

continuous • accurate • affordable

## Trusted Vehicle Navigator (T-VN)

Navigation and assisted driving in urban centres is a difficult endeavour. Reliance on navigation systems that use GNSS only can be aggravating and dangerous.

**Trusted Positioning Inc.** provides a continuous and accurate navigation through the **Trusted Vehicle Navigator (T-VN)** that integrates in-vehicle MEMS sensors with wireless signals, such as GNSS. The **T-VN** delivers unparalleled accuracy, even in the deepest urban environments.



### Applications

The **T-VN** can be used in any vehicle for applications including:

- Accurate in-vehicle navigation and turn-by-turn downtown
- Assisted driving
- Autonomous unmanned vehicle control
- In-dash and mobile device navigation options



### Advantages

The **T-VN** offers the following advantages:

- Continuous navigation in all environments including dense urban centres and tunnels
- Sensor-only solution drift comparable to tactical grade INS/GPS systems at a fraction of the cost
- Cost sensitive applications can obtain a full 3D navigation solution using only 1 gyroscope, 2 accelerometers and the vehicle speed
- Nonlinear modeling and filtering for low-cost MEMS sensors
- Tight integration of vehicle speed and inertial sensors for more accurate positioning

**Positioning Everywhere:**  
*including near  
tall buildings and in  
tunnels*

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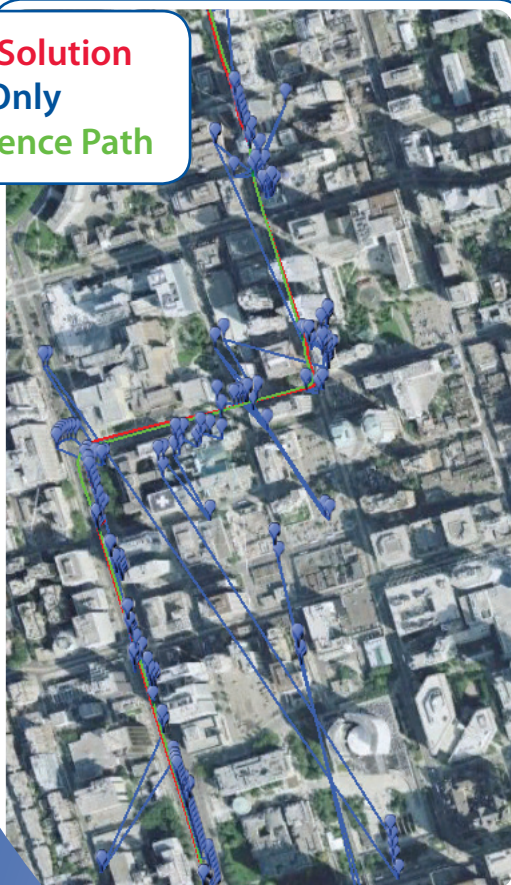
## T-VN Packages

	Basic	Plus	Premium
		<b>S</b>	<b>SM</b>
GNSS	x	x	x
Accelerometers	x	x	x
Gyroscopes	x	x	x
Magnetometers		x	x
Barometer		x	x
Odometer		x	x
Constraint-free Orientation			x
Map Matching			x

Customization is available

## T-VN Example Specifications

**T-VN Solution**  
**GPS Only**  
**Reference Path**



GNSS Outage Duration	Avg. Distance Travelled (m)	Position RMS Error (m)	
		Horizontal	Vertical
1Hz GNSS Updates	9	1.50	0.52
10 secs.	131	1.71	0.68
30 secs.	330	4.62	1.06
1 min.	814	9.60	1.79
2 min.	1817	17.75	2.77
5 min.	4015	41.11	5.36
10 min.	8245	105.29	9.10

### Sensor bill-of-materials

\$60

- Low-cost MEMS gyroscopes, MEMS accelerometers and the vehicle speed from OBDII
- Gyroscopes have a bias stability of 25 degrees/hour
- OBDII scanned velocity at 1Hz with a speed accuracy of 0.3 metres/second

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