MORAI

LOGISTICS

ROBOTS, COBOTS, AND BIONIC HUMANS

THE FUTURE OF SUPPLY CHAINS

Transforming Supply Chains

Supply chains have seen the processes that make them up change at an incredible rate in recent years. From the advent of artificial intelligence and machine learning to the growth of automation and invention of blockchain, technological innovations are transforming the way supply chains operate.

As a result of these numerous developments, there have been understandable concerns over the human component in supply chains, as they seem to be set to be replaced by these technologies of the future. This is particularly true of robots that can operate independently and with minimal oversight.

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TRANSFORMING SUPPLY CHAINS

An article from Deloitte highlights this growing presence of robots in supply chains:

> AUTONOMOUS ROBOTS ARE EXPECTED TO SEE STRONG GROWTH OVER THE NEXT FIVE YEARS, PARTICULARLY WITHIN SUPPLY CHAIN OPERATIONS THAT INCLUDE LOWER-VALUE, POTENTIALLY DANGEROUS OR HIGH-RISK TASKS.

Yet, is this robot takeover inevitable or just one part of a bigger picture? It's impossible to deny that robots in conjunction with AI will take over many kinds of work in supply chains. However, in many cases they will have to work side-by-side with human workers to see the best results. This is where cobots and bionic humans come into the fold.

So, just what are autonomous robots, cobots, and bionic humans in the context of a supply chain?

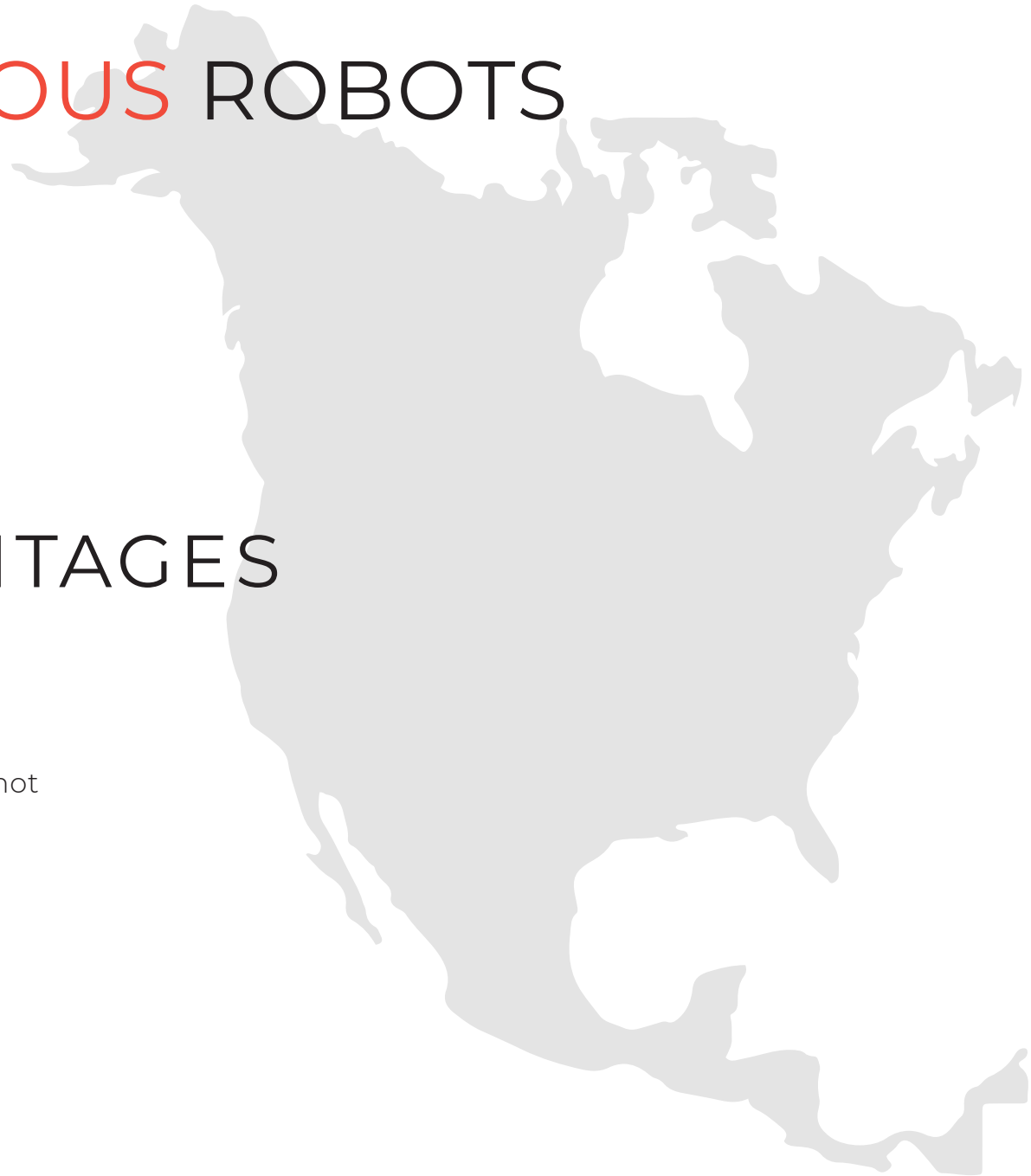
AUTONOMOUS ROBOTS

The robots that are becoming more and more prevalent in supply chains aren't just any kind of robot, they're robots that can operate, to a large extent, independently. They're a marriage of artificial intelligence and robotics.

With them, supply chains can see a vast array of their operations completed with greater precision and speed.

WITH THEM, SUPPLY CHAINS CAN SEE A VAST ARRAY OF THEIR OPERATIONS COMPLETED WITH GREATER PRECISION AND SPEED.

AUTONOMOUS ROBOTS



KEY ADVANTAGES

- Boosted productivity
- Minimal oversight needed
- Can do tasks humans cannot

COBOTS

COBOTS, ON THE OTHER HAND, ARE ROBOTS THAT WORK WITH HUMANS—THEY ARE COLLABORATIVE ROBOTS. THIS MEANS THAT THEY ARE ROBOTS THAT WORK ALONGSIDE HUMANS RATHER THAN INSTEAD OF THEM

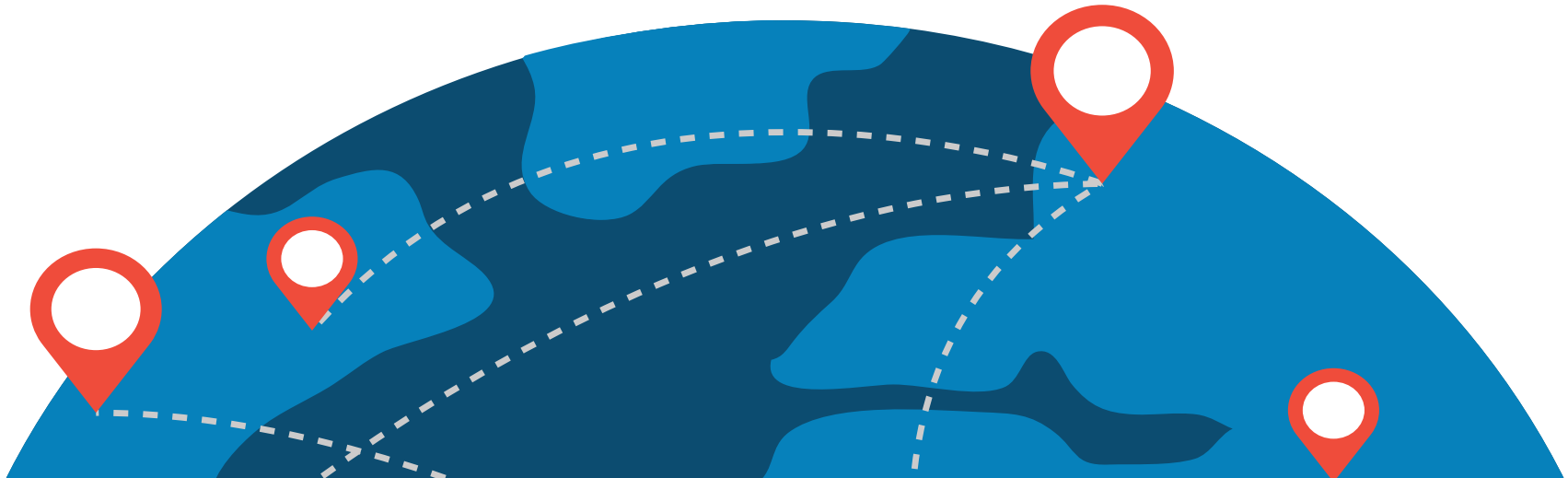
The IFA elaborates on cobots:

> **"COLLABORATIVE INDUSTRIAL ROBOTS ARE COMPLEX MACHINES WHICH WORK HAND IN HAND WITH HUMAN BEINGS. IN A SHARED WORK PROCESS, THEY SUPPORT AND RELIEVE THE HUMAN OPERATOR."**
> **ESSENTIALLY, COBOTS PROVE THAT ROBOTS DON'T HAVE TO REPRESENT AN END FOR HUMAN LABOUR IN SUPPLY CHAINS. INSTEAD, THEY CAN SUPPLEMENT AND ELEVATE IT.**

WHAT DOES THE FUTURE LOOK LIKE ?

The future is likely to involve all these technologies and more. Inevitably autonomous robots, by virtue of being more productive in the tasks they perform, will replace some human work as well do some work that humans simply can't.

At the same time, cobots will work alongside human workers so that they can each do tasks uniquely suited to them, elevating each others work. Moreover, human workers will see their ability to perform their tasks upgraded with the use of bionic technology.



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AUTONOMOUS ROBOTS

The earlier mentioned Deloitte post explains:

> AUTONOMOUS ROBOTS ARE IN A GROWING CATEGORY OF DEVICES—INCLUDING DRONE AIRCRAFT (AERIAL ROBOTS)—THAT CAN BE PROGRAMMED TO PERFORM TASKS WITH LITTLE TO NO HUMAN INTERVENTION OR INTERACTION. THEY CAN VARY SIGNIFICANTLY IN SIZE, FUNCTIONALITY, MOBILITY, DEXTERITY, ARTIFICIAL INTELLIGENCE & COST, FROM ROBOTIC PROCESS AUTOMATION TO FLYING VEHICLES WITH POWERFUL IMAGE AND DATA CAPTURING CAPABILITIES. INCREASINGLY, AUTONOMOUS ROBOTS ARE PROGRAMMED WITH ARTIFICIAL INTELLIGENCE TO RECOGNIZE AND LEARN FROM THEIR SURROUNDINGS AND MAKE DECISIONS INDEPENDENTLY.

COBOTS

KEY ADVANTAGES

- Happier workers
- Reduces injury
- Synergy between workers and cobots

BIONIC WORKERS

Where cobots mean human workers can work in the same space as robots, bionics mean human workers can be enhanced by technology, allowing for feats that would otherwise be impractical or unfeasible.

Bionic workers can use supplemental innovations like voice-activated technology and exoskeleton technology.

ONE WHICH ALLOWS FOR GREATER AWARENESS AND FREEDOM FOR WORKERS; THE OTHER PHYSICALLY REINFORCES WORKERS, SAVING THEM FROM INJURY.

BIONIC WORKERS

KEY ADVANTAGES

- Increased worker output
- Decreased physical strain for workers
- Gives workers more room for strategic thinking

WHAT DOES THE FUTURE LOOK LIKE?

As a recent Supply Chain Dive article asserts:

> **"THIS BLENDING OF HUMAN, AI AND AUTOMATION CAPABILITIES IS BECOMING THE PREFERRED STRATEGY FOR THE WAREHOUSE OF TOMORROW. WITH THE DEMANDS OF E-COMMERCE GROWING, THE SUPPLY CHAIN AND ITS WORKERS NEED TO MAKE THE BEST USE OF ALL PRODUCTIVITY TECHNOLOGIES AVAILABLE."**