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Data & Monitoring

Esri

Helping Esri to Think Like a Railroader

After an illustrious career working for CSX's GIS team, Erik Henderson was headhunted by Esri to take on its newly created position of Director Rail Industry Solutions. We spoke to him about his transition from railroader to railroad vendor, career highlights so far and his plans at Esri...

Railway-News: When and why did you take on this role at ESRI?

Erik Henderson: After a long career in the railroad, I went to work for a start-up LIDAR company out of Australia, trying to bring their technology here to the US. At that point I really wanted to get back to my GIS roots, and someone from the Industry Solutions Team here at ESRI reached out to me, as they were looking for a rail expert to come join their team for the first time.

I wanted to stay connected to the industry, working to help railroaders understand the value of GIS, so it was the perfect fit. I've now been here over a year.

RN: Why do you think they approached you?

EH: I've been using their products my whole career – essentially, I've been an Esri customer for over 25 years! Plus, I have a history in the industry. It's a small one in the US, there are six major railroads and then Amtrak is our one passenger line, so all the railroads have to work very closely together.

For example, when positive train control was created about 15 years ago, it required all of our GIS departments to work together to build a joint

Erik Henderson,
Director of Rail Industry Solutions, Esri

database. That really transformed North American rail, and it transformed our relationships because we had to meet up, agree on a product, process and project, which took years of collaboration to develop. So along the way, I created incredible relationships with the other GIS managers and all the other railroads.

RN: As an industry veteran, what have been your career highlights to date?

EH: It comes back to positive train control. When I started at CSX in 2006, I was an analyst. I made maps and that was the extent of GIS.

Then, in 2008, a railroad incident in California triggered positive train control to be signed into law. This required all trains in North America to have an onboard database so they understood exactly what was on the tracks in front and behind them, and locomotives had

to be intelligent enough to know whether they had the authority to move on that track.

That required an incredibly accurate base model database of the assets and infrastructure along the rails. So, we went from this small, mapping department to a federally mandated data management team. When I was hired, there were only half a dozen employees. At our peak, we had a team of over 110.

In the process of developing that database we were able to purchase LIDAR to start mapping our network and buy GPS devices and drones so that our field workers could maintain that data. Some people called them tools, others called them toys. We were the envy of the railroad, because we had this exciting tech, and it was great.

That requirement to make GIS the system of record really transformed the need and necessity for our department, and facilitated a great investment in GIS technology. In return, the railroad got an extremely accurate map of all its assets network-wide, which offered many benefits, especially in terms of managing inspection and maintenance.

RN: What do you think your experience enables you to bring to Esri?

EH: I see my role as making sure the railroaders get as much out of our software as the utilities, government agencies and commercial industry customers. My job is to think as a railroader so that our products reflect their needs.

I've had a flood of product teams, account managers and marketing folks here reaching out and wanting to use my knowledge to help them understand their rail customers' needs. It's great to have my experience called upon and put to good use.

RN: So now you've settled in, what are your plans? Are there particular projects that you're working on?

EH: One of the railroads' challenges is the vastness of their networks. If you're a water department, you might serve a town or city: you could get in a car and drive to your entire network that same day. But the main railroads cover half of the country. At CSX, for example, there might be a construction project in Nashville, but you're based in Jacksonville.

This technology is needed in order to constantly scan these long distances and has provided incredible amounts of data. The term big data is thrown around a lot, and rail is certainly not lacking big data. We have thousands of trains collecting data all day, every day. We have all of those switches and signals and localised sensors collecting data. The industry literally creates terabytes daily.

I'm hoping to help Esri understand how we can start to analyse this in ways that benefit the railroads. We have decades worth of information around broken rails for example. Let's use GIS as a predictive analytical tool to say when we think the next rail break might happen.

Using historical data like the rail weight, installation date, weather conditions, tonnage of railcars that have gone over it and whether it's had any repairs, we can work out when it's likely to break. This knowledge can help railroads to better know where to focus their maintenance or replacement work when they're dealing with over 20,000 miles of track.

We're now looking to develop predictive analytics products that enable them to make the most out of this information, and so I'm currently working with colleagues to explain what to look for.

Unless you work in the industry you probably couldn't pick out a railroad switch or gauge, so I'm explaining what these things look like, their characteristics and variances, so they can write tools to extract those assets out and analyse them against standards.

RN: What are you most excited about working on at ESRI?

EH: It's using advanced technology like drones and LIDAR, but also being able to add value to the stockpile of data railroads have. Together we can make better use of this.

I also want to build more of a sense of community with the railroad industry. I want Esri to engage with them more closely, but also connect companies, both nationally and internationally, in order to share challenges, knowledge and solutions. Many of our problems are similar whether we're in Europe or the US, so I hope to bring our community closer together.

For more information visit our website **www.esri.com** or click **here** to contact one of the team.