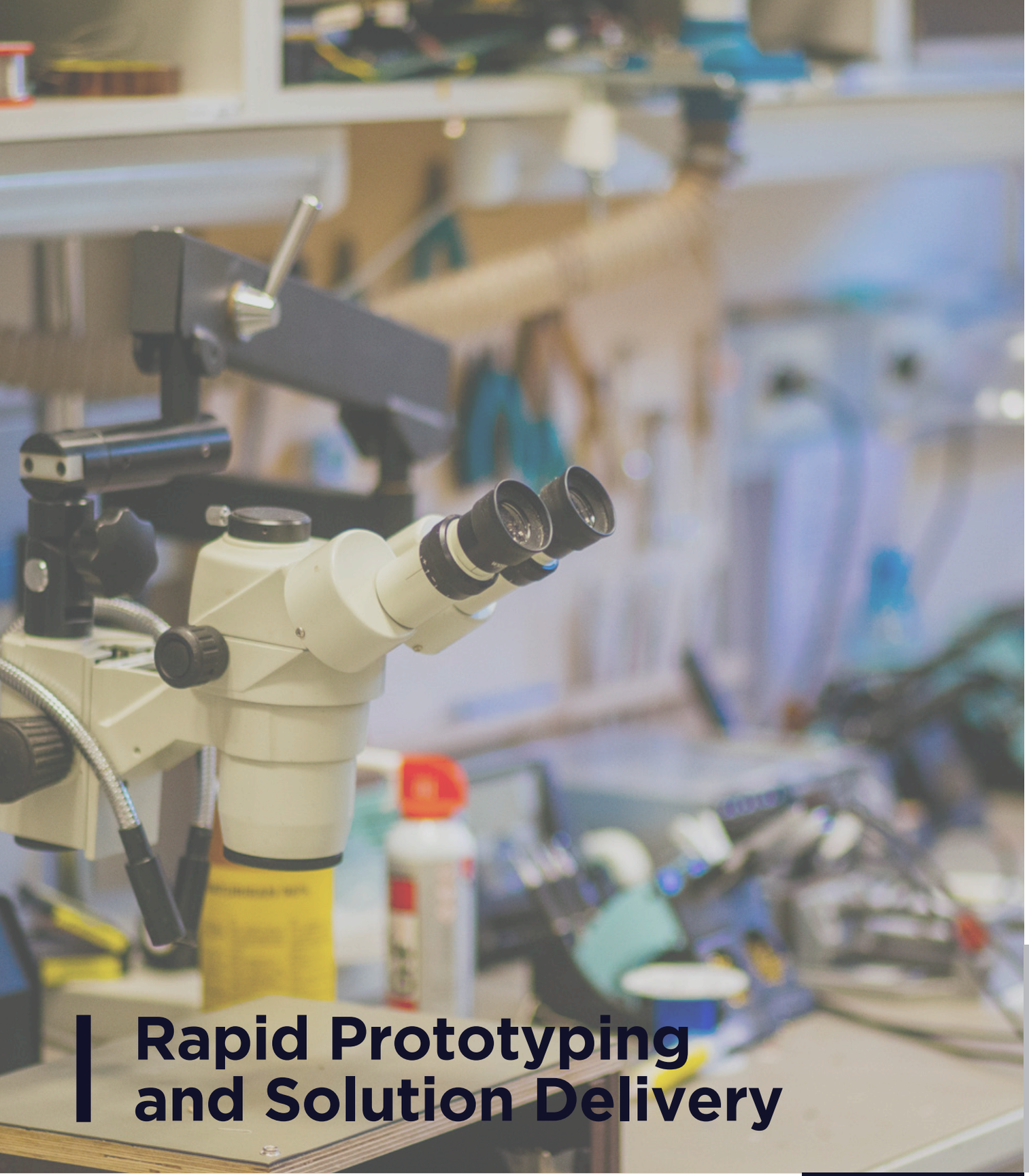

Rapid Prototyping and Solution Delivery

CASE STUDY

> *The short overall project time was a challenge for everyone, but we took it on with great focus which resulted in a quick turnaround and delivery for CES. We are accustomed to working with customers at a fast pace, but this one really tested us!*
>
> *Uroš Dragonja, Solutions Architect*

INSTRUMENTATION TECHNOLOGIES

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OVERVIEW

We were asked by a customer to create key hardware solutions for CES2018 that showcase hardware and software solutions for smart cities.

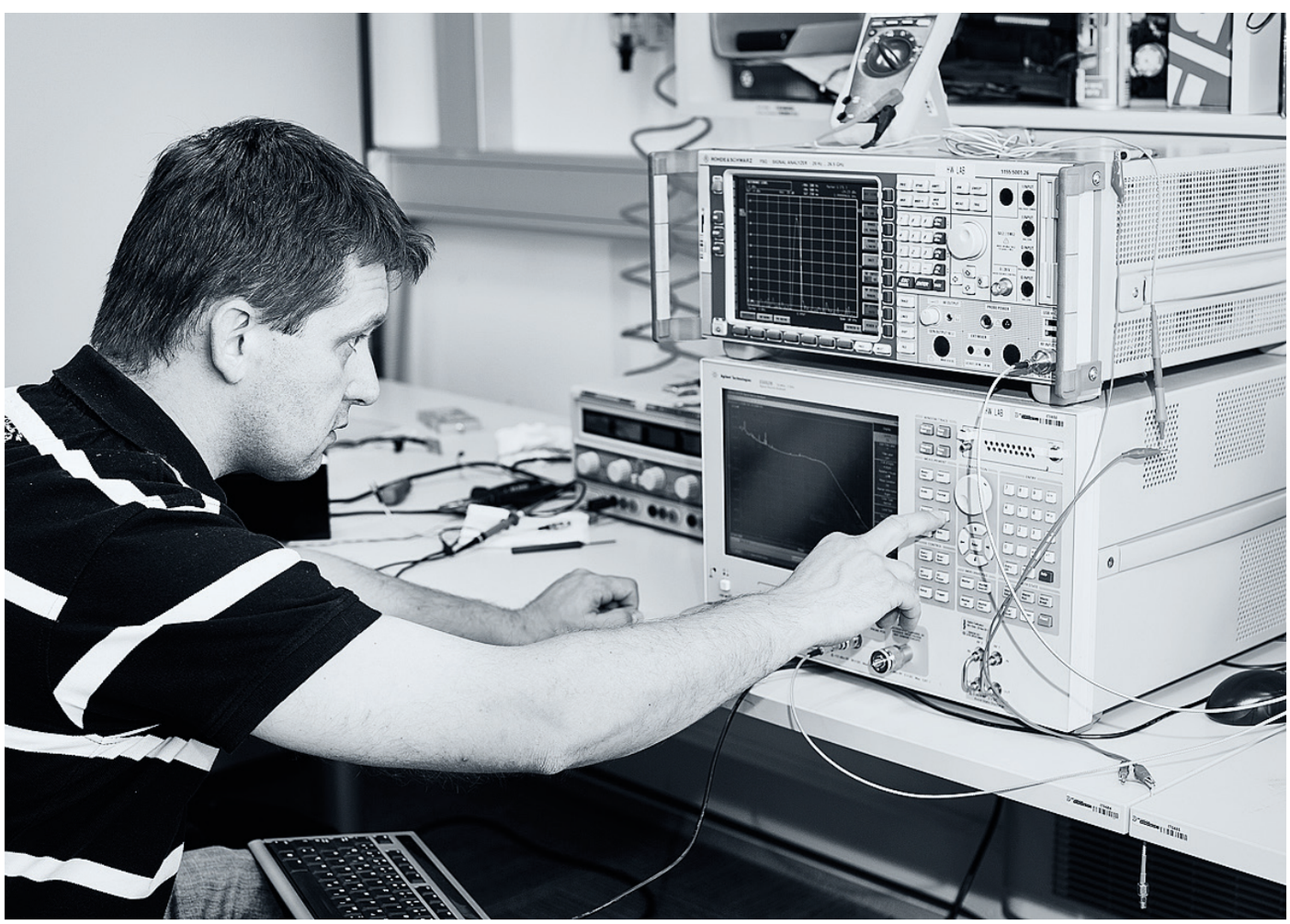
CUSTOMER VISION

CES2018 was an important show for Instrumentation Technologies' customer to demonstrate its products on a global stage. The products Instrumentation Technologies was asked to build consisted of hardware with complex multi-node and multi-root networks, along with development packages for the customer's user community. The customer was also interested in showing low-energy form factors for companies that wanted low-powered or battery powered devices designed to detect variations and exceptions in flow data, weather conditions and air quality.

APPROACH

Instrumentation Technologies was contracted by the customer to produce key deliverables of boards, sensors, embedded communication modules and development kits for CES2018... in four weeks.

The customer's CES requirements dictated the design, development and production of this technology in a very short timeframe. A team of 14 hardware and software engineers, quality control and supply chain team members was assembled and tasked with bringing these new product concepts to CES. The robust engineering processes Instrumentation Technologies uses to successfully deliver high quality customer solutions needed to be compressed significantly.



DESIGN AND DEVELOPMENT

The first few days of the project were critical. Instrumentation Technologies needed to quickly assemble a team and communicate clear objectives about what was expected in order to meet the project delivery date. Since the deadline was not movable, all other facets of the project would have to be. The available technologies and materials had to be evaluated and approved very quickly. Then, the team determined what steps could be done in parallel. This included pulling in departments throughout the company, bringing great minds together and deciding what was possible with only a cursory understanding of the design. This was truly an “agile” approach to hardware design.

TESTING

Quality Control was still an important component delivery and it was “all hands on deck” to develop test cases and an appropriate test schedule, and still have some time for any development fixes required. Quality Control was involved in all of the important stages during design and development. Their insights allowed for design that both minimized the risk of failing and shortened the testing time before the boards were produced. Their involvement throughout the project also allowed them to prepare everything for testing before the boards arrived in their lab.

CERTIFICATION

Though Federal Communications Commission (FCC) certification was not required for the technologies’ use at CES, the design for some of the boards would ultimately require certification for production. The team responsible for the design evaluated these requirements throughout the project and clearly understood what was necessary to certify the boards post CES. The FCC is a US government agency that regulates interstate communications by radio, television, wire, satellite, and cable. Ultimately, it would certify that the electromagnetic interference from the device is under appropriate limits in the United States.

COMMUNICATION

Instrumentation Technologies kept in constant communication with the customer's team, which made quick requirements, design and development decisions to ensure ontime delivery. Regular meetings were held and quick decisions were made every step of the way.

CONCLUSION

Instrumentation Technologies' expertise allowed them to deliver 4 complete engineering boards and 3 development kits for their customer at CES2018 in 30 days. Instrumentation Technologies applied its electrical engineering know-how, rapid design and development skills, supply chain connections, quality control, great customer communication and teamwork to make it happen.

BACKGROUND

CES is the largest consumer electronics show in the world. Every year, over 170,000 people converge in Las Vegas, Nevada to see what's new, and 2018 was the biggest year yet. With 4,000+ exhibitors, the halls are filled with smart technology products from around the globe including 5G wireless, autonomous cars, AI (artificial intelligence), AR (augmented reality), digital health, connected home devices and even a ping pong playing robot! In 2018, CES also hosted the first ever Smart Cities section, with a focus on connected ecosystems driven by technological advancements offering the potential for faster economic growth, integrated mobility, increased accessibility, sustainability and security, and a better quality of life.

> *The prototyping and development Instrumentation Technologies has provided for our team has been exceptional.*
>
> *Engineering Executive,*
> *Instrumentation Technologies client*

> *The work our team did on behalf of our customer for CES2018 is indicative of the change people need to see in the field of embedded software and hardware solutions. Many partners would have said that the tight delivery deadlines were impossible, but the team rose to the occasion and delivered, and the customer was extremely satisfied.*
>
> *Elvis Janežic, Instrumentation Technologies CEO*

ABOUT US

Instrumentation Technologies is a well-experienced, high-tech company, able to provide cutting-edge solutions for your needs. Our flexible team is comprised of curious and innovative, yet reliable and well-experienced, engineers, who work to excel at every solution they develop.

We started 20 years ago in the field of particle accelerators, where we now offer diverse high-performance instruments, under the name Libera. Utilizing the knowledge we have gained in the demanding field of particle accelerators, we are also able to offer consultation expertise in other technologically demanding fields, such as MedTech, IoT, smart cities, telecommunications, aerospace, and university research. Our solutions include hardware and embedded software design, rapid prototyping, product development, and certification assistance.

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