See things differently: interior design from a customer perspective

How customers shape trains.

10.50 am Tuesday 30 November, Rail Interiors, Koln.

Abstract: Rail car interior design has become one of the few areas of vehicle manufacturing where the outcome may represent a significant risk

This paper presents the methodology developed by Creactive to reduce risk and improve timescales when introducing new design proposals.

Introduction

Any rail operator, promoter or transit authority developing a new railway vehicle wants to ensure a successful outcome. With manufacturers developing standard vehicles, the design of a new train interior assumes greater importance for a rail operator. It is one of the few ways to significantly differentiate the vehicle, but is also one of the few remaining risks - as the design of a railway vehicle interior always involves emotion and subjectivity. This has improved in recent years but it still represents a relatively high risk.

The only arbiter of success – ultimately- is the end user; the fare paying customer who may have little or no choice in their mode of transport. But there are measures of success that can be established and the process controlled to a successful conclusion:

- if it is approached in the right way and
- uses brand values and design values to achieve commercial objectives.

Involvement or participation

Passenger consultation and involvement is an integral part of new train investment and development, whatever the type of vehicle. Naturally, some train businesses are better than others in this respect.

Customers may rarely be consulted in the development of new trains as the industry places emphasis on the operational needs of the railway. Safety and reliability for example are absolute values - and rightly so.

The inevitable result is the end user may be dissatisfied with the design solution. Sometimes the rail business does not have the resource.

Whatever the influences, in our experience, it may actually take very little to transform a customer’s negative experience into a positive one.

Approach

The process begins by understanding the brief, the functionality of the vehicle and the commercial motivation behind the project, ensuring that the end user is part of an overall plan. Design should be used at both a strategic and detail-design level to deliver the values the business wishes to communicate to its marketplace.

It is essential the end user is part of the overall project plan and regularly consulted at key stages in the procurement process.

Our work in Nottingham in the UK for a complete LRT system embraces this philosophy. Work with user groups began seven years before the system was completed. Design values were defined through qualitative research, which established very early in the process the key values for the system.

These principles were applied to every part of the system and the brand values for NET were used to shift the traditional rail emphasis to create a position for the new business.

Improving the chances of success

Design is often the glue to hold a project together: most importantly it demonstrates that design-led engineering is both essential and desirable. It is an essential link in the design process as the first principle we endorse is customer-led design which ultimately leads to a second important principle, namely design-led engineering.

Most successful rail businesses manage and exploit these values.

Inclusivity

LRT is a perfect demonstration of inclusivity with respect to disability regulations, although these should not be used to compromise the quality of the vehicle interior. Quite the opposite, the design was influenced but not prescribed by the legislation. The motivation of ‘One design solution which works for everyone’ worked to good effect.

The Nottingham system also shows how inclusive design can embrace high quality design in a cost-effective and rational manner, Our knowledge of the regulatory environment was put to the test: we were responsible for achieving a compliant vehicle under the RVAR. Knowledge of the regulations and how customers use things is an important part of its success in an interior which is open, inviting but functional to cope with the passenger numbers at peak travel periods.

Common values

The principles of an inclusive design approach are easily transferable between different types of vehicle and journey.
To illustrate the point, the principles of the UK RVAR were used in Hong Kong for the West Rail metro trains for KCRC. The RVAR was used as the blueprint for the interior, which is a 14 car corridor train running on a new railway line to serve the Northwest New Territories and the urban Kowloon area and a new boundary crossing between Hong Kong and Shenzen.

The interior may appear unusual to Europeans but local consultation ensures Chinese taste and values are incorporated in the specification of the interiors.

How does this work?

Although they may not look comfortable, the seats are optimised for Hong Kong ergonomics. User trials were undertaken to ensure that comfort values were achieved and, in this case, exceeded. The seats were also manufactured in a way which saved €350,000 of tooling, although the major benefit was the reduction in timescale and lead time.

Design-led engineering has other benefits too.

West Rail Metro Interior

The floor is also unconventional. The curved shape is used to assist passengers whilst boarding and alighting. Mass transit corridor trains must achieve very short dwell times and some of the customers using this train will be unfamiliar with the need to move clear of doorways. The design encourages passengers to enter the saloons where there are more handholds and space for standees.

It has been successful: West Rail is a benchmark for the new metro systems that are being developed throughout Southern China. It is another type of rail vehicle interior where design is used to differentiate the product. It is also unusual as it has both First and Standard Class cars, which use common interior components, the major change being the seats and number of doorways. Comfort levels are high, for both classes.

Comfort

The comfort and overall ambience of a vehicle is shown to involve – more or less - twenty values which vary in importance and ranking, depending on the type and length of journey. Of these twenty values, the top five almost always relate to the seat. The problem most train seat manufacturers have is that they do not work with the end users. Uncomfortable seats are sometimes used because they meet other parts of the train performance specification.

Motivation

For Compin, Creactive created a new commuter seat for journeys of up to one hour duration. Reducing the foam content allowed us to create a thinner seat, gaining valuable leg room (particularly on refurbishment). It also has easier access, improved lumbar support, superior fire-performance and easier maintenance, making it one of the best seats in its class in this respect. Its maintenance is simple, as the train crew can replace damaged trim in short timescales, access being achieved by the removal of two security fixings, quite important when you are maintaining a train overnight in a depot.

The strong architectural character of this seat is further endorsed by the wide variety of trains where it is being specified, from local stopping trains on rural lines to inter-urban metro trains on busy commuter routes. It creates a significantly different ambience for the cabin interior.

User groups almost always identify requirements that are difficult to predict.

The ability to secure a child seat on a train was raised as a complete point to point journey is not the easiest of tasks. Again, a user group identified the demand for such a facility, particularly for parents or carers travelling with two or more children. The issue of a ‘seamless journey’ is an important motivation for improving the whole journey experience, and has significant implications for the design of the vehicle interiors, but this is outside the scope of today’s paper.

Satisfying everyone involved

These values (as we have shown in LRVs, Metros and Seats) can significantly change customer perceptions of a vehicle.

In an IC or HS train, subjectivity increases as the interior is judged (by customer satisfaction) on the seat and immediate environment.

However, we must also satisfy the applicable regulations, brand + design values as well as the operator’s commercial model to ensure the solution is well resolved and sustainable.

Experience

The experience of the travel environment should be both memorable and enduring, these are important motivations and are the strategic elements mentioned at the start of this paper. Design is an often under-utilised resource and the greatest value may be achieved at the earliest, formative stages of the project, particularly in businesses where design has not been used to define the specification.

The final images show how these values (as we have shown in LRVs, Metros and seats) can change the perception of a vehicle, particularly for an Inter City train. The principles are identical, but the emphasis and detail have to reach a higher level of customer expectation. It goes without saying that we must meet the applicable regulatory regime, as well as the brand and design values defined in the commercial model by the operator. There is also pressure to match the qualities found in other forms of transport such as cars and aircraft. Whilst these are perhaps natural comparisons for customers to make, there are a number of key differences with these other forms of transport that make rail travel unique and special.

The reality

Customers assume the train is safe, punctual and reliable.

Designers are trusted to produce enduring, comfortable spaces that meet the needs of all customers.

Naturally we advocate the use of strong brands and the strategic use of design when planning new trains, but also believe that it is time to raise the quality of this offer, to a more prescriptive level.

Delivering the promise

Greater influence from the end-user may require changes in rail business relationships and a need to develop responsibilities to achieve success.

This should result in new levels of customer amenity and appointment but is will require a change in a number of relationships and responsibilities to achieve success. If it is successful it will also be matched through increased patronage and revenue.

This approach works, but design will not succeed in isolation. The operator has to deliver the most important aspect - an excellent level of customer service, consistently delivered, every day.

Summary

As we highlighted in the introduction, vehicle interiors create an unnecessary amount of risk for a rail business. This is often caused by the lack of appropriate components (for example, seats) to meet the demands of the railway and its customers. We propose a number of simple measures to reduce risk and timescale, whilst improving the quality of the offer:

Create long-term partnerships between key suppliers and train manufacturers

Rail businesses should specify interiors with the proactive involvement of existing customers and prospective customers.

Initial customer research should be supplemented by in-service evaluation to continually monitor changing requirements.

A team should be set up to review the design from a wide-ranging perspective (commercial, technical, maintenance and cleaning personnel and, most importantly, end users)

Design management should be applied throughout the process.

Trains, rightly or wrongly, are compared to automotive products, which have much greater R+D and design resources. Design is an area where train builders and train operators can (at little or no risk) raise the quality of their offer. It is probably the simplest and most effective improvement a rail business can make as an investment.

We know it works – the case studies are good examples – the endorsement comes from the end users. We know because we work with them and ask them.

Endorsement

We use customer feedback to endorse the approach.

"The new trains are great, make the old ones just as good".

Chiltern Railways Inter City commuter, male 35-44, when surveyed about the refurbishment of their older train fleet.

Guided by the customer, shaped by design.

Neil Bates
Director
Creactive Design