

THE A/B PROJECT:

RedCabin Inspires Collaborative Craftsmanship
at SEKISUI KYDEX



When attending high-profile conferences, most expect to network and come away with a few insightful ideas. What is not expected is to walk away with a plan and partners to fulfill an airline experience manager's wish list.

But the 2019 RedCabin Aviation Summit isn't for those who want a typical conference experience. Founded by **Monica Wick**, CEO, **RedCabin** is an exclusive aviation summit held twice a year which includes the best in the industry. The summit provides unique round table platforms to establish and renew relationships in the aviation interiors market.

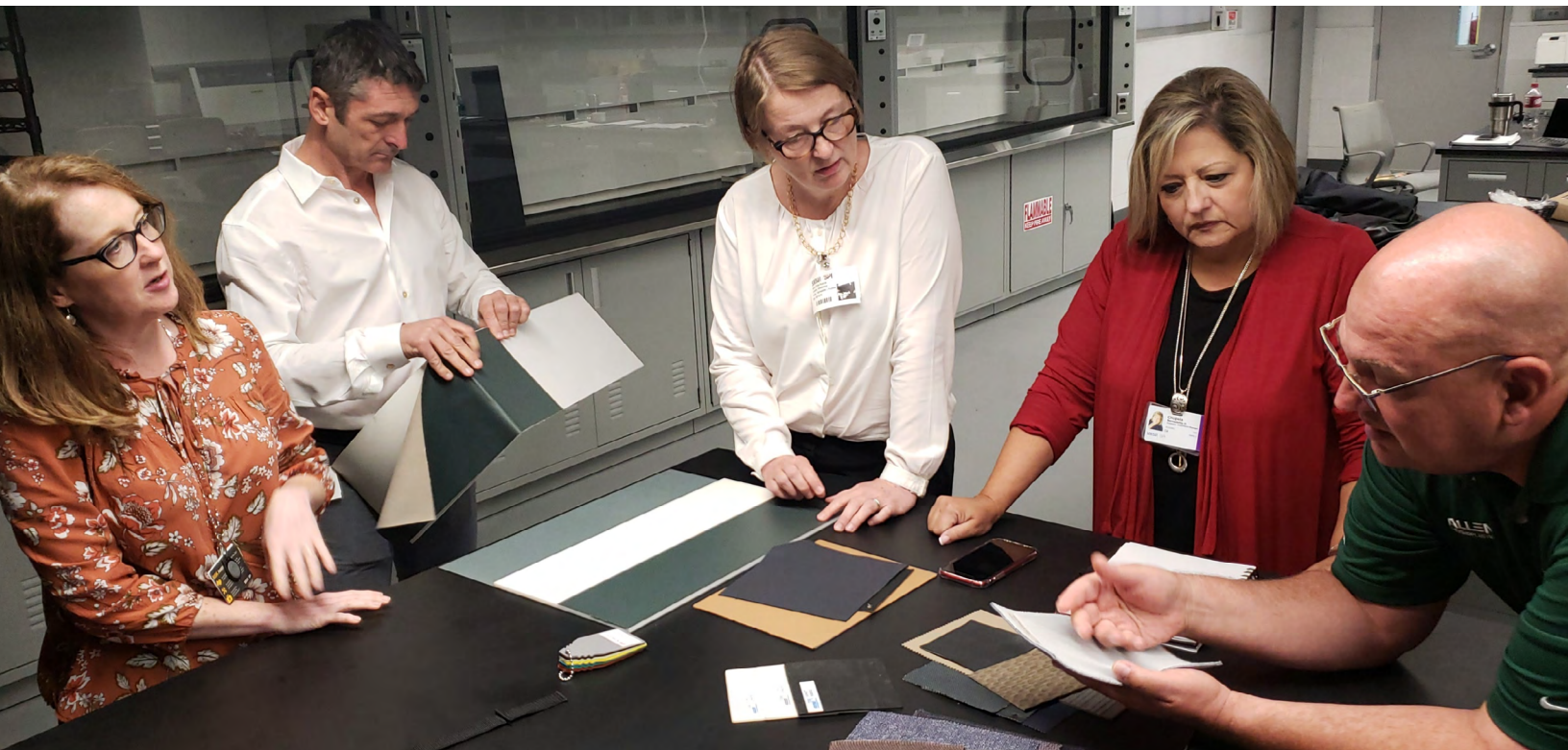
One platform featured a panel focused on how seat OEMs could help airlines innovate aircraft seating and interiors. The panel was asked questions relating to the next generation of passenger experiences and what would be on their wish list required to fulfill those experiences.

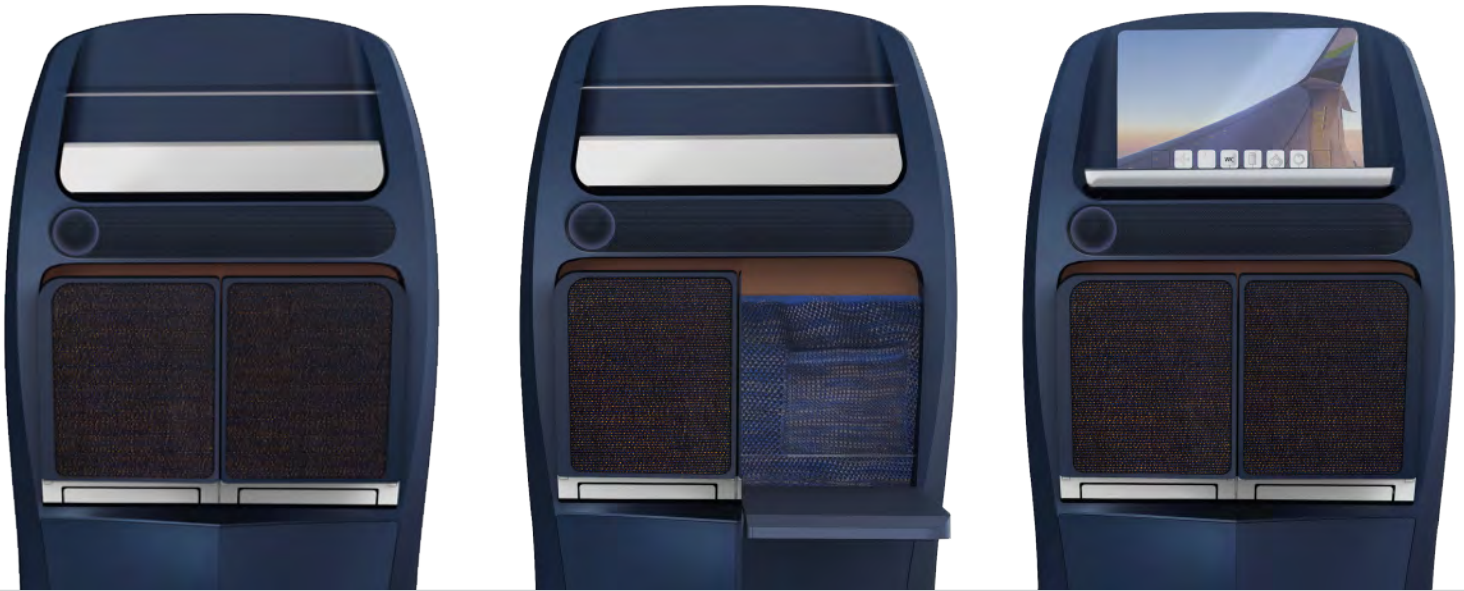
The audience listened as **Matthew Coder**, Onboard Experience Manager at **Alaska Airlines**, detailed his dream economy class seat. It would feature three tray table variations: one for drinks, one for snacks, and one for work. The wish list included a "super widget" capable of informing passengers of everything from the name of the captain flying the plane and their credentials to lavatory availability. Other widgets would include the aircraft type and history, where the plane is in the takeoff lineup, cabin pressure and temperature, and even where

a passenger's pet is in the cargo hold. Coder finished his wish list by saying it would be great to achieve it and innovate for the economy class, but that this was years in the future.

Ronn Cort, President & COO of SEKISUI KYDEX, saw an opportunity to bring panel members, **Elina Kopola** and **Patrick McEneany** of **TrendWorks**, together with **Matt Malejko**, appLab™ Consultant, **Rick Wood** of **ROLLON Corp**, and **Bernadette Chupela**, SEKISUI KYDEX's Customer Experience Manager, to explore the possibilities of the appLab™. This was a prime opportunity to take dialogue from the RedCabin Aviation Summit to the next level by delivering a seat back prototype a few years earlier than Coder expected.

Not wanting to be held back before truly beginning, SEKISUI KYDEX wanted to ensure that the materials for this project were already found in the air. Recognizing that frequently great ideas never take flight in the aviation industry if they aren't presented in a flyable form, the economy seat project was executed in a way that although it might not be on the next flight you take, it is fully capable of moving to the next stage of flight compliance. The team set out to show that innovation and new ideas are possible in an industry looking to elevate ideas into reality. TrendWorks' Kopola and McEneany were inspired by Coder's wish list and started brainstorming for a dream economy class seat.





THE A/B PROJECT

The team drew from the idea of A/B testing for successful innovation and combined it with one of Alaska's most well-known features, the Aurora Borealis. Just as the energy at the RedCabin Innovation Summit excited attendees, the energy from the aptly named A/B project crossed continents and built bonds, unifying everyone who had a hand in the completion of the Aurora Borealis Seat Back.

Kopola and McEneaney introduced different elements of Coder's wish list, and created seven wonders of economy class seating. These conceptual designs introduced split tray tables, adjustable heights, textures, and opportunities for passengers to be fully connected with their devices while onboard. The team chose TrendWorks' first seat back iteration, which incorporated most of Coder's wish list. With the expertise of the appLab™, TrendWorks, and Malejko, the team was ready to turn a concept into reality. While the team isn't comprised of seat OEMs, they leapt at the chance to push boundaries in the appLab™ while building on past and present innovations in economy seating.

Concept 01 introduced a split tray table designed for touch and flexibility, a textured modular insert, an appBar full of information for the passenger including coloured light indicators, a media easel for personal devices, and a multi-pocket pouch for in-flight essentials.

"I wanted to take all the very diverse passenger needs into consideration to create something that was comfortable, yet practical. The combination of the beautiful pearlescent finish (of KYDEX® Thermoplastics) with some tactile, more crafted elements to enhance the passenger experience was essential. The contrast of the 3D-knit fabric with the pearlescent seat shell was intentional to make the Aurora Borealis Seat Back feel more human," explained Elina Kopola, Founder/Director of TrendWorks.

While TrendWorks' Concept 01 had determined the basic design for the project, Colour, Materials and Finish (CMF) had to be decided early to ensure they were received in time for the building phase of the project. As with any project design phase, Kopola and McEneaney drew inspiration from multiple elements. From textiles to material finish, the design possibilities were endless. They pulled from Amazon's Alexa, recent fashion shows, and the automotive industry to build the Aurora Borealis Seat Back design aesthetic.

Designed with the passenger in mind, the 3D knit pocket from **Kobleder** includes multiple ways for passengers to arrange their personal items. The process of nesting and customizing the area for comfort, referred to as "micro nesting," is supported by this unique pocket design. Passengers can get comfortable in their space with a spot for accessories to rest securely during travel.



To add threads of navy, white, and khaki to the tapestry woven from RedCabin, the team also created colours (Arctic Lustre, Sneaker White, Night Sky, Salmonberry, and Glacier Blue) to echo those in Alaska Airlines' newest lounge in Seattle, WA, with assistance from designLab®.

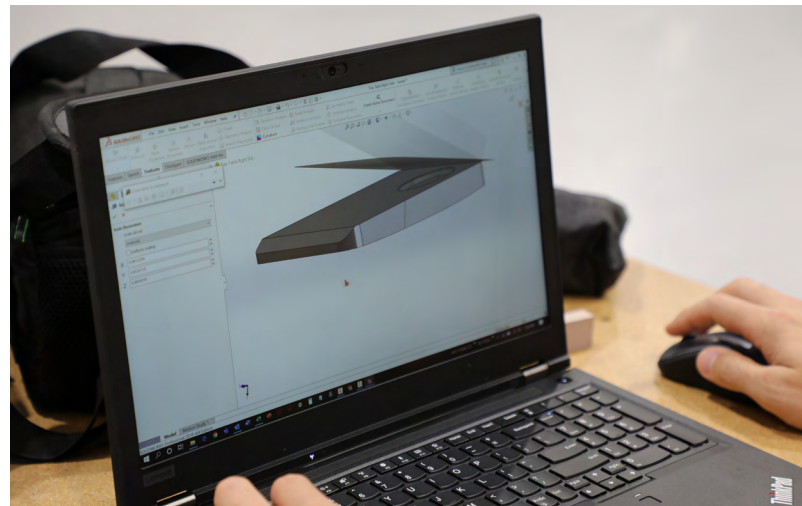
SEKISUI KYDEX's designLab® specializes in custom colour creation and quick turnaround. Kopola and McEneaney provided inspiration for the designLab® to create a custom palette for review. As any designer will attest, seeing colour in person is necessary to truly choose the colour best for any project. Kopola received several colour creations at her London office, just a few short days after sending over her colour inspirations.

The colours of the thermoplastics were amplified as the team reviewed textiles of leather, mesh, and suede. Adding an element of touch to enhance the passenger experience was important to the team. Utilizing **SEKISUI Alveo** foam and **Rohi** fabrics on the back of the seat tray design, passengers could feel comfortable in close quarters while their tray tables were in the upright position. Textiles from Kobleder were also chosen for the 3-D knit literature pocket showcased behind the split tray table. Passenger comfort was not only at the forefront of the CMF design, but also in the engineering phase and throughout the more technical aspects of the seat back.

BLUEPRINTS TO BLUE SKY

The A/B Project jumped from blueprints to forms the team could actually touch and refine. A seat form made of industrial foam from **MachineHistories** provided the base for the next few months of innovation. SEKISUI KYDEX's appLab™ was the playground, with two CNC routers, a full-size pressure former, and a bevy of precision equipment at the team's fingertips.

The project shifted to technical elements beginning with the tray tables, where the team moved forward with a split tray table design. While one of the smaller parts of the Aurora Borealis seat back, it played to some of Coder's most important, non-technology-based passenger



experience must-haves. Each tray table could be used separately or simultaneously, making it easier to juggle the electronics and personal items many passengers bring on flights.

"The split tray table was a decision made really early in the process, and one that was completely crucial. It's what gives the seatback more of a furniture feel. It also allows the passenger to feel more in control of their own environment," explained Kopola.

This divided tray table on a non-reclining seat back required custom mechanisms. **ROLLON Corp** fabricated the hardware while machinery company, **Berwick Machine, LLC**, worked with the team to customize the hinge mechanism. The two pieces allow the split tray table to move with ease.

"The hardest part was getting it all together with the final fit and finish. The most fun but the challenging part is taking concepts and making them function. Going from a drawing to a reality while trying to foresee any issues that may come up has been part of my role for the past 30 years. It was interesting to do this as part of a larger team in the appLab™, but everyone wanted to help solve problems," said Matt Malejko, appLab™ Consultant.

Shawn Gum, appLab™ Applications Engineer, detailed specifics about his role in the project: "I've learned so much with the CNC machines over the past couple of months with the A/B Project. From revising a 3D model through **SolidWorks**, finding the origin, and then creating and refining the tool path to cut molds, it's been a journey of trial and error, but one that I've enjoyed. The more I struggled with the process, the more I learned and the easier every task became. It was an awesome exercise for our first project in the appLab™."

While the team and appLab™ are mighty, they couldn't do it alone. Led by SEKISUI KYDEX's Customer Experience

Manager, Bernadette Chupela, pulling in partners from the supply chain who could work at accelerated speeds was paramount. The seat back part was one of the most pivotal pieces for a successful project. While appLab™ was able to CNC mill out the smaller parts on site, such as the tray table, they needed help with the larger main seat back.

With renderings in hand, **Orange Packaging** milled out the seat back and modular insert parts from REN and aluminum material. Using this material, along with Orange Packaging's expertise, ensured a quick turn around and clearly defined parts ready for thermoforming.

"This is the first time we've officially machined tools to use in the appLab™'s thermoformer for a project. Everybody took an active role with the thermoformer, pressure former, and vacuum forming, and changing tools out for this exercise in rapid prototyping. We designed, created, and put together the Aurora Borealis Seat Back in about six months, when in the aviation industry, sometimes that process can take up to two years. The A/B Project was different as we were working on a project as it shifted. We took designs and worked on the concept as we went, so the troubleshooting happened in real time, not after the fact," said **Matt Kline**, appLab™'s Aviation Applications Engineer, when explaining the project.

Simple parts with flat surfaces weren't going to make the impression the team wanted. Because texture is an important part in aviation interiors, adding dimension to the modular insert through bespoke texture was key. The team designed a texture which would also camouflage inevitable wear and tear the part may encounter. **Custom Etch** collaborated with **Becky Gallup**, SEKISUI KYDEX's Infused Imaging™ Senior Graphic Artist, to laser etch the part in less than a week to deliver the texture to the team.





While the thermoforming mold parts were in development, Coder's super widget was also coming to light. It became the basis for the Aurora Borealis Seat Back's appBar, a one-of-a-kind creation by **Aeolab**. The appBar gives the Aurora Borealis Seat Back an opportunity to respond to the information that passengers need, and includes a light indicator fueled by an exclusive app. TrendWorks' McEneaney asked the group: "How can we create a digital feature that helps the crew and passengers communicate well, especially since the crew is the primary point of interface when a passenger boards the plane?"

The answer? The appBar, which features no-fuss icons for the plane's trajectory, meals, restroom availability, luggage, and even a deep breathing reminder, depending on passenger preference. Each icon will subtly flash on the LED indicator with a red, blue, or amber light to signal "no," "yes," or "breathe," respectively. The design included layering KYDEX® Lumina, **SEKISUI Voltek** foam and **Tapis** fabric to bring softness to hard technology.

"We wanted to address Matthew Coder's request to create a new opportunity for interaction between the flight, crew, and passenger. The vision was for a more engaging overlap between the passenger's own devices and the seat itself. Rather than providing a simple dock for passengers' tablets or laptops, we wanted their own devices to communicate to the seat, and the seat to communicate back to them. The passenger can receive information from the plane as needed without it being overly bombastic. When you have 170 passengers on board asking questions through the appBar, you don't want to light up the plane like Las Vegas. So we built in features that are subtle and make it more human," said Patrick McEneaney.

The Aurora Borealis Seat Back design includes a custom media easel made of KYDEX® 6503 in Sneaker White, which can be used as a device holder or folded out of the way to make efficient use of the passenger's space. This media easel leaves the main tray tables space for other items.

COLLABORATIVE CRAFTSMANSHIP COMPLETE

The Aurora Borealis Seat Back had all the elements needed to fulfill Coder's wish list. Over six months, they had collected fabrics, connectors, technology, thermoplastics, forming tools and molds, foam, and much more to build the prototype. The team encountered challenges as they worked to custom fit all the pieces of their puzzle together, but by utilizing the appLab™ and designLab® resources, they were able to construct their desired Aurora Borealis Seat Back prototype.

"It's a full size, fully functional model we created in under six months. That speed is something that is impressive. It was the largest challenge coming out of the discussions at RedCabin: We needed to break down silos, share ideas, and move quickly in a more iterative process, but at the end of the session, many people were scratching their heads saying 'yeah, but that will never happen.' Having the opportunity to be invited to work together on Ronn's vision, to show them, was the most important thing to us throughout this process," said McEneaney of TrendWorks about the rapid prototyping of the Aurora Borealis Seat Back.

SEKISUI KYDEX, Kopola, McEneaney, Malejko, and Wood were pleased to share the final Aurora Borealis Seat Back prototype at the RedCabin Aviation Summit on

December 4, 2019, in London. Presented on a custom pedestal outfitted by **Bloomsburg Carpet**, the Aurora Borealis Seat Back display will include an iPad for attendees to experience the unique features of the seat for themselves. This project has been an ambitious, but successful, journey.

“In response to the seatback prototype, Coder said he was ‘overwhelmed,’ and stated to the audience that ‘collaboration is the accelerant of innovation.’ When a delegate posed a question about whether having a pocket hidden behind the tray table meant people would be more likely to forget their valuables, the creators responded that there could be a sensor which flashed red if it detected there was still something inside the pocket at the end of the flight. This could be an indication that further collaboration is underway – perhaps a second version of the prototype will be showcased at the next RedCabin event.”

For SEKISUI KYDEX, the project is our guiding star for the customer experience when visiting our appLab™ and designLab® Innovation Centers. We will continue to define collaborative craftsmanship through rapid prototyping and shorter lead times from iteration to realization.

“The most rewarding aspect of the A/B Project was to see everyone using their specific talents to collaborate on the Aurora Borealis seat back. Having all of the partnerships and vendor relationships come together for one common goal with an ambitious vision and aggressive deadline is the epitome of what the appLab™ is for our customers—a common ground and resource to rapidly iterate,” said Chupela.

In a concluding word? “Elegant,” says Kopola, “from the lines of the seat back to the contour of the seat. Contrasting the tactile and elegance in the Aurora Borealis Seat Back is such an accomplishment for the team.”

While there is no official plan for a version 2 of the Aurora Borealis Seat Back prototype, we are excited for the possibilities and challenges of other future collaborations.

SEKISUI KYDEX thanks all of our valuable partners who made the A/B Project a success: Aeolab, Bloomsburg Carpet, Berwick Machine, LLC, Custom Etch, Inc., Kobleder, Lantal, Matt Malejko, Orange Packaging, MachineHistories, RedCabin, Rohi, ROLLON Corp, SEKISUI Alveo, SEKISUI Voltek, Tapis, and TrendWorks.



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the accelerant
of innovation.”*

Matthew Coder
Onboard Experience Manager
Alaska Airlines