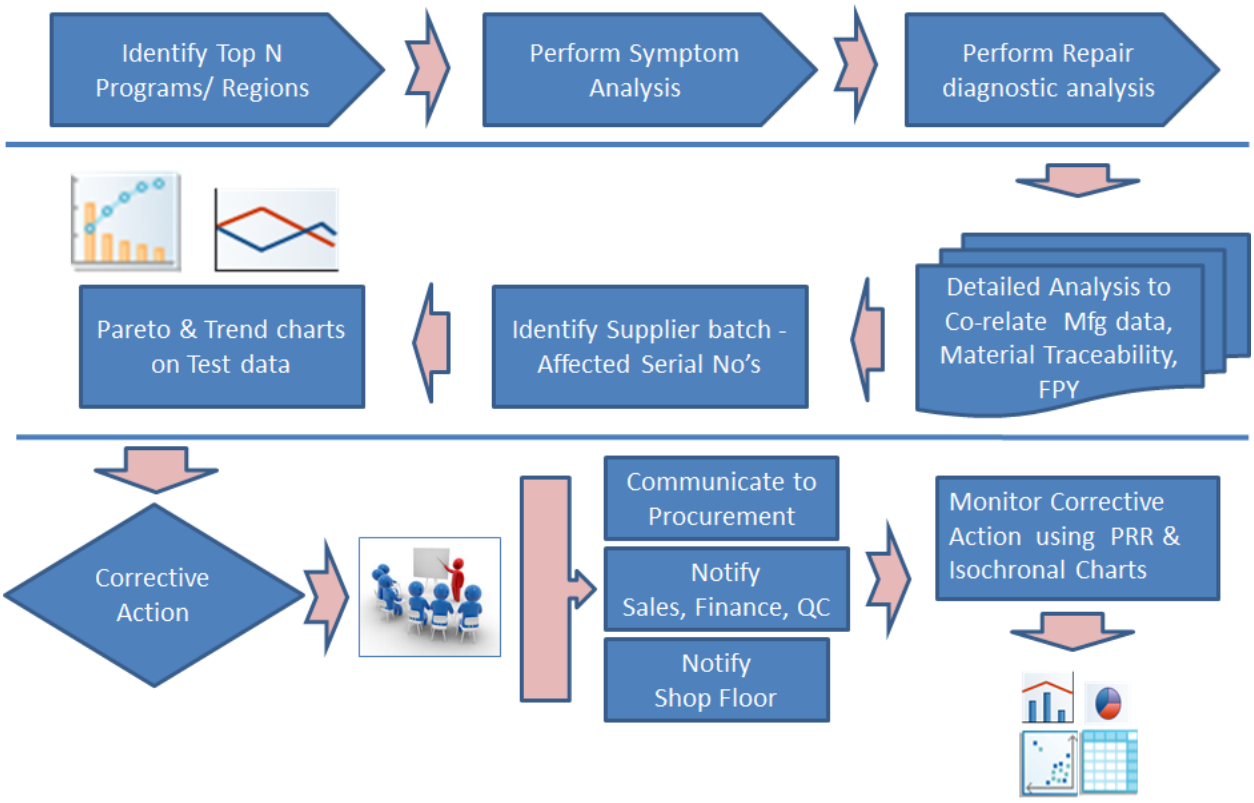
Warranty Claims Analytics Decoded

This is one of the most complex analytics scenarios as reducing warranty cost requires numerous data points and advanced correlation in data. The solution handles very large and complex data coming from repair stations, manual inspections, and corporate master data, manufacturing machine logs, manufacturing test station, ERP, CRM and other sources. The solution coverage includes data integration, incorporation of business logic, master data management and application of data science. A typical application of this solution would be for a customer with following indicative attributes, over a 3 to 5 year warranty period:

- 25,000+ repair centers
- 75+ countries
- 25+ factories
- 100,000+ SKUs
- 50-100 million units
- 10+ TB data volume with 30-50 GB data coming in daily

SOLUTION BLUEPRINT



Explanation of Solution Functionality

1. The solution identifies the Top N SKUs with highest field failure rate that contributes to 80% or more of warranty cost. The solution tackles the challenge related to master data here, which involves matching SKU serial numbers coming from repair centers to corporate master data

2. Once the SKU's are identified, particular SKU's with high failiure instances (for instance, one million units) over the years in market are pinpointed to
    - Identify which factories they were manufactured in
    - Identify top 10 failure causes, symptoms and components
    - Identify top 10 components which are failing for a particular SKU

3. Once SKU or group of SKU is mapped to manufacturing unit, the solution traces the manufacturing process history and Bill of Material used at the time of manufacturing. The inherent complexity is in data access for each serial number failed for a specific SKU and having access to BOM, as BOM for the same SKU may have changed over time. However, the solution addresses this issue appropriately.

4. After accessing data, it is important to find patterns for component failures which has caused high field failure rate, there can be several reasons for high FFR (field failure rates). The solution ensures identification of patterns such as the following
    - May be within specific batch, component supplied by specific vendor was faulty or of lower quality than prescribed guidelines. The complexity involved is mapping component to vendor, as same components may be supplied by multiple vendors
    - May be all serial number in batch with same supplier component has passed QC test but with border line cases and started to fail in market on extreme conditions
    - May be it is a design defect
    - May be it is workmanship or placement defect

The solution also enables another key benefit which is reduction in cost of rework due to enhancement in manufacturing quality. The solution also provides the ability to identify the specific SKU serial numbers which are affected, thereby enabling precision in recalling the specific batches of products. Such precision not only reduces effort and cost in identifying affected batches but also makes the recall from the market swift and well in time.