

# *The secret to building & scaling AV markets*

Corey Clothier

AV BD Strategist & Accelerator



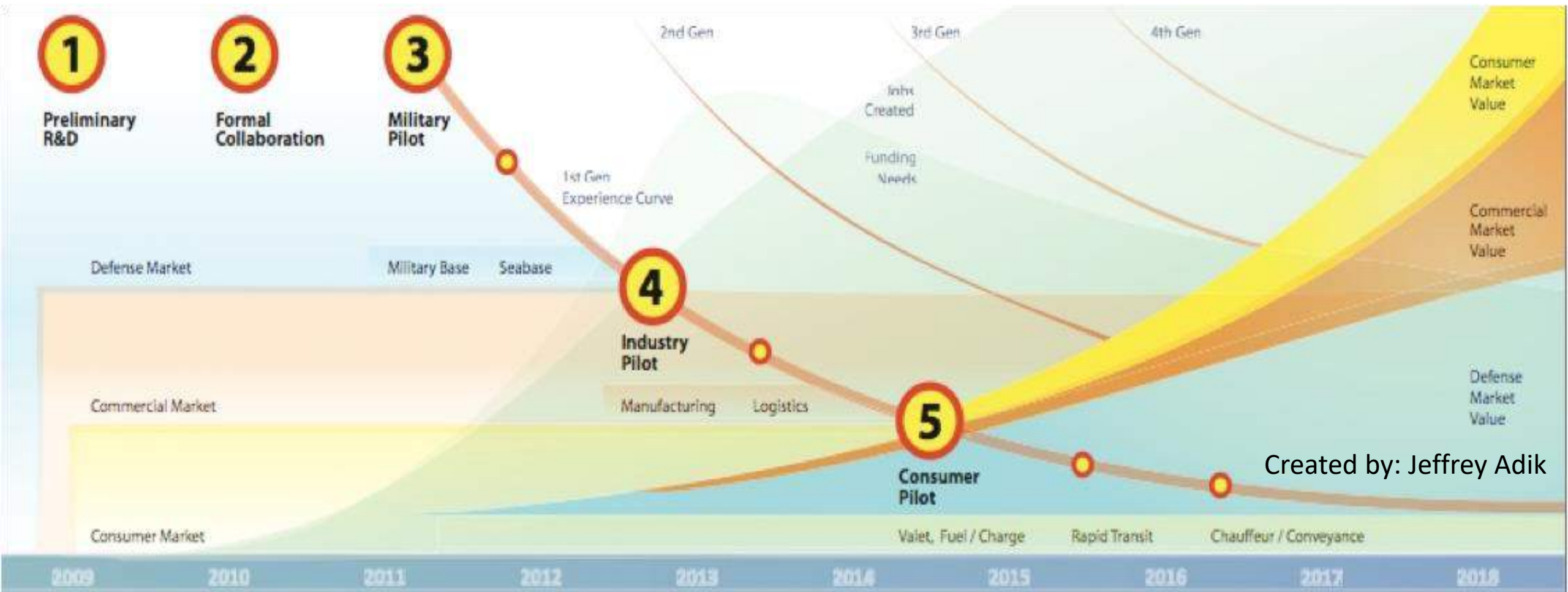








# Collaborative AV Pilots: US Military to Federal to Industry to Consumer



# Corey's Path to AV Deployment

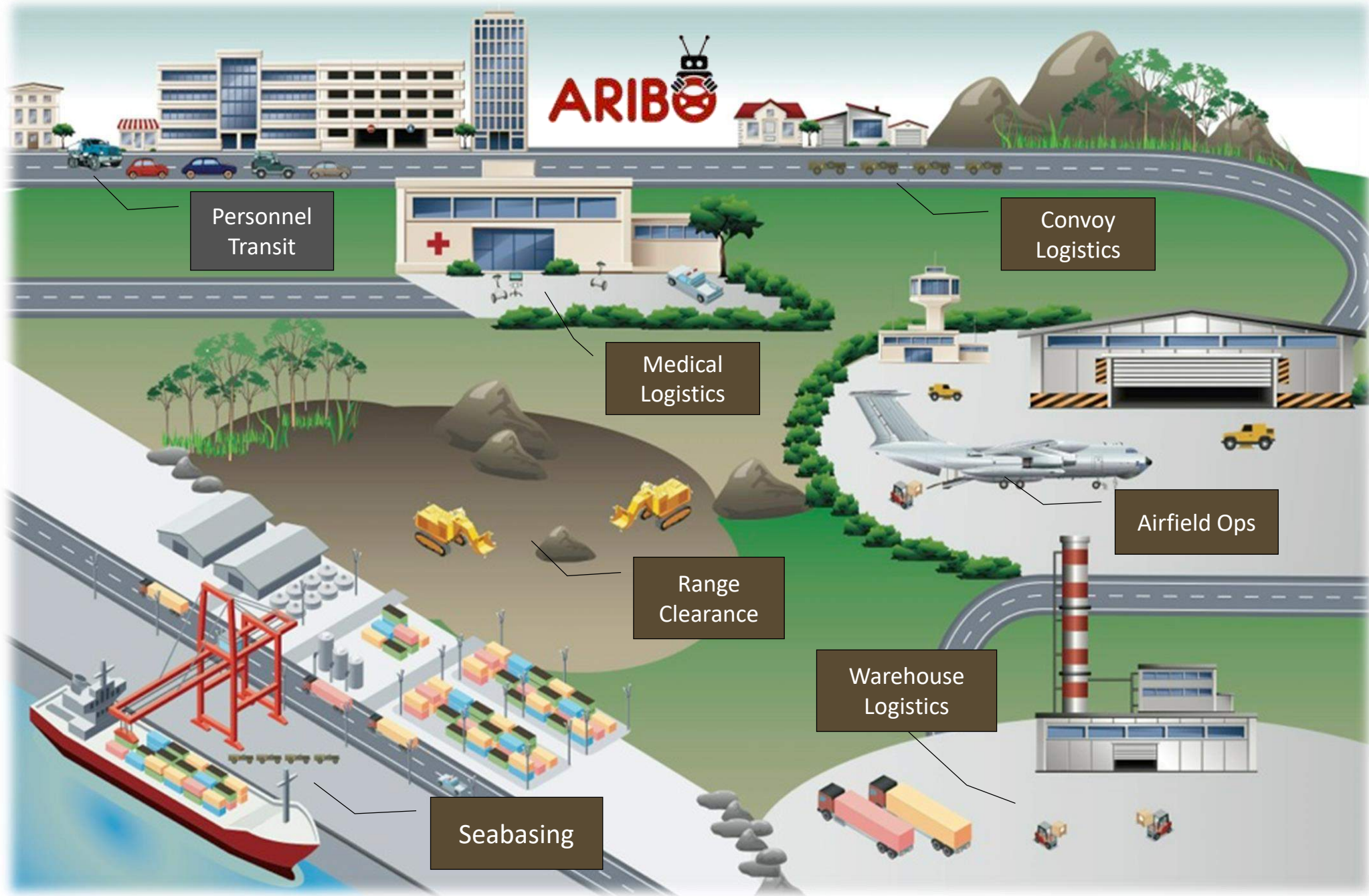
Start Slow...





ARIBO = Living Lab





Personnel  
Transit

Convoy  
Logistics

Medical  
Logistics

Airfield  
Ops

Range  
Clearance

Warehouse  
Logistics

Seabasing



# Army tests driverless vehicles in 'living lab'

BY PATRICK MARSHALL | JUL 16, 2014

























# Corey's Path to AV Deployment







# Corey's Path to AV Deployment



Insurance

A large red circular callout with a white border. Inside, the text reads: 'GAP 2' in large black font, followed by 'AV Platforms' in black font, and 'Purpose Built' in red font.











**UNLV**

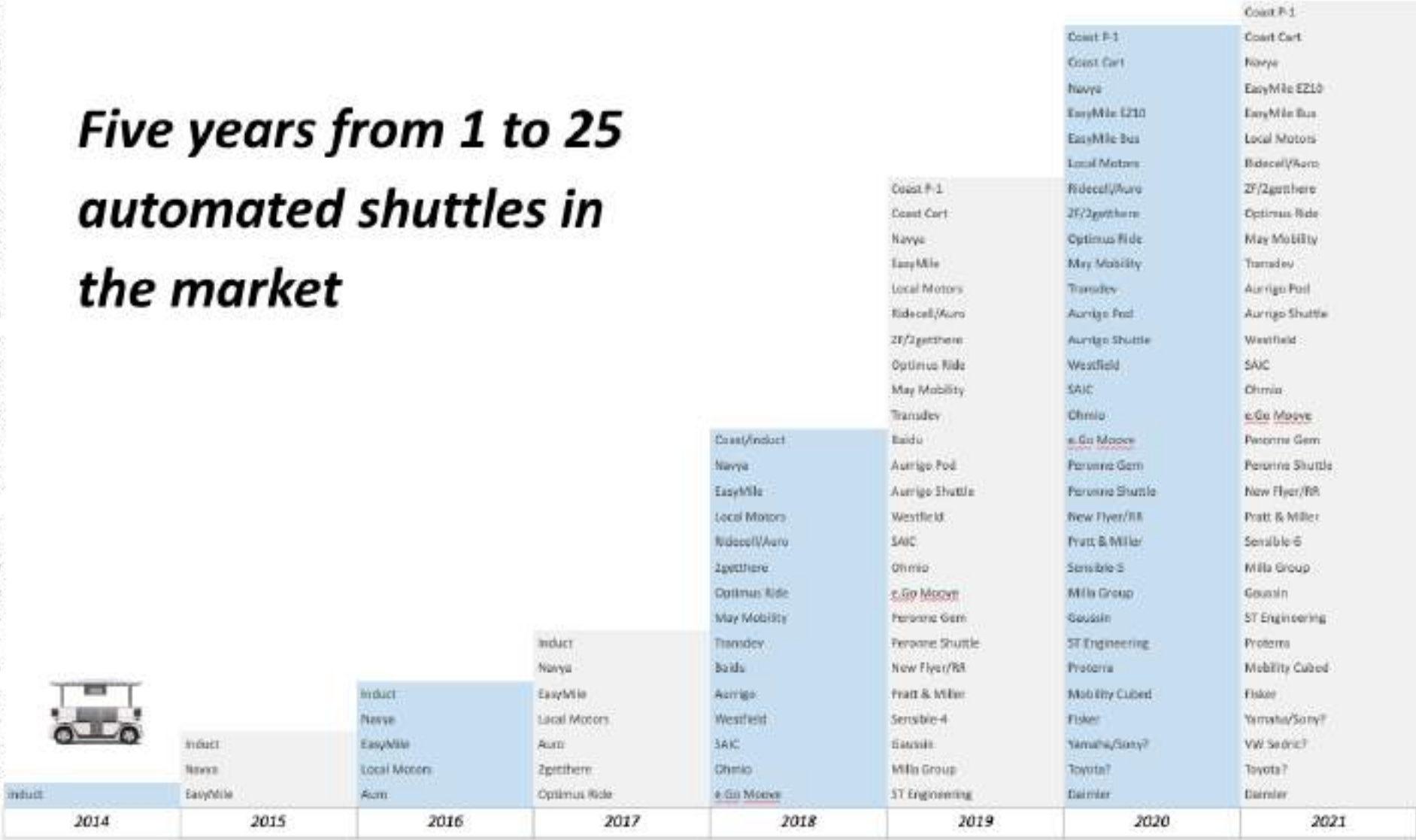






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# Five years from 1 to 25 automated shuttles in the market





AURIGO

EXPERIENCE TECHNOLOGY

00



On-demand  
Dynamic  
Autonomous

AURIGO

GREAT

UKAutodrive

AURIGO

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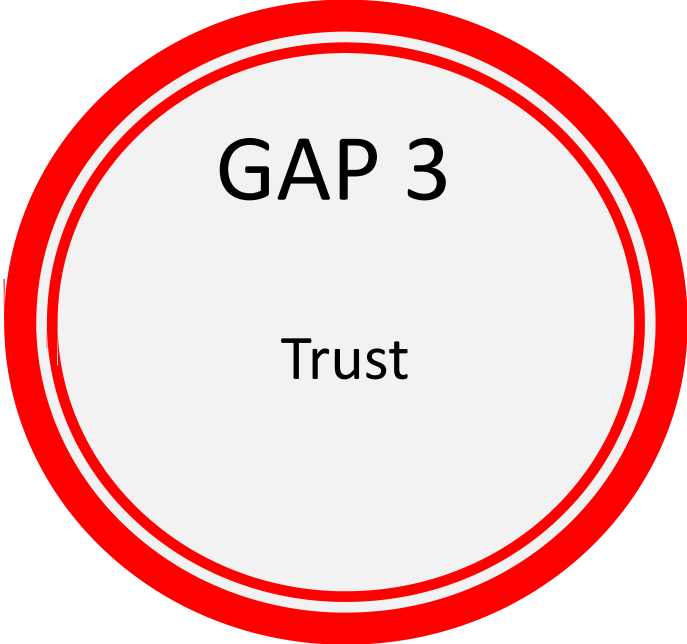




# Corey's Path to AV Deployment



- Insurance
- Platforms







# Build Trust thru 3<sup>rd</sup> Party Safety Verification

Operational  
Safety Audits

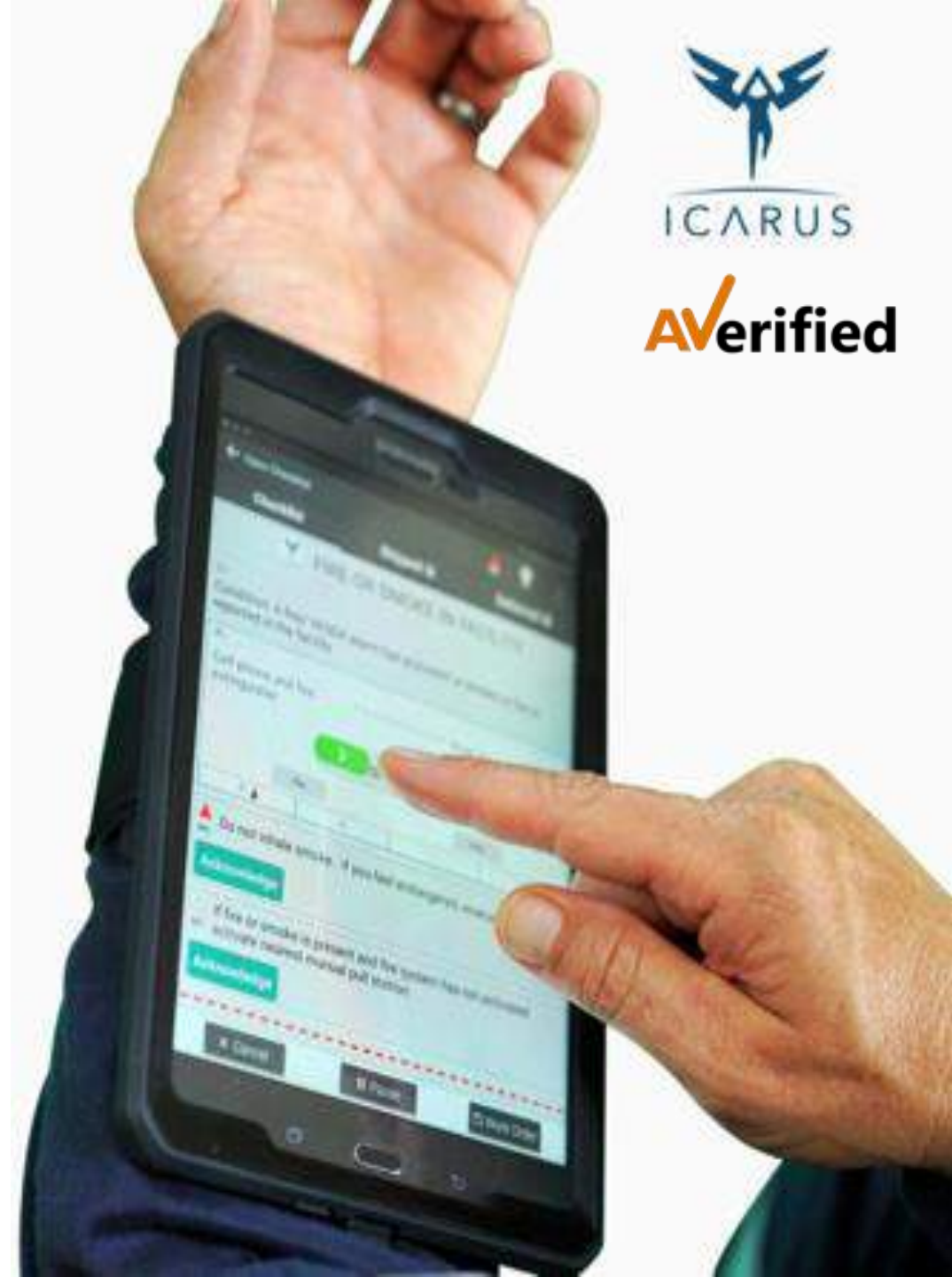
Ops Safety  
Compliance  
Verification

Quantifiable Risk  
Assessment

AV Performance  
Verification

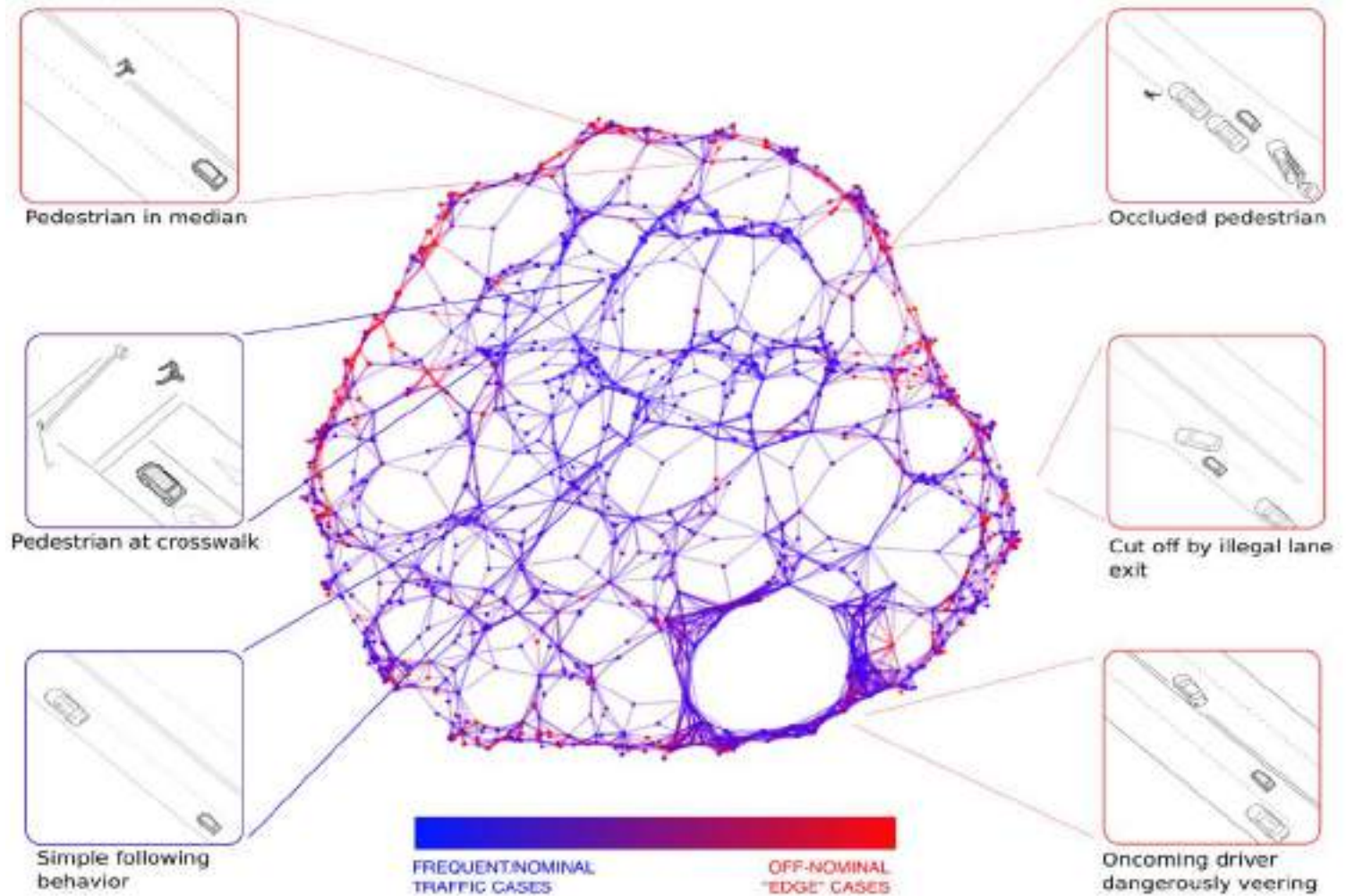
# Process Compliance and Verification for AV ops

## Digitizing Safety Processes and Procedures





Comprehensive AV testing, training and validation on the world's largest library of edge cases





Identify ODD risks, both general and for specific AVs

**dRISK** **SAMPLE REPORT**

**Risk assessment for a Company A deployment in San Leandro, CA**

**Key Deployment Parameters:**

- Vehicles: 10 Chrysler Pacifica Minivans
- Duration: 6 months
- 1 safety driver + 1 systems engineer per vehicle
- Dial-a-ride like service model intended to improve accessibility and mobility
- 95% operational use case is during the day, in non-peak traffic hours, typically traveling between low density residential and commercial areas

**The primary risk factors stem from:**

- Abundance of non-signalized intersections
- Occlusions from on street parking
- Navigating parking lots
- Trucking corridors and commercial hubs near by
- Unprotected bike lanes along San Leandro Blvd. and the CA 185
- Roundabout on Bancroft ave and Victoria ave
- Dead end streets + cul-de-sacs

**Risk Contributors**

Risk Contributor	Primary Risk Factor (Incidents)	Secondary Risk Factor (Incidents)
Unsignalized Intersections	22	12
Occlusion at intersection lot	18	20
Side entry by Semi Trucks	15	18
Complex coding into lane	12	8
Proximities crossing street at green light	10	6
Being Rear-ended	8	10
HC/OV vehicle not following a stop sign procedure	5	8

**Data Sources**

- City accident reports
- Traffic flow counts, volume and type data
- Pedestrian counts
- FARS database
- Light Cycle data
- Infrastructural specs
- Analysis of video from traffic cameras

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**Risk Contributors**

**SAMPLE REPORT**

Edge case archetypes Company A has performed, from previous compared to new edge cases present in San Leandro, CA.

**Primary Gap in Deployment Readiness**

- Company A has collected several scenarios/edge cases for training their stack
- Have not around deployed around industrial/heavy commercial areas
- Geo locked area is near logistical hubs
- This area sees an influx of class 8 vehicles, especially during non peak traffic hours
- Largest gap in readiness is from edge cases, where the AV is in the path of a class 8 vehicle turning at intersections and being in their blind spots
- Company A had to train their AV stack on the following edge case archetypes and several iterations of them.

**es to train AV stack with in simulation**

A tractor trailer is trying to make a left turn at an intersection, has mis-compensated and the trailer is now in a direct collision path with the AV.

Iterations of this scenario was used to train the AV stack in order for it to avoid this scenario archetype.





## Scale AV Deployment and Build Trust:

- Education
- Analysis & Shared Data
- Planning
- Collaboration
- Smart City Integration
- Demo to Pilot to Deployment



# Corey's Path to AV Deployment



- ✓ Insurance
- ✓ Platforms
- ✓ Collaboration
- ✓ Trust

Are we ready to scale low-speed applications?

YES.

What do we need?



What do  
we need?

More AV Options

Purpose Built AVs (production-level)

Comparable Pricing

Safety Verification

More Pilots to Deployments

More Collaboration

More Ops Data Sharing



# Mobility Innovation Team

Scale AV Deployment and Build Trust:

- Education
- Analysis & Shared Data
- Planning
- Collaboration
- Smart City Integration
- Demo to Pilot to Deployment



## Corey's Lessons Learned

**Riders Rule**

**Under Promise**

**Test & Re-Test**

**Team**

**Share Data**

**Keep Going**

**Media Often Gets it Wrong**

**Plan for Accidents**

**Gotta Have a Business Case**

**Inductive Charging**

**There Are Amazing People in AV World**

**...Let's Build EPCOT**



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