Why ATFM: Cause and Benefits

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The Theory of Constraints is a methodology for identifying the most important limiting factor (i.e. constraint) that stands in the way of achieving a goal and then systematically improving that constraint until it is no longer the limiting factor. Constraints are often referred to as a bottleneck.

Every complex system, including service processes, consists of multiple linked activities, one of which acts as a constraint upon the entire system; total process throughput can only be improved when the constraint is improved.

Spending time optimizing non-constraints will not provide significant benefits; only improvements to the constraint will enhance the system. TOC seeks to provide precise and sustained focus on improving the current constraint until it no longer limits throughput, at which point the focus moves to the next constraint.
NAM/CAR Regions

E/CAR - Eastern Caribbean
Caribe Oriental

Anguilla (UK)
Antigua and Barbuda
Barbados
British Virgin Islands (UK)
Dominica
French Antilles
Grenada
Montserrat (UK)
Saba
Saint Kitts and Nevis
Saint Lucia
Saint Vincent and the Grenadines
Sint Eustatius
Sint Maarten (Netherlands)
Trinidad and Tobago
United States
Puerto Rico, Virgin Islands

C/CAR - Central Caribbean
Caribe Central

Aruba (Netherlands)
Bonaire
Cayman Islands (UK)
Curaçao (Netherlands)
Dominican Republic
Haiti
Jamaica
Turks and Caicos Islands (UK)

CA - Central America
Centroamérica

Belize
Costa Rica
El Salvador
Guatemala
Honduras
Nicaragua

NAM - North America
Norteamérica

Canada
Saint Pierre et Miquelon (France)
United States
Bermuda (UK)

22 States
19 Territories
26 Civil Aviation Authorities [CAAs]
44 Flight Information Regions [FIRs] - 29 in NAM; 15 in CAR

22 Estados
19 Territorios
26 Autoridades de Aviación Civil [AACs]
44 Regiones de Información de Vuelo [FIR] - 29 en NAM; 15 en CAR
Our Region has States that range from the most advanced economies and complex aviation systems in the world to some of the least developed economies and with minimal aviation systems and/or international compliance levels.

In spite of this, our Systemic Assistance Program to our States has demonstrated great success when political will, commitment and leadership are in place.
NAM/CAR Regions – Characteristics and Challenges

Tourism in the Caribbean – main source of income
i.e. North America, South America and Europe

Limited resources – reduced number of staff, budgetary constraints

Political, economical, cultural and language diversity: different States - autonomous Territories

Different size of Countries: from small developing islands to world’s most advanced and developed States

Natural phenomena- frequent threat: Hurricanes, earthquakes, volcanic ash, floods, etc.
Economic and social impact of Aviation in the NAM / CAR Regions

The role of the aviation industry in the region

- Create direct and indirect jobs
- Support tourism and local businesses
- Stimulates foreign investment and international trade
- Contributes to sustainable development
- It helps improve living standards and alleviate poverty
- Support small and remote communities
- Facilitates the delivery of emergency and humanitarian aid
Economic benefits of aviation in Latin America

Direct economic contributions from the aviation sector

806.0 thousand Direct jobs supported in regional aviation

$40 billions Direct regional economic impact

Direct, indirect, induced and tourism economic contribution from the aviation sector

5.2 millions Of jobs supported by aviation regionally

$167 billions Regional economic impact

Source: ICAO

ATAG: 2014
Increase Capacity

Enhance Efficiency
Latin America and the Caribbean

“Much of the traffic on the North America-Latin America and the Caribbean route group originates in North America. The route depends on the strength of the North American economy and tourism development in the destination countries.

The Region is enjoying increasing political stability and the emergence of Brazil as a major industrial and economic power will help boost traffic growth.

Other nations are currently addressing political and economic concerns, but still have considerable potential for growth in the medium term. Brazil and Mexico represent the most important domestic markets in this region.”
Latin America and the Caribbean

Global Air Transport Outlook to 2030 and trends to 2040

Figure 5-75: Latin America and the Caribbean passenger traffic: history and forecasts

- **History**
  - 6.2% total traffic 1995–2010 AAGR*

- **Forecasts**
  - 5.9% total traffic 2011–2030 AAGR*

<table>
<thead>
<tr>
<th>Year</th>
<th>Domestic RPK (billion)</th>
<th>International RPK (billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>200</td>
<td>400</td>
</tr>
<tr>
<td>2000</td>
<td>400</td>
<td>800</td>
</tr>
<tr>
<td>2005</td>
<td>600</td>
<td>1200</td>
</tr>
<tr>
<td>2010</td>
<td>800</td>
<td>1600</td>
</tr>
<tr>
<td>2020</td>
<td>1600</td>
<td>3200</td>
</tr>
<tr>
<td>2030</td>
<td>3200</td>
<td>6400</td>
</tr>
</tbody>
</table>

Domestic and International traffic as percentage of total traffic:
- 77% of total traffic in 2010
- 74% of total traffic in 2030

*AAGR: Average Annual Growth Rate*
Global Air Transport Outlook to 2030
and trends to 2040

2030: Top ten cities

<table>
<thead>
<tr>
<th>City</th>
<th>Population (milion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tokyo</td>
<td>40</td>
</tr>
<tr>
<td>Delhi</td>
<td>30</td>
</tr>
<tr>
<td>Mumbai (Bombay)</td>
<td>20</td>
</tr>
<tr>
<td>Sao Paulo</td>
<td>15</td>
</tr>
<tr>
<td>Dhaka</td>
<td>10</td>
</tr>
<tr>
<td>Ciudad de Mexico (Mexico City)</td>
<td>12</td>
</tr>
<tr>
<td>New York-Newark</td>
<td>8</td>
</tr>
<tr>
<td>Kolkata (Calcutta)</td>
<td>7</td>
</tr>
<tr>
<td>Shanghai</td>
<td>6</td>
</tr>
<tr>
<td>Karachi</td>
<td>5</td>
</tr>
</tbody>
</table>

Other cities 27%
Asian cities 73%
Regional Challenges

- Sustained increase of demand.
- Extremely different ANS systems.
- Individual analysis for regional problems.
- Airspace Optimization.
- Harmonization and interoperability.
- Implementation based on favorite solutions (instead of problem solving).
Why ATFM

✈ ATFM is an enabler of Air Traffic Management (ATM) efficiency and effectiveness. It contributes to the safety, efficiency, cost-effectiveness, and environmental sustainability of an ATM system. It is also a major enabler of global interoperability of the air transport industry.
ATFM Benefits

- Enhanced ATM system safety.
- Increased system operational efficiency and predictability through CDM processes.
- Increased situational awareness among stakeholders and a coordinated, collaborative development and execution of operational plans.
- Effective management of irregular operations and effective mitigation of system constraints and consequences of unforeseen events.
- Reduction of aviation-related greenhouse gas emissions.
- Enhanced ANSPs coordination and collaboration.
- Help to identify the ATM system constraints.
ATFM Regional Guidance

INTERNATIONAL CIVIL AVIATION ORGANIZATION

Caribbean/South American Air Traffic Flow Management
Concept of Operation
(CAR/SAM ATFM CONOPS)

2019 - 2024
ATFM Regional Guidance/Tools
Slow ATFM/CDM Implementation CAR Region

- ATM systems have managed their growth reactively.
- Different levels of requirements/constraints.
- Lack of resources to support implementation (human resources in particular).
- Slow implementation of enabling systems.
- Lack of high level commitment for implementation.
NAM/CAR ATFM Activities

- NAM/CAR ANI/WG ATFM Implementation Task Force
  - Work programme implementation
  - Annual Meetings
  - Periodic Teleconferences
  - 2019 Survey
- ATFM/CDM FAA Training
Future Plans

✈ NACC ANS Regional Implementation Strategy
✈ Rethink interaction between ATM Operational Components (AOM, DCB, AO, TS, CM, AUO and ATM SDM)
✈ Regional support with Technical Assistance Implementation Projects
Conclusions

-The implementation of ATFM is a fundamental need to ensure the sustainable growth of air traffic in the CAR Region.

-The strong interdependence with the airspace system of United States imposes the need to implement systems that are compatible and harmonized with it.

-ICAO support for this issue should take into consideration the diversity of needs and possibilities of the different airspaces and air navigation systems of the Region.

-The components of the air navigation system, which are enabling the ATFM, deserve clear and prioritized attention.
Questions?