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2nd Annual Lean Flight Initiative
Plenary Conference
Dublin 24th - 25th April 2007

Paul O'Neill



Agenda

- Introduction

- Not time for: -
 - Air vs Rail
 - Virtual airlines
 - LCC myths
 - Lean fuel practices

- *Just time for*
 - *SMS ticketing & security*
 - *Passenger Boarding Models*

Introduction

- Lean flight is a very exciting field and great to be back in Ireland
- Paul O'Neill - Aviation team
 - industry executives all over the world – Europe/ EMEA, AsiaPac, Americas
 - Their stories about their part of the industry, some I can share
 - Today I intend to share some lean stories from across the industry

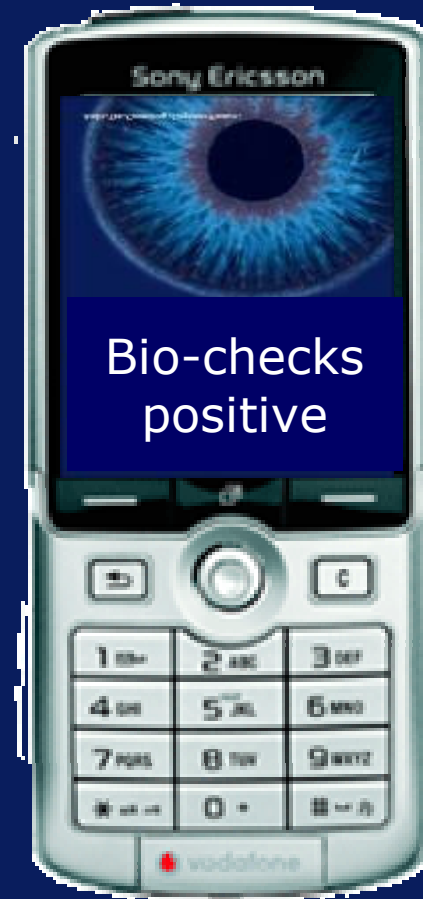
No time for many exciting topic including: -

- **Air vs Rail** Ireland has 15 airports – some congested/ empty, rail links could help, but . . .
 - Wheel based rail (old/ new) vs New MagLev (260/ 575 vs 434 km/h)
 - NB Doganis 3 hour rule – if not Ireland - globally
 - **Lean implications – rail as a competitor, yes. But now hitting more of your market – with a completely different cost basis**
- **Virtual airlines**
 - Extreme focus on core activity – moving folk from A to B; outsource sales, catering, baggage, aircraft, crew (flight/ cabin/ ground) (i.e. full wet lease), down to just the schedule & the brand
 - **Lean implications – optimal use of industry resources (including aircraft) shared across airlines**
- **LCC myths**
 - Traffic growth loosely the same as before LCCs
 - Not enabling poorer folk to fly, just the middle income folk to fly more
 - **Lean implications – target markets – airlines & airports (e.g. duty free)**
- **Lean fuel practices** for airlines– operational/ strategic (PTO)
 - **Lean implications – lower waste/ costs, shorter routes/ flying time**

Aircraft Fuel – Tactical Efficiency

- Operations
 - Single engine taxiing
 - Shut down engines during delays
 - Better measurement & reduction of weight
 - Re-distribution of belly cargo
 - Tankering to avoid refuelling at high-cost airports
 - Higher cruising, shorter/ steeper approaches
- Planning
 - Minimum fuel-burn routes/ altitude
 - Re-negotiate en-route fuel reserve regulations
 - Reduce airborne holding (stacking)
 - Winglets
 - Re-design hubs/ schedules for less congestion
 - Press for expanded/ improved airfield capacity
 - Using airport power when at gates
 - 'better' paint schemes to reduce air resistance
 - No paint to reduce weight (Air Canada)
 - Changing where fuel is purchased
 - Pooled purchasing of fuel (alliances)
- 2000-2005, 12.1% improvement in ASMs/ gallon (52.8 to 59.7)

IIS - UK Govt Think-tank - Transport
- SMS Ticketing & Security through Mobile Phones



Biometrics

SMS ticketing



SMS ticketing

- IT/ Risk/ Biometrics/ Security

- Mobile telephantasy

- Pre-cleared SMS identity (via FFP)

- SMS purchase of eTicket - **'MT' Ticket**

- SMS Confirmation/ itinerary - **'MT' itinerary**

- Early check-in by SMS - **'MT' boarding pass**

- Includes seat selection - **'MT' seat**

- And meal preference - **'MT' plate**

- Baggage check-in – RFID tag issued automatically cross-checked to your 'phone'

- **'MT' bags**

- Newcastle rail

- Helsinki rail

- Vienna rail

SMS ticketing

- Mobile telephantasy
 - **'MT' Ticket**
 - **'MT' Itinerary**
 - **'MT' Boarding pass**
 - **'MT' Seat**
 - **'MT' Plate**
 - **'MT' Bags**
 - **'MT' Security**
 - **'MT' Lounge**
 - **'MT' Passport**
 - **'MT' Gate**

***All more secure;
All more rigorous;
All lower cost
than current practices***
+
***No dialling – 'MT' is
'always on' technology***

Passenger Boarding models



Aircraft Loading Strategies

- Loading an Aircraft – it isn't Rocket Science!

- Airlines, under financial pressure and with aircraft 80%-90% full, seek 'better' boarding strategies – “back-to-front” to “reverse pyramid system” to “seated first if you book the very back of the plane” and others.
- Quick turnaround can enable an extra flight in a busy short-haul day
- It is more about asset utilisation and revenue rather than costs

Selected Seating Strategies

- 1. Back to Front**
- 2. Outside-in – “Wilma”**
- 3. Chaos Theory**
- 4. Advanced I – “Wilma+”**
- 5. Advanced II**

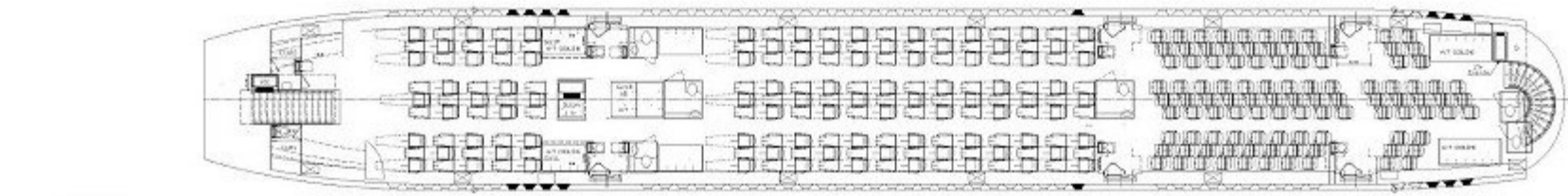
Simulations – based on the Airbus A380





Simulations – based on the Airbus A380

A 380 SEATING CONFIG



UPPER DECK

18 J CLASS

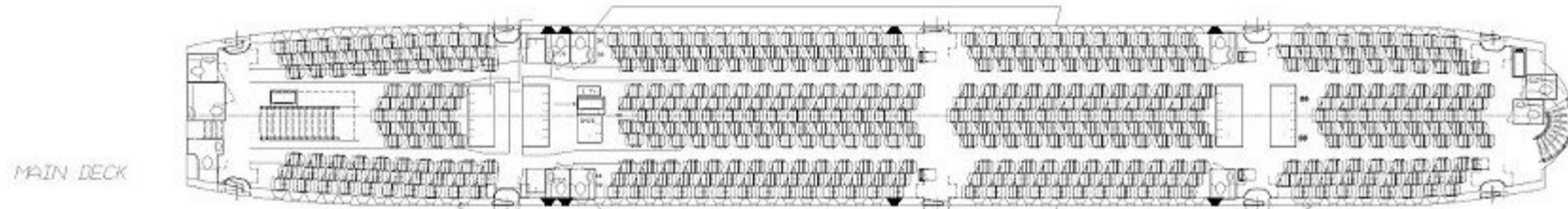
59 Y CLASS

75 Y CLASS

27 Y CLASS

77 J CLASS TOTAL
HORIZONTAL FLAT BEDS 75" - 77" LONG

102Y CLASS TOTAL UPPER DECK
@ 32" PITCH



MAIN DECK

80 Y CLASS

154 Y CLASS

132 Y CLASS

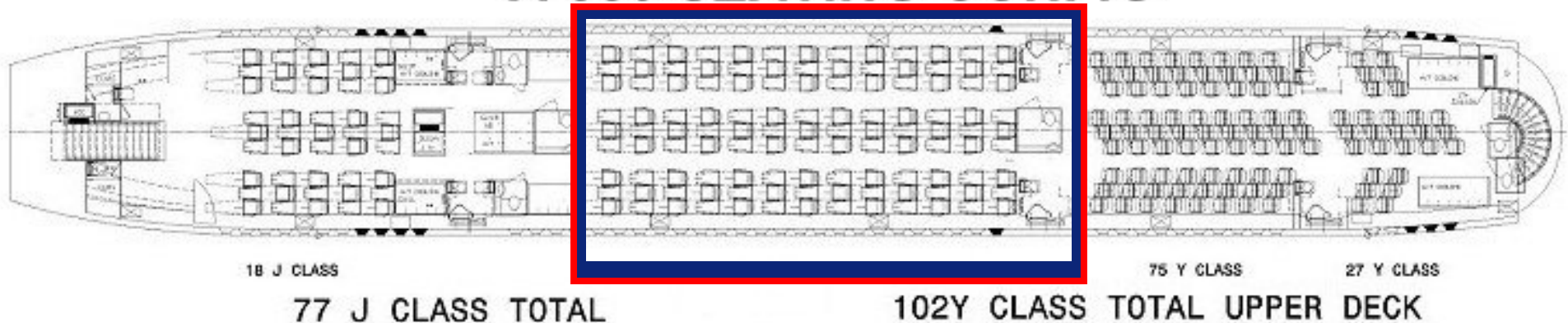
92 Y CLASS

458 Y CLASS TOTAL MAIN DECK
@ 32" PITCH

TOTAL SEATS 637



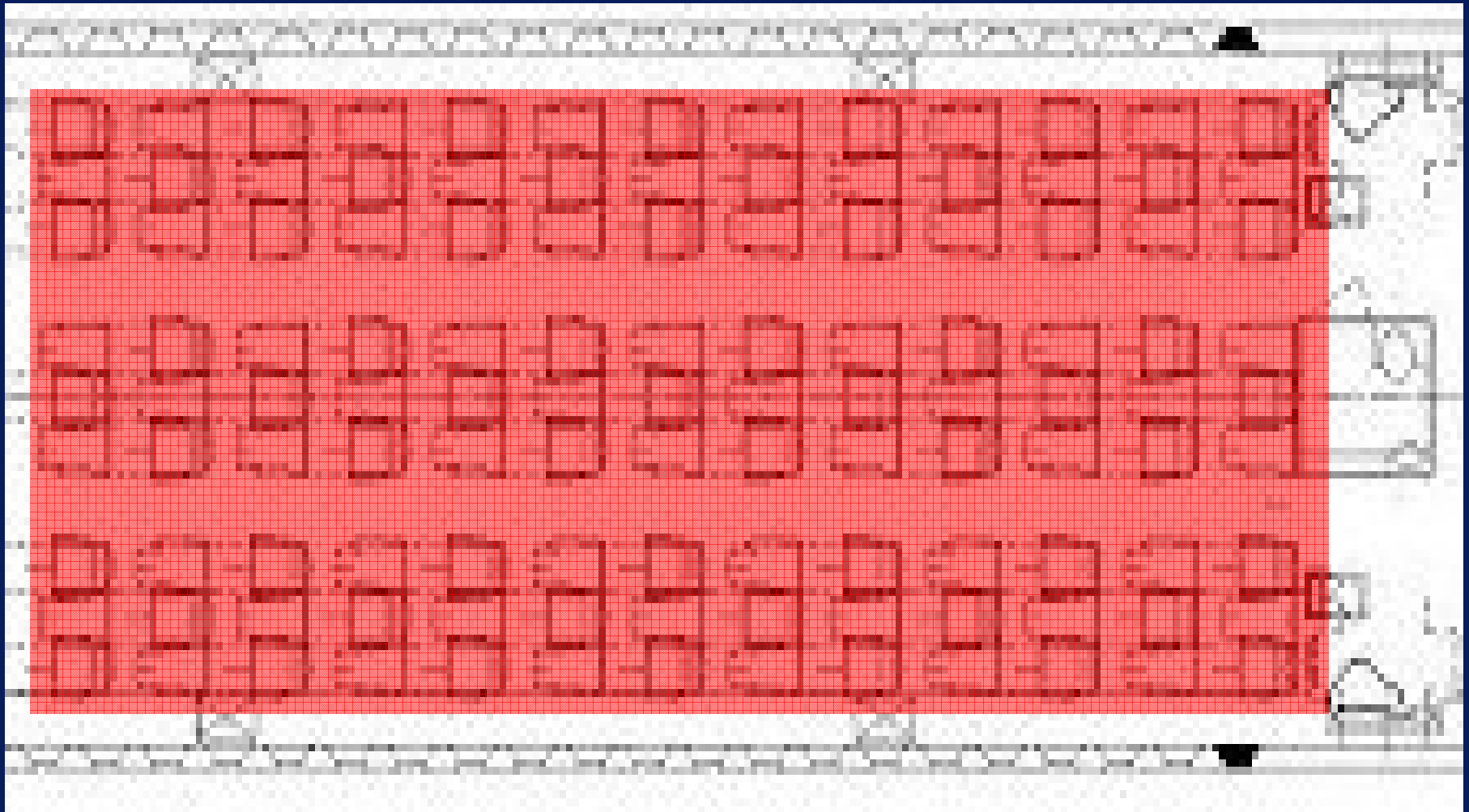
A 380 SEATING CONFIG





Seating Strategies - 1. Back to Front

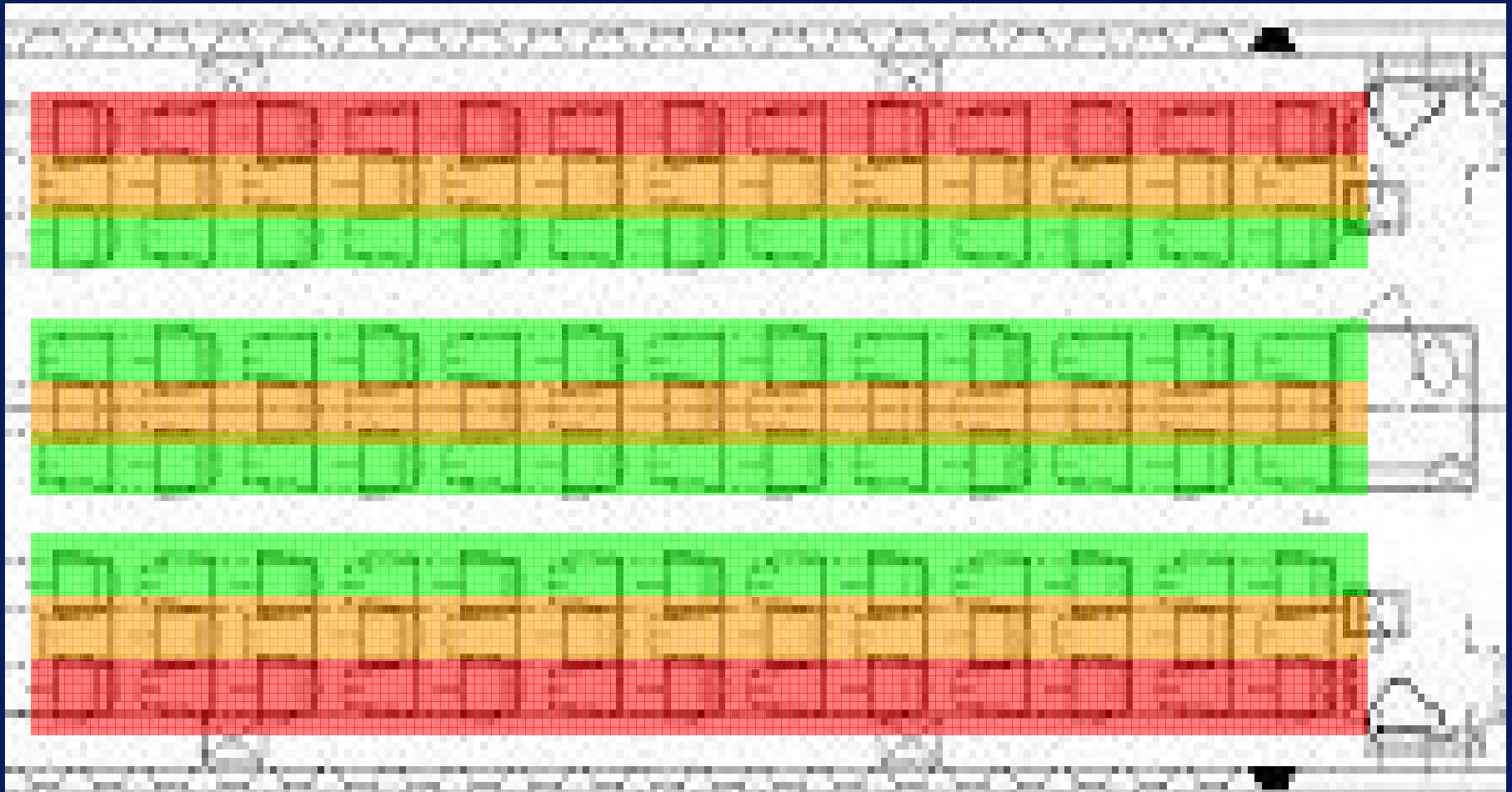
- 1st, Business Class & 'special needs' usually boarded first
- Air Canada, Alaska, AA, BA, Continental, Frontier, Midwest, Spirit and Virgin Atlantic.





Seating Strategies – 2. Outside-in

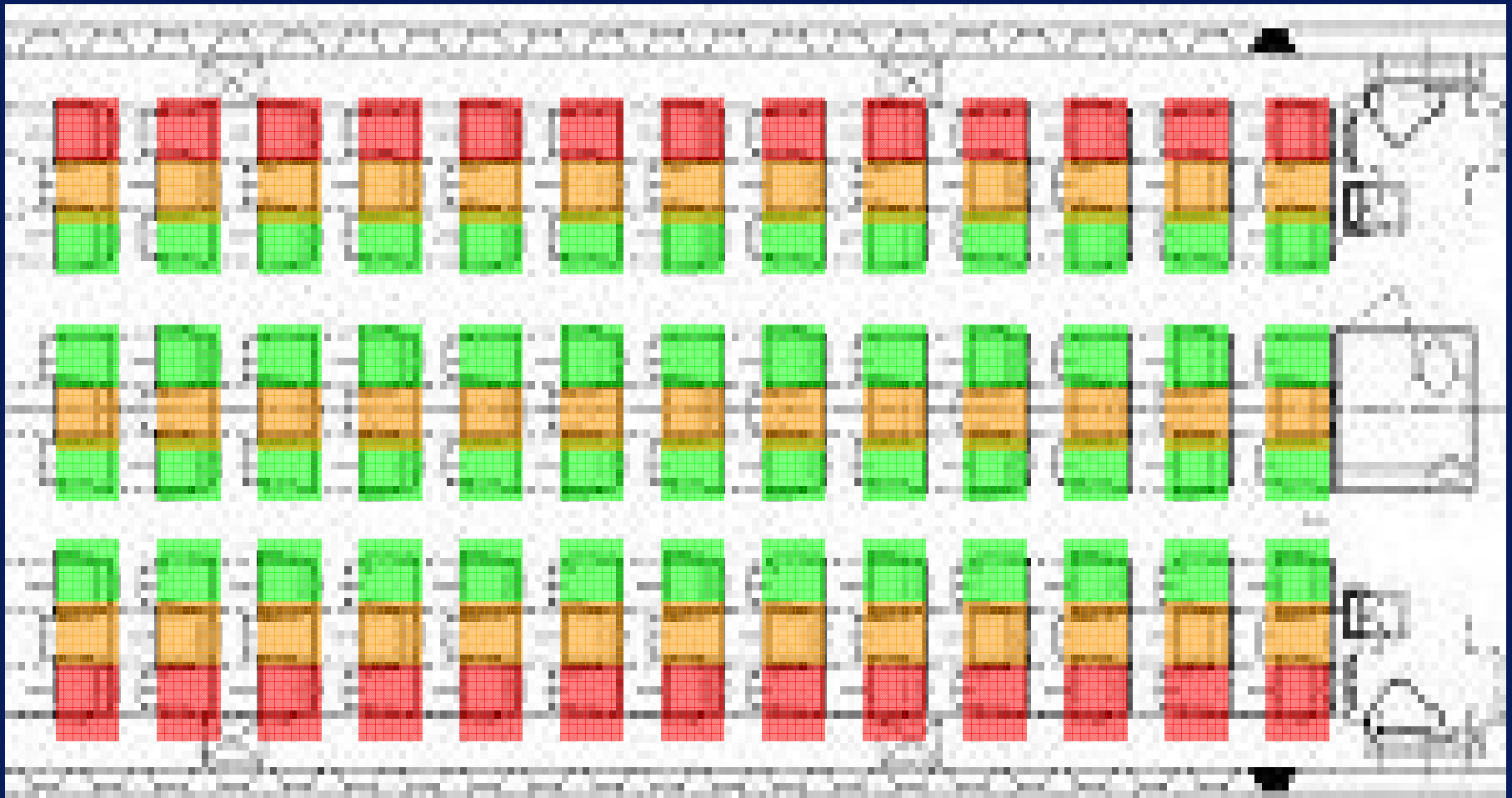
- “Wilma”, window first, then middle and then aisle
- Delta and United





Seating Strategies – 3. Chaos Theory

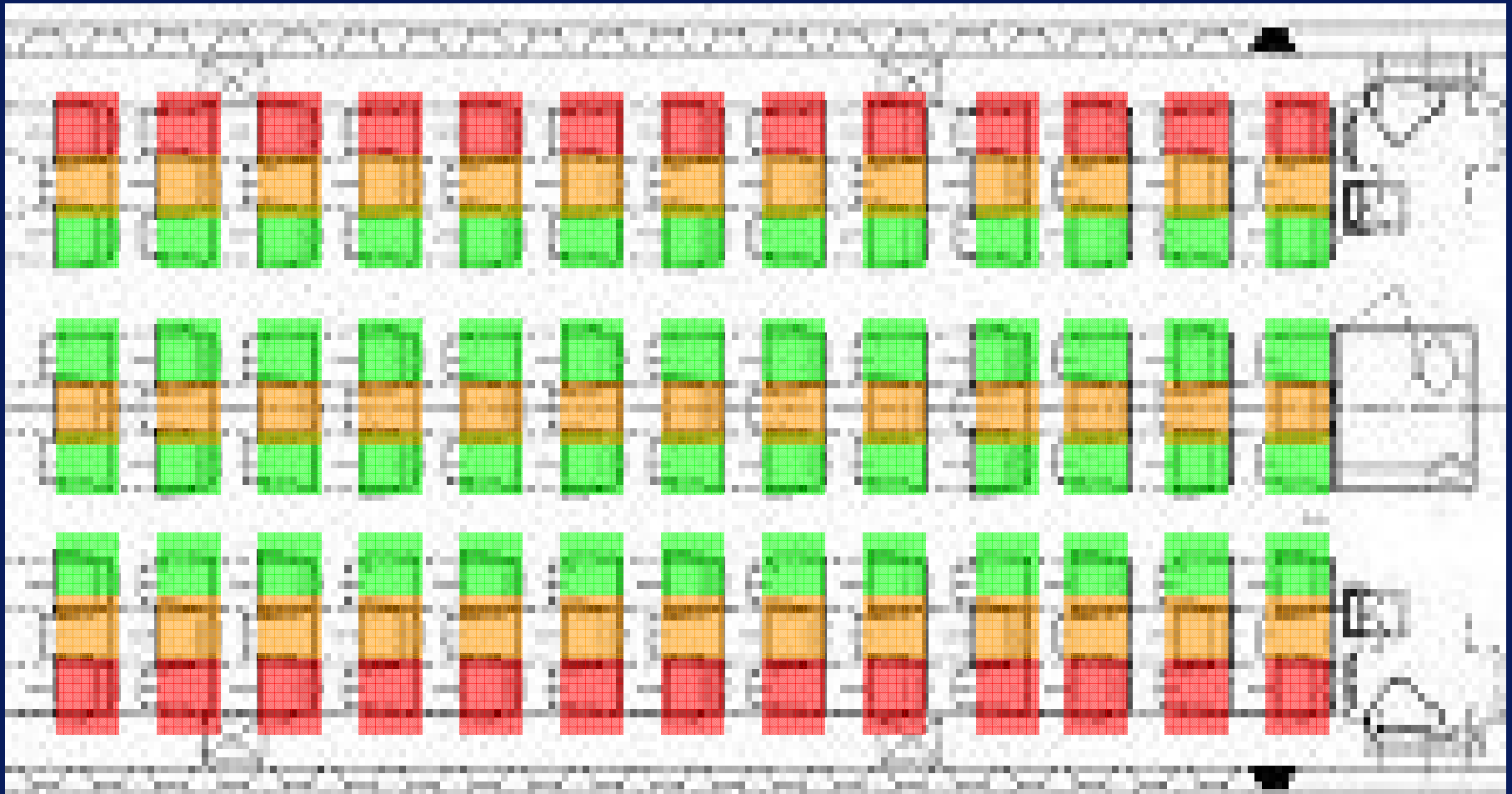
- Boarding in order of arrival
- Many low cost carriers





Seating Strategies – 4. Advanced I - "Wilma+"

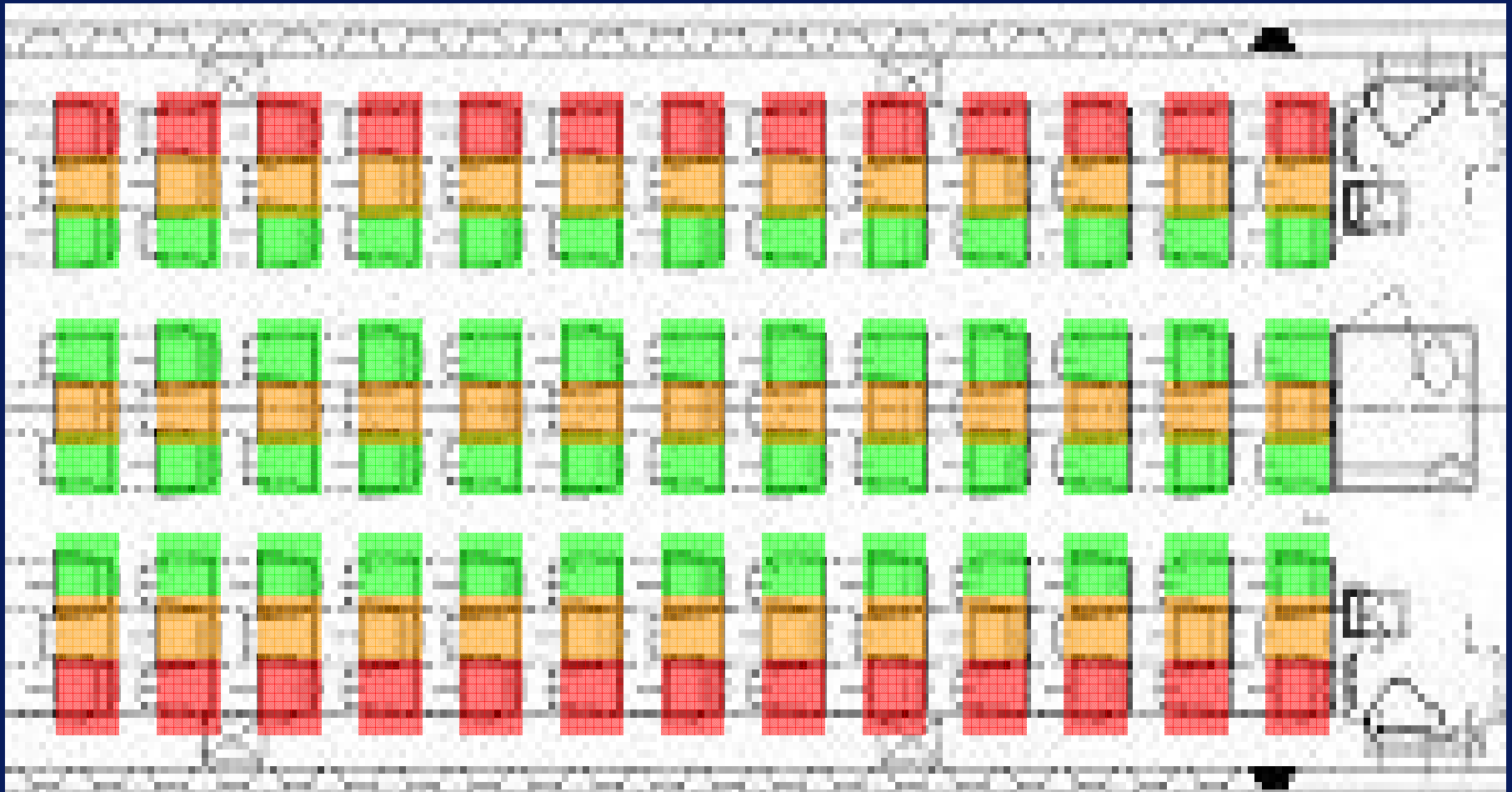
- 'Reverse pyramid system' - rear window & middle, front window & middle, rear aisle, front aisle; *"to minimize seat/ aisle interferences."*
- Cuts 2-5 minutes off turnaround





Seating Strategies – 5. Advanced II

- 'Revolving barrel' - back three rows, front three, the next back three etc until the rows meet in the middle
- AirTran Airways



Lean Importance/ Materiality

- **Importance**

- E.G. Airline X turns around in an average 25 minutes – others take 35-60+ for similar aircraft

- **Materiality**

- Airline X scenario testing, e.g. a 5 minute delay in turnaround.
- To maintain current schedule of (~3,000) daily turns for ~460 aircraft: -
 - 18 extra aircraft would be needed (4%), costing a total of ~**\$1bn**
 - Plus crew (ground/ cabin/ flight)
 - Plus maintenance (scheduled MRO, engineers, etc)
 - Plus airport charges, etc

- **Other issues**

- limiting carry-on baggage may have a far greater impact on turnaround time

Lean Implications

- Seating is an integrated issue
 - in the cabin, by the air bridge, points-of-sale, catering, fleet planning, network planning, MRO schedule, etc
- Seating strategy has implications across wider industry issues
 - Security
 - which seats were the marshals/ suspects/ prisoners allocated?
 - Let's separate the *stag party* and keep them away from the *Language school girls*
 - Air incident investigators
 - Fuel
 - Men weigh more than women who weigh more than children – evenly spread weight burns less fuel

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