



GTEN 2019 Symposium

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Maintenance for Operational Support in a Changing Landscape

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Topics

- Background
- Advanced Services
- Advanced maintenance drivers
- Delivering advanced maintenance
- Example
- Future outlook and summary



Background

- Market landscape is changing
 - <https://www.iea.org/weo/weo2018/secure/>
 - Transition to new role for GT plants
 - Customer business situation changing
- How to increase our business value?
 - Increase customer competitiveness
 - Go digital
 - Flexibility



Advanced services (I)

- “Advanced services are propositions, where the provider (the manufacturer) engages in *in-depth customer interaction* and *extensive capability integration*, and through a *co-creation* process delivers *functional values* to that customer.”

Loasby, 1998



Advanced services (II)

- How is money generated? And lost?
- How can our knowledge help?
- Supplier – operator combined competencies
- *From maintenance to production support*



Advanced services (III)

- <https://www.cos.com>

- ASME Turbo Expo 2019: GT2019-90132



Operator drivers

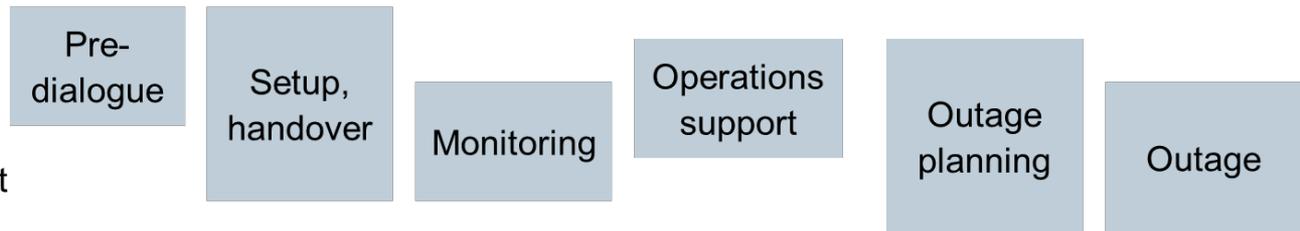
- Predictability and guarantees
- *Risk optimization*
- Competence
- *Power peaking*
- *Dynamic operation optimization*
- Flexible pricing



Delivery: Committment and co-creation

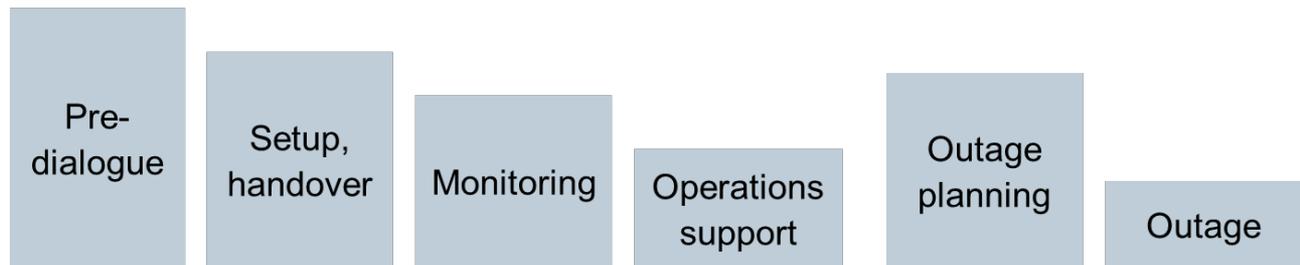
Supplier

Sales
Engineering
Local support
Remote support
Project management
Field service



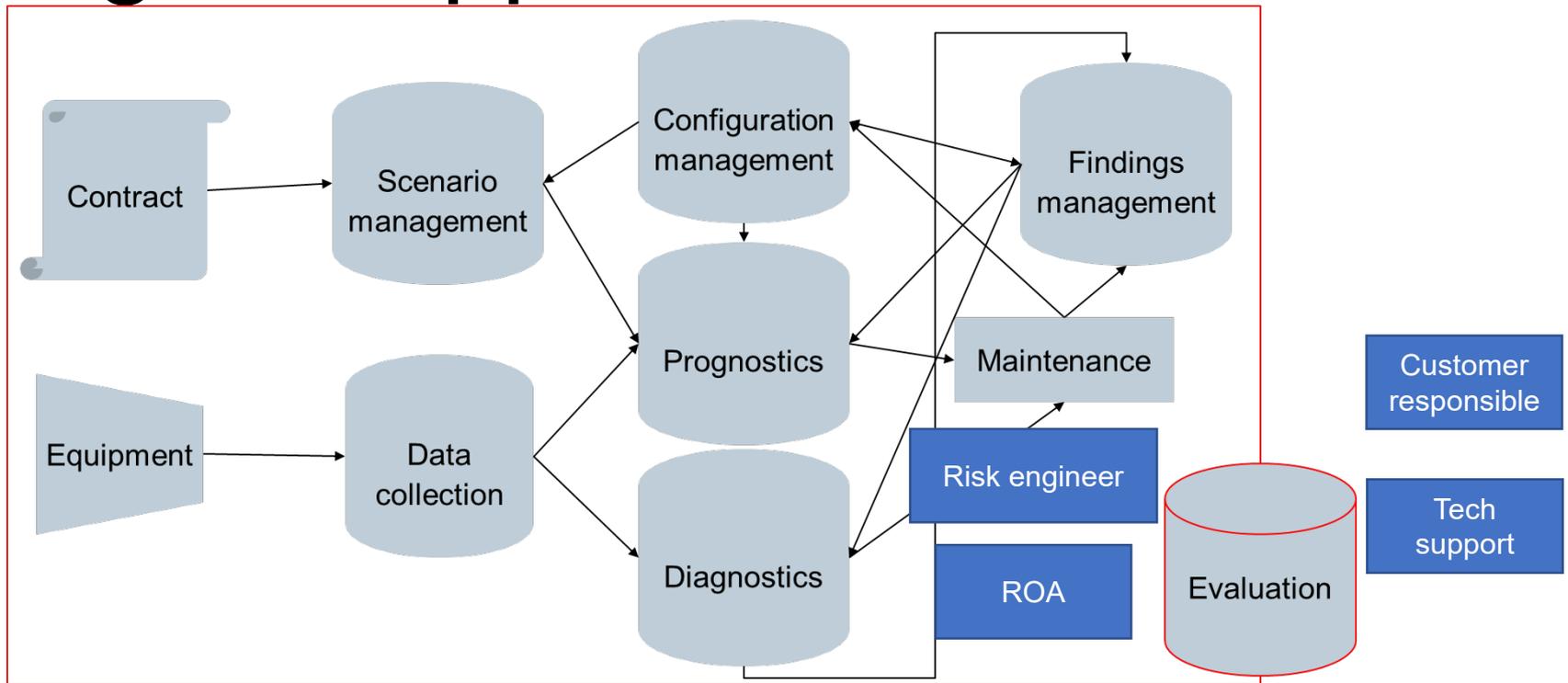
Operator

Management
Purchasing
Finance
Operations
Engineering
Maintenance





Delivery: Digital support





Example

- Power Generation, 2*54MW, Simple Cycle
- Commercial
 - 2-month low season, otherwise power undersupply
 - Cheap fuel
 - Fair power price
- Options
 - Standard 30 000 EOH interval ~3,4 years
 - Three-year 25kOH cycle with limited overfiring
 - Four-year 34kOH cycle with reduced load
 - Inlet air cooling?
- Best choice: ...



Conclusions

- Advanced services can increase operator competitiveness
- Service scope and level dependent on what serves operator best
- Value based payments?
- From supplier – operator conflict to alliance
- Necessary development to keep both parties profitable in a market undertaking a paradigm shift



Next steps

- 4th generation prognostics
- Shorten decision paths
- Customer feedback -> improvements