



# **Designing the “Fleet of the Future”**

## **The Need for Adaptable Interiors**

**Railway Interiors Expo  
Cologne, Germany  
15 November 2011**

# Presentation



- ☐ **BART Overview**
- ☐ **Interior Reconfiguration**
- ☐ **“Fleet of the Future”**

# BART Overview – System



- ❑ Operation began in 1972, 450 Rohr cars
- ❑ 104 miles (168 km) mainline
- ❑ 44 stations
- ❑ Commuter and urban operation
- ❑ 370,000 weekday riders
- ❑ 3 – 10 car consists
- ❑ ATC operation
- ❑ 80 mph (129 km/h) top speed
- ❑ 1000 VDC 3rd rail
- ❑ 5.5 ft (1676 mm) wide gauge track
- ❑ Full dedicated right-of-way



# BART Overview – Fleet



## Fleet Overview:

- ❑ **669 heavy rail cars**
  - **Lead Cars – 289**
    - 59 A2 Rohr cars*
    - 150 C1 Alstom cars*
    - 80 C2 Morrison Knudsen cars*
  - **Mid consist cars – 380**
    - 380 B2 Rohr cars*

## Car Overview:

- ❑ **2 door openings per side**
- ❑ **56 & 60 seats per car (post mods)**
- ❑ **615 ft<sup>2</sup> (57 m<sup>2</sup>) & 655 ft<sup>2</sup> (61 m<sup>2</sup>) interior area**
- ❑ **70 ft (21.3 m) x 10 ft (3.2 m)**
- ❑ **63k lb (28.6 t) light weight car**



# Existing Car Interiors



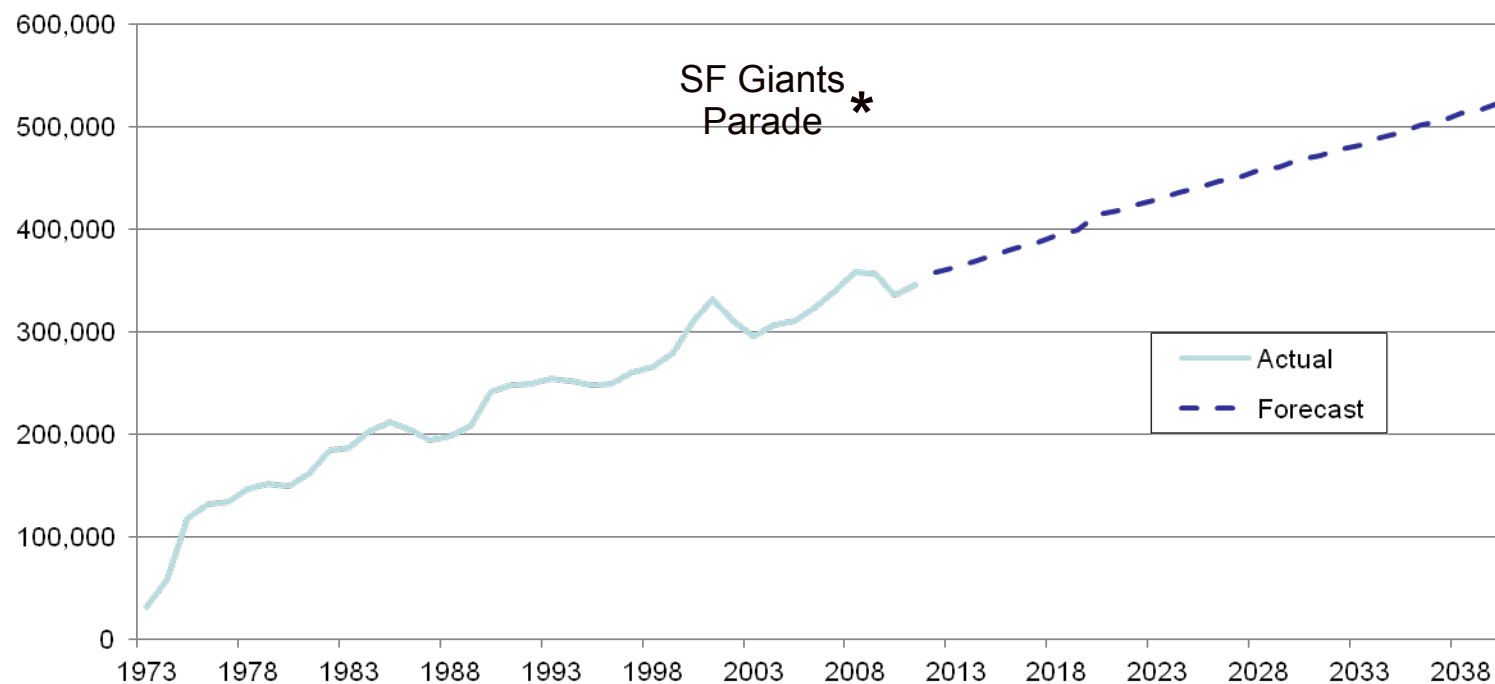
- ☐ Faded wool cushions
- ☐ Stained wool carpet
- ☐ No bike or luggage areas
- ☐ No Hand straps
- ☐ No Leaning bars
- ☐ Restrictive doorways



# Growing Demand for Cars



## BART Average Weekday Trips 44-Station Core System



Source: BART draft FY12 Short Range Transit Plan



# Full Platforms and Trains



- ❑ Typical busy commute
- ❑ Long dwell times
- ❑ Overcrowding unsafe
- ❑ Bike policy
- ❑ Strains stations & cars



# Crowded Car Interiors



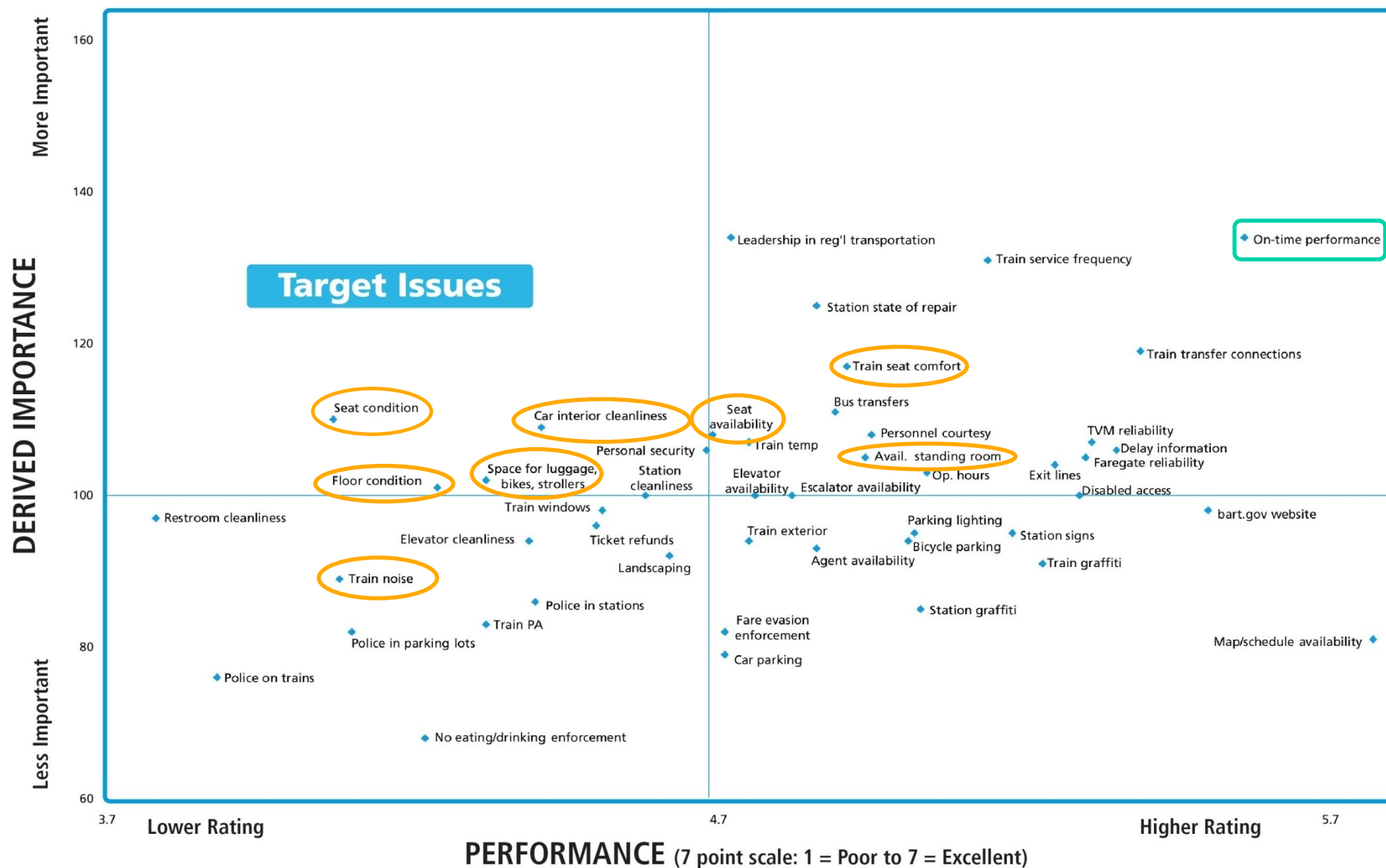
- ☐ Blocked aisles
- ☐ No place for bikes
- ☐ No place for luggage
- ☐ Standees in doorways
- ☐ No hand straps
- ☐ Not very exciting







# 2010 BART Customer Satisfaction Survey Quadrant Chart



# Reconfigured Interiors



- ☐ New MCI floor panels & rubber covering
- ☐ Remove 8 to 12 seating positions
- ☐ New wool seat cushions
- ☐ Bike and luggage area
- ☐ More standee area
- ☐ Add Leaning Bar
- ☐ Hand straps
- ☐ Signage

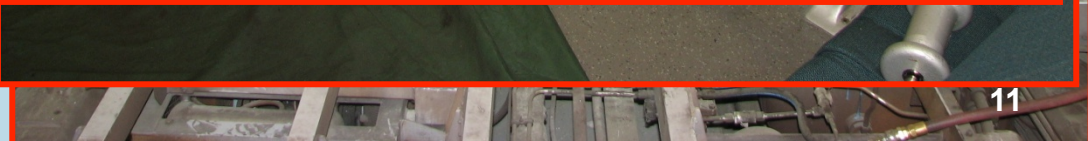


# Reconfiguration Effort



- ❑ High capital cost ~\$40k / car
  - ~\$37.7M for fleet
- ❑ Production vs. maintenance
- ❑ Many engineered parts
- ❑ Dedicated work force
- ❑ Procurement & logistics
- ❑ Complex procedures

**WE NEED TO IMPROVE!**



# Reasons for Change



- ☐ Accommodate increased ridership
- ☐ Reduce crowding in trains and platforms
- ☐ Improve functionality of car interior space
- ☐ Simplify cleaning and maintenance of interior
- ☐ Reduce parts required to reconfigure interior

**A “Modular” interior meets these needs.**

# “Fleet of the Future”



- ❑ Complete fleet replacement plus expansion
- ❑ 40+ year design life, a new legacy
- ❑ Largest contract in BART history, >\$3B
- ❑ Success is critical to future operation

Issues: Reliability ... Cost ... Weight ... Noise ... Maintainability ...  
Availability ... Customer Satisfaction ... Reliability ...

**A “Modular” interior has been specified so BART can be adaptable to these issues.**



# The Modular Interior



- ❑ **Reconfigurable seats – transverse to longitudinal**

- ❑ **Reconfigurable vertical stanchions**

- ❑ **Track mounting allows for:**
  - changes to seat count, seat pitch
  - quickly increase standee area
  - other accommodations - bikes, luggage

- ❑ **Full interchangeability between like parts – reduces inventory**

- ❑ **Allows for aesthetic changes so BART can periodically freshen look**

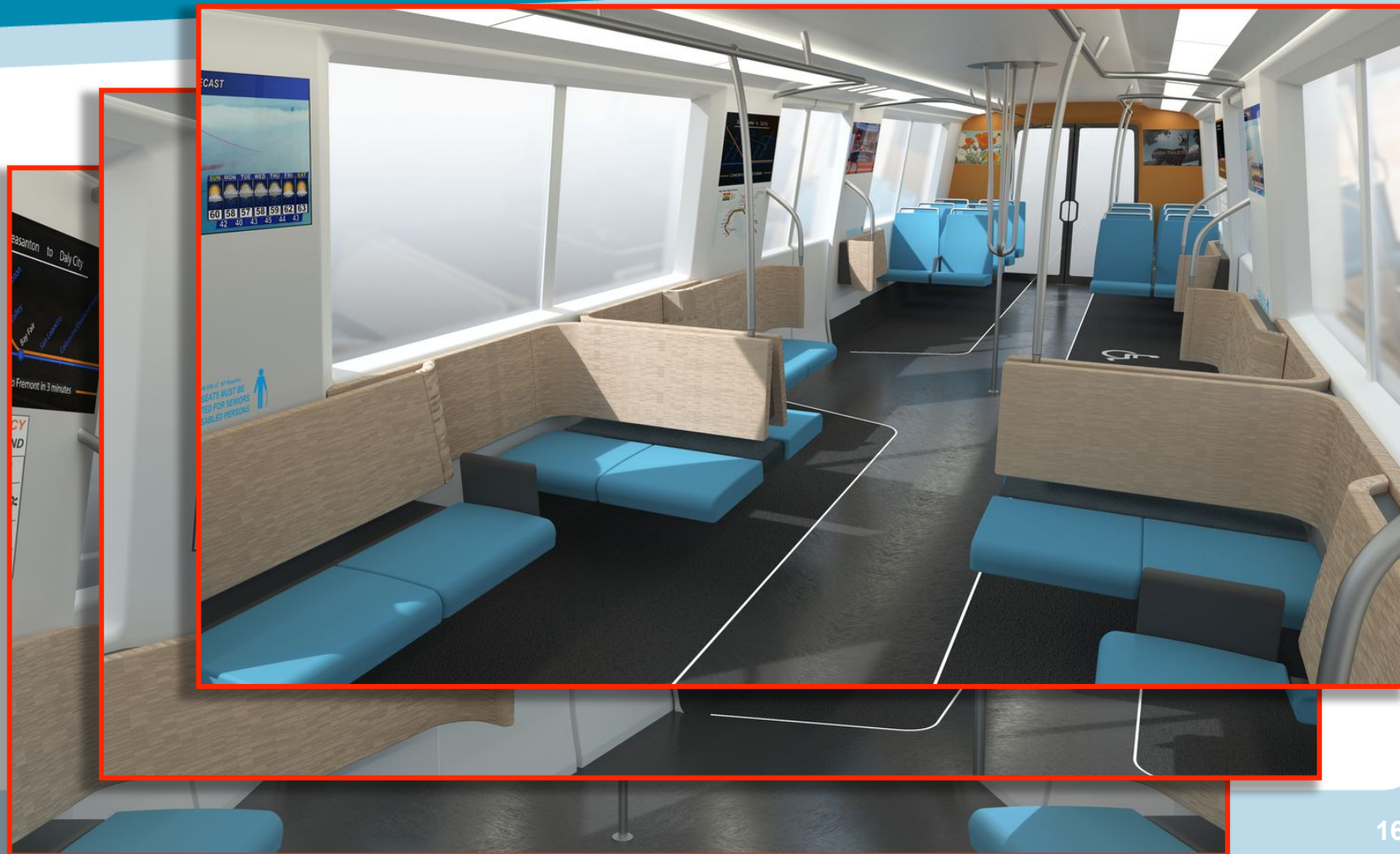


# Interior Design Approach



- ❑ **BART hired BMW DesignworksUSA to provide interior (and exterior) concepts.**
- ❑ **Design concepts aim for sleek, elegant and modern look, while pushing the boundaries of aesthetics and practicality.**
- ❑ **Input from over 9,000 customers has been incorporated into the design.**
- ❑ **Public awareness of project has been heightened, which is needed for project to be successful.**

# Design Concepts



# Thank You!



## Questions?



What route will you choose?