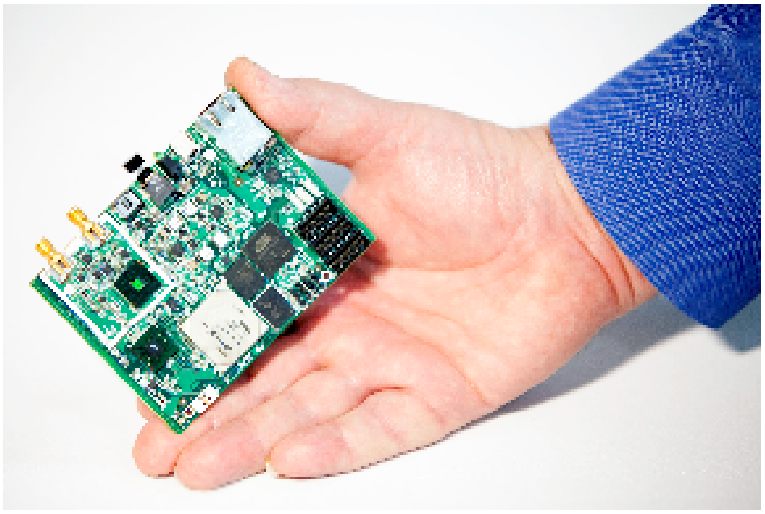
P400 RCM: Scratching the Niche

There are many instances in which it is useful to know the location of a moving person or device. For example, one might want to know a person's location as they move through an office, or the location of a high value item in a warehouse. These applications are well serviced by a number of technologies including GPS, RFID tags, Real Time Location Systems (RTLS), cameras with video analytics, inertial sensors, as well as hybrid systems that combine some or all of these technologies. In general, these technologies satisfy a large number of applications.



However, these technologies have their limitations. GPS does not work inside buildings. RF tags and RTLS require the careful survey and installation of readers at permanent positions in a fixed infrastructure. Inertial Measurement Units (IMU) experience drift errors that accumulate over time. Camera-based systems have difficulty dealing with varying light, weather, and moving backgrounds.

Time Domain's Ranging & Communications Module (RCM) is targeted at augmenting and/or replacing these technologies in high-end applications that require GPS-denied real-time localization with ad-hoc or moving frames of reference.

Examples include, but are not limited to:

- Simple, robust autonomous robot following, with the capability of more advanced coordinated (robot swarm) behaviors,
- Continuous localization of personnel relative to each other, vehicles, or temporarily-placed references as they move through urban and/or canopied areas,
- Ad-hoc mapping of "hot spots" using hand-held sensors for environmental contamination, and
- Mitigation of GPS multipath errors and IMU drift through precision differential ranging.

The RCM is simply an easy to integrate UWB ranging radio capable of precise two-way time-of-flight distance measurement between RCMs. It supports a concise and simple host interface protocol directed toward allowing innovators to quickly add precision distance measurements and covert wireless data communications to their innovations. And, it's built upon reprogrammable and extensible FPGA logic allowing maximum interface flexibility and future behavior enhancements.

The RCM is the world's first small, low power, and low cost device supporting useful RF indoor ranging distances, with precision accuracy, fast update rates, and FCC-compliant RF power levels (as well as optional higher transmit levels when local regulations allow.) Time Domain looks forward to working with innovating partners to integrate, validate, and target this transformational technology toward compelling products and markets.