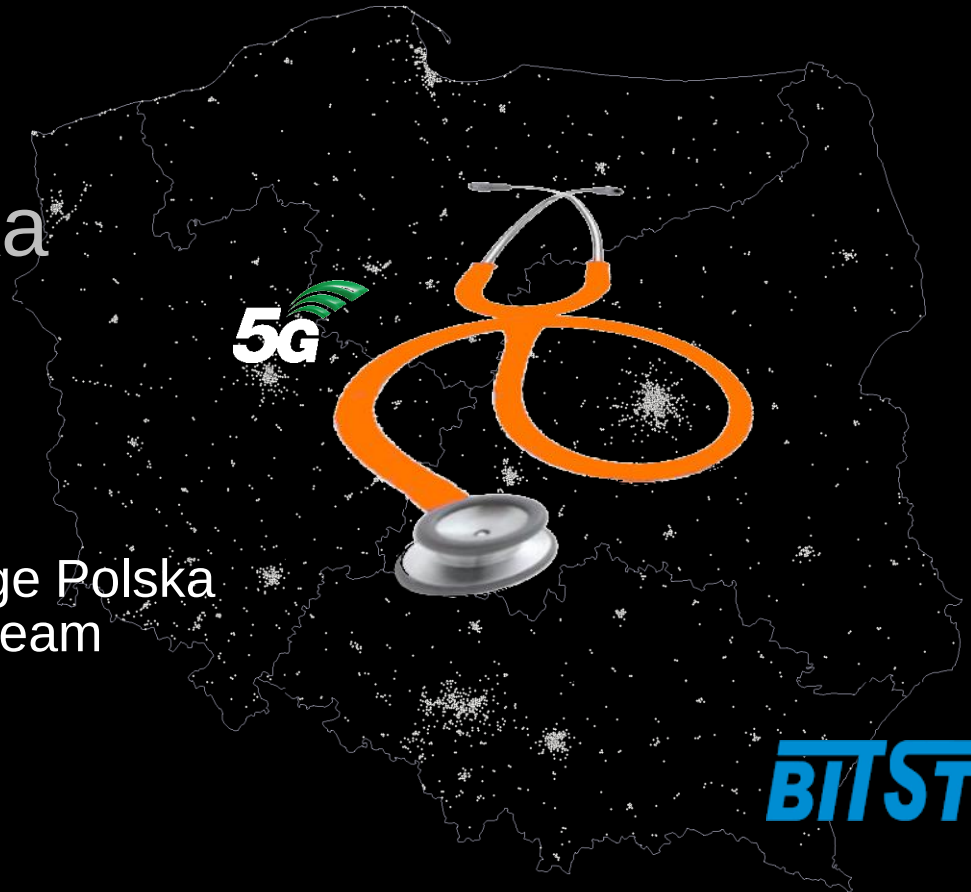
Trust or check?

Synchronization monitoring in Orange Polska

Warszawa
04th Nov 2020



Marek Brawański – Orange Polska
Krzysztof Nowacki - Bitstream

orange™

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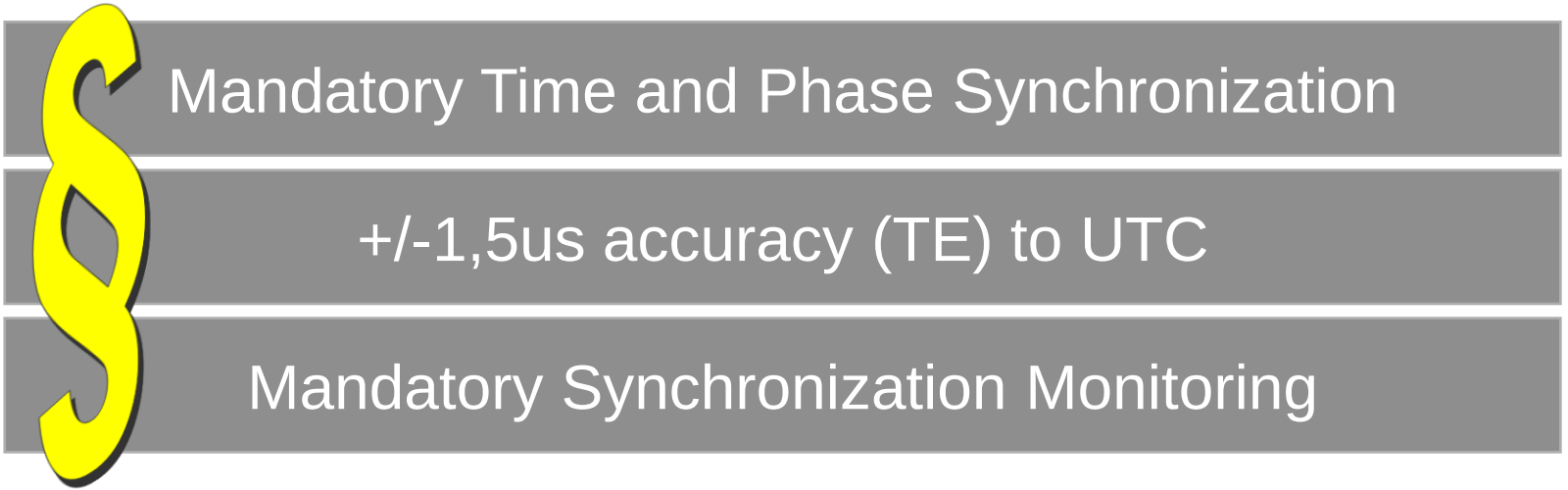
Legal obligations

5G licence draft* requirements



Customer experience

5G TDD coverage

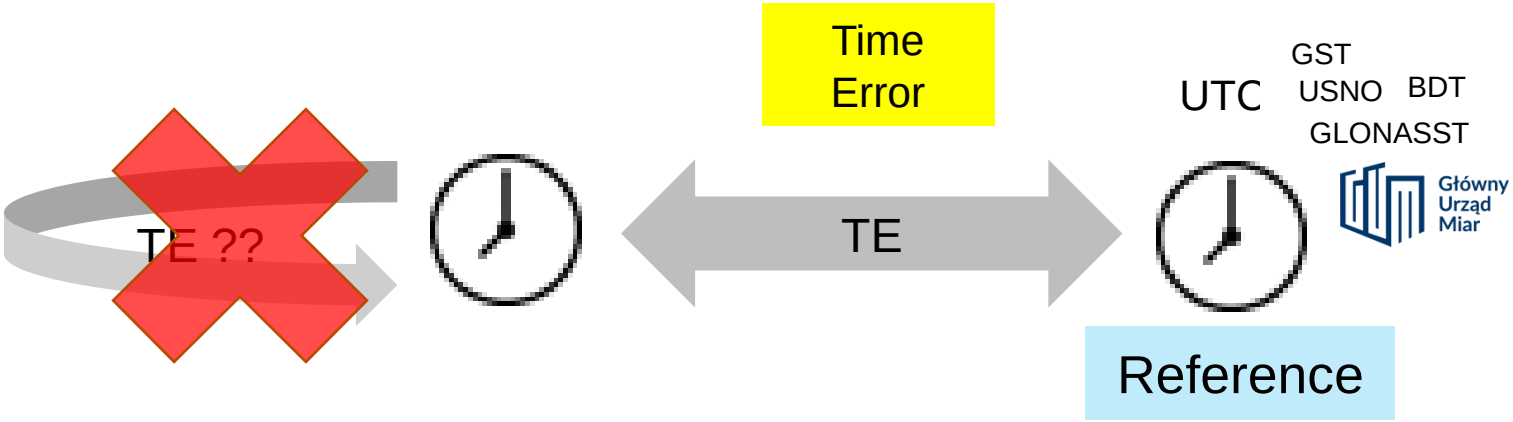
Bandwidth

Mobility

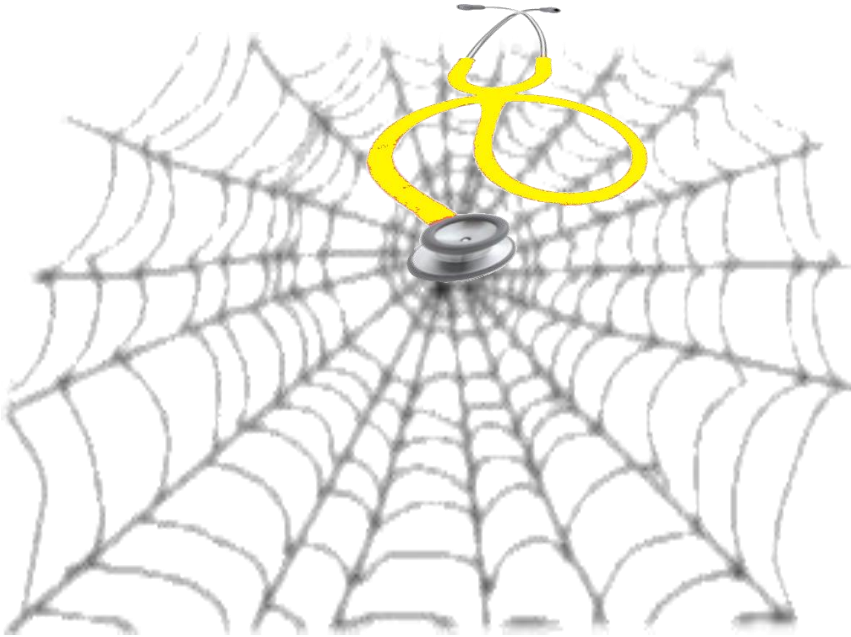
…

Perhaps obvious, but often overlooked …

- **No device alone** can measure it's **own time error** (TE)
- **External reference** is essential



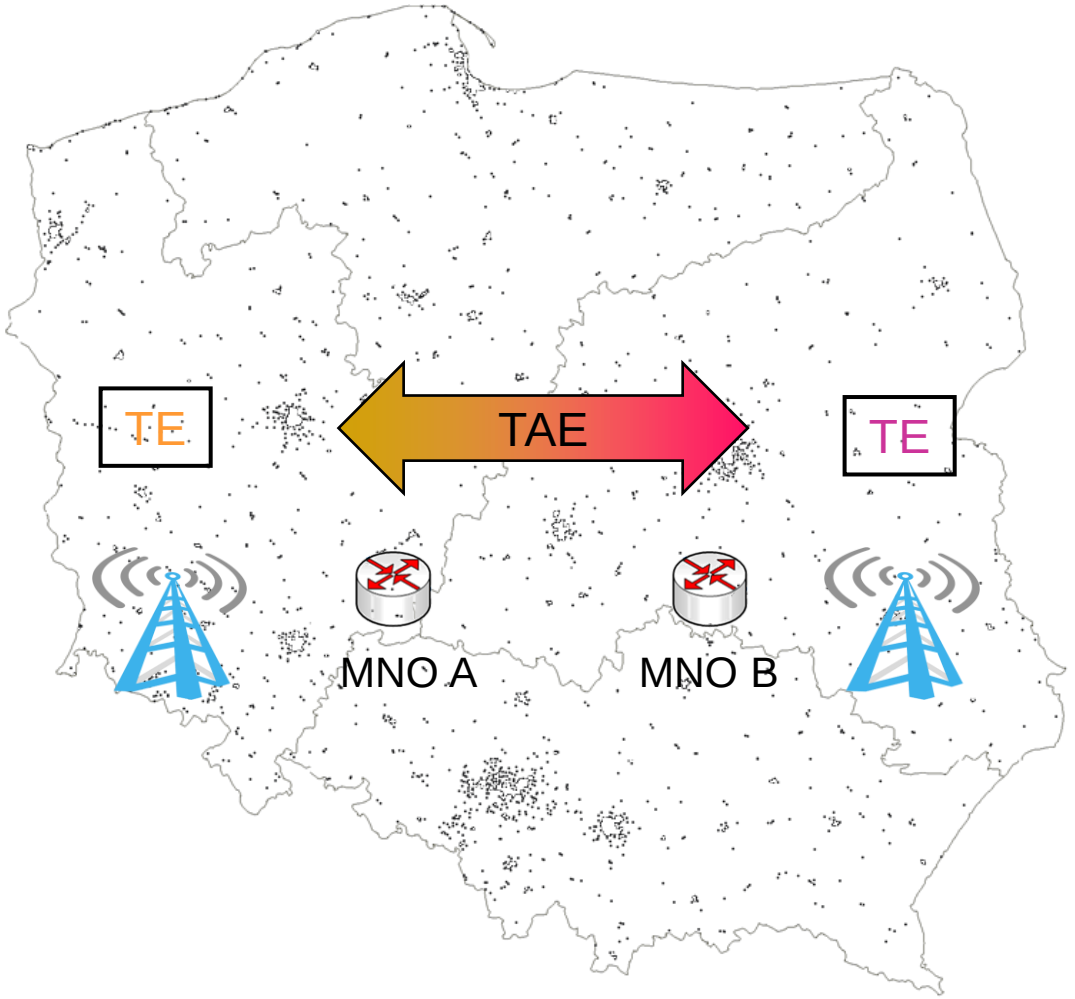
Options



Metrics that matter

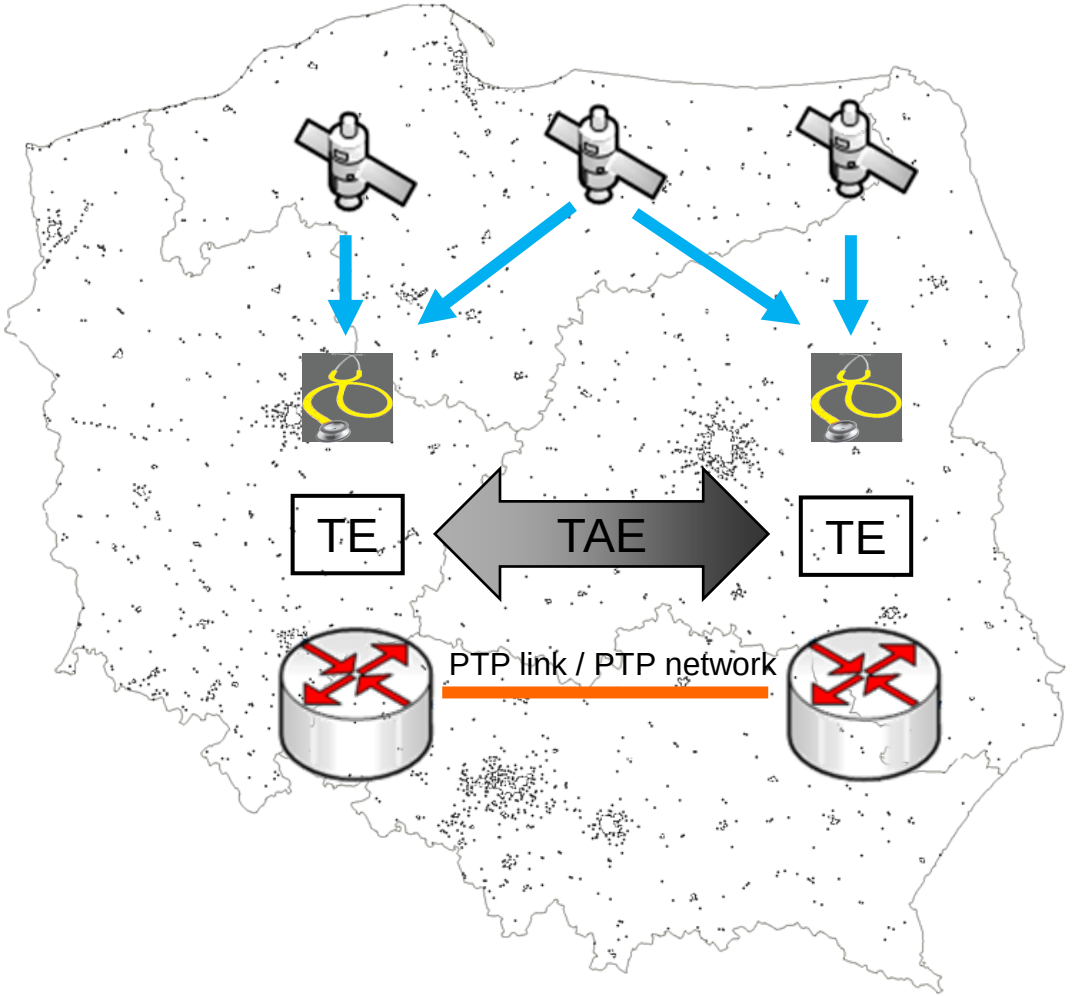
To control

- License terms
- Performance & Quality



Directions to go

- 2 x TE => calculate TAE
- TAE directly with latest GNSS



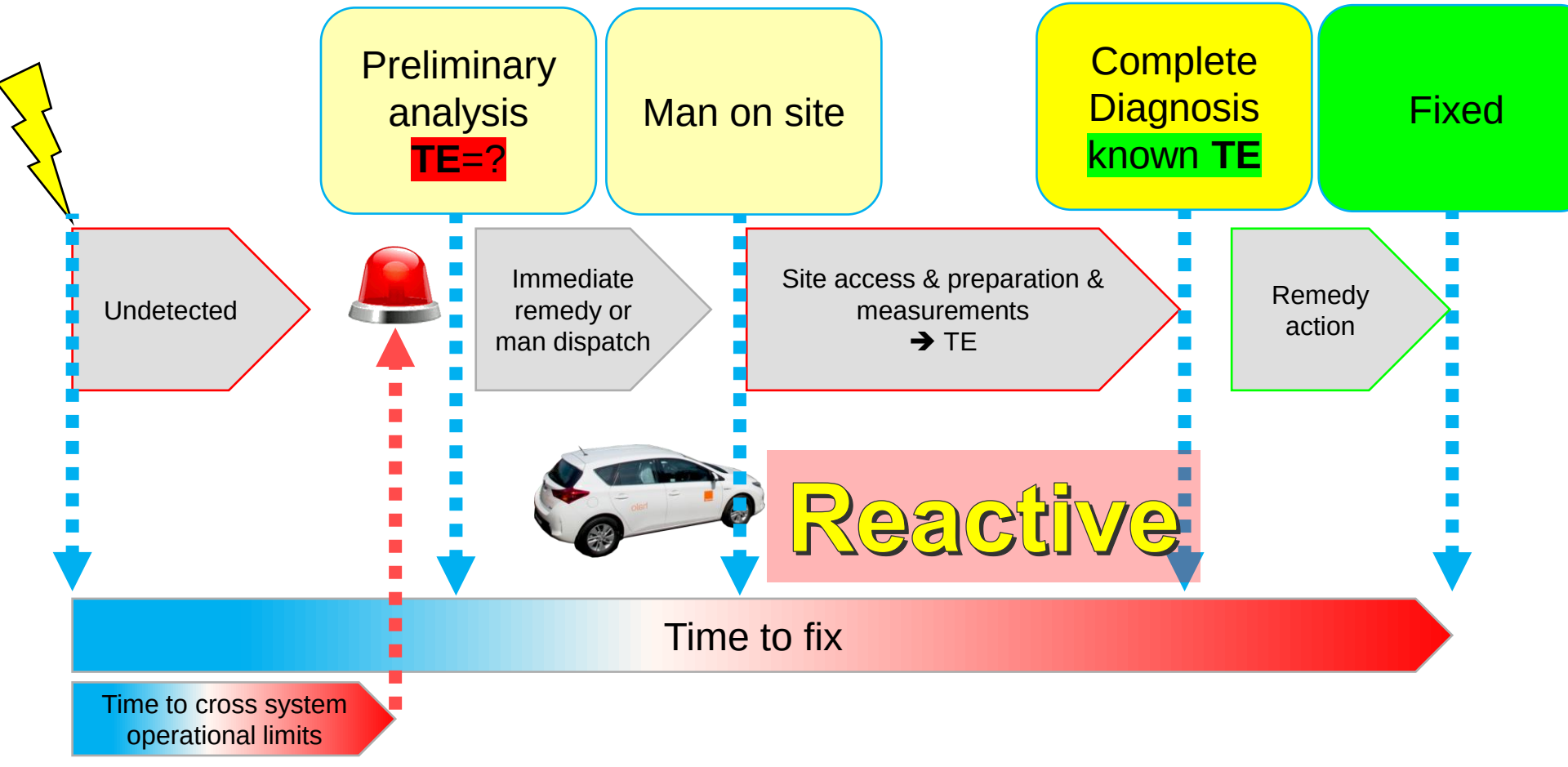
Time Error

Logging PTP

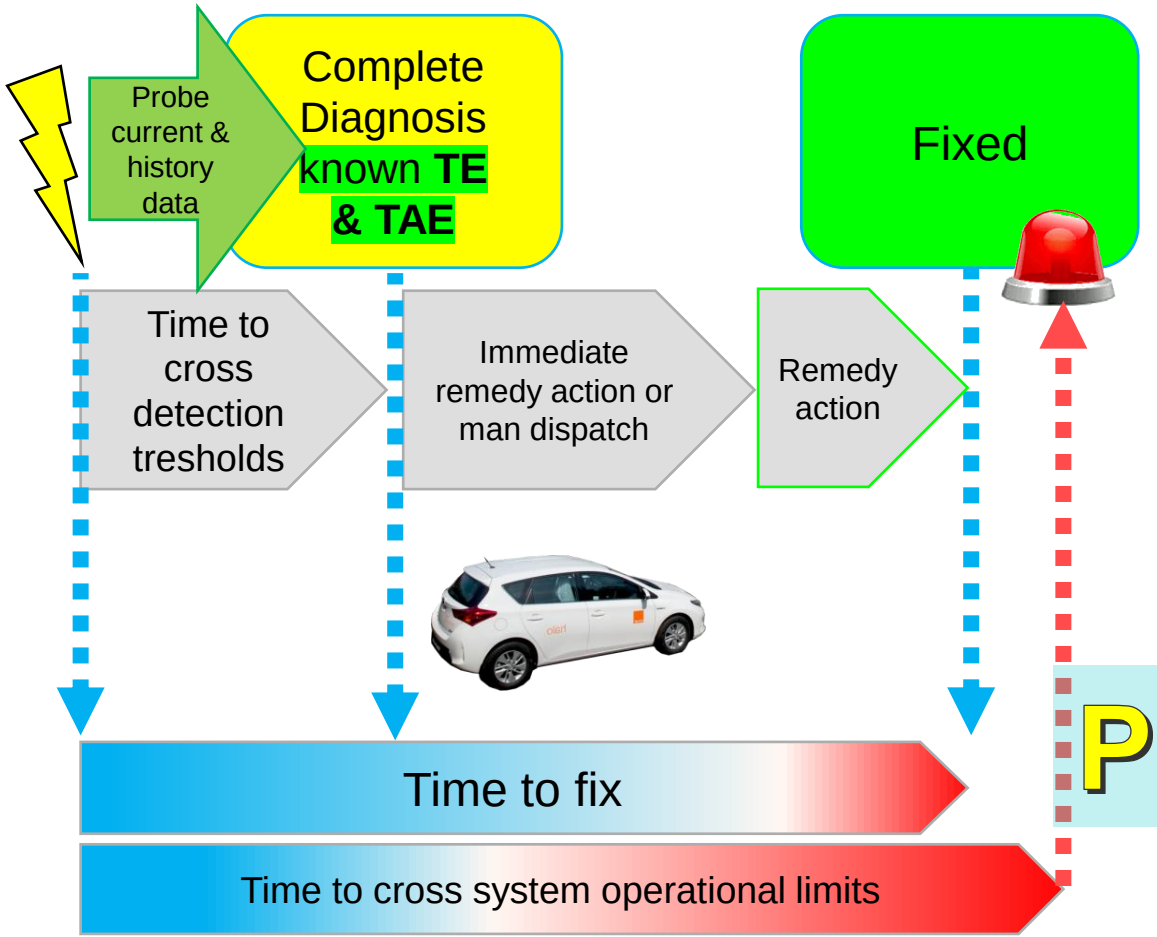
Time Error

& **PTP signalling**

Time synchronization incident handling without probes

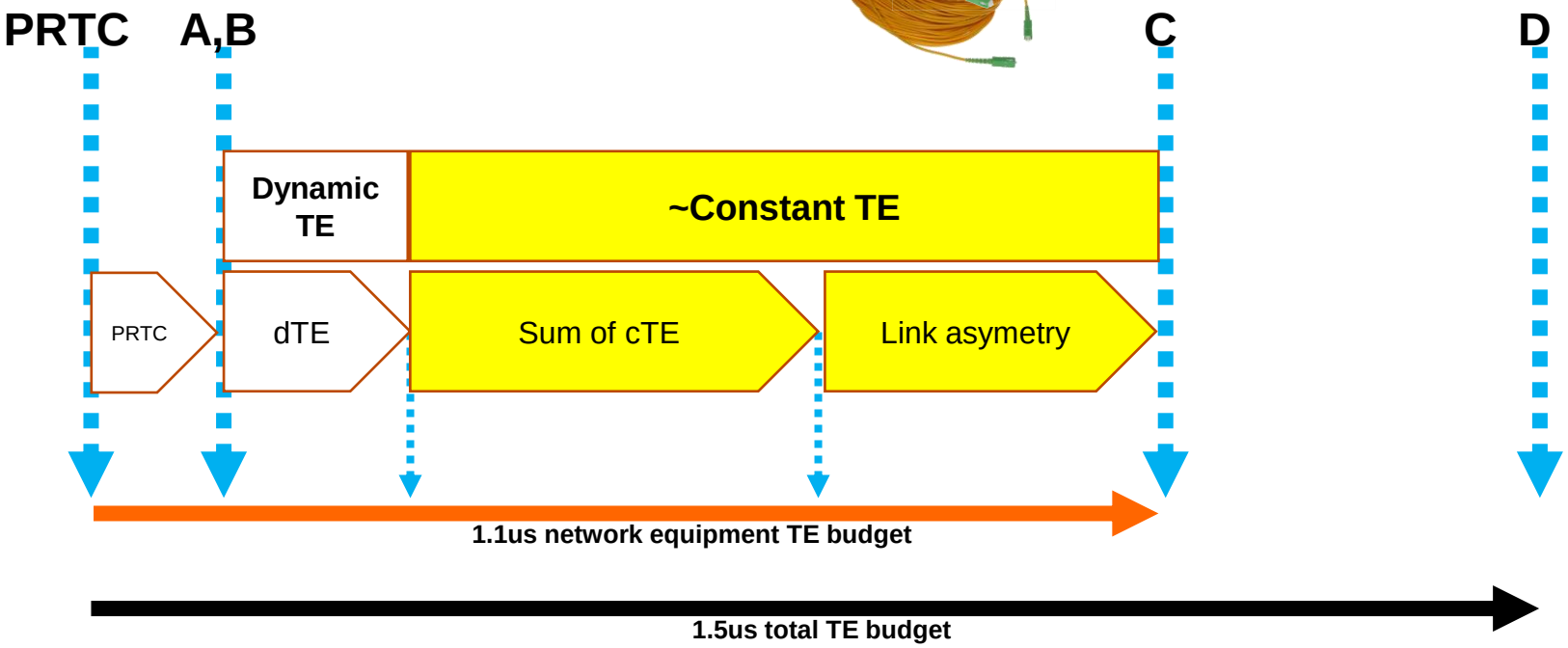


Probe based time synchronization incident handling

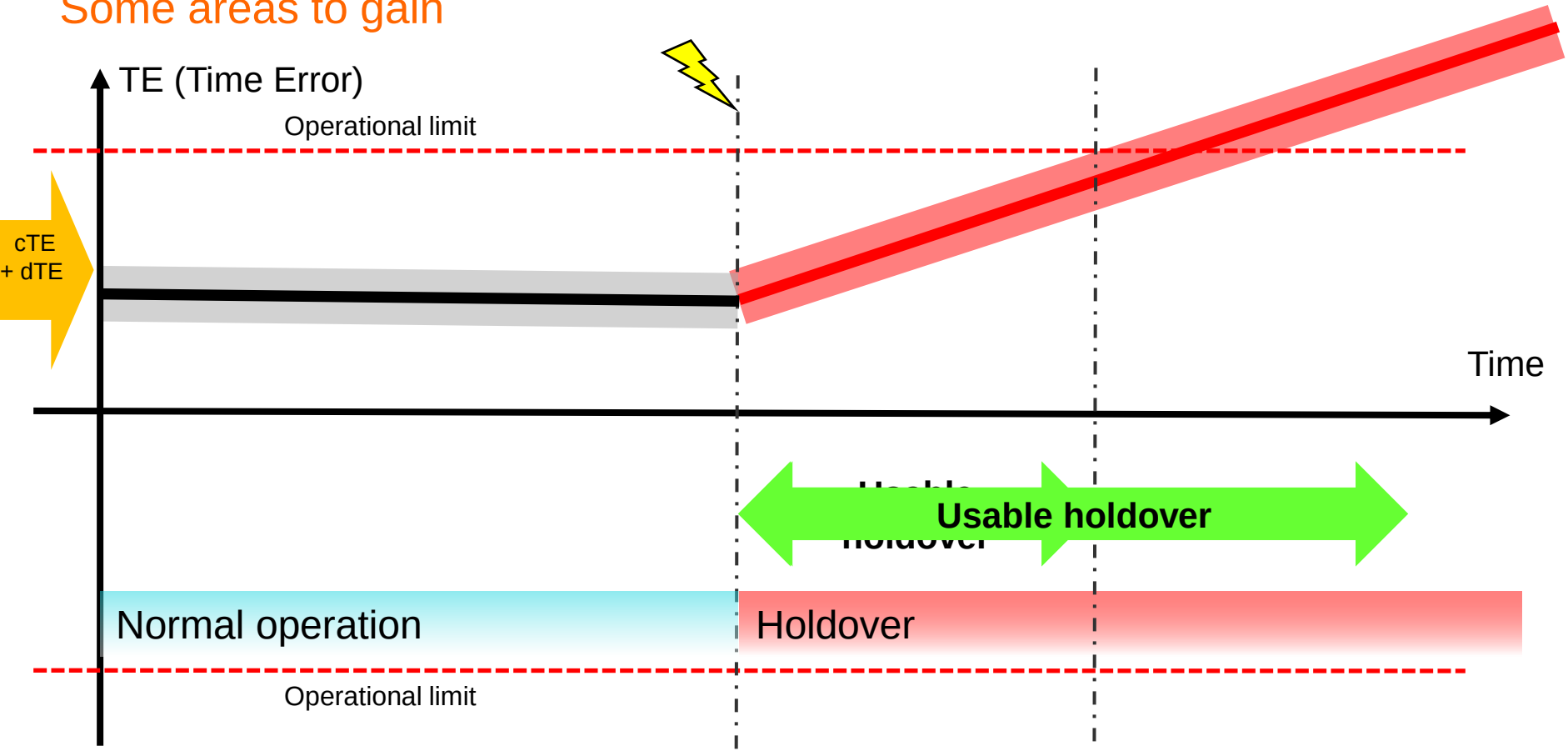


- Save time & OPEX – less on site activities
- Instant current status & history log access
- Great chance to fix the problem before service degradation occur

Some areas to gain

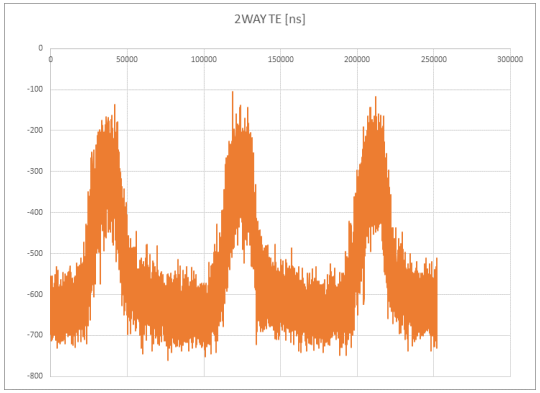


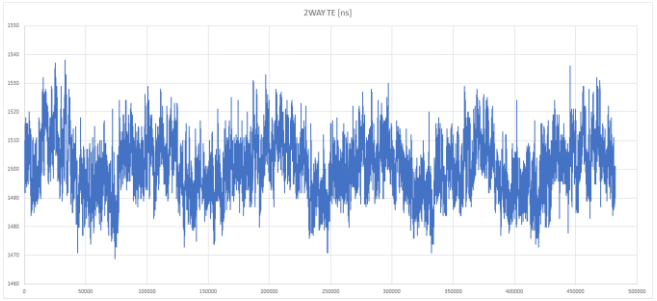
Some areas to gain

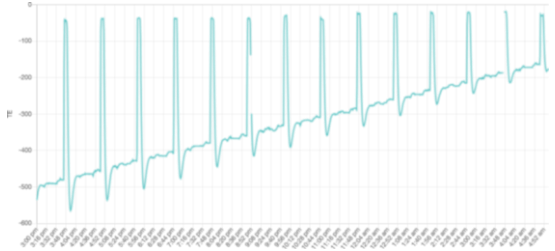


Drivers

- Legal obligation - 5G TDD License
- Basic metrics visibility
- Operational advantage
- Customer experience protection
- PTP time distribution model and shared RAN
- Human errors, bugs, stability issues - „silent killers”





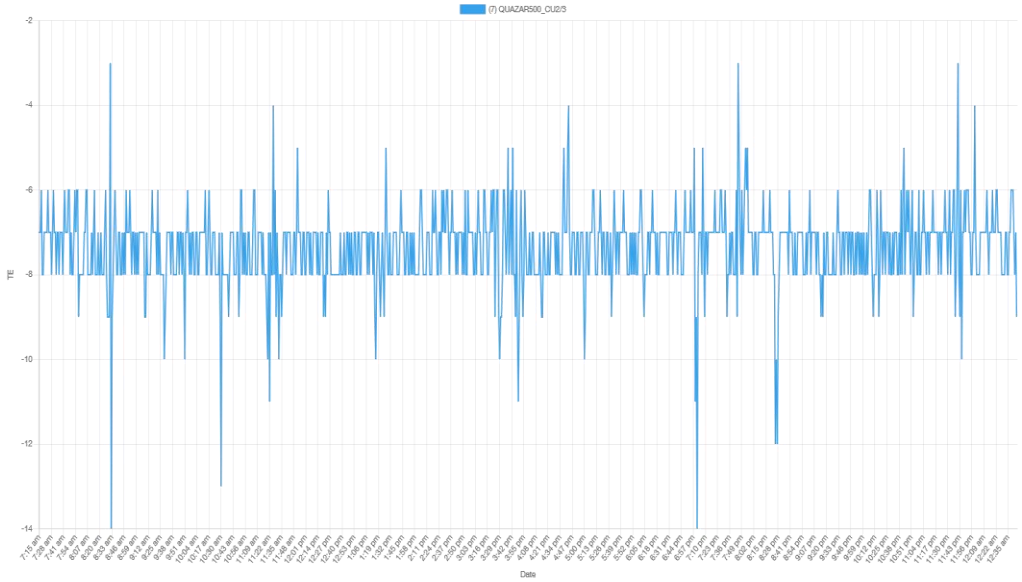


Targets

- TE and TAE control, no guessing
- 5G License compliance
- Response time optimization - early detection - extra time for reaction
- Optimized cTE = Extra time for holdover
- OPEX savings

What we get

- Ultimate „forensic investigation” tool
- Platform open for further development
- Accurate backup GM clock
- Frequency synchronization probe
- More on next ITSF ☺



Where we are

- Deployment of phase I of synchronization probes implementation QUAZAR500 (various versions)
- Preparation for phase II - tailor the solution to meet OPL future goals

Trust or check? …

Trust, but check ☺

Quazar 500
Synchronization Quality Probe

- Synchronization quality probe with up to 8, 10Gbit/s ports
- Monitors PTP, Synchronous Ethernet on each port
- Built-in high quality GNSS synchronized reference clock
- Operates as a Master Clock, Boundary Clock, and passive slave
- Full range of auxiliary interfaces (I/O) like ToD, E1/G.703, PPS, 10MHz
- Could be fixed and mobile probe with transportation toolkit

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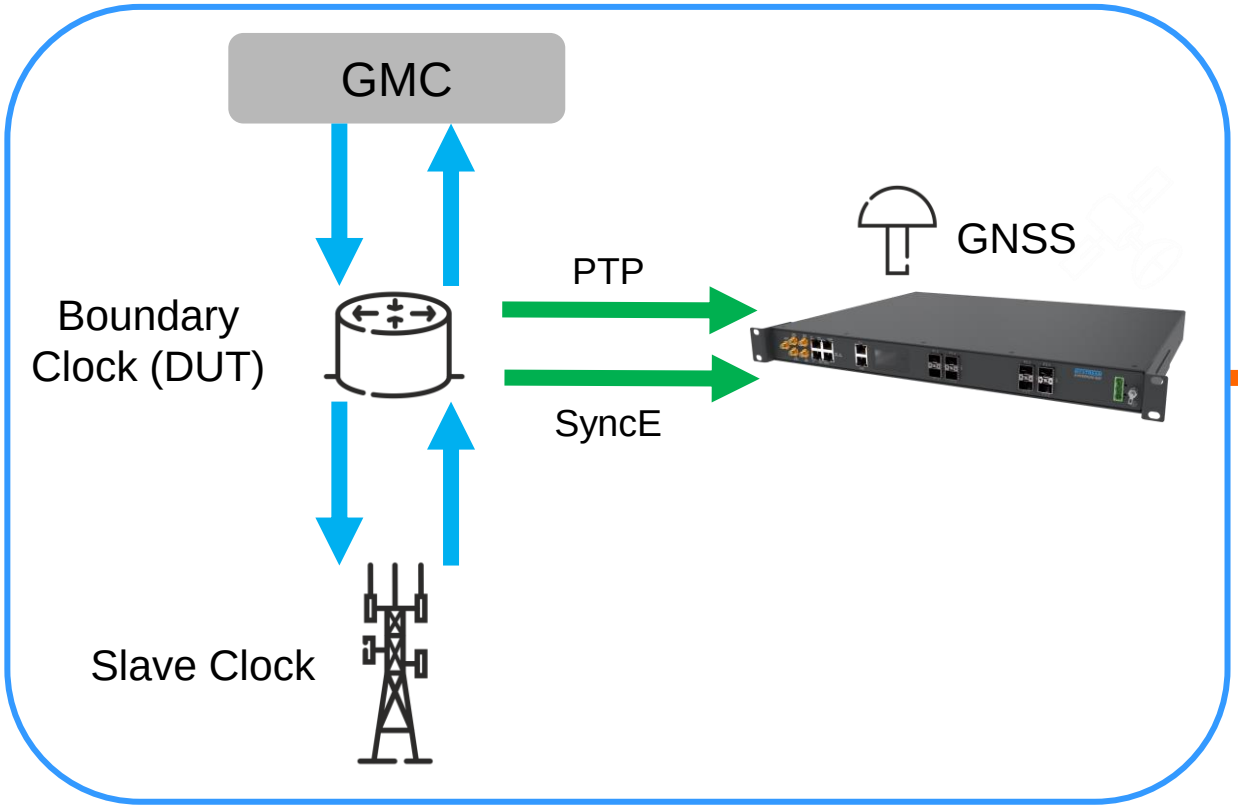
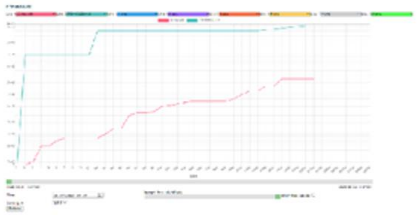
Quazar 500 – Example of application



TIE monitoring



MTIE test with Mask

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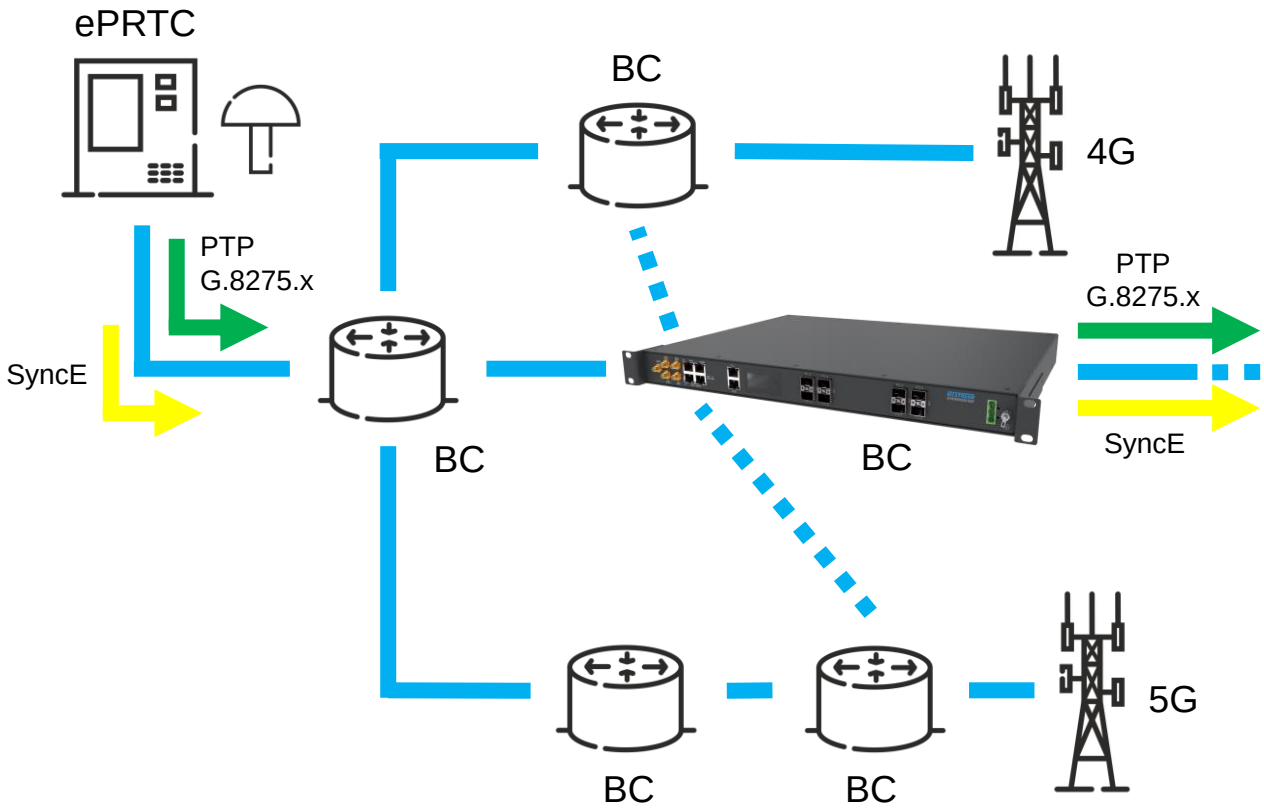
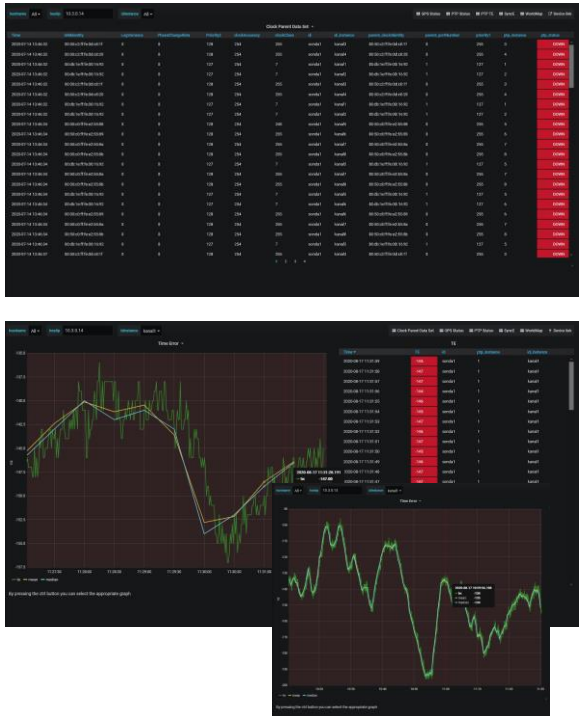
Quazar 500 – Boundary Clock with monitoring





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Quazar 500
Benefits of using

- **Cost optimized** and **reliable** PTP, SyncE monitoring of multiple points
- Fixed and mobile version allows to built **flexible scenarios of monitoring**
- **Constant improvement of accuracy algorithms of reference time server**
- Can work as backup Master Clock and Boundary Clock with Master Clock backup option
- For more details please visit our virtual booth and: www.bitstream.pl/en, www.ptpv2.com

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Thank you

Please visit BITSTREAM virtual booth

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