Task 14.6 Industrialisation of REDNet

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Bring the accelerator timing system developed for the ion-therapy facility MedAustron to "product grade level " so that it can be acquired by similar projects.

- **Bring** lifeycle and documentation **to EN13485 level**

- **Identify cost reduction levers,** review architecture, design, BOM

- Assess market opportunities, **identify potential customers**

- Make specifications, BOM, user documentation **openly accessible**

ARIES

Timing System in a Box

Main Timing System

GPS

OCXO

MTG

Fan-Out

Proven and Robust Transport Platform

Micro Research Finland (light sources)

Sequencer, event framework and plug-ins in FPGA

NI PXIe platforms (additional platforms can be provided in < 6 months including hardware, programming and testing)

Stability Features

GPS Integrated (100 nsec timestamp precision), OCXO oscillator

n Hz heartbeat to synchronize cycle start

Configurable pulse trains (Hz to kHz) and reference clock up to 100 MHz, 5 virtual timing systems concurrently
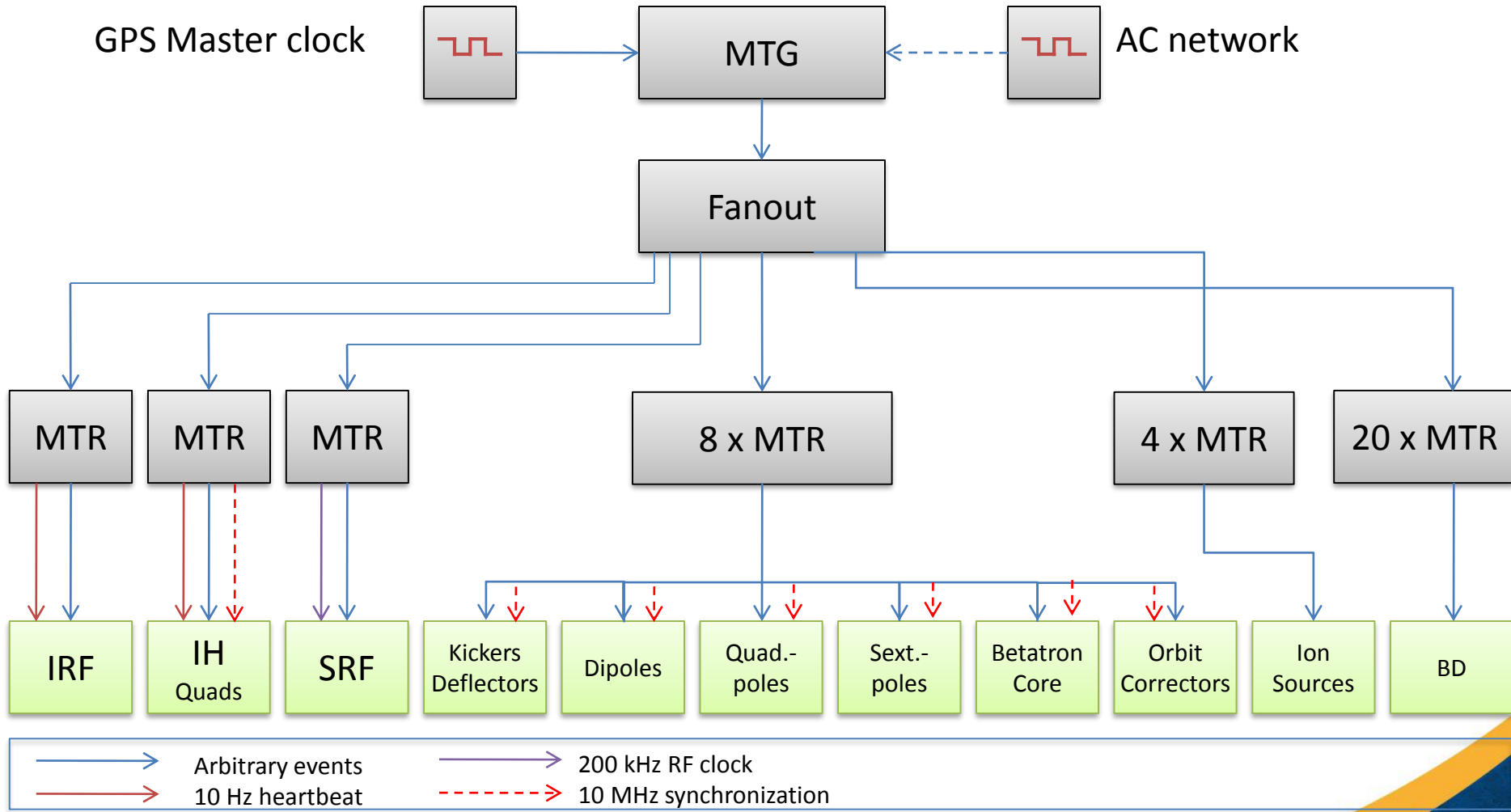
Event Receiver Card and Software Functionality

Windows drivers, Linux drivers can be developed if needed

SW Interrupts, Star Trigger Line & Bus, Aux Outputs, serial out

Up to 20 outputs with TTL & Scope connector fanout box

Generic "in-a-box receiver" to integrate systems

ARIES

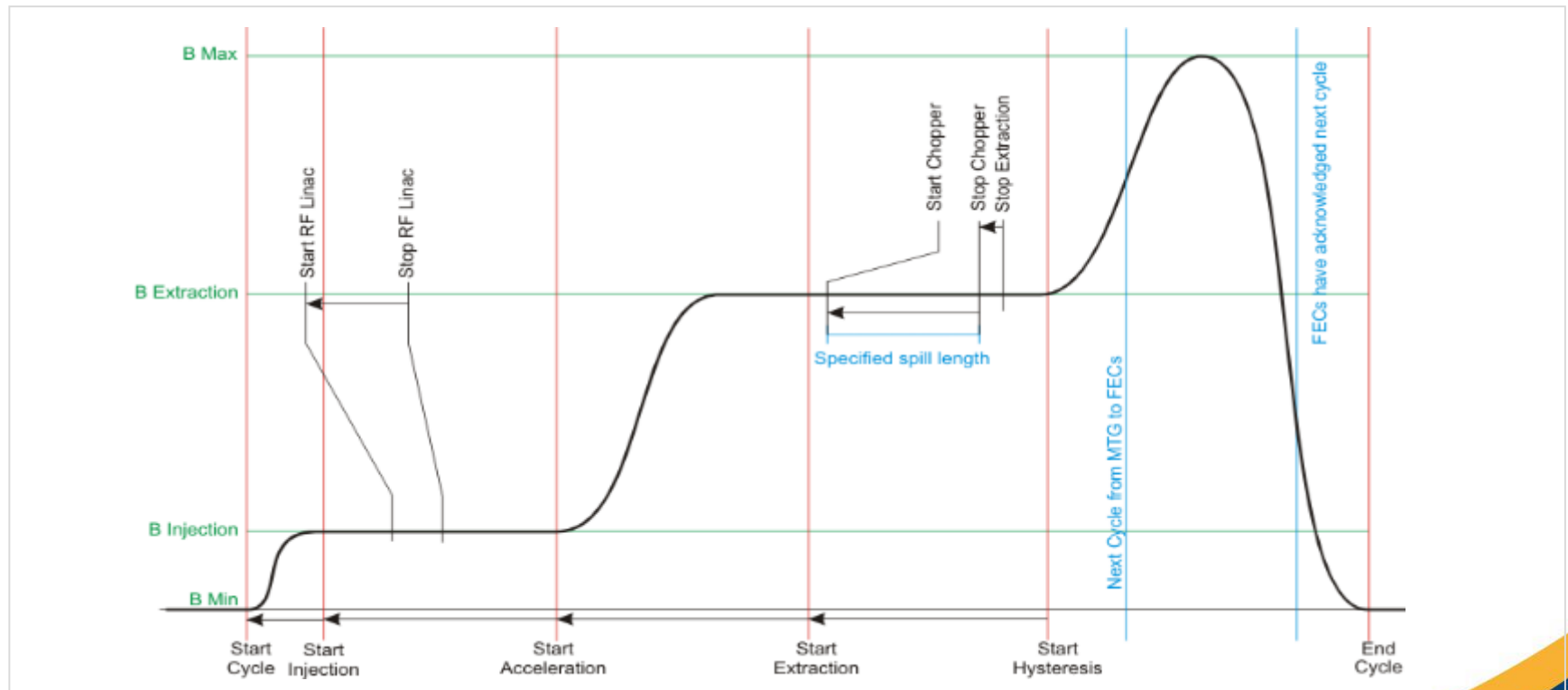# **R**eal-Time **E**vent **D**istribution **Net**work

Operation Principle

Timing system sequences

- **Events** with absolute times and
- with times relative to other events

Timing commands

- Real-Time
- Anytime during cycle
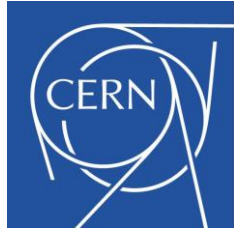
Plans for Coming Year (2017/18)

- **Compile existing documentation**
- **Gap analysis towards EN 13485**
- **Identify potential customers**
- **Gather customer needs**

Selected Industries in this Task

Development Partners

Suppliers