

Jet Engine Transportation Control



From left to right: Casey Simon, Felipe Nespoli Seronatto, Tidiane Kone, and Isaiah Petersen.



TEAM 6

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PROJECT SUMMARY:

Safran Test Cells provides jet engine testing facilities and equipment to customers around the world. To transport jet engines across the testing facilities, they use large cranes known as Big Birds. These cranes are maneuvered manually, pushed by an electric tug.

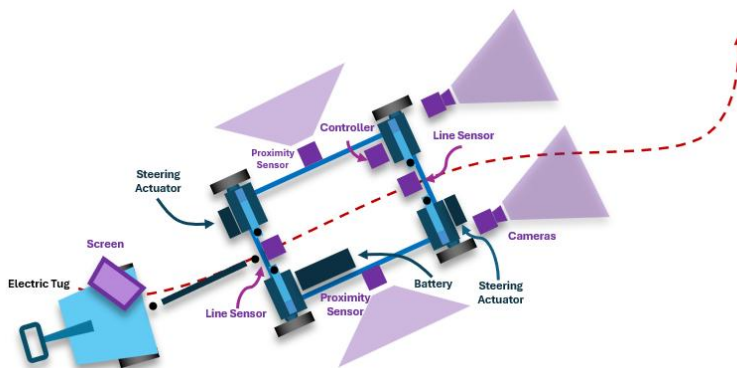
Safran has requested a functional design for an automated system capable of steering Big Bird by following a line on the floor. This system reduces the number of operators and provides the remaining personnel with video, remote control, and proximity sensor feedback for smooth and precise navigation.

DESIGN GOAL:

The primary objective of this project is to develop a reliable and responsive control system for automated and manual steering of the engine carrier. A camera system will provide a screen view of what is in front of the cart and an integrated proximity sensing system will detect objects along the path.

DESIGN CONSTRAINTS:

- Synchronous line detection and steering
- “Drop-in” and replicable solution to the existing Big Bird frame.
- Manual mode gives the operator full control of Big Bird steering mechanism.
- Actuators shall be of easy access and removal.
- Proximity sensors shall sense objects up to 3 meters away.
- Cameras provide a field of view 140 degrees.



Implementation of design solution into Big Bird



Big Bird loaded with Jet Engine