AW DRONES

Performance-Based Regulation: role of industrial standards & meta-standard by AW-Drones

Filippo Tomasello, Marco Ducci

10th EASN Virtual International Conference

This project has received funding from European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No°824292.

Rules and standards

- Today EASA and FAA often refer to **“voluntary” industry standards** in their regulatory material
  - E.g. in “Book 2” of Certification Specifications
  - And in a huge number of FAA Technical Standard Order (TSO) or EASA European TSO (ETSO) for equipment
- All these standards are not binding, but, if used, constitute a **presumption of compliance with the rules = Acceptable Means of Compliance (AMC)**
- Several are published by **ASTM, EUROCAE, ISO, RTCA or SAE** = Standard Development Organisations (SDOs)

This project has received funding from European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No°824292.

Performance Based Regulation

The philosophy: performance-based rules

- First layer: **political objectives** covering safety, security, privacy & data protection, environment
- Second layer: **performance-based requirements** setting safety targets and performance levels plus administrative processes, responsibilities, privileges
- **Third layer: industry standards** = methods delivering targets & performance levels

Legislator

JARUS/EASA/CAA

Standard Development Organisations (SDO)

Most prominent current example: Book 2 EASA CS-23 (Amdt 5)

AW-DRONES Metastandard

This project
Horizon 2020 Research and Innovation
Grant Agreement No°824292.

Standards and EASA rules

Industry standards beyond scope of EASA Regulations

(e.g. Code of Conduct for Privacy; cyber-security of operator)

- **EU/EASA Regulations (Rules) for civil drones**
- **Performance & Risk-Based**

Industry standards supporting (AMC) EU/EASA Regulations,

Inside EU

Industry standards applicable globally (beyond geographical scope of EU/EASA)

Independent 3rd Party certification supporting SORA high level of assurance

This project has received funding from European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No°824292.

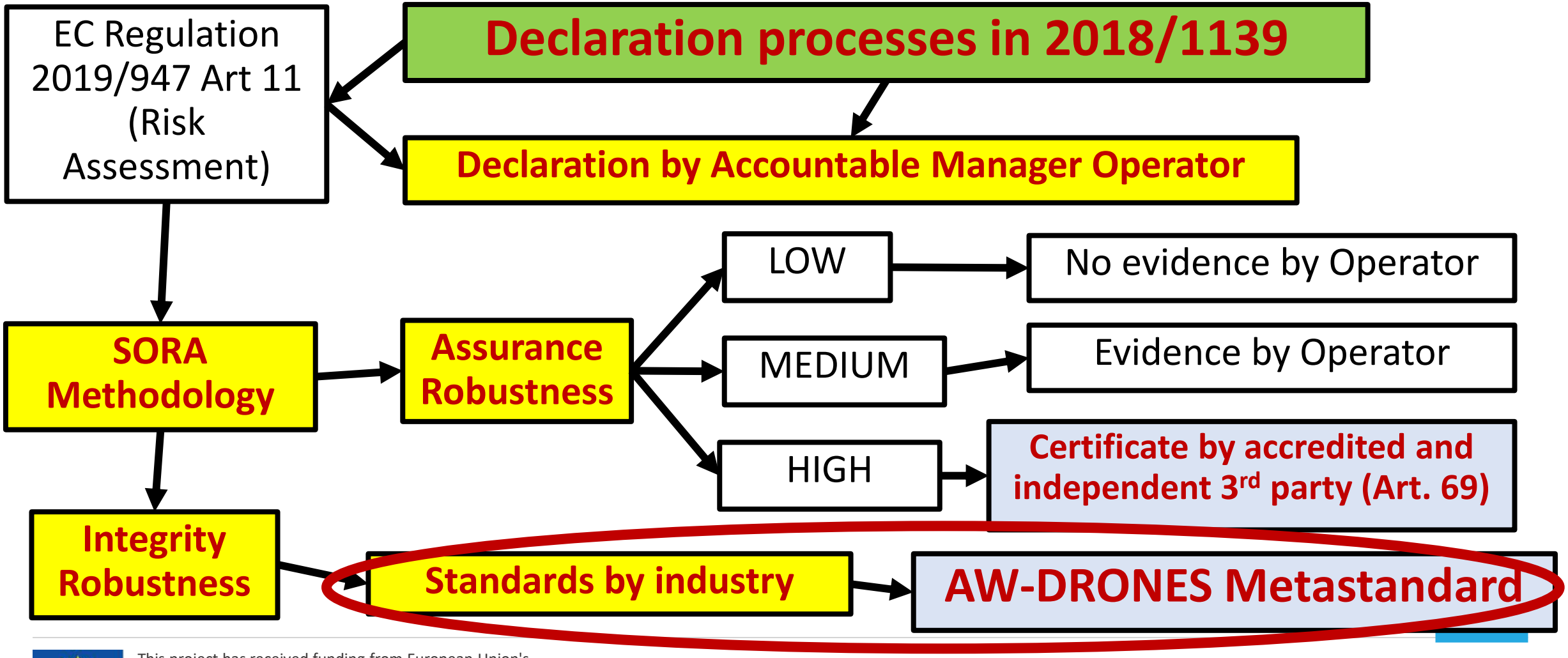
How to find “my” standard in the jungle?

- Industry standard-making bodies are developing …
  several hundreds of standards for drones
- Not immediate and easy to establish relationship between these standards and
  - Applicable EU/EASA rules
  - Categories of UAS operation (open; specific; certified)
  - **Inside specific category, with SORA integrity levels**
- Information difficult to trace, “digest” and consult
- Difficult to assess whether a standard is applicable to “my” case

SORA tells which “mitigations” UAS operator should implement … nothing about list of applicable standards

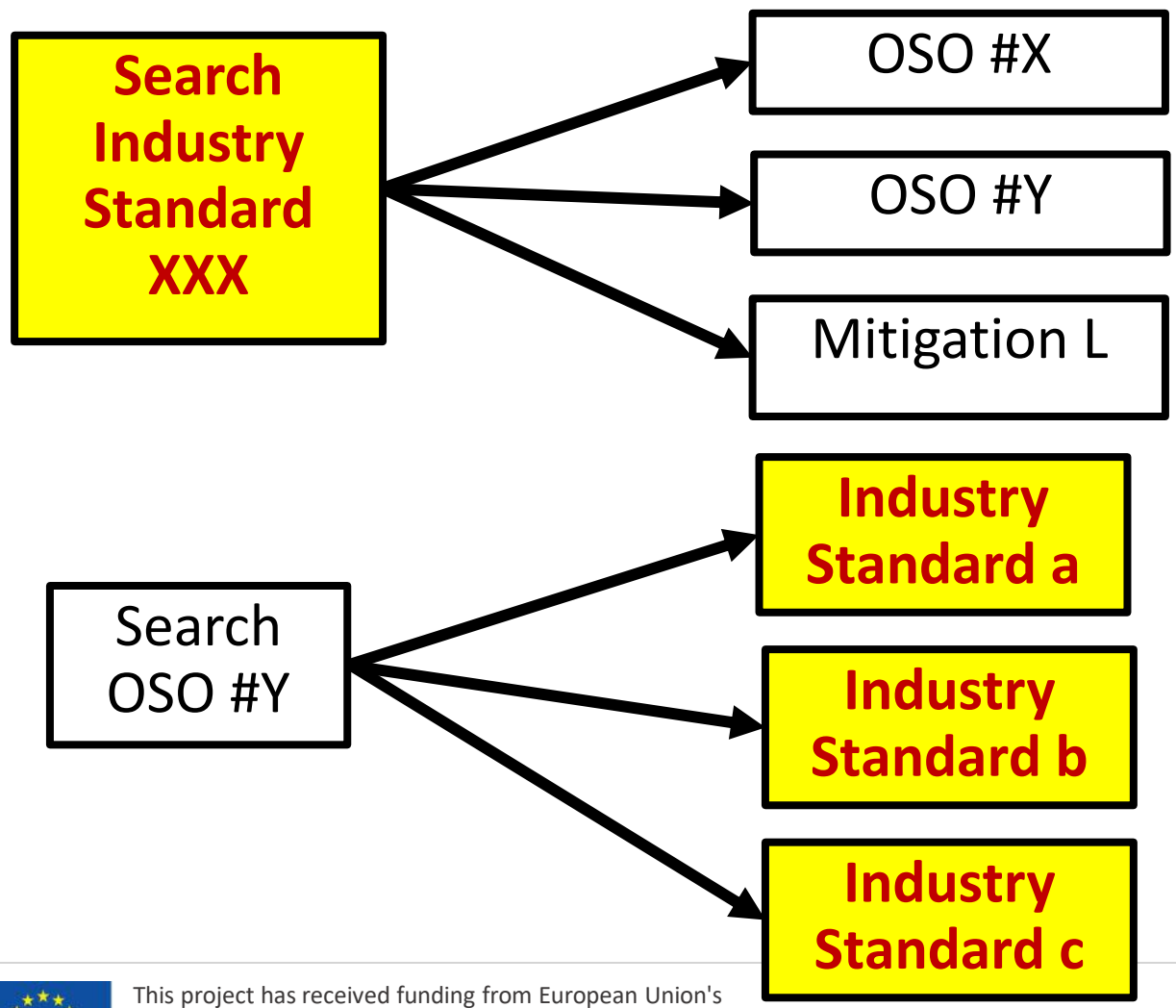
This project has received funding from European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No°824292.

PBR & RBR – UAS Specific category



This project has received funding from European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No°824292.

Metastandard – two directions to enter



- Digital metastandard, would allow searching from “two directions”
- Searching a standard and finding to which OSOs/mitigations it may contribute (with which integrity robustness)
- Searching an OSOs/mitigation and finding which standards may contribute to it (with which integrity robustness)
- **Not limited to airworthiness = also OPS, personnel competency and all other domains covered**

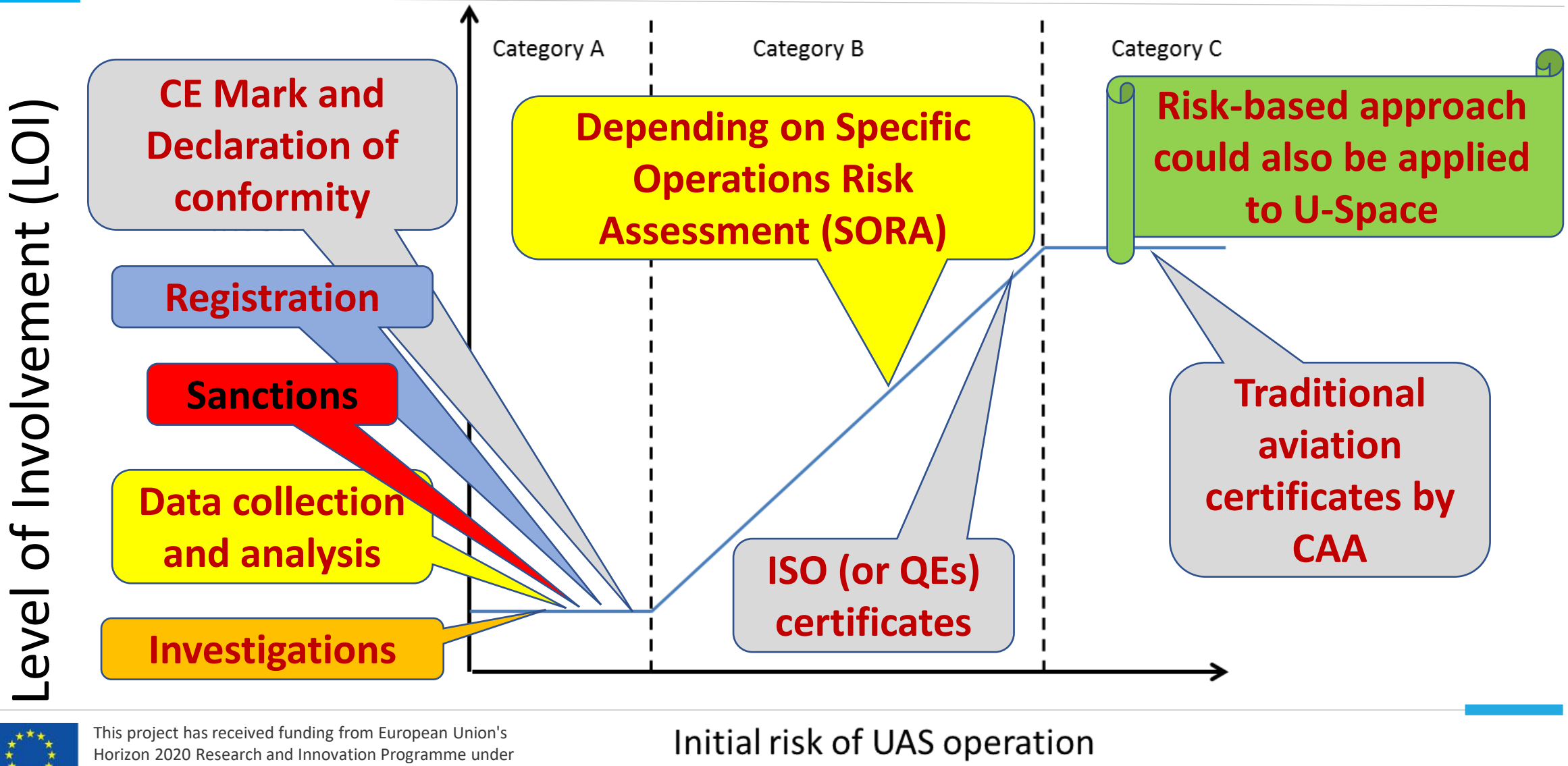
This project has received funding from European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No°824292.

Example

- **SORA OSO 8,11,14,21: Operational procedures**
- Integrity requirements on:
  - Procedure definition
  - Complexity
  - Consideration of Potential Human Error
- Several standards potentially suitable to develop procedures compliant with SORA requirements
- A reference standard is needed for Medium/High robustness levels
- **ISO 21384-3: Operational Procedures** identified by AW-Drones as the most suitable

This project has received funding from European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No°824292.

Risk-based Regulation



This project has received funding from European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No°824292.

Accredited, competent, independent 3rd party

- Annex E to SORA, in case of high assurance robustness, often requires attestation of conformity issued by a “competent 3rd party”
- In EU legislation these 3rd parties need also to be:
  - Independent from manufacturers, operators, maintenance org., etc.
  - Accredited by a public authority
- Current EU Regulations establish **only** two types of such parties:
  - **Conformity Assessment bodies** (alias Notified bodies), accredited by market surveillance authorities, based on Reg. 765/2008 = ISO certifying bodies
  - **Qualified Entities** accredited by aviation authorities (Art. 69 2018/1139) … however no common detailed rules yet available

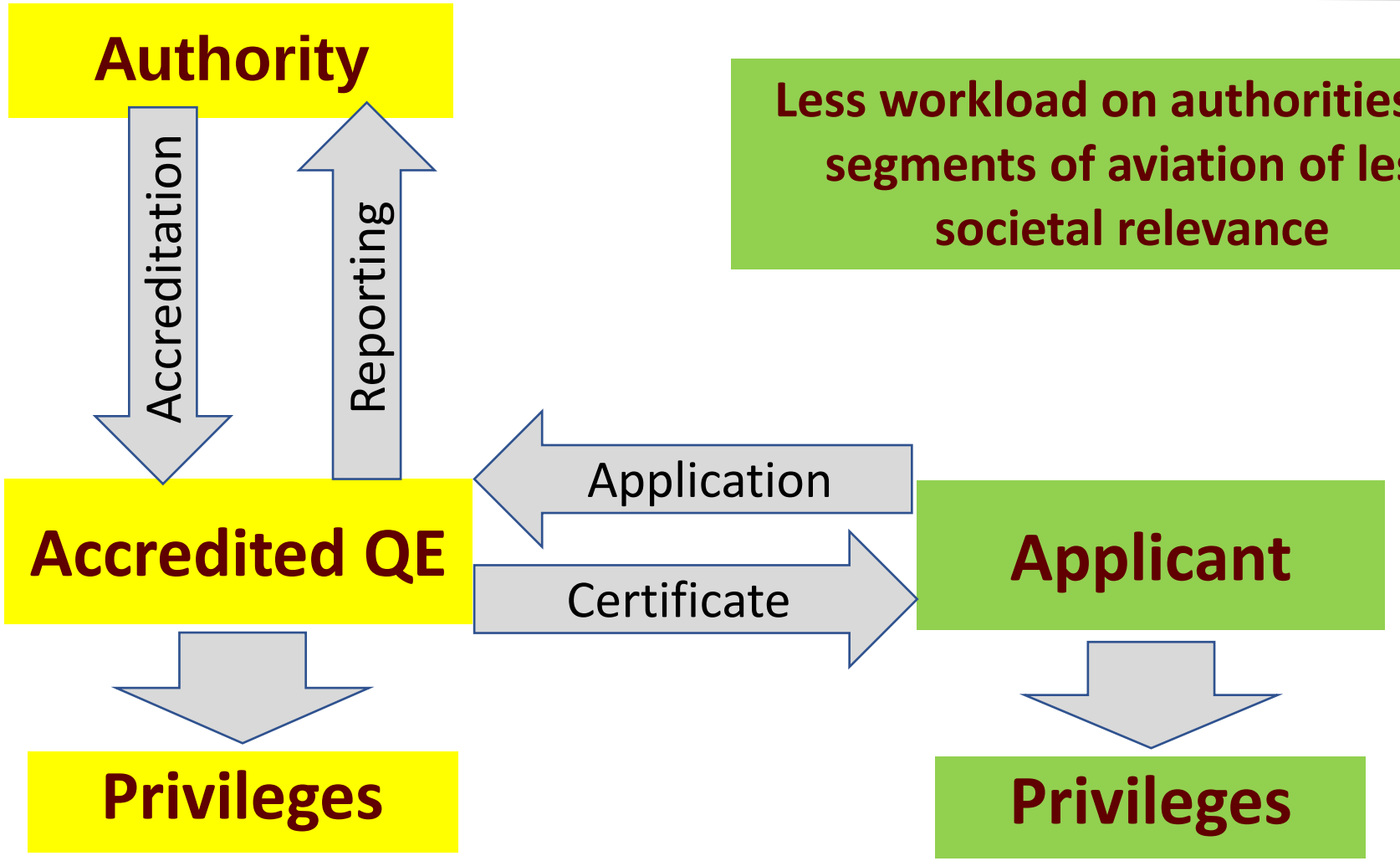
This project has received funding from European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No°824292.

The role of Qualified Entity

- Regulation (EC) 1139/2018 – EASA Basic Regulation:
  - Art. 3 (Definitions)
    ‘qualified entity’: body which may be allocated specific certification task(s) by a national aviation authority or by EASA
  - Art. 69 (Qualified Entities)
  - (1) Aviation authority shall ensure that such entity complies with criteria laid down in Annex VI = **independency from operator, manufacturers, service providers**
  - (3) Authority may grant a privilege to issue, renew, amend, limit, suspend and revoke certificates, on behalf of the authority

This project has received funding from European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No°824292.

QEs in the regulatory processes



This project has received funding from European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No°824292.

AW DRONES

Thanks for your attention !

This project has received funding from European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No°824292.