



terio

Station By Teria

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Brief presentation of the company

The Company

ABOUT US

The TERIA network was initiated in France in 2005 by the French Order of Surveyors, with the ambition of providing the profession with a real-time geolocation tool with centimetric accuracy to unify the production of topographic and land data. This high level of performance, certified ISO 9001 and 14001, has raised the interest of all geolocation players.

The TERIA service has thus naturally spread to the fields of transport, aeronautics, defence, health, personal tracking, sport and entertainment, precision agriculture, industrial robotics, smart cities and environmental research.

Today, it is already a tool with high added value for the requirements of augmented reality or artificial intelligence.

Having always strived for excellence, TERIA is now committed to open and participative long-term partnerships, thus creating a strong link at the core of innovation.

Its ambition is to offer, on a global scale, an Expert Service with a very high level of performance and integrity.

The group is fully committed to a "société à mission" approach with the aim of combining the desire for economic performance with a contribution to the general interest.



TERIA



Services

A wide range of services adapted to the needs of customers according to their field of activity :

TERIA the **NRTK** service available via the Internet;

TERIASat, the 100% **GNSS** satellite solution

TERIAmove dedicated to mobile applications.

In addition, customized support with **project management assistance** and a **consulting service** are also offered.

Customized training is provided by our technical teams.



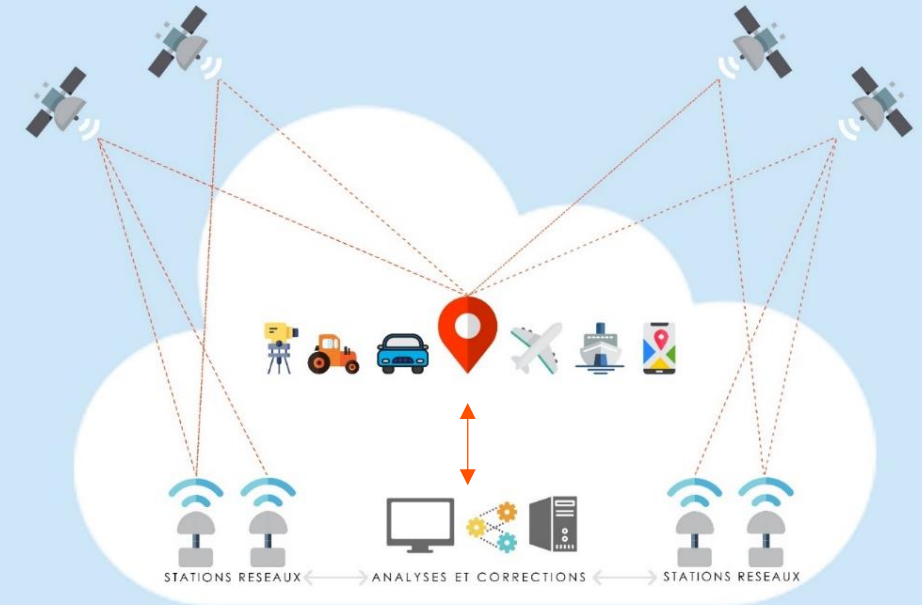
Services

teria

TERIA is a service for **improving the accuracy of satellite geolocation.**

The service collects and models the biases of the satellite data (orbits, clocks, troposphere, ionosphere...).

The user connects its GNSS receiver to the service's server centre and receives corrections in return to improve his own geolocation and access centimetric accuracy in real time.



Availability **24/7**

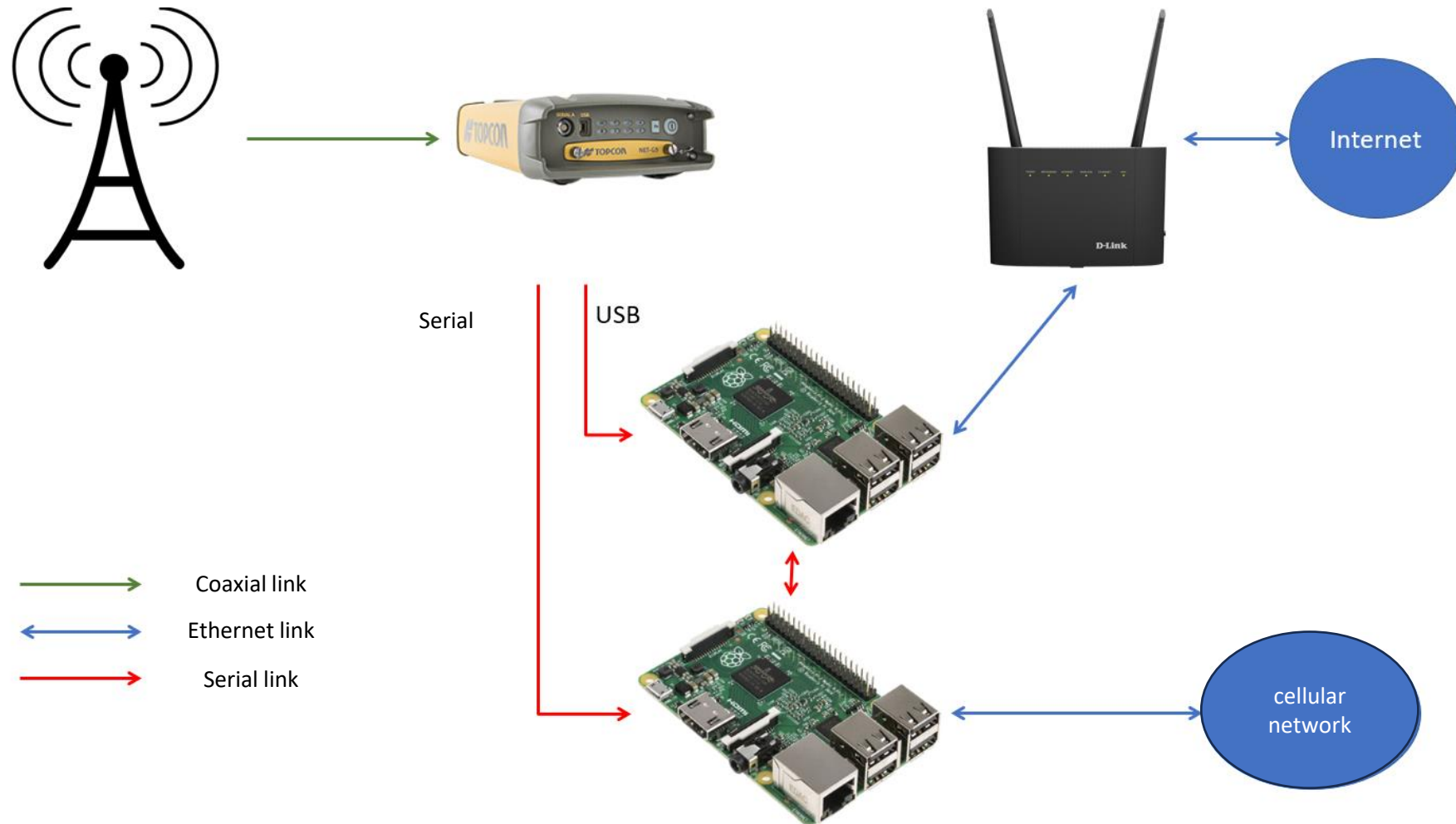
Accuracy **1-2cm**

Time To Fix
Ambiguities **2s**

How the project start – first idea



IOT Reference station



Why not to build our own GNSS receiver ?



GNSS Chipsets are more and more available



Examples of GNSS chipsets



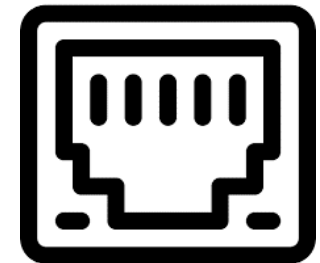
LINUX



GNSS board



Modem LTE - 4G/5G



Ethernet



Choice of Ubuntu linux

- Ubuntu Linux is a computer operating system based on the Debian GNU/Linux distribution.
 - It also has a wide range of pre-installed applications and many more readily available.
- It is distributed as free and open-source software. Ubuntu is designed primarily for desktop use, although netbook and server editions exist as well.





IT Security

- Resistant to many types of malware and viruses.
- VPN: To secure communications and can be implemented anywhere
- Encryption: Using encryption protocols to protect data in transit.
- Proprietary Data Transmission Protocol: To guarantee the integrity and confidentiality of exchanged information.





Hardware

- COM Port Compatibility
- Dual Ethernet Ports for Redundancy
- Mini computer Fan less / Low-power consumption
- European GNSS board
- Modem (external) IOT 4G





Comparison

Characteristics	mosaic x5	u-blox ZED-F9P-04B	Trimble NetR9
Connectivity	4 UART (LVTTTL), Ethernet, USB device, SDIO, 2 GPIO, 2 Event markers	UART, SPI, I2C, USB	Ethernet, USB, Serial, Bluetooth, WiFi
Accuracy	RTK: 0.6 cm + 0.5 ppm (H), 1 cm + 1 ppm (V)	RTK: 1 cm + 1 ppm	RTK: 8 mm + 1 ppm (H), 15 mm + 1 ppm (V)
Static (RMS)	<3 mm	Horizontal: 1.5m (CEP), Vertical: 2.0m (Median)	Horizontal : 3mm + 0.1ppm, Vertical : 3.5mm + 0.4ppm
Maximum update rate	100 Hz	10 Hz	50 Hz
Power consumption	0.6 W typ, 1.1 W max	130 mA (Peak), 85 mA (Tracking)	3.8 W
Operating temperature	-40°C à +85°C	-40°C à +85°C	-40°C à +65°C
Storage temperature	-55°C à +85°C	-40°C à +85°C	-40°C à +80°C
Input voltage	3.3 VDC	2.7 - 3.6 VDC	9.5 - 28 VDC
Antenna LNA output power	3.0-5.5 V, max 150 mA	50 mA	5 VDC, max 150 mA
Web interface	Yes	No	Yes
Received GNSS signals	GPS: L1 C/A, L1 P(Y), L2C, L2 P(Y), L5 GLONASS: L1 C/A, L2 C/A, L2 P, L3 Galileo: E1, E5a, E5b, E5 AltBOC, E6 BeiDou: B1I, B1C, B2a, B2I, B2b, B3I QZSS: L1 C/A, L1C/B, L2C, L5 NavIC (IRNSS): L5 SBAS: EGNOS, WAAS, MSAS, GAGAN L-Band	GPS: L1C/A, L2C, L5 GLONASS: L1OF, L2OF Galileo: E1B/C, E5a, E5b BeiDou: B1I, B2a QZSS: L1C/A, L2C, L5 SBAS	GPS: L1, L2, L5 GLONASS: L1, L2 Galileo: E1, E5a, E5b BeiDou: B1, B2QZSS: L1, L2, L5 SBAS
Price	600 - 1 200 EUR	300 EUR	10 800 - 12 200 EUR

Station By TERIA



Comparison – performance: GNSS satellites tracking and network integration

stva : Trimble NetR9 older receiver model, doesn't track the newest Beidou signals

chta : Topcon NetG5 newer receiver

mach : Mosaic X5 track the newest Beidou signals

Station	GPS								GLONASS					Galileo								BDS						
	24	22	14	15	13	05	30	20	15	05	14	03	21	08	25	03	05	24	15	13	31	07	32	23	10	25	33	24
stva	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
chta	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Red	Green	Green	Green	Green	Green	Green	Red	Green	Green	Green	Green	Red	Red	Green	Green	Green
mach	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Red	Green	Green	Red	Red	Green	Green	Green

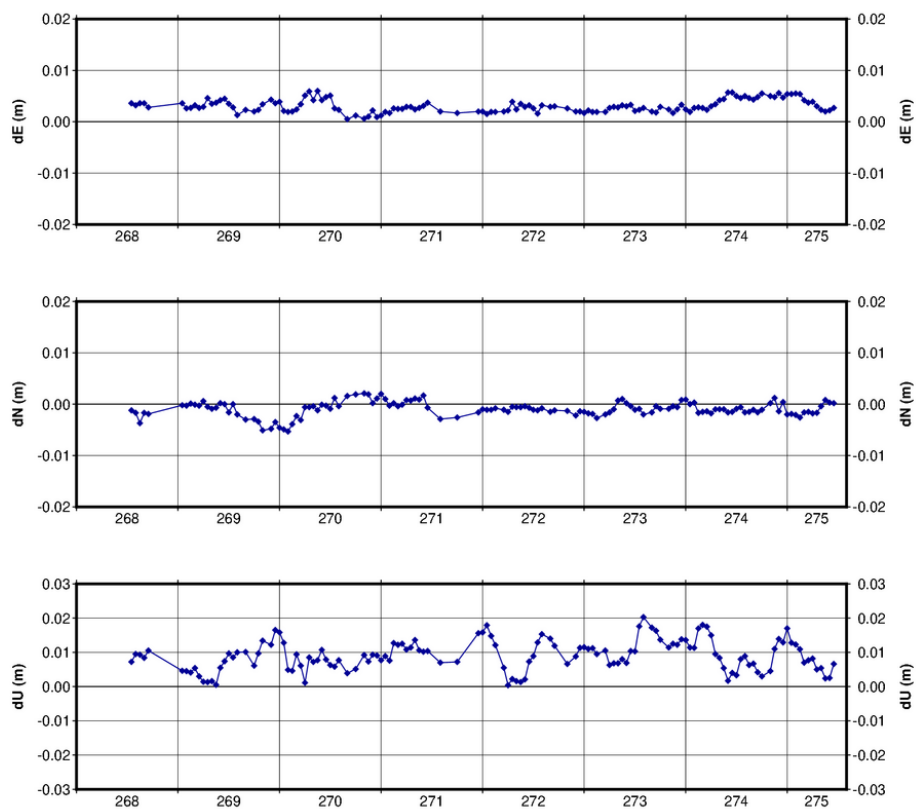
Station By TERIA



Comparison – performance: temporal stability

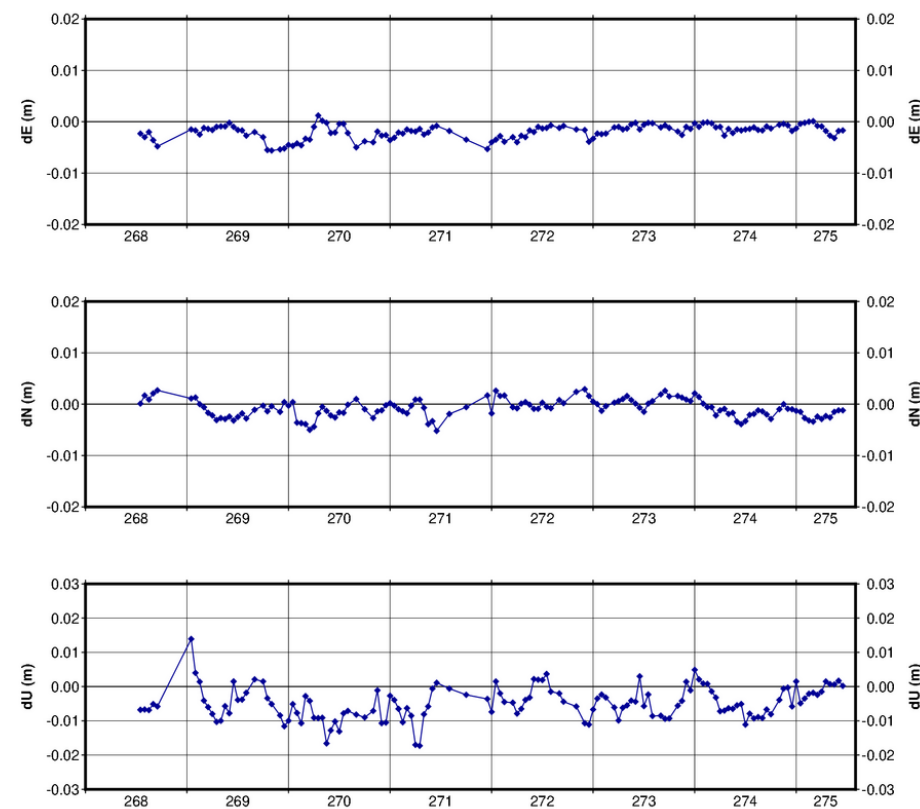
VITY: GNSS reference station with
Station by Teria

VITY, RGF93



CHDY: GNSS reference station with
integrated GNSS receiver

CHDY, RGF93



What could be the next step ?



The next level of cost reduction would be achieved by using a SOC instead a multi-chip architecture



Examples of SOC's

The background is a solid orange color. It features several white geometric elements: a large circle on the right side, a smaller circle in the upper left, and a vertical line that intersects the large circle. There are also some horizontal and curved white lines that create a sense of depth and structure.

Thank you for your attention