NODE as an IoT product

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Imagine a world where all of your products could be connected to your smart phone…

- Items that are connected by Bluetooth to your phone are Internet of Things (IoT) products

- On November 15, 2016, Forrester Research announced PTC as a leader in the Forrester Wave™, a report that evaluates IoT software platforms
  - Forrester states, "the company's broad protocol support for both short-range and wireless connectivity options, strong digital twin functionality and a multitude of prepackaged applications…place PTC in the top tier of vendors for this evaluation."

- NODE is an IoT product that helps create a reality out of what was once a dream.

- NODE is a handheld sensor device that allows you to connect your mobile device to it using Bluetooth.

- It is a product of Variable Inc.

- Once the phone is connected, the NODE can be used in compliance with a vast number of apps to help anyone from a carpenter to manufacturer.

- Dimensions
  - 1" diameter
  - 3.26" length
  (Variable Inc., nd)

Background Information

Physical components of NODE

- The NODE+ sensor platform includes a 9 degrees-of-freedom motion engine made up of a gyroscope, accelerometer, and magnetometer.
  - Gyroscope- A device with a freely-rotating disk on a spinning axis on a larger wheel, used for determining orientation (Goodrich, nd).
  - Accelerometer- Compact device that responds to vibrations associated with movement that measures non-gravitational acceleration (Goodrich, nd).
  - Magnetometer- A device that measures magnetic fields, using a sensor that measures flux density (Jain, nd).

- Battery Life: 54 days on standby, with a rechargeable Li-Polymer Battery

- Sensors: 9-degrees-of-motion fused orientation engine

- Output formats: Quaternion, Yaw/Pitch/Roll

- Communication: Bluetooth 4.0 (Low Energy)/ Bluetooth 2.1
  - 256-bit encryption engine

- Transmit Distance: iOS- 100m/Android- 150m

- Onboard storage: 16MB

- Compatible with the following devices: iOS (5th generation or newer), Nexus 4/5/7, Samsung Galaxy Note II, Tab, Samsung Galaxy S3/S4, HTC One

(Variable Inc., nd)

Smart Components of NODE

Connectivity components of NODE

- There are two expansion ports on either end of the device
  - This allows any type of module to be attached, which in turn enhances the functionality of the product.
  - With the ability to attach any NODE module to the original product, there is an immense amount of variability.

- The NODE uses Bluetooth to allow the user to connect their mobile device to the NODE and to then use all the apps that comply.
  - Bluetooth 4.0 Smart is used because it is Low Energy and can allow the NODE to have a long standby battery life
  - Bluetooth 2.1 Classic is the technology standard

  (Variable Inc., nd)
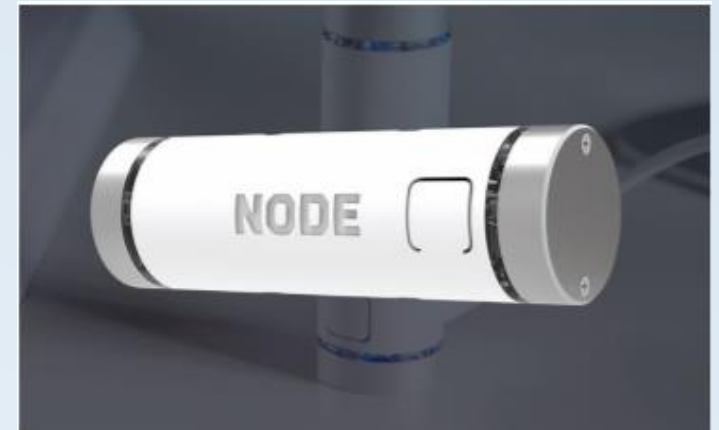
- NODE has a wide array of applications that benefit more than just one niche.

- Examples of some of the applications are:
  - Color Elements: This app, once paired with the NODE scanning device streamlines the color collecting process, and matches the specific scanned color with varying paints and materials matching the scan.
  - Color Inspect: This app is designed for production personnel and brand managers as it has the ability to inspect color standards in the manufacturing process.
  - N+ Clima: Their climate sensor measures humidity, temperature, light level and barometric pressure in the surrounding area.
  - N+ Barcode: Using the scanner, data can be transferred into tables in a CSV format.

  (Variable Inc., nd)

Applications in the Market

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