

Business Model

- The key aspect of the model is to leverage the flexibility of the application platform and the simplicity of the BLE beacons and of oncoming near-term Low Power Wide Area technologies and devices. Use a simple data point - the location of a given beacon at a given point in time - and leverage for maximum value at the application platform level.
- Initial Model – Monitoring and control service
 - BlueCrew's IoT application business model is hospital asset and patient location and movement history information as a service. Blue Crew will generate monthly recurring revenue from each beacon point monitored by the service.
 - Through a customer portal one can monitor the current location of assets as well as generate reports for location of assets at a given time or for the movement of equipment and patients over a given time. Customer can add or remove beacons via the portal and can create asset and patient groups and hierarchies. Via the portal one can create event types and how to flag.
 - Different parts of the hospital organization can generate its own relevant custom reports. For example hospital operational staff such as nurses and maintenance can find current location of specific equipment; accounting staff can generate an inventory reports; staff can query the current location of patients; executive management can generate reports determining effective usage of equipment based on movement over time.
 - The Bluetooth Low Energy (BLE) beacons enable the service platform to effectively monitor and report due to their long life battery capability, small size, low cost, off-the-shelf availability with wireless technology that is license-free, open-standard, and developed specifically for this type low power need application. The hardware is easier to scale since the standard off-the-shelf packaging requires no customization thus saving development time and cost – a major development hurdle for most IoT applications
 - The customer base can be the hospital operator itself or 3rd parties such as equipment suppliers
- 2nd Generation Model - Monitor, Control and Optimization service
 - With built up industry-specific experience Blue Crew can offer a higher value optimization service where equipment use is optimized for Key Performance Indicator goals such as improve revenue, reduce cost, improve quality of service based on historical movement algorithms of equipment and patients.
 - With movement histories equipment the service can minimize equipment inventories by improving the efficient use, ensuring proper equipment maintenance and higher

availability, switching in equipment with higher effectiveness, and removing redundant, underutilized equipment, and simply not buying unnecessary inventory.

- Ultimately BlueCrew can supply equipment as a service where in conjunction with equipment supplier arrangements it provides hospitals with equipment on a non-capital equipment basis.
- 3rd Generation Model – Monitor, Control, Optimize, Autonomous service
 - With smarter beacons the service Blue Crew can integrate the service into other hospital systems such as accounting, facilities management, quality of service.
 - The information of movement of equipment and patients can self-coordinate with other systems to improve performance and reduce cost. The entire hospital can be coordinated as whole. For example management can respond effectively to demand response changes, such as large emergencies where pre-planned responses are automatically launched that involve all systems of the hospital from the operating room to public relations.
- Possible parallel model enhancement
 - Provide similar services to other vertical market segments with similar characteristics. Service enhancements
 - Autonomous product enhancement and personalization
 - Self-diagnosis and service

BLE The good and bad

- Advantages
 - Relatively low power usage allows long battery life
 - Device has small footprint and volume and is off-the-shelf
 - Uses license-free, non-proprietary wireless technology
 - No coding cost for BLE beacon
 - Simpleness limits feature creep
 - Simple anonymous data set limits security issues
- Limitations

- Transmission limited to 30 meters
- Requires 2nd layer of remote hardware
- Location granularity – Algorithms need for under 30 meters
- Installation cost and effort of 2nd layer may be prohibitive
- Blue Crew Model
 - Asset monitoring as a service
 - Client base as facility operator or as 3rd party equipment supplier
 - Charge per beacon per month – monthly recurring revenue
 - Hardware free with 2 year commitment

Service Capability

- Initial Capability
 - Monitoring
 - Asset real time and historical location and movement
 - Real time asset mapping
 - Historical location reporting
 - Point in time
 - Historical movement
- Next level capability
 - Control
 - Communication level app for human or machine follow-through
 - End-User portal interface
 - Add/Remove Beacons
 - Set up own organization reports – operational, accounting, executive, staff

Service Capability

- 3rd Level Capability – Optimization
 - With industry-specific experience can offer to optimize use of equipment to improve revenue, reduce cost, improve quality of service
 - Plan movement for best, highest use
 - Ensure high availability
 - Reduce need of additional equipment
 - 4th Level Capability – Autonomy

Alternative Wireless Tech

- Low Power Wide Area (LPWA)
 - Device transmission measured in miles with low power needs with low data rates and longer latency
 - 3.1 bn connections by 2023 – Machina Research
 - Non-Cellular Networks
 - Sigfox –
 - Weightless
 - M2M Spectrum
 - Nuel`
 - Nwave
 - Semtech
 - Senaptic
 - Cellular Networks
 - LTE-A

Impact on competition

- 1 How does the move to smart, connected products affect the structure of the industry and industry boundaries?

- 2 How do smart, connected products affect the configuration of the value chain or the set of activities required to compete?
- 3 What new types of strategic choices will smart, connected products require companies to make to achieve competitive advantage?
- 4 What are the organizational implications of embracing these new types of products and the challenges that affect implementation success?
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Mistakes to avoid

- Adding functionality that customers don't want to pay for.
- Underestimating security and privacy risks.
- Failing to anticipate new competitive threats.
- Waiting too long to get started.