

# Innovation for a future NZ

IPENZTG - 16

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# What is innovation?

1. Define
2. How it relates to R & D
3. Some technology trends

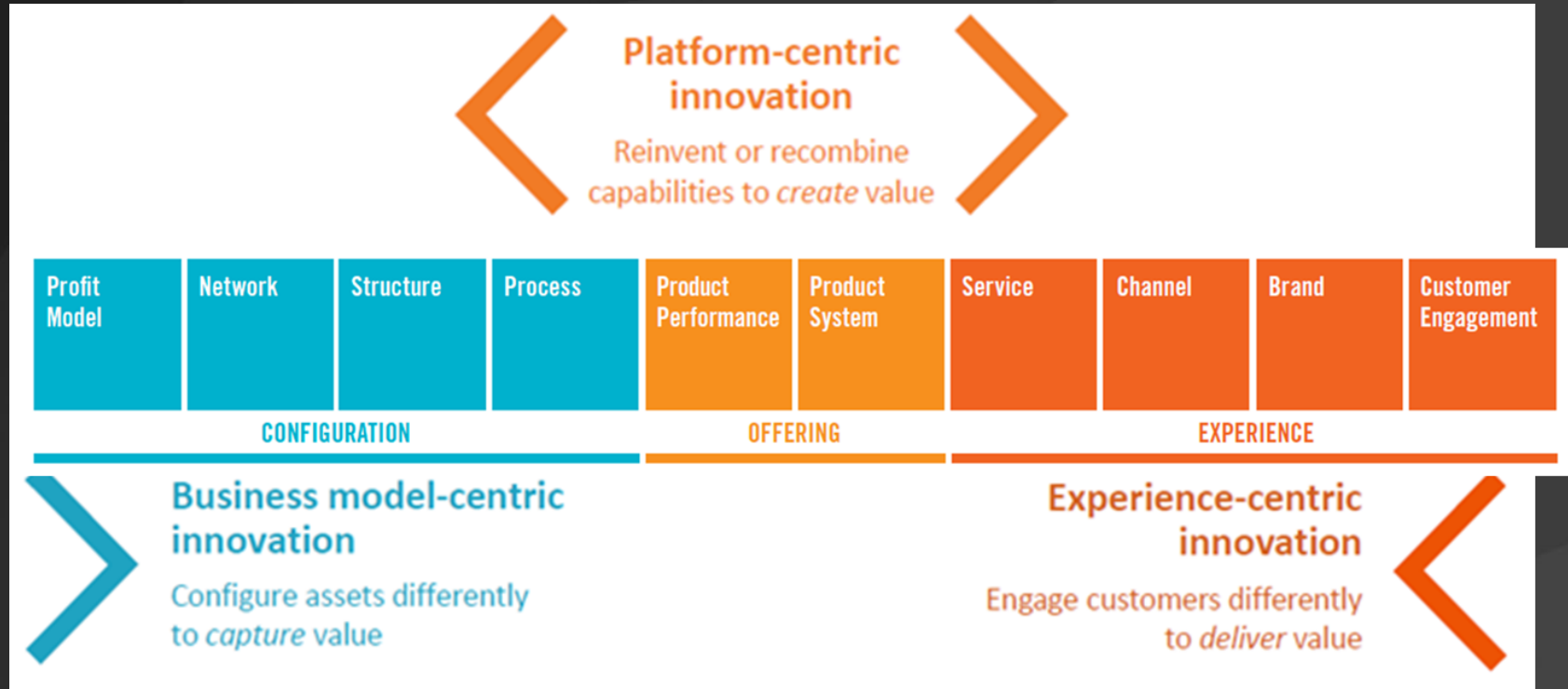


A woman wearing safety glasses and a blue shirt is smiling and talking to a man in a blue shirt. They are in a factory setting with a large machine labeled "OKUMA" in the background. A laptop is open on a table in the foreground.

True innovation leads to new and improved:

- Products
- Processes
- Marketing methods
- Entirely new Businesses
- New and expanded Services

# Doblin ten types of innovation



# Research & Development

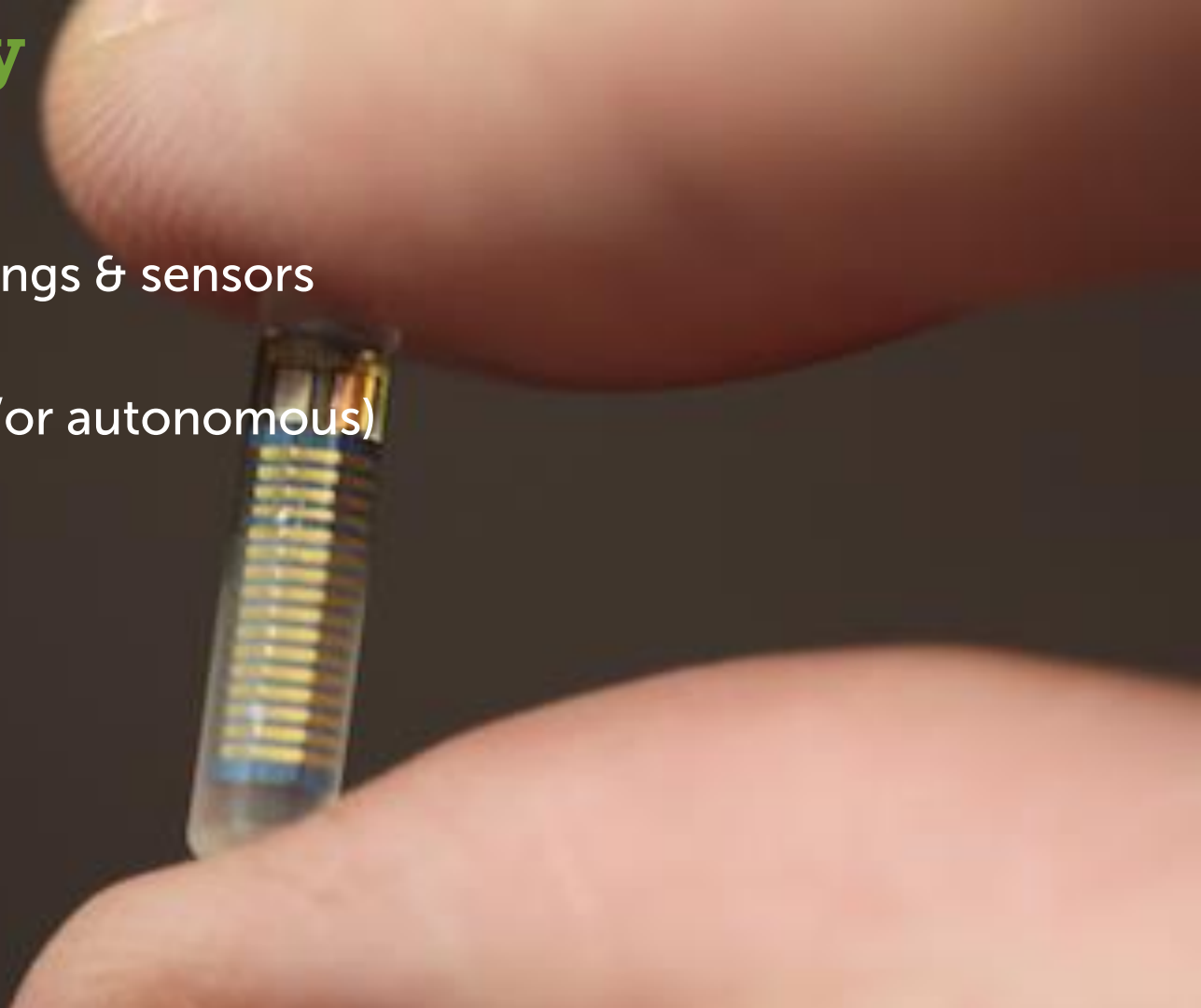
A hand is shown holding a complex, transparent, spiral-shaped mechanical component. The component has a central hub with several radial spokes and a series of concentric, overlapping rings that form a spiral pattern. The hand is positioned in the center of the frame, with fingers visible on the left and right sides. The background is dark and out of focus, emphasizing the intricate details of the mechanical part.

All successful companies depended on critical innovation capabilities. These include:

- the ability to gain insights into customer needs and to understand the potential relevance of emerging technologies when generating new ideas
- to engage actively with customers to prove the validity of concepts during product development
- and to work with pilot users to roll out products carefully during commercialisation

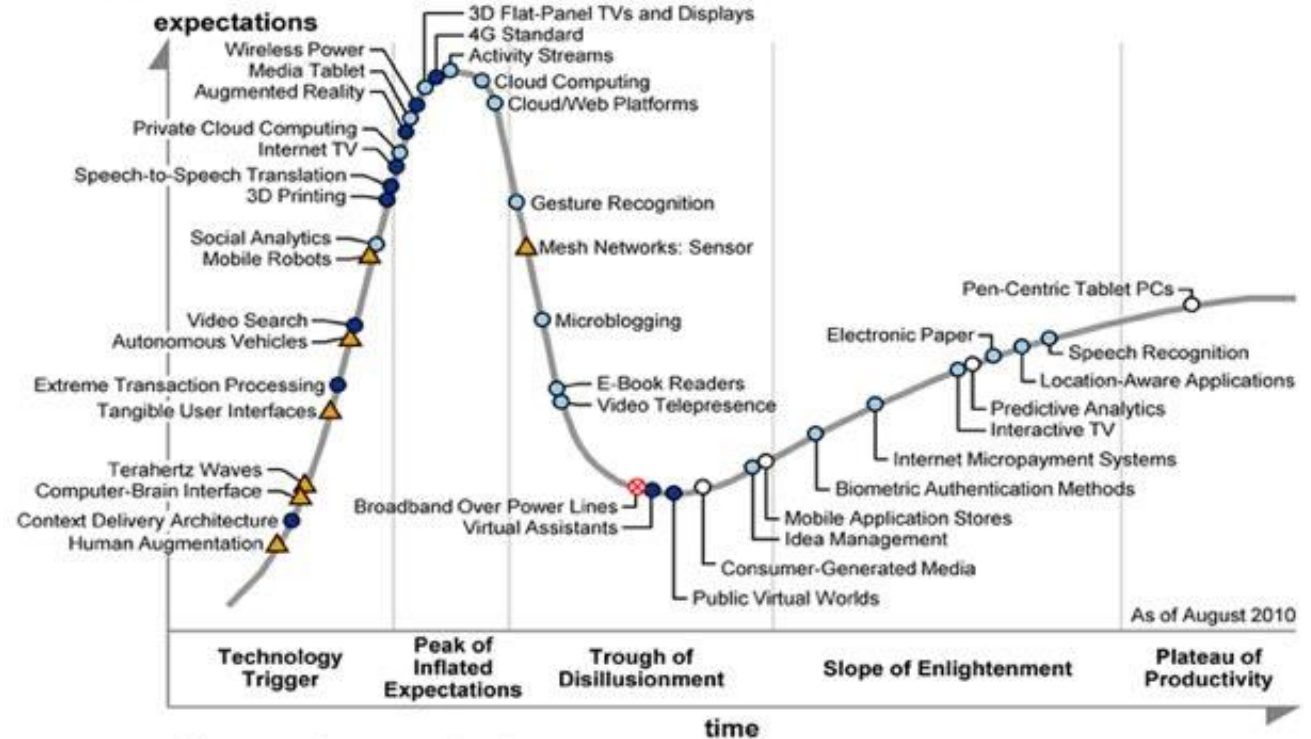
# Three technology related trends

- The Internet of things & sensors
- Robots
- Cars (electric and/or autonomous)



# Hype cycle for emerging technologies 2010

Figure 1 Hype Cycle for Emerging Technologies, 2010



Years to mainstream adoption:

○ less than 2 years

○ 2 to 5 years

● 5 to 10 years

▲ more than 10 years

⊗ obsolete

⊗ before plateau

# Hype cycle for emerging technologies 2015

Figure 2. Hype Cycle for Emerging Technologies, 2015



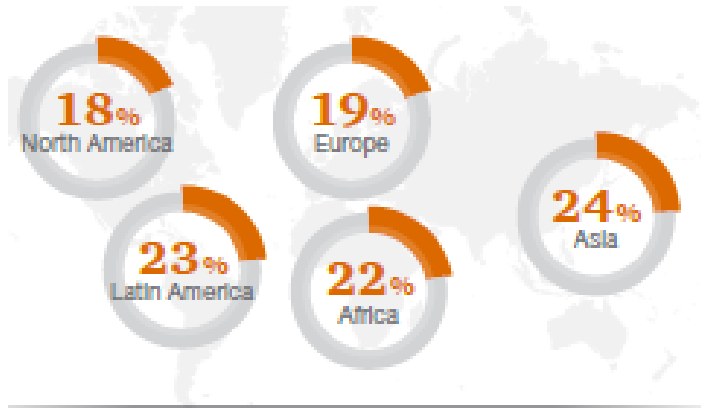
Plateau will be reached in:

- less than 2 years
- 2 to 5 years
- 5 to 10 years
- ▲ more than 10 years
- ⊗ obsolete before plateau



# Sensors, sensors, sensors

> *Global sensor adoption: Asia leads*



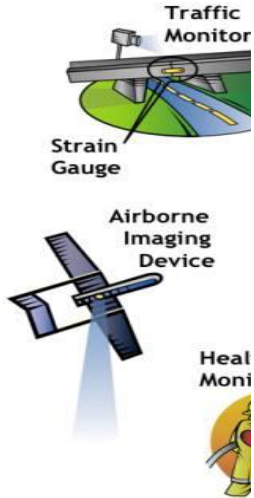
**20%** of companies are investing in sensors, compared to **17%** last year.

**25%** of Top Performers\* are investing in sensors, up from **18%** last year.

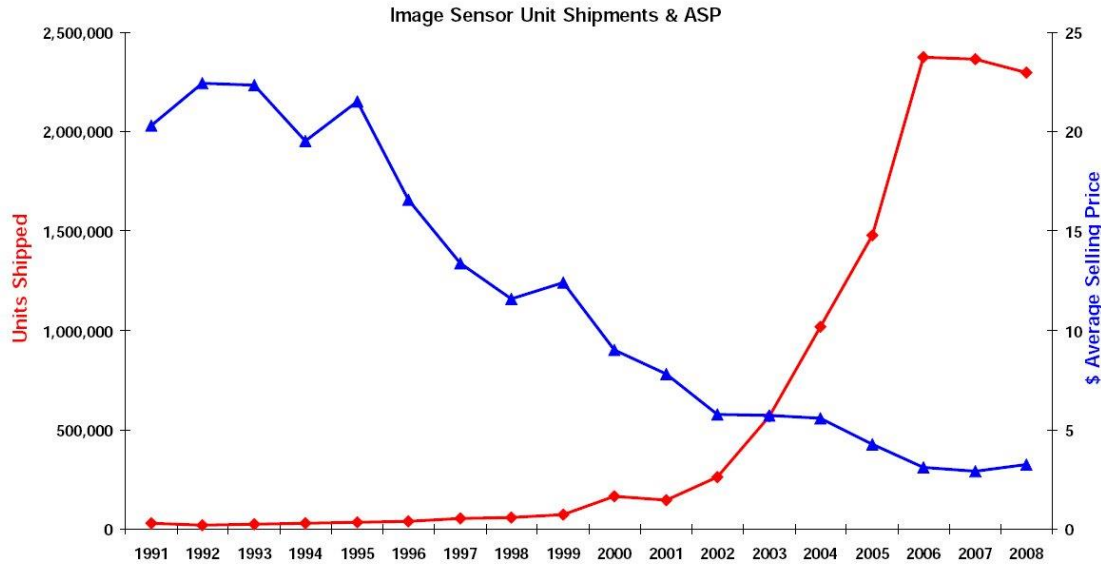
**54%** of Top Performers said they will invest more in sensors this year.

**14%** of respondents said sensors would be of the highest strategic importance to their organizations in the next 3–5 years, as compared to other emerging technologies.

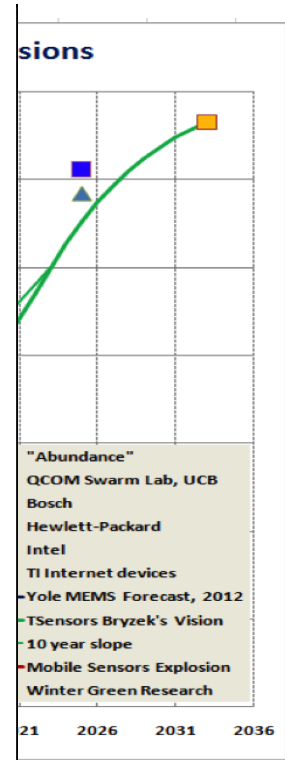
# Sensors in the future



## Falling Prices Ignited Volume Sales



Source: SIA/WSTS

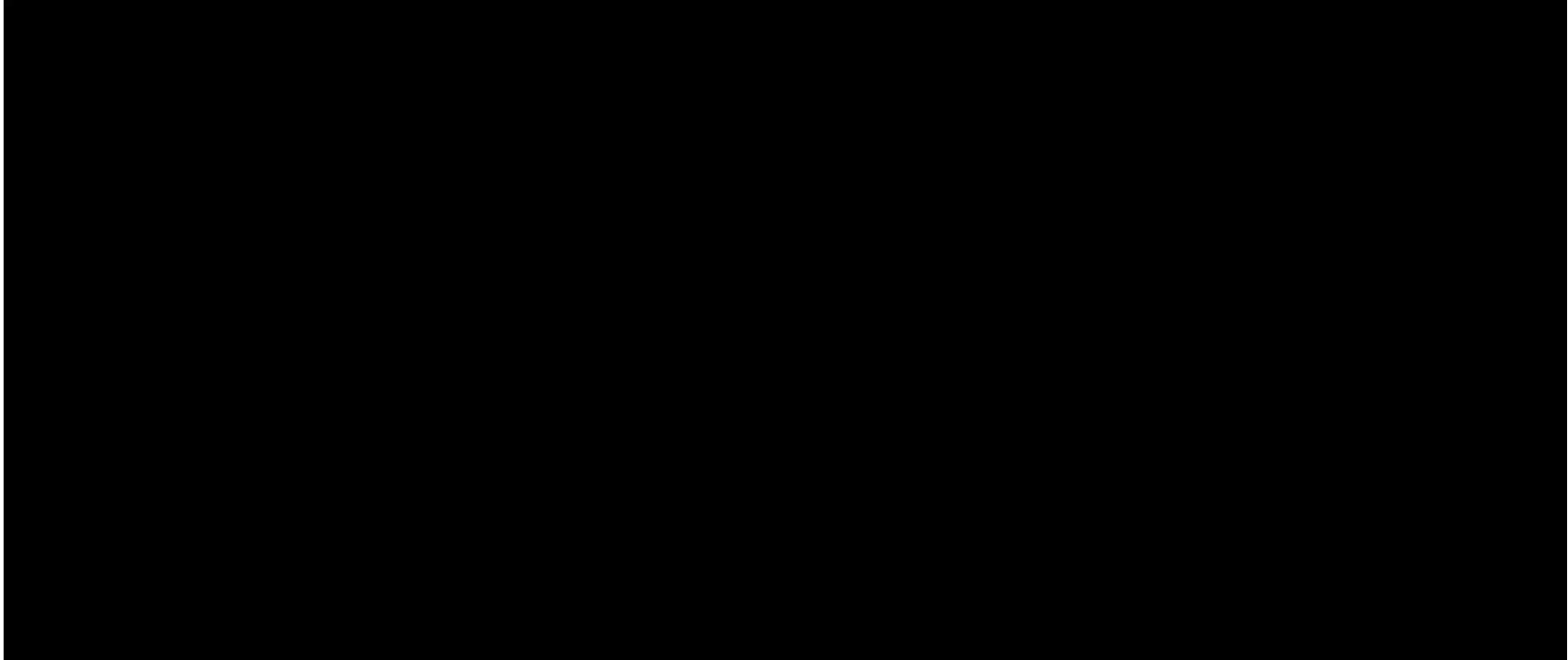


# Robots – exponential technologies

- Meet Baxter – an interactive robot
- Face display to indicate where the robot is about to work and what it is paying attention to.



# Baxter robot with better software

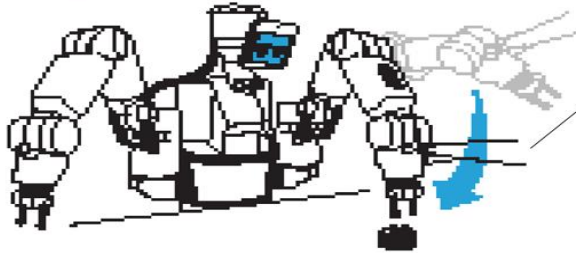


# Baxter - training

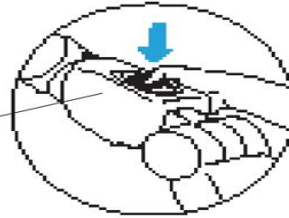
## HOW TO TRAIN A ROBOT, IN SEVEN EASY STEPS

Baxter can be trained by anyone, simply by guiding one or both of its arms and following menu prompts on the monitor that serves as Baxter's "head." Screen selections are made by using a sort of mouse built into Baxter's arm. Here's how to train Baxter to pick up widgets and stuff them into boxes:

1. Select training mode.



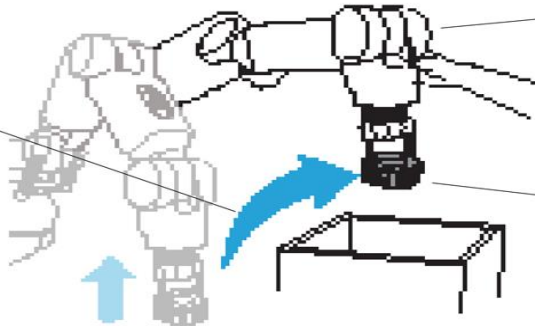
2. Grab one of Baxter's arms and swing its "hand" over the widget, and click to indicate that this is the object to be grabbed.



3. A camera in Baxter's hand will center on the widget and display the image on the screen; confirm with a click that this is the right sort of object.

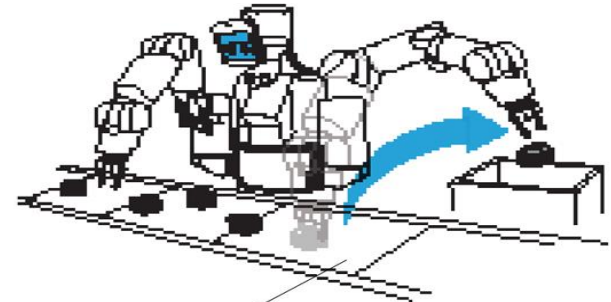


4. Baxter will grab the object. Swing the arm over the four corners of the box, and click to indicate this is the destination for the widget.



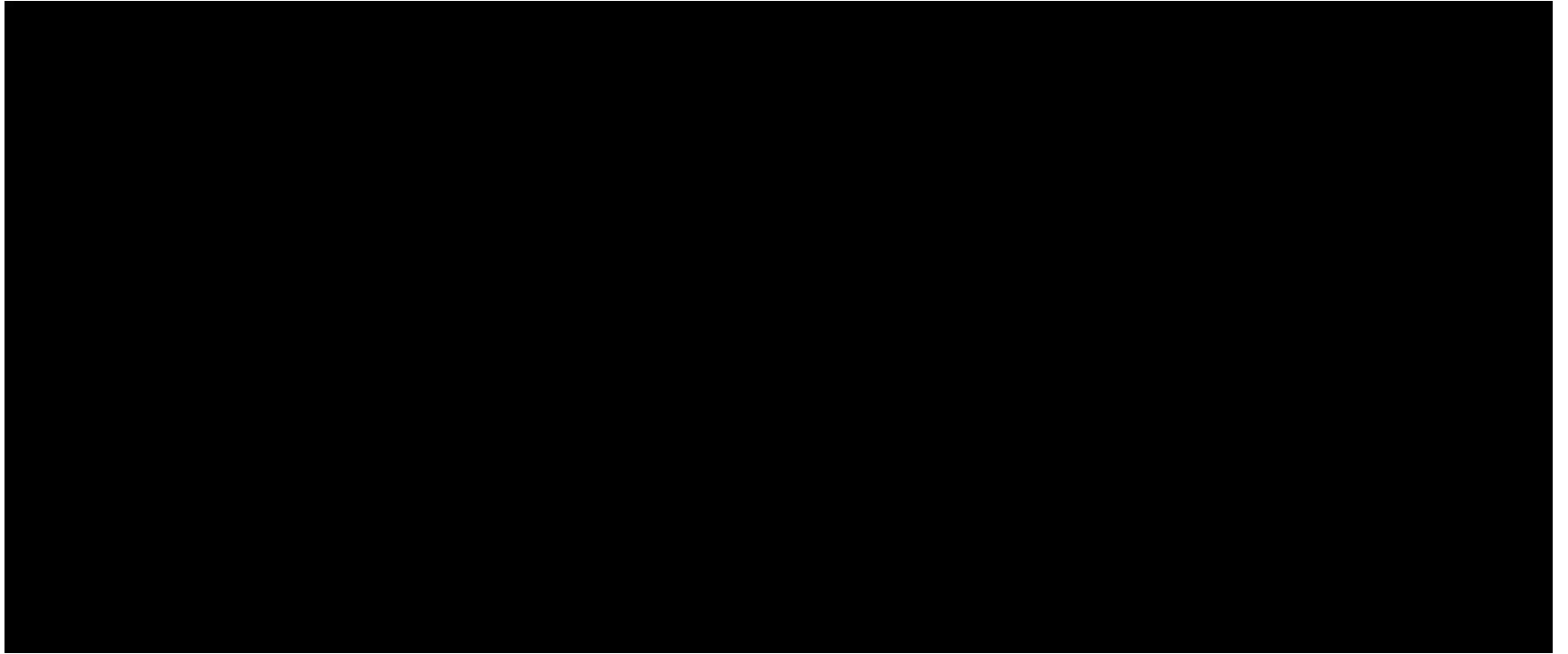
5. Click to confirm that Baxter is to insert the widget into the box.

6. Baxter will put the object into the box, using sensors to guide the widget in. Click to confirm that this is the entire task.

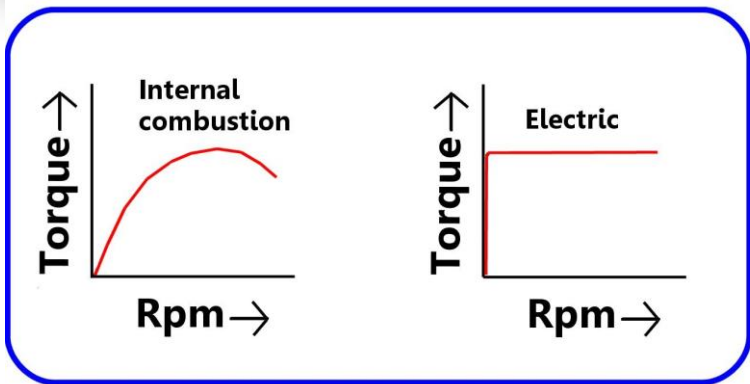


7. Run the conveyor. As long as widgets appear in roughly the same area, Baxter will identify, grab, and box them. Its facial expressions will indicate if it is struggling or working smoothly.

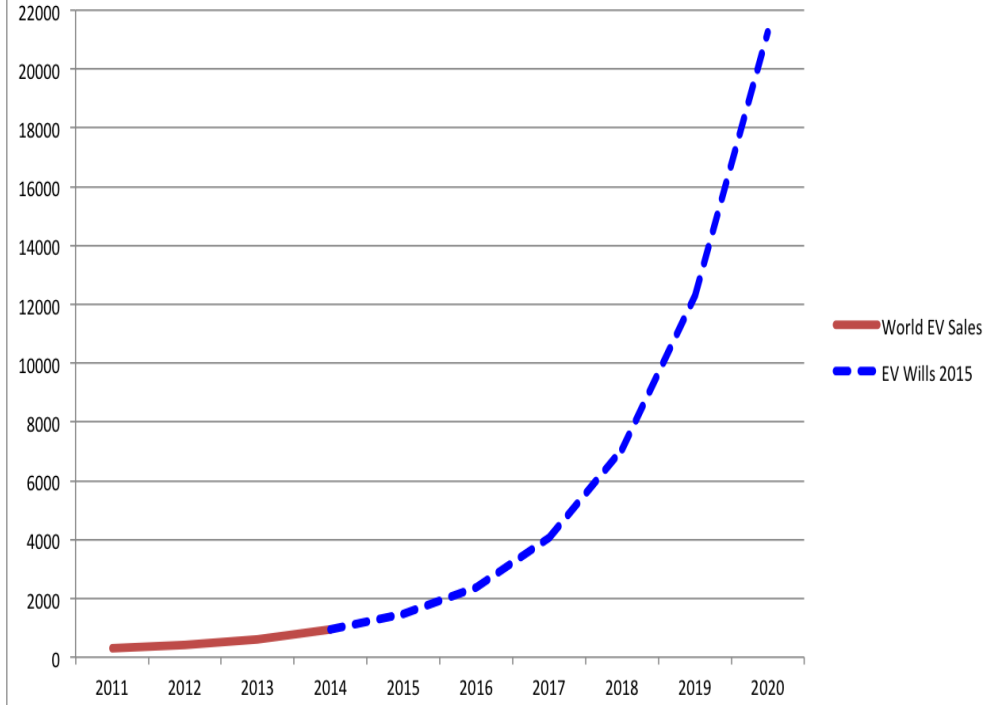
# Robots vs humans (AI is on its way)



# Electric Vehicles



Global EV cumulative sales (000s) and predicted to 2020  
EV sales data 2012-2014 @InsideEVs @ProfRayWills forecast



# Autonomous Vehicles

“Fully autonomous cars will be market ready in two years.” - Elon Musk

“Consumers will be occupying autonomous vehicles by 2020.” - Mark Fields, Ford CEO



- Google has led, but....
- General Motors - \$500 million in Lyft with a promise of a network of autonomous vehicles.
- Toyota has invested \$1 billion in an autonomous vehicle unit.
- Japanese - to shuttle visitors in driverless cars during the 2020 Olympics.
- China's Tencent and iPhone-maker Foxconn are partnering to build smart electric vehicles—without an automaker involved.



# To get in touch...

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