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Delivering IoT Value Through oneM2M Compliance

Nigel Upton, General Manager, Internet of Things

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Hewlett Packard Enterprise (HPE) Point of View

Enabling customers to capitalize on IoT

The opportunity is huge – 26B devices – 10% of world data –
$1.9T economic value add – $322B vendor revenues are expected by 2020*

Situation today

Digitization affects every industry. Requiring disruptive thinking – across the whole organizations

Disruption

Today agile programming, analytics, edge computing and improved connectivity provide the disruptive foundation to accelerate

Transformation

IoT demands a broad range of capabilities and across an open and scalable ecosystem

Partnership

HPE is a well established player in the IT industry. Our business know how enables us to be an ideal integration partner for the enterprise

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* Gartner and IDC

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Hewlett Packard Enterprise (HPE) in IoT

Enterprise / Smart Building

Robin · CITRIX · skyfii · VENUENEXT · Skype for Business · smartvue

Wide Area IoT / Smart Cities

trackimo you are there. · sens.it · TracFind · IEM · BH technologies – éclairage

Industrial / Manufacturing

SAP · PTC · Tech Mahindra · PREDIX · NATIONAL INSTRUMENTS

Ecosystem

Aruba Mobile First Platform

Connectivity, Security and Asset Tracking

Universal IoT Platform

Data acquisition, normalization, device management

HPE Platforms

LAN

Wi-Fi

BLE

WAN

LTE / LPWAN

Converged Edge Systems

Compute, control and data acquisition

Edge Infrastructure

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HPE Universal IoT Platform Value Proposition

IoT Platform

Enable and manage the value chain

Single-source Provider

- Software, Hardware, Services, Consulting – along with a Continuously Growing large partner ecosystem for deploying IoT services
- Carrier-grade scalability and SLA in compliance to meet Enterprise IT-grade requirements

HPE Universal IoT Platform

- A "Horizontal" Platform to enable "Vertical" Use Cases:
  - *Connected Cars, Smart Cities, Track & Trace, etc.*
- Network-Agnostic:
  - *Cellular (3G/4G), LPWAN (LoRa, SigFox), Short-Range (Wi-Fi, BLE, ZigBee, Z-Wave)*
- Differentiators:
  - *OneM2M and 3GPP standards aligned*
  - *Support for both SIM and Non-SIM IoT devices*
  - *IoT device vendor-independence*
  - *Support for IoT data acquisition over any IoT protocol*
  - *Powerful and world-class IoT analytics*

Pricing Model with Unmatched Values

- Best possible pricing based on HPE's global scale, cost efficiencies, best-of-breed components and deep vertical expertise
- Pricing model also aligned with IoT market with low ARPD
- Price Per Device – along with Volume-based Tiered Pricing

IoT GTM Focus Areas and customer accounts

Future Cities

- Smart Lighting
- Smart Transportation (Parking and Traffic)
- Smart Waste management
- Remote Water Quality Management

Connected Cars

- Rain Detection
- Strong Wind Detection
- Pothole Detection
- Location-based Headlights (Geofencing)
- Smart Home Integration (Home Automation Integrations)

Smart Surveillance

- Smart Home (from burglaries, baby monitoring)
- Independence for the Elderly
- Smart Law Enforcement

Fleet Management

- Increase productivity
- Eliminate false overtimes
- Track stolen vehicles
- Track vehicle routes

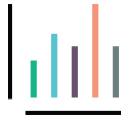
Precision Agriculture

- Smart irrigation management
- Smart plantation assets tracking / management
- Remote monitoring of yield efficiency
- Smart pest control
- Agribots
- Smart drones / tractors

Managing Complexity Requires Platform Approach (not silos)

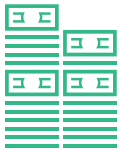
Connectivity & connected objects

Operations



Data, reporting, exposure

Innovation / new services



Costs

HPE Universal IoT Platform

Video surveillance

Waste Management

Fire detection

Smart lighting

Environmental sensing

Personal safety

Fleet Management

Smart metering

Public facilities

Driving behavior

Smart parking

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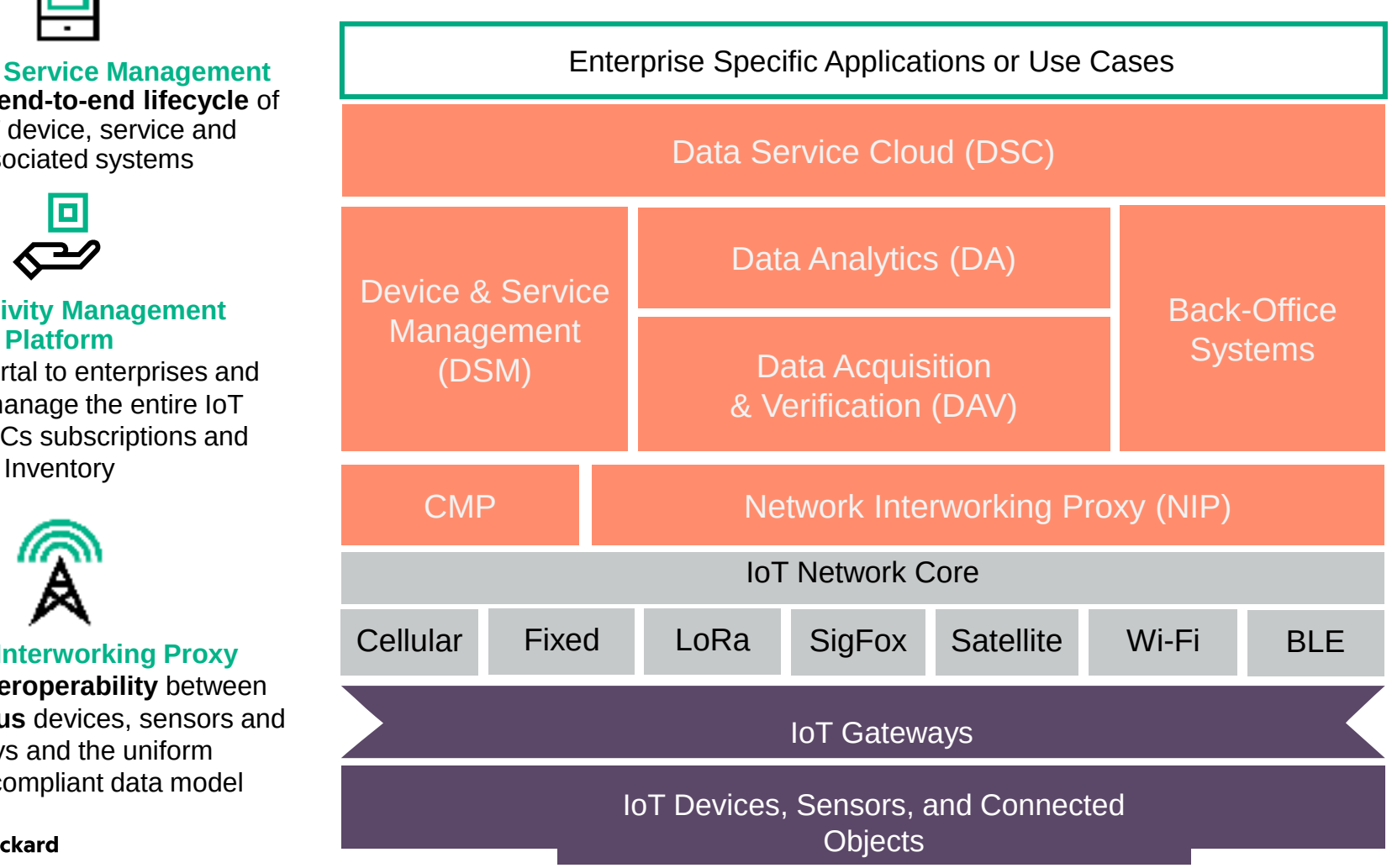
HPE Universal IoT Platform
Solution Architecture Details

Device & Service Management
Manages end-to-end lifecycle of the IoT device, service and associated systems

Connectivity Management Platform
Provides portal to enterprises and CSPs to manage the entire IoT SIMs/eUICCs subscriptions and Inventory

Network Interworking Proxy
Provides **interoperability** between **heterogeneous** devices, sensors and gateways and the uniform oneM2M-compliant data model

Data Service Cloud
Enables rapid development of IoT applications through reusable attributes, **reducing the cost and time-to-market**



Data Analytics
Discover meaningful patterns in data collected from sensors to **expose and monetize** through applications

Back-office Systems
Provides **consolidated operational view** of devices, gateways, and network information to **ease day-to-day operations**

Data Acquisition & Verification
Supports **secure bi-directional** data communication transforms, validates and processes the IoT data and **triggers actions** such as Complex Event Processing (CEP)

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Decoupling Application/Business From Connectivity

Streamlining provisioning, security, etc.

Example IoT Applications

Smart Parking	Waste Management	Smart Lighting	Connected Car	Health/Patient Monitoring	Smart Safety / Track & Trace	Smart Environment	Smart Factory	Precision Agriculture	Fleet Management	Personal Tracking

Data Monetization | **Provisioning**

HPE Universal IoT Platform

Enable and manage the value chain

Security | **Device Management**

oneM2M

oneM2M

Cellular

Track & Trace

Connected Vehicle

OBDII

Personal tracking

Wi-Fi

Video Surveillance

Android App

Fleet Management

LPWAN

Sigfox | LoRa | Cat-M1/2 | Cat –NB1

Temp., Humidity, Etc.

Air quality

Smart parking

Waste management

Others (fixed, satellite, RF…

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oneM2M

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LoRa/LPWAN on The HPE Universal IoT Platform

Tata Communications is deploying the world's largest LoRa network across cities and towns in India, covering 400M people in the first phase.
HPE Universal IoT platform helps deliver health safety and IoT connectivity services

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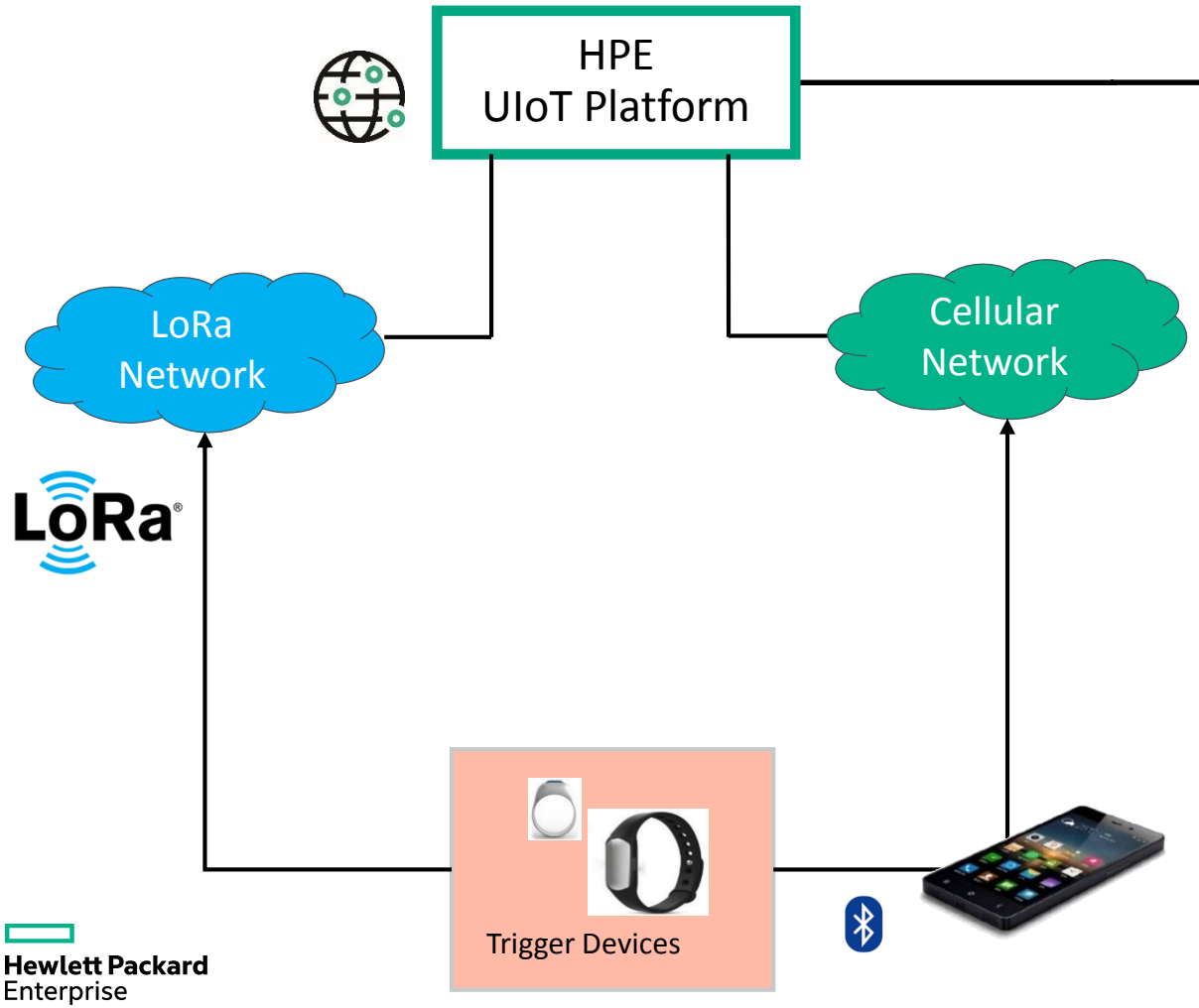
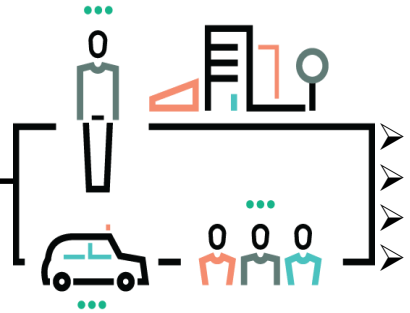
Human Safety use case

HPE UIoT Platform enables addressing Woman Safety concerns in India





- Security Company
- B2B2C Partner
- Service Provider
- Collaborative Tracking App

The **HPE Universal IoT Platform** provides multiple network communication channels for bi-directional messaging , device configuration and access control for different stake holders

1. Woman in danger presses SoS button
2. Sends SOS Message to Family & Security Companies with GPS Location

1. Woman initiates trip start
2. User location tracked with timestamp and shared with stake holders
3. When Stop button pressed, location tracking system disabled

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Tata Communications

Using the HPE Universal IoT Platform to deliver IoT services

Requirements

The device and network-agnostic HPE Universal IoT Platform will help Tata Communications to develop new products and services across multiple industry verticals using a variety of connectivity options, protocols and interfaces

- Tata Communications, part of the $100 billion diverse Tata Group conglomerate, is deploying the world's largest LoRa network across cities and towns in India, serving hundreds of millions of people and companies. The first phase targets to cover 400 million people across Tier 1, 2, 3 and 4 cities.

- The market leading device and network-agnostic HPE Universal IoT Platform will help Tata Communications in its digitization of smart cities and to develop new products and services across multiple industry verticals using a variety of connectivity options, protocols and interfaces

Customers: Identidad IoT

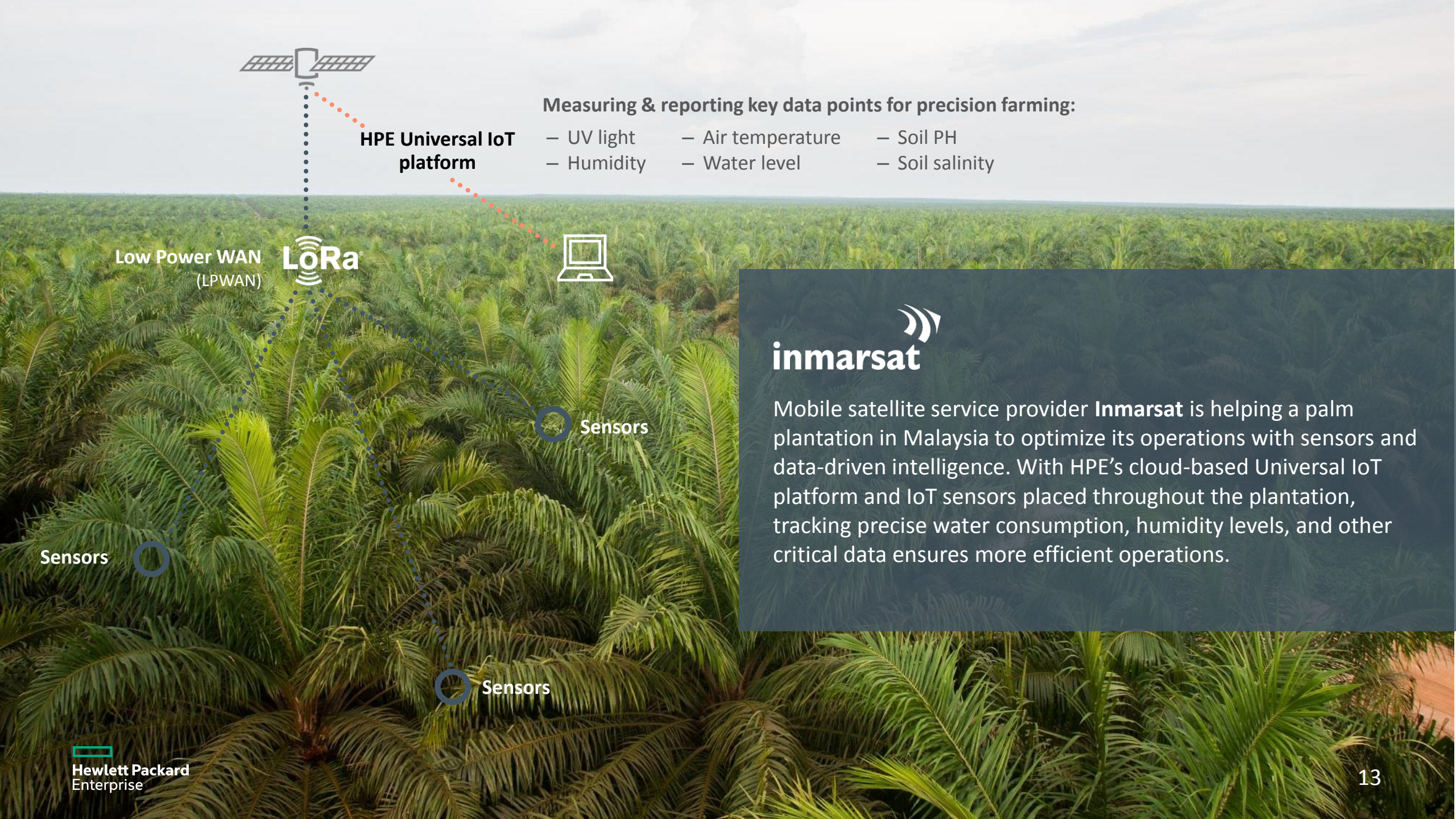
Using the HPE Universal IoT Platform to deliver IoT services

Requirements

The device and network-agnostic HPE Universal IoT Platform will help Identidad IoT develop new products and services across multiple industry verticals using a variety of connectivity options, protocols and interfaces

"Identidad IoT has the knowledge and expertise to develop complete turnkey solutions for customers ranging from mobile network operators to service providers to end users. The HPE Universal IoT Platform is a robust IoT solution and we are confident that HPE is the right partner to lead our customers into the IoT era"

Andres Sanchez, CEO, Identidad IoT



Measuring & reporting key data points for precision farming:

- UV light
- Humidity
- Air temperature
- Water level
- Soil PH
- Soil salinity

inmarsat

Mobile satellite service provider **Inmarsat** is helping a palm plantation in Malaysia to optimize its operations with sensors and data-driven intelligence. With HPE's cloud-based Universal IoT platform and IoT sensors placed throughout the plantation, tracking precise water consumption, humidity levels, and other critical data ensures more efficient operations.

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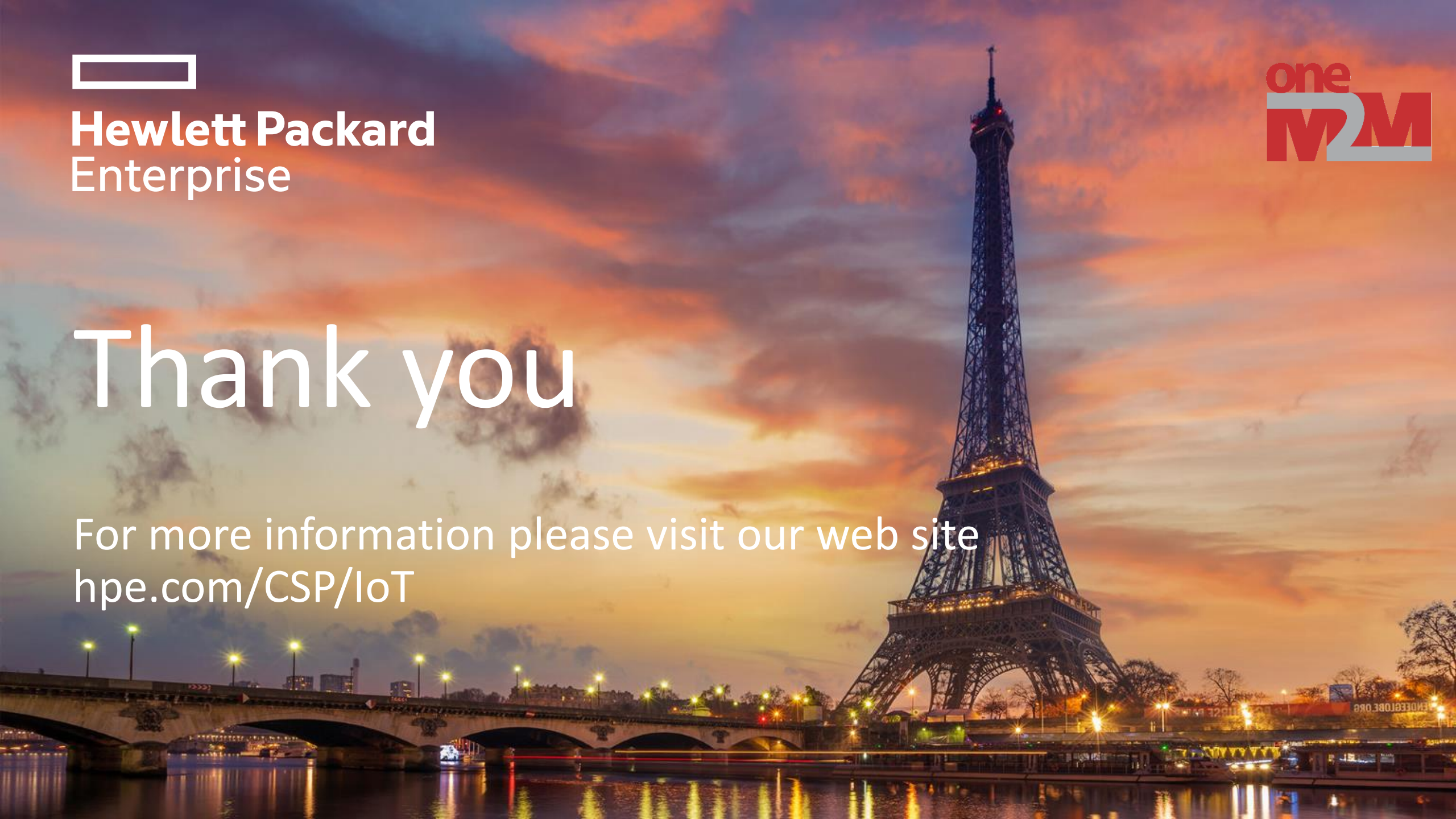
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