

# Problem Statement Worksheet (Hypothesis Formation)

By Hongling Yang

# Context

- Nordic Sensor Company (NSC) is a top-five player in the IoT sensor space focusing on energy consumption and production, and NSC's newest offering in the residential is InSense energy tracking sensor. In early-stage development testing, about 1-2% failure rate was normal for manufacturing the InSense sensor. However, the current sensor failure rate is 15%. The cause of increased failures could be due to a combination of faulty parts and poor manufacturing, or it could be specific to one factory. The company needs to know which manufacturer to shut down or parts supplier to stop buying from in order to get the failure rate back down below 5%.

2

## Criteria for success

- Dive into and identify possible causes that have elevated sensor failure rate
- Bring the current HIGH sensor failure rate of 15% back down below 5%,

3

## Scope of Solution Space

- Connect and combine the available data on 26 parts suppliers, manufacturing and failure of InSense sensors
- Determine if the elevated failure rate is partially due to faulty parts from one or more of parts suppliers. If so, identify and stop partnership with faulty parts suppliers immediately.
- Determine if the elevated failure rate is due to poor manufacturing in one or more of the four factories in Asia and identify them. Immediately Stop production at these sites.

4

## Constraints within solution space

- Time Sensitive: IMMEDIATELY identify the cause(s), to drive interests from our OEM partners and to fulfill massive orders from each of our three accounts;
- Data from Cert is limited (with 20k rows only).

5

## Stakeholders to provide key insight

Otto Evans– InSense President, Tony Abraham– InSense VP,  
Bernard Ong– CTO, Vince Maccano– Head of Data Science  
Shane Buchholz– Head Engineer, Gary Neumont– Head of  
Manufacturing  
Jessica Jones– QA/QC Engineer

## Key Data Source

- data from Cert (in Excel format with only 20k rows), on InSense sensors manufactured in past two quarters. For each InSense sensor, the file contains information on the manufacturing date, the parts suppliers, the testing date and whether it failed on testing. There are 26 suppliers for 7 InSense sensor parts, and 4 manufactures in Asia.