Handle

A presentation made by: Nienke, Gwen and Sophia

Introduction

Who are we?

What will we be discussing?

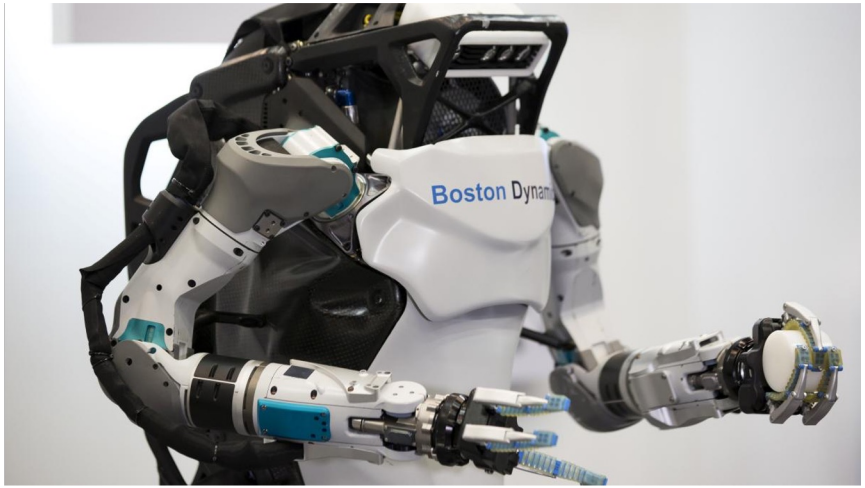
What robot did we choose?

Context

Creator

Boston Dynamics

Boston Dynamics’ mission



Boston Dynamics

Design purposes

Unloading trucks and pallets

Increasing productivity and improving worker safety

The Robot

How the robot works

Combination of legs and wheels

Swinging tail

Manipulator arm

On-board vision system

Jump up to 1.2 meter

Lift up to 15kg (33lb)

Specifications

Height	**200 cm | 78 in**
Weight	**150 kg | 330 lb**
Speed	**15 km/h | 9 mph**

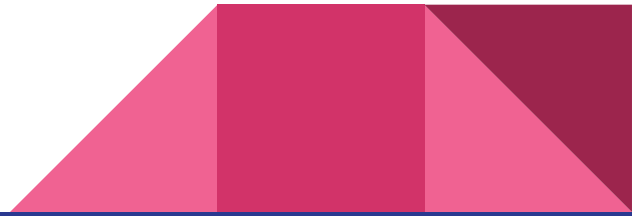
Problems

Speed

Not fast enough to handle the workload

Solution:

New robot Stretch was developed



Safety

Safety was one of the reasons for developing the robot

Industrial type robots like Handle shouldn’t work with humans

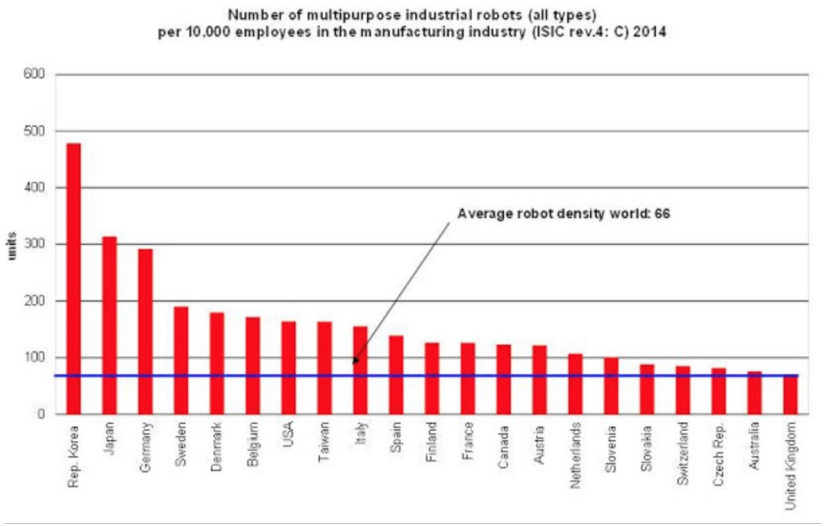
→ Why?

- **Wheeled cart AMR + Robot arm → Increased flexibility & complexity**
- **In case of human errors, control errors, unauthorized access or mechanical failures it is dangerous for humans**

Jobs

Loss of low level jobs

New job types are overseeing and developing robots for higher educated people



Framework

Industrial robot law

World wide different standards

International:

ISO 10218-1+2:2011 Robots and robotic devices — Safety requirements for industrial robots

American:

ANSI/RIA R15.06-2012 American National Standard for Industrial Robots and Robot Systems- Safety Requirements

European Parliament: Civil Law rules on Robotics: License for Designers and for Users

“You should obtain a positive opinion from a Research Ethics Committee before testing a robot in a real environment or involving humans in its design and development procedures.” [6]

Challenges and issues

Liability & AI

Tort law → national & AI law → transnational

Human errors, control errors, unauthorized access or mechanical failures

- **How to determine & How to charge?**

Findings

Problems

Speed & safety

Size (Weight 150 kg and the height is 2 m)

Boston Dynamics saw these issues

New robot was developed

Framework

Fault based liability? To what extent is “handle” or its designers liable?

Warehouse labour with a combination of different robots (eg. amazon)

Opt-out mechanisms and accessibility

Questions?

Sources

1. Prakash, A. (2017). Why Robot Law Around Industrial Automation Varies Worldwide. Robotics Business Review. https://www.roboticsbusinessreview.com/manufacturing/why_robot_law_around_industrial_automation_varies_worldwide/
2. Anderson, M.(2017). After 75 years, Isaac Asimov's Three Laws of Robotics need updating. The Conversation. https://theconversation.com/after-75-years-isaac-asimovs-three-laws-of-robotics-need-updating-74501
3. Pasquale, F. (2020). The New Laws of Robotics. Lawnotes. https://lawnotes.brooklaw.edu/issue/spring-2021/the-new-laws-of-robotics/
4. Fairchild, M. (2021). Types of Industrial Robots and Their Different Uses. #HowToRobot. https://www.howtorobot.com/expert-insight/industrial-robot-types-and-their-different-uses
5. Hogg, S. (2011). 7 Industrial Robotics Hazards and How to Avoid Them. Bastian Solutions. https://www.bastiansolutions.com/blog/7-industrial-robotics-hazards-and-how-to-avoid-them/
6. European Parliament resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics. European Parliament. https://www.europarl.europa.eu/doceo/document/TA-8-2017-0051_EN.html
7. (2019). Handle. Robots https://robots.ieee.org/robots/handle/
8. About. BostonDynamics. https://www.bostondynamics.com/about
9. Solutions for Warehouse Automation. BostonDynamics. https://www.bostondynamics.com/solutions/warehouse-automation
10. Attia, F. (2021). 5 INSIGHTFUL STATISTICS RELATED TO WAREHOUSE SAFETY. Damotech. https://www.damotech.com/blog/5-insightful-statistics-related-to-warehouse-safety#:~:text=There%20Are%20Less%20Than%2030%20Fatalities%20Per%20Year%20in%20U.S.%20Warehouses
11. Vincent, J. (2021). Boston Dynamics unveils Stretch: a new robot designed to move boxes in warehouses. The Verge. https://www.theverge.com/2021/3/29/22349978/boston-dynamics-stretch-robot-warehouse-logistics
12. Owen-Hill, A. (2018). Ten Emerging Applications in Autonomous Logistics. Robotiq. https://blog.robotiq.com/10-emerging-applications-in-autonomous-logistics
13. (2020). Amazon warehouse robots increase staff injuries. BBC. https://www.bbc.com/news/technology-54355803