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Big Data PHM for Aerospace and Mobility

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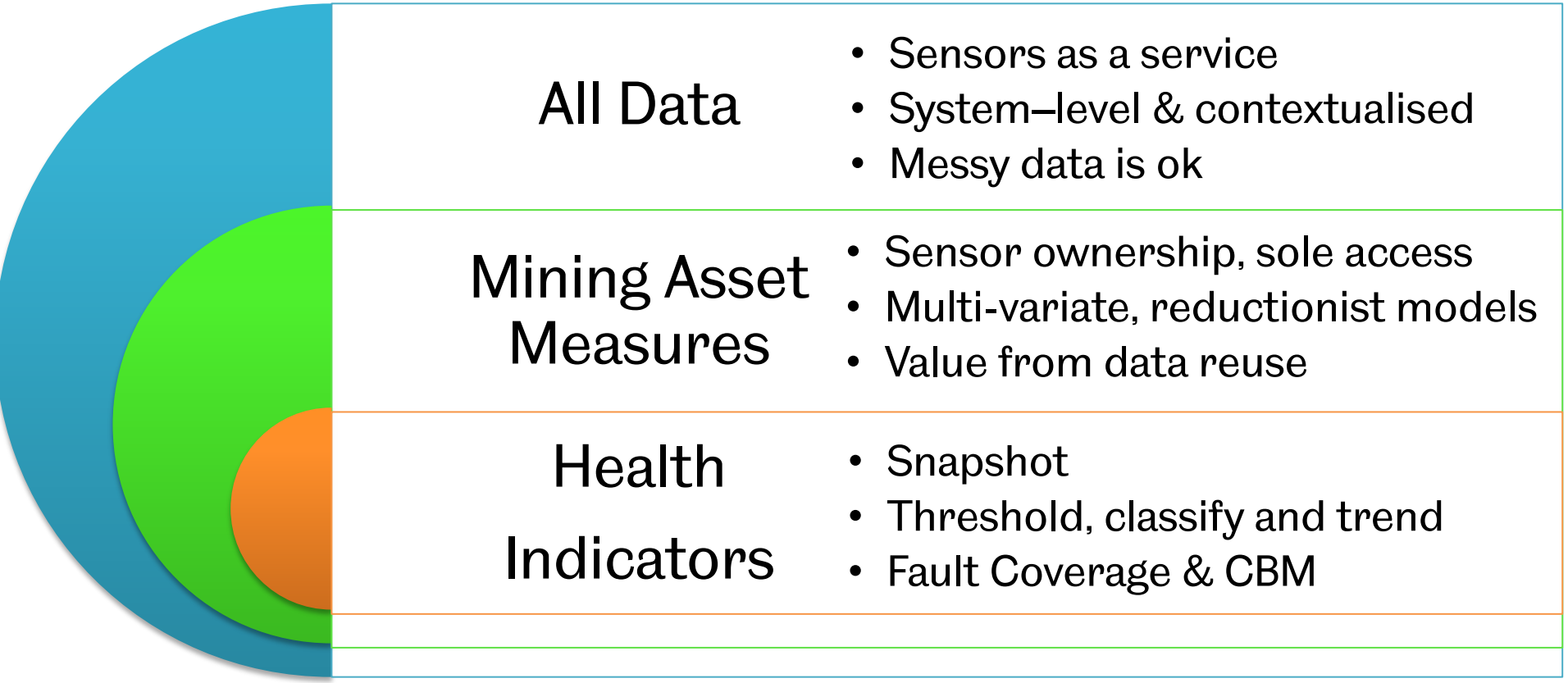
PHM from Big data

- Big Data = data-driven modelling 3.0
- Data is the middle-man to insight
- Sense, Model, Mindset



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Rail Operations

Requirements:

Rolling stock (asset) health state

Track condition

Trackside Condition – tree cover etc.

Regulation required service statistics & financials

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Rail Operations

Passenger Usage/ Sentiment

Driver Monitoring

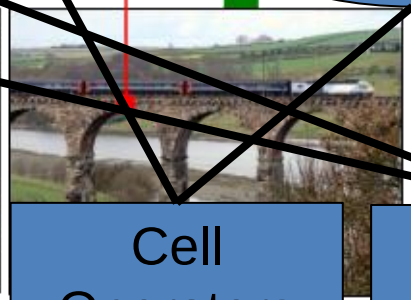
Computing and Communications Infrastructure

Track Condition

Asset State

Trackside Condition

Tunnel



Government & Other Utility

3rd party Sensor Owners

Cell Operators

Cab AV recording

Train Spotters' Photos

Regulation required service statistics & financials

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Predictive Data Modelling

- New Data Territory
  - Volume vs accuracy vs bias vs diversity
  - Feedbacks in data – adjusting to prediction and metrics; self censoring data
- Imagining Signals
  - Correlation vs causation
  - Prediction vs Interpolation: extrapolate with care
- Modelling Needs
  - Spatio-temporal modelling, information sharing (hierarchical) models,
  - Uncertainty capture and representation

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Discussion Points

- Big Data = data-driven modelling 3.0?
- Importance of a good hypothesis vs 'spotting trends'?
- For highly reliable assets, will fault data be 'big enough' for data-driven predictions?
- Dangers of feedbacks in data?