Mega event transport planning and mobility management

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Agenda

1. Mega event: the role of transport
2. Olympic transport challenges
3. Transport objectives and client group focus
4. Transport infrastructure, City and environmental developments
5. Transport operation and services
Agenda

6. Venue transport planning and operations
7. Competition venue and transport testing
8. Transfer of knowledge, sustainability and legacy
9. Very popular world mega event: football tournaments
Topic 1:
Mega event : the role of transport
What is a mega-event?

• All big events are not mega-events
• A 90’000 football crowd at Wembley, in a 8 million pop metropolis is a “usual” event
• A 30’000 jazz fan crowd in a small 30’000 pop town (Montreux) is a mega event
• **Mega events imply temporary major changes of City life and logistics, of transport organization and travel behaviours**
• Mega events shall be festive
Mega-event macro organization

• The mega event **owner** (1)
• The mega event **organizer** (3)
• The mega event **product (4)**: Olympic Games, EURO football, World cups, etc
• The “**product**” is the outcome of an incredibly complex organization designed to optimize expectations and minimize risks
• Plus about **20 essential logistical domains**, such as media, marketing, communication, etc
Public sector involvement

- Mega event organizers cannot deliver “any” quality mega event “product” without **strong public support**, infrastructure investments and involvement in:
  - Transport
  - Sport venue developments
  - Security
  - Health and medical
  - Culture and hospitality
Mega event impacts

• Mega events of Olympic size exert an outstanding pressure on City resources in particular transport, health medical, security, water, energy....

• Fears that mega event further deteriorate the environment—that mega events are non sustainable

• Mega events like the Olympics want to innovate to create “more greener Games” with much sustainable legacy
...multiple interactions...

• Transport interacts with almost everything: where people, athletes and guests live (hotels–villages) eat, entertain (venues and the City), work or train.....

• Transport strongly linked to security, ticketing, to accreditation (in Olympics 200’000 accredited, workforce, volunteers in addition to Olympic Family)
Topic 2:
Olympic transport challenges
Key numbers Summer/Winter
Biggest mega-event

- **Summer Olympic Games = largest World mega sport event = biggest transport challenge**
- Very high traffic demands reaching 1.25 to 2.0 million additional motorized person trips per day
- 4 to 8 million ticketed spectators in a multi-million population metropolis (Sydney and Athens 4 mio inhabitants; Beijing 13; London 8) during 16 days
- About 200’000 logistic and services workforce, staff and volunteers to be transported every day
Summer Olympics key numbers

• 26 sports running simultaneously with their own programs and schedules
• 300 competition events during 16 days
• 17’000 athletes and team officials from 200 countries
• 5000 VIP and officials
• 24’500 accredited media (TV and radio broadcasting, written press, photographers)
• >30’000 sponsor guests
• 100’000 - 150’000 volunteers + paid workforce
## Athens 1896 to Beijing 2008 Olympic Summer Games key numbers

<table>
<thead>
<tr>
<th>Year</th>
<th>NOC.</th>
<th>Events</th>
<th>Competitors</th>
<th>Female Athletes</th>
<th>Medias</th>
<th>Volunteers</th>
<th>Tickets</th>
<th>TV Viewers</th>
<th>TV Rights</th>
</tr>
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<tbody>
<tr>
<td>1896 Athens</td>
<td>14</td>
<td>43</td>
<td>250</td>
<td>0</td>
<td></td>
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<tr>
<td>1984 Los Angeles</td>
<td>140</td>
<td>221</td>
<td>6800</td>
<td>23</td>
<td>9200</td>
<td>28500</td>
<td>5.7</td>
<td>2.5</td>
<td>285</td>
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<tr>
<td>1988 Seoul</td>
<td>159</td>
<td>237</td>
<td>8500</td>
<td>26</td>
<td>13000</td>
<td>27000</td>
<td>3.3</td>
<td>---</td>
<td>400</td>
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<tr>
<td>1992 Barcelona</td>
<td>169</td>
<td>257</td>
<td>9400</td>
<td>29</td>
<td>13100</td>
<td>34500</td>
<td>3.0</td>
<td>---</td>
<td>835</td>
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<tr>
<td>1996 Atlanta</td>
<td>197</td>
<td>271</td>
<td>10400</td>
<td>34</td>
<td>15100</td>
<td>47500</td>
<td>8.3</td>
<td>---</td>
<td>900</td>
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<tr>
<td>2000 Sydney</td>
<td>200</td>
<td>300</td>
<td>10600</td>
<td>38</td>
<td>16000</td>
<td>47000</td>
<td>6.7</td>
<td>3.7</td>
<td>1330</td>
</tr>
<tr>
<td>2004 Athens</td>
<td>202</td>
<td>301</td>
<td>10600</td>
<td>42</td>
<td>21500</td>
<td>45000</td>
<td>3.8</td>
<td>3.9</td>
<td>1495</td>
</tr>
<tr>
<td>2008 Beijing</td>
<td>204</td>
<td>302</td>
<td>10950</td>
<td>43</td>
<td>24600</td>
<td>70000</td>
<td>6.5</td>
<td>4.5</td>
<td>1730</td>
</tr>
</tbody>
</table>

### 1984/2008 growth (%)*
- 46
- 37
- 61
- 87
- 167
- 146
- 14
- 80
- 507

### 2000/2008 growth (%)**
- 2
- 1
- 3
- 13
- 54
- 49
- -3
- 22
- 30

---

1. NOC – nations 2. competition events 3. athletes (±50) 4. Percentage female athletes 5. Accredited medias, press and broadcasters (±100) 6. Volunteers (±500) 7. Spectator tickets sold (±0.1 million) 8. World TV viewers (±0.1 billion) 9. Total TV rights (±5 mio US$)

* 1984 to 2008, 6 Games or 24 year growth in percent (%)
** 2000 to 2000, 2 Games or 8 year growth in percent (%)

By 04.02.2009
Winter Olympics key numbers

- 7 different sports running simultaneously with their own program and schedules
- 84 competition events during 16 days
- 5’000 athletes and team officials from 85 countries
- 2’500 VIP and officials
- 11’000 accredited media (TV and radio broadcasting, written press, photographers)
<table>
<thead>
<tr>
<th>year</th>
<th>NOC</th>
<th>Nb Events</th>
<th>Comp.</th>
<th>Female Medias</th>
</tr>
</thead>
<tbody>
<tr>
<td>1924 CHAMONIX</td>
<td>16</td>
<td>16</td>
<td>260</td>
<td>4</td>
</tr>
<tr>
<td>1948 St Moritz</td>
<td>28</td>
<td>22</td>
<td>670</td>
<td>12</td>
</tr>
<tr>
<td>1968 GRENOBLE</td>
<td>37</td>
<td>35</td>
<td>1160</td>
<td>18</td>
</tr>
<tr>
<td>1984 SARAJEVO</td>
<td>49</td>
<td>39</td>
<td>1270</td>
<td>22</td>
</tr>
<tr>
<td>1988 Calgary</td>
<td>57</td>
<td>46</td>
<td>1400</td>
<td>21</td>
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<tr>
<td>1992 ALBERTVILLE</td>
<td>64</td>
<td>57</td>
<td>1800</td>
<td>27</td>
</tr>
<tr>
<td>1994 Lillehammer</td>
<td>67</td>
<td>61</td>
<td>1750</td>
<td>30</td>
</tr>
<tr>
<td>1998 Nagano</td>
<td>72</td>
<td>68</td>
<td>2200</td>
<td>31</td>
</tr>
<tr>
<td>2002 Salt Lake City</td>
<td>77</td>
<td>78</td>
<td>2400</td>
<td>37</td>
</tr>
<tr>
<td>2006 TURIN</td>
<td>80</td>
<td>84</td>
<td>2500</td>
<td>38</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>year</th>
<th>Nb Volunt</th>
<th>Nb Tickets</th>
<th>TV rights</th>
</tr>
</thead>
<tbody>
<tr>
<td>1984/2006, 22y growth (%)*</td>
<td>65</td>
<td>115</td>
<td>95</td>
</tr>
<tr>
<td>1992/2006, 16y growth (%)**</td>
<td>25</td>
<td>45</td>
<td>40</td>
</tr>
</tbody>
</table>

**SARAJEVO to TURIN, growth percentages (±5%)**
**ALBERTVILLE to TURIN, growth percentages (±5%)**

* By / 8.02.2009

Legend: 1. NOC—nations; 2. Competition—events; 3. Competitors—athletes (±50) without team officials; 4. Percentage of female athletes; 5. Accredited medias, press, broadcasters (±100); 6. Volunteers (±500); 7. Spectator tickets sold (millions); 8. TV rights (mio US$, ±5)
Topic 3:
Transport objectives and client group requirements
Transport and mobility challenges

Five outstanding challenges:

• Managing considerable additional traffic loads
• Maintaining “close to normal” metropolitan transport and traffic operations at Games time
• Providing high security global operations both for Olympic traffic and general traffic
• Respecting or even improving environmental quality
• Promoting more sustainable mobility legacy
Seven mega event transport objectives

Transport shall be:
• **Efficient**, comfortable and convivial for all client groups with many foreigners
• **Fast**, to guarantee short travel times with top priority for athletes (< 45 min from to Olympic Village)
• **Secure, safe and reliable**
• **Adaptable** to contingencies, program changes
• Open to **people with disabilities**
• **Environmentally compatible**
• **Sustainable** to contribute to mobility legacy
Six main client groups priorities

1. Athletes -- Highest punctuality and security
2. Media/Press -- Running 24 hours a day (medias of 202 countries)
3. Olympic Family -- On-demand transport / high security
   Officials / VIP
4. Sponsors -- Charter system
5. Spectators -- Mass transport with workforce and volunteers -- Crowd management
6. General public -- Transport “almost” as usual
Superposition of transport plans and operation schemes

<table>
<thead>
<tr>
<th>Category</th>
<th>Indicator of peak daily traffic demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. ATHLETES + TEAM / IF OFFICIALS</td>
<td>18’500</td>
</tr>
<tr>
<td>B. LOGISTICS + WORKFORCE + VOLUNTEERS</td>
<td>145’000</td>
</tr>
<tr>
<td>C. MEDIA</td>
<td>20’000</td>
</tr>
<tr>
<td>D. IOC + NOC</td>
<td>4’000</td>
</tr>
<tr>
<td>E. SPONSORS</td>
<td>50’000</td>
</tr>
<tr>
<td>F. TICKETED SPECTATORS</td>
<td>500’000</td>
</tr>
<tr>
<td>G. NON-TICKETED VISITORS</td>
<td>150’000?</td>
</tr>
<tr>
<td>H. GENERAL BACKGROUND TRAFFIC OF A 4.0 MILLION METROPOLITAN AREA</td>
<td></td>
</tr>
</tbody>
</table>

Superposition of transport plans and operation schemes
Paralympic mobility enhancement

• Paralympic Games follow the Olympics about 2 weeks latter on some of the same venues
• Paralympic Games call for barrier free competition venues and field of play -- as well as Paralympic Village
• PG calls for Host City general upgrade of facilities for people with “reduced mobility”
Games = 17 days = 17 consecutive transport and logistical plans

- Summer Games complexity is like having 26 World simultaneous championships
- It means 17 consecutive/different transport operations with multiple competitions per day (AM, early PM and late PM)
- For Winter Games, transport capacities can limit the number of events per day in a given Valley
- Event postponement -- frequent in Winter for outdoor sports -- call for flexibility in transport management
Transport budget

Olympic Games Summer transport budgets:
• 2 to 15 billion USD transport infrastructures
• 100 to 200 million USD transport operations or 5% of total Games operating budget
• Games are catalysts for speed-up of planned transport infrastructure developments and/or rehabilitation
• Olympic transport developments contribute to strong and sustainable urban mobility legacy
Topic 4:
Transport “infrastructure”, City and environmental development
Transport infrastructure development

- Host Cities take advantage of the Games to speed-up, rehabilitate their transport systems and build new key elements which often had been postponed for decades.
- All projects shall imperatively be delivered for a given date, 3 to 12 months prior to Opening Ceremony.
- Tremendous challenge for planning, financing, building, testing and delivering transport in time.
Transport infrastructure development

- Transport infrastructures (motorway, arterials, rail, public transport systems, airports, etc.) take a long time to build and **should start early after the Host City selection**

- Olympic transport policies oriented towards **maximal use of public transport** are illustrated by Athens 2004 and Beijing 2008 considerable metropolitan rail system developments
Athens transport system renovation and extension

• A 25 year transport program done in 5 years
• Urban motorway system completion (40 km)
• Metropolitan arterial upgrade (about 80km)
• Full modernization of 30 km of oldest metro line and extensions of the two other lines
• New suburban rail network connected to new airport
• New 23 km light rail connecting Athens centre to the Coast
...Marathon arrival in this Stadium on August 29th 2004, 108 years+ after the first modern Olympics
Beijing 2008 transport features

- Beijing 2008 has invested > 20 billion USD$ to cleanup the metropolitan environment + major vehicle fleet environmental upgrade
- **Tripling Beijing Capital airport capacity** with new terminal 3 (largest in the world -- 1 million sqm)
- **Tripling public transport system capacity** in seven years of Games preparation, mostly the subway
- **Considerable motorway and expressway extensions**, Fifth Ring Road (108km) and most of Sixth ring road (208km) and news expressways to airport and around the Olympic Green
Topic 5:
Transport “operations and services”
Transport system

- Sydney 2000, Athens 2004 and Beijing 2008 had almost 100% spectator, workforce and volunteers by public transport -- Salt Lake City 2002 provided 95--98% spectator accessibility by automobile.
- Since Sydney 2000 free public transport for Olympic ticket holders and accredited workforce and volunteers.
- Since Athens 2004, each client group has its own dedicated transport sub system (athletes).
Traffic priorities and innovations... 

- Athens 2004, *first Olympic Games ever to have its own Olympic lane traffic system*
- 160km *network of Olympic priority lanes* for all accredited vehicles
- Average bus Games speed of 55 km/h instead of 12 to 20 km/h
- Road congestion—-one of the biggest worry in Athens—-was replaced by the fastest Games traffic ever
Topic 6:
Venue transport planning+operations and Olympic Parks
Venue transport concept

• Competition venues = heart of mega events. Must be designed with distinct operational areas:
  • **Front of House (FOH)** for ticketed spectators and sponsors with no individual vehicle access
  • **Back of House (BOH)** for all other functions (athletes, medias, medical, logistics, workforce, volunteers); accredited vehicles go through full **security screening**
  • Two **distinct FOH and BOH access systems** are preferable for security and reliability
Transport for venues / clusters

• Stand alone venues (graph before) and venue clusters/precincts

• **Venue clusters are grouping of venues** (2 to 10) around a common domain with combined security and transport systems. Large clusters (such as Olympic Parks) might require internal or external loop roads

• **Non-competition venues** (Olympic Village, IOC Hotels, IBC/MPC, Airport, Media villages) have similar transport/security features with dedicated transport malls and load zones
Olympic Park = Olympic hubs

• In Olympia (Peloponesus-Greece), all sport competitions were held in a single vast forest shaded park
• Munich, Barcelona, Sydney, Athens, created vast Olympic Parks with strong transport accessibility
• Beijing 2008 had the biggest Olympic Park ever
• Sochi 2014 is building the first Winter Olympic Park
• Considerable investment in rehabilitated and creation of up to date venues
• Olympic Parks have different mixes of competition and non competition venues around the Olympic Stadium
<table>
<thead>
<tr>
<th></th>
<th>OP Area (hectares)</th>
<th>Inside OP Ol. venues</th>
<th>O.Venues adjacent OP</th>
<th>Cap seating</th>
<th>Transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYDNEY 2000</td>
<td>125</td>
<td>OS+MPC</td>
<td>IBC/OV</td>
<td>235'000</td>
<td>1 surb rail/1 station</td>
</tr>
<tr>
<td>ATHENS 2004</td>
<td>190</td>
<td>OS</td>
<td>IBC/MPC</td>
<td>125'000</td>
<td>1 metro, 1 suburb/2s</td>
</tr>
<tr>
<td>BEIJING 2008</td>
<td>715</td>
<td>OS+PBC+OV</td>
<td></td>
<td>225'000</td>
<td>1 metro/3 stations</td>
</tr>
<tr>
<td>LONDON 2012</td>
<td>145</td>
<td>OS+PBC</td>
<td>OV</td>
<td>150'000</td>
<td>11 rail lines/3 stat</td>
</tr>
<tr>
<td>SOCHI 2014</td>
<td>180</td>
<td>OS+MePL</td>
<td>OV+OH</td>
<td>85'000</td>
<td>1 rail line/2 stat</td>
</tr>
</tbody>
</table>

Legend:
- OS  Olympic Stadium
- MPC Main Press Center
- IBC International Broadcast Center (TV)
- PBC Press + Broadcast Center
- MePL Medal Plaza
- OP Olympic Park
- OV Olympic Village
- OH Olympic Hotel
- MV Media Village
- ISU International Sport University

BY. 04.02.2009
Topic 7:
Competition venue and transport testing
Transport operation integration

• All “permanent” transport and traffic systems plus mega-event “dedicated” systems must be integrated under a single command Centre

• Efficient and reliable communication is essential:
  a) within the OCOG/Organizers QG
  b) towards the media,
  c) towards the public
Venue and transport testing

• **Test events are essential** for staff and technology training, for command practice and for venue operation validation

• Sydney had extensive Olympic Park real scale transport tests 2 years prior to OG

• “Good luck Beijing”, in August 2007, one year prior to OG, was an extensive test of about half the sport venues and of some transport key features
Games = live laboratory for testing

- Mega event behavioural patterns cannot be simulated, but must be tested in “real world”
- August 2007, Beijing 2008 tested 10km of Olympic Lanes and 4 days of 45% overall City traffic reduction
- *Learning from “real scale” or live tests*, allow adjustments and sound base for definitive decision for Games time
Topic 8: Transfer of Knowledge, sustainability and legacy
Transfer of Knowledge

- **Transfer of Knowledge** (TOK) = valuable and essential mega event learning tool
- TOK has various forms along the whole process from bidding to Games debrief (see graph)
- Bidding seminar to understand the Games
- Training seminars on specific subjects Y-7 to Y-2
- Latter “learning by testing”,
- Followed by “learning by observing”
- Finally “learning through debriefing”
MEGA EVENT PLANNING AND PRODUCTION

- Preselection bidding
- Formal bidding
- Host country/City choice
- Strategic planning
- Operations planning
- Test events
- Mega event Tournament delivery
- Legacy

TRANSFER OF KNOWLEDGE INTERVENTIONS

1. Applicant City Seminar - Bidding Phase I
2. Candidate City Seminar - Bidding Phase II
3. Foundation Seminar
4. Targeted theme or systems Seminars
5. Participative (owner+organizer) sketch planning of key mega event facilities - pilot competition venue sketch planning
6. Targeted function and client group Seminars
7. Learning by testing / Improving by testing
8. Learning by observing / Observer Program
9. General monitoring - performance data acquisition
10. Mega event debriefing with next organizer
11. Legacy and impact monitoring
12. Sustainable development research

Priority 1 Priority 2 Priority 3
Transfer of knowledge

- **Games observer programs** cover most Olympic functions for different constituencies: event owner / organizer, bidding Cities, other mega event organizers
- Knowledge of “Games X” is transferred to “Games X+1” and to bidding Cities or “Games X+2”
- Transfer of knowledge applies to all Olympic organizational functions: but crucial for transport and security
OLYMPIC KNOWLEDGE TRANSFER AND GAMES OBSERVER PROGRAMS

Legend:
- Red: Summer Games Preparation
- Blue: Winter Games Preparation
- Black square: Observing Beijing 2008
- Black circle: Observing Vancouver 2010
- Red triangle: Observing London 2012
- Black star: Observing Sochi 2014

Olympic Games Knowledge Management (OGKM) Seminars and more than 40 Olympic Function Technical Manuals complete the Transfer of Knowledge (TOK) global program.
Environment + sustainable development

- 15 years ago, IOC introduced environmental guidelines and requirements in bidding and in the Games selection process
- Since Sydney 2000 (Lillehammer 1994), Olympic Cities integrate environmental policies into Games preparation and delivery
- Beijing did a tremendous effort and 2012 London Summer Games have strong sustainable development, rehabilitation and legacy policies
Olympic Games Global Impacts = OGI

- OGI is an IOC program to assess Games impacts in:
  - **environment** (30 indicators)
  - **society** (40 indic)
  - **economy** (30 indic) domains

- This 9 year continuous study process first introduced for Beijing 2008 Games--not yet completed

- Very complex data gathering, assessment and interpretation of Host City development patterns “with and without” Games
Olympic commitments...

IOC is committed to take advantage of each Games experience (twice every 2 years alternatively Summer and Winter and Olympic Games and Youth Olympic Games) to:

• Further the Olympic spirit and ideals
• Improve quality and conviviality of Games organization
• Favour Olympic projects and operations contributing to more sustainable Host City and regional development
Topic 9:
Most popular world mega event: football tournaments
Large Stadium car and spectator crowd viewed by Sempé
Football world success

- **Football (soccer) most popular sport around the world** -- also rapidly growing in Asia
- Multitude of football tournaments at all levels: Regional/Provincial, National, Continental-UEFA, World-FIFA
- High level Football Tournaments require sophisticated event management skills
- Transport and accommodation logistics extremely demanding
Tournament transport challenges

• Tournament = one sport / many Host Cities/ 16 to 24 selected teams
• Last 7 last match/31 uncertainty of what team is playing against what other team!
• Considerable “last minute” transport demands (mostly by air)
• 2004 EURO/Portugal versus Greece as unexpected finalist -- air bridge Athens-Lisbon built in 4 days!
Advanced integrated logistics

Transport (air-rail-road-local public transport) is strongly dependent on other parameters:

• Stadium capacity
• Ticketing policies (10.5 million ticket requests for 1.1 mio available)
• Accommodation, in what categories, quantities and costs? where available and when?
Four dynamic models

Complex transport models dependent on:

• **Match schedule and ticketing distribution** across Europe / 2 competing team countries

• **Accommodation supply/demand/bookings** per City

• **Airport match day capacity**

• **The Event model** and other external parameters linked to the European global transport system
EURO 2008 rail success

- Free 36 hour rail transport in both Switzerland and Austria for ticket holders
- 8800 additional trains in total and 4.4 million more train passengers— a great public transport success
- Public transport 60% for long distance and more than 80% in Host Cities
- Much less pressure on airports than expected / low Stadium parking usage
Matches de l'EURO 2008 au Stade de Genève: les deux cordons du concept d'accessibilité

Cordon "longue distance"

Cordon "dernier kilomètre"

Autoroute et jonction
Train
Tramway
Navette parking
Liaisons piétonnes
Périmètre piéton autour du stade

Stade
Fan Zone
Fan Village
UEFA reservés
Parking

Inside and outside Stadium success

• **Highly successful sport and commercial event**: 10.4 million ticket demands, 1.07 millions ticket sold or 99.88% of available capacity a fantastic achievement
• **Non ticketed fans and visitors reached 4.2 million, 4 times ticketed guests**
• **Growth of the fan zone phenomena**: 4 Cities with more than 600’000 visitor-fans and 1 City with 1.1 million
Thank you