The evolving Influence of Industrial Design in the procurement of Rolling Stock in North America

11 28 2009 Köln Messe, Germany

Cesar Vergara
National principal Design
Jacobs
260 Madison Avenue
New York NY 10016
Cesar.vergara@jacobs.com

You can wait for change to happen to you, or make the change happen in the way you like….

JACOBS

Overview of presentation

- Introduction
- Changing roll of Industrial design in the specification process
- The traditional “Static” method
- The emerging “Dynamic” method
- The Dynamic method is the standard of the future
- The RR, and thus the passenger, are in charge
- How the change alters the dynamic between Car builder, consultant, vendors and customers (RR or Transit Agencies)
- The Dynamic method, an opportunity for all
- Case study The Metro North M8 Vehicle
- Concluding remarks

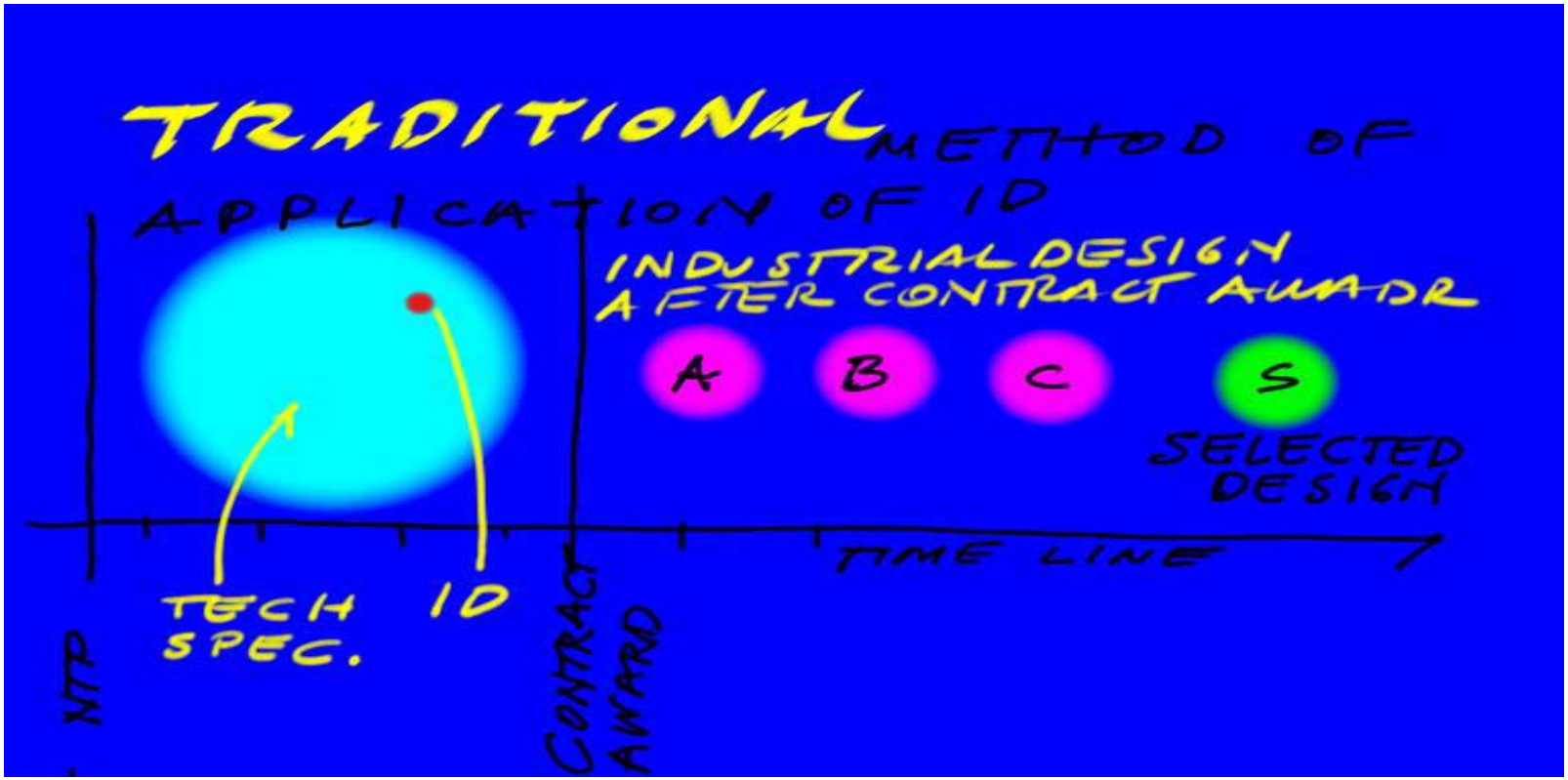
JACOBS

The changing function of ID in the Specification and Procurement process: The traditional or “Static” Method

- Industrial Design of all kinds of passenger rolling stock and motive power in North America for the past decades has been inconsistent or non existent.
- The traditional or static Method has one or two paragraphs buried in the technical specification describing the desired ID to be as “Modern and pleasant as possible..” and ending with … the bidding car builders will provide three proposals for selection by the railroad.
- One is chosen after award and some colors and materials are adjusted.
- The proposals are usually conservative, as no to offend the selection committee made up of mostly engineers concerned with maintenance rather than ergonomics an passenger comfort.
- The traditional “Static “ method gives way to very little innovation.

JACOBS

The traditional or “Static” Method of application of ID



The ID is buried within the technical specification, it becomes important only after contract award and then only marginally

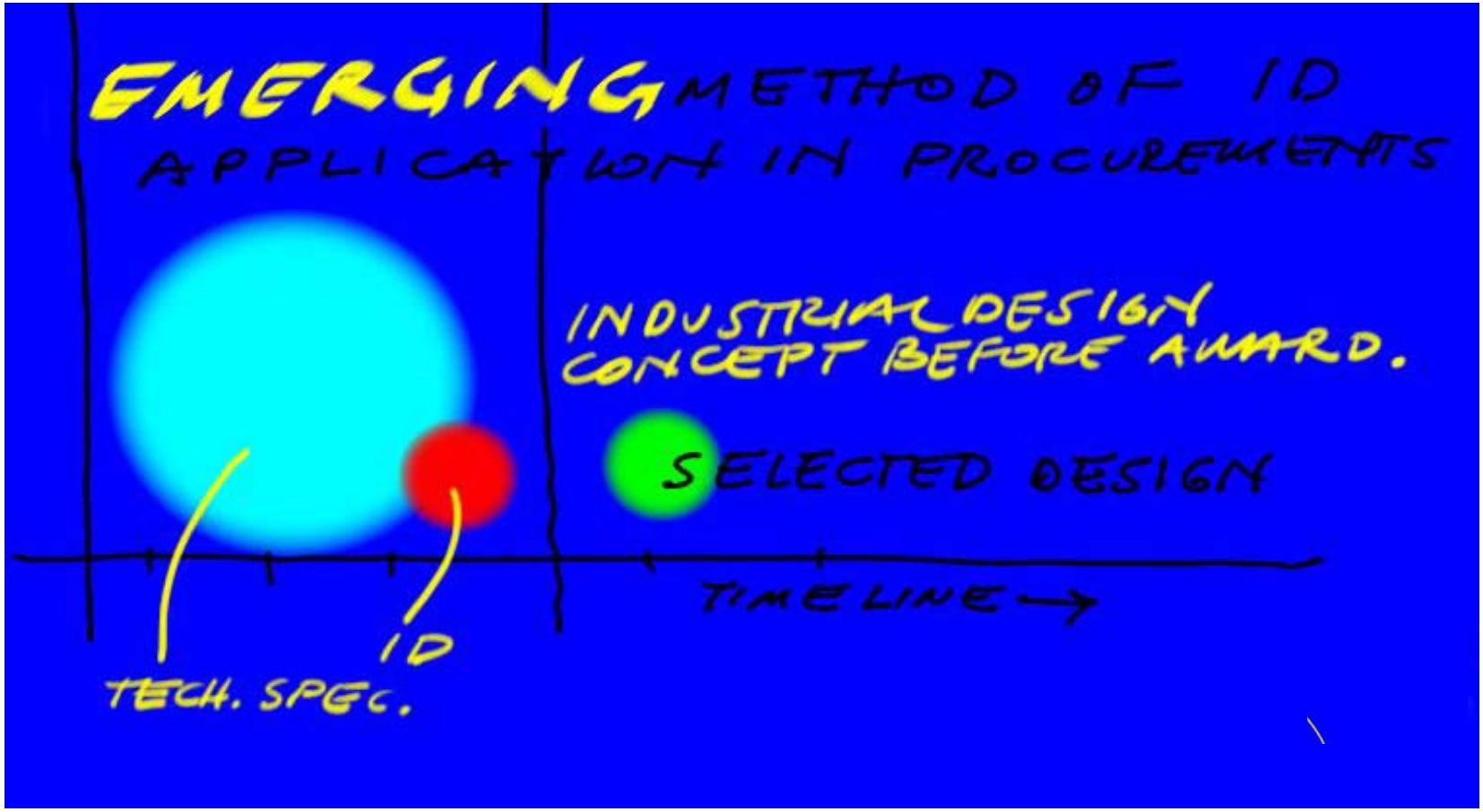
JACOBS

The “Dynamic” or emerging application of ID

- An Industrial designer or design firm is retained.
- The RR conducts customer focus groups based on past experience and expectations of new fleet.
- The Industrial Designer Participates in the focus groups as an observer.
- Findings are not binding, but are used as a backdrop for executives to create criteria
- The design firm prepares concepts than address findings.
- The adopted concept is presented to the bidding car builders before award, as part of the specification.
- Once a car builder is picked the selected concept is used as the basis for the Industrial Design development of the exterior and interior of the vehicle.
- Once the vehicle is in service, pride of ownership by the community, media and employees is evident, bringing about a virtuous circle.

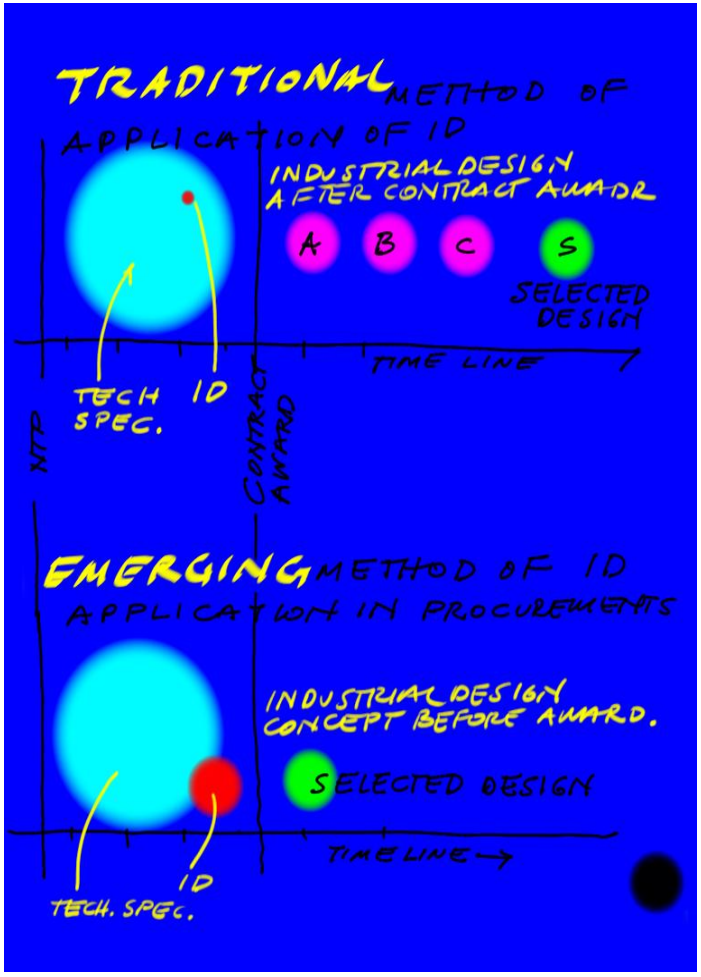
JACOBS

The “Dynamic” emerging Method of application of ID to rail vehicle procurement



JACOBS

Static versus Dynamic application of ID



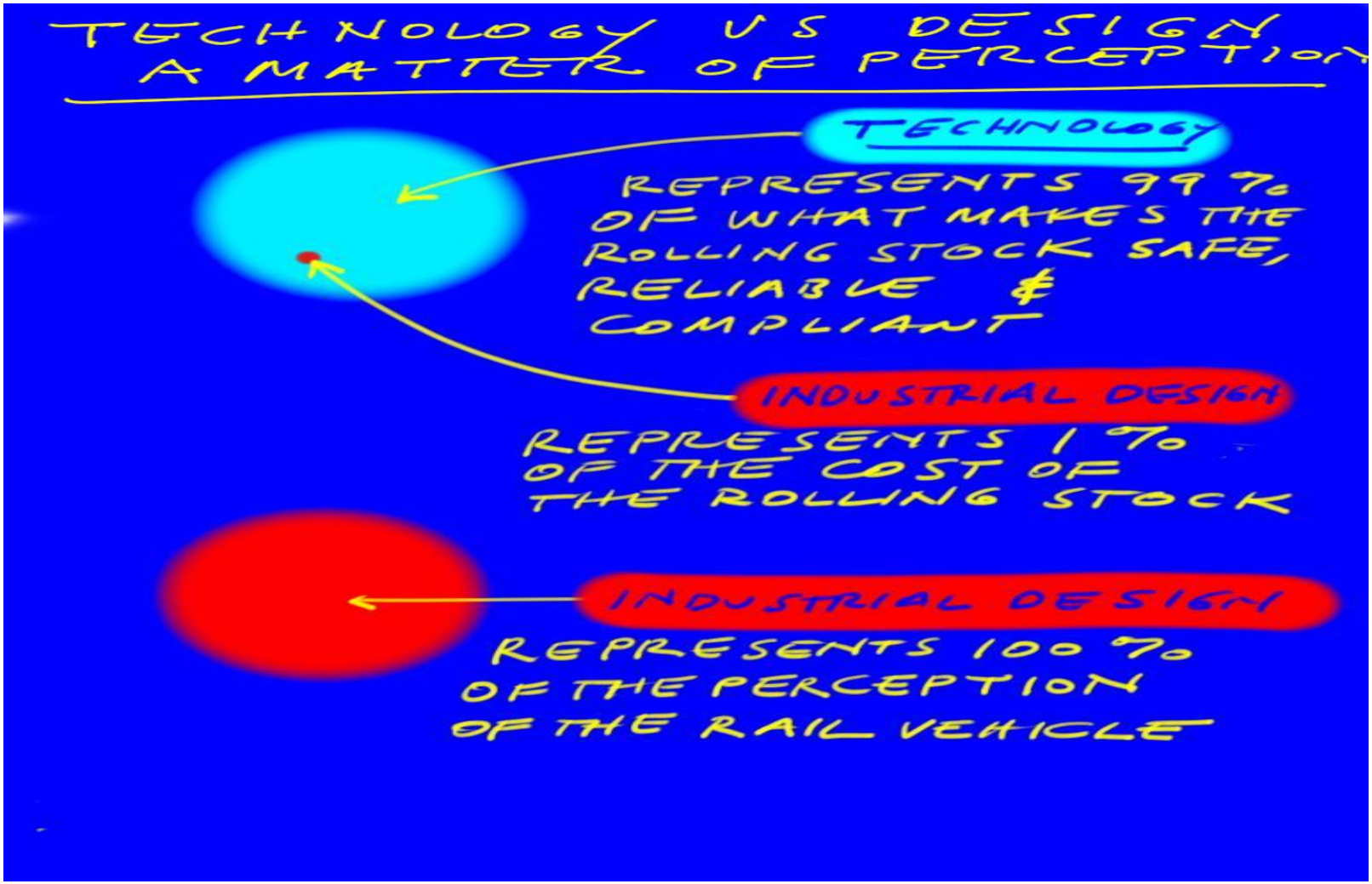
Traditional method yields little or
No incentive to innovation.
Industrial design is used as a repetitive tool of equipment already in existence.

Dynamic or emerging method is driven
By innovation, as the passenger focus
Group findings are applied to the design.

An Industrial Designer is provided criteria
Not design instructions, which leads to
Innovation and competitiveness.

JACOBS

Technology vs. Design, A matter of perception



JACOBS

The Dynamic method is the future standard

- Public transport Referendums are becoming more common in local and state elections. The “Green” revolution is taking hold.
- Grassroots organizations and local media are realizing the advantages of having rolling stock tailored to their community.
- Community involvement , focus groups and public awareness make the appearance of the train an important political issue.
- Community tailored public transport triggers a virtuous circle of pride, better service and lower maintenance.
- Accessibility issues , though regulated by the Americans with Disabilities Act (ADA) still stir local emotions.
- Voters realizing public transport is one of the answers in reducing dependency on oil, politicians know this.
- Passengers want interiors comparable to their automobiles.

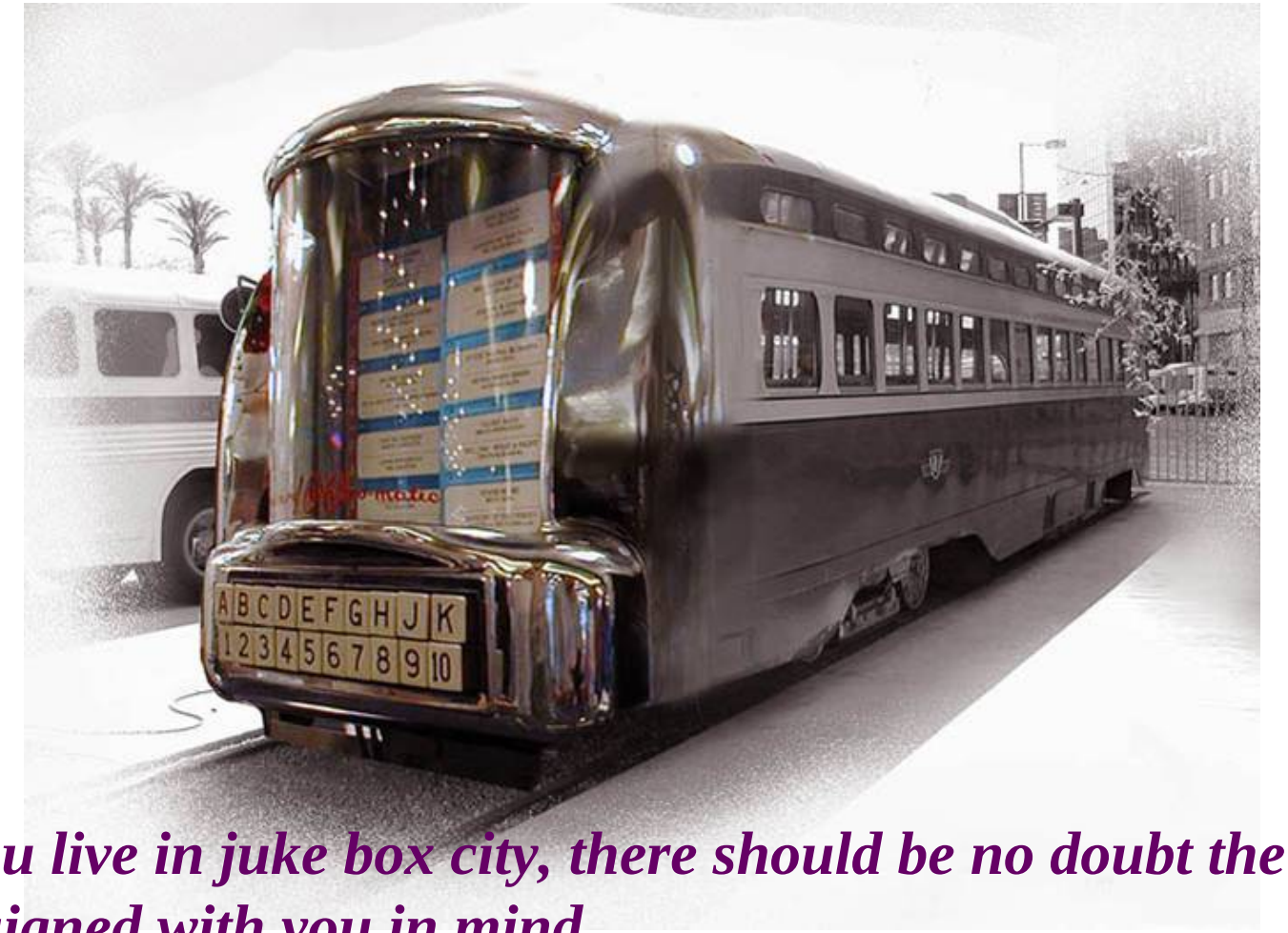
JACOBS

The Dynamic method, an opportunity for all

- Closer attention must be paid by seat vendors, interior material vendors, lighting, flooring or any other material that has the potential for becoming part of the initial concept. Greater awareness by end user becomes important.
- Car builders must be bolder in asserting the importance of design with their potential customers…
- A more innovative interior means greater opportunities for introduction of new materials, systems or services

JACOBS

The Dynamic methods goal: Making the vehicle be specific to the ridership.



So if you live in juke box city, there should be no doubt the railcar was designed with you in mind……

JACOBS

Case study: The Metro North M8 Vehicle

- The M8 vehicle will serve the Metro North New Haven Line, from Grand central Station in New York City to New Haven Connecticut .
- Cesar Vergara national Principal Design at Jacobs responsible for Industrial design concept which was presented to bidding car builders before award
- This is a dramatic departure from the “Static” model which has been used by the MNR for decades.
- The procurement of this vehicles is the largest in the history MNR. Almost 400 EMU Catenary-third rail cars.
- MTA funds 33% while the State of Connecticut funds 66% of the procurement
- Focus groups were conducted based on initial concepts to critique and comment, all findings were applied to assemble a final concept.

Metro-North Railroad

JACOBS

The seats are the focus of great debate

- Seats will have slightly wider middle section.
- Slimmer backs to provide more ample knee room without increasing pitch
- Seat will be engineered based on concept
- Attempt to make the center seat attractive, without making the side seats unattractive
- Easy access and egress. Functional armrest that does not catch on clothing
- Possibility of using fabric seat covering.

JACOBS

Concept for seat will be a road map for engineering the actual product.

JACOBS

New seats, innovative bag racks, curved cove and center ceiling, new vestibules and passive security features will be some of the innovations on the M8

JACOBS

M8 technical specification based on M7, Interior and exterior design new concepts.

M7 front end is clean and functional, fleet uses third rail power, no pantograph or superstructure on cars.

Early concept of M8 based on modified photographs

Visually the challenge was to create the next generation to the M7 but with decisively different exterior and interior.

JACOBS

A front end concept evolved, by linking the front end to the upper part of the car

Existing 25 year old equipment front end showing pantograph support system superstructure

Early sketch concept for M8 front, visually linking the front end the superstructure.
All New Haven line trains are red

JACOBS

M8 final front end concept.

JACOBS

Thank you very much for your attention!

Cesar Vergara
National Principal Design
Jacobs Engineering
260 Madison Avenue
New York NY 10016

cesar.vergara@jacobs.com

Railway Interiors expo

JACOBS