

29 March 2023

Opus Suite
Conference

SYDNEY

LCM Meeting ASDEFCON Requirements: Opus Suite from Concept to Disposal

James Foley
Systecon Australia

by Systecon
opus
suite

 **Systecon**

The 70,000' View



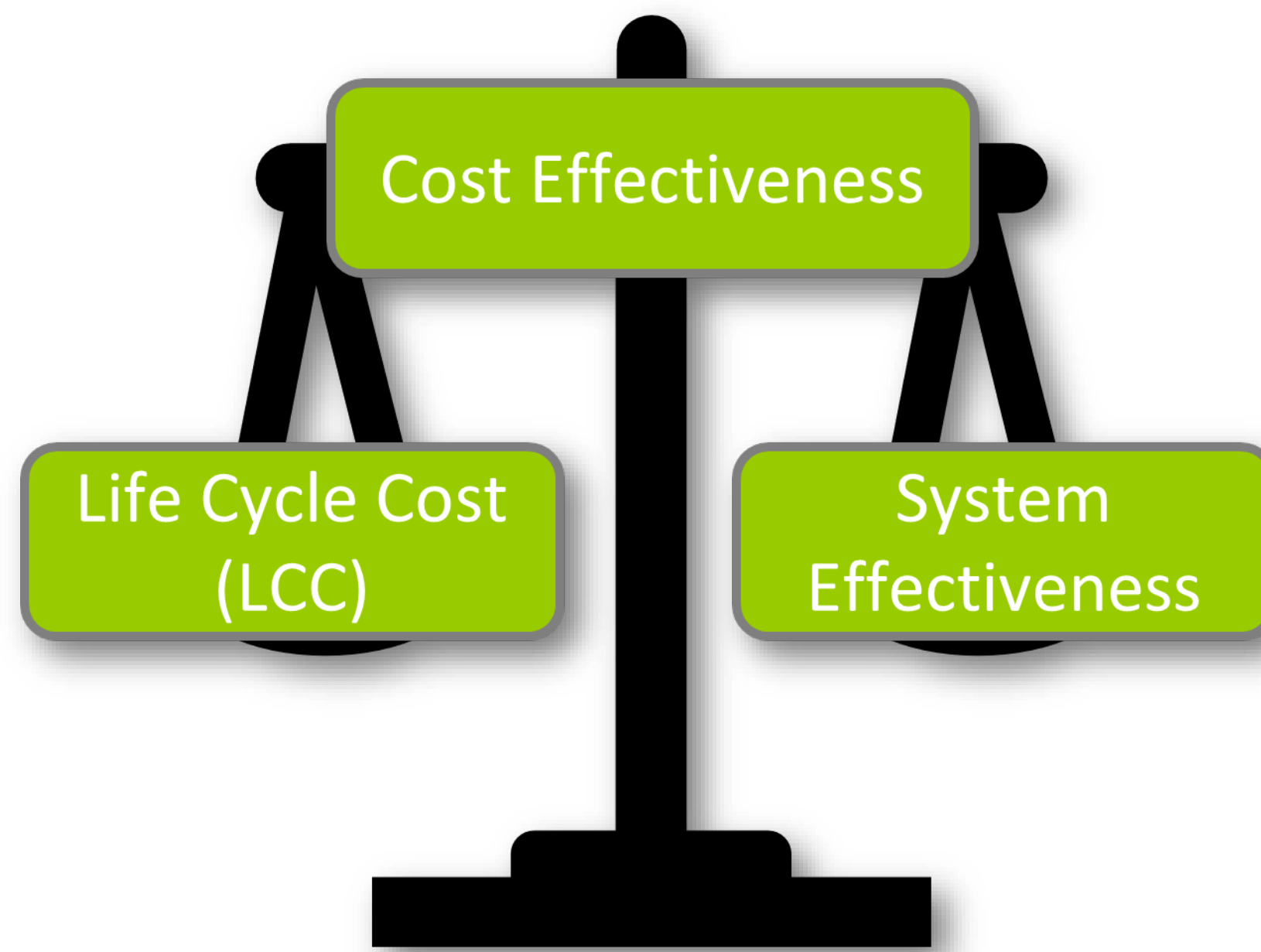
(US Department of Defense)

How can Opus Suite contribute to Lifecycle Management (LCM) in the Australian Standard for Defence Contracting (ASDEFCON) context?

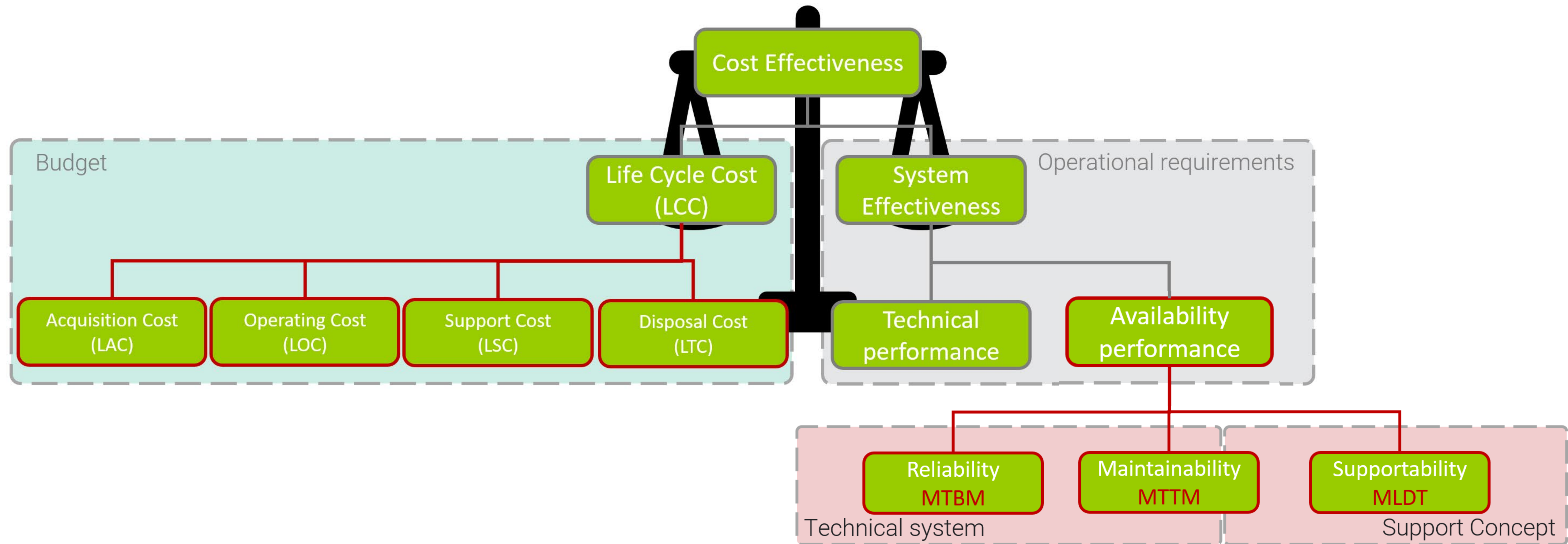
Opus Suite contribution to LCM

To ensure Cost-Effectiveness of a technical system throughout its lifecycle by:

- ensuring System Effectiveness, through Availability performance; and
- ensuring Life Cycle Cost is within budget



Opus Suite contribution to LCM



Opus Suite contribution to LCM

Pre-Second Pass

- Strategy and Concepts Phase
- Risk Mitigation and Requirements Setting Phase

ASDEFCON (Strategic Materiel/ Complex Materiel)

- Acquisition Phase of high risk, software intensive systems with complex integration relating to major platforms or highly developmental systems

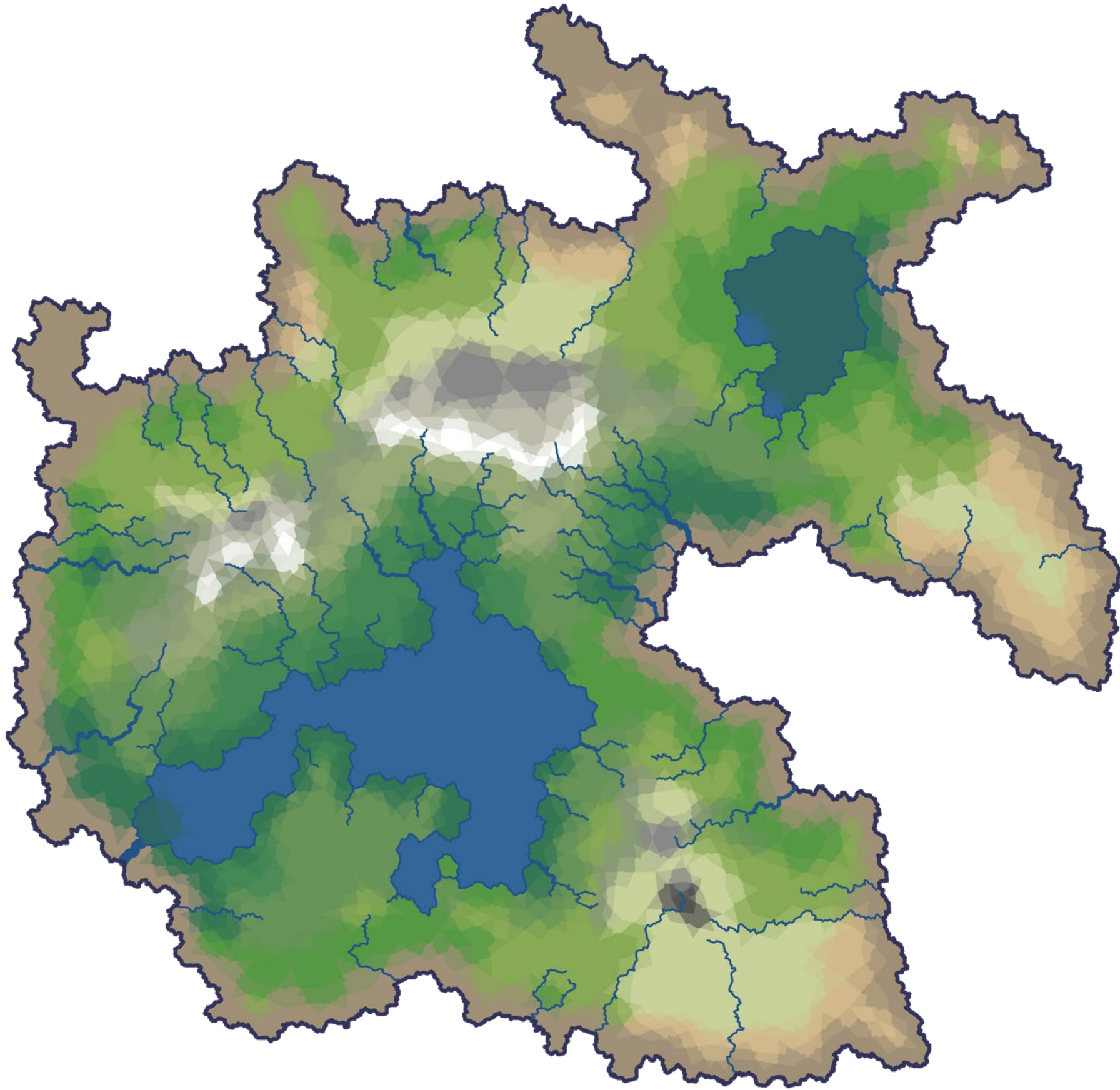
ASDEFCON (Support)

- In-Service and Disposal Phases

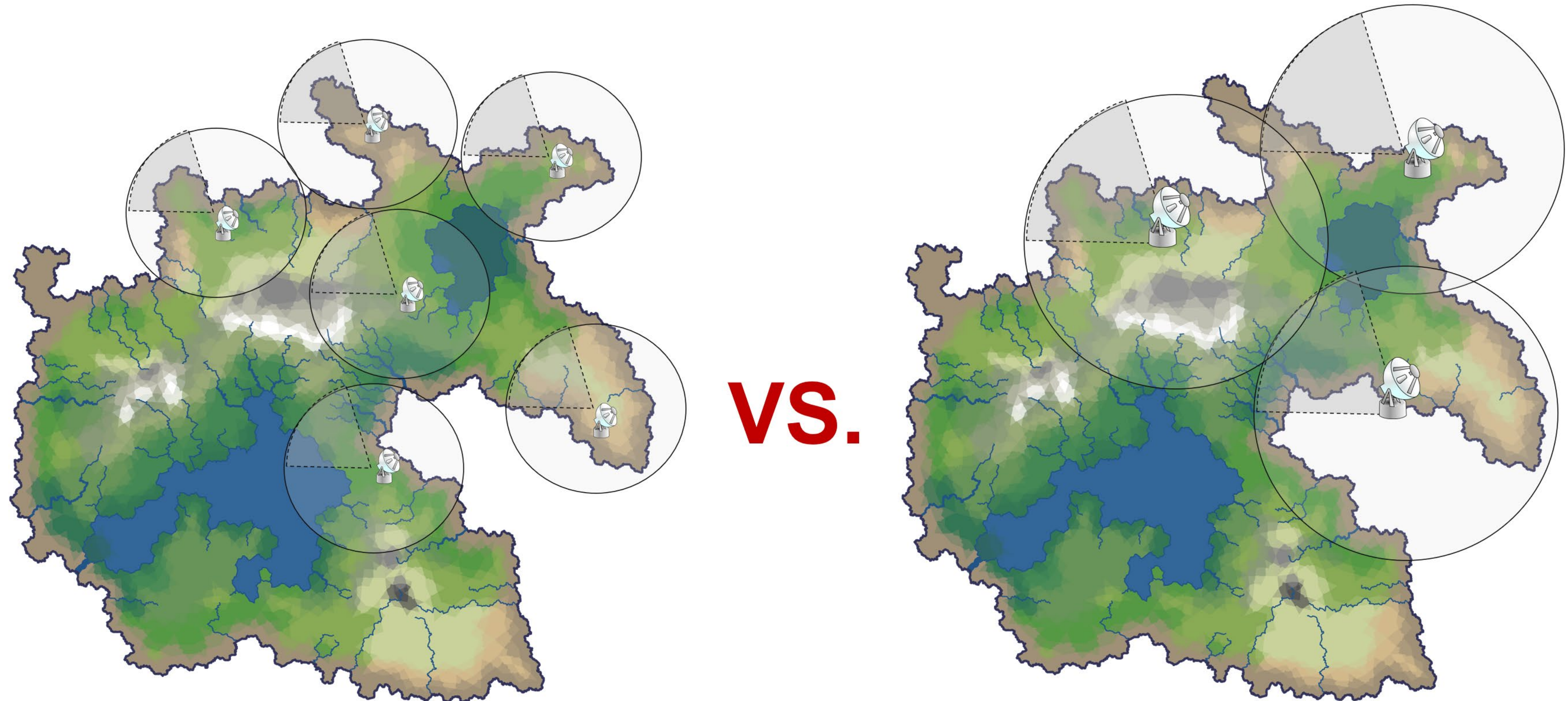
Risk Mitigation and Requirements Setting Phase

- Data-poor environment but can still use OPUS Suite to generate actionable intelligence

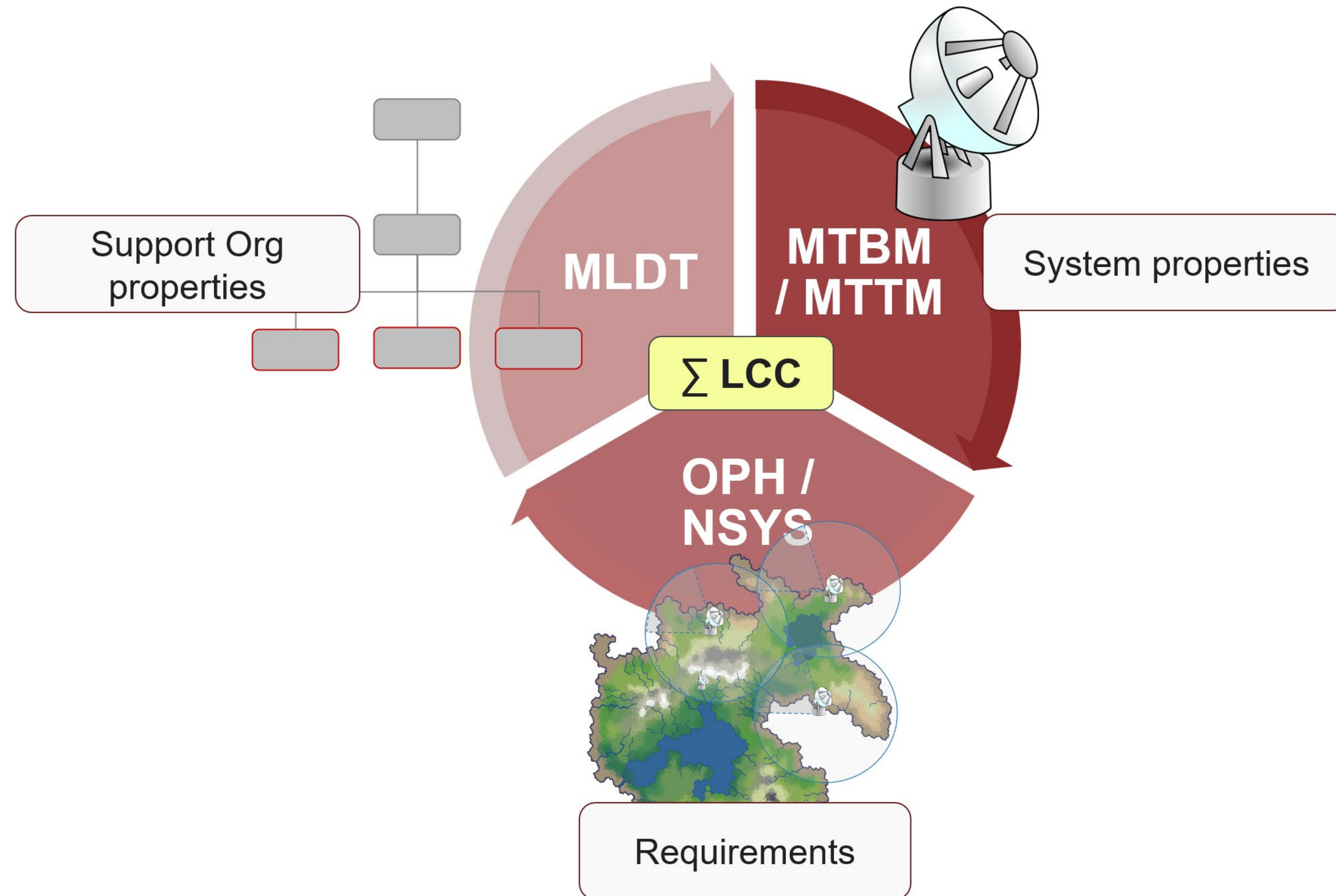
Risk Mitigation and Requirements Setting Phase



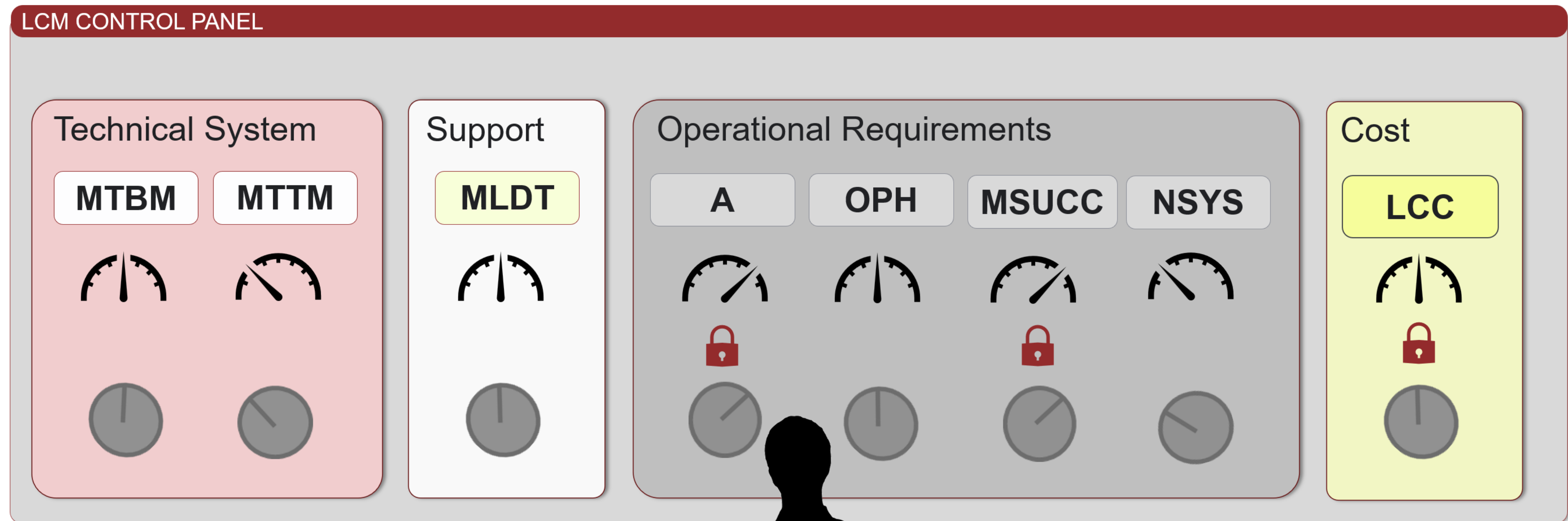
Risk Mitigation and Requirements Setting Phase



Risk Mitigation and Requirements Setting Phase

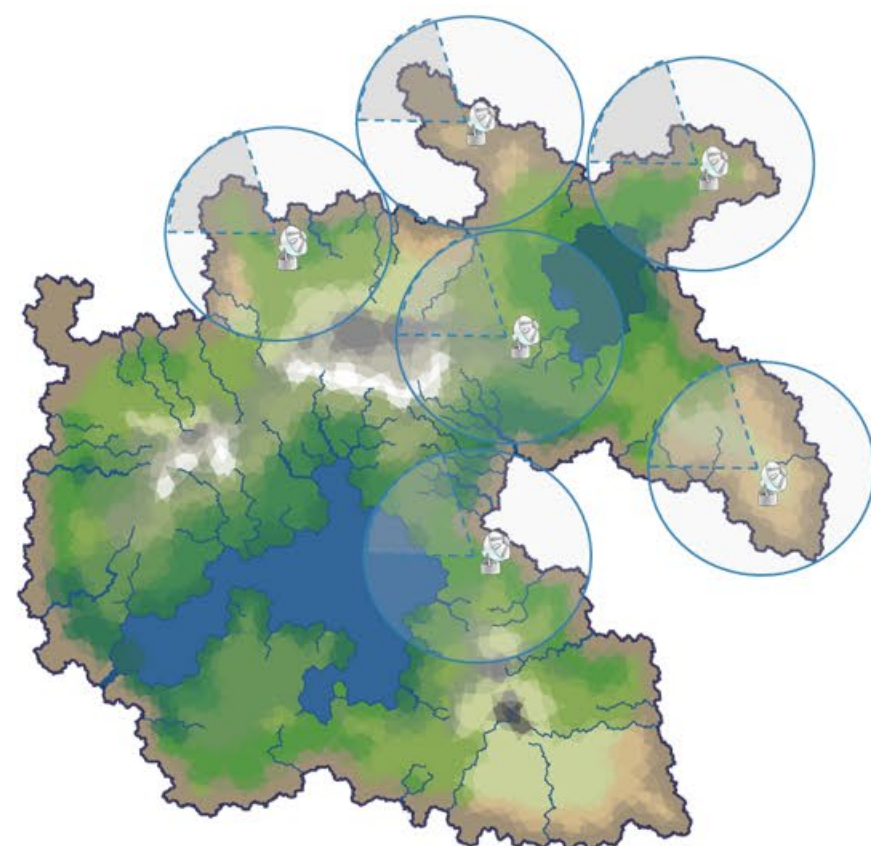


Risk Mitigation and Requirements Setting Phase

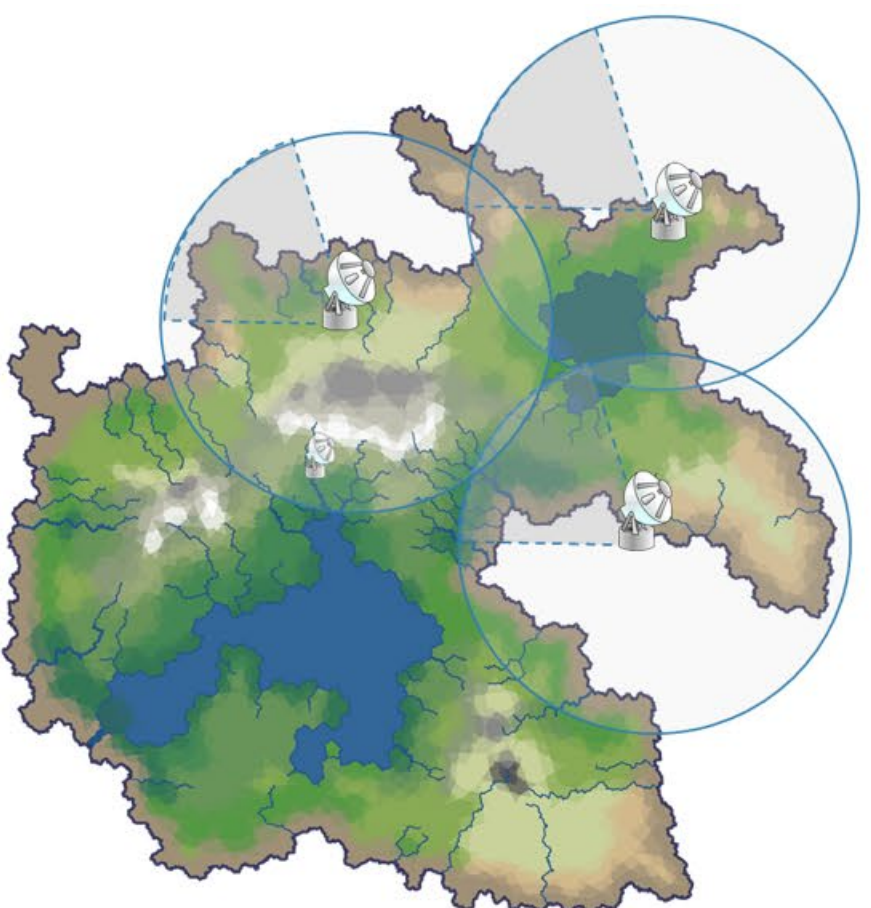


MSUCC = Mission Success Rate

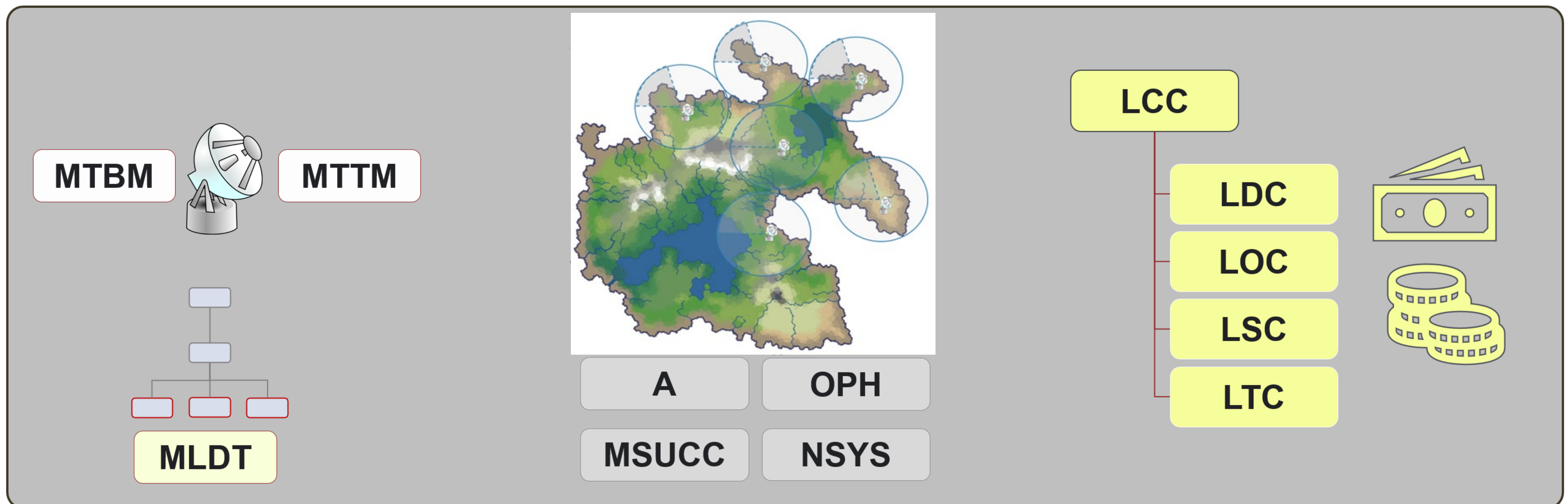
Risk Mitigation and Requirements Setting Phase



Parameter	Small radar	Big radar
Availability per system	99,3%	99,6%
MTBM	> 1095 h	> 974 h
MDT (MTTM+MLDT)	8h	4h
# Maintenance per year	8	9
Cost per maint. Occasion	€ 15000	€ 22000
LCC (LDC+LSC+LOC)	M€ 75,6	M€ 113,9



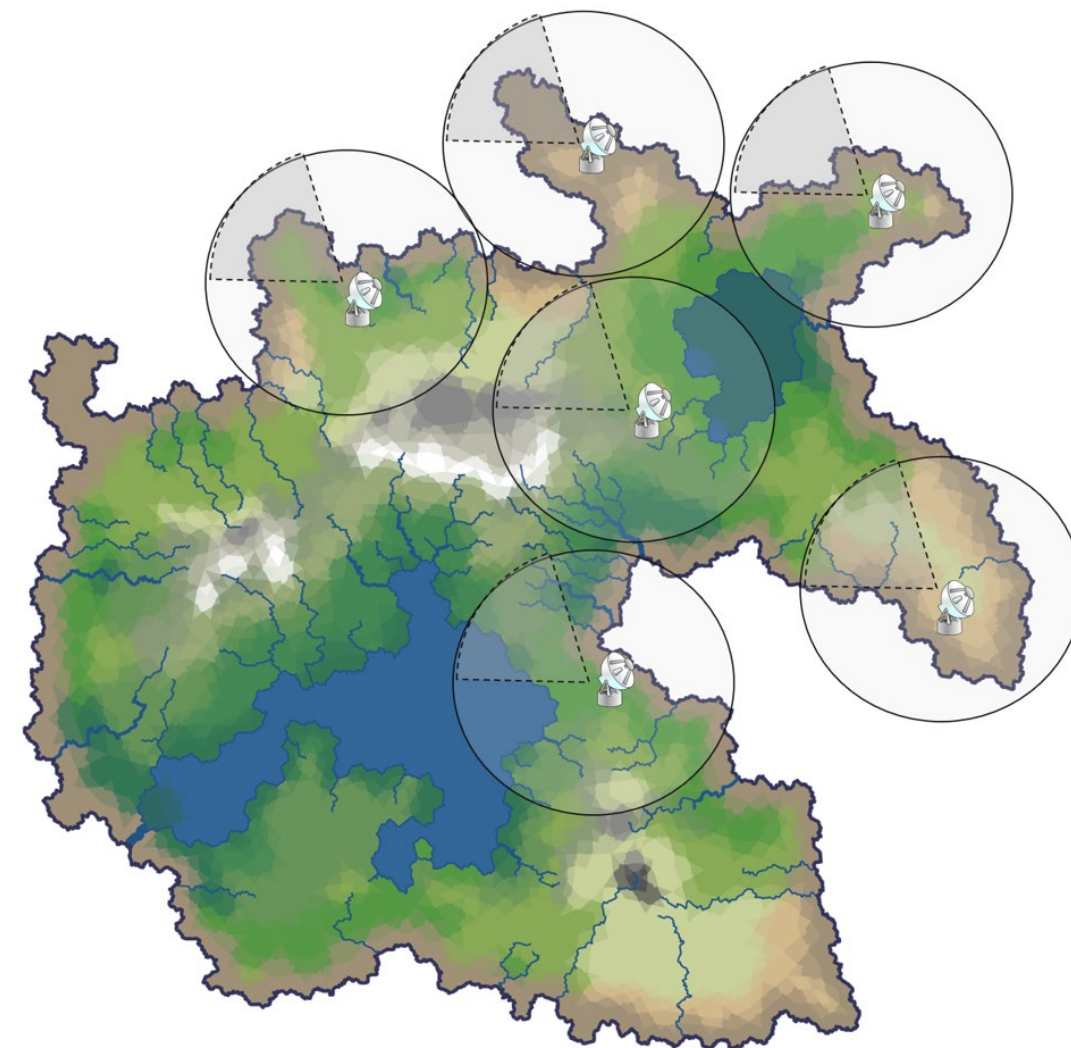
Risk Mitigation and Requirements Setting Phase



Risk Mitigation and Requirements Setting Phase

- Tender Evaluation – TDID – Tender Life Cycle Cost Model

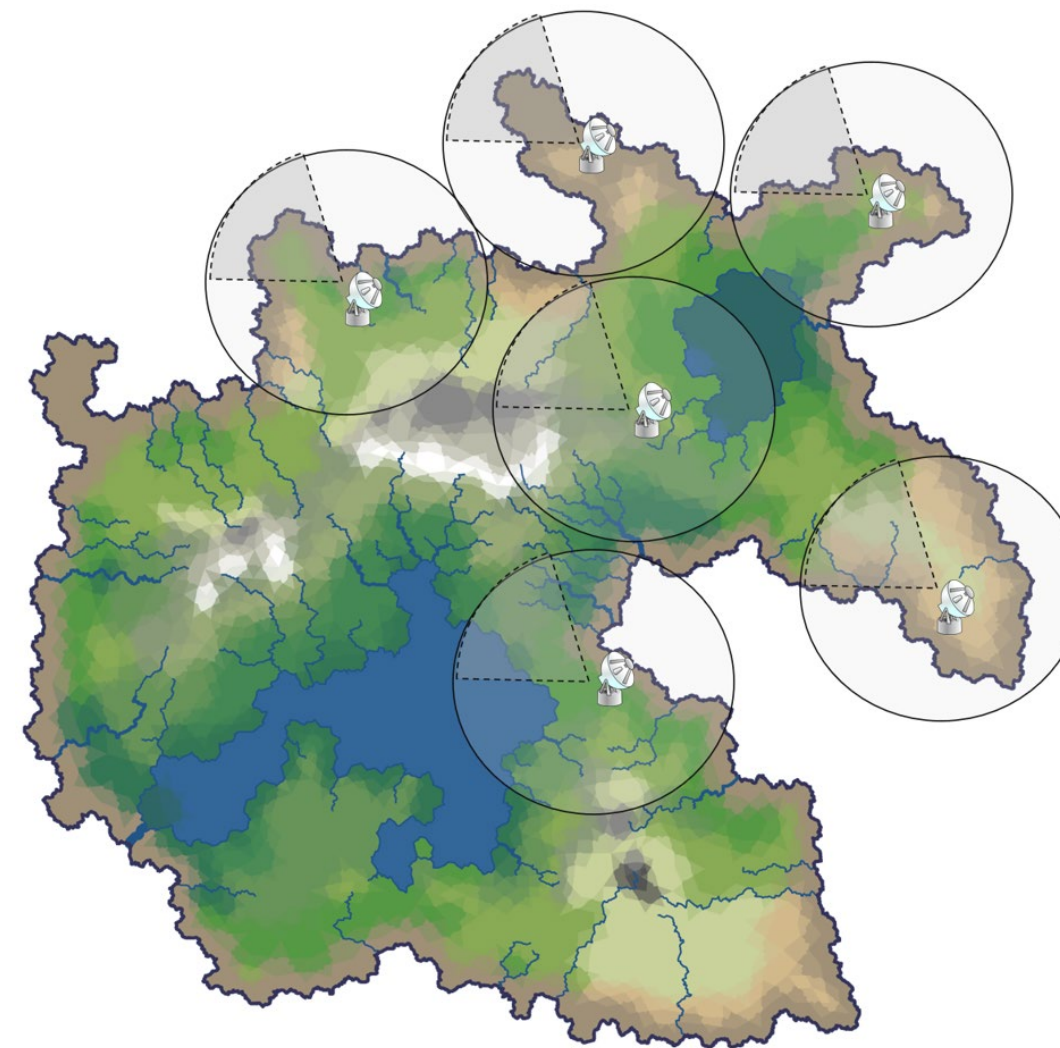
Tenderer A



LCC/TCO = \$XXm

VS.

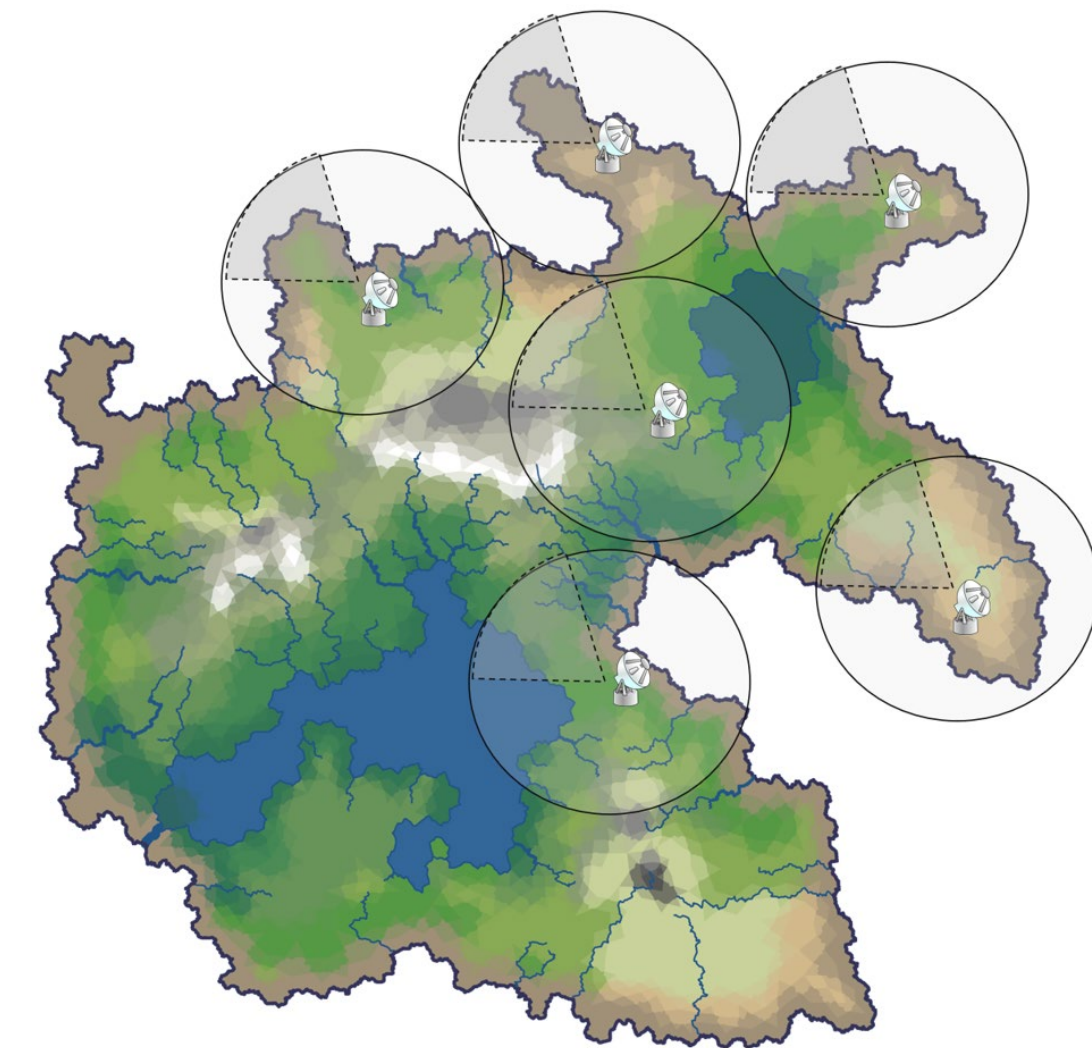
Tenderer B



LCC/TCO = \$XXm

VS.

Tenderer C



LCC/TCO = \$XXm

Risk Mitigation and Requirements Setting Phase

- Tender Evaluation – TDID – Tender Life Cycle Cost Model

6.2.1 General

- 6.2.1.1 The TLCCM shall provide sufficient detail to enable the Commonwealth to understand the LCC model developed by the tenderer.

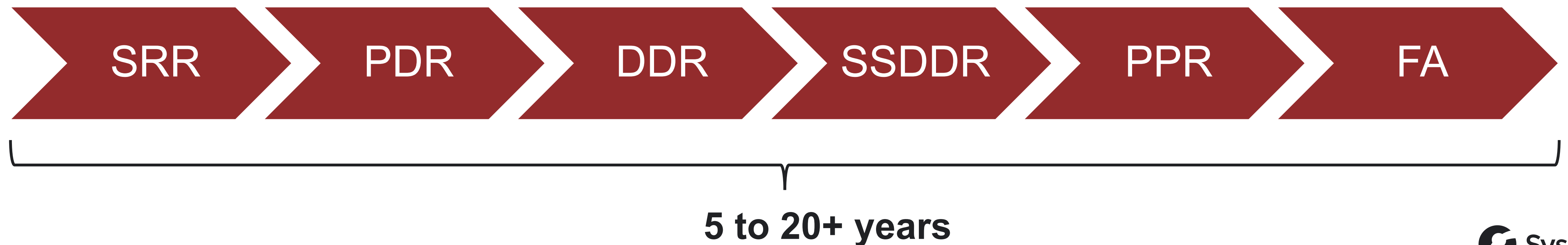
Note to drafters: The software tool or software, which the tenderer is required to utilise to develop its LCC Model, needs to be inserted into the following clause.

- 6.2.1.2 The LCC data files shall be in a format required by the selected LCC software package.

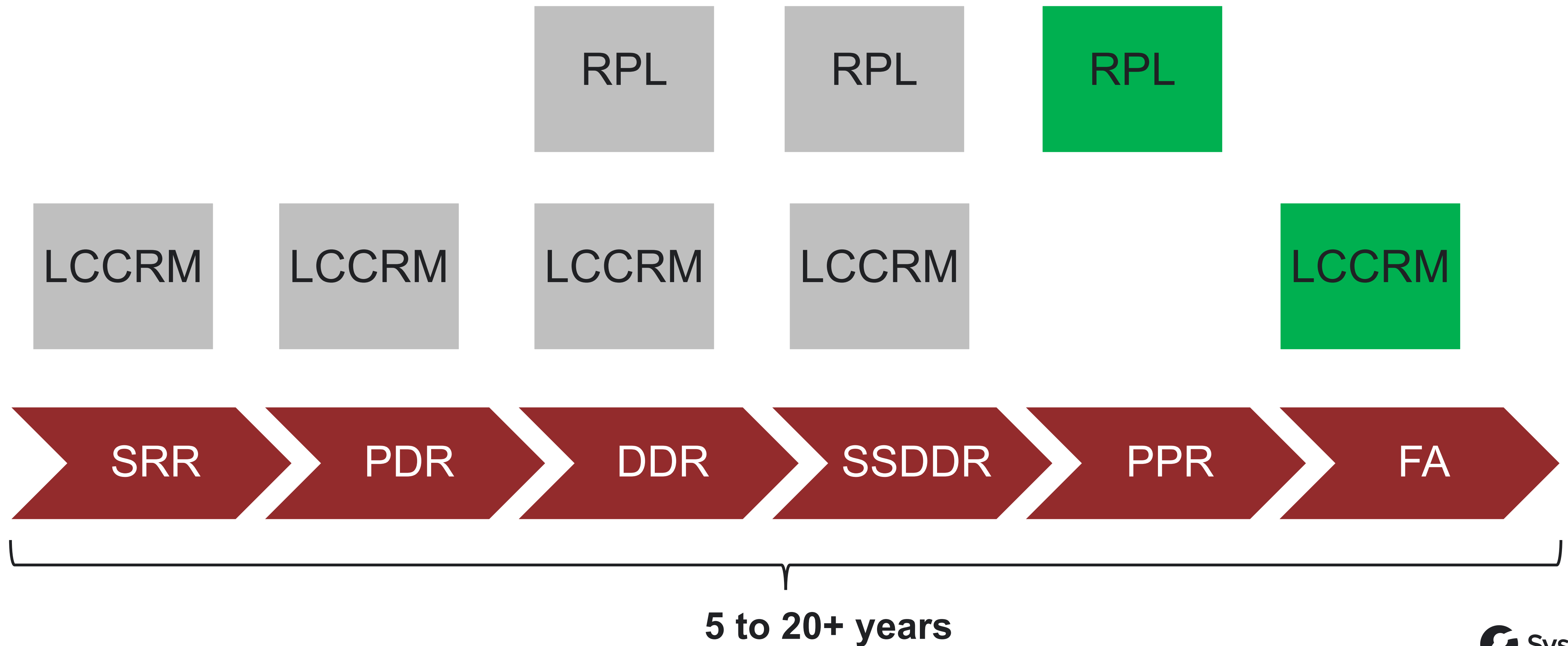
RFT Response

- **Support System Resources Volume:**
 - Draft Recommended Provisioning List (RPL)
 - Spares, S&TE, Specialised Packaging Lists
 - Supportability Analysis Data
 - CM and PM Actions Per Year
 - Support Cost Data
 - Repair of RIs Per Year
 - Replenishment of non-RIs Per Year
- **Price Schedule Appendices:**
 - Spares, S&TE, Specialised Packaging NTEs

ASDEFCON (Acquisition) *Developmental Program



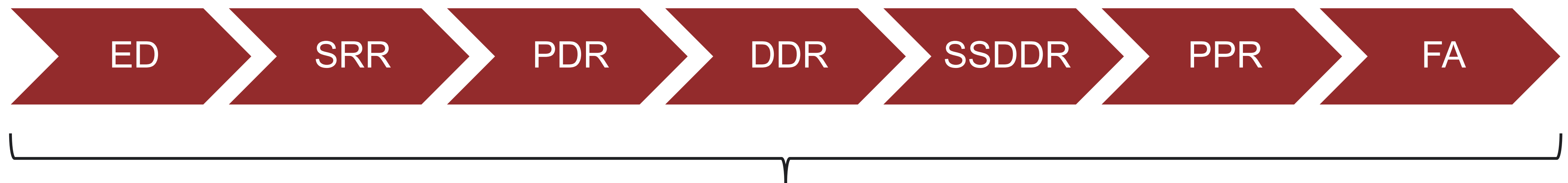
ASDEFCON (Acquisition)



ASDEFCON (Acquisition)

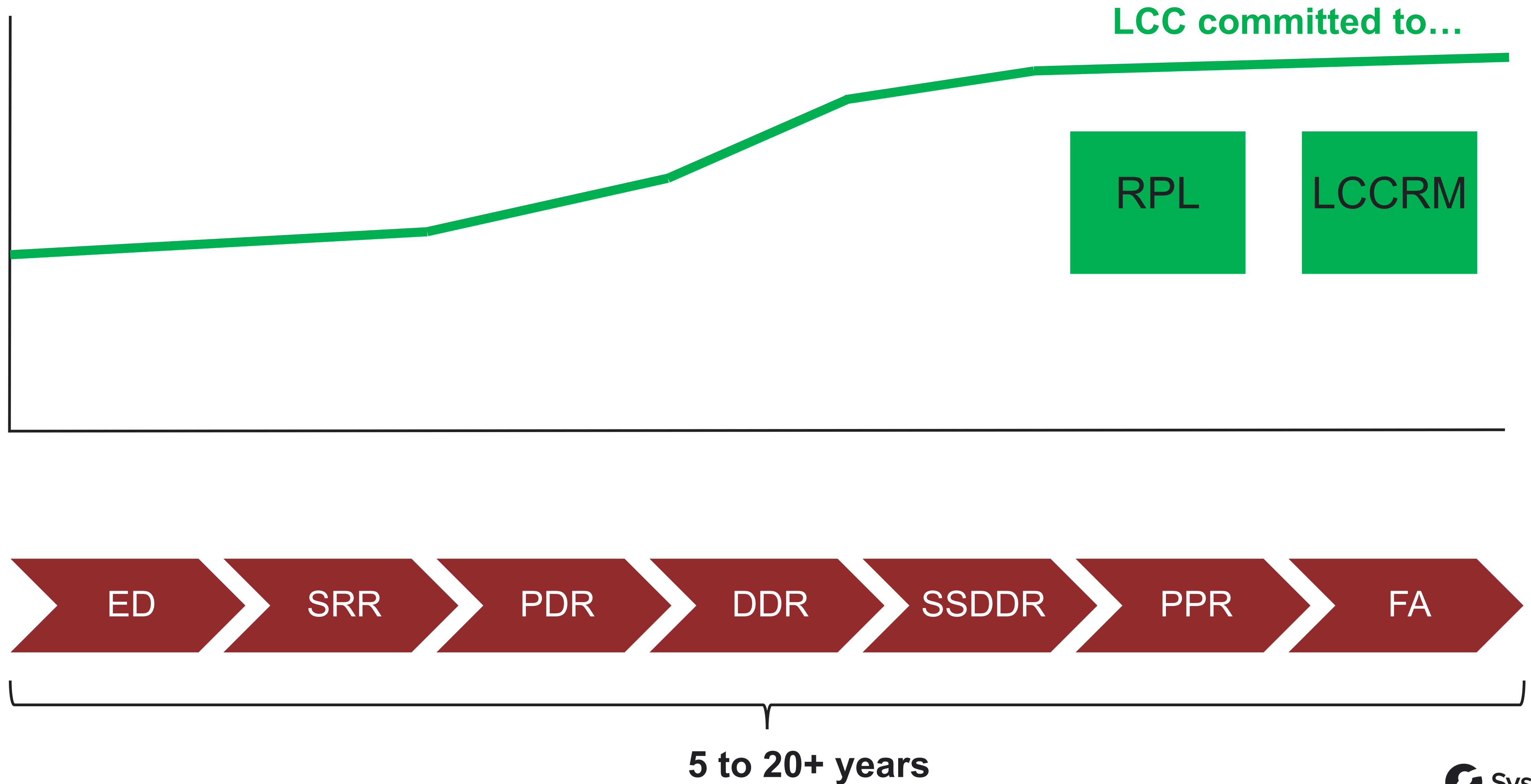
- **Statement of Work [STRATEGIC MATERIEL – Core]**
 - SoW 3.11 **Life Cycle Cost:**
 - Develop, deliver and update a **Life Cycle Cost Management Plan (LCCMP)**
 - Conduct an LCC Program
 - Develop, deliver and update a **Life Cycle Cost Report and Model (LCCRM)**
 - **Use a Defence endorsed LCC software package**
 - Identify and analyse cost drivers, including sensitivity analysis
 - Undertake trade-off analyses to identify design solutions that minimise LCC
 - Assist with design trade-off decisions both within and between the Mission System and the Support System
- **Demonstrate to the Commonwealth at each MSR** that the Contractor's development activities will result in a **Material System that minimises LCC and meets the other requirements of the Contract**

“The Ship Has Sailed”

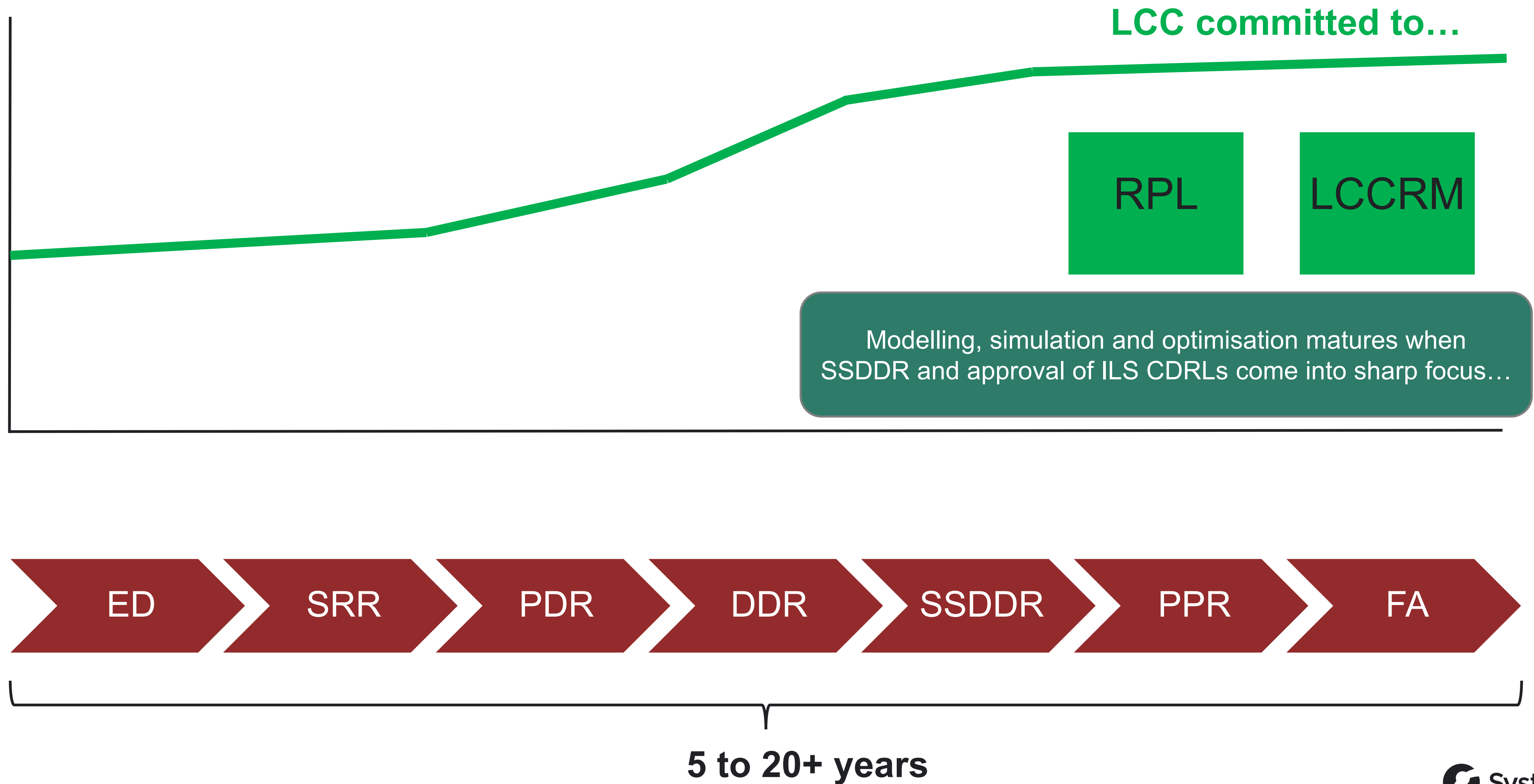


5 to 20+ years

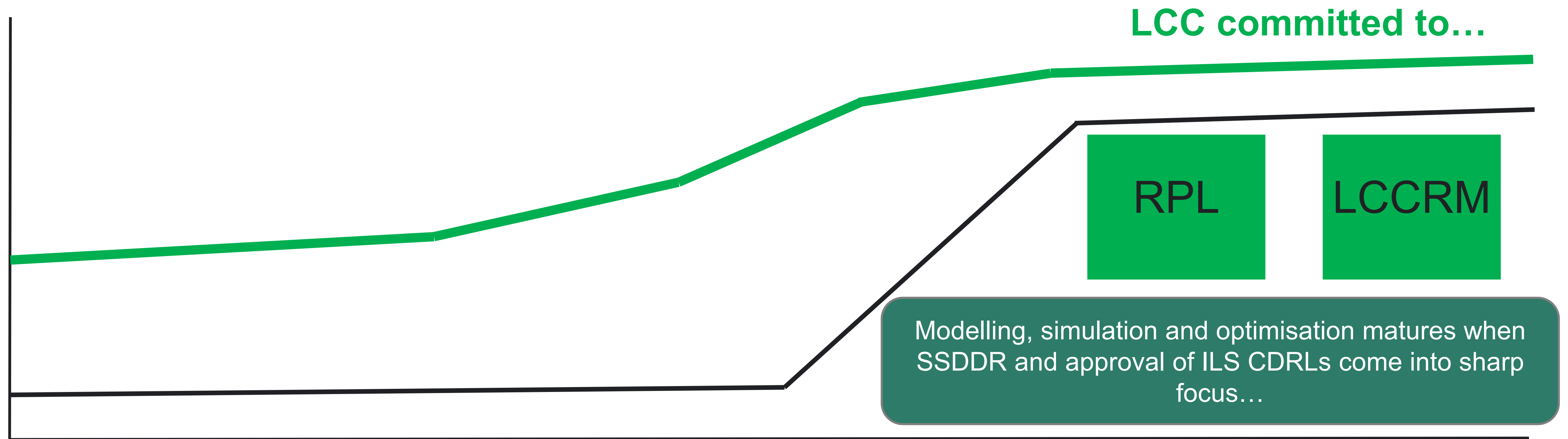
“The Ship Has Sailed”



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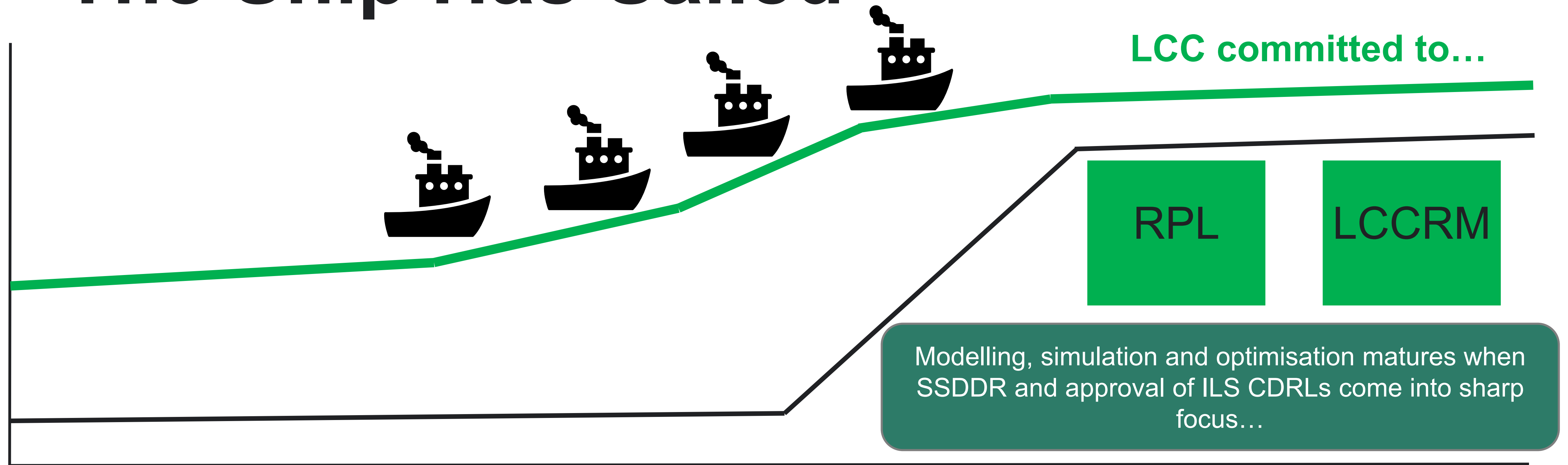


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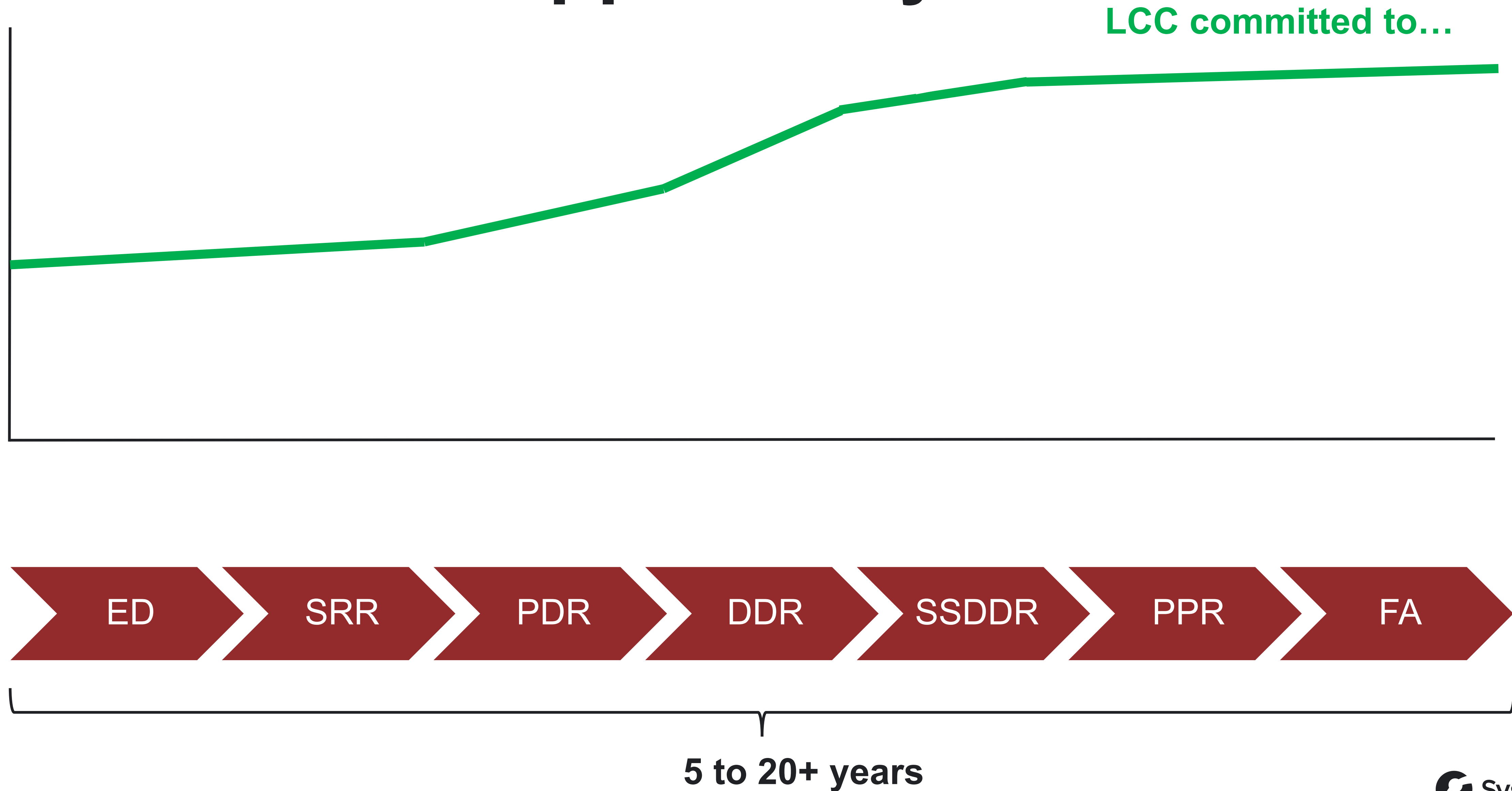
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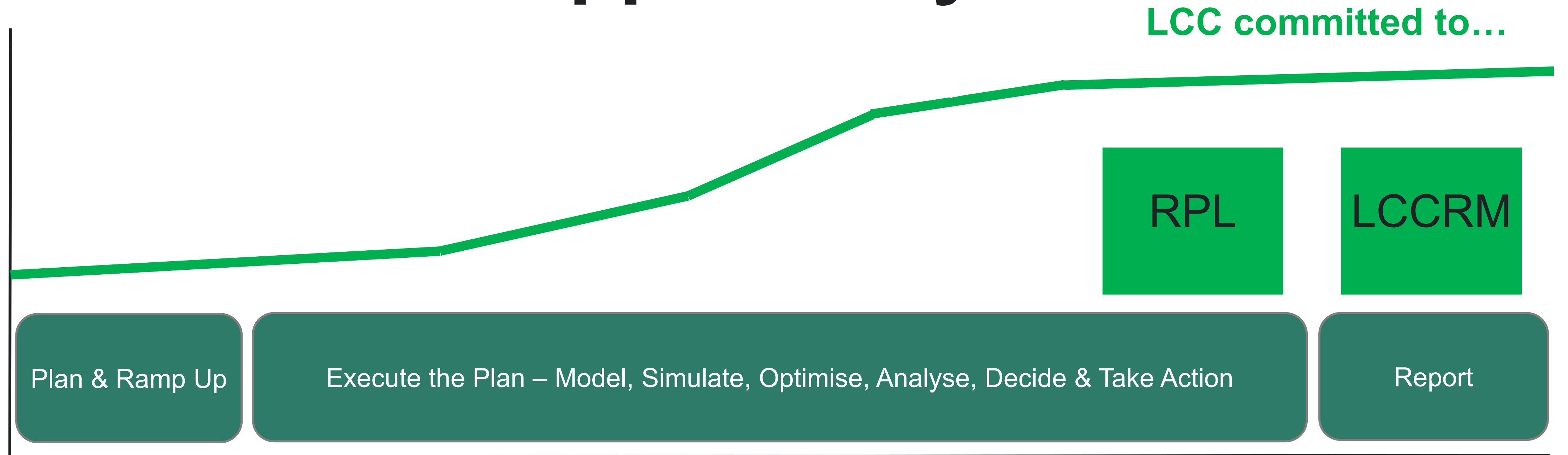


5 to 20+ years

“Window of Opportunity”

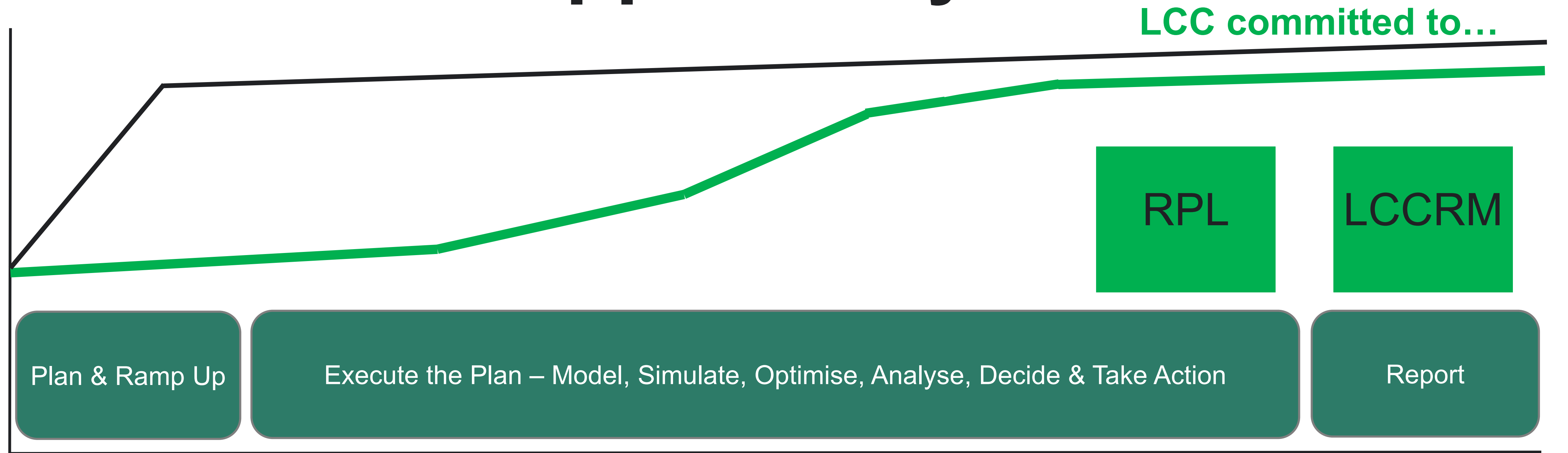


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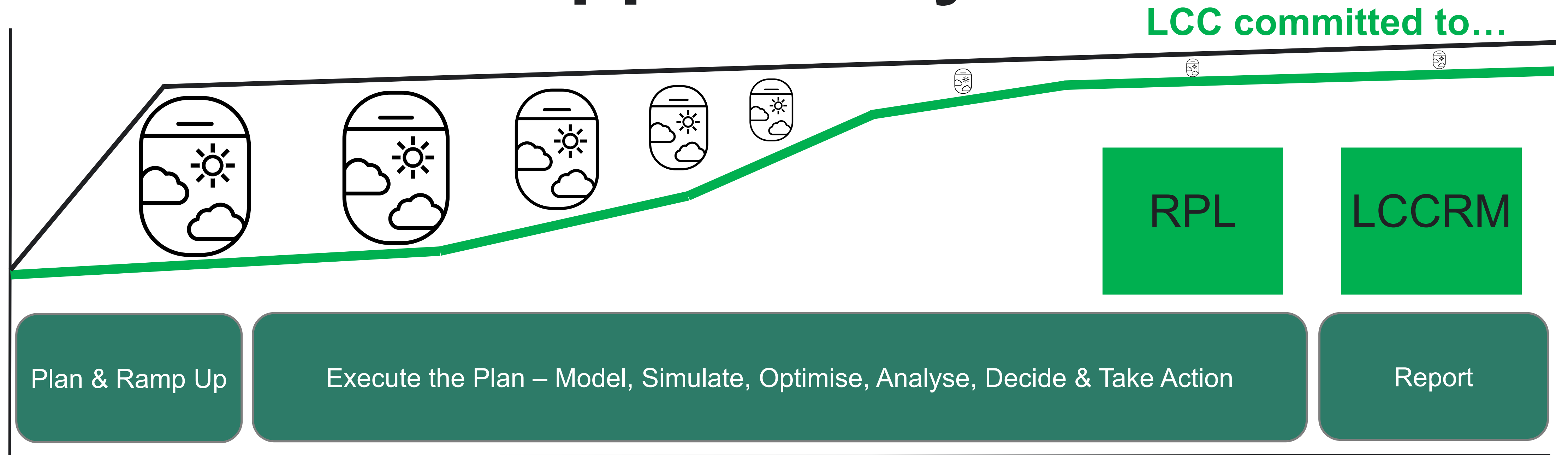
5 to 20+ years

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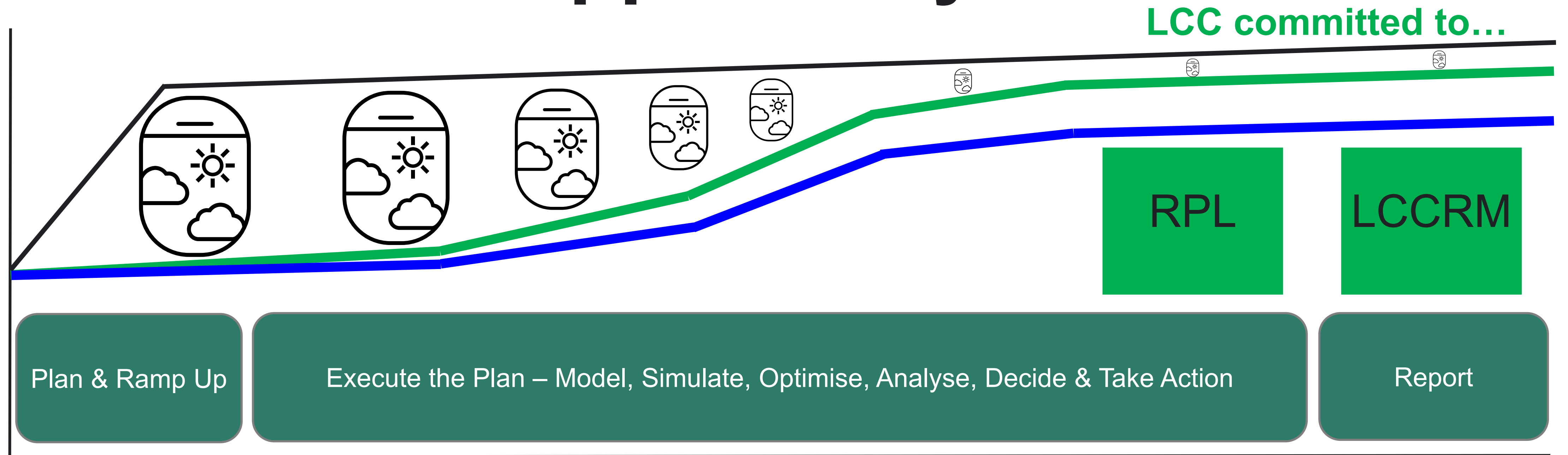
5 to 20+ years

“Window of Opportunity”



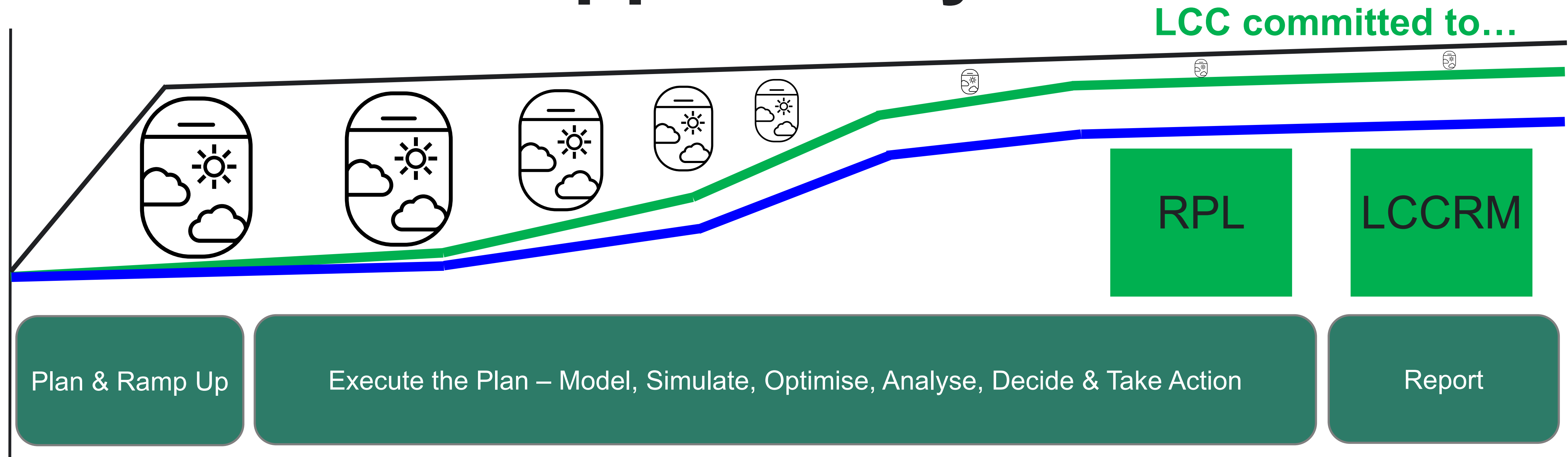
5 to 20+ years

“Window of Opportunity”



5 to 20+ years

“Window of Opportunity”



Tools, licences, trained users

Objectives & plan to meet them (MGT-900 LCCMP)

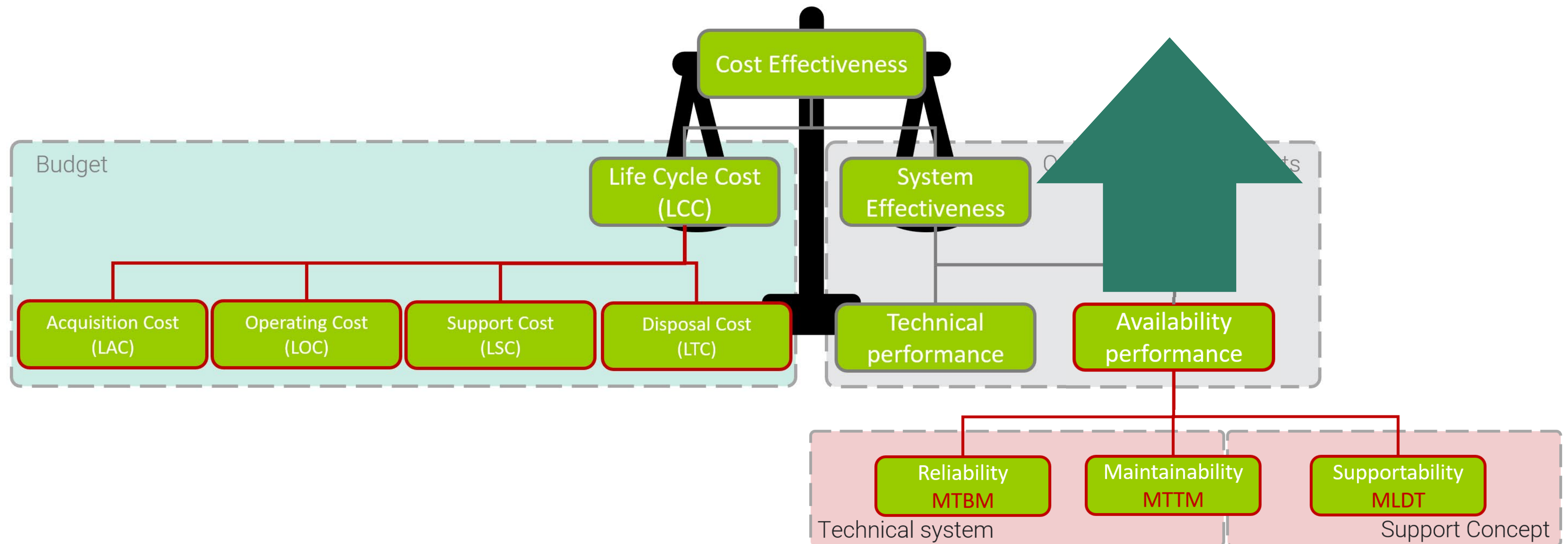
Wide consultation and IPT inclusion

Organisational interest & management support

Go hard early, find opportunities to improve effectiveness and reduce TCO

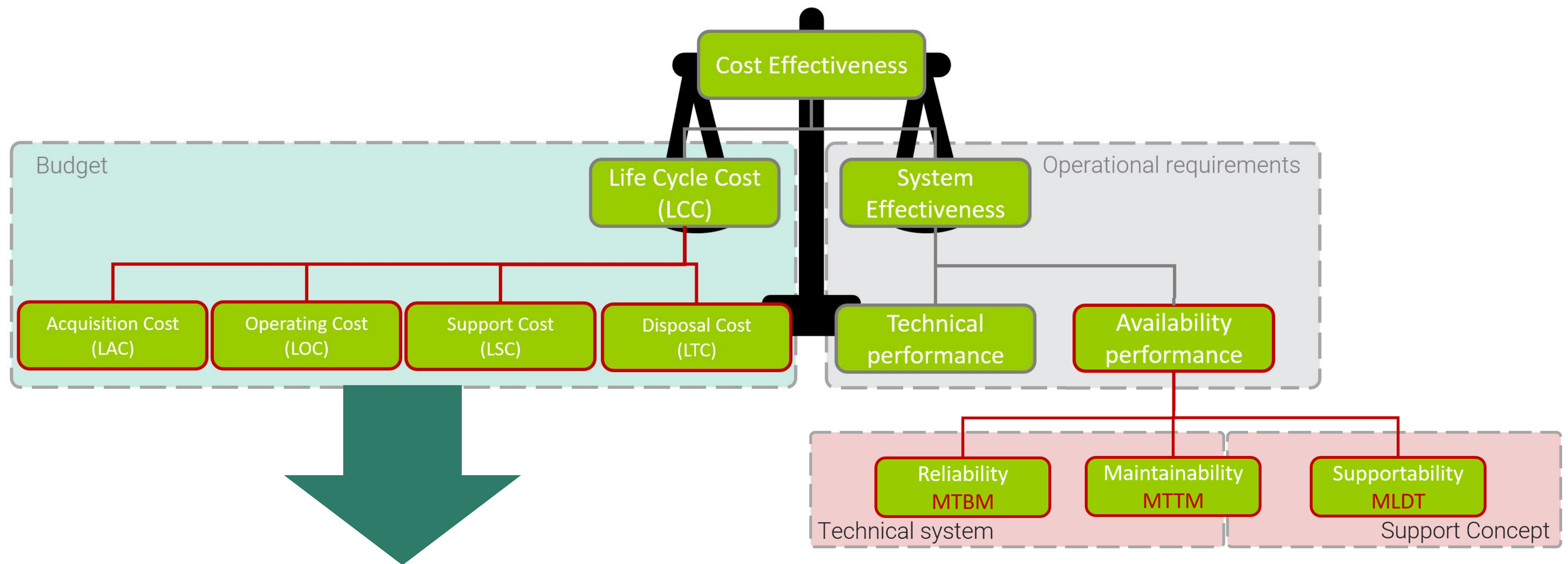
Quantify impact of alternatives to support decision making & take action

“Window of Opportunity”



Opportunities – anything and everything that improves availability performance while maintaining Life Cycle Cost within Budget...

“Window of Opportunity”



Opportunities – anything and everything that reduces Life Cycle Cost while maintaining the required level of Availability Performance...

“Window of Opportunity”

Reliability:

- Designing or selecting **more reliable components...**
- Potentially at higher Acquisition cost
- Offset by:
 - Reduced Support costs
 - Reduced Spares investment
 - Reduced system downtime for CM (and potentially PM)

“Window of Opportunity”



“Window of Opportunity”

\$100-150 options are very Cost-Effective

<\$50 options are not...



“Window of Opportunity”

Maintainability:

- Designing a system and selecting components with **better maintainability characteristics...**
- Potentially at higher Acquisition or System Production Cost...
- Offset by:
 - Reduced Support costs
 - Potentially reduced Spares investment
 - Reduced system downtime for CM and PM

“Window of Opportunity”



8 hours downtime & 4-6 labour hours charged to replace a leaking gasket or seal in plain sight...

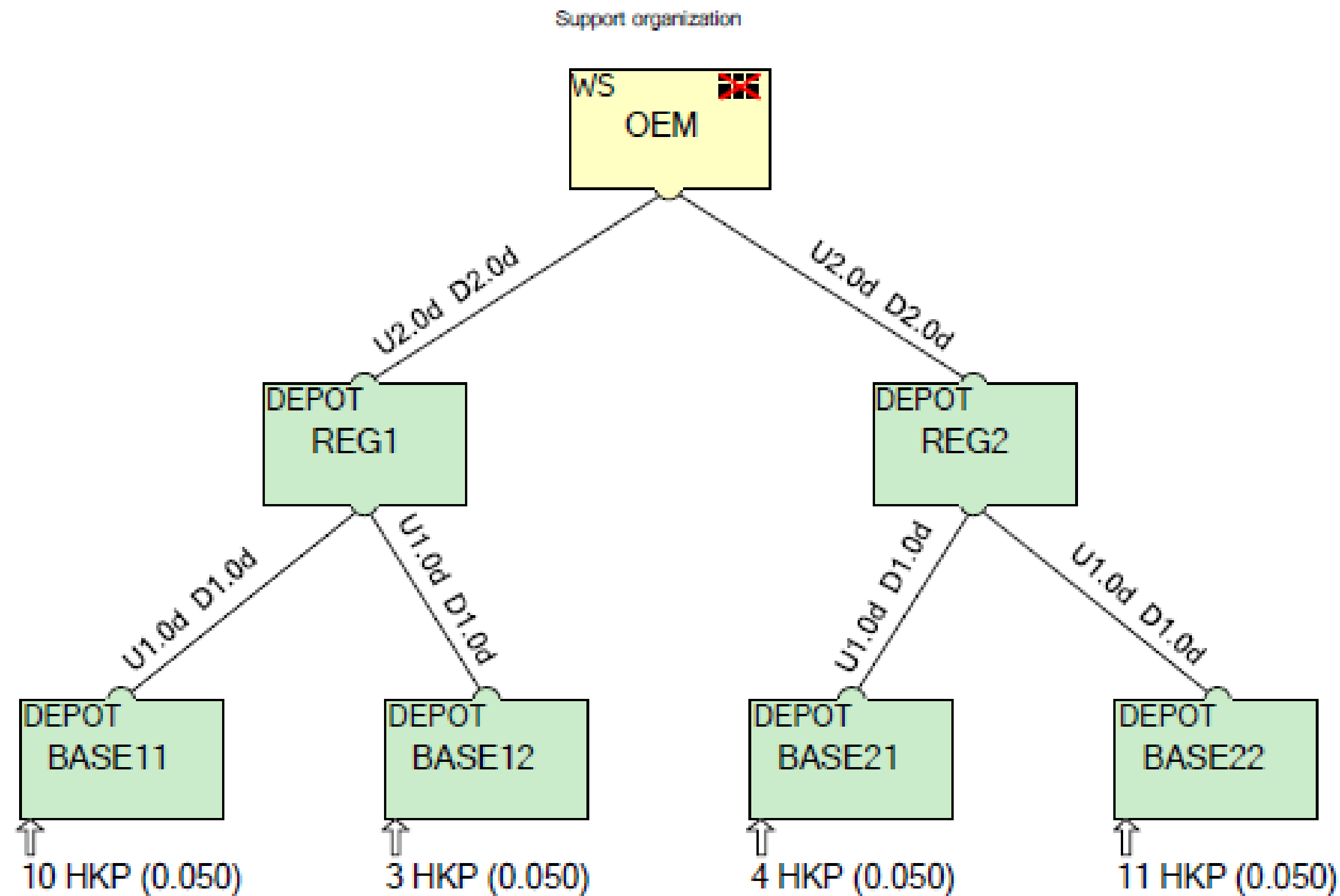
“Window of Opportunity”

Supportability:

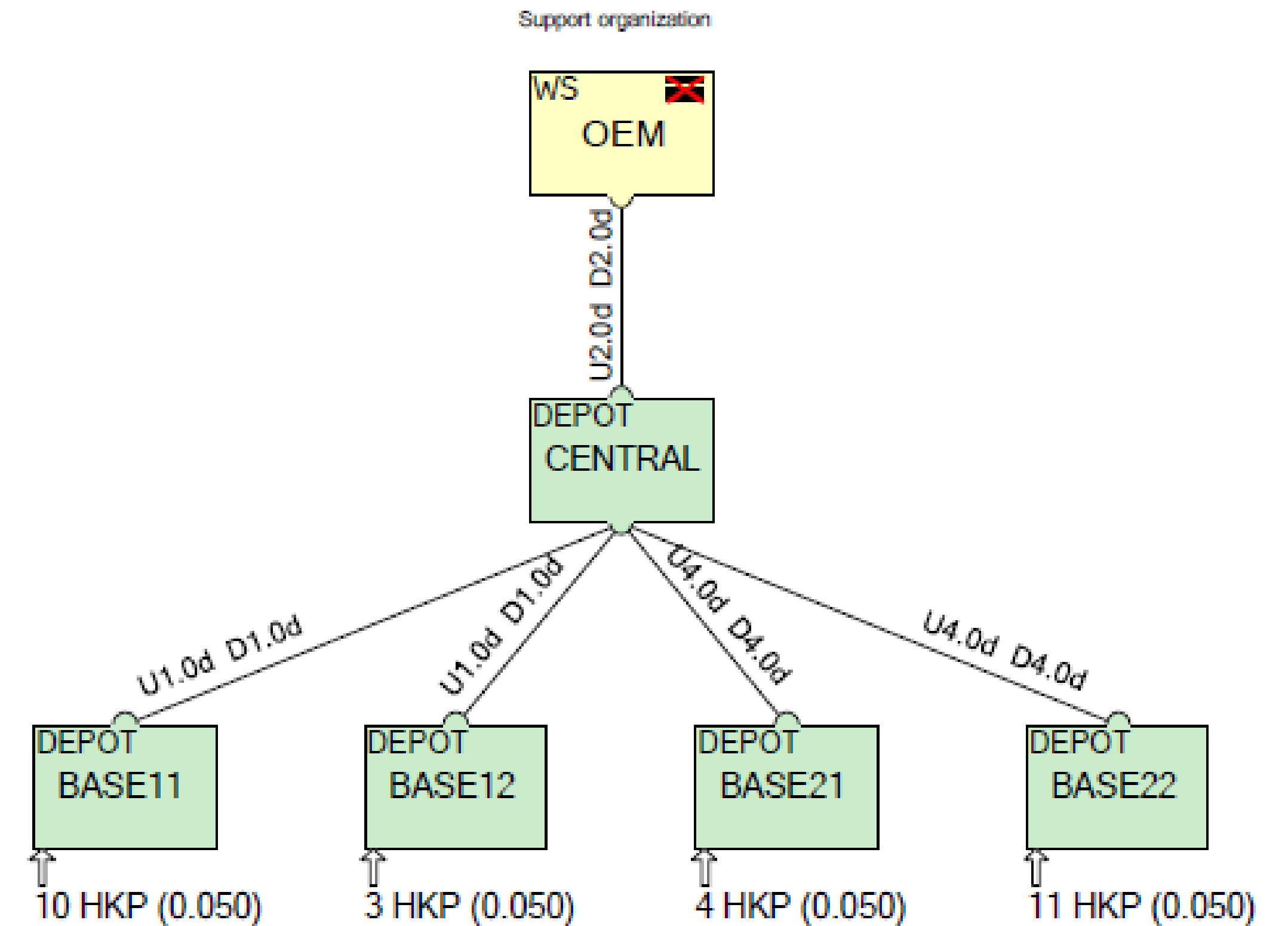
- Designing or opting for a support organisation with **better supportability characteristics...**
- That may have higher upfront and/or ongoing facilities costs...
- Offset by reduced **Life Support Costs and/or Logistics Delay Time** associated with:
 - Spares investment
 - Transportation and storage
 - waiting time for spares
 - waiting time for resources (technicians, S&TE, tech pubs etc)

“Window of Opportunity”

Alt 1: Regional stores



Alt 2: Central store



Evaluate Alternative 1 vs Alternative 2 for Cost-Effectiveness...

“Window of Opportunity”

Operations:

- Determine and use **realistic utilisation parameters and operating/mission profiles...**
- Critical for **accurate LCM analyses** including Spares optimisation and LCC/TCO control and reduction programs
- “How will the mission system and the overall fleet actually be operated?”
- “On what ‘clock’ or operating event do items fail or require PM?”

“Window of Opportunity”



How many utilisation parameters could potentially be handled within Opus Suite?

“Window of Opportunity”



1 – OPHOURS* (Engine, Turret, Electrical System etc)

“Window of Opportunity”



2 – SURVEILLANCE HOURS (some Sensors)

“Window of Opportunity”



3 – KILOMETRES DRIVEN (Tracks, Running Gear etc)

“Window of Opportunity”



4 – MAIN WEAPON ROUNDS FIRED

“Window of Opportunity”



5 – SECONDARY WEAPON ROUNDS FIRED

“Window of Opportunity”



6 – ANTI-TANK GUIDED MISSILE ROUNDS FIRED

“Window of Opportunity”



7 – ACTIVE PROTECTION SYSTEM ROUNDS FIRED

“Window of Opportunity”



8 – SMOKE GRENADE ROUNDS FIRED

“Window of Opportunity”



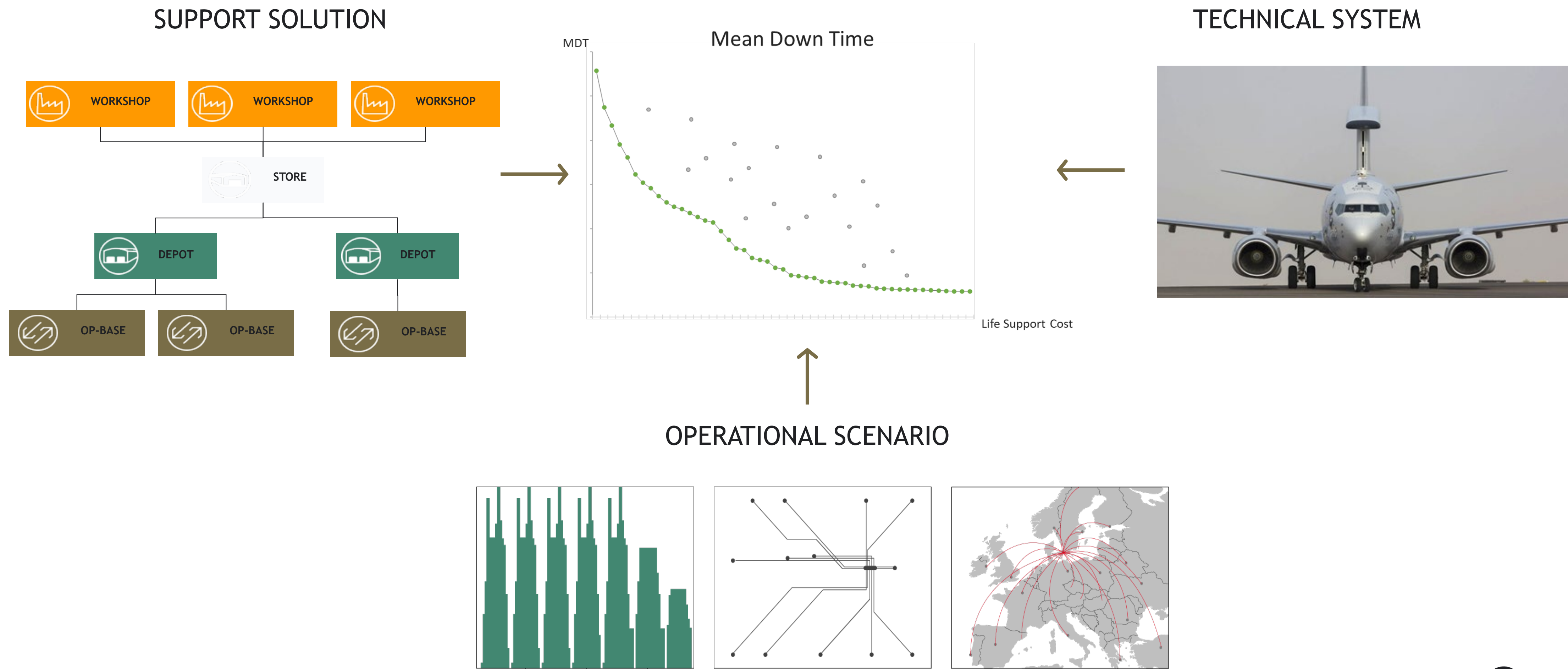
9 – REAR RAMP CYCLES

“Window of Opportunity”



10 – MISSIONS* (Some Cabin Air Filters)

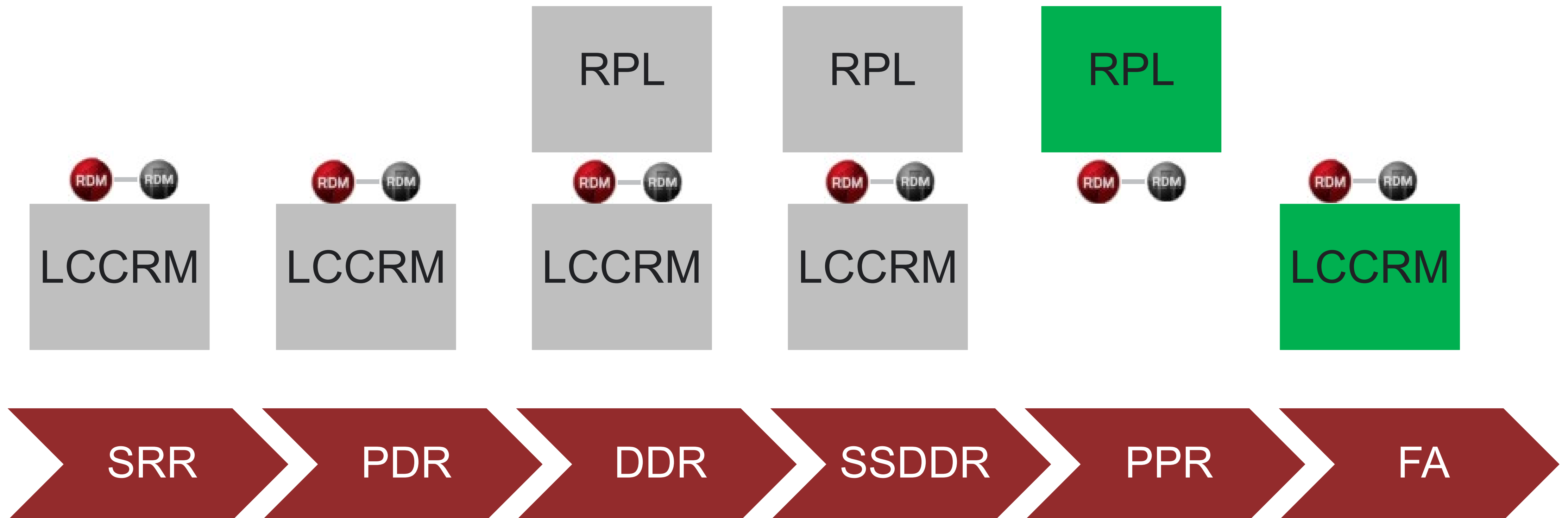
“Window of Opportunity”



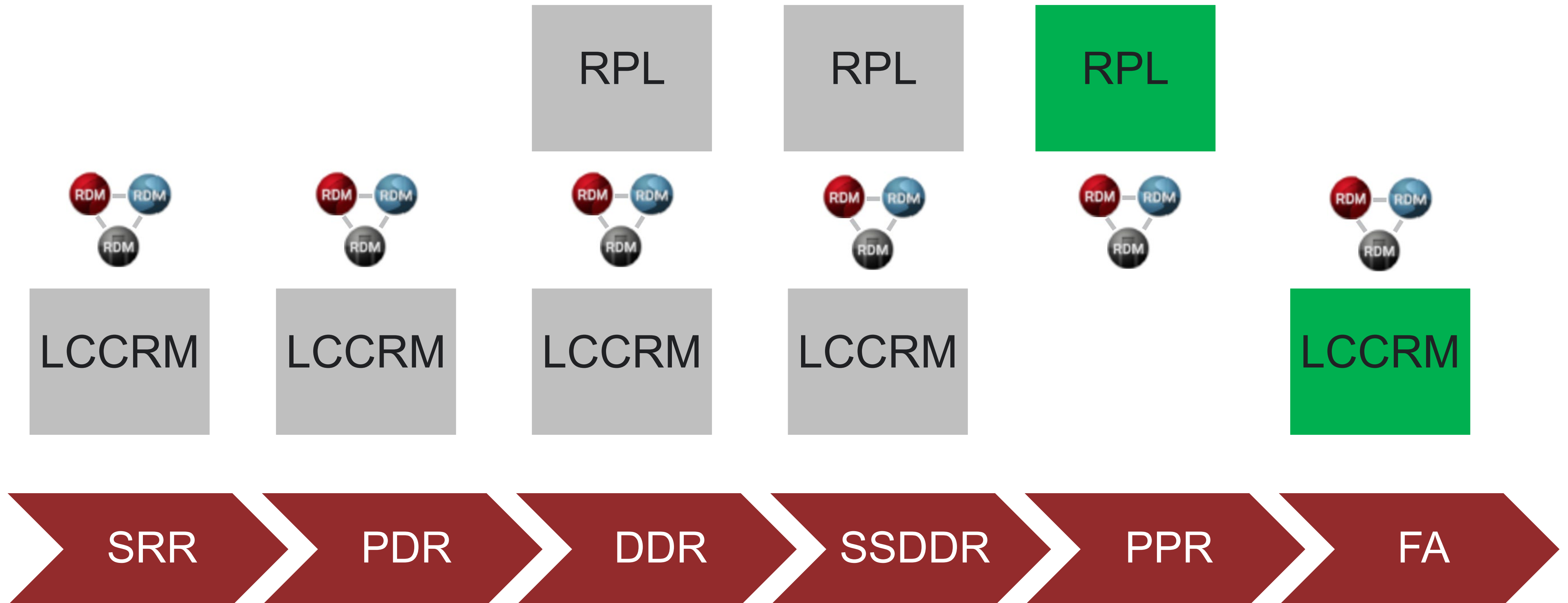
ASDEFCON (Acquisition)

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ASDEFCON (Acquisition)



ASDEFCON (Acquisition)



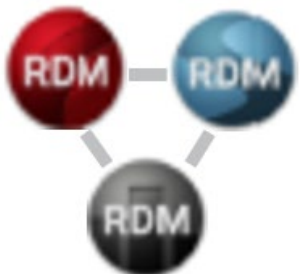
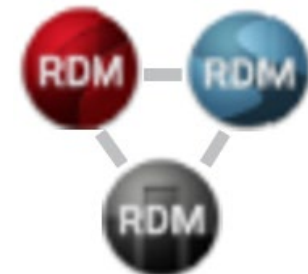
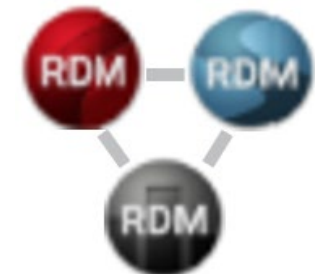
ASDEFCON (Acquisition)

Ramp Up!

RPL

RPL

RPL



LCCRM

LCCRM

LCCRM

LCCRM

LCCRM

SRR

PDR

DDR

SSDDR

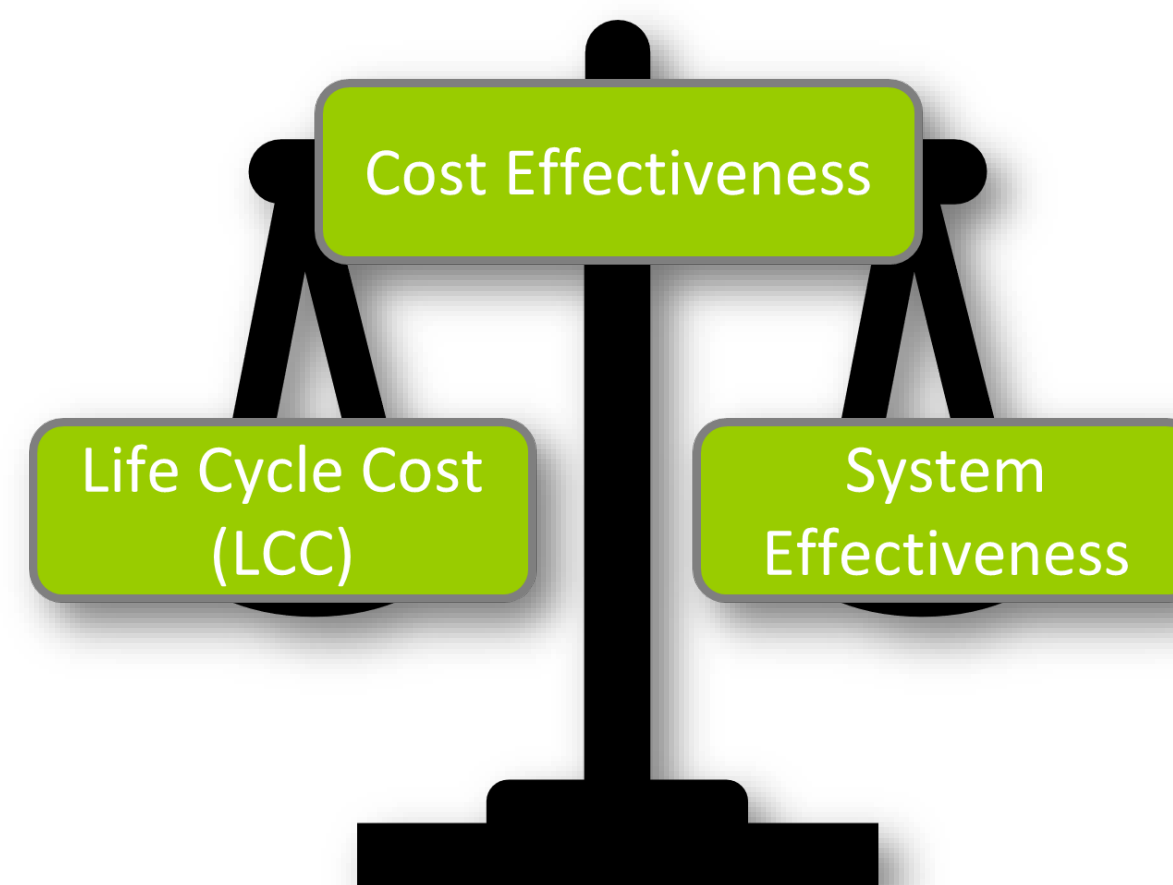
PPR

FA

ASDEFCON (Support)

During In-Service and Disposal Phases Opus Suite's contribution to LCM remains to:

- Ensure Cost-Effectiveness of the acquired technical system is **achieved and maintained while it's operated, supported, modified, upgraded and disposed** of by:
 - ensuring System Effectiveness through Availability performance; and
 - ensuring Life Cycle Cost is within budget



ASDEFCON (Support)

The key ASDEFCON requirements **OPUS Suite** can meet or significantly contribute to w.r.t. conducting **LCM during In-Service and Disposal Phases** can be found in:

- **SoW 13** Capability Innovations and Efficiencies Program
- **DSD-SUP-SACC** Stock Assessment, Codification and Cataloguing Services
- **DSD-SUP-SERV** Routine Supply Services
- **DSD-ENG-SERV** Routine Engineering Services

ASDEFCON (Support)

13. CAPABILITY INNOVATIONS AND EFFICIENCIES (CORE)

13.1 Acknowledgement (Core)

13.1.1 The Contractor shall identify, analyse and implement Innovations / Efficiencies (IEs) in accordance with this clause 13 and clause 3.20 of the COC ('Capability Innovations and Efficiencies').

Note to drafters: If the Contract will have a fixed Term (Option B under clause 1.9 of the COC) then delete subclause b below and merge subclause a into the stem of clause 13.1.2.

13.1.2 The Contractor acknowledges that its performance of the CIE Program will be:

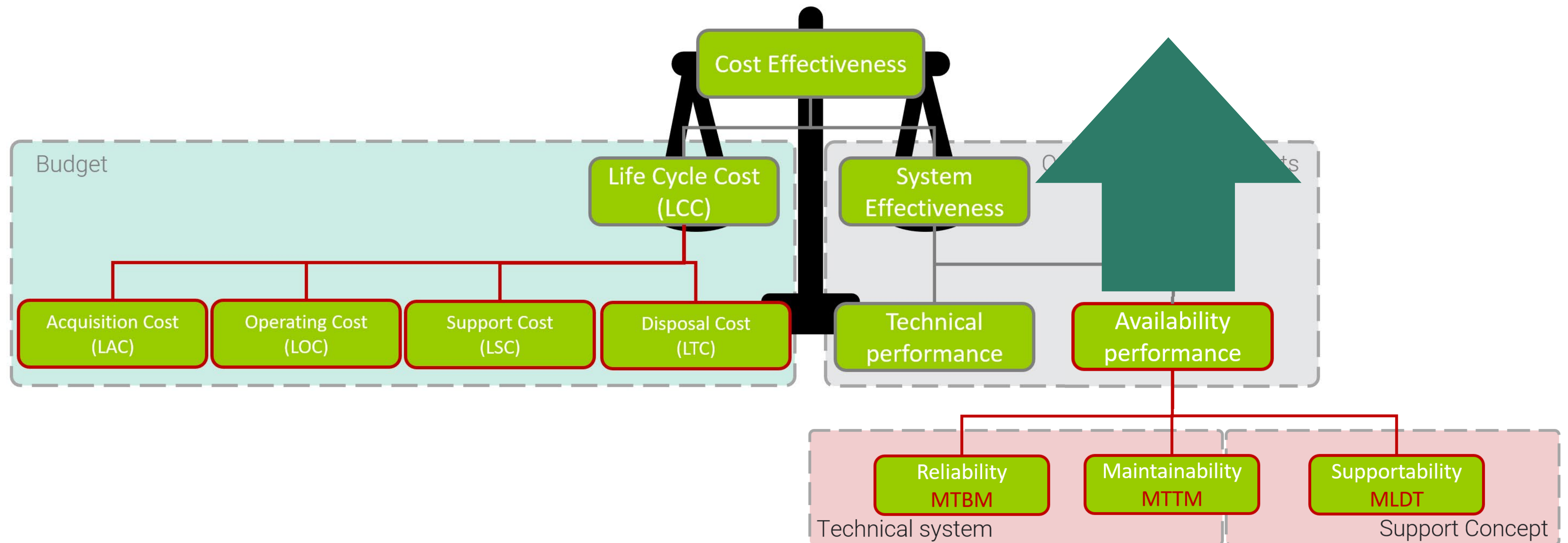
- a. continually monitored and assessed by the Commonwealth, and the outcomes of this assessment will be advised to the Contractor during the Performance Assessment Reviews conducted in accordance with clause 3.4.5; and
- b. taken into account under clause 1.9 of the COC for the determination as to:
 - (i) whether or not the Term will be extended; and
 - (ii) where applicable, the duration of any such extension.

ASDEFCON (Support)

13.2 Management of the CIE Program (Core)

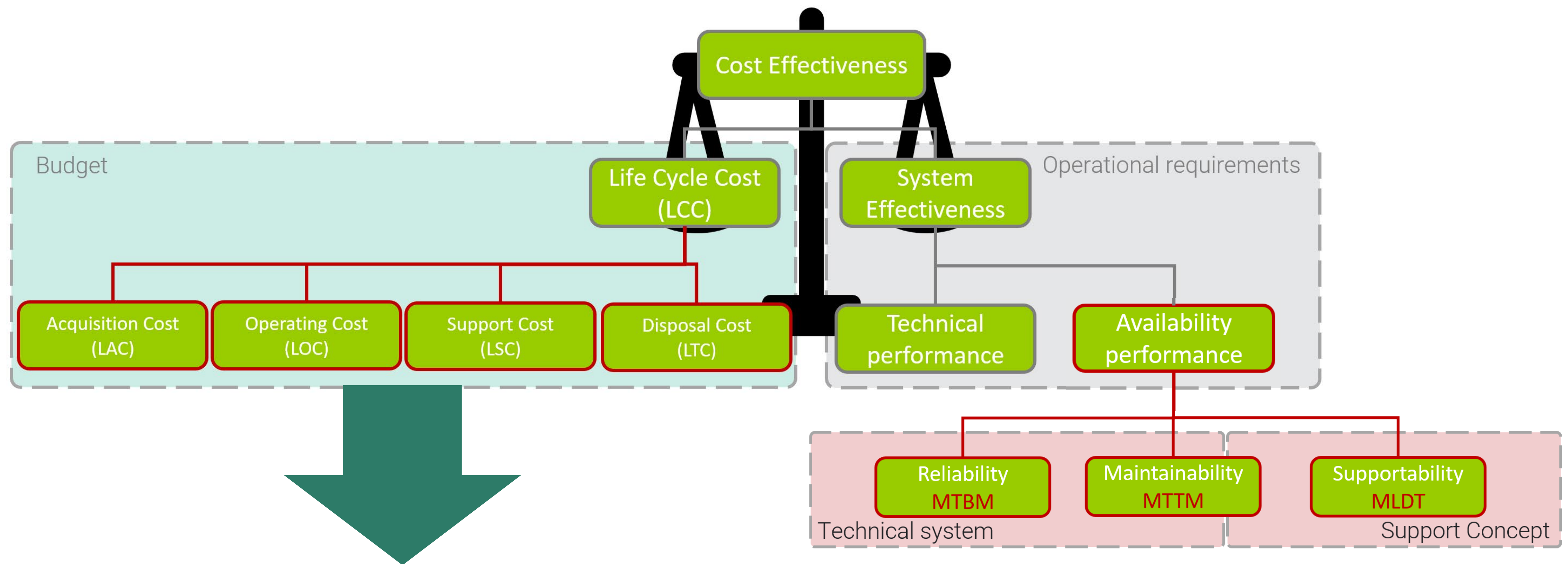
- 13.2.1 The Contractor shall implement and refine on an on-going basis the CIE Program to:
- a. proactively identify opportunities that:
 - (i) reduce the TCO of the Capability and/or the total cost of ownership to the Commonwealth of Other Capabilities;
 - (ii) enhance the Capability, including through modifications to the Products Being Supported, to address technology evolution, technology insertion and changing operational imperatives and threats (as advised by the Commonwealth); and
 - (iii) promote and enhance the AIC Objectives,while ensuring that (except to the extent that the Contract is amended by a CCP to address an IE):
 - (iv) the Services are provided in accordance with the Contract; and
 - (v) the Outcomes and performance requirements of the Contract, including those measured by KPIs, continue to be achieved in accordance with the Contract; and
 - b. promote a culture of innovation, efficiency and cost consciousness between the Commonwealth and the Contractor that actively seeks to achieve the outcomes described in subclause a above.

ASDEFCON (Support)



Innovations and Efficiencies – anything and everything that improves Availability Performance while maintaining Life Cycle Cost within Budget...

ASDEFCON (Support)



Innovations and Efficiencies – anything and everything that reduces Life Cycle Cost while maintaining the required level of Availability Performance...

ASDEFCON (Support)

SoW 13.4 Cost Modelling - In accordance with the **Capability Innovations and Efficiencies Program** the Contractor shall:

- Model and analyse **Total Cost of Ownership (TCO)** using Defence-endorsed software package(s).
- Develop and maintain a baseline TCO model that includes costs associated with:
 - **Operating and supporting the Material System by the ADF**
 - The Services provided under the Contract (Support)
 - The associated activities for managing the Services, as conducted by Defence.

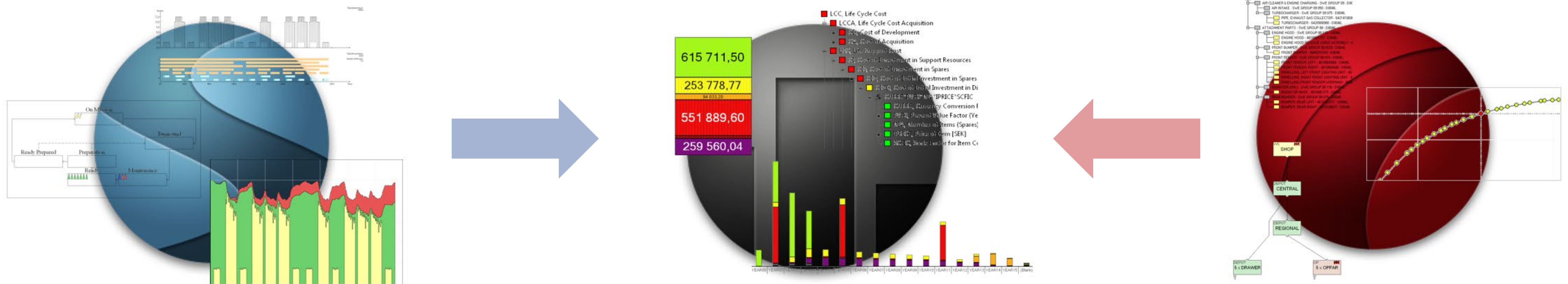
ASDEFCON (Support)

SoW 13.4 Cost Modelling - In accordance with the **Capability Innovations and Efficiencies Program**:

- With the **objective** being to:
 - Identify cost drivers [**Performance Assessment SHI: Top 10 Cost Drivers**]
 - Perform sensitivity analysis of cost drivers, with a view to identifying and analysing Efficiencies
 - Undertake **trade-off analysis** to identify potential solutions for Efficiencies
 - **Proactively reduce the TCO of the Capability and/or Other Capabilities.**

ASDEFCON (Support)

Tomorrow Afternoon: Guided tour of OPUS Suite's LCC/ TCO application: CATLOC

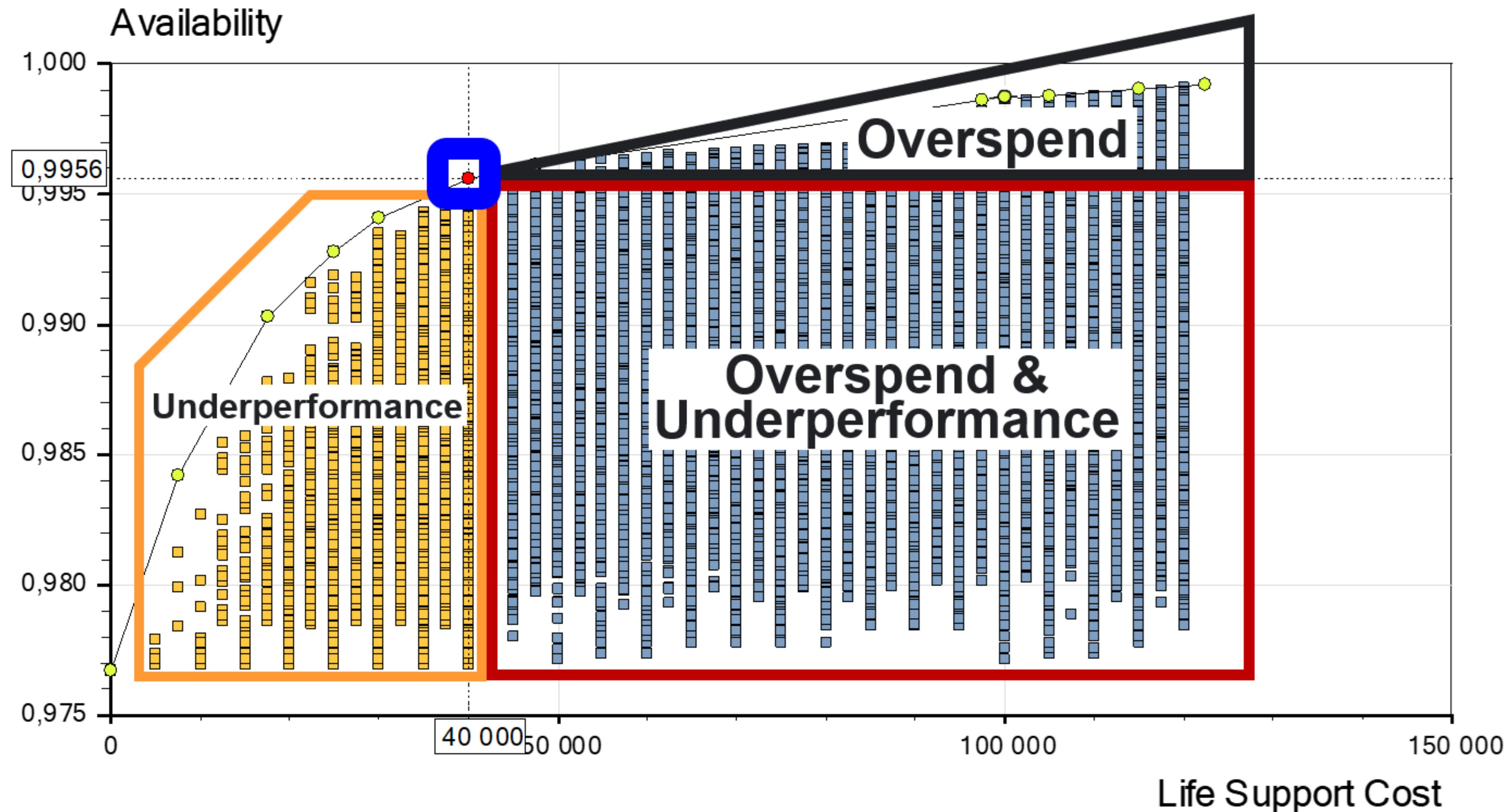


ASDEFCON (Support)

DSD-SUP-SACC **Stock Assessment Services**

- “**OPUS10** is Defence’s recommended software tool for the optimisation of RIs”
- “The Contractor shall perform the Stock Assessment analyses...using the Stock Optimisation software package OPUS10 (or an alternative Approved by the Commonwealth Representative)”

Test the alternative software package's Spares solution in OPUS10 'ANALYSIS' mode



ASDEFCON (Support)

DSD-SUP-SACC Stock Assessment Services

- **Operating and Reserve Stock Analyses** whenever circumstances warrant they be conducted, whenever the Commonwealth directs the Contractor to do so, whenever Contractor recommends procurement of Repairable Items or whenever WSL or RSL changes are proposed.
- **Stock Assessment analysis report** provided to Commonwealth detailing rationale, modelling processes, assumptions, data sources, sensitivity analysis results and stock recommendations.

DSD-SUP-SERV Routine Supply Services

- Support System Supportability Analysis including **monitoring and analysis of RTATs and lead times**
- **Obsolescence** Monitoring and Management

ASDEFCON (Support)

DSD-ENG-SERV Routine Engineering Services

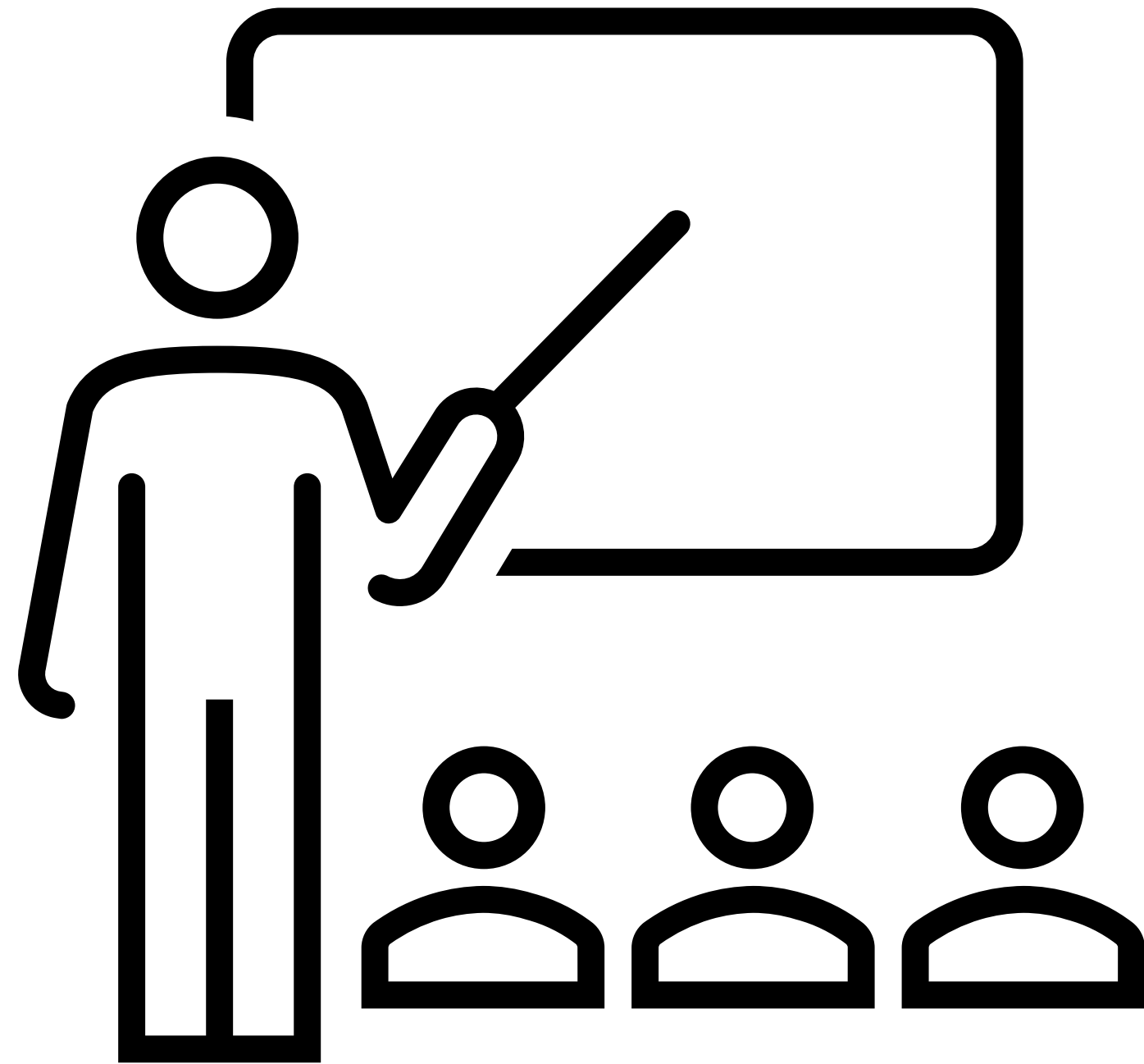
- Analysis of Change Requests
 - Contractor determines whether proposed engineering changes will be **cost-effective w.r.t LCC/TCO**
- Supportability and Engineering Analysis
 - Contractor performs LSA and **associated trade studies, trade-off analyses and cost modelling**
- Life Cycle Cost Analysis
 - Contractor maintains a baseline LCC/TCO model and uses it to prepare cost estimates in support of the **Capability Innovations and Efficiencies Program (CIEP)**
 - Contractor performs **ad hoc LCC modelling at Commonwealth's request** and may deliver formal LCC Analysis Report

In-Service

LCM Analyses Undertaken using Opus Suite:

- Any time there's a relevant and significant change (potential or impending) to:
 - Mission System;
 - Support System;
 - Operations; or
 - Commercial/ Finance
- Proactive analyses to inform and support decision making; otherwise
- Reactive analyses to quantify the likely effect on performance and Life Cycle Cost

In-Service



In-Service

Fly Away Kits / Deployment Kits/
Onboard Ship Stores...

for exercises and contingencies

In-Service

Fly Away Kits / Deployment Kits/
Onboard Ship Stores...
for exercises and contingencies

Item and sub-system trade studies...
reliability improvement proposals
resulting from Failure Reporting,
Analysis, and Corrective Action
System (FRACAS)

In-Service

Fly Away Kits / Deployment Kits/
Onboard Ship Stores...
for exercises and contingencies

Item and sub-system trade studies...

reliability improvement proposals
resulting from Failure Reporting,
Analysis, and Corrective Action
System (FRACAS)

Analysis of effectiveness of...
spares owned vs recommended
during acquisition

In-Service

Fly Away Kits / Deployment Kits/
Onboard Ship Stores...
for exercises and contingencies

Item and sub-system trade studies...
reliability improvement proposals
resulting from Failure Reporting,
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System (FRACAS)

Analysis of effectiveness of...
spares owned vs recommended
during acquisition

Analysis of effectiveness of...
spares owned vs originally
procured during acquisition

In-Service

Quantifying effects of operational changes...

rate of effort, basis of provisioning,
basis of issue, live vs simulated,
MoE changes per system location

In-Service

Quantifying effects of operational changes...

rate of effort, basis of provisioning,
basis of issue, live vs simulated,
MoE changes per system location

External disruption assessment...

lead time and repair turnaround
time (RTAT) delays

In-Service

Quantifying effects of operational changes...

rate of effort, basis of provisioning,
basis of issue, live vs simulated,
MoE changes per system location

External disruption assessment...

lead time and repair turnaround
time (RTAT) delays

Sustainment budget planning...

input to annual spares and repairs
plans (STSIZ and CM/PM APY
data)

In-Service

Quantifying effects of operational changes...

rate of effort, basis of provisioning,
basis of issue, live vs simulated,
MoE changes per system location

External disruption assessment...

lead time and repair turnaround
time (RTAT) delays

Sustainment budget planning...

input to annual spares and repairs
plans (STSIZ and CM/PM APY
data)

Revisit & refine spares holdings...

in-service reliability, maintainability
and supportability data
incorporation

In-Service

Mid-life upgrades...

replacement, modification, addition
or removal of items or sub-systems

In-Service

Mid-life upgrades...

replacement, modification, addition
or removal of items or sub-systems

Preventative Maintenance policy
changes...

repackaging, rephasing, relocation

In-Service

Mid-life upgrades...

replacement, modification, addition
or removal of items or sub-systems

Preventative Maintenance policy
changes...

repackaging, rephasing, relocation

Last time buys & support to
modification projects...

DMS, obsolescence and
discontinued repair support

In-Service

Mid-life upgrades...

replacement, modification, addition
or removal of items or sub-systems

Preventative Maintenance policy
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Last time buys & support to
modification projects...

DMS, obsolescence and
discontinued repair support

Repairable item replenishment
assessment and justification...

failures beyond economic or
physical repair

In-Service

Analysis of AD/ SB/ STI...

manage impact on available spares
pool and test mitigation strategies

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Assistance to related acquisition
and sustainment programs...

input data, assumptions,
methodology, output data, results

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LCC/TCO impact of engineering,
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changes (i.e. CIEP)

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maintenance, supply chain,
training, operations or commercial
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Sustainment budget changes...

expected effect on availability

Disposal

Fleet drawdown and disposal...

When to stop repairing and/or
overhauling repairables (&
reordering discardables)

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When to withdraw systems from
service in step-wise manner

Disposal

Fleet drawdown and disposal...

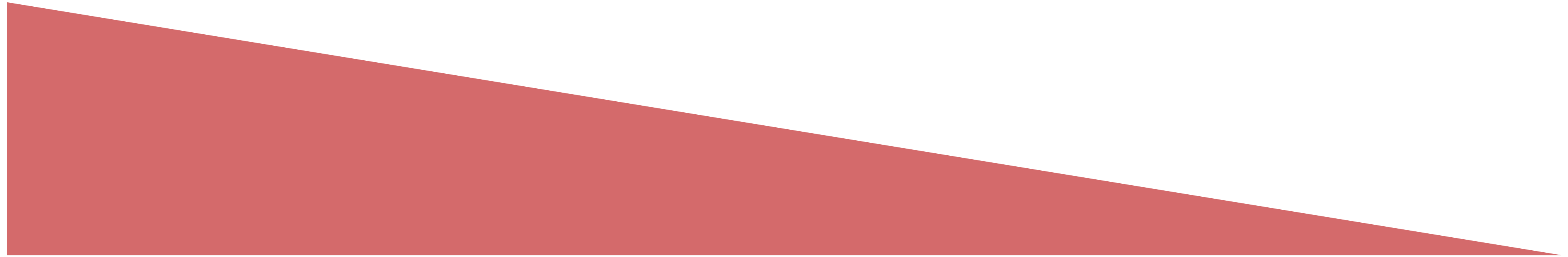
When to stop repairing and/or
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reordering discardables)

When to terminate repair contracts

When to withdraw systems from
service in step-wise manner

When to cannibalise items from
systems withdrawn from service

Disposal – System withdrawal from service



Acquisition – System introduction into service



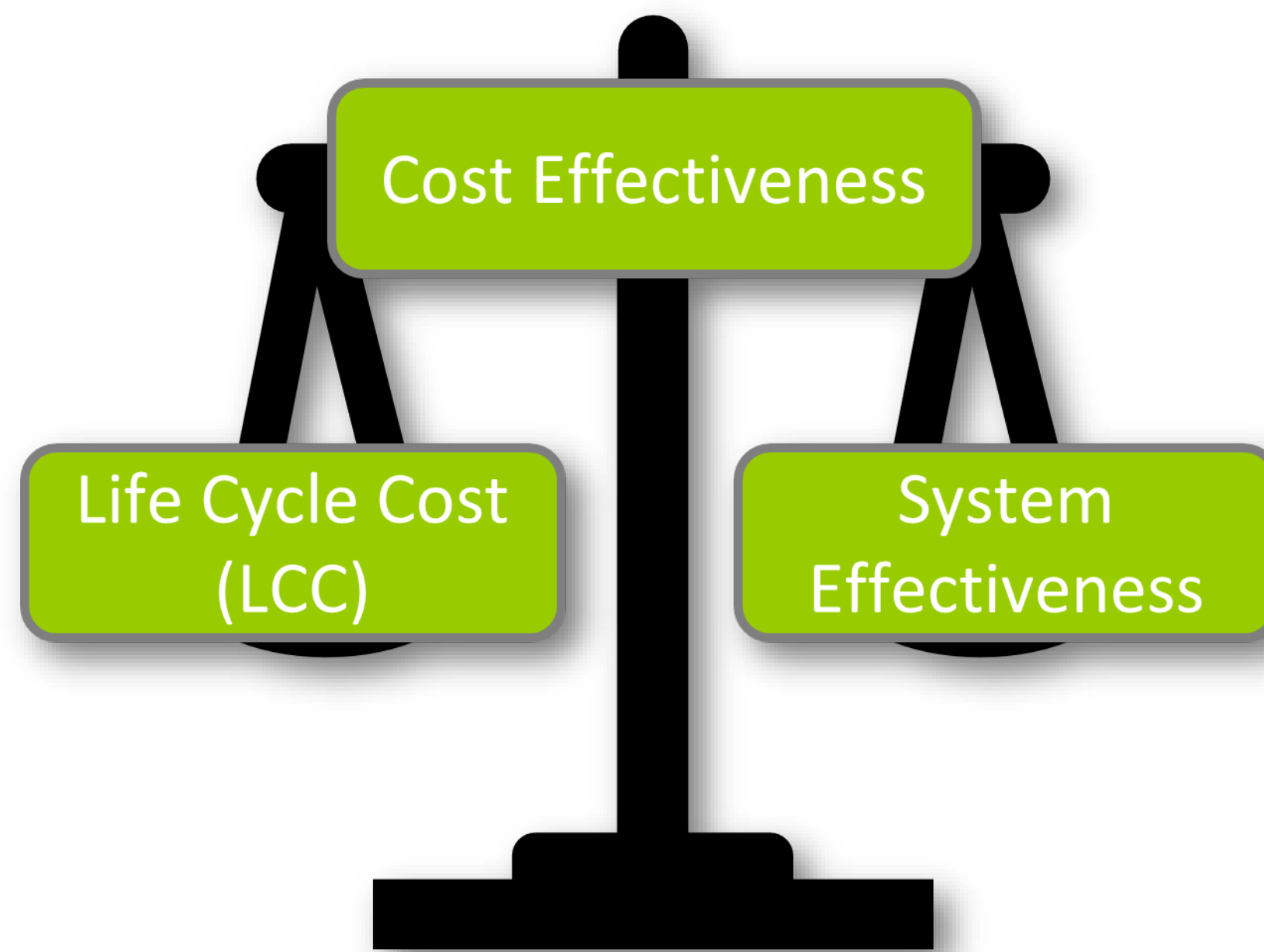
In-Service and Disposal

Other OPUS Suite 'Applications'...?

Opus Suite contribution to LCM

To ensure Cost-Effectiveness of a technical system throughout its lifecycle by:

- ensuring System Effectiveness, through Availability performance; and
- ensuring Life Cycle Cost is within budget



The 70,000' View



(US Department of Defense)

Thank you.

