Israel's automotive & smart mobility industry

Dr. Wolfgang Bernhart
A. Disruptive trends in the automotive industry
   - Technological innovations and business models are converging, reshaping the mobility landscape and value chain
   - Smart mobility creates a new ecosystem around the basic and advanced vehicle technology

B. Israel's automotive & smart mobility industry
   - Startups are contributing to and focusing on the automotive megatrends
   - The ecosystems encourages people to live the Israeli dream: "Open a startup"
   - Startups are targeting the sweets spots in the advanced veh. tech and smart mobility sector

C. Growth opportunities
   - Startups need to capture critical control points of the future automotive ecosystem
   - Internationals need local presence to start cooperation with Israeli startups
Technological innovations and business models are converging, reshaping the mobility landscape and value chain

Key driver for disruption in the mobility landscape

**Major disruptions**

- Re-prioritizing of customer expectations & buying criteria
- New and open eco-system
- Innovation in business models
- Change in value centers
- Fast development cycles

**Technological innovation**

- Automated driving
- Connectivity & smart devices
- Powertrain technology

**Business model innovation**

- Digitization of retail
- Data intelligence
- Sharing economy

Source: Roland Berger
Smart mobility creates a new ecosystem around the basic and advanced vehicle technology

The 3 core layers reflect a variety of business opportunities within the playing fields

### Automotive & smart mobility ecosystem

#### Basic vehicle
- HMI
- ADAS

#### E-Powertrain

#### Infrastructure
- Cloud data intelligence
- Customer mobility
- Traffic management

#### HMI

#### ADAS
- Sensor tech. (Lidar, radar)
- Sensor fusion & environ. model

#### Future Drivetrain
- Electric powertrain
- Batteries

#### Advanced veh. tech.
- Smart brought-in devices
- In vehicle infotainment

### Control points

#### Smart Mobility

<table>
<thead>
<tr>
<th>Traffic Management</th>
<th>Traffic control</th>
<th>Road toll/pricing</th>
<th>Real time traffic analysis</th>
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#### Basis

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<th>Basic vehicle technology</th>
<th>Vehicle hardware</th>
<th>Actuators &amp; controls</th>
<th>Passive safety</th>
<th>Vehicle design</th>
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Source: Roland Berger
Israel's startups are contributing to and focusing on the megatrend topics of the automotive industry

Structure of the Israeli automotive & mobility industry

1 Electric mobility
   - Electric vehicle
   - Batteries/storage/e-powertrain
   - Charging infrastructure
   - Other

2 Autonomous mobility
   - Automated & urban vehicle
   - Active safety & ADAS
   - Drones
   - Sensors
   - Others

3 Smart mobility
   - Infotainment & connected car
   - Sharing mobility
   - Navigation & ITS
   - Fleet management/logistics
   - Parking
   - Big data
   - Other

4 Vehicle technology
   - Manufacturing
   - Energy efficiency
   - Engines
   - Passive safety
   - Security
   - Other

5 Other
   - Alternative fuels
   - Infrastructure
   - Other

Source: Roland Berger
Recent startups from Israel focus on the smart mobility sector and rise mainly seed funding for their initial company growth.

Evolution of automotive & mobility startups in Israel and their funding scheme

- Electric Mobility: +7%
- Autonomous Mobility: +10%
- Smart Mobility: +13%
- Vehicle Technology: +3%
- Others: CAGR 1990-2016

Source: Fuel Choices Initiative, Roland Berger
Israel has developed an ecosystem which encourages people to live the Israeli dream: "Open a startup"

Entrepreneurial ecosystem: Unique characteristics and success factors

- **Culture**
  - Israeli dream: open a startup
  - Out of the box thinking
  - Direct and confrontational business culture
  - Take risk seeking to solve problems

- **Supports**
  - Selected accelerator/incubator offer all services
  - Majority of startups uses demanded supports on contractual basis

- **Policy**
  - The **Office of the Chief Scientist** helps in R&D phases of startup
  - Later Export Institute/invest in Israel helps in terms of networking

- **Finance**
  - Time to market is crucial
  - R&D Funding supported by the OCS and Incubator programs
  - International VCs becoming highly active in Israel

- **Human capital**
  - Highly educated specialists
  - Israeli military educates elite and is generating and enormous network

- **Market**
  - Local Israeli market good playing field for product development
  - Large markets are accessed with OEM and Tier 1 as partners

Source: Interviews, Roland Berger
Israel's startups are targeting the sweet spots in the advanced vehicle technology and smart mobility sector.

Technological ecosystem: Activity radar on critical control points by company maturity

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<tr>
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<th>Start-ups (&lt;10a)</th>
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Source: Fuel Choices Initiative, Roland Berger
Local startups can grow to international markets with individual strategies per topics

Start-Ups: Mastery of critical control points guarantees future growth opportunities

1. Electric mobility
   > Int. VCs highly experienced with automotive startups
   > Hardware production can be licensed for scale up
   > CCP’s:
     - Electric powertrain
     - Batteries

2. Autonomous mobility
   > Int. VCs highly experienced with automotive startups
   > Hardware production can be licensed for scale up
   > CCP’s:
     - 360° Lidar/Radar
     - Sensor fusion
     - Object recognition & path prediction

3. Smart mobility
   > Local VCs highly experienced with software
   > Software needs market specific adaptation
   > CCP’s:
     - Mobility platforms/Apps
     - Booking & payments
     - Robocabs/Taxi services

4. Conventional automotive technology & more
   > Int. VCs highly experienced with high-tech & manufacturing startups
   > Manufacturing technology as well as hardware based developments
   - 3D Printing
   - High-tech electronics manufacturing

Source: Roland Berger
International players need local presence to start cooperation with Israeli startups

International players: Overview on opportunities to benefit from Israel's know-how

1. Establish an R&D operation in Israel
   - Over 250 foreign companies operating R&D centers in Israel
   - Major way for multi-nationals to tap into Israel's innovation capacity
   - R&D centers require large investments in time and resources

2. Buy technology and talent with M&A and strategic venturing
   - 104 Israeli tech companies bought in 2015 by foreign corporations
   - Many turn acquisition into an R&D center and innovation lab
   - Attractive to start-up that has developed disruptive technology but lacks the ability to scale up

3. Set up new platforms such as innovation labs, accelerators
   - Close to 100 innovations labs and accelerator programs have been set up in Israel
   - Most accelerator programs are non-profit, others require founders to give equity
   - Chance to redefine the way innovation is organized

4. Use Israel as a base to manage innovation actives
   - Israel can make an excellent base to connect with innovation ecosystems elsewhere
   - Foreign start-ups, too, are flocking to Israel, with a rising number of non-Israeli companies participating in accelerator programs

Source: Roland Berger
Contact: Dr. Wolfgang Bernhart, Senior Partner, wolfgang.bernhart@rolandberger.com