

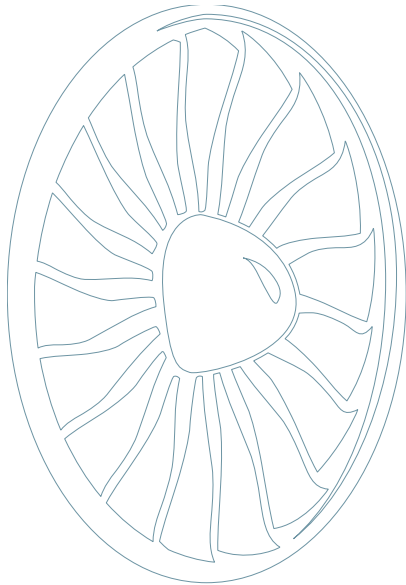


Mature Engine Support

Keeping engine assets performing at maximum efficiency beyond mid-life

17.05.2017 – Derek Paterson, Director, Sales - Europe

MTU Aero Engines at a glance



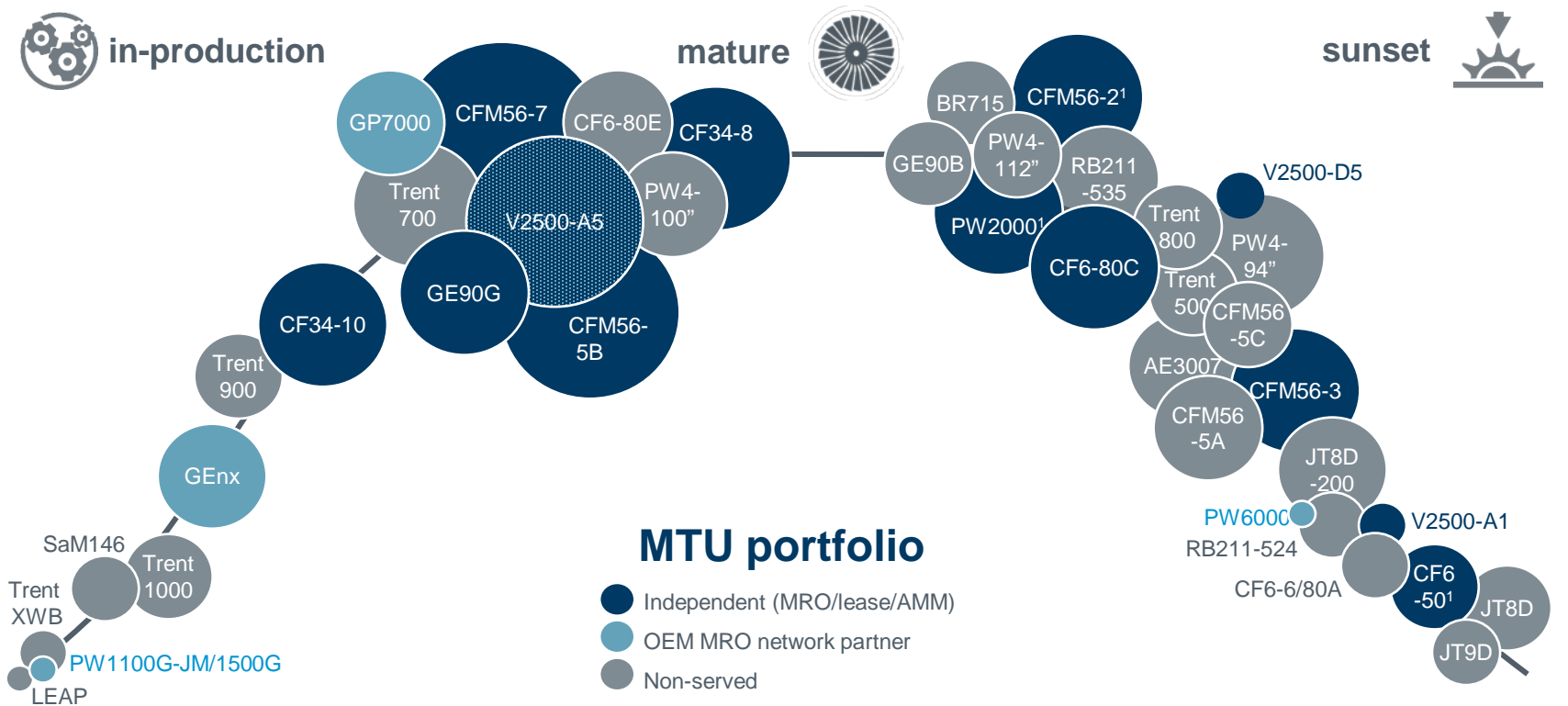
Leading German engine manufacturer
and key partner to OEMs for military and
commercial engines

A leading provider of engine services

€4.7 billion revenue with ~9,000 employees

Worldwide network of facilities and
representative offices

Engine management during the lifecycle



MRO focus

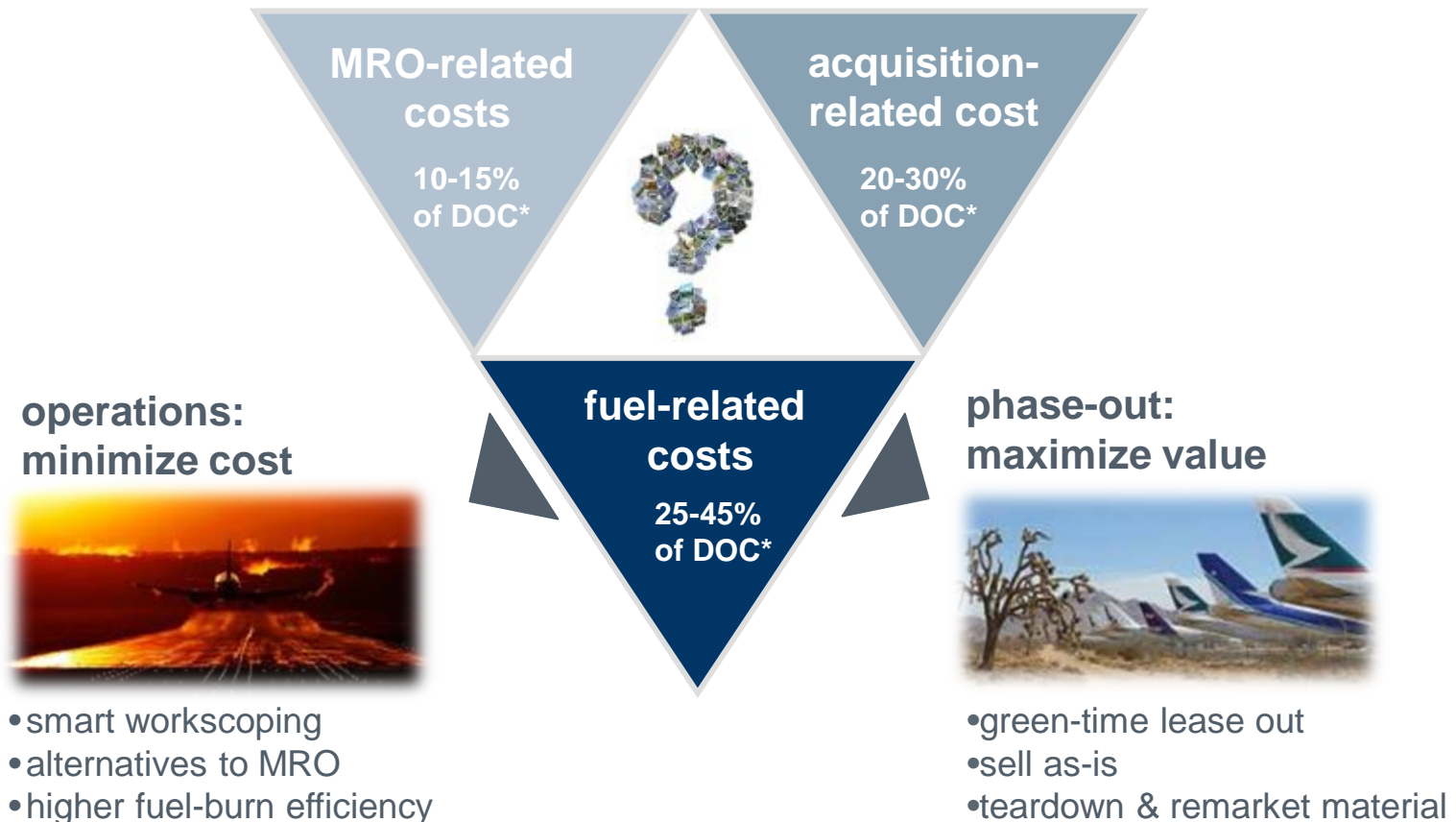
- No/limited surplus material
- Focus on cost/hour and on-wing times
- Classic MRO approach

MRO alternatives

- Increased surplus availability
- Focus on cost/visit and customized builds
- End-of-life asset and material management

Ageing technology engines – Operations vs. phase out

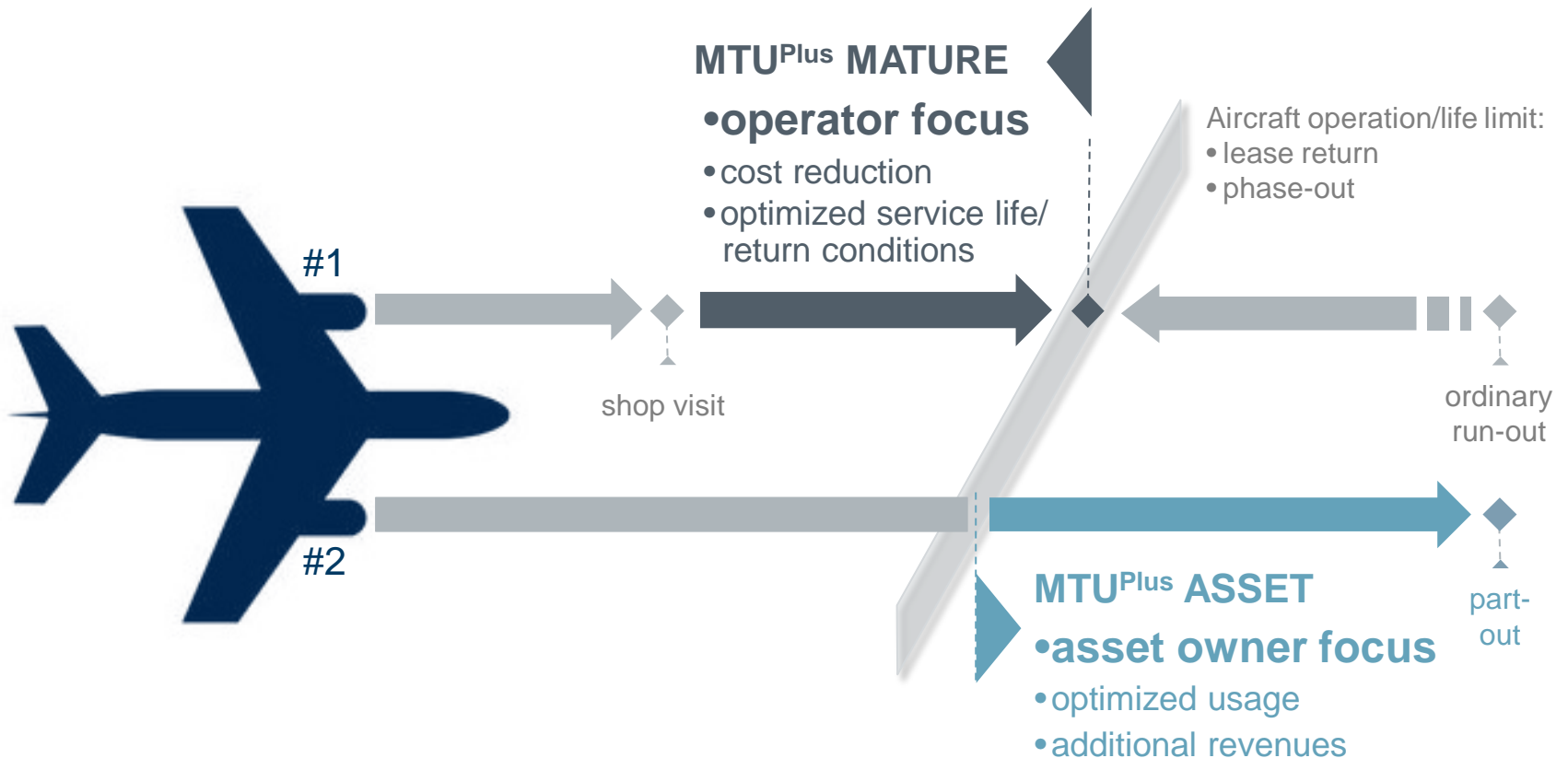
Major aircraft DOC factors – A unique balance for each and every case



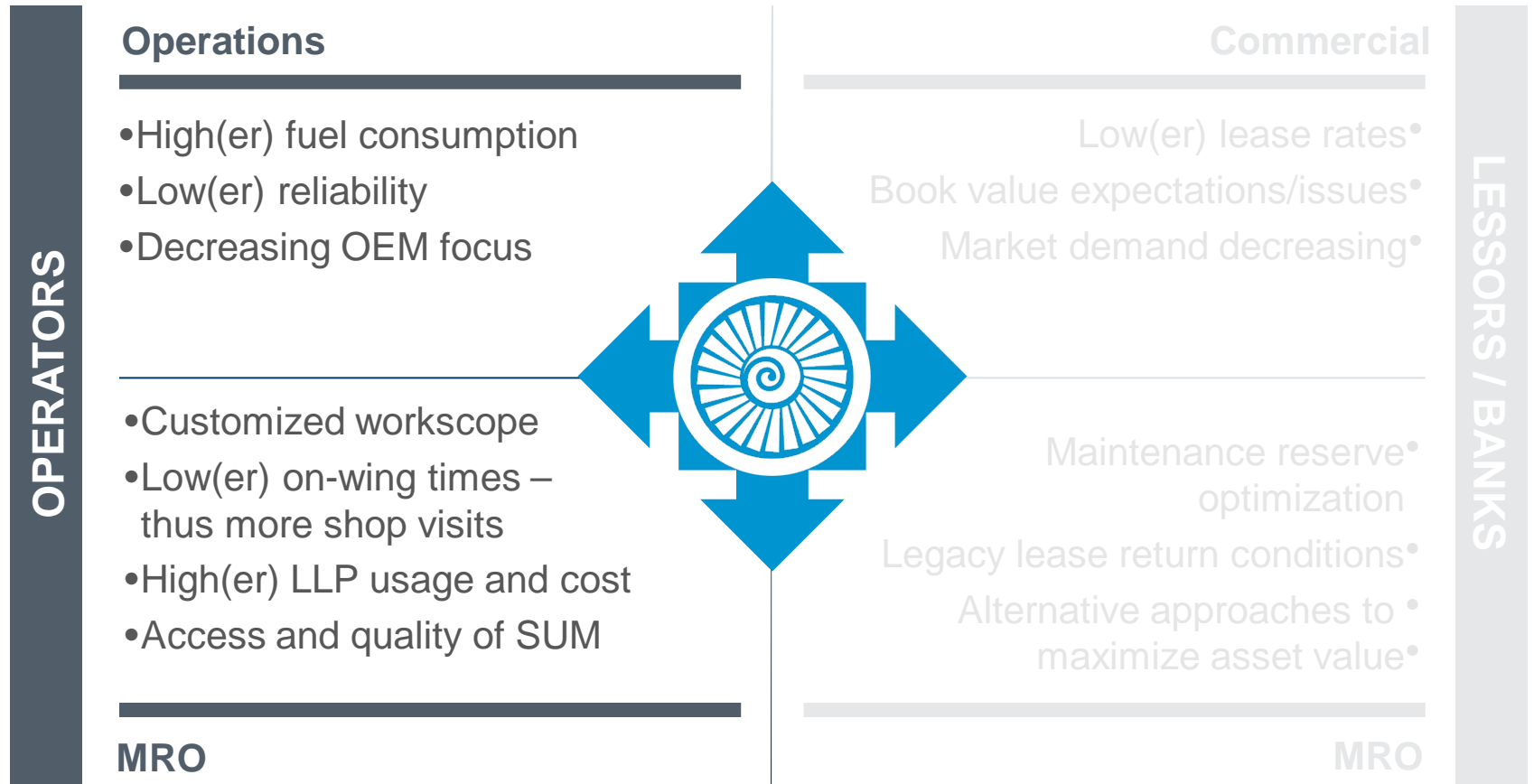
* Variable part of total DOC, pending on oil price and aircraft technology; other cost excluded, e.g. cabin crew

How to optimize cost/value for mid-life/ageing engines?

MTU solutions for operators and asset owners



Challenges for ageing engines



Solutions for operators of ageing engines

MTU^{Plus} MATURE

Alternative MRO/Smart Repair

Salvation

- Engine teardown
- Parts evaluation, repair & certification
- Parts management, storage, re-marketing*
- Asset/part purchase*



Maintenance

- Optimized engine repair w.r.t. cycles, cost, residual value
- Tailored workscoping
- Used material usage
- Module swap



Alternatives to MRO/Instant Power

Exchange

- Exchange engine fulfilling operator needs (config., LLP cycles)
- Purchase at current market value
- On-wing exchange*
- Financing*



Lease

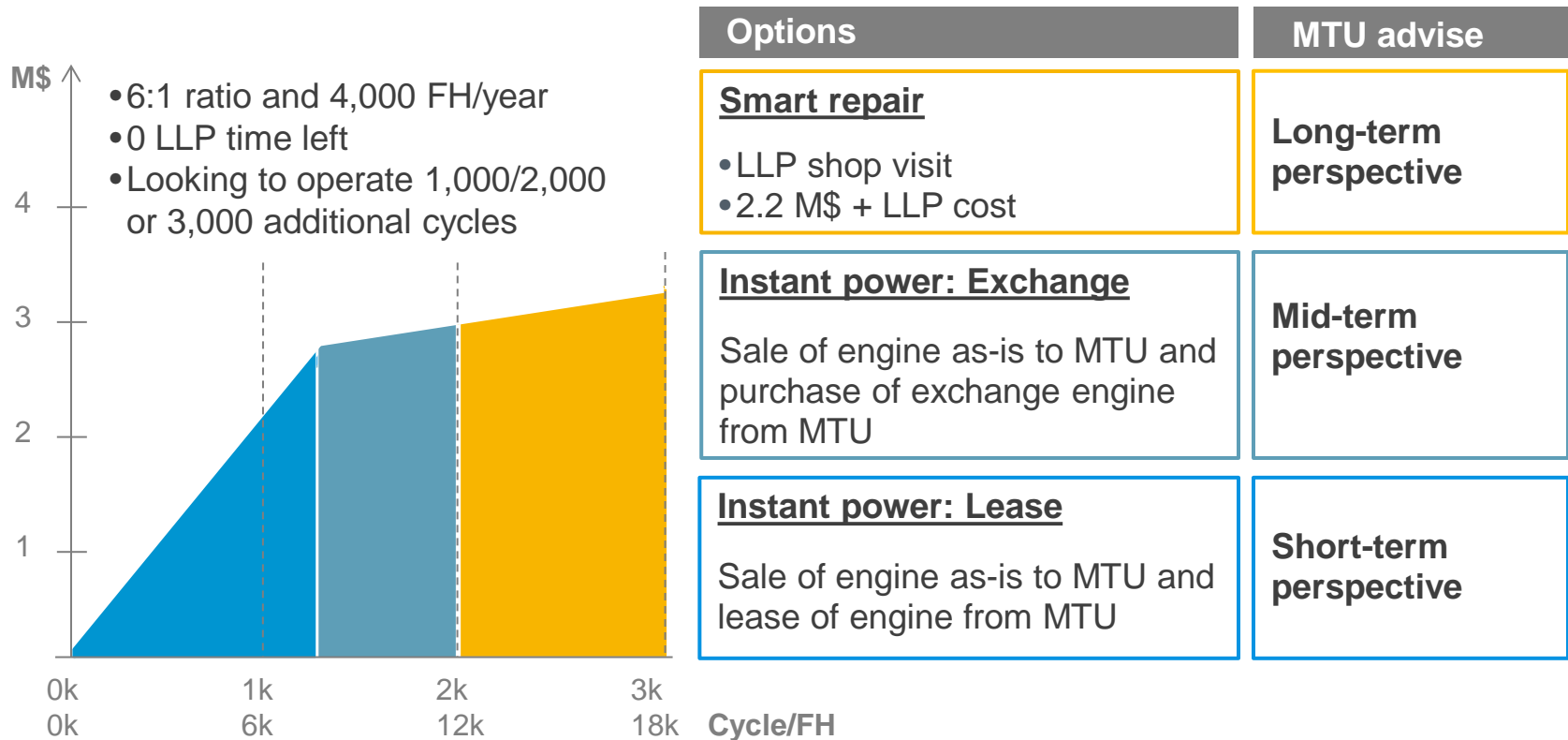
- Lease engine fulfilling operator needs (config., LLP cycles)
- Lease at daily/monthly rate
- On-wing exchange*
- Sale & lease-back*



*optional services

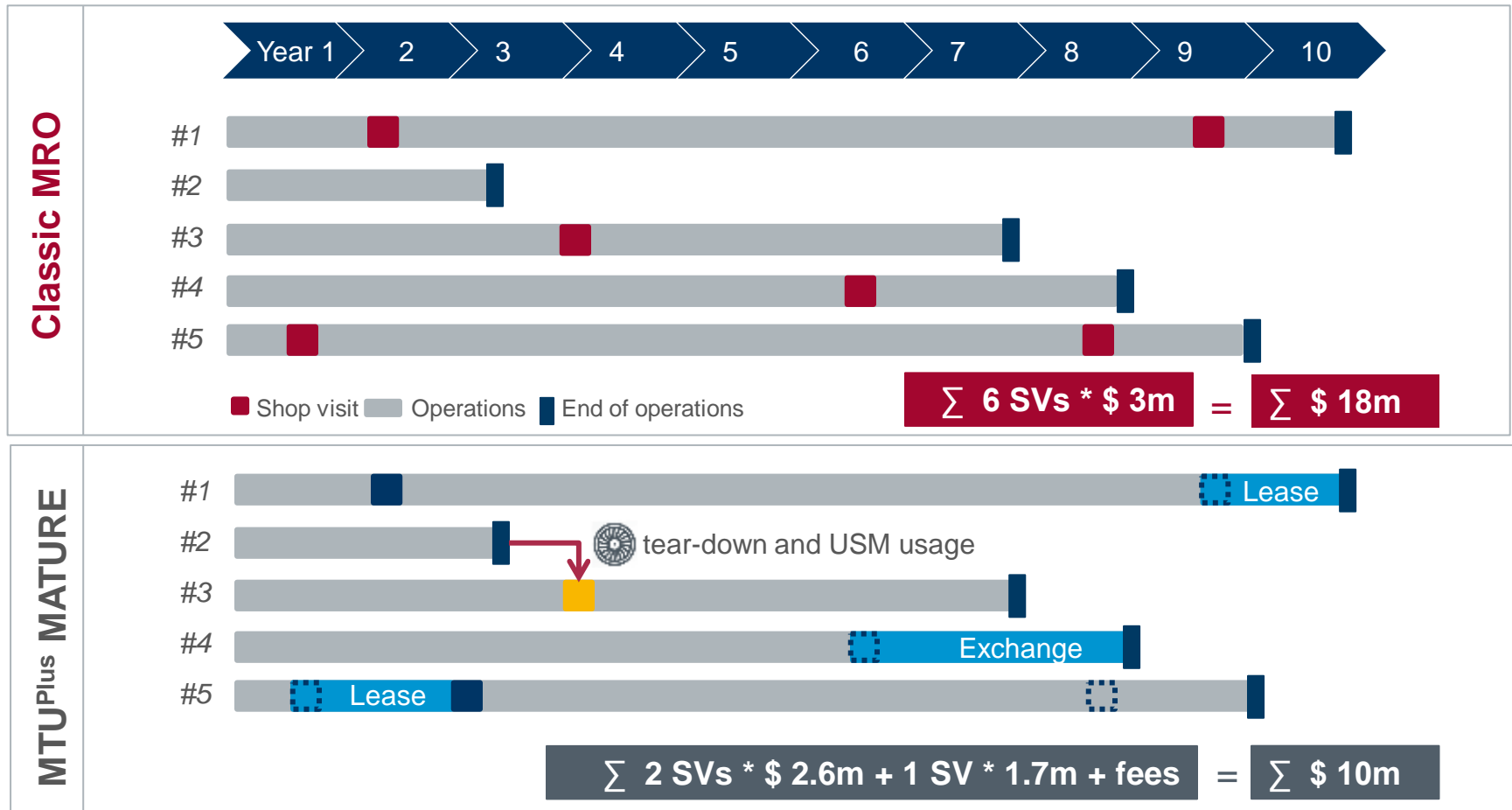
Example: Instant power vs. smart repair

Decision making – Airline-owned engines

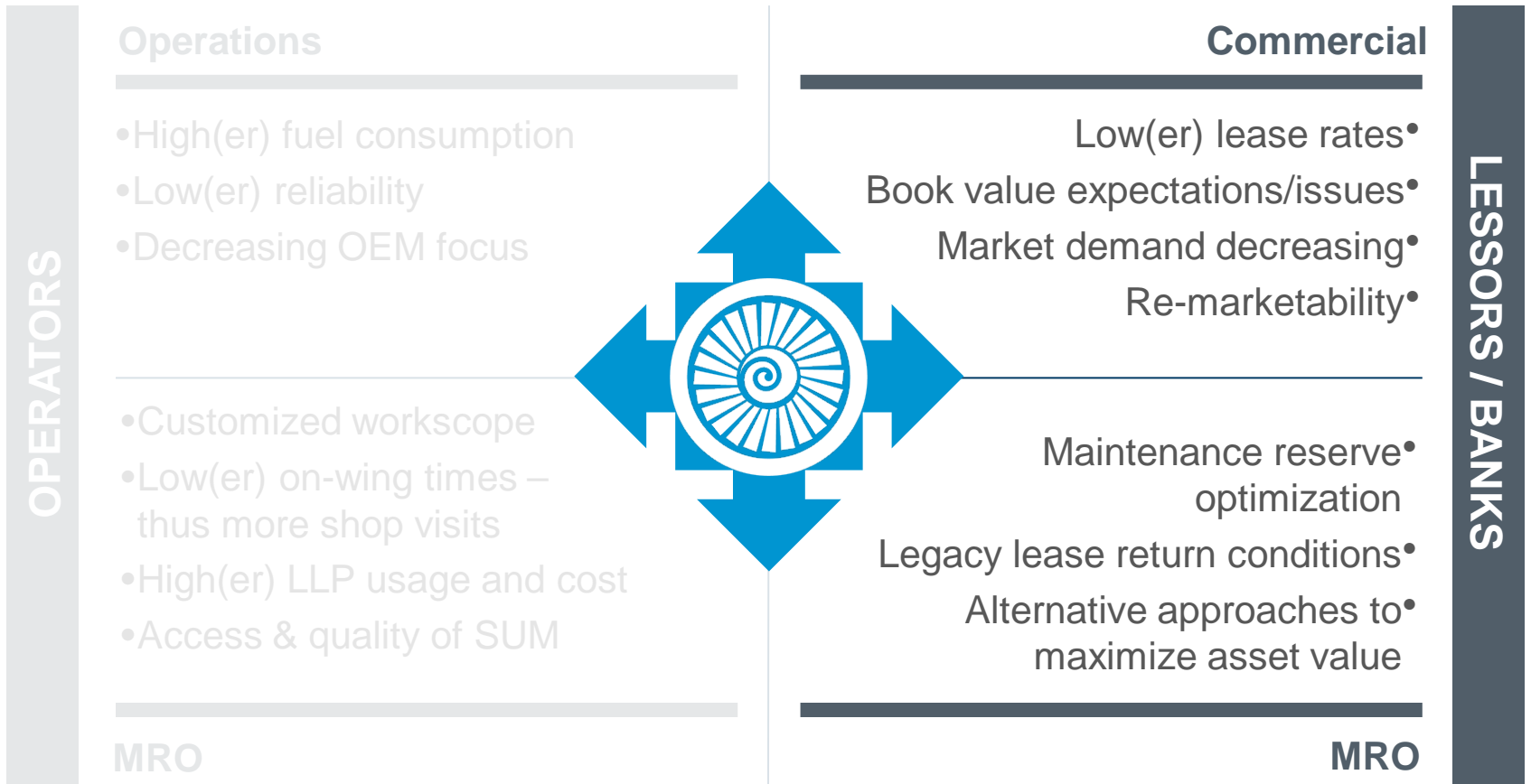


Example: Fleet management for ageing engines

Benefits of alternative solutions vs. classic MRO

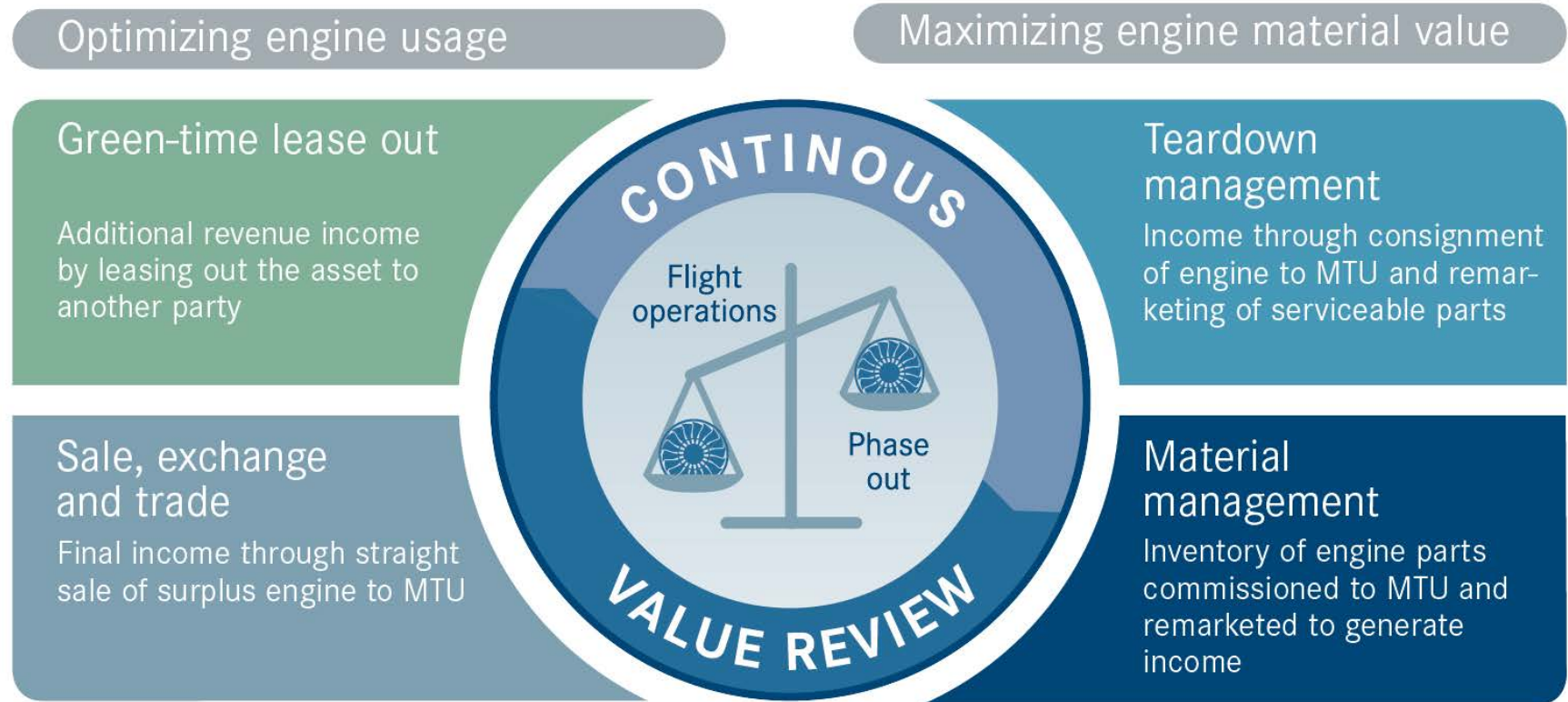


Challenges for ageing engines



Solutions of owners of ageing assets

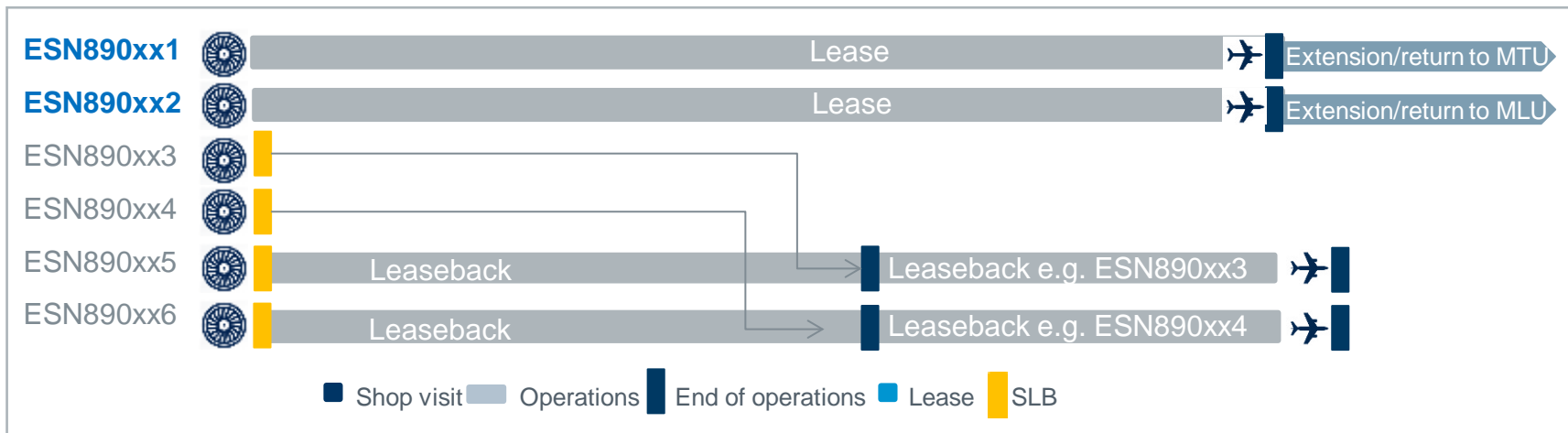
MTU^{Plus} ASSET: Exit strategies for end-of-life engines



Competence as lessor & MRO guarantees **maximized value** of spare assets

Example: Instant Power program for lessors

Jointly optimized phase-out plan and exit strategy for lessors



Benefits

- Avoidance of ESV (4 x ESV w/LLP) = \$ 16 mill.
- No MRO exposure, along with prevailing market asset volatility
- Ensured continued operations – should new deliveries be delayed/postponed: Instant Power solutions via a mix of existing and lease engines

Increase of re-marketability of mid-life assets

MTU^{Plus} Lease Enhancement Program: A one-stop portable engine maintenance service



MRO coverage during service life up to the entire engine lifespan



Full flexibility for contract opt-in/out and service coverage



Unmitigated transfer of maintenance risks/exposure to MTU



Maintenance reserves' protection for lessors

with full service benefits to lessees

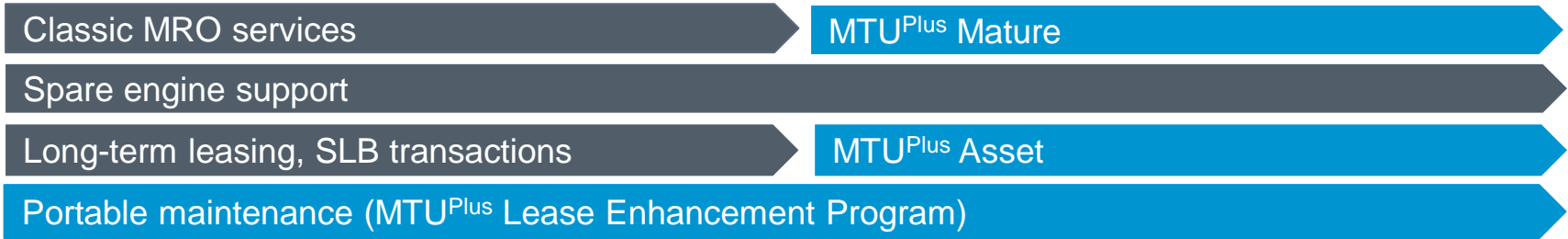
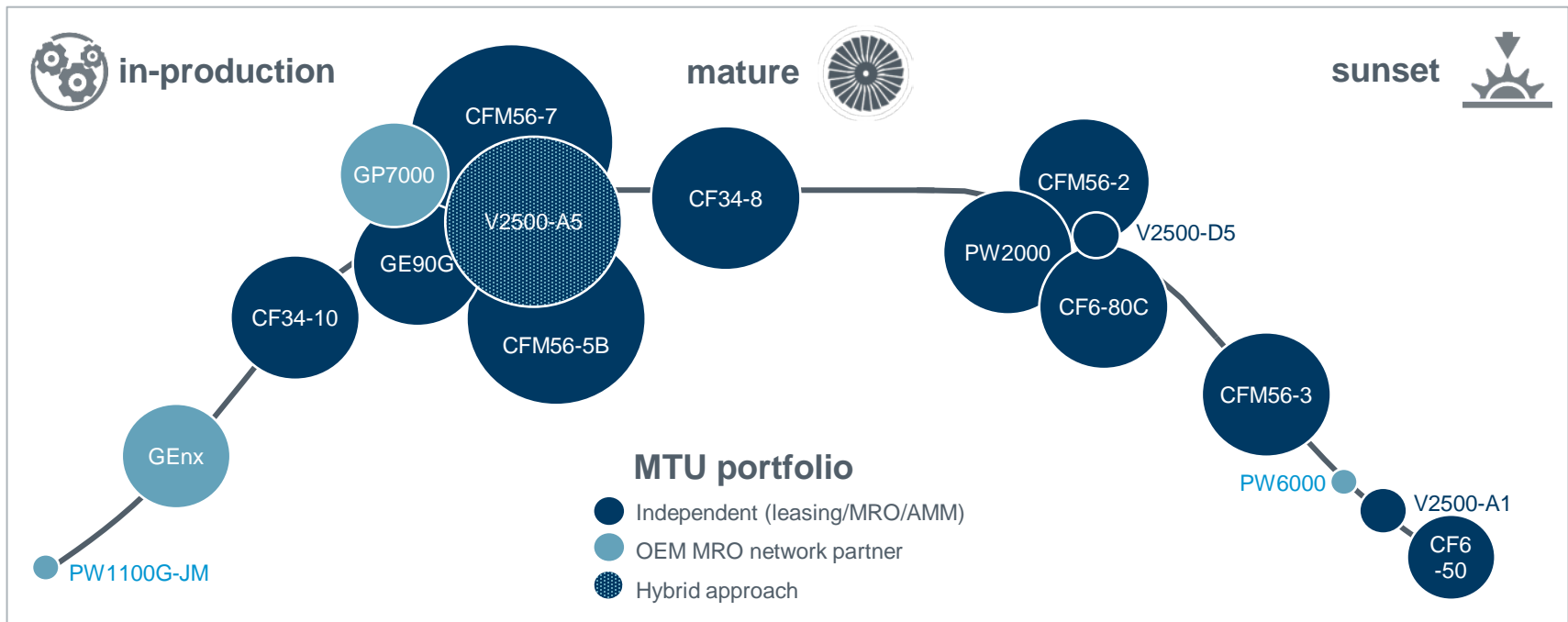


Complete contract portability and easy geographic transitions



Protection and maximization of asset residual value

Providing a unique expertise: bespoke solutions for mid-life assets



Summary

One stop-solutions for maximized asset value



Asset control
Significant scale/scope of assets under management is key to offer competitive integrated solutions

Workscope control
Control over material decisions and MRO/teardown timing is critical to lower cost and used material access

Control of route-to-market
Combined in-house consumption and SUM remarketing guarantees maximized value

We know **best** when and how to repair, buy, sell or liquidate assets



Thank you for your attention!

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