UX Design Maximizes the Appeal of Sports

● Manami Jo ● Tomohiro Takizawa ● Hiroto Motoyama ● Gen Asakawa

In recent years in Japan, various new initiatives are being actively conducted in the sports business market in view of the major international sporting events scheduled around 2020. In this market as well, a user experience (UX) design-oriented approach, which allows for the creation of new service experiences and value from customer-centered perspectives, is an effective means of differentiating one's own products and services from those of competitors. Users in sports are mainly players, judges, and spectators. When making proposals for innovations or pursuing new business projects, designers need to appreciate the different perspectives of these three types of users. To bring them to fruition, it is important to visualize challenges and visions of the business operator, create a prototype based on them, and commercialize it quickly while developing empathy through a trial. This paper describes practical aspects and important points of the UX design-oriented approach for maximizing the appeal of sports, with cases conducted by Fujitsu in 2016 and after.

1. Introduction

The area of sports business in Japan is relatively underdeveloped compared to European and American counterparts in terms of the market size and entertainment value, and has set poor precedents with few achievements. As various stakeholders are involved, it is often difficult to establish consensus among all parties on visions during the developmental phase because their interest and viewpoints are intertwined in complex ways. If the consensus is pursued prematurely, the entire project may lose focus of the initial purpose, compromising the appeal and/or value of the new service to be offered.

Furthermore, the project may fail to achieve its original purpose of articulating the appeal of sports during the testing phase, or if it is successful, it may still fail to create a sustainable business model. Under these circumstances, the project may have to be reconsidered or even discontinued. Thus, there are still many issues to be addressed.

We therefore need to convey what sports have to offer, through which we ensure both user satisfaction and profitability while supporting the sporting enterprises. To this end, Fujitsu adopts a method called the user experience (UX) design approach. This is an approach centered on user perspectives, and it covers everything from field research (investigation) to the development of visions, verification of concepts, and verification and establishment of the business. The term "user" in this context refers to three groups of people: "players" including the athletes and coaches who engage directly in the sports, "judges" who preside over sports games to ensure smooth game proceedings, and "spectators" who are present at stadiums to watch the games.

In this paper, we first describe the co-creation workshop method involving stakeholders including players to reach consensus through the development of visions. We then describe our user-centered agile UI design development. Lastly, we present some cases and explain how we realize sports entertainment as a business with a keen awareness toward UX, such as spectators' physical experiences and shared excitement.

2. Multi-faced value-creation with stakeholders

Fujitsu develops solutions for sports businesses

using cutting-edge technology. In this section, we present a co-creation workshop case based on the participation of players as users.

2.1 Multi-faceted value-creation with diverse stakeholders

Fujitsu has launched a project to leverage features of the Smart Arena and enhance the performance of basketball players. The Smart Arena refers to the Smart Arena Solution developed by Fujitsu Laboratories, and it combines various technologies such as high-precision 3D sensing, motion tracking, and free viewpoint video generation.[1)]

To pursue this project, we conducted interviews and workshops with cooperation from stakeholders in the basketball industry. This helped us to select functions and develop ideas for services from multiple perspectives (**Figure 1**). Specifically, we conducted interviews with diverse peoples involved in basketball from professional leagues to university teams, including players, coaches, and technical assistants, to investigate factors necessary for strengthening teams and fundamental values in employing Smart Arena Solution.

We obtained an understanding of the viewpoints involved in directing teams during practices/games and the means of communication used between coaches and players. In the co-creation workshop, we invited not only members of the business department, laboratories, and design department, but also the coach and former players of Fujitsu Red Wave, a corporate team in the Women's Japan Basketball League (WJBL). We discussed topics such as the information required in specific situations, effective communication expressions, and so on. Thus, we quickly established ideas for specific content.

Figure 1
Smart arena co-creation workshop.

2.2 Clarifying visions and forming consensus through the co-creation workshop

The co-creation workshop is effective not only in generating diverse ideas but also in defining the fundamental value of the Smart Arena Solution with stakeholders. It also helps to quickly establish internal consensus when discussing the directions of new products. As the projects are clarified in terms of their goals and visions quickly, the projects as a whole can progress smoothly. There are also advantages such as that specific content as output can easily create empathy among stakeholders and that the direction of any required adjustments can be determined easily.

2.3 Building new relationships and promoting business

We aimed to verify the ideas for commercial application and developed a prototype of a UI (**Figure 2**). This initiative helped to develop new relationships with stakeholders of the Japan Professional Basketball League (B.LEAGUE) and other sports business operators, leading to new business proposals. For example, we are planning to conduct field trials of content designed for players in cooperation with the Japan Basketball Association. Also, we will further enhance the content so that they can be launched as services to be offered in the market.

3. User-centered agile UI design development

In this section, we describe the UI design development for the gymnastics judging support system. In this project, we focused on developing a better system by having judges as users test it in real competitions and making improvements through verifications.

3.1 Agile development process based on repeated verifications

We aimed to understand the movements and

thinking of judges in a competition. We therefore created a customer journey map (**Figure 3**) with qualified judges as we followed their actions in chronological order. This exercise made clear that judges first identify

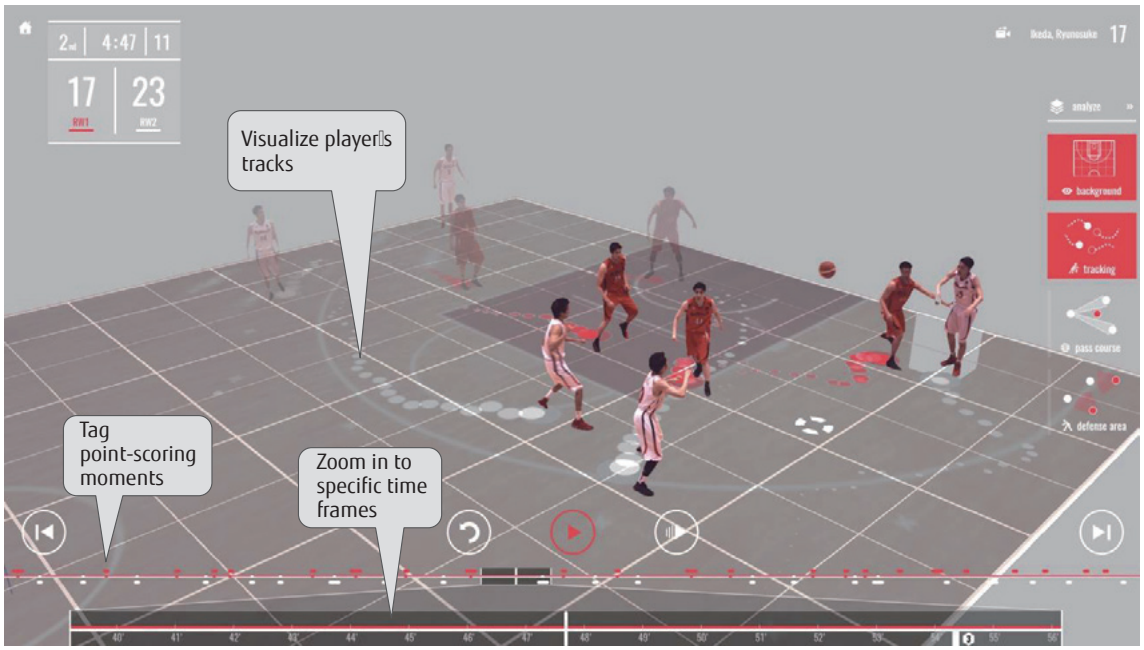


Figure 2
Prototype UI.

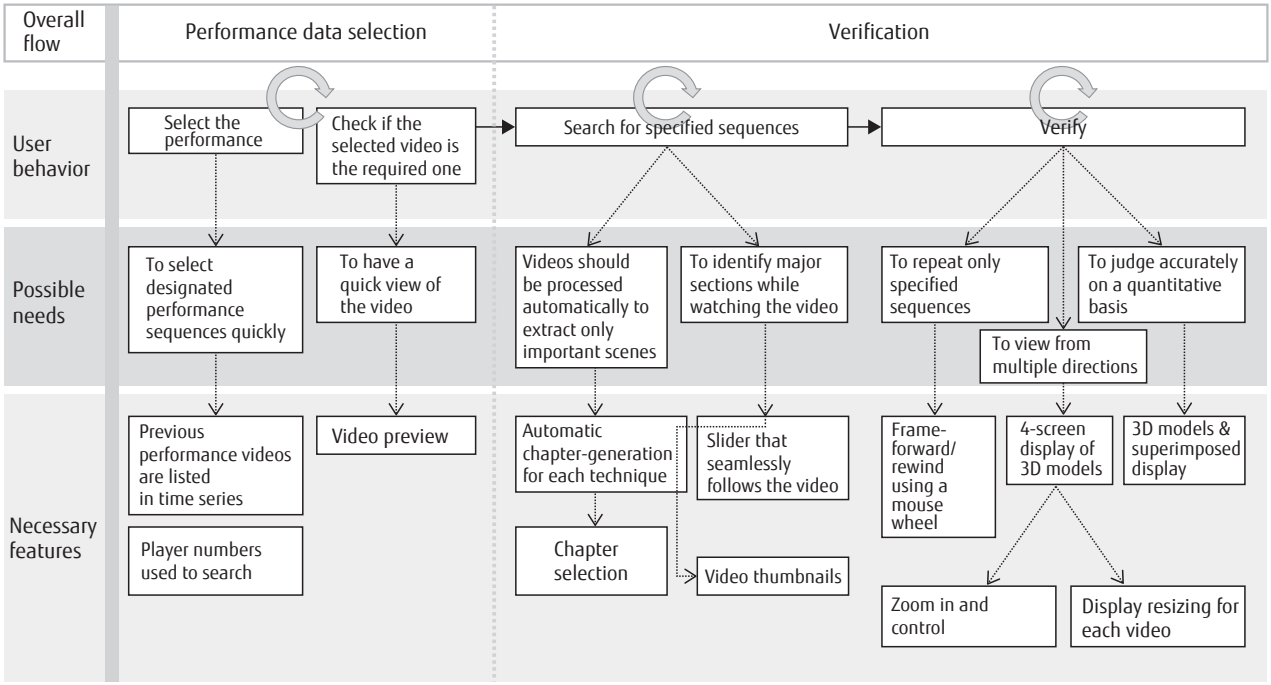


Figure 3
Judge's customer journey map.

major points and study details as they watch performance videos. Using this customer journey map, we further conducted interviews with judges from the International Gymnastics Federation (FIG) to improve the accuracy. We also prepared a simple prototype screen together with a questionnaire to verify the system usability at the same time.

Subsequently, we put the system to test in actual gymnastics competitions, through which we added a few features and improved the system design. In doing so, we adopted a UI layout and structure that can be easily modified or supplemented with more features based on the agile development concept.

3.2 UI design aimed for global application with enhanced usability and easy understanding

This system is modeled on the conventional video-based judging software to ensure ease of operation. By reviewing and enhancing the layouts and configurations of each feature, we tried to make the system easier to use. We adopted pictograms as a basic means of expression on each screen so that the system may be intuitive and easily standardized internationally. This also saves the developer the need to localize the system in different languages. We also added some features to assist judging according to users and/or performances. For example, when displaying a certain part of a gymnast's body to show its angle, the system not only displays the numerical data, but also changes the display color if the angle is greater than a threshold value. Changes over time are also displayed using graphs.

3.3 Appealing design

The most notable features of this system are that it displays the angle of specific parts of gymnasts' bodies and that CG rendering enables visual inspections from all angles. Some features are added to emphasize these visual effects and make them more effective and more emphasized, such as changing display colors according to the recorded angles and high-contrast black-and-white rendering. The design was also based on the consideration of how to promote the latest technologies such as 3D laser sensing and 3D data processing through these efforts.

3.4 Future development

We gathered data from the world's top athletes at the 47th FIG Artistic Gymnastics World Championships in Montreal held in October 2017. We will repeat field trials in real situations such as at international competitions to advance the system and its design to completion. Moreover, we will seek to apply the know-how and resources gained through this project to new areas such as gymnasts' performance training aids and other sports.

4. Developing design that augments the excitement of real venues

In this section, we describe the UX design approach that we adopted in the project to realize a new sports spectating style, which is the world's first of its kind. The design approach aims to augment various sensations in watching sports using ICT, such as the exciting ambiance, exhilaration, and the sense of unity that are felt at a venue.

4.1 Creating concepts that facilitate "shared experience" from spectator's viewpoints

Initially, this project required our department to imagine an ideal UX for watching sports in arenas and stadiums. In order to investigate the needs that arise through spectator perspectives, we conducted a survey at various arenas and stadiums in Japan and abroad. We also conducted interviews with many fans and other stakeholders. Through these efforts, we defined the following three values in sports-watching experiences in arenas/stadiums:

- Participation

  To change the experience from passive watching to more active participation.
- Experience

  To appreciate the realness of the game not via information but through the five senses.
- Connection

  To enhance the sense of unity among the spectators in the arena to achieve a sense of oneness.

We also developed a new concept of "shared experience" to mean those experiences augmented by use of ICT. This concept entails that various information is gathered in real time using sensing technology, capturing the spectators (cheering) and players (movements, vibrations, etc.). Then, a shared experience can

be created uniquely to a specific game by analyzing, processing, and using the information for interactive arrangements. We based our vision on this concept and identified various moments in spectating sports, such as opening events, the game itself, and intervals where spectators can typically share their experiences.

4.2 Experience-based prototype to verify the value of experience

The next step was the prototyping phase so that we could verify that the imagined ideals were truly valuable to users, evaluating in such a way that everyone could experience them.

We developed a prototype by applying the technology Sound Intelligence[2)] to sports spectating. This was developed through a co-creation project between Yamaha Corporation and Fujitsu. More specifically, the sounds unique to the game and its audience are collected. This includes vocal responses from the gallery, vibrations of the ball, players' footsteps, and so on. These sounds and vibration are then reproduced according to the development of the game and location of the play. We further developed a system to enhance the excitement and exhilaration beyond spatial constraints by linking the sounds with the video of the game and the lighting in the viewing venue.

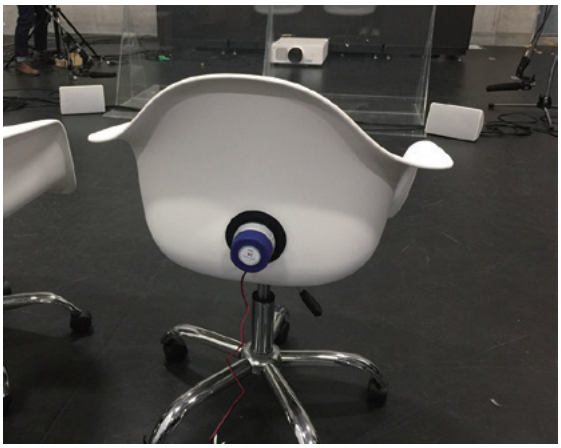
We also processed the sound/vibration data to emphasize specific bands of sound pressure and realize sound effects that amplified the excitement of watching according to plays during the game. We also leveraged a mesh network to recreate the ambiance of the game venue by, for example, making seats attached with vibration actuators vibrate and making wrist band devices glow/vibrate (**Figure 4**).

Starting from a simple prototype, we repeated verifications several times, involving designers themselves in the process to find out what augmentation/arrangement makes spectators' experiences more enjoyable (proof of concept: PoC). Integrating the knowledge gained through the prototyping, we organized an experience-oriented special exhibition of sports for the Fujitsu Forum 2017 held in Japan in May 2017. At the event, many sports stakeholders experienced the system first-hand. Their recognition and feedback helped significantly with driving the subsequent proof-of-business (PoB) phase.

4.3 Future development

This project is in its PoB phase as part of Fujitsu's new live-viewing business project for arenas/stadiums based on our advanced video transmission business.

Many arenas and stadiums are scheduled for construction in the coming years throughout Japan. They will need to have plans in place to improve facility utilization rates and revitalize the local economies centered around those arenas and stadiums. We aim to realize the world's first experience-oriented live-viewing solution by developing a system to augment



Chair with vibration actuator

Wrist band device

Figure 4
Created prototype.

the excitement and exhilaration of the sports venue through sound, video, and lighting. This system will be appreciated by those fans who are unable to watch their favorite team play at the away stadium or arena.

This project was tested with the B.LEAGUE in FY2017, and we hope to launch it commercially in or after FY2018.

5. Conclusion

This paper described cases that drove new business proposals and field trials using the UX design approach meant to enhance the appeal of sports.

While there are several templates to these approaches, we are pursuing their combination and further development by means of various activities and methods. This project has also been useful and important for expanding business-creation outside the sports industry (area) and proposing new services.

We continue to aim to realize a prosperous society where human-centric creativity creates value. To this end, we will continue our efforts to present our unique proposals based on trials at major international sporting events scheduled to be held in Japan and give support to the creation of new value. Through these activities, we aim to expand businesses and improve the value of services in the sports market.

References

1) Fujitsu: Fujitsu ICT to Support the Future of Basketball in Japan. September 21, 2016.
http://www.fujitsu.com/global/about/resources/news/press-releases/2016/0921-01.html
2) Fujitsu: Sound Intelligence (in Japanese).
http://jp.fujitsu.com/solutions/business-technology/iot/future-ux/pj_sound-intelligence.html

Manami Jo
Fujitsu Design Ltd.
Mrs. Jo is currently engaged in the planning and development of product/UI design for new business areas.

Tomohiro Takizawa
Fujitsu Design Ltd.
Mr. Takizawa is currently engaged in the planning and development of product/UI design for new business areas.

Hiroto Motoyama
Fujitsu Design Ltd.
Mr. Motoyama is currently engaged in the UX design of new business projects and product promotion support.

Gen Asakawa
Fujitsu Design Ltd.
Mr. Asakawa is currently engaged in customer negotiations for UX and UI designs of systems, services, and products, as well as the support of in-house development projects.

©2018 FUJITSU LIMITED