



**ZEBRA**

**Sports Solutions**

Revolutionizing Sports in Real-Time

## Revolutionizing Sports In Real-Time

Zebra is the “Official On-Field Player Tracking Provider of the NFL, powering the League’s ambitious, game-changing Next Generation Stats initiative. With decades of heritage as a global leader in Enterprise Asset Intelligence, Zebra Technologies has served Blue Chip companies across sectors as diverse as industrial manufacturing, transportation and logistics, health care and retail, transforming the way businesses use location-based tracking technology to unlock business value.

Building on this rich foundation, Zebra has boldly challenged the status quo in sports by introducing patented RFID technology to deliver a paradigm-shifting, player tracking system in professional sports.

## Why Zebra

### Innovation

Zebra Sports is revolutionizing how sports are watched, analyzed, coached and played. Powered by RFID technology it is one of the only real-time player tracking systems in sports, transcending other limited solutions with ground-breaking speed and precision.

### Excellence in Product Integrity

Following a competition among top global technology vendors, the NFL selected Zebra to be its Official On-Field Player Tracking Provider. Within the first year the Solution was selected as winner of Sports Business Journal’s Sports Business Awards ‘Best in Sports Technology’ and RFID Journal’s ‘Best New Product’ Awards.

### Limitless Applications

The Zebra Sports Solution enables a trove of data for real-time insight. As it’s full spectrum of capabilities continue to be leveraged across multiple sports properties, its impact will be significant. New player tracking insights will change how fans relate to sports through cross-channel engagement and forever transform coaching and player personnel evaluations.



Winner of SBJ 2015 Best in Sports Technology

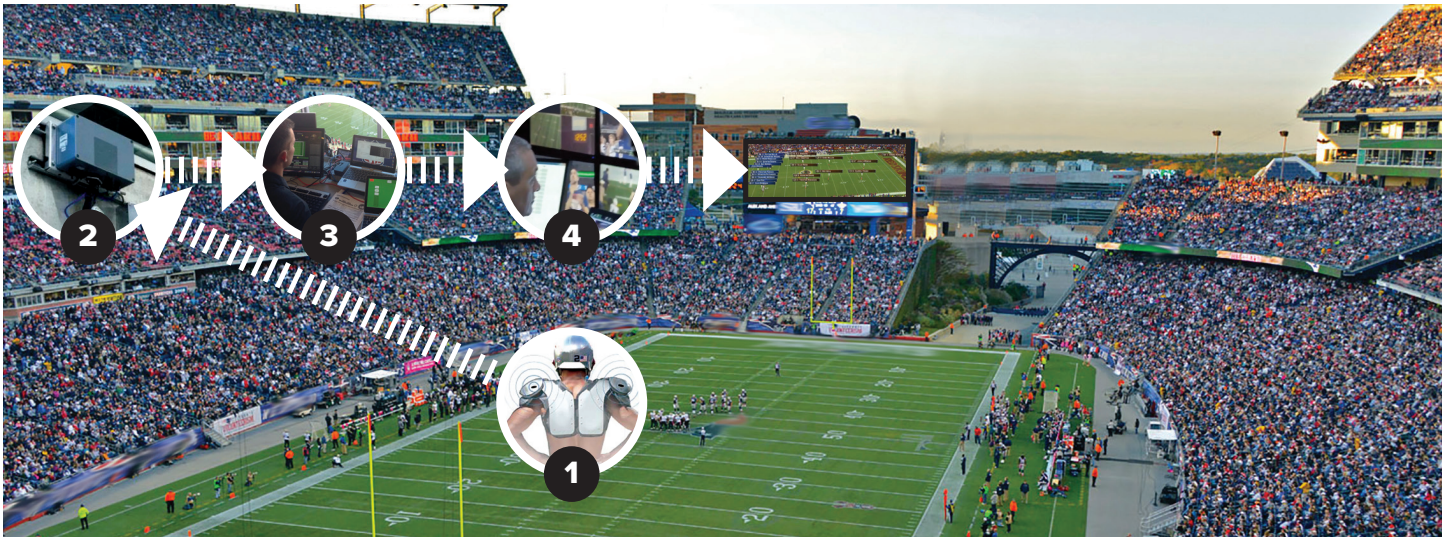


Winner of RFID Journal Best New Product



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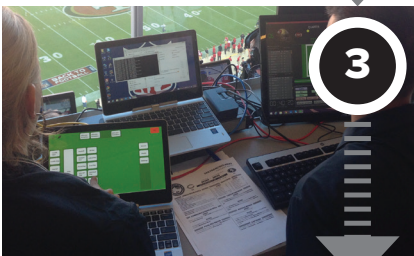
# ZEBRA Sports Solutions



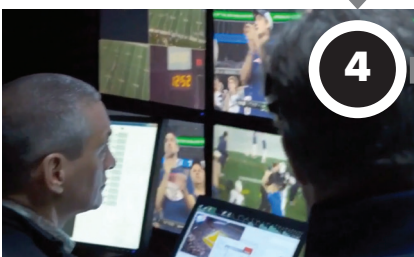
Each player wears two nickel-sized sensors, one under each shoulder pad, that emit unique radio frequencies at 15 times per second.



Receivers mounted permanently between the upper and lower decks of the stadium read signals from all players on the field pinpointing a player's position, tracking speed, acceleration, and distance traveled in real-time.



Algorithms aggregate players' stats from the data and displays it on analytics software, which allows Zebra staff to add context to data in real-time.

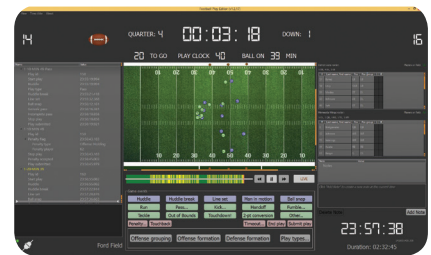


The data is instantly interpreted by media producers to create graphics for viewers across a variety of digital media channels and devices from jumbotrons to smart phones and tablets in real-time.

NFL Team Practice Example

Summary Report for Friday, January 2nd 2015

Player	Position	Yds	Yds/Att	TDs	Yds/Recep	TDs	Catch	Yds/Car
QB1	QB	238	3.98	2	1.90	2	0	0.00
QB2	QB	143	2.07	2	7.11	0	0	0.00
QB3	QB	172	3.02	2	7.00	0	0	0.00
RB1	RB	104	4.14	1	7.84	0	0	17.20
RB2	RB	108	3.04	1	7.56	0	0	14.16
RB3	RB	106	4.67	1	7.64	0	0	10.12
WR1	WR	151	3.70	1	7.00	0	0	16.76
WR2	WR	204	3.84	1	7.64	0	0	20.07
WR3	WR	148	3.88	1	7.80	0	0	14.48
TE1	TE	207	3.37	1	7.81	0	0	19.12
TE2	TE	148	3.70	1	7.07	0	0	11.48
OL1	OL	174	2.80	1	7.00	0	0	10.12
OL2	OL	175	3.38	1	7.00	0	0	14.48
OL3	OL	175	3.38	1	7.00	0	0	14.48
OL4	OL	147	2.45	1	7.00	0	0	10.12
OL5	OL	172	2.87	1	7.00	0	0	10.12



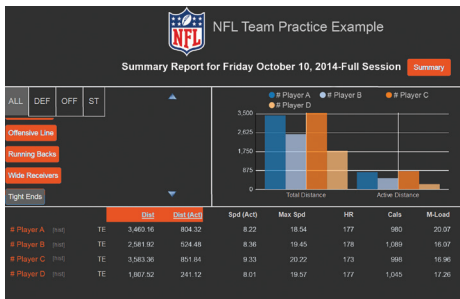
Zebra Sports Solutions generates a robust range of player metrics on proprietary software dashboards usable across a host of professional and consumer applications in real-time.



## Solution Benefits

### Athlete Performance

Zebra Sports is revolutionizing how scouts, coaches and trainers evaluate players. This solution allows trainers to keep athletes at peak performance by developing bespoke training plans based on individual metrics and fatigue thresholds. The proprietary software further enables NFL coaches to sync with official Game Day data and integrate it to quickly optimize training.



### Coaching & Training

Zebra's solution enables a consistent, data-forward analysis method, allowing coaches to strategize in-game and in-practice using real-time data to adapt and be endlessly nimble in play-calling. Whether assessing route running patterns, evaluating grouping and formation, analyzing the separation distances on pass coverage or assessing quarterback pressure, there are limitless, highly customizable applications.

Name	Position	Dist	Dist (Act)	Spd (Act)	Max Spd	HR	Cals	M-Load
# Player A (WR)	WR	3,460.16	1,052.48	9.45	22.71	181	977	20.07
# Player B (WR)	WR	2,627.68	506.96	8.01	20.11	176	1,075	16.07
# Player C (WR)	WR	3,151.12	533.28	8.32	22.89	189	1,141	16.96
# Player D (WR)	WR	3,583.36	763.92	8.22	21.02	184	994	17.26
# Player E (WR)	WR	3,460.36	507.84	8.33	23.48	175	1,137	14.16
# Player F (WR)	TE	3,460.16	894.32	8.26	19.77	180	1,007	18.07
# Player G (WR)	CB	3,227.76	667.04	8.11	22.54	184	987	16.76
# Player H (WR)	TE	3,583.36	851.84	8.57	20.72	178	1,116	20.07
# Player I (WR)	RB	3,254.24	899.84	9.43	21.88	180	998	13.47
# Player J (WR)	S	3,567.52	934.56	8.32	21.97	179	1,007	16.32
# Player K (WR)	DE	2,527.36	315.04	8.01	18.77	184	1,045	11.48
# Player L (WR)	WR	3,591.84	538.96	8.56	22.89	179	989	16.53
# Player M (WR)	WR	4,641.00	1,031.36	8.08	23.41	177	1,119	23.47

### Fan Enhancement

This proprietary real-time player tracking solution enhances fans viewing through television broadcasts, mobile engagement and in-stadium, enabling fans to view never-before-seen real-time player data and compelling new performance insights. Fans receive live to-the-second, to-the-inch broadcast graphics illustrating players' speeds, acceleration, distances gained and in-depth analytics including how closely receivers are covered and how this separation distance changes over a play, how tightly quarterbacks are pressured and much more. This has made for a more immersive viewing experiencing, increasing fan attentiveness, connectivity and the understanding fans have of players, teams and on-field strategy.

**ZEBRA** | **NFL**

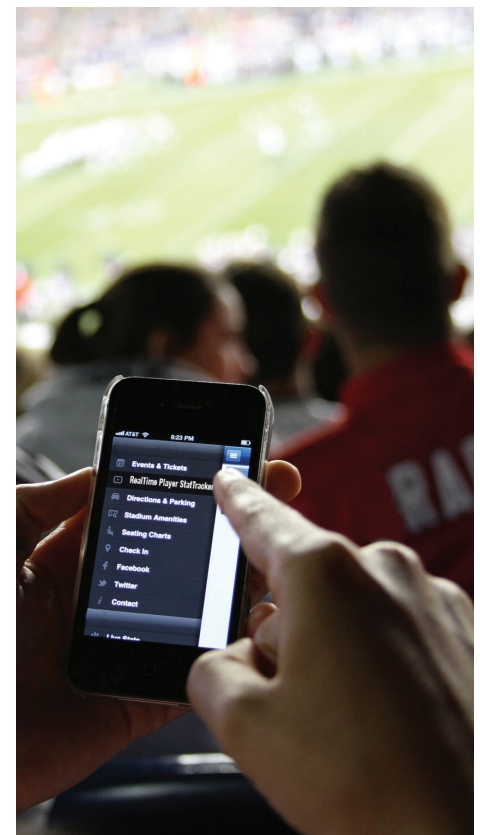
**OFFICIAL ON-FIELD PLAYER TRACKING PROVIDER OF THE NATIONAL FOOTBALL LEAGUE**

**Vishal Shah VP, NFL Media**

*“ Working and operating in NFL Stadiums on Sundays is a very scaled operation. We chose Zebra because they have the right resources, the technology expertise, and the vision to help us evolve the sport. ”*

**Mark Robert Founder & Editor, RFID Journal**

*“ The Zebra Sports Solution is the most advanced sports tracking solution we've seen. The editors at RFID Journal were impressed with the accuracy of the solution, and its ability to provide the data (to the NFL in real-time). Clearly, the solution has implications in other sports and other businesses. ”*



## Applying Real-Time Data to GameDay, Practice and Training

Zebra's aggregated, precise player tracking and data analysis tools provide enhanced sports information via highly customized electronic feeds that meet the needs of our clientele. For football, revolutionary game day reporting and in-depth statistics augment complete play-by-play reporting.

### GameDay

- Ability to generate player participation data in real-time.
- Ability to generate player groupings data in real-time.
- Ability to generate play formation and route running data.
- Ability to generate player speed data in real-time.
- Ability to generate player separation data in real-time.
- Ability to generate new distance stats / data in real-time: Total yards run in game, yards run before and after catch, yards run by quarter, for example – virtually an unlimited variety of relevant distance data in real-time.

### Practice and Training Environments

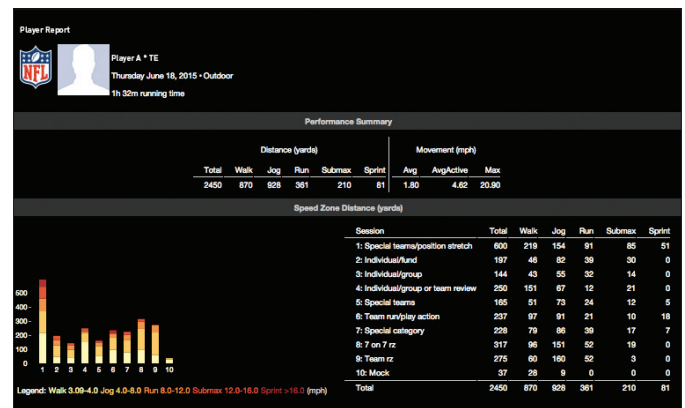
- Ability for coaches to gain in-depth visibility in practices as never been seen and derive insights and develop action plans for players in real-time.
- Enhancement of trainers knowledge of player's practice and training regimes and ability to develop more insightful training programs in real-time.
- Insight for player personal management to better understand player development over the course of a season and career.
- All data can be dimensionalized in the following ways:
  - On per play, per session basis
  - Compare and contrast players and groups
  - Mark data based on actual practice schedule
  - Record play start and stop

### Reportable Events

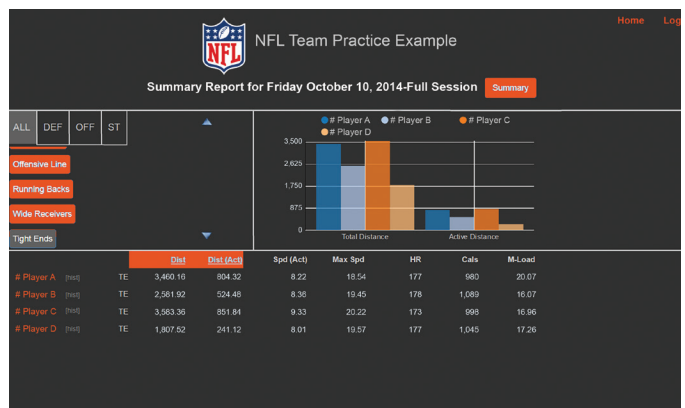
- Distance traveled, total and by speed zone (walk, jog, run, sub-max & sprint)
- Max & average speed
- Accelerations & decelerations by intensity
- Training intensity & mechanical load
- Total calories burned via biomedical device
- Heart rate via biomedical device



After a full season of using Sports Solutions in practice and game environments, New Orleans Saints Head Coach, Sean Payton endorses Sports Solutions as a product that will help his staff put a better product on the field and give Saints fans new ways to experience and understand their team and players.



Zebra Sports Solutions generates a broad range of player metrics on proprietary software dashboards for ease in monitoring player performance.



## TECHNICAL SPECIFICATIONS

### Zebra Sports Solutions Player Tracking System

#### Technology Basis

Active RFID Real Time Locate System (RTLS)

#### Operating Frequency

6.35 to 6.75 GHz

#### Accuracy

± 1 foot (without averaging) ± 4 inches (with averaging)

#### Hub / Receivers - Regulatory Compliance - EMI/EMC

FCC Part 15 B, ICES-003, EN 55022

#### Sensors - Reg. Compliance - EMI/EMC

FCC Part 15 B; ICES-003; EN 301 489-1 & -33

#### Hub / Receivers Regulatory Compliance – Safety

UL 60950-1: 2007; CAN/CSA22.2 No. 60950-1-07;  
EN 60950-1:2006+A11

#### Operating Blink Rate

12 Hz (optimized for sports - actual operating range is 0.1Hz to 50 Hz)

### Zebra Sports Solutions Server

#### Form Factor

Rackable minitower

#### Operating System

Linux

#### Processors

2x 3.1GHz Intel® Xeon Processor (16 cores)

#### Storage

Up to 15 TB

#### Graphics

NVIDIA Quadro K5000

#### Video

HD 720p

#### Network

Dual GbE

#### Dimensions

17.5 x 8 x 20.7 in (44.4 x 20.3 x 52.5 cm)

#### Power Supply

1125W 90% Efficient wide-ranging, active Power Factor Correction

#### Display

24" LED

Specifications are subject to change without notice.

For information about Zebra Sports products, please email [realtime\\_tracking@zebra.com](mailto:realtime_tracking@zebra.com)

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