



INSTRUMENTATION
TECHNOLOGIES



LIBERA



Company

Presentation

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S o l k a n , 2 0 1 9

Agenda

- 🔍 COMPANY OVERVIEW
- 🔍 POSSIBLE CAREER PATHS
- 🔍 EXAMPLE OF OPAC FELLOWSHIP



Instrumentation Technologies

EST. 1998



40 EMPLOYEES



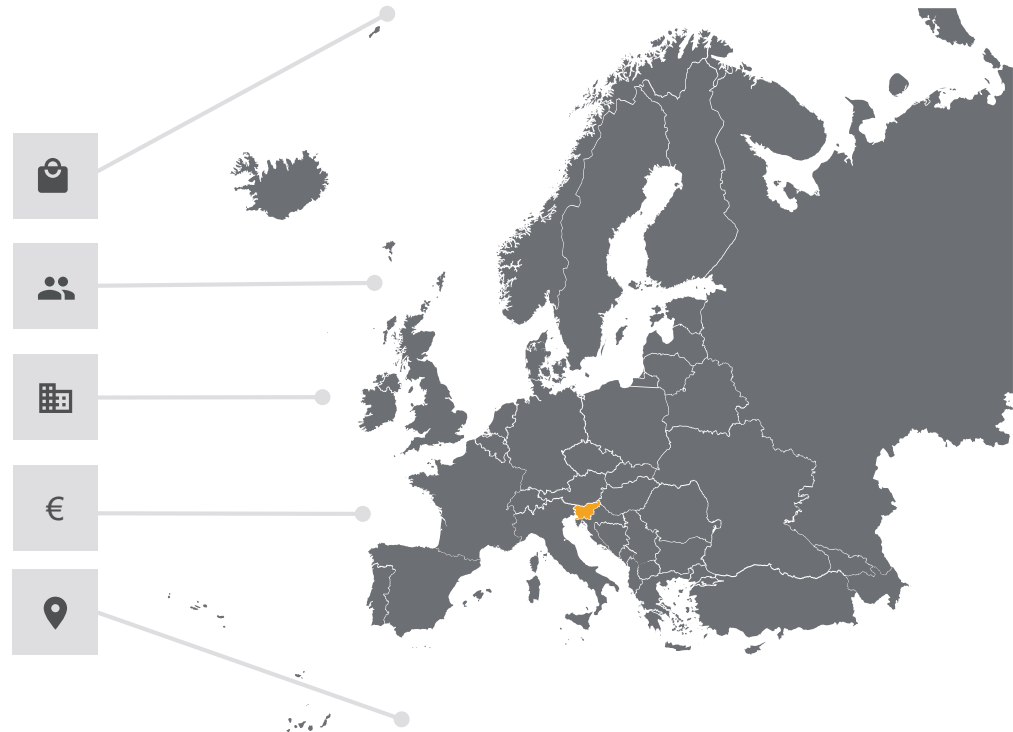
PRIVATELY OWNED



7,2 M€ REVENUE IN 2017



LOCATED IN CENTRAL EUROPE









INSTRUMENTATION TECHNOLOGIES

SOLUTIONS FOR PARTICLE ACCELERATORS

Product portfolio of
more than 20
products



LIBERA

SOLUTIONS FOR INDUSTRIES

Consulting expertise
in other
technologically
advanced fields

- MedTech
- Smart cities
- Aerospace etc.

RED PITAYA

Open-source
general purpose
laboratory
instrument



Solutions for Particle Accelerators

Started in 1998 as a collaboration between synchrotrons Elettra, PSI, Diamond and Soleil. The company developed Libera Electron, putting together an **analog front end** , fast **A/D converters** and a **digital processor** (FPGA).



LIBERA

PAUL SCHERRER INSTITUT



Elettra Sincrotrone Trieste



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Solutions for Particle Accelerators

Beam diagnostics:

- Beam Position Monitoring
- Beam Loss Monitoring
- Beam Current / Beam Phase

LLRF controls

- LINAC
- Proton synchrotrons

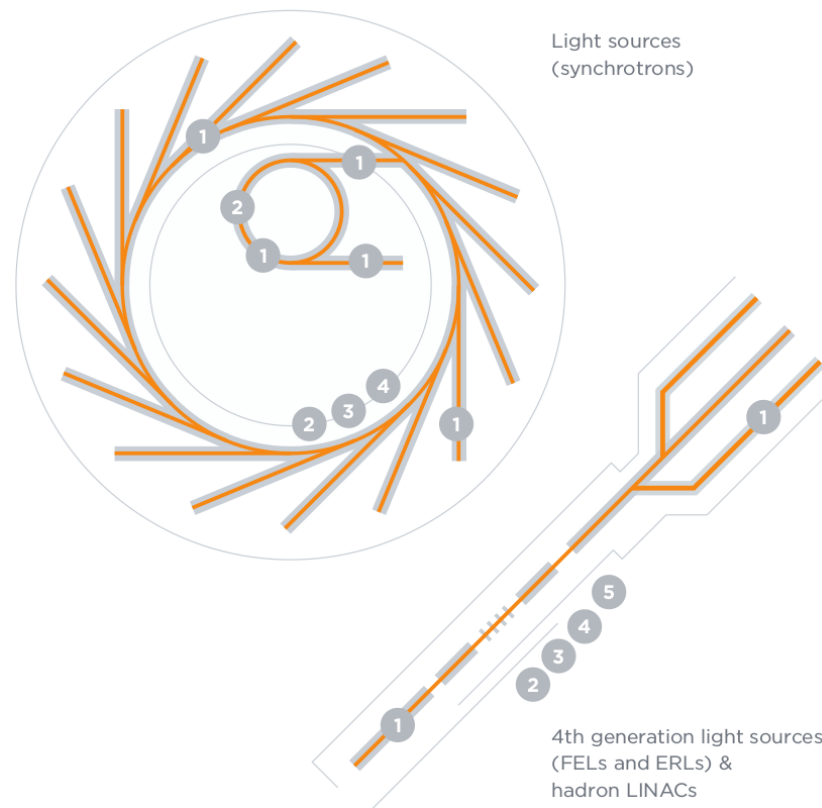
RF generation and transfer

- Reference Master Oscillators
- RF distribution

General Purpose DAQ (RF, Current)



LIBERA



Solutions for Particle Accelerators

- A global brand in the field of beam diagnostics and feedback systems
- Working with labs in more than 30 countries worldwide
- Constantly caring for clients – sales, support, training, maintenance
- Requires a lot of travelling - ¼



Organization (Libera unit)

Project management (2 PM)

SW development group (6
SW engineers)

FPGA development group
(2 FPGA engineers)

HW development group (5
HW engineers)

Sales and support group (5
engineers + customer
coordinator)

Quality control (4 test
engineers)

POSSIBLE CAREER PATHS



T E C H N I C A L

- Deep knowledge of a specific field
- Involved in development applications



C U S T O M E R -
O R I E N T E D

- Application level knowledge
- In-touch with clients



TECHNICAL PROFILE

- ✓ **Possible fields**
 - Hardware, Software, FPGA, System architecture
 - Each takes a part in product development cycle
 - Different roles within the department
 - Mentorship, trainings
- ✓ **Working with the customer**
 - Even though you don't physically visit them
 - In contact over email, meetings etc.
- ✓ **Involved with development applications**
 - Deeper technical knowledge in a specific field
 - Cultivating specialists in a specific field
- ✓ **Working on projects**
 - Long or short-term projects
 - Short: client needs a small feature
 - Long: GSI FAIR









CUSTOMER-ORIENTED PROFILE

✓ **Application level knowledge**

- Technical knowledge + people skills
- Important to understand the client needs
- Business knowledge is also important

✓ **Working with the customer**

Sales engineer – preparing proposals, following-up on the discussions, searching for funding, important to understand what the client wants, visiting conferences

Support engineer – Offering training and maintenance to our existing clients, preparing product documentation, looking for new technologies

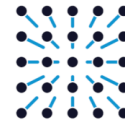
✓ **Possible fields**

Sales engineer, support engineer, product manager

✓ **Involved in every part of product cycle**

You can be involved in innovation, product development, naming the product and sales activities such as setting the price etc.

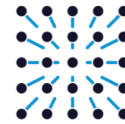
CLIENT



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If we don't get in touch with the client we only know what the client tells us – very limited knowledge of the client's needs. Consequently worse service for the client

CLIENT



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By visiting the client we can see their environment and understand their needs and problems in a better way. We notice that the client is willing to tell you more if they physically meet you.

RESULT:

- Make a relationship with the client and gain trust
 - Better able to cater to the client's needs
- Understand the requirements which drives new product development



CONNECTION TO RESEARCH

1. Doing measurements together with the client and preparing a paper together

Example: IPAC 2019 we prepared two papers in collaboration with Elettra Sinchrotrone in Trieste, Italy showing the valuating of a new 500 MHz digitizer and evaluation of pilot-tone calibration based BPM system

2. Collaborating the client to drive new product development

Example: Our product Libera Spark was created in collaboration with ESRF

THE GOAL:

We don't want to be a company who creates products which are then useless to the labs. We prefer collaborating with the labs and determining specifications based on their needs



INSTRUMENTATION TECHNOLOGIES

General-purpose FPGA-based Data Acquisition Systems

Libera Digit 125

- Digitization of DC-coupled pulses and RF signals
- 125 MHz - 18 bit ADCs

Libera Digit 500

- Digitization of DC-coupled signals - 2 GHz
- 125 MHz - 18 bit ADCs, phase locked loop reference

Scintillator Pulse Processor (BLM)

- Pulse digitization, summing and integration, pulse counting
- Synchronization capabilities, external and auto-triggering

Current Meter

- Absolute calibrated

Taking care of 4000 LIBERA

Supporting over 70 laboratories worldwide!

Libera users:

LIBERA

Solutions for particle accelerators

BPM Electronics

- Libera Spark
- Libera Photon
- Libera Brilliance
- Libera Hadron
- Libera Cavity BPM
- Libera Single Pass E/H

Beam Loss Monitor System

- Libera BLM
- Beam Loss Detector

Digitizers

- Libera Digit 125
- Libera Digit 500

Clock Transfer System

Wide Dynamic Range Amplifier

LIBERA

Libera Digit 500

With great ADCs

and versatile

able to handle more than

micrometers

Integration, Matlab compatible

INSTRUMENTATION TECHNOLOGIES

Product display area featuring:

- Four orange water bottles
- Libera Digit 125 and 500 units
- Scintillator Pulse Processor (BLM) unit
- Current Meter unit
- Laptop displaying software
- Various brochures and literature
- Small electronic components on display

Product display area featuring:

- Laptop displaying software
- Brochures and literature









Example of an OPAC fellow's career

M A N U E L
C A R G N E L U T T I

2012-14

Started as a **software developer** – involved in the wholesome process of developing a product

2015-16

Involved in product definition in one specific project and started to play a role of **product manager**

2017

Became **head of the business unit**, taking care of the highest strategic decisions together with the department and CEO



2012

Started working at Instrumentation Technologies through OPAC network

2014-15

Soon showed potential while interacting with the client and worked as a **support engineer**

2016-17

As a **sales engineer** started making more strategic decisions about the product's sales

Role of OPAC

M A N U E L
C A R G N E L U T T I

- ✓ **KNOWLEDGE**
 - Trainings and conferences
 - Not only technical knowledge
- ✓ **NETWORKING**
 - Opportunity to get new contacts
 - Key-point for each fellow
- ✓ **RESOURCES**
 - The company was able to provide time and budget
 - Not easy for companies

Role of Instrumentation Technologies

M A N U E L

C A R G N E L U T T I

✓ DIFFERENT COLLABORATIONS

- An unique balance of R&D activities and commercial aspects
- Able to collaborate with the end user

GIVEN A LOT OF RESPONSIBILITY FROM THE

✓

START

- The CEO gives trust and empowers people in new roles
- Especially if you are willing to take responsibility and pursue the company

✓ TRAVEL

- If you are willing to travel the company will enable you to do so as much as possible





















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Thank you!

W W W . I - T E C H . S I

