



LHP's NEST

Incubating the next-generation safer autonomous drive!

By Nirmalkumar Patel, Matthew Mills, Abhinav Sikharam



Inspiration

"I'm really excited about everything we're building here at LHP. We're guiding the best brands in the world to deliver safer transportation via autonomous, electric, and connected technology."

David Glass

Co-Founder & CEO





Ideation Journey

Autonomous Vehicle
Design Transformation

Fleet Vehicle Management
& Maintenance



Consumer Vehicle Maintenance
Supply Chain Management

**Autonomous
Vehicle Design
Transformation**



LHP Nest: AV Sensor Design Incubator

LHP Engineers



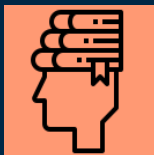
LHP Automotive
Designers

.....



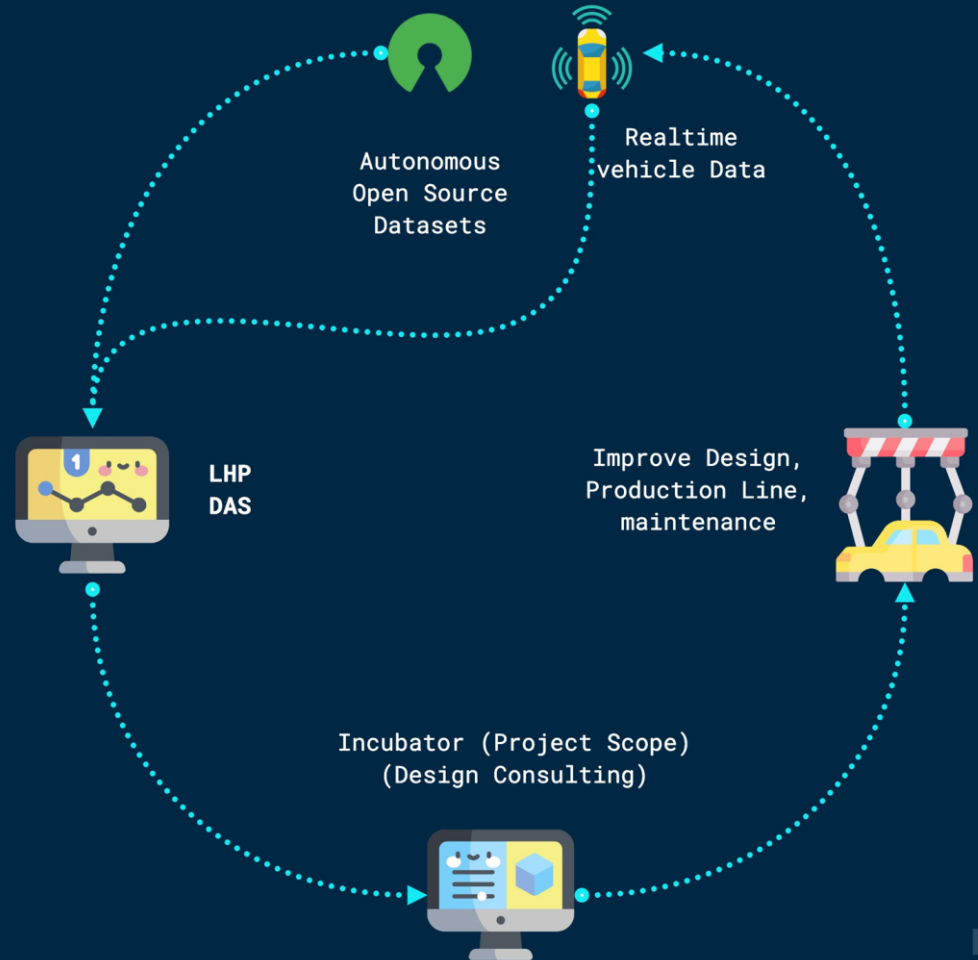
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Functional
Safety Expert



Autonomous
Vehicle Domain
Expert

Proposed Schematic





Today there are 100+ open source datasets for autonomous driving*.



NUSCENES by Motional



Oxford RobotCar Dataset



Berkeley DeepDrive



Why are these organizations democratizing the data?

- To drive innovation.
- To make more safer autonomous vehicles
- To improve Machine Learning algorithms making them robust.

Project – SCOPE

Sensor Combinatorics and Optimal
Positioning Ecosystem design

“ Sensing for automated cars is like sensing for living beings – there is no one perfect sensor configuration that prevails in all environments and fits all budgets.”

- Open Autonomous driving Org

Sensor Combinatorics

Operational Design Domain (ODD)

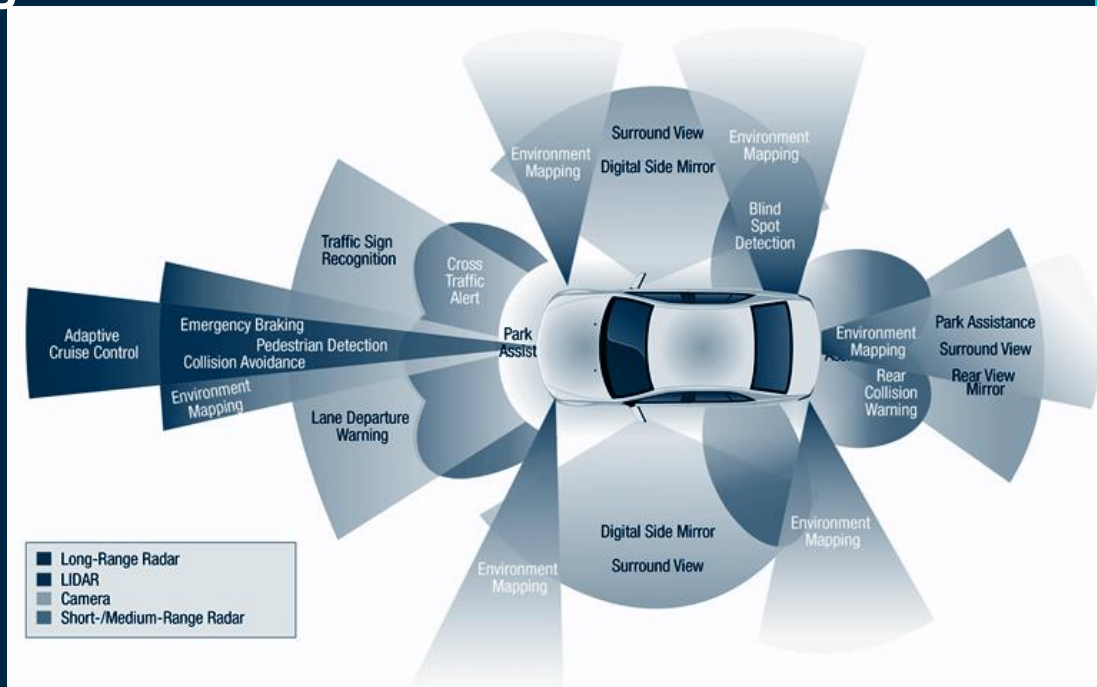
- Cameras
- LiDAR Sensors
- Radars
- Ultrasonic



Optimal Positioning

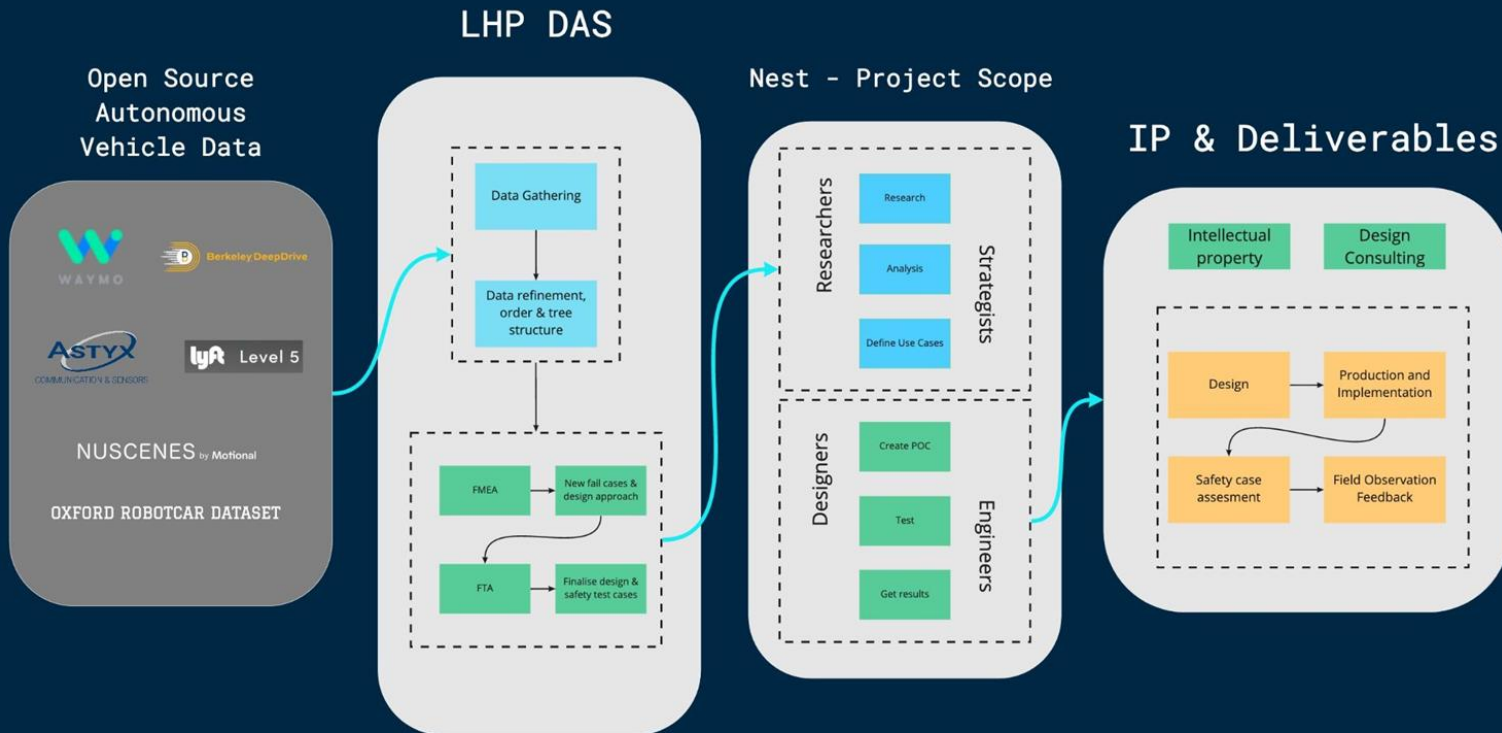
Field of View (FOV)

- Coverage
- Blind Spots
- Occlusion
- Sensor Colocation



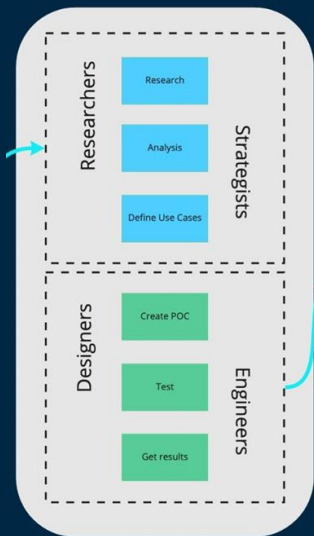


Proposed Business Architecture

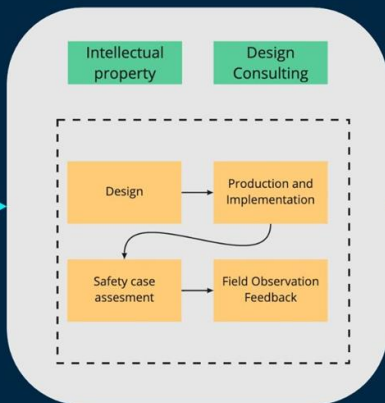


Proposed Business Architecture

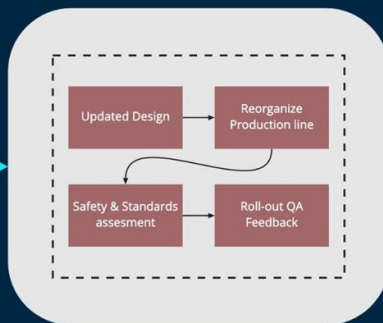
Nest - Project Scope



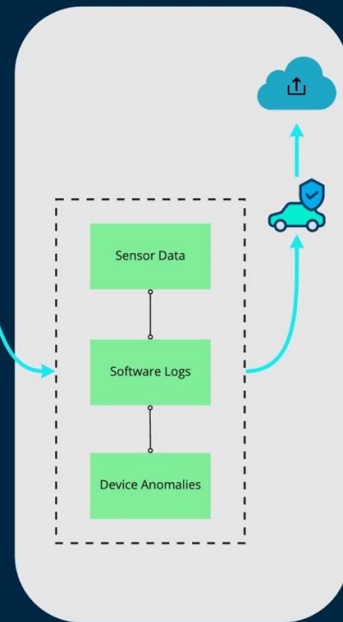
IP & Deliverables



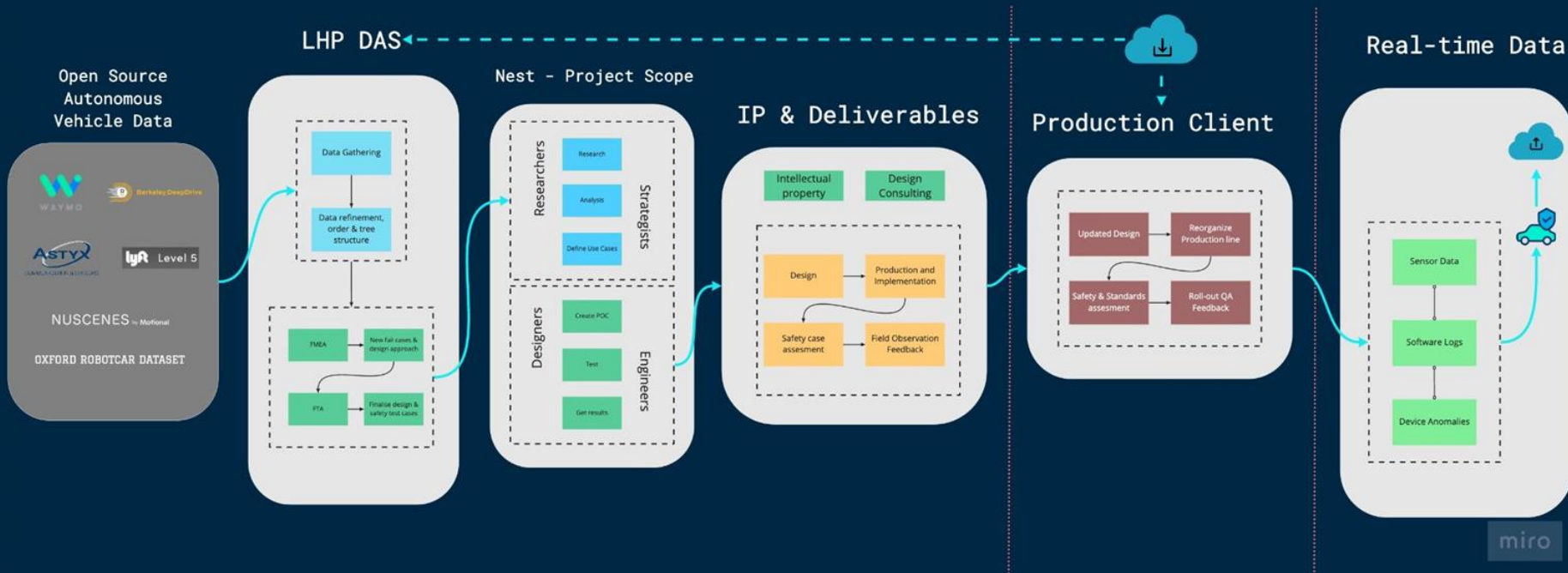
Production Client



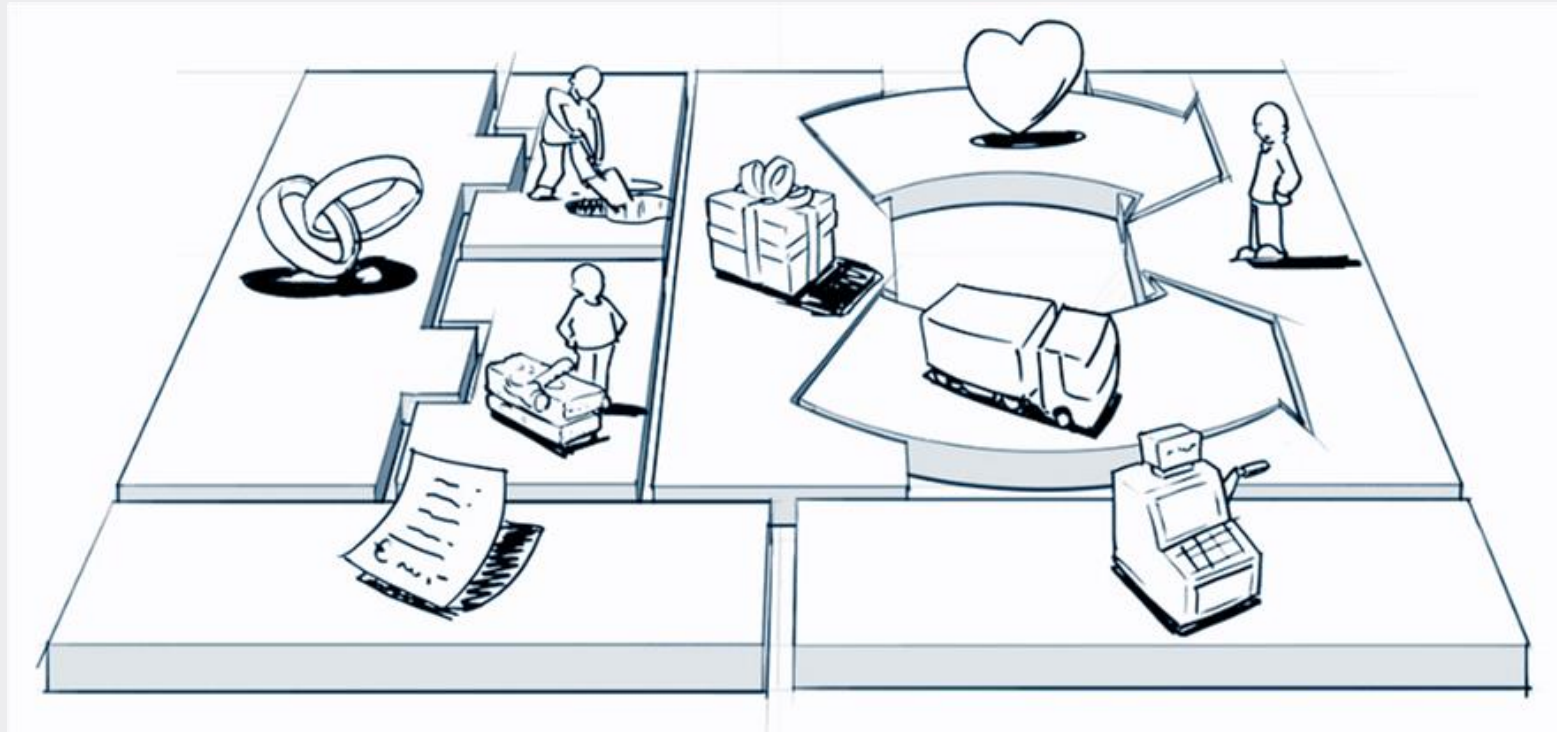
Real-time Data



Proposed Business Architecture



How can we pitch LHP Nest to the Leadership team?



Customer Segments



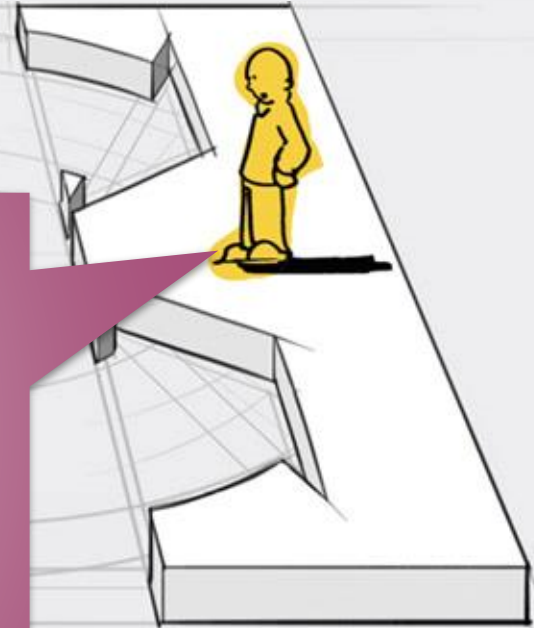
Automotive
OEMs, EV and AV
Startups



TAM is \$ 3 billion in 2020 & is
expected to reach \$ 8 billion
by 2026



*Design segment is
anticipated to register
highest CAGR of 29%



Value Propositions



Better Design
Decisions



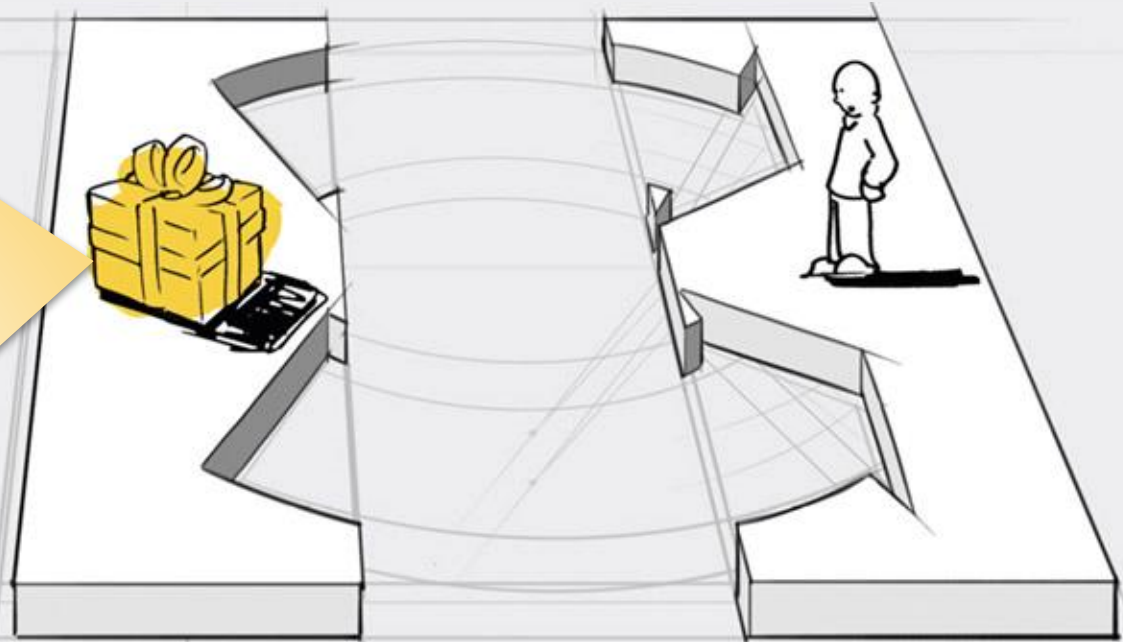
Intellectual
Property

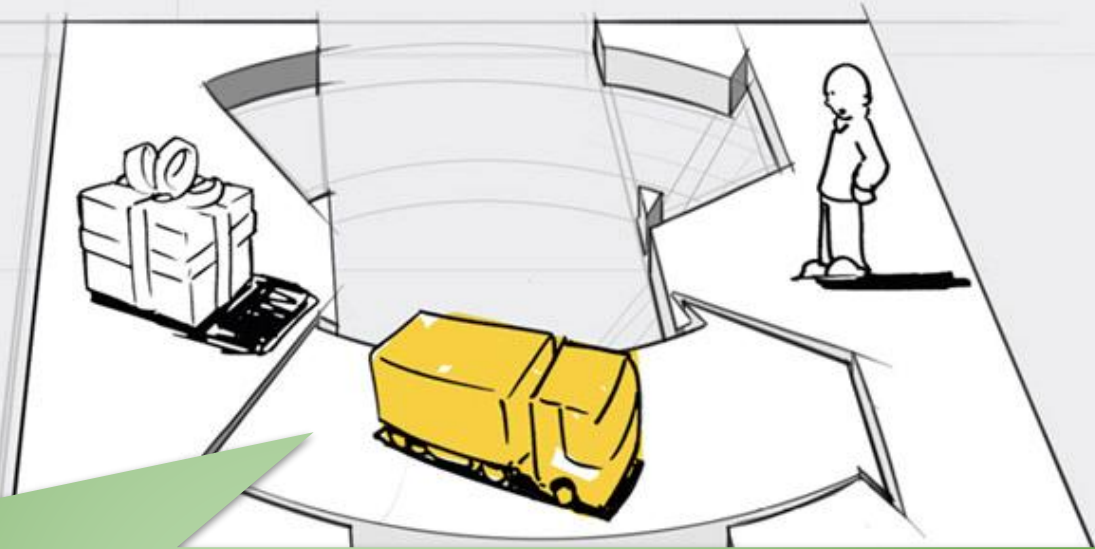


Functional Safety
Expertise + Design
Consulting



Reorganised
Production Line
insights





Channels



Awareness through
ISO Standard
practitioners



Evaluation through
hybrid lifecycle &
production



Purchase through Long-
term contracts



Delivery by timely
design reviews



Post Sales by
Proactive Remote
24/7 DAS Insights

Customer Relationships



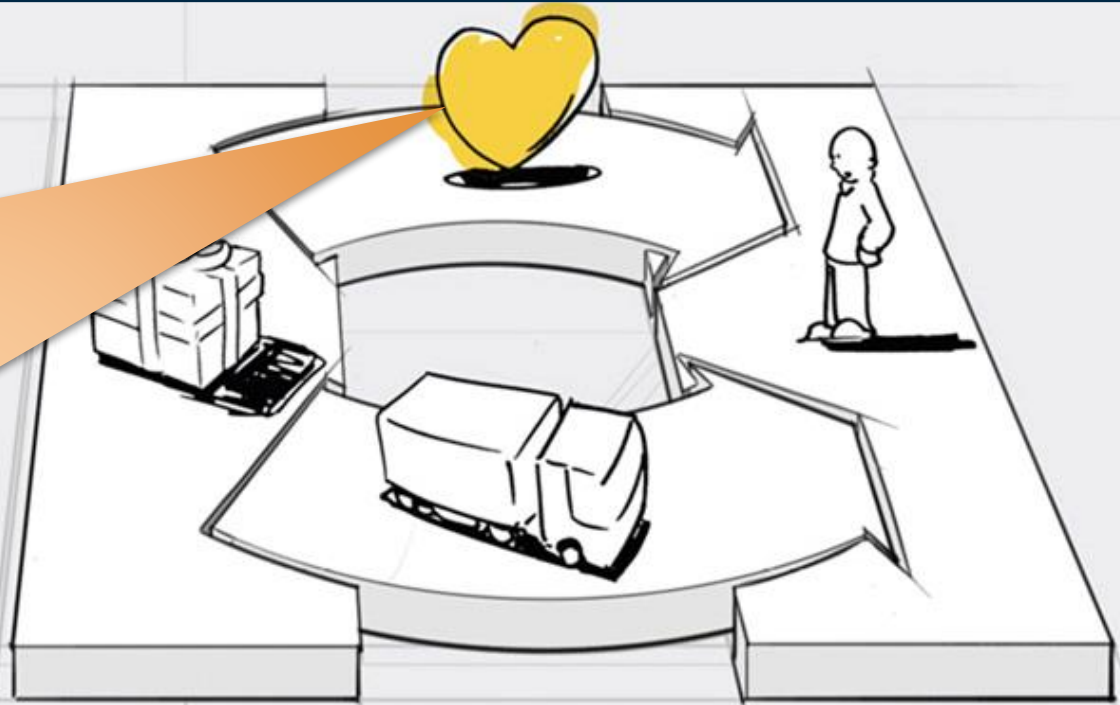
Acquisition by
Advocating and
Executing ISO
Standards



Retention by Timely
insights and new
design launches



Boosting sales by
Diversifying insights
and Design
consulting



Revenue Streams



Long term contracts



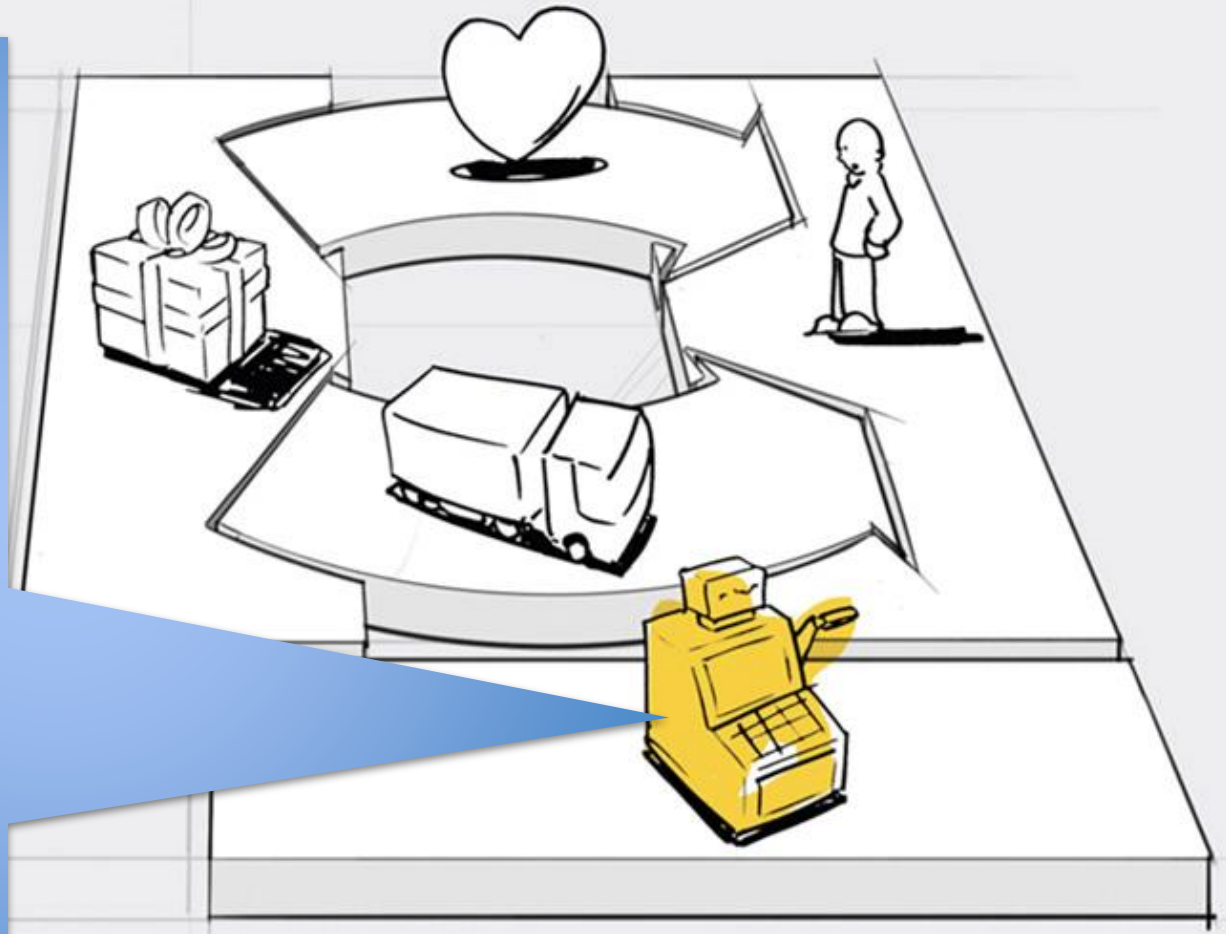
I.P. - client data
sharing



Design Consulting



Component/unit
volume pricing
&
multiple clients
discount for OEMs



Key Resources



Sensor
Design



IT
Infrastructure



functional
safety expert



Design
Consultants





Key Activities



R&D of AV
designs and
data searching



Open-sourced data
refinement and
Analysis



Design
investigation &
test case building



Validate design
from third-
parties



Key Partners



Independent firm/expert
as a moderator

E.g., [Kugler Maag CIE](#)



AV OEMs
Sensors design partners
E.g., [AutonomouStuff](#)



HEXAGON



Cost Structures



Sensor Design
Costs



R&D department
setup
(LHP incubator)

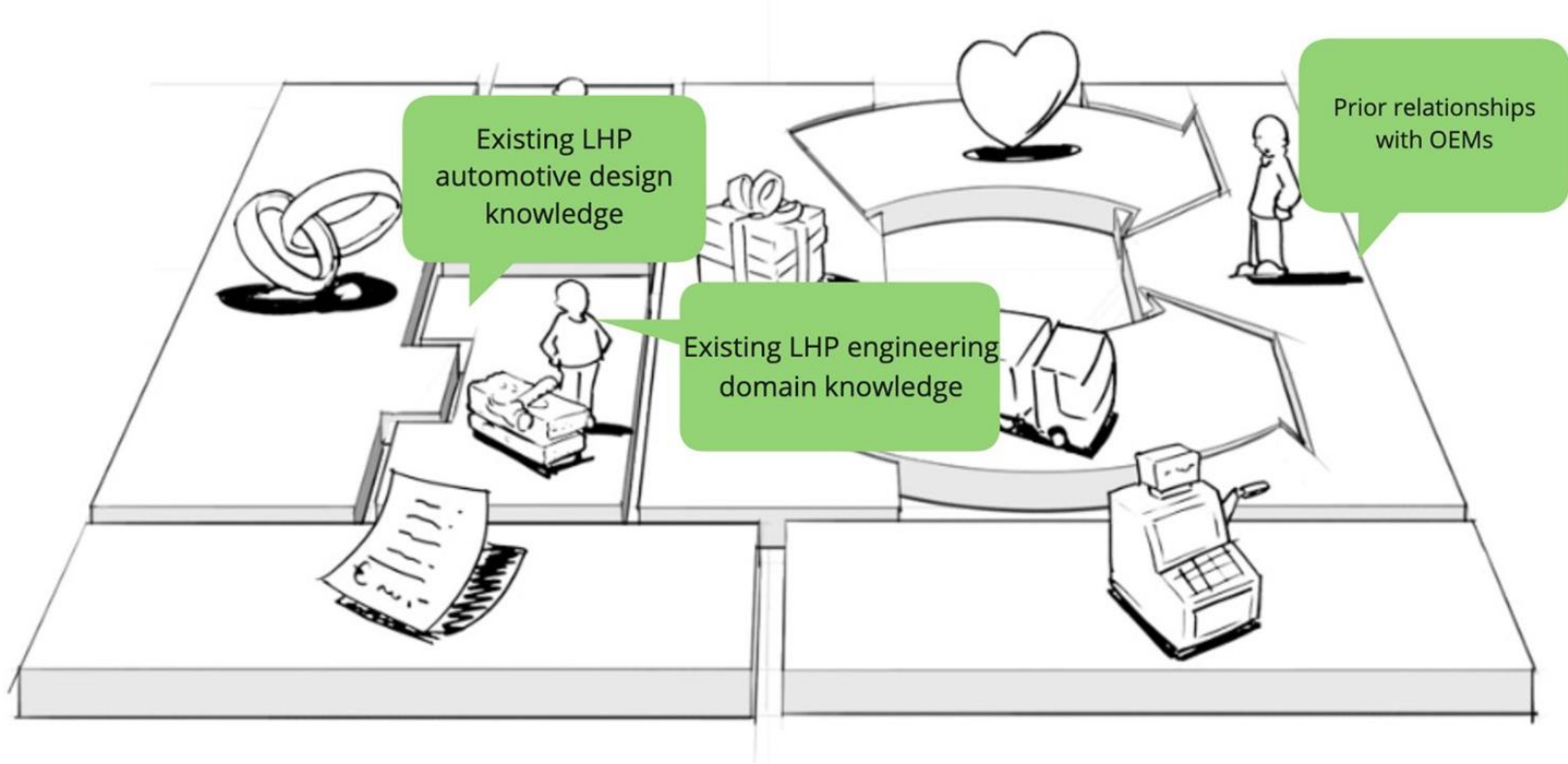


Field
observation/
simulation costs

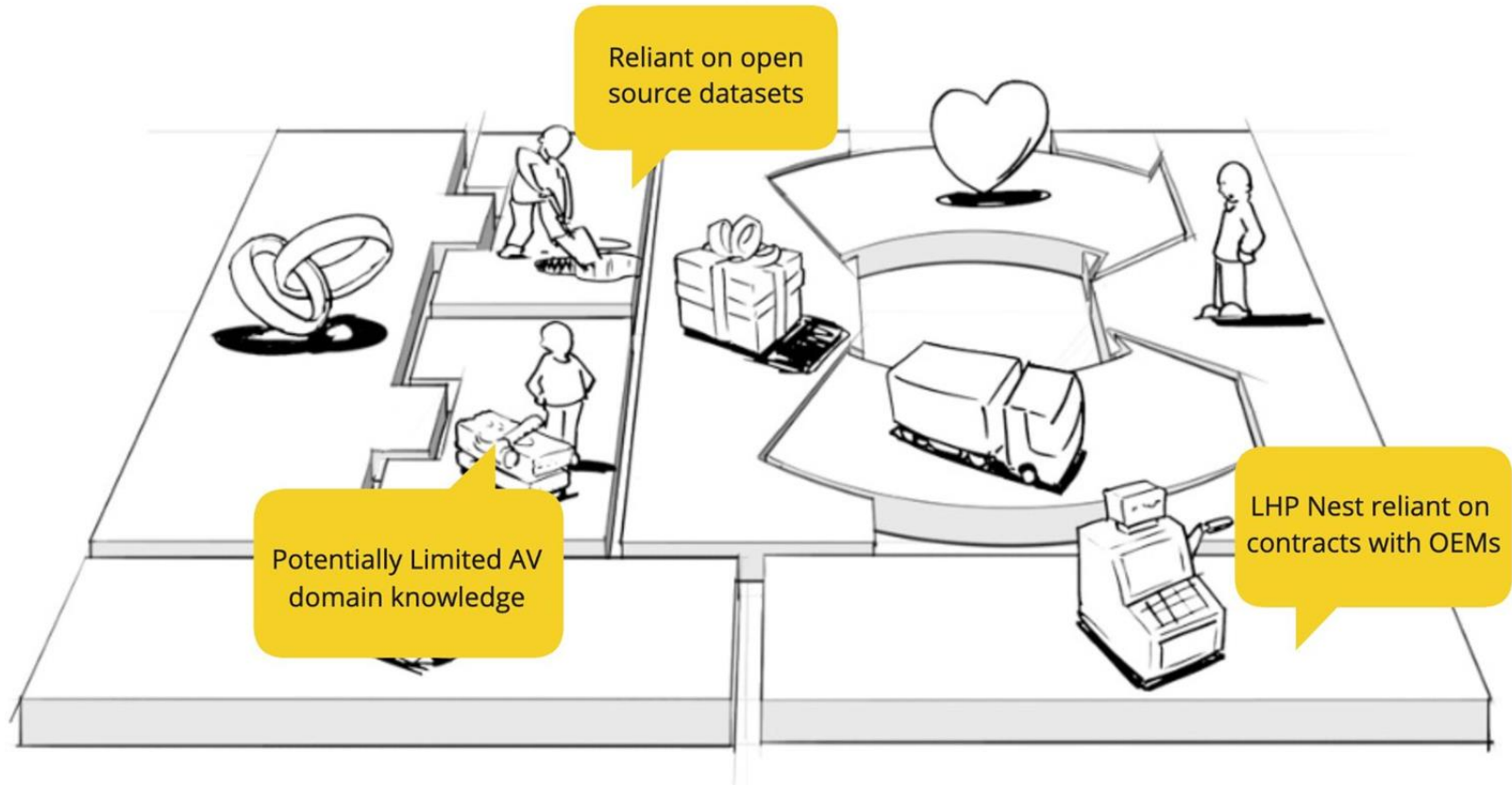


Design
consultants/
partnership costs

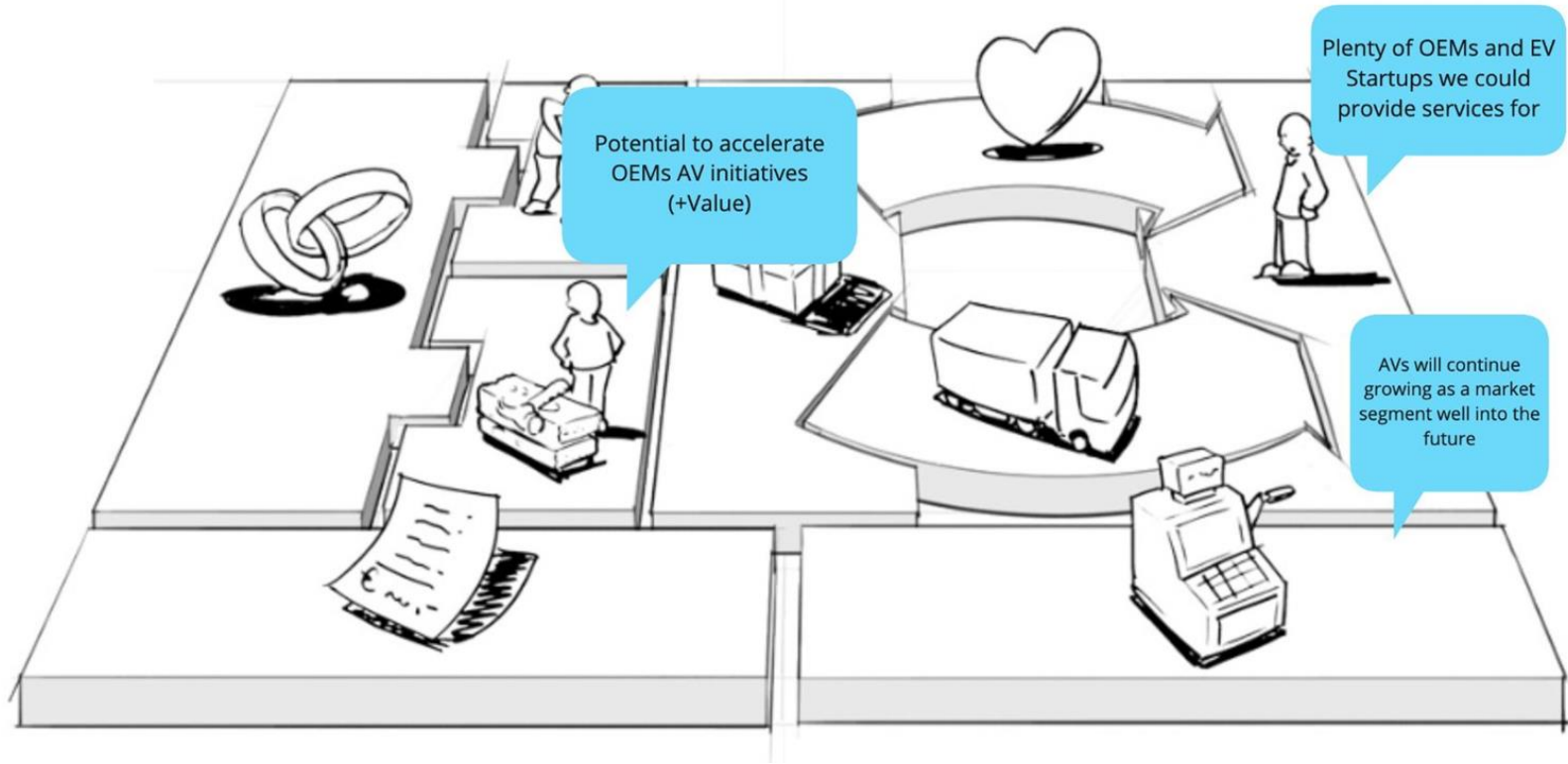
Strengths



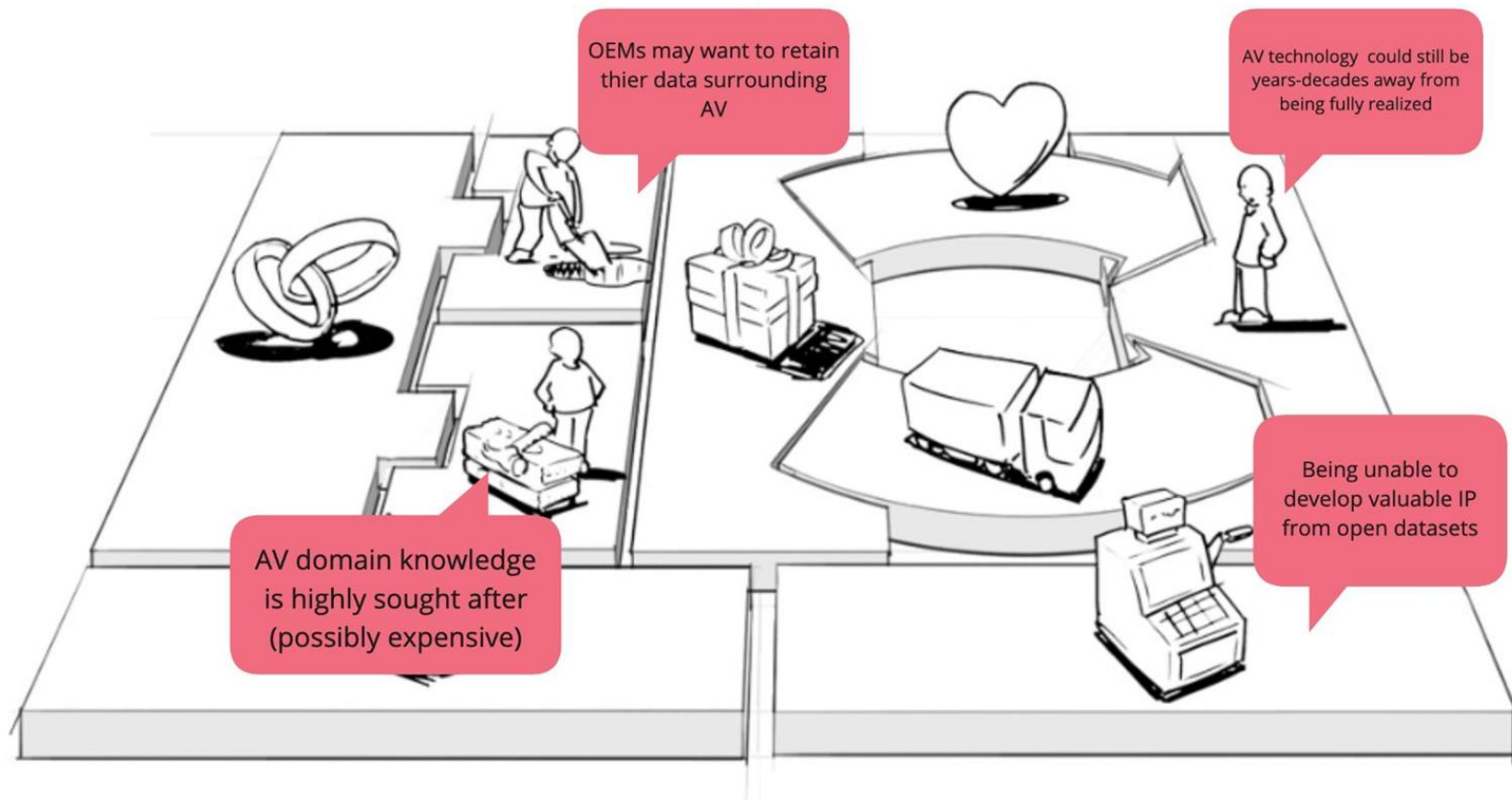
Weakness



Opportunities



Threats





In Conclusion

Leveraging existing LHP business segments, alongside new talent and knowledge, to drive a cutting edge transformation service through incubation-project SCOPE.

Sensor Combinatorics and Optimal Positioning Ecosystem design.



Thank You.

Questions?

LHP's NEST

Incubating the next-generation safer autonomous drive!