



The Pathway towards dual certification, with EASA and the FAA

Bhavesh Mandalia – Chief Airworthiness Officer and Deputy CTO – Lilium

Presented at “eVTOL Insights’ London Conference 2023” on April, 19 2023

Highly performant,
premium, jet aircraft



HIGH-SPEED

**250KM
MAX RANGE**

LOW NOISE

**ZERO
OPERATING EMISSIONS**

HIGHEST SAFETY

250 KM/H¹

175 KM OPERATING RANGE¹

68 dBA at 100 M¹

FULLY ELECTRIC¹

10⁻⁹ SAFETY LEVEL²



Source: Architectural performance assessment of an eVTOL aircraft. Lilium engineering assessment. Management estimates. ¹ Performance targets based on current development status of aircraft. Cruise speed based on Lilium engineering assessment assuming flight at 10,000 ft. Range refers to physical range (service range + reserves).

² Lilium's primary certification authority stipulates probability of a catastrophic failure must not exceed 10⁻⁹.

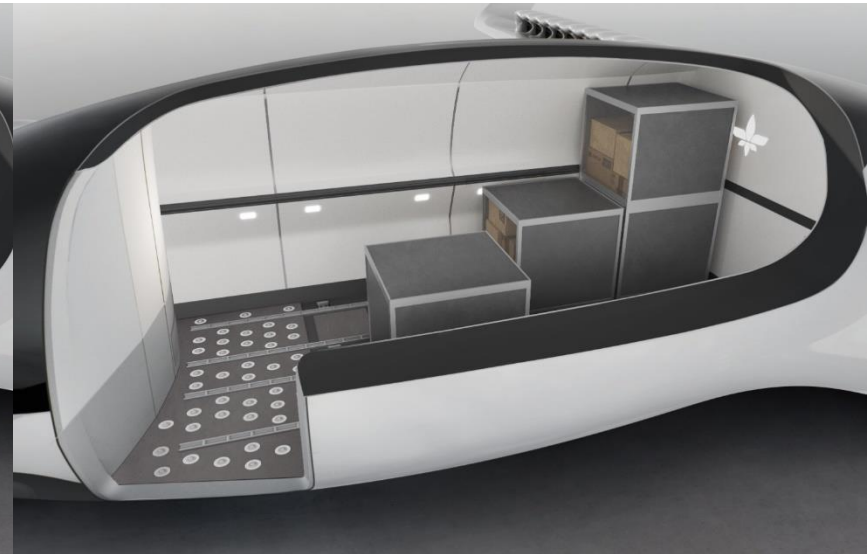
Flexible by design



4 PASSENGER CLUB CABIN

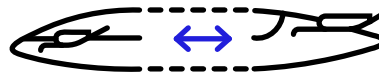


6 PASSENGER CABIN



FLEXIBLE CARGO CABIN:
6m³ volume

SCALABLE PLATFORM



Larger form factors on same technologies in the future

Purpose of dual concurrent certification / validation

Develop a single aircraft for global operations

NETJETS®

Bristow

eVOLARE

GLOBE AIR

HÉLITY
Copter Airlines

Azul

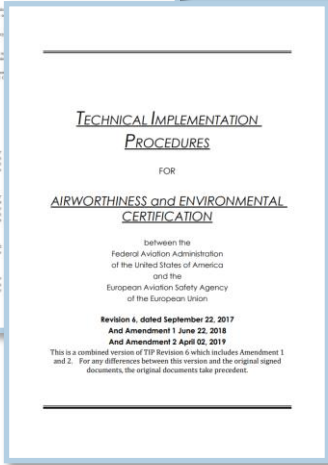
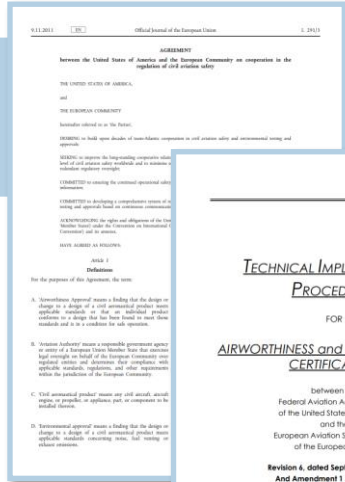
AAP
AVIATION

ASL GROUP

السعودية
SAUDIA

ifly

Timeline of engagements



Application for FAA Validation of EASA TC, submitted under the provisions of the existing Bilateral Aviation Safety Agreement (BASA) between the EU and USA and Technical Implementation Procedure (TIP) Rev. 6 between EASA and the FAA.



Key Success Factors on the Path to EIS



Air Operations



New EU Air Ops requirements, Part-IAM proposed in 2022, under NPA 2022-06



New SFAR for operational requirements for powered lift aircraft in development.

Air Traffic Management



Leveraging existing regulatory framework (SERA) and national regulatory frameworks.



Leveraging existing regulatory framework for initial operations. New requirements under development.

Air Crew



Transitional provision proposed under NPA 2022-06 and CM-FCD-001, in 2022.



New SFAR and other operational requirements for powered lift aircraft in development.

Infrastructure



Utilizing existing helicopter sites and aerodromes with spec. for vertiports proposed in 2022 (PTS-VPT-DSN).



FAA Vertiport Design , Engineering Brief No. 105 published in 2022 and new AC to be finalized in 2024.

Initial Airworthiness






EASA published special conditions for airframe and electric engines in 2019 / 2020.



FAA are currently publishing special class airworthiness criteria for powered lift



Certification approach EASA and FAA

-  Denotes complete
-  Denotes drafted and in discussion with authority for original 21.17(a) Part 23 approach
-  Denotes not started



Regulatory framework

CS-23 Amendment 5 for Normal-Category aeroplanes + elements from CS-27 for small rotorcraft as necessary and CS-E for Engines



Special Conditions SC VTOL: for VTOL aircraft and SC E-19: Electric / Hybrid Propulsion System



Probability of Catastrophic Failure < 10⁻⁹

Safety Objective

Part 23 + Part 33 + Part 35 + additional requirements to cater for powered-lift



Special Class Certification per 21.17(b) as a 'Powered Lift' category




Probability of Catastrophic Failure < 10⁻⁷ / 10⁻⁸

TECHNICAL FAMILIARIZATION WITH LILIUM JET ARCHITECTURE 

Certification approach

Alignment on list of Significant Standard Differences between the EASA and FAA

EASA Certification Basis 

Significant Standard Differences 

FAA Certification Basis 

Certification program progress

- Complete
- In discussion with relevant authority
- Not started



How does the Lilium Jet architecture work?

Which requirements will apply for the Lilium jet?

Which means and methods to demonstrate compliance?

Agreement on how will we demonstrate compliance and authority Level of Involvement

Collection of methods and evidences to demonstrate compliance

Verification of compliance



CRI A-01



CRI A-01



G-1 Issue Paper



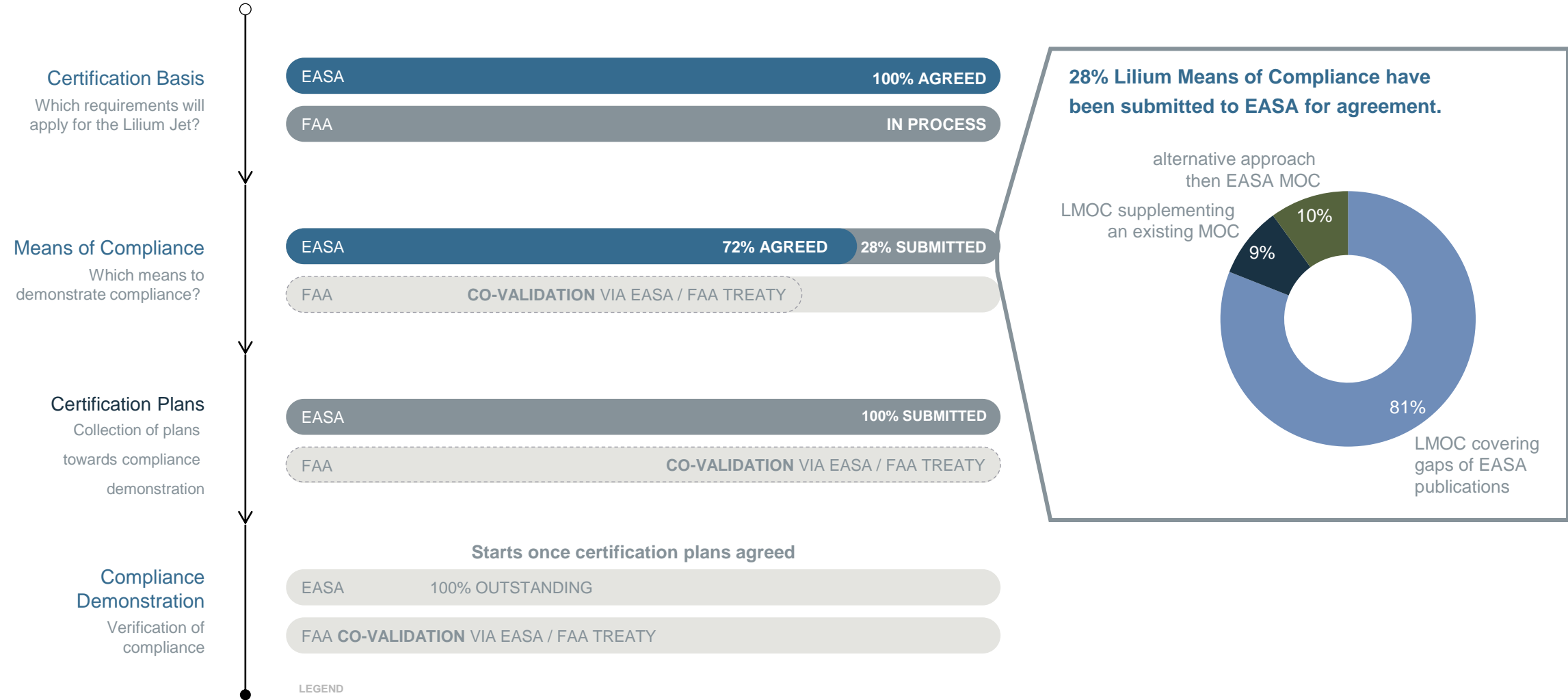
G-2 Issue Paper

Additional tests & reports to account for Significant Standard Differences between EASA and FAA Certification Basis

2025 Certification Program progressing well



Federal Aviation Administration



LEGEND

AGREED: Refers to items which have been approved by the relevant authority; IN PROCESS: Refers to released documentation submitted by LiliuM and pending approval by the relevant authority;
 OUTSTANDING: relates to items yet to be submitted by LiliuM to the relevant authority

Compliance demonstration begins after the certification program is agreed; As part of the EASA type certification process, LiliuM will additionally submit for approval its operational suitability data (OSD) covering pilot training, maintenance staff and simulator qualification and environmental protection, which are in active discussions with EASA.



Key differences EASA / FAA

For commercial air transport over densely populated areas

EXAMPLES IDENTIFIED

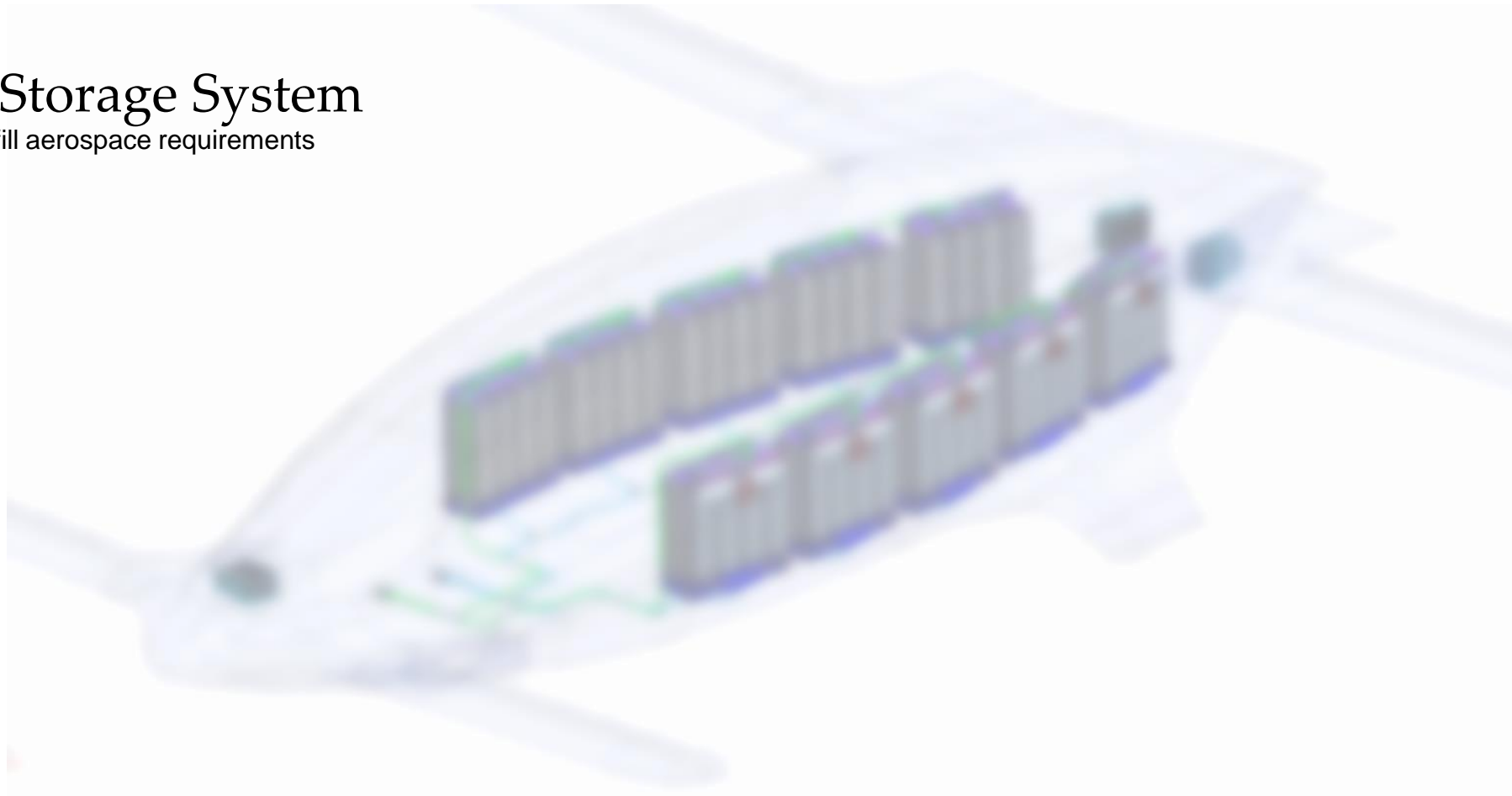


		For Class II $\leq 10^{-7}$ For Class III $\leq 10^{-8}$
1. Safety Objectives for Catastrophic Failure Condition	$\leq 10^{-9}$	
2. Catastrophic Failure Condition does not result from a single failure	✓	
3. Continued safe flight and landing at a <u>vertiport</u>	✓	
4. Bird deterrence device in addition to designing for bird strike		✓
5. Controlled Emergency Landing by glide, autorotation or equivalent means	#	✓
6. Energy System Thermal Runaway	By Cell Non-propagation and Management	By Containment

only permissible for basic category eVTOL's, not permitted for commercial air transport over densely populated areas

Energy Storage System

Designed to fulfill aerospace requirements



10 packs/AC

- Catering for redundancy to fulfill $\leq 10^{-9}$
- Integrated Battery Management and HV Power Distribution Functions

Network Configuration

- To ensure graceful degradation
- The aircraft can sustain multiple pack failures and still maintain Continued Safe Flight and Landing (CSFL)

Designed to satisfy regulatory requirements from EASA and FAA

- Thermal runaway containment
- Cell level non-propagation
- Crashworthiness

Legal Disclaimer

No Representations or Warranties

No representations or warranties, express or implied, are given in, or in respect of, this presentation or the accompanying oral presentation (collectively, this “presentation”). This presentation does not purport to be comprehensive or all-inclusive and is for information purposes only. It does not purport to contain all of the information that may be required to perform a complete analysis of the business or prospects of Liliium N.V. (“Liliium” or the “Company”). To the fullest extent permitted by law, in no circumstances will Liliium or its subsidiaries (collectively, the “Liliium Group”) or any of their respective shareholders, affiliates, representatives, partners, directors, officers, employees, advisers or agents be responsible or liable for any direct, indirect or consequential loss or loss of profit arising from the use of this presentation, its contents, its omissions, reliance on the information contained within it, or on opinions communicated in relation thereto or otherwise arising in connection therewith. Industry and market data used in this presentation have been obtained from third-party industry publications and sources, as well as from research reports prepared for other purposes that the Liliium Group believes are reasonable. The Liliium Group has not independently verified the data obtained from these sources and cannot assure you of the data’s accuracy or completeness, and this data is subject to change. Except as otherwise required by applicable law, the Liliium Group disclaims any duty to update the information contained in this presentation.

Forward-Looking Statements and Risk Factors

This presentation contains certain forward-looking statements within the meaning of the federal securities laws, including, but not limited to, statements regarding the Liliium Group’s proposed business and business model, the markets and industry in which the Liliium Group operates or intends to operate, the anticipated timing of the commercialization and launch of the Liliium Group’s business and the expected results of the Liliium Group’s business and business model, including when launched in phases. These forward-looking statements generally are identified by the words “believe,” “project,” “expect,” “anticipate,” “estimate,” “intend,” “strategy,” “future,” “opportunity,” “plan,” “may,” “should,” “will,” “would,” “will be,” “will continue,” “will likely result,” and similar expressions. Such statements are based on management’s belief or interpretation of information currently available. Forward-looking statements are predictions, projections and other statements about future events that are based on management’s current expectations with respect to future events and are based on assumptions subject to risks and uncertainties, and as a result are subject to change at any time. The Liliium Group operates and will continue to operate in a rapidly changing emerging industry. New risks emerge every day. Given these risks and uncertainties, you should not rely on or place undue reliance on these forward-looking statements, including any statements regarding when or whether any strategic collaboration between Liliium and the respective collaborator will be effected, the number, price or timing of any Liliium jets to be acquired (or if any such Liliium jets will be acquired at all), the price to be paid therefor and the timing of launch or manner in which any proposed eVTOL network or anticipated commercial activities will operate, or statements regarding the Liliium Group’s business and product development strategies or certification program. Actual events or results may differ materially from those contained in the projections or forward-looking statements. Many factors could cause actual future events to differ materially from the forward looking statements in this presentation, including, but not limited to, the following risks: (i) the eVTOL market may not continue to develop, or eVTOL aircraft may not be adopted by the transportation market; (ii) Liliium’s eVTOL aircraft may not be certified by transportation and aviation authorities, including the European Union Aviation Safety Agency (“EASA”) or the U.S. Federal Aviation Administration (“FAA”); (iii) the Liliium Jet may not deliver the expected reduction in operating costs or time savings that Liliium anticipates; (iv) adverse developments regarding the perceived safety and positive perception of the Liliium Jets, the convenience of Liliium’s expected future Vertiports, and Liliium’s ability to effectively market and sell regional air mobility (“RAM”) services and aircraft; (v) challenges in developing, certifying, manufacturing and launching Liliium’s services in a new industry (urban and regional air transportation services); (vi) a delay in or failure to launch commercial services as anticipated; (vii) the RAM market for eVTOL passenger and goods transport services does not exist, and whether and how it develops is based on assumptions, and the RAM market may not achieve the growth potential Liliium’s management expects or may grow more slowly than expected; (viii) if Liliium is unable to adequately control the costs associated with pre-launch operations and/or its costs when operations are commenced (if ever); (ix) difficulties in managing growth and commercializing operations; (x) failure to commercialize Liliium’s strategic plans; (xi) any delay in completing testing and certification, and any design changes that may be required to be implemented in order to receive certification; (xii) any delays in the development, certification, manufacture and commercialization of the Liliium Jets and related technology, such as battery technology or electric motors; (xiii) any failure of the Liliium Jets to perform as expected or an inability to market and sell the Liliium Jets; (xiv) any failure to manage coordination with vendors and suppliers to achieve serial production of complex software, battery technology and other technology systems still in development; (xv) reliance on third-party suppliers for the provision and development of key emerging technologies, components and materials used in the Liliium Jet, such as the lithium-ion batteries that will power the jets, a significant number of which may be single or limited source suppliers; (xvi) if any of Liliium’s suppliers become financially distressed or go bankrupt, Liliium may be required to provide substantial financial support or take other measures to ensure supplies of components or materials, which could increase costs, adversely affect liquidity and/or cause production disruptions; (xvii) third-party air carriers are expected to operate Liliium Network services in the U.S., Europe and Brazil using the Liliium Jets, and these third-parties, as well as Liliium, are subject to substantial regulation and complex laws, and unfavorable changes to, or the third-party air carriers’ or Liliium’s failure to comply with, these regulations and/or laws could substantially harm Liliium’s business and operating results; (xviii) any inability to operate the Liliium Network services after commercial launch at the anticipated flight rate, on the anticipated routes or with the anticipated Vertiports could adversely impact Liliium’s business, financial condition and results operations; (xix) potential customers may not generally accept the RAM industry or Liliium’s passenger or goods transport services; (xx) any adverse publicity stemming from any incident involving Liliium or its competitors, or an incident involving any air travel service or unmanned flight based on autonomous technology; (xxi) if competitors obtain certification and commercialize their eVTOL vehicles more quickly than Liliium; (xxii) Liliium’s future funding requirements and any inability to raise necessary capital on favorable terms (if at all); (xxiii) business disruptions and other risks arising from the COVID-19 pandemic and geopolitical events, including related inflationary pressures, may impact Liliium’s ability to successfully contract with its supply chain and have adverse impacts on anticipated costs and commercialization timeline; and/or (xiv) Liliium’s inability to deliver Liliium Jets with the specifications and on the timelines anticipated in any non-binding memorandums of understanding (“MOUs”) or term sheets we have entered into or any binding contractual agreements with customers or suppliers we may enter into in the future. The foregoing list of factors is not exhaustive. Forward-looking statements speak only as of the date they are made. You are cautioned not to put undue reliance on forward-looking statements, and the Liliium Group assumes no obligation to, and does not intend to, update or revise these forward-looking statements, whether as a result of new information, future events, or otherwise. The Liliium Group is not giving you any assurance that it will achieve its expectations. A further list and description of risks, uncertainties and other matters can be found in sections titled “Risk Factors,” similarly titled sections and elsewhere in our filings with the U.S. Securities and Exchange Commission (“SEC”), all of which are available at www.sec.gov. All forward-looking statements attributable to the Liliium Group or any person acting on its behalf are expressly qualified in their entirety by this cautionary statement.

Description of Key Partnerships

This presentation contains descriptions of some of Liliium’s key business partnerships with whom Liliium has entered into feasibility studies, indications of interest, term sheets, memoranda of understanding or other preliminary arrangements. These descriptions are based on the Liliium management team’s discussions and the latest available information and estimates as of the date of this presentation. In each case, these descriptions are subject to negotiation and execution of definitive agreements that may not have been completed as of the date of this presentation and, as a result, the nature, scope and content of these key business partnerships remain subject to change.

Financial Information

Some of the financial information and data contained in this presentation is unaudited and does not conform to Regulation S-X. Accordingly, such information and data may not be included in, may be adjusted in or may be presented differently in the reports and other documents the Liliium Group may from time to time file with the SEC. You should review Liliium’s audited financial statements in its filings with the SEC for a presentation of Liliium’s historical IFRS financial information.

Trademarks

This presentation contains the trademarks, service marks, trade names and copyrights of the Liliium Group and other companies, which are the property of their respective owners.

Graphic Representations

Aircraft depicted in this presentation have been rendered utilizing computer graphics.

The information contained herein is made as of 19 April 2023, and does not reflect any subsequent events.