



hiving
Enabling my World

SMART MANUFACTURING

WHERE ARE WE IN THE INDUSTRIAL REVOLUTION PATHWAY?



The first Industrial Revolution started in England in the 18th century with mechanical looms.

The second centred on electrically-powered mass production, near the start of the 20th century. E.g. Henry Ford and assembly lines.

The third is electronics, robotics and IT. This era is marked with Computers entering the office and manufacturing space.

We are currently in the fourth Industrial Revolution, which is about harnessing, the power of data. It's about real-time data, parameter driven algorithms, predictive analytics and artificial intelligence I.e. allowing the data to tell us what to do. In this lies the unrealized potential of IoT; that has the ability to transform business models; enabling companies to sell products in entirely new and better ways that benefit both the company and the customer.

TRACK PRODUCT THROUGH THE PRODUCT LIFE CYCLE



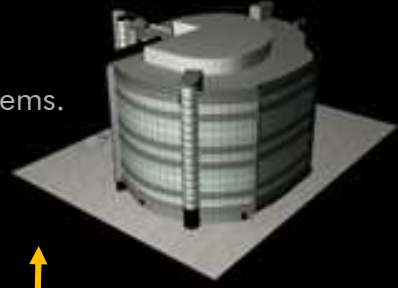
An Interconnected world...
Voice, data, mobile, etc.



Supply chain.



Smart factory.



Business systems.



Distribution centre.



End user.





Hive's Single Identification supports either part of or the entire Product Life Cycle depending on the type of product and are ideal for the following:

Design

- Endless application possibilities and can be used with custom designed enclosures.
- Can be built into (OEM) electric or electronic products.

Manufacturing

- Streamline logistics and supply chain.
- The same technology and infrastructure can be used to enable Smart Manufacturing facilities.
- Identify and track anything from raw material to pallets of final product -in the case where it is not suitable to be built into the product.
- Provides real time visibility to components, sub-assemblies, and production batches to best handle exceptions.
- Decrease unnecessary human interaction to identify, categorise, or locate WIP.
- Supply data and metrics for ERP and manufacturing software.

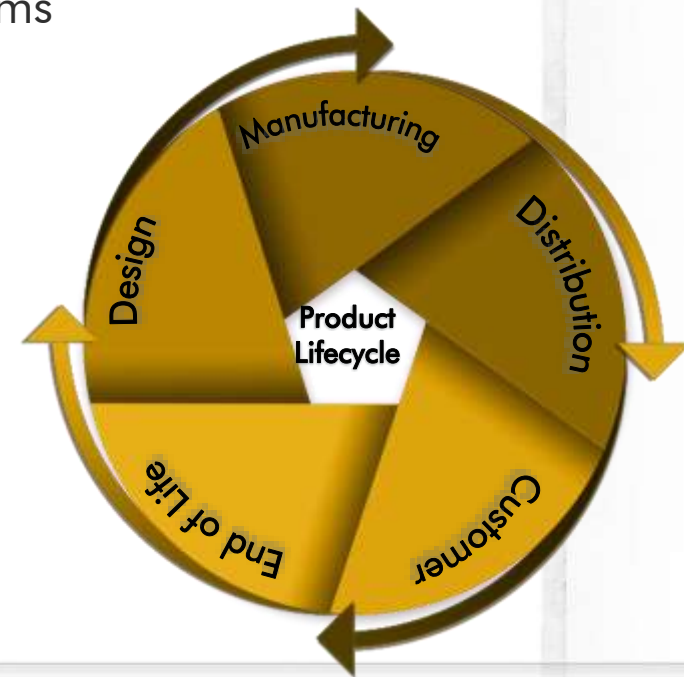
Distribution

- Hive One ID can be the enabler that allow the manufacturer to change the entire business model. Hive can also be used to track items from, storage, to dispatch, to delivery.

HIVE ONE ID IN THE MANUFACTURING ENVIRONMENT?

- **Customer**
- Hive can enable proactive client service models.
- Hive One ID can change the way the manufacturer interacts with the client on product warranty.

- **In addition to managing the Product Life Cycle, Hive One ID can be used for the following:**
 - Access control and security - can be linked with CCTV and surveillance systems
 - Asset Management – from office furniture to hand tools
 - Timekeeping
 - Energy Management Systems - lighting and heating
 - Proactive maintenance & tracking of items sent for external servicing
 - Stock Management Systems





APPLICATION EXAMPLES

- This section deals with possible examples in the manufacturing environment. The examples do not pertain to one process or industry, they are only intended to explain possible examples.



- Hive One ID has endless application possibilities and can be used with custom designed enclosures or can be built into (OEM) electric or electronic products.
- E.g. Hive One ID can be built into electronic products such as Televisions, Audio Systems, Cameras, small appliances or white appliances, Motor vehicles, hand tools, locks, pcs & laptops etc. When built in, Hive One ID can not only serve as identification but can also be used to sense different attributes such as temperature, pressure, light, magnetic switches, tilt etc. Hive One ID can also be used to track, secure or provide predictive analytics.
 - E.g. Appliances with built in Hive One IDs can be configured to only work on the network they were registered on when they were purchased. I.e. when the product is stolen it will not work when plugged in without the owner deregistering it on the current network and setting it up on a new network.
 - Hive can also for example be used to monitor vibration or temperature on an electrical pump.

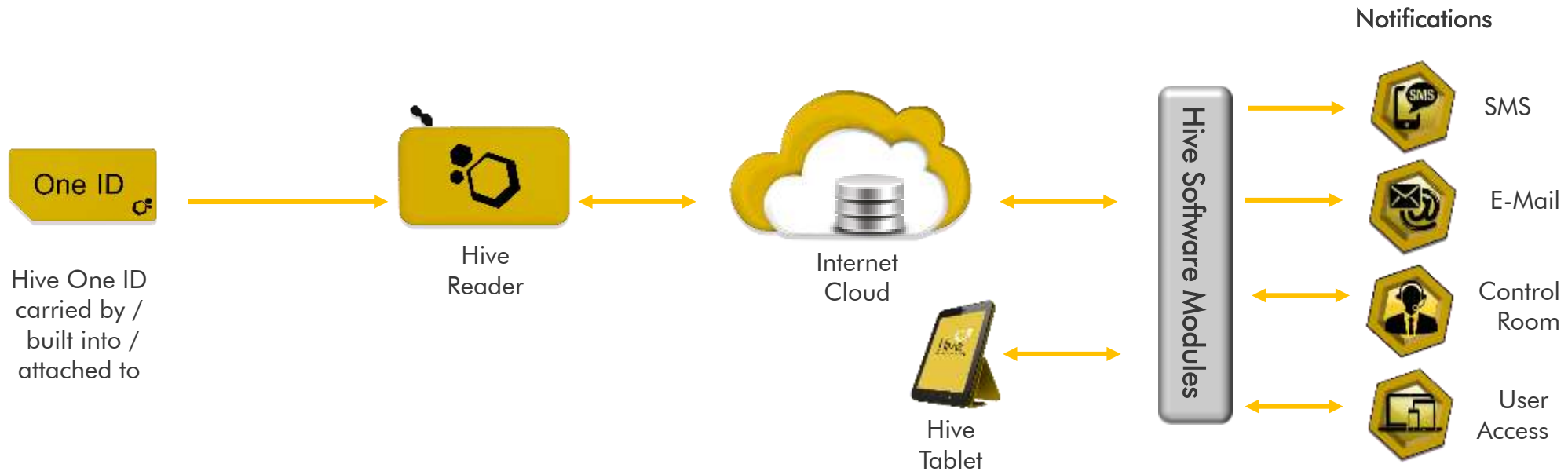
HIVE CAN BE INCORPORATED IN SOLUTION DESIGN

- Hive One ID can be used with custom designed enclosures when not built into products. This can enable a Hive One ID to be attached/ linked to just about any object, person or even animal.



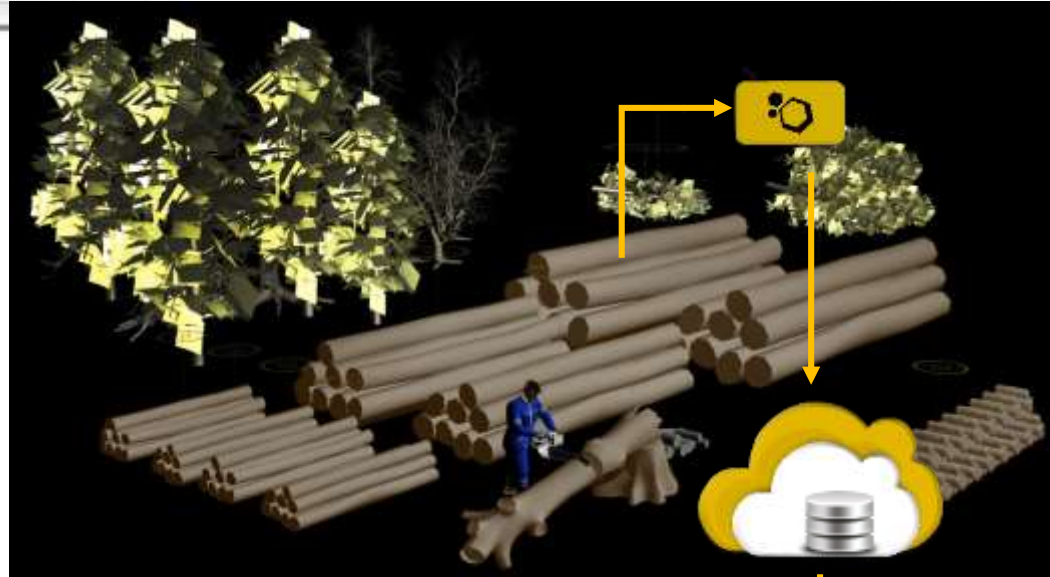
HIVE ONE ID CAN MONITOR /TRACK VIRTUALLY ANYTHING

- Not only does Hive One ID's have the unique ability to identify people and objects but through it's wireless, non-intrusive, rule based architecture it becomes possible to have efficient real-time interaction based on data analysis.



TRACKING RAW MATERIAL IN A PRODUCTION PROCESS

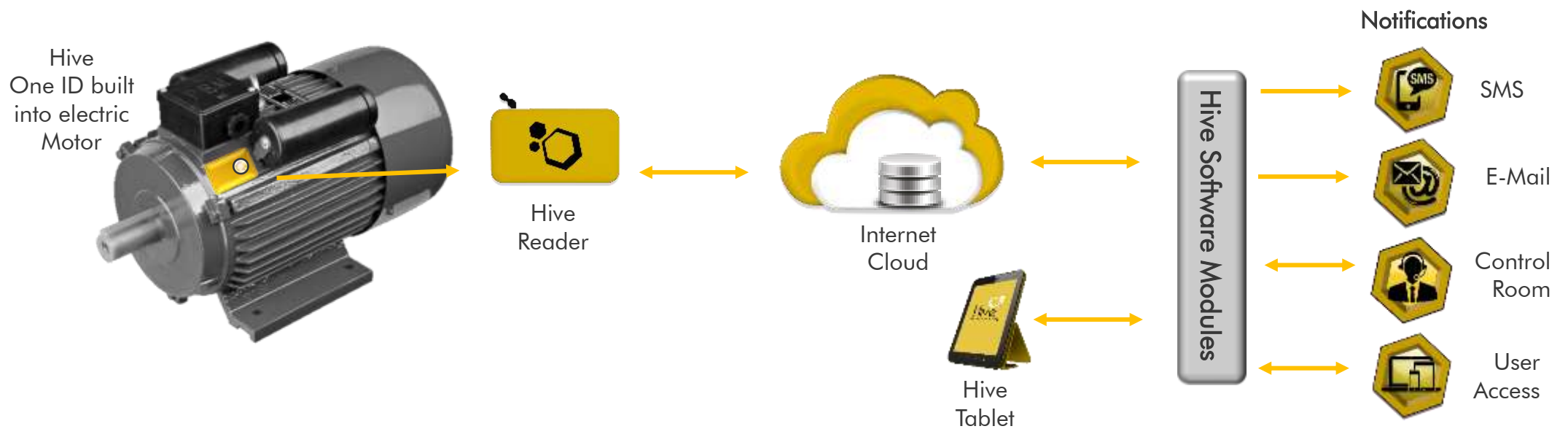
- Hive One ID's are ideal to identify and track raw material in a production process.
- The source of raw material is often important to obtain quality certification.
- A Hive One ID accompanies the raw material through the production process.
- Any Hive One ID can be read as it passes through every stage of the process. The data is transmitted to a database that will provide the complete tracking history.
- During the process it might be necessary to change the monitor to suit the next stage of the process in which case the new Hive One ID will need to be linked to the previous data.
- Hive One ID Monitors can be changed and reused.





- Hive Technology assists in the proactive maintenance and management equipment such as electrical pumps & motors. Changes in vibration and temperature can indicate when components are faulty or servicing is required.
- This innovative technology will send real time alarms to a control room on predefined parameters. Early warnings on tampering, overheating, excessive vibration and other parameters can extend the life of electric equipment and can circumvent delays in production.
- Alarms can be configured and can be sent both to the control room and to a designated persons via SMS. This will inform the applicable parties of which alarms have been activated.
- Hive One ID is ideal to track assets through service & repairs.
 - Instant real time communication.
 - Easy to install non-intrusive wireless architecture.
 - Rule based alarm notifications.
 - Automatic notification of alarms via software and SMS.
 - Long battery life with a configurable battery management system.

PROACTIVE MAINTENANCE



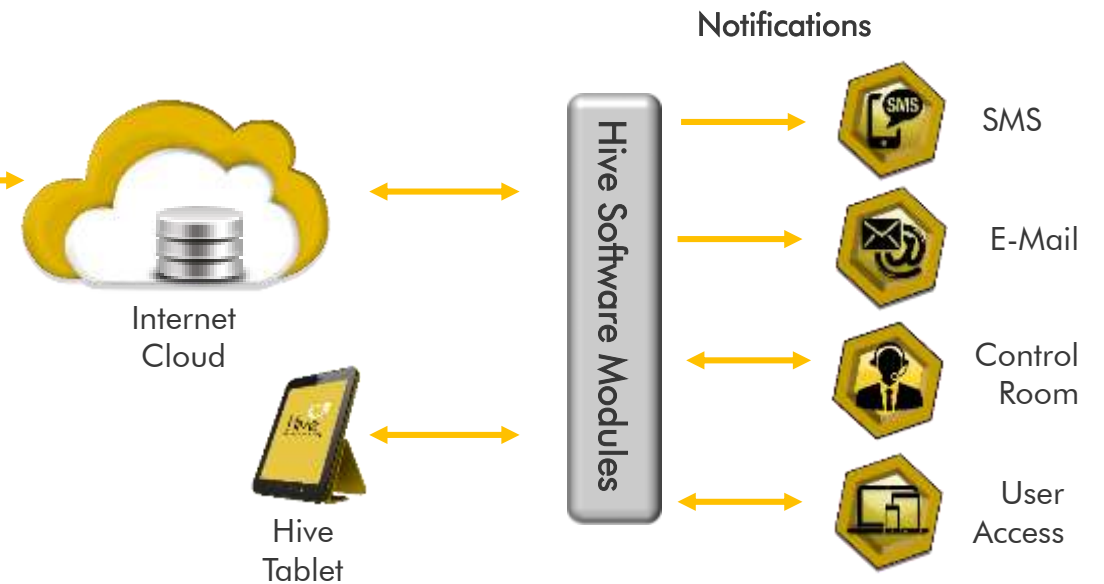
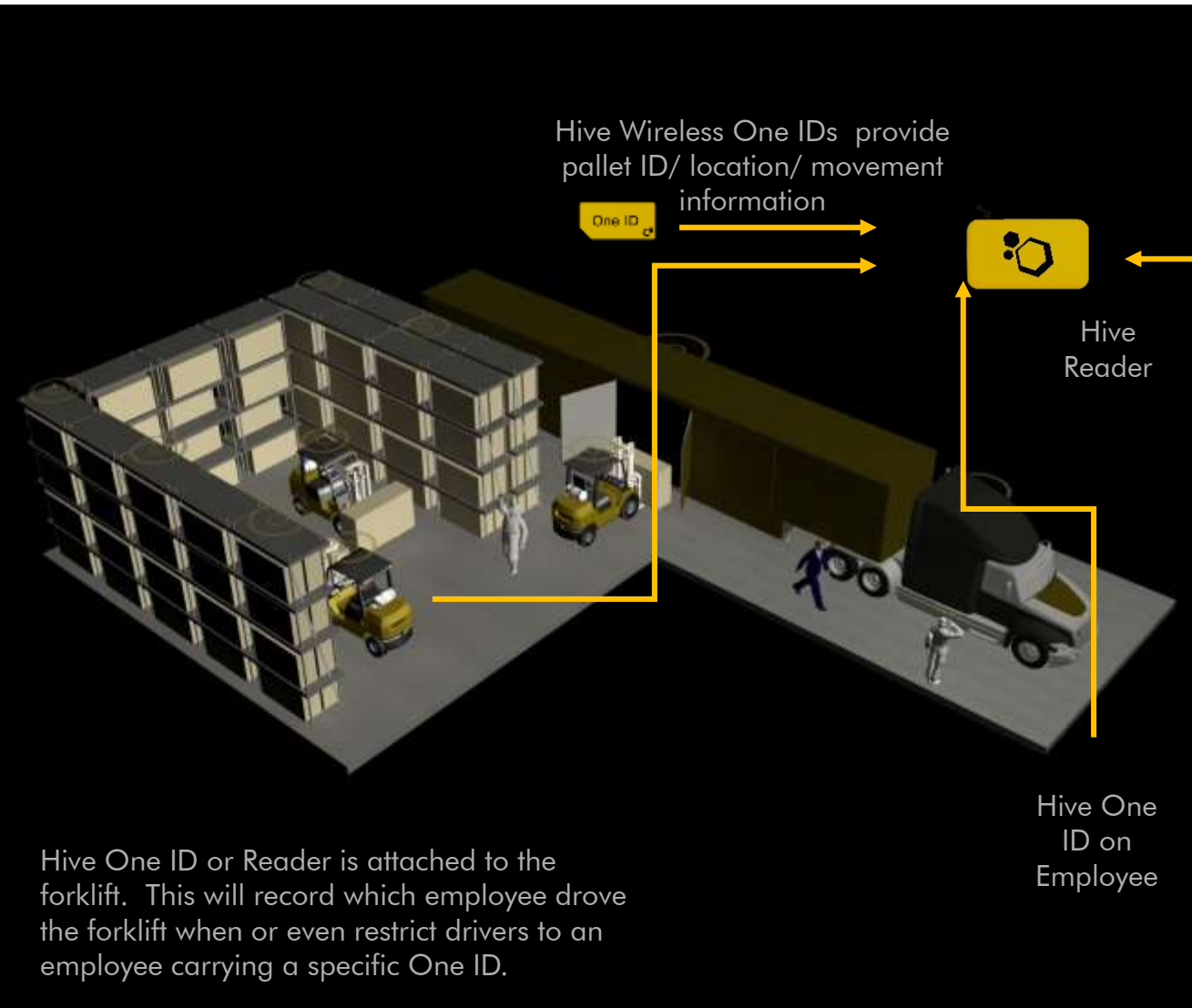


Hive Technology assists with the identification of pallets in a warehouse. Forklifts & personnel can be equipped with Hive One ID Monitors to identify exactly which pallet was loaded to which vehicle and by whom.

- Improved supply chain operations including speedy order fulfillment.
- Improves the ability to find the required pallet/ item and ensures that the correct pallet is loaded.
- Know at any time what pallets are in the warehouse.
- Alarm is triggered when incorrect pallets are moved or loaded.

One ID assists with the whole logistic process from receiving the stock, tracking stock in-house, having the information to maintain optimum stock levels, dispatching stock to a client or delivering an order to a buyer.

STOCK MANAGEMENT

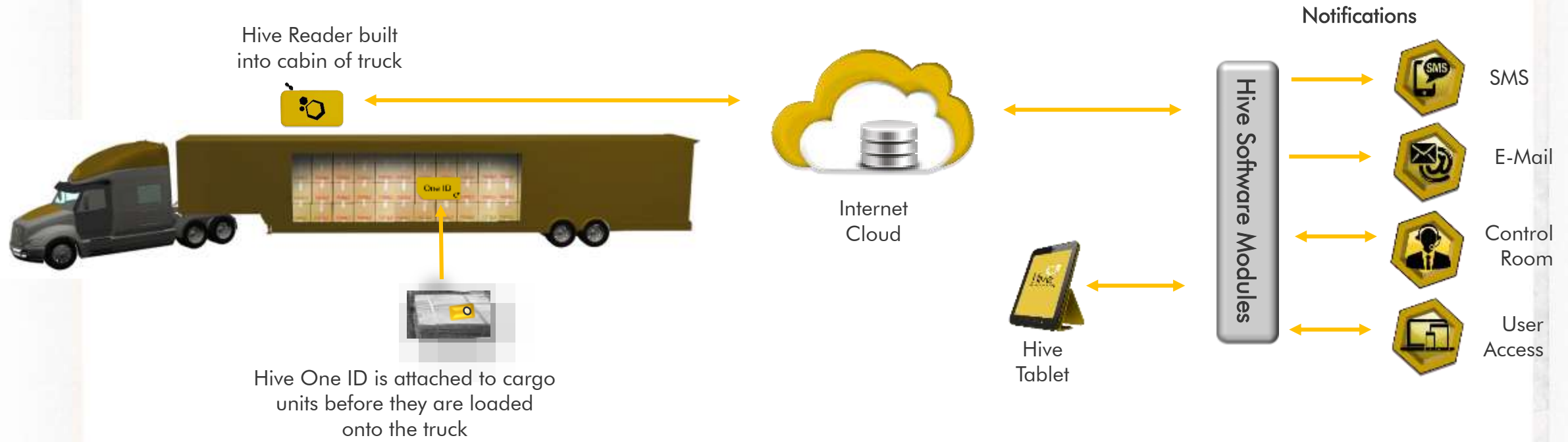




- Hive Monitoring Systems assist in the management and security of different types of cargo. This innovative monitoring technology will send real-time alarms to a control room on predefined parameters. Early warnings on tampering, overheating and other parameters enable proactive management.
- The wireless Hive Monitors track and monitor cargo in storage areas making the position of the products known at all times and ensuring that the correct cargo is dispatched to the client.
- The vehicle is monitored by placing a GSM/GPS long range activity reader on the back window of the cabin or the body of the truck. The activity monitor will respond to the movement and transmit the location on more regular intervals while being moved or transported.
 - Activity monitors and locks & seals are fitted with tamper detection.
 - All communications are real-time.

CARGO MANAGEMENT

- All units are GPS enabled.
- Units are powered by long life batteries and do not require any additional power sources.
- Units are sealed units making them robust and tamper and weather proof.





- Electronic locks that are managed from a central control location, secures infrastructure, protects cargo in logistics solutions and can be used in a myriad of applications. Examples are electrical distribution boxes, sub stations, telecommunication infrastructure, cash in transit vehicles and many more.
- We explain the lock by using a electrical distribution box as an example. Globally the world's energy resources are under pressure and it is becoming increasingly important to protect the energy infrastructure from theft and illegal connections.

Hive Technology makes it possible to manage access to the distribution network with a key-less lock. The GSM Key reads the identity of the Hive Monitor in the distribution box. The identity is transferred to a central database or to a operator from where authorization is obtained. The authorization is sent to the Hive Monitor in the box and the lock mechanism is powered to unlock.

- Tampering with the locks can be detected and alarms raised timeously.
- All transactions are logged on the database and full audit trails of who opened the lock, who authorized the transaction are available in real time.



- Hive Monitors are ideally suited for situations where only one monitor is required as the GSM engine will send SMS's as specified by the owner, making the Hive Reader obsolete.
- GSM Monitors are mobile and ideal for on the road readings.
- Fast and easy installation and setup. Hive GSM Monitors have a wide variety of applications and can be fitted with different sensing components such as: Cargo Door, Ge Force, ID, Analogue Input, Digital Input, Light, Location, Movement, Odometer/ Counter, Presence, Pressure, Magnetic, Receiver, Seal, Shock, Tap, Tilt, Tracking, Keyboard, Temperature and Vibration.
- A Hive GSM Monitor can for example be attached to a safe for additional security. The Hive GSM monitor is pre-programmed to send an alarm when the safe is opened. For day to day use the owner of the safe can pre-programme the GSM Monitor not to trigger an alarm when called from a specific cellphone number.
- I.e. if the owner is forced to open the safe and he/she does not call the GSM Monitor, an alarm will be triggered and a custom message sent to the pre-programmed numbers.
- This wireless, mobile unit is an ideal traveling companion in a situation of distress.
- The unit can also include a GPS in which case the coordinates will be sent as part of the SMS.
 - All communications are in real-time.
 - Units are powered by long life batteries and do not require any additional power sources. (Two year standby life or 3600 updates.)
 - Units can be sealed making them robust, tamper and weather proof.
 - Units that are fitted with a GPS and can be tracked via GPS should they be stolen.

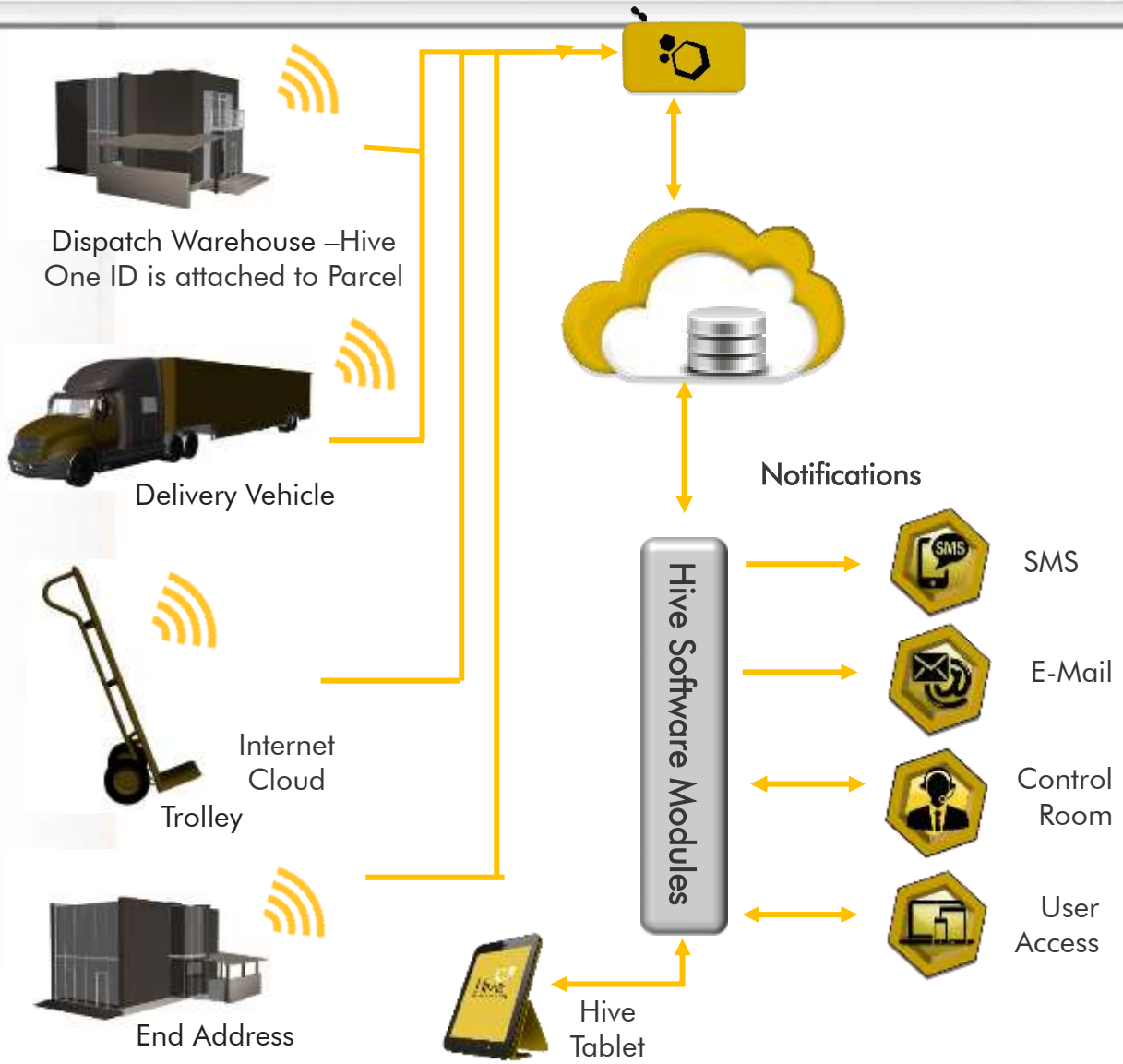


- Hive Technology is ideal for automated asset management. As soon as the asset is moved, the register will automatically be updated.
- Vehicle make, model, colour, registration number, parking-bay details can be associated with each individual Hive One ID.
- Hive Technology delivers a cost-effective and reliable solution for monitoring movable assets. It also provides instant visibility to assets entering & exiting the depot, as well as identifying where the assets are located at any given time thus reducing paper trails.
- Hive Monitors include on-board memory for monitoring & storing information about the asset or vehicle with multiple levels of security.
- Hive technology can be applied in various ways to manage fuel and prevent shrinkage.

The Hive System will also:

- Prevent unauthorised usage of stock vehicles.
- Provide more accurate storage information.
- Improved supply chain operations
- including speedy order fulfillment

TRACKING OF DELIVERIES



- Hive Technology is ideal to track deliveries. Hive One IDs can be used to secure packages and track the whereabouts of the package up to delivery.
- Hive One ID streamlines the process and simplify of control procedures while updating systems in real-time.
- This enables clients to monitor progress on important or valuable parcels in real-time.
- Hive Light Monitors can be used in parcels to alert the client and management when the parcel has been opened.
- Hive Monitors can be recycled and have a battery life of up to 3 years.



- Hive Technology can be used to secure any space. The system is always on & safe. Hive mainly works with presence detection, vibration/ movement monitoring.
- Hive can also monitor staff. Authorised staff will not trigger alarms.
- Hive Technology offer a comprehensive guard monitoring solution, for all types of applications in the Security Industry.
- Hive Technology will also facilitate the following:
 - Unobtrusive monitoring of entry/ exit.
 - Detection of unauthorised entry.
 - Link system with the existing security camera system and access control.
 - Privacy & data security.



- Hive Technology is ideal for asset management. As soon as the asset (tagged with a Hive One ID) is moved, the asset register will automatically be updated, making it easy to locate assets and equipment.
- Hive One ID can be configured to transmit its ID at any specified interval and will be monitored by the Hive Reader placed in the zone where the assets are located. The data is updated to a central database.
- Hive One ID is equipped with tamper-proof detection and an alarm will be triggered in case of any tampering.
- Hive One ID can also be used to track equipment that is regularly taken off site such as company laptops.
- Hive One ID is ideal to track assets through service & repairs.
- All reporting is based on live real-time information.



- Hive One ID can be used to not only manage employees but also security and cleaning staff. Hive One ID can track employees, making it easy to find them on the floor/ premises. It can also report on where staff spend time.
- One ID can manage access to zones.
- It can also record time management which can also be integrated to a payroll.

- For the companies that embrace it, smart manufacturing has the potential to trigger innovation and productivity, enable and spur growth, facilitate greater worker and product safety, and improve the environmental profile of operations.
- By driving efficiency throughout the manufacturing process, smart technology helps eliminate waste:
- Tracking of machines and equipment, leads to better scheduling which prevents breakdowns, idle machines and manpower; optimise runs, shrinked water and energy use.
- Other ways smart technology improves the supply chain include enhancing communication to facilitate planning and helping manufacturers react to events in real time.
- Smart manufacturing is about creating an environment **where all available information**—from within the plant floor and from along the supply chain—is **available in real-time, made visible and turned into actionable insights**. Smart manufacturing comprises all aspects of business, blurring the boundaries among plant operations, supply chain, product design and demand management. Enabling virtual tracking of capital assets, processes, resources and products, smart manufacturing gives enterprises full visibility which in turn supports **streamlining business processes and optimizing supply and demand**.



QUESTIONS?