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TECHNICAL BRIEF
INDOOR LOCALIZATION CHALLENGES

Indoor localization is a challenging problem due to the inherent multi-path and shadowing phenomena in indoor environments. Achieving high accuracy is possible, however, it requires sophisticated algorithms and a complex localization system. Our solution is different from other service providers because of our Easy Access Simple Install (EASI) deployment process.. Installation with EASI requires no cabling, no power connections and no ladders; it is literally peel and stick. Existing localization service providers either rely on the pre-existing infrastructure such as Wi-Fi APs (to reduce the cost), or install proprietary localization nodes such as the widely used BLE based Beacons or UWB tags that are attached to the devices. BLE beacons are passive devices that only transmit messages and usually it is the user's phone that hears the messages and then uses them to localize itself with respect to the beacon. Hence, the phone (receiving device) is responsible for complex processing that can't guarantee the target accuracy. However, user smartphones are not primarily intended for indoor localization and lacks the hardware and processing capacity that can help in achieving a higher accuracy. In contrast, TrakPoint's EASI architecture allows us to place sophisticated hardware Detection Points (DPs) that are solely intended for indoor localization. The device to be tracked has an inexpensive BLE transmitter attached it to that can run for years on a small battery and we rely on the DPs to carry out the major tasks. DPs possess the necessary hardware and processing capacity required to provide highly accurate localization. UWB, on the other hand, can provide higher accuracy for indoor localization but requires expensive UWB chips that lack the flexibility BLE chips offer and are expensive for large scale deployments.

Most of the other solution providers target different verticals which result in a solution that is a compromise among service cost, localization accuracy, energy efficiency and wide-scale applicability. Some use BLEs due to the energy efficiency and relatively cheaper cost, however, the localization accuracy is low since the receivers used for localization are not optimized for the job. Others use UWB chips for achieving higher accuracy, however, UWB chips are comparatively expensive and not widely available. At TrakPoint, we use BLE chips to inherit the benefits of energy efficiency, lower chip costs, wide range and widescale availability whereas our EASI architecture (DPs) allows us to have sophisticated receivers in place that can inherit many of the benefits typically associated with UWB based systems.

TrakPoint Solutions, Inc. located in San Diego, CA is a technology company offering a hardware-supported, cloud-based, B2B SaaS service to indoor facilities for electric tracking of critical assets. TrakPoint eliminates the need to rely on the customer's WiFi or network infrastructure by utilizing an independent IoT network with cellular backhaul. This advanced technology is the only solution designed to provide economic, reliable indoor asset tracking with guaranteed accuracy and performance. For more information on TrakPoint Solutions or InsideTrak, please go to www.trakpointsolutions.com or call 1-888-650-TRAK.