



A low-cost platform for traceable time and frequency

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APMP Technical Committee Initiative



APMP Technical Committee for Time and Frequency

2014 meeting (Daejeon, Korea)

NPLI	India
NMI	Australia
NML-SIRIM	Malaysia
NIMT	Thailand

NIM	China
NICT	Japan
MUSSD	Sri Lanka

TL	Chinese Taipei
KRISS	Korea
NICT	Japan
VMI	Vietnam
KIM-LIPI	Indonesia
NMISA	South Africa

http://www.apmpweb.org/fms/general.php?tc_id=TF

Aims of the project

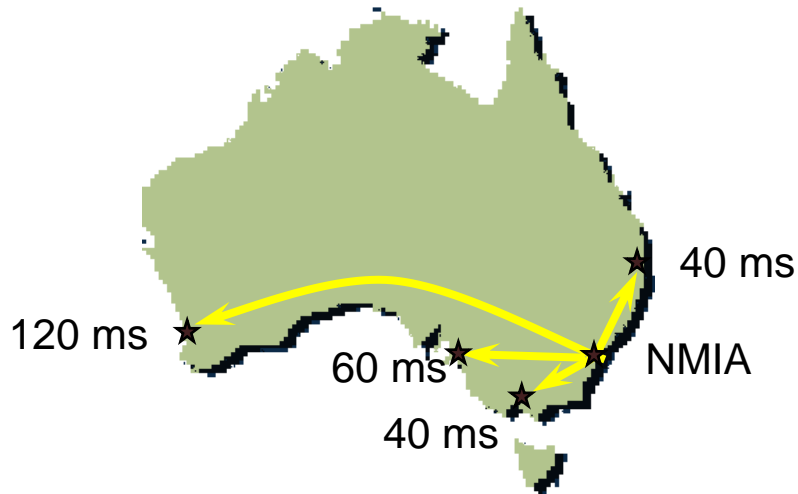
- Low cost (< \$2K for basic system)
- Produce CGGTTS data files
- Ease of customization - all hardware designs and software openly available
- Easily extended to new receivers
- Develop technical capabilities in NMIs
- Support development of services

Only 18 months for the project so it is based on a system that NMIA has been using for a number of years.

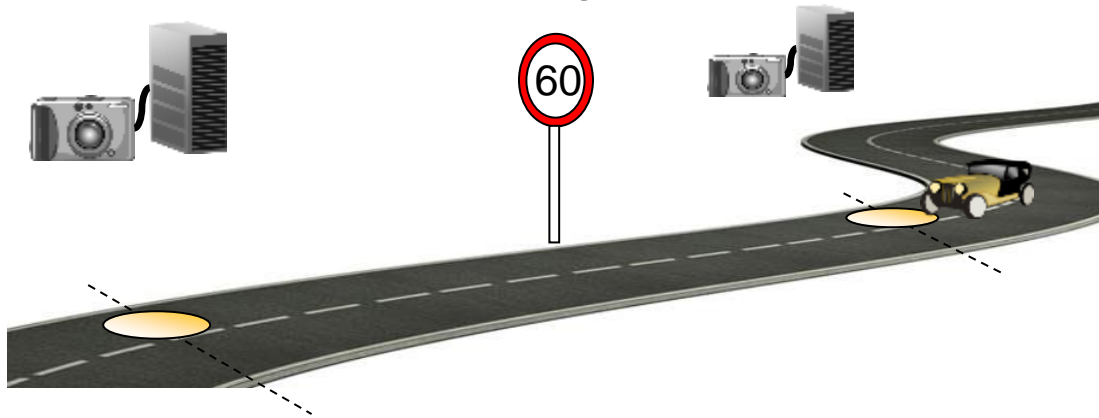


Applications

Time-of-day service via NTP



Time-of-day auditing



Point-to-point speed measurement

Reference platform



Low-cost, ARM based Linux computer
(Raspberry Pi, BeagleBone Black)



FPGA used for multi-channel time-interval
measurement

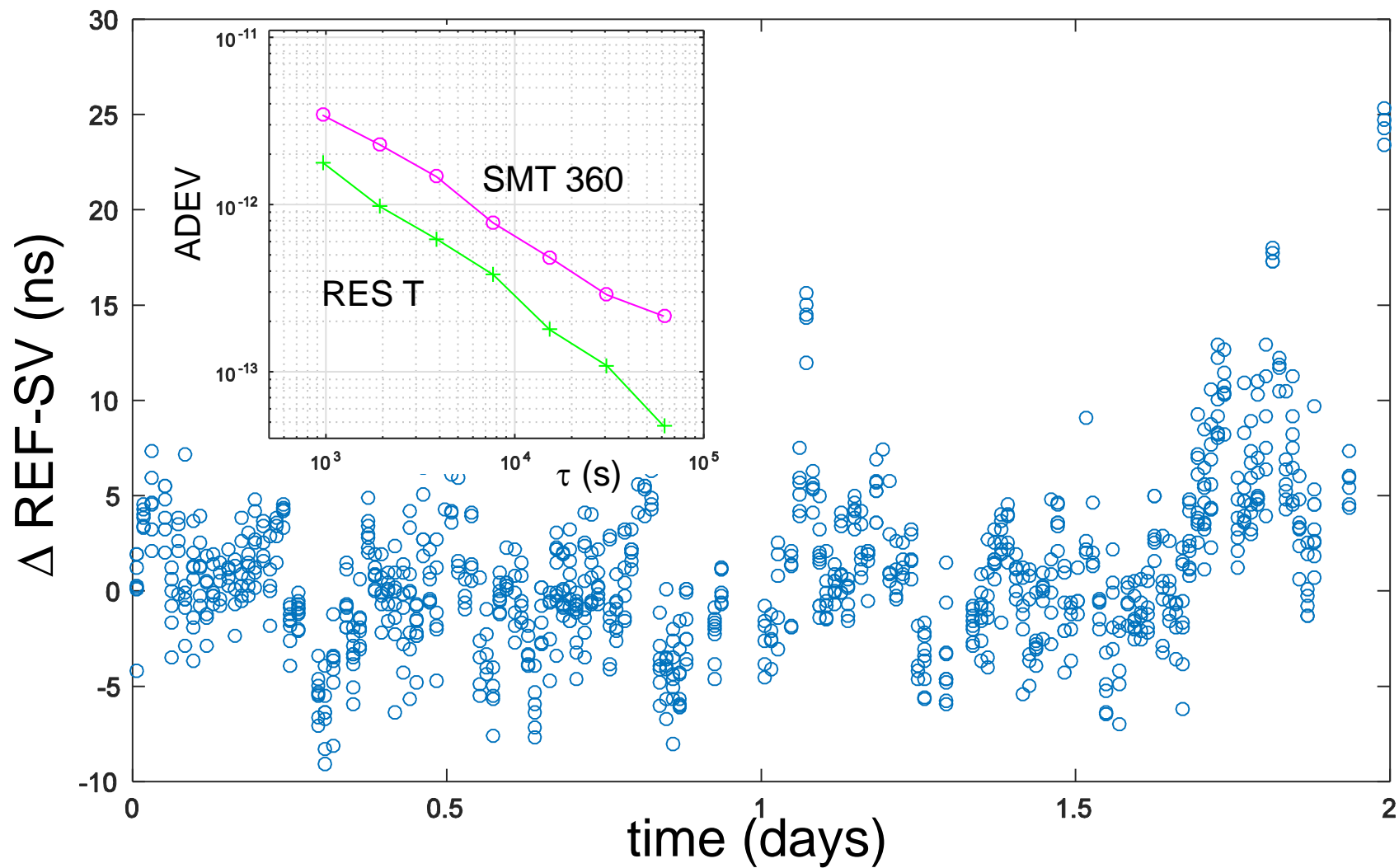


GPS receiver for GPSCV – currently
evaluating Trimble Resolution SMT 360



GPSDO for local reference

Time-transfer performance - Common-clock comparison of Javad and SMT 360



Resources and software



Open Traceable Time Platform

www.openttp.org

Software repository hosted on **GitHub**

<https://github.com/openttp>

(current software is in the 'develop' branch)

Thank you for your attention!

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