# OAG®

## 2015

## Megahubs Index

## The World's Most Connected Airports

# Contents

# About OAG Megahubs Index

The OAG Megahubs Index has been created using OAG Connections Analyser; a powerful tool within the OAG Analyser suite of products which can be used to analyse all possible connections in the airline schedule.

OAG calculated a 'Connectivity Index' for each airport as a ratio of the number of possible connections to the number of destinations served by each airport. We have described those airports with the highest rates of connectivity as Megahubs.

The OAG Megahubs Index 2015 ranks the leading airports in terms of connectivity. It differs from a list of the largest and most well-known airports in the world in that airports serving more regional markets with high-frequency air services may score equally or better than large, high-profile airports known for their long-haul international air services. The Connectivity Index is a mechanism which enables common comparison between airports based on each airport's effectiveness as a connecting point.

# Methodology

OAG has calculated the total number of all possible connections between inbound and outbound flights within an eight-hour window at the largest airports (based on scheduled seats in 2014). Due to the sheer scale of the data, the calculation was made for a single day. The busiest day for global aviation in 2015 was chosen, as well as the busiest day in 2010.

The OAG Megahubs Index presents connectivity data as a series of tables based on regional location and airline type.

For the purposes of this analysis, in addition to the in-built business rules within OAG Connections Analyser, the following customisable criteria were chosen for all Operating flights:

Single connections only to/from the chosen airport;

Maximum circuity of 180;

Minimum Connection Time (MCT) – varies by individual airport as OAG holds the MCT information for every commercial airport in operation;

Maximum Connection Window of 8 hours.

OAG Connections Analyser harnesses the power of the OAG Schedules database to dynamically build connections and is further enhanced by including OAG's MCT Exceptions Table – at any one time, there are typically over 120,000 exceptions globally. These are typically less than published MCTs and it is the responsibility of the airlines involved to ensure that the connection time remains realistic for passengers to make the connection.

# Top 50 Megahubs

**The Top 50 Megahubs are those airports with the highest ratio of possible scheduled connections to the number of destinations served by the airport.**

**Both online and interline connections are included as are all types of scheduled airlines (i.e. Legacy and Low-Cost airlines).**

| Rank | Airport | Country | Connectivity Index |
|------|---------|---------|--------------------|
| 1 | ATL | USA | 2503 |
| 2 | ORD | USA | 2280 |
| 3 | DFW | USA | 1940 |
| 4 | CLT | USA | 1585 |
| 5 | IAH | USA | 1028 |
| 6 | DTW | USA | 903 |
| 7 | CGH | Brazil | 880 |
| 8 | DEN | USA | 877 |
| 9 | MEX | Mexico | 826 |
| 10 | PHX | USA | 778 |
| 11 | SFO | USA | 738 |
| 12 | SEA | USA | 718 |
| 13 | LHR | UK | 692 |
| 14 | PHL | USA | 673 |
| 15 | BOS | USA | 663 |
| 16 | MSP | USA | 659 |
| 17 | CGK | Indonesia | 652 |
| 18 | HND | Japan | 643 |
| 19 | GRU | Brazil | 635 |
| 20 | SYD | Australia | 623 |
| 21 | BOM | India | 599 |
| 22 | YYZ | Canada | 593 |
| 23 | SIN | Singapore | 582 |
| 24 | MDW | USA | 572 |
| 25 | LGA | USA | 571 |

| Rank | Airport | Country | Connectivity Index |
|------|---------|---------|--------------------|
| 26 | DEL | India | 545 |
| 27 | LAX | USA | 531 |
| 28 | YVR | Canada | 523 |
| 29 | IST | Turkey | 515 |
| 30 | LAS | USA | 509 |
| 31 | PVG | China | 482 |
| 32 | DCA | USA | 475 |
| 33 | JFK | USA | 473 |
| 34 | MEL | Australia | 457 |
| 35 | FRA | Germany | 447 |
| 36 | SUB | Indonesia | 447 |
| 37 | BWI | USA | 445 |
| 38 | BOG | Colombia | 427 |
| 39 | DXB | UAE | 424 |
| 40 | EWR | USA | 421 |
| 41 | HKG | Hong Kong | 416 |
| 42 | KUL | Malaysia | 415 |
| 43 | CDG | France | 411 |
| 44 | AMS | Netherlands | 388 |
| 45 | MIA | USA | 373 |
| 46 | MNL | Philippines | 372 |
| 47 | PEK | China | 366 |
| 48 | KMG | China | 364 |
| 49 | BKK | Thailand | 353 |
| 50 | DMK | Thailand | 344 |

# Key Highlights

- **Atlanta Hartsfield-Jackson International Airport (ATL)** is the largest Megahub in the world. On a single day in August there were over 570,000 possible connections between flights arriving at ATL and flights departing within an eight-hour window.

- US airports continue to lead the world when it comes to making large airports work as Megahubs, in part because of the size of the US domestic market. Eight of the Top 10 Megahubs, and 22 of the Top 50 Megahubs are located in the US.

- The US Megahubs are typically dominated by a single carrier:
  - » at ATL Delta Air Lines operates around 80% of all flights;
  - » at DFW American Airlines operates 81% of flights;
  - » at CLT US Airways operates 88% of flights;
  - » at IAH United operates 76% of flights.

- The highest-ranking Megahub outside of the US is **Sao Paulo Congonhas Airport (CGH)** in Brazil. Although scheduled airlines operated to only 25 destinations from CGH in August 2015, the Connectivity Index for CGH ranks the airport in seventh place. CGH may be smaller as an airport operation but the sheer frequency of its operations means that connectivity is very high. One other Brazilian airport, **Sao Paulo Guarulhos International Airport (GRU)**, is also among the Top 50 Megahubs.

- **London Heathrow Airport (LHR)** is the highest ranked Megahub in Europe, in 13th place overall, well ahead of **Frankfurt International Airport (FRA)**, ranked 35th, and **Paris Charles de Gaulle Airport (CDG)**, ranked 43rd.

- **Jakarta Soekarno-Hatta Airport (CGK)** is the largest Megahub in Asia, ranked 17th just ahead of **Haneda (Tokyo) International Airport (HND), Sydney Airport (SYD)** and **Chhatrapati Shivaji International Airport (BOM)**.

# Top 50 Megahubs share by region

- Asia Pacific
- Europe
- Middle East
- North America
- Latin America
- Africa (0%)



Pie chart values: 32%, 10%, 2%, 48%, 8%
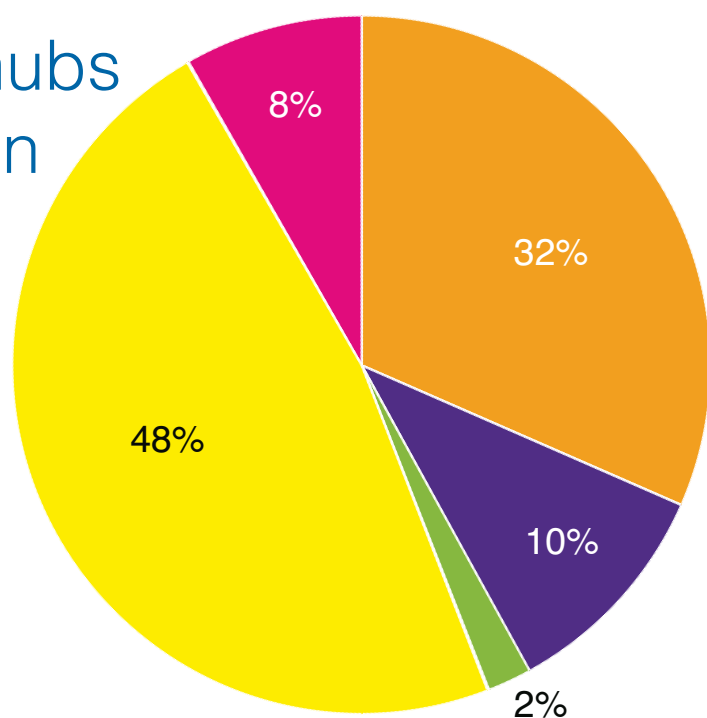
# Top 25 Low-Cost Megahubs

**While connections have traditionally been made between IATA airlines, increasingly passengers are self-connecting between Low-Cost carriers. Airports and, the airlines themselves are beginning to facilitate connections between Low-Cost flights.**

**OAG has, therefore, included in the Megahubs Index the Top 25 airports for online connections (i.e. connections between the same carrier) for Low-Cost airlines.**

| Rank | Airport | Country | Connectivity Index |
|------|---------|---------|--------------------|
| 1 | MDW | USA | 244 |
| 2 | BWI | USA | 144 |
| 3 | LAS | USA | 112 |
| 4 | CGH | Brazil | 91 |
| 5 | PHX | USA | 77 |
| 6 | CGK | Indonesia | 59 |
| 7 | DEN | USA | 54 |
| 8 | DMK | Thailand | 42 |
| 9 | SAN | USA | 41 |
| 10 | SUB | Indonesia | 35 |
| 11 | KUL | Malaysia | 33 |
| 12 | SAW | Turkey | 31 |
| 13 | GRU | Brazil | 29 |
| 14 | MCO | USA | 26 |
| 15 | BCN | Spain | 25 |
| 16 | MEX | Mexico | 22 |
| 17 | ATL | USA | 20 |
| 18 | LAX | USA | 18 |
| 19 | MNL | Philippines | 17 |
| 20 | BOM | India | 17 |
| 21 | JFK | USA | 17 |
| 22 | LGW | UK | 16 |
| 23 | STN | UK | 16 |
| 24 | DEL | India | 15 |
| 25 | BSB | Brazil | 14 |
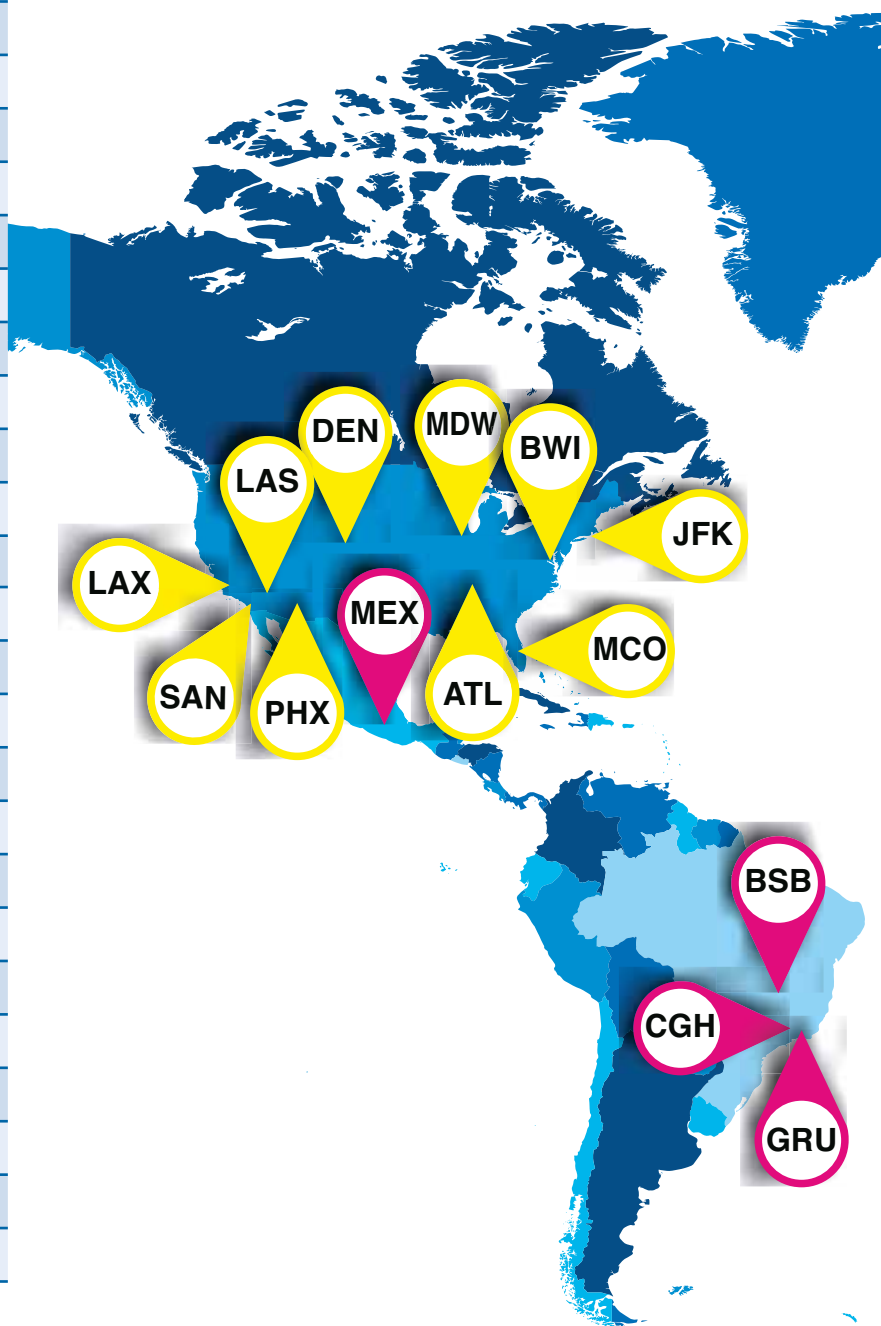
- **Chicago Midway Airport (MDW)** is the most effective Low-Cost hub in the world, ahead of **Baltimore Washington International Airport (BWI)** and **Las Vegas McCarran International Airport (LAS)**.

- Six of the Top 10 Low-Cost Megahubs are in the US and all of them have Low-Cost airline operations dominated by **Southwest Airlines**, the original Low-Cost carrier.

- Outside the US, Gol has created the best Low-Cost Megahub at **Sao Paulo Congonhas Airport (CGH)**.

- In Indonesia, Lion Air is the largest Low-Cost carrier at **Jakarta Soekarno-Hatta Airport (CGK)**, and contributes to the airport being ranked sixth.

- Thai AirAsia and Nok Air, the largest Low-Cost carriers at **Bangkok Don Mueang International Airport (DMK)**, have created an effective hub with high-frequency regional operations.

- **Barcelona Airport (BCN)** is the largest European Low-Cost Megahub.



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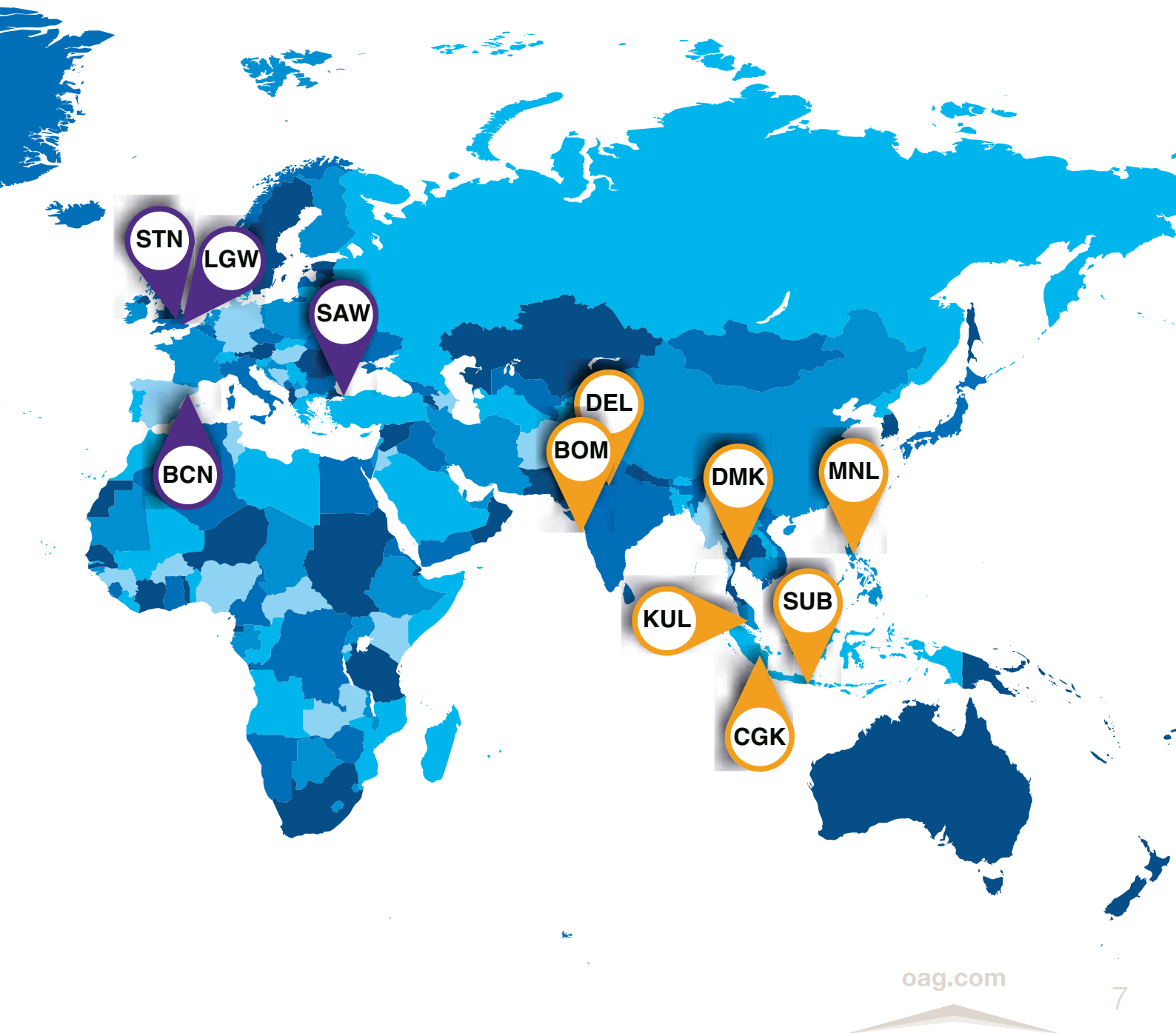
# Top 10 Megahubs by Region

## Asia Pacific

| Rank | Airport | Country | Connectivity Index 2015 Busiest Day | 2010 Busiest Day |
|------|---------|---------|------------|------------|
| 1 | CGK | Indonesia | 652 | 863 |
| 2 | HND | Japan | 643 | 493 |
| 3 | SYD | Australia | 623 | 602 |
| 4 | BOM | India | 599 | 454 |
| 5 | SIN | Singapore | 582 | 400 |
| 6 | DEL | India | 545 | 407 |
| 7 | PVG | China | 482 | 231 |
| 8 | MEL | Australia | 457 | 418 |
| 9 | SUB | Indonesia | 447 | 294 |
| 10 | HKG | Hong Kong | 416 | 335 |

## Europe

| Rank | Airport | Country | Connectivity Index 2015 Busiest Day | 2010 Busiest Day |
|------|---------|---------|------------|------------|
| 1 | LHR | UK | 692 | 671 |
| 2 | IST | Turkey | 515 | 186 |
| 3 | FRA | Germany | 447 | 519 |
| 4 | CDG | France | 411 | 531 |
| 5 | AMS | Netherlands | 388 | 341 |
| 6 | FCO | Italy | 294 | 291 |
| 7 | MAD | Spain | 269 | 393 |
| 8 | MUC | Germany | 241 | 425 |
| 9 | SAW | Turkey | 235 | 48 |
| 10 | BCN | Spain | 232 | 197 |

# Latin America

| Rank | Airport | Country | Connectivity Index | |
| --- | --- | --- | --- | --- |
| | | | 2015 Busiest Day | 2010 Busiest Day |
| 1 | CGH | Brazil | 880 | 841 |
| 2 | MEX | Mexico | 826 | 528 |
| 3 | GRU | Brazil | 635 | 567 |
| 4 | BOG | Colombia | 427 | 295 |
| 5 | BSB | Brazil | 332 | 423 |

# Middle East

| Rank | Airport | Country | Connectivity Index | |
| --- | --- | --- | --- | --- |
| | | | 2015 Busiest Day | 2010 Busiest Day |
| 1 | DXB | UAE | 424 | 205 |
| 2 | DOH | Qatar | 167 | 92 |
| 3 | AUH | UAE | 111 | 56 |
| 4 | RUH | Saudi Arabia | 110 | 71 |
| 5 | JED | Saudi Arabia | 108 | 73 |

# North America

| Rank | Airport | Country | Connectivity Index | |
| --- | --- | --- | --- | --- |
| | | | 2015 Busiest Day | 2010 Busiest Day |
| 1 | ATL | USA | 2503 | 3116 |
| 2 | ORD | USA | 2280 | 2684 |
| 3 | DFW | USA | 1940 | 1752 |
| 4 | CLT | USA | 1585 | 1613 |
| 5 | IAH | USA | 1028 | 1451 |
| 6 | DTW | USA | 903 | 1319 |
| 7 | DEN | USA | 877 | 896 |
| 8 | PHX | USA | 778 | 634 |
| 9 | SFO | USA | 738 | 722 |
| 10 | SEA | USA | 718 | 808 |

# Top 10 Megahubs by Region

FRA

MUC    SAW

CO    IST

DOH    DXB    DEL

RUH    BOM

JED    AUH

PVG

HKG    HND

SIN

SUB

CGK

SYD

MEL
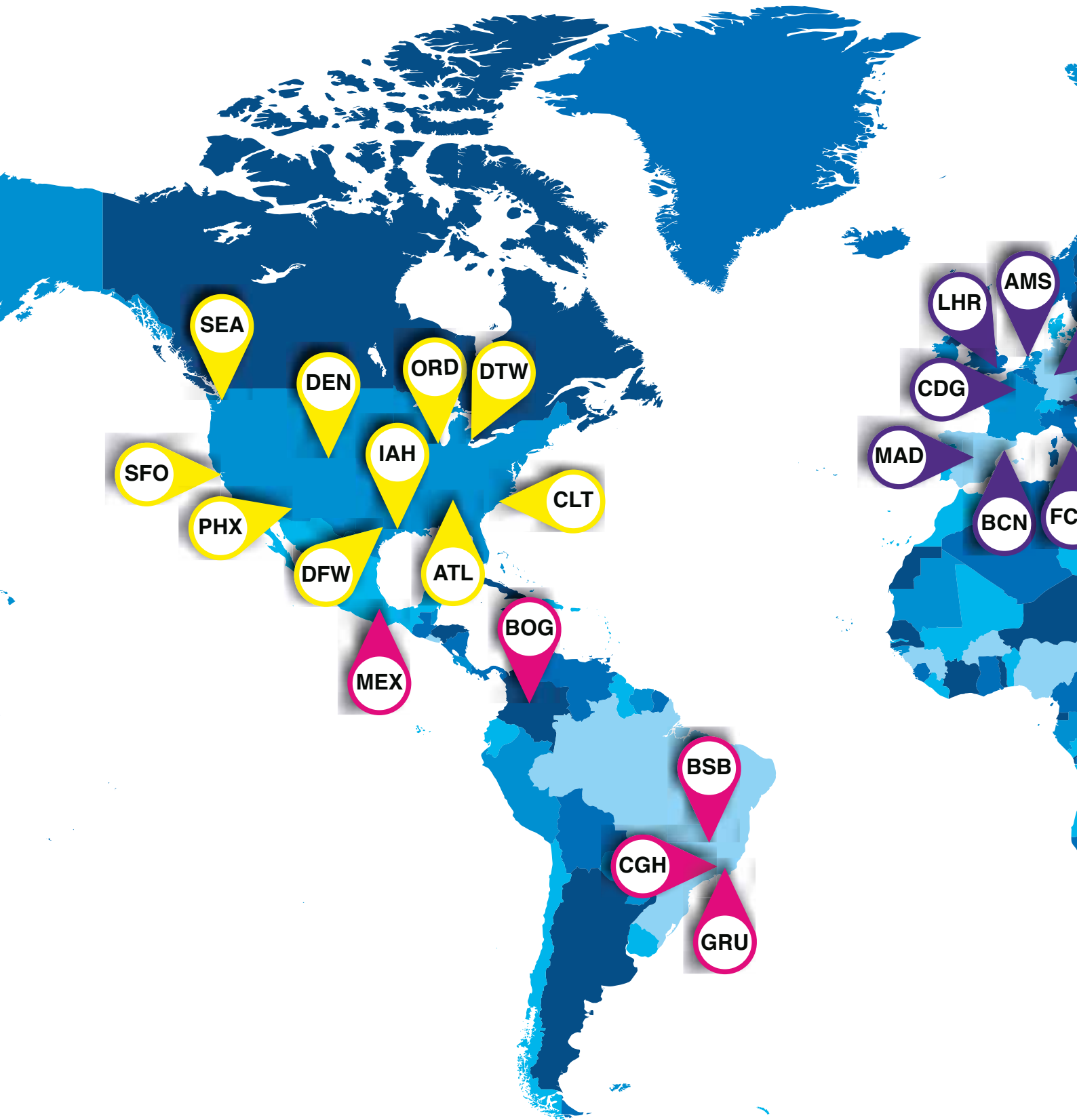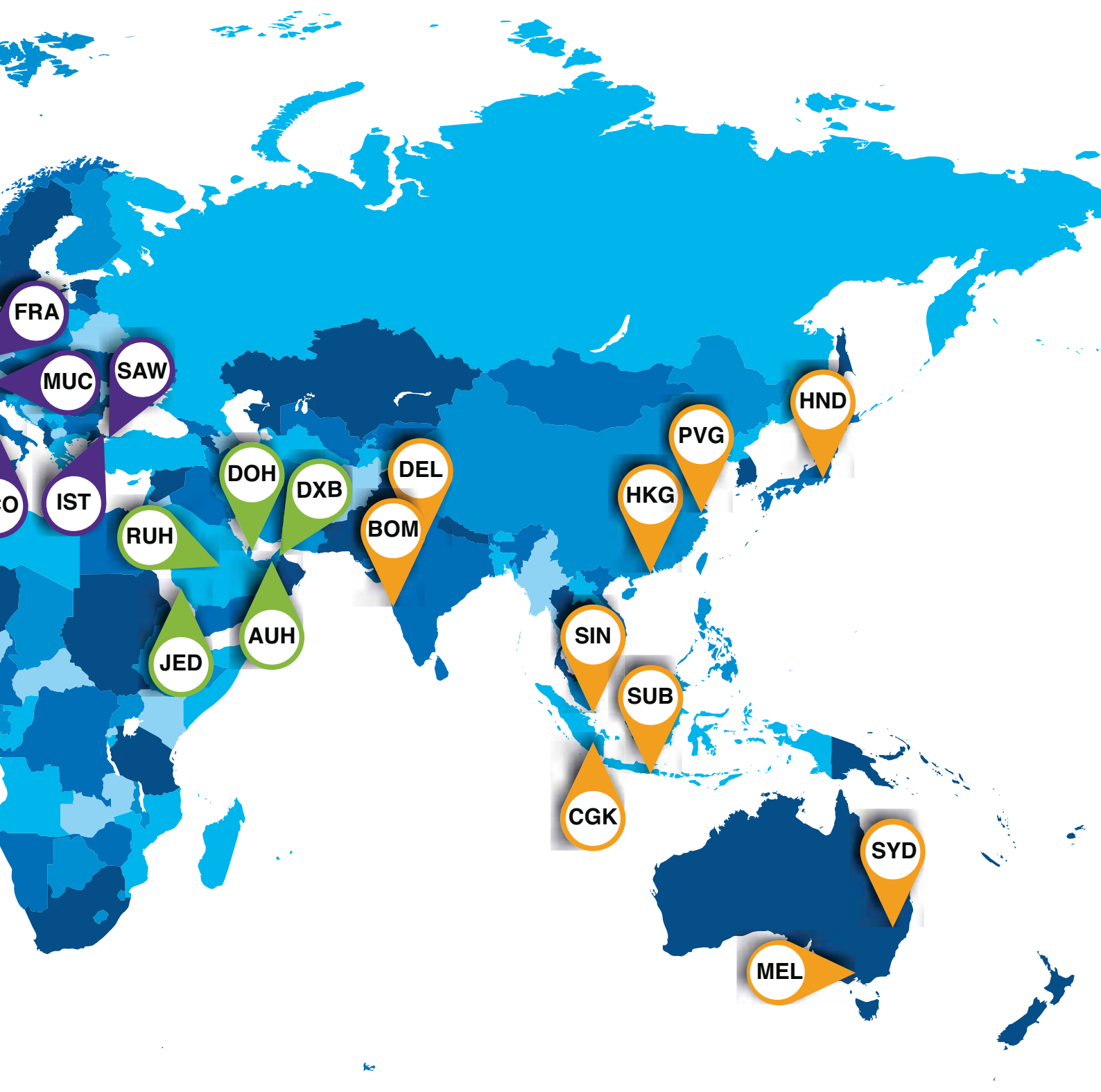
# Fastest-Growing Megahubs

**Effective hub airports benefit from a combination of a large number of inbound and outbound flights along with well-timed airline schedules. While many of the Megahubs are found in the United States, there are a number of airports around the globe which are growing rapidly, especially in terms of the number of flights to and from those airports. These may well be an indication of the Megahubs of the future.**
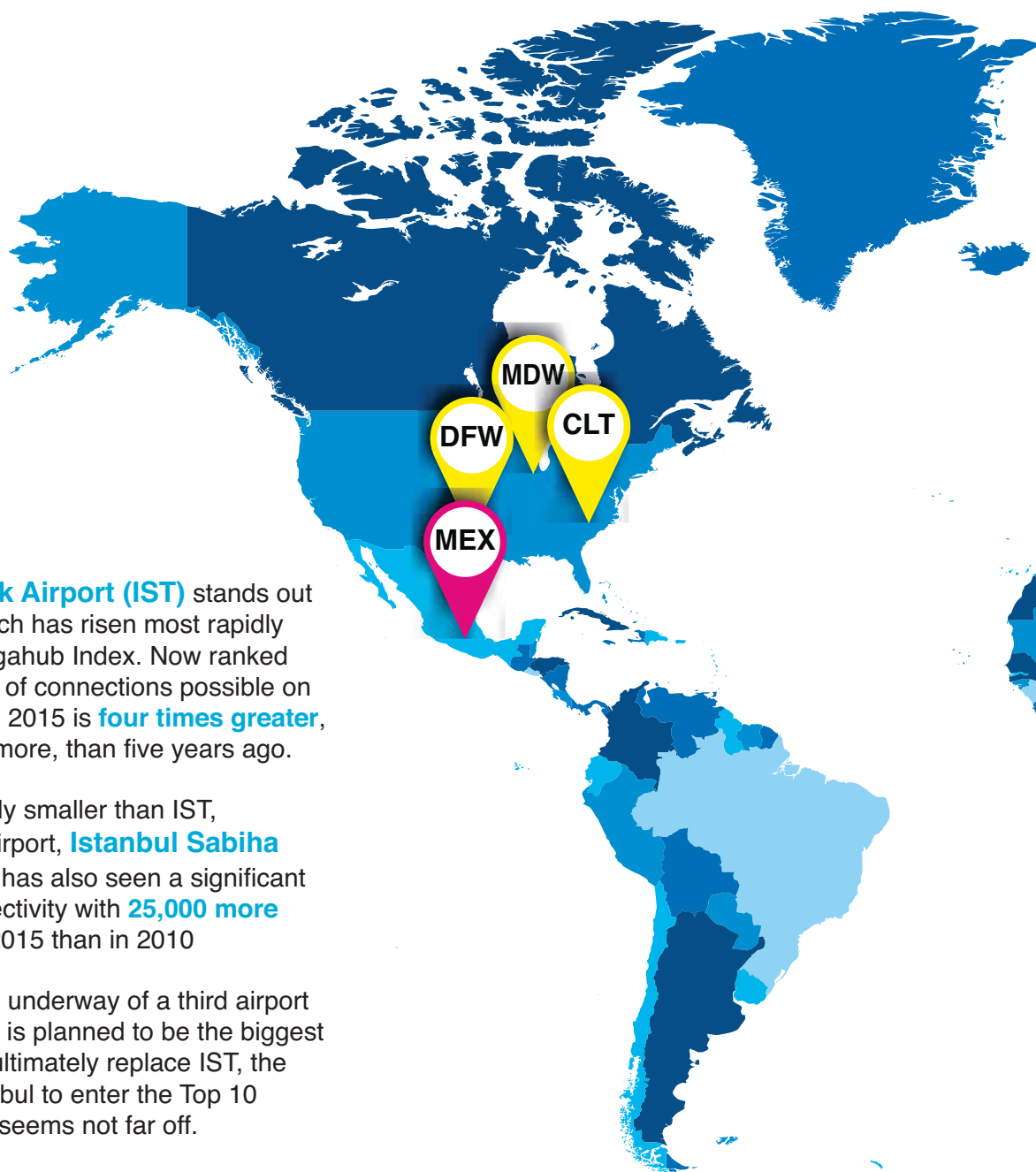
- **Istanbul Ataturk Airport (IST)** stands out as the airport which has risen most rapidly based on the Megahub Index. Now ranked **29th**, the number of connections possible on the busiest day in 2015 is **four times greater**, or **over 100,000** more, than five years ago.

- While substantially smaller than IST, Istanbul's other airport, **Istanbul Sabiha Gökçen (SAW)** has also seen a significant increase in connectivity with **25,000 more connections** in 2015 than in 2010

- With construction underway of a third airport at Istanbul, which is planned to be the biggest in the world and ultimately replace IST, the prospect for Istanbul to enter the Top 10 Megahubs Index seems not far off.

| Rank | Airport | Country | Connections on busiest day in 2015 | Increase in connections vs busiest day in 2010 | Growth in connections |
|------|---------|---------|-----------------------------------|-----------------------------------------------|----------------------|
| 1 | IST | Turkey | 132,355 | 101,439 | 328% |
| 2 | DFW | USA | 389,852 | 81,502 | 26% |
| 3 | PVG | China | 89,698 | 60,616 | 208% |
| 4 | DXB | UAE | 88,545 | 56,578 | 177% |
| 5 | MEX | Mexico | 84,263 | 36,230 | 75% |
| 6 | SIN | Singapore | 74,531 | 32,540 | 77% |
| 7 | MDW | USA | 46,295 | 29,973 | 184% |
| 8 | KMG | China | 42,540 | 28,703 | 207% |
| 9 | SAW | Turkey | 28,199 | 25,008 | 784% |
| 10 | CLT | USA | 244,040 | 24,606 | 11% |
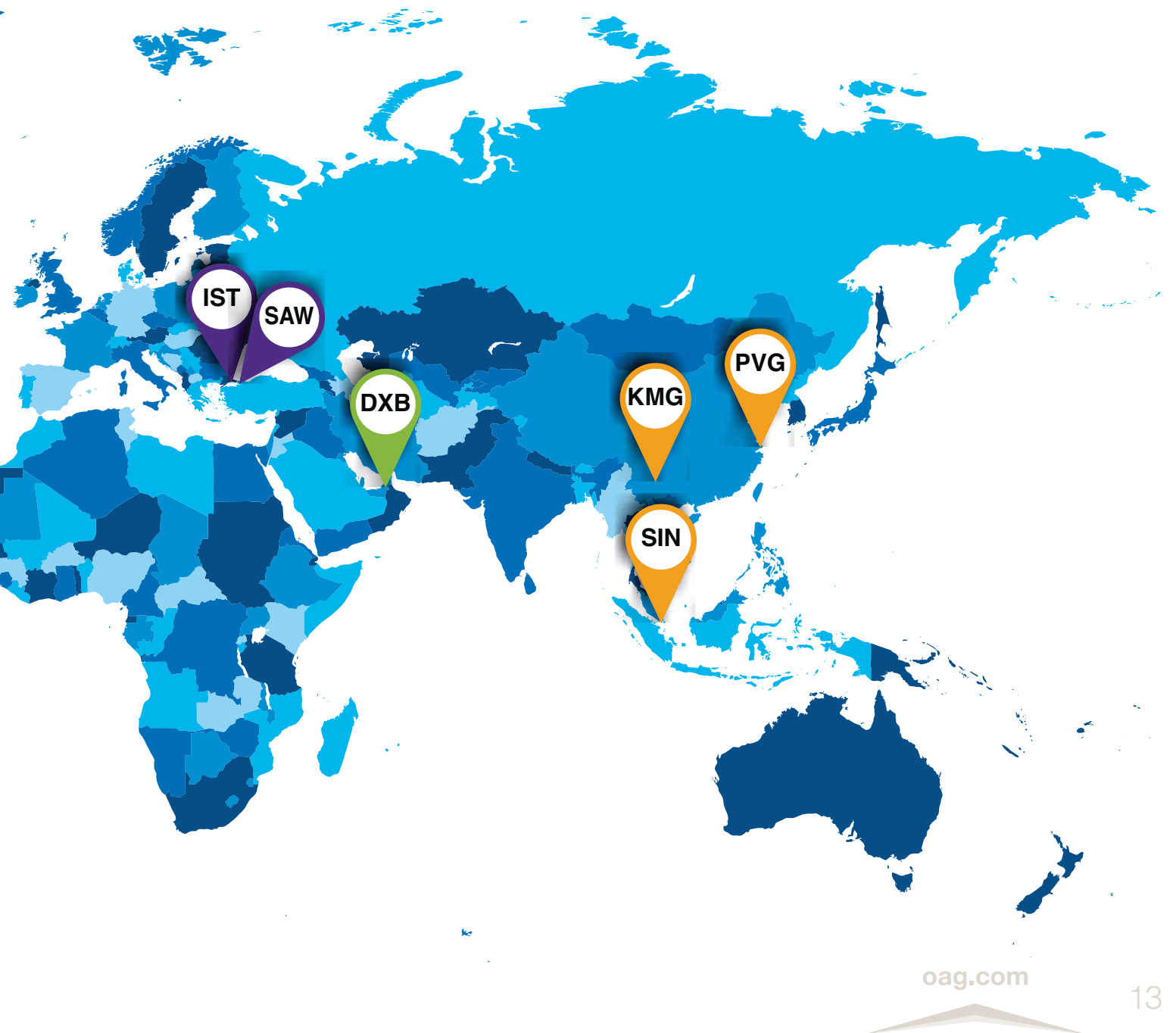
# About OAG

## The global leader in air travel intelligence and analytical services

OAG provides accurate, timely and actionable information and applications to the world's airlines, airports, government agencies and travel-related service companies who have to understand with clarity and precision on how the world moves in order to advance their businesses with confidence.

OAG has the world's largest network of air travel data including its airline schedules database, which holds future and historical flight details for over 900 airlines and the most extensive flight status (FlightView) database in the market.

Through its unrivalled ability to aggregate complex data sets from multiple sources and stages of travel, OAG delivers real-time insights, compelling visualisations, powerful applications and analytics for customers worldwide who need to optimise business operations, increase sales and enhance their customers' experience.

OAG has been trusted and respected within the aviation and travel industry for over 80 years.

# About OAG Connections Analyser

The power of airline networks is in the connections made possible for passengers. Connections Analyser can dynamically build all possible global airline connections for all carriers or a selection of carriers as they occur in real time and plot these on a map to highlight key routes and hubs.

The speed and depth of Connections Analyser will enable airline route planners and aviation analysts to model the impact of real and 'what if' schedule changes on route and network connectivity, contrive potential missed connections at a gateway airport by one or more carriers and view impact on QSI.

## Understand the Impact of your Connections

| Evaluate routes based on a Quality of Service Index (QSI) | Determine impact of schedule changes on route and network connectivity | Assess the impact of increased and decreased capacity on routes | Evaluate how airline service changes impact connections at an airport |

### Find out more today, visit www.oag.com/ConnectToMegahubs

# Glossary of Codes

| Code | | Country |
|------|------|---------|
| AMS | Amsterdam Schiphol | Netherlands |
| ATL | Atlanta Hartsfield-Jackson Intl | USA |
| AUH | Abu Dhabi International | UAE |
| BCN | Barcelona | Spain |
| BKK | Bangkok Suvarnabhumi International | Thailand |
| BOG | Bogota El Dorado International | Colombia |
| BOM | Mumbai Chhatrapati Shivaji International | India |
| BOS | Boston Logan International | USA |
| BSB | Brasilia J. Kubitschek Intl | Brazil |
| BWI | Baltimore Washington International | USA |
| CDG | Paris Charles de Gaulle | France |
| CGH | Sao Paulo Congonhas | Brazil |
| CGK | Jakarta Soekarno-Hatta | Indonesia |
| CLT | Charlotte Douglas International | USA |
| DCA | Washington Ronald Reagan National | USA |
| DEL | Delhi Indira Gandhi International | India |
| DEN | Denver Intl | USA |
| DFW | Dallas/Fort Worth International | USA |
| DMK | Bangkok Don Mueang International Arpt | Thailand |
| DOH | Doha Hamad International | Qatar |
| DTW | Detroit Metropolitan Wayne County | USA |
| DXB | Dubai International | UAE |
| EWR | New York Newark Liberty International | USA |
| FCO | Rome Fiumicino | Italy |
| FRA | Frankfurt International | Germany |
| GRU | Sao Paulo Guarulhos Intl | Brazil |
| HKG | Hong Kong International | Hong Kong |
| HND | Tokyo Intl (Haneda) | Japan |
| IAH | Houston George Bush Intercont. | USA |
| IST | Istanbul Ataturk | Turkey |
| JED | Jeddah King Abdulaziz International | Saudi Arabia |

| Code | | Country |
|------|------|---------|
| JFK | New York J F Kennedy International | USA |
| KMG | Kunming Changshui Intl | China |
| KUL | Kuala Lumpur International | Malaysia |
| LAS | Las Vegas McCarran International | USA |
| LAX | Los Angeles | USA |
| LGA | New York La Guardia | USA |
| LGW | London Gatwick | UK |
| LHR | London Heathrow | UK |
| MAD | Madrid Adolfo Suarez-Barajas | Spain |
| MCO | Orlando International | USA |
| MDW | Chicago Midway Intl | USA |
| MEL | Melbourne | Australia |
| MEX | Mexico City Juarez Intl | Mexico |
| MIA | Miami International | USA |
| MNL | Manila Ninoy Aquino International | Philippines |
| MSP | Minneapolis/St Paul International | USA |
| MUC | Munich International | Germany |
| ORD | Chicago O'Hare International | USA |
| PHL | Philadelphia International | USA |
| PHX | Phoenix Sky Harbor Intl | USA |
| PEK | Beijing | China |
| PVG | Shanghai Pudong International | China |
| RUH | Riyadh King Khalid Intl | Saudi Arabia |
| SAN | San Diego International | USA |
| SAW | Istanbul Sabiha Gokcen | Turkey |
| SEA | Seattle Seattle-Tacoma International | USA |
| SFO | San Francisco International | USA |
| SIN | Singapore Changi | Singapore |
| STN | London Stansted | UK |
| SUB | Surabaya Juanda | Indonesia |
| SYD | Sydney Kingsford Smith | Australia |
| YVR | Vancouver International | Canada |
| YYZ | Toronto Lester B Pearson Intl | Canada |

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