

Engineering Applications of Integrated Wireless Band Pseudolite and GNSS System

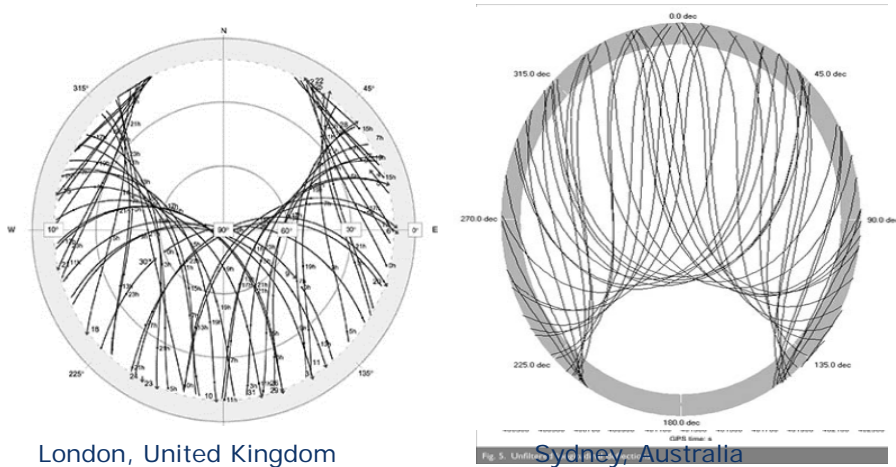
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XXIV FIG International Congress

Reasons for the integration

GNSS accuracy based on the visibility and the geometric distribution of the satellites – depends on time and locations.



London, United Kingdom

Sydney, Australia

LocataLite

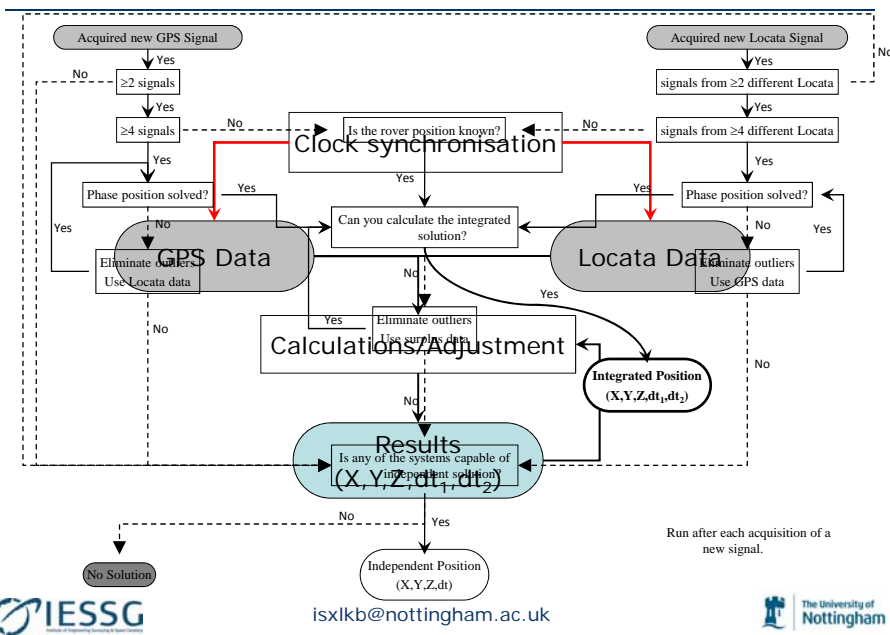
- Terrestrial positioning system.
- Transmits of the 2.4 GHz license free ISM Band.
- TimeLoc procedure synchronise LocataNet up to nanosecond level (10^{-9} s).
- Utilisation of multiple digital signals and TDMA to combat near-far effect, multipath and noise.



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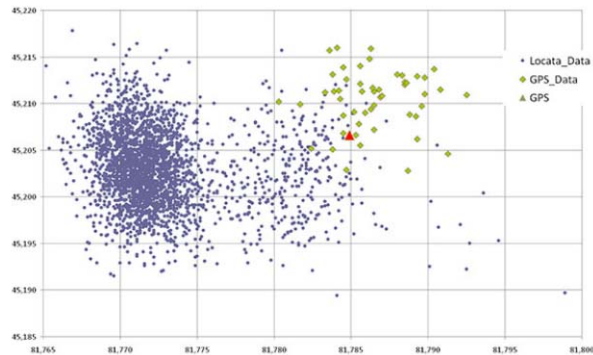
Integration



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Practical Integration



[m]	Locata			GPS		
	dE	dN	dh	dE	dN	dh
Roof 1	0.003	0.003	N/A	0.003	0.004	0.009
Roof 2	0.006	0.004	N/A	0.008	0.011	0.009
UNSW	0.004	0.004	0.009	0.005	0.010	0.010



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Summary

GNSS position is heavily dependent on the number and geometric distribution of the available satellites. One possible solution is the deployment of a supporting system.

Locata/GNSS integration will enhance system geometry, especially vertical component.

Final system is expected to provide seamless position on a centimetre level.

Final system is expected to provide QA for both systems.



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Illustration by Dan Beard for "Travelling with a Reformer" COSMOPOLITAN MAGAZINE, Dec. 16, 1893