ADVANCED AIR MOBILITY

A NEW ARCHITECTURAL TYPOLOGY

IDOM

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About IDOM

320 M€
turnover

65
years

125
countries

40
offices

920
partners

4.300
professionals

Consulting | Engineering | Architecture

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Document OVERVIEW

Advanced Air Mobility

Once perceived as purely a sci-fi reality, “Advanced Air Mobility” (AAM) is an emerging transportation concept that includes the movement of cargo and people in vehicles that fly at low altitudes over metropolitan, suburban, and rural areas. They are envisioned to be small vehicles for inter and intra-city commutes, capable of use by, and **affordable to much of the public**. Electric vertical take-off and landing vehicles (eVTOLs) are being developed to be quieter, safer, and cheaper to produce and operate than conventional helicopters.

Boasting an “On-Demand Mobility” (ODM) approach, AAM opposes the fixed schedule operation of conventional air travel. The service operation would be flexible, operating similarly as taxi mobile applications regarding to the parameters of fare, travel time and local availability. Although it is not possible to state clearly a year of full adoption, investment and efforts in **ODM AAM** have been increasing steadily over the last years.

The Design of a novel Architectural Typology

The realisation of AAM vehicles will need dedicated infrastructure to operate: **Vertiports**. These will imply the adaptation of our territories, our urban fabric, transit conception and the construction of infrastructure for the operation of the new eVTOL vehicles.

Through analysis of the current state-of-the-art, IDOM have found that little progress has been made to **challenge the implications** of AAM within our territories, urban fabric and the development of novel infrastructural typologies that make the implementation of this transport system possible.

To provide stakeholders with **insight for future development**, IDOM are developing research to propose a systematic approach to the categorization of the AAM types and to analyse their implications both at an urban and at a building scale.

01 Advanced air mobility AT A GLANCE

What is Advanced Air Mobility?

AAM is the concept to enable fast, flexible and effective air transportation of people and cargo. This is possible with the introduction of a decarbonised, on-demand and distributed aviation model by using a new generation of small aircraft, **eVTOLs**. These use electric power to hover, take off, and land vertically and will operate in a system that overcomes the limitations of traditional infrastructures, such as car, rail and conventional aviation.

These aircraft will provide **sustainable, affordable and fast** services, enabling a shift in the transportation model. From a monocentric node-based system, our territories will weave into a **polycentric mesh**. It means that mobility will no longer depend on the density of the population and will not depend on large urban areas. AAM will become an equality and accessibility enabler.

The third flight revolution

AAM is probably the most significant event in the industry since the innovation of the jet engine. The advances in electric and **hydrogen propulsion** combined with novel computing innovation will help provide sustainable, affordable, and net-zero mobility. It has the potential to transform our society by **connecting territories** and communities in ways never imagined.

A reality

AAM has been developing over the last decade. Manufacturers have been designing and testing new eVTOLs, **investing billions** in aircraft technology. Authorities such as EASA or FAA have started to regulate these new aircraft. Governments and cities are getting interested and involved in the conversation for AAM implementation.

The scene is becoming more real by the day. Conversations revolve around the new aircraft and its technologies. AAM will have significant implications in **our territories**, but the industry has seen little involvement from Architects and planners.

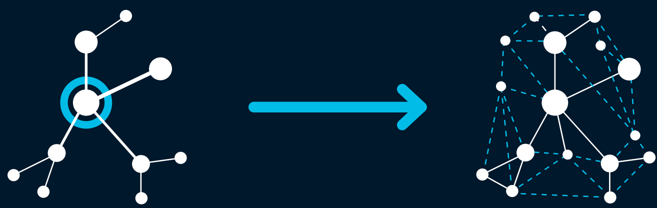
WHAT IS AAM?

New mobility solution

Sustainable

Affordable & on demand

Fast



Monocentric

Polycentric

THE THIRD FLIGHT REVOLUTION

Airborne

Long haul

Flexing flight

Introduction of Jet Aviation

Increase of Hydrocarbon Costs (Economical and Environmental)

THE EVTOL REALITY

Engineers, Manufacturers, Operators, Statutory Authorities and Regulators working together

New vehicles are developed

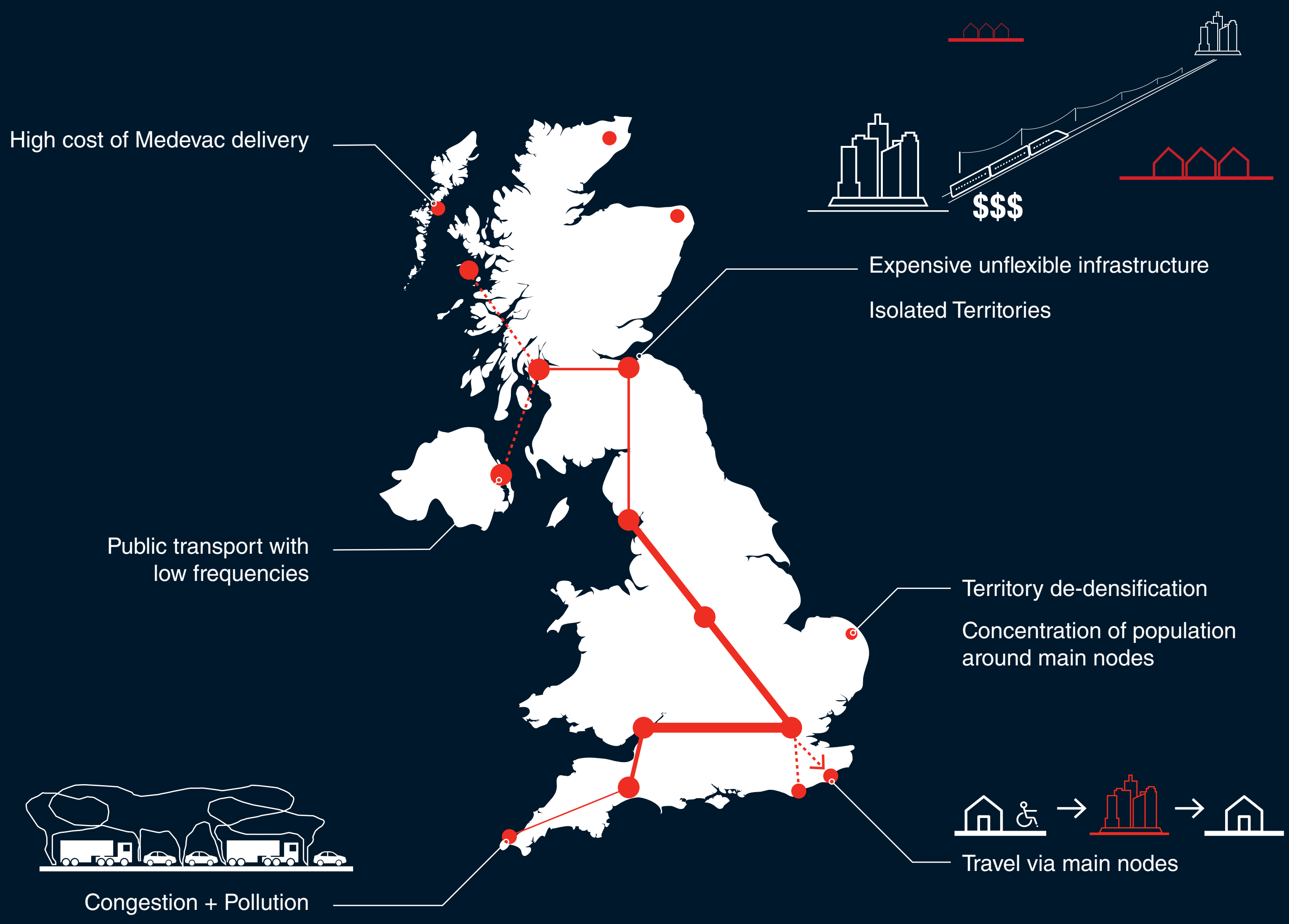
Model for medium-income households

eVTOL use on Medical and Emergency

Unmanned cargo

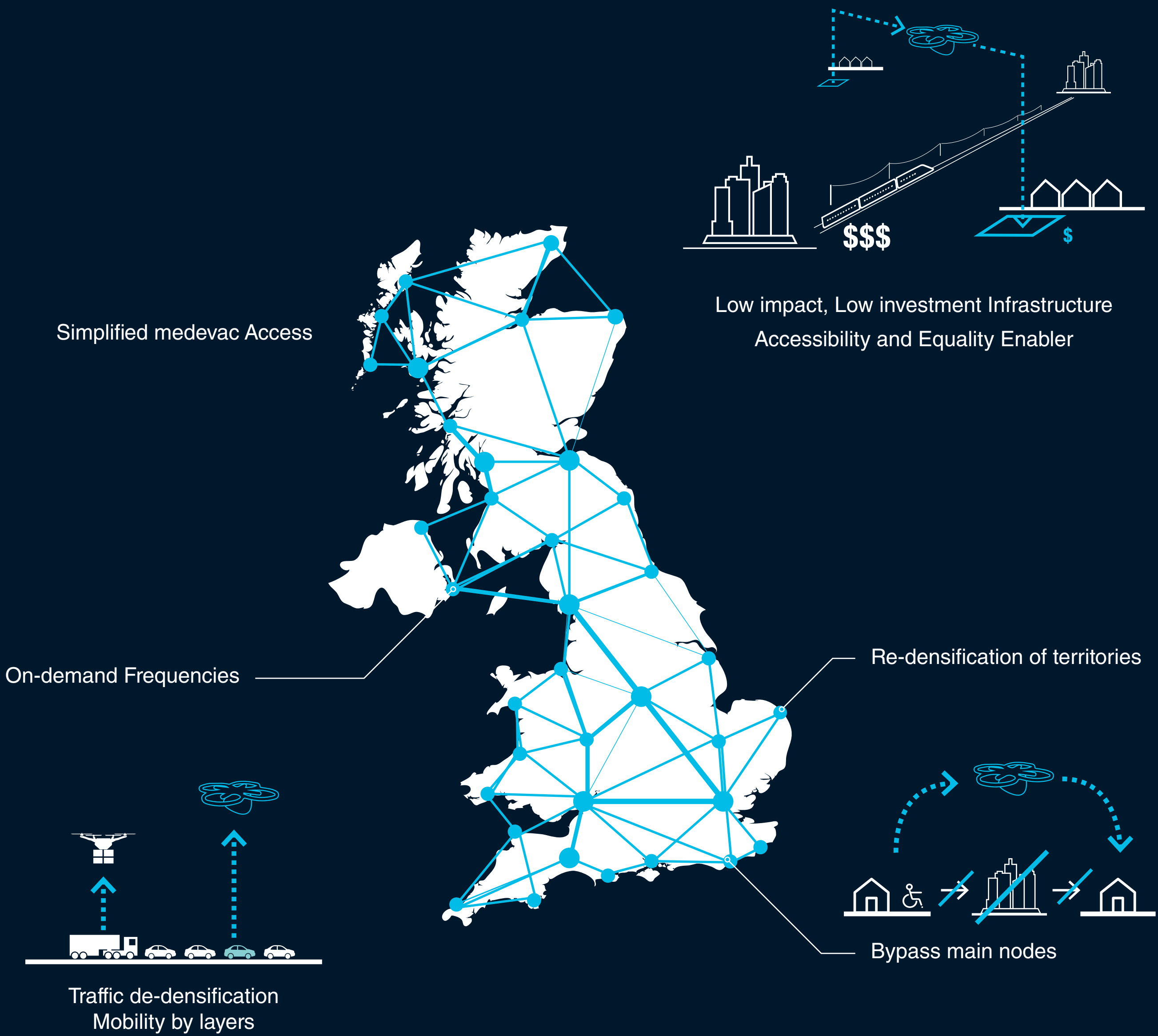
eVTOL will promote unique regulations

OUR MOBILITY REALITY

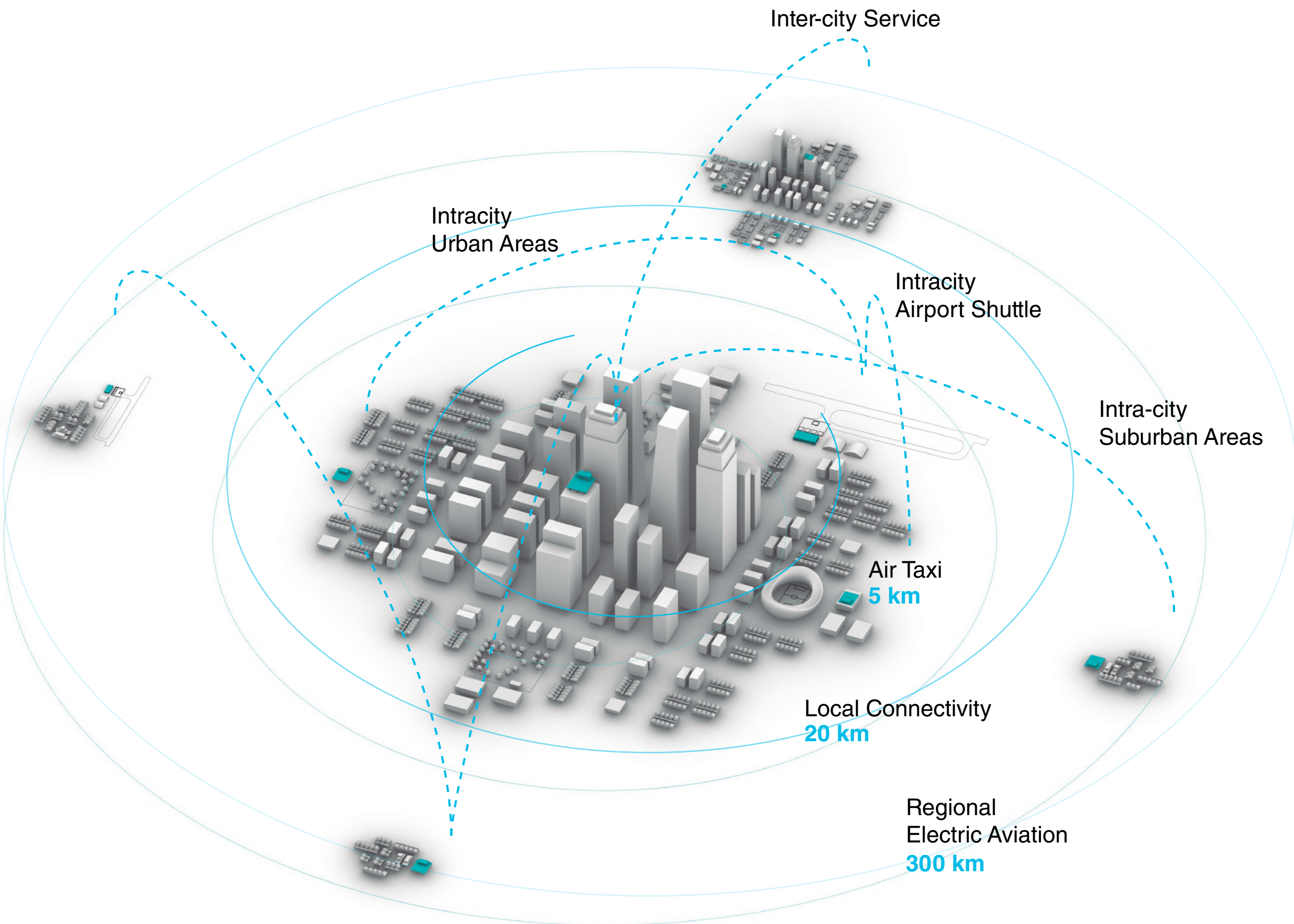


The current mobility reality derives from the technological changes since the mid-XIX century: victorian railways and the introduction of the car. Our territories are **connected but not integrated**. The infrastructure is organised in concentrated non-resilient, rigid hubs forming a **linear infrastructure** network.

THE OPPORTUNITIES OF AAM



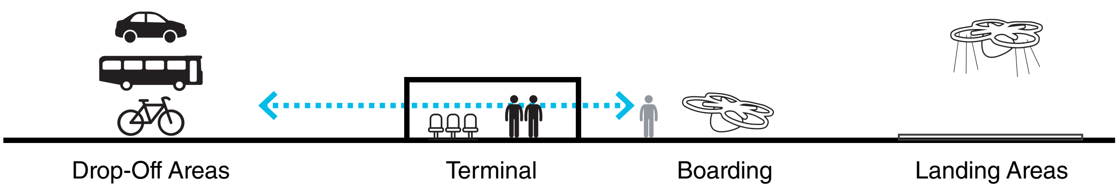
AAM has the potential to **positively change our territories** by overcoming the limitations of our current infrastructure with a sustainable approach.
AAM is a **cost-effective** transport solution for areas not served by public transport.
It is to target **regional connectivity**, activating communities and territories, reducing social exclusion and changing the growth of our built environments to form a **multi-nodal network**.



AAM will serve passengers, cargo and emergency response teams in **intra-city and inter-city services**. The new eVTOLs typologies will have a variety of operating ranges to allow for fast, streamlined passenger journeys and seamless, distributed cargo operations.

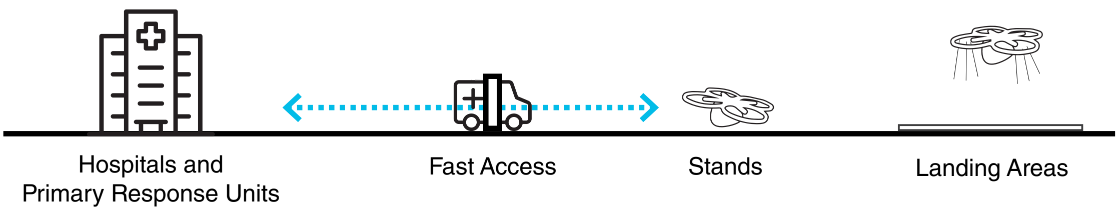
Smaller eVTOLs will operate an intra-city Air-Taxi service that complements conventional taxis. Larger vehicles will add to metro and train services, enabling regional air mobility in **ranges of c. 150 km**. Similar to a car, these vehicles will not incorporate toilets, so their range will be ultimately defined by the human “bladder factor”. eVTOLs are to require maintenance bases to be serviced, charged, parked when not in service, and clean. These facilities are to be integrated into our territories, giving new work opportunities to the population.

STREAMLINED PASSENGER JOURNEY

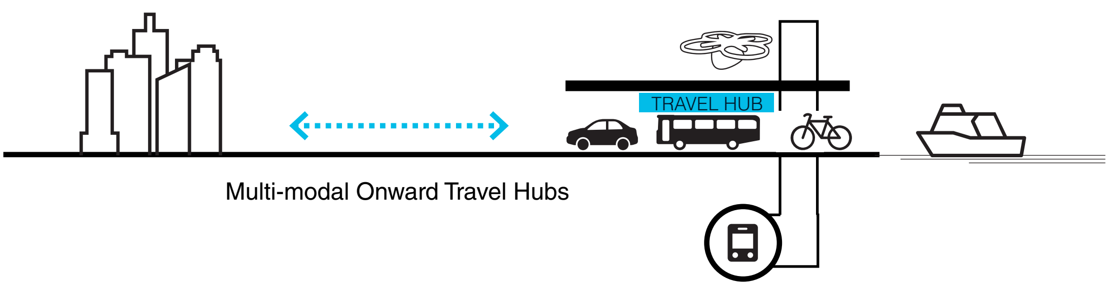


SEAMLESS CARGO OPERATION

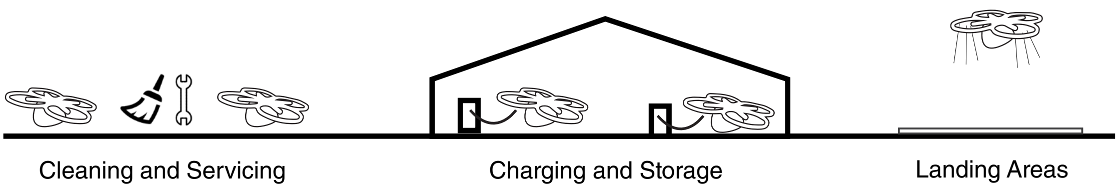
FAST MEDEVAC & EMERGENCY RESPONSE



FUTURE HUB INTEGRATION



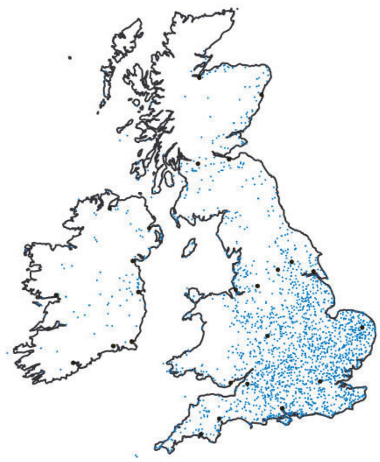
DEDICATED MAINTENANCE BASES

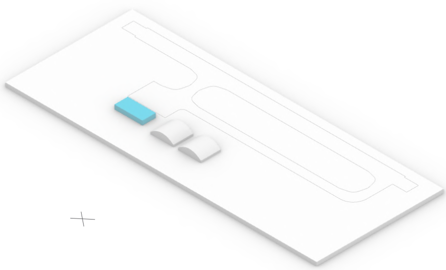


02 The arrival of AAM
TO OUR BUILT ENVIRONMENT IN FOUR STEPS

A

REUSE EXISTING AIRFIELDS
Regional scale



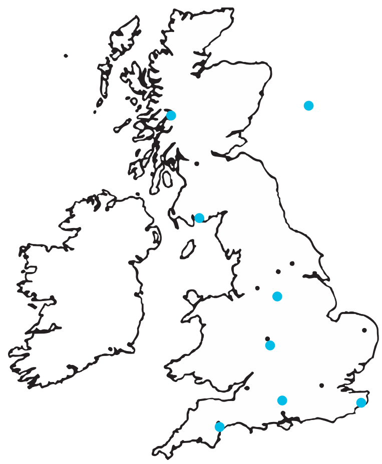


The the most logic and sustainable implementation of AAM infrastructure is the **reuse of existing public airfields**. These are highly visible, open land areas, which include airfield procedures that simplify the beginning of AAM operation as they **don't need new policies** for air operation. Enabling AAM will imply evaluating the existing infrastructure and developing an upgrade strategy.

The number of bases can be slowly scaled up, serving as a test-bed, helping to shape the right conditions for operation and public desire. These bases will become activators of territories enabling territorial commute.

B

NEW TERRITORIAL INFRASTRUCTURE
Territorial scale



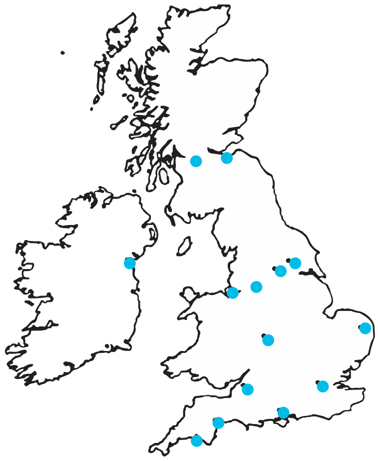
Remote unconnected areas, such as territories with challenging topographies or areas with natural monuments will benefit from AAM. It will **ease the access** with undisruptive infrastructure.

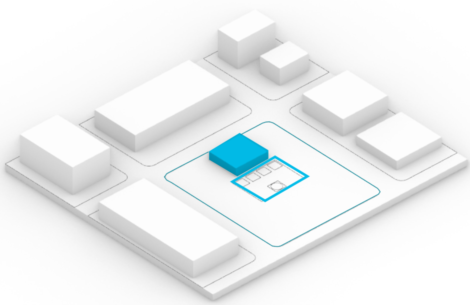
New simple and respectful infrastructure will provide effective and **sustainable** passenger mobility and exchange of goods to places that previously seemed too difficult or expensive.

C

NEW SUBURBAN INFRASTRUCTURE

Suburban scale



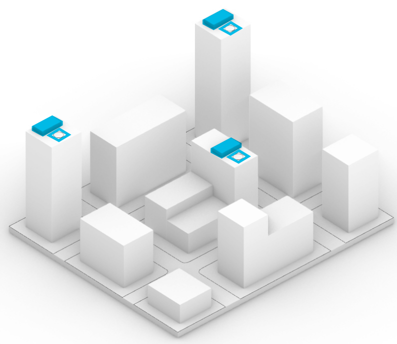


New AAM infrastructure is incorporated into areas with no access to existing airfields to enhance the connectivity of certain regions, such as commercial areas or the outskirts of dense suburban territories. These can **bypass existing mobility hubs** and have the potential to become new mobility nodes.

D

INTEGRATION IN KEY URBAN AREAS

Metropolitan scale



AAM infrastructure is incorporated into heavier, densely populated areas. It will be integrated into mixed-use developments and will form transport hubs.

These operations in the existing urban fabric, where planning does not favour easy implementation, are the most complex and will require a more mature AAM model.

AAM will **complement existing urban mobility** by adding vertical layers and releasing pressure on land mobility.

AAM is to release pressure on land mobility, creating more pedestrianised areas

03 AAM infrastructure
ENABLING FOR ADVANCED AIR MOBILITY

Simple and minimal

AAM is to require **minimal and simple** infrastructure to operate. The new stations, known as **vertiports**, are to be versatile buildings that can be fully integrated into our built environment and territories. These are to be cost-effective and low-maintenance buildings that allow for fast processing of passengers, cargo and servicing of the aircraft.

The new infrastructure is to be able to operate off-grid, combining direct energy provision with on-site production to locally harness the energy required for their operation.

With **sustainability as a priority**, they are to be renewable, net-zero and to use recyclable materials, ensuring they can be upcycled. The buildings are to be designed to be highly automated, so passengers can navigate seamlessly and are only serviced by a reduced staff.

The types

The Vertiports are to be prefabricated, off-the-shelf **adaptable solutions** that can be implemented in existing airfields and consist of an assembly of prefabricated components to upgrade of existing facilities and heliports. These systemic designs would reduce the uncertainties with components that adapt to the site and to the airside conditions.

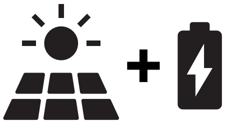
Alternatively, the vertiports can be **bespoke infrastructures** designed to be incorporated into other existing buildings, addressing structural compatibility, fire, noise issues, passenger flows or other constraints imposed by the existing locations.

Sustainable and unified

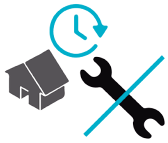
The vertiports are to operate as one **unified network**. The new infrastructure is to ensure compatibility of the charging systems, and electrical and navigation networks, maximising the connectivity possibilities and ensuring a true **polycentric** network.

Additionally, the new infrastructure can incorporate a unified, easily recognisable branding that helps navigation and desire of the public.

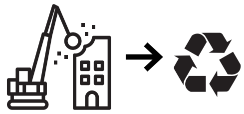
MINIMAL SUSTAINABLE INFRASTRUCTURE



Off-Grid



Resilient + Low Maintenance



Recyclable

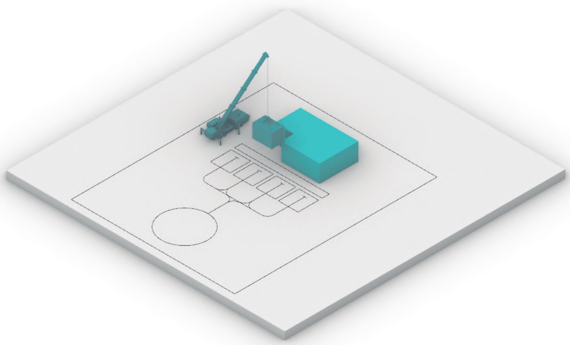
Fully Accesible

Simple

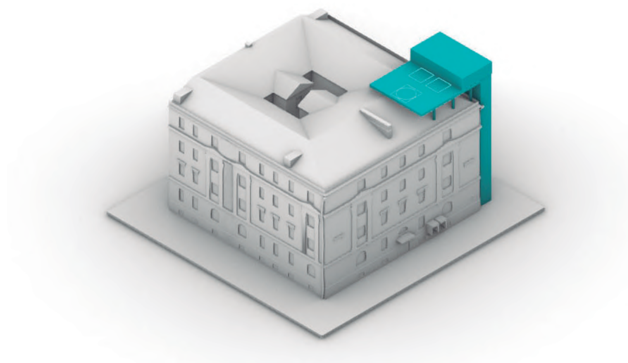
Automated Operation

Cost-Effective

THE TYPES

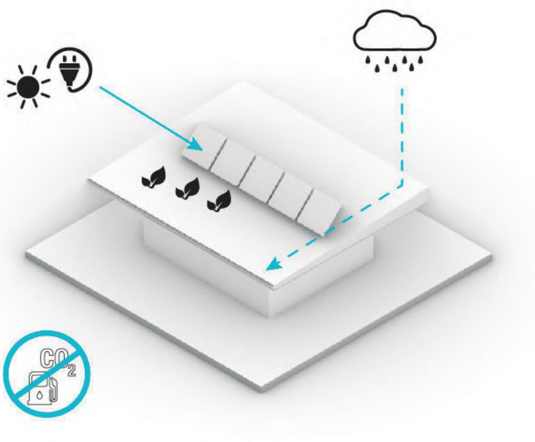


Adaptable and systematic

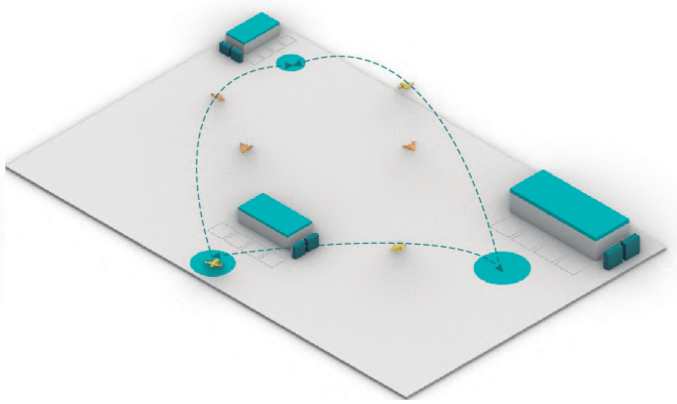


Bespoke typology made to fit

SUSTAINABLE AND UNIFIED

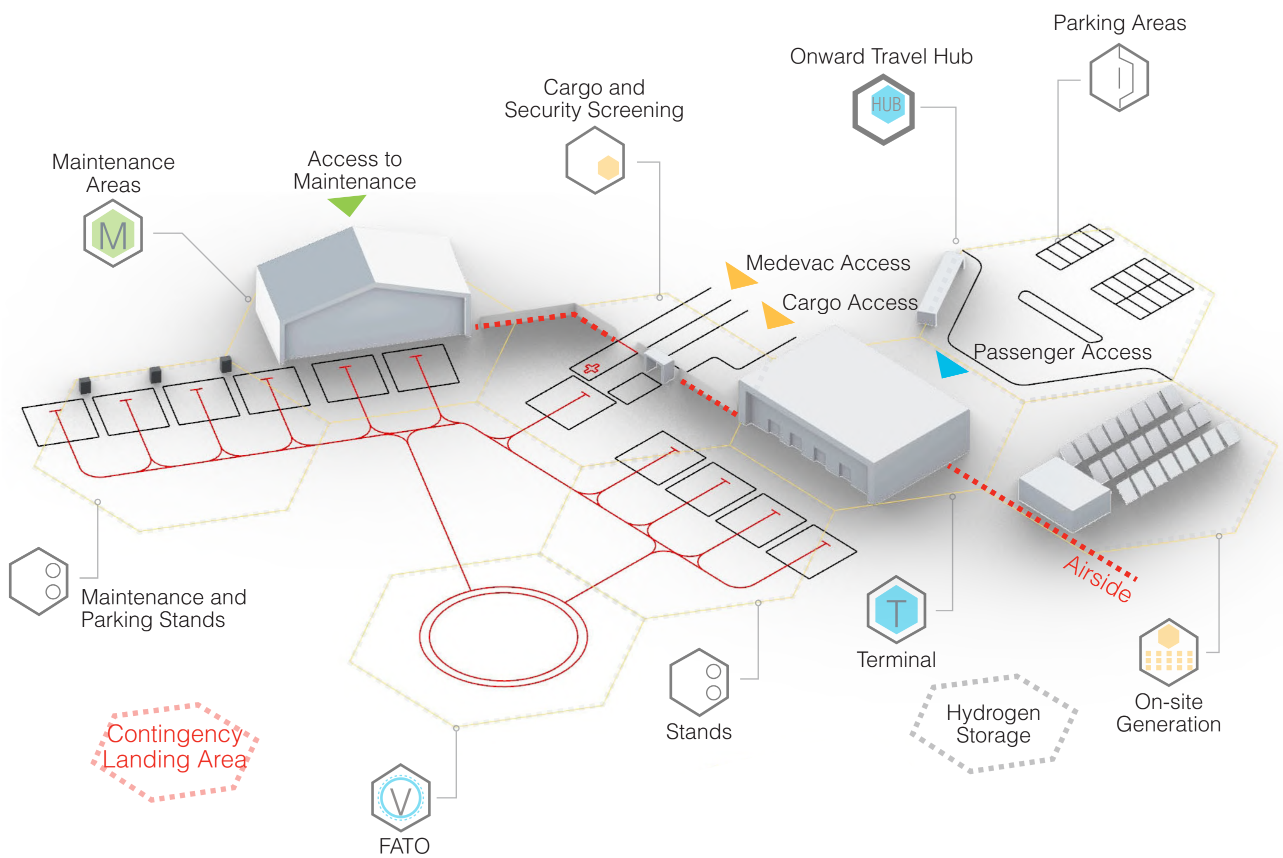


Renewable and net zero

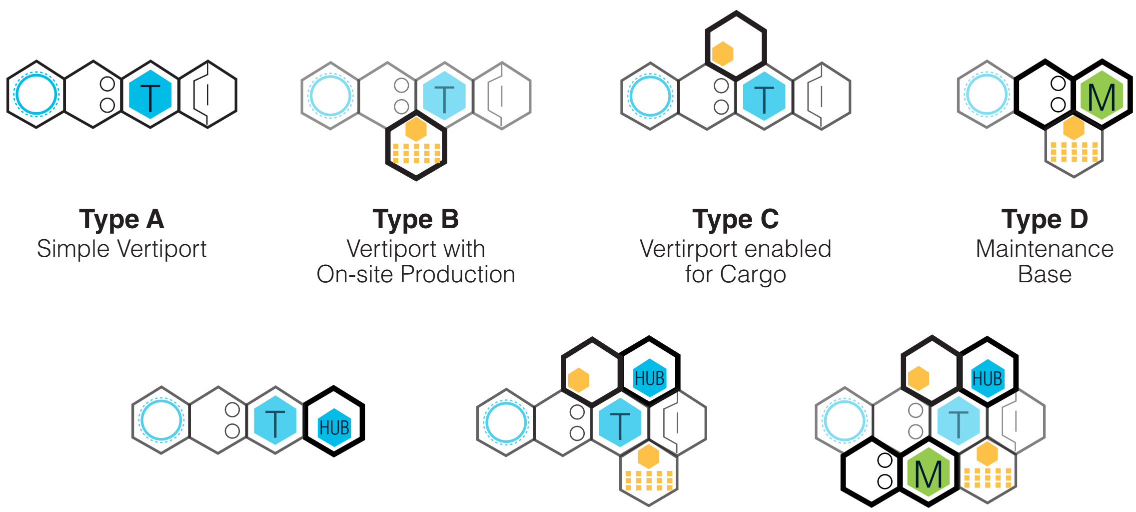


Compatible and unified solution

A MODULAR TYPOLOGY



TYPOLOGY VARIATIONS



Type A
Simple Vertiport

Type B
Vertiport with On-site Production

Type C
Vertirport enabled for Cargo

Type D
Maintenance Base

Type E
Integrated Urban Hub

Type F
Suburban vertirport with transport Hub, enabled for Cargo

Type G
Vertiport with transport Hub and Maintenance Areas

Modularity

Vertiports are an infrastructure tailored to suit the needs of each site. Different locations are to offer the services based on their demand.

Terminal

Fully accessible, simple building for a streamlined passenger experience. Includes waiting areas, toilets and small retail.

Landing area

Dedicated hardstanding area for landing and take-off of aircrafts. Includes clearances as per statutory regulations.

Stands

Spaces for boarding of passengers. May incorporate fast charging positions. To be compatible with multiple eVTOLs.

Drop-Off

Areas for private and shared vehicle drop-off and parking.
To include cycle parking areas.

On-site production

Areas to supply the charging demands of the eVTOLs.
To include production and store of electricity or Hidrogen.

Maintenance and warehouse

Spaces for cleaning, servicing and general maintenance of the eVTOLs.

Service stands

Spaces for parking of eVTOLs, to allow for charging and centralised regular maintenance.

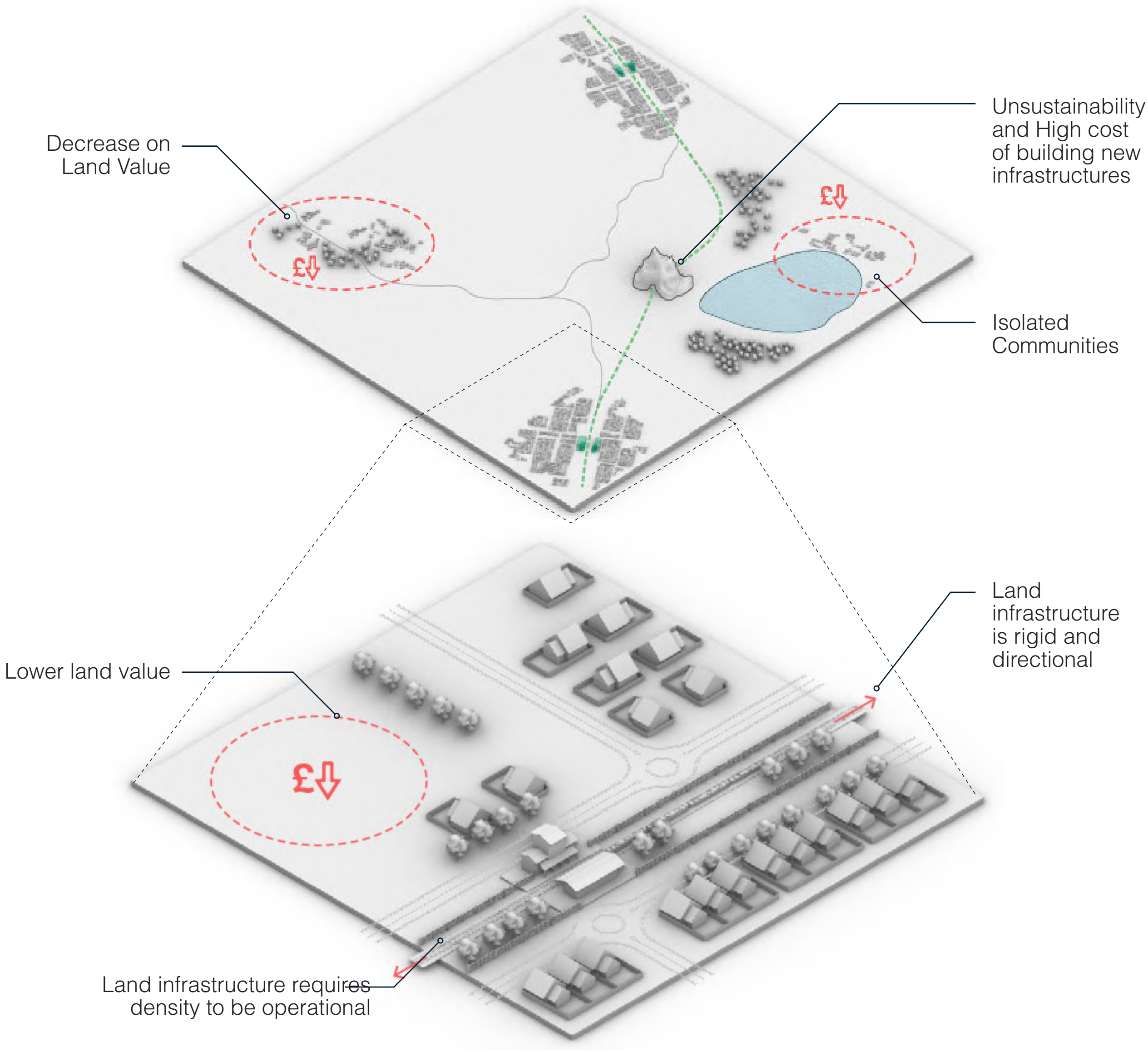
Cargo and medevac areas

Access areas, security clearances and loading bays for cargo servicing. May include small warehouse spaces.

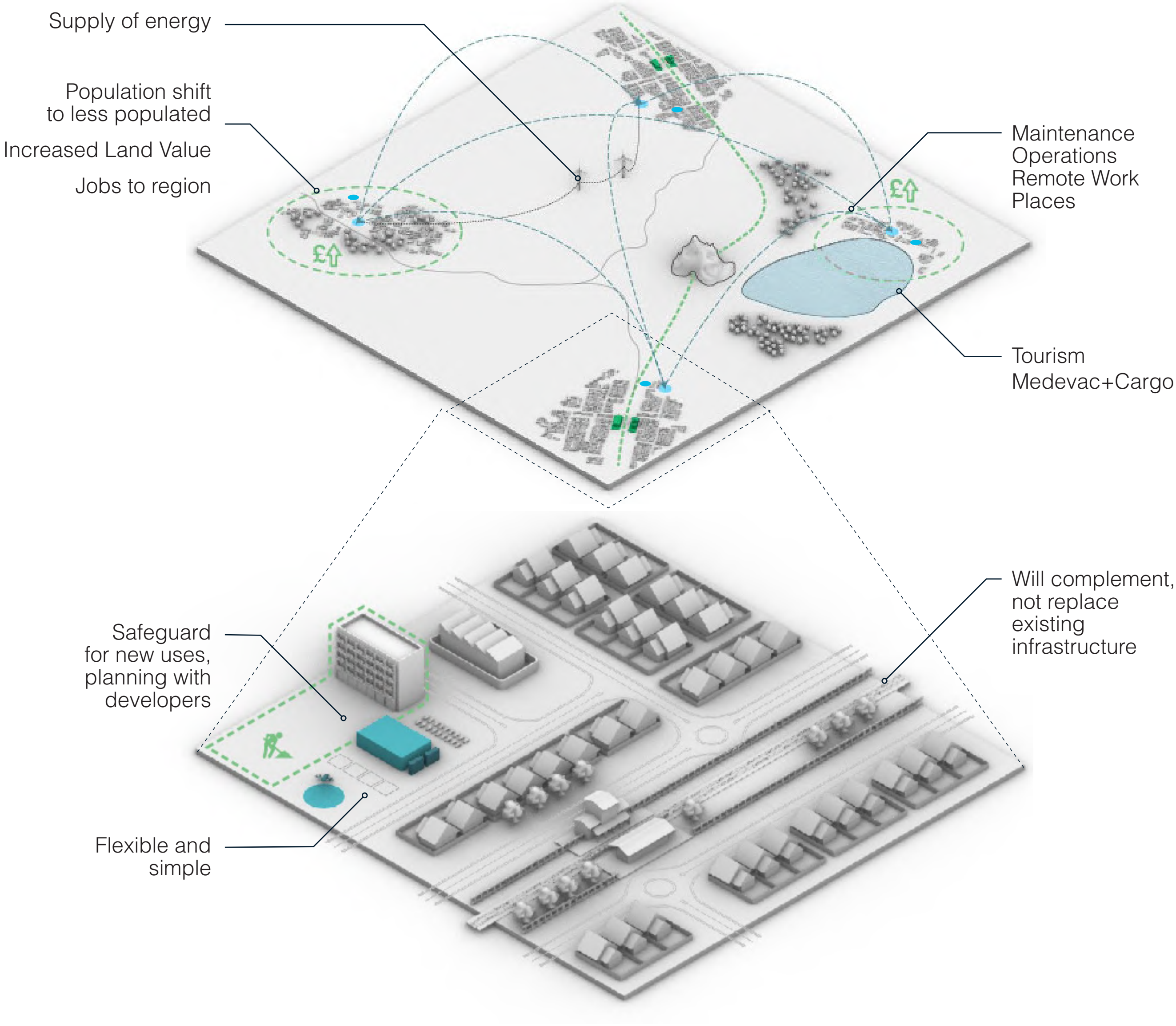
Onward travel hub

Areas to link with other existing urban mobility, such as bus, train, boat, etc.

04 Planning for AAM
UNDERSTANDING OUR TERRITORIES

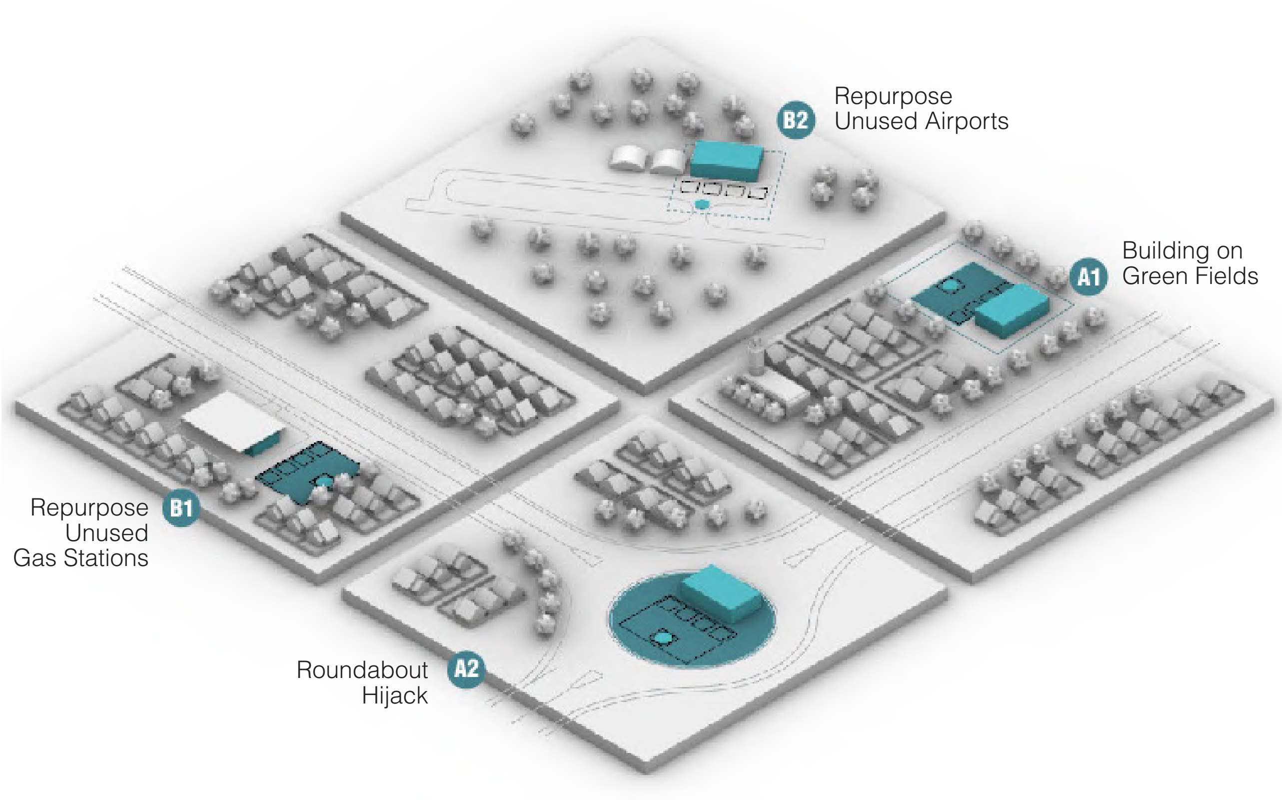


The development of our territories has been greatly influenced by mobility. Areas served by good road connections and railways have typicaly thrived, while less well-connected regions have been slowly **isolated and disconnected**. At an urban scale, land infrastructure has affected the development of our settlements. Infrastructure imposes a strict directionality which restricts and disjoints nearby developments.



Flexibility is the key to overcoming the limitations of existing infrastructure. AAM has the potential to **re-activate** isolated areas, complementing the current regional service. By improving mobility, AAM will **foster changes** both at a regional and urban scale. It can re-activate isolated communities by bringing new inhabitants and uses, overcoming the barriers placed by land infrastructure. On an urban scale, it has the potential to bring new uses to lower land areas.

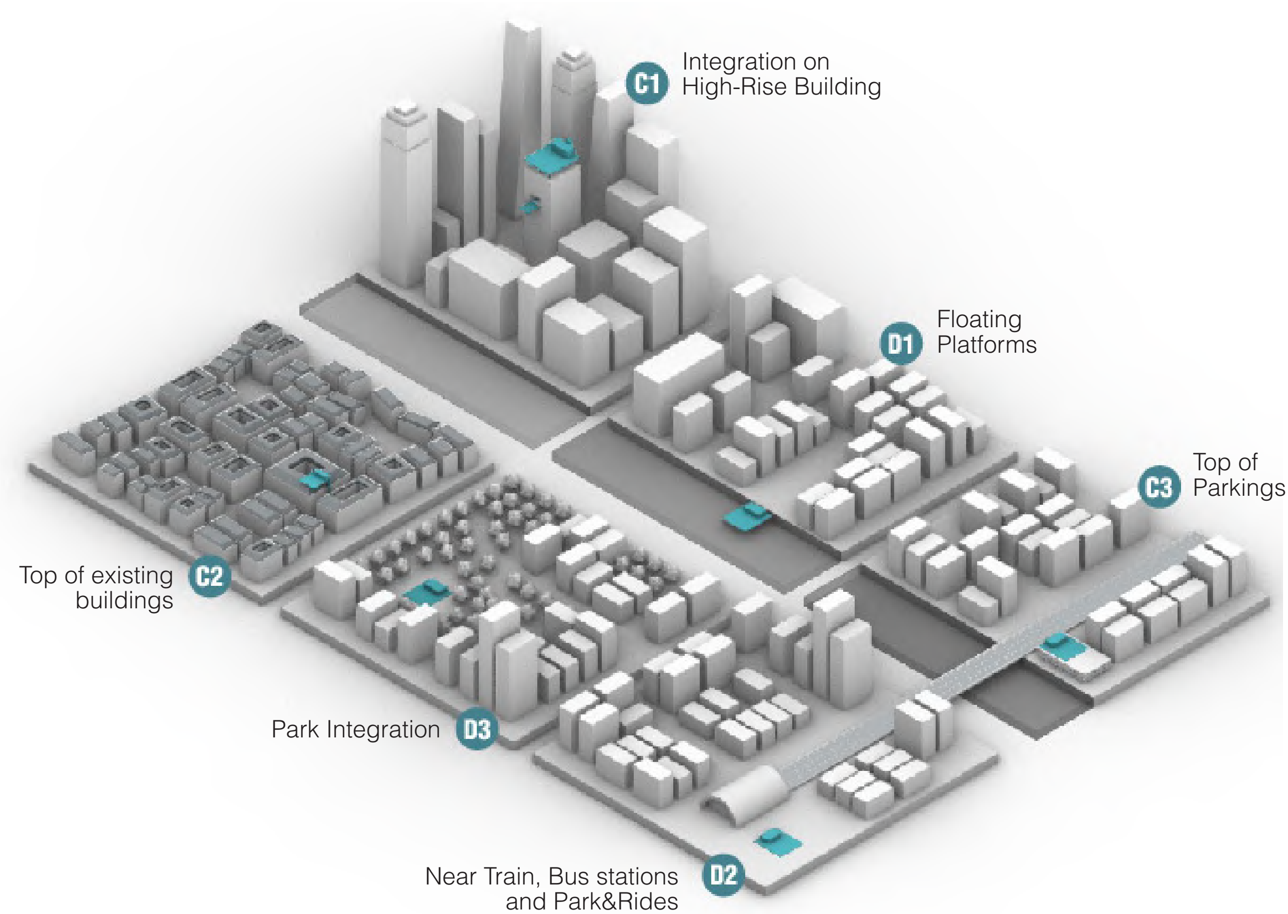
05 Urban integration
CREATION OF MOBILITY HUBS



SUBURBAN TYPES

On-demand AAM would ensure **sustainable territorial growth** and avoid densification around land infrastructure. AAM can be implemented in suburban and rural areas by repurposing existing unused infrastructure on the outskirts of settlements, such as airfields or old gas stations, and low-value land areas.

AAM infrastructure is reached either by public land transport, such as buses and taxis or by private transport, such as cars and bicycle. Safeguarding for **onward travel** is paramount for the success of AAM. Boasting **on-site production**, the new infrastructure can be combined with parking facilities, such as Park&Rides, where the excess production can be used to charge electric vehicles.



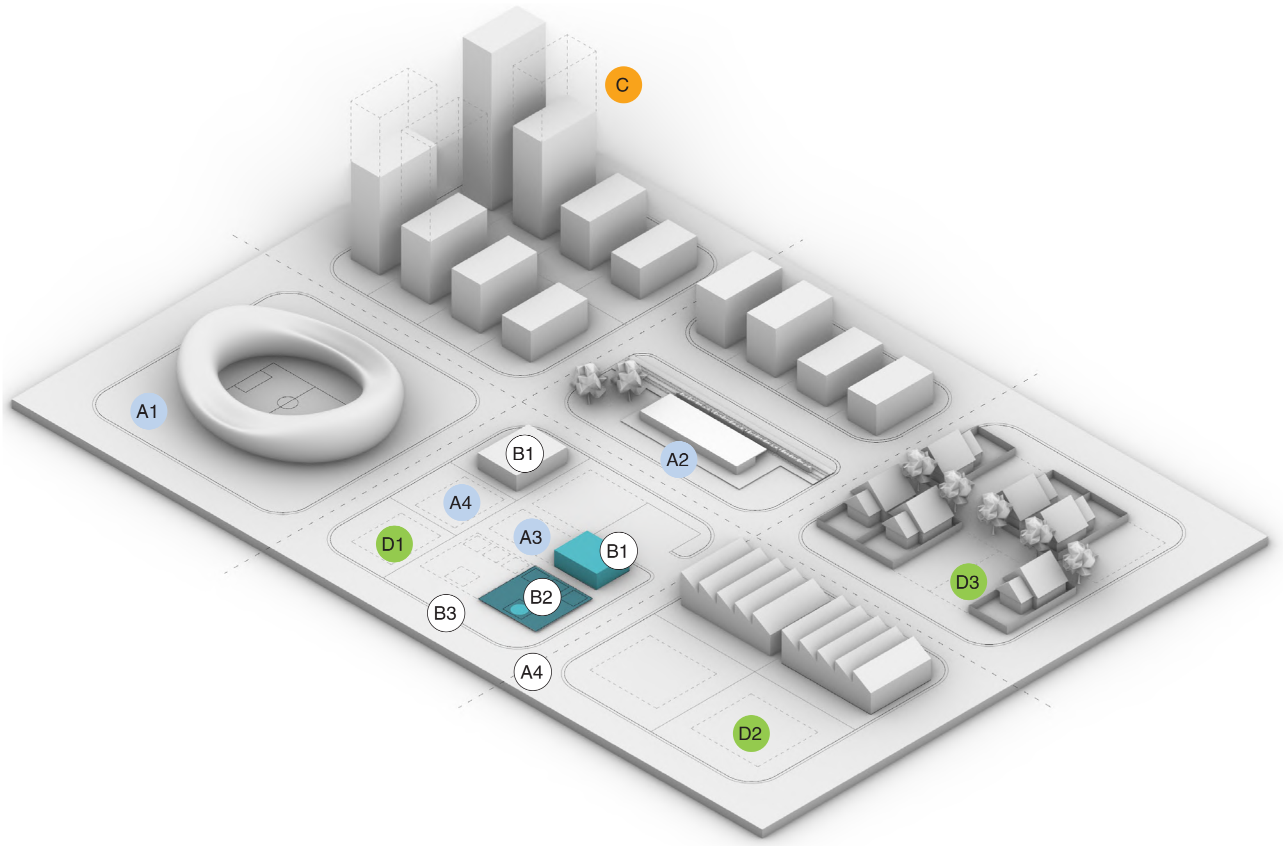
URBAN TYPES

With a population increase expected by 2050 cities will expand rapidly. Vertiports will be integrated into the existing urban fabric complementing the city infrastructure. Designers need to consider the implications of AAM both at the **urban and building scale**, for example, by serving the new infrastructure, considering the flows and utilities, along with urban constraints and how the urban space may evolve around these. The integration of AAM in different urban fabrics can overcome these diverse implications.

New Vertiports, located on low value land, can become transportation and charging hubs. The image above shows a conceptual Vertiport situated on a roundabout. This low-land value is easily accessible by road, and can be upgraded to enable a **fast and seamless commuting**. Located in the outskirts of residential areas, these are to be easily accessible and provide adequate privacy to local residents. This type of location would also help keeping noise levels under control.

Denser urban areas require careful, detailed analysis for AAM implementation, looking at the best places from an urban perspective but also technically suitable. The value of urban land implies that the integration of existing constructions will require detailed studies. Many proposals argue for the construction of Vertiports on top of existing buildings, will require reviewing the building structures, services and fire evacuation plans. It will also need thinking in the access of passengers or cargo, and the compatibility with existing urban mobility.

06 The vertiports
A NEW ARCHITECTURAL TYPOLOGY



A. Site Selection

The Site selection for AAM will be influence by Demand, Capacity and Cost Analysis. Some urban factors will also influence the site selection:

1. Proximity of activity atractors, Commercial Areas, Stadia, etc
2. Possibility to connect to other land infrastructure (Bus, Rail)
3. Possibility to safeguard for future expansion of AAM infrastructure.
4. Land availability for new services to relocate next to AAM infrastructure.
5. Airspace Compatibility (Obstacle Limitation Surfaces, Vertiport Safeguarding, etc).

B. New Vertiport Construction

1. Construction of minimal new airfield, on-site energy production, new access for local commuting/passenger drop-off, new accesses for local cargo distribution, fast delivery of medical goods and evacuation
2. Construction of vertiport with minimal new passenger terminal, repurposing existing buildings whenever possible.
3. New landscaped areas to be noise attenuators and increase privacy
4. Uplift of roads for transport of aircraft in the event of breakdown and to guarantee access for fire brigade

C. Urban Constraints

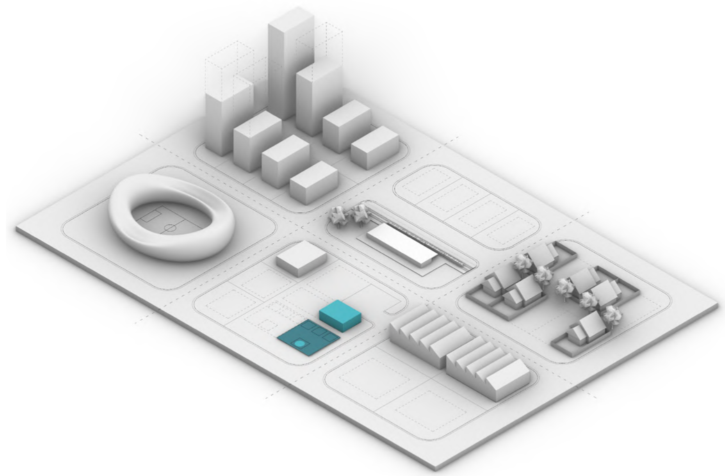
The flight paths of the eVTOLs may impose constraints over neighboring constructions, such as limits on the max height, compatibility of uses, privacy or noise. Planners and developers are to be aware of these constraints in order to provide the best implementation in the urban fabric.

D. Urban Changes

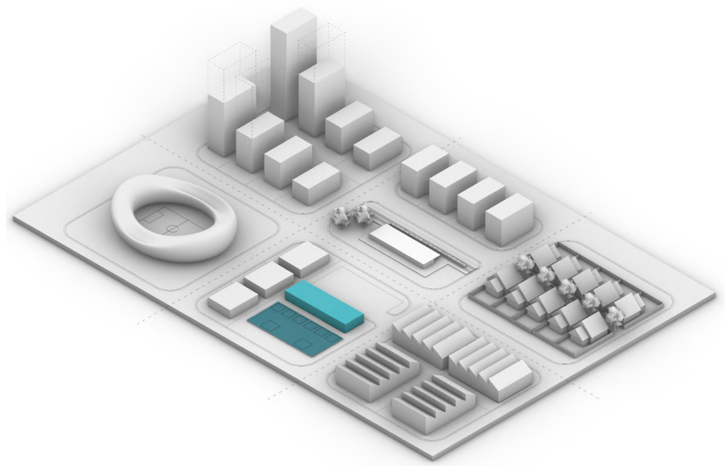
The incorporation of AAM will ease movement of passengers and cargo. Industries and services benefiting from cargo eVTOLs may increase their presence around the Vertiports. Similarly, enabled for a faster commute, new inhabitants may relocate to less dense areas.

URBAN TRANSFORMATION

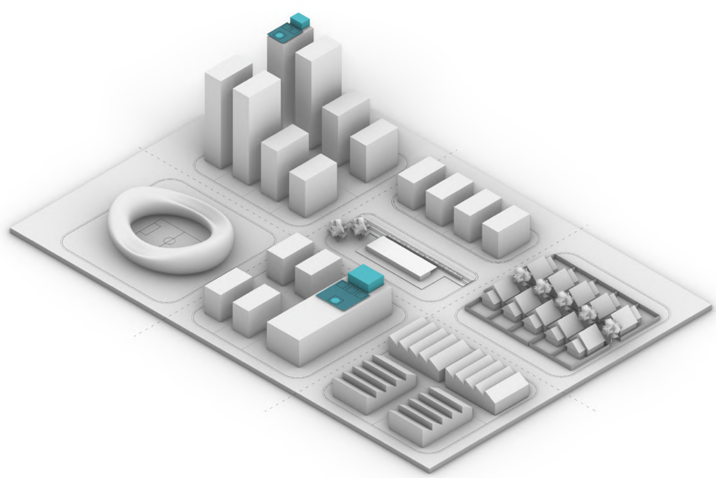
2025 - Implementation



2035 - Growth



2050 - Urban change



Site Selection, Existing Analysis and Implementation

Analysis of site and existing buildings (including structures, facades, fire strategies, ecogical studies...)

- Analysis of existing electrical grid capacity and other building services
- Definition of Airside/Landside Boundary.
- Analysis of existing traffic routes. Estimation and uplift of demand road traffic demand
- Analysis of Existing flight paths
- Identification of contingency spaces for emergency landing
- OIs and Safeguarding Assessment

Futureproofing for infrastructure growth

Identification of Safeguard Areas For future growth of infrastructure

- Bases for Emergency support, Maintenance and inspection
- Identification of Safeguard Areas For future growth of new developments and Tenants

Futureproofing for urban growth

Potential demand increase in local taxi/car sharing schemes.

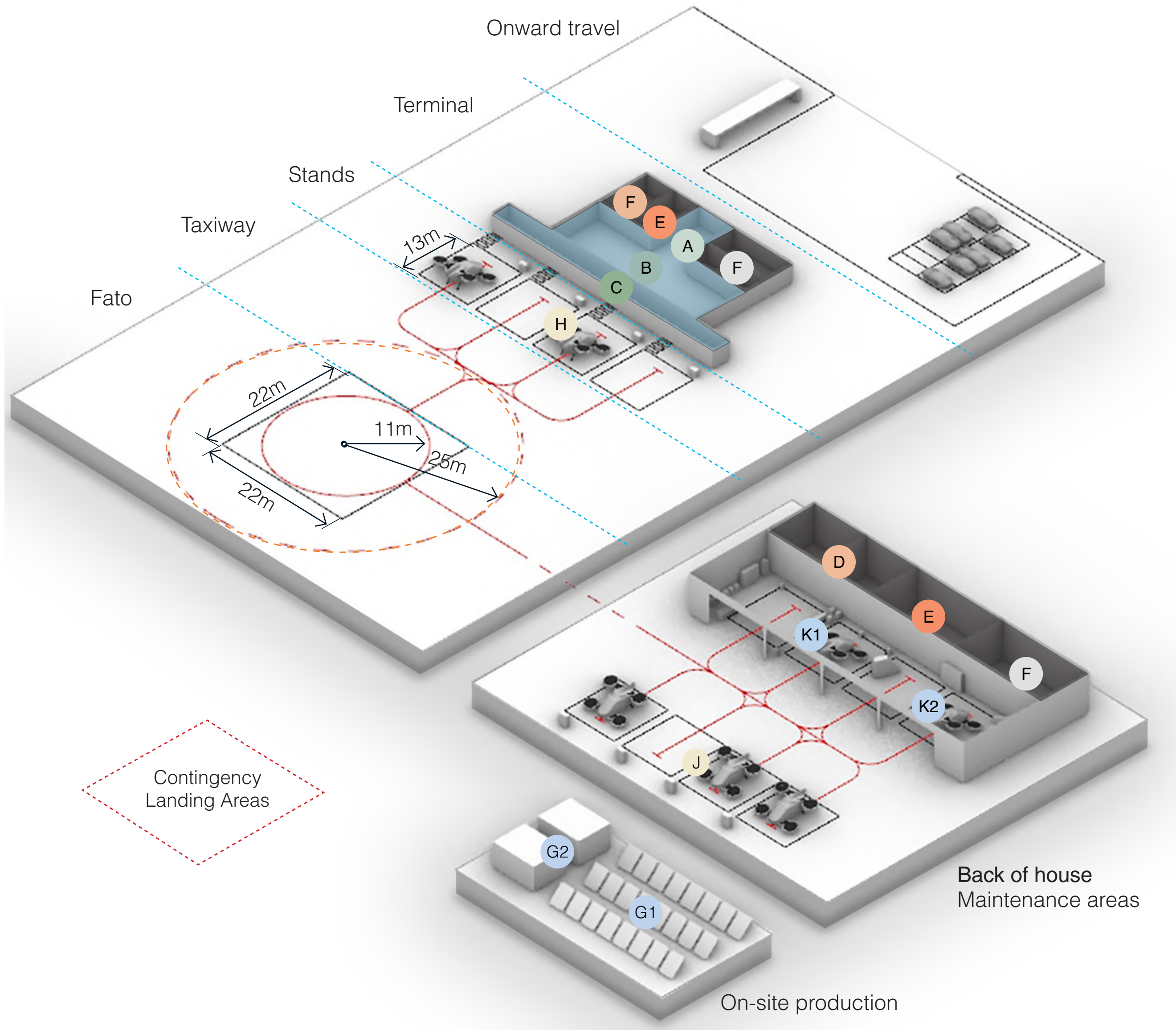
Remote maintenance services and rescue services relocating to make use of the vertiport facilities

- Potential increased demand in local Cargo
- Potential increased demand of commercial/office spaces
- Potential increased demand in local housing

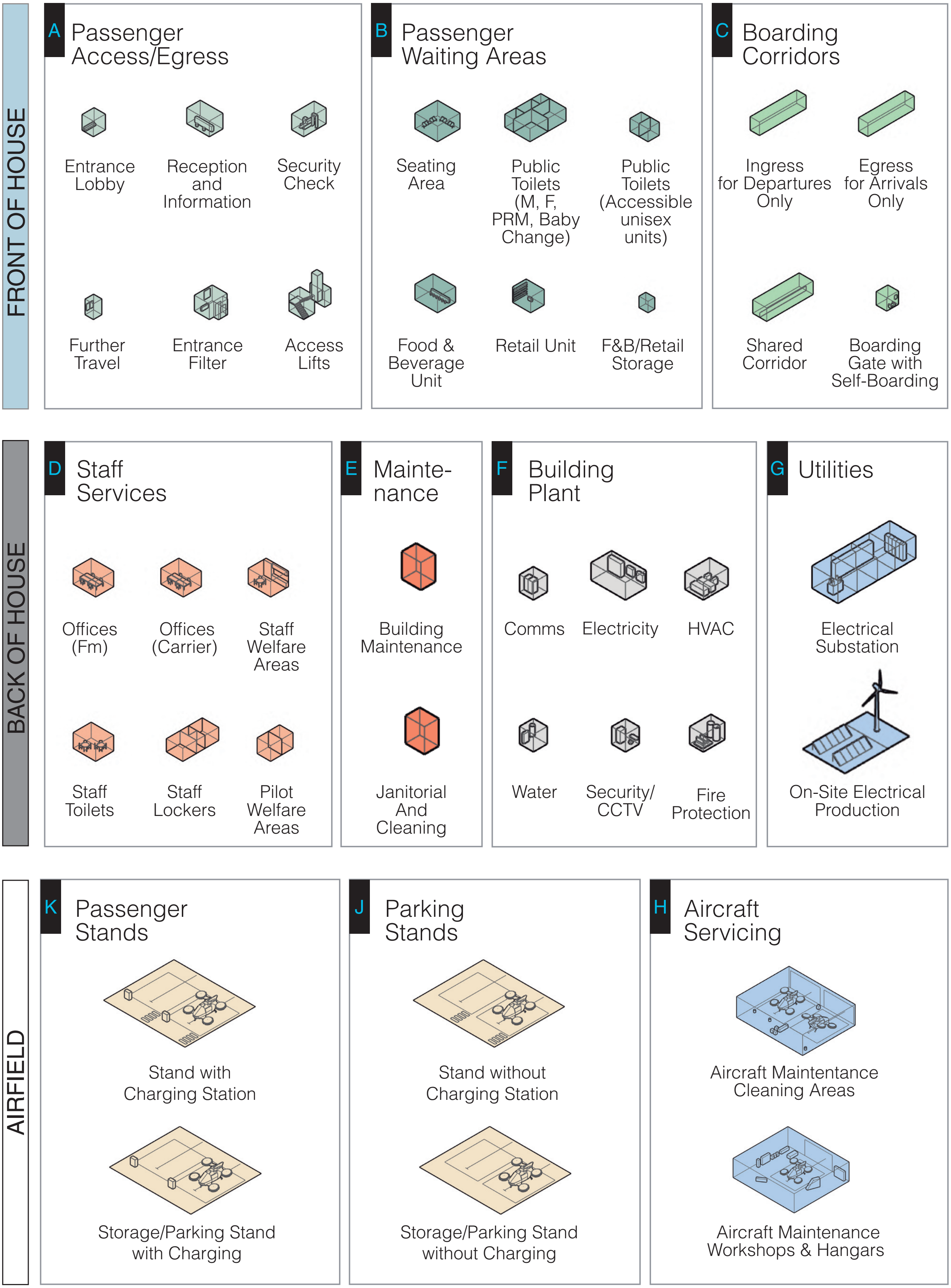
Flexible and Resilient to urban change

- The simplicity of the design allows for the infrastructure to be easily dismantled and relocated if necessary.

VERTIPORTS BASIC FUNCTIONAL COMPONENTS

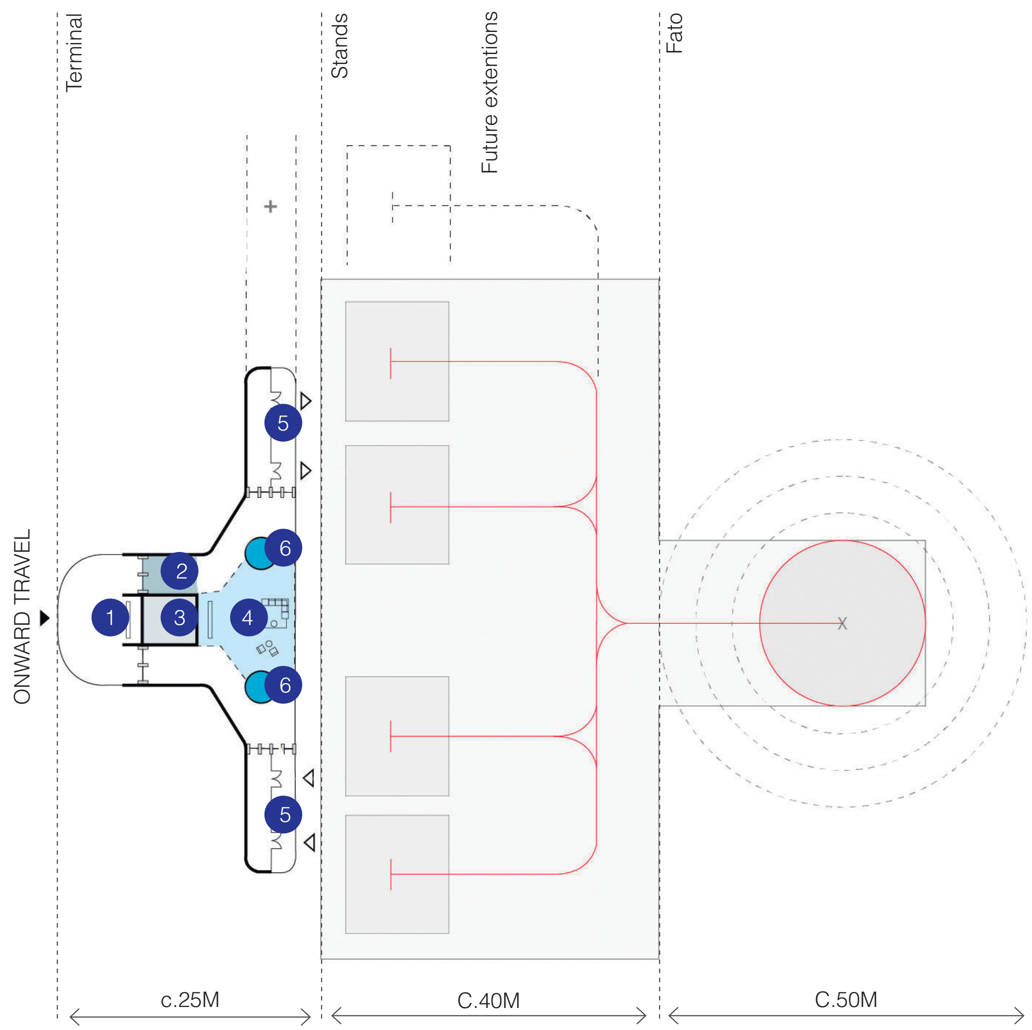


Adaptability, flexibility and simplicity. Vertiports can be easily assembled combining **pre-designed components as needed**, depending on the location and type of service. These are classified into three groups: Front-Of-House (FOH) areas, serving passengers; Back-Of-House (BOH) areas, serving the staff and the building; and Airfield, serving the eVTOL vehicles.


FRONT OF HOUSE
A Passenger Access/Egress
Entrance Lobby
Reception and Information
Security Check
Further Travel
Entrance Filter
Access Lifts
B Passenger Waiting Areas
Seating Area
Public Toilets (M, F, PRM, Baby Change)
Public Toilets (Accessible unisex units)
Food & Beverage Unit
Retail Unit
F&B/Retail Storage
C Boarding Corridors
Ingress for Departures Only
Egress for Arrivals Only
Shared Corridor
Boarding Gate with Self-Boarding
BACK OF HOUSE
D Staff Services
Offices (Fm)
Offices (Carrier)
Staff Welfare Areas
Staff Toilets
Staff Lockers
Pilot Welfare Areas
E Mainte-nance
Building Maintenance
Janitorial And Cleaning
F Building Plant
Comms
Electricity
HVAC
Water
Security/ CCTV
Fire Protection
G Utilities
Electrical Substation
On-Site Electrical Production
AIRFIELD
K Passenger Stands
Stand with Charging Station
Storage/Parking Stand with Charging
J Parking Stands
Stand without Charging Station
Storage/Parking Stand without Charging
H Aircraft Servicing
Aircraft Maintentance Cleaning Areas
Aircraft Maintenance Workshops & Hangars

TYPE A: flexibile

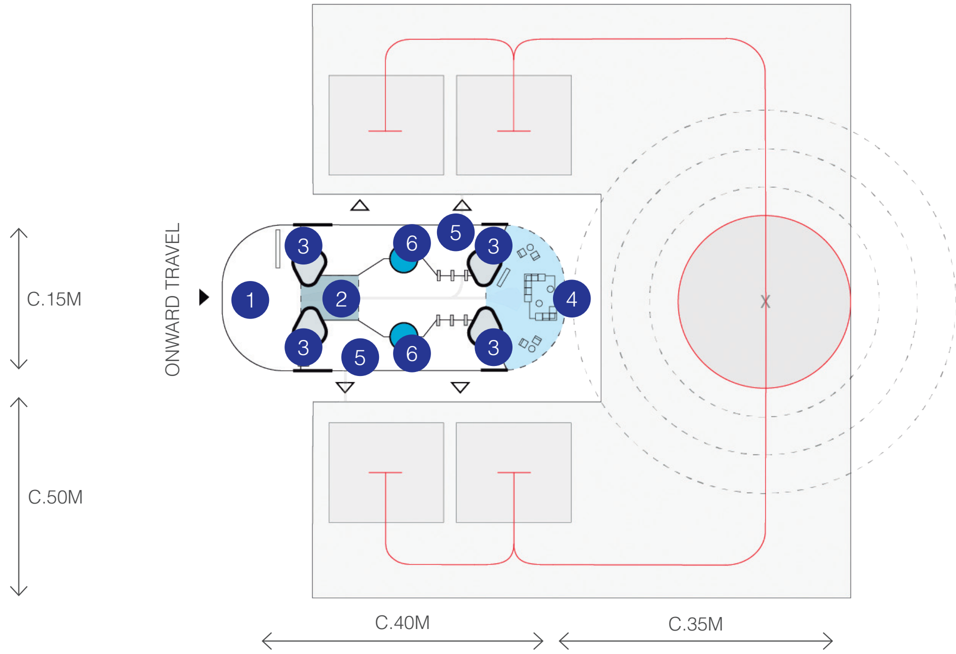
The architecture of terminal must adapt to the airfield: the designs have to account for the unpredictability of the future eVTOLs. The diagrams in these pages show different solutions where the terminal adapts to various airfield configurations.



Entrance	Access/ exit to stands	1 Reception	2 Security
3 Back of house Plant areas, Bar	4 Waiting lounge	5 Boarding Corridor	6 Toilets

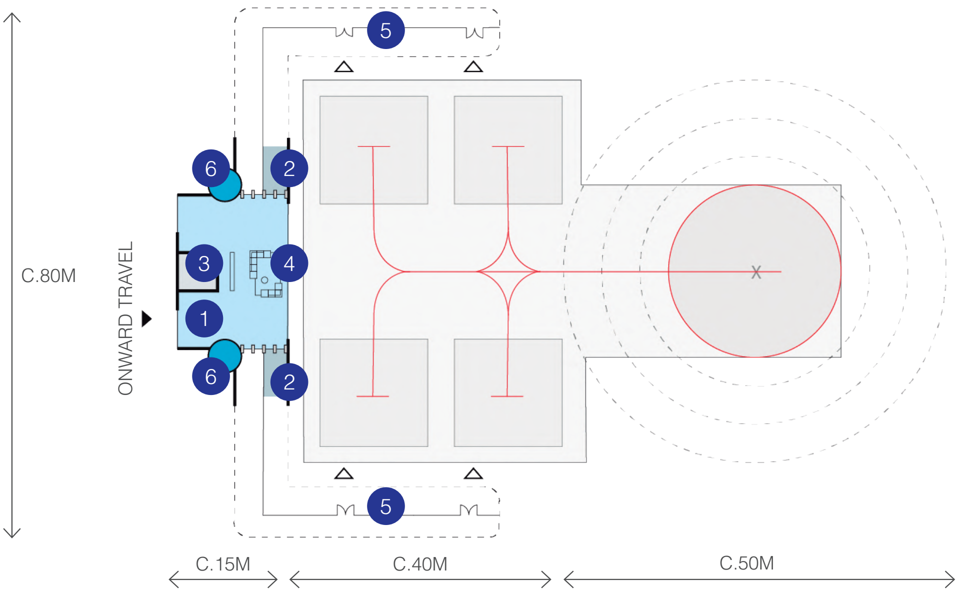
TYPE B: compact

Typology B prioritizes a compact infrastructure, at the expense of an increased airfield area. While this could challenge future expansion, it offers a streamlined passenger experience with very fast servicing.



TYPE C: customer experience

Typology C seeks to optimise the airfield area at the expense of an increase on corridor areas. This option explores the idea of an open lounge with novel security, to enhance passengers' experience.



A collaborative joint effort

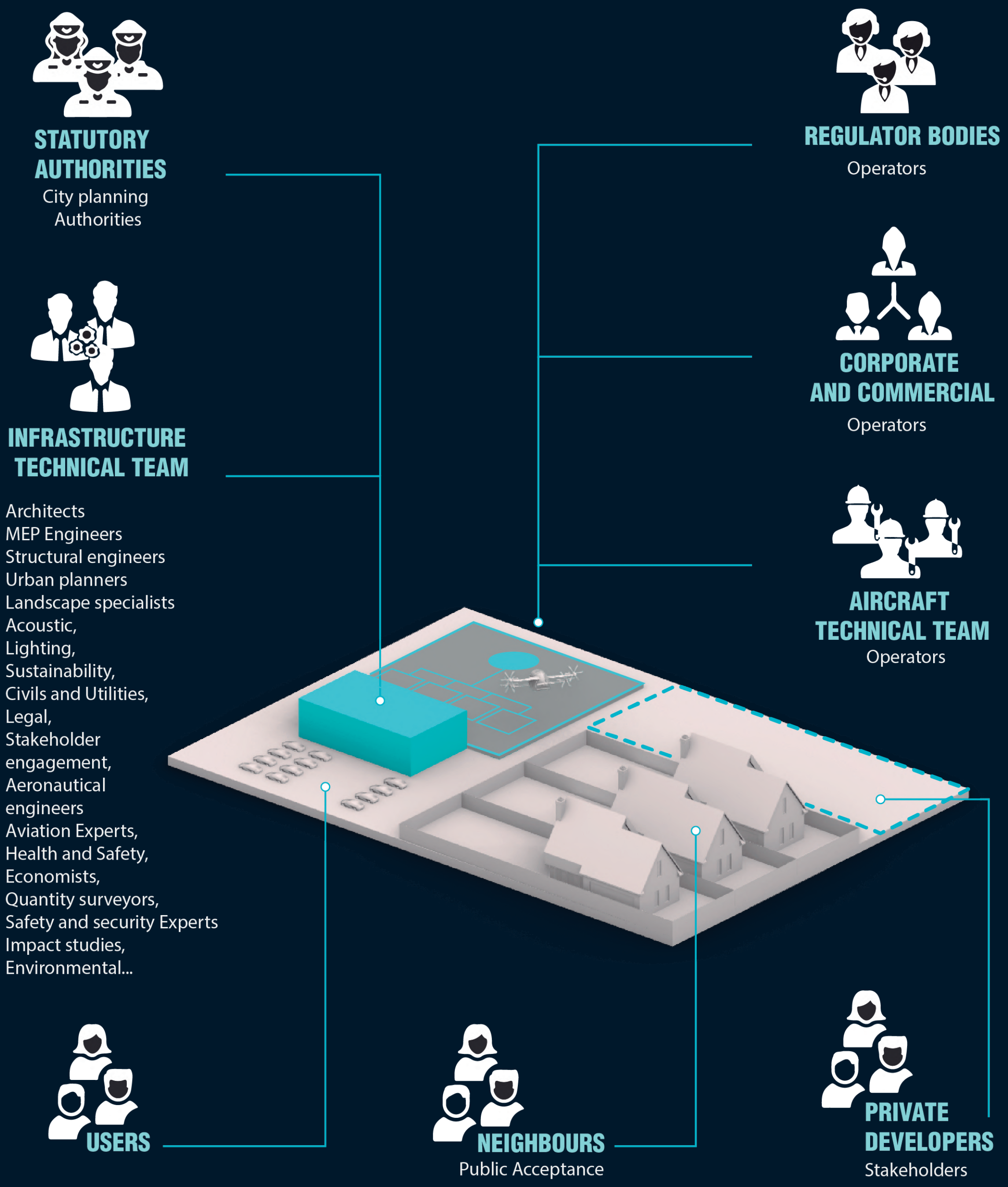
As shown throughout this document, the development of a new AAM network will need collaboration between cities, vehicle manufacturers, operators, infrastructure developers, infrastructure designers and regulatory bodies. In this race for joint implementation, all these bodies are working together to overcome technological problems, regulatory frameworks, operational safety, cost competitiveness, etc.

The successful delivery of AAM is a joint effort of many disciplines, anticipating the needs of these facilities, thinking about how they may impact our built environments, asking questions and looking at urban implications, and speculating about a change in small villages.

Preparing for aircraft certification

AAM will require its proprietary infrastructure to operate, that will have an **impact on our built environment**. It is necessary to look beyond the aircraft, looking into the built infrastructure that is to be designed.

To do this, it is paramount that multi-disciplinary teams of architects, urban designers, planners, ecologists, engineers, etc work together to anticipate the challenges and oportunities of this novel typology.


STATUTORY AUTHORITIES
City planning Authorities
INFRASTRUCTURE TECHNICAL TEAM
Architects
MEP Engineers
Structural engineers
Urban planners
Landscape specialists
Acoustic,
Lighting,
Sustainability,
Civils and Utilities,
Legal,
Stakeholder engagement,
Aeronautical engineers
Aviation Experts,
Health and Safety,
Economists,
Quantity surveyors,
Safety and security Experts
Impact studies,
Environmental...
REGULATOR BODIES
Operators
CORPORATE AND COMMERCIAL
Operators
AIRCRAFT TECHNICAL TEAM
Operators
USERS
NEIGHBOURS
Public Acceptance
PRIVATE DEVELOPERS
Stakeholders

Credit: IDOM and Ferrovial 2021

Credit: IDOM and Ferrovial 2021

“At IDOM we are experts in engineering, aviation and urban infrastructures”

Anticipating questions and possible answers of AAM

Established in 1957 in Bilbao, IDOM is an independent multinational company offering integrated services in Engineering and Architecture. IDOM operates in a **multi-disciplinary design approach**, with a network of 4,300 architects, engineers, researchers and other specialists with the skills required to provide integrated design and project management services across a number of sectors.

At IDOM, we have been **working since 2018** in the develoment of Vertiports. The timeline below gives a glimpse of the projects we have been recently developing, such as the preliminary design and valuation of different Vertiport types, or the development of the Ferrovial, shown in the renders on the left, for the deployment of an AAM network in Spain in 2020. IDOM has also been focusing on strategies and Assessment for energy Innovation together with Ferrovial; being involved in the study of a sustainability case study for the deployment of AAM infrastructure in different parts of the world in 2021-2022 and in the Envision Certification Advisory in 2022.

Aiming to provide designers with insight for future development, IDOM is developing research to propose a systematic approach to the categorization of the AAM types and to analyze their implications both at an urban and building scale. IDOM has also participated in the Prototype Technical Design Specifications for Vertiports by EASA, and is currently working on a series of multi-disciplinary case studies, to further understand the potential urban, spatial, functional, legal, infrastructural, and construction requirements of Vertiports. In June 2022, IDOM participated in the ADRM of IATA for Operation and Sustainability.

2018	2020	2021	2022	2022	2022	2024	2025	2035
Preliminary Design and Valuation of Different Vertiport types	Concept Vertiport Design	Strategies and Assessment for Energy Innovation	Envision Certification Advisory	EASA’s Prototype Technical Design Specifications for Vertiports	Collaboration in IATA’s ADRM of Operations and Sustainability	Paris EXPO	First Vertiport in Florida	Estimated $100 billion market

OUR MULTI-DISCIPLINAR TEAM OF EXPERTS

Aitor Almaraz

ARCHITECT, VERTIPORTS EXPERT

aitor.almaraz@idom.com

Aitor is an ARB and RIBA Chartered Architect with International multidisciplinary experience. He has developed several projects from concept to construction as well as international competitions. He has experience leading teams in unique projects with a high level of technical innovation and complexity. Since 2020, he has been involved in the design of Vertiports and is the responsable of IDOM Architectural Vertiport design.

Ana Diaz

ARCHITECT, ARCHITECTURAL AVIATION DIRECTOR

Ana is an experienced Project Director and Manager who has worked on many important international infrastructure and airport projects. Since 2013 she is responsible for the coordination of Airport Building Projects at IDOM. She has lead the architectural vertiport designs since 2020. Her experience in airport design, covering all the different phases of airport design from Master plans to Detail design, allows her a complete view of all the process.

Viral Bhavsar

ARCHITECT, UK DIRECTOR AND AIRPORTS EXPERT

Viral is a british chartered RIBA Architect with a BSc. in Architecture and PgDip. Arch. He has over 20 years' experience working on a variety of projects in the UK and internationally. Viral started working in IDOM in 2001and he is currently IDOM UK's managing director and project director.

Xavier Graas

ARCHITECT, AIRPORTS EXPERT

Xavier is an Architect with International experience on a wide range of aviation and transportation projects. His approach to the development of project starts with his interest and ability to archieve transversal integration of the many components that affects the building process: Design, Energy, Sustainability, Structure, Holistic approach.

Antonio Villanueva

ENGINEER, SUSTAINABILITY EXPERT

Antonio leads the team of Sustainability and Building Engineering Physics of IDOM. The team has developed outstanding and innovative projects internationally. He develops his work in all project phases, from the concept to the development of thermal, mechanical, electrical and hydraulic services. He has been actively involved in the design process of Vertiports at idom as well as the energy management strategy and energy positive design.

OUR MULTI-DISCIPLINAR TEAM OF EXPERTS

Hector Martin

MSC AERONAUTICAL ENGINEERING, DIRECTOR OF AIRPORTS

hmartin@idom.com

Héctor, current Director of IDOM's Airports unit, is an aeronautical engineer with a Master's degree in Airports and over 15 years´ experience focused exclusively on Aviation. He is a technical specialist in Airfields and Heliports, who has managed over 20 projects around the globe. Member of EASA Vertiport Task Force, he has been working on Vertiports/AAM projects since 2018 performing as senior technical advisor.

Javier Losada

MSC. AERONAUTICAL ENGINEER, PRINCIPAL PLANNER FOR AVIATION

Javier began to works in Vertiports from 2018. Since then he has been participating in all vertiports projects, including the Task Force for the defintionn of EASA's "Prototype Technical Design Specifications for Vertiports", as well as lecturing and drafting several whitepapers for AAM development and organisation.

Alejandro Morillas

BSC ELECTRICAL ENGINEERING,
SPECIAL AIRPORT/VERTIPORT SYSTEMS EXPERT

Alejandro is an electrical engineer with more than 20 years of experience in the design and construction of all types of special and electrical installations (terminal buildings, TWR and airport runways, taxiways and aprons) acquiring the ability to work at all levels across a broad range of disciplines to ensure the success of the projects. He is mainly specialised in AGL, Apron Floodlighting, BHS, AVDGS, FEGP and eVTOL charging systems.

Bartlomiej Siwiec

MSC. AERONAUTICAL ENGINEER, VERTIPORTS AIRSIDE EXPERT

Bartlomiej is an experienced multidisciplinary professional with a deep understanding of aeronautical regulations. He has over 7 years of experience in the planning, design, construction, and operation of airports, heliports, and vertiports. His expertise focuses on the airside elements, ranging from geometrical definition and pavement design to capacity analysis and airspace compatibility assessments.

Elena Calcerrada

MENG CIVIL ENGINEERING,
INFRASTRUCTURE SUSTAINABILITY EXPERT

Elena is MEng Civil Engineering, currently Infrastructure Sustainability Manager at IDOM. Certified as ENVISION Sustainability Professional (ENV SP) and CEEQUAL Version 6 Projects Assessor, the two most internationally recognized certifications for sustainability in civil works infrastructure. She is driving vertiport projects toward higher levels of sustainability. She has experience in climate change, carbon footprint and circular economy.

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