

HHM-OP-02

TITLE

DEVELOPMENT AND INITIAL EVALUATION OF AN INTEGRATED SYSTEM UTILIZING LOW POWER BLUETOOTH BEACONS, SENSORS AND A CLOUD-BASED PLATFORM TO CONCURRENTLY MEASURE NEAR-REAL TIME MOVEMENT OF PIGS, SEMEN, FEED, SUPPLIES, ASSETS AND PERSONNEL THROUGHOUT A LARGE PIG PRODUCTION NETWORK IN THE UNITED STATES

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CONTENT

The pig and pork production industry is highly networked and mobile – with various types of movements occurring numerous times per day within farms, between farms, across production systems and throughout production networks. Production systems experience movements of pigs, semen, feed, supplies, assets and personnel – within farm sites, between farm sites, and among non-production sites (e.g., feed mills, truck washes, offices, warehouses). All movements inherently carry with them varying levels of disease introduction and transmission risk by animals, people and/or fomites within and among farm sites, with often serious consequences on animal productivity and business performance.

The objective of this project was to design, develop and evaluate an integrated measurement system to capture movement records to enable the more objective assessment of movement-related risks of disease introduction and transmission.

A large multi-farm system and production network was enrolled in the project. At each participating site, zones were outlined inside and outside of each barn. A risk level was assigned to each zone. Location beacons were installed within each zone. Significant assets (e.g., trucks, trailers, feed carts, robots, power washers, semen coolers) were tagged with asset beacons. All system personnel received beacon sensors. Cellular routers with attached gateways were installed at key sites. Sensor-captured data is automatically transmitted in real time to a cloud-based platform where data can be viewed and analytics done using available visualization components, dashboards and reports.

Internal farm site as well as site-to-site asset and personnel movement events were recorded. Also, pig, semen, feed, asset and personnel ex-site movement events were recorded among sites within the production system and movements ex-system within the production network.

This integrated system holds promise as a means for the simultaneous recording of various forms of relevant movements, enabling an improved understanding of disease introduction and circulation risks in near real-time.