



Aeronautical Taxonomy Report

PAE-ATX-REP-01/03

July 2017



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Configuration Control

Document	Issue	Modifications
PAE-ATX-REP-01/01	01 Rev 01	Initial issue (July 2017 - 24 pages)
PAE-ATX-REP-01/02	01 Rev 02	Small changes and mistakes corrected from version 1.1 (July 2017- 24 pages)
PAE-ATX-REP-01/03	01 Rev 03	List of contributors added (July 2017 – 25 pages)

This report summarizes the PAE's proposed taxonomy for Aeronautical (Aeronautics + Aviation in the same terms defined by [ACARE](#)) with the following main objectives:

1. Having a common understanding and language to define our Strategic Research Agenda (commonly accepted definitions of technologies).
2. Classifying the entries in our Catalogue of Capabilities and Infrastructures.
3. Obtaining, by analysis of the classified information, a better knowledge of our needs and capabilities to do research and taking better decisions.

The report is divided in two parts: the overview of the different levels of the taxonomy (main branches) contained in the present document, and the detailed description of all the branches contained in the Annex.

There is a similar document defining the PAE-SPACETAXONOMY.

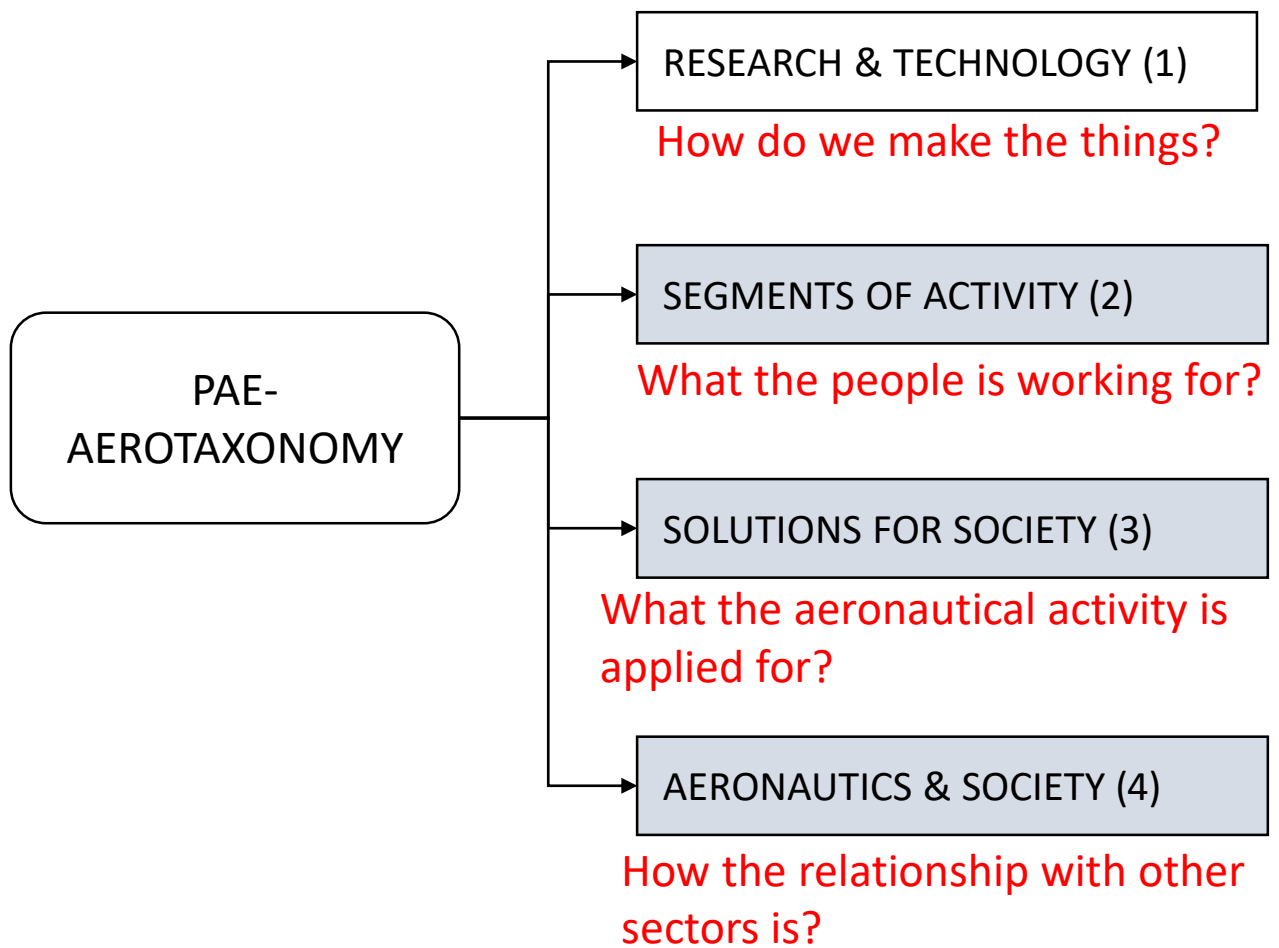
The following references have been used to prepare this document:

R1. [NLR-CR-2002-688 "ACARE Taxonomy A common European taxonomy for aeronautical research & technology"](#) published in January 2003 and used as the basis for the Research & Technology part of the AEROTAXONOMY. An alternative link can be found in the easn (European Aeronautics Science Network) that has the [ASTERA taxonomy for aeronautical R&T](#)

R2. ["Technology Roadmap of SMART", the Eureka Advanced Manufacturing Program, draft 2, published in January 13th, 2017](#) and used in part as a guide for the "New Industry paradigms for space manufacturing " part of the SPACETAXONOMY

R3 ["North American Industry Classification System", United States 2017](#)

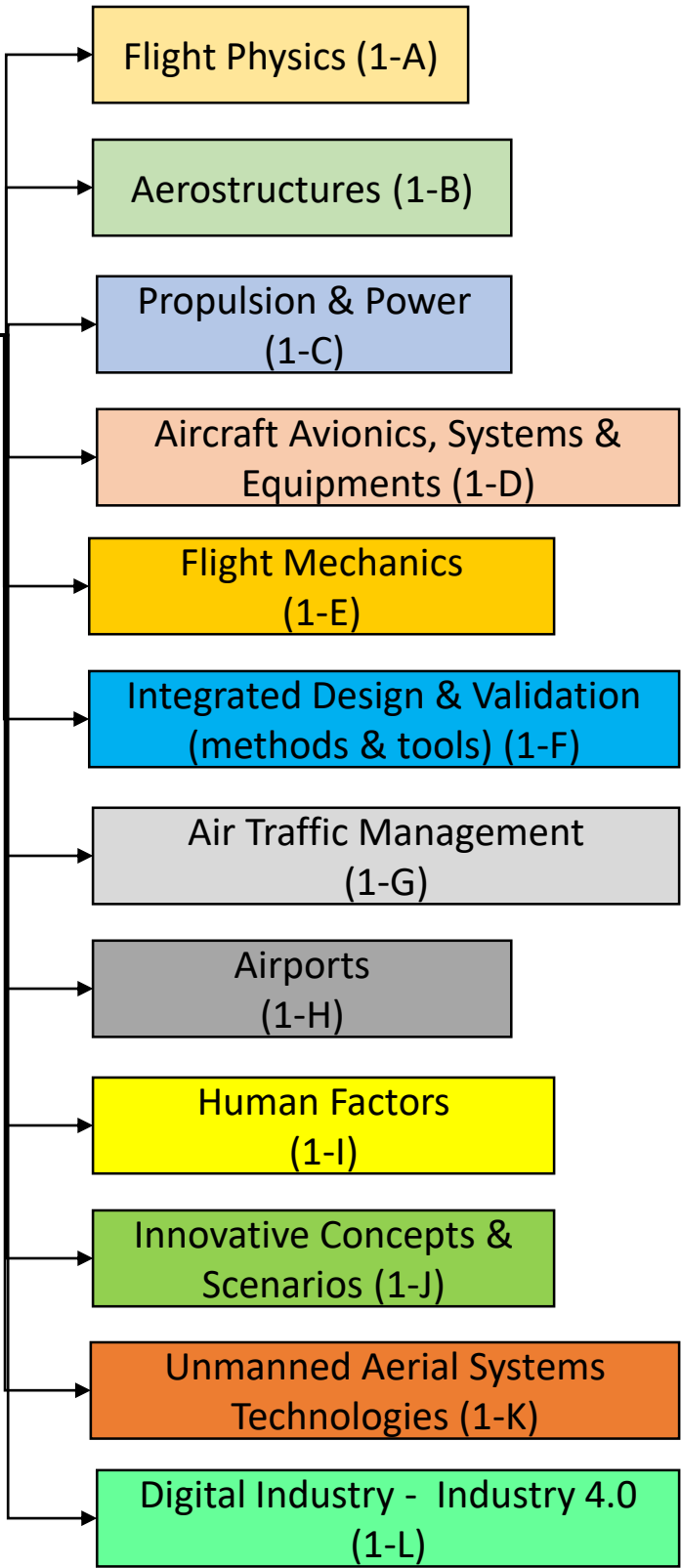
R4 ["REGULATION \(EC\) No 1893/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 20 December 2006](#) establishing the statistical classification of economic activities"



RESEARCH & TECHNOLOGY (1)

How do we make the things ?

We start knowing the environment (1A), then we need a the skeleton (1B). Propulsion is needed at least to take-off (1C), then Equipments and Systems with their connections (1D) and control and maintain the flight path (1-E) and, aircrafts must be designed and validated as a whole (1F).
 The air traffic must be controlled (1G) and adequate airports must be provided (1H).
 Human factors must always be taken into account (1-I)
 Innovative aerial systems are continuously developed (1J)
 Nowadays we are specially involved in development of unmanned systems (1K).
 Digitalization of industrial processes is crucial also in aeronautics (1L)

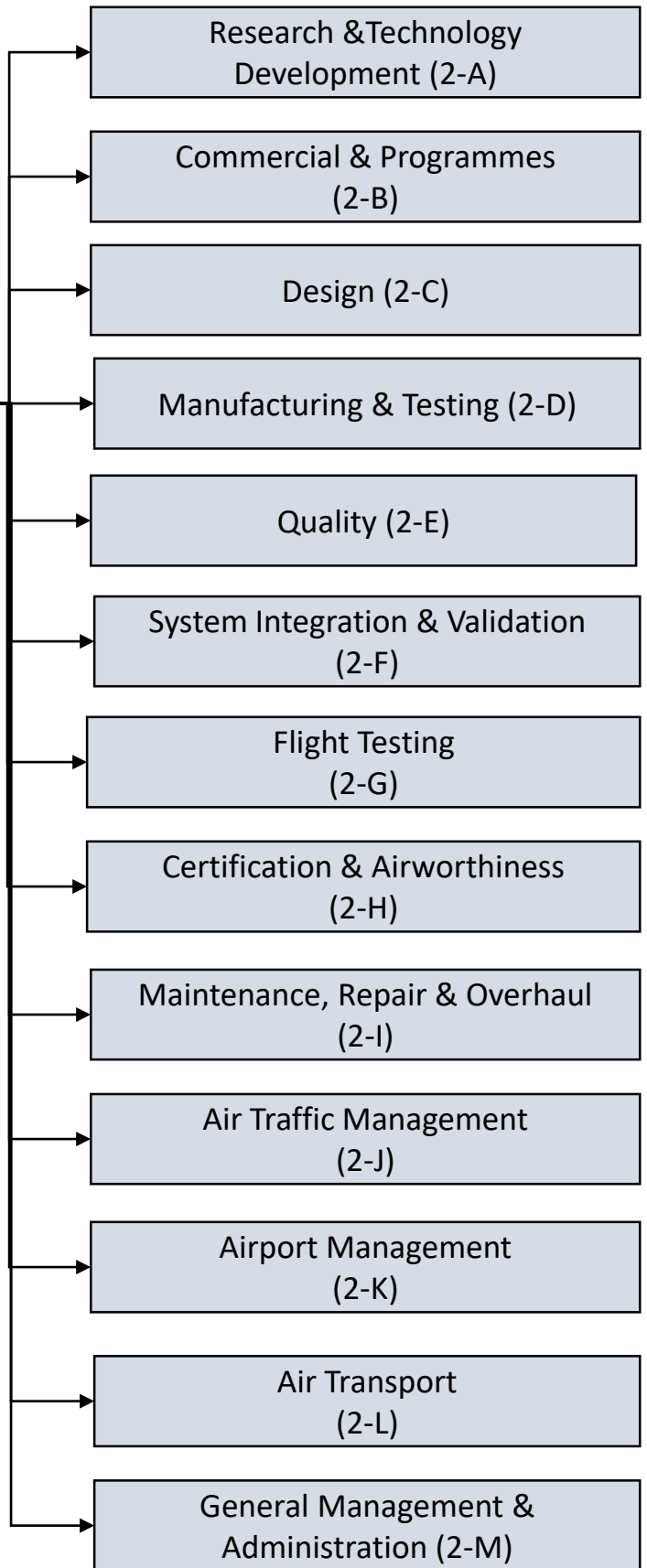


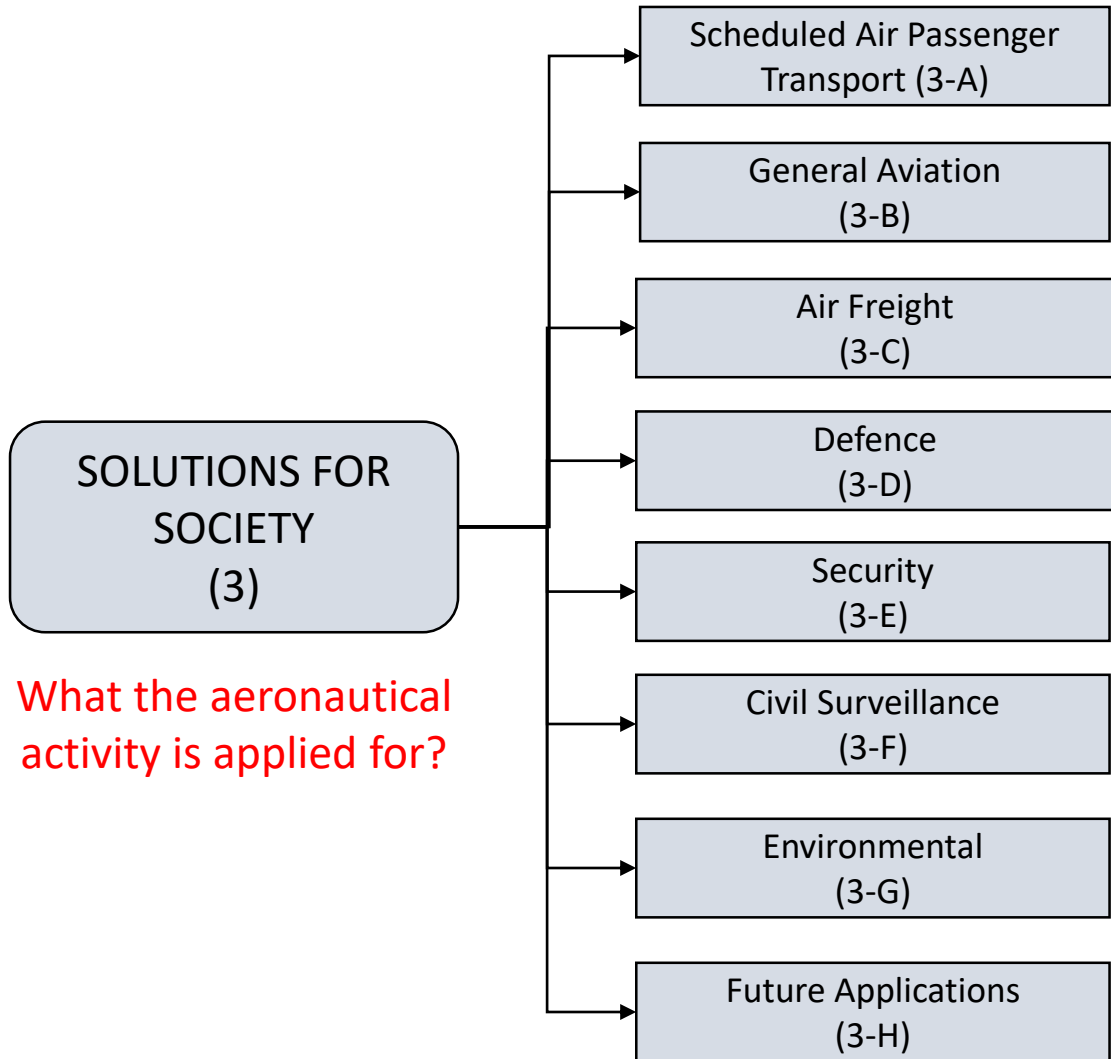
**SEGMENTS OF
 ACTIVITY
 (2)**

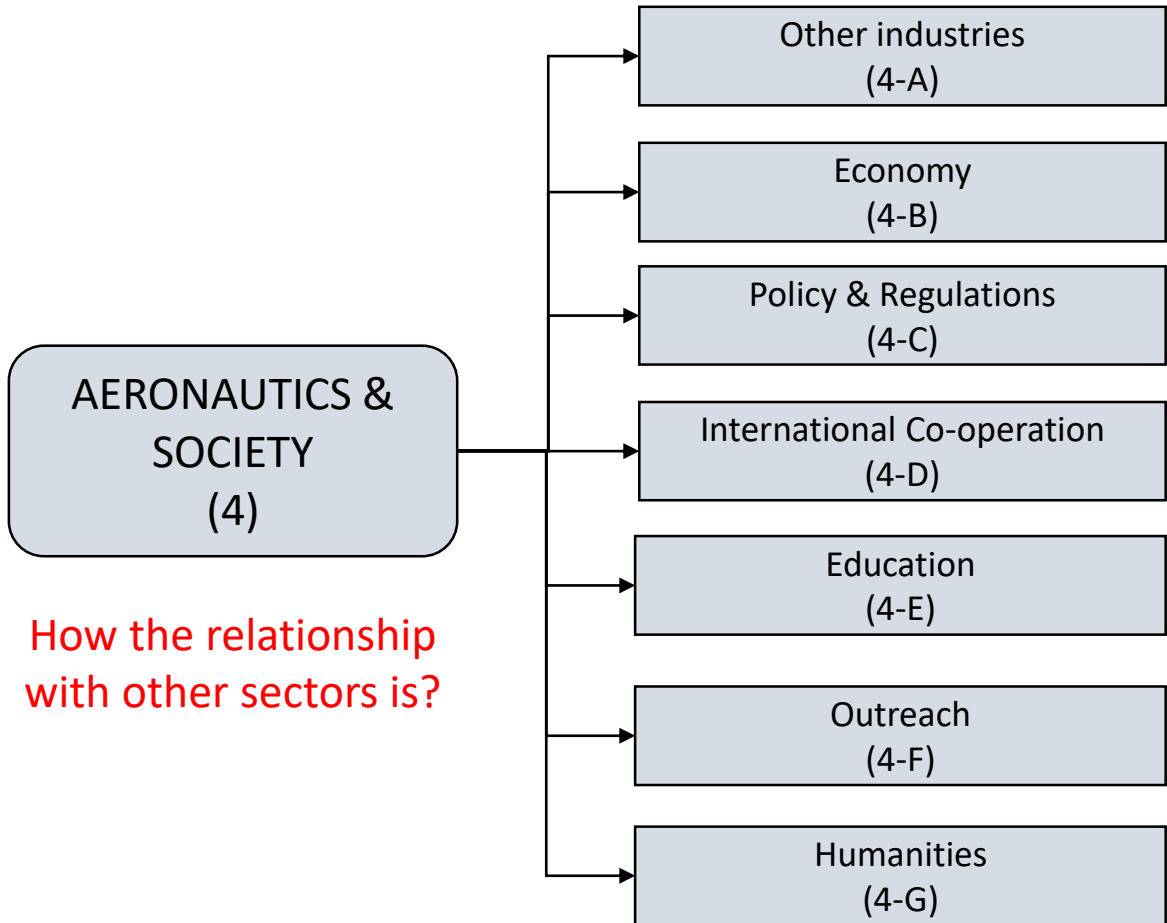
**What the people
 is working for?**

People can work in one or several of the following fields:

- Doing RTD for aviation (2A)
- Managing programs (2B)
- Selling or studying the market (2B)
- Designing aviation systems or subsystems (2C)
- Manufacturing and testing aviation elements (2D)
- Assuring the quality (2E)
- Integrating and validating aviation elements into systems (2F)
- Doing Flight Testing (2G)
- Running certification & airworthiness activities (2H)
- Doing maintenance, repair and overhaul of aviation systems (2I)
- Doing air traffic management(2J)
- Doing airport management(2K)
- Providing air transportation services (2L)
- Doing general management & administration (2M)

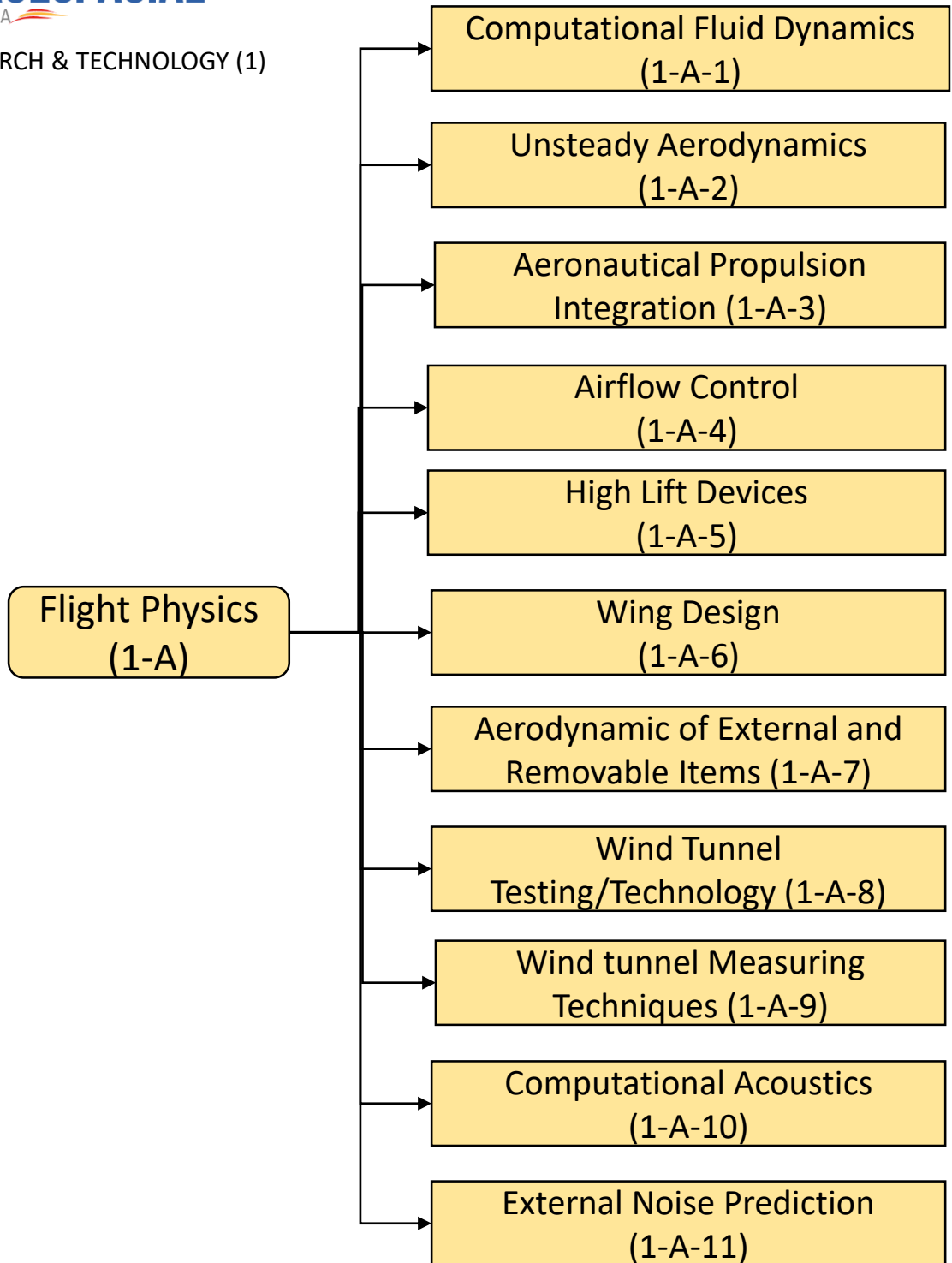




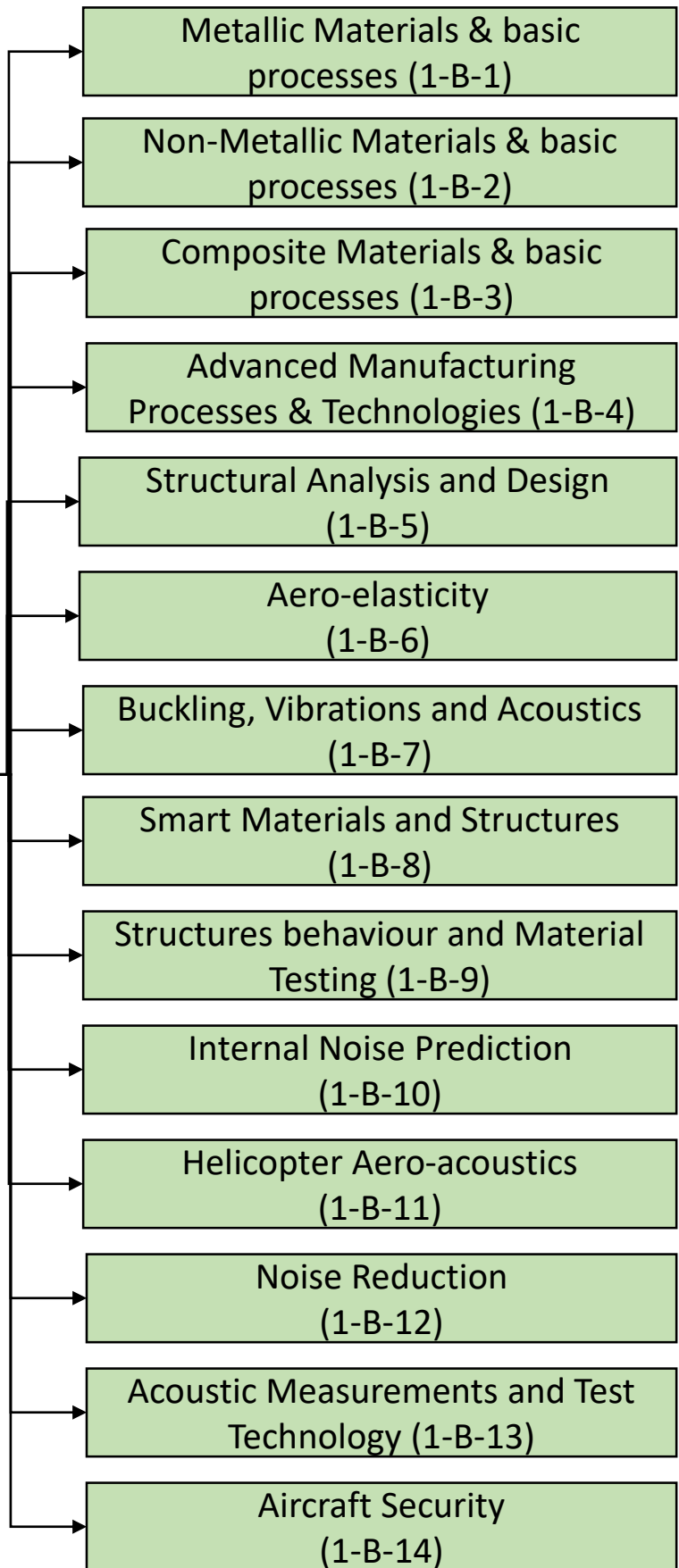


RESEARCH &
TECHNOLOGY
(1)

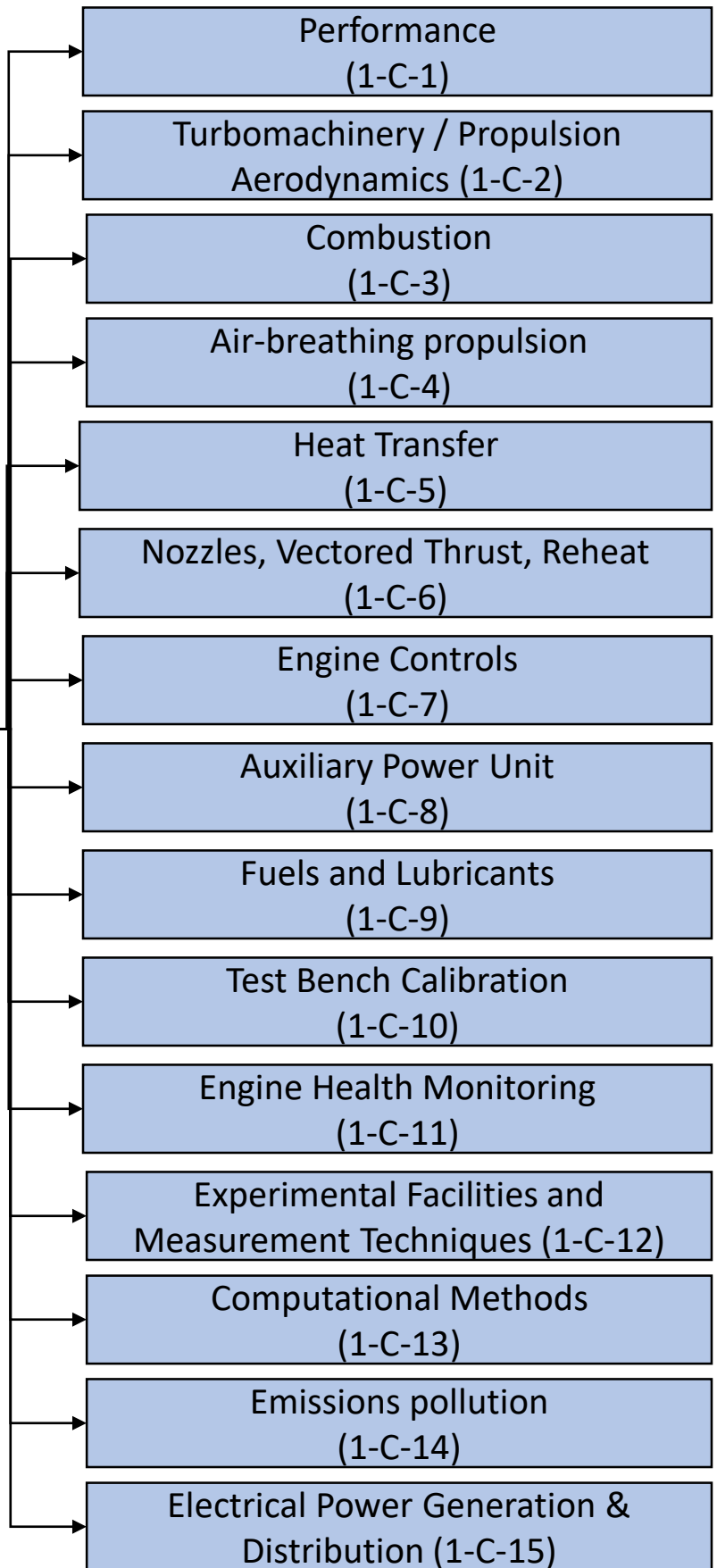
How do we make the things?

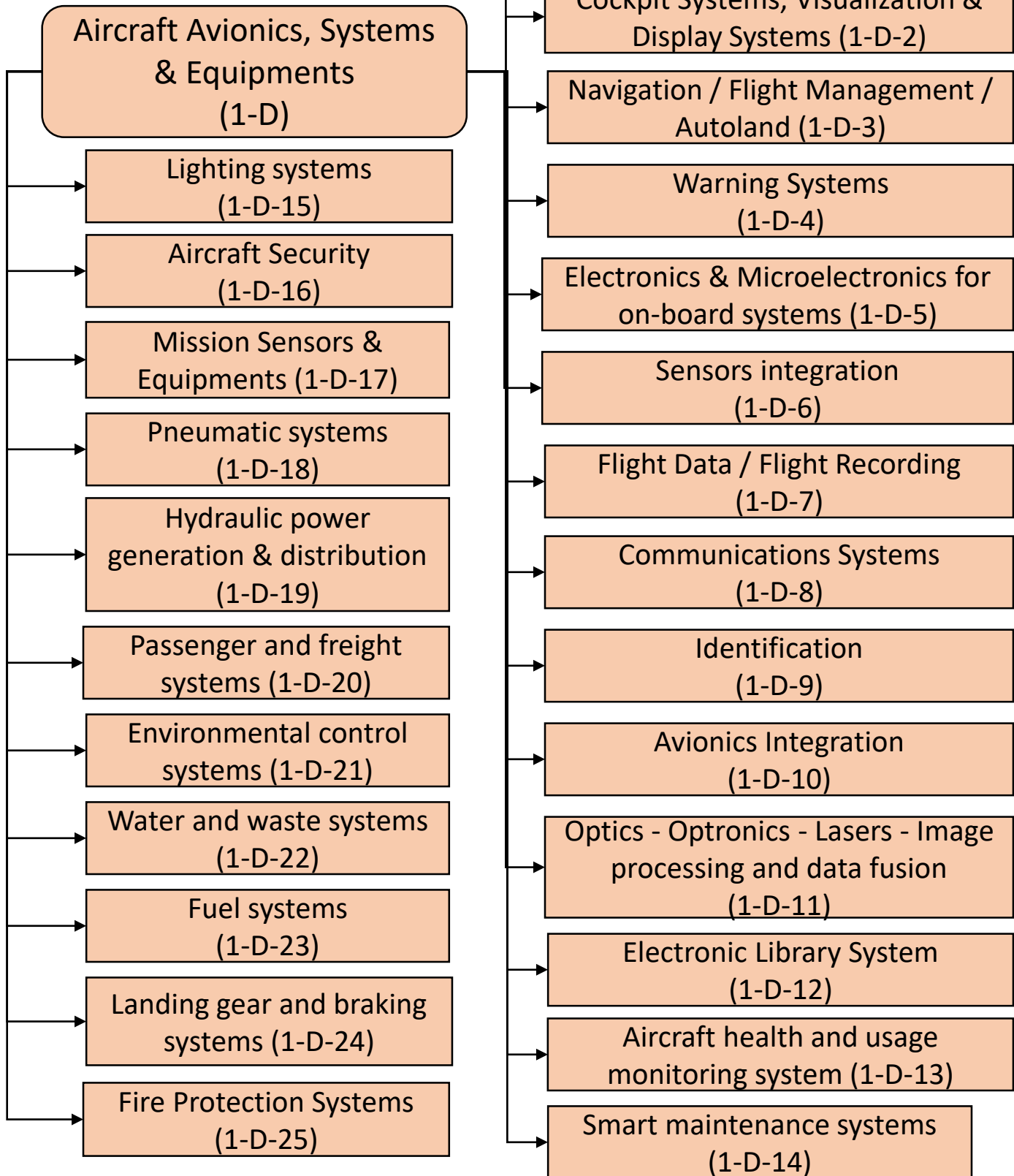


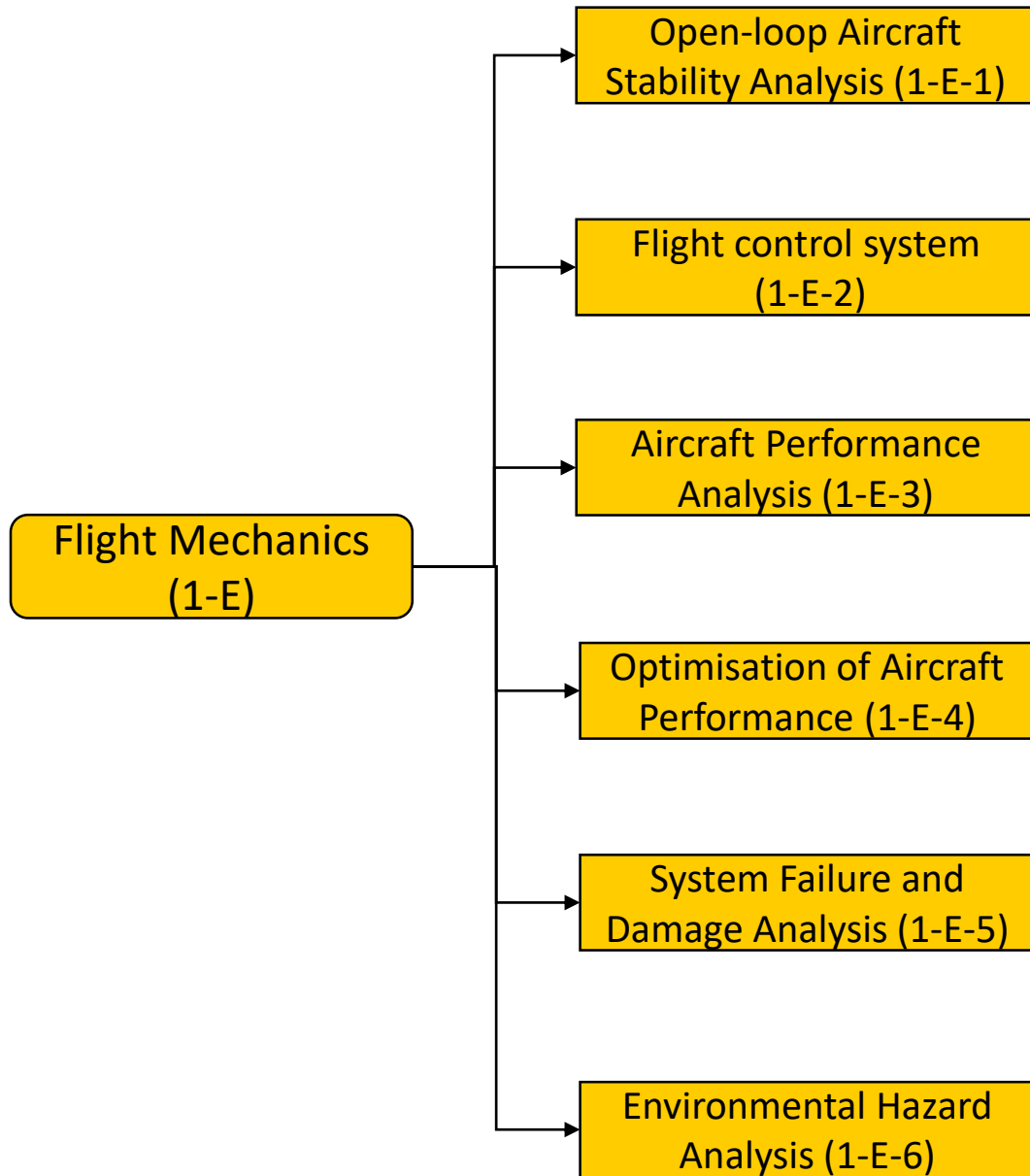
**Aerostructures
(1-B)**



**Propulsion &
Power
(1-C)**







Integrated Design and Validation (methods & tools) (1-F)

Information management & Knowledge management (Methods & tools) (1-F-19)

Autonomous operation (1-F-20)

Aeronautical Software Engineering (1-F-21)

Development of operational research methods & tools (1-F-22)

Development of synthetic environment & virtual reality tools (1-F-23)

Aircraft performance assessment (1-F-24)

Airport performance assessment (1-F-25)

Business modelling (1-F-26)

Numerical Models (including Fast Time Simulation) (1-F-27)

Real Time Simulators (1-F-28)

General Purpose Equipment (1-F-29)

Reference Data for R&D Use and live/RT data Use (1-F-30)

Methodology (Validation) (1-F-31)

Large scale validation Experiments (1-F-32)

Large scale validation Platforms (1-F-33)

Methods and IT tools for Collaborative Product & Process Engineering (1-F-1)

On-board systems engineering (1-F-2)

Environmental and EM compliance engineering process (1-F-3)

Flight / Ground Tests (1-F-4)

Life-cycle Integration (1-F-5)

System Certification (1-F-6)

Fault Tolerant Systems (1-F-7)

Hazard Analysis (1-F-8)

Safety modelling (1-F-9)

Air Safety Data analysis (1-F-10)

System reliability (1-F-11)

Security / Risk analysis (1-F-12)

Maintenance modelling (1-F-13)

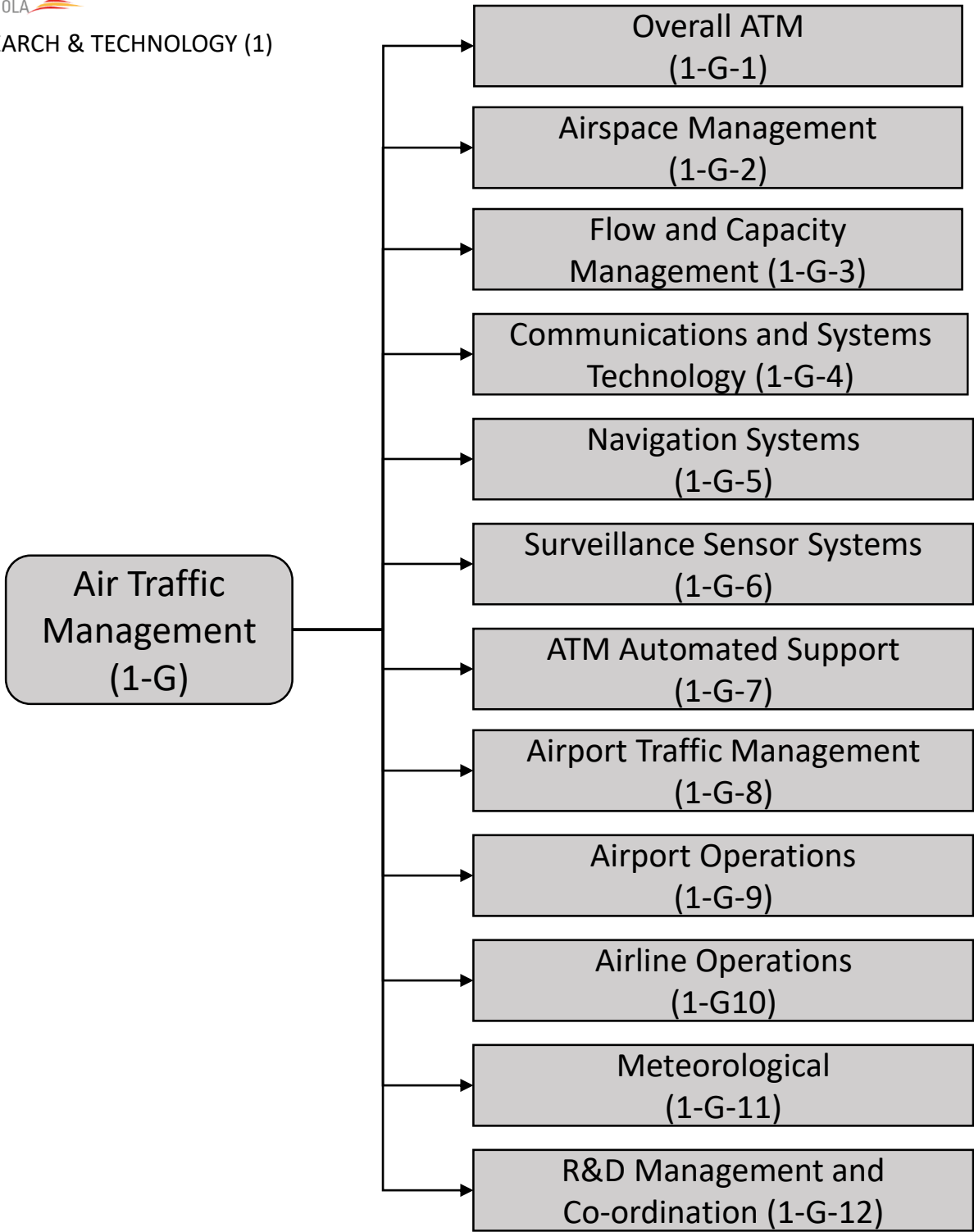
Infra-red and Radar Signature Control (1-F-14)

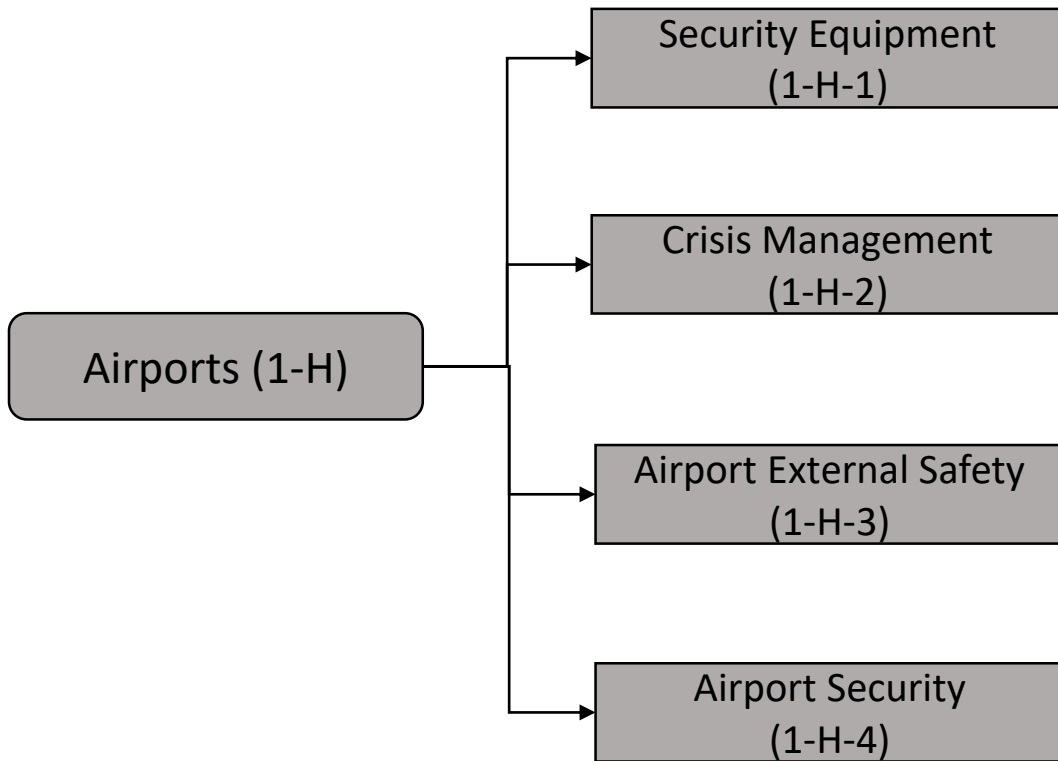
Advanced information processing (1-F-15)

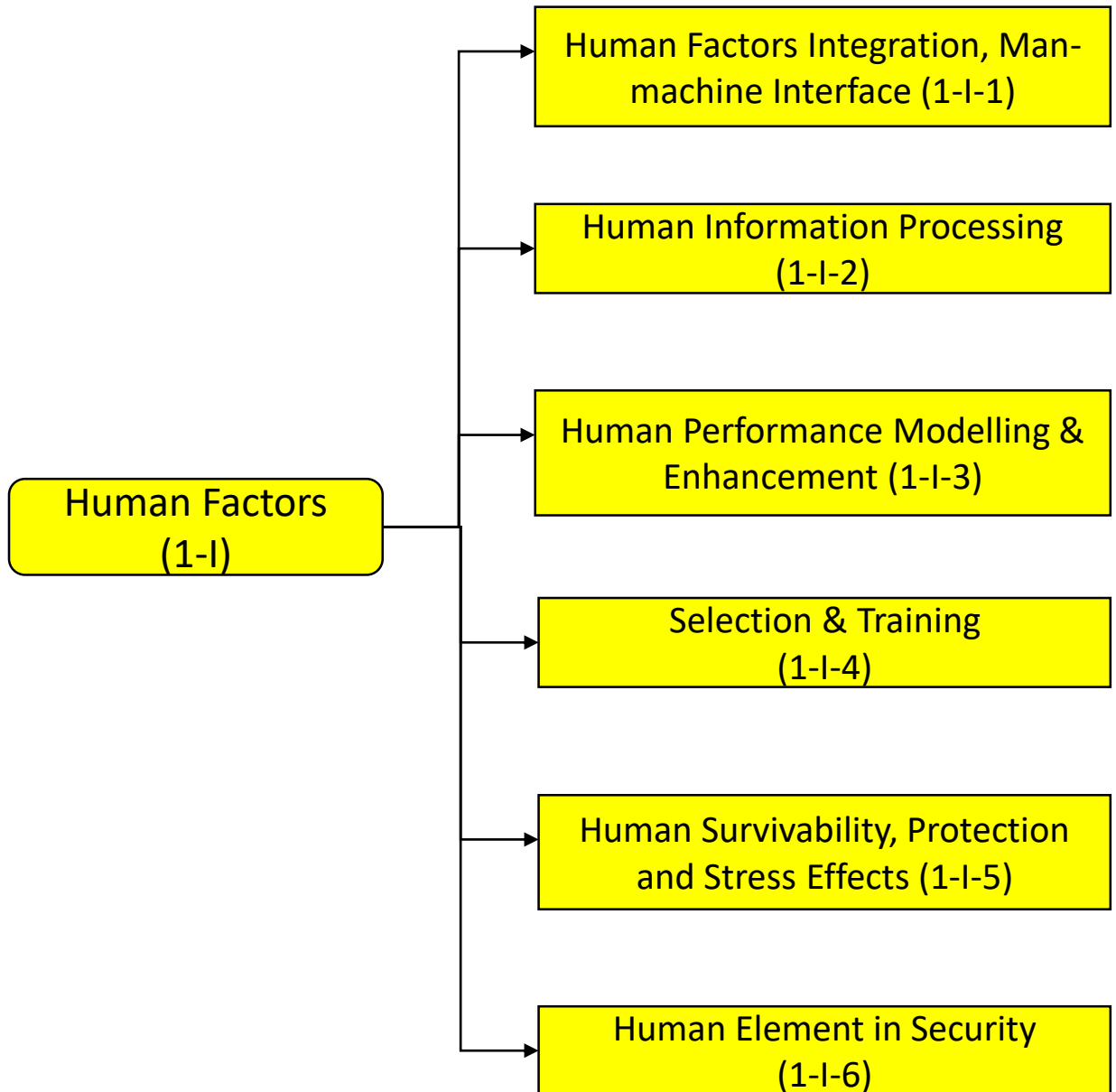
Collaborative Decision Making (1-F-16)

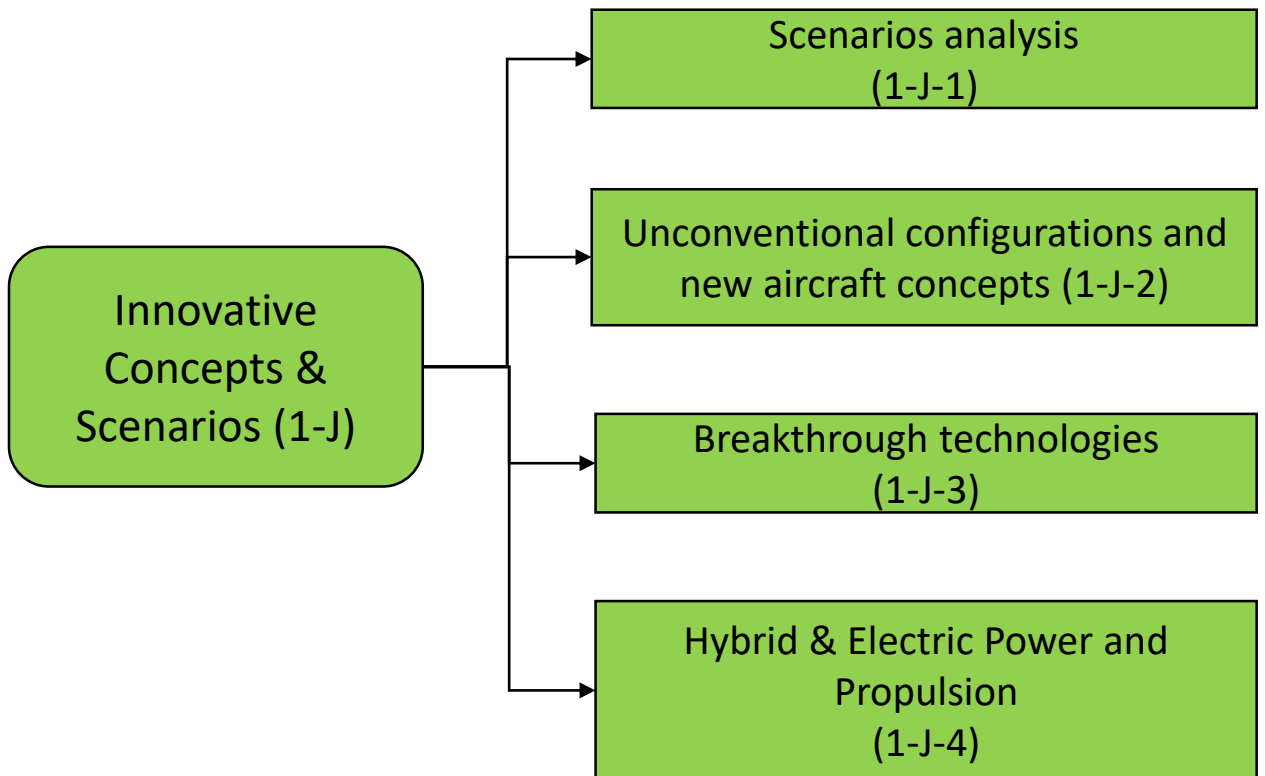
Simulator environments & Virtual reality (1-F-17)

Decision Support Systems (1-F-18)

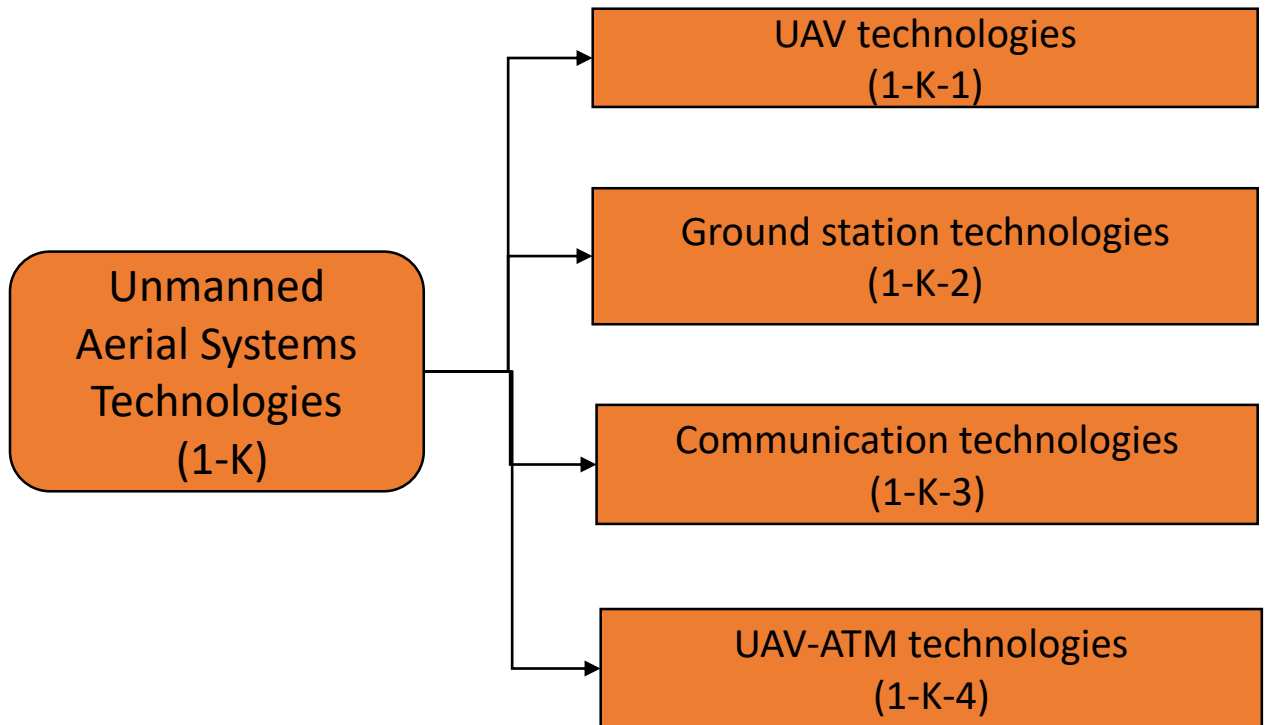


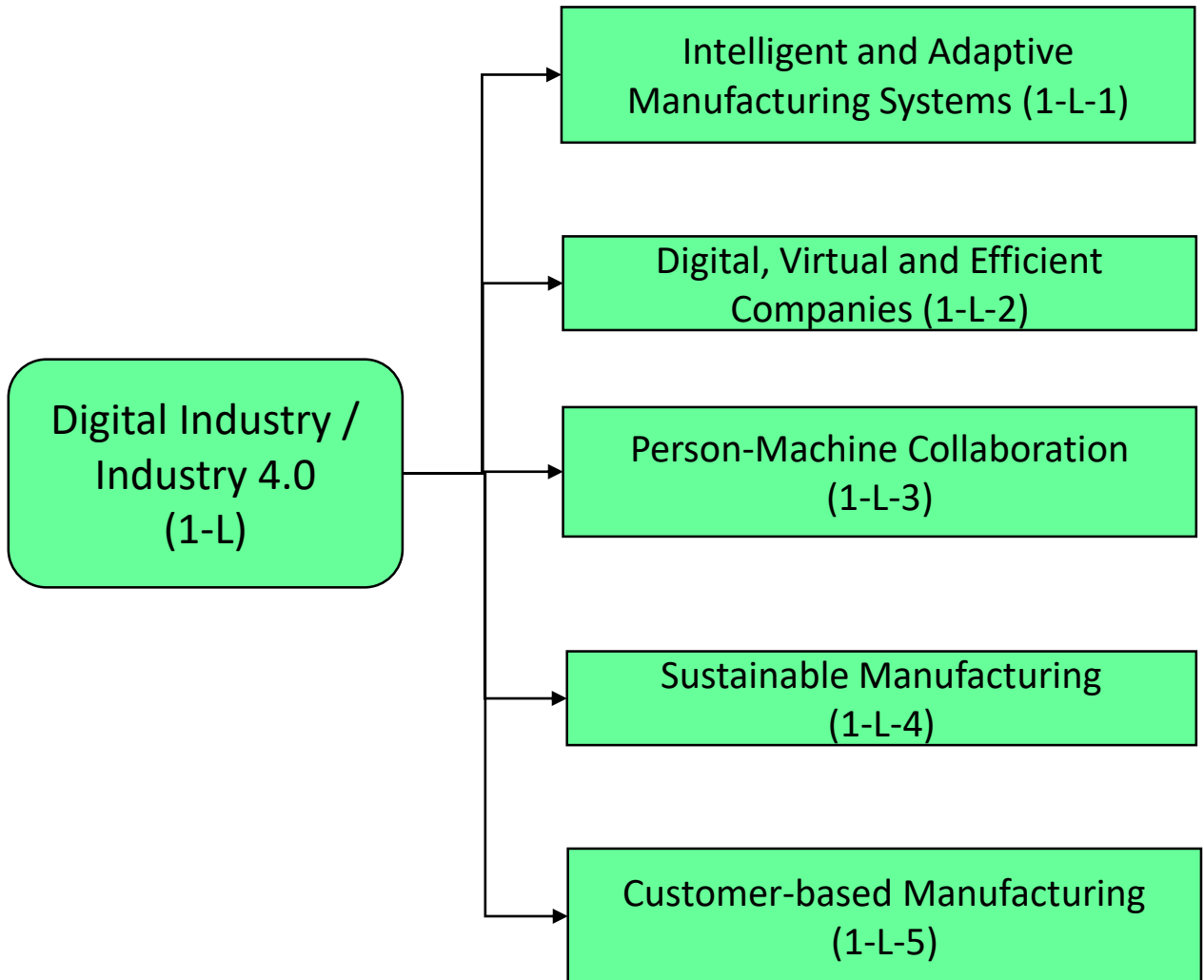






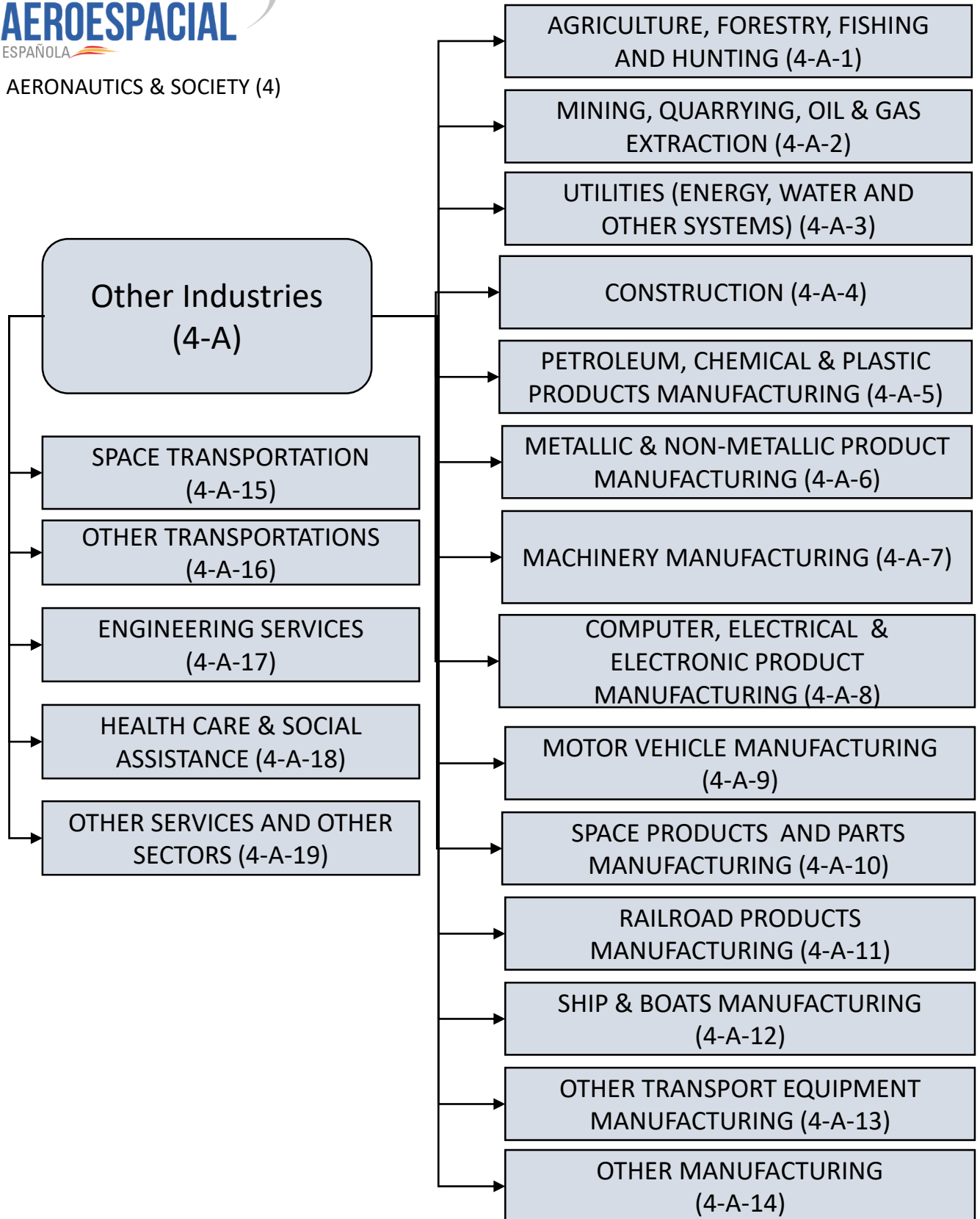
RESEARCH & TECHNOLOGY (1)





AERONAUTICS
& SOCIETY
(4)

How the relationship
with other sectors is?



In the elaboration of the present issue of the PAE's taxonomies have participated the following entities and persons:



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