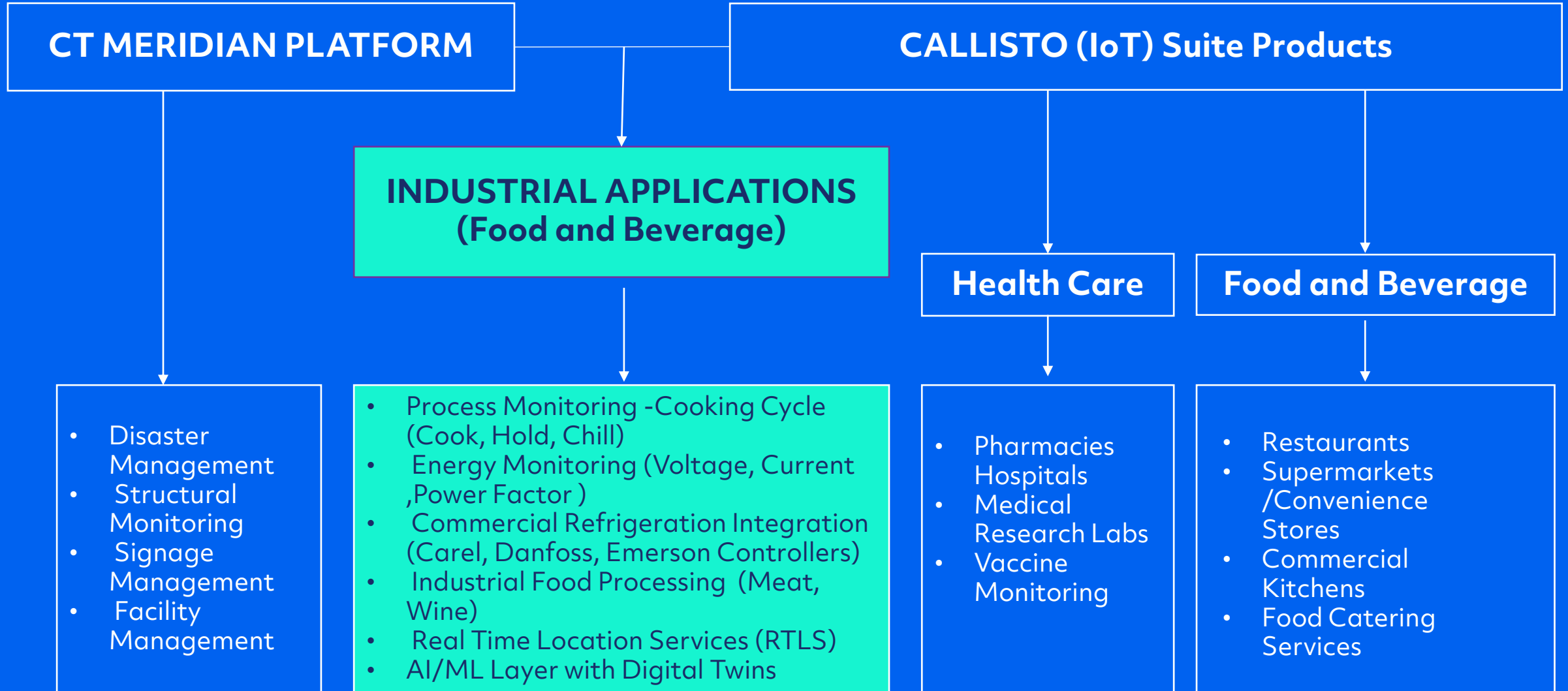


# Annual General Meeting Presentation

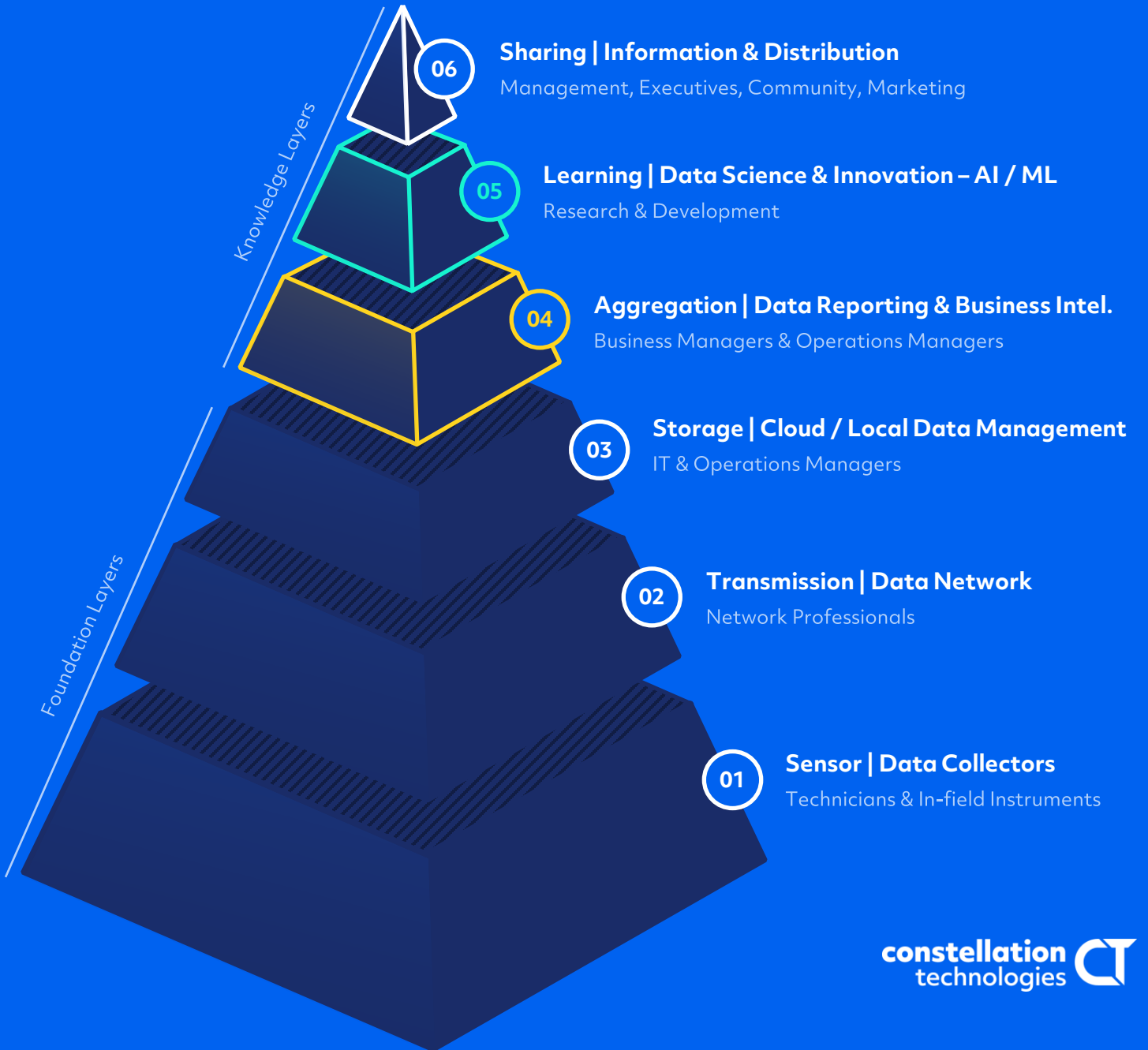
**Kartheek Munigoti C E O**

# CT Product Roadmap



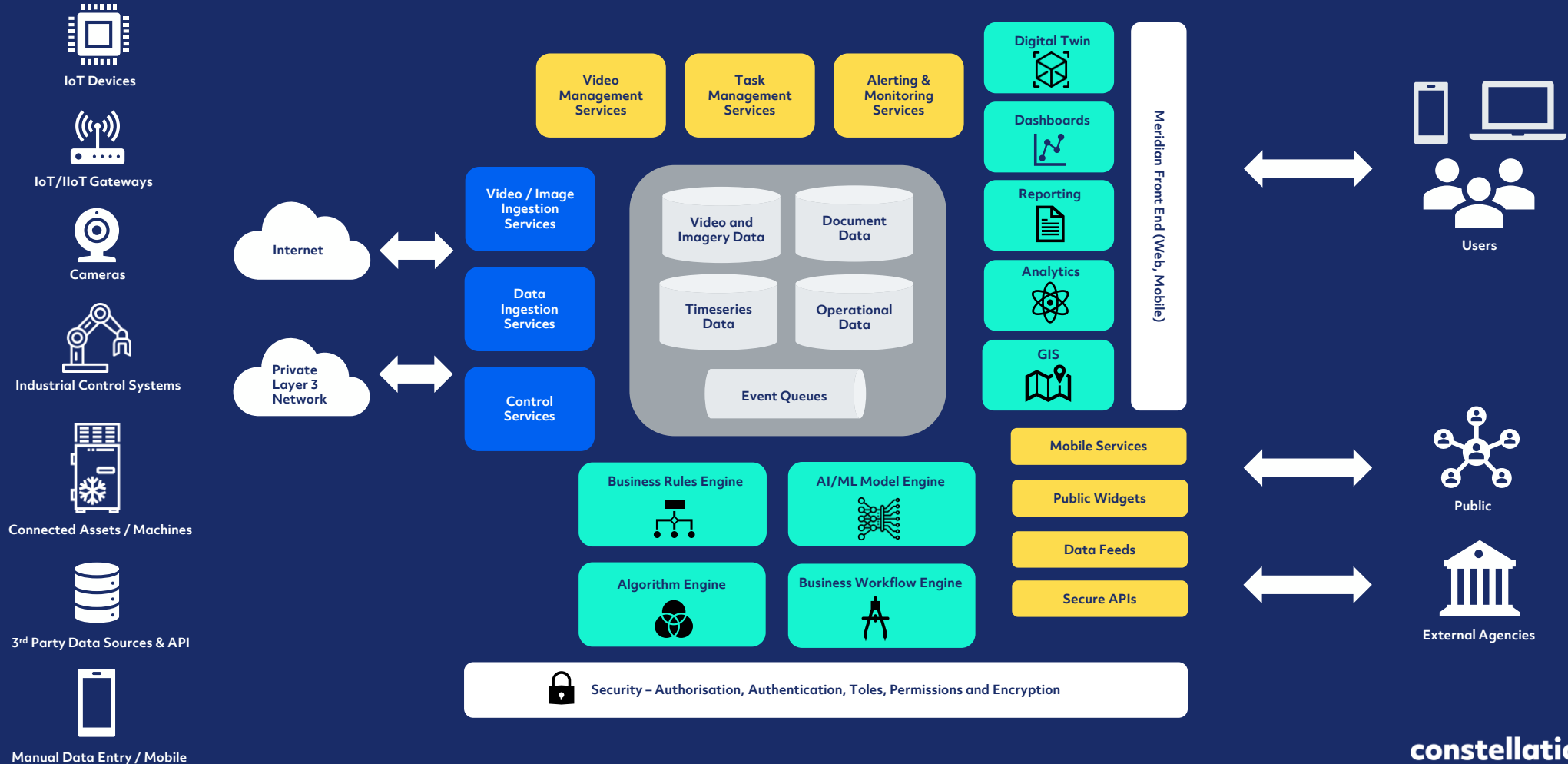
# A Complete IoT Solution

The first 20 years of IoT has focused on developing the foundation layers, the future and true potential of the digital economy is in the knowledge layers where IoT meets Constellation Technologies.



# MeridianCT IoT Platform

The MeridianCT (MCT) platform is a low code, single software solution for all IoT devices and connected asset data sources. MCT platform enables users to create a single pane view of all connected assets and devices, create custom dashboards (tenants) analyse data, generate insightful reports, and create active alerts and alarms to enhance operational efficiencies.



# Callisto - Cold Chain Management Solution Overview

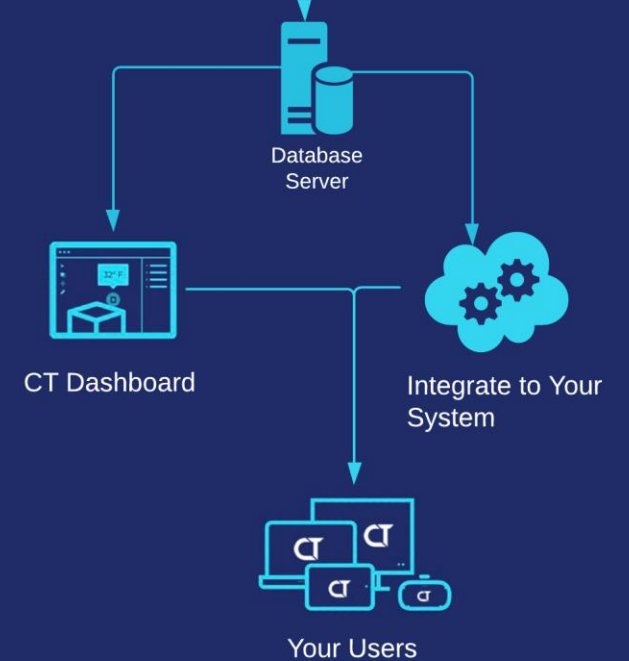
## AT WAREHOUSE AND DISTRIBUTION CENTRES



## DURING TRANSIT



## Data Transmission via Telstra / Vodafone Network



# MCT Existing Applications

## Disaster Management

- MCT Disaster Management platform is built to provide critical road flooding safety management data to councils and public users.
- Field equipment installed at river and creek crossings across the state of QLD, provides near real-time water level data collected from sensors, as well as, live camera feeds.
- Based on collected data, the MCT platform will push out alerts to connected smart signs, warning road users of hazards.
- Live situational camera streams are provided to councils to monitor the road crossings.
- CT developed customised firmware to run on the remote gateways to facilitate the ability for operators to control the cameras PTZ functions.
- The MCT platform schedulers allow administrators to setup intervals for still image capture including PTZ set points. Images captured are archived for evidence purposes.
- The MCT platform has been integrated with BOM to collect all weather related data, along with the data collected from remote field devices and images captured by the cameras help predict the chances of flood accurately well before the actual floods occur.

## Structural Monitoring

- Our structural monitoring client required a versatile and robust IoT platform to monitor and record data from remote structural assets, such as bridges, overland conveyors and draglines.
- Sensors are installed to capture stress points along structural assets to remote gateway devices which send the live data back to the MCT platform for storage, processing and visualization.
- For this project CT developed a customised ingestor which enabled the MCT platform to receive up to 1 million data records per minute during a live event.
- To visualise such vast quantities of data required the build of customised visualisations, allowing users to easily view and drill down to event points enabling users to understand the health of the structure and predict its lifetime before a possible failure.
- Threshold values can be set and alerts can be triggered when a device records a value above or below a set threshold.
- Historic data can be retrieved for purpose of comparison and graphs can be plotted to analyze trend or pattern in data captured.

## Smart Sign Management

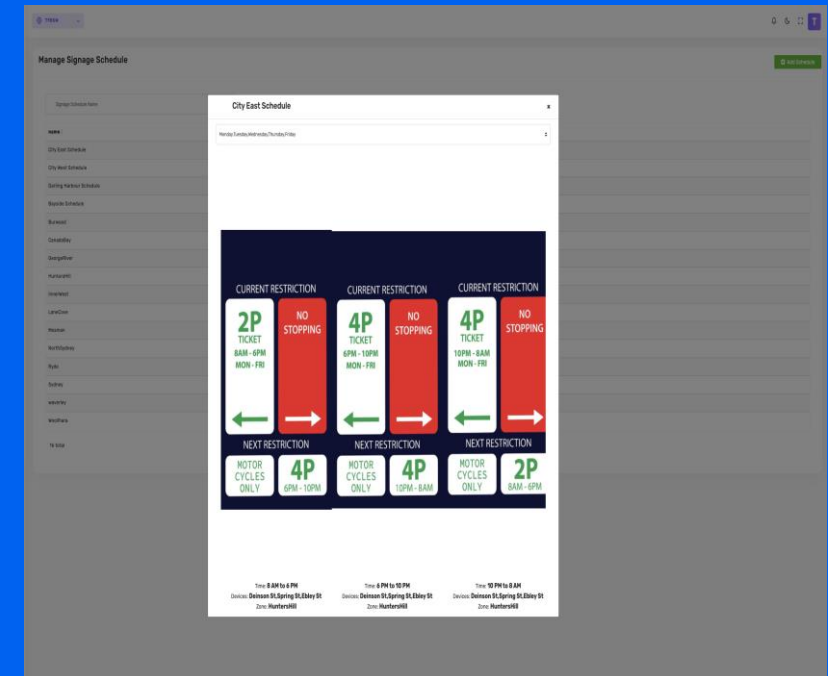
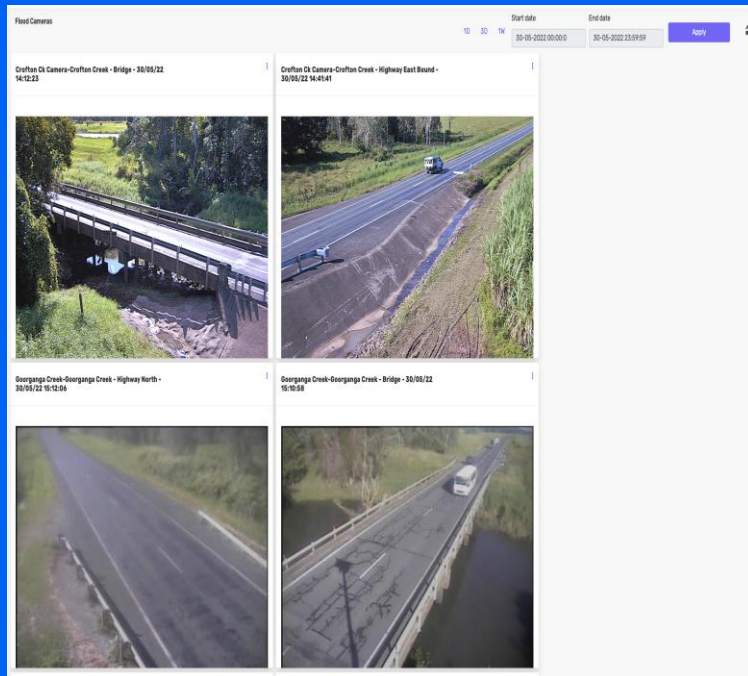
- The MCT platform provides a way to monitor and maintain smart traffic and parking sign solutions for councils for smart cities.
- Users can easily navigate, view and configure each device via an interactive map dashboard.
- The platform application provides the ability to quickly filter and administrate devices based on Zones and Sub-Zones.
- Sign information collected includes things such as, the current status of the communications gateway, signal strength, battery voltage and any equipment alerts.
- The MCT platform provides a Scheduler which allows the users to run multiple schedules on a device, schedules can be either actions or data [in the form of images and video] that are run on device for a set period of time.
- Images are collected from the signs built in IP camera and stored for time based evidence within the platform.
- MCT also provides the user with the ability to run Emergency messages on devices in the case accidents or events. This also includes maintenance image in the event of a sign failure.

# MCT Existing Applications

Disaster Management

Structural Monitoring

Smart Sign Management

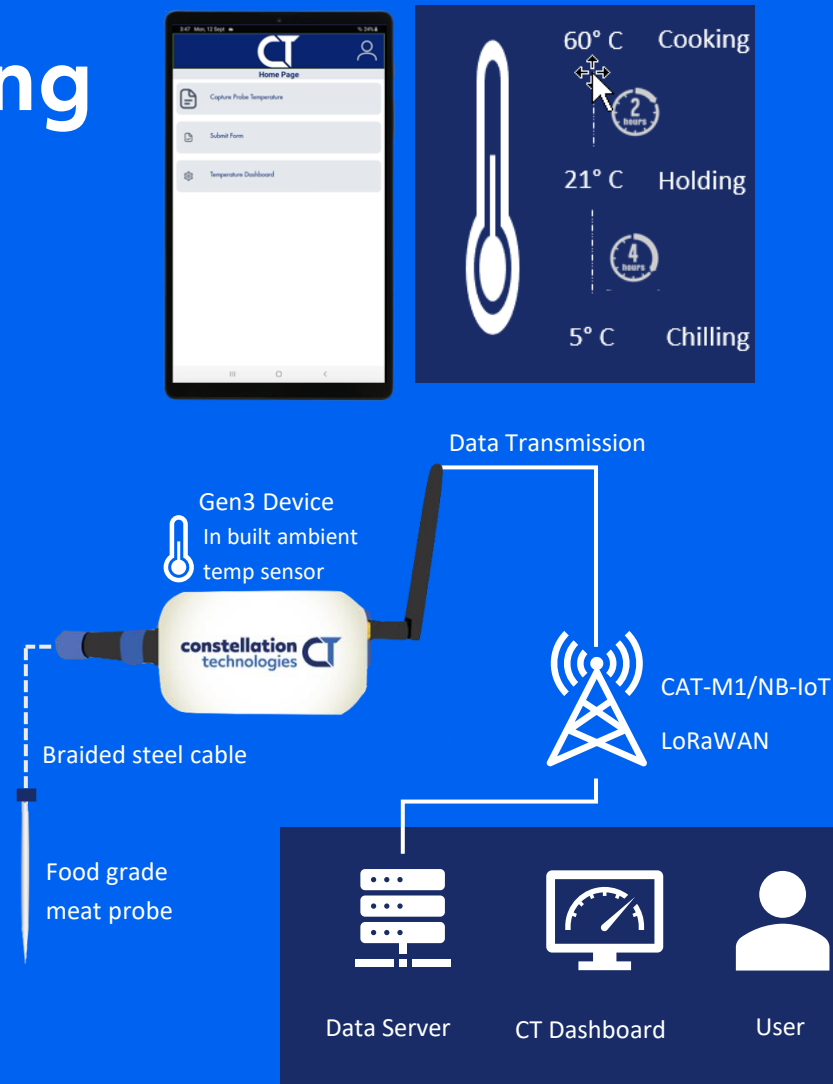


# RoadMap - a Combined MCT Callisto Solution



# Process Monitoring

- After processing and prior to dispatch, processed food are left for few hours within the carton chiller to reach their optimum cool down temperature.
- Manual monitoring is performed by QA staff via the insertion of a meat probe into the carcasses to measure the cool down process and ensure the safety and quality of the product.
- Manual monitoring is time consuming, and financial savings in the form of reduced labour costs and chiller running hours could be made by utilising our Gen3 IoT devices with an suitable insertable meat probe.
- The installed Gen3 device within the chiller can continuously record both ambient room temperature (Gen3 in built sensor) and product cool down temperature via the probe.
- The data would be sent from the Gen3 IoT device to the MeridianCT Cloud platform for storing and visualisation.
- Temperature set points can be configured to notify staff when the food have reached their optimum temperature, thus reducing labour requirements, chiller run time and improving product quality outcomes.



## Features



Take periodical temperature samples, as per requirements.



Dashboards provide near real-time visibility of temperature performance at any time and location.



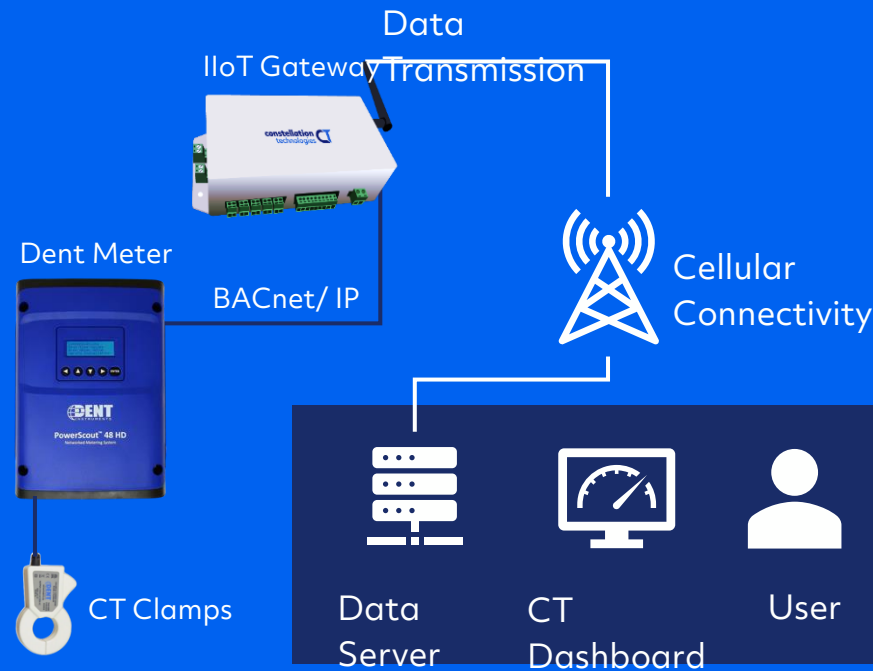
Get alerted when there are temperature changes that could effect quality or compliance.



Generate compliance reports. Supports automated report delivery.

# Energy Monitoring

- Energy Monitoring provides near real-time data about your electricity consumption.
- Monitoring can be performed from main boards, distribution boards all the way down to individual circuits and equipment.
- Utilising our IIoT gateway connected to Dent Instruments range of PowerScout meters, CT can provide kWh/kW energy data, as well as virtually all relevant energy parameters for storing and visualisation within the MCT Platform. Supports 3-Phase & 1-Phase circuits.
- Clamp-On Current Transformers provide easy installation.
- Customised dashboards can be configured for specific users on site.
- Reports can be configured to automatically generate and send to relevant personnel.
- Setup alarms and notifications around energy consumption.



## Features



Take continuous energy consumption data samples.



Dashboards provide near real-time visibility (kWh) energy consumption, including other relevant and available energy parameters.



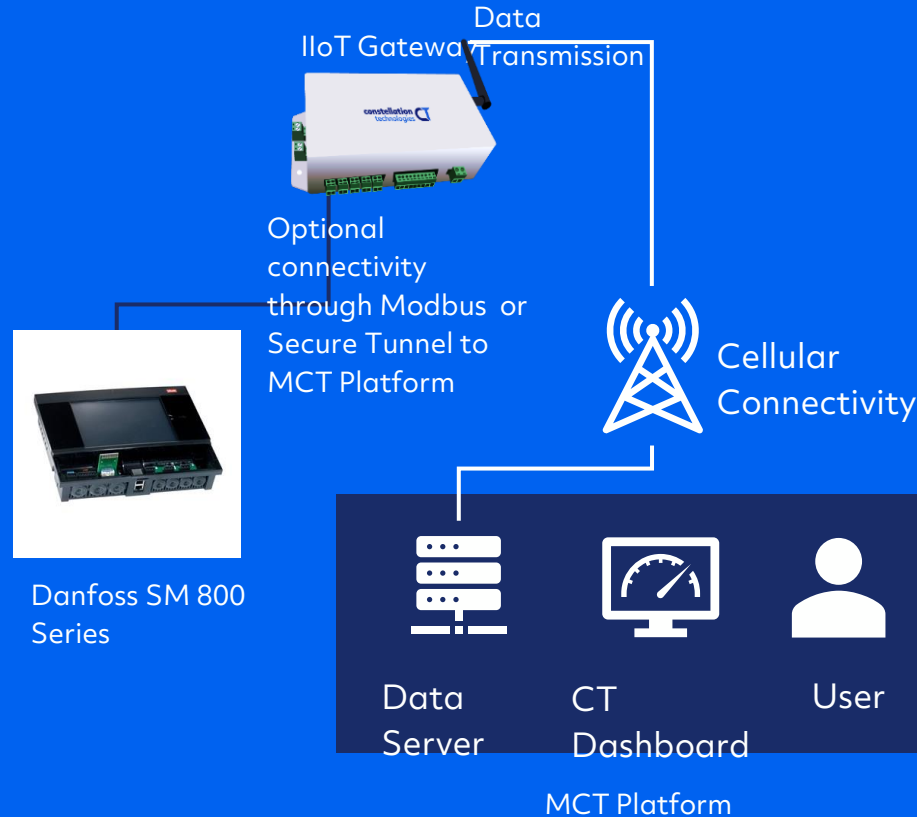
Setup alerts and notifications as required.



Generate energy reports. Supports automated report delivery.

# Commercial Refrigeration Controller Integration (Danfoss, Carell)

- Integrate plant controller data into MCT platform through the IIOT Gateway using RJ45, Modbus or BACNET over IP.
- In some cases like Danfoss SM 800 series where a static IP address is exposed, CT Ingestion services directly reads using secure XML schema.
- Supports most of the controllers such as
  - Danfoss SM 800 Series or Above
  - Emerson Site Supervisor
  - Emerson Xweb500
  - Carel Boss



## Features



Continuous Refrigeration Monitoring



Dashboards provide near real-time visibility and trending of water quality data: Temperature, Thermostat, Alerts, Defrost, Set point, PSI etc.

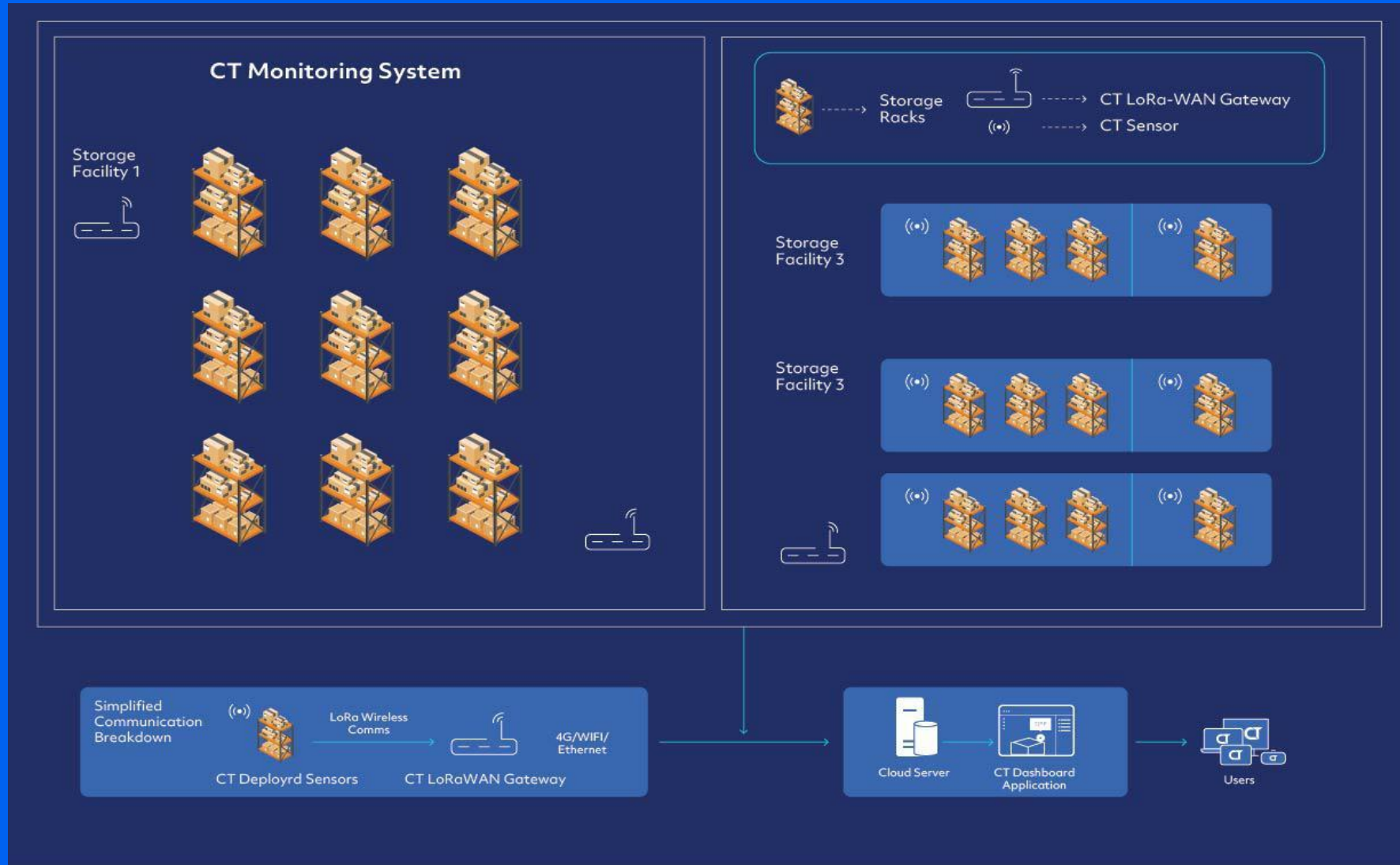


Setup customised alerts for any parameter, and get alerted when there are changes that could effect compliance.



Generate compliance reports. Supports automated report delivery.

# Industrial Food Processing (Meat and Wine)



# Real Time Location Services – Track Moving Things

Real-time information for faster business decision.



Track your assets location, storage temperature through its trade route and set geofencing to be aware of asset locations at anytime.



Anticipate failure before they happen so defects can be reduced, and food safety standards are always met.

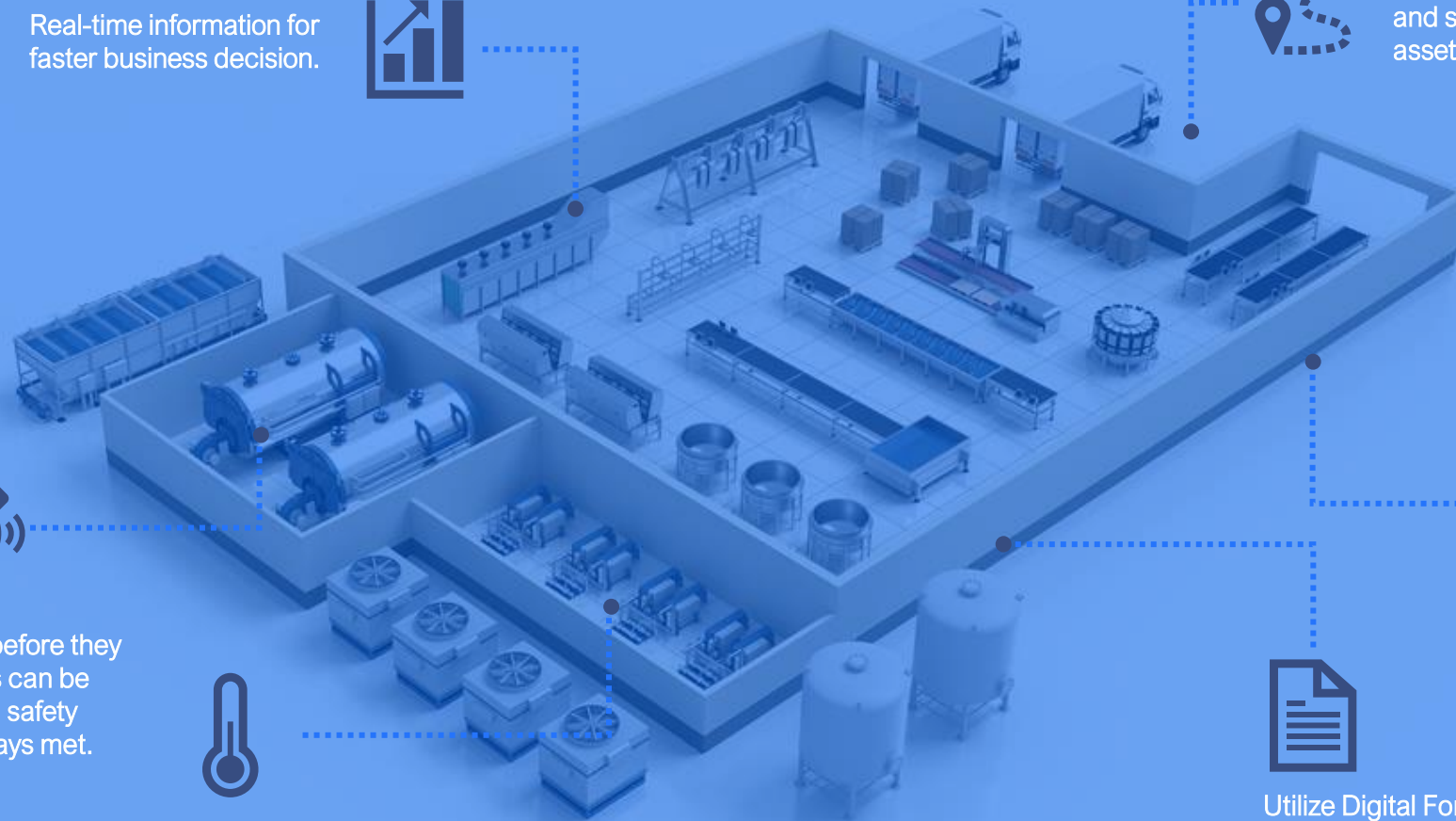


Alerts when changes in temperature/humidity that could affect production and product quality.

Complete visibility to daily operations across multiple processing plants and the data collected at any time on any device.

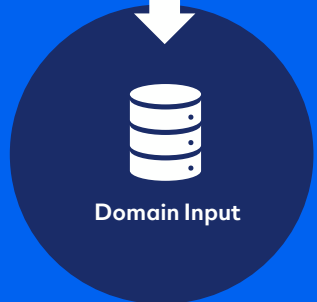
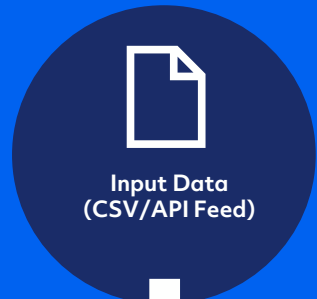


Utilize Digital Forms to collect information with ease and simplicity.

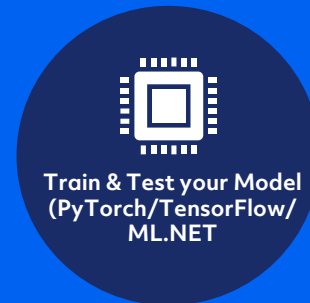


# Introducing MCT A.I./ML Layer

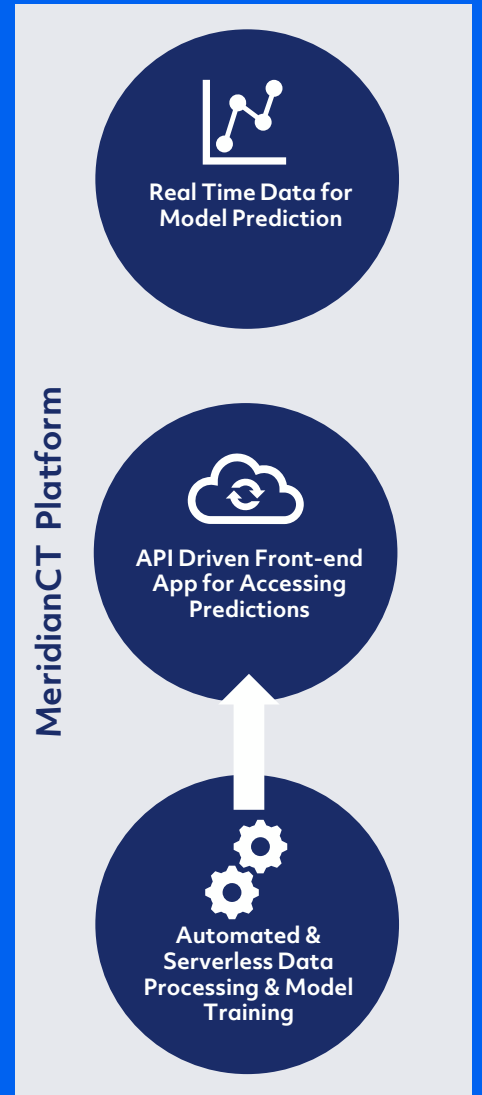
## Prepare



## Experiment



## Deploy



# **MCT- Callisto Future Target Industries**

- **Refrigeration and HVAC**
- **Energy and Lighting Control**
- **Health and Safety**
- **Construction and Building Management**
- **Industrial Automation and Tracking**

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