UNIVERSITÀ DEGLI STUDI DI TRIESTE

Deams
Dipartimento di
Scienze Economiche, Aziendali,
Matematiche e Statistiche "Bruno de Finetti"

GISLAB
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GEOGRAPHY OF AIR MOBILITY

Representation, evolution, spaces and dynamics of contemporary air transport

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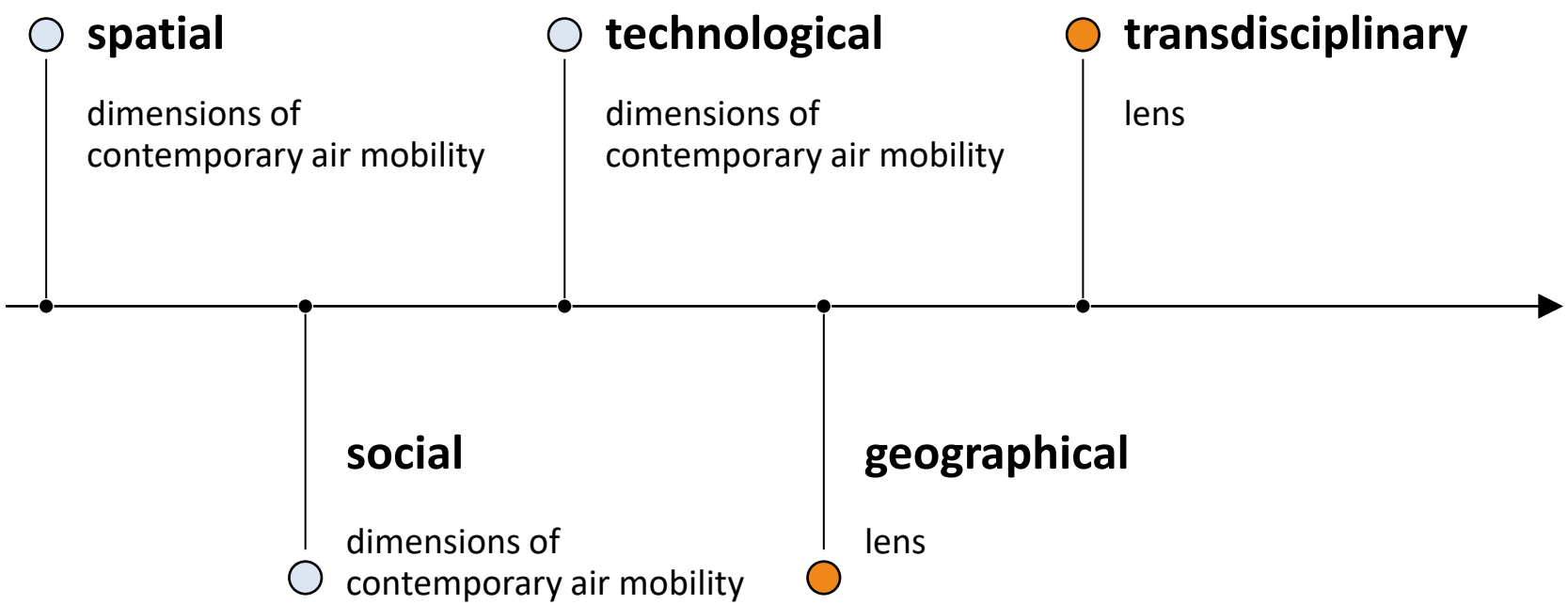
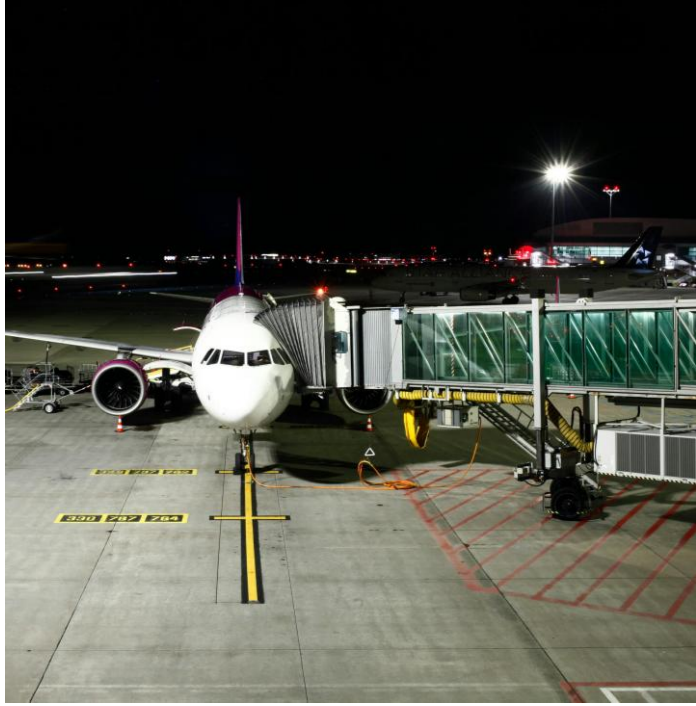
GEOGRAPHY OF AIR MOBILITY



Airport as a complex socio-technical system



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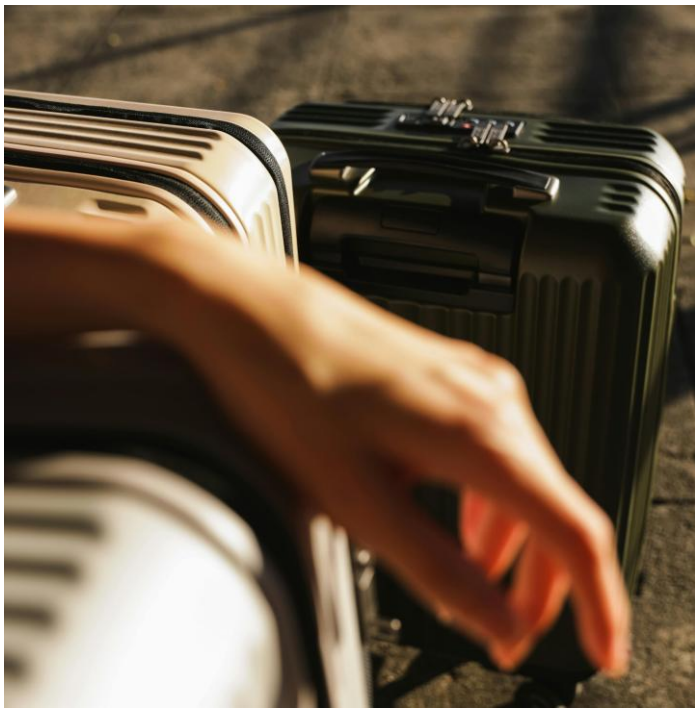
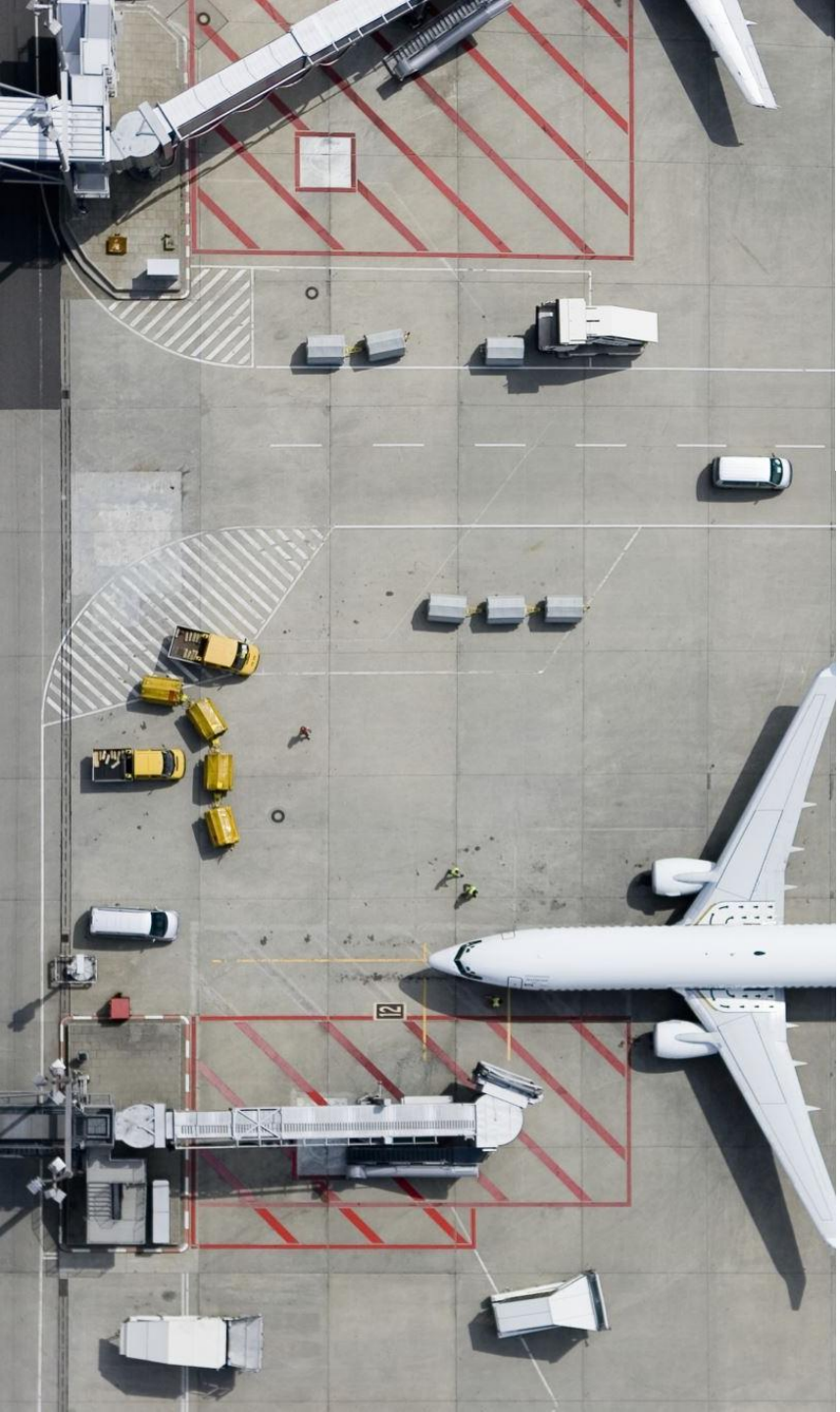


Non-place Hyperplace

- Non-place = loss of identity and transience; places characterised by an absence of lasting relationships
- Hyperplace = space with social, political and symbolic practices. An overlap of subjective experiences, economic relations and media representations emerges.



Before we begin…

- What do you think an airport is?

Infrastructure?

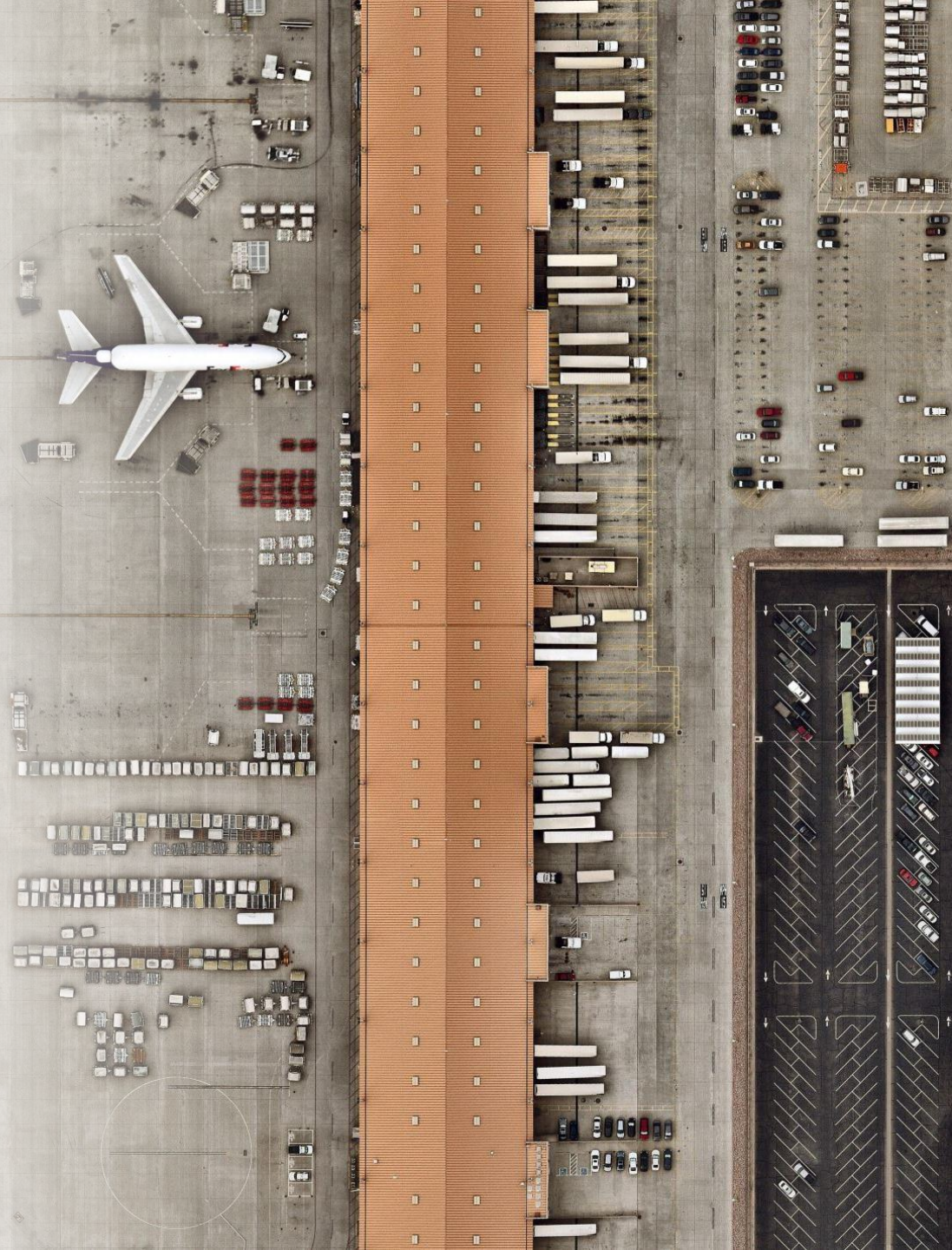
place?

home?

job?

Airports: From Non-Places to Hyperplaces

- • Augé (1993): Airports as 'non-places'
- • Lussault (2017): Airports as 'hyperplaces'
- • Airports as socio-technical, emotional and cultural spaces

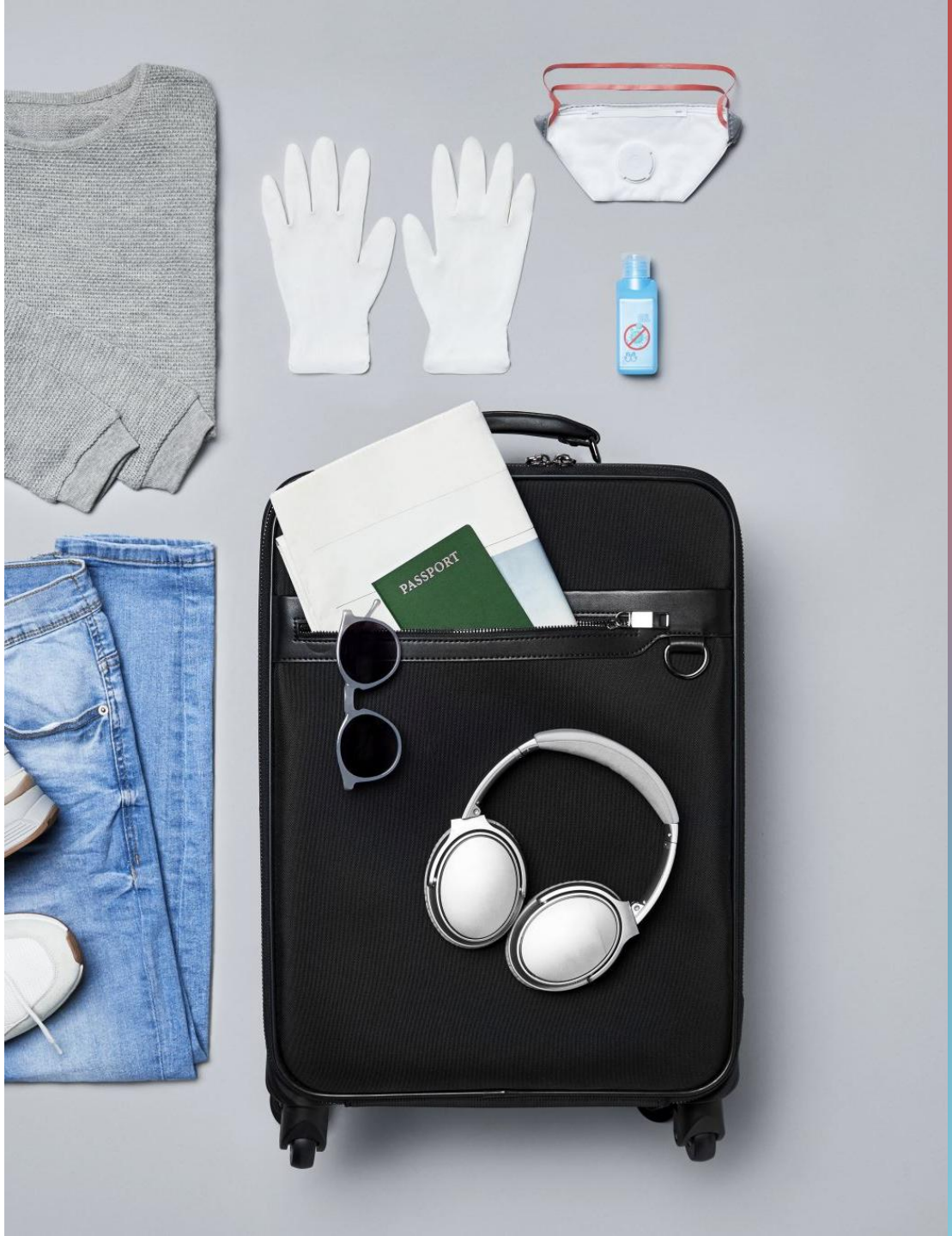


Mobility & the Contemporary World

- • Mobility as a key factor in the global economy
- • Time-space compression and global connectivity
- • Mobility generates both opportunity and inequality

Mobility
multiple aspects

- movement of people (travel, tourism)
- material objects (goods)
- other immaterial entities (data, fashions, ideas)
- as well as the various social implications of these movements.

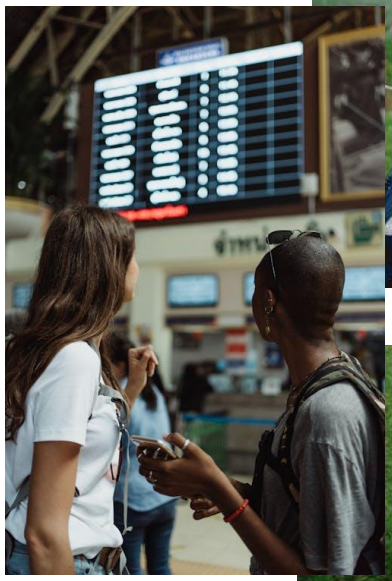


Mobility vs mobilities

concepts that are independent but related

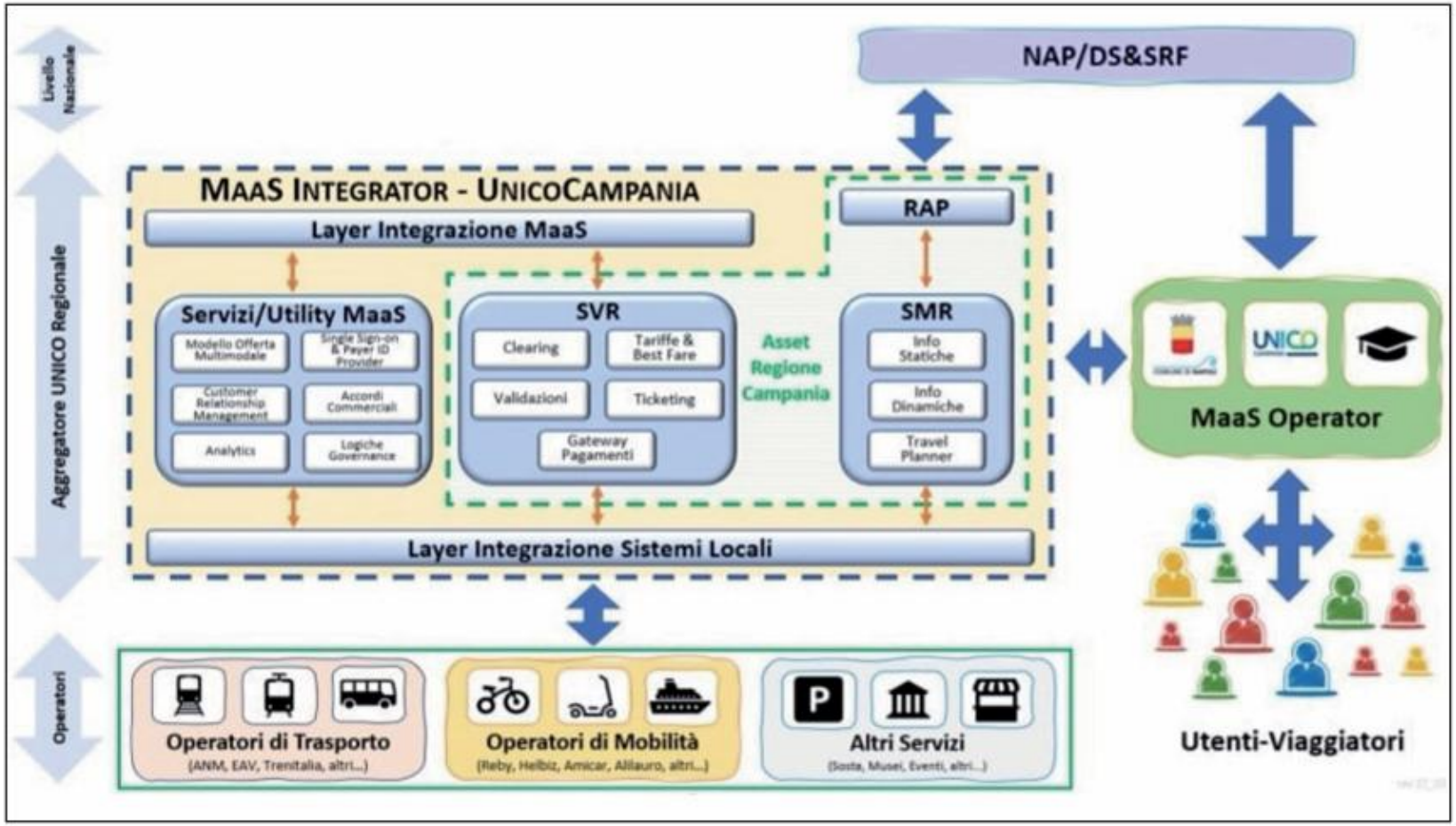
mobility

mobilities



MaaS

Mobility as a Service



Role of communication technologies

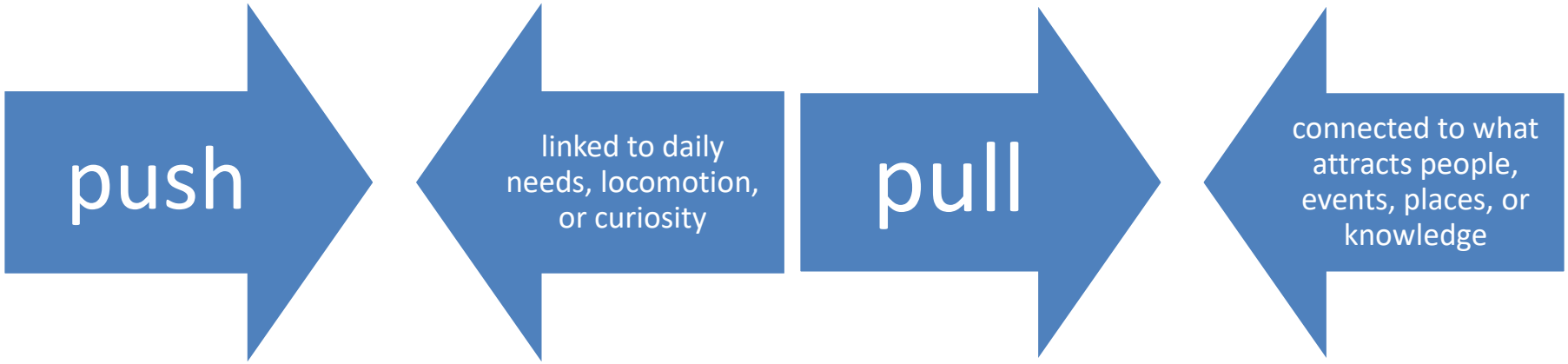
Aeromobility

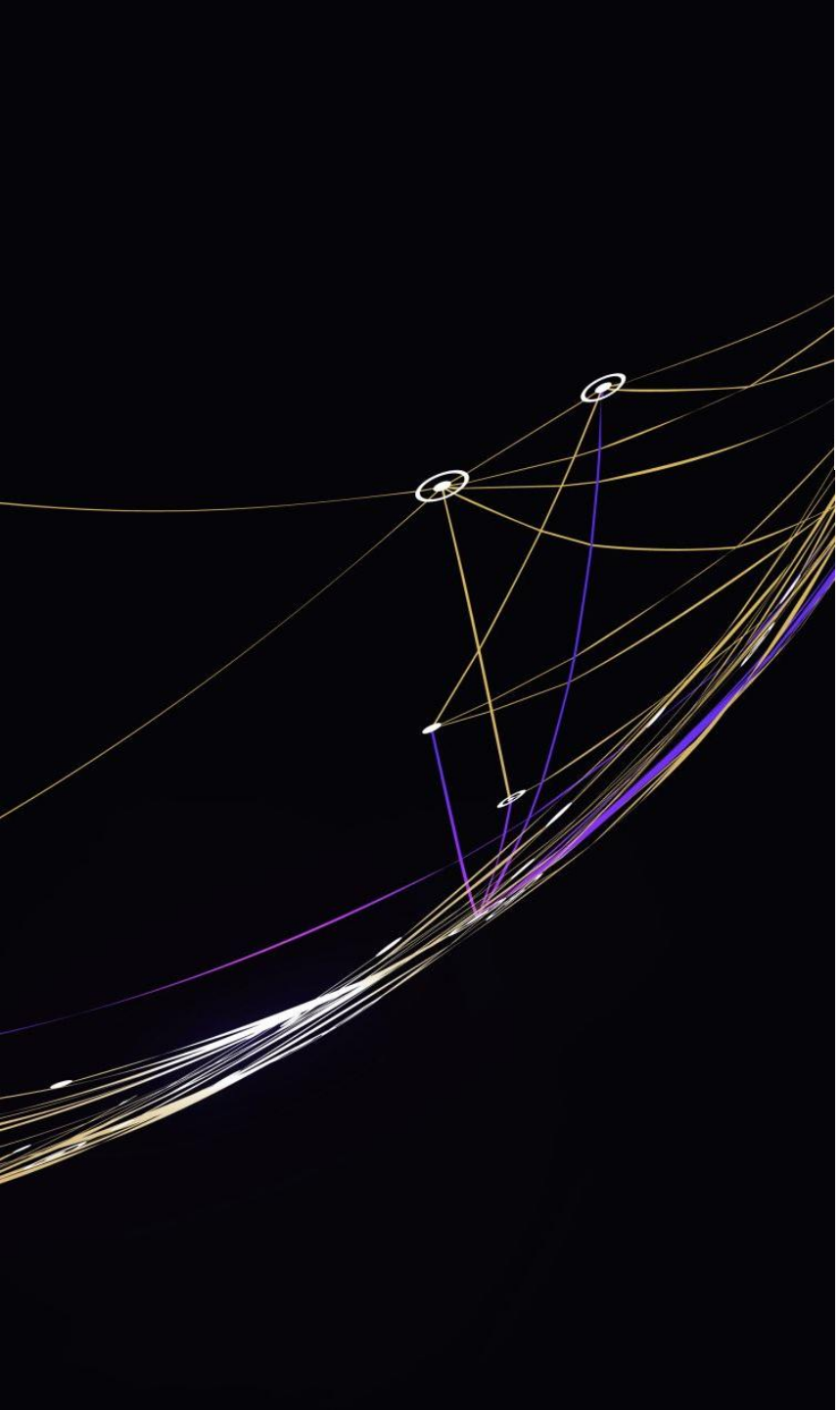
- air travel and tourism in general
- flying as a central practice in the dynamics of contemporary mobility
- the dominance of flight as the main international mode of movement (Adey et al., 2024)
- critical implications in terms of social and environmental injustice
- structural component of globalized economies, with significant social and cultural consequences (Kesselring, Vogl, 2016)
- air travel becomes an integral part of professional practices (Lassen, 2006)

Push and pull factors

shape mobility behaviors (Kellerman, 2012); emotional, technological, and relational dimensions.

showing how people shape their own experience of moving through space





Transport

The transport system plays a central role in the organization of geographical space, as infrastructures such as terminals, nodes, and networks occupy specific positions within the territory and constitute the supporting framework of an increasingly complex spatial system.

Transport
SPATIAL ACTIVITY

mobility must be analyzed within its geographical context, directly linked to spatial flows and organizational patterns.

transport geography can be understood through eight fundamental principles:

- **Transport as a spatial linkage** of derived demand, since the need for movement arises from economic, social, or political requirements (Sartzetaki et al., 2023; Seneviratne, Martel, 1991).
- **Distance as a relative concept** involving space, time, and effort, which influences costs and accessibility (Rodrigue, 2024) — equivalent dimensions when evaluating spatial separation (Chan, 2005). Travel time to destinations is often the most critical determining factor, influencing people's modal choices (Couclelis, Getis, 2000; Lucas, 2012). This factor also shapes social equity, directly affecting access to essential services such as healthcare (Neutens, 2015; El-Geneidy et al., 2016). Unequal travel times can have a disproportionate impact on vulnerable populations, who may already face challenges such as limited mobility and financial constraints, thereby exacerbating systemic inequalities.
- **Space as generator**, support, and constraint of mobility, since geographical configuration conditions transport possibilities (Rodrigue, 2024). The territory is not merely a passive context but actively shapes mobility. It can generate movements (as the origin of resources or economic functions), support them (by providing infrastructures and natural or artificial networks), and at the same time constrain them (through physical barriers, demographic dispersion, or topographical features) (Rodrigue, 2020).
- **The relationship between space and time may converge or diverge**, depending on transport infrastructures and technological innovations (Givoni, Banister, 2010).

- A **location** may be central, generating and attracting flows, or an intermediate element through which traffic passes, with direct effects on territorial connectivity (Rodrigue, Notteboom, 2024; Button, 2017).
- **Overcoming geography requires** infrastructures that shape both the landscape and the spatial organization of human activities (Hesse, Rodrigue, 2004).
- **Transport seeks massification** but is constrained by atomization, as economies of scale are balanced by the need for flexibility and accessibility (Black, 2003). Accessibility refers to the ease with which people can reach desired destinations or opportunities (such as work, education, healthcare, etc.) using a particular transport system (Dalvi, Martin, 1976). It encompasses different aspects such as time (travel, waiting, parking), cost (fixed, variable), and effort (comfort, reliability, convenience) (Geurs, Van Wee, 2004). Although accessibility is multidimensional, travel time is often considered a synonym for accessibility and is frequently used as a proxy in accessibility assessments due to its ease of interpretation.
- **Speed is a modal, intermodal, and managerial effort**, influenced by operational efficiency and infrastructural conditions (McCann, 2013).

Mobility

- Not only to transport costs and the attributes of the cargo (such as fragility, perishability, and economic value)
- also to political factors (laws, regulations, borders, and tariffs)

This highlights that when mobility is high, economic and social activities become less constrained by distance, allowing for greater territorial integration and improved accessibility to markets

Mobility must be analyzed within its geographical context, directly linked to spatial flows and organizational patterns.

- The concept of flow can be broken down into four main components:

- **Geographical**, which concerns the location of origin and destination points and the role of distance in the spatial structure of transport;
- **Physical**, which includes the infrastructures and means of transport used for the movement of passengers and goods;
- **Transactional**, which refers to the administrative procedures, regulations, and agreements required for the transfer of people and goods between different geographical areas;
- **Distributional**, which considers how transport flows are organized to meet demand (Sartzetaki et al., 2023; Fritsche, 2009; Seneviratne, Martel, 1991), optimizing logistics networks and minimizing operational costs (Hesse, Rodrigue, 2004).

- **transport** deals with the mobility of passengers and goods,
- **logistics** focuses on the management and control of the circulation of raw materials, labor, energy, and information within systems.

The Role of Air Transport

- One of the main transport modes (speed, flexibility, costs)
- Airports as nodes in multimodal systems
- Air transport connects economies and drives competitiveness

Spatial Principles in Transport Geography

- Distance, accessibility, connectivity, agglomeration
- Transport systems shape spatial organization
- Global hubs concentrate economic power

Global Cities & Aviation Hubs

- • London, Frankfurt, Singapore as global air nodes
- • Connectivity reinforces economic hierarchy
- • Unequal participation in global mobility networks

Socio-Technical Systems of Airports

- Infrastructure, technology, people, regulation, identity
- Interactions among flows, security, and belonging
- Local identity within global flows

Digitalization & Data in Air Mobility

- Real-time data, sensors, GIS, Big Data analytics
- Integration of quantitative and qualitative research
- Enhanced efficiency and sustainability monitoring

Governance & Sustainability

- Governance: ENAC, operators, state agencies
- Balancing efficiency, safety, sustainability
- Green transition: Sustainable Aviation Fuels (SAF)

Case Study: Italian Airport System

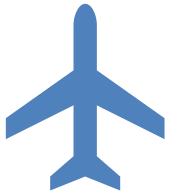
- Strategic National Airport Plan (PNA)
- Concentration in Northern Italy; Southern underuse
- Survey on accessibility, comfort, and local identity

Spatial Inequality & Airports in Italy

- Uneven regional participation in air networks
- Economic geography implications of connectivity gaps
- Airports as levers for territorial cohesion

Conclusions

- Air mobility = relational and hybrid space



- Airports are hyperplaces linking local and global

- Sustainability and governance as future frontiers

Thank You


Questions?
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