

INNOVIZ COMPANY OVERVIEW / Oct-2018

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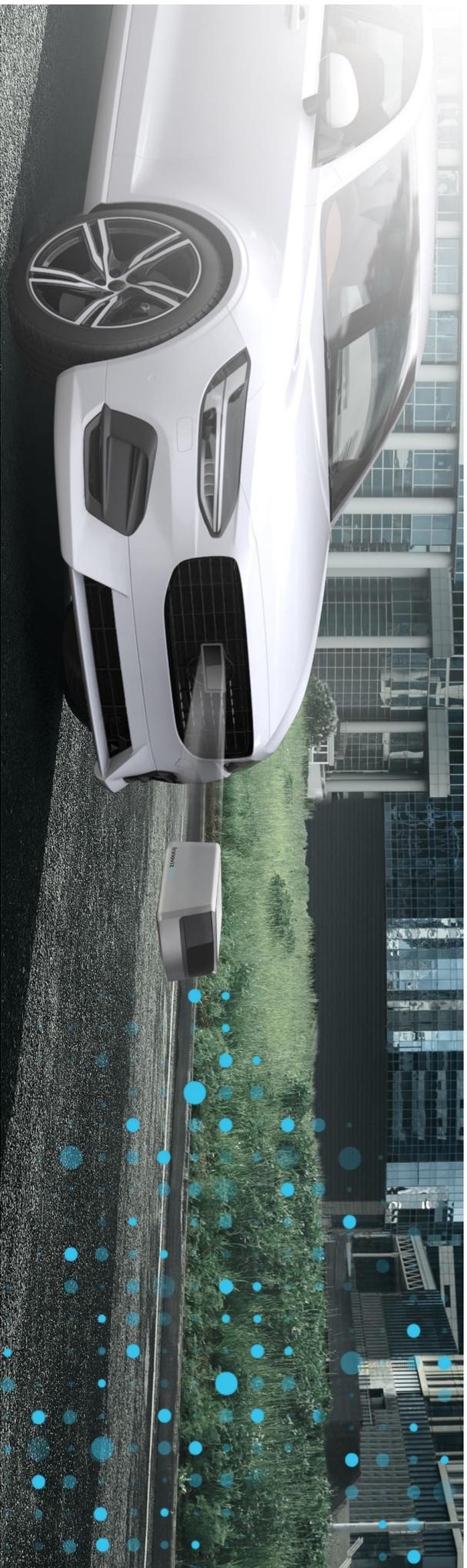
INNOVIZ: ENABLING THE AUTONOMOUS VEHICLE REVOLUTION

INDUSTRY CONSENSUS

LIDAR is a key enabler of Autonomous Vehicle technology

INNOVIZ GOAL

Provide the highest performance, lowest cost and most compact solid-state LIDAR for AVs
Develop Computer Vision and additional solutions around Innoviz LIDAR for AV ecosystem



INNOVIZ SNAPSHOT – September 2018

FOUNDED JANUARY 2016

RAISED \$82M from leading investors

- Financial: SoftBank Korea, Vertex, Magma and others
- Strategic: Aptiv, Magna International and Samsung (Harman)

TECHNOLOGY LEADER FOR LIDAR SENSORS & CV

- Partnerships with major Automotive, AV, Semi and manufacturing
- BMW Design Win for 2021 Vehicle Program

AWARD WINNING HIGH PERFORMANCE LIDAR PRODUCTS

- InnovizPro – Standalone LIDAR starting to ship Q2 2018
- InnovizOne – Built-in automotive-grade; samples available Q2 2019

OVER 40 PATENT APPLICATIONS

EMPLOYEE COUNT – 190, PLAN TO GET TO 200 BY END OF 2018



FOUNDING TEAM



Omer Keilaf

Chief Executive Officer

- Senior management roles in startups, leading complex R&D projects
- Senior officer in the Elite Technological Unit of the Intelligence Corps
- BSc and MSc in Electrical Engineering, both from Tel-Aviv University
- MBA from Tel Aviv University



Oren Rosenzweig

Chief Business Officer

- Business consulting experience advising leading technology companies
- Senior management roles in startups
- Senior officer in the Elite Technological Unit of the Intelligence Corps
- BSc in Electrical Engineering from the Technion – Israel's Institute of Technology
- MBA in finance from the University of Chicago



Zohar Zisapel

Chairman of the Board

- Rich entrepreneurship and management background
- CEO and Chairman of the Board of several prominent technology companies including RAD DATA Communications, Ceragon, Silicom & more
- National Security Award Recipient
- BSc and MSc from the Technion
- MBA from Tel Aviv University



Amit Steinberg

CTO

- Senior management experience in algorithms and VLSI design
- Senior officer in the Elite Technological Unit of the Intelligence Corps
- BSc in Electrical and Computer Engineering from Ben-Gurion University of the Negev



Oren Buskila

VP R&D

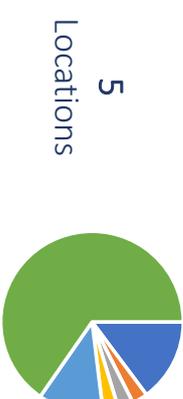
- Senior management roles in startups
- Senior officer in the Elite Technological Unit of the Intelligence Corps
- BSc in Physics, BSc in Electrical Engineering, MSc in Electro-optical Engineering, all from Tel Aviv University
- MBA from Tel Aviv University

TEAM: MAKING THE IMPOSSIBLE POSSIBLE



Omer Keilaf
CEO & CO-FOUNDER

190
Employees
>20
Departments



■ Business ■ CTO ■ Finance ■ G&A ■ Operations ■ R&D



Oren Rosenzweig
CBO & CO-FOUNDER



Oren Buskila
VP R&D & CO-FOUNDER



Amit Steinberg
CTO & CO-FOUNDER



David Eiloaz
CHIEF PHOTONICS OFFICER



Ronnen Lovinger
COO



Eldar Cegla
CFO



Shiri Hilton
VP of HR

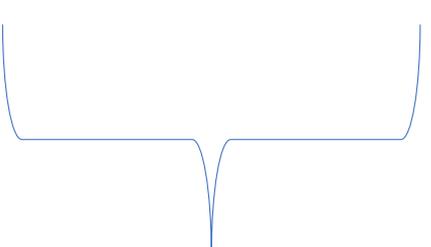
Sales	VLSI / ASIC	IP	Photonics/Optics	Operations & Supply Chain	Finance	Recruitment
Business Development	MEMS	"InnovizTwo"	Physics	Engineering	Legal	Retention & Training
Marketing Strategy	Detector System	Autonomous Driving Future Technologies		NPI		
Product Management	Hardware			Quality & Testing		
Program Management	Software, Embedded & Tools					
Application Engineering	Computer Vision					
	Algorithms / Signal processing					
	Mechanics					

GLOBAL PRESENCE



CONSENSUS: “MOST EXPERTS BELIEVE LIDAR IS A MUST-HAVE”¹

- For each use case, for functional safety, when a machine makes a decision - full redundancy is required
 - “Auto-pilot” allows the camera control the car, but the driver needs to act as the redundant sensor
- RADAR cannot provide backup to the camera
 - Radar low resolution does not allow it to see small objects
 - Radar cannot detect stationary objects
- The camera fails without backup in different scenarios
 - Sensitive to ambient light condition (night, bright sun)
 - Sensitive to many weather conditions
 - Perception highly depended on machine learning



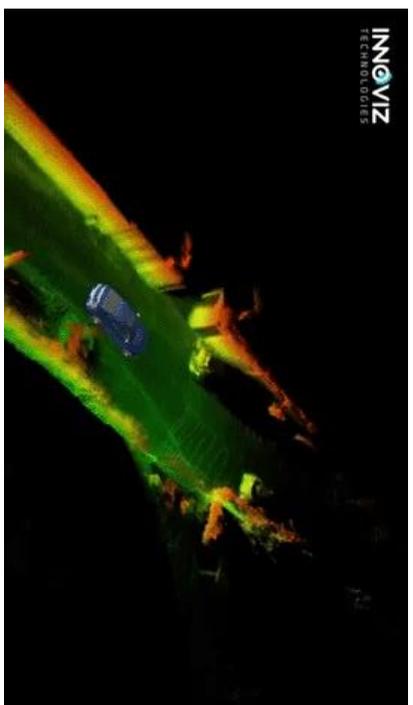
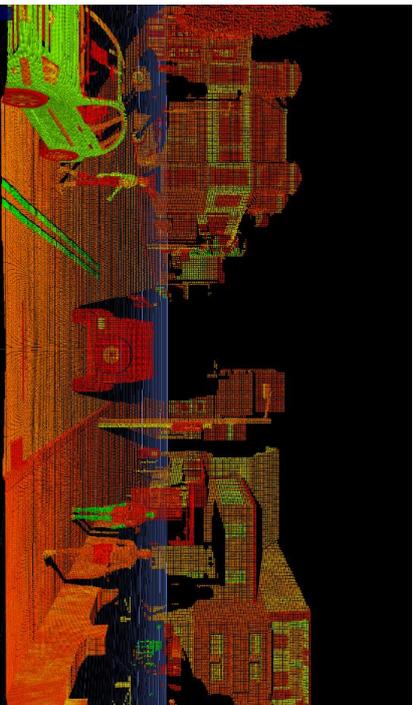
Without the LIDAR
The driver is the
redundant sensor

The LIDAR allows to completes the set:

- High resolution and range provide full redundancy to the camera in all use cases
- Resilient to ambient condition
- Less sensitive to weather condition

¹ JBS Q-Series: Who will win the race to autonomous cars? (May 2018)

THE FUTURE OF LIDAR



3D Vision

- LIDARs will continue to increase range and resolution while reducing cost
- 3D high resolution data is richer than camera data and allows simpler processing and accuracy of detection

HD Maps

- Cameras will not be needed to read signs or traffic lights
- Using accurate mapping simplifies autonomous driving

LIDAR will
become
Primary
Sensor for
Perception

ESTIMATED TOTAL ADDRESSABLE MARKET (\$M)

Total # of LIDARs Sold ('000)

13

32

127

330

1,337

4,717

9,213

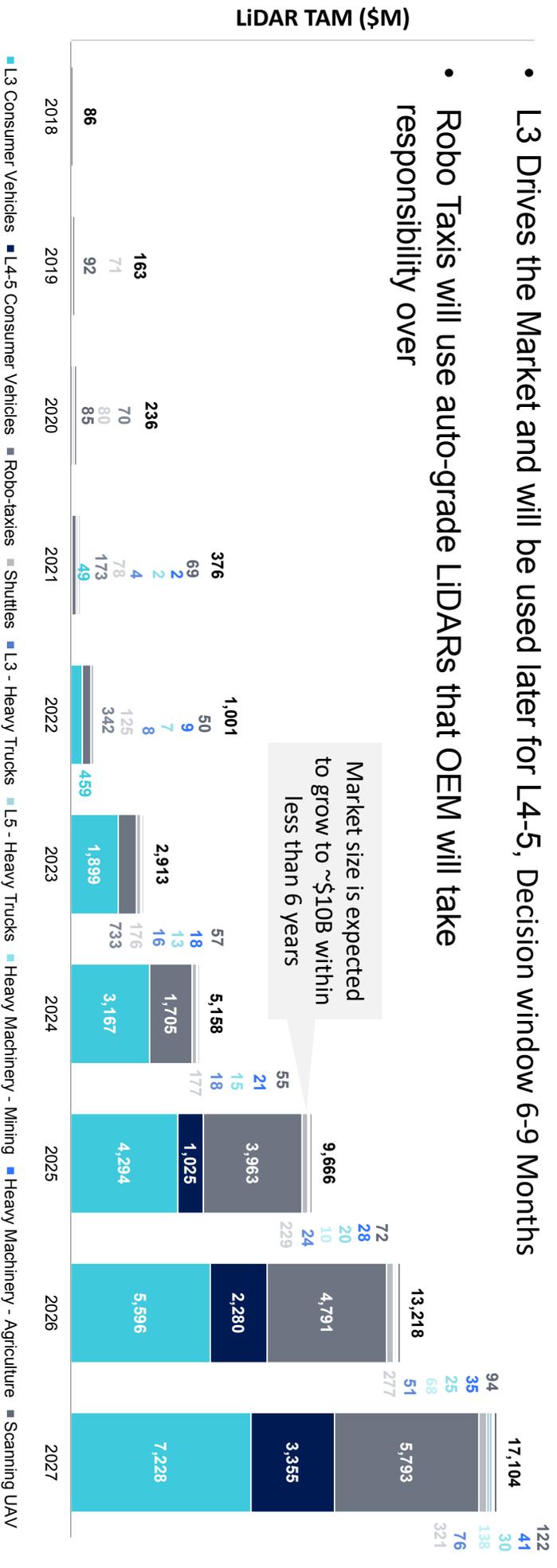
18,571

27,290

37,958

- L3 Drives the Market and will be used later for L4-5, Decision window 6-9 Months
- Robo Taxis will use auto-grade LIDARs that OEM will take responsibility over

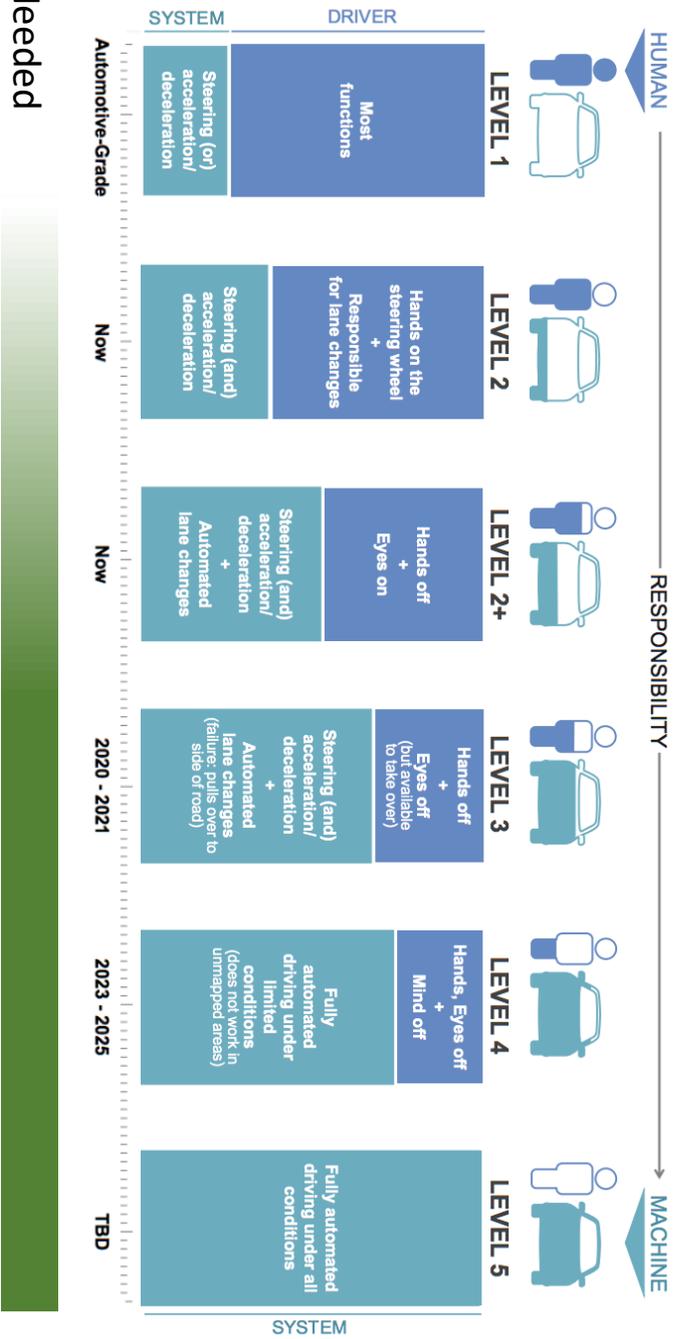
Market size is expected to grow to ~\$10B within less than 6 years



Note: Includes addressable market for Innoviz (excluding security and CV sales) and does not take into account current use cases of Mechanical LIDARs

AUTONOMOUS DRIVING

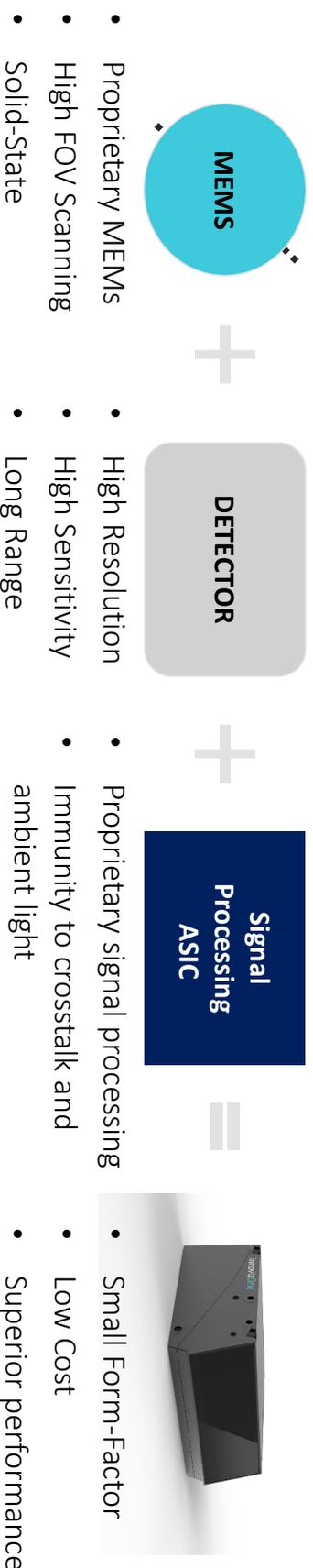
Level of Automation, Cost, Timing



- Even though L2 doesn't require a LIDAR, many OEMs realize that the driver is not attentive so in effect does not serve as a redundancy for the camera.
- LIDARs are added to increase safety of Level2

TECHNOLOGY – NEW SOLID-STATE APPROACH

INNOVIZ MEMS-BASED BREAKTHROUGH SOLID-STATE LIDAR



CONVENTIONAL MECHANICAL APPROACH FOR LIDARS



MARKET DYNAMICS – HIGH BARRIERS TO ENTRY

- LIDAR sensor is a mission critical element in autonomous driving which requires the highest level of automotive functional safety compliance
- LIDAR automotive requirements standards are high across multitude dimensions (e.g. FoV, resolution, frame rate, coexistence, computer vision capabilities, etc.)
 - Innoviz advance technology encapsulates a multidisciplinary approach
- **The advanced safety and technical requirements will lead, in our view, to only a few LIDAR companies dominating the market**
- New technologies are driven into the automotive market by few leading OEMs and BMW is known to be a technological defining thought leader
- Innoviz is the only LIDAR company that was awarded an automotive grade contract by a leading OEM (BMW)
- **Certain OEMs (FCA, Ford,[others]) look at BMW as proxy for their decisions on technologies**

Relevant Case Studies – Automotive Functions Dominated by Only Few Suppliers

Image Sensing



Air-Bag



Commercial Vehicle Brakes

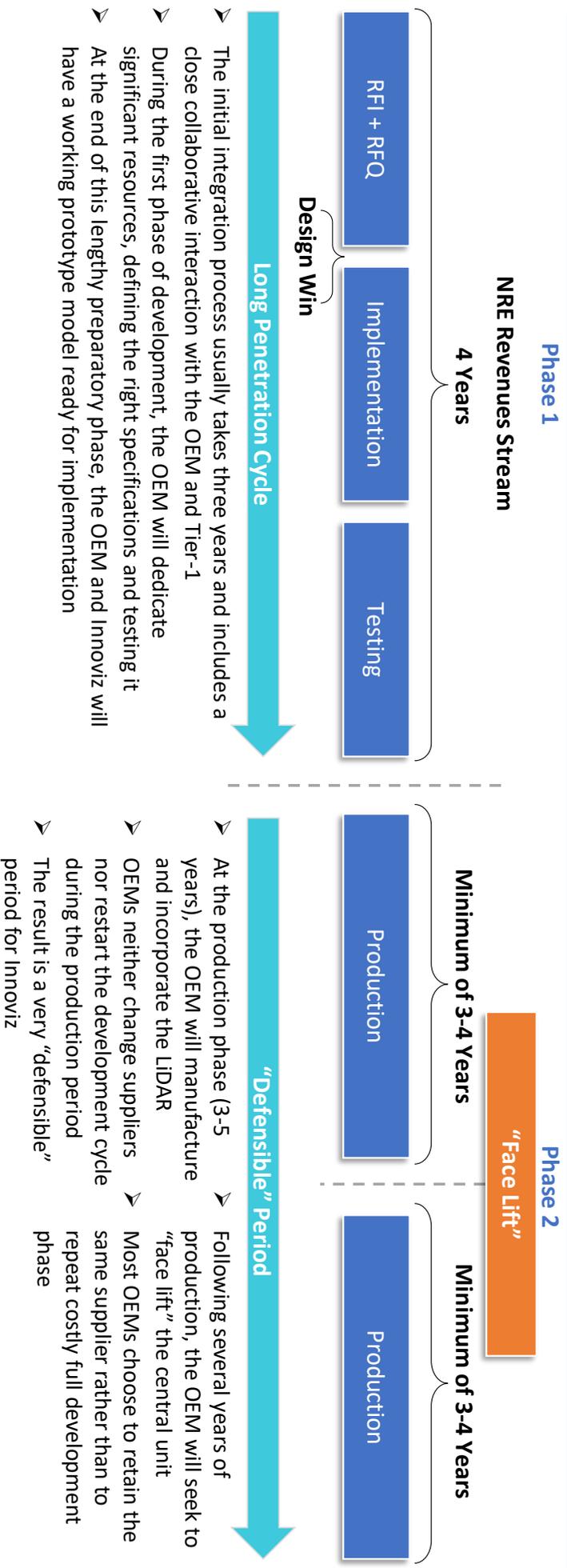


Seating

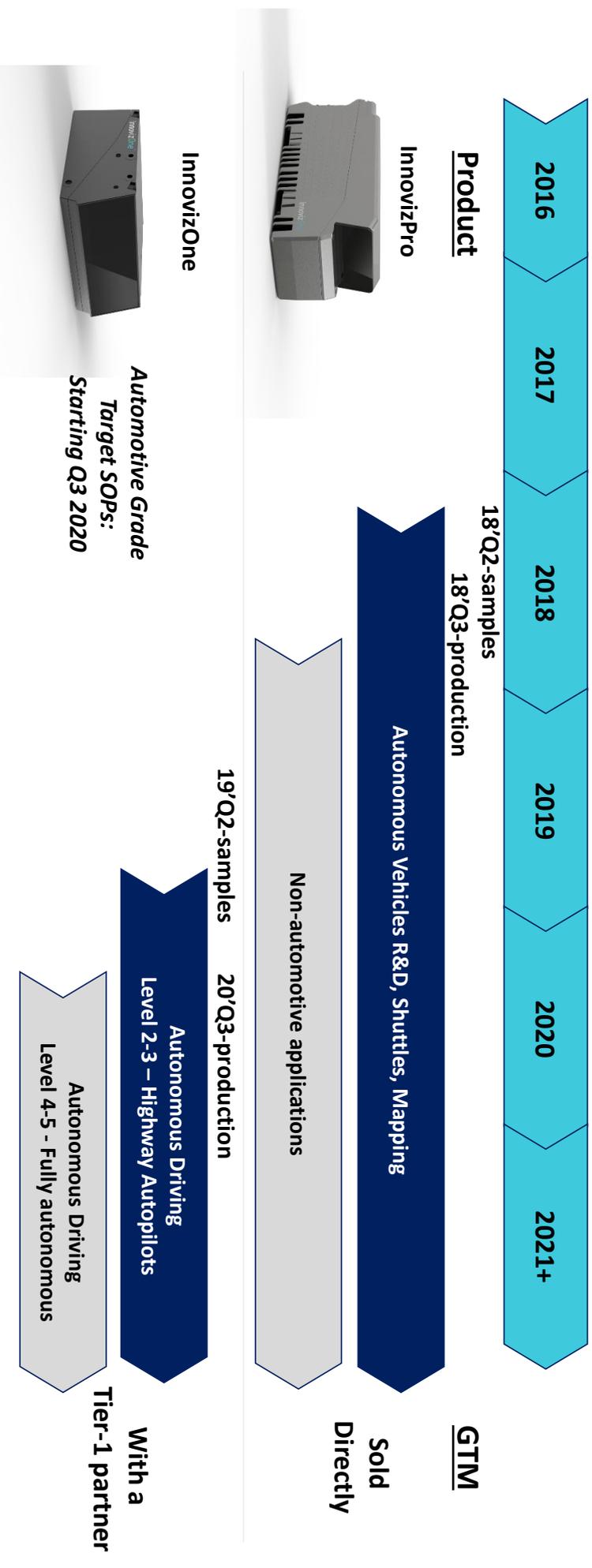


BUSINESS MODEL BUILT ON DEEPLY-ROOTED, STRUCTURAL, COMPETITIVE ADVANTAGES

The Long Integration Process and Subsequent Production Period Provide Innoviz with a Defensible Market Position



INNOVIZ PRODUCT GO-TO MARKET



DETAILED PRODUCT ROADMAP

Mass Production
June 2018

InnovizPro	
0.15°H 0.45°V	73°H 20°V
20FPS	130m
~7x7x17cm	430K sam/sec



Customer samples Available

Design for Manufacturing,
Improved Detector

Ramp up,
Improved detector

Custom Detector and MEMS

1st ASIC Frontend

2nd ASIC Complete flow
Apr 2019

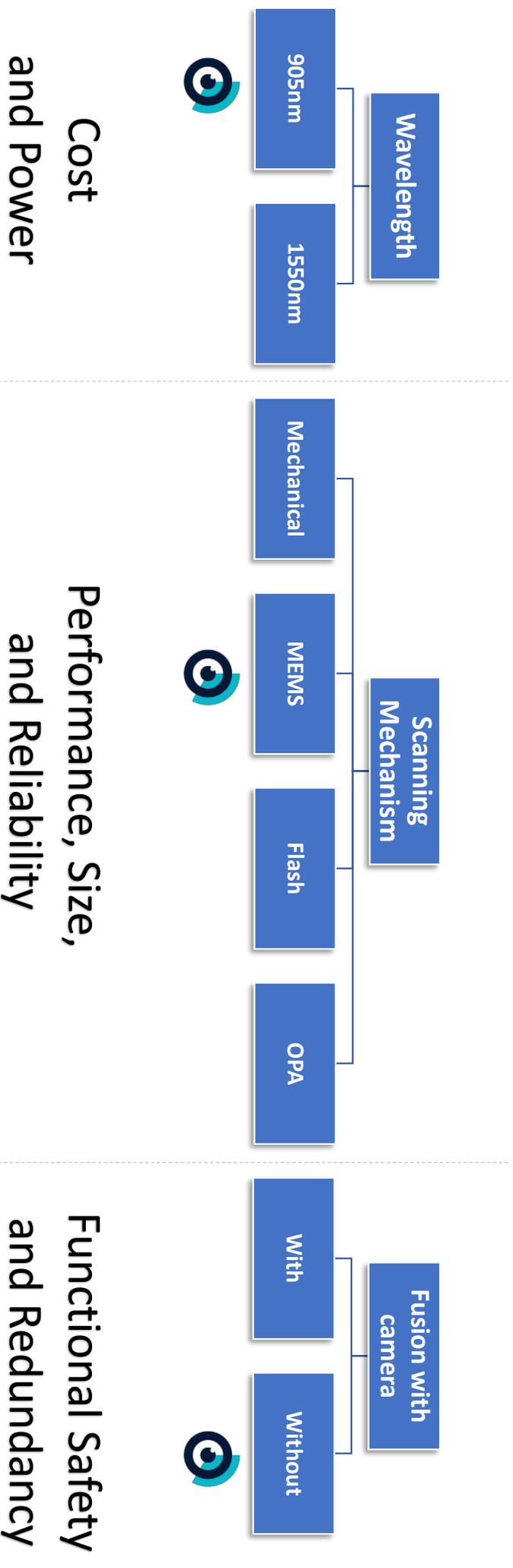
InnovizOne™



Automotive Grade
Target SOPs:
Starting Q3 2020

InnovizOne DV		
Up to 0.1°H 0.1°V	120°H 25°V	
Up to 25FPS	Up to 250m	
~4.5x9.5x10cm	Up to 7.5M sam/sec	

LIDAR TAXONOMY



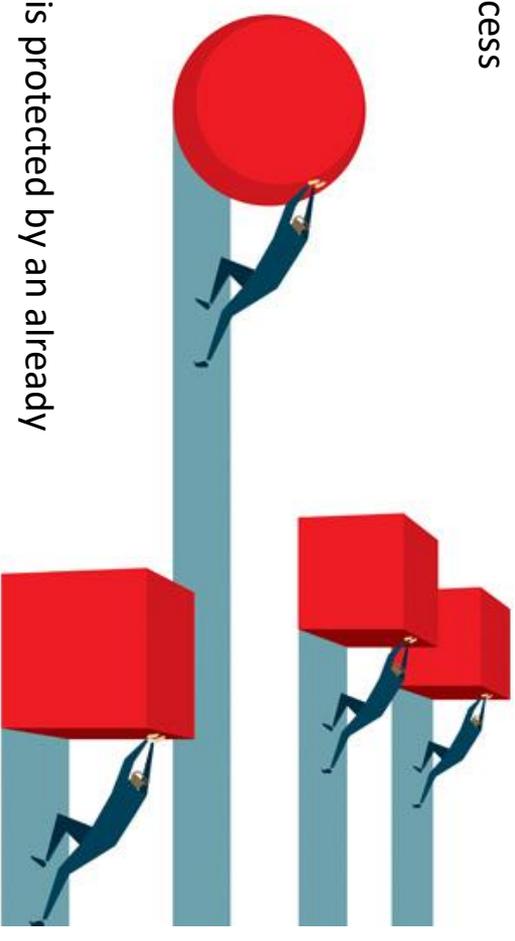
INNOVIZ COMPETITIVE ADVANTAGE

- A unique Optical design and System design which requires customization in many areas
 - Our own MEMS chip which requires a unique knowledge
 - Our own tailored design Detector
 - Our own proprietary signal ASIC chip
- Over 40 innovative concepts in different stages of patenting process

Allows us to achieve

- 905nm low cost design
- Low size and low power
- Highest performance among all LIDARs
- Automotive grade

Our ability to achieve an eye safe, high performance 905nm LIDAR is protected by an already granted IP.



INNOVIZ

Thank you
for your
time!



THANK YOU.

INNOVIZ
ENABLING THE AUTONOMOUS CAR REVOLUTION

