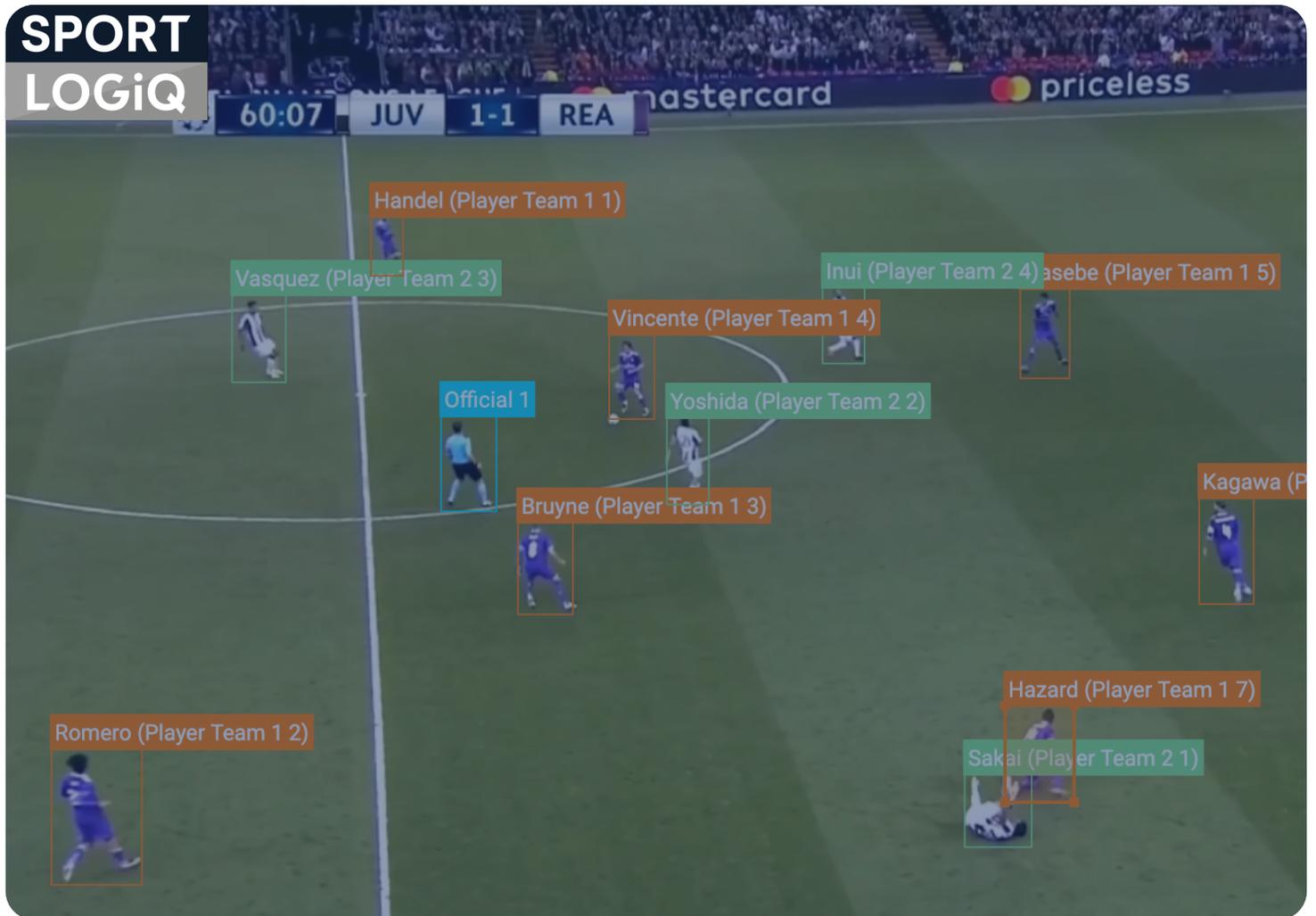


CASE STUDY

Reducing Model Error with Data Labeling for Sports AI



Introducing Sportlogiq: An AI-Enabled Sports Analysis Engine

How do you save coaches hours upon hours of time spent watching game footage to improve their athletes' performances? For media companies, is there a way to report game highlights and analyses faster? Enter Sportlogiq, a Montreal, Canada-based provider of modern sports intelligence through AI. The company uses machine learning models to track hockey, soccer, football, basketball, and figure skating events like goal scoring, passes, missed shots, and blocked shots, as well as metrics like ball location, player time on field, player position, and more. Sportlogiq technology can report nearly every detail of a broadcast game, with no human supervision and no time lost in playback.



Above: Sportlogiq's analytics tool allows individual hockey players to be tracked and analyzed

The Challenge of Getting Better Data

As with every machine learning initiative, **Sportlogiq** reached a point in its product development in which it had to overcome the problem of precision model training for its soccer analytics software. The model had a persistent low level of error because it was trained on video footage where the model could not confidently identify objects due to unreliable annotations. How could the company generate the high volume of accurately labeled data required to push its high performing model to the next level?

Michael Jamieson, an AI Research Manager at Sportlogiq, knew that to improve their soccer model performance, a full service annotation provider made the most sense.

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We have done annotations in the past with our own workforce, but it takes time away from core business functions. Organizing a separate workforce and scaling it up is also time intensive. We did a cost-benefit analysis and decided that doing it internally didn't make sense.

— Michael Jamieson, AI Research Manager at Sportlogiq

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Developing a Video Annotation Strategy

Jamieson and his Sportlogiq team reached out to Alegion for a proof-of-concept. **“We reached out because we knew Alegion’s software was optimized for video tracking. Our other vendor didn’t have as much software support for video annotation,”** said Jamieson. Together, the two teams discussed annotation requirements and Alegion developed a customized data labeling solution for the sports use case. **“We presented some troublesome scenes to Alegion and we were impressed with the quality of the annotation corrections and the workforce power Alegion could provide,”** said Jamieson. **“Alegion consultants took a lot of time to understand the problem and develop the solution.”**

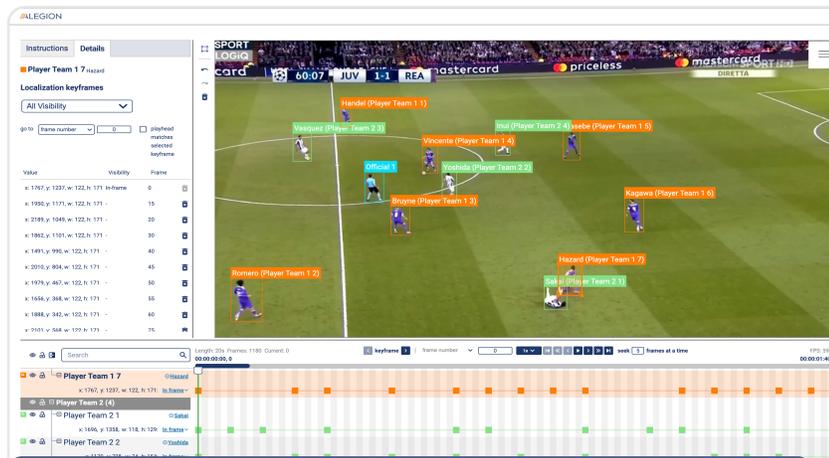
To begin, Alegion worked with Sportlogiq to answer a few questions:

- 1 How many annotations are needed per video?
- 2 Which type of annotations are needed, such as bounding boxes, key points, polygons, lines, polylines, cuboids, or ellipses?
- 3 What classifications are most relevant to the model?
- 4 What is the most cost-efficient labeling process?

Alegion Data Labeling Methodology

Alegion data scientists determined the following:

1. An annotation density of every tenth frame would suffice in combination with entity persistence and object tracking to automatically label all frames in between the manually annotated frames.
2. In the first workflow, a bounding box would localize the ball. In the second workflow, bounding boxes localized players.
3. The ontology would comprise individual player names and the soccer ball to track ball movement and players on a given team.
4. Alegion A/B tested workflows to find one that was most efficient for annotators, which included color-coded localizations for each entity type.



Above: Alegion annotated soccer game footage with individual player names so that Sportlogiq analytics can now reliably track individual players during a live game

“Alegion worked with us to iterate on our process and figure out exactly what we wanted to do. This was a good sign of what was to come.”

— Michael Jamieson, AI Research Manager at Sportlogiq

Leveraging Software to Deliver 4,116,563 Labels in 77 days

Alegion’s dedicated customer support team and workforce for Sportlogiq delivered 4,116,563 annotations in 77 days.



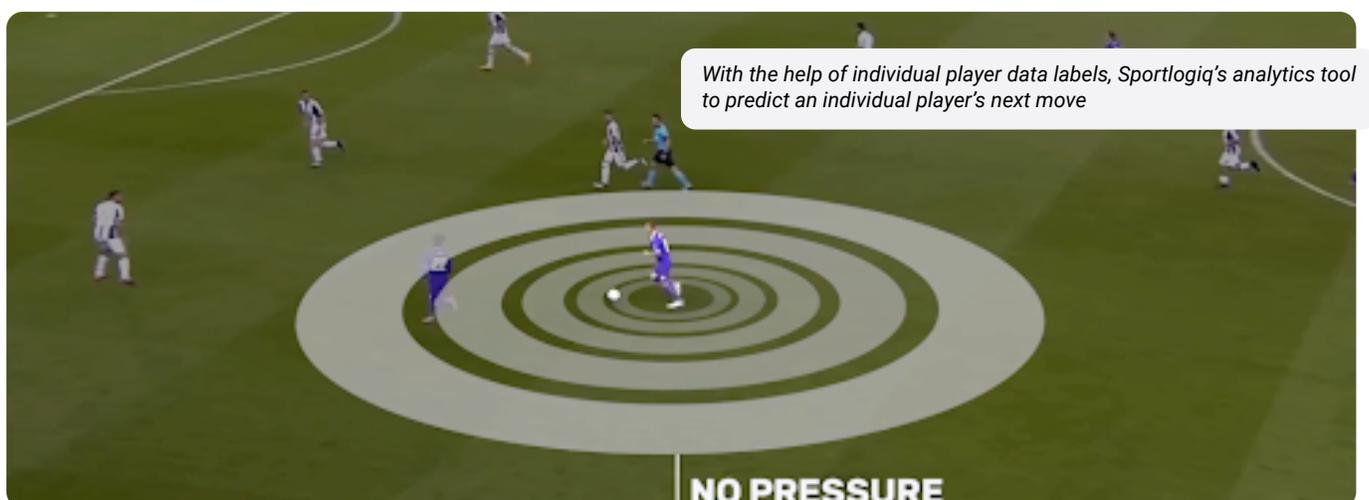
Different software features built into the Alegion Platform, from the Worker Portal to the Review Portal allowed the project to move seamlessly through the data preparation cycle. Alegion annotators each completed an average of 2,545 annotations a day using Alegion’s AI-powered labeling tools and with guidance from Alegion project managers. With worker scoring built directly into the platform, Alegion project managers were able to review any drops in accuracy and retrain annotators as necessary.

“With Alegion as an annotation partner, we don’t have to spend time making a fully featured annotation system. We need this annotation data one way or another, so you all helped us focus on our core expertise by building impressive software that’s automated where possible and well-designed,” said Jamieson.

Reaping the Results: 70% Decrease in Model Error

The high volume of precisely labeled data from Alegion trained Sportlogiq’s model to better understand game play situations where it previously had difficulty, resulting in a 70% decrease in model error. With a soccer computer vision model that has now attained near-perfect accuracy, Sportlogiq is quickly establishing itself as the foremost sports intelligence company in the industry. The company is the data provider of choice for 30 out of 31 National Hockey League teams and the NFL, NCAA, SHL, and AHL. Top media companies use Sportlogiq to get real-time gameplay data.

With higher performing models, the company can build its product suite by including advanced data analytics services like calculating alternative game outcomes or providing player formation data.



A Data Labeling Partnership for Future Innovation

With the success of its first high-volume data labeling project, the Sportlogiq team has now partnered with Alegion to increase model accuracy for football, basketball, figure skating, and soccer video-based annotation. They cite customer service and Alegion Managed Services as reasons for such a strong partnership.



Alegion is friendly, supportive, and willing to dig into the problem to come up with a clean solution. Alegion uses its pre-existing software and workforce to get our project off the ground quickly so we don't have to create a whole other side of our company to get the volume of labeled data we need.

— Michael Jamieson, AI Research Manager at Sportlogiq



Alegion offers data labeling services for sports and for many other industries. To learn more about how **Alegion Fully Managed Services** or the **Alegion Labeling Platform** can address your high-volume labeling needs, request a consultation with a data expert.