



# SafetyPool™

A global Incentive-based brokerage of shared safety data and scenarios for safe Autonomous Driving Systems (ADSs)

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WORLD  
ECONOMIC  
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# PROBLEM

ADSs safety is held back by limited sharing

Siloed datasets, secrecy and lack of benchmarks, common data and scenarios database is holding back the entire ADSs industry from its number 1 objective: Building the safest and most reliable driver.

## Problems caused by data fragmentation

- Negative externalities: E.g. Each ADS player has unique data and safety gaps
- Difficult to benchmark among different parties
- Impossible to develop informed and actionable regulatory frameworks
- Lack of transparency = low public trust

# SOLUTION



Safety Pool™

A superset pool of unified safety data and scenarios. Shared among the main stakeholders involved in the development of ADSs (Autonomous Driving Systems) and autonomous mobility



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# GOALS

Increase and assess overall ADSs safety

- Solve for basic dangerous scenarios across the whole industry. Starting from the accessible average 90%, and progressing gradually to the last 10% of edge cases
- Prevent repeating avoidable mistakes by sharing occurrences that have or could have affected the safety of operations
- Unlock Federal, National and local governments/administrations to take informed, data-driven regulatory decisions in collaboration with industry



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# OUTPUTS

Creating a Governance tool for ADSs safety

- Set up of the infrastructure for having a non-biased single comprehensive set of data (scenarios) to fill unique data gaps
- Establishment of a global framework for safety data and scenarios sharing
- Development of a common language and metrics for benchmarking and performing safety assessments of ADS testing activities
- Provide Toolkits, protocols and guidelines for future development of public policy and regulatory instruments



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# IMPACT

A collaborative effort towards safe autonomy

- Enhance consensus across stakeholders and geographies for defining what is a safe ADS
- Showcase the value of private-public collaboration on data sharing for the commercialization of ADSs.
- Increase transparency in ADS development and related activities to gain public trust



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# How Safety Pool™ works

An Incentive-based brokerage of shared data and scenarios for safe Autonomous Driving Systems (ADSs)

1. Each ADS developer Pool member collects data relevant to a specific ODD and sends a Data Push request to the Pool
2. Deepen labels the raw data using the pool unified taxonomy, extracts relevant scenarios together with the ADS partner and uploads them to the Pool.
3. ADS Members and Partners have access to the Pool database. A proportional incentive scheme ensures a balance between what each ADS Member contributes to the pool and what it gets out of it (Value of data pushed to the pool = Value from data taken from the pool)
4. Cities, regulators, governments and other Stakeholders have access to the Pool and insights derived from it, to take informed, data-driven decisions in collaboration with industry



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# ROADMAP

Q4 19

Landscape review and scoping

Community Formation & Stakeholders engagement

First pilot with pioneering ADS partners

Iterative development of technical requirements and specifications

Q1 20

Initial Launch @ CES 2020

Q2 20

Development of policy toolkit and guidelines

Community expansion

Q3 20



# SAFETY POOL LEADERS



## Partners

- Major Automotive OEM, Silicon Valley Autonomous Full Stack Developer, Major Automotive Tier 1 Supplier, LiDAR Maker
- City of Sacramento
- City of San Jose

Coming soon: State of Michigan, EU, South Korea, and others to be disclosed soon



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# Safety Pool TAXONOMY

A Superset Golden Standard Taxonomy

- **Superset Taxonomy:** ~145 classes organized in a graph structure. It aims at being a superset of everything it is publicly available
- **Taxonomy Design Process:** Strict design process based on Representativeness, Accuracy and Difficulty
- **Interoperable and Extensible:** The structure should allow for different industry players to be adopted and should be easily extensible with new classes



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# INVOLVEMENT LEVELS

## TIER 0 Affiliate

Stay engaged with the Leaders and receive monthly updates

Little to no contribution, limited to ODD definition and other high-level inputs

Introduce potential candidate stakeholders to project leaders

## TIER 1 Stakeholder

Stay engaged with the Leaders and receive monthly updates

Contribution with technical/operational/marketing or other input and/or resources

Introduce potential candidate stakeholders to project leaders

Access to insights generated from the Safety Pool database

*Recommended for non-tech stakeholders*

## TIER 2 Member

Contribute with scenarios to the Pool

Incentive-based access to Safety Pool data and scenarios

Evangelize SP and Introduce potential candidate stakeholders to project leaders

## TIER 3 Partner

Contribute with raw data and scenarios to the Pool

Contribute with substantial technical, operational and/or marketing input/resources

Be visible and recognized as a relevant contributor/Partner

Incentive-based access to Safety Pool data and scenarios



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# LICENSING TERMS (IP ownership)

All data in the Pool should be allowed to be used for commercial purposes without any liability to the members

1. Tier 0 members don't get any access to the scenarios or data in the pool
2. Tier 1 members get access to insights or limited reports
3. Tier 2 members retain ownership of the raw data, assign ownership of the scenarios to the Safety Pool. The scenarios can be used for commercial purposes without restrictions without any liabilities to the Pool, its members, or any of its stakeholders.
4. Tier 3 members assign ownership of the raw data, generated annotations and scenarios to the Safety Pool. The data and scenarios can be used for commercial purposes without restrictions without any liabilities to the Pool, its members, or any of its stakeholders.



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# NEXT STEPS

CONTACT: [nico@deepen.ai](mailto:nico@deepen.ai)

1. Feedback and thoughts on the project
2. Commit to join the Safety Pool Partner consortium through signed LOI
3. Start contributing to the pool by dropping data and/or providing input
4. Start exchange data out of the pool after initial launch

## Thank You!