



ICARUS

INTEGRATED COMPONENTS FOR
ASSISTED RESCUE AND UNMANNED SEARCH OPERATIONS

LEGAL ISSUES IN SEARCH AND RESCUE UAV OPERATIONS

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- Unmanned tools (ground, air, marine robots) can play a critical role to save human lives



- Remaining bottlenecks:
 - Cost
 - Scientific and technical improvements
 - C4I Integration (new SOPs)
 - Procedures
 - Logistics
 - Training
 - Legal
 - Safety / Security
 - Ethical
 - Privacy / Data Protection
 - Command and Control
 - Communication



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- Nepal 2015

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Drones (non-military)

Nepal moves to limit drone flights following earthquake

Drone operators will need permission from the country's aviation authority following complaints in affected areas



▲ A drone flies over buildings destroyed after last week's earthquake in Bhaktapur, Nepal, 2 May, 2015. Photographic Olivia Harris/Reuters

Alex Hern
 @alexhern
 Wed 6 May 2015 15:18 BST

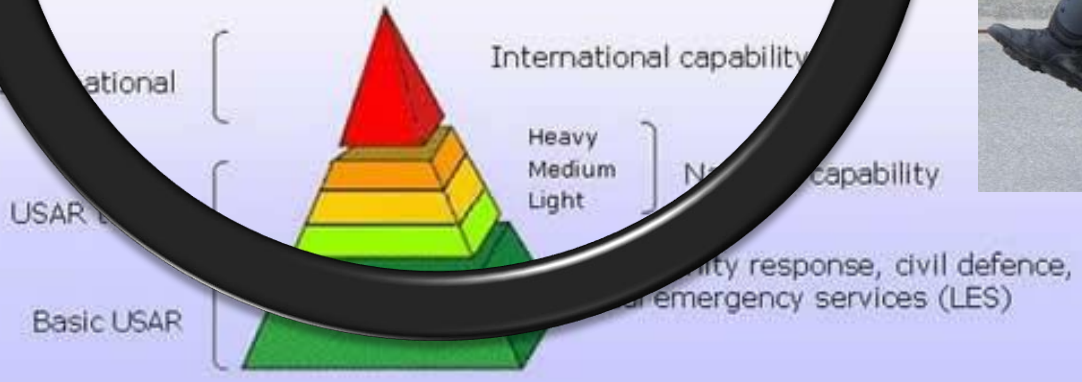
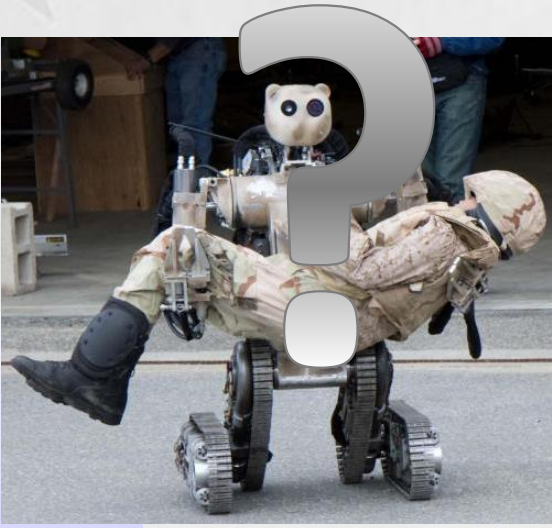
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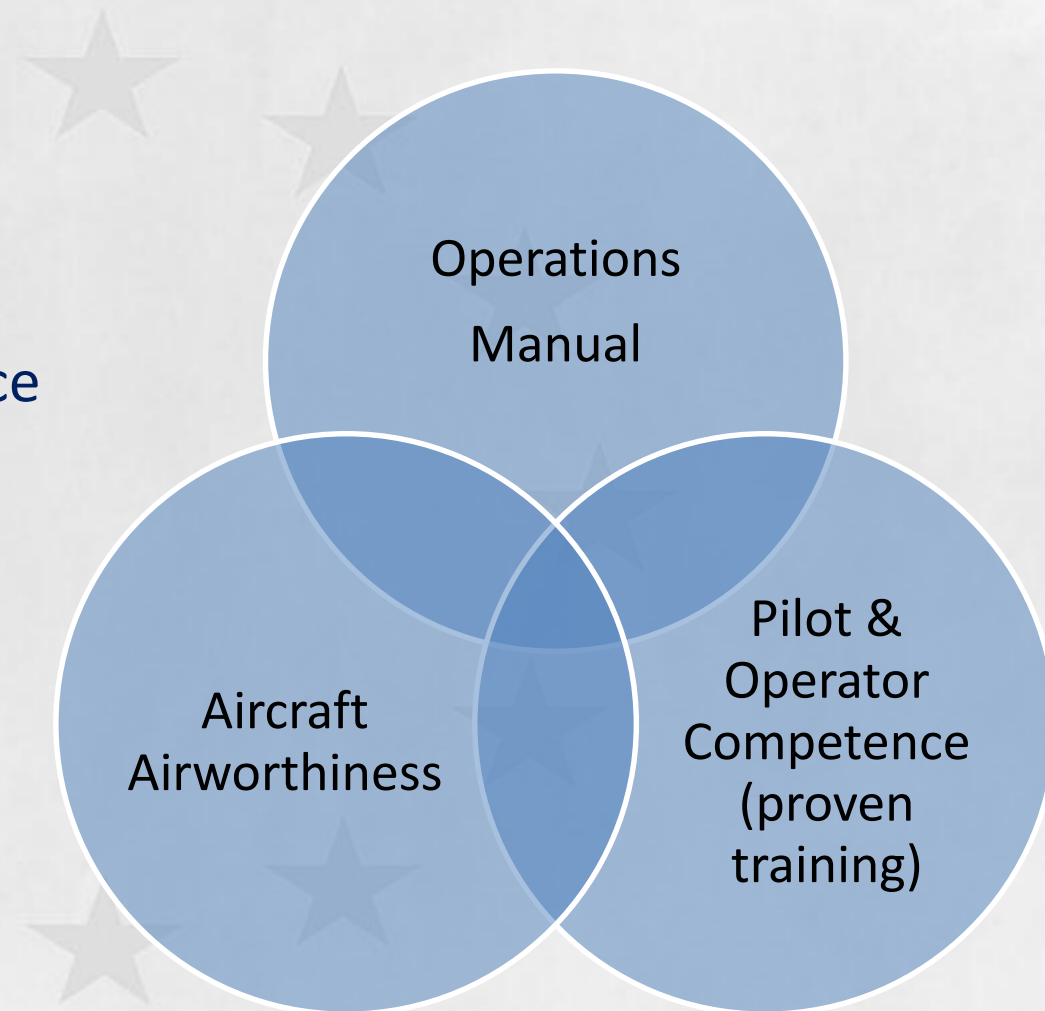
The Nepalese government has cracked down on unmanned aerial vehicles



European Civil Protection



- Legislation is currently being adopted all over the world
- Unfortunately, this legislation is very different from place to place
- Obtaining a flight permit in own country generally eases the process elsewhere
- State rescue teams can fly as “state aircraft”, but also here legislation is being applied

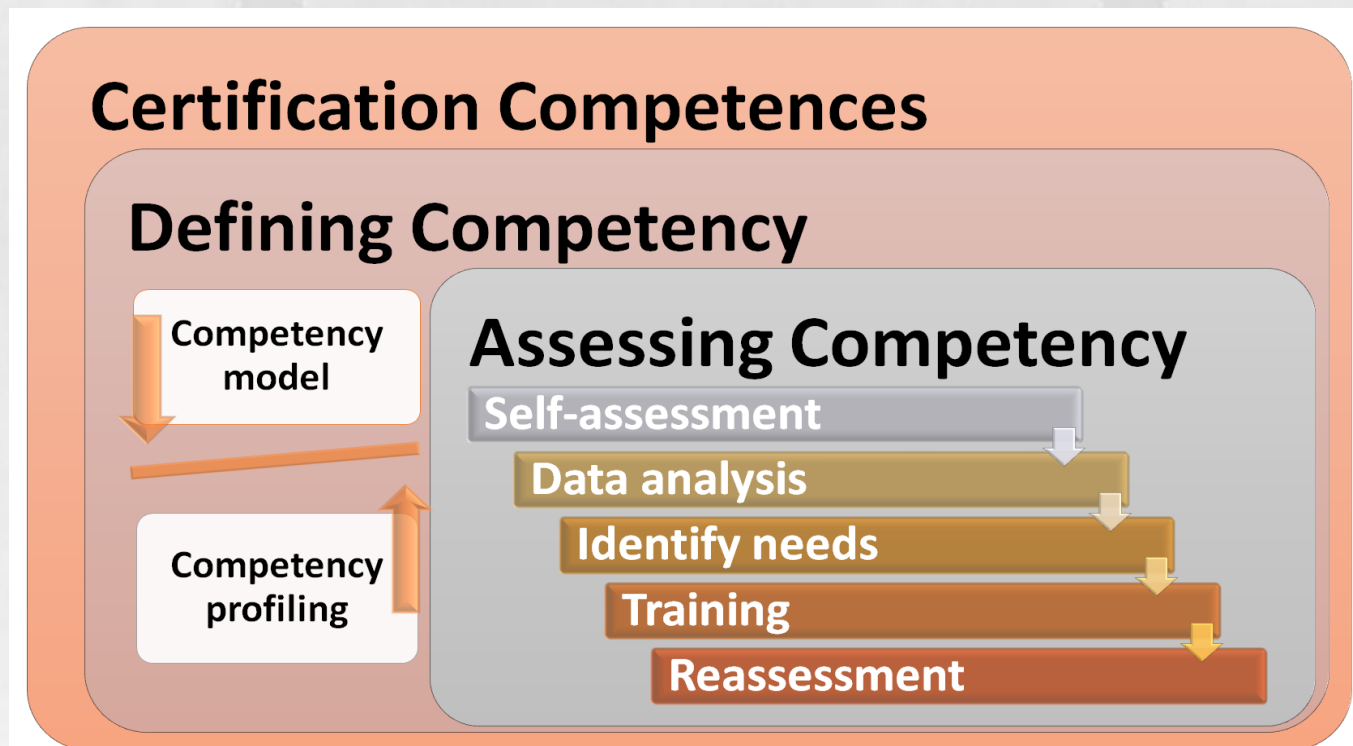


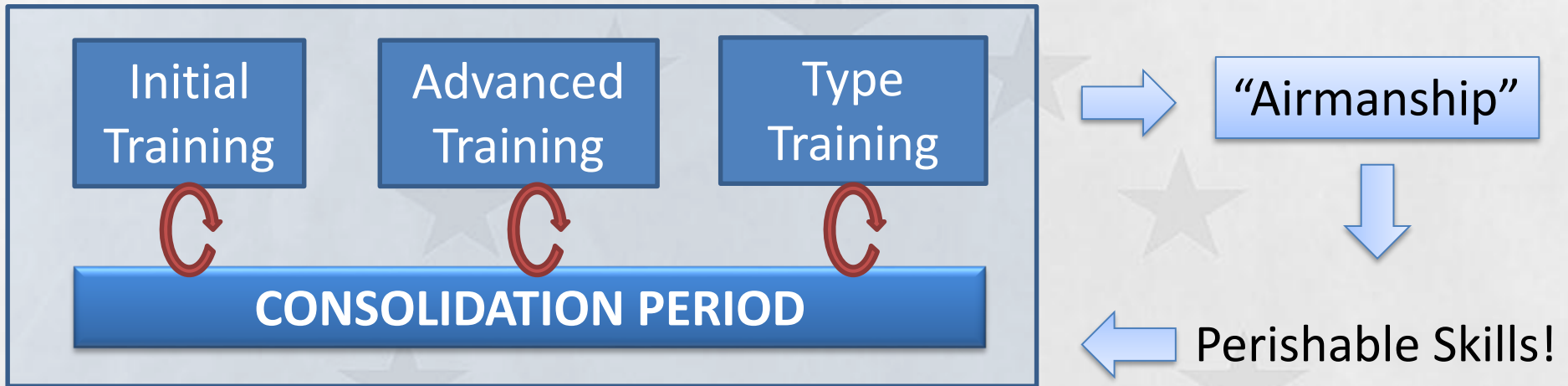
- Common (wrong) arguments & perceptions about drones
 - They are only small (<7-20Kg)
 - Same size/weight as a large bird
 - They don't go fast
 - They don't fly in the same airspace as big aircraft
- Not always true!

Aviation Rules are, historically, written in blood

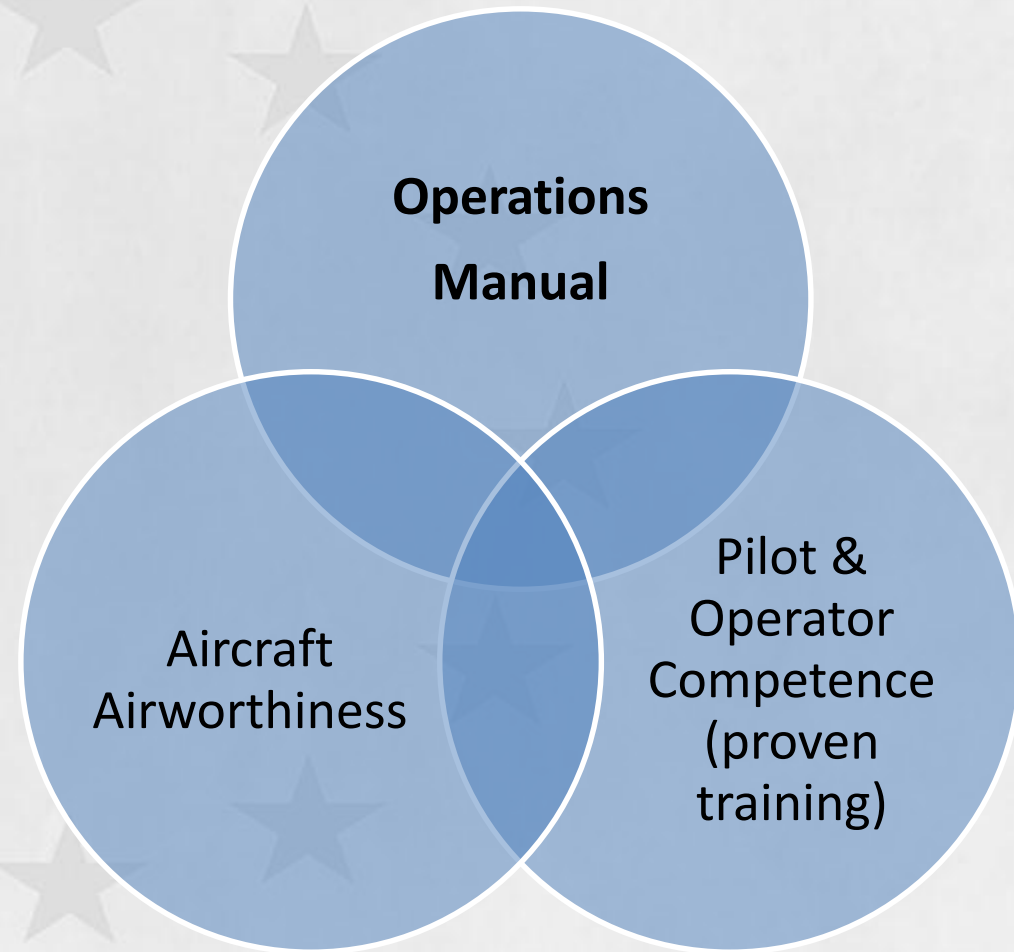


- Competence profiles of the target group must be defined and assessed





- Certificate of Competence (who? – authority?)
- Initial, advanced, specific?
- Type of training (you must tailor your flight training to reflect the specific skills required)
- Scenarios → developments → simple to complex
- Continued Training & Recurrency & Re-certification
- **Supra-national recognition does not exist yet!**



- Thinking about safety **before** operations
 - ➔ Operations Manual
 - Security Management System
 - Standard Operating Procedures
 - Checklists
 - Limitations to operations (what can/cannot be done)
 - Risk Management ➔ methodology
 - Airworthiness logs
- This document is not a paperwork mountain, but is backed up by professional aviation experience / processes and practice



- Thinking about safety **during** operations
 - Knowledge sharing (turnover Opr/Staff)
 - Limitations to operations (what can/cannot be done, e.g. in function of changing weather conditions)
 - Do not fly over people and keep public at a security distance
 - Do not disturb the pilot(s) / operator(s)



- Depends largely on categorization of the UAV
- Typically as a function of mass (or kinetic energy) → risk-based
- Can be simple product safety (e.g. CE) certification for smallest systems.
- Can become extremely extensive (comparable to manned aviation) for larger systems
- Obtained via national civil aviation authority
- **Supra-national recognition does not exist yet!**

- Realize that a UAV is a special kind of tool
 - Potential spying tool
 - Contains dangerous batteries
 - Contains sensors subject to export license (e.g. IR cam)
- Prepare in advance:
 - Export license papers
 - ATA carnet for passing customs easier
- Think about transport of LiPo batteries over the air (limit power density or switch to other technologies)

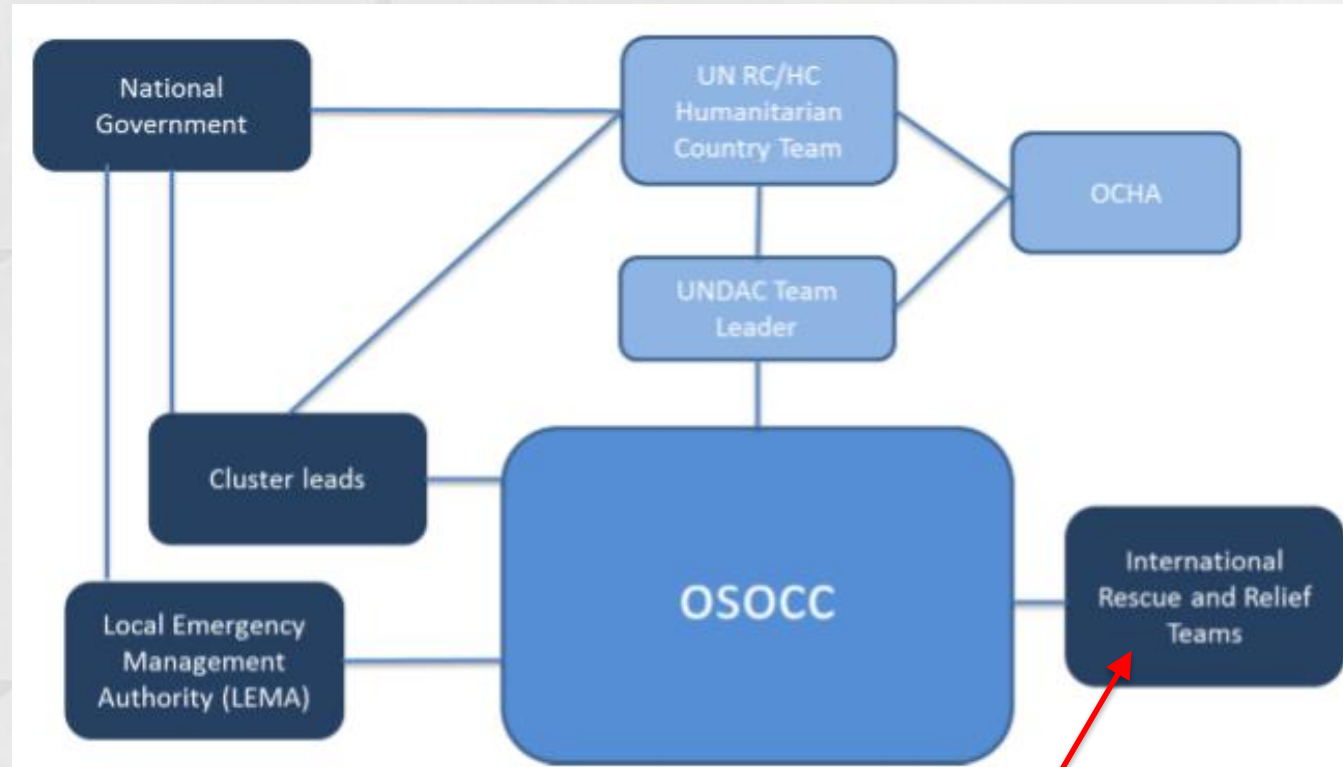




- A drone is an excellent spying tool
- No government will give unconditional unrestricted access to its airspace (sensitive areas)
- Did you receive the authorisation from the competent national authorities (e.g. to film people)?
- Who is the data controller for the data you record?
- What is your data protection mechanism?



- Integrate with OSOCC and LEMA
- Follow orders from OSOSCC and LEMA
- Remember that you are supposed to be there to help SAR operations in the first place, NOT to take footage of the devastation



- Air: Legally, tele-operation by a pilot will generally be required (RPAs) in the foreseeable future
- Autonomous capabilities can be built in, where this reduces the workload of the operator (e.g. area mapping), but the human pilot / operator remains required for the foreseeable future
- For indoor platforms (where legal restrictions do not apply!), advanced autonomous navigation capabilities must be foreseen to be able to cope with communication loss

Takeaways:

- Prepare well:
 - Pilot certification ↔ Training
 - Aircraft airworthiness
 - Operations manual
- Respect import regulations
- Respect security constraints imposed by local government
- Optimally prioritize operation in interest of the victims
- Integrate yourself in the existing SOPs
- Respect privacy and data protection regulation

• Nepal



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- Local government
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- Integrate in SOPs
- Privacy and data protection

• Bosnia





THANK YOU

ANY QUESTIONS?

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