AIRCADEMY

Operational Procedures

Shortcut

Flight Monitoring

Flight Preparation

Abnormal Procedures

Debriefing

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Checklists

- Avoid careless mistakes
- Recurring processes
- Points must be confirmed

Emergency

Pre-flight	Equipment	Before Take-Off	After Take-Off	After Landing	After Flight
1 day before	Day of flight	On-site	On-site	On-site	Day of flight

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Papers and Fitness

Necessary „Papers“

- Proof of competence
- Operator registration
- Insurance

Fitness

- Check before flight
- I‘M SAFE checklist
- Also includes involved persons!

I	*Illness*
M	*Medication*
S	*Stress*
A	*Alcohol*
F	*Fatigue*
E	*Emotion*

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Airspace, NOTAMs, Weather

Airspace

- Permission of restrictive Airspace possible
- E.g. control zone
- Take-off and landing coordinates
- Area of operation and flight route
- Flight times
- Contact details

NOTAMs

- NOtice To AirMan
- Inform about short time particularities
  - *Festivals*
  - *Military exercises*
- Published by responsible air traffic control body (ATC)
- Preparation on day before flight

Weather Check

- Preparation on day before flight, update on day of flight
- Wind and precipitation
- Development of conditions
- Use anemometer
  - *Wind speed increases with height!*
- In case of weather deterioration: Land as soon as possible!

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Area of Operation

- Check area for obstacles
- Inspection of unclear terrain
- Secure take-off and landing area
- Watch out for streets and paths
- Permission necessary?

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Involved Persons

Assistance

- Secure area of operation
- Airspace observation
- Informing people

Briefing

- Planned flight route and intention of flight
- Checklists
- Secure take-off / landing area
- Abnormal and emergency procedures
- Communication
- Task distribution

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UAS and Equipment

Assembling

- Damage and soiling
- Attachments
- Spare battery
- Latest software / firmware

Payload

- Maximum take-off mass (MTOM)
- Centre of gravity (CG) calculation
- UAS operating manual
- Assembling
- Check functionality

UAS settings

- UAS operating mode
- Battery level
- GNSS reception
- Return-to-Home (RTH) setting
- Calibration of compass

If using a mobile phone:
Avoid incoming calls!

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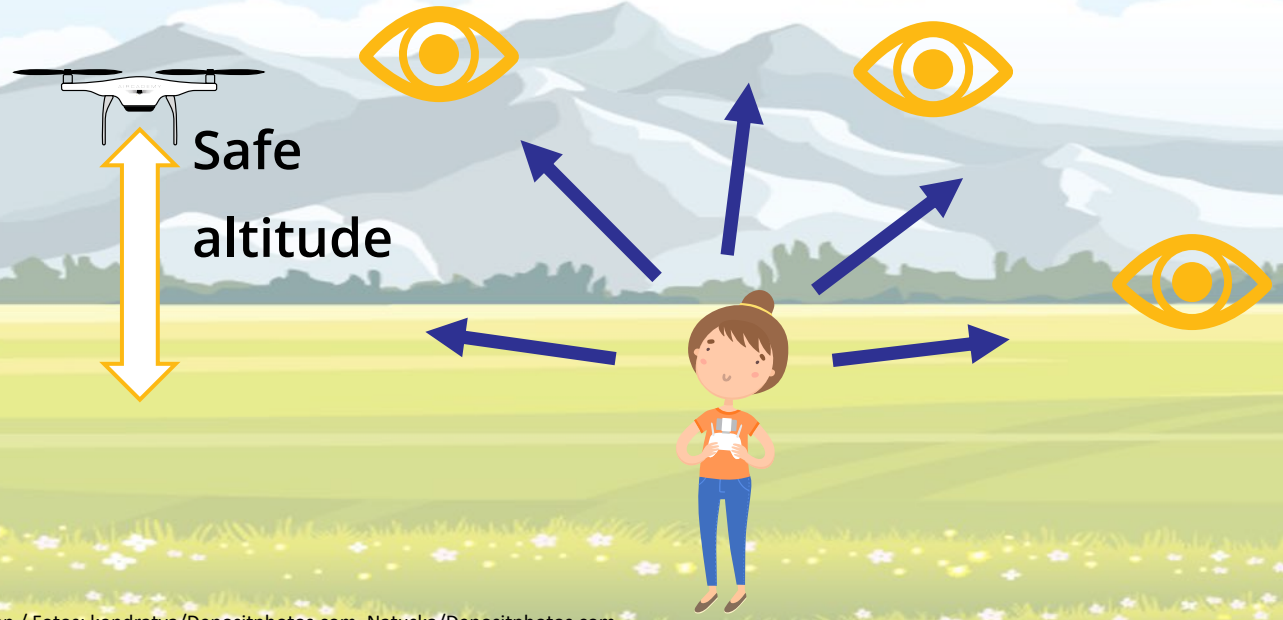
Departure Procedures

Function test

- Payload
- Telemetry
- Control



Departure of UAS

- Pre-flight checklists completed
- Check airspace and surroundings
- Take-off procedure
  - *Remote control*
  - *UAS*
  - *Other equipment*
- Take-off area
  - *Flat*
  - *Platform (launchpad)*
  - *No obstacles*

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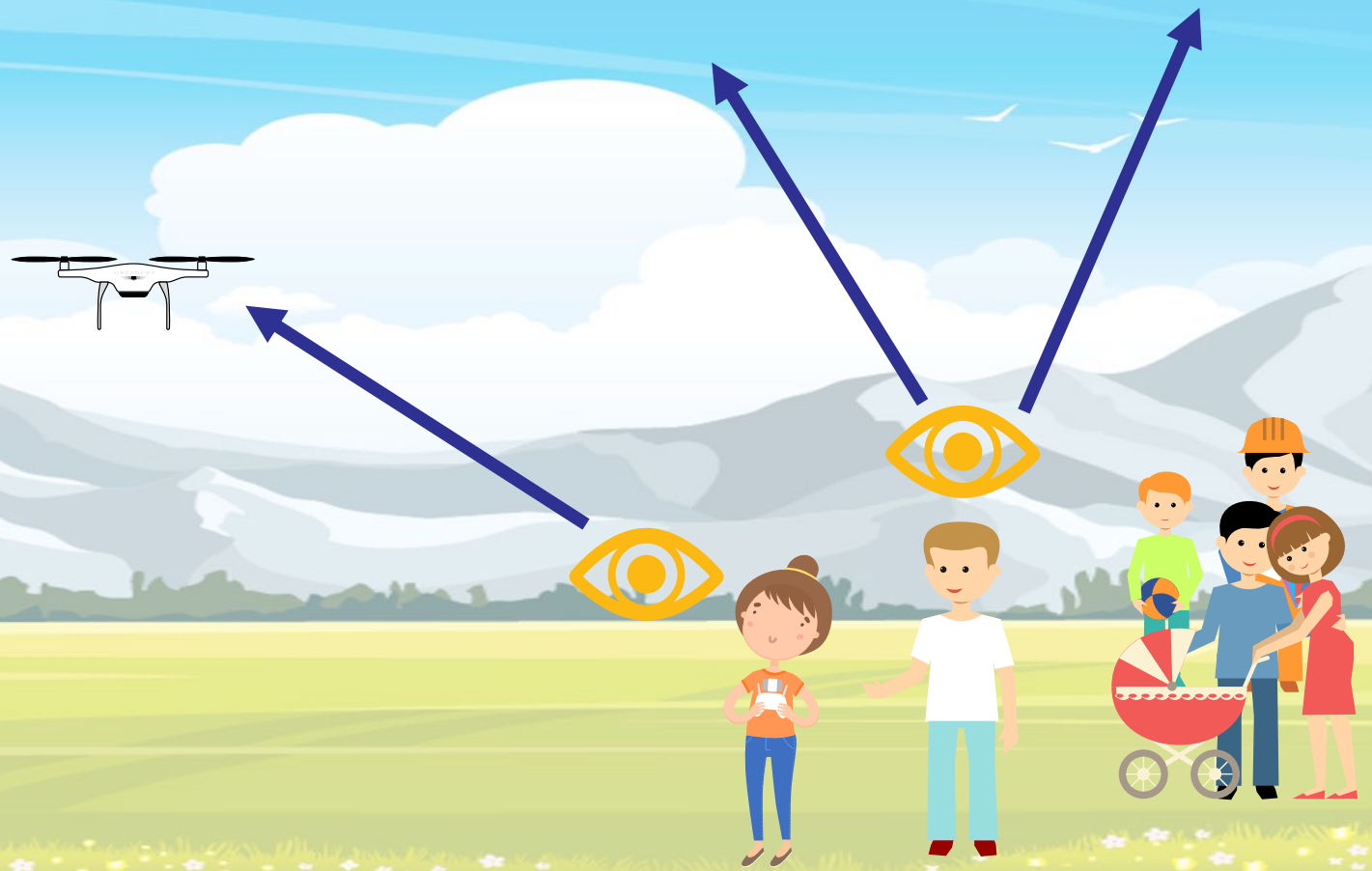
Normal Procedures

Monitoring

- Battery
  - *Discharge curve*
  - *Land with sufficient time left over*
- UAS position
- Airspace
- Two-person team
- Don´t get distracted!



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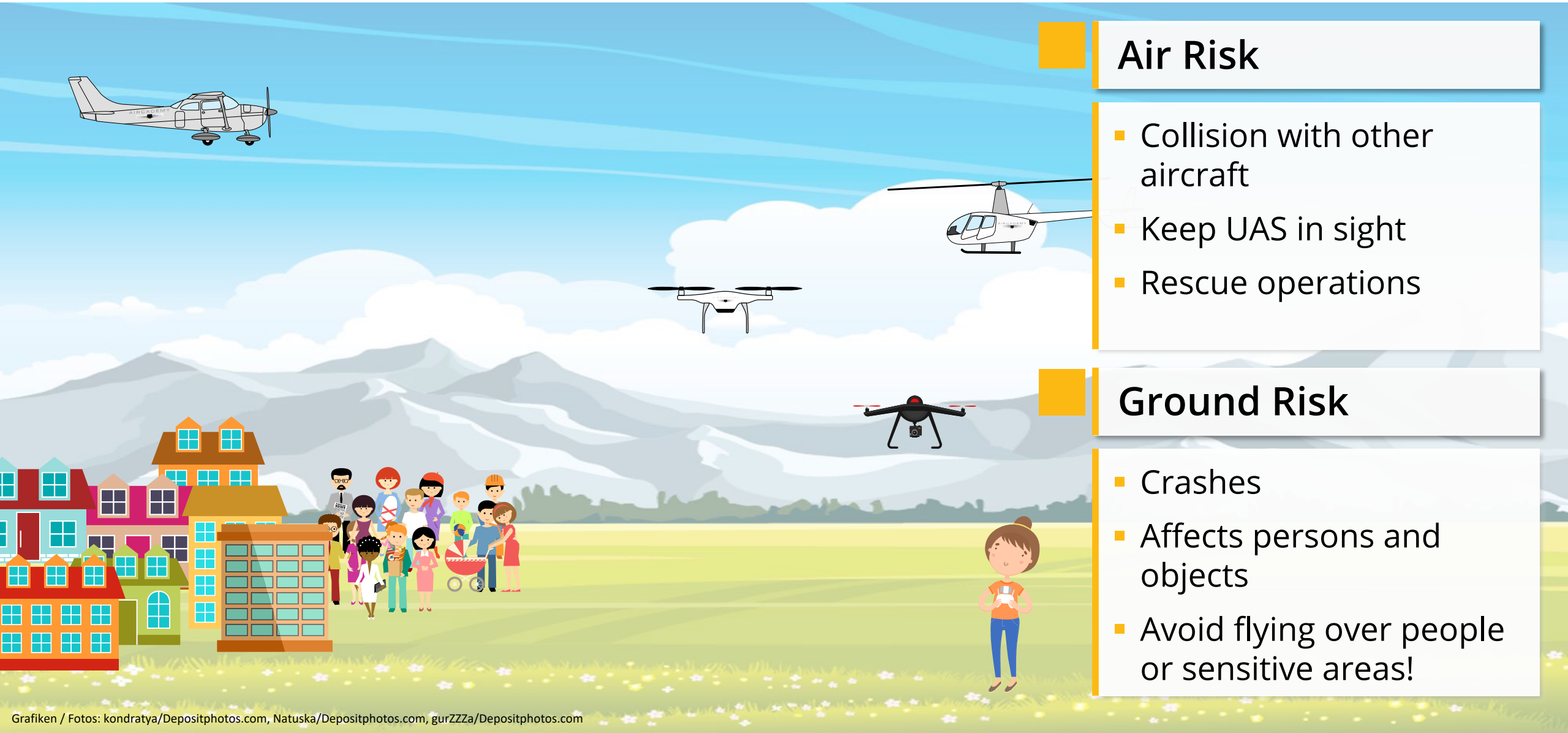
Risks



Air Risk

- Collision with other aircraft
- Keep UAS in sight
- Rescue operations

Ground Risk

- Crashes
- Affects persons and objects
- Avoid flying over people or sensitive areas!

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Debriefing

Inspection of the UAS

- Damage or soiling
  - Propeller and batteries
- Clean
- Remove batteries
  - Storage in a dark place at around 15-25°C
  - No flammable objects or surfaces nearby

Backup of flight data

- Date of flight
- Origin and destination
- Take-off and landing time
- Flight route with waypoints
- Altitudes
- Keep data backup on external storage device

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Documentation

Advantages of a documentation

- Planning of regular maintenance
- Calculation of parts' lifetimes
- Traceability of flights

UAS logbook

- Date of flight
- UAS type
- Location and reason
- Take-off and landing time
- Number of take-offs and landings
- Flight duration
- **Abnormal incidents**
- **Any repairs or damages**

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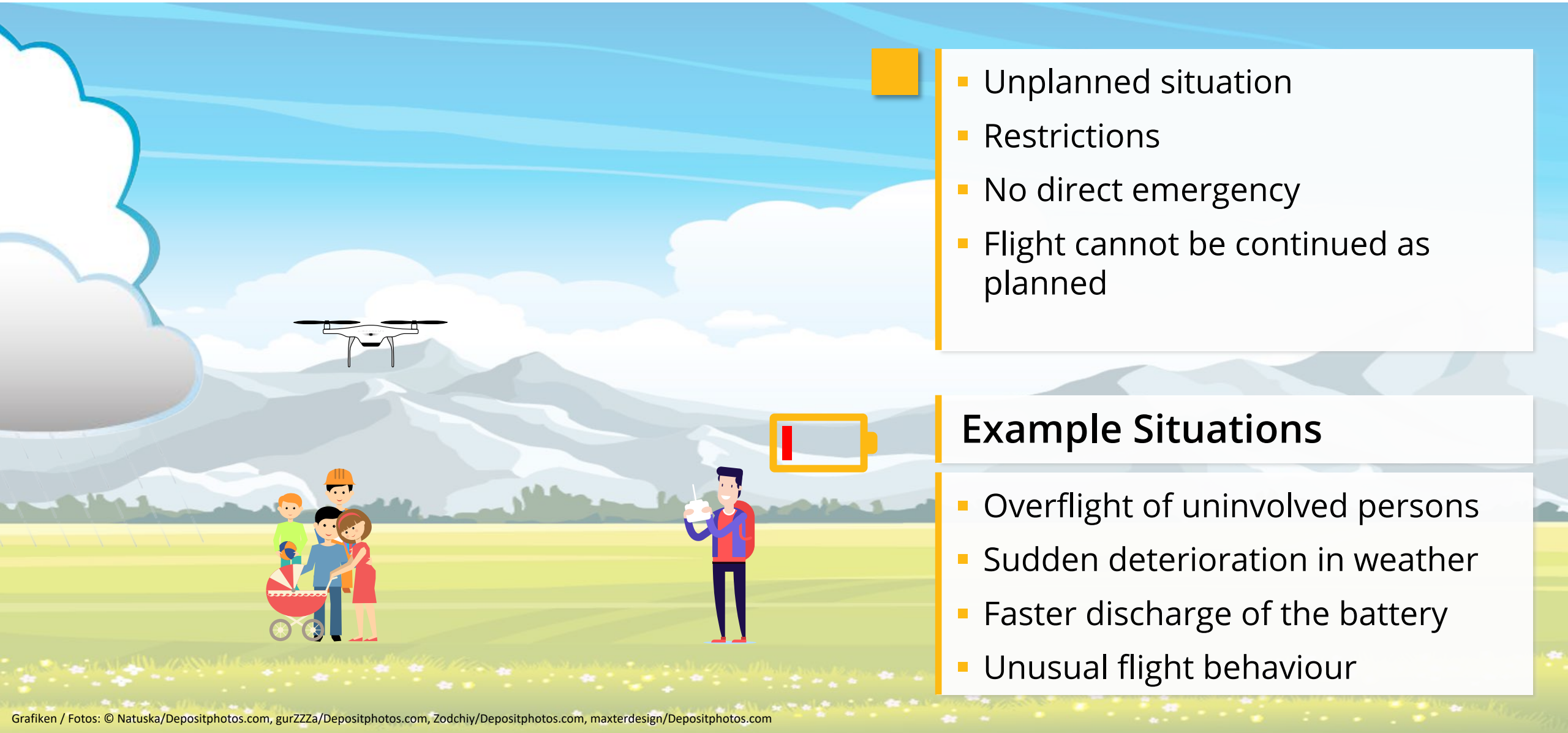
“Abnormal Situations”



- Unplanned situation
- Restrictions
- No direct emergency
- Flight cannot be continued as planned

Example Situations

- Overflight of uninvolved persons
- Sudden deterioration in weather
- Faster discharge of the battery
- Unusual flight behaviour

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Emergency Procedures

Emergency Landing

- Limited options
- Quick reaction necessary
- Forced landing
- *Failed motors*
- *Badly damaged propeller blade*

Precautionary Landing

- Difficult situation recognised in good time
- Time for decision making process
- No serious deficiencies
- *Failed sensors or instruments*
- *Slowly deteriorating weather*

Return to Home (RTH)

- Can be started by UAS
- Leads UAS back to take-off position
- Appropriate mode must be selected
- *Critical battery level*
- *Loss of radio connection*
- *Problems with ground station*

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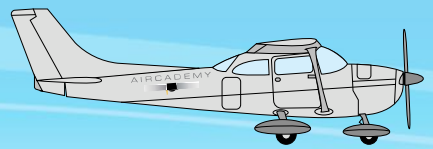
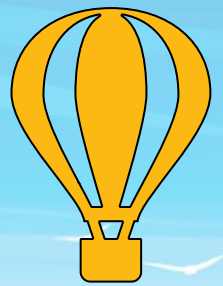
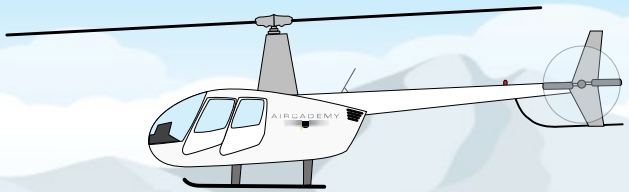
Risk of collision

- Eliminate danger immediately
- Assume: The other aircraft has not seen you
- Precautionary landing
- Hover or circle in low altitude







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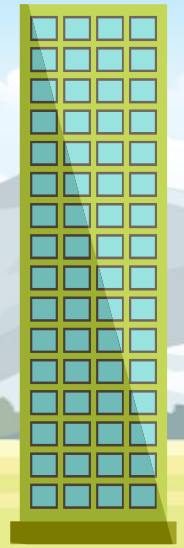
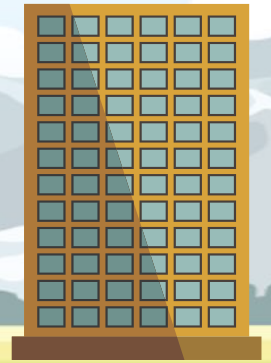
GNSS- or Compass Error





Behavoiur and Reactions

- Fast turns
- Flying in unintended directions
- RTH manoeuvre not possible
- Change to manual or stabilised mode
- Consider wind!

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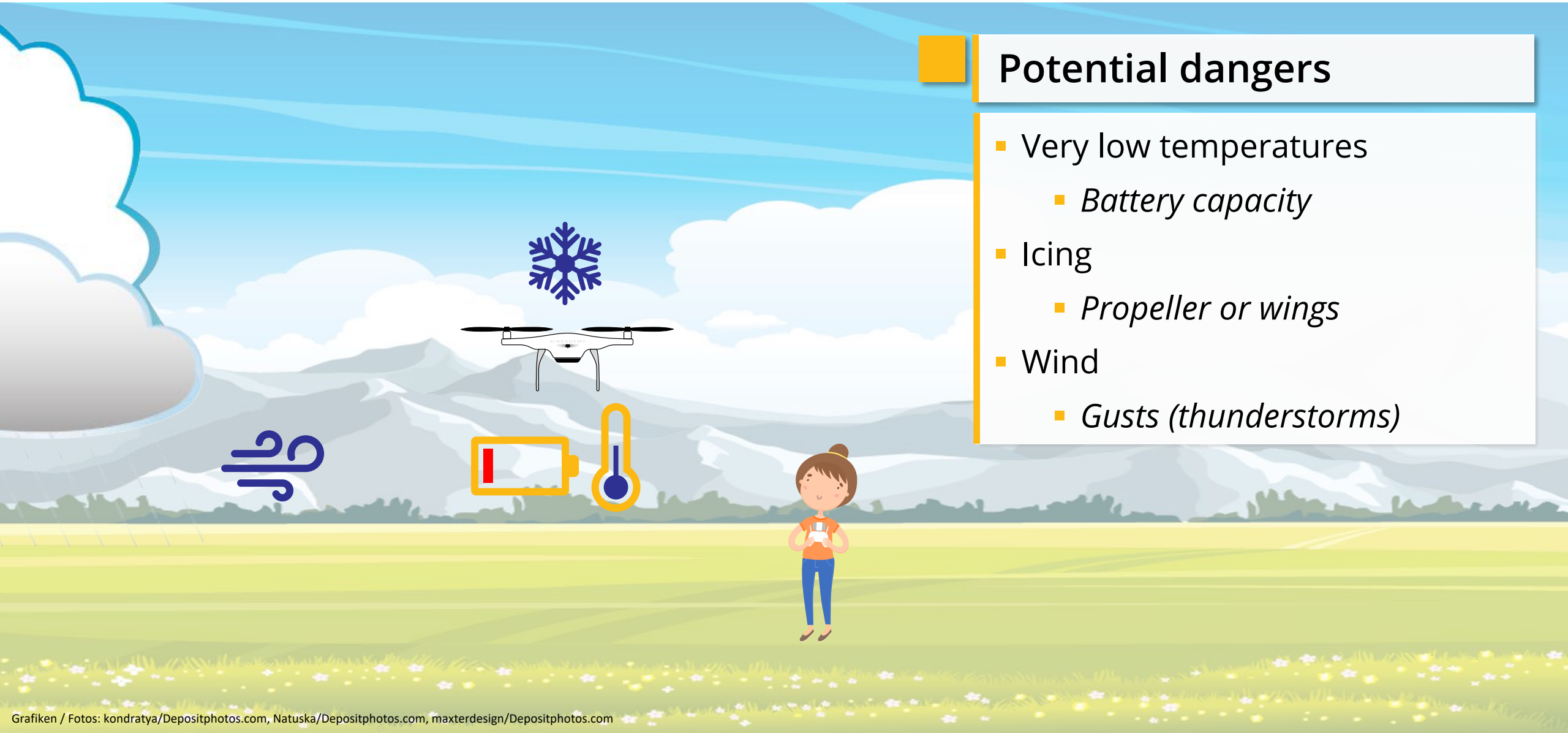
Critical Weather Conditions



Potential dangers

- Very low temperatures
  - *Battery capacity*
- Icing
  - *Propeller or wings*
- Wind
  - *Gusts (thunderstorms)*

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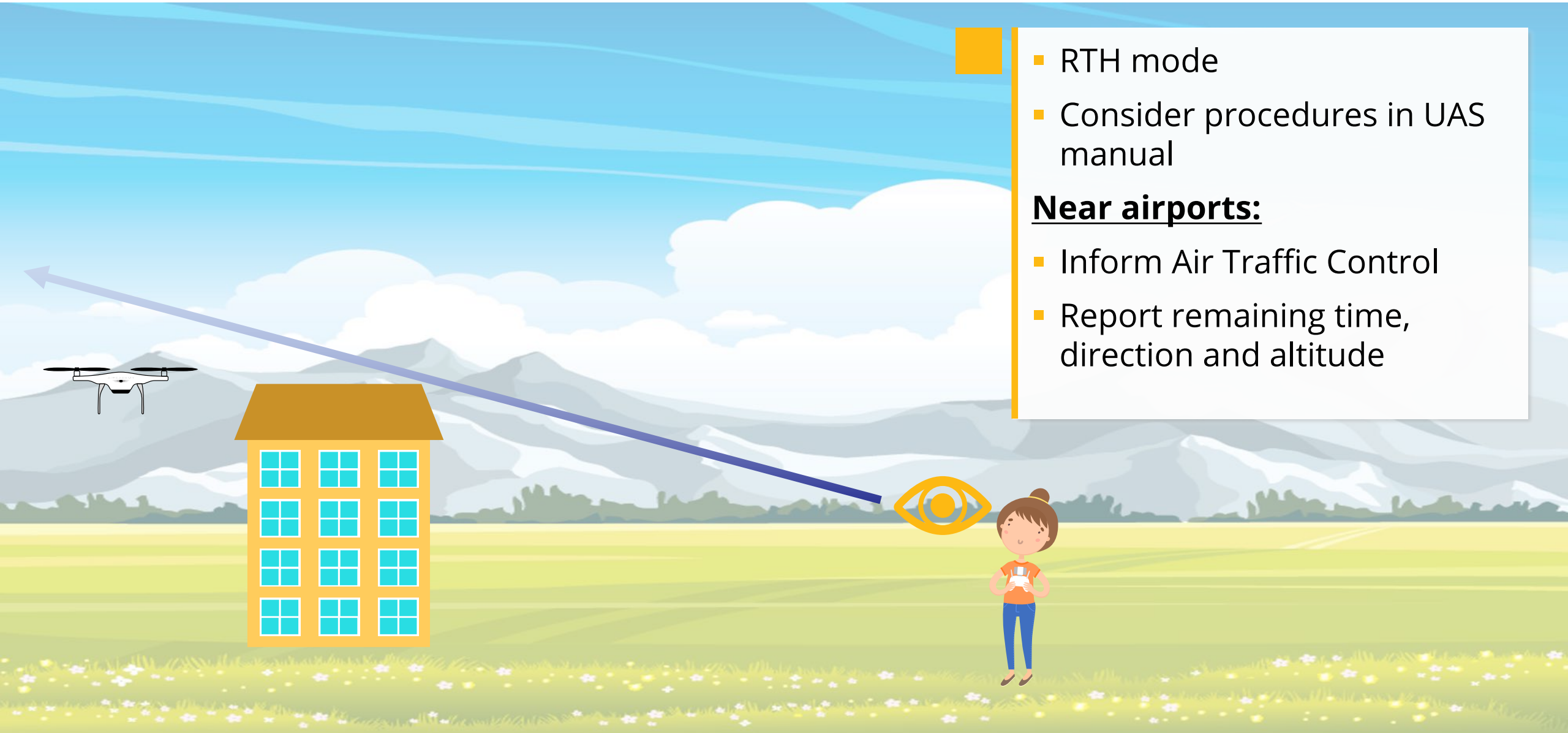
Loss of Sight / ‘Fly-away’



- RTH mode
- Consider procedures in UAS manual

Near airports:

- Inform Air Traffic Control
- Report remaining time, direction and altitude

Crash

- Loudly warn nearby persons
- Restore memory card
- Inform responsible authority to help prevent such incidents in future

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