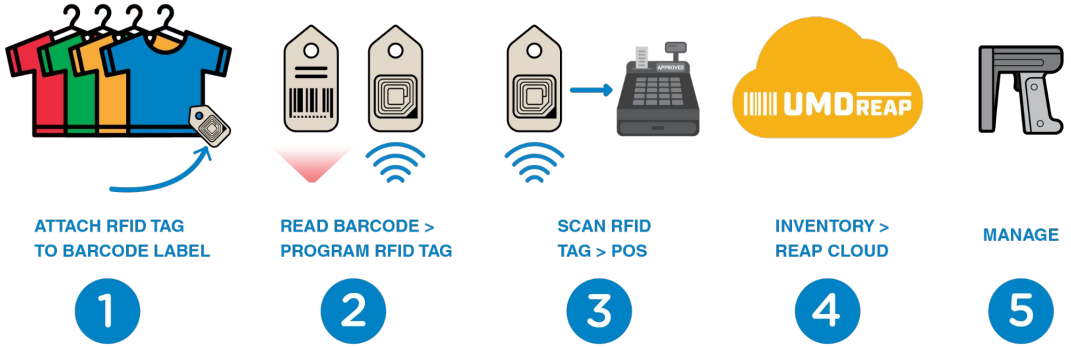
Vertical - Retail & Payment Technologies

- **Platform: UMD REAP™**
  - Retail Edgeware Application Platform
  - Expands POS/Enterprise functionality
  - RFID inventory and loyalty
- **Solution:**
  - REAP/Smart-Stock - Add RFID to Retail POS, with no POS software changes
  - REAP/EVT - Electronic Voucher Terminal. Adds to POS with no POS software changes
  - REAP/Cashless - Adds & manages cash to any token with no POS software changes
  - REAP/Mobile (App store to leverage platform)

UMD REAP



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Vertical - Retail & Payment Technologies

- **Platform: Cardgate.Net**
  - Credit Card Payment Service Provider
  - Provides API's to process credit cards
- **Solutions:**
  - Cardgate/CIS - Cardgate Internet Services
    - Adds payments to e-commerce sites
  - Cardgate/LEMOTTO – Batch processing of C.C
    - Typically for MOTTO customers
  - Cardgate/SPS – Simple Payment Service
    - Initiate payments via the Internet and pay by phone
  - Cardgate/BOS – Basic Ordering System
    - Simple to set up e-Commerce System

CARDGATE

SPS

CARDGATE SPS

CARDGATE TOP.UP

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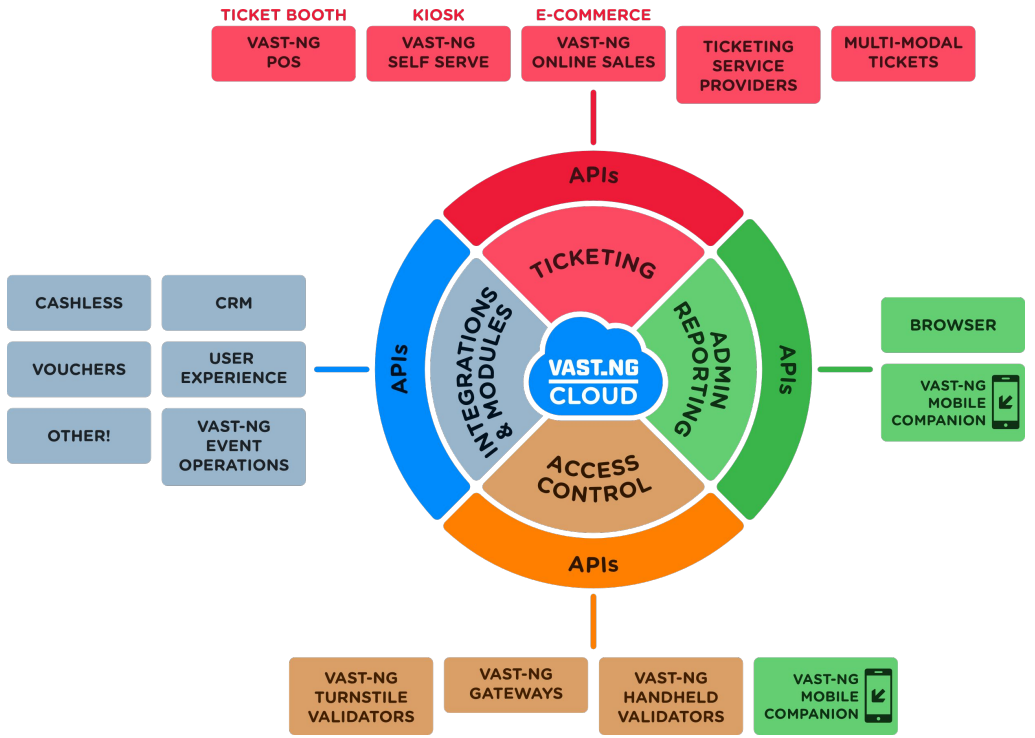
Vertical - Patron Access & Ticketing

- **Platform: UMD ICADA™**
  - Independent validation of tickets and access control
  - Ticket life cycle management
  - Multi-source tickets
- **Solution:**
  - VAST/PAX - Venue patron access control
  - VAST/Mobile - Mobile patron access control
  - VAST/EVT - Adds Electronic Voucher Transfer to tickets. Enables loyalty and multi-modal tickets
  - VAST/TTP - Transport ticketing platform

UMD VAST



UMD PASSPORT

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Vertical - Retail, Patron Access & Ticketing

- Platform: UMD PASSPORT™
  - Integrates UMD platforms to create Multi-Modal Ticket
  - Any token can be used as a Passport to attached tickets, vouchers, cashless and redemptions, used across any mix of POS environments in agnostic way using lightweight infrastructure.
  - Customer create closed loop specific schemas
- Solutions
  - Passport/Events
  - Passport/Attractions
  - Passport/Aviation
  - Passport/Precincts
  - Passport/Councils

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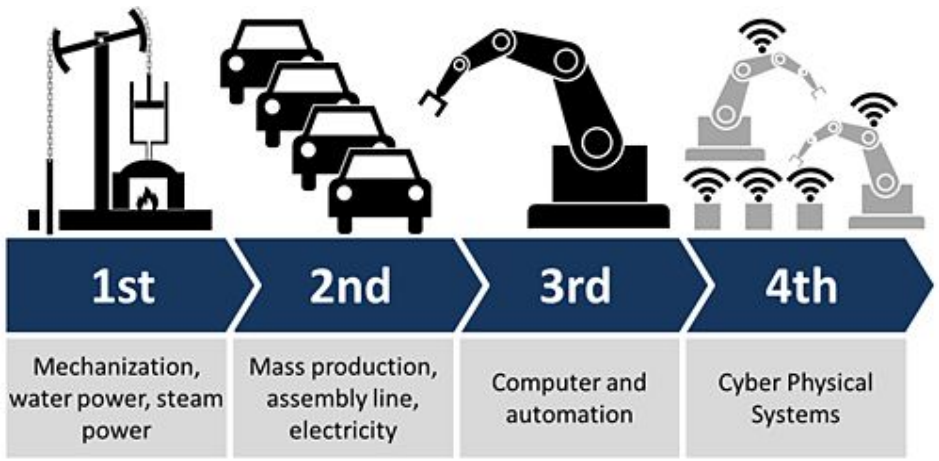
Vertical - Business Support Systems

- Platform: Business Operation Central
  - Business Software for Industry 4.0
  - Cloud based with Extensive range of Modules
  - Single platform with “infinite” extensible applications

UMD BOC

- Solution:
  - BOC/Smart-Assets – RFID/Barcode Asset Management System
  - BOC/Smart-Track – RFID/Barcode Based Tracking System
  - BOC/POS– POS for Hospitality or Retail
  - BOC/WMS – RFID/Barcode based Warehouse Management System
  - BOC/Payroll – Integrated payroll, accounting and Time & Attendance
  - BOC/Enterprise – Integrated Business Software for Industry 4.0



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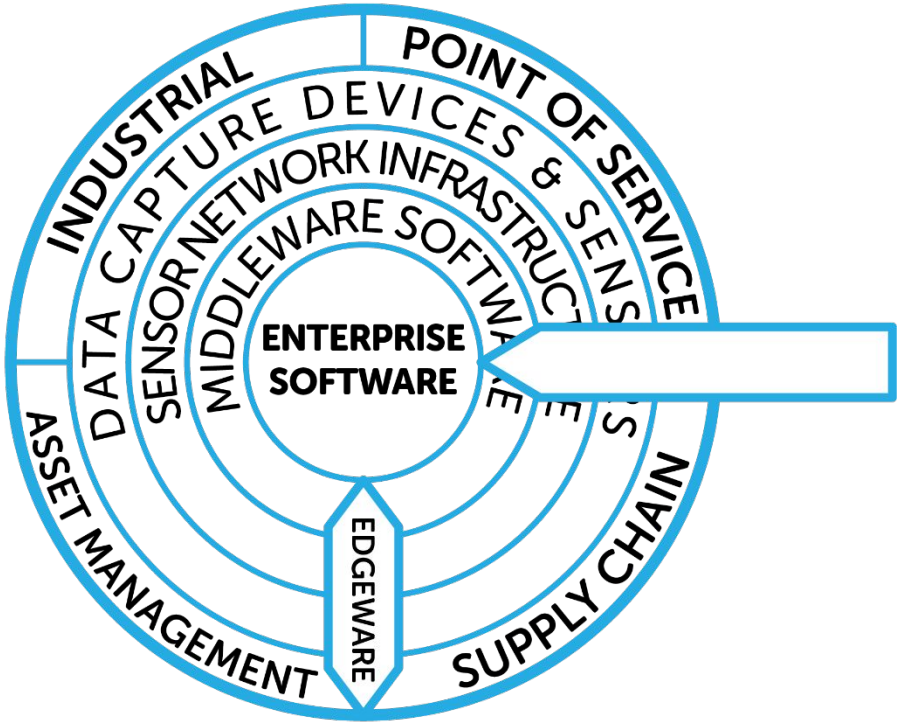
Our Approach



- Our methodology is focussed on building systems from
  - Outside to Inside
- Five-step process
  - Collect data
  - Visualise data
  - Analyse data
  - Automate analysis
  - Integrate into Enterprise System
- Get results straight away

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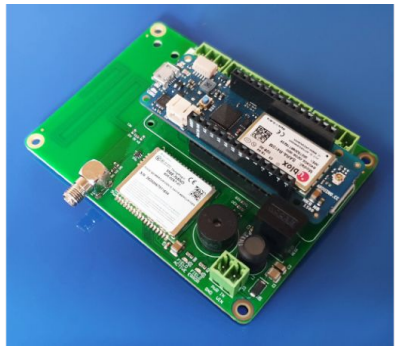
Real World Examples



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Supply Chain & Manufacturing

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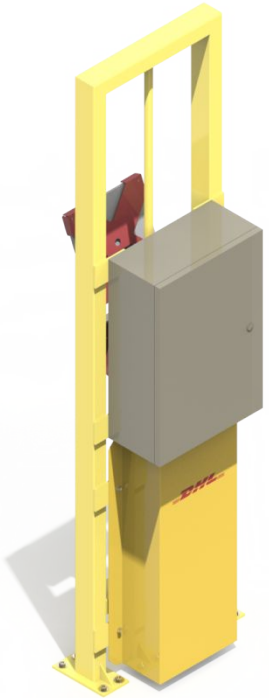
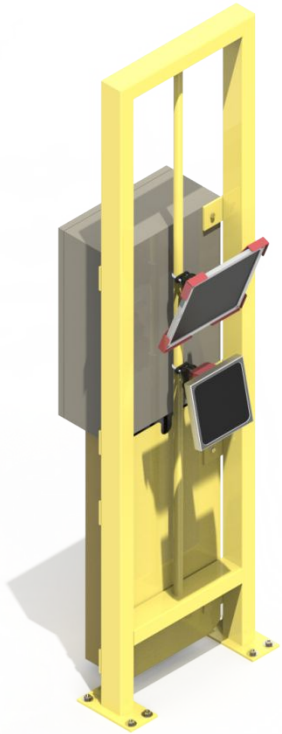
Toll Shipping (Melbourne)

ICADA RFID

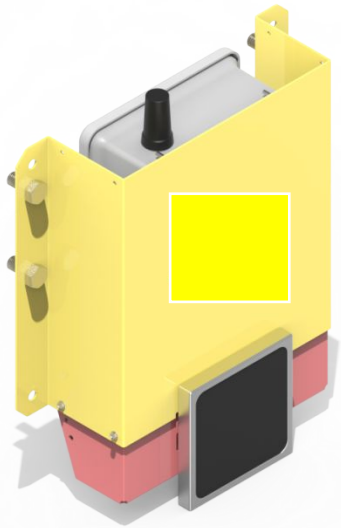
UMD Control Box
x 16



Portals
x 16



Vehicle Readers
x 46



Programmers
x 2

RFID Tags
x 50,000
4,000+ containers

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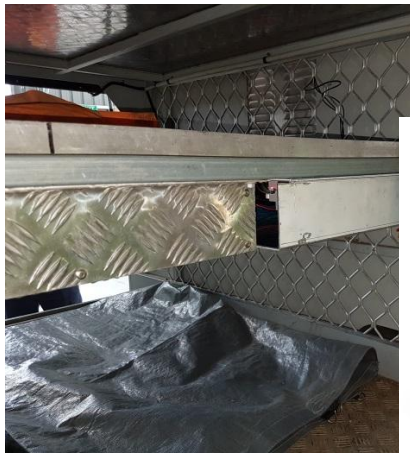
Melbourne Water - PoC

- Vehicle

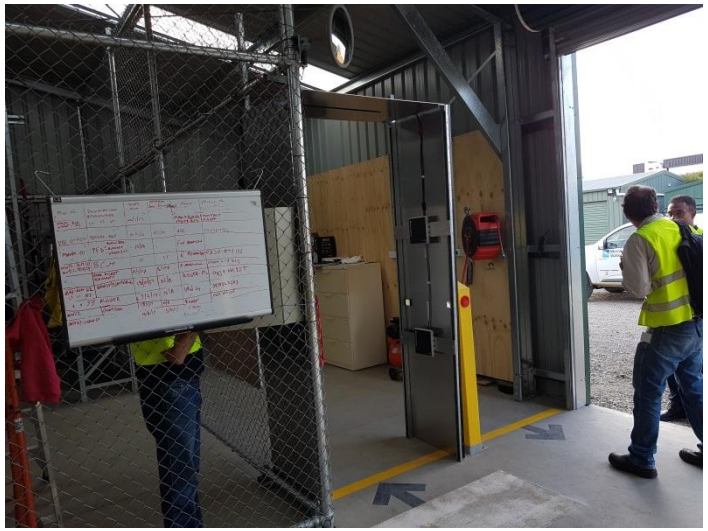


- Mobile
  - Induction
  - Stocktaking

- Middleware
  - Visibility * Reporting

UMD ICADA

- Portal



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Symbion Pharmacy

RFID Returnable Asset Tracking System (RATS)

- Installed in 6 Warehouses, Australia Wide
- Tracks Issuance and Return of Totes
- Outbound associates Licence plate with RFID
- Inbound records returns

ICADA RATS

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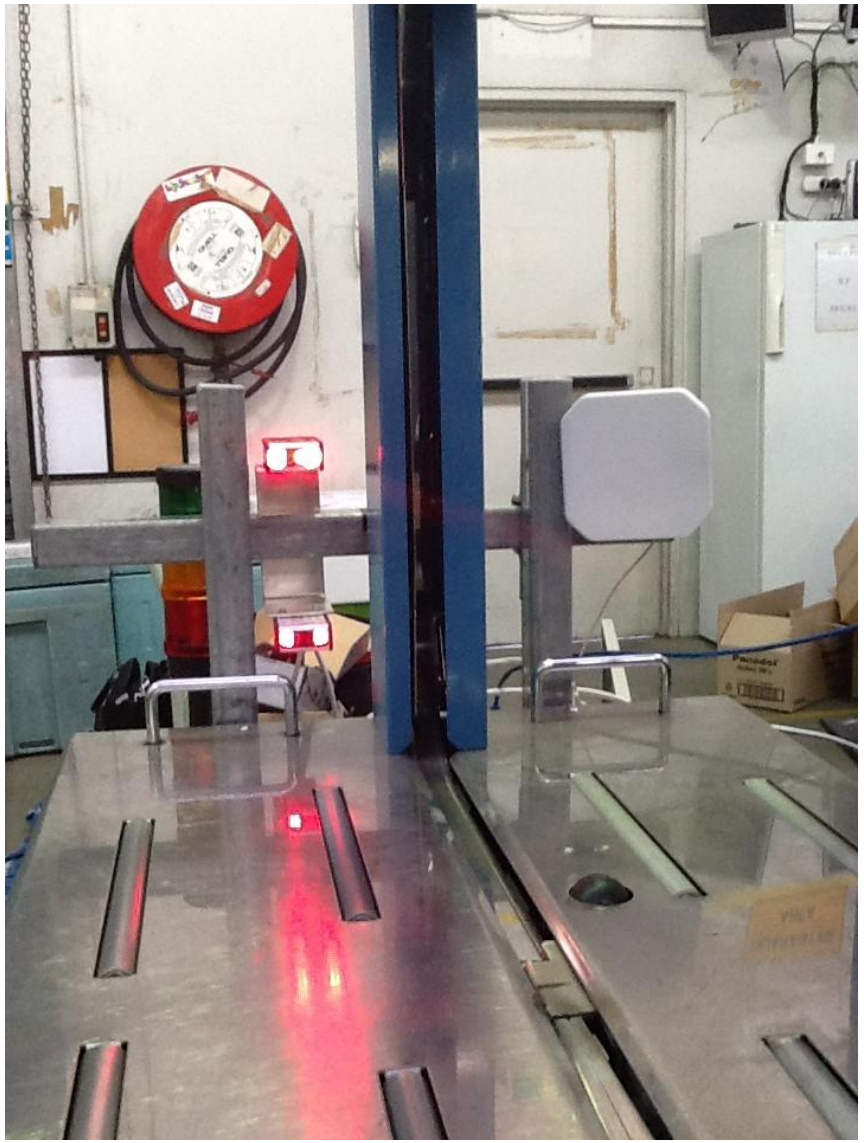
RATS – Challenges (LEAN process)



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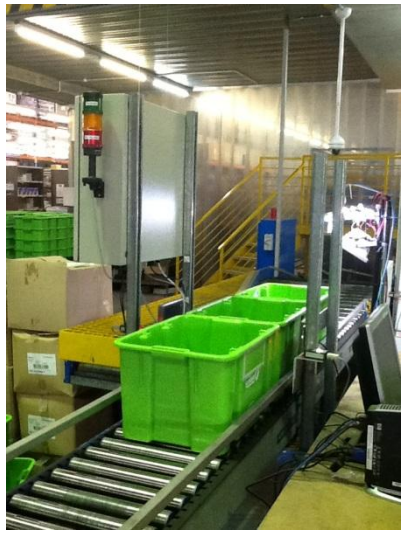
RATS – Limited Space



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RATS - All the Same but different?

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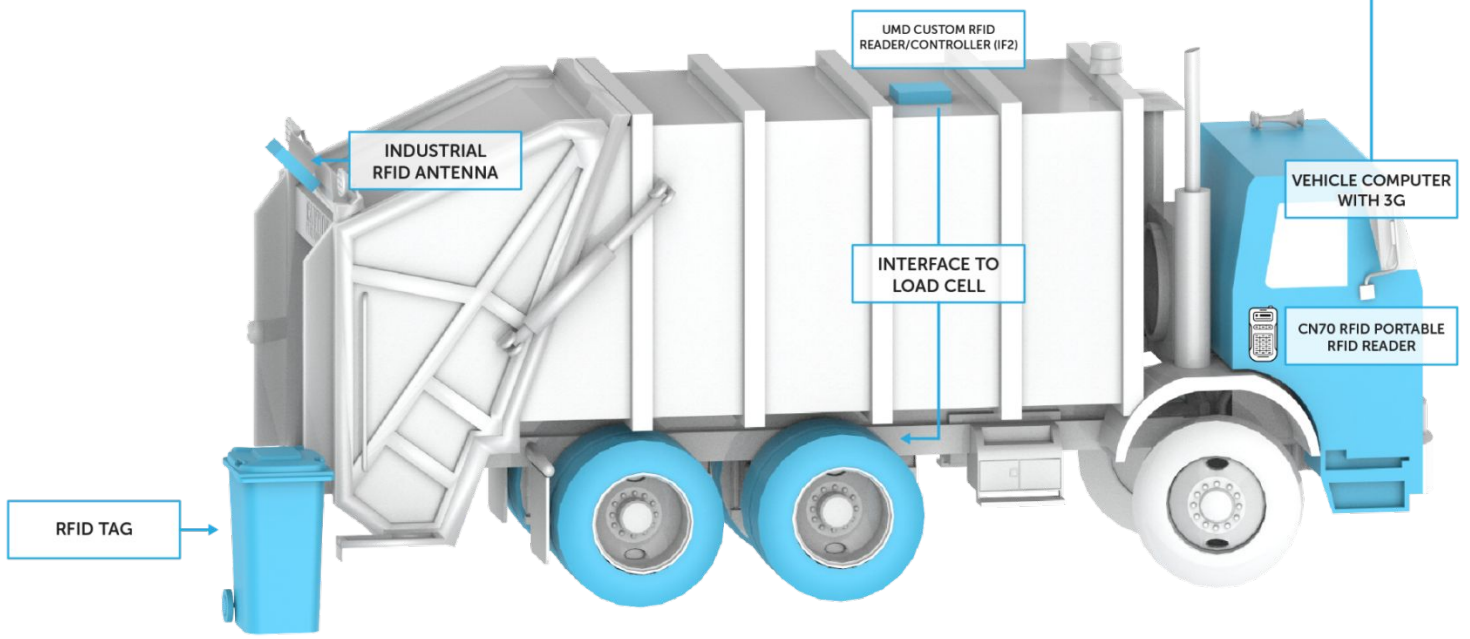
ToxFree – Waste (contract) Management

Chevron → toxfree → Fenwick Software (MICROSOFT PARTNER) → UNIQUE MICRO DESIGN ...Engineering IoT Solutions

"All we want is the Data"
- Fenwick Software

ICADA RFID



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Plant Access – Vehicle Portal / Cross Docking

- Stillage RFID Tagged
- Picked up at Nurseries
- Crossed Docked
- Sent to Retail Merchants

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Garment Tracking System

- Stewart & Heaton Clothing
  - Provides uniform management
  - RFID based uniform tracking
  - Integrated into ERP
  - Software as a Service
- Metropolitan Fire Brigade
- Country Fire Authority
- Fire & Emergency Services Authority of WA
- Over 100,000 RFID Tags

ICADA RFID

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Process Group

- Manufacture plants (pipes/fittings)
- Tracking pipes & processed when shipped to external suppliers
- Suppliers scan RFID to remotely update Process Group schedule

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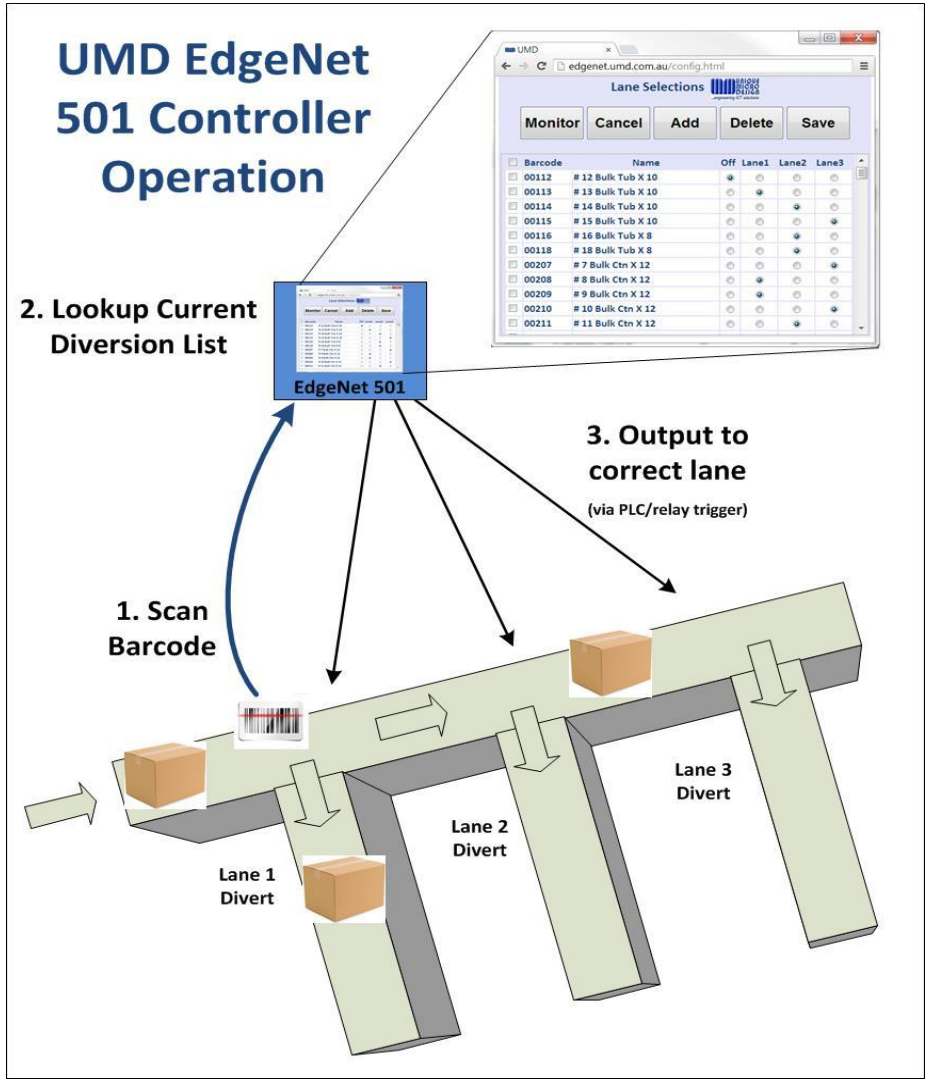
Hazeldene's

- Custom Diverter
- Developed new architecture and controller (UMD 501 Edge. Net Controller & Protocol)
- Advanced PLC Functionality
- Diverter functionality and product selection controlled by Wireless operation by Tablets (iPads)



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RFID Horse Reader

- Equine Reader
  - UMD Model 641 LF RFID Reader
  - Custom designed and manufactured
  - Developed for Racing Industry
  - Horses are “microchipped” (Scanrite helps to ensure the right horse is in right race)

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Interfacing to Legacy Systems

- Lot of “legacy” systems
- Simple “text” based systems
- How to interface?
- Use “tricks” – Keyboard Wedging (UMD M364)

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Patron Access & Ticketing

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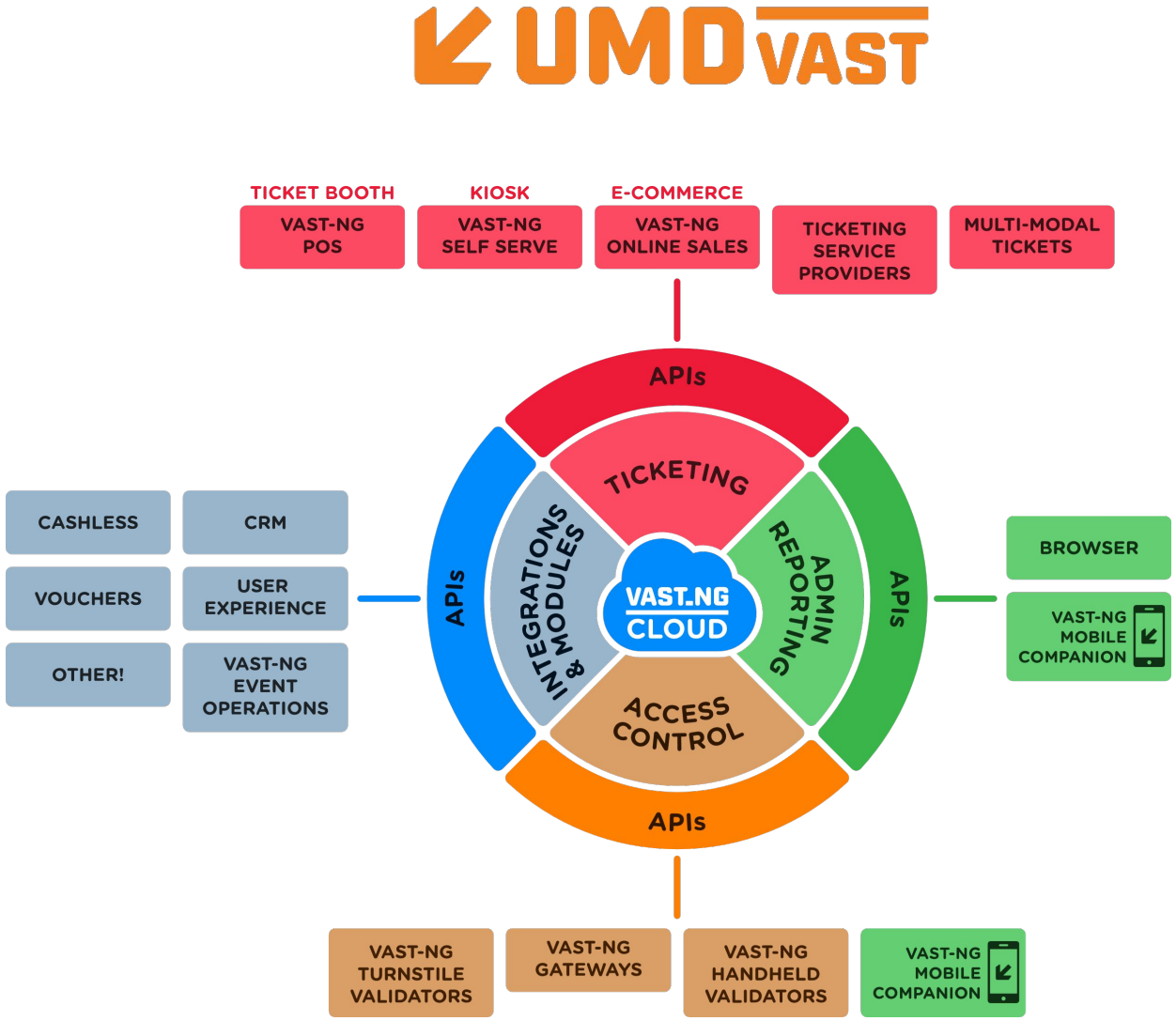
UMD VAST – Venue Access System for Turnstiles

Controlled access to Venues and Stadia:

- Victorian Racing Club - Flemington (Melbourne, Australia)
- Melbourne Racing Club - Caulfield (Melbourne, Australia)
- Moonee Valley Racing Club - Moonee Valley (Melbourne, Australia)
- Sydney Turf Club - Rosehill & Canterbury Racecourse(Sydney, Australia)
- Australian Jockey Club - Royal Randwick Racecourse (Sydney, Australia)
- Wentworth Park - Greyhound racing (Sydney, Australia)
- Dairy Farmers Stadium - Rugby (Townsville, Australia)
- Hindmarsh Stadium (Adelaide, Australia)
- Suncorp Stadium (Brisbane, Australia)
- Bangladesh Cricket Board - (Chittagong, Bangladesh)
- Bangladesh Cricket Board - (Mipur, Bangladesh)
- Royal Melbourne Show - (Melbourne, Australia)
- Parramatta Stadium - (Sydney, Australia)
- WIN Stadium -(Sydney, Australia)
- Mystery Creek Exhibition Centre - (Mystery Creek, New Zealand)
- 1300 Smiles Stadium - (Townsville, Australia)
- Kalgoorlie-Boulder Racing Club - (Kalgoorlie, Australia)
- Luna Park - (Sydney, Australia)
- South Australian Jockey Club - (Adelaide Australia)
- Pt Leo Estate (Merricks – Victoria)



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Cotton On – Try on your Sound

- RFID in Change Room
- Plays specific music based on RFID tag
- All about the experience… not inventory!

UMDREAP

RFID Swing Tag

COTTON ON

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