arbe
ROBOTICS
Shifting into High Gear:
Next Generation Radar
TechCrunch
DISRUPT
Tel Aviv
Tech.AD
AWARD
AutoSens
Awards

Radar: Reliable Driver Assistance

- Effective day and night
- Penetrates dust, rain, fog, and snow
- Long range
- Makes the invisible visible
- Directly measured Doppler velocity
- Car-design friendly
- Affordable

Today's radar is not advanced enough for autonomous driving!

Not even for real safety

arbe))) ROBOTICS

Highway Lane Change

Busy City Street Driving

Car Under a Bridge

Driving Around Stationary Objects

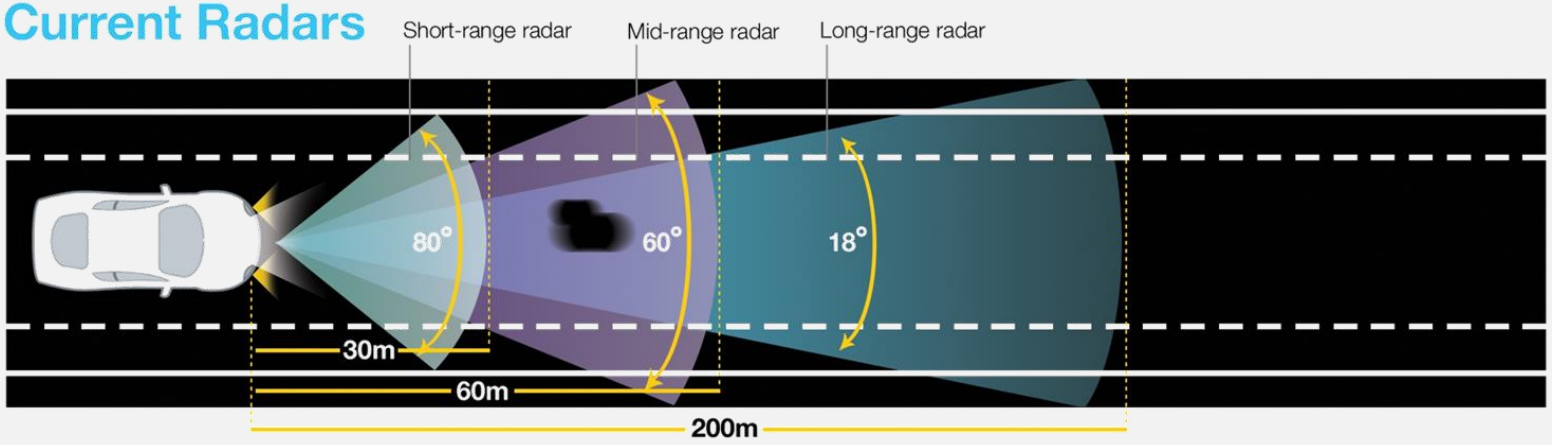
Sharing the Road with Bicycles & Bikes

Those cases and many more – needs a much better radar

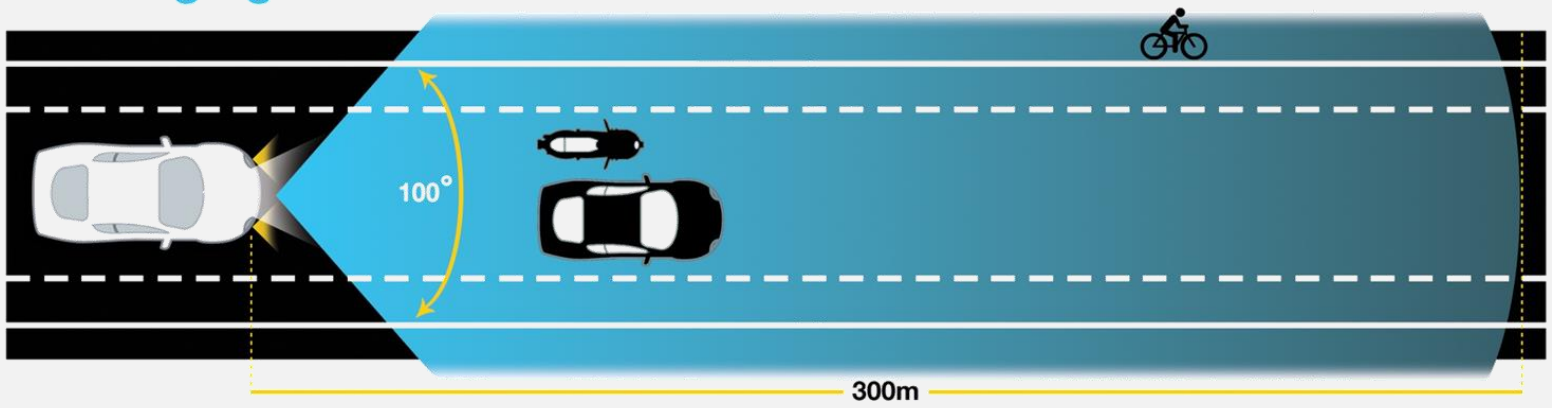
arbe ROBOTICS

Shifting to Next Generation Radar

Current Radars



4D Imaging Radar



Level 2: A basic sensor stack

- Limited field of view
- High level of false alarms
- Difficulty in detecting stationary objects
- Tracks up to tens of objects
- Can’t scale

Higher autonomy levels (3-5) require higher safety and accuracy

No field of view & resolution trade-offs

- High resolution in 4D
- Wide field of view
- Tracks hundreds of objects
- Real time

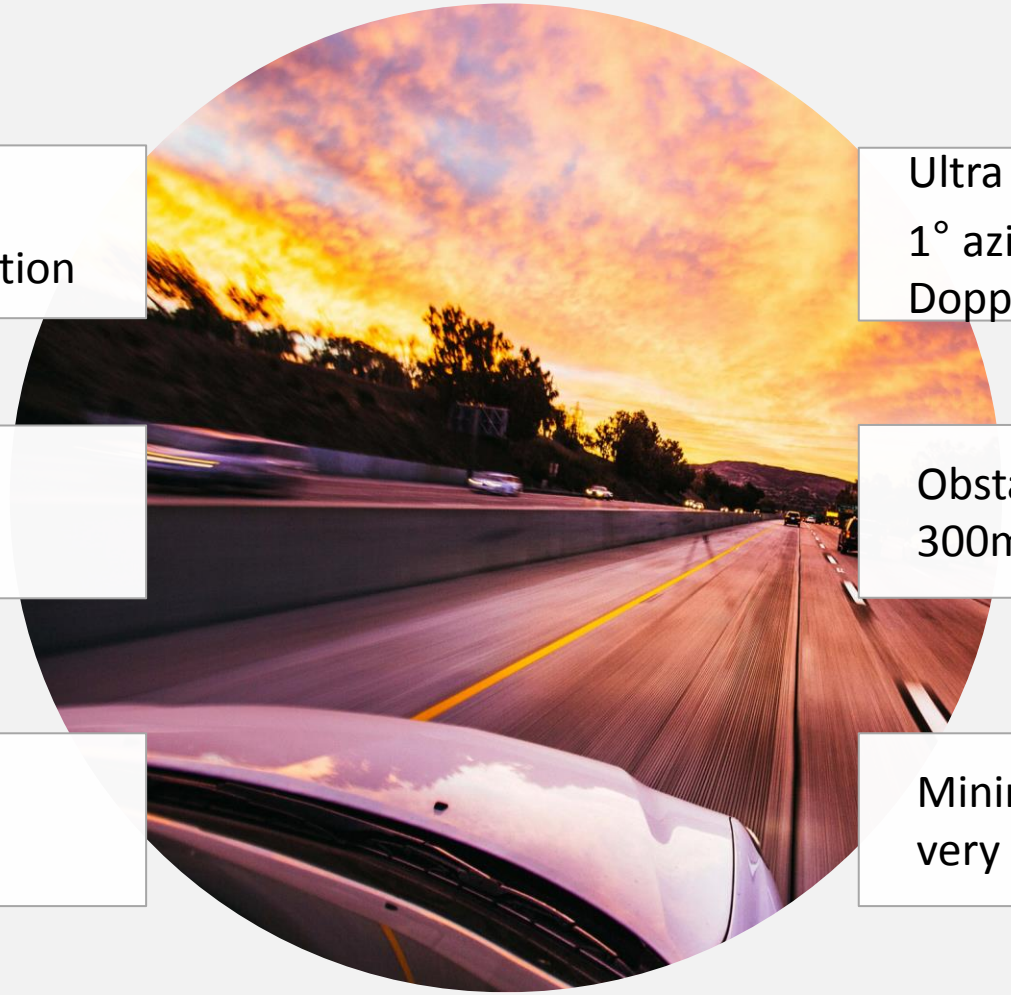
arbe ROBOTICS

The Autonomous Radar Check List

Wide field of view:
100° azimuth / 30° elevation

4D real-time picture

Range accuracy of 7.5cm



Ultra high resolution:
1° azimuth / 1° elevation
Doppler resolution 0.1 m/sec

Obstacle detection range:
300m

Minimal false alarms and
very low side lobes

arbe ROBOTICS

Arbe’s Radar Technology Breakthrough

- **Arbe’s RF-IC :**

  Breakthrough RF performance with ultra-fast chirps and high chirp linearity

- **FMCW “2.0” :**

  Patented signal processing to avoid false alarms and mutual interference

- **Arbe’s Radar-Processing-Unit**:

  Dedicated Radar ASIC to process >6500 virtual channels

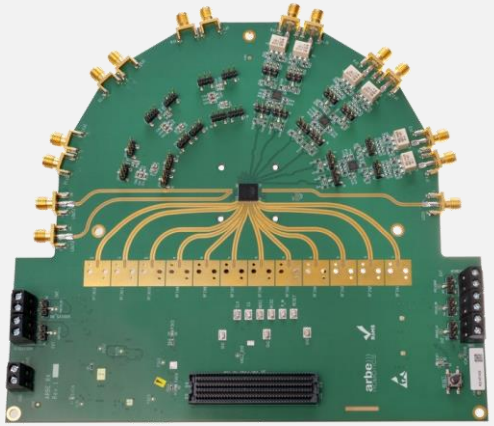
  Multi core microcontrollers for software and safety processing

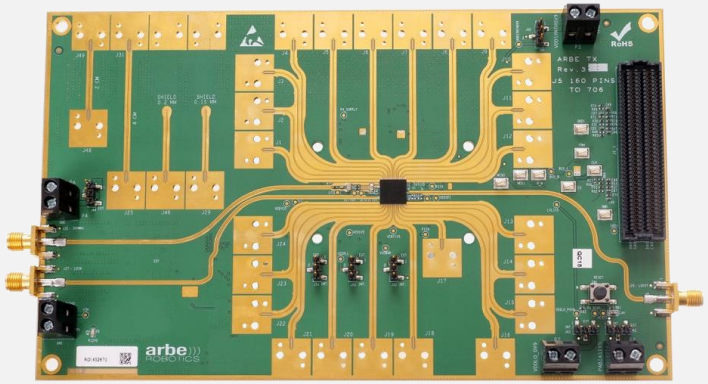
- **22nm RF process:**

  Best cost/performance product

- **Safety and quality:**

  ASIL-B (D) and AEC-Q100 Qualifications

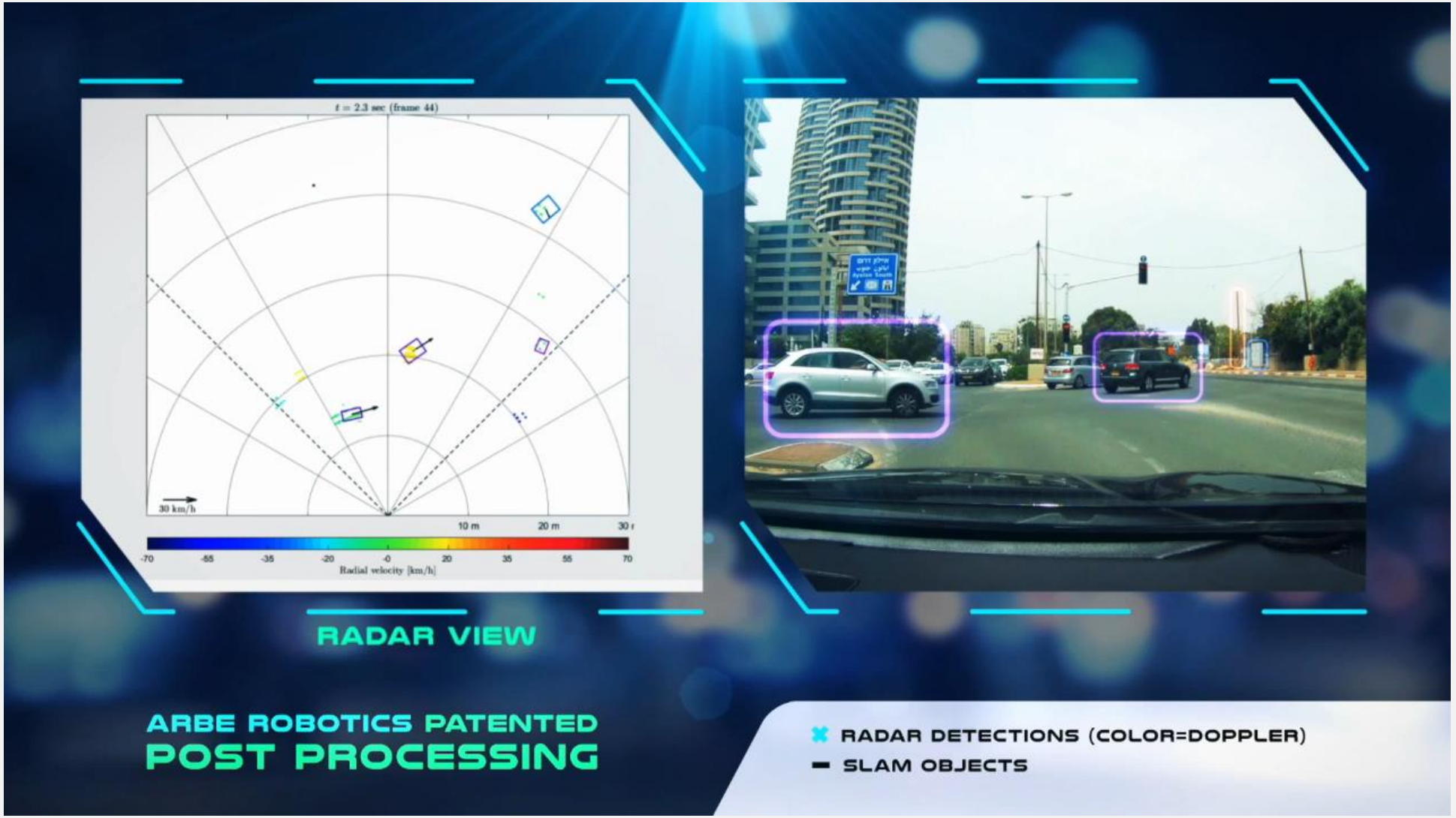




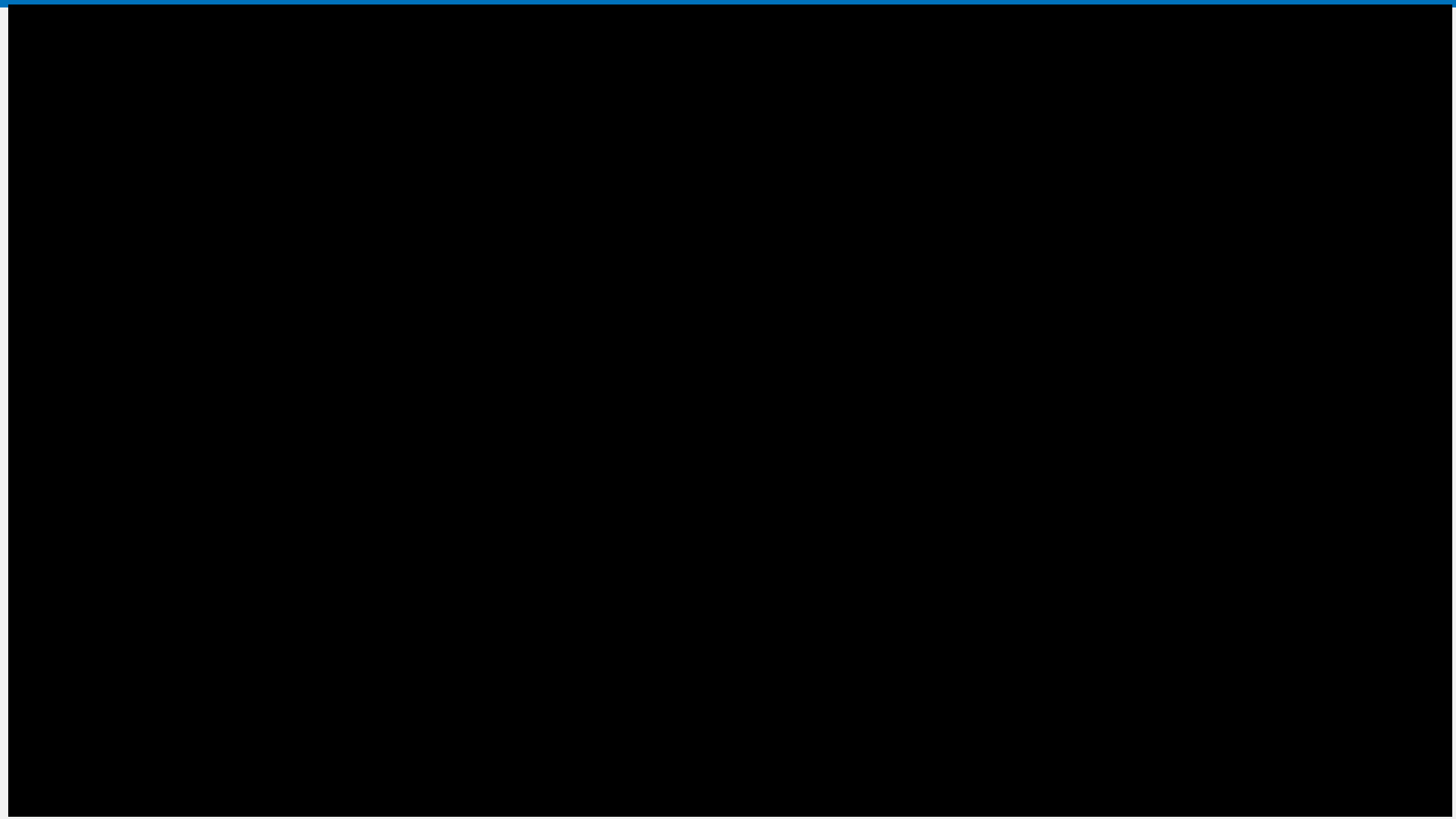
arbe ROBOTICS

Arbe’s Post Processing

- Clustering
- Generate a target list
- Track moving objects
- Filter false targets
- Localization relative to static map
- Doppler based classification



Live Demo



arbe ROBOTICS

More clips on YouTube >>

Company Overview

Founded: 2015

Team: 65 members, 5 PhDs

Patents: 10 Provisionals

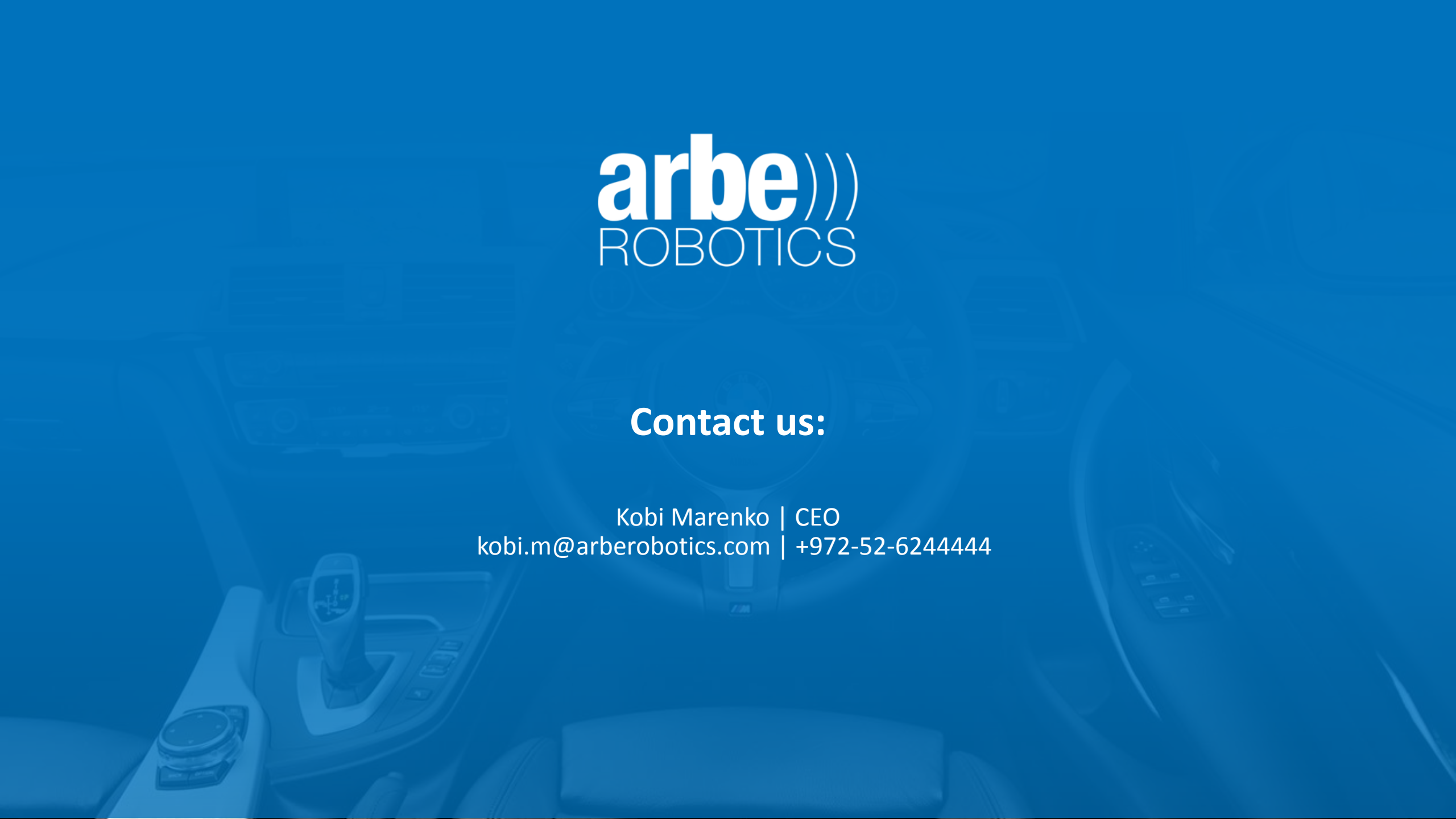
Investors: Raised $23M from Canaan Partners Israel, Maniv Mobility, 360 Capital, iAngels, OG Capital & OurCrowd

Product Stage: Working prototype, Beta in September

Commercial: 18 Beta customers, 4 Tier-1s engaged

Offices: Tel Aviv, Silicon Valley, Beijing , Tokyo

arbe ROBOTICS



Contact us:

Kobi Marenko | CEO
kobi.m@arberobotics.com | +972-52-6244444