

CLEAN AVIATION

## Mapping Key Stakeholders and their Information Requirements to Integrate Ecodesign and its Principles in the Overall Aircraft Development Process



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As part of the **Short and Medium Range - Aircraft Architecture and Technology Integration Project (SMR ACAP)**  
**WP3 Environmental Target Definition, Evaluation & Integration**



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# Outline



# Background & Purpose



# Introduction to WP3

Short and Medium Range –  
Aircraft Architecture and Technology  
Integration Project (**SMR ACAP**)



**WP3** Environmental Target Definition, Evaluation & Integration

- **WP3.1** Target Definition & Co-Design Approach
  - **WP3.1.3** Environmental Co-Design Approach
    - Identify **key stakeholders**
    - Define their **information requirements**

# Some Definitions



The **environmental co-design approach** aims to embed eco-design principles into the overall aircraft design process and enable a life cycle assessment (LCA) of different aircraft concepts.

**Eco-design** is defined as a “systematic approach that considers environmental aspects in design and development with the aim to reduce adverse environmental impacts throughout the life cycle of a product” (ISO 14006:2020).

**Life cycle assessment (LCA)** is a standardised technique to quantify the environmental impact associated with products, both manufactured and consumed (ISO 14040:2006).

# Purpose of the Survey

Collect the **information requirements** of key stakeholders to engage with the environmental co-design approach developed in SMR ACAP WP3.1

# Stakeholder Analysis



# Stakeholder Groups

## Feasibility & Concept phases

CA Technical  
Committee & Contract  
Management

Software Tools (Design,  
LCA, etc.)

CAJU

Environmental Database  
Suppliers

Chief Engineer  
Representatives

Stakeholders responsible  
for specific Technology  
Developments on  
component level

SMR Demo Project  
Leaders

SMR ACAP Partners  
(*this project*)

Stakeholders defining and  
integrating the developed  
technologies into a design  
solution

Technology  
Development Partners  
(SMR Projects Pillar)

Public Policy-Makers

## Design & Industrial phases

(Design / Development)  
Process Owner

Manufacturing Engineering  
Department / Industrial  
Architects

Environmental Process Owner

Specific Manufacturing and  
Assembly Definition  
Sites/Facilities

Overall A/C Design (OAD) /  
Architecture & Integration

Environmental Engineers in  
Manufacturing / Plants

Design Office & M&P  
(Material & Processes)

Chief Engineering /  
Architecture & Integration of  
Development A/C

Specific Designers /  
Development Engineers

Standard Parts Supplier

Environmental Engineers /  
Departments

Procurement Teams

Single Part Suppliers

Raw Material Suppliers

(Major) Component Suppliers

## MRO Integration phases

Airline, including Passengers  
Wishes (Marketing)

MRO Provider (Operational)

Aircraft Manufacturer Program

Regulators / Standards

Spare Parts Providers (Logistics)

Components Manufacturer (Repair  
Parts, Manufactured by MRO)

Recycler

# Roles

Source: Berlin, C., Bligård, L.-O., Babapour Chafi, M., Eriksson, S. (2022). Development of a stakeholder identification and analysis method for human factors integration in work system design interventions – Change Agent Infrastructure. *Human Factors and Ergonomics In Manufacturing* 32(1), pp. 151-170. <https://doi.org/10.1002/hfm.20910>

## Initiators

- Bring attention to the underlying need for change
- Place the problem on the official agenda to be dealt with

## Sponsors

- Not directly affected by or active in the intervention
- Maintain and support the legitimacy of the intervention, morally or with resources, and keep it on the agenda

## Subjects

- Actors who are recipients of the intervention, and whose operations are directly affected by both the original problem (if left unresolved) and the proposed change.

## Documenters

- Document the problem formulation, requirements, decisions made, quality criteria and/or the design/execution of the intervention

## Convincers

- Use evidence (e.g., statistics, measurements, studies, reports) to convince other actors that there is a legitimate need for action and that change is required.

## Change owners

- Assigned legitimate ownership of the problem or intervention, and ensure that the problem is resolved
- Determine when the intervention (from **Solution builders**) is sufficiently implemented.

## Solution builders

- Responsible for examining, advising on, and eventually solving the problem
- Contribute wholly or partly to the design and implementation of the intervention

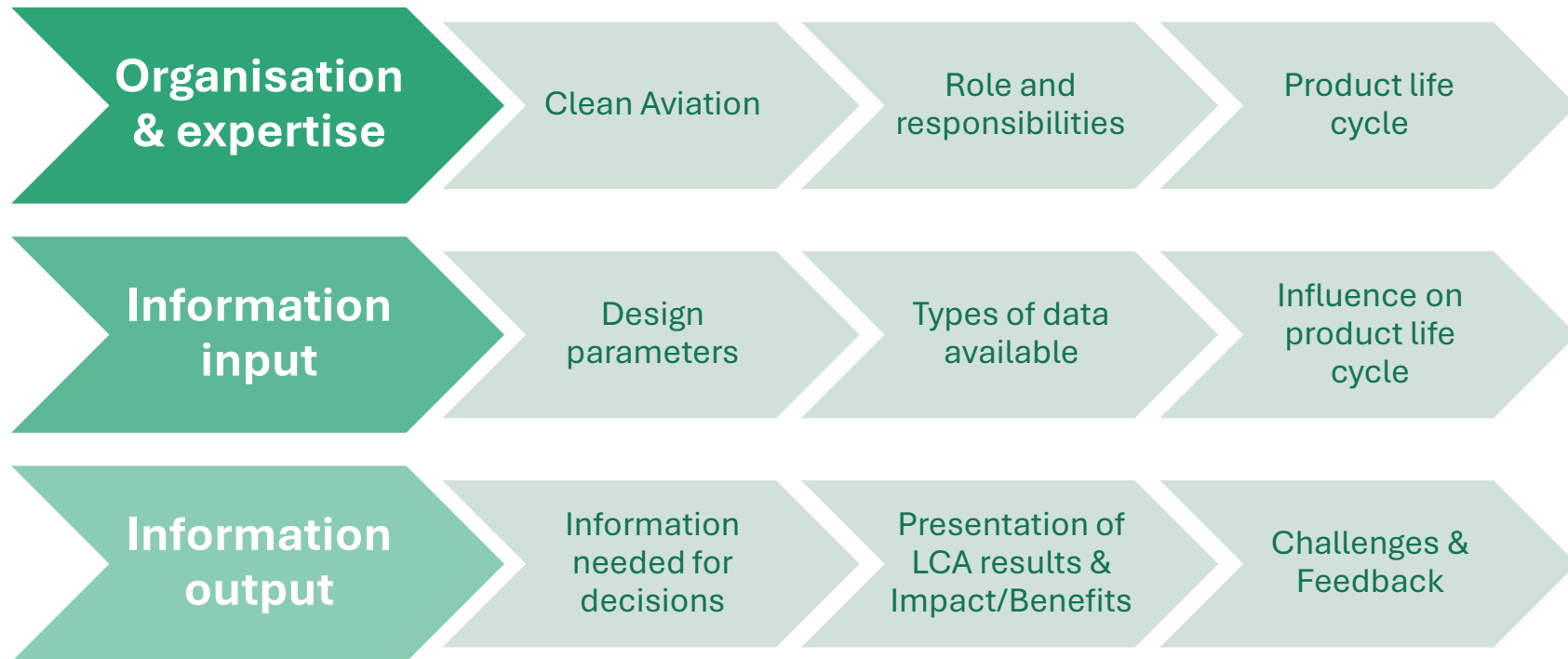
## Blockers

- Inhibit the proposed change due to threat or conflict of interest
- May hinder the intervention, or may withhold access, resources, or contacts needed to proceed

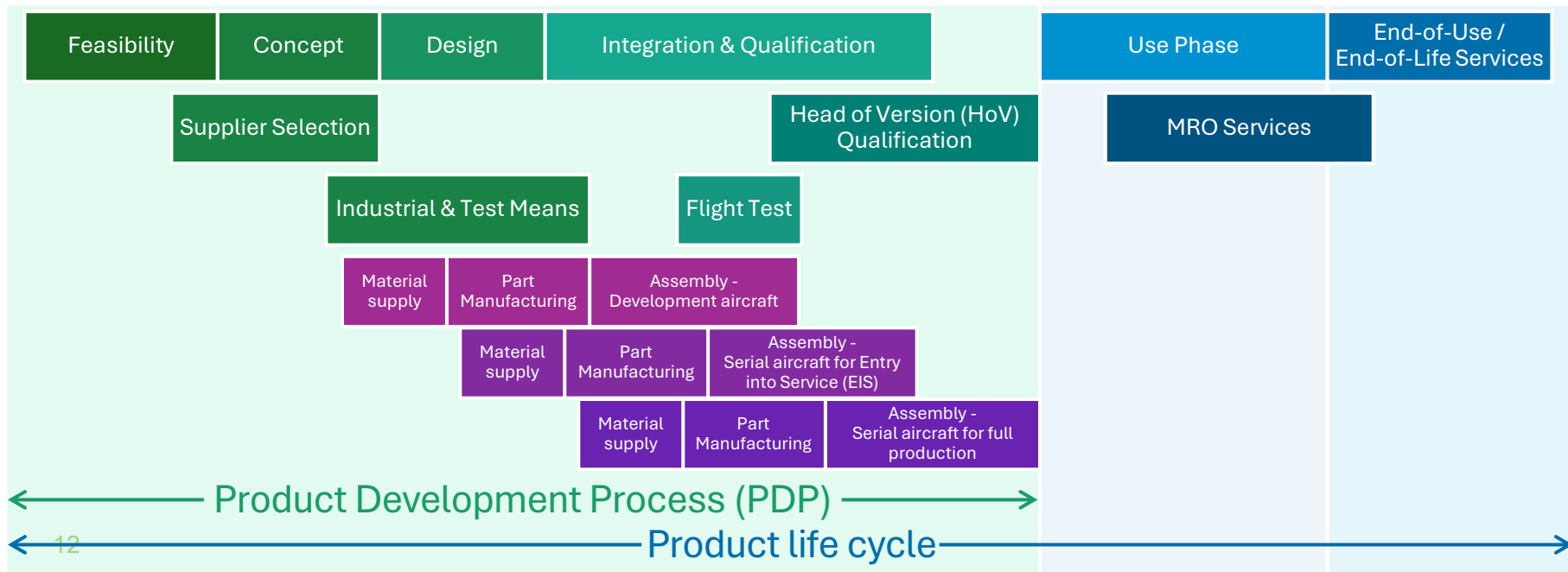
# Information Requirements



# Survey Structure



# The Product Development Process and Life Cycle Stages



# LCA Insights, Impact & Benefits

## Insights from LCA results

- Environmental hotspots
- Comparative LCA results
- Contribution of specific parameters/decisions
- Uncertainty / Sensitivity analysis (robustness)
- Etc.

## Areas of impact

- Material/energy sourcing and efficiency
- Waste management and pollution prevention
- Logistics / Supply chain optimization
- Circularity
- Etc.

# Invitation to Participate to the Survey



<https://forms.office.com/e/eYitRxK9Ku>





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