

RPAS Operator responsibilities: Ensuring that staff are trained/competent; and safe planning of operations from start to finish

**RPAS Symposium
Montreal, 2017**



IMAGERY



VIDEOS



ANALYSIS



REPORTS



SKY -FUTURES™

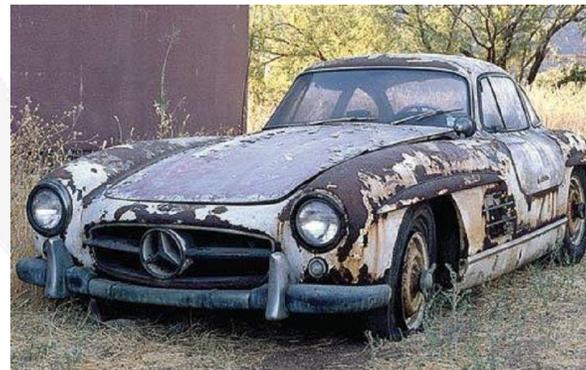


RPAS: Revolutionary Technology for Asset Management

*“The **global cost of corrosion is estimated to be US\$2.5 trillion, which is equivalent to 3.4% of the global Gross Domestic Product (GDP) (2013).**”*

“**ISO 55000** - Asset Management, enables an organization to achieve its objectives through the effective and efficient management of its assets. The application of an asset management system provides assurance that those objectives can be achieved consistently and sustainably over time.”

*By using available corrosion control practices, it is estimated that **savings** of between 15 and 35% of the cost of corrosion could be realised; i.e., between US\$375 and **\$875 billion** annually on a global basis. In addition, these costs typically **do not include individual safety or environmental consequences.**” NACE 2016*



Why use drones for industrial inspection?



SAFER – Use a drone instead of putting your people at risk.



FASTER – 8x faster than conventional inspection techniques e.g. rope access and scaffolding.

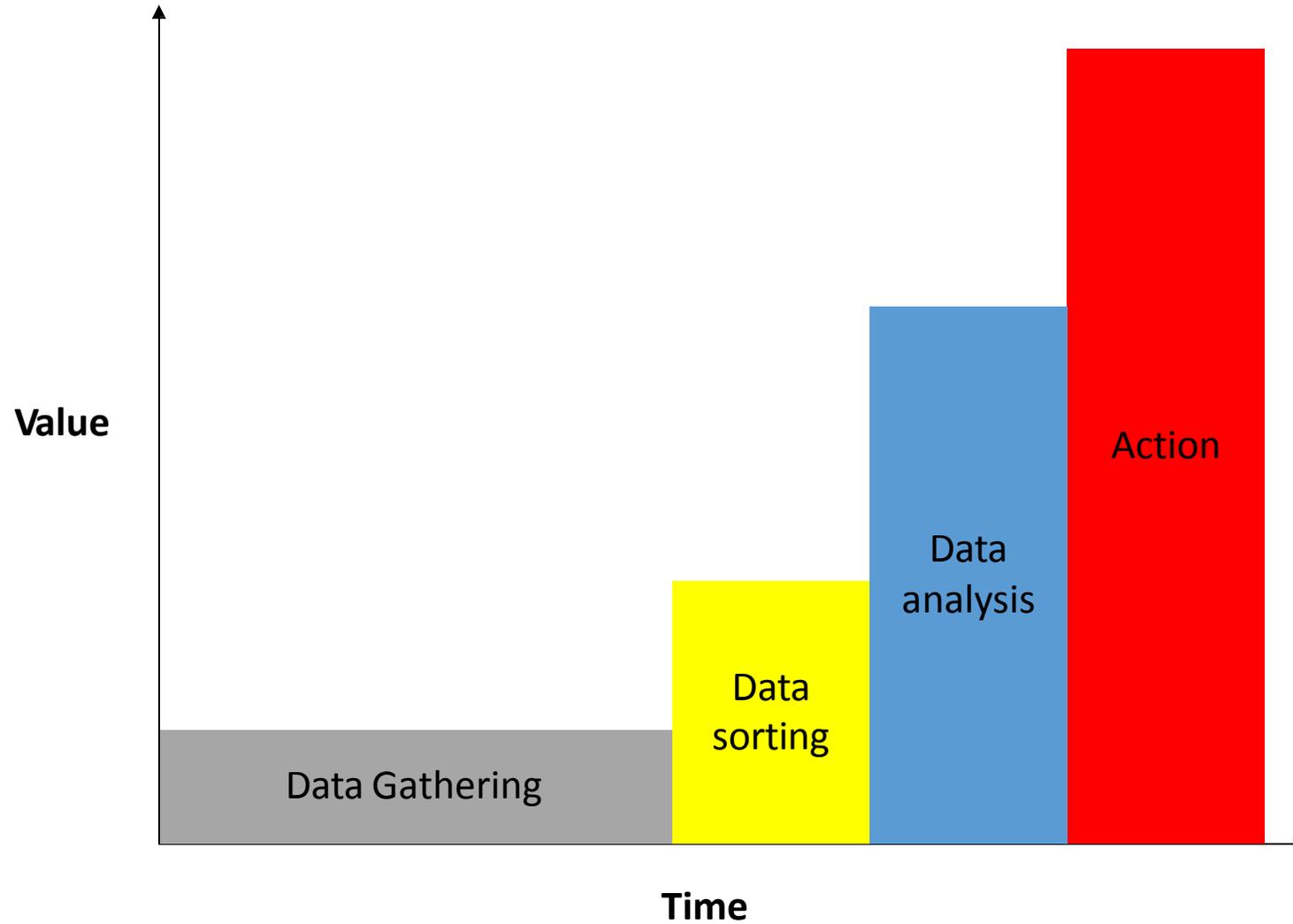


CHEAPER – 85% more cost effective than conventional inspection techniques. Reduce operating costs.

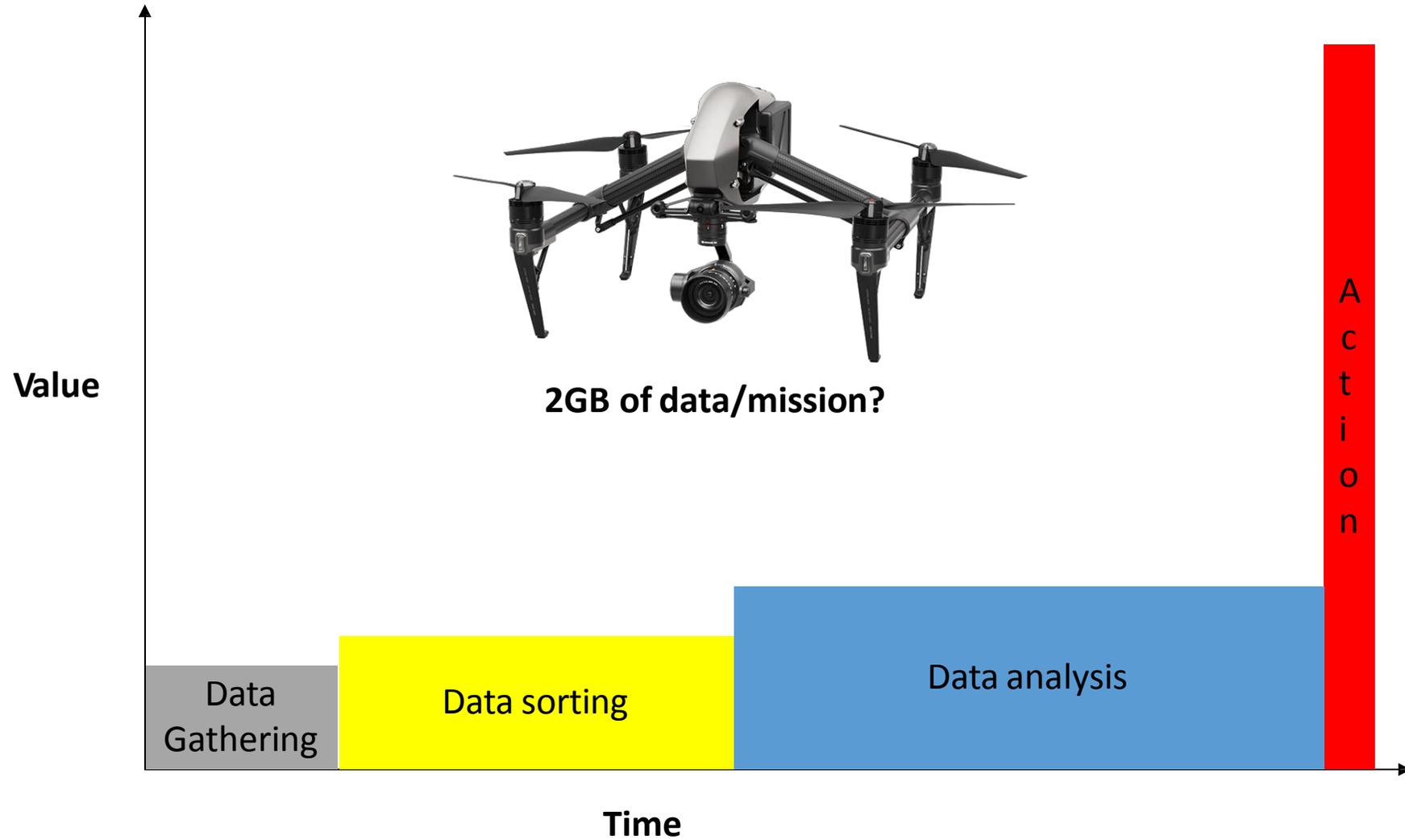


BETTER DATA – High quality data sets that are accurate, repeatable, and measurable.

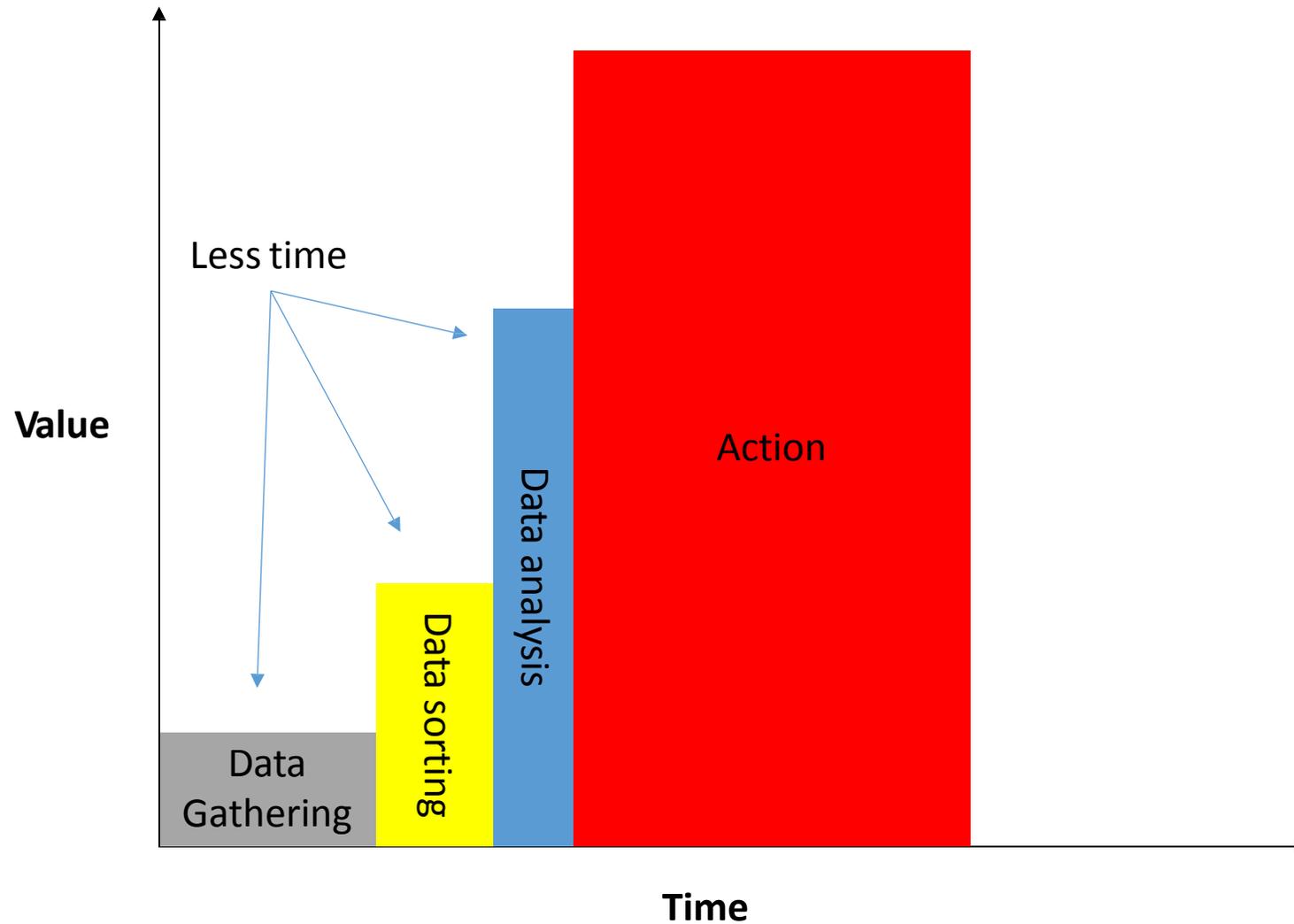
Traditional Inspection Effort



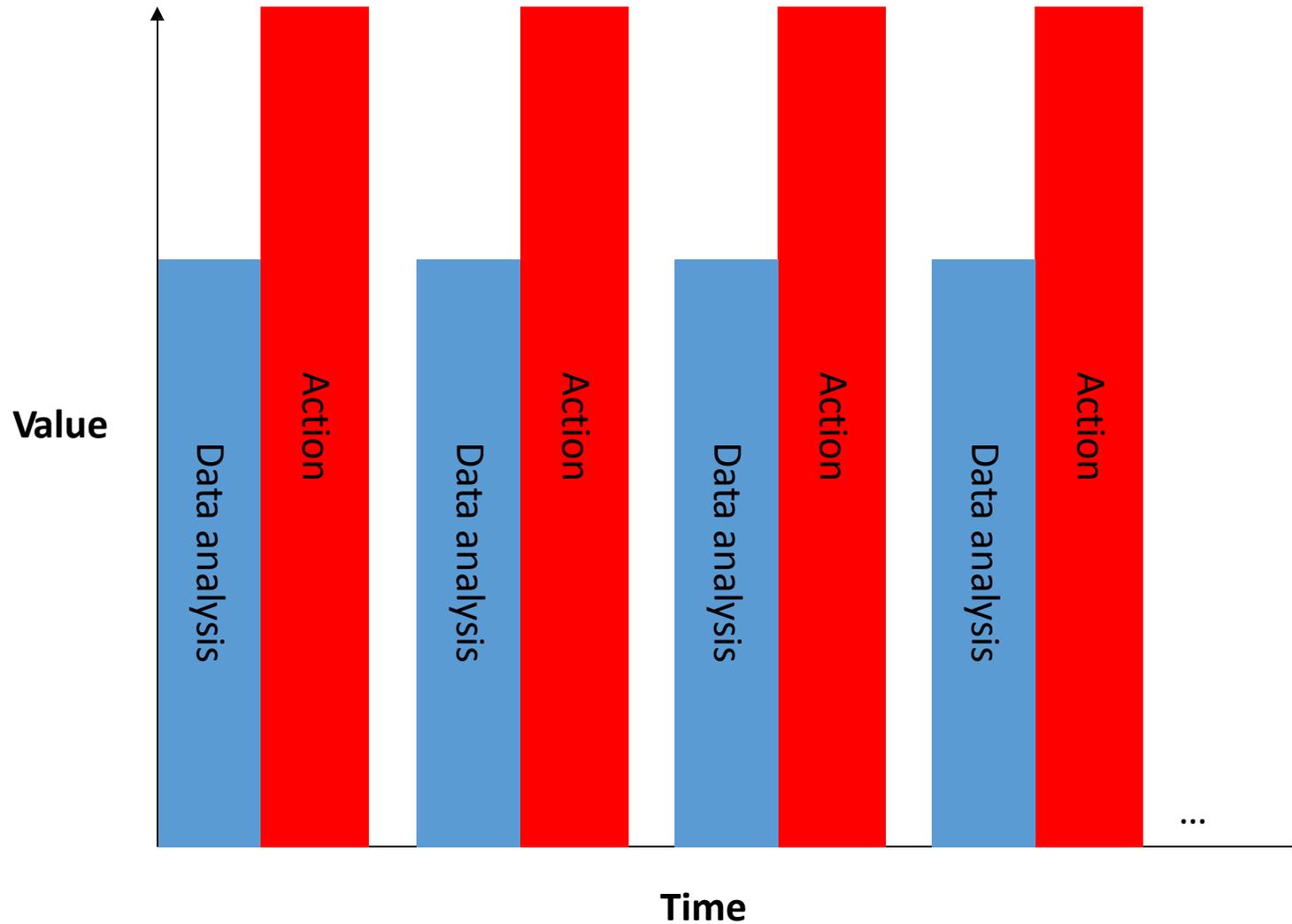
Traditional Inspection Effort + RPAS



Workflow improvement opportunity with RPAS, Cloud & AI



Systematic RPAS + Cloud + AI inspection = AUTOMATION



RPAS Operators are a new type of Aviator

- Drones offer a 8x efficiency, cost and safety improvement over traditional inspection methods
- Computer vision and machine intelligence offer the opportunity to reduce amount of low value work and direct that effort towards higher value activities
- Current technology supplements inspectors' engineering judgement
- Huge potential for fully automatic inspection process with anomaly reporting and predictive maintenance
- Computer vision and machine intelligence has remaining challenges

National Aviation Authorities supported by ICAO have a unique opportunity to facilitate growth for new era of "Industrial Aviation"

Enabling Elements for New Aviators



RPAS Operator training –

Academies in the UK and USA delivering real-to-life, scenario based training



Software – Drone mission planning, inspection reporting and data analysis software. Expanse Flightdeck is designed and built in-house for the industrial inspection market



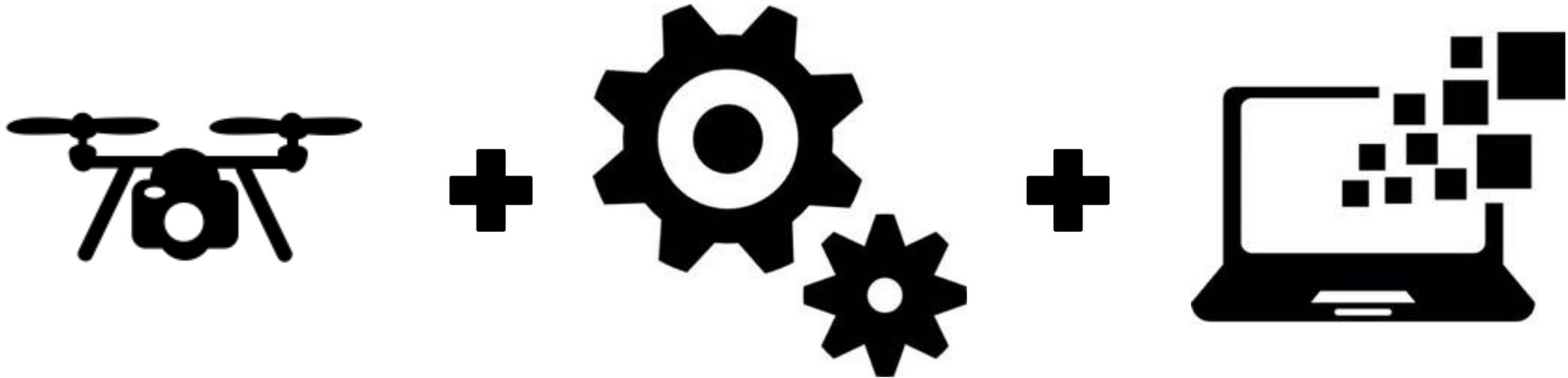
Inspection service –

Support for drone strategies as large plc's develop capability. 'New Aviators'



Consultancy – Providing clients with the experience and expertise to support the development of an in-house drone-based inspection capability

“Industrial Aviation” - Combining operations, engineering and technology experience



Regulators need to ensure ease of access with proper oversight to not just the air vehicle but also to the network and security around the aviation activity.

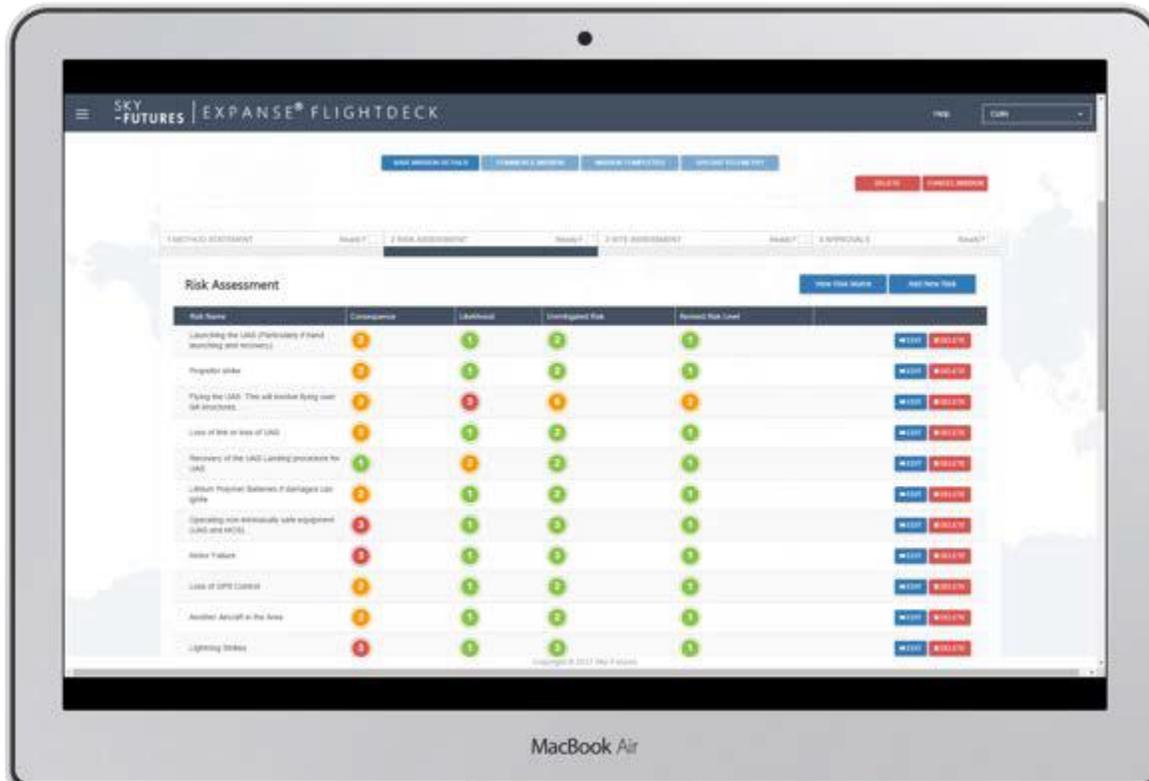
Eg. UK CAA, OFCOM and Industry Bodies (OGUK, Renewables UK)

Small Unmanned Aircraft Operator Training

Exercise	Description	Modes	Number of Sorties
BA 1.0	Familiarisation	GPS	2
IM 1.1	Outside Orbit	GPS	2
IM 1.2	Inside Orbit	GPS	2
IM 1.3	Non Normal Procedures	GPS	3
IM 1.4	IM Handling Assessment	GPS	2
IM 1.5	Familiarisation	GPS/Attitude	2
IM 1.6	Outside Orbit	GPS/Attitude	3
IM 1.7	Inside Orbit	GPS/Attitude	3
IM 1.8	Non Normal Procedures	GPS/Attitude	3
IM 1.9	Scenario Based Non Normal Procedures	GPS/Attitude	3
AV 1.0	AV Handling Assessment	GPS/Attitude	2
AV 1.1 (A)	Scenario	GPS/Attitude	2
AV 1.1 (B)	Scenario	GPS/Attitude	2
AV 1.1 (C)	Scenario	GPS/Attitude	2
AV 1.1 (D)	Scenario	GPS/Attitude	2
		15 minutes per sortie (Minimum)	
		Total Flight Time: 8.45 hours (Minimum)	

- **Integrated Ab-Initio Training (Competency Based)**
- Sky-Futures Training Academies in the UK and USA.
- **Real-to-life scenario based training:** onshore; offshore; and confined space.
- UK site is 350-acres with structures including: multi-story buildings; oil rig; ship; towers; motorway, railway line and train and gantry.
- Fully residential course.
- **All evidence based training**

Fleet and Flight Management Software: Expanse Flightdeck



- **Cloud-based drone mission planning and fleet management tool.**
- **Manage your pilots, equipment, missions and safely in one virtual place.**
- **Plan drone missions using our intelligent AI driven Risk Assessment, Method Statement (RAMS) and site assessment workflow.**
- **Software acts as a compliance tool to support a Safety Management System (SMS) and internal/external audits.**
- **Flight telemetry playback function allows you to download flight path and view in a 3D world.**
- **Virtual BVLOS in 2018**

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