

Mobile robots in the outdoor public domain

Centre for Collaborative Autonomous Systems, DTU, October 21st, 2020



Speaker:
CTO Mads Bendt
Capra Robotics



CAPRA ROBOTICS

Introduction



CAPRA ROBOTICS

- Mads Bendt
- Capra Robotics
- Our Vehicle
 - Precise steering
 - Terrain adaptability
 - Long range
 - Versatility



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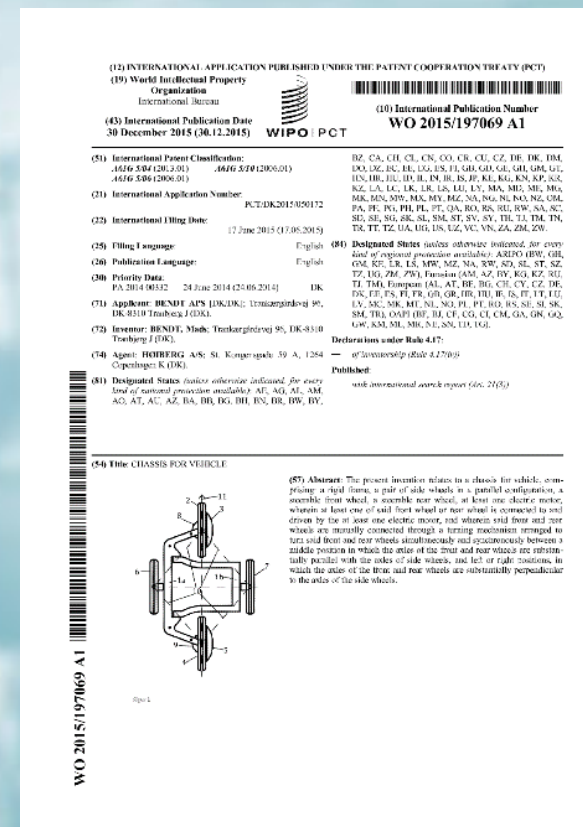
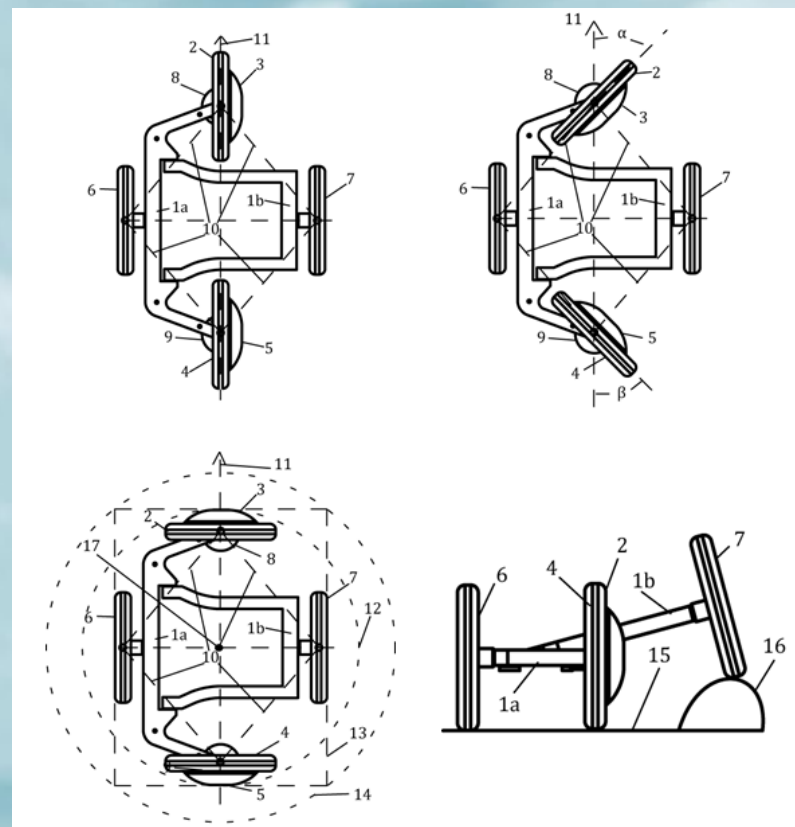
Introduction: The Patent

The patent applies in:

- USA
- Europe
- Japan
- Australia
- China
- Israel

In the national phase in:

- Canada
- South Korea



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Legislation

- Test law to start 1 of January 2021
- 6 km/h on sidewalks etc.
- 15 km/h on empty park lots/ areas etc.
- Must be applied for, tester has full responsibility
- A “robot pilot” must be available to take over at all times, - located in Denmark.



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Challenges about navigating in urban areas

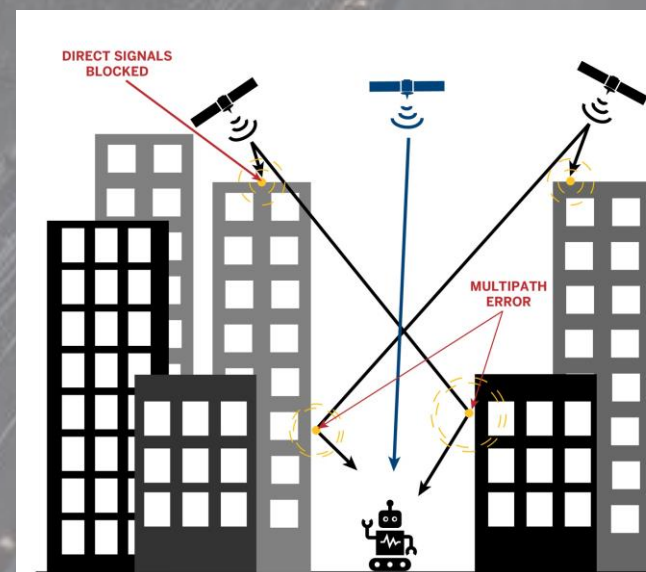
Precise global navigation is a must for autonomous vehicles

- Precise positioning and heading via GNSS with RTK (like TAPAS)
- Multipath is the challenge
- GIS as Pre-SLAM
- Combine visual map for AI with position



Safety

- Through Geofencing
- Mowing objects
- Soft and hard safety



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Level of possible autonomy

- Robots are dumber than mice
 - Limitation of AI
 - Need of understanding of Context to chose adequate AI
- The Black Swan: The broken traffic Light
 - Need of a “Robot Pilot” support center inside the borders of Denmark



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Intuitively understandable intention markers

Hard safety

- Safety ensure that no one objects, material or alive are hurt, directly or indirectly
 - Mostly sensor and control relevant

Soft safety

- To make people (and animals) feel safe when near or passing a mobile robot in the public domain
 - “Intuitively understandable intention markers”



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Q&A



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CTO Mads Bendt
Capra Robotics ApS
Jegstrupvej 8
DK 8361 Hasselager, Denmark
Phone: (+45) 20 77 70 77
E-mail: mkb@capra.ooo
Web: capra.ooo