Arthur D Little

Travel & Transportation

Mega-Aviation Cities' Project

Giant Battles on the Ground… to Win the War in the Skies

Content

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Executive Summary

In the context of rapid growth in world air traffic and increasing connectivity, the airport industry stands at the cornerstone of its brief history. Airports are facing higher competition in all their target business segments, which is far away from the traditional image of "local monopolies."

Most exposed to this new competition paradigm are the existing and upcoming Mega-Aviation Cities around the globe.

Given the massive operational challenges, limited financial resources and strategic ambition at stake, Mega-Aviation Cities are among the most critical projects across the globe. Therefore, these projects are highly dependent on robust strategic business and implementation plans that are shared by airport managers, partner airlines, investors, political and economic leaders and organizations.

This side-by-side strategic planning and implementation approach is crucial, as the stakeholders of Mega-Aviation City projects must simultaneously fight a battle on three fronts:

- Firstly, they must attract the maximum number of passengers and air cargo traffic. This goal can be achieved by building an airport that will not simply be used as a transit area, but as one that passengers view as a destination itself. Leveraging innovation together with partner airlines and a superior customer experience will not only achieve this objective, but also overcome potential weaknesses with regards to the airport catchment area and traffic potential.
- Secondly, they must ensure the rise of the "Core Aviation City", which aims at accumulating aviation-related support services. Some activities must settle at the airport and will grow at the pace of traffic, and especially at the pace of the home-airline and of long-haul flights (e.g. ground-handling, air cargo logistics, fueling). But competition will inevitably arise for some activities which might settle at a neighboring area (e.g. catering) or even at another airport or region (e.g. MRO), depending on the competitive attractiveness of the "Core Aviation City" with regards to labor cost and skills and to real estate prices amongst other criteria.
- The final challenge to overcome is to grow the "Extended Aviation City" into a diversified urban and service center. From an Industrial Free Trade Zone to an iconic theme park, almost everything can be envisioned. Still, Mega-Aviation City stakeholders must conduct a careful analysis of the strengths and weaknesses of an airport area against near-by competing locations. They should also predict the potential future advantages to optimize the sqm allocation, the business model to be adopted (landlord, operator, JVs) and the pricing premium the airport should pursue.

Based on Arthur D. Little's extensive experience in assisting airport managers and investors, this report focuses on the key success factors needed to fulfill the initial ambitions of Mega-Aviation City projects and to provide sufficient returns for all stakeholders.

Mega-Aviation Cities, Shaping the Future Airport Industry Landscape

Airport traffic will grow by + 4.1% per year until 2030, but it will be uneven across regions, with Asia and Middle-East accounting for +6.0% and +5.1% per year, respectively. To cope with traffic growth, airports are expected to invest 1,800 bn$ until 2030.

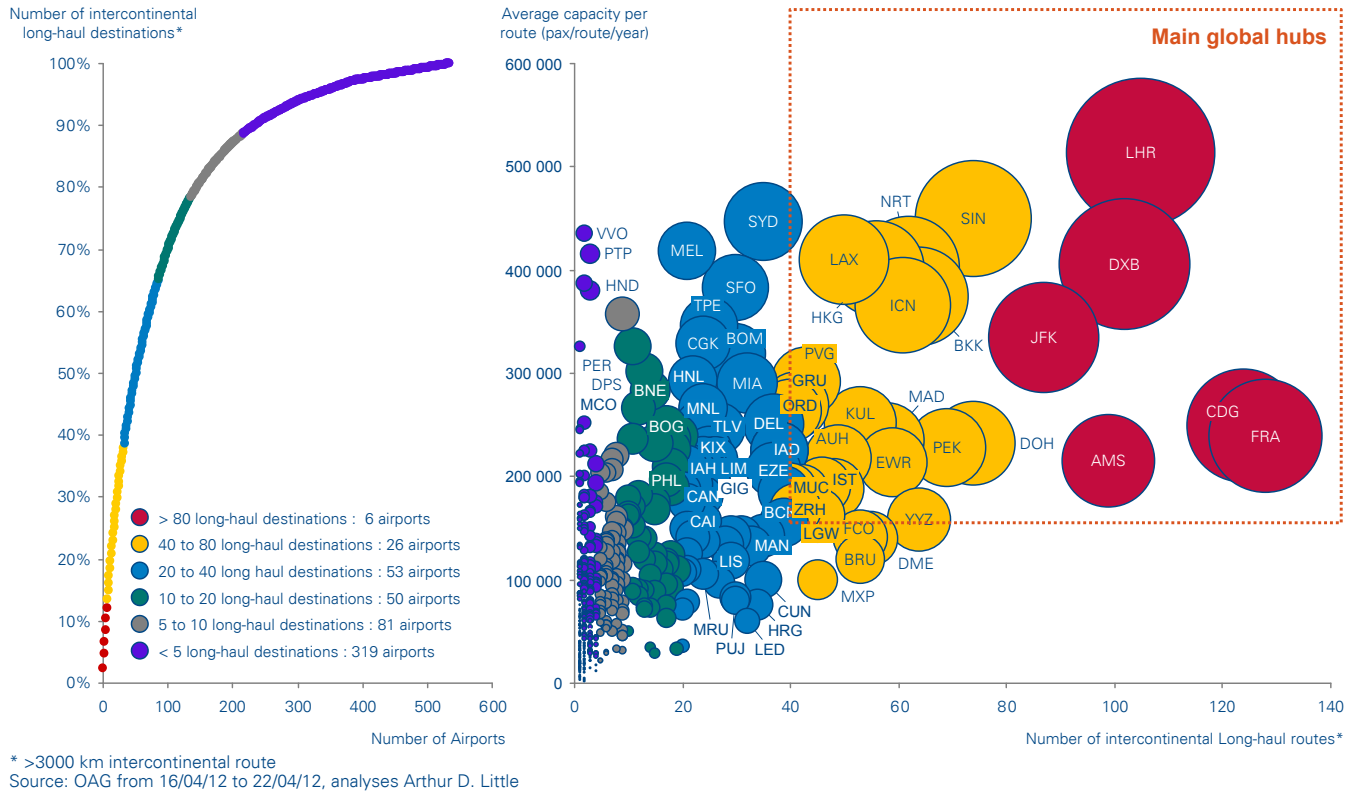
However, this traffic growth is concentrated within a few global cities that are sustaining the rise of Aviation Mega-Cities. For example, since 2007 45% of the traffic growth in Latin America is accounted for by just 10 airports and in Asia, the world's top 100 largest airports are responsible for >50% of the total traffic growth. To cope with this enduring increase, Mega-Aviation City projects are therefore currently emerging around the globe.

These projects do not see airports as mere transport hub exchanges but as the cornerstone of new global urban and economic centers. Today, these include London, Paris, New York, Istanbul, Dubai, Abu Dhabi, Doha, Frankfurt, Rome, Munich, Moscow, Madrid, Barcelona, Sao Paulo, Rio, Incheon, Beijing, Hong Kong, Shanghai, Singapore, Kuala Lumpur and Sydney for instance. However, Djakarta, Manila, Bogota and many more will soon compete in this new global arena. Taking a 20-years+ perspective, Mega-Aviation Cities can indeed be envisioned for today's top 100 world airports at least.

These airports are simultaneously facing three challenges:

1. Attract passenger and cargo traffic
2. Become globally recognized as an aviation-related industry and logistical hub
3. Become a diversified service and urban center

Figure 1: Concentration of 2012 long-haul traffic among global hubs



* >3000 km intercontinental route
Source: OAG from 16/04/12 to 22/04/12, analyses Arthur D. Little

Winning Battle no.1: Attracting Traffic in a Hyper-competitive Air Transport Industry

Five key success factors for airports in the era of hyper-competition

Flying from the monopoly era (1950-1980) through the age of continental competition (1980-2010), the air transport industry is now at the edge of the period of hyper-competition between airlines and between airports.

Indeed, former key resources that enabled airlines to gain a sustainable, dominant competitive position are no longer scarce: ATC and airports authorities are investing heavily to provide more slots and capacity, open skies agreements provide more traffic rights, airplanes are more and more affordable (leased aircrafts today represent ~40% of the world fleet up from 9% in the late 90s) and numerous IT vendors' solutions enable even start-up airlines to optimize their revenues and operations like legacy carriers can do. As a consequence to this new paradigm, competition among airports, to attract both point-to-point and connecting traffic, is continuously increasing.

In this context, the ability of Mega-Aviation Cities to attract passenger and air cargo flows is closely related to five main key strategic success factors. The traffic potential will be clearly driven by:

1. the size, wealth and attractiveness of the local market/ destination, sustaining the platform's origin& destination (O&D) traffic,
2. the suitability of the geographical location of the airport to attract connecting passengers;
3. a performing and opened airline industry sector,
4. an excellent airport product and
5. a performing ecosystem (i.e. tourism sector, aviation support industries and other private sectors).

Lessons learned from Singapore in the 90's and Dubai in the 00's: leveraging innovation, customer experience and a collaborative approach with partner airlines

Offering both an excellent airline product and an overwhelming airport experience is not a new recipe. In the 90's, Singapore emerged as a global hub by mastering these two success factors. Since then, both Singapore Airlines and Changi Airport have been regularly ranked among the players delivering top quality service for premium passengers.

In the 2000's, Dubai raised the bar even higher. Emirates and the Dubai Airport Authority have strategically excelled in providing a superior travel experience whereby all passengers, from economy class to premier, may prefer to stop-over rather than take a direct flight.

Furthermore, since the early 2010's, Qatar, Abu Dhabi and Turkey have been rapidly following the same path as Dubai.

- Emirates, Etihad, Qatar Airways and Turkish Airlines are becoming familiar to consumers worldwide, just like, easyJet, Ryanair and AirAsia succeeded in becoming the first genuine continental aviation brands in Europe and Asia, respectively. These airlines understood the importance of growing a new strategic asset - their brand by investing more intensively than any other in marketing and the customer experience, to achieve their leadership position.
- On the other hand, the transfer airport has become a true travel destination in and of itself, triggering the desire of travelers to actually visit it. Dubai thus leverages a cruise liner-like architecture and design, world-class retail areas, branded events and complements these with a relentless effort to innovate the customer journey. This, along with its excellent geographical location, clearly off-set its initial handicap, namely the lack of a powerful and dynamic O&D air travel market.

Conceiving airports as pure tourist attractions

In this battle of the giants to become the world's preferred aviation hub, Singapore is now launching the Jewel project in order to regain the crown it once had. The Jewel project will increase the airport's capacity, but first and foremost its primary goal is to create an "iconic mixed-use complex to enhance the airport offerings" and position Changi airport as a "world-class, signature lifestyle destination." The new Incheon tourism focused aviation city, the new Istanbul and Beijing airports and the revamped Moscow airports will also enter this game.

The leading Mega-Aviation Cities in the US or Europe could suffer if they do not rethink their value proposition to travelers, leverage innovation and technology and begin collaborative transformation projects along with their main airlines partners to overhaul the customer experience.

In the current global airport market, assessing today's and tomorrow's performance of a Mega-Aviation City project along the above mentioned dimensions is critical to fine-tuning the strategic efforts that must be made. This is also critical in order to ensure that airports are investing the right and required resources at an adequate speed, versus the progress made by other stakeholders (airlines, government, and private sector) to attract more traffic.

Figure 2. Building a global brand and aligning both the airline's and the airport's positioning

Source: Arthur D. Little

Winning Battle no. 2 & no. 3: Growing the Core and Extended Aviation City

Developing diversified economic and urban centers at airport sites has become the worldwide ambition of governmental bodies, as well as of airport managers and investors.

Indeed, it looks obviously relevant to take advantage of infrastructure that will be developed for the airport (transportation, utility networks, telecommunication networks etc.) and to "saturate" them by developing a new urban cluster around them.

Such a Mega-Aviation City will consist of a bundle of clusters that may differ according to their level of dependence to the airport's aeronautical activities and to the competitive intensity with other possible locations. These clusters will thus belong to:

1. The Core Aviation City, involving aviation/ airlines support services and
2. The Extended Aviation City, involving diversified service activities.

Obviously, Mega-Aviation City project promoters have to first ensure that the airport site is providing sufficient available surface within the airport's boundaries. According to our research, major hubs globally show a typical ratio of 20 ha of land for 1 Mpax of ultimate traffic capacity. But this ratio may vary from 16 ha in Delhi, Mumbai or Los Angeles up to >50 ha for the new Istanbul or DWC projects.

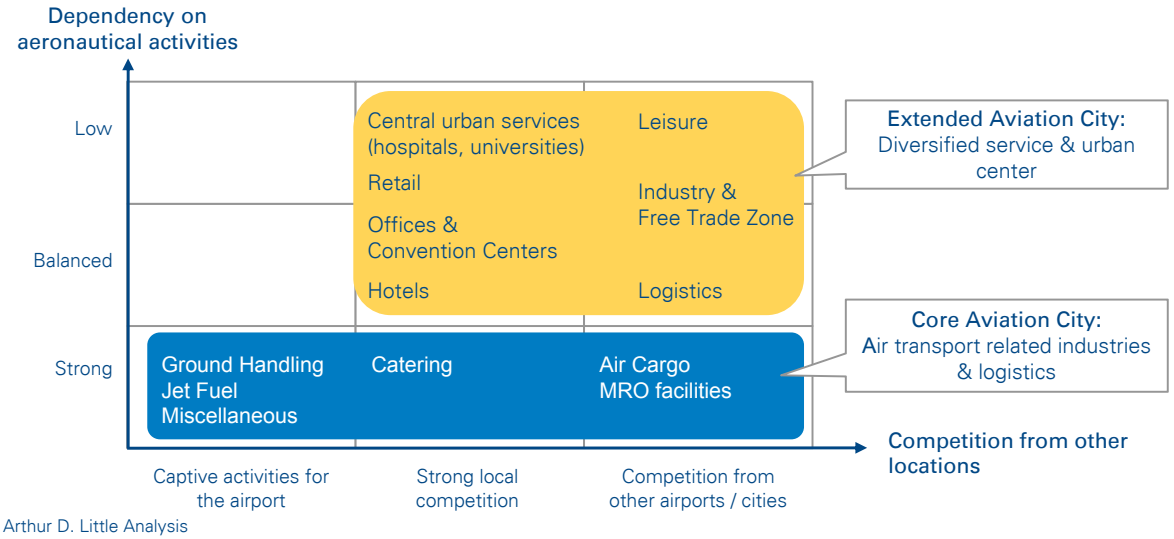
Targeting the right mix between Core and Extended Aviation City development

Allocating the scarce sqm resources to the most likely to develop and most profitable activities is key. Therefore, it is crucial that the settlement conditions are sufficiently attractive to lock activities on the airport site and not just over the fence. The danger might lie in overestimating the attractiveness of the airport and betting too much on the real estate revenues to reach a satisfactory financing or governmental reward for the project.

To identify clusters to be developed, strategic planners must carefully assess:

1. The market demand of the upcoming 10 years
2. The business model for each activity cluster, their revenue and cost structure as well as the capital intensity of the business
3. The competitive position of the Aviation City vs. key success factors required by each targeted activity cluster

Figure 3. Strategic segmentation of activity clusters of Mega-Aviation Cities



Source: Arthur D. Little Analysis

Core Aviation City Development: driven by long-haul traffic and by the local environment

Activities related to the Core Aviation cities are closely related to the quantity and quality of traffic hosted, for example: Ground Handling, Catering, Jet Fuel, MRO, Air Cargo and Facilities. The more long haul traffic there is, the more business for them due to the medium haul traffic tending to ask for less on-board catering and less cargo handling. The MRO market is also smaller and jet fuel consumption per ATM is almost 8-10 times lower for narrow-bodies versus wide-bodies.

However, competition to attract such businesses may be tough. With improving "cold-chain" solutions, catering facilities can easily settle off-airport, and airports must offer attractive rent levels to counter this global trend. Attracting MRO business is even more difficult, given that the competition can be regional or global for this segment. Quality and cost of labor along with excellent supply-chain/ logistics and customs are vital to attract businesses. The ability to attract a skilled workforce, the role of the government policy and the efficiency of public agencies are key differentiators here.

Overall the strength and dynamism of the home-airline, especially the critical size of its long-haul operations, is a strong enabler to create sustainable foundations for all these businesses.

Regarding the business model, airports must envision that catering and ground handling are quite labor intensive. Therefore, Airports could step away from these facilities. On the other hand, Jet Fuel is almost an infrastructure management business, as it is strategically very close to the airport business model.

Extended Aviation City development: a head-to-head match with local real estate projects

Clusters that can be developed in an Extended Aviation City project are directly headed with usual real estate development projects. They could be as diverse as long distance logistics, free trade zone, convention centers or luxury leisure resorts. For such Extended Airport City projects, the differences in local urban planning arises between European, North American, Asian or Sea-side cities that may actually impact heavily on the airport ambition.

Figure 4. Key Success Factors to develop activity clusters of the Core Aviation City

	Weight of Key Success Factors				
	Home airline	Skilled workforce	Low labor cost	Proximity of sea/road transport ation hub	Rent prices
MRO - Airframe	●	◕	◕	◔	◔
MRO - Engines	●	●	◑	◔	◔
Catering	◕	○	●	○	◑
Air Cargo logistics	○	○	●	●	◑
Fuel	◕	○	○	●	○

Source: Arthur D. Little Analysis ● Very high ○ Very Low

Figure 5. Key Success Factors to develop activity clusters of the Extended Aviation City

	Weight of Key Success Factors							
	City attractive-ness vs. Airport	Position vs. City center	Site accessi-bility / Predicta-bility of time to airport	Short distance connec-tion to the city center	Position on long distance transport. infra-structure network	Implan-tation environ-ment quality	Other ex-ternal fac-tors (Free Trade Zone, regulation ...)	Presence of a global airline
Long distance logistics	○	◑	○	○	●	○	◔	◕
Last mile logistics	◔	◕	◕	◕	○	○	○	○
Industry	○	○	○	◔	◕	◔	●	◔
Retail	●	○	○	◕	○	●	○	○
Leisure	●	○	○	◕	○	●	◑	○
Hotels	●	◑	◕	◔	◔	◑	○	◔
Business	●	◑	◑	●	○	●	◔	◔
Central Urban Services	●	◕	○	●	○	◕	○	○

Source: Arthur D. Little Analysis ● Very high ○ Very Low

In any situation, the attractiveness of the airport location versus other competing sites, its accessibility versus city down-town or any other major focused activity area, the quality of its immediate neighboring environment and the economic/ tax regulation will play a major role in influencing the possibilities for the airport cities.

This might lead to a project as varied as the future Incheon Mega-Aviation City which has a strong leisure focus, the existing Memphis Aviation City which is very industrial oriented or the coming projects in Dubai or Istanbul which have a much more balanced ambition between all real estate clusters to be developed.

Finally, the strategic review of Mega-Aviation City projects must carefully identify the "airport premium":

1. to set the right pricing level & approach (fixed versus variable, price level and scaling)
2. to implement the right business model for the airport (landlord, co-investor, operator)

Arthur D. Little's research and benchmark demonstrate that rent premium for logistics facilities at global major hubs can vary from -11% to +50%. However, office rent in other prime locations in the neighboring Mega-City; vary from -70% to +7%.

Figure 6. Selected examples of Mega-Aviation Cities with associated activity clusters (continued)

	AMS	PEK	DWC	ICN	SIN	BKK	ATH	HKG	KUL	MUC	FRA	CDG	ORY
Logistics & Industrial District													
Logistics & Warehouses Parks	✓	✓	✓				✓		✓		✓	✓	
Industrial / Technology / Research Parks									✓				
Free Trade Zone			✓	✓			✓		✓				
Business District													
Business Centers			✓	✓		✓	✓	✓	✓		✓	✓	✓
Convention Centers & Exhibition Halls	✓			✓		✓	✓	✓	✓				✓
Offices / Commercial buildings	✓		✓	✓		✓	✓	✓	✓		✓	✓	✓
Leisure District		✓	✓										
Sports & Aquatic Complex				✓	✓		✓	✓	✓				
Entertainement Center				✓	✓	✓	✓		✓				
Retail District			✓										
Malls		✓		✓	✓		✓		✓		✓	✓	
Commercial Zone / Retail Park							✓	✓	✓				
Hotels	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Others													
Residences			✓	✓		✓	✓		✓				
Medical Centers / Hospitals						✓			✓	✓			

Source: Airports

Conclusion: Side-by-side Strategic Planning and Implementation are the Keys to Success

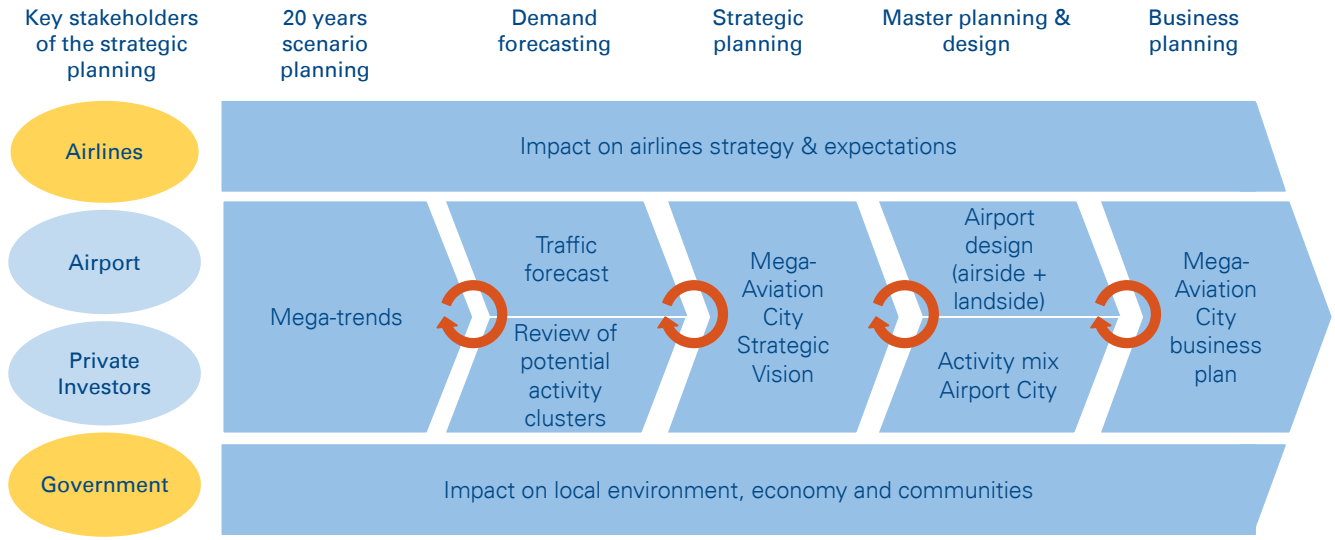
Mega-Aviation Cities are among the most critical projects currently running across the globe, given the massive operational challenges, financial resources and strategic ambition at stake. The multi-billion dollars invested by public bodies, infrastructure investors, and private operators and airlines can change the landscape, wealth and history of a megapolis or even of a country.

But each Mega-Aviation City project will have its own characteristics with no way to copy-paste an urban planning concept, which increases the complexity of achieving such a vision.

No doubt then, that Mega-Aviation Cities projects must rely on robust strategic, business and implementation plans, shared together by airport managers, airlines executives, investors, political and economic leaders and organizations.

The ability to build close partnerships and a shared vision between key players of the airport ecosystem is perhaps the most critical key success factor, to efficiently develop Mega-Airports projects. Ultimately it is the key to win the battle on the ground, which will allow you to win the war in the skies.

Figure 7. Mega-Aviation City collaborative strategic planning approach



Source:

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Arthur D. Little

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