

Erdoğan Özçitak
Corporate Product Manager Systems



Elevator as an element of
style for any building



Agenda

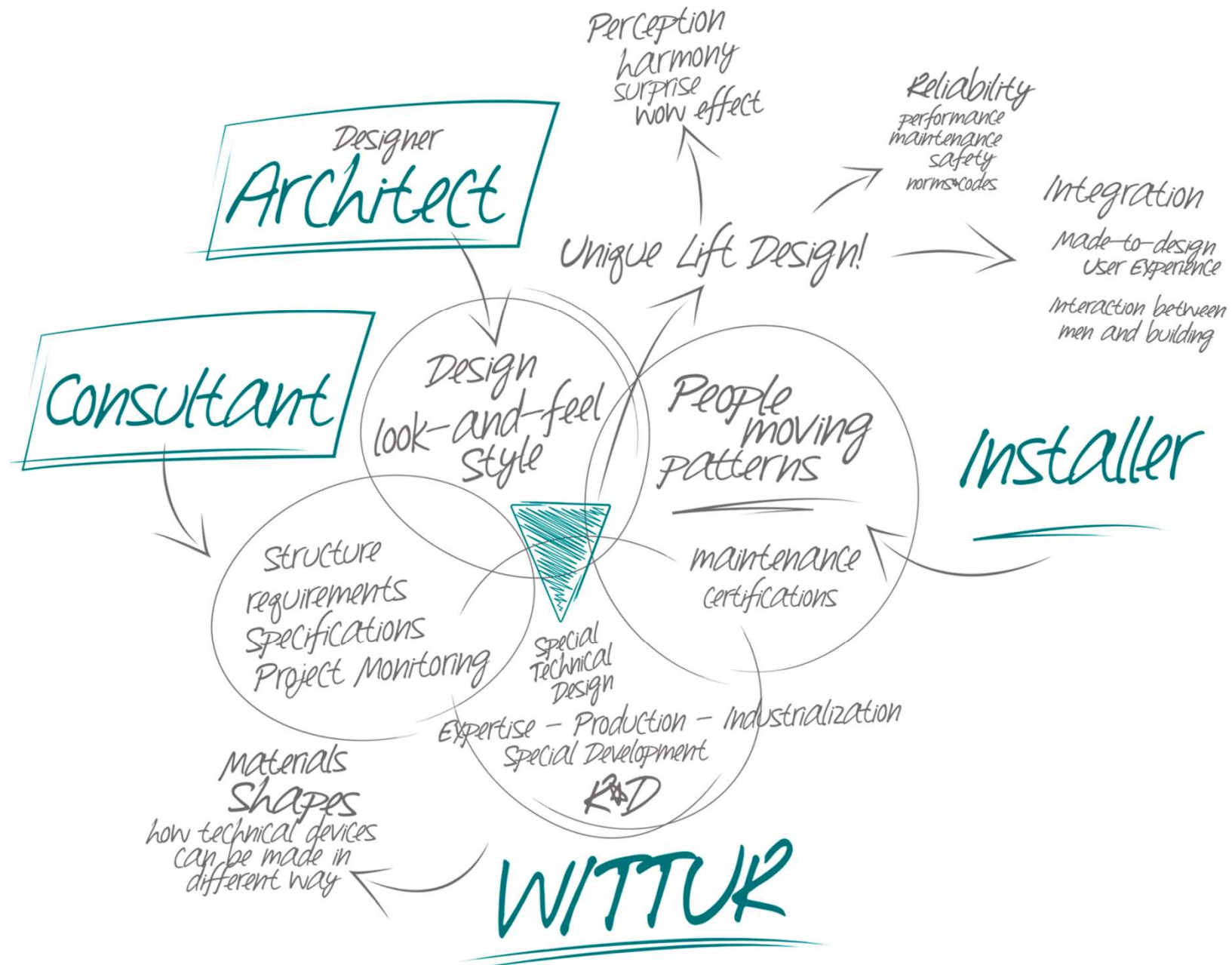


- 1 From ideas to reality
- 2 Bloomberg, London (UK)
- 3 Expo 2017 Main Pavilion, Astana (Kazakhstan)
- 4 Lloyds, London (UK)
- 5 Broad Museum, Los Angeles (USA)

Transforming Architects' Ideas into Reality

- The technological developments of our industry has contributed to the creation of one-of-a-kind systems in panoramic and very special executions (in terms of shapes, aesthetic qualities and characteristics)
- In addition to changing the travelers' perception of elevator space, these systems can offer a privileged observation point on the architect's project, which is perceived during the elevator ride
- Starting from the selection of the finest finishes and accessories up to the design and construction of fully customized systems, a wide range of possibilities is offered to the interdisciplinary project team - involving architects, installers, consultants and component manufacturers – which takes care of integrating special elevators in buildings.

Only Teamwork Guarantees Great Results



Bloomberg (London, UK) – Architect's Design

- Designed by **Foster + Partners**
- Right in the heart of London City
- External façade with **bronze elements**, which reflect the sunlight, combined with structural elements in **white stones**
- **Panoramic external elevators** perfectly integrated within the façade



Bloomberg (London, UK) – Panoramic Elevators

Passenger Lift
Level 06 Lift Lobby

Foster + Partners



18 March 2013

- Perfect aesthetic integration between building and elevators

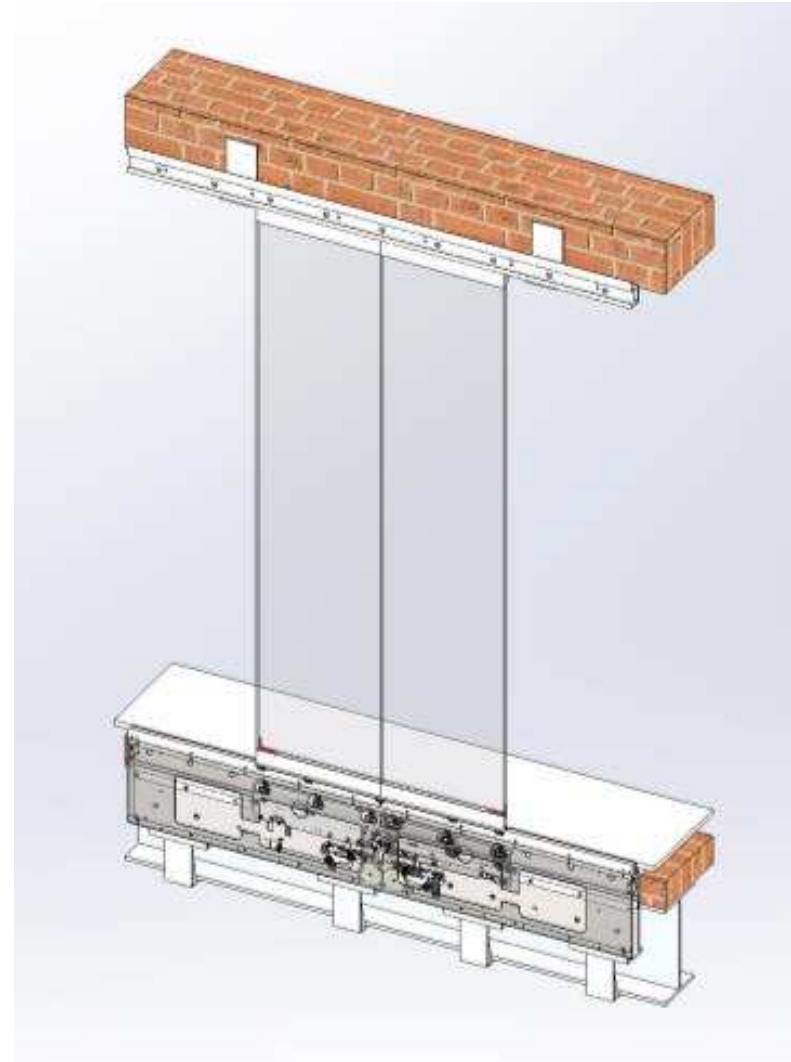
Bloomberg (London, UK) – Requirements of the project

- High reliability
- Explosion-proof glass panels
- Car door operator with a special free-standing design
- Endurance testing in order to guarantee high reliability and low noise even in a 100% customized product
- Special packaging in order to reduce any damage during transport



Bloomberg (London, UK) – How we executed

- Glass panels with relevant dimensions
- Hidden under-driven mechanisms, integrated in the wall structure
- Endurance testing that simulated high traffic and high wearing conditions
- FEM analysis



Bloomberg (London, UK) – Elevator Shaft



Bloomberg (London, UK) – Door installation



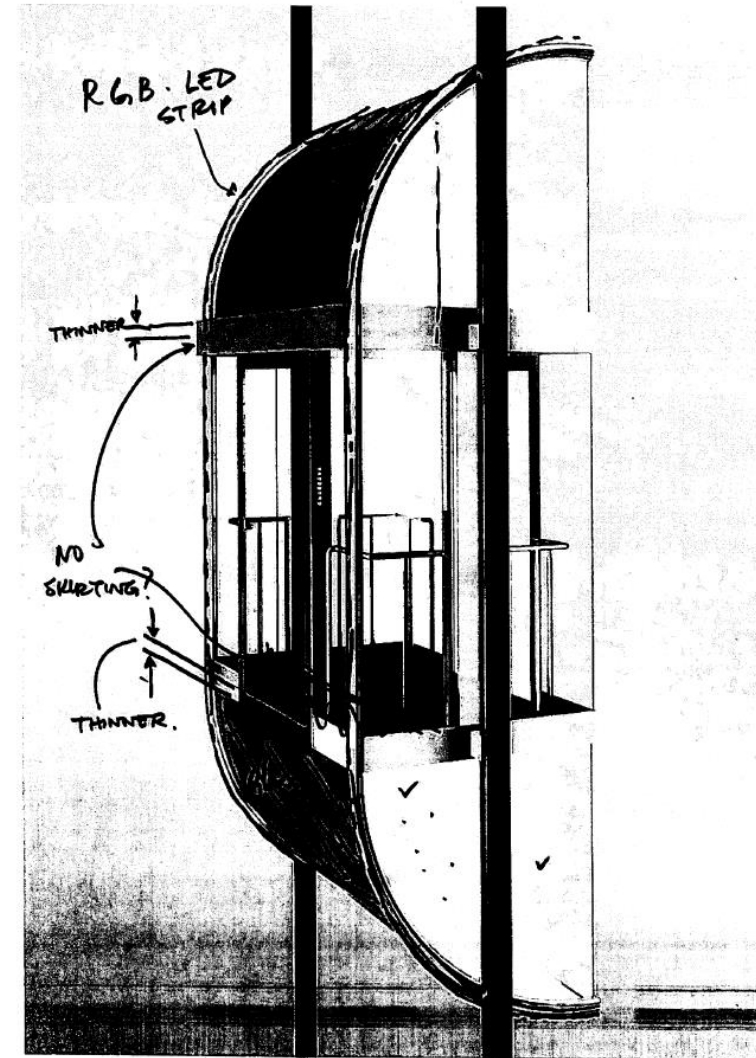
Expo 2017 Pavilion (Astana, Kazakhstan)

- Astana Expo 2017 – Main theme: «Future Energy» (June-September 2017)
- Main pavilion: 80-meter diameter sphere, the biggest ever built in the world, that hosted the Kazakhstan Pavilion
- Design by Adrian Smith + Gordon Gill Architecture (AS+GG), Chicago

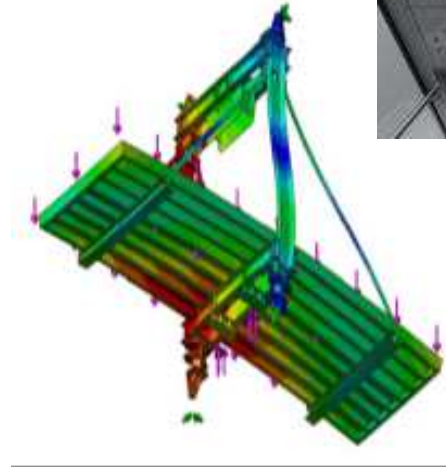
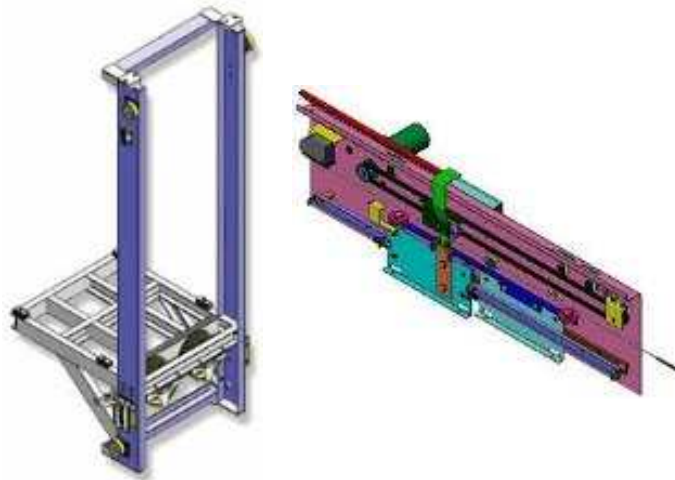


Expo 2017 Pavilion (Astana, Kazakhstan)

- The elevator systems had to be perfectly integrated into the overall building architectural structure
- The architects had the opportunity to improve the aesthetic design and appearance of the elevators thanks to 3D design and photorealistic renderings prepared by LM technicians, during the project discussion and definition phases



Expo 2017 Pavilion (Astana, Kazakhstan)



From components design



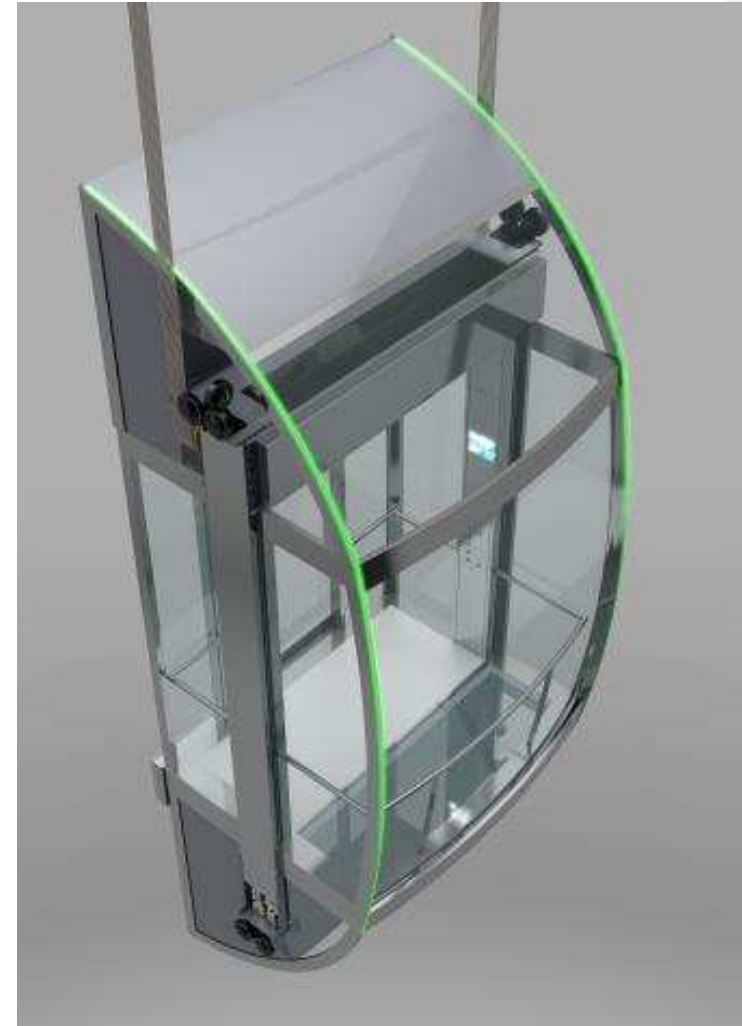
To sub-systems design

- Single component design
- Interface problems among components
- Design problems due to components integration

- Integrated design
- Interface optimization (FEM)
- Highly reliable performance (low level of noises / vibrations)
- Outstanding aesthetic appearance (perfect integration among doors, cars and slings)

Expo 2017 Pavilion (Astana, Kazakhstan)

- The project included 8 elevators with egg-shaped cars that were installed in the sphere with the following characteristics:
- Speed 2,0 m/s
- Stops: 9 / 10
- Duty load: 1875 kg
- Travel heights: 70 / 75 meters
- Compliant to GOST P 53780-2010 / EAC
- Equipped with two panels, center opening, full glass doors and under-driven operators



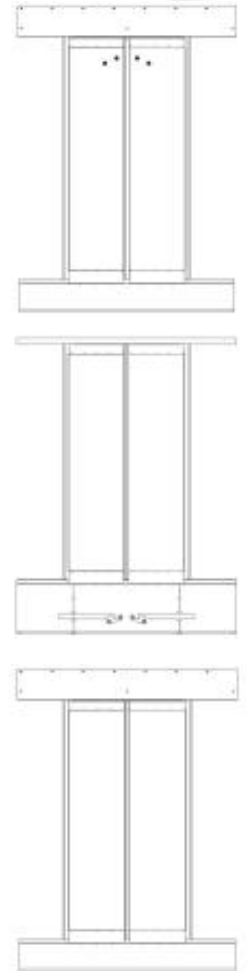
Lloyds (London, UK) – Architect's Design

- Designed by Richard Rogers
- Built between 1978 and 1986
- It is the world's most famous example of inside-out architecture. All the systems, including the elevators, are outside the building in order to create wider free space internally that guarantee more flexibility
- The building is part of the English Heritage: any modernization project has to be approved by the English Heritage Society and should preserve the original appearance of the building



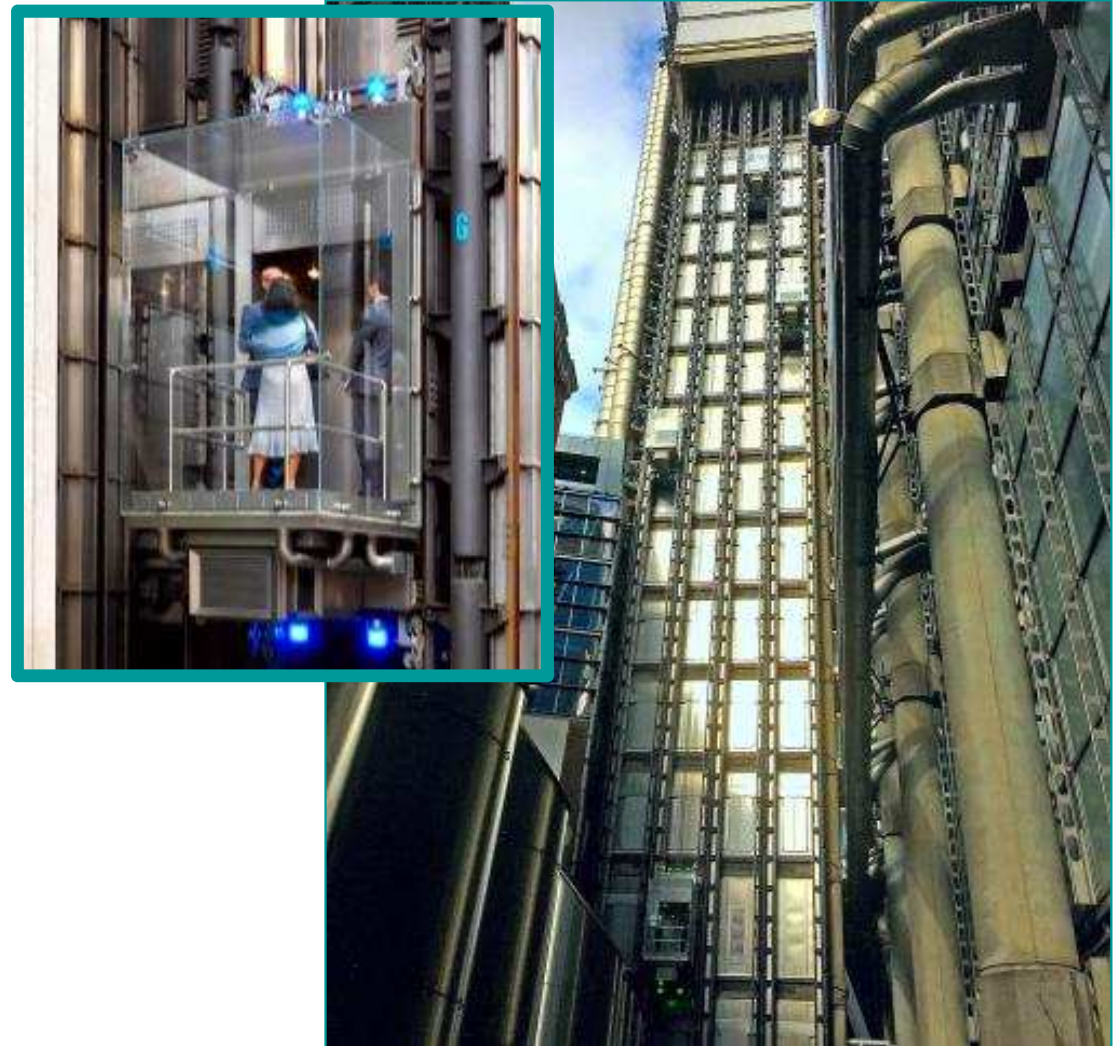
Lloyds (London, UK) – Elevators modernization project

- **Starting point:** 100% tailored made elevators with special components only - low reliability, high cost maintenance
- **Modernization project goals:**
 - Include wherever possible standard components
 - Reduce energy consumption
 - Improve maintenance activities
- Teamwork with the customers in order to find the best solution
- New door operators with standard motorization and stainless steel structure



Lloyds (London, UK) – How we executed

- Preservation of the aesthetic characteristics of the elevators
- The original equipment (dated 1986) had motorized landing doors, which were substituted by customized landing doors coupled with the newly-designed cabin doors
- Strong improvement of the energy efficiency of the overall vertical transportation system



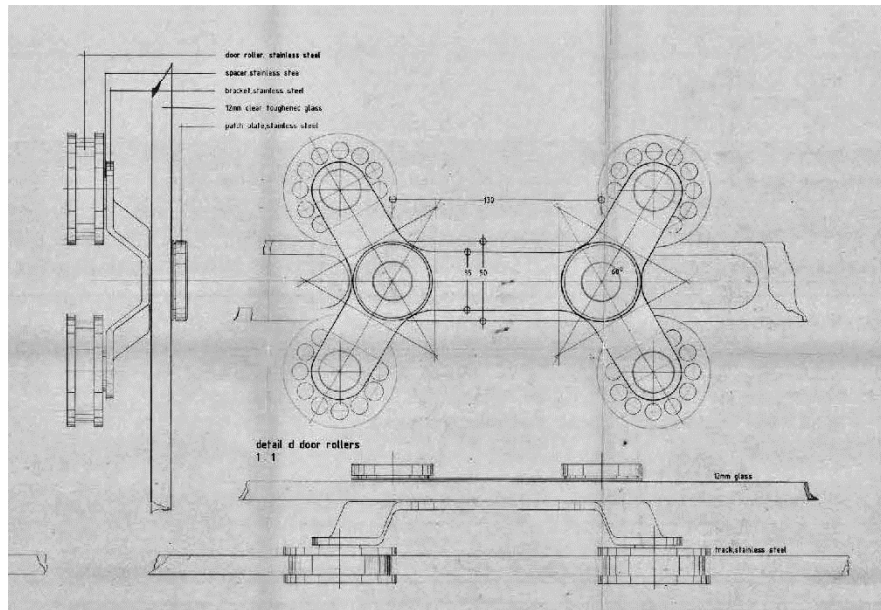
Lloyds (London, UK) – How we executed

- Stringent requirements in terms of acoustic, thermal and atmospheric insulations
- Motorized covers in order to protect travelers from rain during entrance/exit
- Clean door design with hidden sill, without junctions in the top element, without visible screws and brackets
- The landing-car door coupling is granted by two lateral blades



Lloyds (London, UK) – How we executed

- We modernized also some special full glass doors which required custom-designed fastening



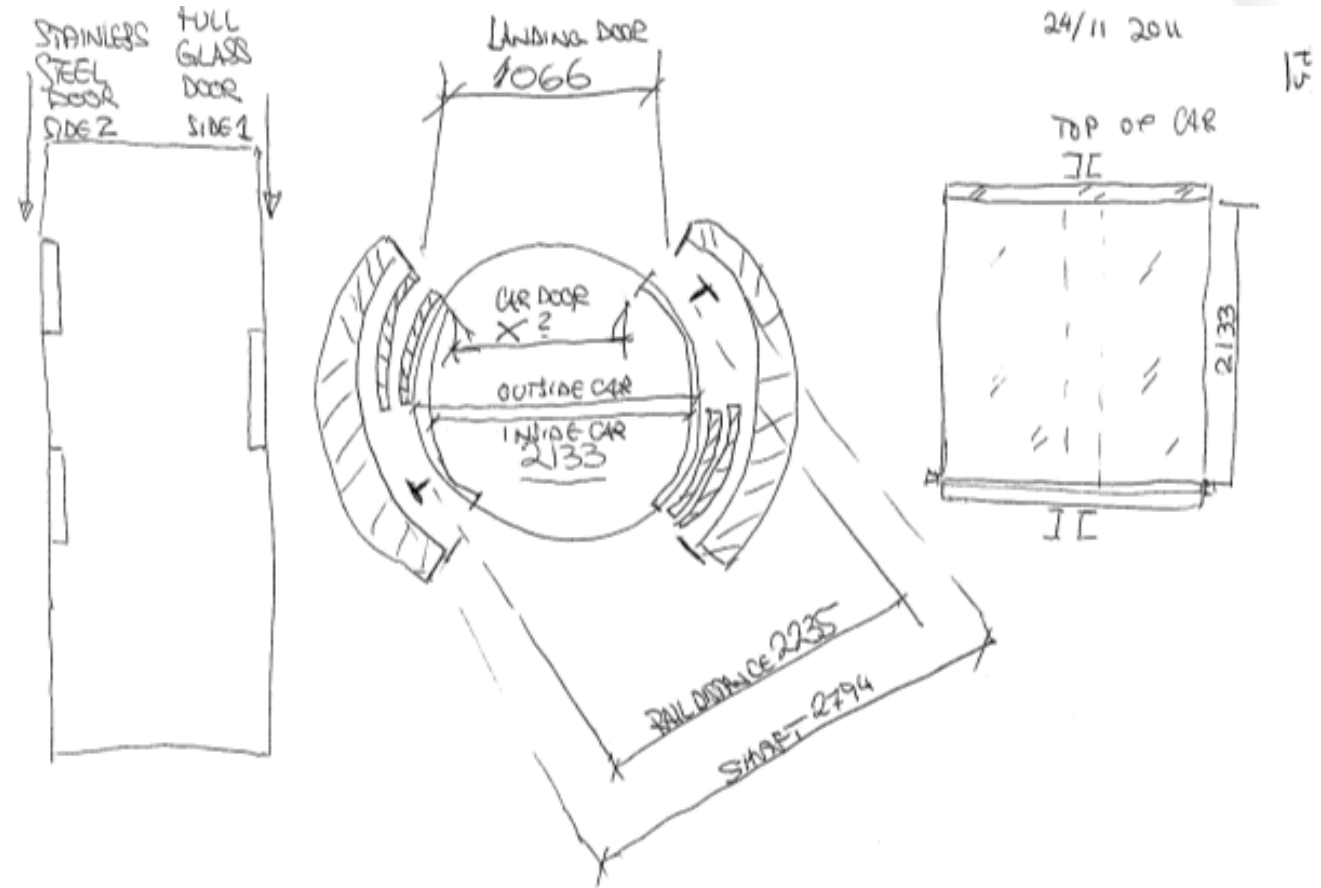
Broad Museum (Los Angeles, USA)

- The Broad is a contemporary art museum located in Los Angeles
- The building was designed by the architecture studio Diller Scofidio + Renfro
- The external element, called “veil”, has an honeycomb structure



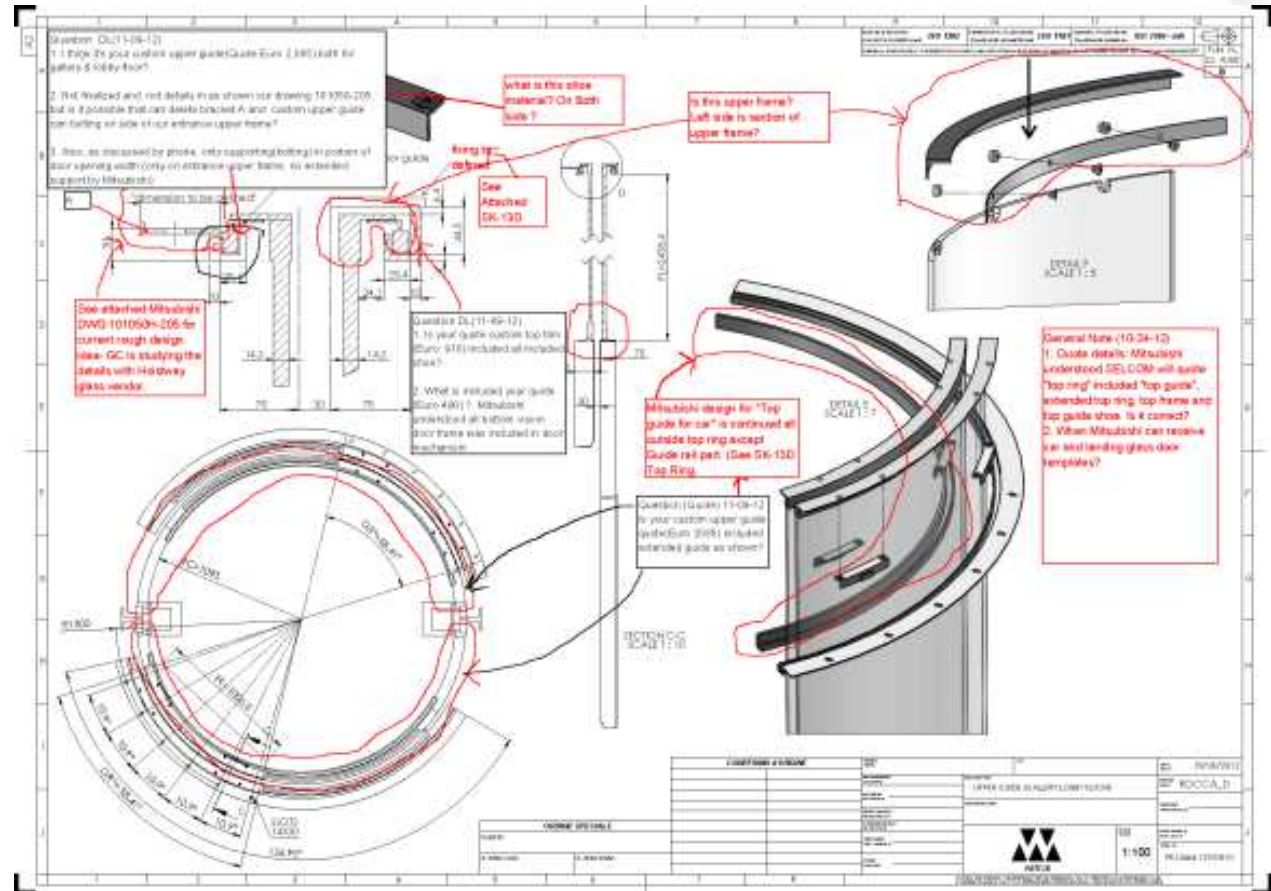
Broad Museum (Los Angeles, USA)

- A round panoramic elevator guarantees the access to the different floors of the museum
- The architect's idea was to use both steel (in the lower part) and glass (in the upper part) in the elevator cabin



Broad Museum (Los Angeles, USA)

- Extensive revision process involving the architect, the design team and the component manufacturer
- Each element has been defined, designed and revised according to the architect's vision



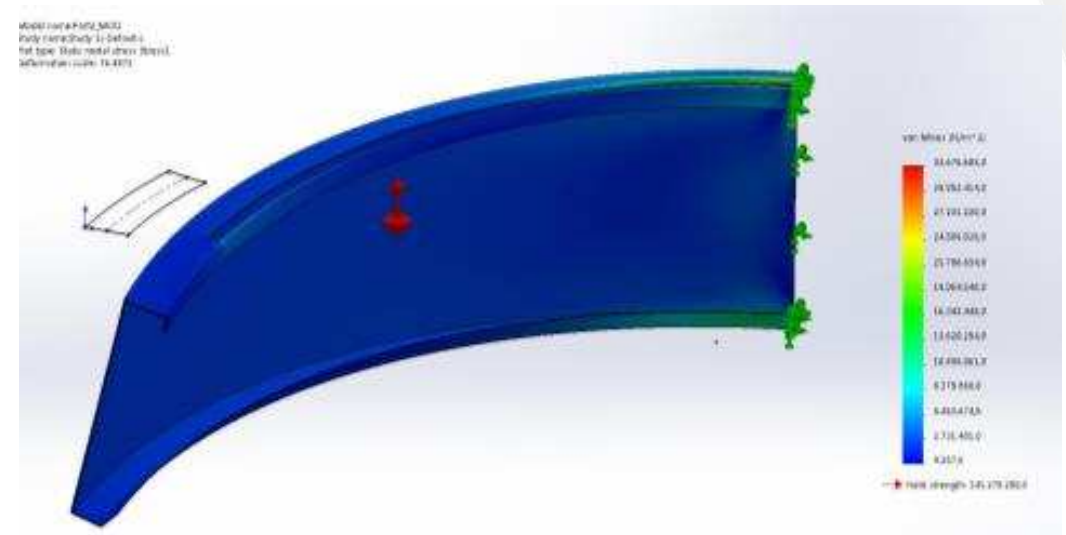
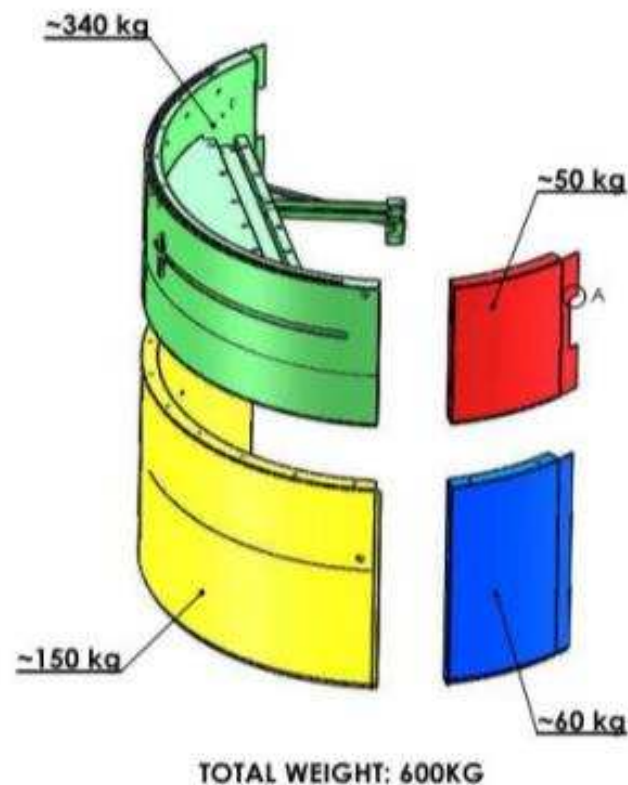
Broad Museum (Los Angeles, USA)

- The landing doors are flush and perfectly satisfy the architect's aesthetic requirements: the lower part is in stainless steel and the top part in full glass



Broad Museum (Los Angeles, USA)

- FEM analysis in order to verify the correct dimensions of the door mechanism



Broad Museum (Los Angeles, USA)

- Special solutions in order to improve the visual wow-effect
- Fixed blade in special execution
- Three-hole safety screws perfectly visible in the mechanism
- Sill with seamless edges



Broad Museum (Los Angeles, USA)

- Clean aesthetic and design
- Moving mechanical parts hidden and positioned under the cabin



Summary

- Elevators are installed in public buildings in order to satisfy first the needs for top safety and comfort of passengers during vertical transportation
- In some cases, the space occupied by elevators within a building can be an integral part of the architect's vision. The elevators can be perfectly integrated within the overall building structure or on the contrary can occupy a distinctive, central spot within the architecture
- The technological progresses of the elevator industry has opened new opportunities for the design of special solutions that combine technology and aesthetics
- The elevator can become the focal element of design in any building

Thank you for your kind attention