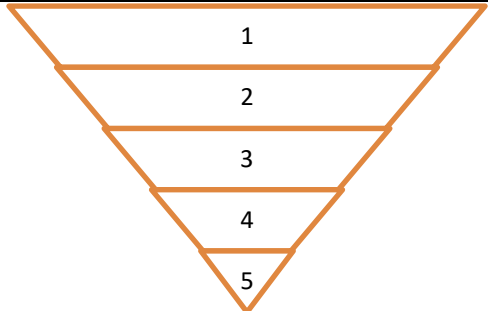


Document ID: DroneFlyingInSportsHall-002			
Risk Assessment			
Risk Assessment for the activity of	GDP Group 53 - Collaborative Robot Perception for mm-wave radar – drone flying		Date 29/11/2024
Unit/Faculty/Directorate	ECS - FEPS	Assessor	Name
Line Manager/Supervisor	Klaus-Peter Zauner	Signed off	Signature

PART A										
(1) Risk identification			(2) Risk assessment				(3) Risk management			
Hazard	Potential Consequences	Who might be harmed (user; those nearby; those in the vicinity; members of the public)	Inherent			Control measures (use the risk hierarchy)	Residual			Further controls (use the risk hierarchy)
			Likelihood	Impact	Score		Likelihood	Impact	Score	
1) Drone operation	Serious injury, damage to property from contact with flying drone.	Main user and anyone in the immediate vicinity of the equipment	4	4	16	<p>Specific risks associated with the indoor flying operation of drones: risk of crashing into person(s) and building fittings and fixture through driver error or malfunction.</p> <p>All flying (including testing) will take place within a designated enclosed flying zone. This zone will be unpopulated when any testing/flying is undertaken. The zone will be a fully enclosed environment with restricted access to the test area.</p> <p>All testing and flying within the designated zone will have an observer present in addition to the pilot.</p> <p>All drones will be equipped with propeller guards. The propeller guards will protect person(s), building, and drone from the risk of harm from the drone's rotors. The guards will minimise this from happening accidentally. The drone is light-weight (~2kg).</p> <p>Signs will be placed in prominent view to display and advice that drones will be flown in the designated zone.</p> <p>(NB - Reference method statement: DroneFlyingInSportsHall-001)</p>	1	4	4	

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2) Exposure to RF - (close proximity)	Heating effect and potential cause of cataracts.	User or anybody nearby who is within 5 cm of the transmitter.	4	4	16	<p>Place the radar module in a box when operating in a lab.</p> <p>The box when closed will have a push to make switch that will only allow the radar to be turned on when securely in place in the box so that no-one can go withing 5 cm of the transmitter.</p> <p>When not operating the radar, the box should be left open so the switch is left open meaning the radar cannot be powered.</p> <p>Place <u>not to touch</u> sign on box, saying so that someone doesn't touch the setup.</p> <p>(The European RF exposure radiation limit is fulfilled if a minimum distance of 5 cm between the body and the radio transmitter is respected).</p>	1	4	4	

Assessment Guidance

1. Eliminate	Remove the hazard wherever possible which negates the need for further controls	If this is not possible then explain why	
2. Substitute	Replace the hazard with one less hazardous	If not possible then explain why	
3. Physical controls	Examples: enclosure, fume cupboard, glove box	Likely to still require admin controls as well	
4. Admin controls	Examples: training, supervision, signage		
5. Personal protection	Examples: respirators, safety specs, gloves	Last resort as it only protects the individual	

LIKELIHOOD	5	5	10	15	20	25
	4	4	8	12	16	20
	3	3	6	9	12	15
	2	2	4	6	8	10
	1	1	2	3	4	5
	1	2	3	4	5	
	IMPACT					

Risk process

1. Identify the impact and likelihood using the tables above.
2. Identify the risk rating by multiplying the Impact by the likelihood using the coloured matrix.
3. If the risk is amber or red – identify control measures to reduce the risk to as low as is reasonably practicable.
4. If the residual risk is green, additional controls are not necessary.
5. If the residual risk is amber the activity can continue but you must identify and implement further controls to reduce the risk to as low as reasonably practicable.
6. If the residual risk is red do not continue with the activity until additional controls have been implemented and the risk is reduced.
7. Control measures should follow the risk hierarchy, where appropriate as per the pyramid above.
8. The cost of implementing control measures can be taken into account but should be proportional to the risk i.e. a control to reduce low risk may not need to be carried out if the cost is high but a control to manage high risk means that even at high cost the control would be necessary.

Impact		Health & Safety
1	Trivial - insignificant	Very minor injuries e.g. slight bruising
2	Minor	Injuries or illness e.g. small cut or abrasion which require basic first aid treatment even in self-administered.
3	Moderate	Injuries or illness e.g. strain or sprain requiring first aid or medical support.
4	Major	Injuries or illness e.g. broken bone requiring medical support >24 hours and time off work >4 weeks.
5	Severe - extremely significant	Fatality or multiple serious injuries or illness requiring hospital admission or significant time off work.

Likelihood	
1	Rare e.g. 1 in 100,000 chance or higher
2	Unlikely e.g. 1 in 10,000 chance or higher
3	Possible e.g. 1 in 1,000 chance or higher
4	Likely e.g. 1 in 100 chance or higher
5	Very Likely e.g. 1 in 10 chance or higher