



MORE SPACE MORE PEOPLE

Formation Premium Seating Concept

- Lie-flat seats with counts comparable to angled lie-flat
- Larger beds compared to staggered arrangements
- Direct aisle access for all seats in many LOPAs

Formation Design Group has developed a new lie-flat seating concept that represents the next major evolution in premium seating. The configuration features lie-flat beds arranged to allow seat counts comparable to traditional angled flat seats while providing larger beds compared to staggered arrangements. This highly efficient arrangement is made possible by the use of vertical cabin space through a small elevation change incorporated into every third seat. Formation is seeking airlines or seat manufacturers to license and codevelop this patent-pending concept.



Illustration of the original embodiment

The concept is the result of intensive geometric analysis of cabins in existing and planned airframes. The seating arrangement provides legroom for two seats under a centrally located raised seat and bed area. As a result, one of the lower seats and the upper seat are forward facing with one of the lower seats aft facing. Formation applied for patent protection of this innovation in early 2008. The above rendering illustrates the basic embodiment of this concept which is also seen in the cabin mock-up center row and the center row of the A330-300 LOPA shown on the next page.

The original patent applications are filed as:
EP2268544
US2009243358
WO2009120308

http://ep.espacenet.com/numberSearch?locale=en_EP

Formation continues to develop the basic concept and subsequently has filed for additional patents on various derivative innovations that address comfort & spatial efficiency.

The first of these was demonstrated at the 2010 AIX Americas within a scale model of an A330/340-300 forward cabin. The configuration featured 32 fully lie-flat seats arranged between door one and door two. All seats in this LOPA feature direct aisle access and 79 inch long lie-flat beds.



A330/340-300 forward cabin model

Additionally, four of the forward facing upper seats were outfitted as premium seats measuring 30 inches wide with 80 inch long beds. These four seats also featured dedicated stowage compartments large enough for a roller bag accessible from the seated position.

The image on the first page of this document illustrates how these seats can be configured as enclosed suites. The enclosure of the suites provides additional differentiation between the premium and business class seats in the cabin. Even with the 4 premium suites in the cabin, seat count remains 32. This seating count would not be possible with existing seating solutions while maintaining comparable bed sizes and direct aisle axis for all. While most wide-bodies have sufficient overhead clearance to accommodate the slightly elevated seat, the bins directly over the higher seats were deleted in order to balance aesthetic enhancements with practical storage needs. This can be seen in the photo above.

A third filing covers the concept shown in the center row of the LOPA on page 4. This arrangement allows the reduction in the total length of the 3 seat module by having the lower seats' foot well angled toward the center. This is particularly conducive to the B777's comparatively wider but shorter forward cabin.



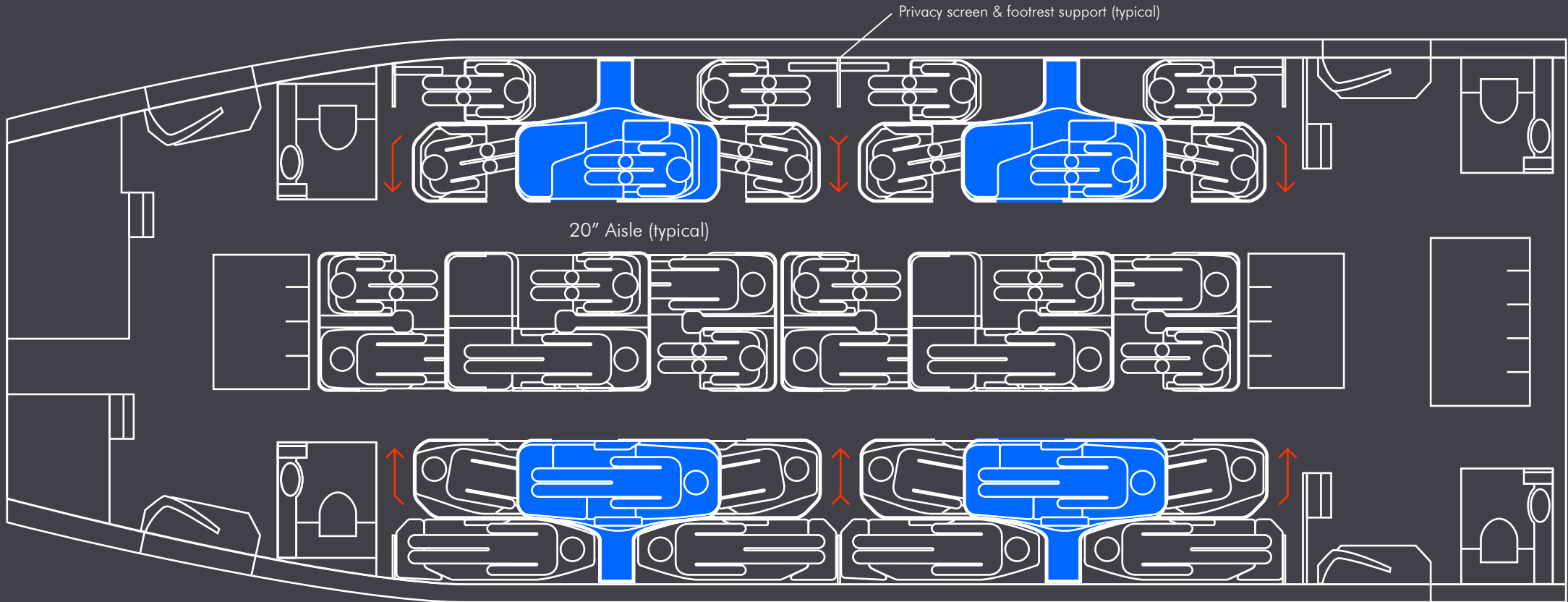
A330/340-300 forward cabin LOPA: 32 PAX

4- 30" X 80" Forward facing premium seats

16- 24" X 79" Forward facing business seats: (4 seats with angled foot wells are 26.5" wide)

12- 24" X 79" Rearward facing business seats: (4 seats with angled foot wells are 26.5" wide)

100% Direct aisle access



15" pass-thru for window seats

30" X 80" Forward facing premium seats

This LOPA was shown at the 2010 AIX Americas as a scale model.



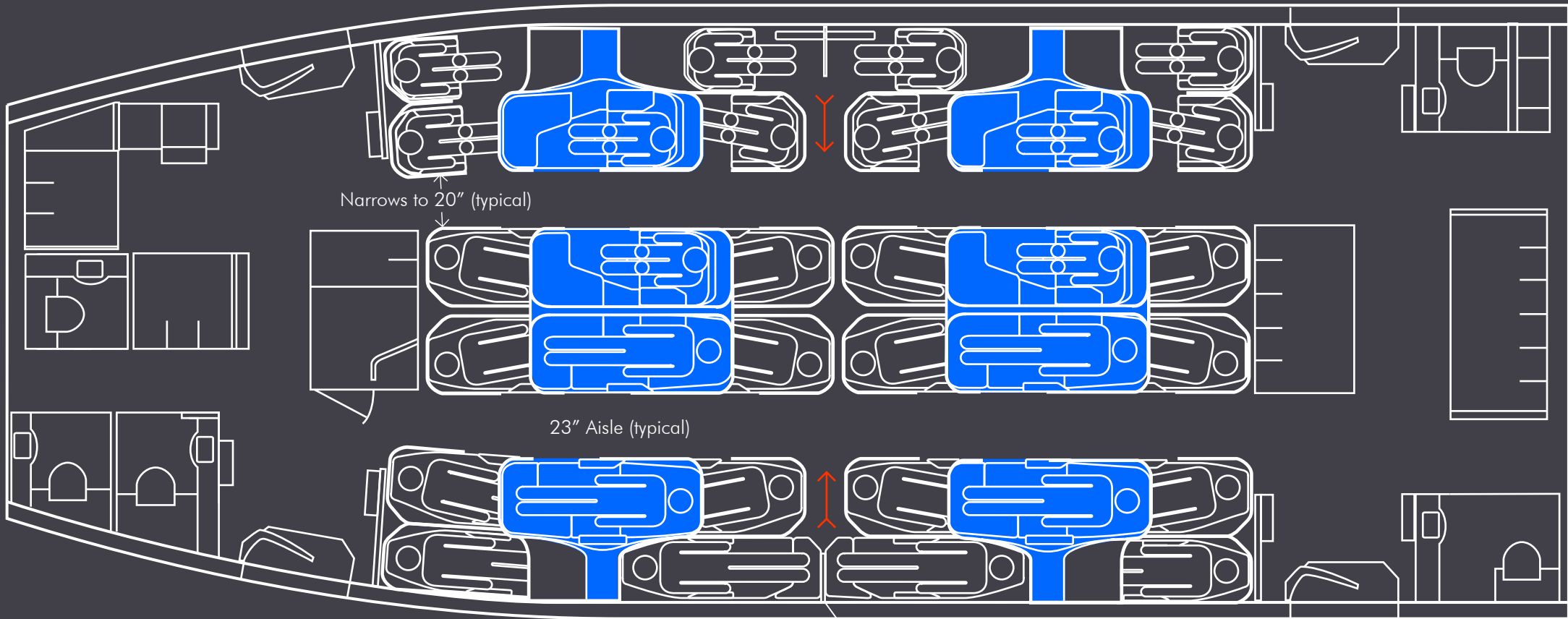
B777 forward cabin LOPA: 32 PAX

8- 30" X 80" Forward facing premium seats

12- 24" X 79" Forward facing business seats: (8 seats with angled foot wells are 27" wide)

12- 24" X 79" Rearward facing business seats: (8 seats with angled foot wells are 27" wide)

87.5% Direct aisle access



■ 15" pass-thru for window seats

■ 30" X 80" Forward facing premium seats

The center row arrangement allows the reduction in the total length of the 3 seat module by having the lower seats' foot well angled toward the center. This is particularly conducive to the B777's comparatively wider but shorter forward cabin.



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