

CASE STUDY

NIELSEN-KELLERMAN PROJECTS





CONTENTS

- CUSTOMER
- BUSINESS NEED
- SERVICES PROVIDED
- SOLUTION
- CUSTOMER VALUE-ADD
- ABOUT MUSALA SOFT





Both professionals and hobbyist rely on their own preparation and skills level to achieve better results.

When the stakes reach to the point of demanding complete precision, smart technologies are getting into the spotlight.

01 CUSTOMER

Nielsen-Kellerman was established in 1978 and nowadays is one of the US largest innovative designers and manufacturers of measurement equipment for demanding customers in outdoor business, such as sports, military, etc. NK products are rugged, waterproof, calibrated and provide durability and measurement accuracy. NK has a diverse portfolio of products in the following product lines:

NK Electronics for Rowing and Paddling



SpeedCoach

Stroke-by-stroke update on boat speed, rate, distance and time.



EmPower Oarlock

Measures stroke technique (slip, wash, force, etc.)



CoxBox

Retains the main performance information that coxswains need.



Kestrel Weather & Environmental Meters

Measures numerous micro-climate and weather condition properties



Kestrel Ballistics Meters

Kestrel instruments for long range shooting accuracy.



Blue Ocean Rugged Megaphones PA Systems

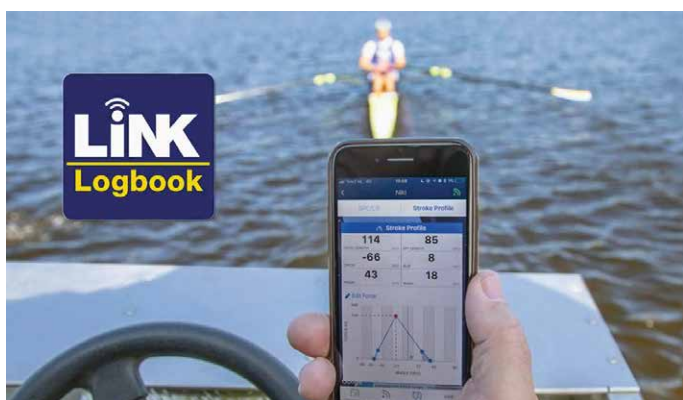
Provides crystal clear sound reproduction at extreme range.

Musala Soft and NK started their partnership in 2017 when NK contacted Musala Soft referenced by their expertise in software projects in the field of sports. Musala Soft was led by the experience gained through the years in leveraging smart technologies, development of mobile, IoT and cloud solutions, data analysis and user experience. In addition to the IT skills and experience, Musala Soft committed to pursue a complete understanding of the business context in order to provide the best solution.

02 BUSINESS NEED

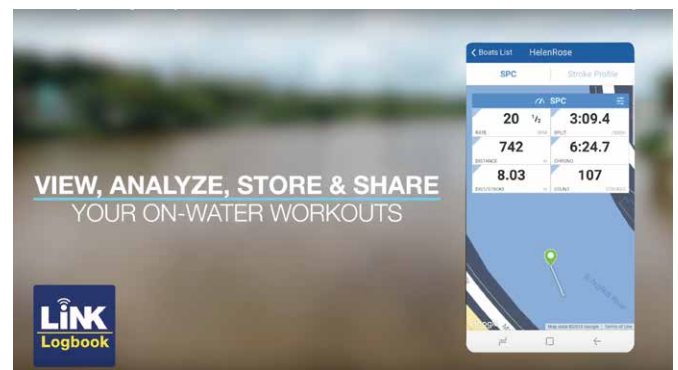
LiNK Logbook

REAL TIME FEEDBACK FOR COACHES ON THE PERFORMANCE OF THEIR ATHLETES



A digital platform for professional and hobbyist rowers that provides an innovative way to connect NK's SpeedCoach, CoxBox, and EmPower Oarlock to a suite of tools to help the athletes and coaches get the most out of their on-water training sessions - view, analyze, store and share.

The system consists of cloud based services, native iOS and Android applications. The platform is extended to support paid premium features focused on coach and athlete collaboration.



Kestrel Instruments Ballistics

EVOLVE AN EXISTING SOLUTION TO SUPPORT NEW DEVICES

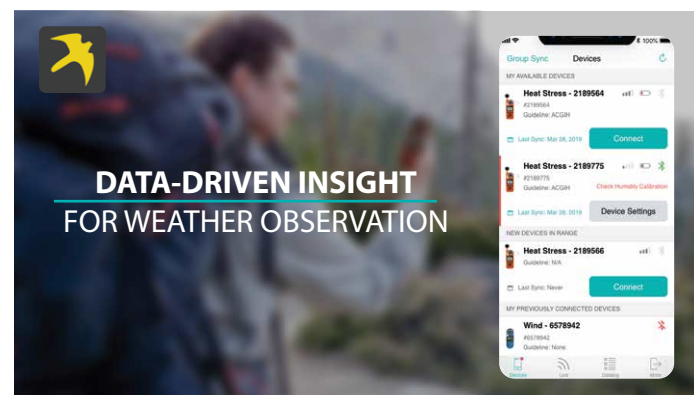


The mobile application takes into account the weather conditions and accurately determines long range holdovers and windage corrections combined with ballistics calculator to help long-range shooters do their best shot. The application is refactored and extended to introduce new types of devices to the line of meters and instruments designed.

Kestrel Instruments Weather line

BROADEN A PRODUCT OFFERING TO ENTER NEW BUSINESS AREAS

Reimagining the mobile platform experience of the Kestrel Weather line. The mobile application is completely rebuilt with a modern look and feel as well as utilizing the modern development concepts. It also enters into new business areas including agriculture and occupational heat stress as well as assessment of athlete training conditions.



03 SERVICES PROVIDED

The team at Musala Soft was responsible for the end to end delivery of the solution covering all aspects - from business analysis, UI/UX and architectural design, through development and quality assurance (including test automation), to deployment and support of the completed solution. Musala Soft provided all these services to achieve excellence with the Nielsen-Kellerman projects.

Additional Highlights



Strove to get a complete understanding of the project specifics and used expert knowledge in software development in the sports domain to consult the client to take the platform to the next level.

Utilized User Experience design practices and established an iterative approach for requirements discussion, that helps to settle the implementation scope smoothly for both building new applications or restructuring existing ones.



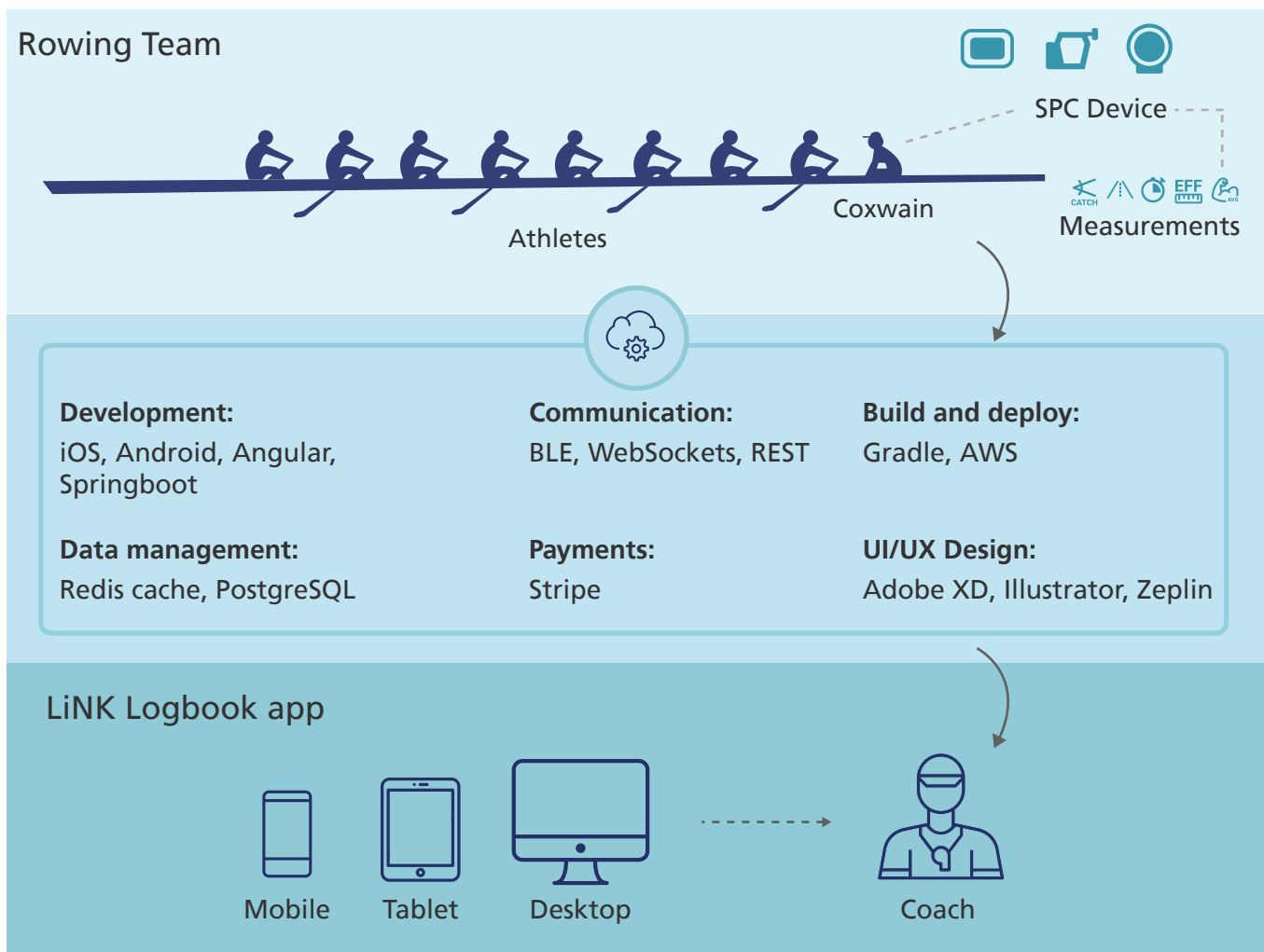
Took the responsibility of the full development process, providing the client flexibility, visibility, predictability and an active open communication between stakeholders.

Built the cloud infrastructure on Amazon Web Services, that handles all of Nielsen-Kellerman's cloud-based software solutions.



04 SOLUTION - LINK LOGBOOK

In the past, the NK Rowing and Paddling Electronics are installed on the vessel or oars and only the athlete is able to monitor the measurement data about their performance and rowing style during training. Though the tracked data was accessible via download and import to computer, Nielsen-Kellerman envisioned a solution to make this data available for coaches and spectators in real-time.



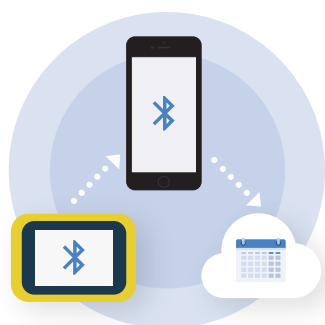
As part of the solution, a mobile phone (iPhone or Android), with the LiNK Logbook mobile application installed, is used as gateway for the data collected during the rowing session. It allows pairing with CoxBox, SpeedCoach and EmPower Oarlock devices. The communication is established through Bluetooth Low Energy - fast and reliable messaging protocol for poor network coverage environment to allow for use for on-water outdoor activities. The phone is a peripheral device in this communication - starts receiving all electronics readings and transmits them via websockets to the cloud backend component.

The cloud component processes and stores the measurements and makes them available for the Live Viewer component of the LiNK Logbook platform. The Live Viewer can be opened in the mobile app of the rower or nearby coach and can also be accessed by any browser. Thus the information about the rower's performance and the boat's pace and location can be monitored remotely in real time by coaches and spectators through different access points. The back-end and web components of the Logbook solution effectively utilize the Amazon Web Services (AWS) technology stack in order to manage and run a modern cloud offering. Builds and deploys of the application components are automated using CodePipe-

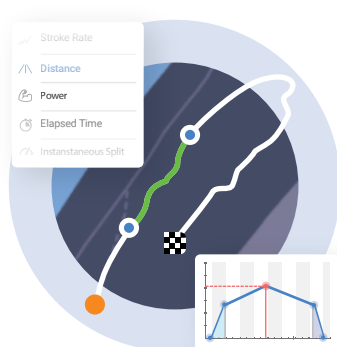
line service. Application and environments management as well as monitoring are achieved with Elastic Beanstalk. Scaling of the solution is supported by EC2, which helps achieve a highly available product. A scalable data storage is provided by RDS, Redis caching is utilized using ElastiCache, a general purpose storage of all application assets is managed via S3 buckets. To ensure maintainability of the solution logs are collected in CloudWatch. All user facing resources are delivered via the CDN of CloudFront. Those along with other AWS services seamlessly integrate in order to produce an efficient cloud offering - LiNK Logbook.

For competitive and professional athletes the performance insight might be sensitive information that needs to be protected. The LiNK Logbook also offers a subscription based service that allows private streaming only to the personal coach. The coaches are also able to compare data from multiple boats simultaneously in real time.

Save Sessions to Logbook



View and Analyze Saved Sessions



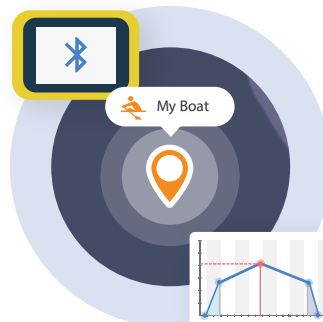
Stream Live Data

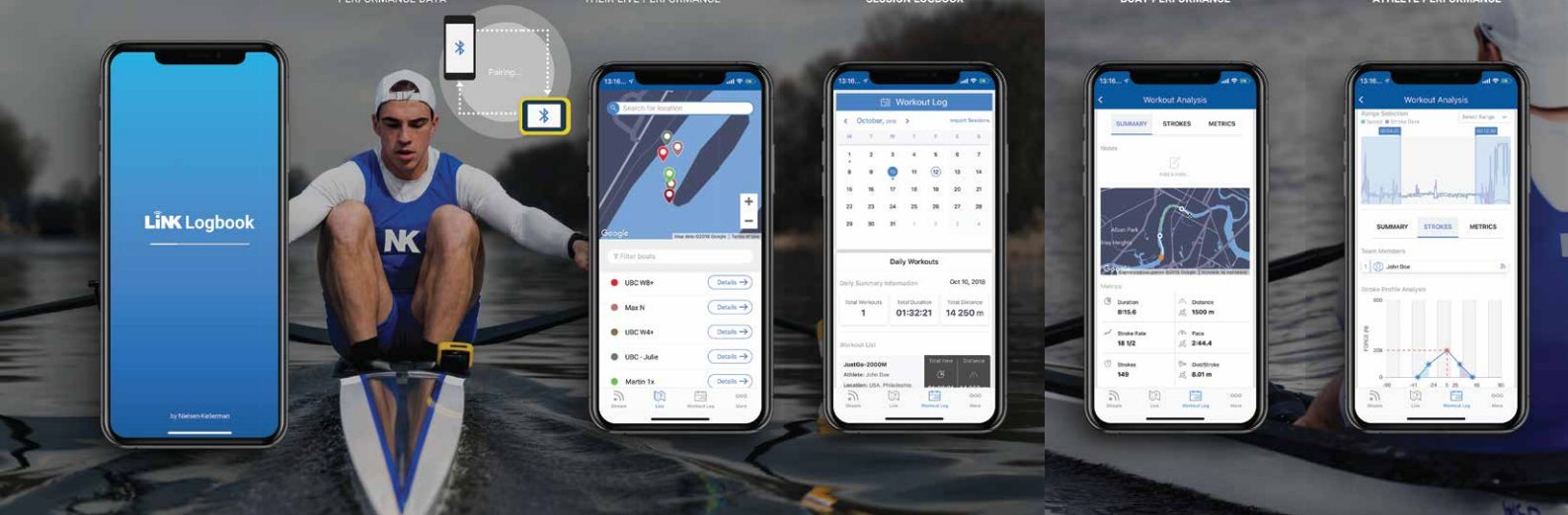


View Live Data



Achievement Unlocked





MUSALA SOFT AND NIELSEN-KELLERMAN

05 CUSTOMER VALUE-ADD

- ✓ Push the boundaries of technology enhancement of traditional sports. Build contemporary solutions that turn the measurements into insights.
- ✓ Give access to the coaches to the real time data of their athletes to improve performance. Get Immediate Insights - View your athlete's technique and output while they are rowing.
- ✓ Go Deeper With Data Review - Review Workout Data on the SpeedCoach GPS to establish targets and monitor your athletes' performance against them. For even deeper insights, upload workouts to LiNK Logbook and analyze per-stroke data from any portion of the recorded workout.
- ✓ Establish new channels for marketing and monetization for Nielsen-Kellerman. Build a rowing community to share and support athletes striving toward a goal.



Go beyond the limitations of the well-known applications and integrate the modern technology into traditional areas, such as sports and military.



Create modern solutions that leverage the measurement data gathered by NK tools to unlock the opportunity of getting better, faster and more precise.



Transform and modernize the client business strategy and help NK to become the leader who sets the innovation trends in the market.

06 ABOUT MUSALA SOFT

In 2000 we founded Musala Soft

Inspired by our desire to bring together technology and innovation to help big ideas come true. Nowadays, we keep doing it. We are an established and growing software services company with a strong track record of success in building innovative enterprise software solutions for multinationals and government institutions around the globe.



Musala Soft professional team provides expertise and creativity in all elements of the software life cycle - IT consulting, analysis, design, development, testing, implementation, integration and maintenance. Our offices in Sofia, Ruse, Burgas, Bulgaria and Skopje, Macedonia follow the latest design and agile teamwork trends to ensure work environment and processes where achievements flourish.

PROMINENT CLIENTS



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