werkbox

Lucerne University of
Applied Sciences and Arts
HOCHSCHULE
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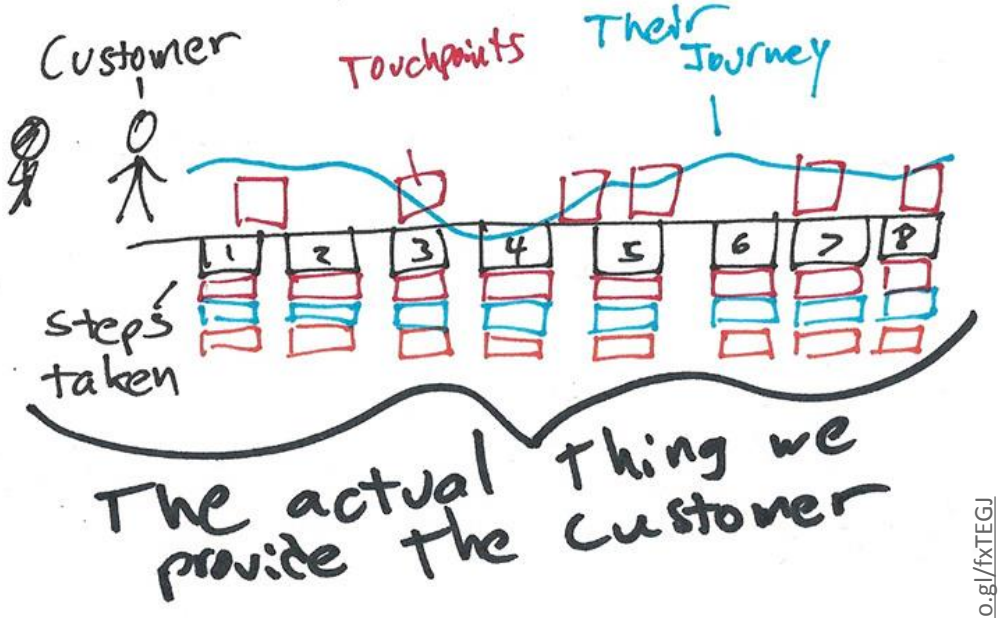
Technik & Architektur

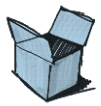
Creating and measuring value: Alternative operations and maintenance business models



goo.gl/fxTEGJ

The Future of Gas Turbine Technology,
ETN's 8th International Gas Turbine Conference,12-13 October 2016, Brussels, Belgium

Shaun West



Introduction
The problem and the purpose of this presentation

Problem

… not any two owners are the same so why do we often treat them as if they were the same…

Purpose of this paper

…to describe some use cases from an asset management perspective

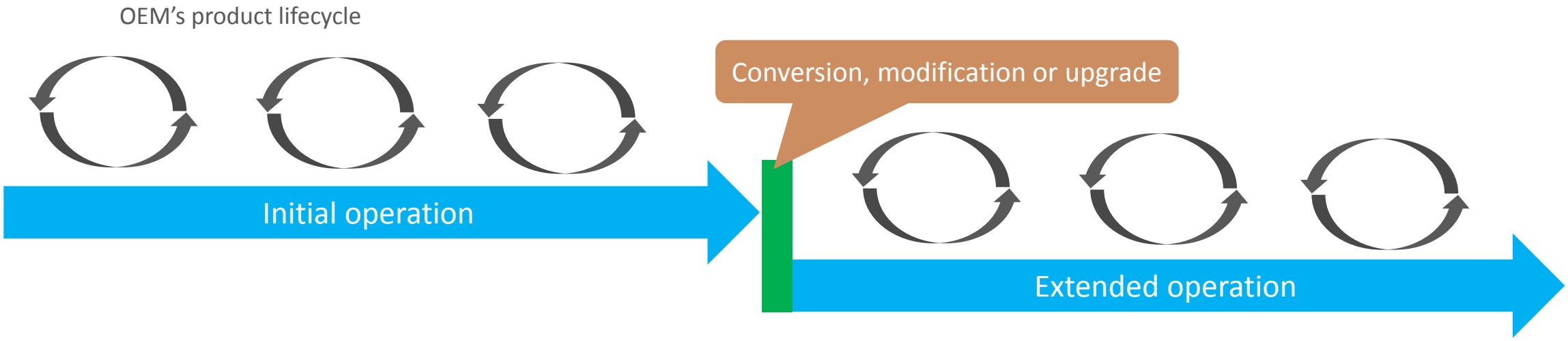
…to provide some insight into situations when different models could be applicable

By examining use cases for the operation and maintenance of turbines we will discover some new business models that could increase customer value

Introduction

Use cases that we will explore the owner's and the OEM's perspective

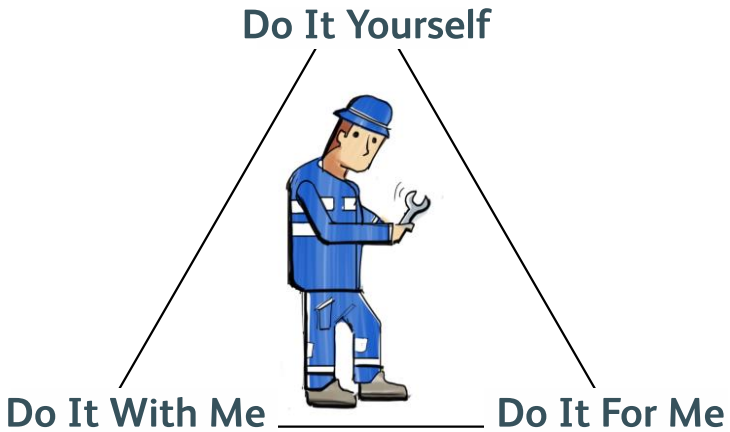
- The OEM's view on the product lifecycle is very short
- The Owner's view on the asset is much longer

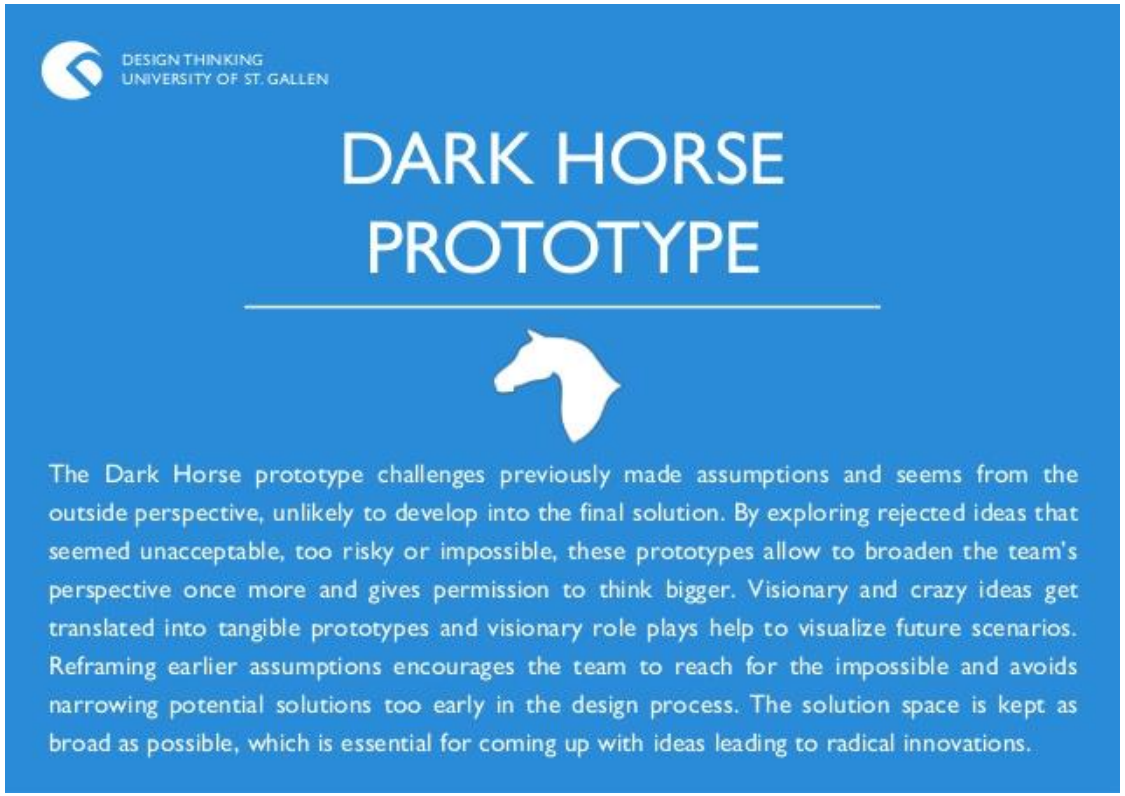


The asset lifecycle is much longer than the product lifecycle – this causes conflicts

Introduction
The approach for this presentation

- Consider the situation from the asset owner's view
- Use examples of different O&M use cases
- Use extreme examples (where possible)
- (Re-)imaging the future





This approach will challenge the status quo and suggest possible future opportunities

Introduction
Service design with use cases and situation analysis

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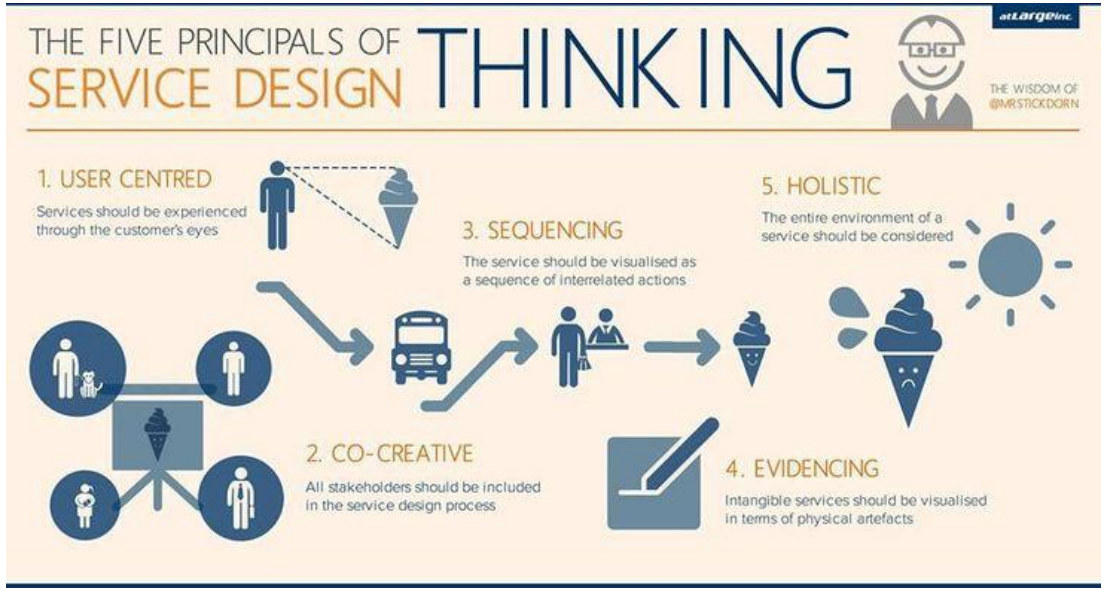

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I will base this presentation on ”*use cases*” to stimulate ideas from actual cases to future possible cases

Use case
The utility who can act as an architect engineer

Background
- Re-powering of an existing asset
- Oil replacement with gas
- Customer has own EPC group

Customer value
- Lower installation costs
- Improved integration with existing plants
- Use of own EPC teams

Supplier value
- Risks limited to equipment supplied
- Improved customer relationships
- Equipment maintenance

goo.gl/m1GhDF

Taking the lead allowed EDF to successfully repower their existing oil-fired thermal power plants

Use case
The IPP who moved to self-perform and non-OEM services

Background
- 23GW of advanced turbines
- Owner needs to cut costs
- Turbine maintenance is a major costs

Customer value
- Lower medium/long-term cost of maintenance
- Built up own turbine maintenance know-how
- Risk of technology obsolesce

Supplier value
- OEM lost ’after sales’ revenues
- Non-OEMs gained business
- Non-OEMs provided a more open business model

goo.gl/aTVeNg

With a large standard fleet the IPP was able to internalise the services and drive cost and risk out

Use case
The new technology risk management using long-term contractual agreements

Background
- Power projects need to be ’bankable’
- New technology risks can be hard to accept
- Owners ’want’ better performance

Customer value
- New technology risks pushed off to the supplier
- Known maintenance costs per MWh
- Some coverage on availability/reliability

Supplier value
- Cash flows are known
- Tie-in during early evolution of the technology
- O&M know-how flows into the supplier

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The LTSA offers technology risk management during the early years of new technology introduction

Use case
The mature technology moving to a do-it-yourself model

Background
- The owner knows the plant well
- Plant operation is hard to forecast
- Cost cutting becoming ever more important

Customer value
- Repair/replace decisions in customer's hand
- Obsolescence risk is with the customer
- Phased shutdown/cannibalisation become possible

Supplier value
- Prices may be set – volumes are not set
- More consulting advice is required
- Product rebuy opportunities through relationships

goo.gl/Gvu5tQ

The customer knows the plant well and is able to manage the equipment and performance risks

Use case
Using owner (or 3rd party) craft labour to support an inspection

Background
- Owner has own labour not fully utilised
- Labour pool of technicians with O&M know-how
- Labour pools understands the working enviroment

Customer value
- Use of existing resource reduces costs
- Understand customer's site
- Understand the customer's behaviours

Supplier value
- Improved customer relationships
- Customer becomes part of the solution
- Reduction in revenues

goo.gl/ZtJq2Q

Local craft labour often understands the customer better than the OEM

Use case

General contractor to manage all power plant maintenance

Background

- Routine, planned and unplanned contracted out
- Move maintenance risks to one party
- Provides simpler cost control

Customer value

- Bundling routine, planned and unplanned activities
- Risks placed with one contractor
- Different revenue models possible

Supplier value

- Expansion of EPC concepts and thinking
- Contractor gains long-term relationship with owner
- Improved balance between plant and product

goo.gl/DuWERL

A general contractor can use the ecosystem to create new offerings

Use case
Value not cost in O&G can help to drive the cost out

Background
- Customer revenue is based on per barrel of oil
- Facility had a 'cost' mentality
- The availability and HSE were poor

Customer value
- Customer value is derived from oil sold
- Outsource to competent party
- Alignment of goals

Supplier value
- Income based on per barrel
- Removes procurement distractions
- Alignment of goals

goo.gl/Ab3ZEH

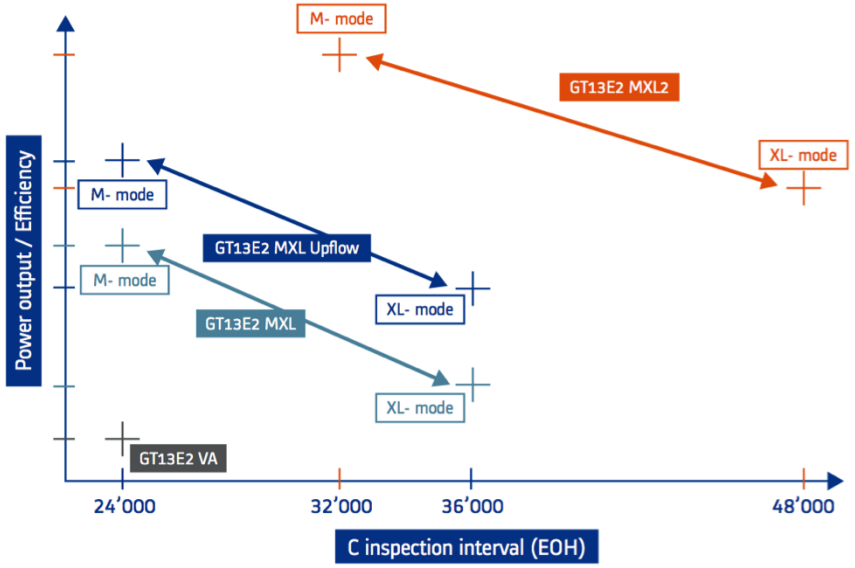
Moving from cost plus to a tariff-like agreement can provide opportunities to cut per barrel costs

Use case
Conversions, modifications and upgrades – providing customer and supplier value

Background
- All asset owners gain from reduce costs per MWh
- Some customers gain from more capacity
- Some customers gain from fewer inspections

Customer value
- More capacity or lower operational costs
- The customer is in the driving seat
- Known costs with known performance

Supplier value
- Customer lock-in/non-OEM lockout
- Standardised fleet
- Based on existing technology



Alstom Power: 13E2 MXL2 Brochure

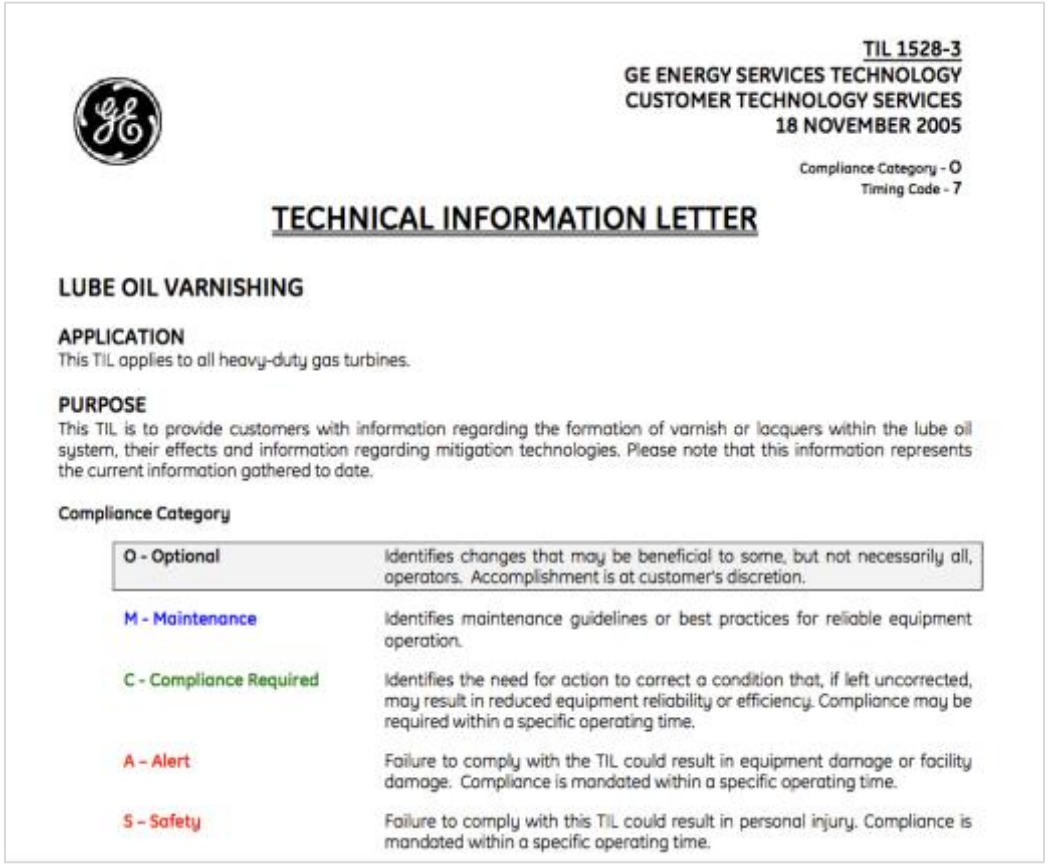
The value of the upgrade is that it addresses two markets: cost-saving and revenue growing

Use case
The application of technical updates has value for all parties

Background
- Technical updates occur on all equipment
- Some are required, some are optional
- Why should I pay extra for required updates?

Customer value
- Safe reliable operation of the equipment
- Risk of equipment obsolescence
- Risk of loss of warranty

Supplier value
- Opportunity to gain extra revenues
- Standardised fleet – easier to support
- Improved customer experience/better retention



TIL 1528-3
GE ENERGY SERVICES TECHNOLOGY
CUSTOMER TECHNOLOGY SERVICES
18 NOVEMBER 2005

Compliance Category - O
Timing Code - 7

TECHNICAL INFORMATION LETTER

LUBE OIL VARNISHING

APPLICATION
This TIL applies to all heavy-duty gas turbines.

PURPOSE
This TIL is to provide customers with information regarding the formation of varnish or lacquers within the lube oil system, their effects and information regarding mitigation technologies. Please note that this information represents the current information gathered to date.

Compliance Category

O - Optional	Identifies changes that may be beneficial to some, but not necessarily all, operators. Accomplishment is at customer's discretion.
M - Maintenance	Identifies maintenance guidelines or best practices for reliable equipment operation.
C - Compliance Required	Identifies the need for action to correct a condition that, if left uncorrected, may result in reduced equipment reliability or efficiency. Compliance may be required within a specific operating time.
A - Alert	Failure to comply with the TIL could result in equipment damage or facility damage. Compliance is mandated within a specific operating time.
S - Safety	Failure to comply with this TIL could result in personal injury. Compliance is mandated within a specific operating time.

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What is the balance of ’free issue’ updates vs customer paid updates?

Use case
LNG train is the core value creation for the customer

Background
- Value is derived from the LNG shipments
- Cost or poor reliability is high
- Availability is critical

Customer value
- Production capacity
- Instability in main gas train destroys value
- Cost of power (inputs)

Supplier value
- Single point of contact
- Full train solutions
- Spares availability

goo.gl/Zc59Qu

The customer is unlikely to move from the OEM on the main LNG train as downside risk is high

Use case
Power for LNG provides opportunities for different business models

Background
- Focus remains on LNG shipments
- Electricity costs impact on LNG costs
- Electricity can be imported

Customer value
- Production of LNG is core value creation activity
- Competency is the O(&M) of the LNG train
- Electricity costs are translated to mmBTU's shipped

Supplier value
- Long-term agreement to provide power
- LNG-train production
- Trading of excess power

goo.gl/nEJcEu

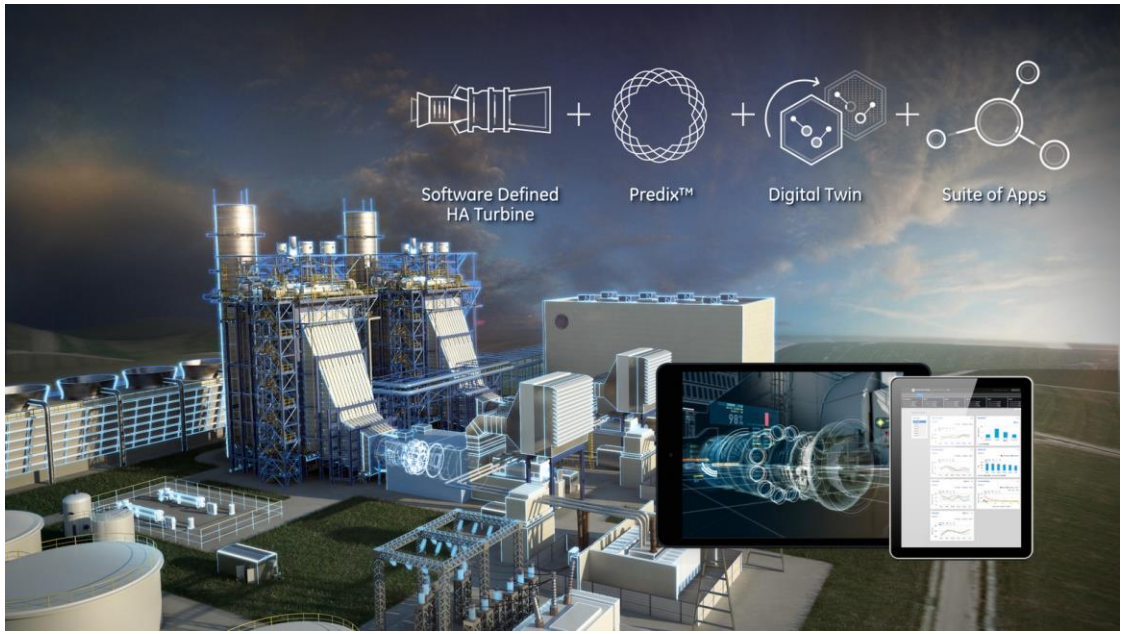
Providing high quality power 'over-the-fence' solutions can support the LNG operations

Use case
The Ind4.0 – one OEM supporting all of your outcomes

Background
- M&D on a semi-open platform
- It supports O&M/asset management outcomes
- Integrates all equipment

Customer value
- Reducing O&M costs
- Improved equipment risk management
- Advisory services helping you to achieve more

Supplier value
- Many hundreds of machines in arrogate
- Becomes more effective at providing support
- Locks out other Ind4.0 providers



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Does this potentially concentrate all of the know-how into one supplier

Use case

The Ind4.0 – an open platform supporting your outcomes

Background

- M&D on an open platform
- It supports O&M/asset management outcomes
- Integrates all equipment

Customer value

- Reducing O&M costs
- Improved equipment risk management
- Data and know-how is local with remote support

Supplier value

- Experts can access the system
- Becomes more effective at providing support
- Allows engagement with other experts

goo.gl/oxdTo5

An open system allows wider ecosystem engagement and better faster solutions

Use case
The on site repairs hot gas components changing service delivery models

Background
- On site machining is ’normal’ during an inspection
- On site refurbishment of capital parts is new
- Containerisation of the repair centre

Customer value
- Reduction in number of spares sets
- Out going shipments are removed
- Earlier warning of scrapping

Supplier value
- Working at site improves customer experience
- Reduced work in progress
- Flexible delivery

goo.gl/TfYAgK

Converting a repair shop into a site-based service shop prevides new opportunities

Use case
The on site additive manufacturing creating spares as needed

Background
- On site machining is ’normal’ during an inspection
- On site additive manufacturing is new
- Containerisation of the additive machining
- **Customer value**
- Increased availability of replacement parts
- Reduction in number of spares sets
- Out going shipments are removed

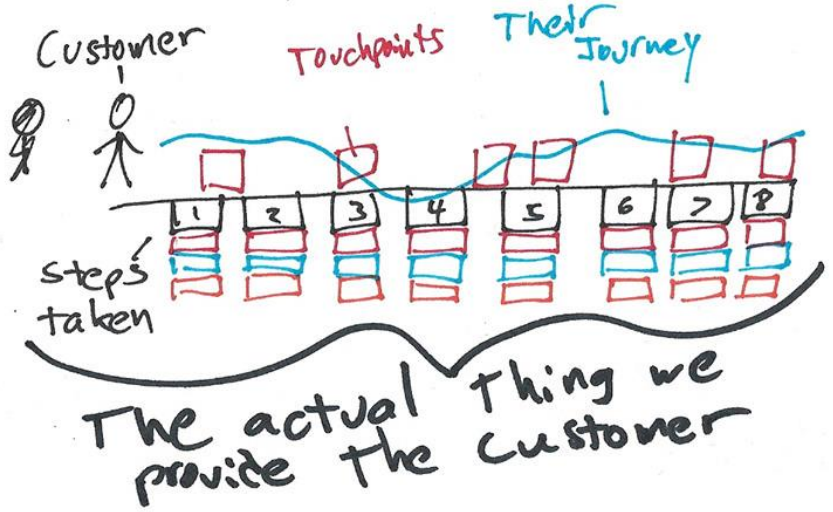
Supplier value
- ’Xerox’ printing machine at site
- Simpler spares management
- Accidental breakage can be supported

goo.gl/KdARAU

Spares can be printed and final machined at site providing real just-in-time service

Lessons from the use cases
My questions from the use cases

- Do you understand how LTSAs reduce technology risks?
- Do you understand why an IPP might move away from the OEM?
- Could you create new maintenance models to drive O&M costs out?
- Could you use 3rd party labour to improve the customer experience?
- How could you help an owner move to a self-perform model?
- Could an LTSA be delivered by a general contractor?
- How could you design CMUs to provide real customer value?
- Who and how could you charge for CMUs?
- Where do you fit into the LNG value chain?
- What options do you have for Ind4.0 services?
- Could you deliver more on site?



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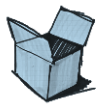
What questions do you have?

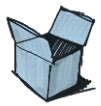


Conclusions

We have seen many use cases – not all are fully applicable but all have lessons for us

- There is always more than one ’right’ solution
- Situations change over the asset life: new mission, new technology
- There are many different models that we can draw from
- Business models need use cases to support understanding

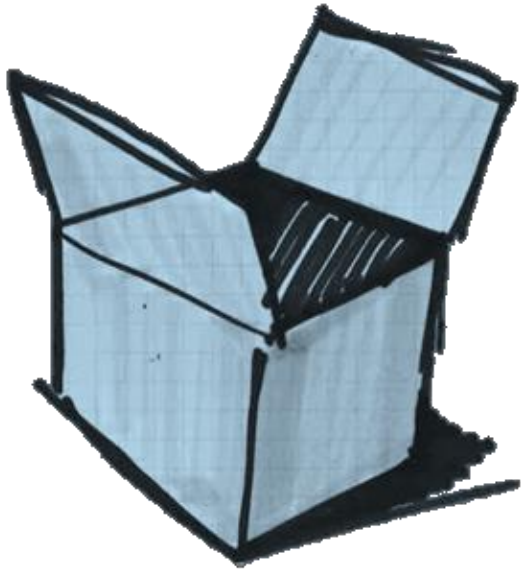
All customers face different situations so we need to learn to address their outcomes and not assume what is ’best for them’



Recommendations
Learn from other use cases and get closer to your customers

- Always consider at least three solutions to one problem
- Understand the situations your customers find themselves in
- Look at different use cases and learn from them
- Build a business model that supports your customer’s outcomes

From alternative use cases and understanding how they could help our customers you will learn how to design better value propositions and business models



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Thanks for your time!
Questions over coffee…

Slides posted on SlideShare.com