

Time Server
Pro.■

WORKSHOP
ON
SYNCHRONIZATION
AND
TIMING SYSTEMS

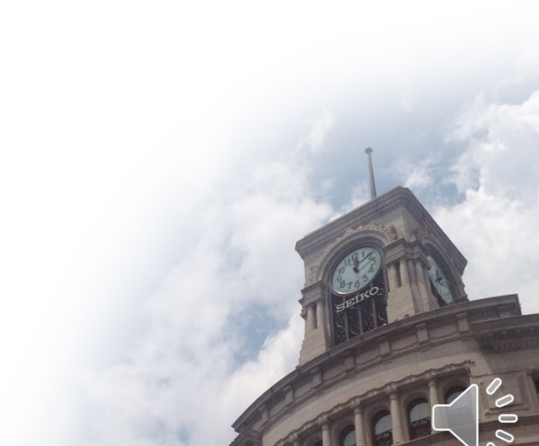
MARCH 30, 31 AND APRIL 1

PTP Grand Master Clock for 5G and Broadcasting in JAPAN

Time Server Pro. TS-2912／2914 TS-2950/TS-1550

SEIKO SOLUTIONS INC.

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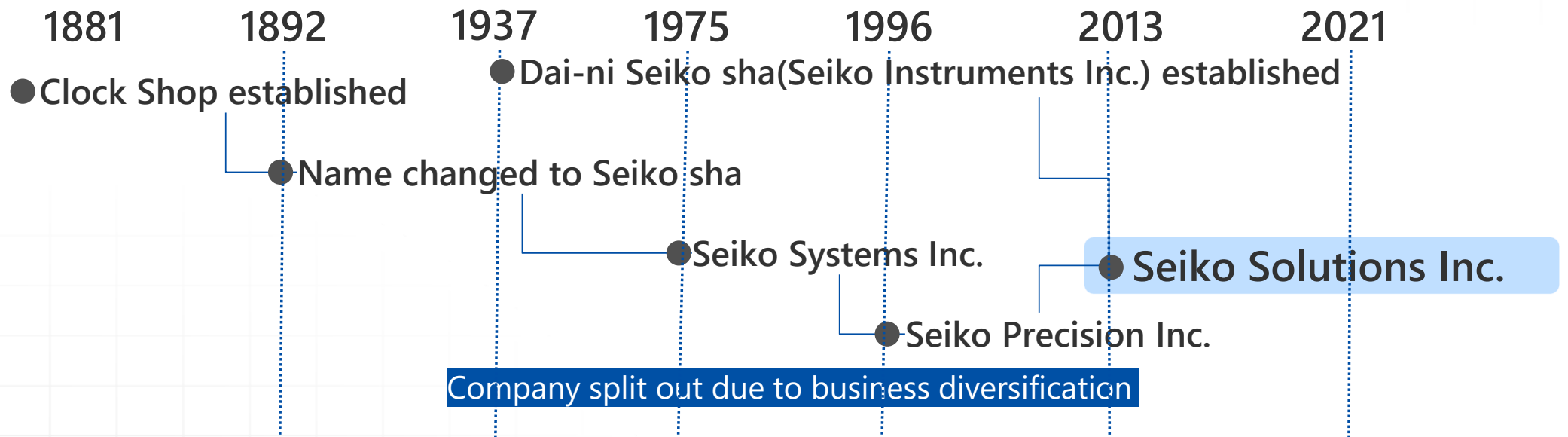
SEIKO and SEIKO Solutions Inc.

SEIKO



140 years history in “time” solution market

20 years in Network and IT business





We provide customers with safety and satisfaction based on "reliable quality"

We are the first manufacture of PTP GMC in Japan!



SEIKO HOLDINGS CORPORATION

- SEIKO WATCH CORPORATION
- SEIKO INSTRUMENTS INC.
- SEIKO PRECISION INC.
- SEIKO NPC CORPORATION.
- SEIKO SOLUTIONS INC.
- SEIKO CLOCK INC.
- SEIKO OPTICALPRODUCTS CO.,LTD.
- WAKO CO., LTD.
- SEIKO TIME SYSTEMS INC.
- SEIKO NEXTAGE CO., LTD.
- SEIKO SERVICE CENTER CO.,LTD.



PTP Products Time Server Pro. for Broad casting and Telecom

SEIKO

Sync Generator TS-1550



PTP Grand master TS-291x series



Broadcasting market



Telecom market



PTP Grand Master TS-2950 series



PTP Interoperability challenges

SEIKO

Interop[®] Tokyo
7 - 9 JUNE 2017 | MAKUHARI MESSE | JAPAN

SHOWNET
INHERIT THE INTENTION

EANTC

ib
2017
IP SHOWCASE
REAL TIME MEDIA

IBC 2017
CONFERENCE // 14-18 SEPTEMBER
EXHIBITION // 15-19 SEPTEMBER

【Confirmed Brands】

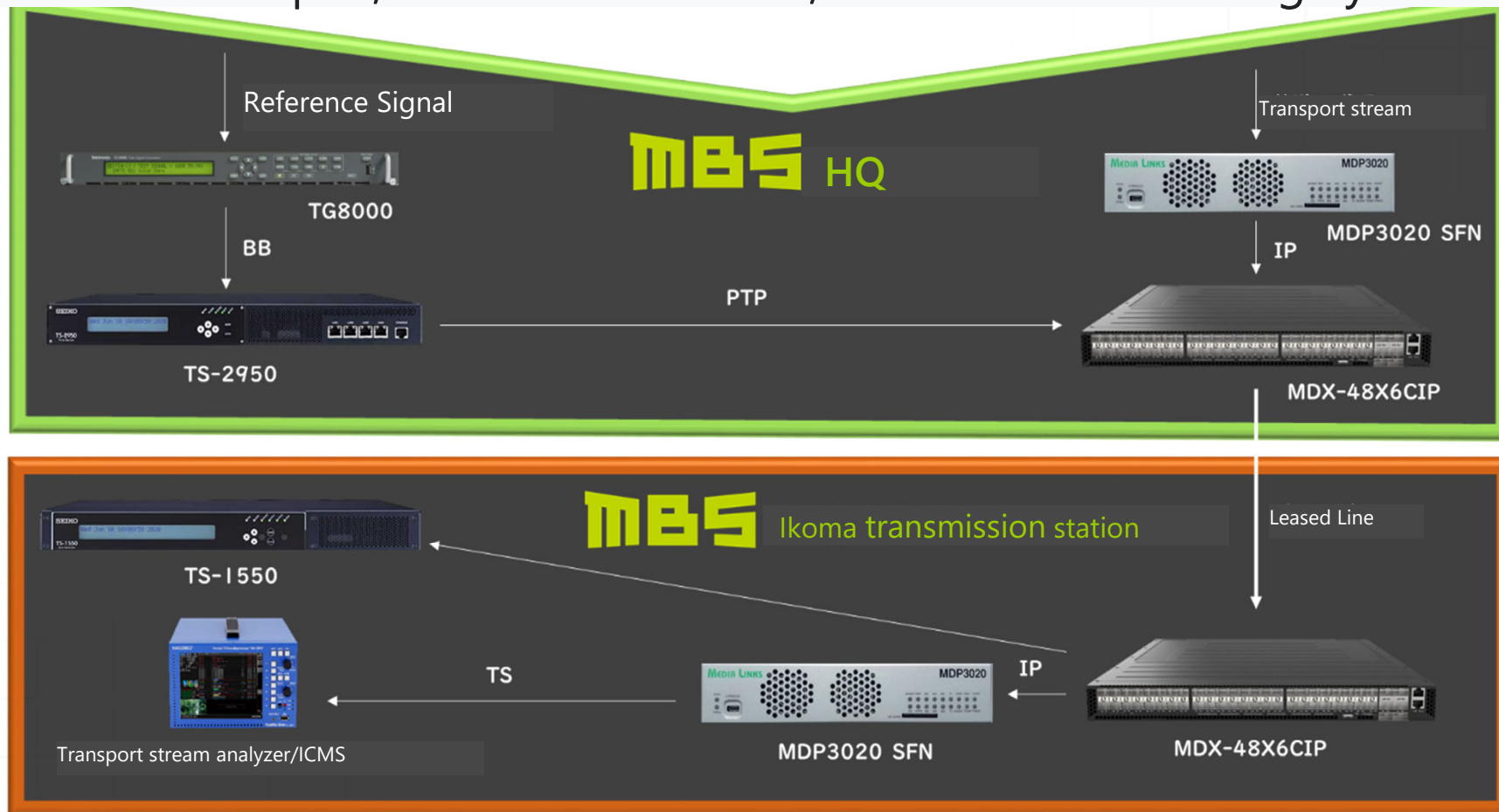
- ALAXALA Networks
- Allied-Telesis
- Anritsu
- Apresia systems
- Arista Networks
- Calnex Solutions
- Cisco Systems
- Extreme Networks
- Ericsson
- HUAWEI
- IXIA
- Juniper Networks
- LAWO
- Meinberg
- Microchip(Microsemi)
- Mellanox
- NOKIA
- Oscilloquartz
- Qulsar
- Panasonic
- Sony
- Spirent
- Tektronix
- Tekron
- ZTE

(in alphabetical order)



Latest update from Broad casting market

"Succeeded in IP transmission demonstration of broadcast transport stream using PTP"
by Media Links Japan, Seiko Solutions Inc., Mainichi Broadcasting System.



PTP Grand Master for telecom market

TS-2910 is designed for **4G/5G Mobile network**

Time Server
Pro. ■
TS-2910



Indoor model TS-2910



Outdoor model TS-2914

Synchronization accuracy

- The accuracy of TS-2910 is UTC within 40 nsec.(**PRTC-B**)
- Compliant for G.8272,G.8265.1,and G.8275.1,G.8275.2

ITU-T G.8272
PRTC-B Compliant



Flexibility

- Able to be deployed inside building or outdoor
- Upgradable both of hardware logic (FPGA) and system software by remote control, for future requirement or adaption to new standards.



Functions for stability

- Multi-GNSS: GPS, QZSS, Galileo, Glonass supported(configurable)
- Filters reflected signals at Urban Canyon and jamming



Deployment for 5G mobile network

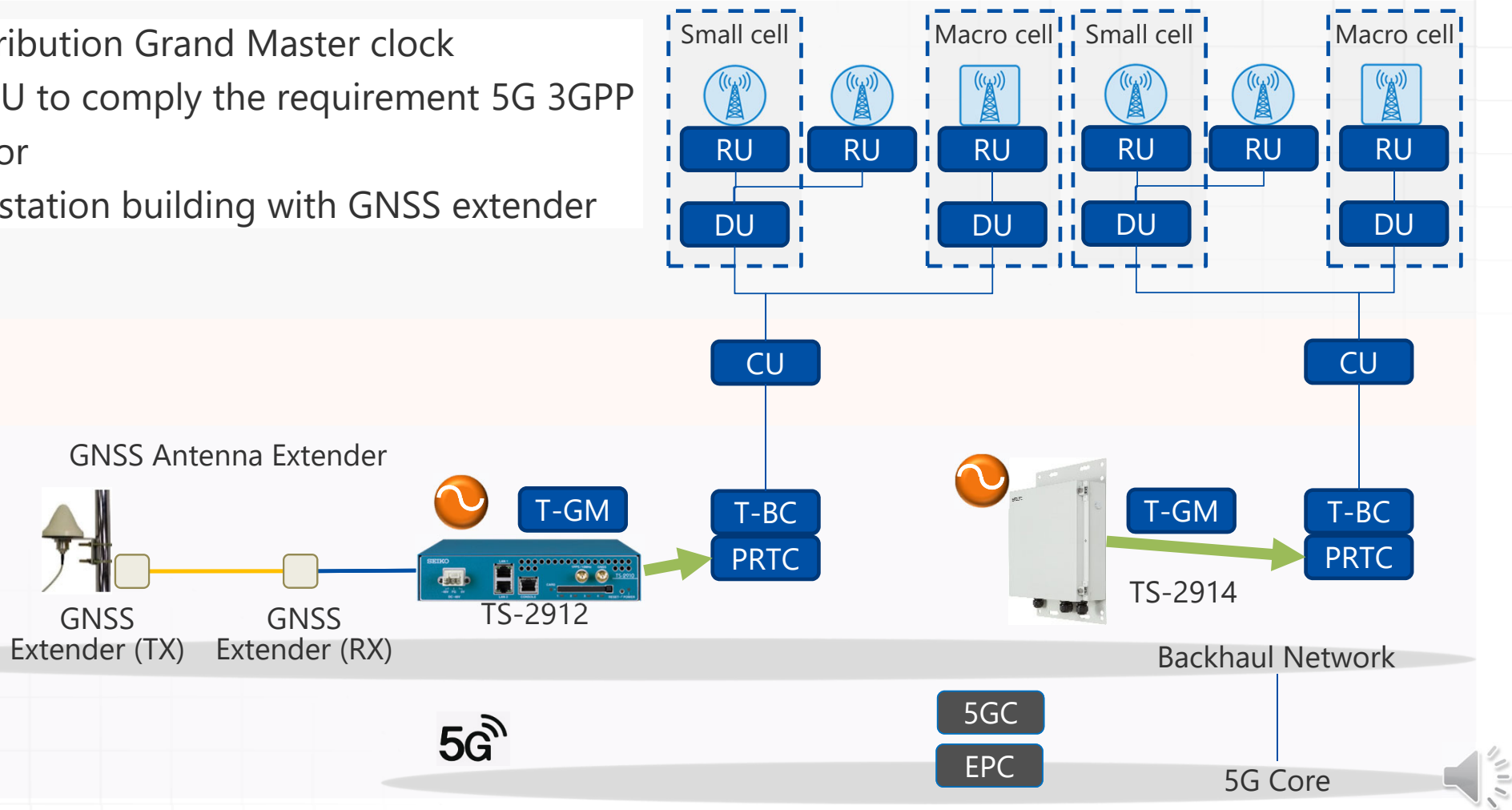
Edge/distribution Grand Master clock

- Near CU to comply the requirement 5G 3GPP
- Outdoor
- At the station building with GNSS extender

Fronthaul

Middlehaul

Backhaul



Roadmap

Sync Generator TS-1550



PTP Grand master
TS-291x series



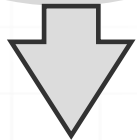
Telecom market



New technology and market



PTP Grand Master TS-2950 series



More PoC and deployment

- New types of hardware
- New functions

- Software based timing solution
- **IEEE 802.1AS-2011 (gPTP)**



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