



1st October 2021

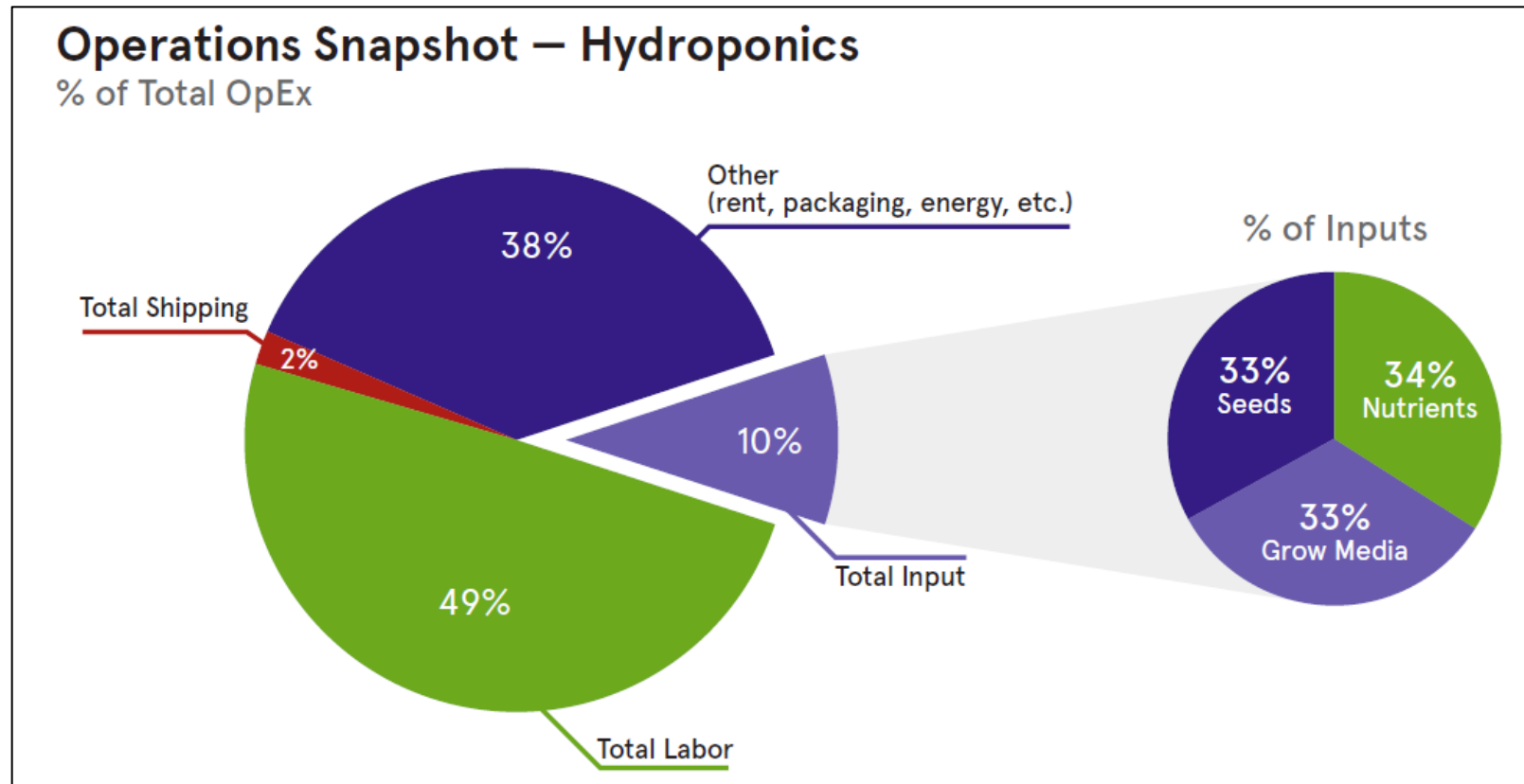
Robotics in Vertical Farming

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Labor tasks in Vertical Farming

- Over 50% of Operation costs are accounted for labour costs.
- Labour costs impedes business scalability



Vertical Farming needs automation

- Robots/automation seems to be key to obtain better results



Source: robots.com

Let's do the journey – 1st approach

Industrial robot applied to Vertical Farming



- Robot is dangerous and the installation is narrowing the working area
- Plants and growing supports are not as repetitive as an industrial process, too many pick up errors
- Crops are much softer than most industrial products, they get damaged



2nd approach

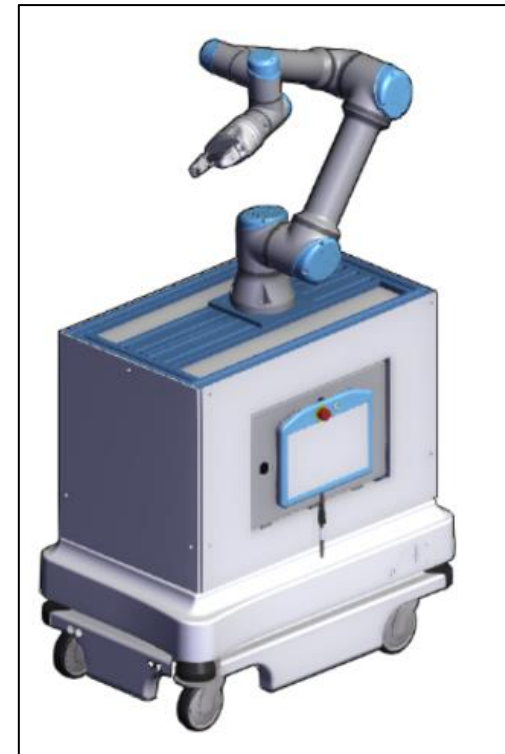
Collaborative Robot + extended work range using additional axis or mobile platform



- We can avoid fences (risk assessment mandatory)
- We can adapt the installation to the current layout



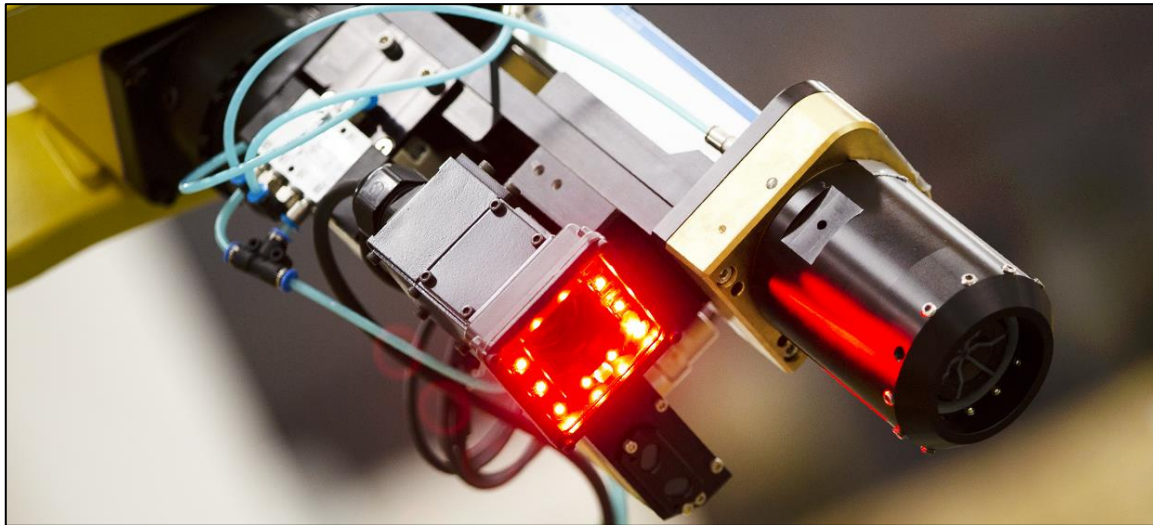
Source: infopl.net



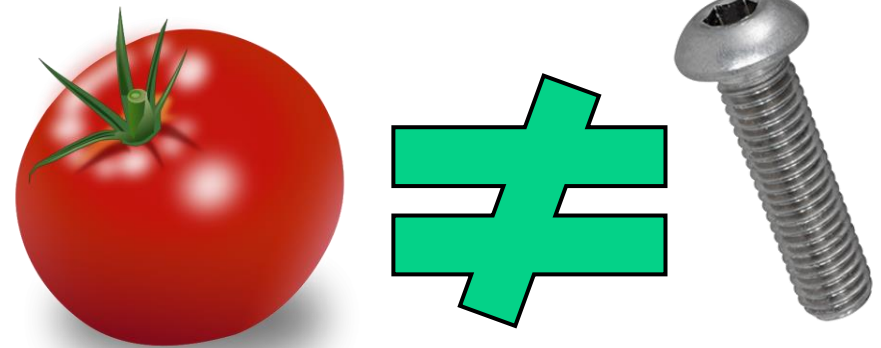
Source: vention.io

3rd approach – Add vision to detect crops and growing supports

- Traditional industrial vision systems are **not adaptable** to the organic growth nature of the crops

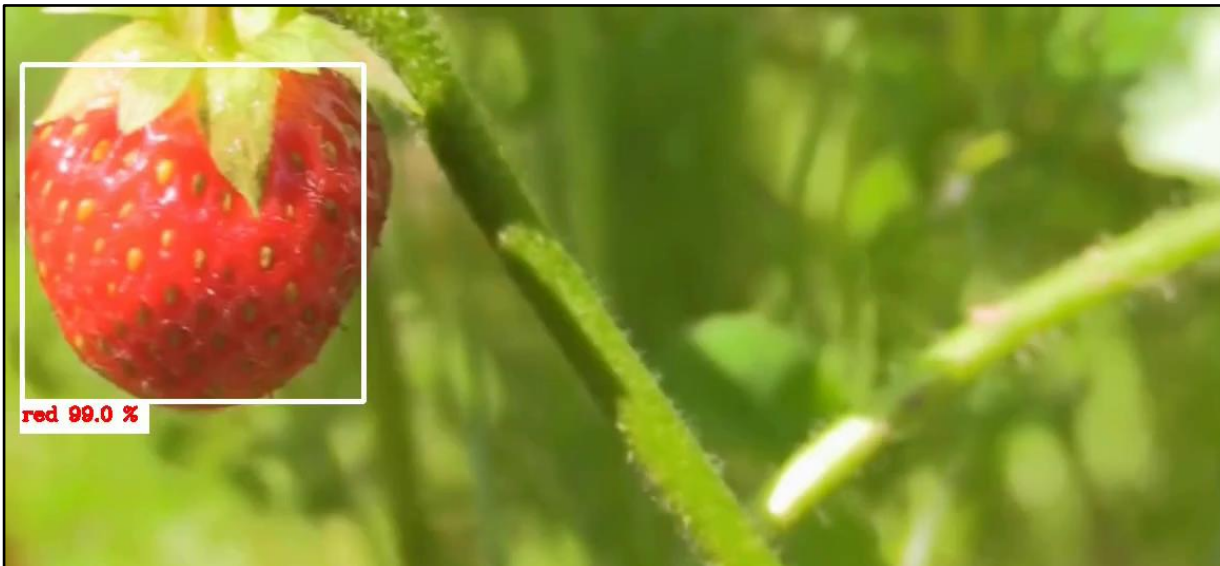


Source: fanuc.eu

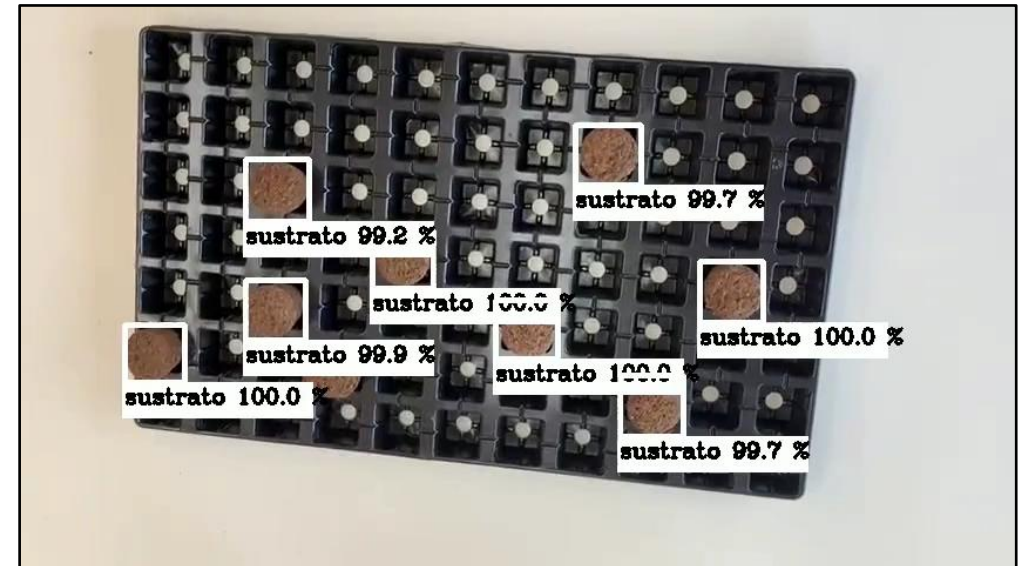


4th approach – Add Artificial Intelligence

- The robot is provided with accurate coordinates to fulfill the tasks
- AI can adapt to the minimal changes of the crops



Source: 



Source: 

Final approach

Add soft and customized grippers

- The robot is able to gently handle crops to harvest high quality products



Source: infopl.net



Source: infopl.net

- Most of the hardware needed is already in the market
- Main challenges are:
 - Find suitable processes to apply the technology
 - Find an integrator able to deploy the hardware
 - Find a powerful platform to control the robots

Thank you for your attention

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