



ICAO DRONE ENABLE/2 Symposium
Chengdu, China September 13, 2018

White Paper Presentation

A Decentralized Solution for Integrating Large Scale UAS Operations into Future Aviation System



Presentation is Developed
in Technical Collaboration with

Distributed Sky  TERRAHUB



Contents

This presentation will discuss the following



The Challenge

— ATM = Centralized
UTM = Decentralized

— ATM = Restrictions
UTM = Geofencing & Communication

— ATM = Human in the Loop
UTM = Machine in the Loop

ATM



152M (500 FT)

UTM

122M (400FT)



CONTROLLED AIRSPACE
AND AIRPORTS

URBAN AIRSPACE

SUBURBAN AIRSPACE

RURAL AIRSPACE

Density / Risk
Demand for Automation

Geofencing & Communication

Boundaries

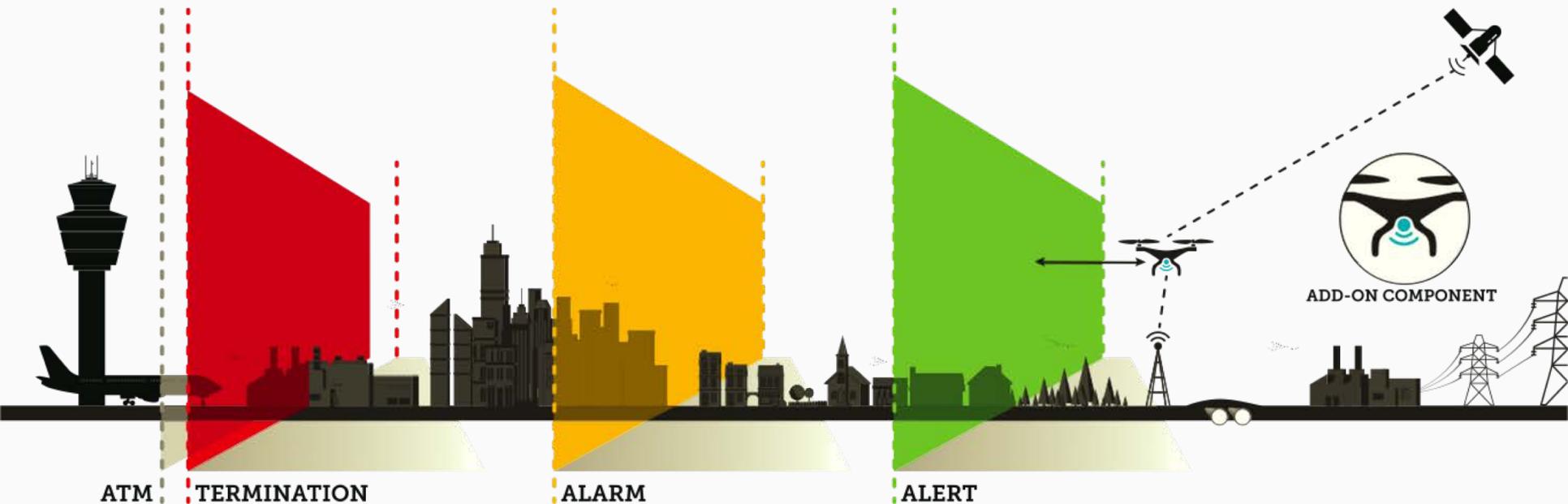
- Fixed & Temporary
- Customized Breach Action(s)

Ownership and Management

- Regulators
- Delegated Authority

Implementation

- Onboard & Remote Strategies
- Remote Access to UAS



UTM System Architecture

Distributed Solution Framework

- Unique Identifiers
- Performance Parameters

Authorization

Pilots



f\$s8!s8s8f8#ds13

UAS



f\$s8!s8s8f8#ds13

Data Providers



f\$s8!s8s8f8#ds13

USS



f\$s8!s8s8f8#ds13

...

- Distributed Ledger
- Smart Contracts
- Transfer of Liability

Business Logic

f\$s8!s8s8f8#wew
2#e8!s8s83232lgj
{.....}{.....}{...}
{.....}{.....}
{.....}{.....}



Smart Contract(s)

2#e8!s8s83232lgj
f\$s8!s8s8f8#wew
{.....}{.....}{...}
{.....}{.....}
{.....}{.....}



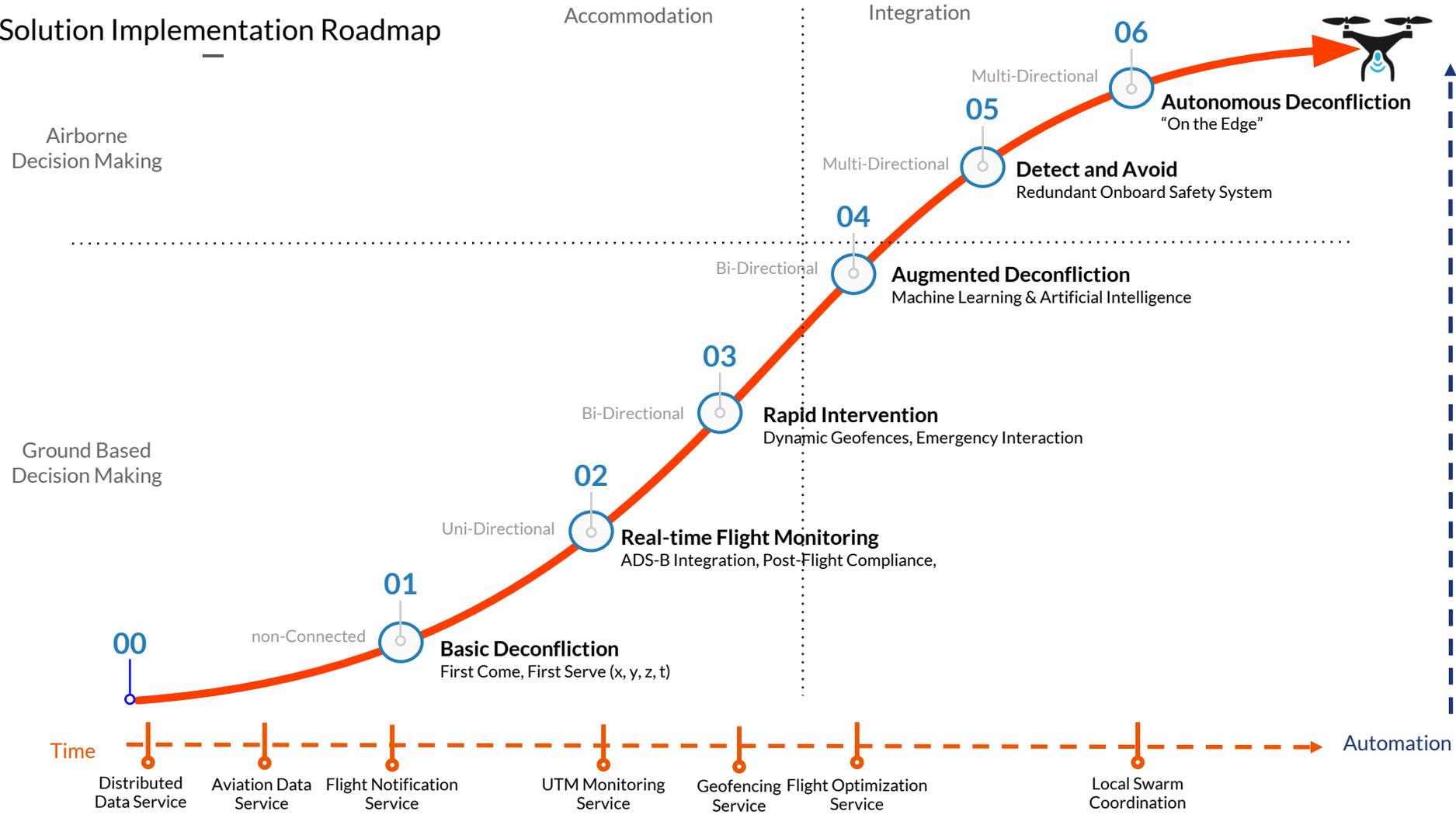
f\$s8!s8s8f8#wew
2#e8!s8s83232lgj
{.....}{.....}{...}
{.....}{.....}
{.....}{.....}

- Storage
- Monetization

Technical Infrastructure



Solution Implementation Roadmap



Airborne
Decision Making

Ground Based
Decision Making

Accommodation

Integration



Autonomous Deconfliction
"On the Edge"

05
Detect and Avoid
Redundant Onboard Safety System

Multi-Directional

04

04
Augmented Deconfliction
Machine Learning & Artificial Intelligence

Bi-Directional

03

03
Rapid Intervention
Dynamic Geofences, Emergency Interaction

Bi-Directional

02

02
Real-time Flight Monitoring
ADS-B Integration, Post-Flight Compliance,

Uni-Directional

01

01
Basic Deconfliction
First Come, First Serve (x, y, z, t)

non-Connected

00

Time

Automation

Distributed
Data Service

Aviation Data
Service

Flight Notification
Service

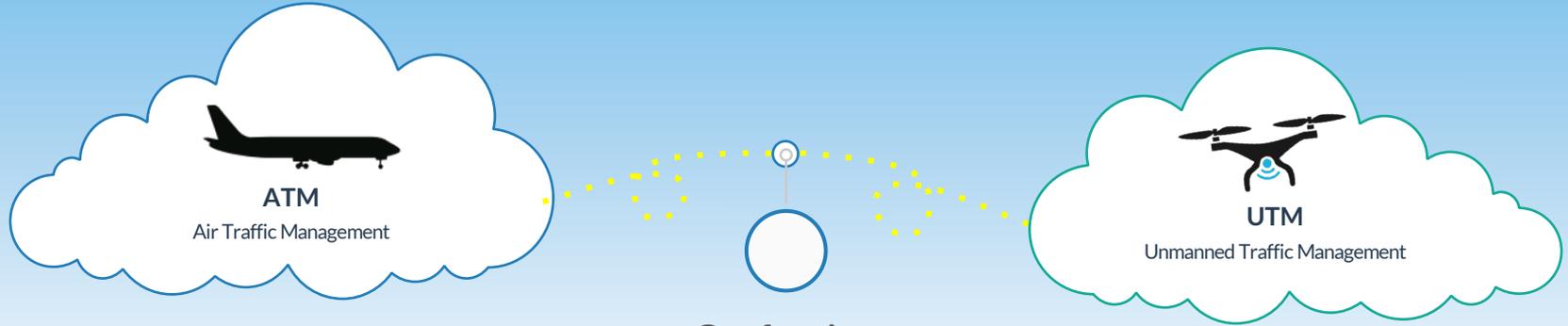
UTM Monitoring
Service

Geofencing
Service

Flight Optimization
Service

Local Swarm
Coordination

Solution Summary



Communication

Reliable Channels



Trust

Single Source of Truth



Accountable

Transfer of Liability



Lindsay Mohr
AirMarket Inc.
CEO



Andrei Morozov
simlabs.
CEO



Work to Date

Delivering the Vision

Distributed Sky

