**Challenge – IoT Reference Architecture**

You work for a gourmet cheese company named Cabot**.** The company’s Chief Technology Officer has evaluated the business opportunity for implementing IoT and has concluded that Contoso can realize significant benefits by implementing an IoT solution. Contoso has selected the Microsoft Azure IoT tools based on their evaluations.

Cabot is known for producing high quality cheeses. Due to the company’s rapid growth in both popularity and sales, they want to take steps to ensure that their cheeses stay at the same high level of quality that their customers expect.

In the past, temperature and humidity data was collected by factory floor workers during each work shift. The company is concerned that the factory expansions will require increased monitoring as the new facilities come online and that a manual process for collecting data will not scale.

Cabot has decided to launch an automated system that uses IoT devices to monitor temperature and humidity. The rate at which telemetry data is communicated will be adjustable to help ensure that their manufacturing process is under control as batches of cheese proceed through environmentally sensitive processes.

To evaluate this asset monitoring solution prior to full scale implementation, you will be connecting an IoT device (that includes temperature and humidity sensors) to IoT Hub.

Cabot Management is impressed with your implementation of automatic device enrolment using DPS. They are now interested in having you develop an IoT-based solution related to product packaging and shipping.

The cost associated with packaging and shipping cheese is significant. To maximize cost efficiency, Contoso operates an on-premises packaging facility. The workflow is straightforward - cheese is cut and packaged, packages are assembled into shipping containers, containers are delivered to specific bins associated with their destination. A conveyor belt system is used to move the product through this process. The metric for success is the number of packages leaving the conveyor belt system during a given time (typically a work shift).

The conveyor belt system is a critical link in this process and is visually monitored to ensure that the workflow is progressing at maximum efficiency. The system has three operator-controlled speeds: stopped, slow, and fast. Naturally, the number of packages being delivered at the low speed is less than at the higher speed. However, there are several other factors to consider:

You have developed a simulated IoT device that generates vibration data and other telemetry outputs that are representative of the conveyor belt system used in Cabot’s cheese packaging process. You have built and tested a logging route that sends data to Azure Blob storage. You will now start work on a new route within IoT hub that will send telemetry data to an Azure Event Hubs service.

The designed solution we use to use some built-in functionality of Power BI along with the ability of Azure Stream Analytics to send data in a real-time format that Power BI can ingest. We use the dashboard feature of Power BI to create several tiles. One tile contains the actual vibration measurement.

**Outcome:** Solution Design based on above use case