

UNMANNED AIRCRAFT LOADING SYSTEM

FOR HUMANITARIAN AID OPERATIONS

VANBERLO
Part of Accenture Industry X.0



HUMANITARIAN AID

In the aftermath of a disaster, Humanitarian Aid Organizations must operate in highly uncertain and complex contexts in order to provide the lifesaving aid to the people in need. However, the systems currently available to them are limiting the aid logistics, leaving victims cut off. Affordable options are not well suited for the devastated infrastructure and the ones that are, come with a high cost.



UAV SWARM DROPS AID

WingsForAid is solving this problem. It uses a swarm of Unmanned Aerial Vehicles (UAVs) fly to the locations in need, unhindered by the ground conditions. Without landing, the aid is dropped in cost-effective and sustainable cargo boxes. After the cargo arrives safely on the ground, relief workers distribute the goods to the people in need.

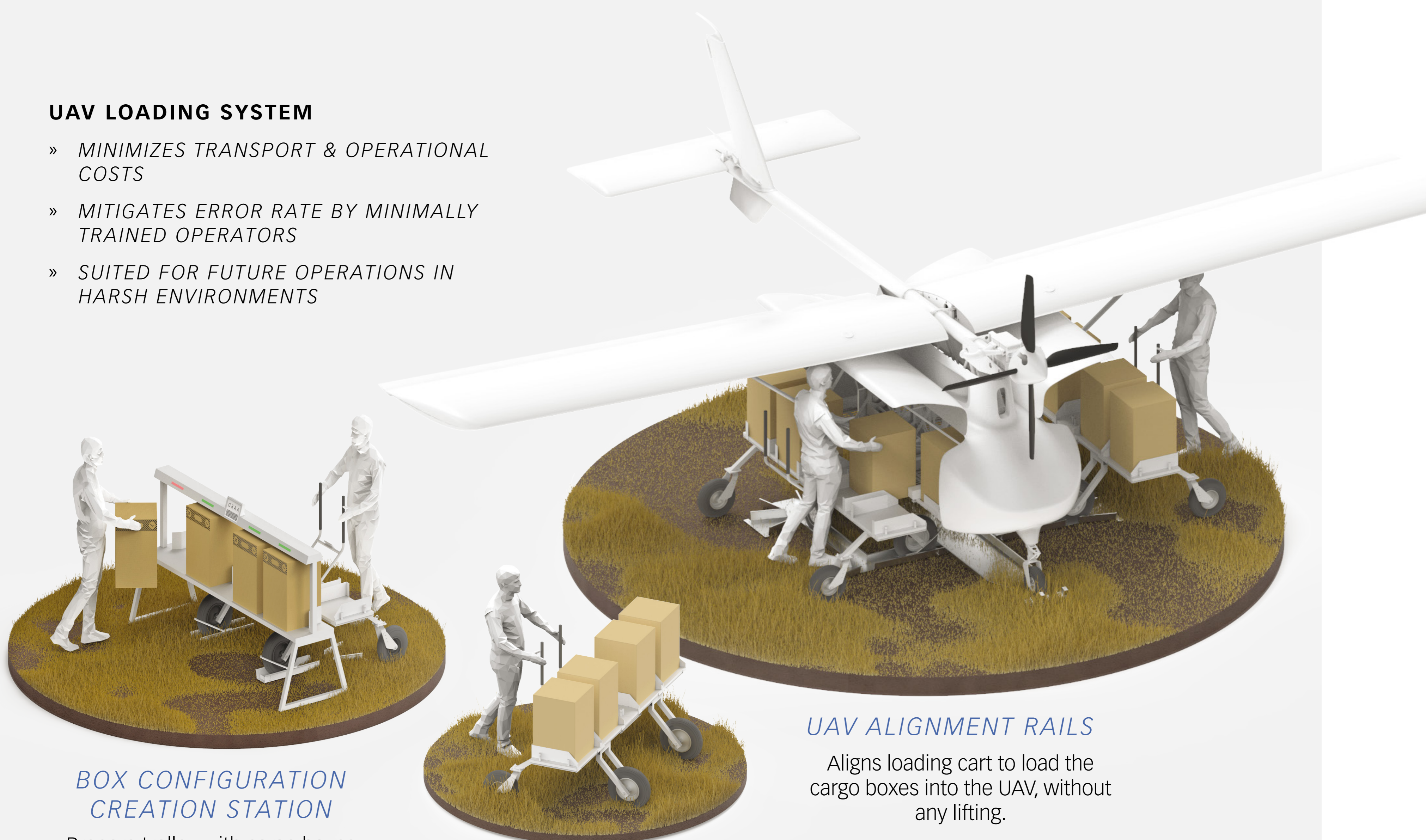


UAV LOADING OPERATION

During this thesis, a future ground operation is constructed. In this, all the UAVs are prepared for the next mission as quickly as possible. The final design provides a novel solution to load the UAV with the required cargo box configuration. It consists of both the required functional product systems as well as the integrated process. A product usability evaluation using several prototypes, proved the system to be promising.

UAV LOADING SYSTEM

- » MINIMIZES TRANSPORT & OPERATIONAL COSTS
- » MITIGATES ERROR RATE BY MINIMALLY TRAINED OPERATORS
- » SUITED FOR FUTURE OPERATIONS IN HARSH ENVIRONMENTS



BOX CONFIGURATION CREATION STATION

Prepare trolley with cargo boxes of specific content

LOADING TROLLEY

Transport cargo boxes towards UAV over any terrain

UAV ALIGNMENT RAILS

Aligns loading cart to load the cargo boxes into the UAV, without any lifting.

Max Weetzel
Design of an unmanned aerial vehicle loading system for humanitarian aid operations
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Integrated Product Design

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