mobileye

INNOVATE 2024

Defining Success in a Fully Autonomous Driving System

Prof. Amnon Shashua, CEO

Prof. Shai Shalev-Schwartz, CTO

Forward-Looking Statements

Mobileye's business outlook, guidance and other statements in this presentation that are not statements of historical fact, including statements about our beliefs and expectations, are forward-looking statements and should be evaluated as such. Forward-looking statements include information concerning possible or assumed future results of operations, including revenue and expense forecasts, our customer pipeline, industry and market forecasts, request-for-quote ("RFQ") order estimates, and descriptions of our business plan and strategies. These statements often include words such as "anticipate," "expect," "suggests," "plan," "believe," "intend," "estimates," "targets," "projects," "should," "could," "would," "may," "will," "forecast," or the negative of these terms, and other similar expressions, although not all forward-looking statements contain these words. 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Although we believe that these forward-looking statements and projections are based on reasonable assumptions at the time they are made, you should be aware that many factors could affect our actual financial results or results of operations and could cause actual results to differ materially from those expressed in the forward-looking statements and projections. Important factors that may materially affect such forward-looking statements and projections include the following: future business, social and environmental performance, goals and measures; our anticipated growth prospects and trends in markets and industries relevant to our business; business and investment plans; expectations about our ability to maintain or enhance our leadership position in the markets in which we participate; future consumer demand and behavior; inventory utilization by customers; our ability to effectively compete in the markets in which we operate; future products and technology, and the expected availability and benefits of such products and technology; changes in regulation and trade policy, including increased tariffs, in regions in which we operate, including the US, Europe and China; development of regulatory frameworks for current and future technology; projected cost and pricing trends; future production capacity and product supply; potential future benefits and competitive advantages associated with our technologies and architecture and the data we have accumulated; the future purchase, use and availability of products, components and services supplied by third parties, including third-party IP and manufacturing services; uncertain events or assumptions, including statements relating to our estimated vehicle production and market opportunity, potential production volumes associated with design wins and other characterizations of future events or circumstances; effects of the COVID-19 pandemic and responses to future pandemics; adverse conditions in Israel, including as a result of war and geopolitical conflict, which may affect our operations and may limit our ability to produce and sell our solutions; any disruption in our operations by the obligations of our personnel to perform military service as a result of current or future military actions involving Israel; availability, uses, sufficiency and cost of capital and capital resources, including expected returns to stockholders such as dividends, and the expected timing of future dividends; tax- and accounting-related expectations. The estimates included herein are based on projections of future production volumes that were provided by our current and prospective OEMs at the time of sourcing the design wins for the models related to those design wins. For the purpose of these estimates, we estimated sales prices based on our management's estimates for the applicable product bundles and periods. Achieving design wins is not a guarantee of revenue, and our sales may not correlate with the achievement of additional design wins. Moreover, our pricing estimates are made at the time of a request for quotation by an OEM (in the case of estimates related to contracted customers), so that worsening market or other conditions between the time of a request for quotation and an order for our solutions may require us to sell our solutions for a lower price than we initial expected. 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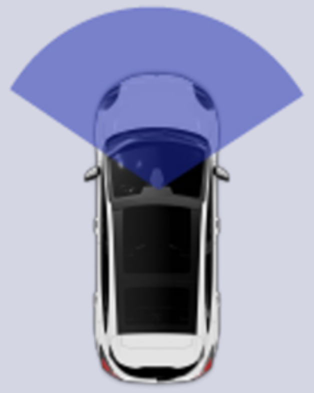
Mobileye's Vision: Solving Autonomy and Step-Change in Road Safety*

Moving from Hands-On / Eyes-On to Hands-off / Eyes-off and No-driver

ADAS

EYES-ON / HANDS-ON

Front Camera (1V)



- Driver Assist safety features
- Cloud Enhancement with REM

↓

Surround ADAS (6V5R)

- ENCAP 2028+ 5 Star
- Hands Off on Highways

Gen 1: 1xEQ6H (2026)

SuperVision™

HANDS-OFF / EYES-ON

- "Vision Zero" - comprehensive safety covered by full-surround sensing.
- Hands Off, point-to-point navigation.

Surround Camera (optional radar)

Gen 1: SV52 (2022)
Gen 2: SV62 (2026)
Gen 3: SV71

Chauffeur™

EYES-OFF

- Giving back time to the driver.
- Safer than a human driver.
- Gradual Eyes Off ODD expansion.

Surround Camera + Radar + Lidar (imaging radar for extended ODD)

Gen 1: CH63 (2027)
Gen 2: CH72

Drive™

NO DRIVER IN THE CAR

- Enables Driverless business models for optimal utilization of the vehicle as a resource

Surround Camera + Imaging Radar + Lidar

Gen 1: DR64 (2027)
Gen 2: DR72

*Availability and performance subject to products' and vehicles' specifications and manual, ODD and local law

Driving Demos

Hands-off | No-driver

SuperVision™

HANDS-OFF / EYES-ON

Polestar / Zeekr

- Production vehicle, deployed in both China and Europe
- Point-to-point navigation (selected by investors)
- Highway / arterial / rural / urban...

Drive™

ROBOTAXI

ID Buzz

- Pre-production
- Project was launched less than 1 year ago
- Time difference of less than 10% compared to human driving
- Geo-fenced, mostly urban

On both platforms, the safety drivers will be members of Mobileye's top management

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Approaches to Solve Autonomy

	Sensors	AI Approach	Cost	Modularity	Geographic Scalability	Deployed	How to Solve Autonomy
WAYMO	Lidar-centric	CAIS	✗	✗	?	L4	High quality Lidars, stereo cameras, radars, …
TESLA	Camera only	End-to-end	✓	✓	✓	L2+	Camera alone would be able to achieve autonomy
mobileye™	Camera-centric	CAIS	✓ Also for eyes-off	✓	✓	L2+	Sensor redundancy which requires: • Density of a camera (different failures) • Low-cost **Mobileye's Imaging Radar**

Requirements For Success: From Eyes-on to Eyes-off

01

Productization

Getting from demo to real product

02

Scalability

Geographic and ODD

03

Technology Stack

- CAIS
- EyeQ6H
- HIL
- Imaging Radar
- Etc.

04

Cost

Solving autonomy while controlling system (compute, sensors…) and development costs

05

Safety

Eyes-on: human serves as the safety driver

Eyes-off: the vehicle is responsible for driving (within the ODD)

Productization: From Demo to Real Product (Consumer Car)

Why aren't more companies being seriously considered as players in solving autonomous driving, when many showcase nice demos?

The path to productization presents significant challenges

Geographic scalability

- More than 50 OEMs
- REM covers over 95% of the roads in the US and EU
- Over 200PB of clips worldwide

Multiple car models and OEMs: Support spectrum of requirements and sensors

- DXP - allow the OEM to code and control unique elements in the system affecting the driving experience
- Modular AI stack (CAIS) - Facilitate the development process to adapt to changes of sensors and their placement on the vehicle

Meeting industry standards: Automotive grade, FuSa, SOTIF

- Proven experience as an ADAS supplier - Over 50 OEMs, 1,200 car models, and shipping more than 190M EyeQs
- Successfully deployed SuperVision in both China and Europe
- Transparent safety architecture

Productization: From Demo to Real Product (Consumer Car)

Mobileye

Advanced products deployed in Europe, China, and soon in the U.S.

In production (SuperVision52)

ZEEKR Polestar

Pre-production

SuperVision62	PORSCHE	Audi	BENTLEY	LAMBORGHINI	17 car models
Chauffeur63	PORSCHE	Audi	BENTLEY	LAMBORGHINI	10 car models
Drive64	VW	SCHAEFFLER	BENTELER	verne	

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Scalability: Geographic and ODD

Geographic

The ability for a system to operate across diverse regions

- Semantic data (e.g., traffic signs/lights, traffic laws, public transportation route)
- Human drivers behavior
- Etc.

Enabling OEMs to offer autonomous solutions worldwide

ODD

The ability of an autonomous system to expand its ODD over time

- Road types (e.g., highway, rural, arterial, urban)
- Driving conditions (e.g., daylight, night)
- Weather conditions (e.g., clear, rain, fog, snow)
- Speed limit (e.g., up to 60kph)
- Etc.

A useful system that operates effectively in conditions beyond just optimal ones

Avoid creating a new moonshot for upgrades in geography or ODD

Geographic Scalability: REM

56.6B

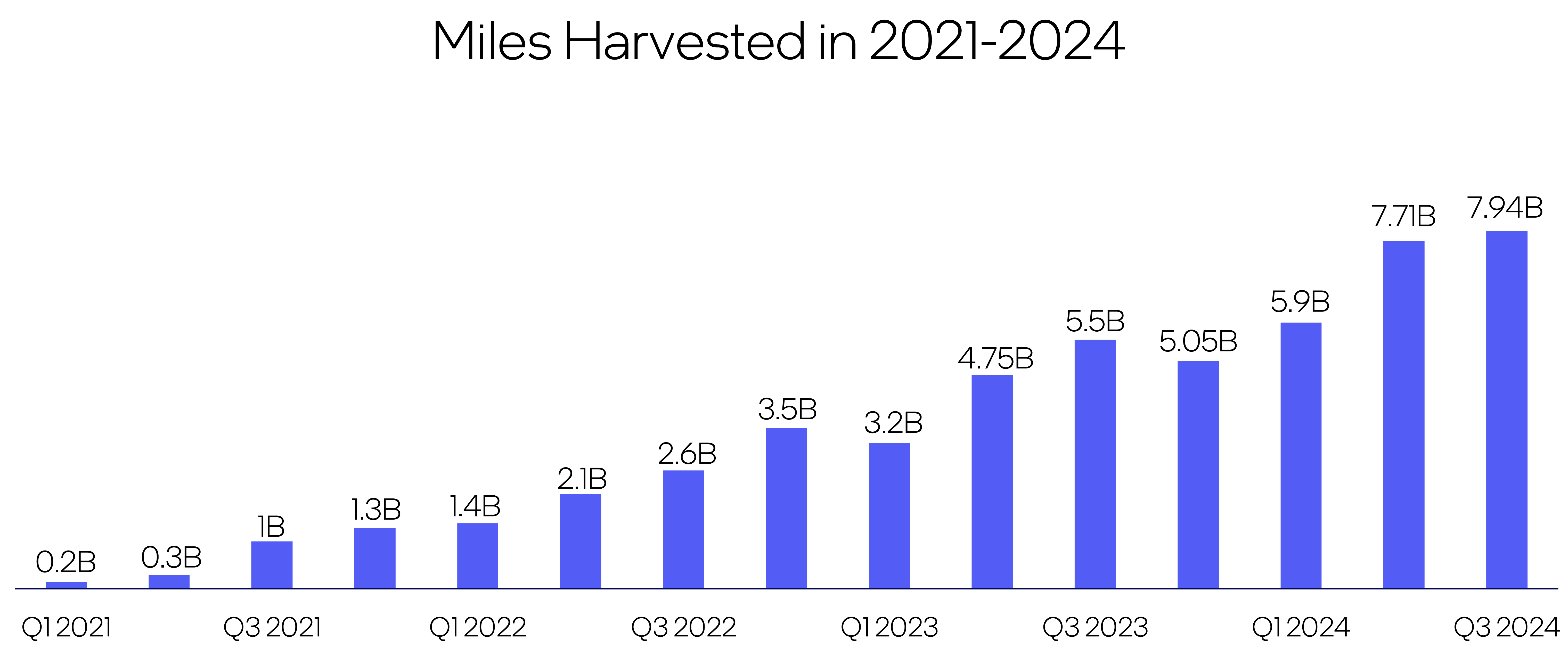
Total miles harvested so far

29.6B

Miles harvested in 2024

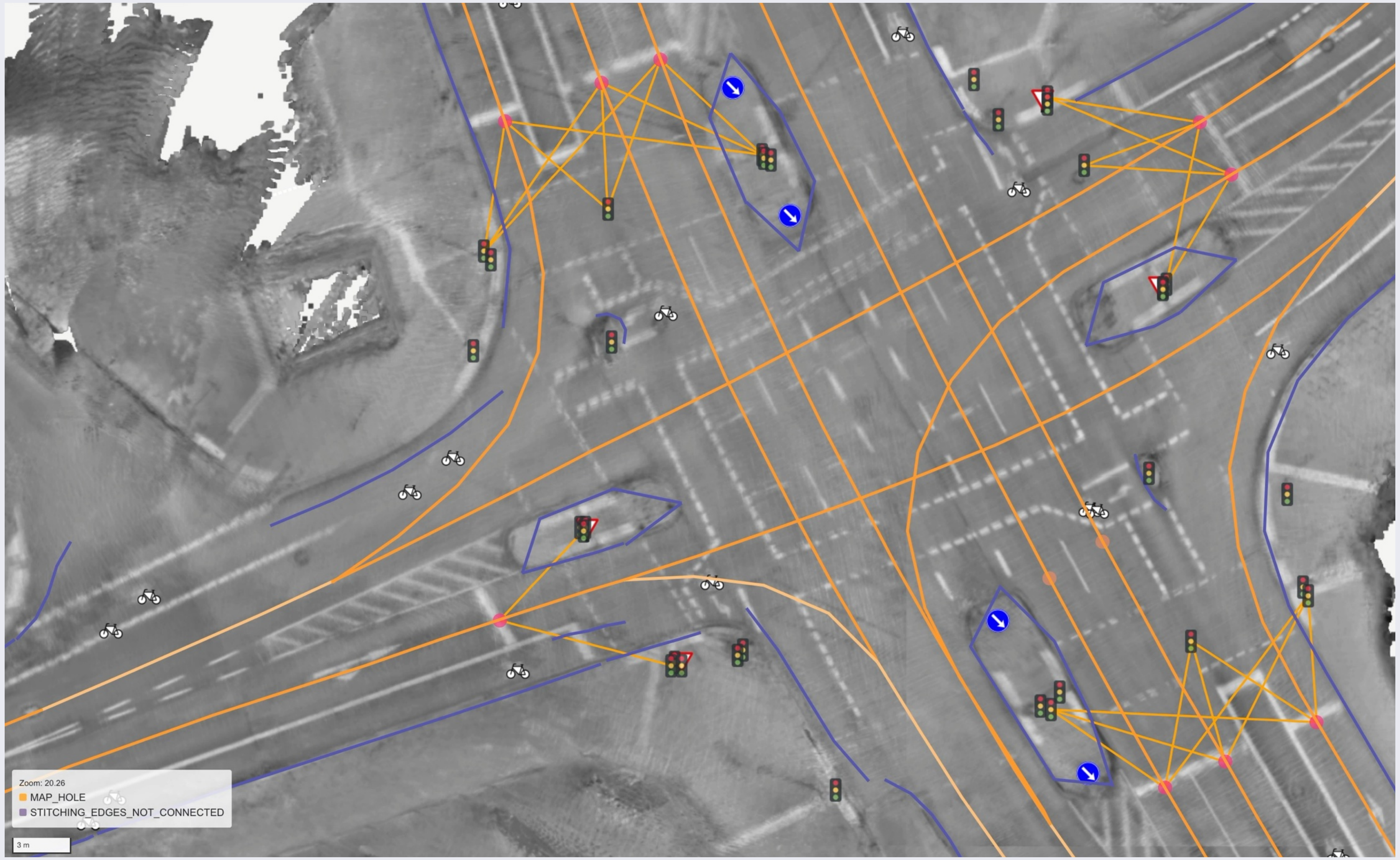
62.4M

Miles collected daily



Geographic Scalability: REM Coverage and Features

- Crowd Speed
- Traffic light associations
- Priorities
- Drivable Path
- Lane level accuracy
- ...



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Gen I: Solving Autonomy at Scale, **Gen II:** Cost Reduction

Gen I

With Mobileye's current technology stack, including EyeQ6H, highly efficient AI as part of our CAIS approach, Imaging-radar, and more

Mobileye is well-positioned to solve autonomy through its ongoing projects

EyeQ6H

Mobileye BSR

Gen II

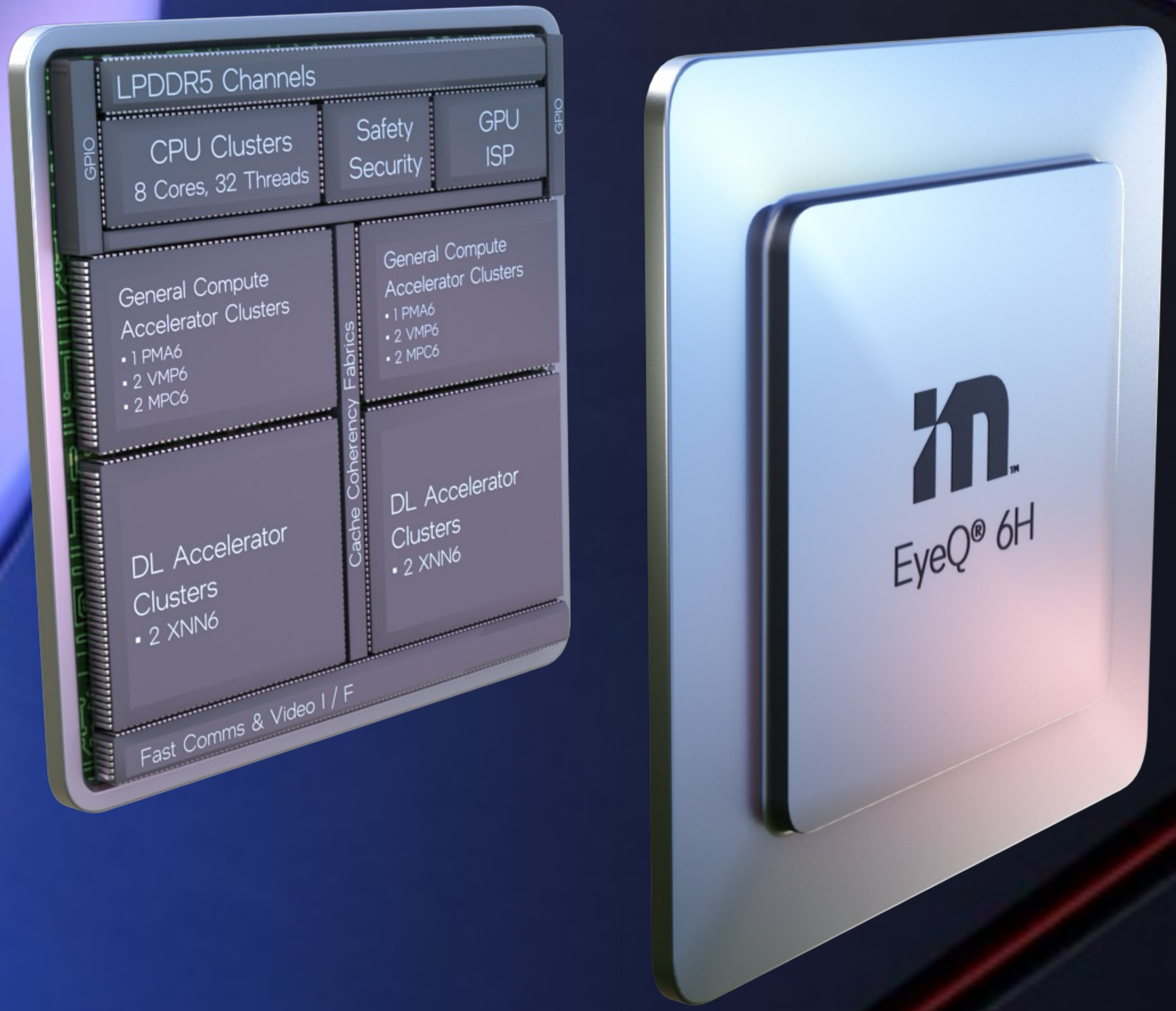
EyeQ7H and next-gen imaging radar (CSR)
Reducing costs

EyeQ7H

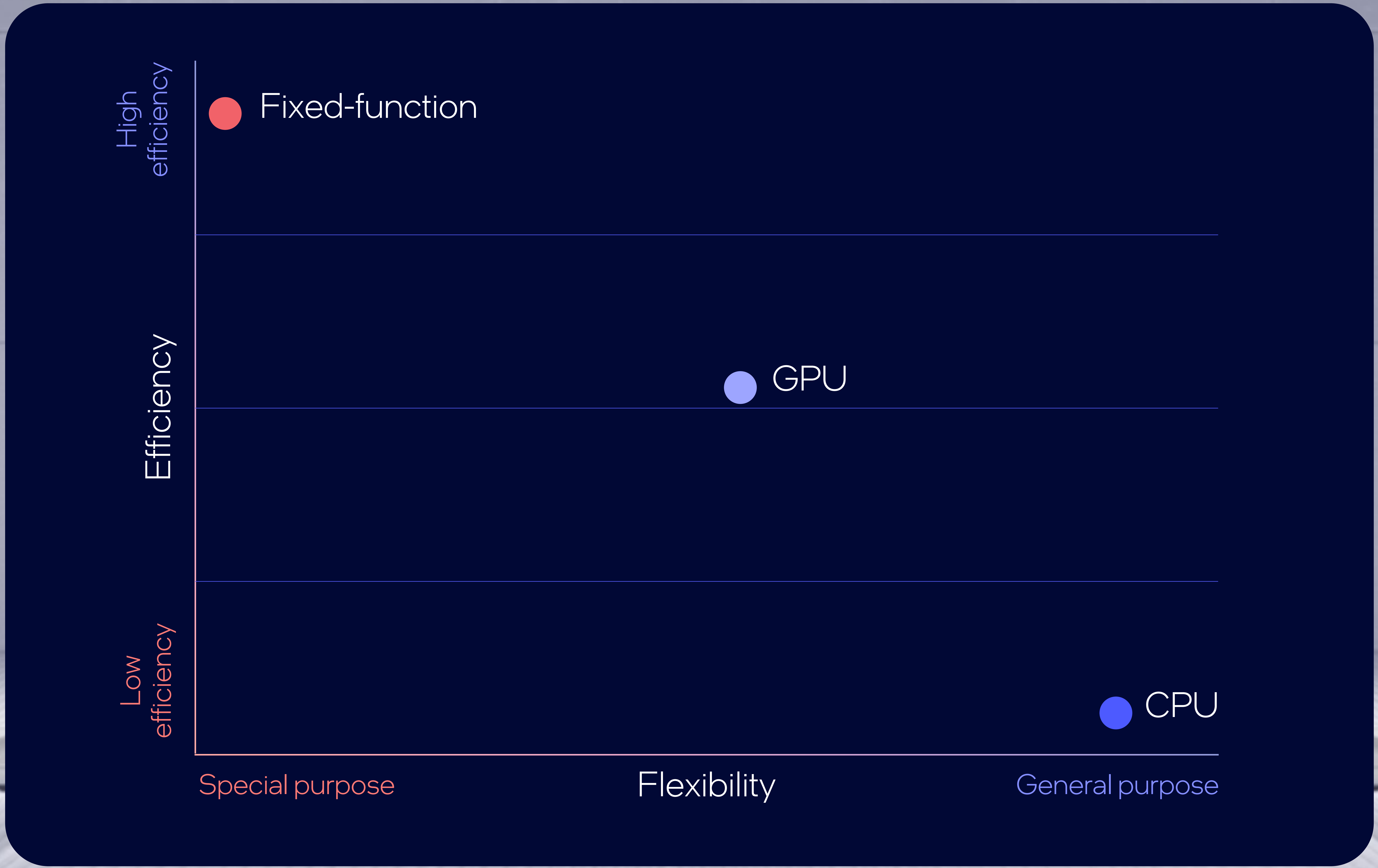
Mobileye CSR & CSR-C

Inference chip (EyeQ6H)

Design for efficiency

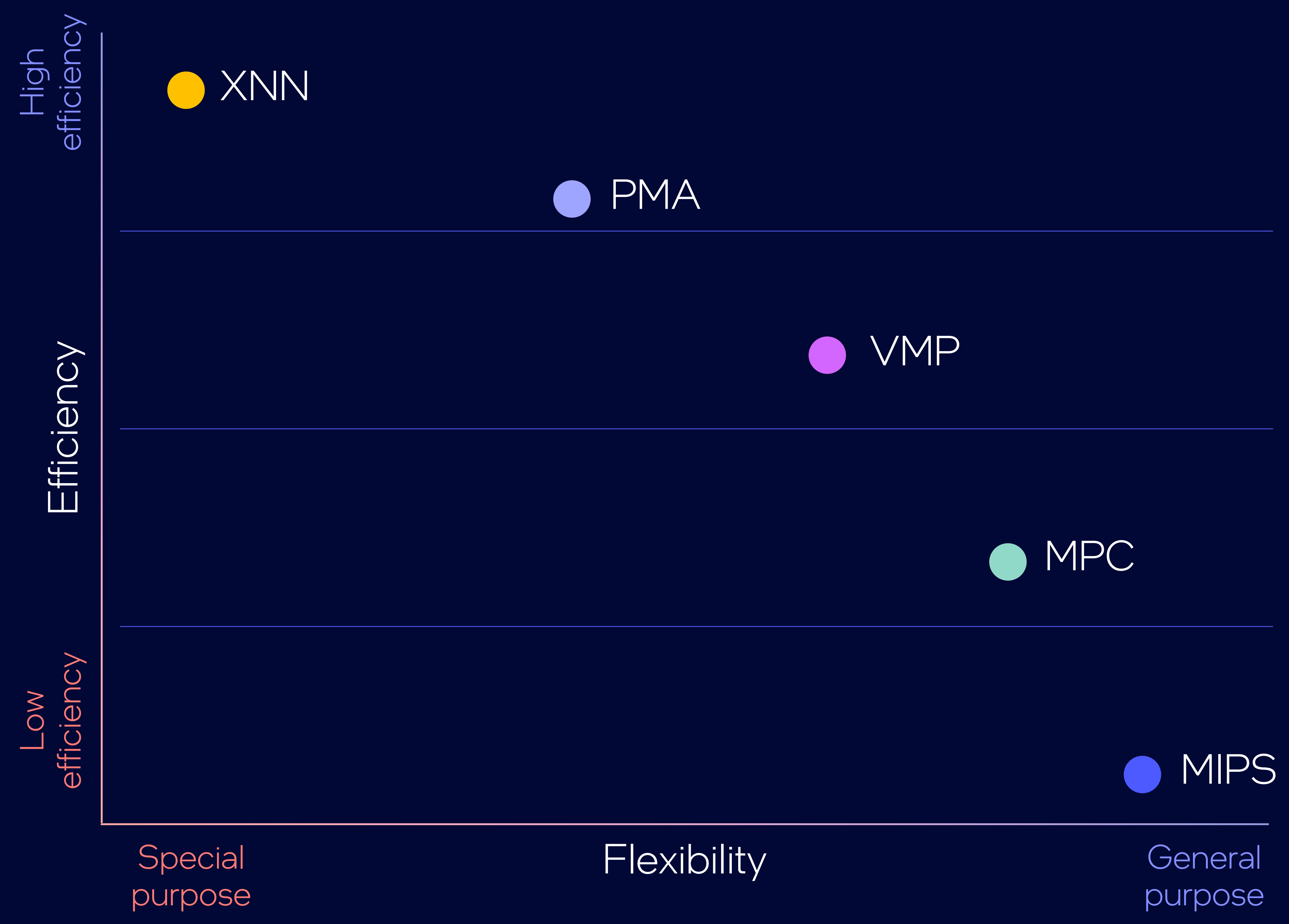


Hardware Architectures Tradeoff: Flexibility vs. Efficiency

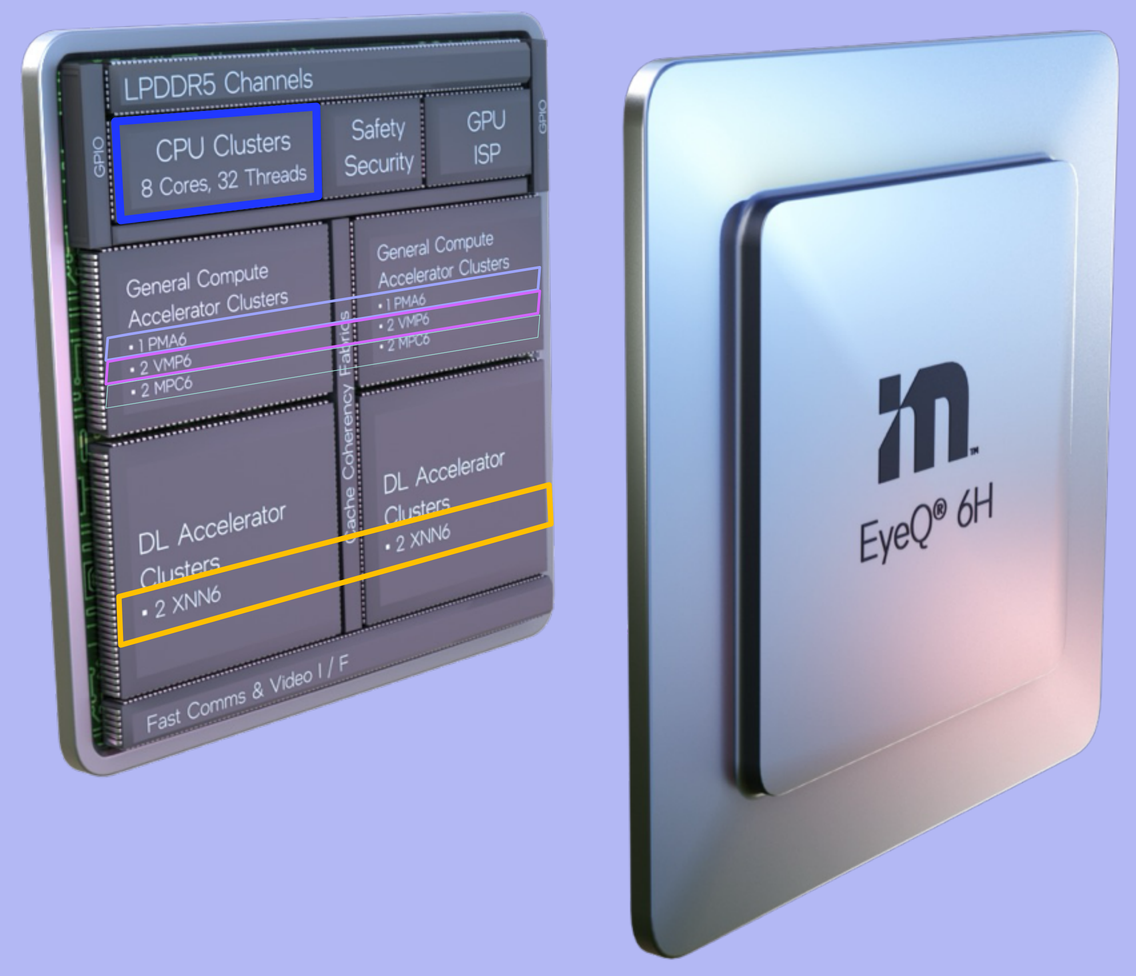


EyeQ6H: 5 Distinct Architectures

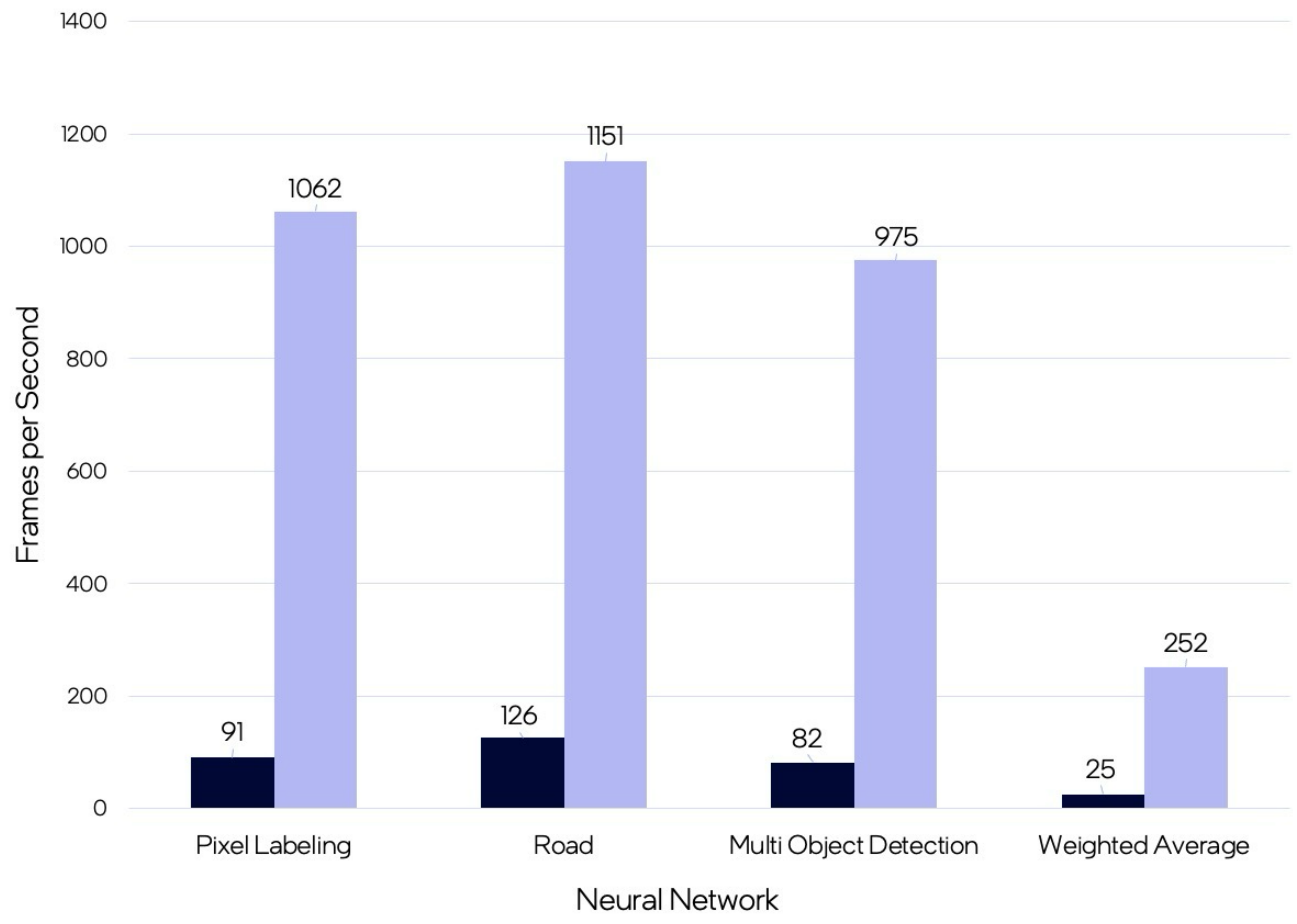
EyeQ6H



- Address Mobileye's high efficiency and flexibility needs
- Enable accelerating range of parallel compute paradigms



EyeQ6H vs. EyeQ5H: 2x in TOPS, But 10x in FPS!

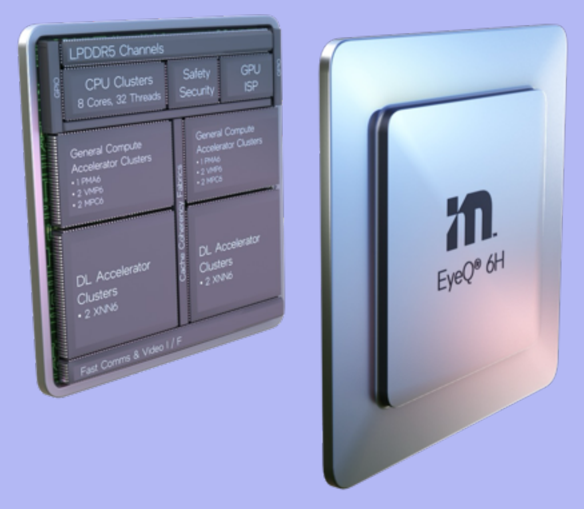


EyeQ5H

16 TOPS (int 8)

27W (max)

EyeQ6H



34 TOPS (int 8)

33W (max)

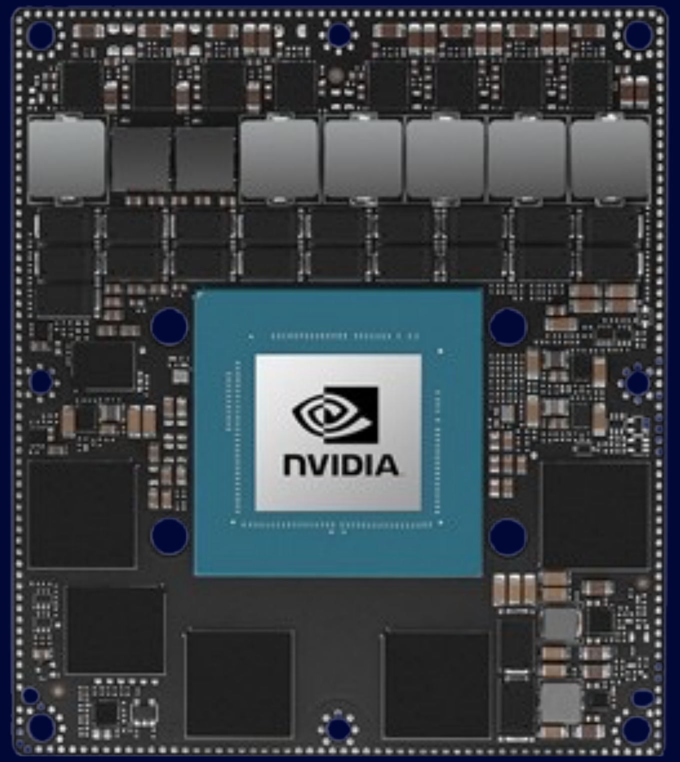
EyeQ6H vs. Orin: It's Not All About TOPS

34 TOPS (int8)

Theoretical TOPS

Factor x8

275 TOPS (int8)



Frames per Second for ResNet50 only factor x2

Conclusion: TOPS are a poor measure for compute capabilities

Mobileye's Imaging Radar

BSR (Front LRR/ MRR)

BSRC (corner radar)

BSR / BSRC

Support high speeds, dense traffic, arterial, rural and urban scenarios

Designed to enable L4 capabilities

Short range capabilities designed to replace Short-Range Lidars and enable autonomous parking scenarios

SOP 2025

Mobileye's Imaging Radar

Hundreds of tests conducted by OEMs over the past 2 years

Integrate Mobileye's Imaging Radar as a key component of their eyes-off solution

Feedback from the OEMs

The leading radar in the market, significantly outperforming all competitors

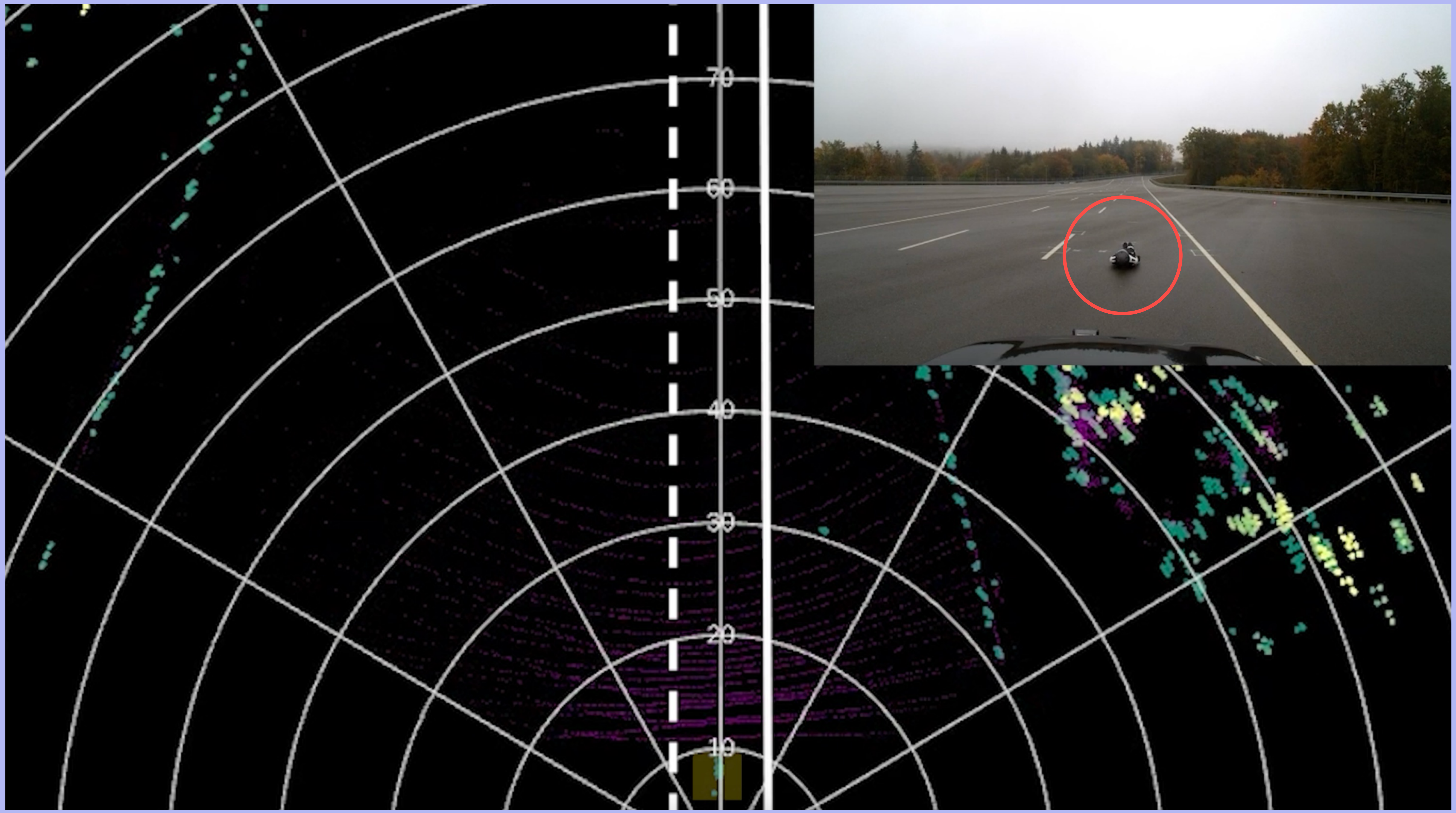
Hundreds of tests

	Western OEM requirements	Mobileye's Imaging Radar performance (done by the OEM)
Lying dummy facing vehicle direction (open space)	>130m	181m-214m
Lying dummy facing vehicle direction (near guard rail)	>130m	136m-143m
Small wood facing vehicle direction (open space)	>130m	136m-142m
Small wood 90 degrees to the vehicle (open space)	>130m	228m-230m
Small wood facing vehicle direction (near guard rail)	>130m	220m-222m
Small wood 90 degrees to the vehicle (near guard rail)	>130m	158m-167m
Wheel rim in open space	>130m	226m-229m
Child dummy between 2 cars (3m between cars)	>130m	240m (maximum test distance)
Adult dummy between 2 cars (3m between cars)	>130m	240m (maximum test distance)
Wooden pallet 90 degrees to vehicle	>130m	240m (maximum test distance)
Wooden pallet 45 degrees to vehicle	>130m	202m-206m
1 Car Sidetrack, 1 Car +8m rate of closure, with Motorcycle on the middle of car	>130m	240m (maximum test distance)
1 Car Sidetrack, 1 Car +8m rate of closure, with Motorcycle on the middle of car without license plate	>130m	240m (maximum test distance)
...	...	...

Mobileye's Imaging Radar

A brief overview of one scenario showcasing the tests and performance evaluations conducted by the OEM on our radar

Detection of a dummy with a helmet lying on-road facing our direction



At a distance of 8 meters

Mobileye's Imaging Radar

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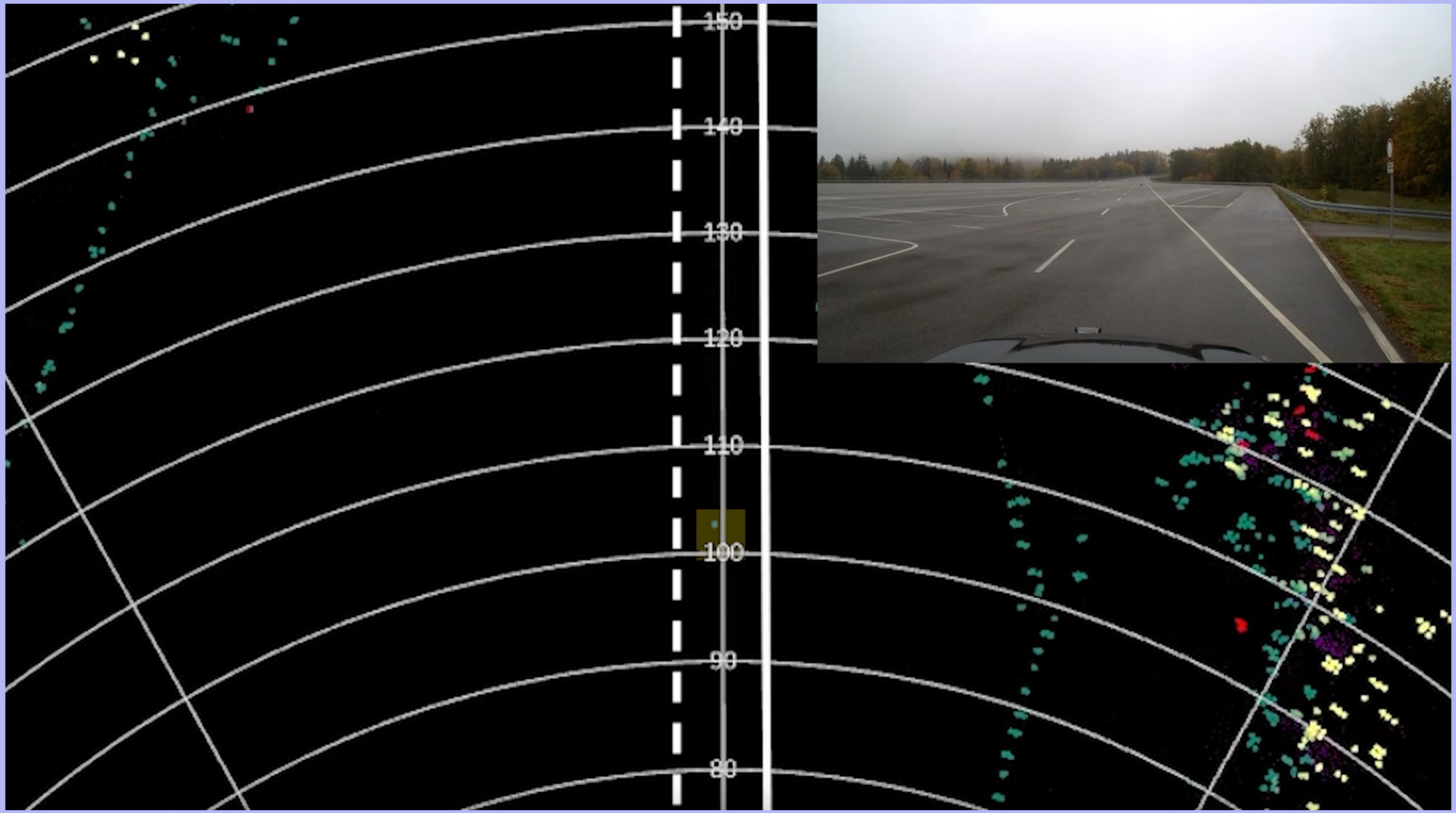
Detection of a dummy with a helmet lying on-road facing our direction

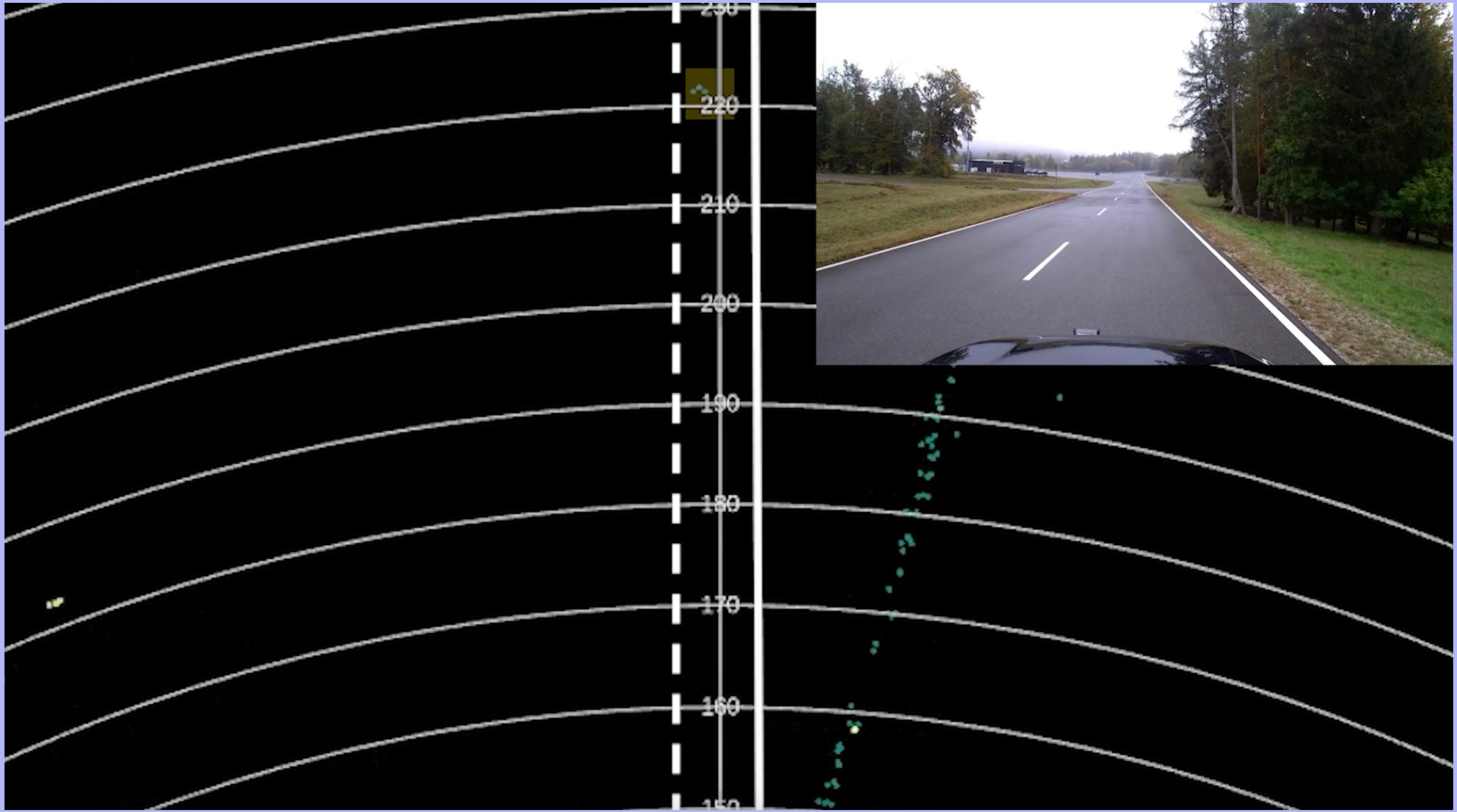


At a distance of 100 meters

Mobileye’s Imaging Radar

A brief overview of one scenario showcasing the tests and performance evaluations conducted by the OEM on our radar

Detection of a dummy with a helmet lying on-road facing our direction



At a distance of 220 meters

Imaging Radar Enabling Autonomy at Scale

Redundancy

- An independent sensor with different failure modes from cameras and lidars

Performance

- Density of cameras
- High accuracy in detecting objects in extended distances
- Enables very close 360° coverage

Cost-optimized for scaling

- Low cost sensor for OEMs to enable an eyes-off product

BSR (Front LRR/ MRR)

BSRC (corner radar)

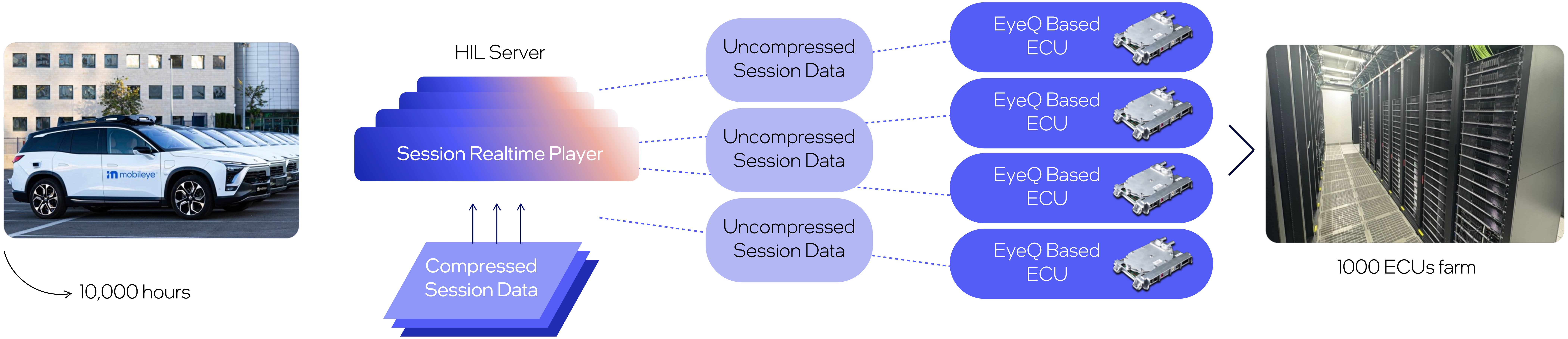
Hardware in the Loop (HIL) Validation

HIL enables a quick overnight validation cycle

- Real-time Playback of 10,000 hours of real world data of mission-collected critical sessions
- Each session reproduces all data received by the ECU during the collection
- Efficient compression of sessions to reduce HIL server costs

ECU SW/HW remains unmodified

Data collection expedition (worldwide)



Mobileye Extremely Efficient AI

- Transformers at x100 efficiency
- Efficient labeling by Auto Ground Truth
- Meeting Safety Goals
  - Sufficiently high MTBF
  - No 'unreasonable risk'

Will be covered by Shai

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Moving from Hands-On / Eyes-On to Hands-off / Eyes-off and No-driver

ADAS

EYES-ON / HANDS-ON

Front Camera (1V)

$100-$150

Surround ADAS (6V5R)

$700-$800

Gen 1: 1xEQ6H (2026)

SuperVision™

HANDS-OFF / EYES-ON

Surround Camera (optional radar)

Gen 1: SV62 (2026)

$2000-$2500

Gen 2: SV71

$1200-$1900

Chauffeur™

EYES-OFF

Surround Camera + Radar + Lidar
(imaging radar for extended ODD)

Gen 1: CH63 (2027)

$4500-$6000

Gen 2: CH72

$4000-$5000

Drive™

NO DRIVER IN THE CAR

Surround Camera + Imaging Radar
+ long-range Lidars

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Safety: How Safe is Safe Enough?

Is a self-driving system with Human-level MTBF sufficient on its own?

Answer

We argue that it is not

Why?

- Humans are expected to properly respond to events even when those are extremely rare (e.g., baby lying on the road)
- Human driving statistics are heavily influenced by illegal or irresponsible behaviors (e.g., driving under the influence, texting while driving)

Self-driving system safety goals

- Absence of "unreasonable risks", with a transparent definition of the boundary between reasonable and "unreasonable risks"
- The overall MTBF of the system should be at least as good as human statistics

Safety: Mobileye Safety Architecture to Meet the Safety Goals

Absence of "unreasonable risks", with a transparent definition of the boundary between reasonable and "unreasonable risks"

Planning

Errors due to mis-interpreting the intentions of other road users

Human's planning errors :"lapse of judgement"

RSS

Guarantee **zero** unreasonable planning errors

Identifiable Errors

Hardware failures: e.g., a sensor malfunctions, the SDS computer fails

Software bugs: e.g., memory corruption

Failsafe

Maximize failure detection and safe stop on the shoulder (MRM) through built-in **redundancies**

Reproducible Errors

The system fails, without understanding that it fails, but it is easy to reproduce the error in a test track

"Unreasonable risk":
Baby lying on the road

"Reasonable risk":
2 flat tires simultaneously

Eliminate 'unreasonable'

Transparency about the boundaries distinguishing 'reasonable' and 'unreasonable' risks

Black Swans

Rare, unexpected failures that cannot be easily predicted or reproduced

Redundancies through PGF

Leveraging **redundancies** so that failure involves at least two sub-systems

Summary

Requirements for Success

From Eyes-on to Eyes-off

- **Productization**: From demo to real product
- **Scalability**: Geographic and ODD
- **Cost**: Controlling system and development cost
- **Technology stack**: CAIS, HIL, EyeQ6H and imaging-radar, …
- **Safety**: Safety bars for autonomous driving systems

Navigating The Path to Autonomous Mobility with Extremely Efficient AI

Prologue

6 AI Revolutions

Machine Learning

Deep Learning

Mobileye was the First to Utilize

Generative AI

Universal Learning

Sim2Real

Reasoning

Machine Learning and Deep Learning in Mobileye

ML

Machine Learning Revolution

- Shifting from expert systems to learning algorithms
- SVM and AdaBoost on hand-tuned features

DL

Instead of hand-tuned features, let the machine learn the features as well

- 2012: Krizhevsky-Sustkever-Hinton Imagenet paper
- 2012-2013: Deployment of deep learning models into an embedded system: **EyeQ3 Chip**
- Mobileye was first to do so worldwide (2014, on Tesla 1st gen Autopilot)

Prologue

6 AI Revolutions

Machine Learning

Deep Learning

Generative AI

Universal Learning

Transformers

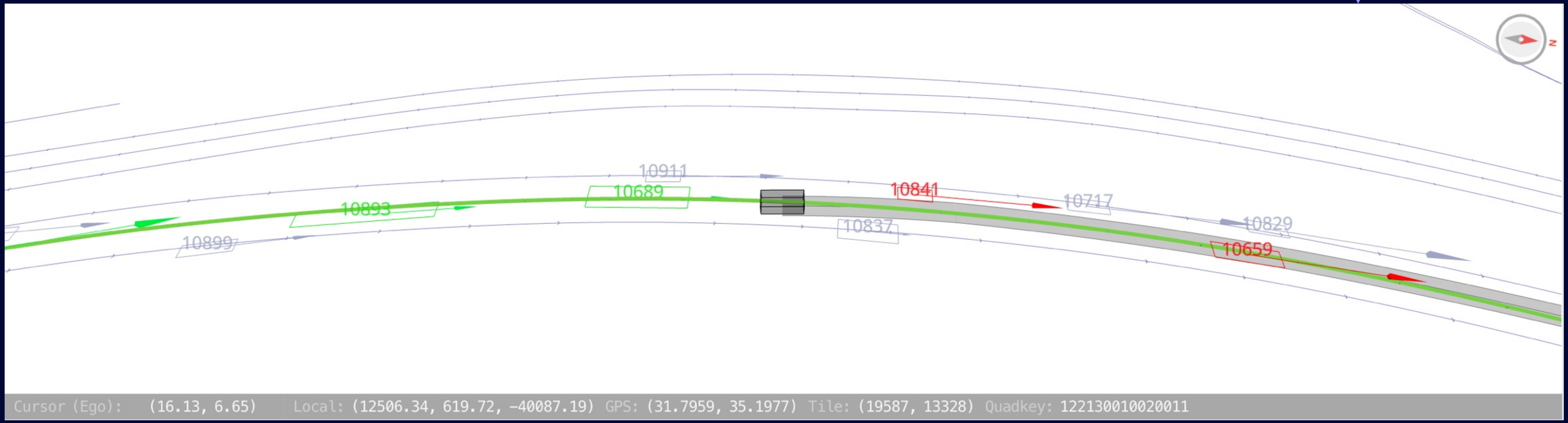
Sim2Real

Reasoning

Pre-Transformers: Object Detection Pipeline

Clustering and max suppression

2D to 3D



Three Revolutions of Generative Pre-trained Transformers (GPTs)

- Tokenize everything
- Generative, Auto-regressive
- Transformer architecture: 'Attention is all you need'

Three Revolutions of Generative Pretrained Transformers

1

Tokenize everything

Input: Transcribe each input modality (e.g., text, images) into a sequence of tokens

Output: Transcribe each output modality as a sequence of tokens and employ generative, auto-regressive models with suitable loss function

Accommodates: Complex input and output structures (e.g., sets, sequences, trees)

Object detection pipeline example:

Input
Single image

'Tokenized' input
Sequence of image patches

'Tokenized' output
Sequence of 4 coordinates determining the location of the objects in the image

Three Revolutions of Generative Pretrained Transformers

2

Generative, Auto-regressive

Previous approach: Classification or regression with fixed, small size, outputs (e.g., ImageNet)

Current approach: Learn probabilities for sequences of arbitrary length (e.g., sentence generation)

Key Features: Chain Rule – Models sequence dependencies

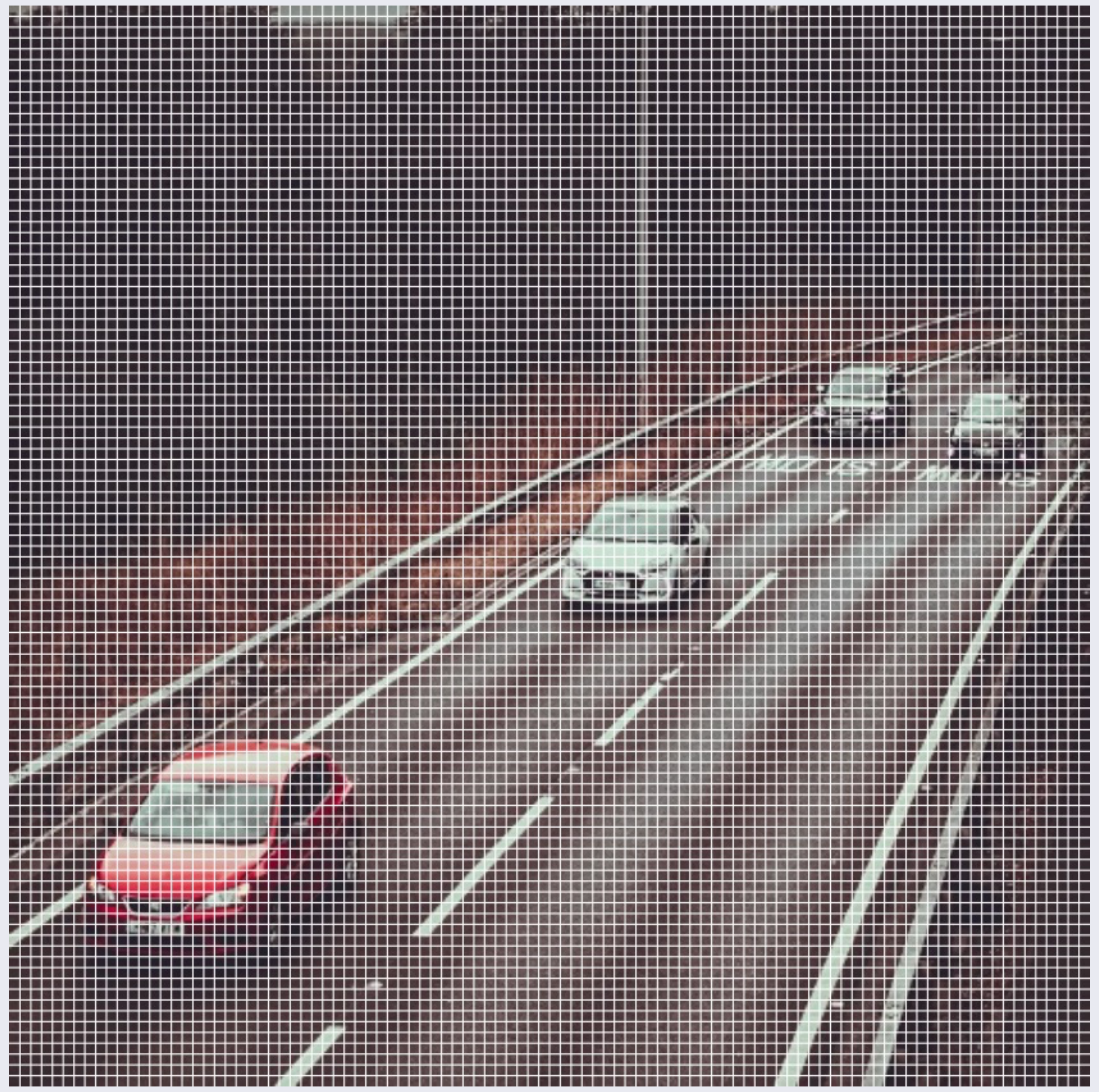
Generative – Fits data using maximum likelihood

Enables: Self-supervision (e.g., future words in a document)

Handles uncertainty (multiple valid outputs by learning $\mathrm{P}[y|x]$)

Three Revolutions of Generative Pretrained Transformers

Example: Consider a 1000x1000 pixel image containing 4 vehicles, with the image divided into 10x10 pixel patches. What are the probabilities for identifying vehicle positions when not using the chain rule compared to when using the chain rule?



List of 4 coordinates per vehicle $(x_{1,1}, y_{1,1}, x_{1,2}, y_{1,2}, \ldots, x_{4,1}, y_{4,1}, x_{4,2}, y_{4,2})$

Without using the chain rule

$$P(vehicles|I) = P(x_{1,1}, y_{1,1}, x_{1,2}, y_{1,2}, \ldots, x_{4,1}, y_{4,1}, x_{4,2}, y_{4,2}|I)$$

$$\text{Dim} = 10^{32}$$

Using the chain rule

$$P(vehicles|I) = P(x_{1,1}|I) * P(y_{1,1}|x_{1,1}, I) * \cdots * P(y_{4,2}|x_{1,1}, \ldots, x_{4,2}, I)$$

$$\text{Dim} = 100$$

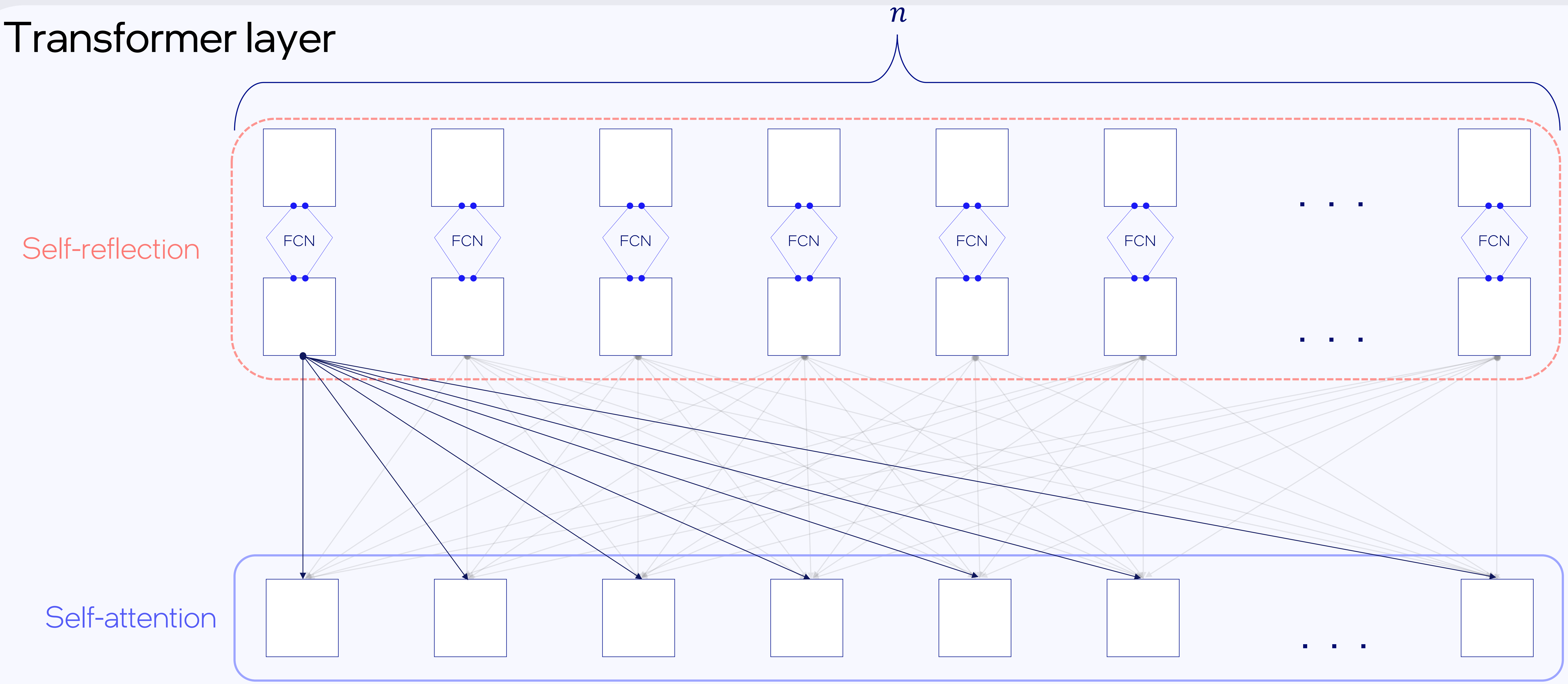
Three Revolutions of Generative Pretrained Transformers

3

Transformer architecture: 'Attention is all you need'

Tailored for problem of predicting $P[token_{n+1} | \, token_n, token_{n-1}, \dots, token_0]$

Transformer layer



Transformers Layer: Group Thinking Analogy

Imagine a team discussing a project

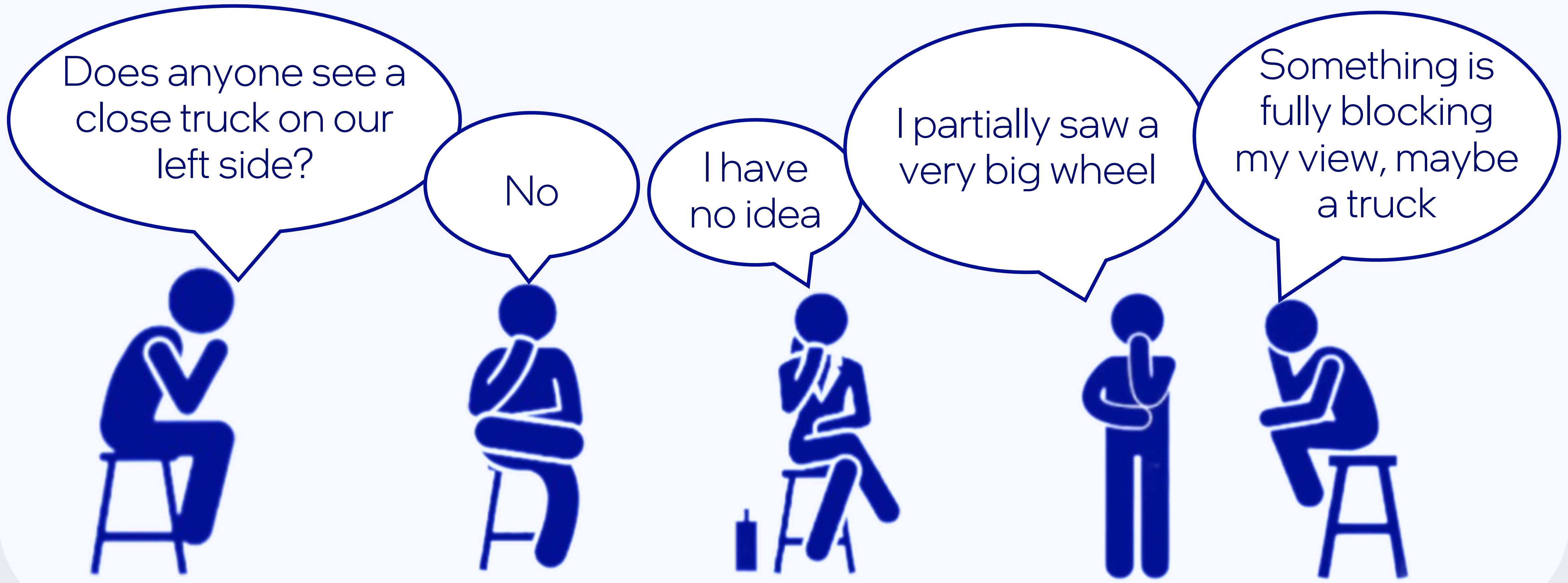
- Each person has their own area of expertise
- they all contribute to the overall outcome
- Everyone is working simultaneously rather than one after another

Self-reflection

Each participant takes time alone to process ideas and organize their thoughts

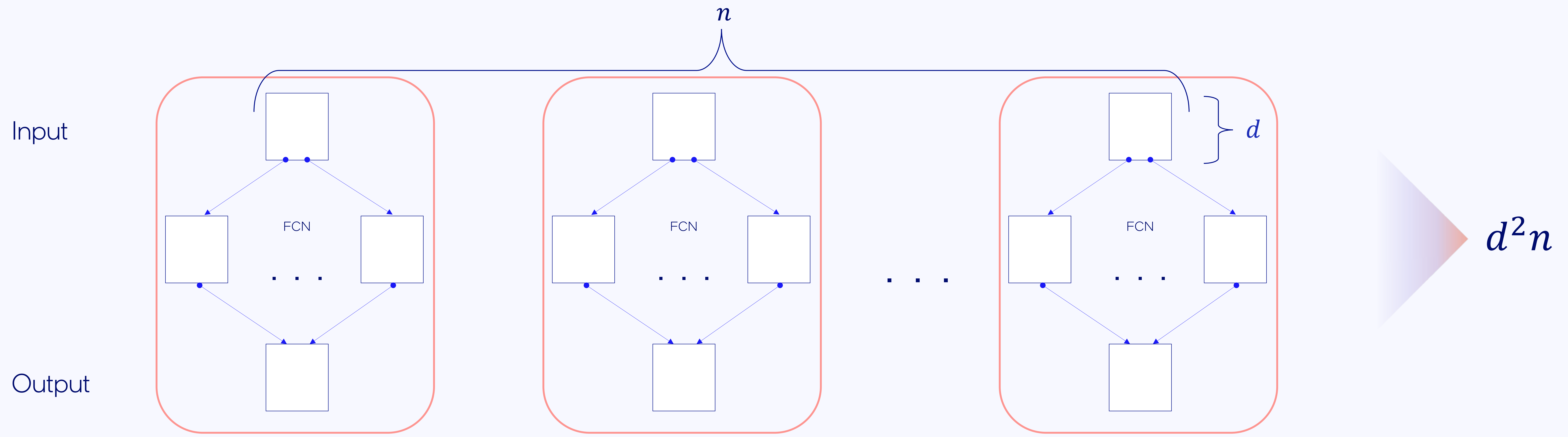
Self-attention

Each member listens to others and responds in real-time, adjusting their input based on important points raised



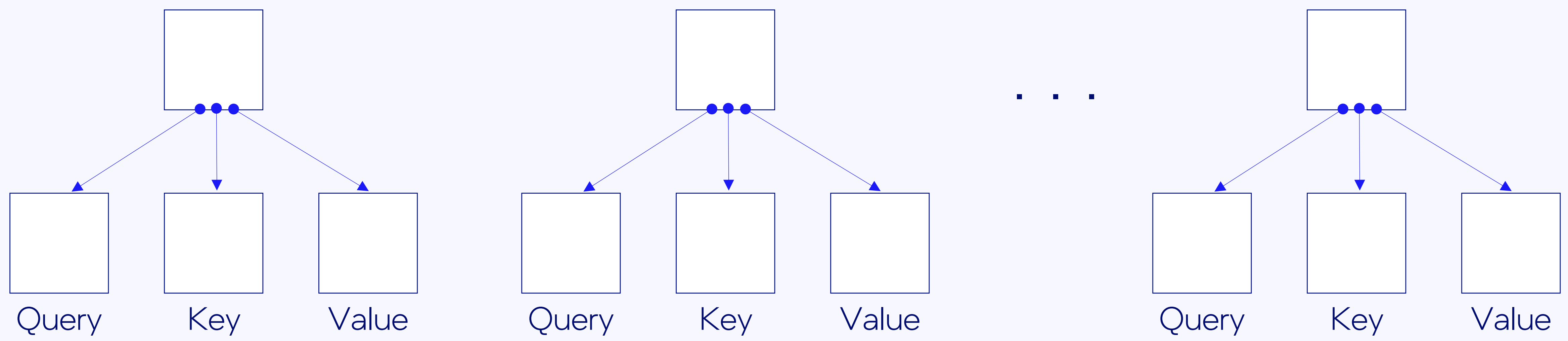
Transformers Layer: Self-Reflection

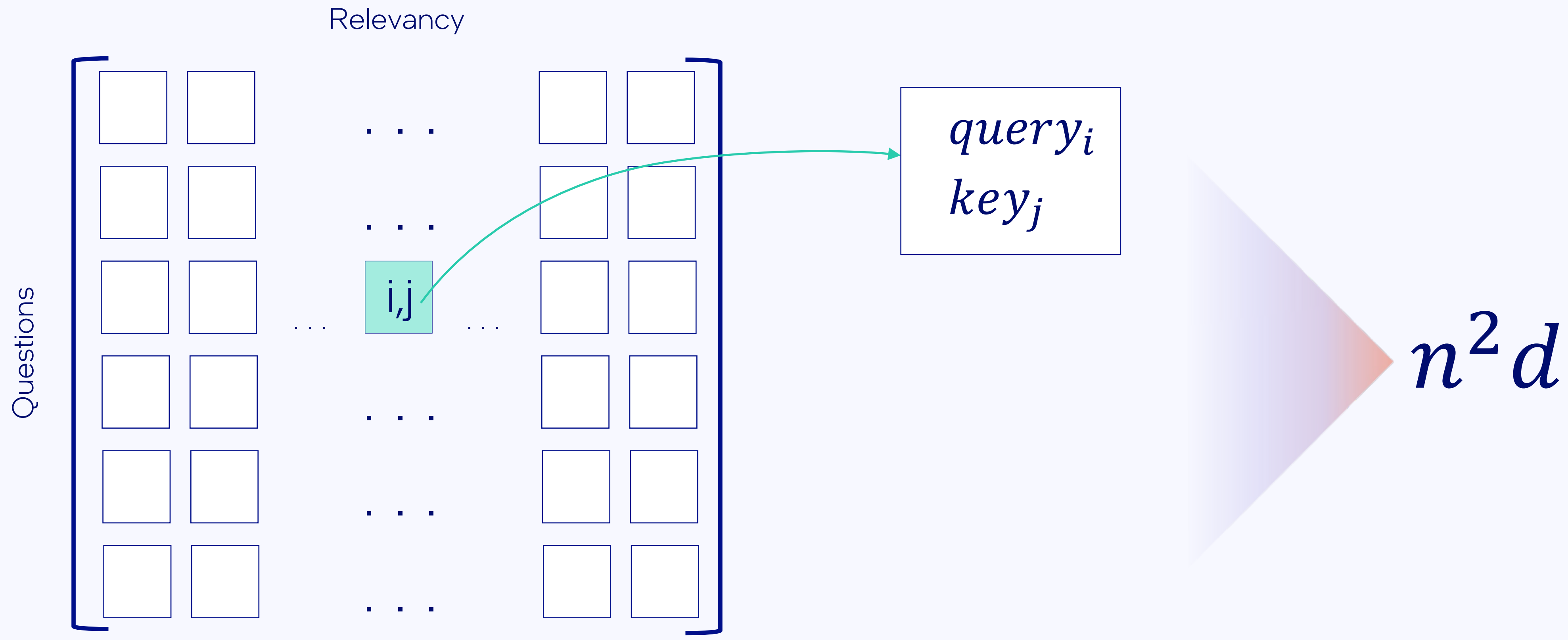
- Each token individually processes its 'knowledge' using a multi-layer-perceptron, without interacting with other tokens



Transformers Layer: Self-Attention

- Each token send ‘query’ to the other tokens, which respond with values if their ‘key’ match the ‘query’
- The querying token then averages the received values, facilitating inter-token connectivity



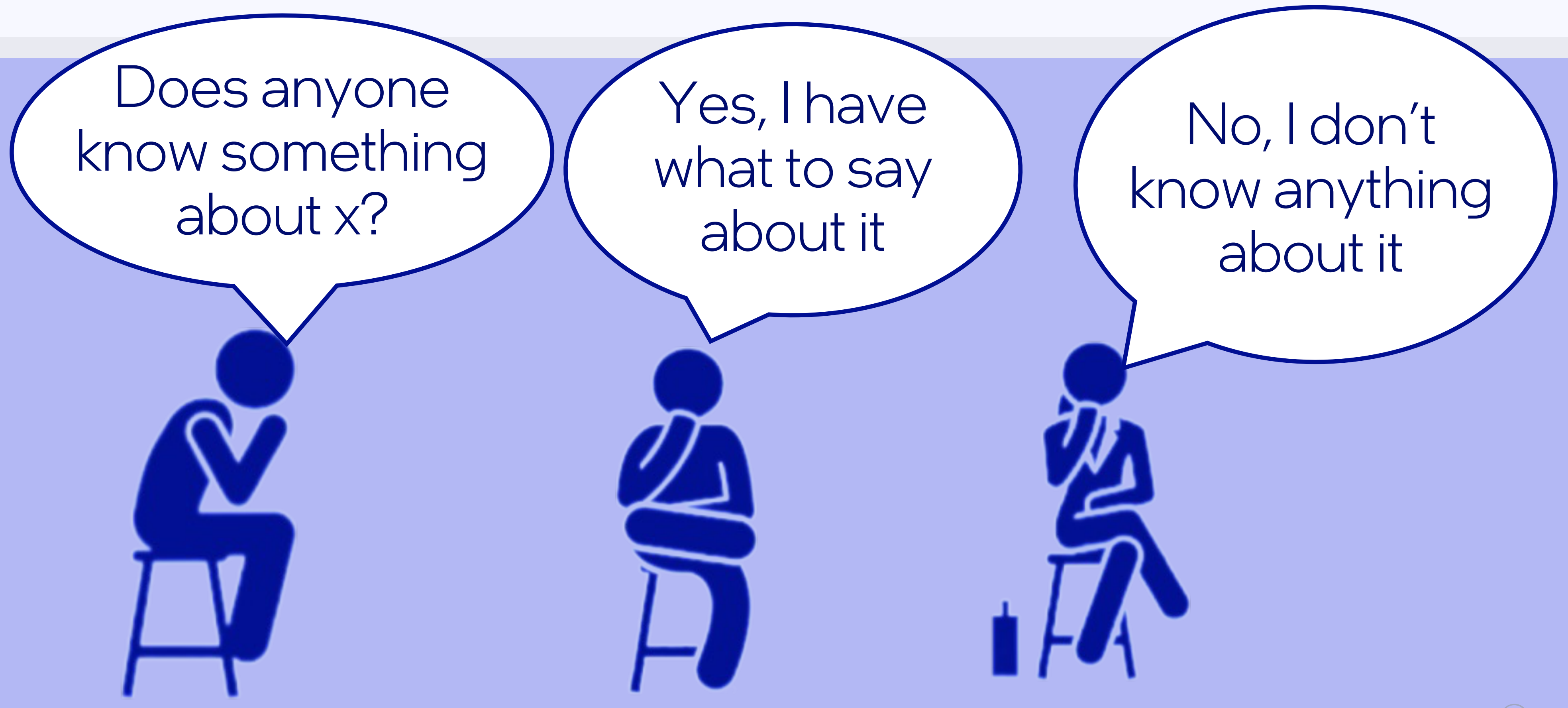


Example from the Group Thinking Analogy

Person i asks: “Does anyone knows something about x?”

Person j responds: “Yes, I have what to say about it”

Person j' responds: ”No, I don’t know anything about it”

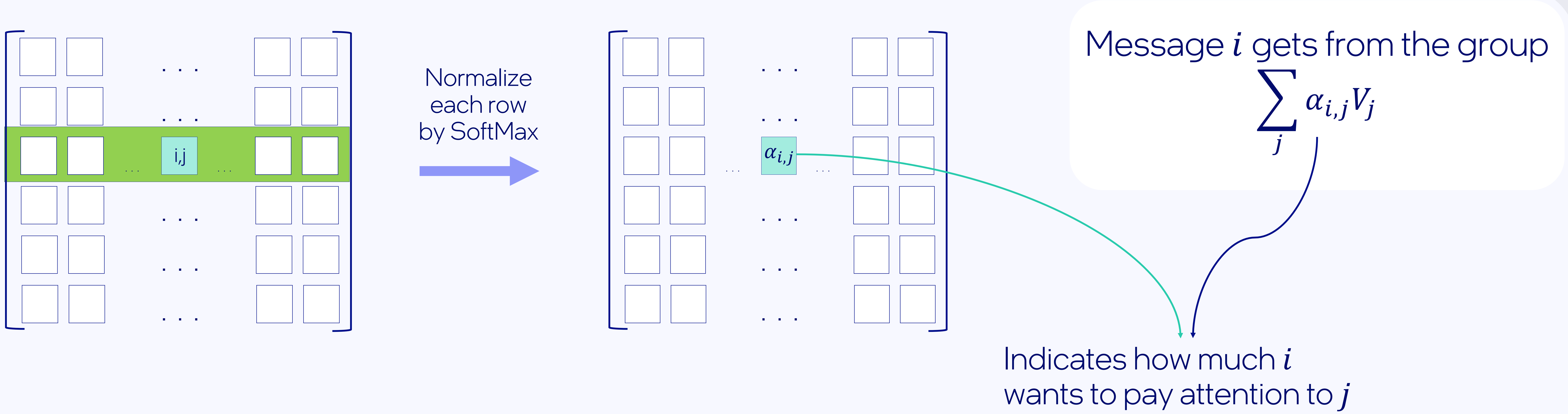


Transformers Layer: Self-Attention

Normalizes Scores: It converts raw attention scores into normalized probabilities

Probability Distribution: Each set of attention scores is transformed so that their probabilities sum to 1

Focus Mechanism: This allows the model to weigh different parts of the input differently, focusing more on relevant parts based on the probabilities



Transformers: Complexity

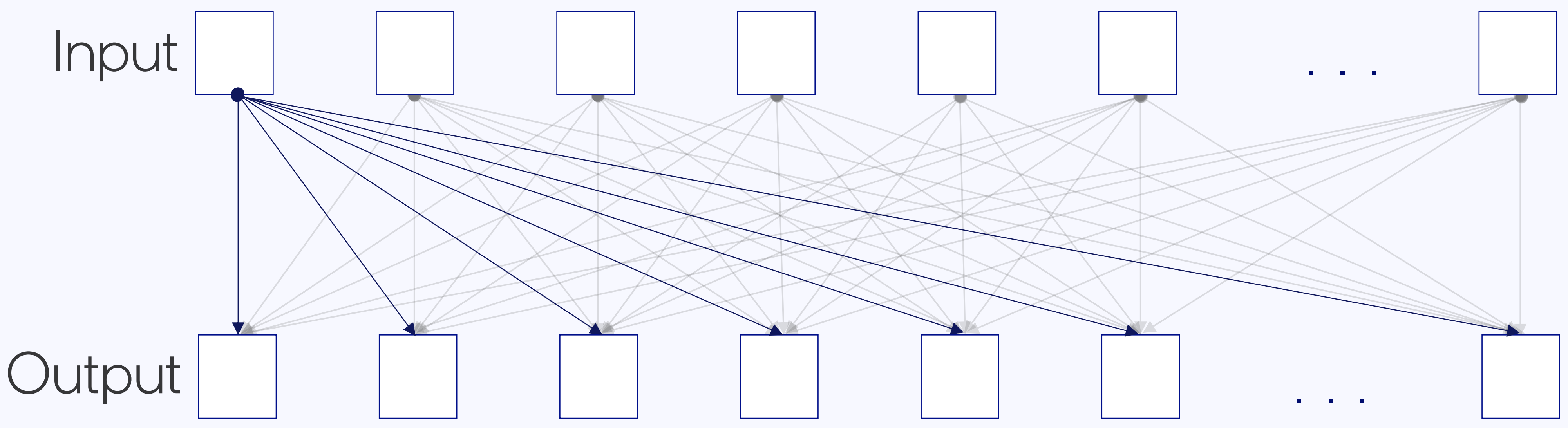
$$L * (n\,d^2 + n^2 d)$$

#layers — Self reflection — Self attention

Cost per layer for alternative architectures:

Fully Connected Network (FCN)

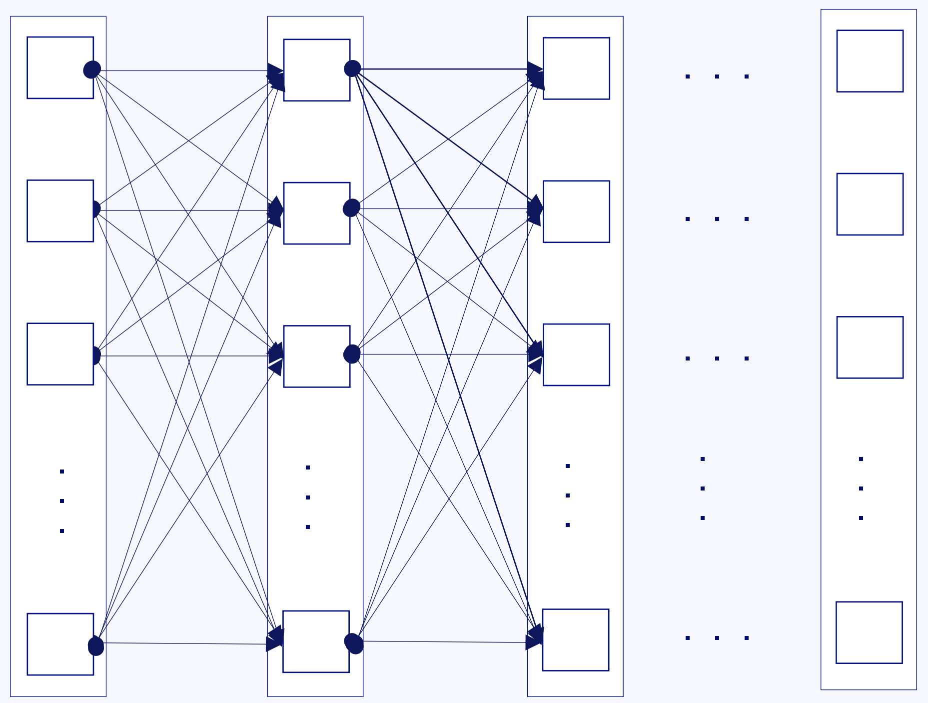
Flatten nd values



Connections: $\mathbf{d^2 n^2}$

Recurrent Neural Network (RNN)

'Talks' only with previous token



Connections: $\mathbf{nd^2}$

‘Effective Sparsity’ of Transformers

Transformers

Sparser
$d^2n + n^2d$

Any modality

Denser, but effectively selects only a few past tokens for communication

Fully Connected Network (FCN)

d^2n^2 connections

Convolutional Neural Networks (CNNs)

Sparsity specific to images

Long-Short-Term-Memory (LSTM)

Recurrent Neural Networks (RNN)

Markov sparsity context represented by a state vector

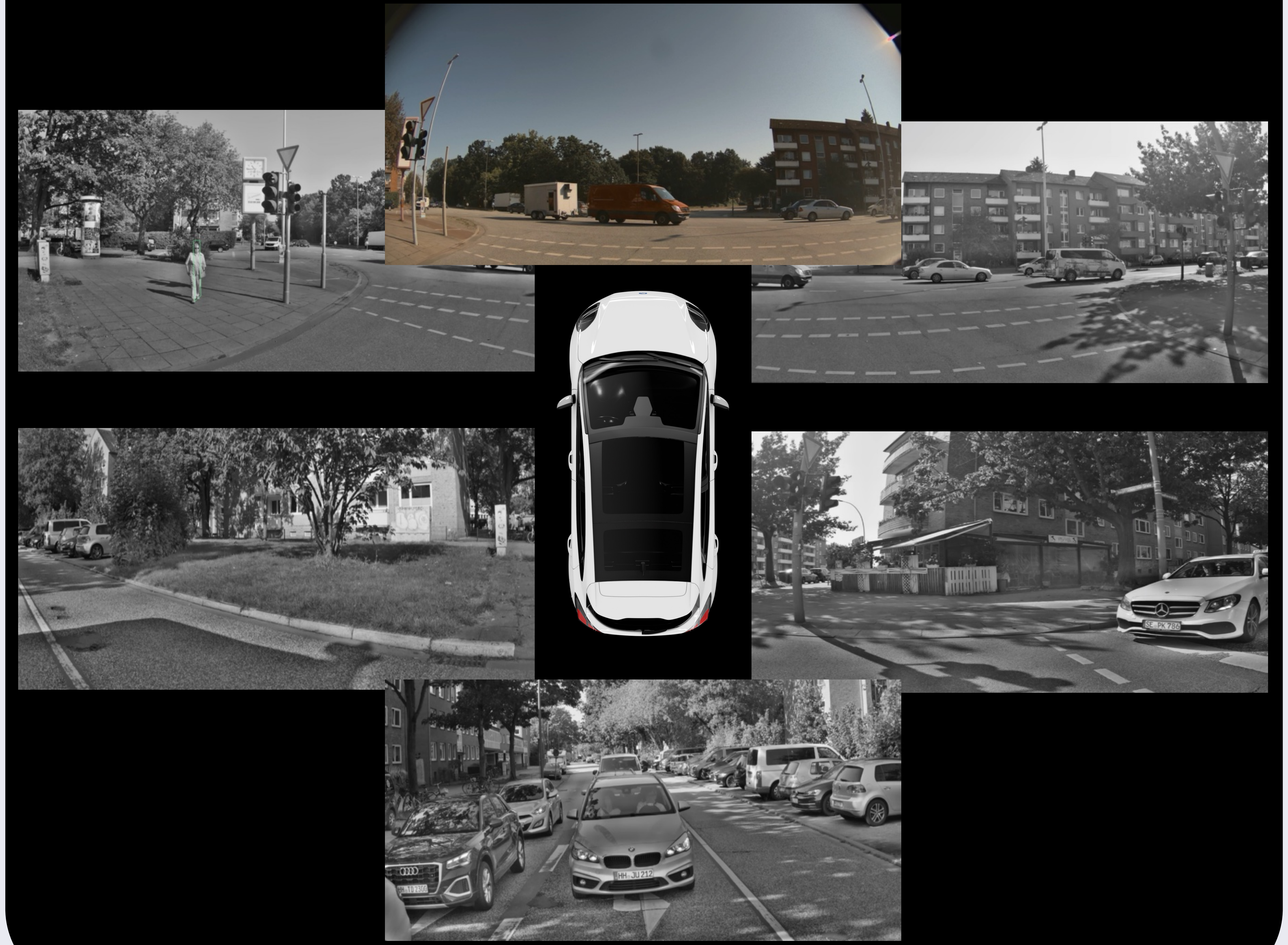
The 3 Revolutions Enable a Universal Solution

- Handle all types of inputs
- Deals with uncertainty (by learning probability)
- Enables all types of outputs

The ultimate learning machine?

End-to-End Driving: From Pixels to Control Commands

Input: images



Output: Control commands

Network Architecture: Vanilla Transformer

- CNN backbone for creating image tokens:
  - $C = 32$ high resolution images are converted to 32 images of resolution 20x15 yielding $N_p = 300$ "$pixels$" per image, and $d = 256$ channels
- Encoder:
  - We have $N = C * N_p = 9600$ "$image\ tokens$", each at dimension $d = 256$
  - A vanilla transformer network with L layers requires $O(L * (N^2 d + d^2 N))$
  - Encoder alone requires around 100 TOPs (assuming 10Hz, L=32)
- Decoder:
  - 50 tokens describing where the vehicle should drive in the coming 5 seconds


x:612 y:-459
HLS
x:699 y:489
HLS
x:-205 y:-406
World
Map
+
Cursor (Ego): (-11.37, 16.10)
Local: (12139.25, 475.09, 3542.71)
GPS: (48.4027, 11.7504)
Tile: (17453, 11335)
Quadkey: 120230002101323


x:210 y:-407
HLS
x:0 y:0
HLS
x:735 y:-426
World
Map
Cursor (Ego): (46.98, -12.73)
Local: (11564.89, 480.36, 4153.71)
GPS: (48.3972, 11.7426)
Tile: (17452, 11336)
Quadkey: 120230002103100


x:-363 y:307
HLS
x:744 y:759
HLS
x:-567 y:546
World
Map
Cursor (Ego): (-7.97, -20.36)
Local: (14178.12, 700.44, -38446.64)
GPS: (31.7811, 35.2153)
Tile: (19589, 13330)
Quadkey: 122130010020121

Limitations of End-to-End

1

Will it reach the desired MTBF?

- 'Rare and correct' vs. 'common and incorrect'
- Fail to learn important abstractions (calculator as a study case)
- The 'Shortcut Learning' Problem
- Long tail problem

2

Eliminating 'unreasonable risk'

3

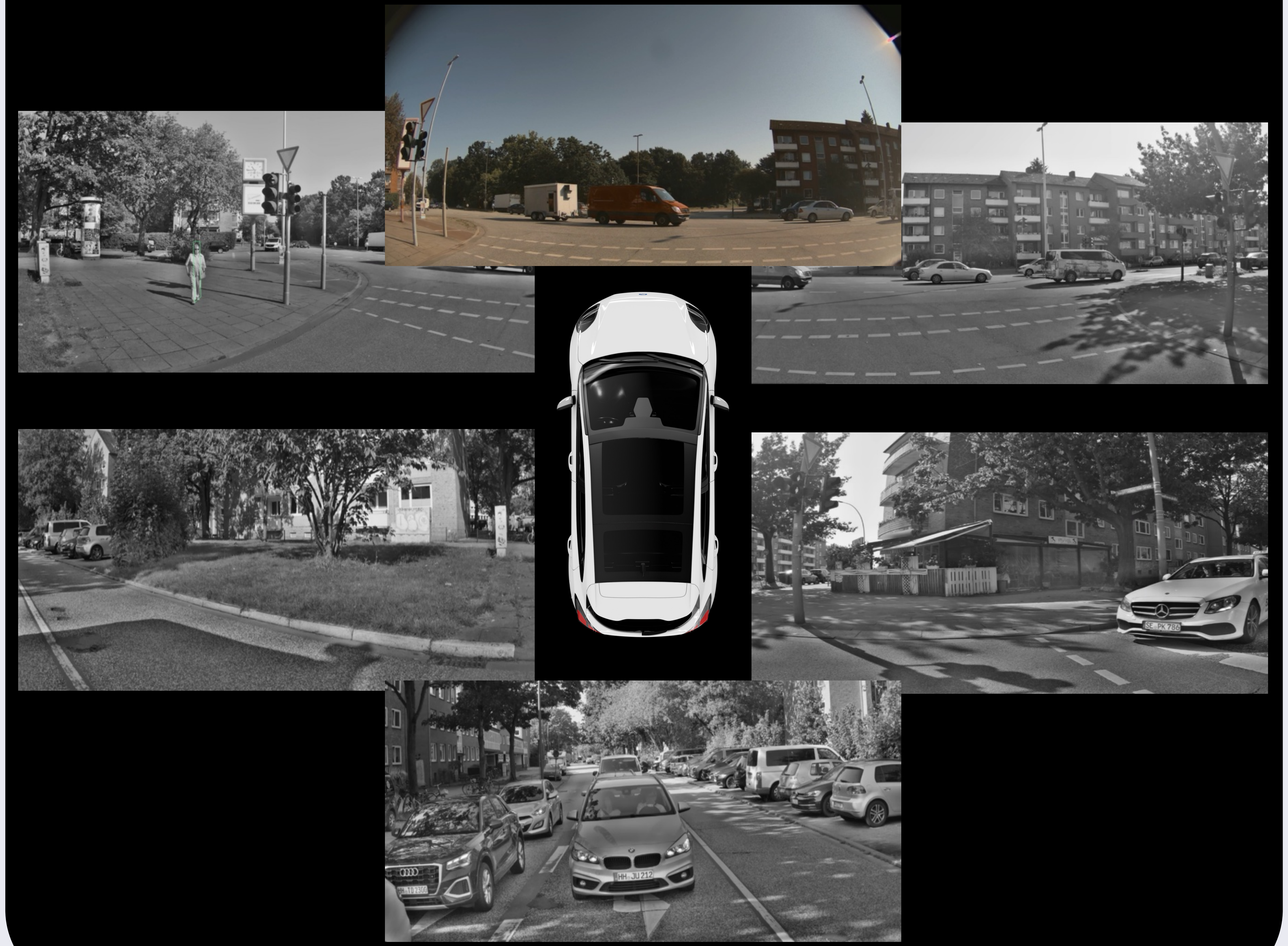
Brute force

Mobileye Extremely Efficient AI

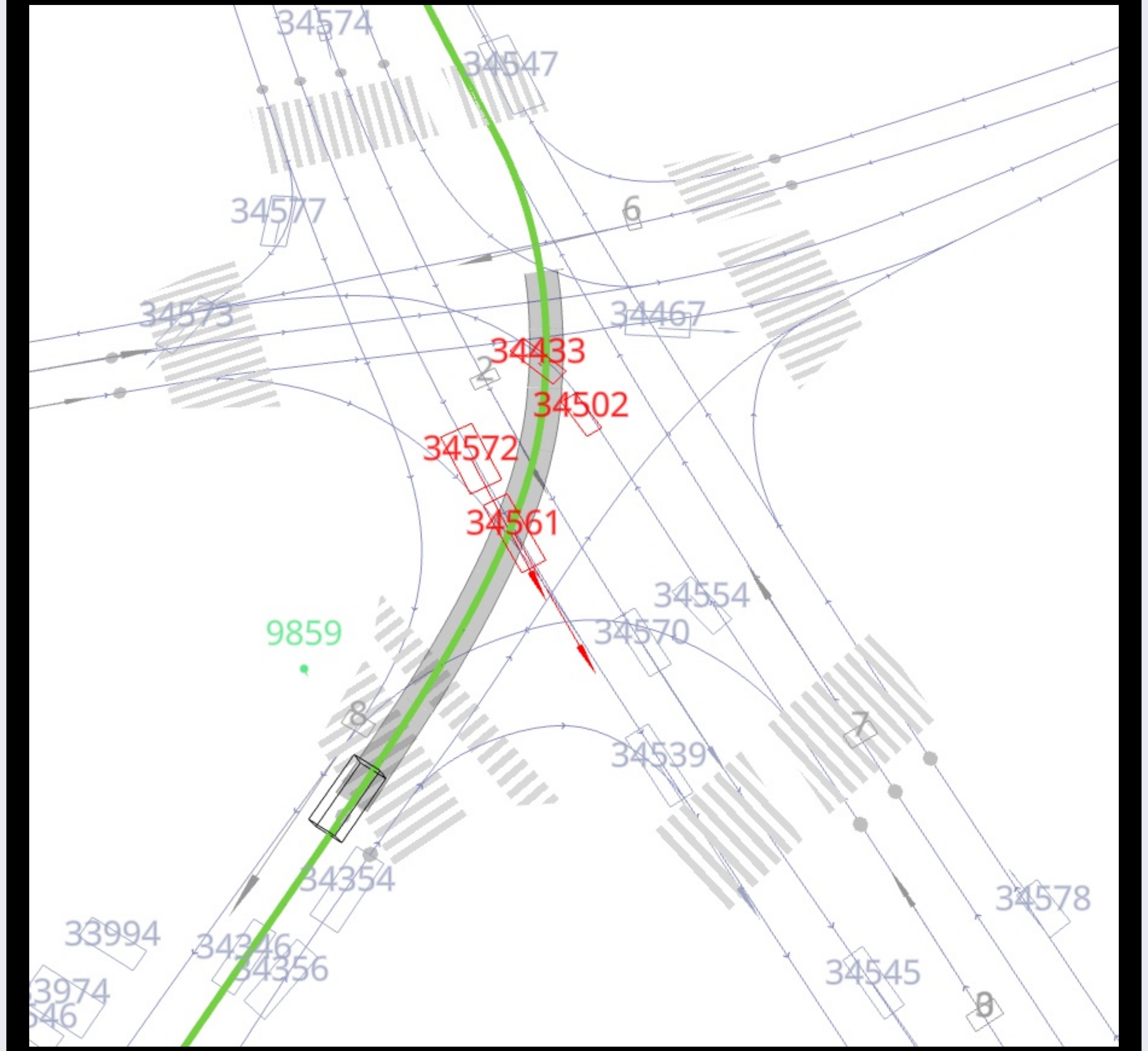
- Transformers at x100 Efficiency
- Efficient labeling by Auto Ground Truth

Transformers for Sensing State and Control

Input: images



Output: All objects & trajectory



STAT: Sparse Typed Attention

Vanilla transformer:
$n^2 d + d^2 n$

STAT:

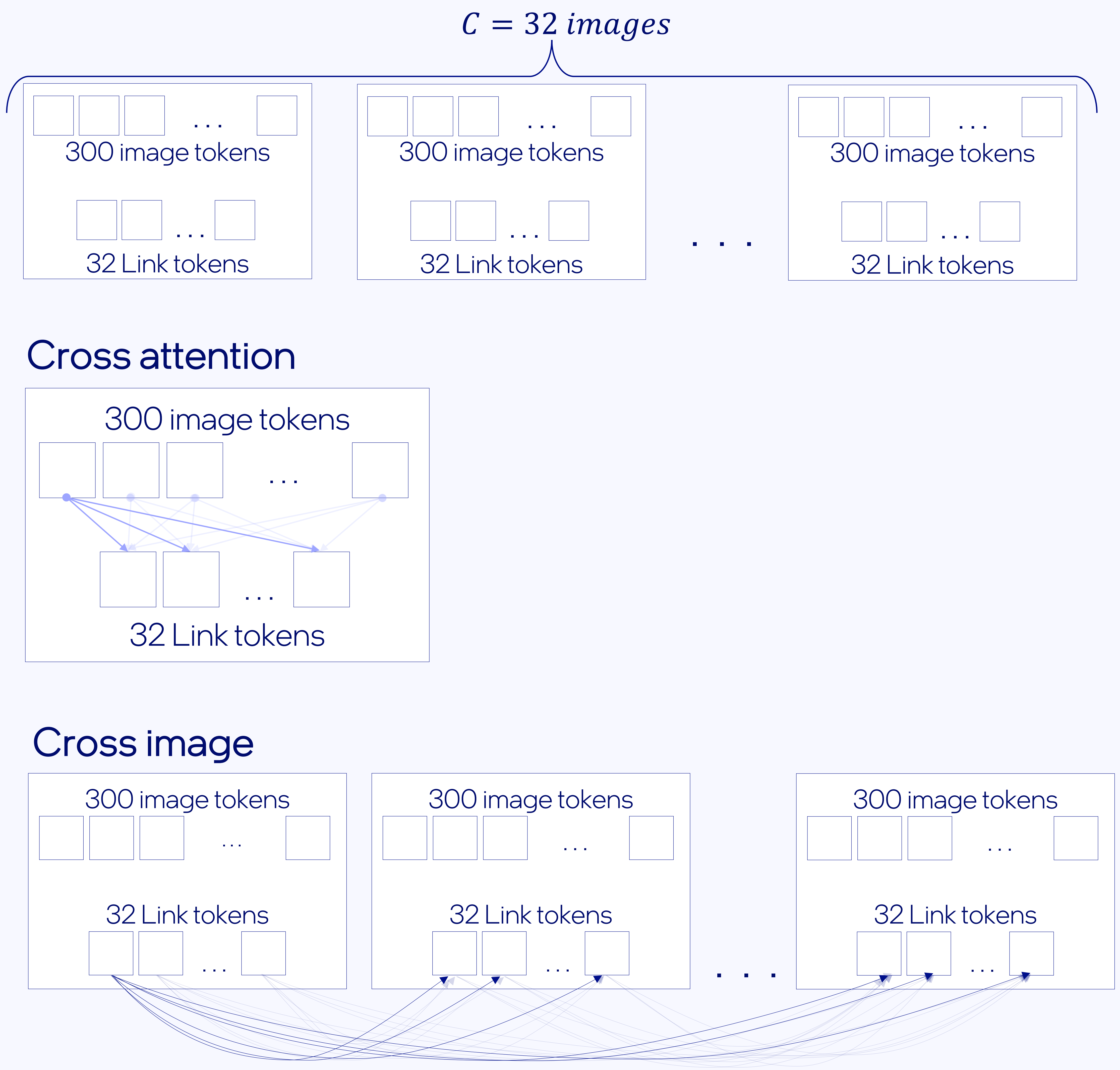
- **Token Types**: Each token has a "type"
- **Dimensionality**: of embeddings and self-reflection matrices may vary based on the token type.
- **Token Connectivity**: The connectivity between tokens is sparse and depends on their types
- **Link Tokens**: We add "link" tokens for controlling the connectivity
- **Inference Efficiency**: For our end-to-end object detection task, STAT is x100 faster at inference time and at the same time slightly improves performance

STAT: Sparse Typed Attention

Vanilla transformer: $n^2 d + \mathrm{d}^2 \mathrm{n}$

STAT Encoder for Object Detection:

- Token types:
    - Image tokens: recall, we have $C = 32$ images each with $N_p = 300$ "$pixels$", yielding 9600 image tokens
    - We add $N_L = 32$ "$Link$" tokens per image
- STAT Block:
    - Within each image, Cross Attention between the 300 image tokens and the 32 link tokens $(C * N_p * N_L * d)$
    - Across images, full self attention between all link tokens $(C * N_L)^2 d$
    - Compared to $\left(C * N_p\right)^2 d$ in vanilla transformers, we get a factor improvement of $(\frac{N_p}{N_L}) * \min(C, \frac{N_p}{N_L})$, which is approximately **x100 faster** in our case
- **Performance**: For our end-to-end object detection task, STAT is not only x100, but also improves performance (we enlarge the expressivity of the network while making it much faster at inference time)



Parallel Auto-Regressive (PAR)

We need to detect all objects in the scene: What is the order?

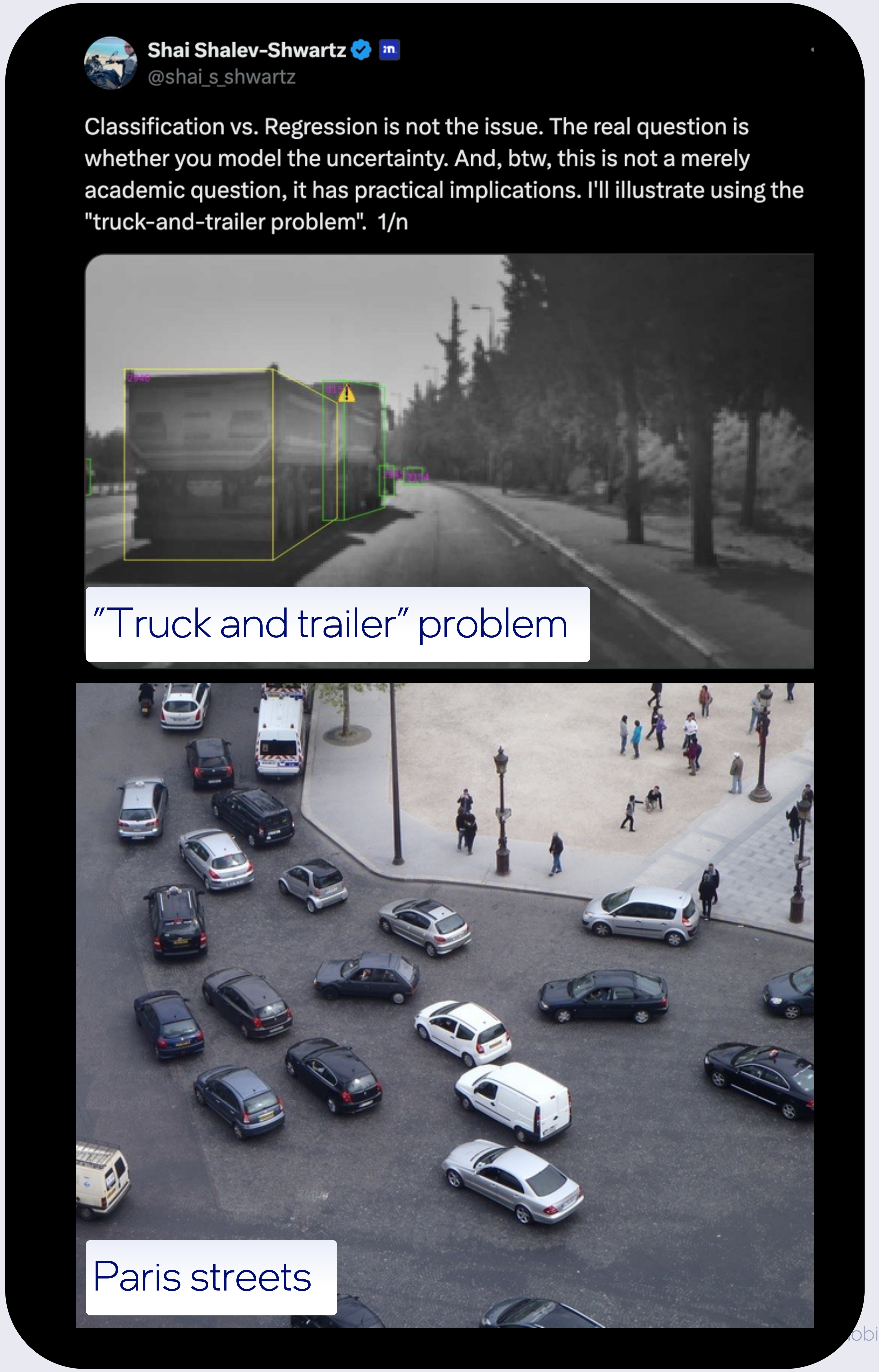
Auto-Regressive: It doesn't matter due to the chain rule !

Price of sequential decoding

- Sequential decoding is costly on all modern deep learning chips (due to IO)
- We added un-needed "fake uncertainty" (what is the order)

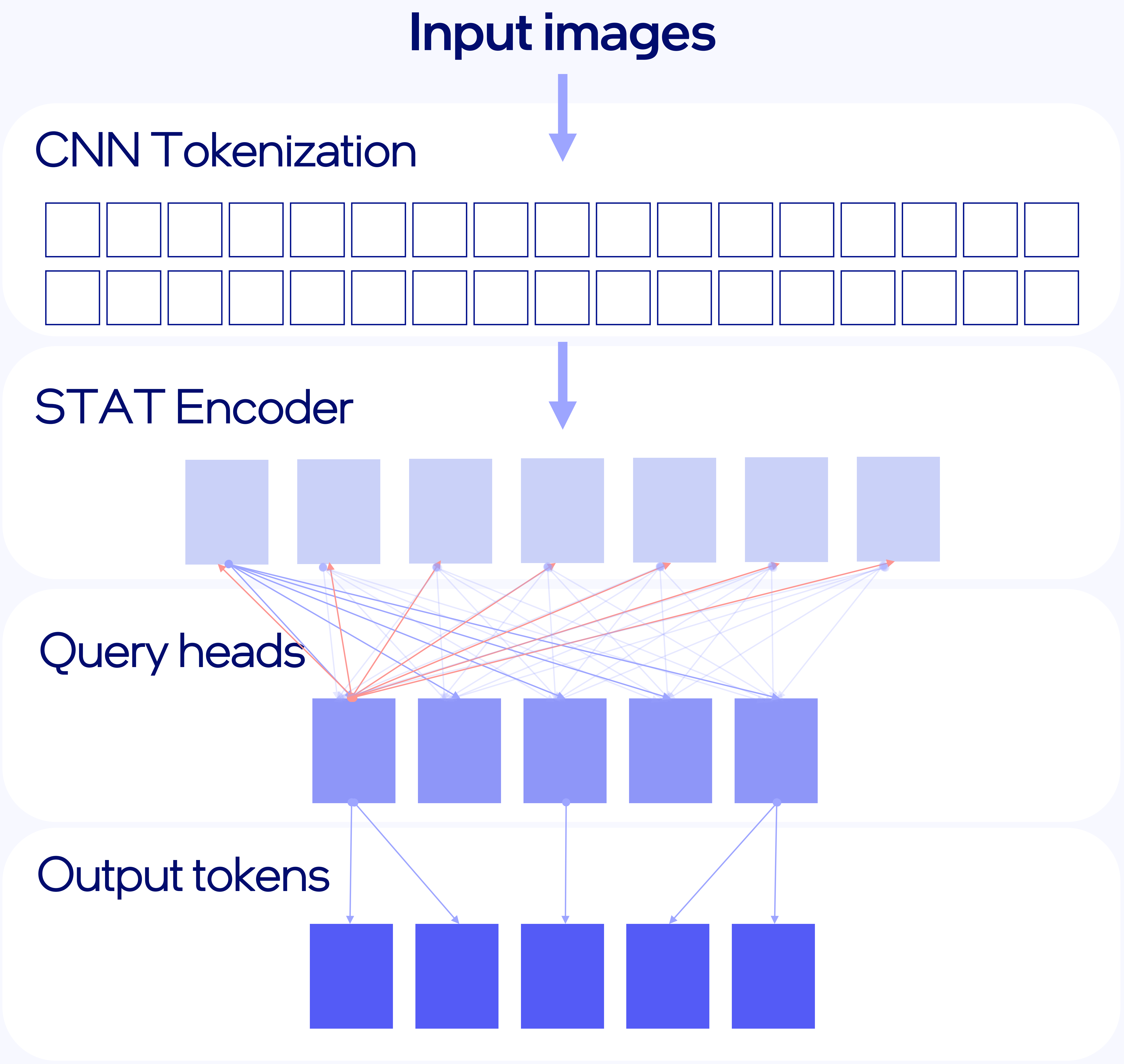
DeTR (DETection Transformer, Facebook AI, May 2020)

- Output all objects in parallel
- Hungarian matching to determine the relative order between the network's predictions and the order of the ground truth
- **Problem**: Doesn't deal well with true uncertainty
  - The "truck and trailer" problem
  - Streets which can be 1 or 2 lanes, etc.



Parallel Auto-Regressive (PAR)

- The decoder contains query heads which perform cross attention with the encoder's link tokens entirely in parallel
- Each query head outputs, auto-regressively, 0/1/2 objects (independently and in parallel to the other query heads)
- • • • • ▶ dealing only with "true uncertainties" and not with "fake uncertainties"



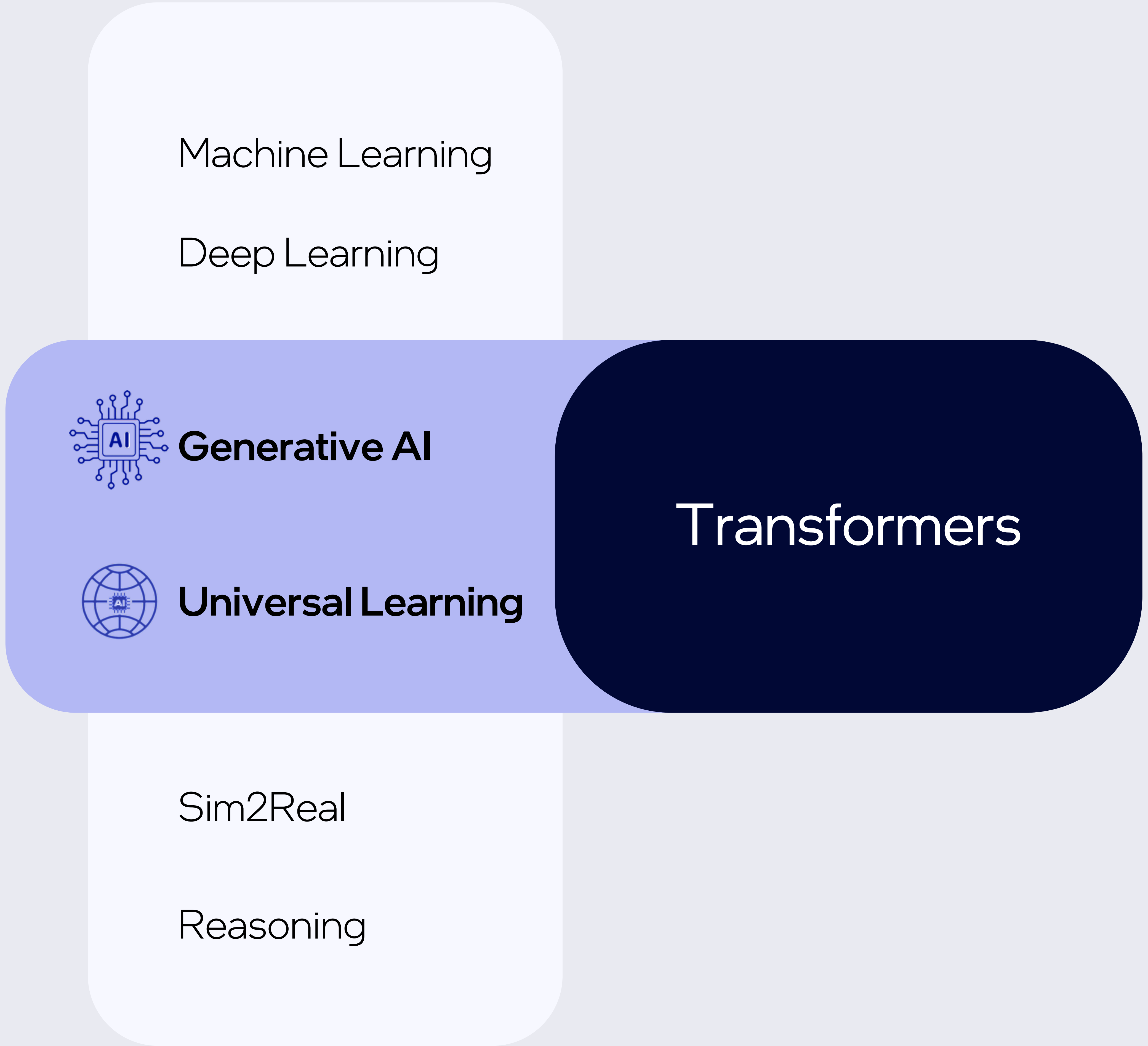
Intermediate Summary

Transformers revolutionized AI

- The good
  - Universal, generative, AI
- The bad
  - Can't separate "correct & rare" from "wrong & common"
  - Miss important abstractions
  - Questionable when very high accuracy is required
- The ugly
  - Brute force approach, unnecessarily expensive

Working smarter with transformers

- Using as one component within a CAIS
- STAT: x100 faster & better accuracy
- PAR: x10 faster & embrace uncertainty only when it is needed



Mobileye Extremely Efficient AI

- Transformers at x100 Efficiency
- Efficient labeling by Auto Ground Truth

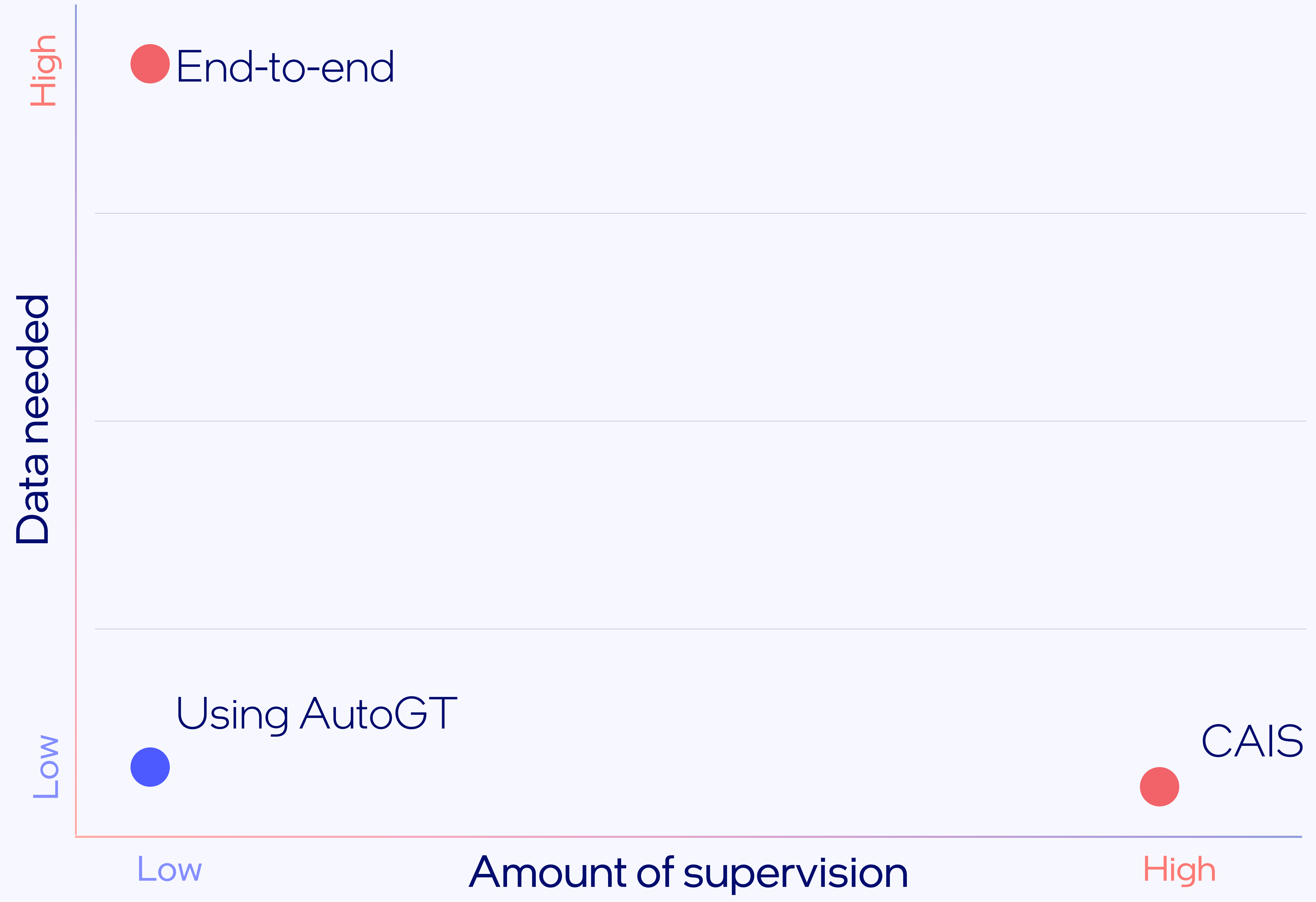
Automatic Ground Truth: CAIS vs. End-to-End

Compound AI System

- Injecting abstractions: Sensing State, RSS, PGF, etc.
- Need to label data: Normally does through supervised learning

End-to-end solution

- Much more data
- Unsupervised



Automatic Ground Truth: How to Reduce #Labels

Easier problem to solve

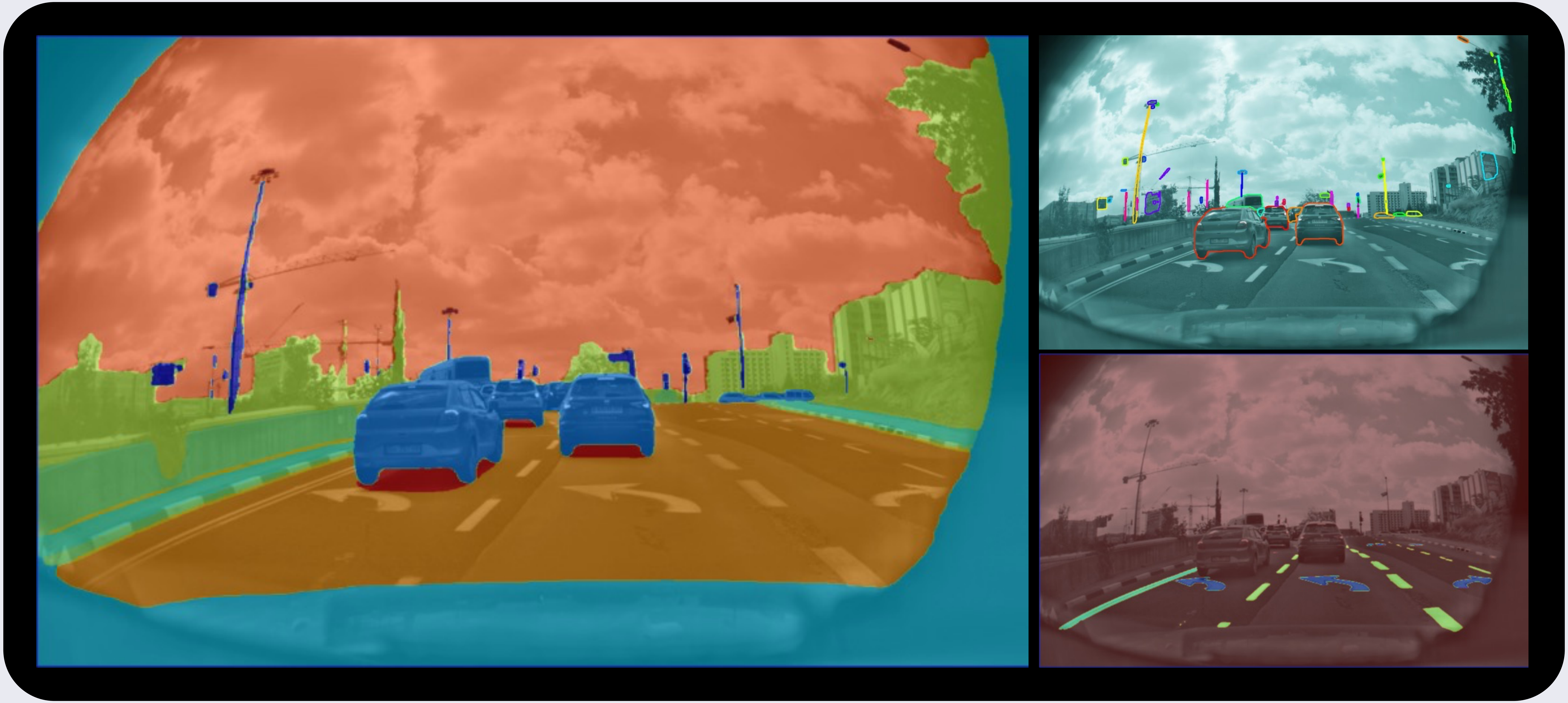
- Since the future is known
    - Kinematics become easier
    - Circumvent temporary occlusions
    - Can focus on short range + tracking
- Powerful (expensive) sensor (e.g., 360° Lidar)

Offline compute

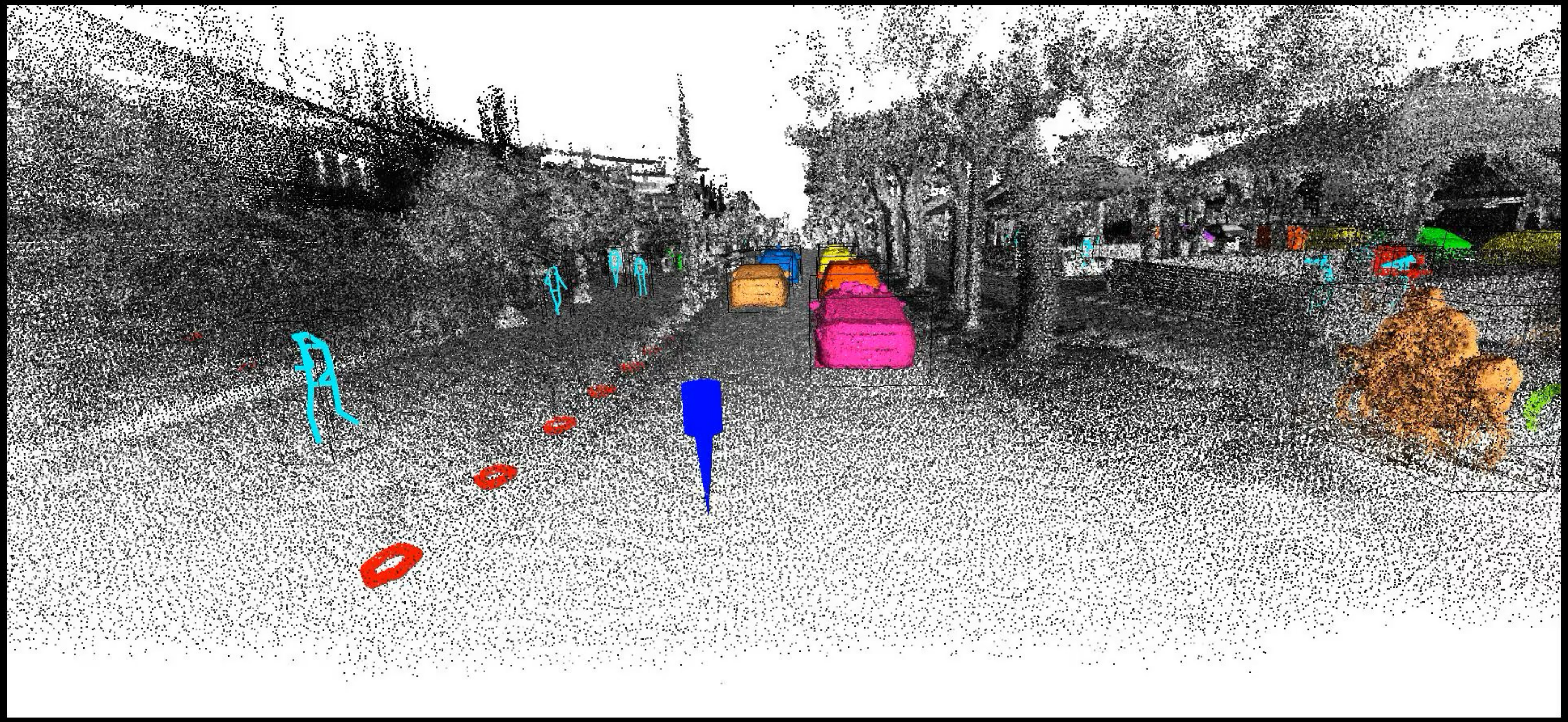
- Train foundation model on large unsupervised data
- Supervised fine tuning on a smaller number of labels

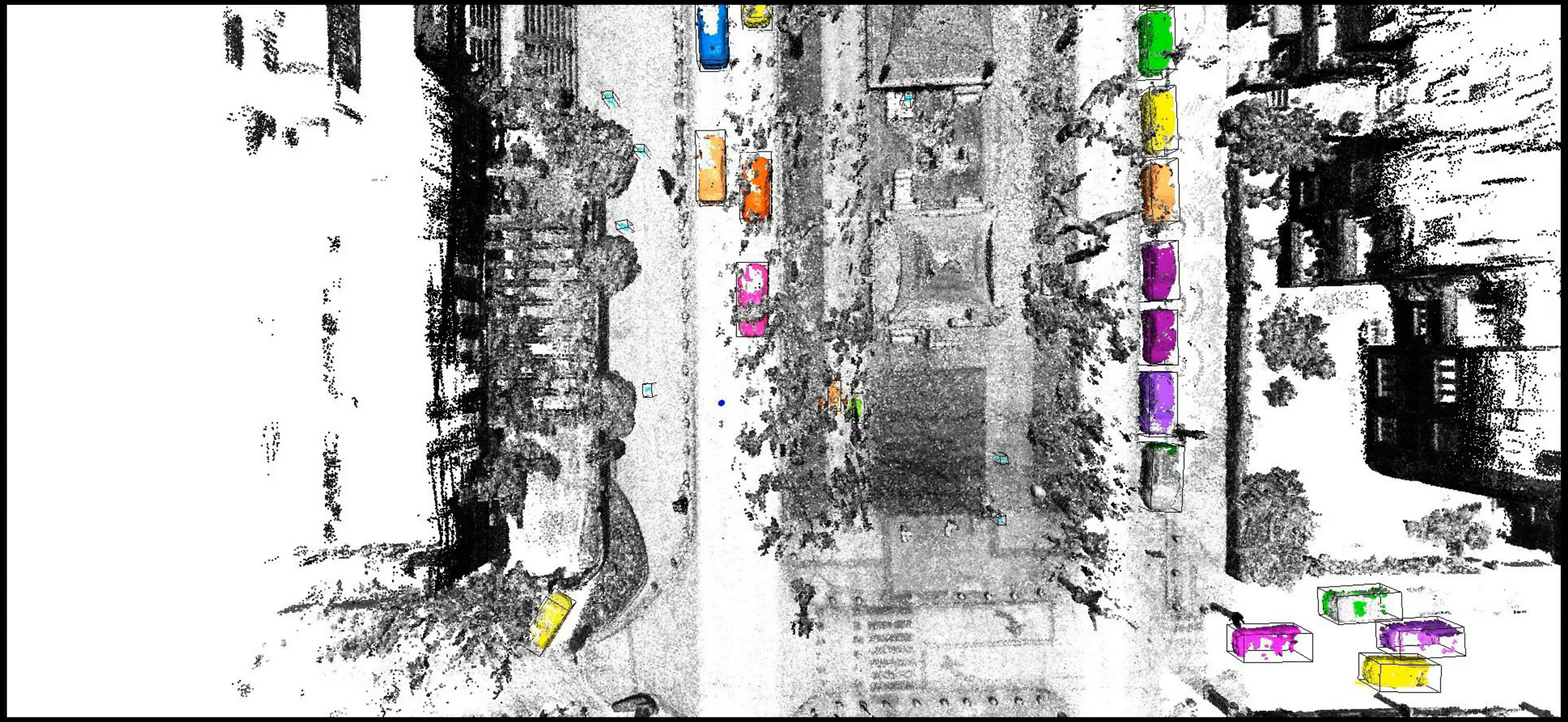
The future is known

Automatic Ground Truth: Foundation Model



Automatic Ground Truth Final Product





Safety Goals

Super-human MTBF

No ‘unreasonable risk’

- ‘No lapse of judgement’
- ‘No reproducible errors’
- ‘Identifiable errors’

The Boundary Between 'Reasonable' and 'Unreasonable'

Planning

The RSS model defines what is 'reasonable' to assume on the future actions of other road users

Hardware

FuSa standard requires

- No single point of failure
- When a component fails, the system should detect the failure and perform MRM based on functioning components

"AI Bugs"

SOTIF requires

- Hunting and fixing reproducible errors
- Be transparent on rare reproducible errors

Black Swans

- No single point of failure – each system failure must involve a failure of at least two sub-systems
- Sub-systems include different sensor modalities and/or algorithmic redundancies
- How to fuse systems in a safe manner: PGF (read the paper)
- Super-human MTBF

Examples of PGF as Part of Our Architecture

Physical Objects and Ego Motion

Primary – 3 low-level sub-systems, fused by GNN, fed into an RSS-based driving policy module

Guardian – Approves P if its command adheres with RSS according to 2oo3 individual sub-systems

Fallback - If 2oo3 state we violate RSS, apply minimal braking, else apply E2E policy network, while limiting its output to only allow mild braking

Lane Semantic System

Primary – Low-level fusion of map and camera data by a Generative Deep Network called 'RoadX'

Guardian - 'Lane validator', Discriminative DNN. Input: proposed lane and driving commands. Output: A binary decision (approve / disapprove the lane/trajectory)

Fallback - Drive the car according to an end-to-end deep network. Input: camera data. Outputs: driving commands, and geometry of the most relevant lane

Summary

Mobileye Extremely Efficient AI

- Transformers at x100 efficiency
- Efficient labeling by Auto Ground Truth
- Safety Goals

mobileye™

INNOVATE 2024

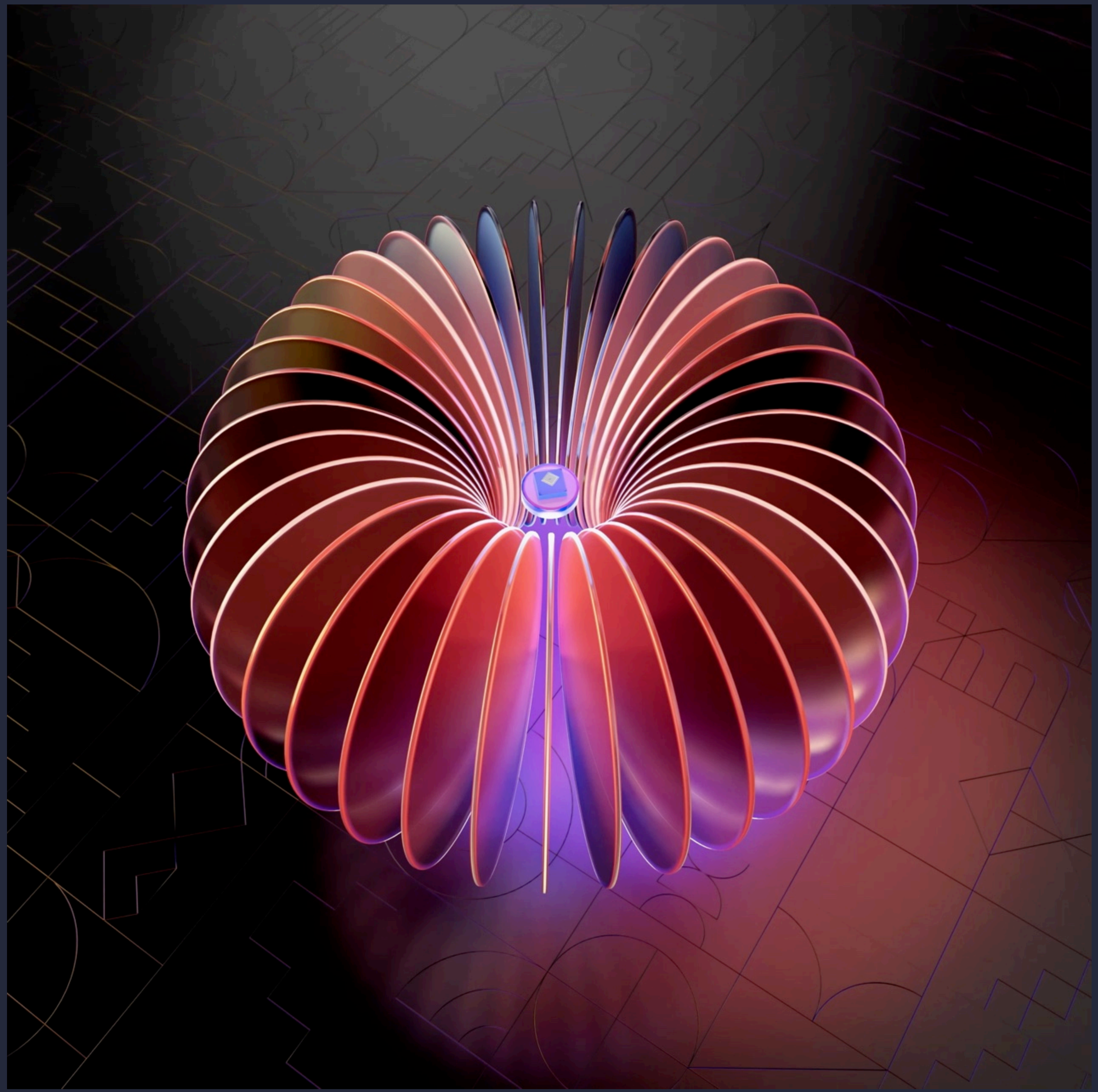
Defining Success in a Fully Autonomous Driving System

Prof. Amnon Shashua, CEO
Prof. Shai Shalev-Schwartz, CTO

mobileye

INNOVATE 2024

Mobileye's Growth Story



Nimrod Nehushtan

EVP Strategy & Business Development

December 2024

Forward-Looking Statements

Mobileye's business outlook, guidance and other statements in this presentation that are not statements of historical fact, including statements about our beliefs and expectations, are forward-looking statements and should be evaluated as such. Forward-looking statements include information concerning possible or assumed future results of operations, including revenue and expense forecasts, our customer pipeline, industry and market forecasts, request-for-quote ("RFQ") order estimates, and descriptions of our business plan and strategies. These statements often include words such as "anticipate," "expect," "suggests," "plan," "believe," "intend," "estimates," "targets," "projects," "should," "could," "would," "may," "will," "forecast," or the negative of these terms, and other similar expressions, although not all forward-looking statements contain these words. We base these forward-looking statements or projections on our current expectations, plans and assumptions that we have made in light of our experience in the industry, as well as our perceptions of historical trends, current conditions, expected future developments and other factors we believe are appropriate under the circumstances and at such time. You should understand that these statements are not guarantees of performance or results. The forward-looking statements and projections are subject to and involve risks, uncertainties and assumptions and you should not place undue reliance on these forward- looking statements or projections. Although we believe that these forward-looking statements and projections are based on reasonable assumptions at the time they are made, you should be aware that many factors could affect our actual financial results or results of operations and could cause actual results to differ materially from those expressed in the forward-looking statements and projections. Important factors that may materially affect such forward-looking statements and projections include the following: future business, social and environmental performance, goals and measures; our anticipated growth prospects and trends in markets and industries relevant to our business; business and investment plans; expectations about our ability to maintain or enhance our leadership position in the markets in which we participate; future consumer demand and behavior; inventory utilization by customers; our ability to effectively compete in the markets in which we operate; future products and technology, and the expected availability and benefits of such products and technology; changes in regulation and trade policy, including increased tariffs, in regions in which we operate, including the US, Europe and China; development of regulatory frameworks for current and future technology; projected cost and pricing trends; future production capacity and product supply; potential future benefits and competitive advantages associated with our technologies and architecture and the data we have accumulated; the future purchase, use and availability of products, components and services supplied by third parties, including third-party IP and manufacturing services; uncertain events or assumptions, including statements relating to our estimated vehicle production and market opportunity, potential production volumes associated with design wins and other characterizations of future events or circumstances; effects of the COVID-19 pandemic and responses to future pandemics; adverse conditions in Israel, including as a result of war and geopolitical conflict, which may affect our operations and may limit our ability to produce and sell our solutions; any disruption in our operations by the obligations of our personnel to perform military service as a result of current or future military actions involving Israel; availability, uses, sufficiency and cost of capital and capital resources, including expected returns to stockholders such as dividends, and the expected timing of future dividends; tax- and accounting-related expectations. The estimates included herein are based on projections of future production volumes that were provided by our current and prospective OEMs at the time of sourcing the design wins for the models related to those design wins. For the purpose of these estimates, we estimated sales prices based on our management's estimates for the applicable product bundles and periods. Achieving design wins is not a guarantee of revenue, and our sales may not correlate with the achievement of additional design wins. Moreover, our pricing estimates are made at the time of a request for quotation by an OEM (in the case of estimates related to contracted customers), so that worsening market or other conditions between the time of a request for quotation and an order for our solutions may require us to sell our solutions for a lower price than we initial expected. These estimates may deviate from actual production volumes and sale prices (which may be higher or lower than the estimates) and the amounts included for prospective but uncontracted production volumes may never be achieved. Accordingly, these estimations are subject to and involve risks, uncertainties and assumptions and you should not place undue reliance on these forward-looking statements or projections. Detailed information regarding these and other factors that could affect Mobileye's business and results is included in Mobileye's SEC filings, including the company's Annual Report on Form 10-K for the year ended December 30, 2023, particularly in the section entitled "Item 1A. Risk Factors". Copies of these filings may be obtained by visiting our Investor Relations website at ir.mobileye.com or the SEC's website at www.sec.gov.

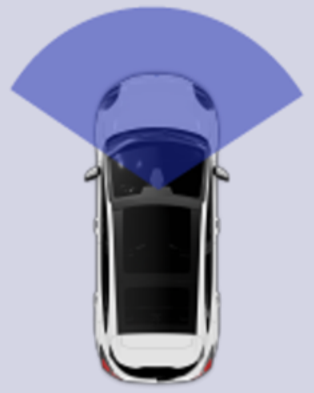
Mobileye's Vision: Solving Autonomy and Step-Change in Road Safety*

Moving from Hands-On / Eyes-On to Hands-off / Eyes-off and No-driver

ADAS

EYES-ON / HANDS-ON

Front Camera (1V)



- Driver Assist safety features
- Cloud Enhancement with REM

Surround ADAS (6V5R)

- ENCAP 2028+ 5 Star
- Hands Off on Highways

Gen 1: 1xEQ6H (2026)

SuperVision™

HANDS-OFF / EYES-ON

- "Vision Zero" - comprehensive safety covered by full-surround sensing.
- Hands Off, point-to-point navigation.

Surround Camera (optional radar)

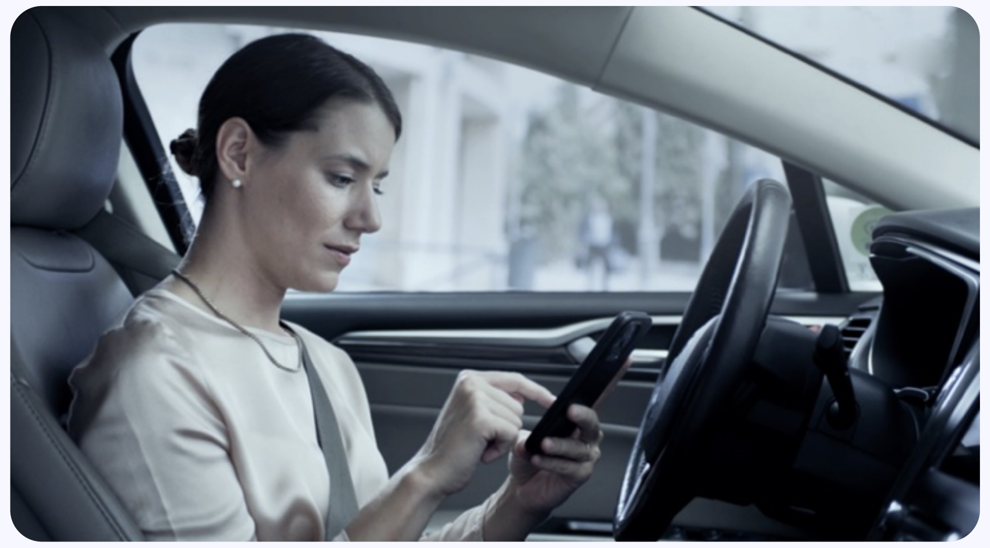
Gen 1: SV52 (2022)

Gen 2: SV62 (2026)

Gen 3: SV71

Chauffeur™

EYES-OFF



- Giving back time to the driver.
- Safer than a human driver.
- Gradual Eyes Off ODD expansion.

Surround Camera + Radar + Lidar (imaging radar for extended ODD)

Gen 1: CH63 (2027)

Gen 2: CH72

Drive™

NO DRIVER IN THE CAR

- Enables **Driverless** business models for optimal utilization of the vehicle as a resource

Surround Camera + Imaging Radar + Lidar

Gen 1: DR64 (2027)

Gen 2: DR72

*Availability and performance subject to products' and vehicles' specifications and manual, ODD and local law

Mobileye's Growth Story:
Base ADAS

Substantial 2023-2024 progress lays foundation for strong future growth

Progress / Tailwinds

- ✓ **Won 95%+ of RFQs issued by Top 10 customer base** during 2023-2024, extending our core ADAS position with visibility into the **2030s.**
- ✓ **Winning early in emerging markets,** including India (Mahindra, Tata).
- ✓ **No global competitor emerged** with notable design wins.
- ✓ **Continued regulatory push for higher performance,** fitting our strengths:
  - FVMSS-127 regulation in the US
  - ENCAP 2028 in EU
- ✓ **China – Emergence of Tariffs & Regulation in the west:**
  - Restrictions on Chinese technologies in the US (and potentially EU)
  - Heightened Tariffs in US (100%) and EU (~30%) hinders C-OEM's growth

Solidifying Mobileye's position as global leader in core ADAS tech

Headwinds

- China – Emergence of a "race to the bottom" price dynamic due to:

1. Lack of performance regulation and oversight.
2. Government push to source domestic products ("China for China")
3. Too many vehicle brands leads to overall negative pricing environment.

- Decline in our core customers' sales volume due to:

1. China Market Shifts – Foreign OEMs are rapidly losing market share in China
2. Volume Stagnation in Developed Markets.

Uncertainty in near-term volumes until China-driven trends stabilize

Mobileye's Growth Story: Advanced Products

Substantial 2023-2024 progress lays foundation for strong future growth

Progress / Tailwinds

- ✓ Winning 1st SuperVision, Chauffeur & Drive ™ programs with a global OEM (VWG)
- ✓ Establishing engagements / RFQs with 9 out of 10 biggest global customers
- ✓ Emergence of a new Mid-Trim category (Surround ADAS) which fits our strengths
- ✓ Launching Zeekr NZP in production in China, evolving from a demo to a product
- ✓ No direct global competitor with equivalent value proposition and performance emerged

Solidifying OEM's perception that Mobileye is the global leader in Hands-Off (and Eyes-Off) products

Headwinds

- Temporary delay (mid-'23 to mid-'24) in decision making among global OEMs on next-gen products, driven by:

1. EV / ICE re-planning.
2. China market shifts
3. AI & Technology uncertainties

- China:

1. Success of Chinese OEMs in developing in-house Hands-Off products.
2. Acceleration of China for China policies, prioritizing domestic solutions.

- **Delays in decision making pushed the timing of advanced products**
- **China competition reduced potential for China domestic market growth**

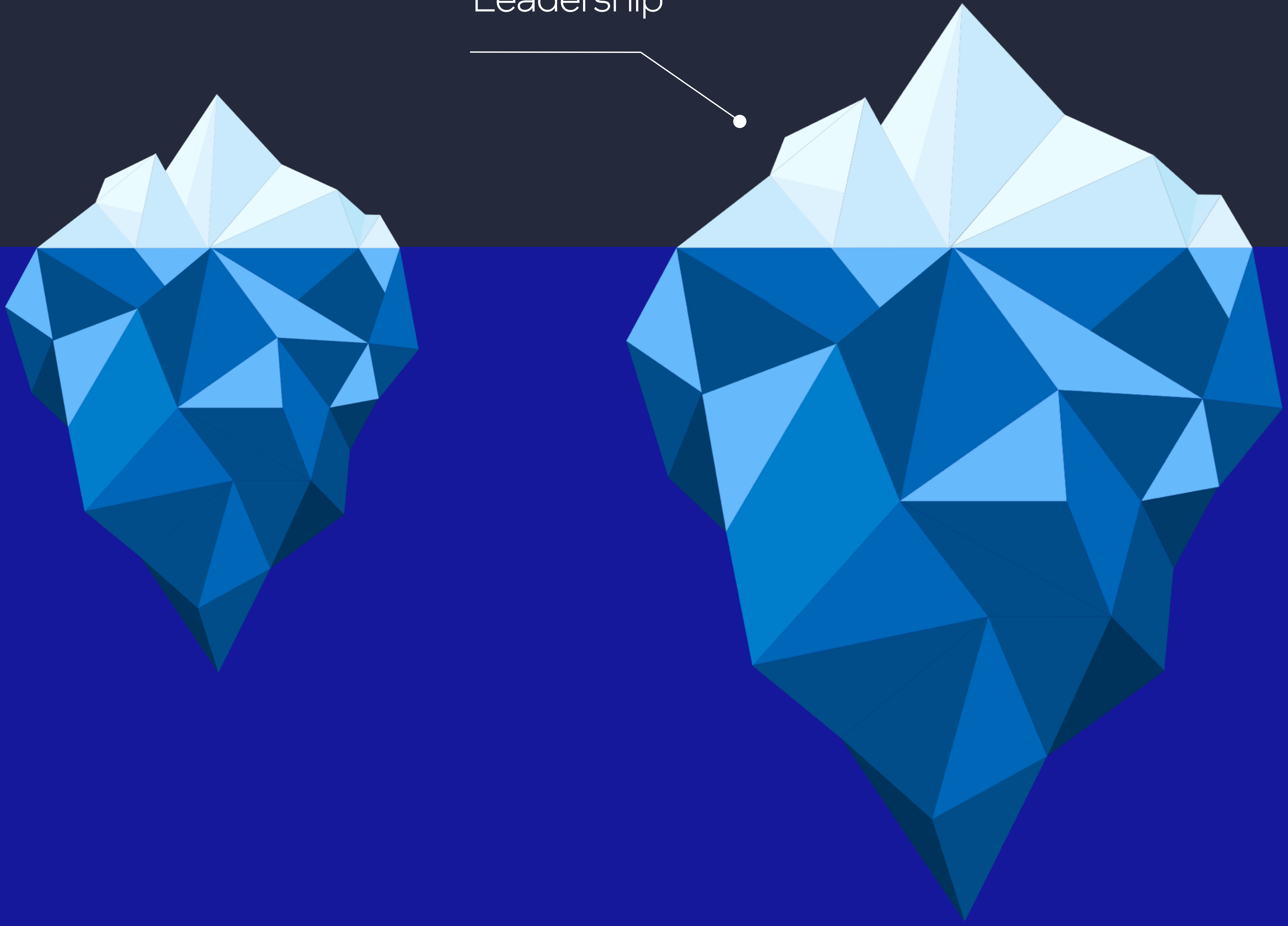
Market Evolution & Business Development Progress

Product Segments Evolution

What is the OEM vision for ADAS / AD product segmentation in the near-to-mid-term?

	Today		2026+		
Segment	**Standard**	**Premium**	**Minimal**	**Mid**	**Premium**
Key Value Propoisition	Regulation-Compliant ADAS Features	In-lane Hands Off on Highways (limited ODD) Parking Assist & Visualization	Regulation-Compliant ADAS Features	5-StarSafety Rating Hands Off on Highways (broad ODD)	Point-to-point Hands Off Everywhere Eyes Off on Highways Parking Valet Features
Architecture	 Front Camera (optional radar)	No Standard Today Multi-Supplier, Multi-ECU	 Front Camera (optional radar)	 Surround Camera + Radar	 Hands Off - 11V Eyes Off – 11V + Active Sensors
OEM Total System Cost (ECU + Sensors)	$100-$150	$500-$1,500	$100-$150	$700-$800	$2,000 (for Eyes On, Hands Off) $5,000 (for Eyes Off, Hands Off)
Additional Desires			Cost Optimized for Emerging Markets + High Performance for Developed Markets	Architecture simplification through ECU Consolidation (Driving, Parking, DMS)	

What Are the Core Principles OEMs Look for?



Clear Path to Cost-Efficient Autonomy

- State-of-the-art technology
- Optimized system cost

What Are the Core Principles OEMs Look for?

Technical and Cost Leadership

Proven Track Record of Execution, Partnership, Speed, Quality, and Ability to Innovate

Clear Path to Cost-Efficient Autonomy

- State-of-the-art technology
- Optimized system cost

Trusted, Long-Term Partner

- Fastest **time to market**
- Execution proficiency
- Trusted **functional performance**
- Controllability
- Modular portfolio **with segments synergies**

Key OEM Decision Criteria: How Do Competitors Stack Up?

	Fastest Time to Market	Optimized System Cost	Execution Proficiency	State-of-the-art Technology	Trusted Functional Performance	Controllability	Modularity
Legacy Tier 1s	○	?	○	○	○	●	●
Silicon Actors	○	?	○	○	○	●	◐
Start-Ups	○	?	○	?	○	?	?
mobileye	●	●	●	●	●	◐	●

Design Win Process Overview

What are the key steps in OEM's technology partner selection process?

	Interest →	Recurring Engagement →	Due Diligence →	Negotiations & Decision Making →	Nominated
Key questions	• Why do we need such a product?	• What are the system requirements? • What will be required budget to get to SOP? • What will be technically required to launch? • What is the value proposition to drivers?	• What is the exact vehicle architecture? • What is the project execution plan? • What are the OEM-specific requirements? • What is the validation & safety plan? • What is the RASIC split between all parties? • What is the maturity of core technologies?	• Did we reach a vaild business case? • Did we agree on commercial / legal terms?	
Key outcomes	• Green light to start evaluation.	• Approved technical & commercial feasibility	• Technical Solution Rating (A/B/C/Disqualified) • Execution Risk Rating (A/B/C/Disqualified) • Commerical Rating (A/B/C/Disqualified)	• Signed Contract (or no blockers) • Approved Budget for project development • Approved Business Case	Project Kick-Off , Execution Starts
Key Activities	• Demos (1-2 hours of freedriving) • Proposition presentation	• Demos (multiple days, extended group) • Workshops	• RFI • RFQ • Prototype Build on OEM vehicle • Global Testing Campaigns		
Duration	~1 Months	~2-3 Months	~7-9 Months	~2-3 Months	
Mobileye's Investment	Low	Moderate	High (allocating dedicated teams, answering RFQ, building prototypes)		
OEM's Commitment	Low (investing 1-2 days for touch base)		High (allocating dedicated teams, allocating M USD for evaluation)		

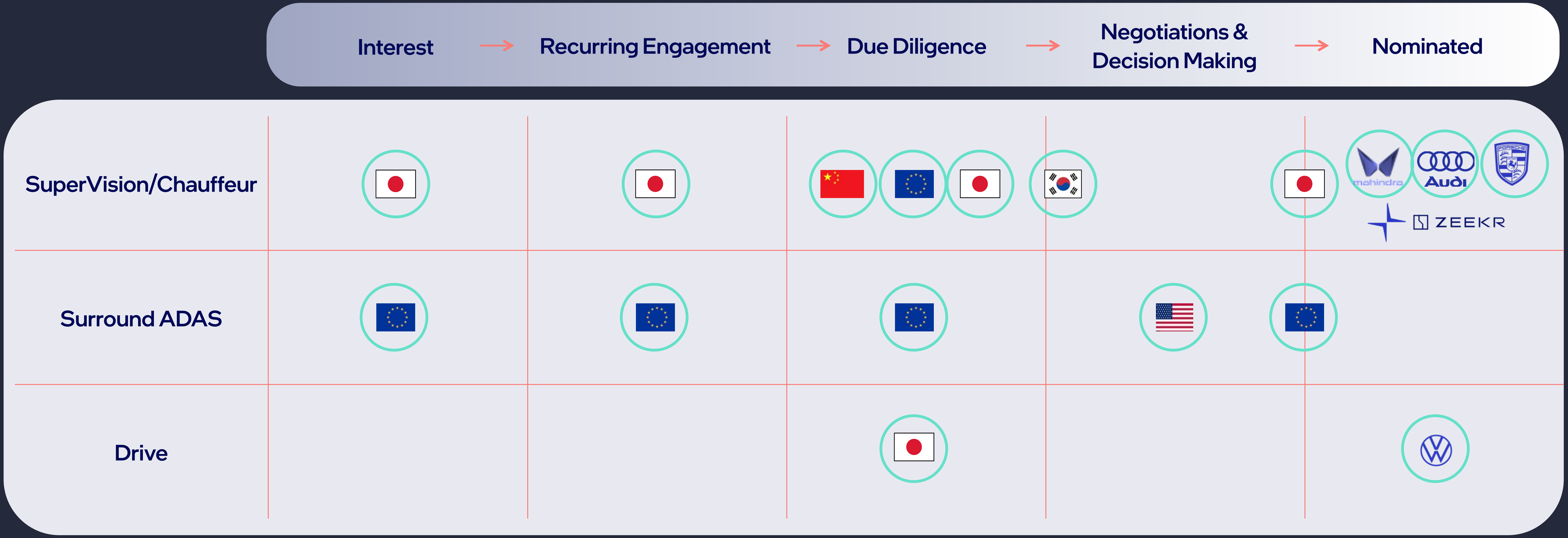
Business Development Engagement Status – December ‘23

Where were we last year?

	Interest →	Recurring Engagement →	Due Diligence →	Negotiations & Decision Making →	Nominated
SuperVision/Chauffeur				Audi	ZEEKR
Surround ADAS					
Drive					

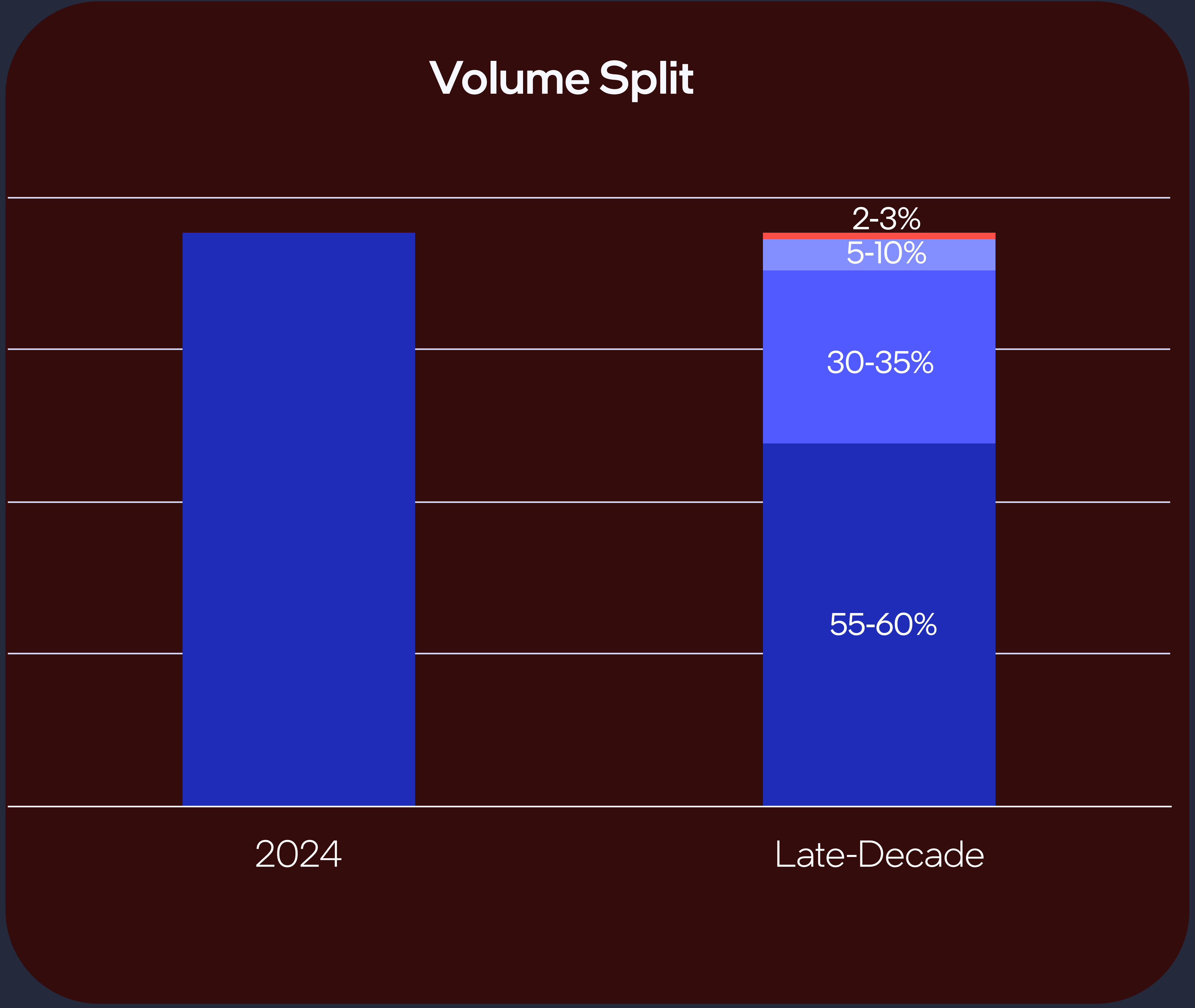
Business Development Engagement Status – December '24

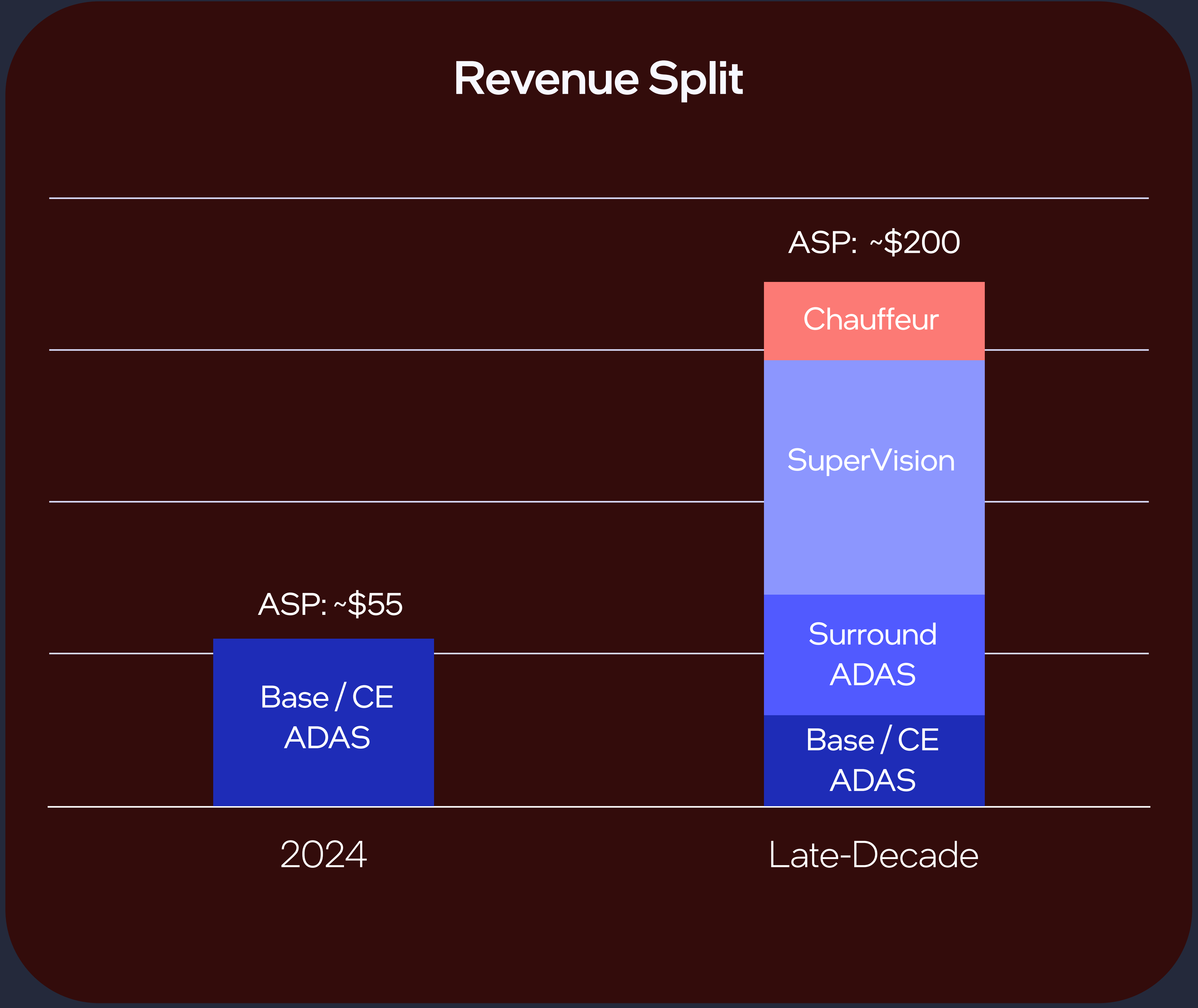
Where are we today (highlighted in green are positive progressions through the stages)



Product Segmentation Impact on Future Revenue

Illustrative Large OEM Case study – Based on design win projections





Base / CE ADAS | Surround ADAS | SuperVision | Chauffeur

Mobileye's Growth Story

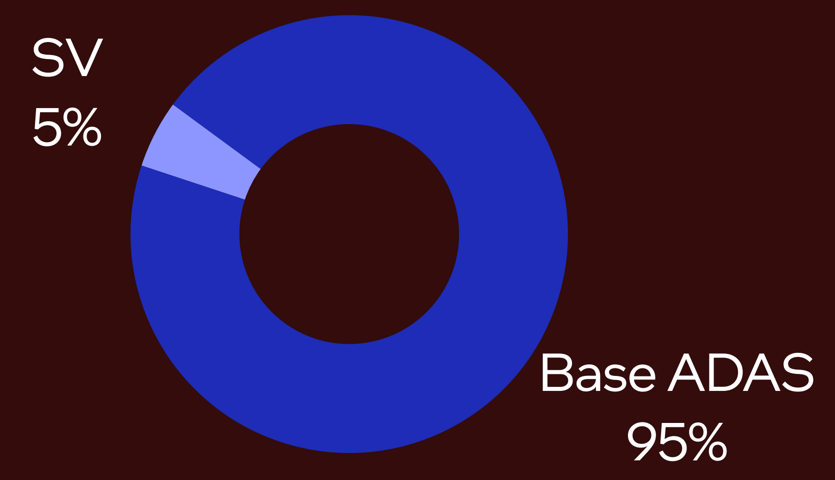
Mobileye's long-term growth story unfolds in three stages, each defined by its strategic objectives, growth drivers, and revenue distribution

Forecasted revenue figures below are estimates and based on several assumptions, including pricing and volume, and many factors may cause actual revenue to differ materially.

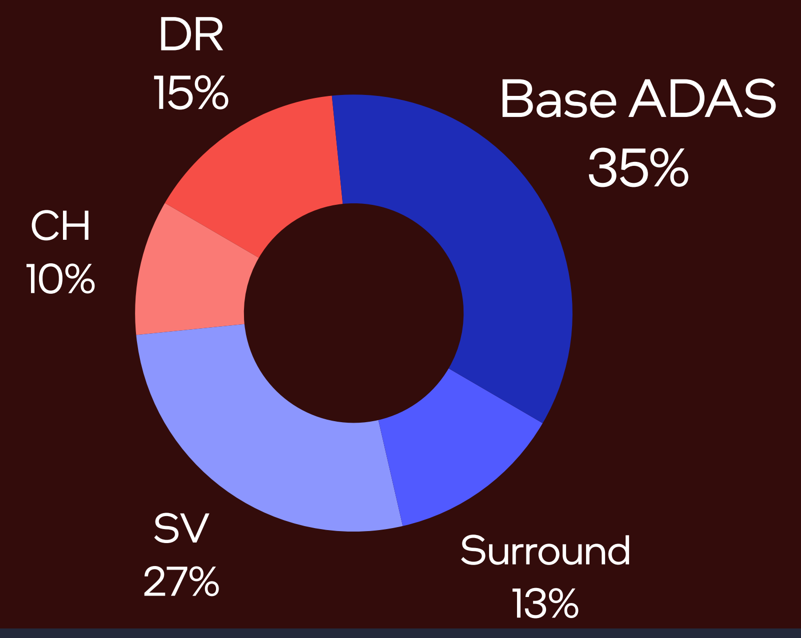
	Stage 1	Stage 2	Stage 3
Strategic Objectives	1. Expand Business & Customer Base ▪ Deepen relationship with existing OEMs with new products ▪ Expand customer base into new OEMs. 2. Develop EQ6 & EQ7 Product Families with state-of-the-art AI. 3. Maintain healthy profitability	1. Achieve scalable Eyes-Off/Driverless technologies and products. 2. Launch Surround ADAS, SuperVision programs simultaneously. 3. Launch EQ7 to further improve price/perf. superiority.	Capitalize on leadership position in "Driverless, Everywhere" technology
Primary Growth Drivers	1. Returning to stable inventory levels (affecting '25 only) 2. Organic growth in ADAS penetration rates (ADAS volume growing faster than Top 10 OEM production growth)	1. Scaling Surround ADAS, SuperVision programs 2. Launching Eyes Off / No Driver Products 3. Higher content base ADAS sales due to regulation 4. REM recurring license fees from EQ6H products 5. Winning ADAS programs with new customers 6. Organic growth in ADAS take rates	1. Scaling Eyes Off & Driverless Products 2. Surround ADAS as standard fit for volume cars in developed countries.

Primary Revenue Sources

Stage 1:



Stage 2:



Stage 3: Eyes Off & Driverless Products.

Mobileye's Growth Story

The table below outlines the current volume pipeline and potential opportunities across all product ramps:

Unprecedented Volume and Revenue Potential

	Product	ASP	Current Booked Future Volume (units)	Current and Advanced Engagement OEMs	Incremental Advanced Engagement RFQ Volume (units)
Base ADAS	Eyes On ADAS (2012+)	~$50	>250 M (40% won in '23-'24)	All Top 10 customers plus several new customers	~80-90 M
Hands Off	Surround ADAS (2026+)	~$150-$200	-	**4** ~21% of global volumes	~25 M
Hands Off	SuperVision (2022+)	~$1,250-$1,500	~2-3 M (70% won in '23-'24)	**8** ~33% of global volumes	~8-16 M
Eyes Off / No Driver	Chauffeur (2027+)	$2,500-$3,000 (+ imaging radar)	~500,000 (100% won in '23-'24)	**2** ~5% of global volumes	~1-3 M
Eyes Off / No Driver	Drive (2027+)	~$50,000	~12,000 (100% won in 23-24')	**2** ~20% of global volumes	10,000-100,000

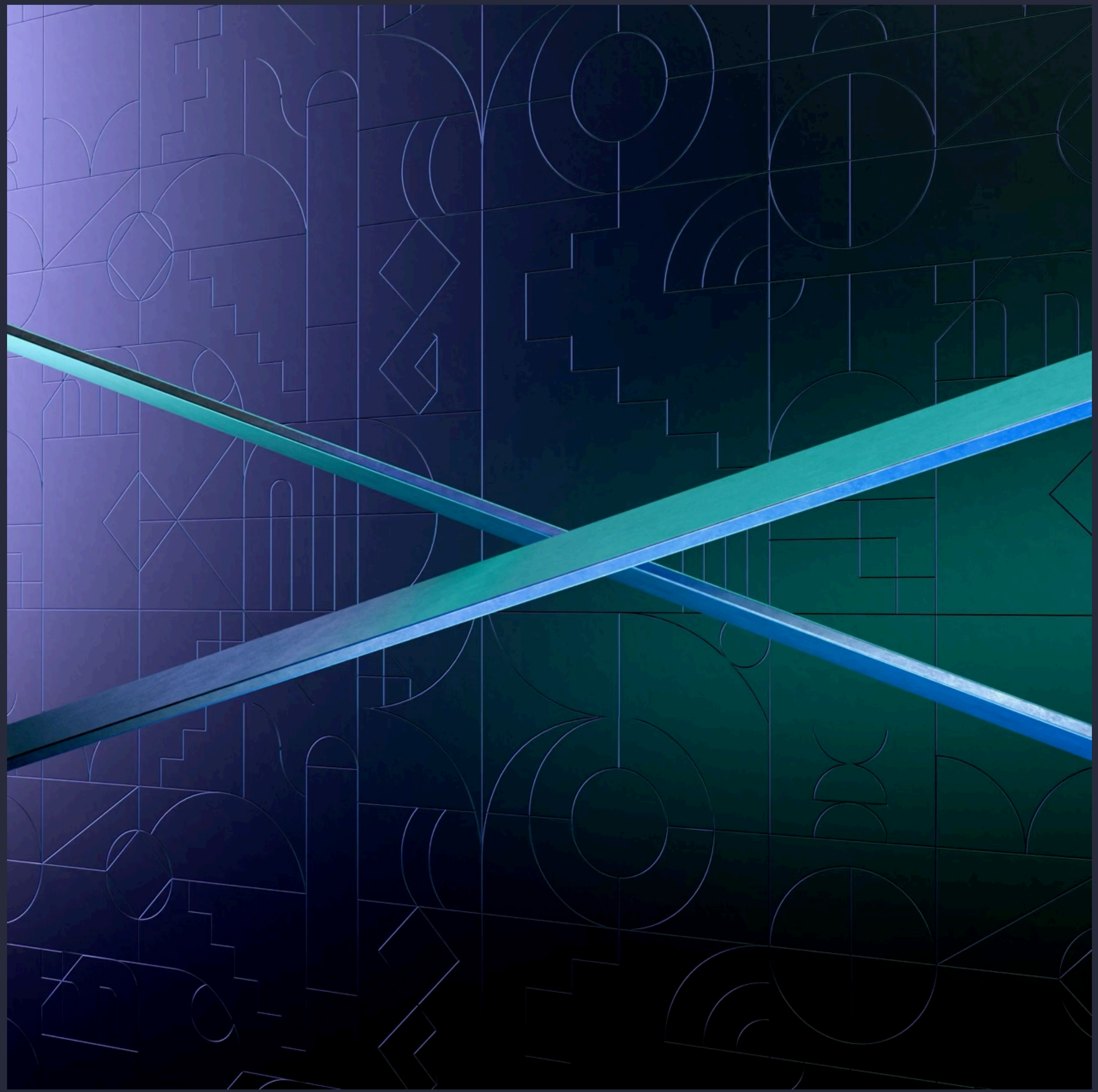
*Future volumes represent estimated volumes based on projections of future production volumes provided by our current and prospective OEMs at the time of sourcing the design wins for the models related to those design wins. See the disclaimer under Forward Looking Statement of this presentation for important limitations applicable to these estimates.

Thank You.

mobileye

INNOVATE 2024

Finance Update



Moran Shemesh Rojansky

Chief Financial Officer

Forward-Looking Statements

Mobileye's business outlook, guidance and other statements in this presentation that are not statements of historical fact, including statements about our beliefs and expectations, are forward-looking statements and should be evaluated as such. Forward-looking statements include information concerning possible or assumed future results of operations, including revenue and expense forecasts, our customer pipeline, industry and market forecasts, request-for-quote ("RFQ") order estimates, and descriptions of our business plan and strategies. These statements often include words such as "anticipate," "expect," "suggests," "plan," "believe," "intend," "estimates," "targets," "projects," "should," "could," "would," "may," "will," "forecast," or the negative of these terms, and other similar expressions, although not all forward-looking statements contain these words. We base these forward-looking statements or projections on our current expectations, plans and assumptions that we have made in light of our experience in the industry, as well as our perceptions of historical trends, current conditions, expected future developments and other factors we believe are appropriate under the circumstances and at such time. You should understand that these statements are not guarantees of performance or results. The forward-looking statements and projections are subject to and involve risks, uncertainties and assumptions and you should not place undue reliance on these forward- looking statements or projections. Although we believe that these forward-looking statements and projections are based on reasonable assumptions at the time they are made, you should be aware that many factors could affect our actual financial results or results of operations and could cause actual results to differ materially from those expressed in the forward-looking statements and projections. Important factors that may materially affect such forward-looking statements and projections include the following: future business, social and environmental performance, goals and measures; our anticipated growth prospects and trends in markets and industries relevant to our business; business and investment plans; expectations about our ability to maintain or enhance our leadership position in the markets in which we participate; future consumer demand and behavior; inventory utilization by customers; our ability to effectively compete in the markets in which we operate; future products and technology, and the expected availability and benefits of such products and technology; changes in regulation and trade policy, including increased tariffs, in regions in which we operate, including the US, Europe and China; development of regulatory frameworks for current and future technology; projected cost and pricing trends; future production capacity and product supply; potential future benefits and competitive advantages associated with our technologies and architecture and the data we have accumulated; the future purchase, use and availability of products, components and services supplied by third parties, including third-party IP and manufacturing services; uncertain events or assumptions, including statements relating to our estimated vehicle production and market opportunity, potential production volumes associated with design wins and other characterizations of future events or circumstances; effects of the COVID-19 pandemic and responses to future pandemics; adverse conditions in Israel, including as a result of war and geopolitical conflict, which may affect our operations and may limit our ability to produce and sell our solutions; any disruption in our operations by the obligations of our personnel to perform military service as a result of current or future military actions involving Israel; availability, uses, sufficiency and cost of capital and capital resources, including expected returns to stockholders such as dividends, and the expected timing of future dividends; tax- and accounting-related expectations. The estimates included herein are based on projections of future production volumes that were provided by our current and prospective OEMs at the time of sourcing the design wins for the models related to those design wins. For the purpose of these estimates, we estimated sales prices based on our management's estimates for the applicable product bundles and periods. Achieving design wins is not a guarantee of revenue, and our sales may not correlate with the achievement of additional design wins. Moreover, our pricing estimates are made at the time of a request for quotation by an OEM (in the case of estimates related to contracted customers), so that worsening market or other conditions between the time of a request for quotation and an order for our solutions may require us to sell our solutions for a lower price than we initial expected. These estimates may deviate from actual production volumes and sale prices (which may be higher or lower than the estimates) and the amounts included for prospective but uncontracted production volumes may never be achieved. Accordingly, these estimations are subject to and involve risks, uncertainties and assumptions and you should not place undue reliance on these forward-looking statements or projections. Detailed information regarding these and other factors that could affect Mobileye's business and results is included in Mobileye's SEC filings, including the company's Annual Report on Form 10-K for the year ended December 30, 2023, particularly in the section entitled "Item 1A. Risk Factors". Copies of these filings may be obtained by visiting our Investor Relations website at ir.mobileye.com or the SEC's website at www.sec.gov.

Key Company Metrics

Last twelve months (through Q3 2024) revenue of **$1.8B**

Over 3,900

Employees operating across 8 countries

Operating Cash flow as percentage of adjusted Net Income has **averaged over 100%** over last 5 years

31.3 million Systems

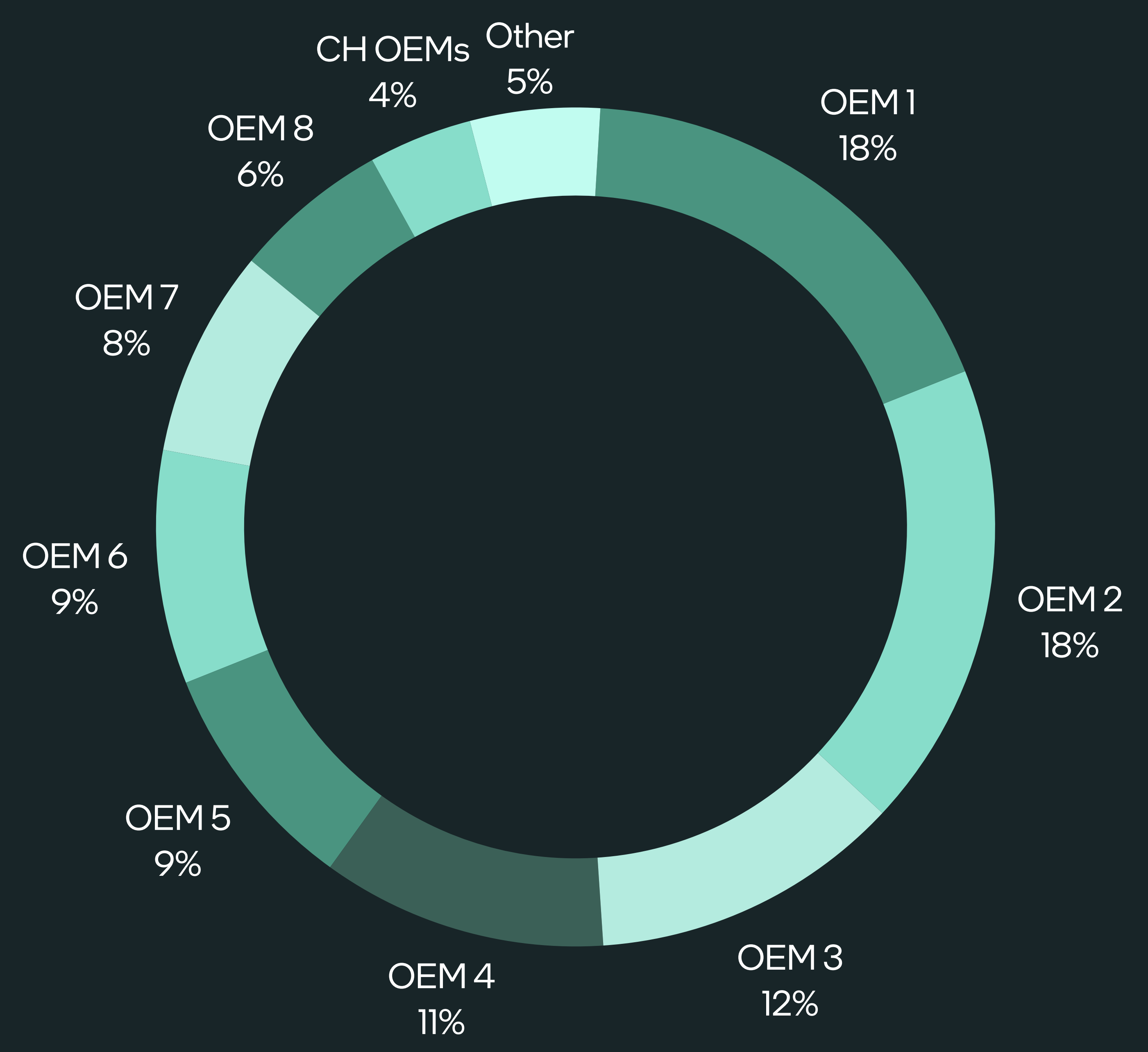
System-on-chip (SoC) and Super Vision™ Systems shipped last twelve months

Our Systems-on-chip have been deployed in about **190 million vehicles**

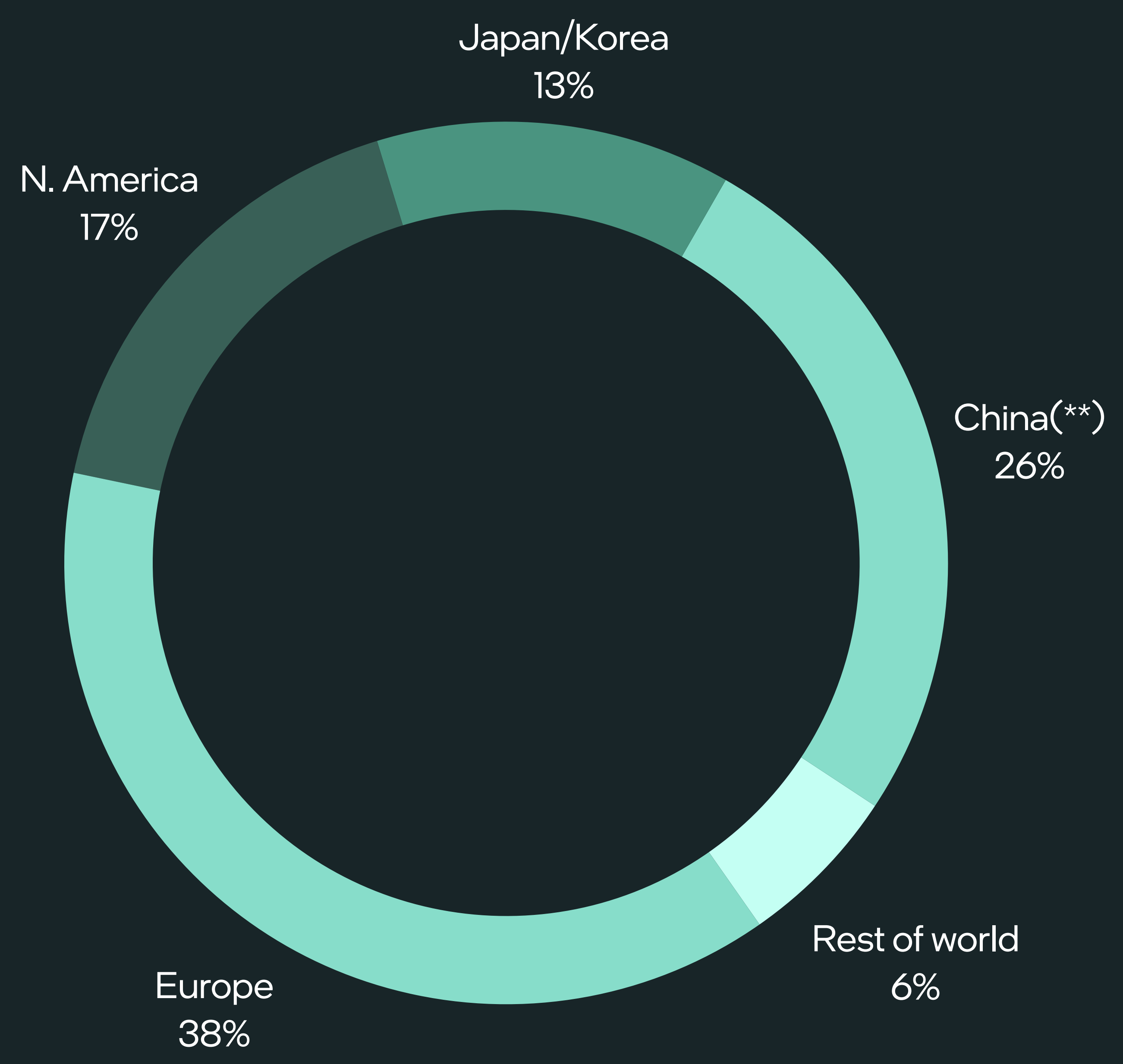
Our solutions had been installed in about **1,200 vehicle models**

Mobileye's Diverse, Global, Blue Chip Customer Base

2024 Forecasted Base ADAS Revenue by OEM



2024 Forecasted Revenue by Region* (ADAS and Advanced Products)

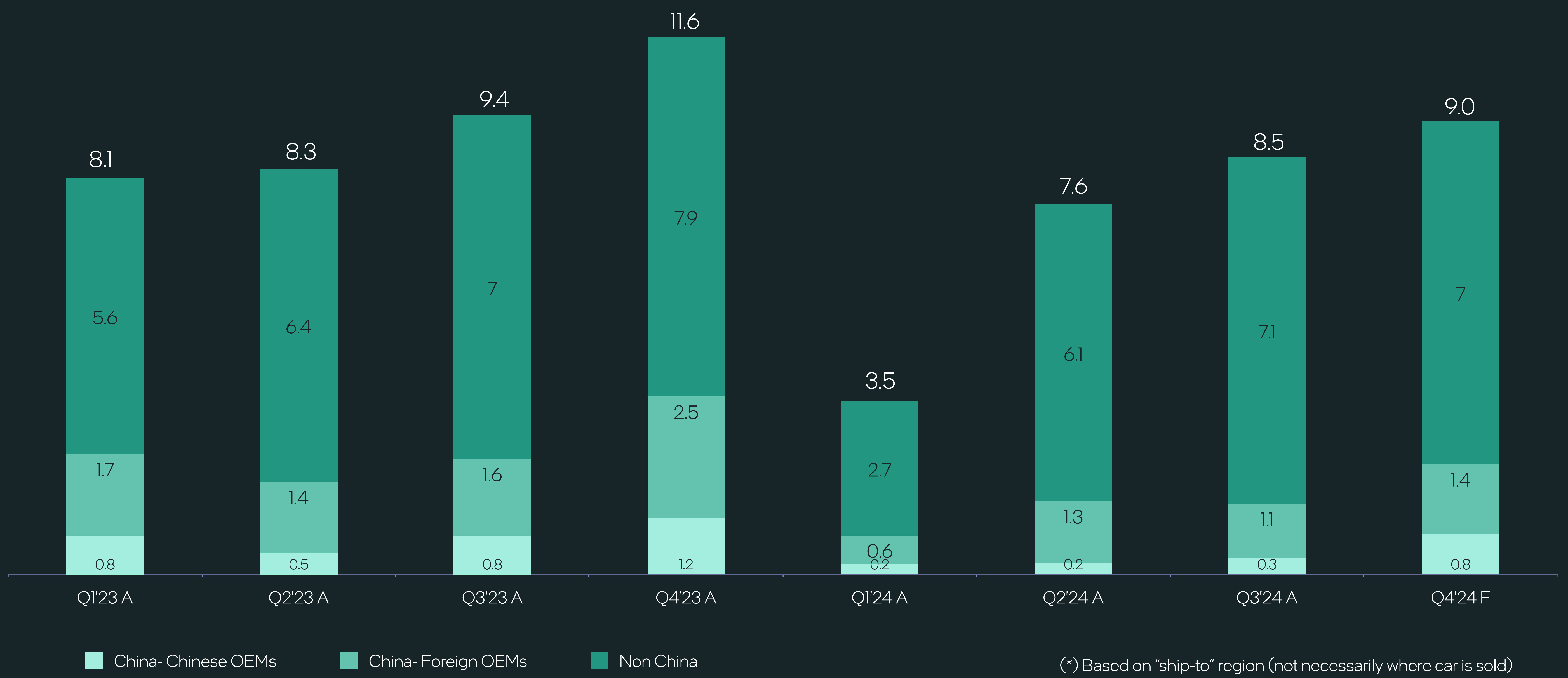


(*) Based on "ship-to" region (not necessarily where car is sold)

(**) Super Vision is approx. one-third of China forecasted revenue in FY24

China Exposure Diminished Meaningfully in 2024

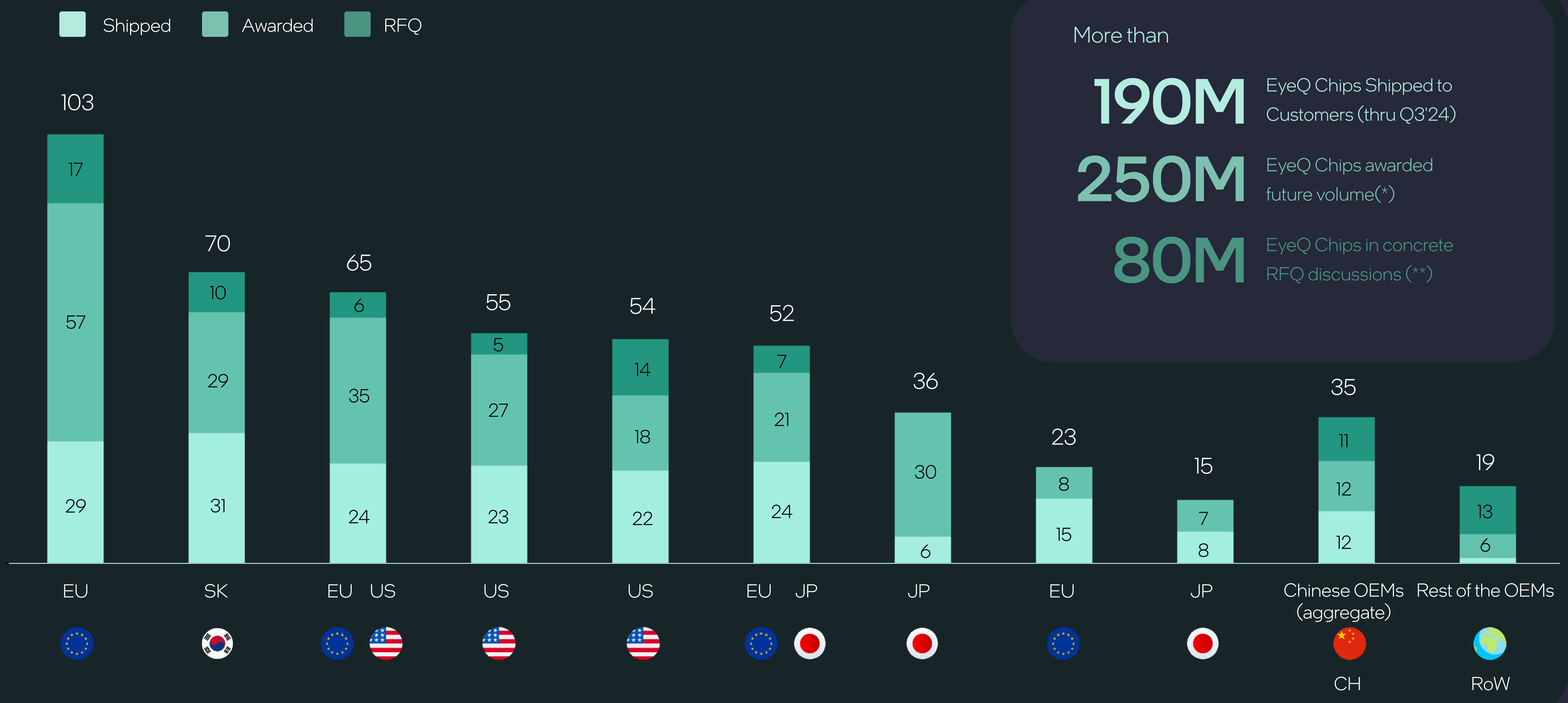
EyeQ Volume Split, China OEM vs Foreign JV in China*



(*) Based on "ship-to" region (not necessarily where car is sold)

Strong Pipeline Across Customer Base, with Good Visibility

Top 9 Anonymized OEM



More than

190M EyeQ Chips Shipped to Customers (thru Q3'24)

250M EyeQ Chips awarded future volume(*)

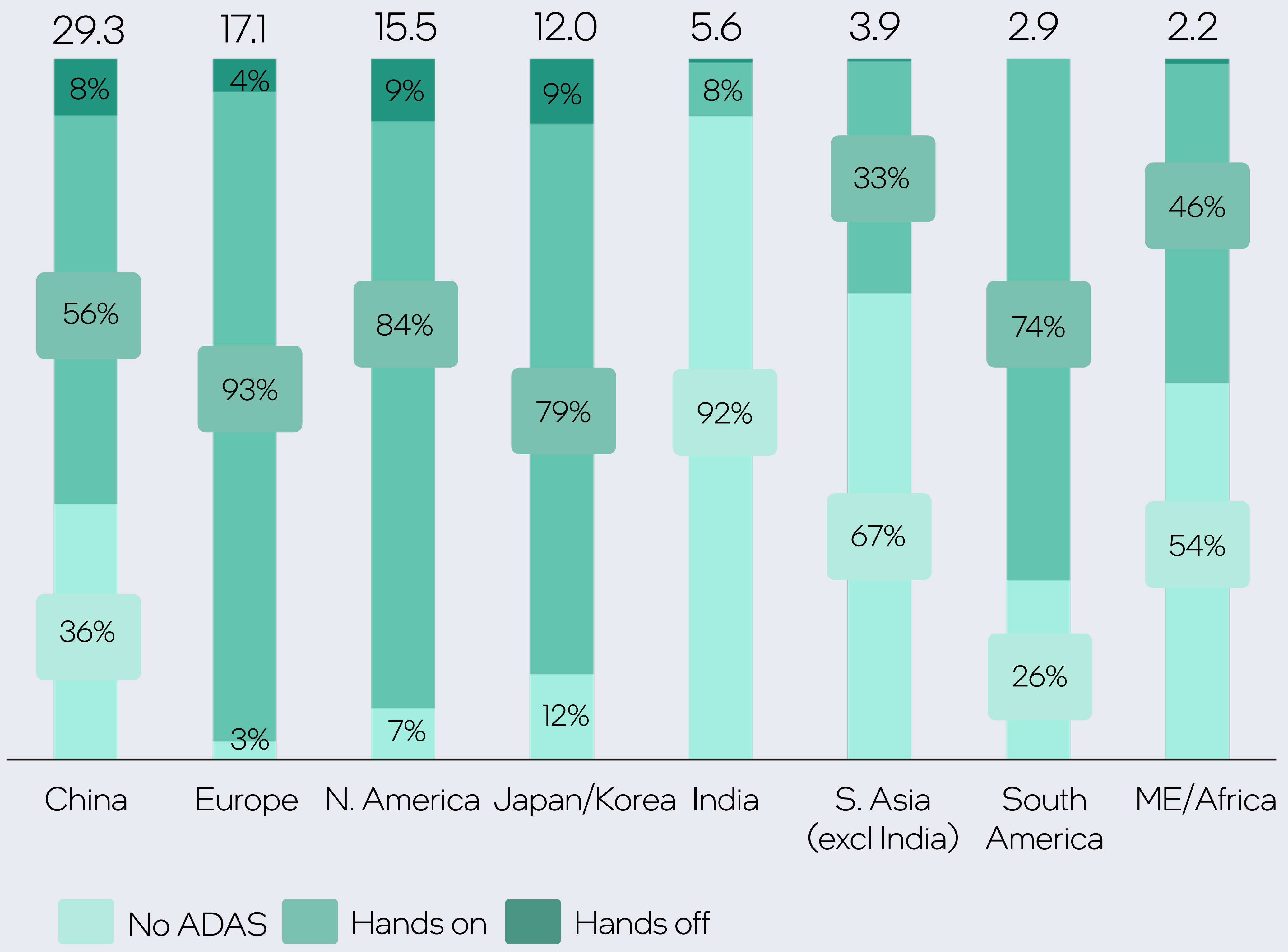
80M EyeQ Chips in concrete RFQ discussions (**)

(*) Projected volumes are estimates and based on several assumptions. Many factors may cause actual volume to differ materially

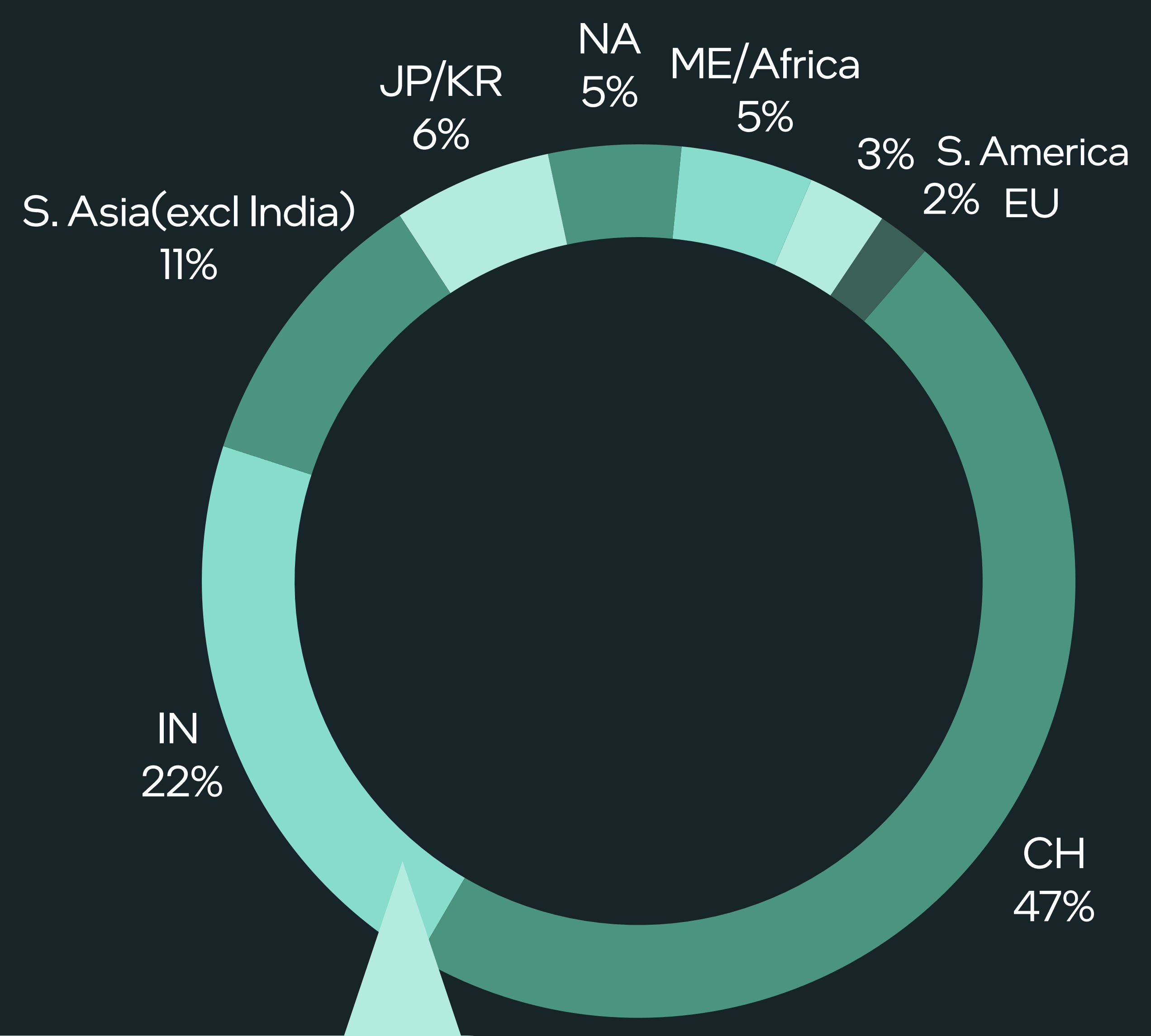
(**)These figures represent preliminary discussion and have not yet been awarded . Actual chip volumes may differ or may not be awarded at all

Summary of future ADAS adoption opportunities (as of 2024)

ADAS penetration rates by region (% of production)



Regional distribution of 23.3m "no ADAS" produced units



At N. America penetration rate, India represents incremental **4.7M** vehicle opportunity

Source: IHS ADAS & Applications Nov 2024

Individual OEM Design Win Example –Illustrative Financial Impact

Illustrative Annual Peak Year Figures	 Surround ADAS	 SuperVision™	 Chauffeur™
Average annual RFQ Volume	800K-1,200K	200K-300K	50K-100K
ASP	$150 –$200	$1,250 –$1,500	$2,500 –$3,000
Revenue (at midpoint)	~$170mm	~$350mm	~$200mm
Gross Profit (at midpoint)	~$110mm	~$160mm	~$120mm

(*) This information is provided for illustrative purposes only and does not represent actual recorded revenues

Scaling Revenues to Unlock Significant Operating Leverage

2024 Forecast

>50%

Operating expenses as % of revenue

Late-Decade Forecast

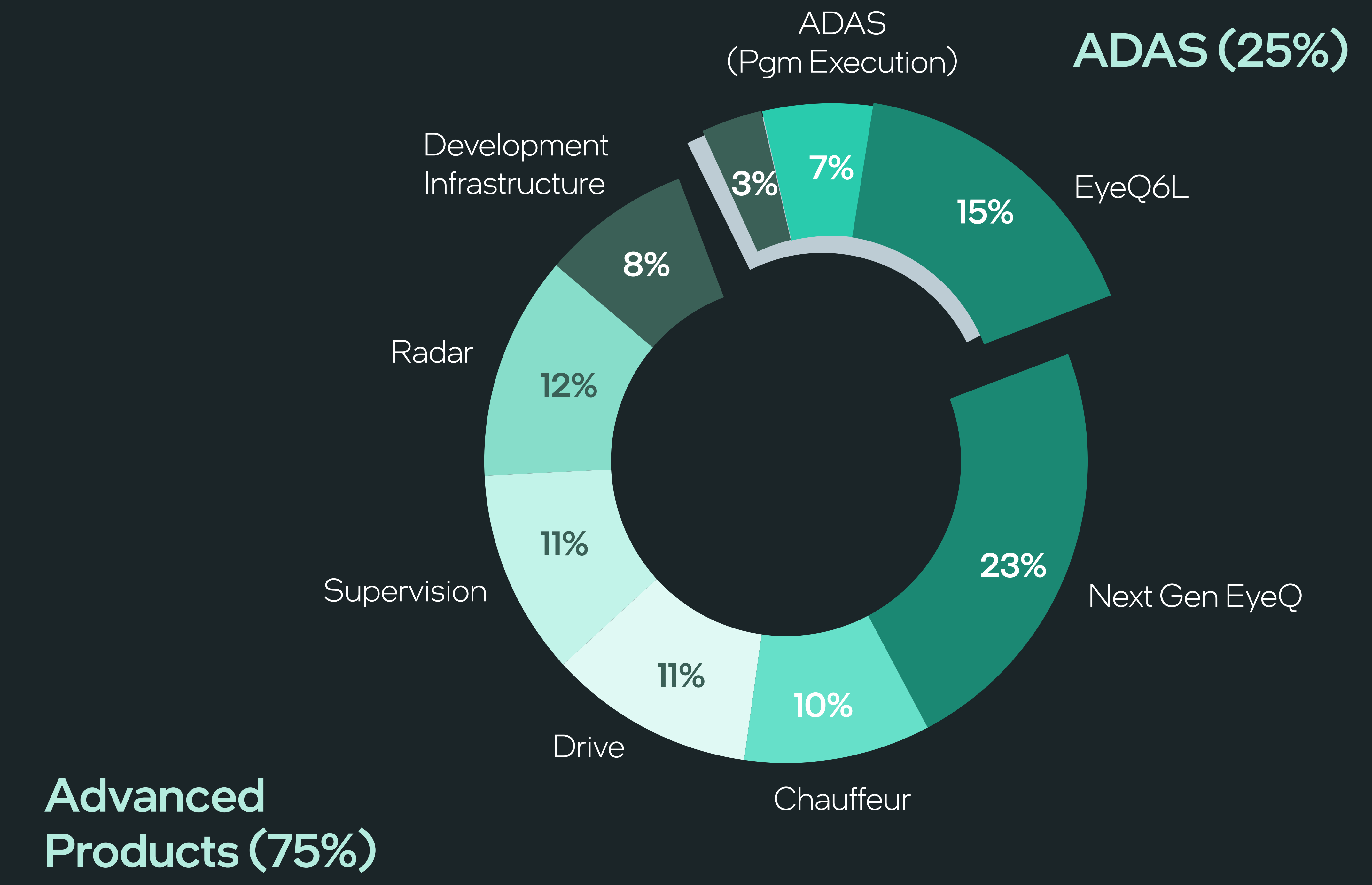
~30%

Operating expenses as % of revenue

R&D expenses breakdown by product

75% of our non-GAAP R&D supports development of Advanced Products (Supervision, Drive and Chauffer)

80% of our advanced products development cost is related to internal resources (payroll etc.)




Thank You.
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