



# **GTEN 2019 Symposium**

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## **Maintenance for Operational Support in a Changing Landscape**

**19-GTEN-202**

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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://t/Cos>
- ASME Turbo Expo 2019: GT2019-90132



# Operator drivers

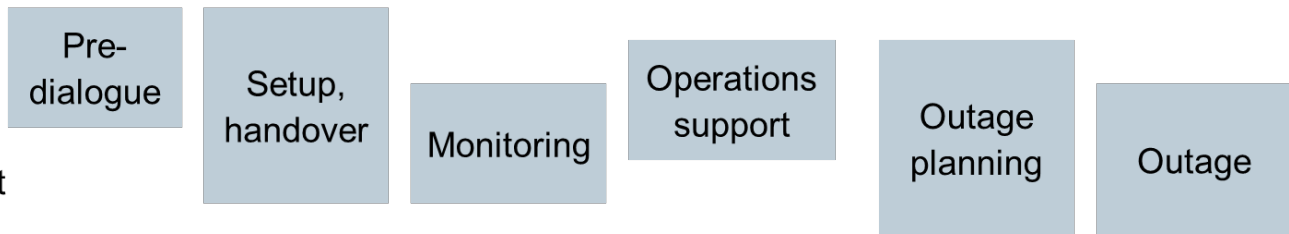
- Predictability and guarantees
- *Risk optimization*
- Competence
- *Power peaking*
- *Dynamic operation optimization*
- Flexible pricing



## Delivery: Committment and co-creation

### Supplier

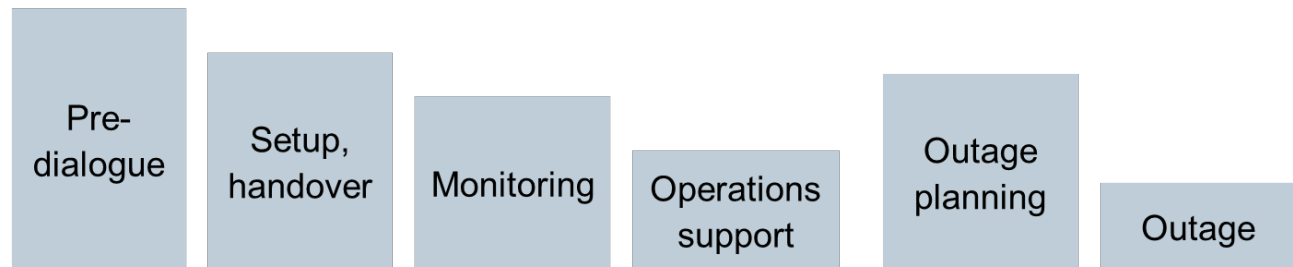
Sales  
Engineering  
Local support  
Remote support  
Project management  
Field service



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### Operator

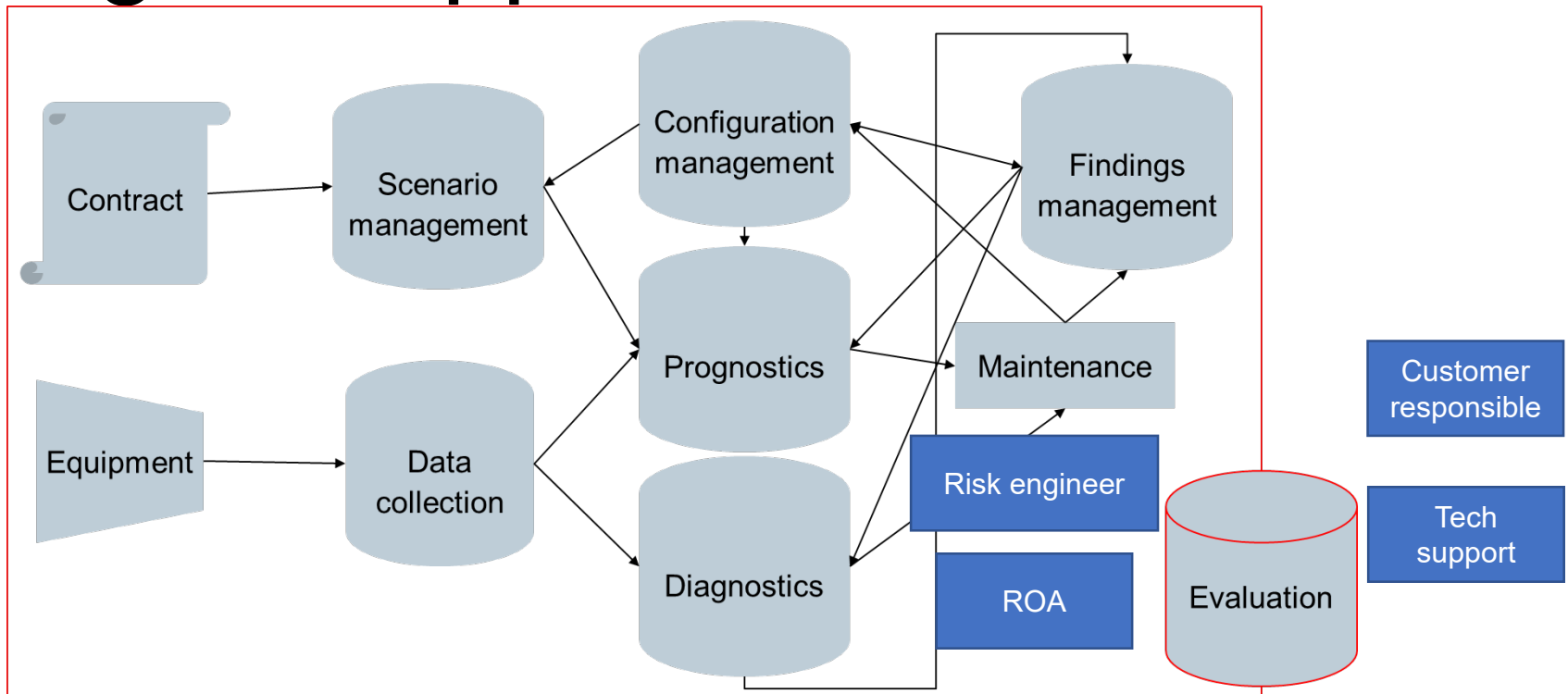
Management  
Purchasing  
Finance  
Operations  
Engineering  
Maintenance







## 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