Smart X

Speaker(s):

Carl Akin
Staff Consultant
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What is Smart X?

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Smart X

- What is the Smart Xperience?
- How do we enable data transfer from the pipe to the consumer?
- The consumer views their new world from the screen in front of them.

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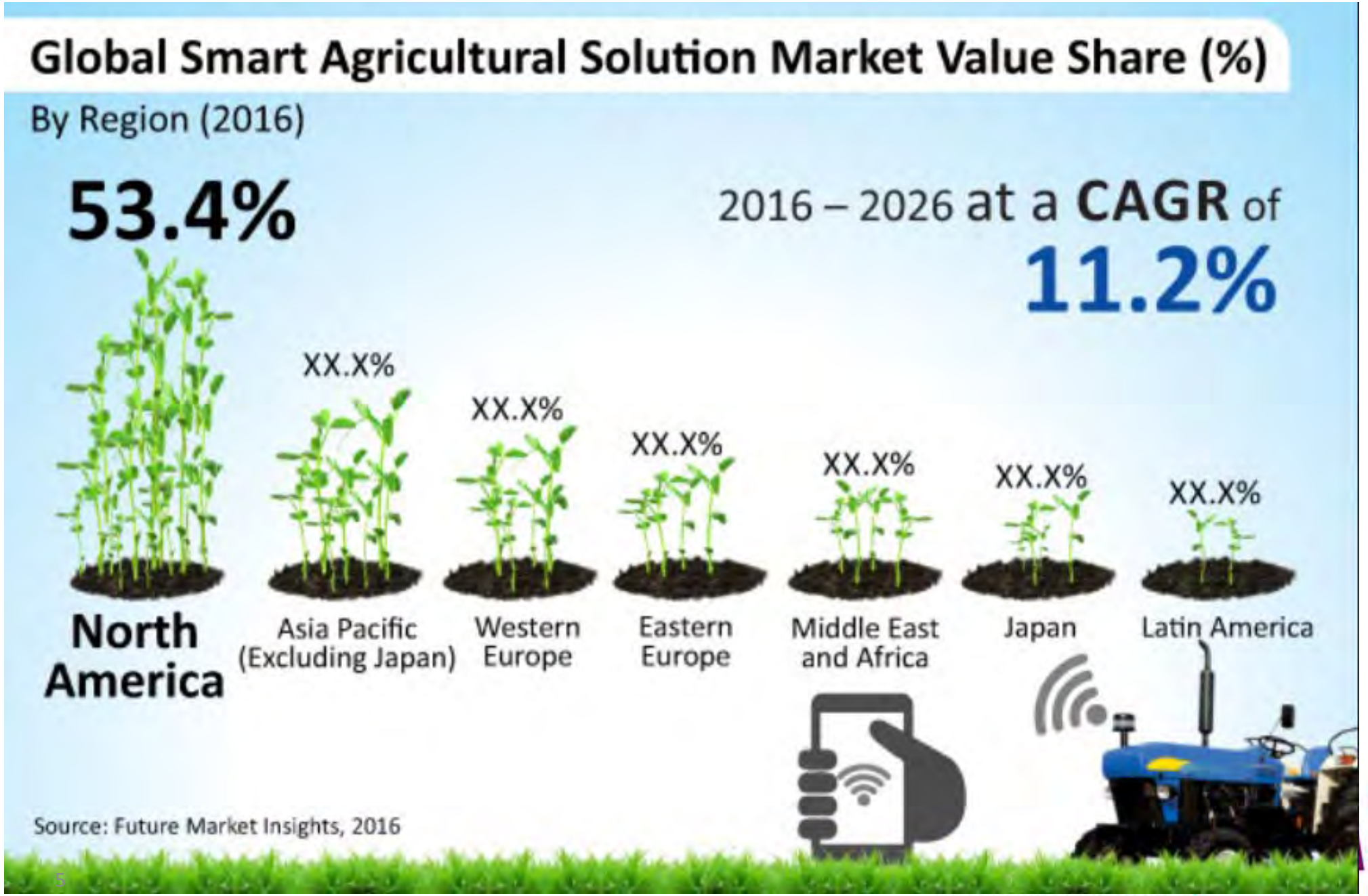
Smart Ag


Global Smart Agricultural Solution Market Value Share (%)
By Region (2016)
53.4%
2016 – 2026 at a CAGR of
11.2%
XX.X%
XX.X%
XX.X%
XX.X%
XX.X%
XX.X%
North America
Asia Pacific (Excluding Japan)
Western Europe
Eastern Europe
Middle East and Africa
Japan
Latin America
Source: Future Market Insights, 2016

5 USE CASES OF AI + ROBOTICS IN AGRICULTURE

ANALYZING SATELLITE IMAGES

Descartes Labs
farmshots
Orbital Insight
OmniEarth

IN-FIELD MONITORING

HoneyComb
SkySquirrel
dji
GeoVisual
AGRIEYE
SKYCISION
AIRWOOD
SENSURION
GAMAYA
PRECISIONHAWK
RESSON

ASSESSING CROP/SOIL HEALTH

TRACE GENOMICS
indigo
peat
BENSON HILL

AGRICULTURAL ROBOTS

CLEARPATH ROBOTICS
FarmBot
HARVEST CROO ROBOTICS
BLUE RIVER TECHNOLOGY
abundant ROBOTICS

PREDICTIVE ANALYTICS

ec2ce
aWhere
OPTIMAL

CBINSIGHTS

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90% of all crop losses are due to weather

50% of consumer-ready food never makes it to market

70% increase in food production required by 2050 to meet population growth

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Constant Need for Improvement

FEB 18, 2015 @ 08:04 AM 150,114

The Future Of Agriculture? Smart Farming

Federico Guerrini, CONTRIBUTOR

FULL BIO

Opinions expressed by Forbes Contributors are their own.

The agricultural sector is going to face enormous challenges in order to feed the 9.6 billion people that the FAO predicts are going to inhabit the planet by 2050: food production must increase by 70% by 2050, and this has to be achieved in spite of the limited availability of arable lands, the increasing need for fresh water (agriculture consumes 70 per cent of the world's fresh water supply) and other less predictable factors, such as the impact of climate change, which, according a recent report by the UN could lead, among other things, to changes to seasonal events in the life cycle of plant and animals.

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What is the definition of precision agriculture?

Precision agriculture (PA), satellite farming or site specific crop management (SSCM) is a farming management concept based on observing, measuring and responding to inter and intra-field variability in crops.

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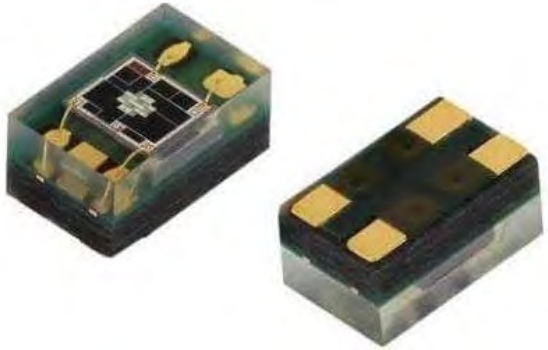
Increased Yields with Connected Sensing

- Soil Quality – Monitor condition to optimize watering
- Crop Growth – Track growth and take action based on environmental factors
- Stock & Feed levels – generate alerts to ensure livestock feed areas are appropriately stocked



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Colin Hurd, the founder and CEO of Smart Ag

"The best way to improve our customers' operational capacity is to enable them to use automation and driverless technology on their farms. With the correct technology and knowledge, farmers can do the seemingly impossible."

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Self Driving Tractors

SmartHP – Smart Horse power

- On-board navigation system
- On-board machine learning system
- 360 Degree Dual Layer Obstacle Perception System
- Long range front facing Obstacle Detection
- External Long Range Radar
- External Cameras
- External Antennas
- External Hardwired E-Stop Button
- Handheld E-Stop
- Steering and Speed Controller
- Long Range WIFI
- Long Range Mesh Network
- Cellular Modem
- Choice of Verizon or AT&T
- Mounting Hardware
- Wiring Harnesses

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Vertical Farming

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CUBICFARMS' SMALLEST 12 MACHINE SYSTEM WILL GROW:

HUNDREDS OF VARIETIES.

HEADS OF LETTUCE
1.25 MILLION ANNUALLY
24,480 WEEKLY

PLUGS OF BASIL
6 MILLION ANNUALLY
117,000 WEEKLY

LBS OF MICROGREENS
150,000+ ANNUALLY
2,880 WEEKLY

BENEFITS OF A CUBICFARM

COMMERCIAL SCALE VERTICAL FARMING

SAVE MILLIONS OF GALLONS OF FRESH WATER

REPLACE 20 ACRES OF TRADITIONAL FARMLAND

REDUCE LABOR – ONLY 3 TO 4 EMPLOYEES CAN RUN THE ENTIRE PROCESS

ZERO PESTICIDES

GROWN CLEAN

GROW LOCAL

Smart Cities

The smart city concept arguably dates back at least as far as the invention of automated traffic lights, which were first deployed in 1922 in Houston, Texas.

Smart Cities – Executive Summary

- **What is a smart city?** A smart city uses IoT sensors and technology to connect components across a city to derive data and improve the lives of citizens and visitors.
- **What does a smart city do?** Oftentimes, a mobile app is provided to give immediate access to data, communication channels and more, so that people can do everything from avoiding traffic jams, to finding a parking spot, reporting a pot hole, or an overflowing dumpster.
- **Why do smart cities matter?** The world is becoming more urbanized, and by 2050, more than 60% of the world's population is expected to live in cities. Making these cities better places to live is essential to quality of life by making them more sustainable and efficient with streamlined services.
- **Who do smart cities affect?** It affects everyone on the planet.
- **When are smart cities happening?** This is happening now.
- **Where are smart cities happening?** Early adopters of smart city technology were European cities, but US cities have quickly picked up steam and are incorporating technology into municipal infrastructure.
- **Who is making smart cities happen?** Public and private companies, as well as federal, state and city government are getting involved to make it easier for municipalities to adopt new technology.
- **How can my city become a smart city?** Citizens can form a grassroots campaign to get support and ask government officials to incorporate more technology into their city.

From TechRepublic

Why become a Smart City

You do it because you improve and impact people's lives. Period, end of story.
This is about transforming people's lives into making them more efficient.

Quality of life is not spending three hours in a car every day. If you're becoming smarter and more connected and utilizing those city services that are available then you're alleviating some of those pain points.

Jarrett Wendt, vice president of strategic initiatives and business development for Panasonic Enterprise Solutions Company

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Smart Cities
v1.0, v2.0 and v3.0

The smart city industry is projected to be a $400 billion market by 2020, with 600 cities around the globe expected to generate 60% of the world's GDP by 2025, according to McKinsey research.

Smart Cities 1.0

- A technology provider encouraging the adoption of their solutions to cities that are not really equipped to understand the implications of the solution or how they impact their citizens life.
- i.e. Google in Kansas City

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Smart Cities 2.0

- Technology Enabled
- City-Led
- Wi-Fi in public spaces and public transit
- Intelligent lighting

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Smart Cities 3.0

- Citizen Co-Creation
- Vancouver engaged over 30,000 citizens to create their action plan
- Appears to be grounded more in issues of equity and social inclusion
- Repair Cafes – tool lending libraries

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Smart City Index

Dimension	Working Area	Indicator
Environment	Smart Buildings	Sustainability-certified Buildings Smart homes
	Resources Management	Energy
		Carbon Footprint Air qualty Waste Generation
		Water consumption
	Sustainable Urban Planning	Climate resilience planning Density Green Space per capita

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Smart City Index

Dimension	Working Area	Indicator
Mobility	Efficient Transport	Clean-energy Transport
	Multi-modal Access	Public Transport
	Technology Infrastructure	Smart cards
		Access to real-time information

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Smart City Index

Dimension	Working Area	Indicator
Government	Online services	Online Procedures Electronic Benefits Payments
	Infrastructure	WiFi Coverage
		Broadband coverage
		Sensor Coverage
		Integrated health + safety operations
	Open Government	Open Data Open Apps Privacy
Economy	Entrepreneurship & Innovation	New startups R + D Employment levels Innovation
	Productivity	GRP per capita
	Local and Global Conexion	Exports International Events Hold

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Smart City Index

Dimension	Working Area	Indicator
People	Inclusion	Internet-connected Households Smart phone penetration Civic engagement
	Education	Secondary Education University Graduates
	Creativity	Foreign-born immigrants Urban Living Lab Creative Industry Jobs
Living	Culture and Well-being	Life Conditions Gini Index Quality of life ranking Investment in Culture
	Safety	Crime Smart Crime Prevention
	Health	Single health history Life Expectancy

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Atlanta's smart city initiative

- Joined the Smart City Forum (started by TM Forum)
- capture, communication and crunch
- On the capture side, all in all, we're in pilot mode, like most cities. This is a new area, standards haven't been defined.

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Your Face is Your Credit Card

- The use of facial recognition on buses.
- Your face is linked to your bank account.
- You step onboard and the money is deducted from your account

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Smart City Features

- Parking Sensors and Parking apps.
- Car sharing
- Smart phone penetration
- Connecting disadvantaged citizens with critical information and services
- Sharing government data and meetings with the public
- Free wireless to K-12 schools
- Online building permits

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Smart City Features (continued)

- Solar powered bus stops, billboards and lights
- Automatic dimming light switches
- Smart meters
- Ultra low energy LED lights
- Enhanced recycling efforts, smart bins
- City app that allows residents to report potholes, graffiti, and other issues from anywhere in the city
- Smart Building Utilization

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Smart City Features (continued)

- Business ecosystems, startup and incubator programs
- Increased urban planning
- Louisville, KY uses IFTTT (If This Then That) to notify citizens of air quality changes
- Real-time bus tracking
- Waze integration for signal re-timing

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Smart City Funding

- $80m announced by White House in Sept. 2017
- $15m program improve energy efficiency through data gathering
- $15m for research on improving transportation
- $60m National Science Foundation Smart Cities Initiative
- The Smart Cities Council (for-profit association)
- Philips Lighting and Ericson are offering public-private partnerships.

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ROI

- LED smart streetlight energy savings pays for the cost in a few years.
- If you can deploy a network where an urban operator comes in and manages and starts modernizing lighting, sharing data on traffic, sharing data on environment noise, and other things, you start having one network with multiple capacities, and net new revenue for the city in the case of parking and other data models.
- LA has converted of 80% of 215,000 streetlights to LED and is saving $9m annually
- In 7 years smart LED streetlights have gone from $700 to $100

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The Connected Car

A **connected car** is a **car** that is equipped with Internet access, and usually also with a wireless local area network. This allows the **car** to share internet access with other devices both inside as well as outside the **vehicle**.

Today (April 2018) 35% of new vehicles are connected to the Internet.

The Battle is On!

- The U.S. government has invested hundreds of millions of dollars in Wi-Fi-based technology known as DSRC, or dedicated short-range communication, that allows cars to link to “smart” traffic lights designed to smooth congestion and provide warnings about accidents or poor weather conditions ahead. Rolling out in 2019 per DOT/NHTSA.

- Defined by 3GPP in 2017. C-V2X (cellular vehicle to everything) is the new kid on the block. 5G Automobile Association (5GAA) consists of 75 companies pushing C-V2X.

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By the Numbers

- 68% of connected car owners in North America did not receive a demonstration of their cars features.
- When purchasing a new car key purchasing considerations are:
  47% Safety
  42% Fuel Economy
  38% Brand Image
  34% exterior Design
  11% Connectivity
- Of those who have used the features 56% of drivers say they won't renew.

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SiriusXM Connected Vehicle Services

- SiriusXM wants to dominate the dashboard of the connected car.
- Teamed up with AT&T to provide 4G LTE in the US.

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IBM Connected Vehicle Insights

Connected vehicles retrieve and manage all kinds of in-vehicle and environmental data from sensors and other vehicle systems through the cloud. They know when weather will impact travel, can predict maintenance issues, understand driving patterns and even proactively offer assistance.

IBM Connected Vehicle Insights help deliver a safer and more engaging experience that improves over time.

BMW, Honda, Airwire Technologies

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AT&T

- In-car Wi-FI with Unlimited Data for $20/mo (up to 22GB/line/mo)
- Up to 10 mobile devices at once
- 4G LTE
- Both built-in and plug-in hotspots available
- Works up to 50 ft. away from your car

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AT&T with built-in hotspots

Smart Home

Smart Home Issue 1

"The fact that I have multiple personalities and none of them are computer literate is depressing."

Purchase intentions for smart home devices have increased by 66% year over year.

© Parks Associates

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26% Own a Smart Device, 53% Installed It Themselves

Connected Thinking

COMMENTARY

26% Own A Smart Device, 53% Installed It Themselves

by Chuck Martin , Staff Writer, Yesterday

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Hello HAL, How's it going?

Introducing the Master Replicas Group's 2001 Interactive HAL Computer!

For the first time in 50 years, you can own an absolutely authentic, fully-operational HAL 9000 computer interface.

The Master Replicas Group Interactive HAL Computer uses Amazon Echo technology to control your home!

Available for preorder this spring. Shipping in second quarter 2018!

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Who is at the door?

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Pick a controller

Zigbee

LE Smart Hub

SYLVANIA SMART+ ZigBee

Full Color RT 5/6 Recessed Lighting Kit, Works with SmartThings and Amazon Echo Plus

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Smart Wi-Fi Light Switch

Alexa Google Home Compatible, iOS Android Smartphone Wireless Remote Control

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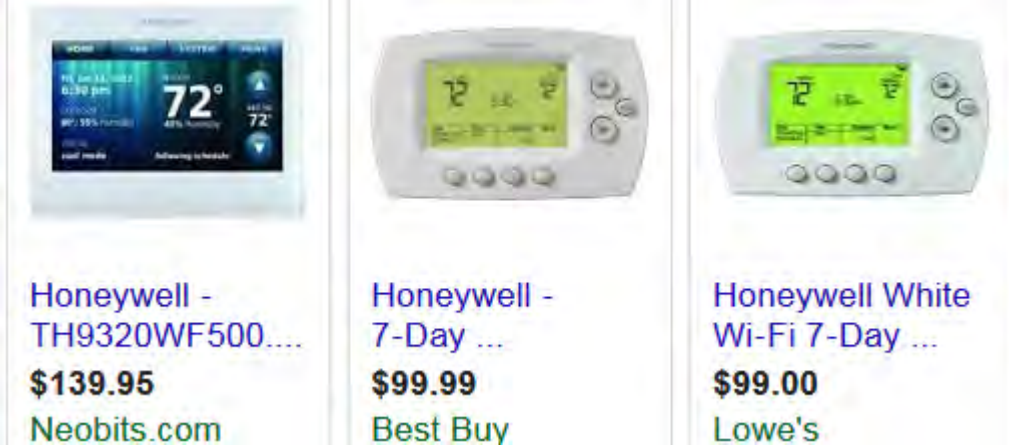
Your hot, I'm cold



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Bathroom

New this year at the CES (Consumer Electronics Show) Kohler had a $6000 Alexa controlled toilet! It is called the Kohler Konnect.

For $735 Techcrunch has plans for a home built version.

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Moen U Shower Smart Home Connected Bathroom Controller

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More Bathroom ideas

The trouble with showers is that you have to go 10 or 20 minutes without using your phone. But now, the iPad Mount Clear Shower Curtain lets you put phones or tablets on the dry side of the shower curtain in special pouches. The touch screen still works through the plastic.

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Even more bathroom!

TheHiMirror is an internet connected smart mirror connected with Alexa.

Home Office

The Flexisport combines a desk with a stationary bike.

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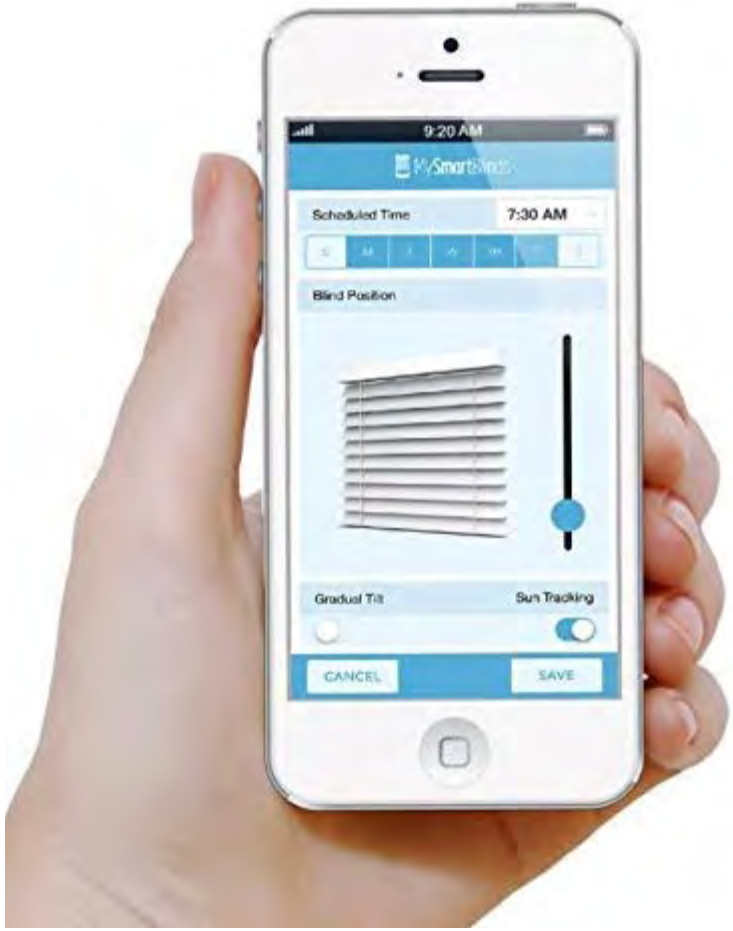
MySmartBlinds
Automation Kit for Motorized Blinds



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Cat Litter-Robot

Automatic self-cleaning litter box. The app provides status notifications, monitors litter box usage, and view the waste drawer level.

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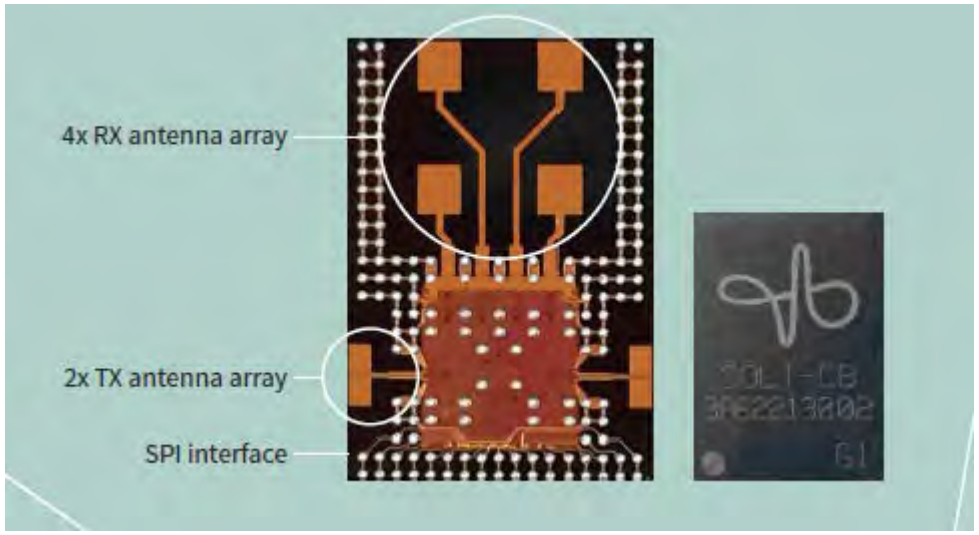
Smart X – to the next level

Google/Infineon – Project Soli
Say Goodbye to manual controllers and input devices!



Micro radar interface

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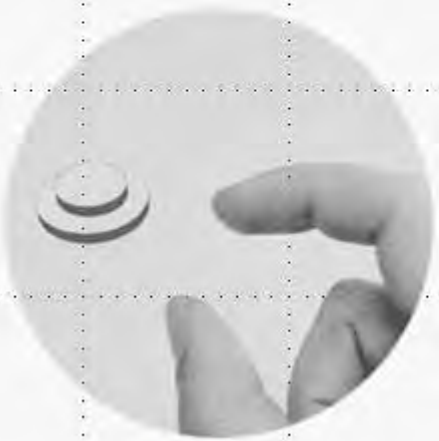
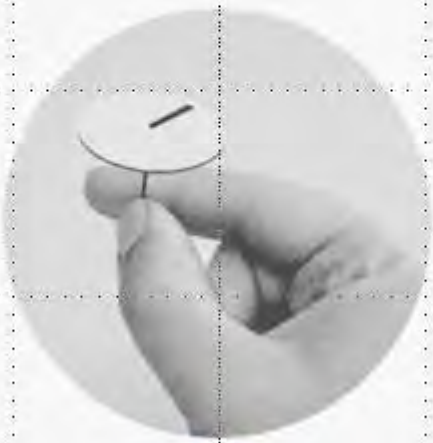
Virtual Tool Gestures

Imagine an invisible button between your thumb and index fingers – you can press it by tapping your fingers together. Or a Virtual Dial that you turn by rubbing thumb against index finger. Imagine grabbing and pulling a Virtual Slider in thin air. These are the kinds of interactions we are developing and imagining.



Button



Dial

Slider

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Smart Fabrics

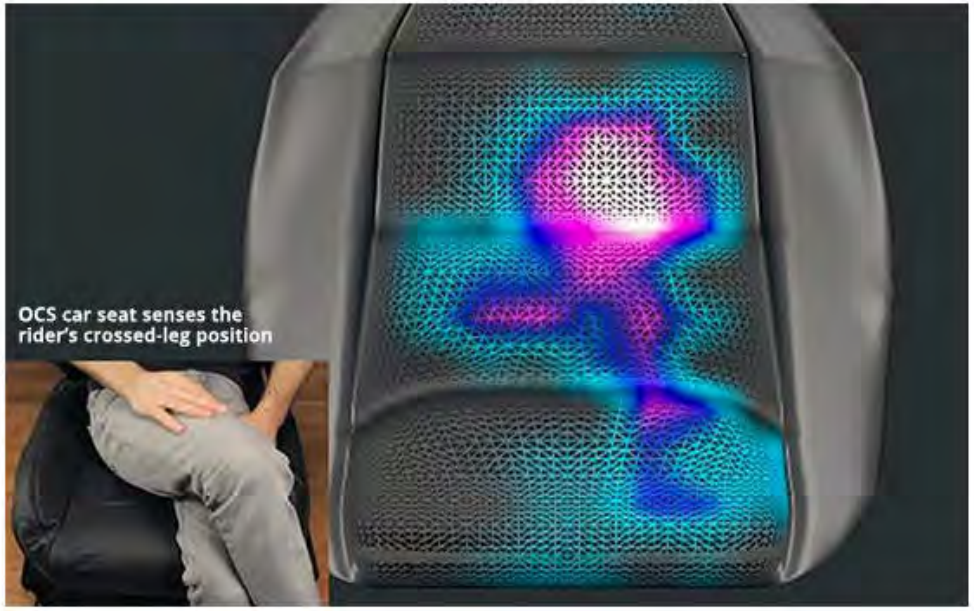
MediaPost News Events Awards Members More

Connected Thinking

COMMENTARY

Here Come The Smart Fabric Sensors

by Chuck Martin , Staff Writer, Yesterday



Questions?

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