INTERNET OF THINGS

THE IOT PROMISES A HIGHER LEVEL OF CONNECTIVITY TO OUR EVERYDAY LIVES. THERE HAS BEEN A LOT OF HYPE ABOUT WHAT THIS COULD BE, BUT AT THE CORE WE SEE POSSIBILITIES FOR INCREASED EFFICIENCY, IMPROVED SAFETY AND MORE INTUITIVE AND PERSONALIZED INTERACTION, ALONG WITH A TREND TOWARDS COMMON PLATFORMS AND INTEROPERABILITY ACROSS PRODUCTS AND SUPPLIERS.

- **Smart air quality monitors:** Awair – monitors air quality using a range of sensors and adapts levels to users' personal preferences
- **Wireless equipment inspection:** WellAware – a technology platform consisting of sensors and communication networks that enable oil and gas companies to prioritize their inspection operations while reducing the labor and resources needed to carry out safety checks
- **Smart thermostats:** In addition to optimizing comfort for the homeowner, smart thermostats allow power companies to manage demand at peak times
- **Connected manufacturing:** "By connecting and sharing data, all parts of the supply chain can gain greater visibility over demand and manage it more effectively" - Pinsent Masons - 13 Apr 2015
- **Digital light:** Philips Hue – connected light bulbs can monitor people in the room to manage the light level and colour and be networked to save energy or achieve a coordinated function – sales display, safety, security etc.

SUSTAINABILITY

SUSTAINABILITY IS ONE OF THE MOST PRESSING GLOBAL CHALLENGES OF OUR TIME AND TECHNOLOGICAL BREAKTHROUGHS ARE SHOWING SOME REAL PROMISE TO HELP TRANSFORM RESOURCE INTENSE INDUSTRIES IN AN EFFICIENT AND MORE COST EFFECTIVE WAY.

- **Biodegradable electronics:** Wood chip semiconductors for portable electronic devices
- **Self-destructing electronic devices:** Heat activated electronic devices that self destruct to reduce materials that end up in landfill
- **Fully recyclable plastic:** PlantBottle from Coca-Cola is made 100% from renewable plant materials
- **Water desalination:** Water desalination and purification technology that uses uniquely absorbent carbon nanotubes to remove salt and pollutants
- **Energy harvesting 2.0:** A high-performance rechargeable aluminium battery that's fast-charging, long-lasting and inexpensive

WEARABLE TECH

TO DATE, THE MARKET FOR WEARABLES HAS BEEN FOCUSED ON INDIVIDUAL APPLICATIONS IN HEALTH AND WELLNESS, BUT WITH LITTLE SCOPE FOR DIFFERENTIATION. THERE ARE, HOWEVER, NEW AND UNTAPPED OPPORTUNITIES TO TAKE THIS FURTHER INTO AREAS THAT COULD HAVE A REAL IMPACT ON BOTH CONSUMERS AND PATIENTS AND THE WAY IN WHICH COMPANIES AND PRODUCTS INTERACT WITH THEM.

- **Gesture controlled devices:** Smart glove for guiding blind people around grocery stores
- **Intelligent clothing:** Smart trousers designed to assist the mobility of frail elderly and disabled people
- **Ultra-thin skin devices:** Wearable plasters that continuously monitor skin properties and function for targeted skin products
- **Prevention trackers:** A worker wears the tracker periodically during work tasks, and the software analyzes data about the strain the work is putting on different muscles and joints
- **Pressure-sensing stockings:** Stockings designed to let diabetics know when it's time to shift their weight in order to relieve pressure on specific areas of their feet

EVERYDAY ROBOTICS

ROBOTS HAVE BEEN A HOT TOPIC FOR DECADES, LARGELY FOCUSED ON RECOGNIZABLE AND OFTEN SINGULAR AUTONOMOUS ROBOTS FOR ASSEMBLY LINES AND OTHER CONTROLLED TASKS. BUT WITH ADVANCES IN SENSOR TECHNOLOGY, CONTROL AND CONNECTIVITY THERE IS A NEW ERA OF ROBOTICS EMERGING ONTO THE CONSUMER SCENE.

- **Social robots:** Jibo – your 'family's personal assistant'
- **Drink-making robots:** Somabar – a robot bartender to sit on kitchen counters and link via Wi-Fi to smart devices
- **Mind-controlled prosthetics:** Mind-controlled robotic arm sponsored by DARPA
- **Tiny robotic workers:** MicroTugs – tiny robots that can pull objects up to 2,000 times their own weight
- **Drones 2.0:** Amazon delivery drones and consumers making movies at home

PERSONALIZATION

CONSUMERS ARE RESISTING THE 'ONE SIZE FITS ALL' PRODUCTS AND SERVICES OF YESTERDAY. COMPANIES ADOPTING LOCALIZATION AND PERSONALIZATION IN THE WAY THEY APPROACH MARKETS WILL HAVE A SIGNIFICANT ADVANTAGE. FROM POINT OF SALE CUSTOMER INTERACTIONS FOR BEAUTY PRODUCTS, TO MORE USER-SPECIFIC SETTINGS IN WHITE GOODS, THE PERSONALIZATION CRAZE IS NOT OVER.

- **Memory shape composite material:** Customizable footwear to prevent common foot problems
- **Using capsule technology to create drinks and meals:** A miniature cooker called the Genie turns pods of freeze-dried ingredients into full meals in seconds
- **Lab-on-chip devices:** Allowing clinicians to identify the bacteria causing infection and the specific antibiotic to treat it
- **Customized skin serums:** Customers will be able to create a custom skin care serum, using Skin Inc. and Sephora's "My Daily Dose", designed for their unique needs
- **Personalized skincare using consumer genetics:** GeneU is offering what may be the definitive personalized skin consultation using DNA testing

REMOTE MONITORING

AUTOMATED AND REMOTE MONITORING HAS BEEN AVAILABLE ON HIGH VALUE EQUIPMENT FOR MANY YEARS. NOW THE AVAILABILITY OF LOW-COST WIRELESS COMMUNICATIONS AND LOW-COST AND CAPABLE MICROCONTROLLERS TO PRE-PROCESS DATA MEANS THAT MANY OTHER DEVICES AND APPLICATIONS CAN BE MONITORED BEYOND HIGH VALUE INFRASTRUCTURE.

- **Smart implants:** Biosensing chips for contactless monitoring of multiple health parameters
- **Precision farming using GPS sensors and data analytics:** Startup, OnFarm's platform that allows farmers to manage all of their agricultural data in one place
- **Electronic pillbox:** Pillboxes that provide automatic data via a wireless network, providing the patient daily organization of pills, adherence reminders, and adherence patterns
- **Monitoring of existing infrastructure:** Monitoring is moving into everyday services such as washrooms, pest control, trash cans and home security
- **First 1000 launch monitoring:** Market and field trials using sensors
- **Smart phone medical kits:** Blink brings an eye exam to the home or office for $75. A technician uses a trio of handheld devices that take the place of a bulky autorefractor, lensmeter, and phoropter usually seen in an eye doctor's office

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