

ASSET MANAGEMENT AND DISTRIBUTION NETWORK STATE ESTIMATOR

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Asset management

Asset management is a business decision process designed to align corporate goals with asset-level spending decisions.

Classical approach	Future approach
maximum performance	prudent performance targets
avoiding risk	active manage of risks
rate-base mentality	spending decisions based on performance improvement and risk mitigation



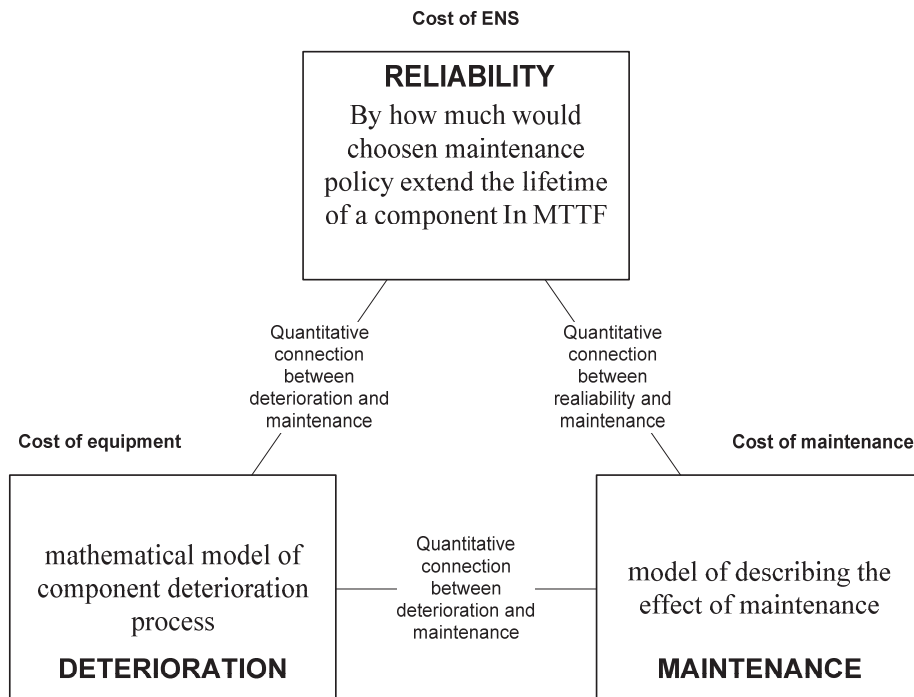
Uncertainty, Risk and Hazard

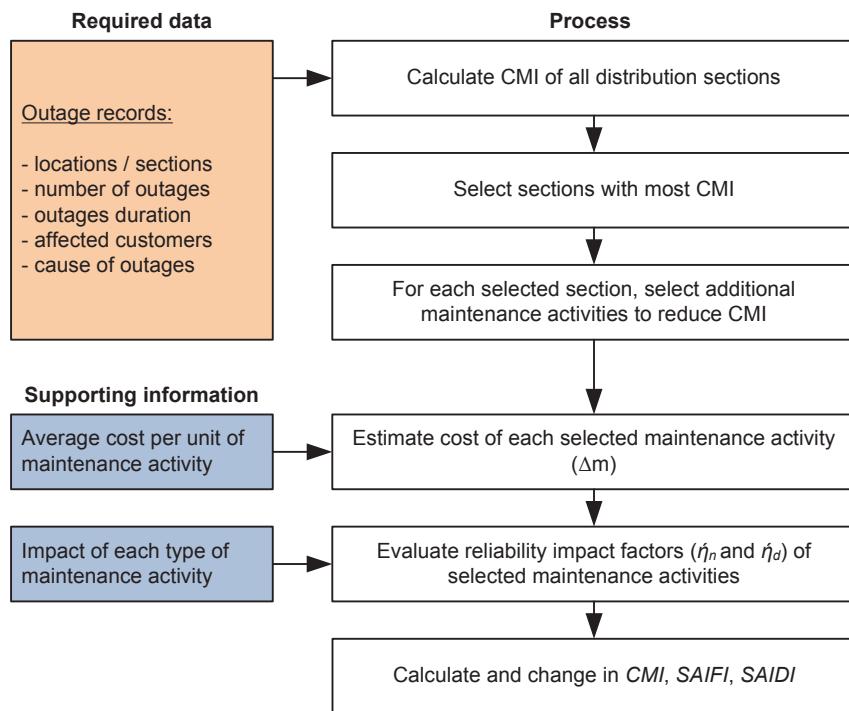
- Uncertainty is a state of knowledge (e.g. reliability, availability ...)
- Risk is uncertainty connected with damage:

$$risk = uncertainty \& \text{ damage}$$

- Hazard is a source of danger:

$$risk = \frac{hazard}{safeguards}$$



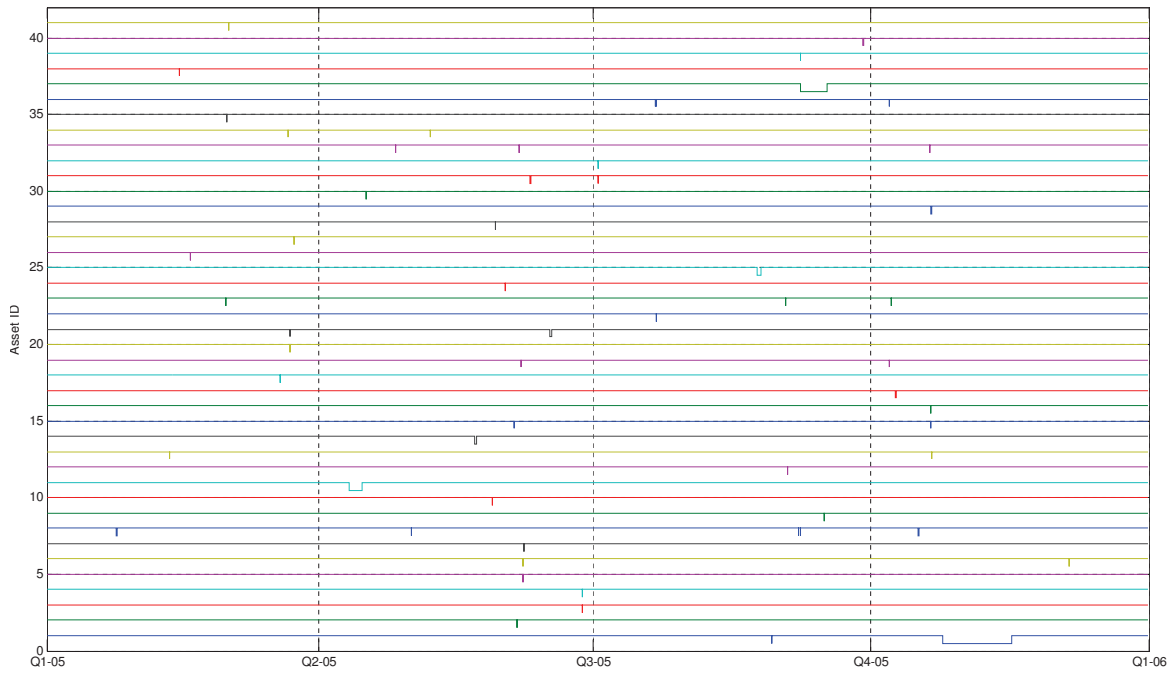
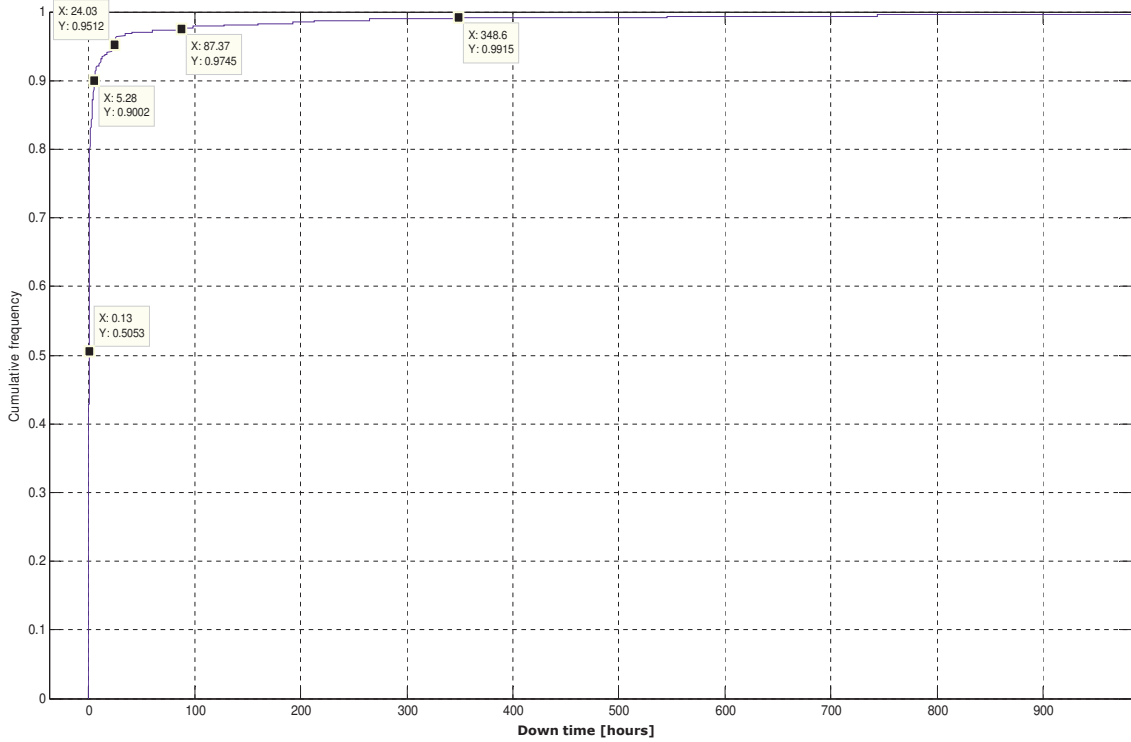


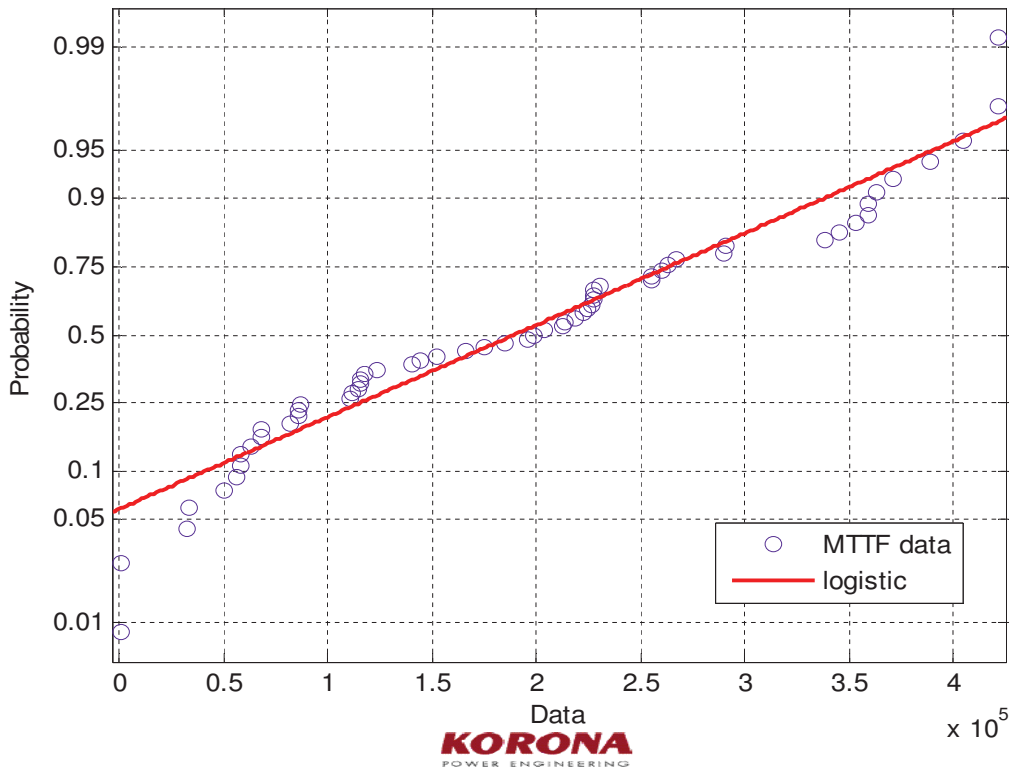
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State estimator use in AM

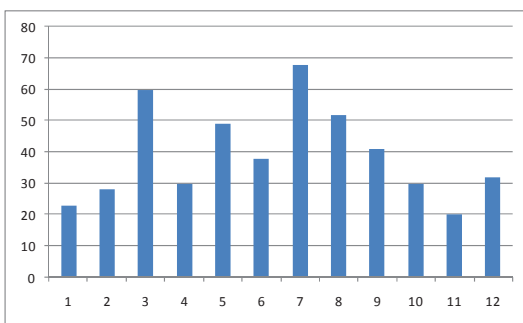
- Reliability analysis:
 - calculate ENS, SAIDI, SAIFI, CMI or other reliability indices
 - calculate influence of reliability of equipment failure on system reliability – importance of equipment
- State of equipment analysis:
 - operating conditions (e.g. overloading)
- Maintenance optimization:
 - Multi objective evolutionary optimization

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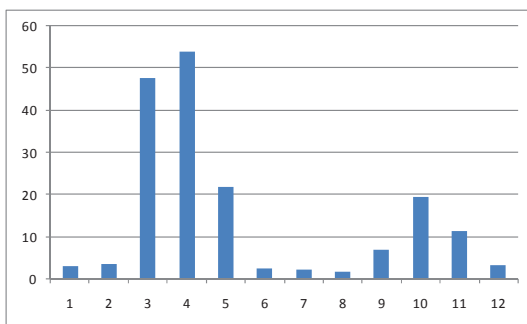




Question: Is the number of events and/or duration constant through year?



Number of events



Average duration

- Crew management
- Work planning
- Test

χ^2

Conclusion

- With distribution automation we get substantial amount of data for decision support in asset management.
- Use of data:
 - Reliability modelling
 - Cost optimization
 - Maintenance strategy selection