

THE TAKE

What is the one thing that allows you to do all of the following?

- a) view your friend's Snapchat story
- b) stream a song on Spotify
- c) catch up on your favorite Netflix show.



THE REVEAL


The answer: Internet. Fundamentally, the internet is a network of computers that allows your phone or computer to communicate with other devices around the world.



THE SCOPE

Like you, more and more smart factories are relying on the “internet” to function—specifically, the Industrial Internet of Things (IIoT).

The Industrial Internet of Things (IIoT) is a  network  of physical objects across a smart factory floor that are equipped with sensors that collect and exchange data.

When companies want to produce a single product, as small as a phone or as **big** as a car, they need to design an efficient production process.

The production process is composed of several assembly steps –for a car, steps include stamping out the car frame, welding, painting, and assembling (e.g., installing the engine and electronic system). Multiple robotics arms  may collaborate to complete a single step, but through the IoT, all the robotic arms involved in the entire production process can communicate with each other.

Just like we rely on the Internet to catch up on the latest trends, celebrity drama, or current events , manufacturers rely on the IoT to check in on just how well their current  production processes are working.

DEFINING IT

How does the IoT work within a smart factory?


PREDICTIVE MAINTENANCE


The equipment in smart factories self-evaluate.

In smart factories, wireless sensors are attached to equipment and connected through the IoT. These sensors can calculate the most precise of measurements—the vibrations, surrounding temperature, acceleration of machines—to make sure everything is working perfectly. Irregularities in the sensor data alert manufacturers of impending problems before they even happen.

DIGITAL TWINS


[Opening line]: digital twins.

A digital twin is a digital copy  of a physical object, such as equipment or even people. The cool thing about digital twins is that they don't just simulate individual things—through the IoT, digital twins can also model how human workers and equipment interact with each other.

Through digital twins, manufacturers determine how to best organize their factories without touching a piece of physical equipment. Manufacturers can rearrange  people and equipment in the simulation to find which orientation makes the factory most efficient and productive.

WORKER SAFETY

Sometimes, the IoT is a worker's lifeline.

The IoT powers wearable sensors that track the wearer's heart rate and blood pressure  either reaches an unhealthy point, the wearables advise the wearer to stop working.

The sensors can also monitor the heat, air pollution, radiation, and noise levels of the wearer's surroundings to ensure that the working environment is healthy.

LOOKING AHEAD

Edition 3 – Industry 4.0 In-Depth

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SOURCES CONSULTED

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