



#### **Opening**

Welcome address

Introduction to the UPU's last-mile delivery strategy

**Session 1: Parcel lockers – Scaling convenience** 

Experience of national parcel locker deployment

Cost-effective and scalable parcel locker solutions for logistics, retail and e-commerce, urban-rural deployment trade-offs, standards and user accessibility

Response to questions

Mr **Masahiko Metoki**, Director General, UPU International Bureau

Mr **Prannoy Sharma**, Postal Operations Senior Expert, UPU International Bureau

Mr **Tadas Drunga**, Head of International Business Development, Omniva (Estonian Post)

Ms Julia Lockman, Junior Partner, Omnic



#### **Session 2: Drones – Redefining reach**

Use of drones for last-mile deliveries – medical and e-commerce deliveries and public-private contracting models. Key enablers and blockers in national legal frameworks for drones

Capt. **Eshaan Khullar**, Senior Vice President, Skye Air Mobility (India)

Global trends in drone regulations, drone deployment in humanitarian logistics, access to remote and conflict areas and collaboration possibilities with Posts

Mr **Oleg Aleksandrov**, Unmanned Aircraft Systems Project Manager, Aviation Service, United Nations World Food Programme

How drone delivery can change the last-mile landscape for Posts in e-commerce and remote connectivity

Mr **Justin Dong Wang**, Deputy Director, International Business Department, China Post Group

Response to questions

Closing

## PARCEL LOCKERS AND DRONE DELIVERY – INNOVATION AT THE LAST MILE



MASAHIKO **METOKI** 

Director General, UPU International Bureau



TADAS **Drunga** 

Head of International Business Development, Omniva (Estonia)



JULIA **LOCKMAN** 

Junior Partner, Omnic



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JUSTIN DONG WANG

Deputy Director, International Business Department, China Post Group



PRANNOY SHARMA

Postal Operations Senior Expert, UPU International Bureau





11 November 2025, 13.00–14.30 CET (UTC+1)
Online via Zoom (in English)



## Experience of national parcel locker deployment

Mr **Tadas Drunga**, Head of International Business Development, Omniva (Estonian Post)



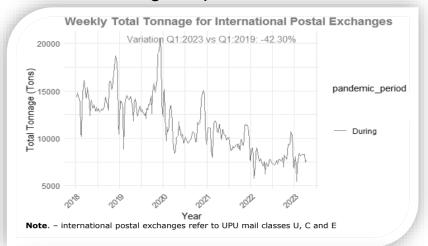
#### Why do we have to CHANGE?

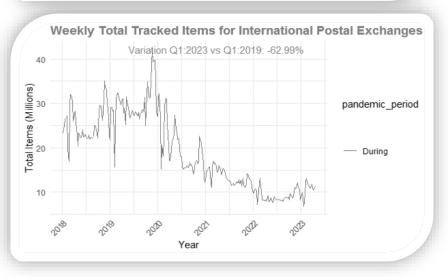
- We are NOT THE ONLY choice in Last mile anymore
- NO ONE CARES about our network
- Letters are becoming obsolete PARCELS are everything now
- We are too SLOW, too EXPENSIVE and too INFLEXIBLE
- Estonia population 1,33 million people





- Tracked items down 4 times
- Total tonnage of postal volume is also down 3-4 times





#### Lets REINVENT last mile 2014 - 2024

#### **CHANGE LAST MILE**

First Postal Operator to successfully build parcel lockers delivery network



#### **GEO EXPANSION**

> 1300 parcel locker in Baltic States changed client behaviour



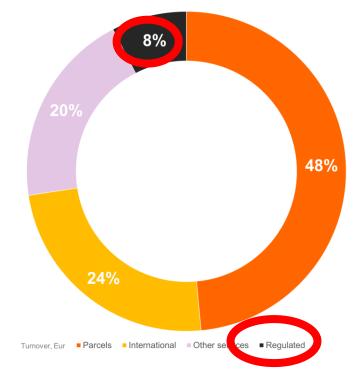
#### NOT DEPENDABLE ON POST

Only 8% of revenue from regulated postal services



- 5 companies operating Pan Baltic Parcel Locker Network
- Around 5000 lockers and growing



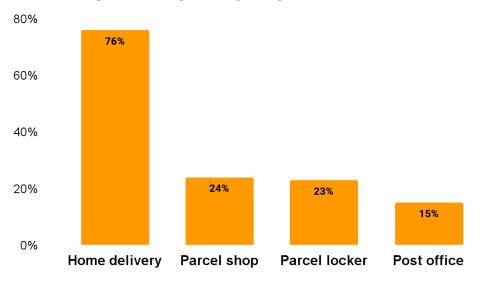


# Customers prefer the cheapest and closest delivery method

Geopost and DHL e-shopper survey in Europe states:

- Customers have no preferences regarding delivery companies as long as they get the cheapest delivery close to home.
- If the price of different delivery channels is the same, then home delivery is preferred.

#### Where do you usually have your parcels delivered?



#### Which criteria are the most important when buying online?



#### Community & Personal Parcel Machines

#### **WHY**

- Utilize postal delivery network to meet customer expectation
- Effectively combine postal and parcel delivery routes
- Reduce courier delivery cost
- Increase revenue
- Boost loyalty





#### **HOW**

- Modular battery-operated parcel machines close-to-home proximity
- Carrier integrations enable Open Network business models
- Postal Courier integrations and applications
- Subscription-based services
- New services: Appliances rental and repair, Drycleaners, Collection services, etc.









#### Community parcel machine

- Battery-operated parcel machine. Battery replacement once a year.
- Designed as modular, making it possible to adapt the size based on the need. Current design allows to install up to 3 modules.
- Has a small display and PIN pad.
- Segment: apartment building areas, smaller municipalities, commercial buildings, public transportation stops, communities etc.
- Receiving, sending and returning parcels



#### Private parcel machine



- Battery-operated private parcel machine.
   Battery replacement once a year.
- Has 3 lockers and a PIN pad.
- Segment: one household/business
- Receiving, sending and returning parcels
- Monthly subscription.
- Can add up to 6 phone numbers.
- Courier agnostic accessible for all carriers

#### Mission

- Create close to home parcel machine network across Baltics
- Main goal is to bring PUDO services closer to where people actually want to use them and where the nearest options today are too far away
- We'll aim for proximity and remain preferred delivery channel for our customers
- Network is planned as "open network" enabling to use it by other carriers as well
- In near future, also mail and periodicals could be delivered through community parcel machines





## +40% parcel volume

 Customer loyalty increase by being closest and cheapest delivery service



## delivery cost reduction by 15%

- increased delivery rate at first attempt
- Combining mail and parcel delivery routes



## new revenue streams

- Renting out network to competitors
- Delivering competitors parcels in remote locations

#### Lessons learnt

- Battery-based solution enables **flexibility finding** (rent free) **locations**.
- Location needs to have proper lighting.
- Easy installation and relocation is important for reducing costs.
- Basic maintenance has to be simple enough to be performed by the courier as well.
- Mobile app is expected for additional functionalities (payment, identification etc.)
- Potential challenge with frauds as currently no cameras are included in design







# Scalable smart designed parcel lockers: Accessibility and Innovation

Ms Julia Lockman, Junior Partner, Omnic



# THE ARCHITECTURE OF INTELLIGENCE: HOW SMART DESIGN MAKES LOCKERS SCALABLE AND HUMAN



### START WITH WHY

#### Speaker





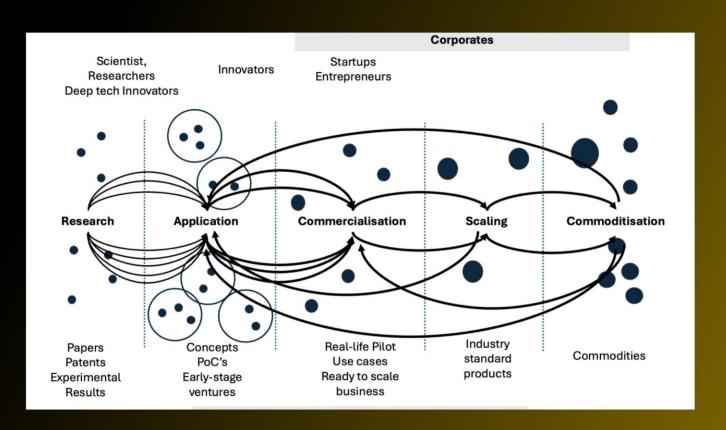
#### **Julia Lockman**

Junior Partner at OMNIC

International projects launched for logistics companies and national posts; 2x Guinness World Record holder.

#### The Shift from Innovation to Intelligence





It's no longer about how cheap a locker is to produce — it's about the cost of ownership:

- How long does installation take?
- What is the cost of location rent?
- How fast is maintenance?
- Are spare parts standardized?
- And how many revenue services are integrated inside one unit?

#### **OMNIC's Perspective**



13 years of experience with postal operators and logistics leaders

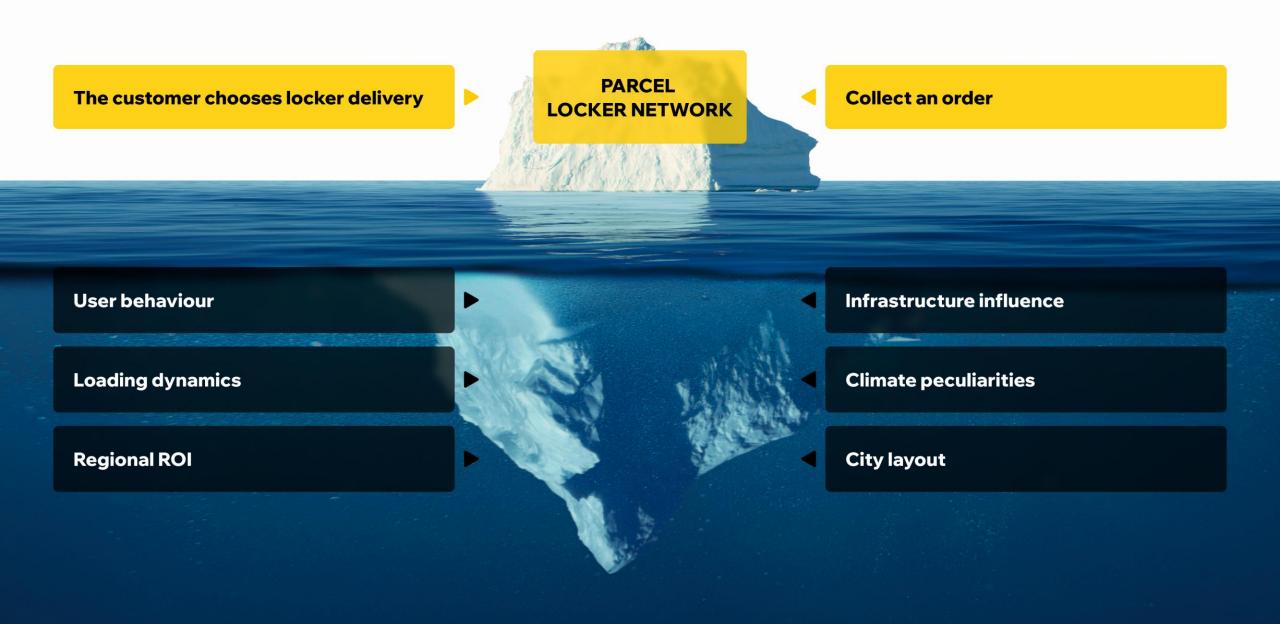
7 years managing open locker networks in real environments





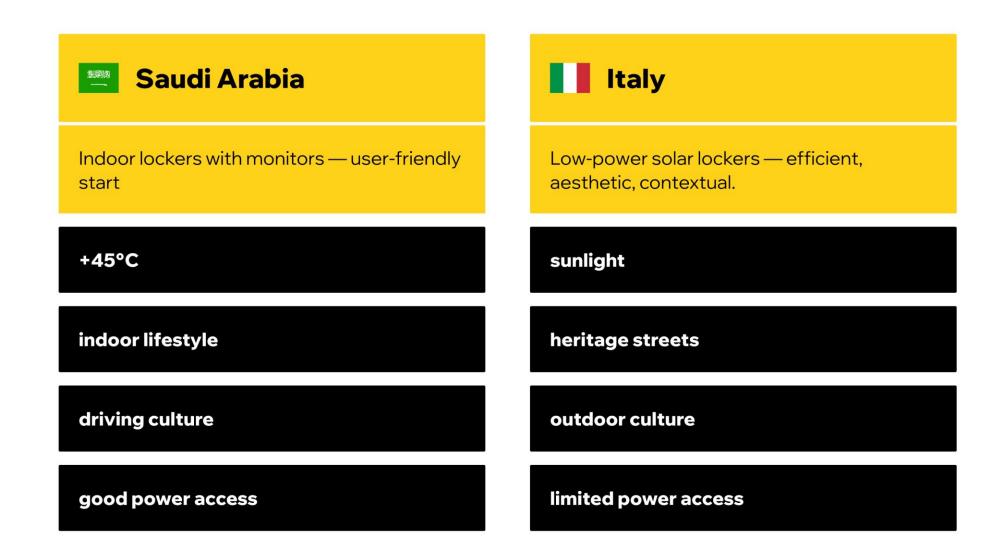
#### **Invisible Side of Innovation**





#### Saudi Arabia vs Italy





#### **LLAMA BOX Case**













LLAMA BOX — world's largest parcel locker.

Built on sharing economy and open network principles.

#### **Urban-Rural Balance: Accessibility for Everyone**





Measure parcel weight & dimensions



ID scanning and OCR technology



Payment, parcel drop off and pickup



#### Interoperability and Standards



Standards are the language of trust.

Open systems grow faster, integrate easier, and reduce total costs.







**OMNI Post Core** 

**OMNI Post** Pro

**OMNI Post** Ultra

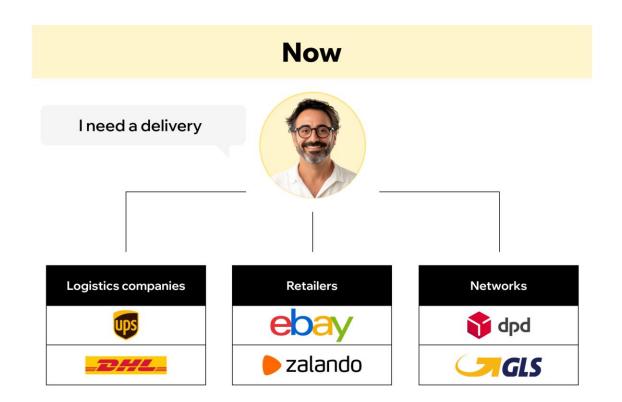
#### **Open Ecosystem**

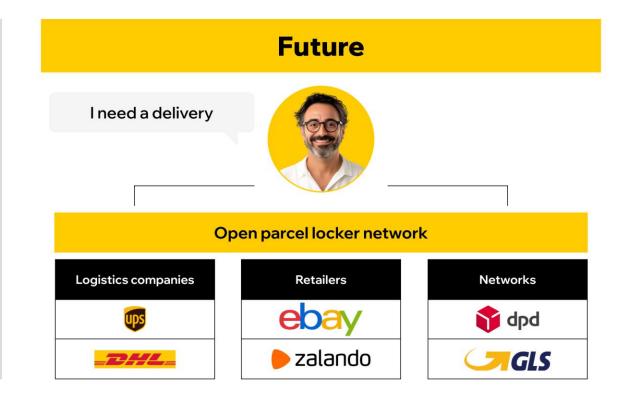


Open ecosystems always win — in utilization and trust.

Carrier-agnostic networks increase ROI by 20-40%.

Innovation is not about ownership — it's about collaboration.





#### Return on Intelligence



#### **Get Your Personalized Guide**

**Your personal action plan** and ROI calculation during interactive 15-minute meeting

- Identify the locker type and location for your business context.
- Optimize efficiency and network ROI.



## The Era of Loud Innovation is Over. The Era of Intelligence Begins.

### Key Takeaways



#### 01 Adapt to Context

Design for reality — adapt technology to culture, climate, and user behavior. Intelligence is not universal; it's contextual.

#### **O2** Build on Standards

A unified locker architecture creates predictability, trust, and scalability.

Standards simplify operations, ensure consistency, and make integration effortless.

#### 03 Educate through Experience

Changing habits begins with simplicity.
When interaction feels natural, users trust, adopt, and the market evolves.



### **Questions and Answers**



# Drones for the last mile: medical and e-commerce deliveries; public-private contracting models and legal enablers and blockers

Capt. **Eshaan Khullar**, Senior Vice President, Skye Air Mobility (India)



# ELEWAIING DELIVERIES

## **Emerging Whitespace Opportunity in Logistics Market**



01

#### **Large Addressable Opportunity**

Indian logistics sector is one of the largest in the world; Road Transport itself has 57% market share

02

#### **Inefficiencies in Logistics Market**

Rising cost, delay in delivery, inefficient routes, reverse logistics are some of the key inefficiencies which no one is solving for

03

#### Same day delivery demands

Increasing demand for same day delivery is forcing sellers & logistics players to think beyond road/vehicle logistics

04

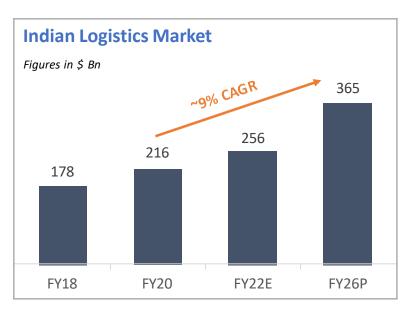
#### **Drones to tackle Inefficiencies**

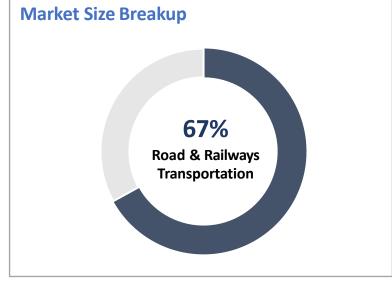
Drones can radically transform logistics operations, leading faster, efficient & greener mode of delivery

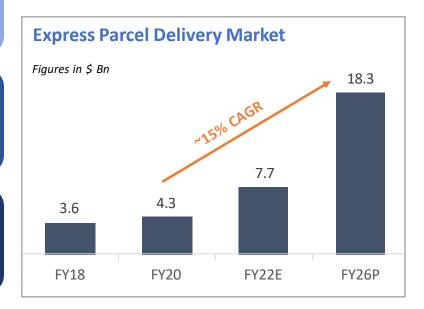
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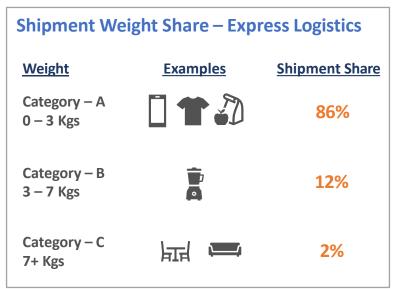
#### **Push from Government for Drones**

Govt. incentives are encouraging multiples industries to experiment mid and last mile delivery via drones









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## **Use cases**



#### ...... One viable solution which would guarantee quick and effective delivery



#### Healthcare

Rx prescriptions, medicines & reports



#### **Public Health Services**

Vaccines, Blood delivery & Medicines



#### **Quick & E-Commerce**

Groceries, retails items, electronics, etc



#### **Disaster Relief**

Distribution of aid & Supplies



#### **Postal Deliveries**

Transfer of documents & small parcels



#### **Farming & Agriculture**

Life stock Vaccines & Supplies



• Place Order

**2** Drone dispatch

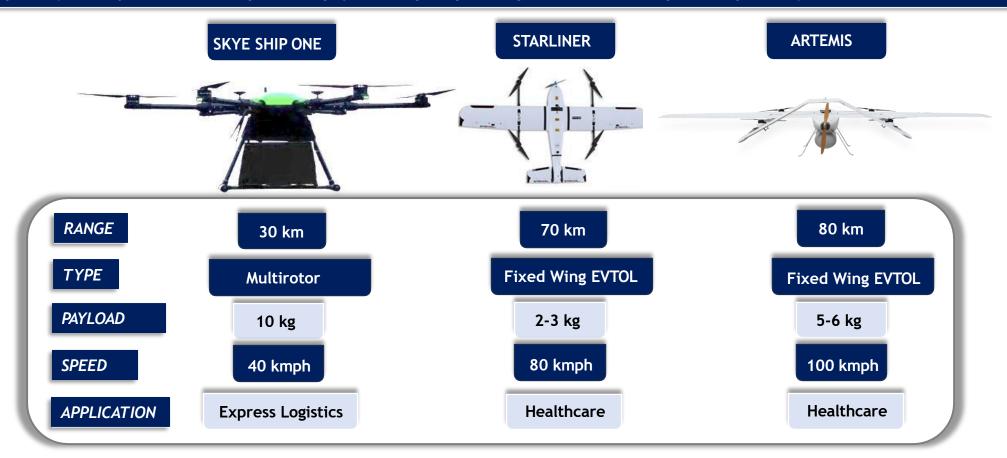
Real-time tracking

4 Secure Delivery



## **Enabling** the Growing Desire for Faster Deliveries

SKYE AIR's proprietary drone platforms, developed through joint design engineering with India's leading OEM, represent years of advanced, collaborative innovation



Proprietary Integrated Hardware Mechanism Capabilities Traditional drones require landing to complete deliveries — a process that consumes time, limits drop locations, and exposes the drone to ground-level threats.

Skye Air eliminates landing delays and ground-level risks with a proprietary winching system, driving efficiency and delivery precision.

Traditional drones fail at multi-package, multi-site deliveries because they lack the systems to plan, sequence, and adapt routes beyond single-package, single-drop missions.

Skye Air eliminates landing delays and ground-level risks with a proprietary winching system, driving efficiency and delivery precision.







## **DeepTech Play at Core – Enabling Automated Deliveries**



## **Drone Delivery Technology Updates**

## **Skye Connect**

Triple redundant 4G LTE connectivity - enhancing connectivity for drone flights and ensuring security & safety



## **Skye Pod**

OTP secured last mile delivery infra, enabling faster delivery network



## **Skye Winch**

Proprietary winching mechanism for swift delivery; Integrated on 2 drones



#### **Skye Run**

Proprietary slotting systems, allowing drones to carry multipackage for multi-site and do milk run



## **SaaS Technology Updates**

## **Skye Tunnel**

End to end air corridor enabling safer flights; Also provides data for collision avoidance



#### **Skye FMS**

End to end Fleet Management
System (FMS) enabling warehouse
to doorstep delivery



#### **Skye Ops**

Automated operations management systems build to handle millions of deliveries



#### **Skye Zone**

**Ground control system** managing flight interface and control flight management



## **Skye UTM - Key Features**



#### **User Access: Access to Pilots**

Pilots can access the platform to view airspace, submit missions, receive approvals & track flights



#### Pop-up UTM (1-click UTM)

Skye UTM automatically connects with the GCS with a single 'click', without any API integrations or downloads



#### **User Access: Regulators & Stakeholders**

Regulators & Stakeholders can access the platform to design regulations, generate approvals & monitor airspace usage



#### Whatsapp UTM

Pre-approve BVLOS flight within 3-clicks and receive: flight plan verification, weather status, regulatory approval & pre-flight report



#### **Blackbox UTM**

Mission analytics such as pre and post flight reports, pre, in & post flight details, airspace restrictions, weather, actual path etc.



#### **Tracking Engine**

Anywhere, anytime tracking; open on any device, all missions stats, delivery related details
Deliver real time updates to your client



## **Operational flow**



- Shipments received at Skye Port
- Shipments processed and sent to drone flying zone
- Shipment weighed and loaded onto the drone
- Take off within minutes to Society of Cx within 3kms
- Drone winches shipment inside Skye Pod
- Skye Walker (delivery boy) enters OTP and receives package
- Delivers to Cx doorstep

- One stop Hub for Quick Logistics
- Equipped with Drone flying, sorting and batching areas
- Connected to multiple societies in area of 3kms
- Multiple Brands Inventory management and connectivity
- End to End solution for D2C, B2B or B2G brands

## Clients who trust us

















zepto

















**Advance Stage Discussion** 



frido







#### **Government and Real Estate Collaborations**













**India Post Case Study** 

## **Summary**



## **Himachal Pradesh – Hatkoti Base**

## **Performance Metrics:**

- Total Flights Conducted: 300
- Total Distance Covered: 1,608 km
- · Total Mail Load: 374.7 kg
- · Average Delivery Time Reduction: 75%

## **Arunachal Pradesh – Chowkham Base**

## **Performance Metrics:**

- Total Flights Conducted: 308
- Total Distance Covered: 5,854 km
- · Total Mail Load: 82.4 kg
- Average Delivery Time Reduction: 60%

## **Key Findings**



- **Time Efficiency:** Drones reduced delivery times by 55%-85%, overcoming terrain-related obstacles.
- Cost Optimization: Initial costs were higher, but projected cost reductions suggest a 25% decrease compared to traditional methods at scale.
- **Operational Scalability:** Plans to expand from 3 to 12 routes in Himachal Pradesh and 3 to 10 routes in Arunachal Pradesh.
- Environmental Impact: Each drone flight saves 1 kg of CO2 emissions, supporting India's sustainability goals. The trials saved approximately 750 kg of CO2 emissions, which is equivalent to the carbon absorption of about 34 mature trees in one year. This highlights the substantial environmental impact of drone deliveries compared to traditional logistics.
- **Technology Advancements:** The program employed UTM-based route planning, BVLOS operations, and energy-efficient UAVs.
- **Regulatory Compliance:** Full adherence to DGCA guidelines, including airspace safety measures like geofencing, detect-and-avoid systems, and integration with Unmanned Traffic Management (UTM) platforms.

The trials confirmed that drone logistics can provide a scalable, cost-efficient, and environmentally friendly last-mile delivery solution. This model is poised for nationwide implementation, modernizing postal logistics across India

## **Expanding Global Footprints...**



The trial aimed to enhance security and safety standards, to enable public and private entities to use drones in providing the desired services. It helped to regulate activities related to the use of drones and create an environment conducive to investment in this sector in order to contribute to the strategy to make Dubai a centre for the drone industry and smart and innovative air transportation systems.

#### **Objective**

- Defining Con-ops, SORA and ERP for BVLOS drone delivery for commercial use case
- Ensuring product and operational compliance as per the directions of Dubai Civil
   Aviation Authority
- Test the technical feasibility of using drones for delivering packages in urban and semi-urban environments
- Detailed report submitted for 3 weeks trial with learnings, best practices and operational economics





## **Awards and Recognition**







## **Skye Air: Achieving Greatness Through Grit and Dedication**







## What the future looks like!





# Global trends in drone regulations, deployment in humanitarian logistics, access to remote and conflict areas and potential collaboration with Posts

Mr **Oleg Aleksandrov**, Unmanned Aircraft Systems Project Manager, Aviation Service, United Nations World Food Programme



# UAS Humanitarian Operations, Challenges and Opportunities

Global Webinar on Parcel lockers and Drone delivery – Innovation at the last mile

**11 November 2025** 

SAVING LIVES CHANGING LIVES



# **WFP Aviation Service**Vision and Objectives



## **Provide** aviation service

Common service

(United Nations Humanitarian Air Service - UNHAS) **including UAS** 

Global On-demand and Specialized service

for humanitarian and development organizations **including UAS**;



Act as a facilitator in humanitarian response

**Promote collaboration** between aviation and humanitarian stakeholders (**UN UAS Forum**);

Ensure **systematic communication and coordination** among aviation and humanitarian actors.



Strengthen Aviation Systems and Capacity at the Regional and National Levels

**Collaborate** with international aviation organizations and regulators;

Strengthen partnerships with humanitarian and development actors.

## **UNHAS** presence 2025

## **21 UNHAS operations**

## **UNHAS** provides:

- passenger and light cargo air transport
- capacity for medical and security evacuation
- capacity strengthening for staff, partners and local authorities
- airport and airfield rehabilitation



UAS in Humanitarian Operations



## **Humanitarian UAS segmentation**





- Data collection and communication
- Small Cargo delivery
- Mid-size Cargo delivery
- Heavy-lift Cargo delivery

# Data collection and communication

Big variety of applications: security, development status assessment, damage assessment, communication, engineering, etc.

Big variety of available UAS and operators for any applications

Safety can be significantly accommodated by mass / speed limitation

Requires strong data management, data protection

Can be easily used for improper purposes and easy to hack

Difficult business case (cost vs benefit) and often used as mission tool



1-5 kg of cargo delivery for 100 km



The easiest business case definition in cases of urgent medical delivery

# Small Cargo delivery



High impact from weather and long-distance communication



Difficult diversity of delivery for non urgent cargo



Requires primary safety risk assessment

## Mid-size Cargo delivery



5-100 kg of cargo delivery



Too big for urgent, too small for non-urgent deliveries in humanitarian applications



Big offering from UAS manufacturers mostly for non-humanitarian applications



Very high cost per kg of delivery



100+ kg of cargo for 200+ km of distance



The scaling allows first approximation to helicopter delivery cost in terms of USD/kg





Allows various cargos to be delivered as one package



Requires significant UAS regulation development



Requires significant Safety evaluation process and compliance

Pioneering Humanitarian Heavy-lift Cargo UAS





## Why Madagascar?

- Country has predictable humanitarian need
- Humanitarian volume per delivery in 100s of kg, not in MTs
- Main challenge is roads deterioration due to flooding
- Minimum security challenges
- Low population density
- Low air traffic
- Availability of UAS civil regulation



## What is the use case?

- Delivery need from 80 to 160 kg per destination
- Delivery can combine several items like special food supplement, medical supply, seeds, etc.
- This allows combination of several humanitarian actors for one delivery
- Efficiency is mainly the difference between unpredictable time / cost and stable cost / predictable time for UAS delivery
- Access to remote area



## Required pre-work

- Development of basic UAS civil regulation
- CAA familiarization with ICAO concept for RPAS and UAS through, for example, ICAO UAS iPack
- Understanding that UAS is not handled via ICAO SARPS and familiarization with UAS concepts of safety evaluation like JARUS SORA
- UAS positioning in the country that includes sequential VLOS / BVLOS authorizations with required geographical and altitude parameters
- Safety / security assessment for operational base



## **Recurrent work**

- Preflight assessment of path to destination
- Preflight assessment of availability of drop zone and drop pattern and descend to drop zone
- Training for drop zone coordination
- Engagement with local community
- Weather forecast for entire flight
- Each flight clearance with Civil Aviation authority
- Empty pre-flight to drop zone for flight validation



## **Actual flight**

- Security clearance for operational base
- Weather forecast and actual weather monitoring during the flight
- Correct communication sequence with Drop zone coordinator
- Drop is aborted is any safety conditions are not met
- Operation of 160 kg humanitarian cargo delivery with airdrop for 200 km range has started in Madagascar from Feb 2025



## **Challenges and next steps**

- Conversion of UAS definitions into CAA working concepts like:
  - Type Certificate
  - Continues airworthiness
  - Approved Training organization
  - Pilot Type rating for UAS
  - Safety definition and assessment
- Ability to monitor local weather (weather avoidance)
- Enroute communication (command and control latency)



## **UAS collaboration opportunities for cargo humanitarian operations**



Increase flexibility of supply chain where it improves the last mile delivery



Predictable and reduced delivery time to isolated locations



Technology **capacity building** in country (regulation, UAS pilot's community, spare parts / repair)



Reduction of security threat for aid workers



Ability to provide delivery **common service** to the humanitarian community



Ability to deliver at the **cost competitive** to other air delivery options



## THANK YOU



oleg.aleksandrov@wfp.org | UAS Projects, Aviation Service



## How drone delivery can change the lastmile landscape for Posts in e-commerce and remote connectivity

Mr Justin Dong Wang, Deputy Director, International Business Department, China Post Group



# Innovating the Last Mile: China Post's Approach and Initiatives

Presentation by Mr. WANG Dong
International Business Department, China Post

November 2025

### **Common Last-Mile Challenges for Postal Operators**



#### Accessibility:

 How to provide equal and reliable postal services to remote, geographically challenging communities?

#### ■ Affordability:

 How to balance high operational costs with continuously rising expectations for timeliness?

#### Adaptability:

 How to make our postal service network more resilient and adaptable in the face of challenges?

China Post's last-mile exploration aims to find answers to these common questions.

# Our Innovation Exploration: Building an Integrated Last-Mile Service Network



#### Smart Terminals

#### **Unmanned postal stations and smart parcel lockers**

 Deliver extensive, 24/7, low-cost, and highly convenient last-mile service.

#### **Local Connection Transfer**

#### Unmanned vehicles

 Enable smart transfers and flexible replenishment between different logistics modes.

#### **Aerial Network**

#### **Drones**

 with long endurance and heavy payloads, overcoming geographical barriers for regional transport and urgent deliveries.



#### **Smart Terminals: Parcel Lockers and Unmanned Postal Stations**



- ➤ 400,000+ parcel lockers
- Across 230 cities | Serving 500M+ customers | 24/7 service





- > 900+ Unmanned Postal Stations so far
- > 7\*24h self-pickup & drop-off in highdemand areas (large communities, administrative districts, and business districts, etc.)





# [Case Study] Unmanned Postal Station: Enhancing End-Point Efficiency and Addressing Cost Challenges



- China Post has deployed unmanned postal stations in Shanxi Province, in northwestern China, to improve efficiency and reduce the rising costs of last-mile delivery.
- **Technology used:** Smart shelves | Light-guided picking | Auto-location tracking

#### Positive outcome

- Shelving time: 3–5 seconds per item
- Retrieval time: 1–2 minutes per user
- Efficiency gain: Over 5x faster on average
- Error rate: Below 0.1%





### **Ground Transfer: Smart Application of Unmanned Vehicles**



China Post is actively deploying unmanned vehicles through leasing, procurement, and partnerships.

#### Key application scenarios:

- Last-mile city shuttle transportation
- Direct drop-off points
- Grid-based transfer services

#### Current implementation:

- 775 vehicles already in operation
- 7,000 vehicles leased/procured in total
- Ongoing distribution to locations nationwide



### [Case Study] Unmanned Vehicle in City Transport



#### Fewer staff needed:

 We now need only 1 person instead of 3 to load a truck at the dock.

#### **Efficiency** gain

- Bulk loading/unloading of mail significantly cuts loading time
- Handling efficiency increased by 70%

#### **Quality Control**

- Reduced mail handling frequency
- Mail damage rate decreased by 50%



### **Aerial Network: Continuous Exploration of Drone Operation**

- Since 2016: Pioneering drone delivery to bridge the service gap for remote communities.
- Proven Expertise: Successfully operating across mountains, plateaus, islands, and villages.
- Our Mission: Guaranteeing equitable and reliable postal services for all.







### **Challenges & Considerations**



#### ■ Policy & Regulations:

• Airspace application management, road rights for unmanned vehicles, and lowaltitude flight approval processes need further clarification and simplification.

#### **■** Technology & Operations:

 Adaptability, reliability, and endurance of unmanned equipment in special environments (e.g., extreme cold, maritime).

#### **■** System Integration:

• How to smoothly and efficiently integrate new models into China Post's vast traditional supply chain and operational system.

#### Cost & Talent:

 High upfront investment costs, shortage of composite talent with both technical and postal business knowledge.

# Summary and Outlook: Collaborating to Create a New Future for Smart Logistics



- Innovation is essential to meet universal service obligations and overcome delivery challenges.
- Drones, unmanned vehicles, smart stations and lockers have shown strong potential to expand coverage, improve efficiency and create value.
- Shaping the future requires collaboration and shared expertise across the global postal sector.

China Post is committed to sharing experience and deepening cooperation with all partners to jointly drive last-mile innovation and build a more efficient, inclusive and sustainable global postal network.



# Thank you!

Any questions?

wangdong@chinapost.com.cn



## **Questions and Answers**



Thank you for taking the time to complete this survey. Your feedback is valuable.

https://fr.surveymonkey.com/r/XJCBKQC



For further information, please contact us at: Transport@upu.int



# Thank you