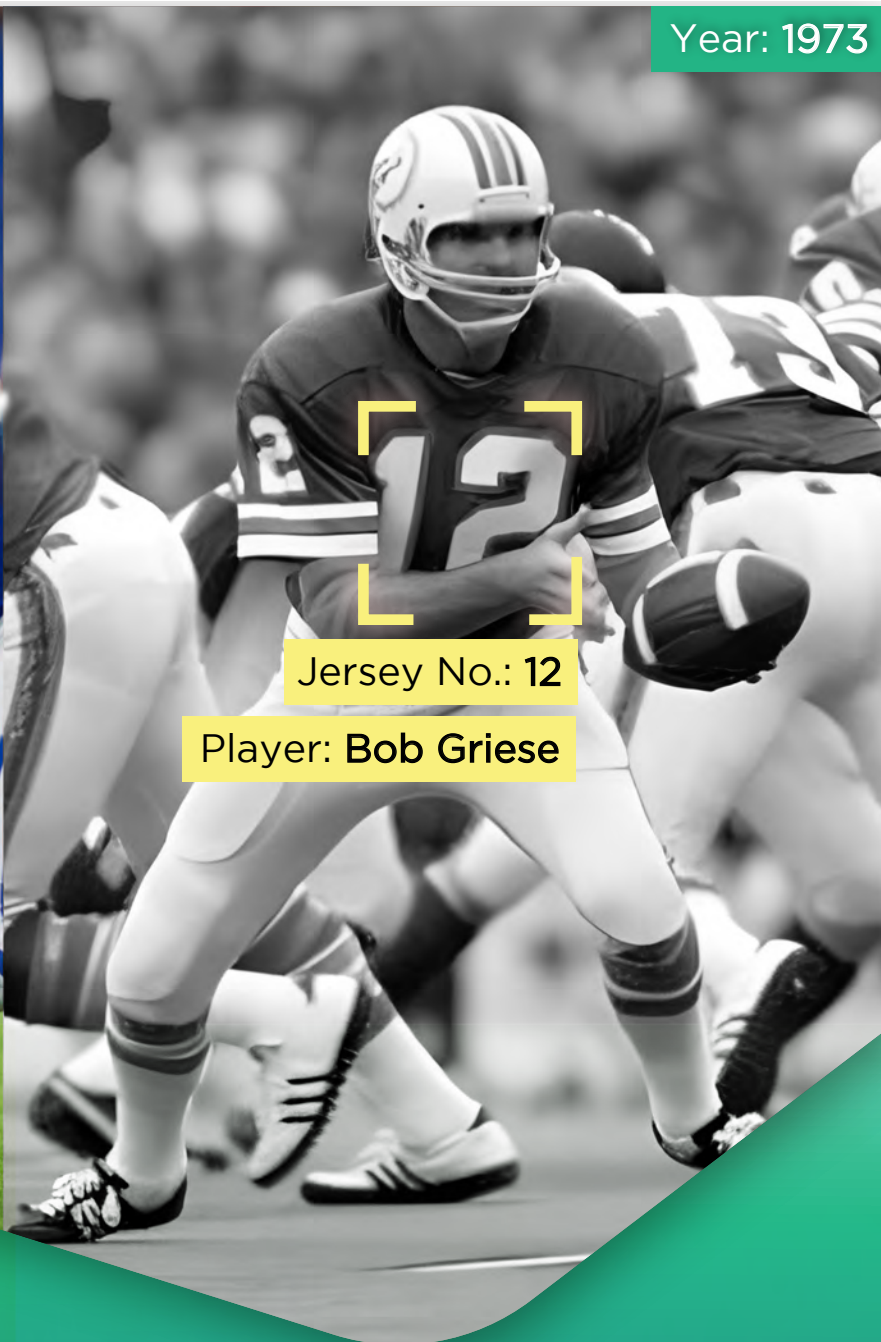Jersey No.: **56**

Player: **Q. E. Nelson**

Jersey No.: **12**

Player: **Bob Griese**

quantiphi
Solving What Matters

MEDIA INTELLIGENCE FOR SPORTS

The AI Playbook To Unlock Success
Within Your Sports Content

TABLE OF
CONTENTS

01 What is **Media Intelligence?**

Media Intelligence is a collective term for deep learning applications that leverage computer vision over sports content to solve challenges in the sports media value chain. Depending on the requirements of a particular sport, Artificial Intelligence provides a contextual description of match content, exclusive behind-the-scenes footage, and in-person interviews by players and coaches.

AI-powered hyper-tagging engines generate granular metadata about the visual elements present in the content, such as players, and desired objects such as ball, goalpost, and camera angles.

Media Intelligence models are trained to identify specific match events across multiple sports. This metadata enables a deep search in the archives and retrieves high-value editorial moments. For example, all the players and related objects such as the ball will be detected and recognized for an event detected as a foul.

Clubs

Leagues

Sports Media Houses

OTT Platforms & Broadcasters

02 How is Media Intelligence Useful for **Sports Industry?**

A **sports journalist** needs close-ups of key players in a match.

A **sports editor** requires the best actions within a particular season by a particular player.

An **OTT platform** wants to create custom highlights of a game.

A **club** wants to advertise its merchandise to the right audience to increase its sales.

A **sponsor** wishes to measure the screen time of its logo during a match.


Save on time, cost and efforts in managing and creating match and player content:

The lack of specialized AI capabilities will eventually lead to volumes of archived content that cannot be monetized. The existing manual tagging process is effort-intensive, expensive and time-consuming. Auto-highlights will expedite the process of producing relevant content.

Understand content and audiences better:

There is a lack of visibility of the type of content that is appreciated and accepted by the audience. This leads to uncertainty about the type of content that is to be broadcasted. The metatags generated from the video intelligence solution can be used to categorize and analyze the content to provide audience-specific content.

Brand Visibility time: **6 secs**

Reale

Brand: **Reale**
Screen Share: **12%**
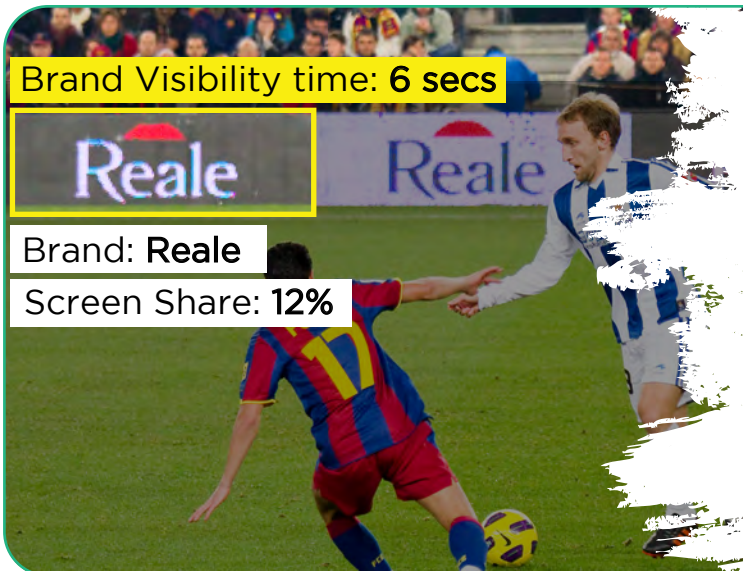
Improve ad-effectiveness and create contextual ad inventories:

In today's attention economy, ads are considered an unpleasant interruption in the viewing experience. However, that is not true for contextual advertising. Video intelligence allows broadcasters and media houses to target specific moments and prevent tone-deaf advertising.

Brand Visibility time: **10 secs**

Brand: **Evonik**
Brand Visibility: **4.5%**

Calculating brand visibility and sponsorship effectiveness:

Brands invest heavily in sports properties in the form of naming rights and sponsorship. Visibility metrics like screen share and brand duration enable advertisers to calculate RoI and improve their media buying decisions.

03 Redescribing Sports Content with **Granular Metadata**

Relevant metadata that uniquely defines video content can be broadly classified into four types.

Action : Throw
Ball Speed : 60 mph
Object : Football
Player : Tom Brady
Jersey No.: 12
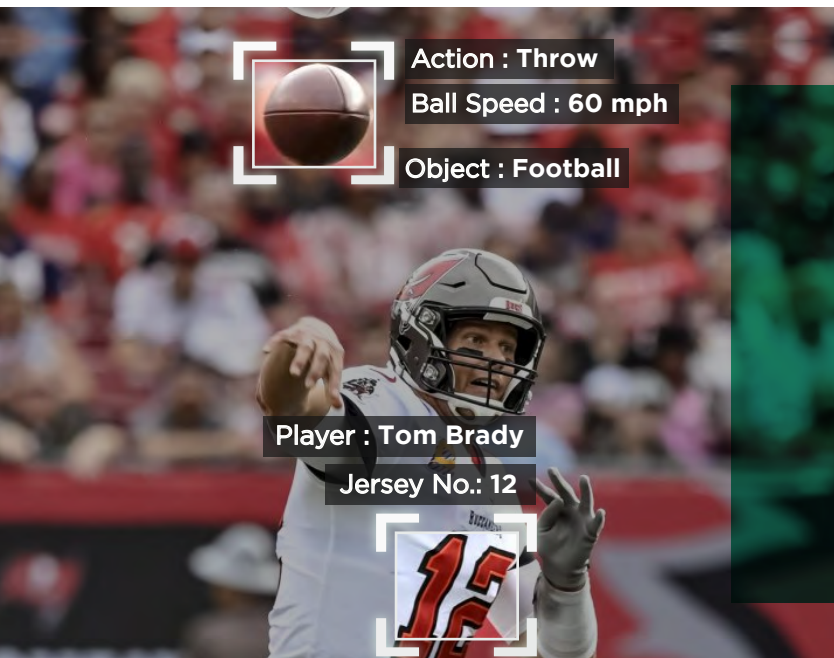
Player Metadata

This class of metadata concerns itself with people. It includes identifying character-based information that drives the narrative in a particular scene. In a game of soccer, it is the players or referees. This includes tagging players, and movements such as walking, running, kicking.

Specific Events

This set of metadata helps in identifying game-specific events and key moments like -
- Fouls
- Goals
- Red/Yellow cards
- Celebrations
- Collisons

Collision Detection
Injury Possibility - **High**
Jersey No. : 52
Jersey No. : 20
Object: Football

Object: Helmet

Object: Football

Object: Helmet

Desired Objects

This metadata helps in identifying game-specific objects like -
- Helmet
- Ball, bat and other sports gears
- Club and sponsor banners
- Logos

Specific Camera Angles

- Spidercam
- Goal Line Cam
- Penalty Box cam
- High Field Cam
- Mid Field Cam
- Wide Goal Cam
- Close Up Shot
- Side on
- Front on

Goal Line Cam

Front on Cam

Close Up Shot

Mid Field Cam

04

Metadata Matters. However, **It Doesn't Solve Everything**

Media intelligence not only generates volumes of metadata but also creates meaningful metadata that describes your content according to the desired use case.

Player: J. Verdu

Jersey No. : 11

Screen Share: High

Centrality: High

'Meaningful' is the keyword here as all the metadata generated by AI may not be relevant to the needs of the current use case. For instance, if we consider footage of a soccer match, there are 22 players on the ground along with the referee. All the 23 people on the ground are detected, and metadata for all these is generated. However, all the metadata is not required as you only need metadata of the player with the ball at a particular moment.

At the same time, the relevant metadata may consist of pockets of contextual inaccuracy. With computer vision and cloud computing developments, we can now process video content at scale. We can also generate highly granular time-coded streams of content entities (metadata) that explain the content structure with required details.

05 Building **Media Intelligence** Applications

#1. Model Training:

Training of media-based intelligence model
Our ML models are trained with match dataset

On-demand customization according to use case and business requirements
For a custom requirement, we feed the existing model with your custom dataset

#2. Model Inferencing:

> AI/ML Inferencing for Sports Applications with Contextual Metadata

Denoising and filtering of the metadata:
For example, if all players are identified in a match, but you want to identify only the player who has the ball right now. In that case, the rest of the players are not important and you would want to eliminate any kind of metadata generated for such players.

Active Learning Feedback Loops
For incorrect results recognized by models, active learning is a feature which lets us change the incorrect data points. The corrected data point is then sent back to the feedback loop, for model retraining. This feature helps us do a QC on the results.

#3. Model Management and seamless integration with existing media workflow operations

Active Learning Feedback Loops
With the obtained metadata, you can easily navigate through the ocean of media content. This makes retrieval of the content very quick.

Easily edit, repurpose and publish content
Quick and easy retrieval of your media content, gives you time to focus more on repurposing your content in form of short videos, highlight reels, compilations etc.

Integration with MAM Systems
The metadata processed from our ML models can easily be integrated into your Media Asset Management systems, to make it a seamless process from start to finish.

Can AI be customized for other sports?

Every sport is different with its own editorial requirements but the core pillars of relevance, quality and scalability broadly hold true. For instance, motorsport like Formula One would need a higher focus on metadata quality due to fast-moving vehicles. The content from the National Football League (NFL) would have numerous players in single frames which make the requirement to tag relevant players imperative.

The model must adhere to the data privacy norms governing the players and the league.

Baseball			
Types of Metatags	● Jersey Number	● Player Identification	● Helmet Detection
	● Bat Detection	● Brand recognition	
		○ Ground Billboards	
		○ Team Jerseys	

Formula 1

Types of Metatags

● Brand Recognition   ● Lap Number   ● Finish Line Detection
  ○ On Car
  ○ Billboards
  ○ Player Jerseys

Screen Share: 3.15%

ROLEX
134042354

Brand Visibility Time:
6 secs
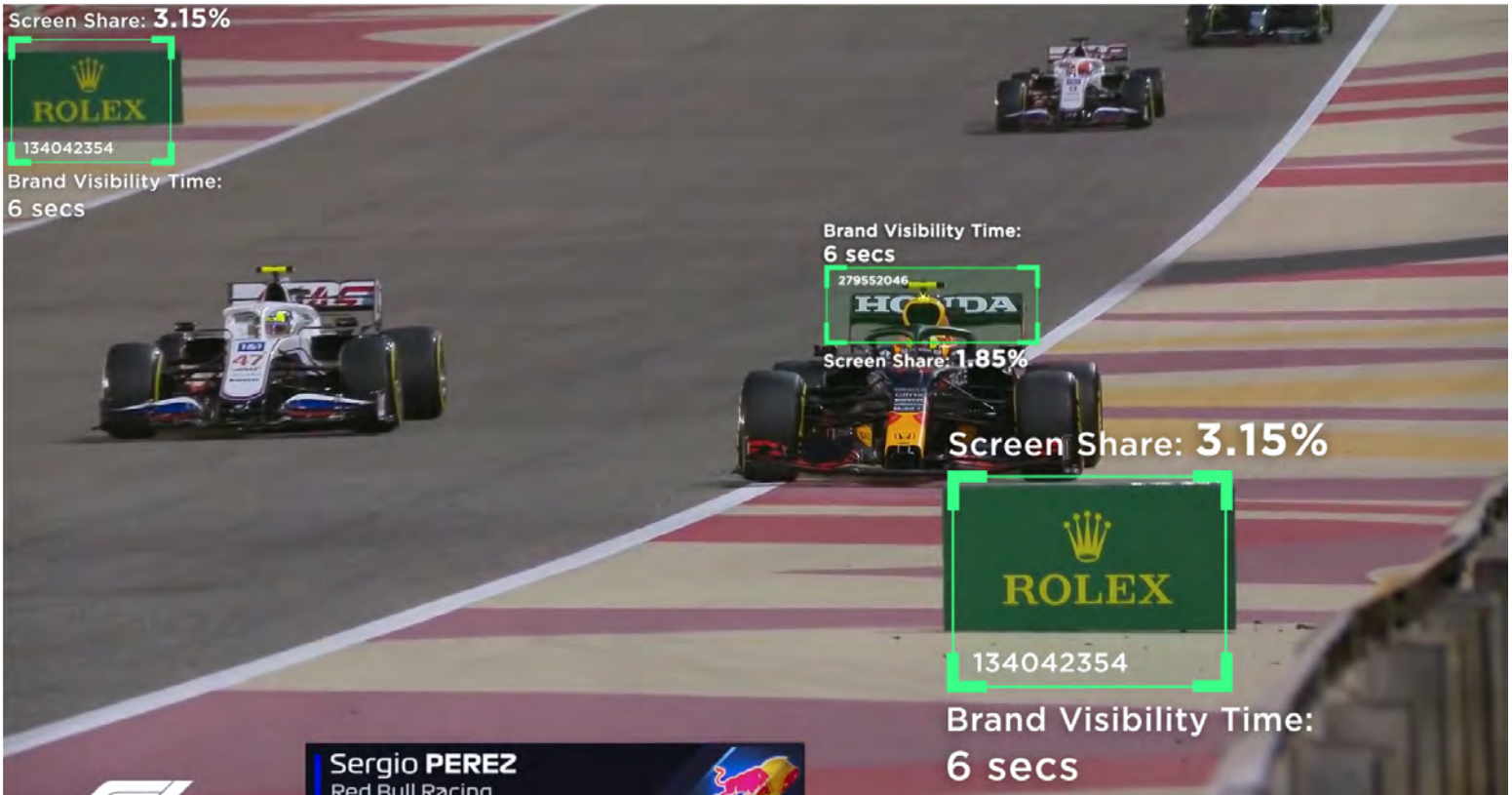
Brand Visibility Time:
6 secs
279552046
HONDA
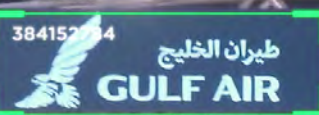Screen Share: 1.85%

Screen Share: 3.15%

ROLEX
134042354
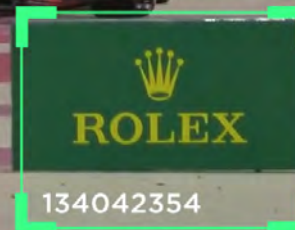
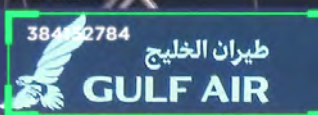Brand Visibility Time:
6 secs

Sergio PEREZ
Red Bull Racing
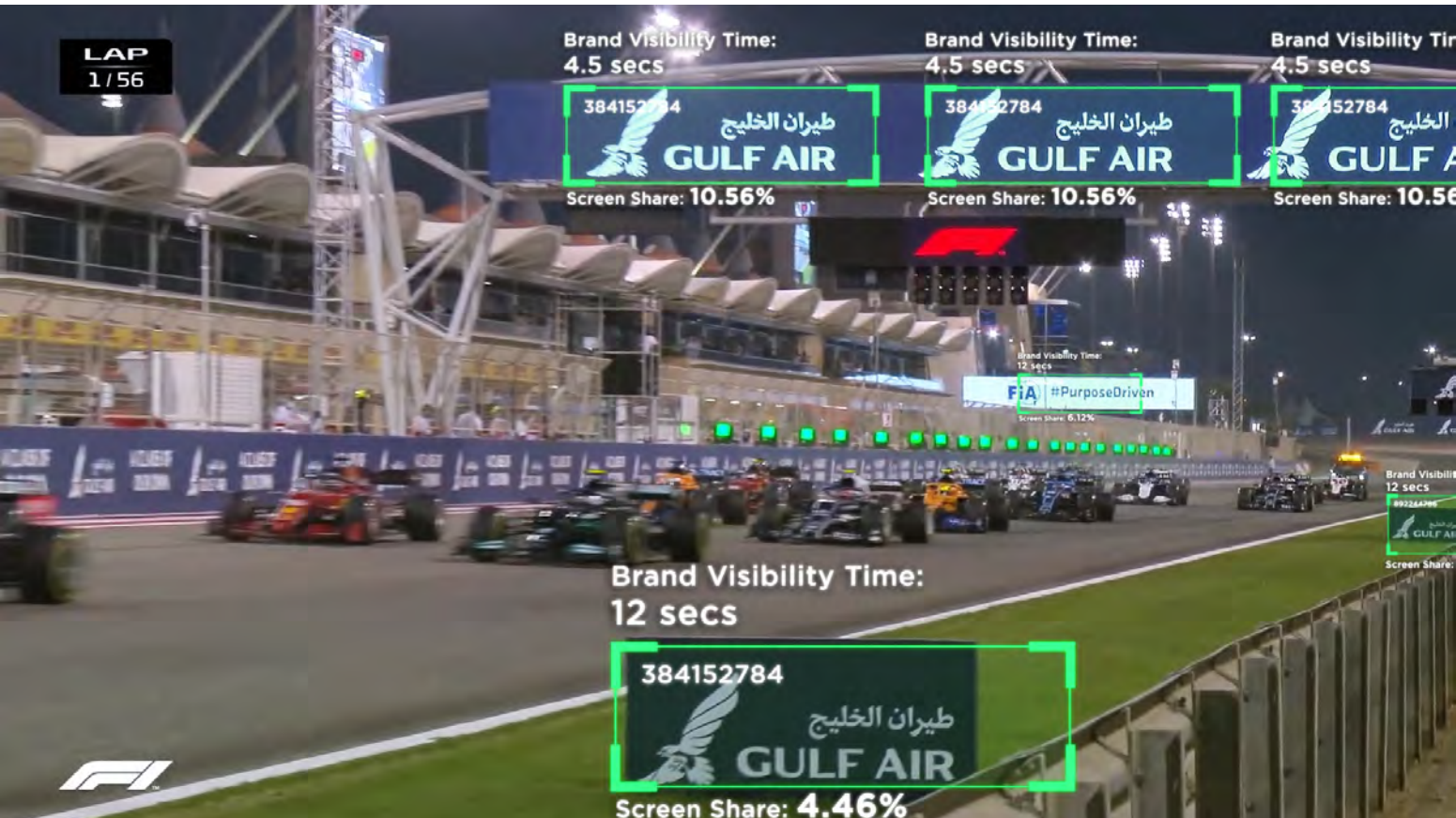
LAP
1 / 56

Brand Visibility Time:
4.5 secs
384152784
طيران الخليج
GULF AIR
Screen Share: 10.56%

Brand Visibility Time:
4.5 secs
384152784
طيران الخليج
GULF AIR
Screen Share: 10.56%

Brand Visibility Tir
4.5 secs
384152784
الخليج
GULF A
Screen Share: 10.56
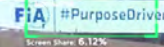
Brand Visibility Time:
12 secs
FiA #PurposeDriven
Screen Share: 6.12%

Brand Visibili
12 secs
89226A796
GULF AIR
Screen Share:
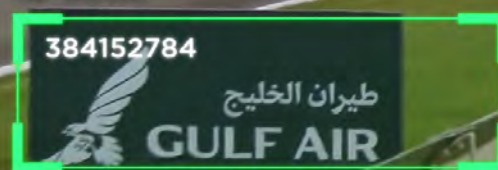
Brand Visibility Time:
12 secs
384152784
طيران الخليج
GULF AIR
Screen Share: 4.46%

American Football

| Types of Metatags

- Goal Post Detection
- Ball Detection
- Player Identification
- Helmet Detection
- Jersey Number
- Brand Recognition
  - Ground Billboards
  - Team Jerseys

3RD & 12 JAX 10 • IND 14 2ND 1:01

INDIANAPOLIS COLTS VS. JACKSONVILLE JAGUARS
PLAYER COLLISION COUNT: 2
INJURY LEVEL: HIGH
INJURED PLAYER: JERSEY NO. 17 (AUSTIN COLLIE)

NFL CBS

INDIANAPOLIS COLTS VS. JACKSONVILLE JAGUARS
PLAYER COLLISION COUNT: 2
INJURY LEVEL: HIGH
INJURED PLAYER: JERSEY NO. 17 (AUSTIN COLLIE)

Ball Speed: 2.7 sec

Player: Tom Brady

Player's team: Tampa Bay Buccaneers
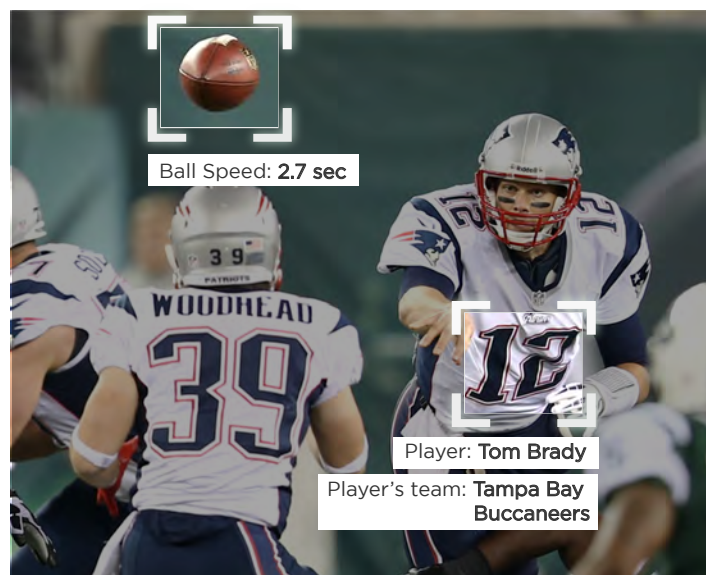
Soccer

Types of Metatags

- Ball
- Event Detection
  - Foul
  - Red/Yellow Card
  - Injury
  - Substitutions
  - Goals
  - Celebrations
- Player Identification
- Boundary Line Detection
- Brand Recognition
  - On Bat
  - Team Jerseys
  - Ground billboards

Cricket

Types of Metatags

- Stumps, Bat, Ball
- Events
  - Wickets
  - Boundary
  - Six
  - Dot ball
  - No Ball
- Player Identification
- Types of shots
  - Cover Drive/Straight Drive/Helicopter
- Boundary Line Detection
- Brand Recognition
  - On the bat
  - Team Jerseys
  - Ground advertisements
  - Boundary billboards

Object: Cricket bat

Jersey No. : 03
Player: David. D

Jersey No. : 04
Player: Nese. M

Jersey No. : 21
Player: Hollis. K

Sports Content Archiving with AI: The German Football League

Problem Context

The Deutsche Fußball Liga (DFL), responsible for running all elite professional tiers of German club soccer, had created a video data library with more than six decades of match content.

Sportcast wanted to make this entire library content searchable and accessible to Bundesliga clubs, global media partners, sponsors and agencies.

The German Football League's (DFL) Media Hub currently manages the video data equivalent of 2.75 billion smartphone photos. With fifteen years of careful archiving, the DFL has curated and recorded some of the most momentous moments in soccer – last-minute wins, stunning goals and individual pieces of brilliance.

Challenges

- Identifying the right set of metadata from over 175,000+ hours of soccer content
- Identifying over 1800+ players with quality metadata for faces and emotions
- Ensuring the scalability of the solution with additional content being added to the hub every week

Business Impact	Ability to search players, emotions, objects and other desired entities within six decades of soccer video content.

Solution

Quantiphi evaluated the soccer content to be processed and built a video intelligence model which can detect and recognize player faces, emotions, camera shots, custom objects, brand logos and match events. The solution complemented the existing metadata requirements (editorial relevance and quality) of archiving teams within DFL Media Hub.

Our cloud-agnostic solution can scale while processing large volumes of soccer content within a short period.
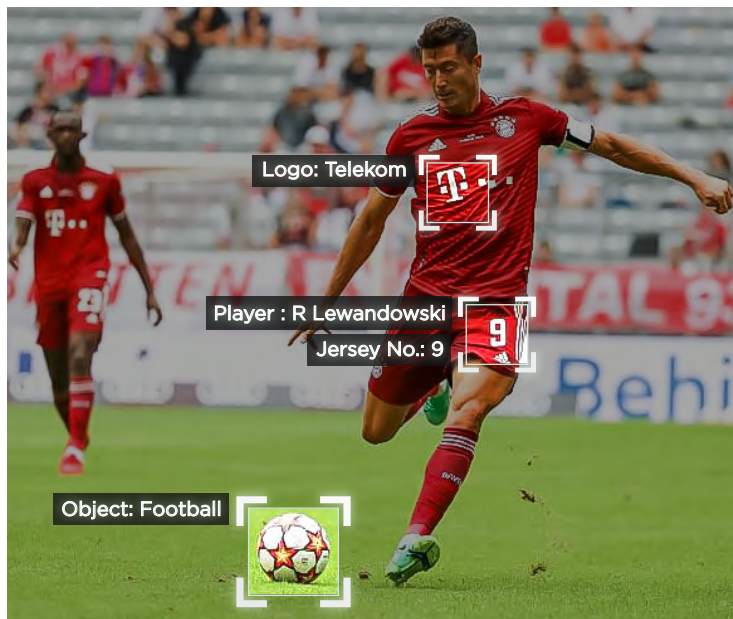
Result

01 Two million quality content data points encompassing league players, emotions, camera shots and angle, logos and custom entities.

02 Automatically archived over 500+ hours of historical soccer content.

03 1700+ players and DFL members were added to the AI platform.

Summary: Top Three Media Intelligence Applications for Sports Content

Archiving decades of match content for sports for quick search and retrieval

The sports clubs and federations have amassed decades of match footage and other data related to the players and the matches. The problem arises in making proper use of this enormous data. AI helps in tagging the data to enable clubs to easily navigate through the content.

Quick, customized and localized auto-highlights

During matches, multiple live feeds capture the same game from different angles. Editorial teams need to manually analyze and extract relevant content from this bulk data. The content creators and archive users can now curate sports content with the utmost ease. For instance, quick highlights can be

created using AI-enabled editing workflows which have been learned from editorial actions. For custom highlights, these can be targeted to different user segments depending on the fanbase, interest and other business needs based on the same metadata.

Driving storytelling in sports

Storytelling in sports is now mainstream. Multiple leagues and broadcasters combine match content and behind-the-scenes footage with an engaging narrative to engage fans globally. AI can also help identify footage with the right emotions, custom events and desired camera angles for sports documentaries.

09 AI-First Digital Engineering for Sports

Scoring on Innovation with an AI-assist.

Using AI-ML models and intelligent sports analytics solutions are imperative to build a smarter world for sportsmen, advertisers, broadcasters, coaches, scouts, and fans world-wide.

Quantiphi leverages a combination of deep learning, computer vision, and cutting-edge AI to reimagine the major sports disciplines. We use computer vision-powered solutions to collect athletes' performance data and leverage groundbreaking AI tools to gather insights regarding the audience's sentiment.

Quantiphi's machine learning (ML) and deep learning (DL) systems process the afore-mentioned data to create forecast models and assist scouts, coaches, and managers with their decision-making, and help automate numerous complex workflows related to broadcasting and fan experience.


Media Intelligence Applications

Media Intelligence for Sports is a combination of AI offerings for content-intensive sports companies & OTT Platforms. They are perfect solutions for content owners who need to search desired sporting moments from their vast archives and automate content operations.

Sports Analytics

Objectively analyze players & the game using computer vision and deep learning. Our sports analytics solutions enable coaches and scouts to build a competitive edge over their opponents. Here, we combine data-driven insights with sports storytelling to improve fan experiences for sports broadcasters.

Overcrowded
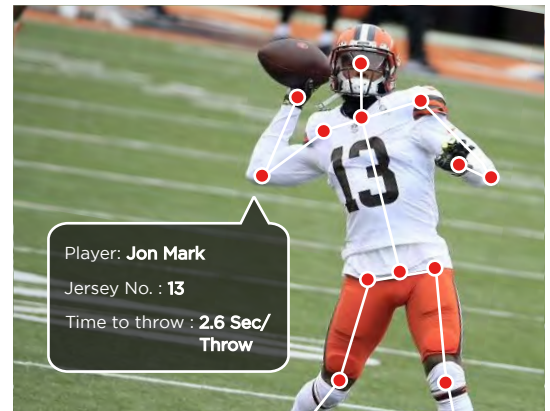
Makes stadium and match-day experiences better, more engaging and profitable. Our deep expertise in video analytics and connected IoT enables stadiums to build secure environments, track visitor data, and effectively manage the match-day experience.

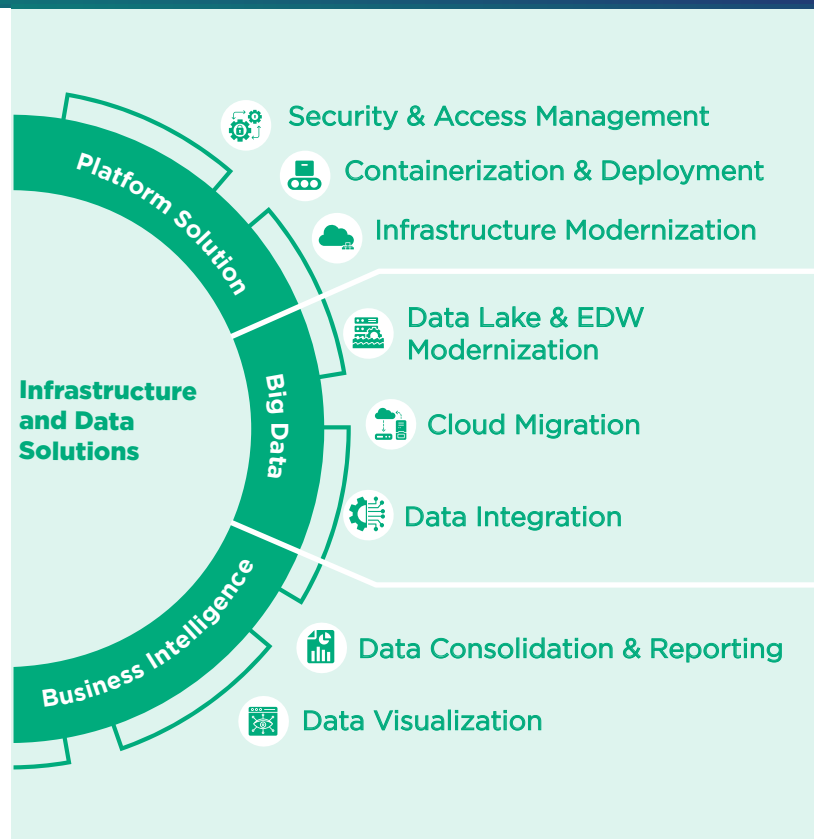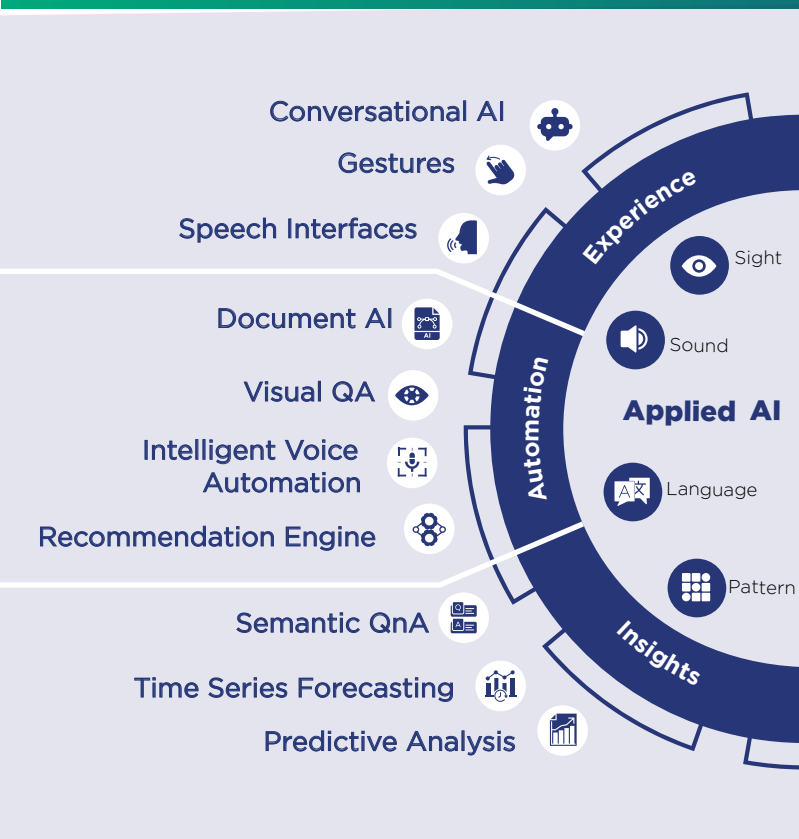Leader in the Forrester New Wave™: Computer Vision Consultancies Q4,2020

Leader in IDC MarketScape: Worldwide AI IT Services 2021

Launch Partner For AWS Media Intelligence Services 2021

Solutions Portfolio

Experience
- Conversational AI
- Gestures
- Speech Interfaces

Automation
- Document AI
- Visual QA
- Intelligent Voice Automation
- Recommendation Engine

Insights
- Semantic QnA
- Time Series Forecasting
- Predictive Analysis

Applied AI
- Sight
- Sound
- Language
- Pattern

Infrastructure and Data Solutions

Platform Solution
- Security & Access Management
- Containerization & Deployment
- Infrastructure Modernization

Big Data
- Data Lake & EDW Modernization
- Cloud Migration
- Data Integration

Business Intelligence
- Data Consolidation & Reporting
- Data Visualization

Object: Basketball

Jersey No. 8
Player: Mark. J

Jersey No. 23
Player: Bob. J

Follow us:
appliedai@quantiphi.com

Know More

Quantiphi is an award-winning AI-first digital engineering company driven by the desire to reimagine and realize transformational opportunities at the heart of business.
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