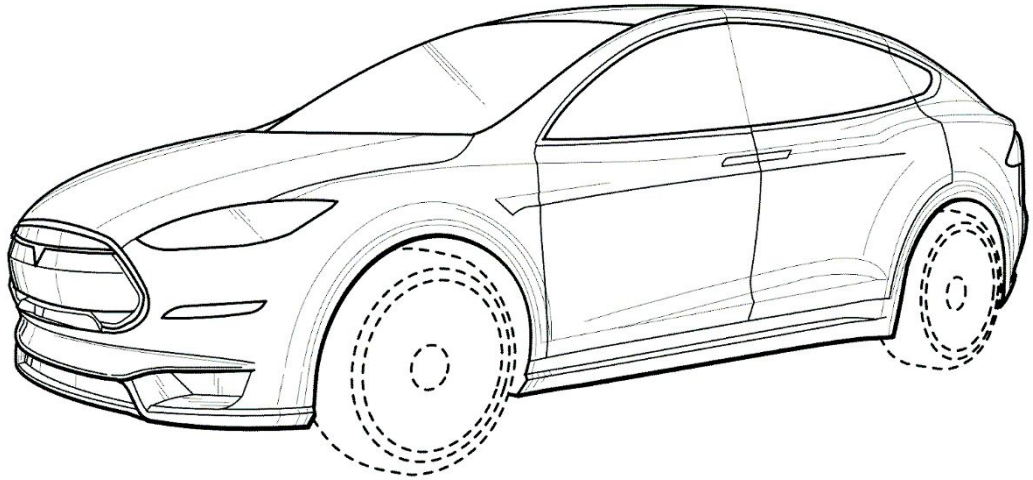
Business Plan



Pitch Desk by Eth Transport

Team:
Manu Sheel Gupta
Deepti Gupta
Vithika Gupta



Oct. 19, 2022

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Executive Summary

- More number of people died due to road accidents in South Asia in 2013-19, than all of our wars put together. One big reason is that there is very little driver accountability

- Endeavour to change the scenario by use of in-car technology to make driving safer and monitored for drivers, authorities, as well as other 3rd parties. With a mix of hardware and software we will provide intelligent feedback about drive quality and help analyze past incidents, as well as predict future incidents

- Flagship product will be a combination of intelligent on board sensors and a dashboard camera to provide user with unacceptable driving behavior along with video footage of the same

- Key product features to include video recording, event detection and reporting, GPS tracking, 4G- LTE and Wifi compatible with Wifi hotspot, vehicle diagnostics, maintenance remainders, drive quality scores, speed alerts and much more

- Product target segment includes OEMs & dealerships, car fleet owners including OLA and UBER, Insurance companies, and state governments

- Identified clear gap in the market and will focus development efforts towards building quality hardware, intelligent information processing and seamless user experience

- Seeking 15 lakhs for prototype development and testing and to test patentability of the idea

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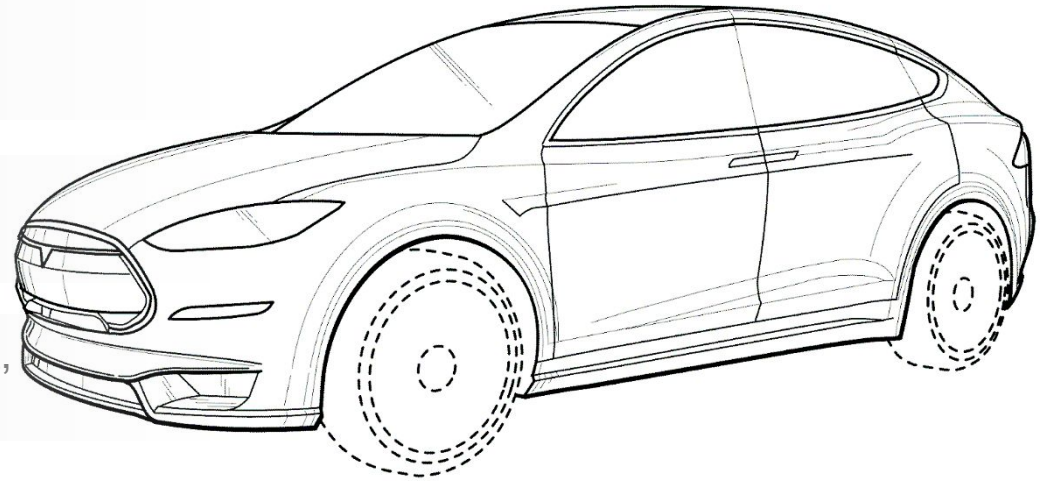

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Roads – A Giant Killing Machine

- The total number of road accidents increased by 2.5 per cent from 4,89,400 in 2014 to 5,01,423 in 2015
- Over 1,37,000 people were killed in road accidents in 2013 alone, that is more than the number of people killed in all our wars put together. This number increased to 1,46,133 in 2015
- There is one death every four minutes due to a road accident in India.
- 1,214 road crashes occur every day in India

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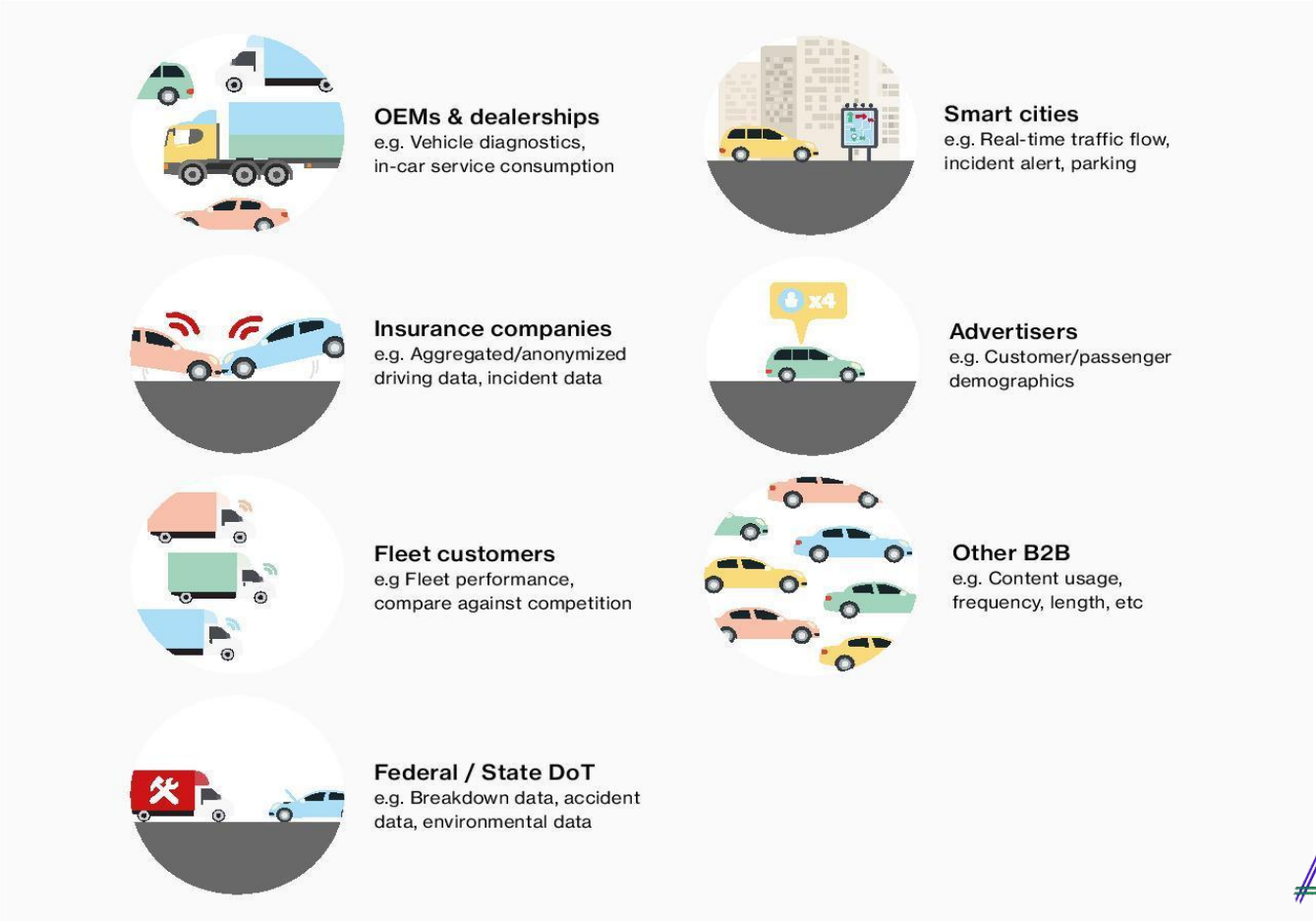
Our Vision

Our vision is to use in-car technology to make driving safer and monitored for drivers, authorities, as well as other 3rd parties. With a mix of hardware and decentralized software powered by FileCoin, XMTP Moralis, Tableland, Polygon, Fluence, Chainlink we will provide intelligent feedback about drive quality and help analyze past incidents, as well as predict future incidents using a gamified interface



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Our Idea

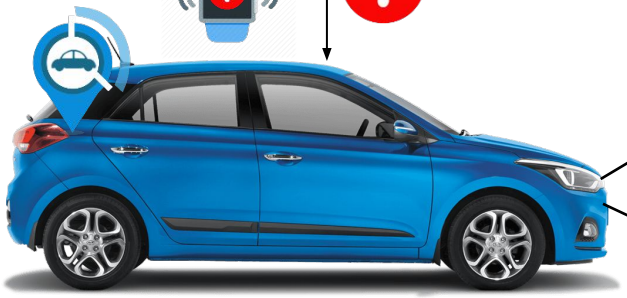
Data Generation

Data Transmission

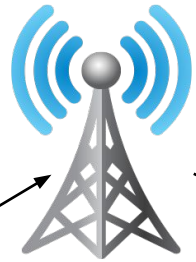
Data Processing

Verification and authorization using Cronos, RockX and Covalent blockchain technology

Real time alert

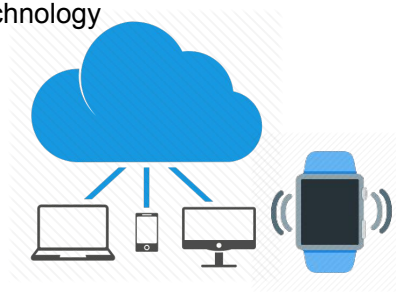


Gesture control



Mobile Network

WIFI



Data Analysis

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Technical Solution Features for Driver

360 degrees access of the incidents to the action/ administration team. They can manage the complete lifecycle of incident reporting, overall status, traffic monitoring, managing police teams. Using machine learning they can also predict the incident occurrence at any area. This will help in taking necessary actions in advance to control the traffic. They can also use the solution for effective utilization of staff members and provide road safety counseling.

The Blockchain-Connected Vehicle Drives IoT Monetization. Real-time access to car availability and mobile connectivity enables better decisions making systems.

Recognition area built in the central control to pick up your body movements, GAIT analysis

Vehicles become IoT devices which can connect to smartphones, take voice commands, change the user interface.

Incident-based reporting & Collision detection (even when a vehicle is parked) and video footage associated with it.

Video footage for abnormal driver behavior (complete view of the vehicle with 2 cameras – front and back)

Real-time alert and live streaming. Any abnormal behavior/activity can be displayed on the smart dashboard in the vehicle.

Built-in GPS technology useful in fleet management and tracking. Black box vehicle tracking to be able to pre-empt and diagnose breakdowns more quickly.

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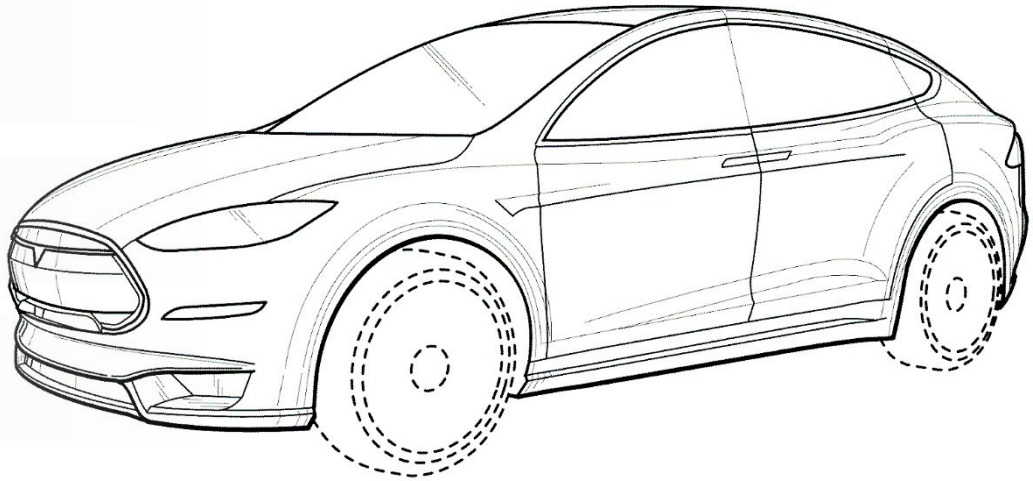

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Competitive Landscape

Unintelligent Dash Cameras

Out of Context Telematics Solutions

- Cameras require simplified user interface and one has to know exactly what he/she is looking for
- OEM Telematics solution is bundled with a lot of features and only provide data or at best, information
- No player offers complete solution for the user

Competitive Landscape - Global

Verizon Hum

- Use OBD (On Board Diagnostics) to get data about vehicles and gives real time alerts to users
- Has other features like:
  - Roadside and emergency assistance
  - Maintenance reminders
- Cost - $ 30 for hardware and $10 subscription fee (2 year)
- They also have a variant which turns Hum device into a WiFi Hotspot (Hardware cost is $150 and $15 subscription fee (2 year)
- Other than this Verizon is betting on Telematics and connected cars, they have an entire suite of products providing features like Safety and security, Remote access, Family Driver Monitoring, Fleet monitoring, etc.

Other OBD based Products

- Apart from these, there are many other OB readers like Dash Command, Torque etc. (which basically use OBD and send information to the App)
- Tools like Blue driver Professional OBD2 Tool help mechanics to understand issues with the car

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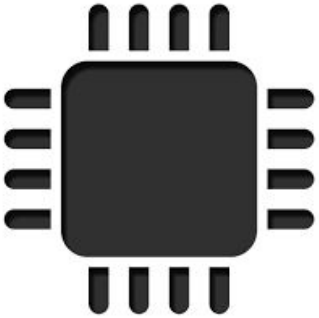
Our Value Proposition

Hardware:

- Hi resolution front and back cameras for complete protection (both when car is running and when it is parked)
- Reliance on trusted technologies for reliable vehicle data



Intelligent Information Processing:

- Incidence based reporting
- Understanding “What” happened and “Why”
- Build analytical and predictive capabilities to increase value of recommendations

User Interface:

- Access past data without storage
- Actionable information

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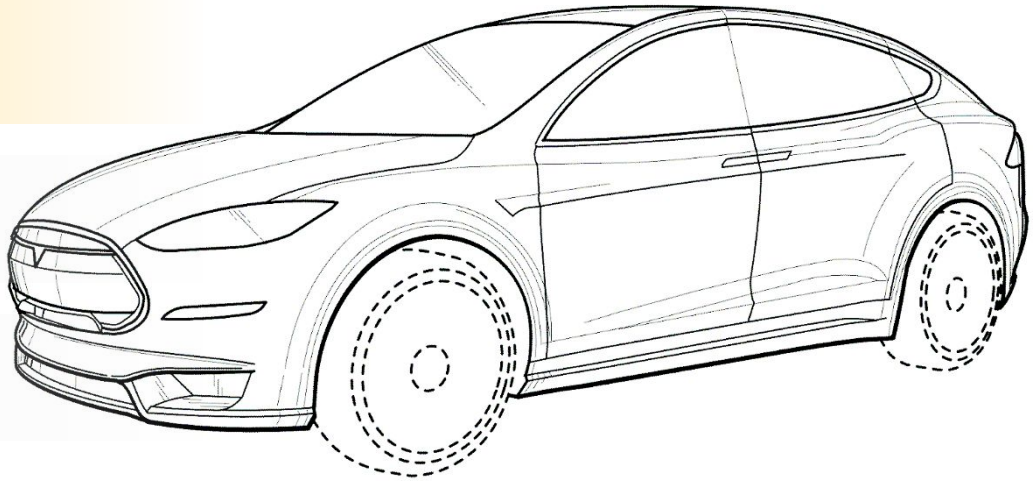

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Target Customers and Market Sizing – Phase 1

	F17	F18	F19	F20
Total PV Sales (2015 - 16)	2872884	2959071	3047843	3139278
Fleet Cars (% of PV)	11%	13%	14%	15%
New Fleet Cars	316017	384679	426698	470892
Existing Fleet Cars (with Cab Aggregators)	550000	716212	952334	1198459
% of New fleet cars with cab aggregators	70%	80%	80%	80%
New Fleet Cars (With Can Aggregators)	221212	307743	341358	376713
% of cars discarded from roads	10%	10%	10%	10%
No. of Cars discarded from roads	55000	71621	95233	119846
Total Fleet Cars (With Cab Aggregators)	716212	952334	1198459	1455327

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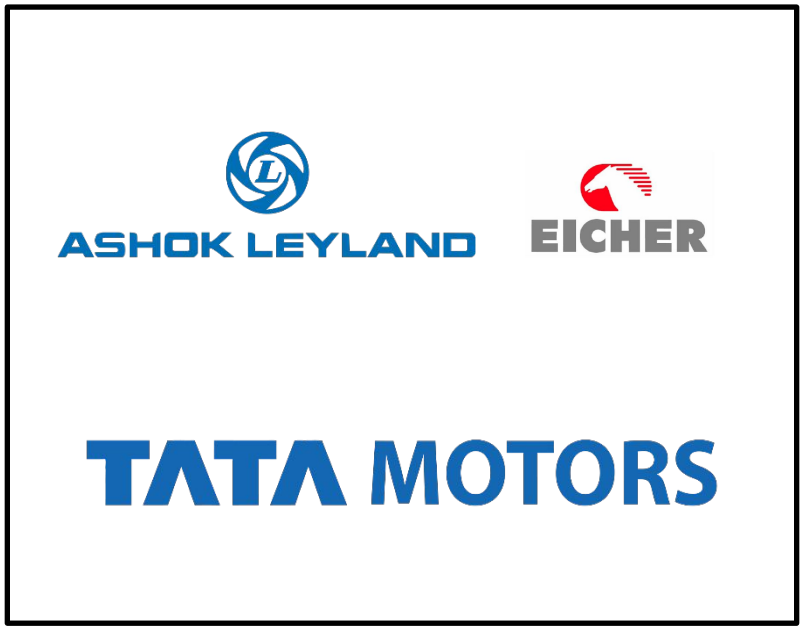
Target Customers and Market Sizing – Phase 2

Commercial Vehicles (over 1.6 Crore vehicles sold in the past 5 years)



Commercial Vehicles (over 42 lakh vehicles sold in the past 5 years)

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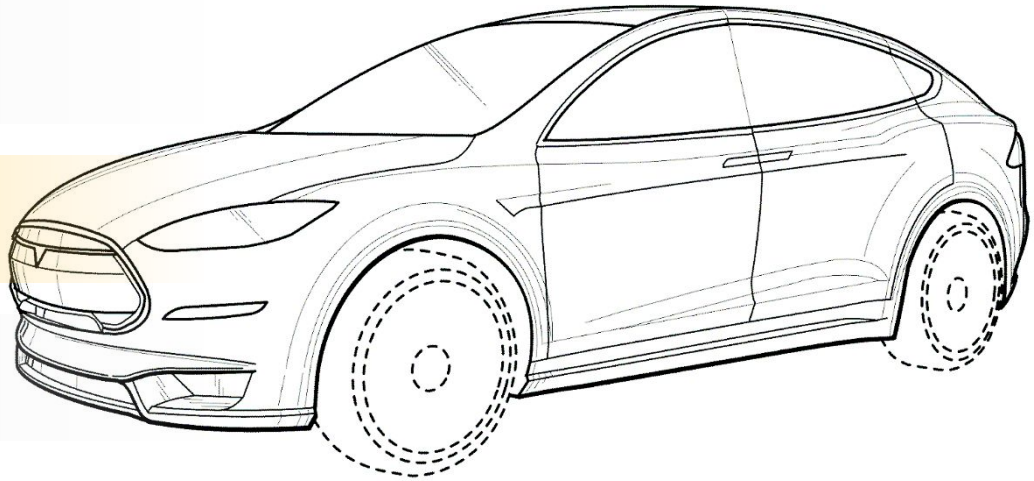

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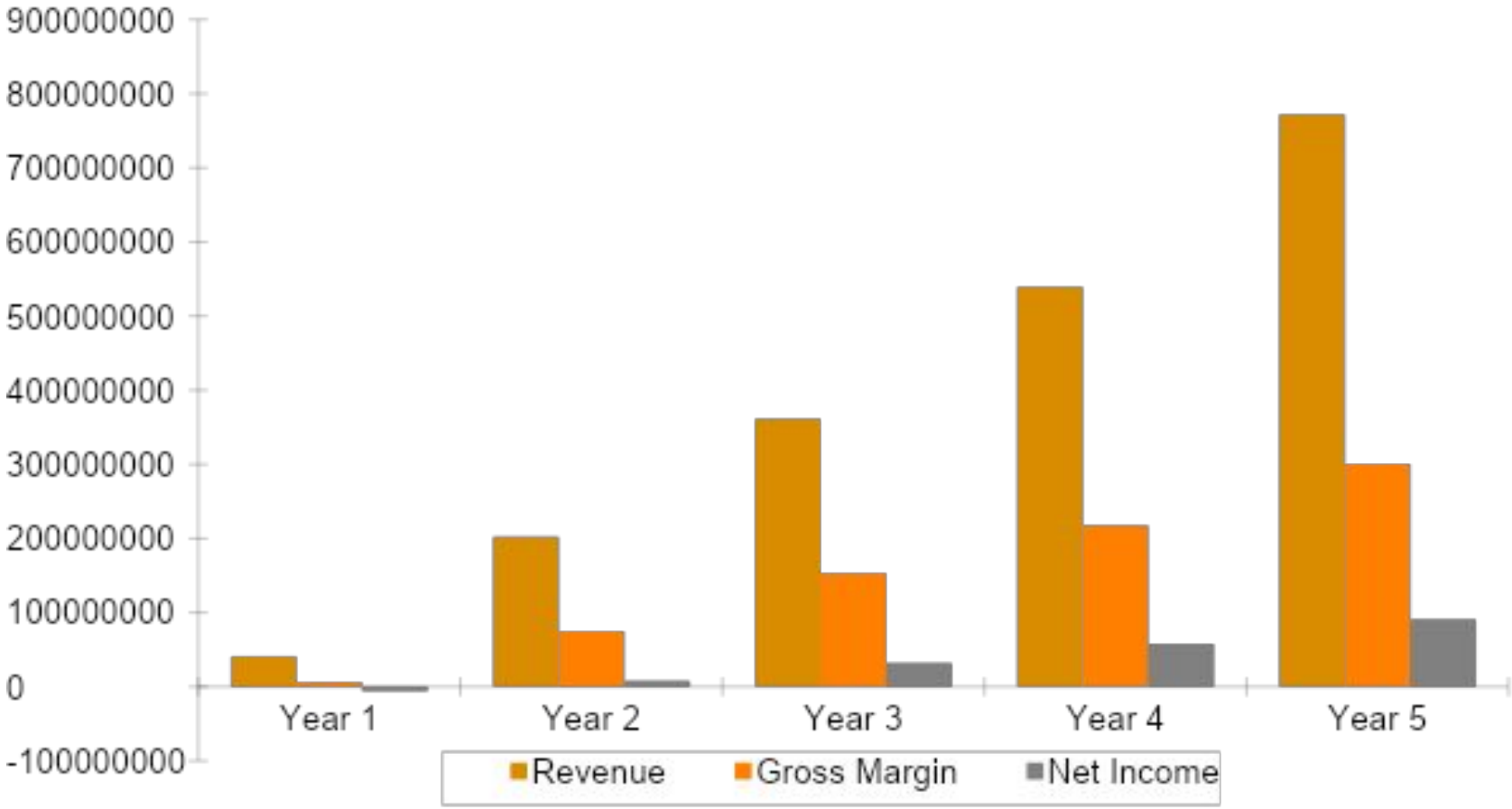
Forecasted Revenue, Gross Margin, & Income

All Figures in INR millions



Projected Income Statement

	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue					
Dash Solution - B2B	₹ 4,08,00,000	₹ 9,36,00,000	₹ 12,16,80,000	₹ 15,81,84,000	₹ 20,56,39,200
Dash Solution - B2C	₹ 0	₹ 10,50,00,000	₹ 13,65,00,000	₹ 17,74,50,000	₹ 23,06,85,000
Subscription Revenue	₹ 0	₹ 39,20,000	₹ 10,27,20,000	₹ 20,38,08,000	₹ 33,52,22,400
Total Revenue	**₹ 4,08,00,000**	**₹ 20,25,20,000**	**₹ 36,09,00,000**	**₹ 53,94,42,000**	**₹ 77,15,46,600**
Cost of Goods Sold	₹ 3,47,40,000	₹ 12,76,71,033	₹ 20,74,42,717	₹ 32,19,60,042	₹ 47,07,74,906
Gross Margin	**₹ 60,60,000**	**₹ 7,48,48,967**	**₹ 15,34,57,283**	**₹ 21,74,81,958**	**₹ 30,07,71,694**
% of Revenue	*15%*	*37%*	*43%*	*40%*	*39%*
Operating Expenses					
Engineering	₹ 57,05,367	₹ 1,45,74,300	₹ 1,90,08,400	₹ 2,59,25,650	₹ 3,58,17,775
% of Revenue	*14%*	*7%*	*5%*	*5%*	*5%*
Marketing/Sales	₹ 53,33,936	₹ 4,86,13,433	₹ 8,13,05,633	₹ 9,95,43,021	₹ 12,31,73,404
% of Revenue	*13%*	*24%*	*23%*	*18%*	*16%*
Administration	₹ 6,99,600	₹ 32,41,267	₹ 78,47,500	₹ 97,84,170	₹ 1,22,59,924
% of Revenue	*2%*	*2%*	*2%*	*2%*	*2%*
Total Operating Expenses	**₹ 1,17,38,903**	**₹ 6,64,29,000**	**₹ 10,81,61,533**	**₹ 13,52,52,841**	**₹ 17,12,51,104**
% of Revenue	*29%*	*33%*	*30%*	*25%*	*22%*
Income Before Int & Taxes	-₹ 56,78,903	₹ 84,19,967	₹ 4,52,95,750	₹ 8,22,29,118	₹ 12,95,20,591
% of Revenue	*-14%*	*4%*	*13%*	*15%*	*17%*
Interest Expense	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0
Interest Revenue	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0
Income Before Taxes	**-₹ 56,78,903**	**₹ 84,19,967**	**₹ 4,52,95,750**	**₹ 8,22,29,118**	**₹ 12,95,20,591**
Tax Exp	$0	$8,22,319	$1,35,88,725	$2,46,68,735	$3,88,56,177
Net Income	**-₹ 56,78,903**	**₹ 75,97,648**	**₹ 3,17,07,025**	**₹ 5,75,60,382**	**₹ 9,06,64,413**
% of Revenue	*-14%*	*4%*	*9%*	*11%*	*12%*

Projected Balance Sheet

	Year 1	Year 2	Year 3	Year 4	Year 5
ASSETS					
Current Assets					
Cash	₹ 23,12,325	₹ 9,88,27,225	₹ 12,01,11,437	₹ 16,91,60,652	₹ 25,43,95,794
Net Accounts Rec	₹ 77,61,000	₹ 1,72,93,100	₹ 2,99,24,625	₹ 4,47,28,733	₹ 6,39,74,072
Inventory (60 days)	₹ 1,08,00,000	₹ 1,92,40,000	₹ 2,50,12,000	₹ 3,25,15,600	₹ 3,54,96,600
Total Current Assets	₹ 2,08,73,325	₹ 13,53,60,325	₹ 17,50,48,062	₹ 24,64,04,984	₹ 35,38,66,466
Gross Fixed Assets	₹ 10,10,000	₹ 29,90,000	₹ 66,70,000	₹ 74,30,000	₹ 81,90,000
Less Accum Depreciation	₹ 1,10,611	₹ 8,41,944	₹ 25,05,944	₹ 41,87,944	₹ 56,21,278
Net Fixed Assets	₹ 8,99,389	₹ 21,48,056	₹ 41,64,056	₹ 32,42,056	₹ 25,68,722
TOTAL ASSETS	**₹ 2,17,72,714**	**₹ 13,75,08,381**	**₹ 17,92,12,118**	**₹ 24,96,47,040**	**₹ 35,64,35,188**
LIABILITIES					
Short Term Liabilities					
Accounts Payable (30 days)	₹ 54,22,450	₹ 1,12,95,000	₹ 1,68,67,583	₹ 2,62,29,483	₹ 3,78,31,400
Salaries Payable (30 days)	₹ 5,29,167	₹ 20,80,833	₹ 38,21,583	₹ 45,64,221	₹ 55,39,178
Taxes Payable (365 days)	₹ 0	₹ 7,13,802	₹ 33,97,181	₹ 61,67,184	₹ 97,14,044
Line of Credit (0% of net A/R)	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0
Current Portion of Capital Equipment Lease	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0
Current Portion of Long Term Debt	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0
Total Short Term Liabilities	₹ 59,51,617	₹ 1,40,89,636	₹ 2,40,86,348	₹ 3,69,60,888	₹ 5,30,84,623
Long Term Liabilities					
Capital Equipment Lease (3 years)	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0
Long Term Debt (5 years)	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0
Total Long Term Liabilities	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0
TOTAL LIABILITIES	₹ 59,51,617	₹ 1,40,89,636	₹ 2,40,86,348	₹ 3,69,60,888	₹ 5,30,84,623
Equity					
Preferred Stock	₹ 2,15,00,000	₹ 12,15,00,000	₹ 12,15,00,000	₹ 12,15,00,000	₹ 12,15,00,000
Common Stock	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0
Retained Earnings	-₹ 56,78,903	₹ 19,18,745	₹ 3,36,25,770	₹ 9,11,86,152	₹ 18,18,50,565
Total Equity	₹ 1,58,21,097	₹ 12,34,18,745	₹ 15,51,25,770	₹ 21,26,86,152	₹ 30,33,50,565
LIABILITIES & EQUITY	**₹ 2,17,72,714**	**₹ 13,75,08,381**	**₹ 17,92,12,118**	**₹ 24,96,47,040**	**₹ 35,64,35,188**

Projected Cash Flows

	Year 1	Year 2	Year 3	Year 4	Year 5
BEGINNING CASH	₹ 0	₹ 23,12,325	₹ 9,88,27,225	₹ 12,01,11,437	₹ 16,91,60,652
Sources of Cash					
Net Income	-₹ 56,78,903	₹ 75,97,648	₹ 3,17,07,025	₹ 5,75,60,382	₹ 9,06,64,413
Add Depr/Amort	₹ 1,10,611	₹ 7,31,333	₹ 16,64,000	₹ 16,82,000	₹ 14,33,333
Issuance of Preferred Stock	₹ 2,15,00,000	₹ 10,00,00,000	₹ 0	₹ 0	₹ 0
Issuance of Common Stock	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0
Plus Changes In:					
Accounts Payable (30 days)	₹ 54,22,450	₹ 58,72,550	₹ 55,72,583	₹ 93,61,900	₹ 1,16,01,917
Salaries Payable (30 days)	₹ 5,29,167	₹ 15,51,667	₹ 17,40,750	₹ 7,42,638	₹ 9,74,958
Taxes Payable (365 days)	₹ 0	₹ 7,13,802	₹ 26,83,379	₹ 27,70,003	₹ 35,46,860
Additions to Line of Credit (0% of net A/R)	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0
Additions to Capital Equipment Lease (3 years)	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0
Additions to Long Term Debt (5 years)	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0
Total Sources of Cash	₹ 2,18,83,325	₹ 11,64,67,000	₹ 4,33,67,737	₹ 7,21,16,922	₹ 10,82,21,481
Uses of Cash					
Less Changes In:					
Net Accounts Rec	₹ 77,61,000	₹ 95,32,100	₹ 1,26,31,525	₹ 1,48,04,108	₹ 1,92,45,340
Inventory (60 days)	₹ 1,08,00,000	₹ 84,40,000	₹ 57,72,000	₹ 75,03,600	₹ 29,81,000
Gross Fixed Assets	₹ 10,10,000	₹ 19,80,000	₹ 36,80,000	₹ 7,60,000	₹ 7,60,000
Reductions To Credit Line	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0
Total Uses	₹ 1,95,71,000	₹ 1,99,52,100	₹ 2,20,83,525	₹ 2,30,67,708	₹ 2,29,86,340
CHANGES IN CASH	₹ 23,12,325	₹ 9,65,14,900	₹ 2,12,84,212	₹ 4,90,49,215	₹ 8,52,35,142
ENDING CASH	₹ 23,12,325	₹ 9,88,27,225	₹ 12,01,11,437	₹ 16,91,60,652	₹ 25,43,95,794

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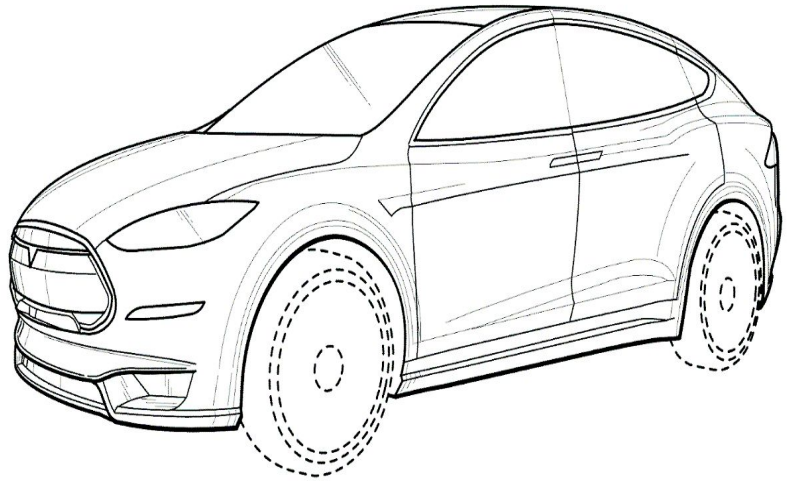

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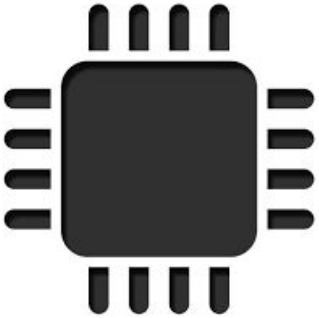
Value Proposition

- Hi resolution front and back cameras for complete protection (both when car is running and when it is parked)
- Reliance on trusted technologies for reliable vehicle data



Intelligent Information Processing:

- Incidence based reporting
- Understanding “What” happened and “Why”
- Build analytical and predictive capabilities to increase value of recommendations

User Interface:

- Access past data without storage
- Actionable information

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Our Team

Manu Sheel Gupta: Co-founder, Director at SEETA and Director, Aspiring Investments Corp

Manu is also Mentor, Visiting Expert at NSIT Incubation Centre funded by Delhi Government.

- Former South Asia Lead at One Laptop Per Child, Cambridge, United States of America
- Associate Product Manager at Servigistics India Office
- Co-authored over 15 research papers published in international conferences, journals
- Invited speaker at RSA Conference, San Francisco; Google, India and University of Delhi
- Education: Bachelor of Engineering in IT from NSIT, University of Delhi, India.

South Korea Collaboration: Special Award Presented to SEETA, 24th Global Contest, South Korea. The award was presented to SEETA on behalf of its remarkable results at 24th Global Software Contest hosted by IPAK and NIPA, South Korea.

Deepti Gupta: Product Engineer, Consultant and Open Source Contributor

- Developer at SAP
- Open Source Contributor

Vithika Gupta: Software Engineer, App Developer and Community Engineer

- Developer of Business and Financial products.
- Education: Computer Engineer, Banasthali University, India

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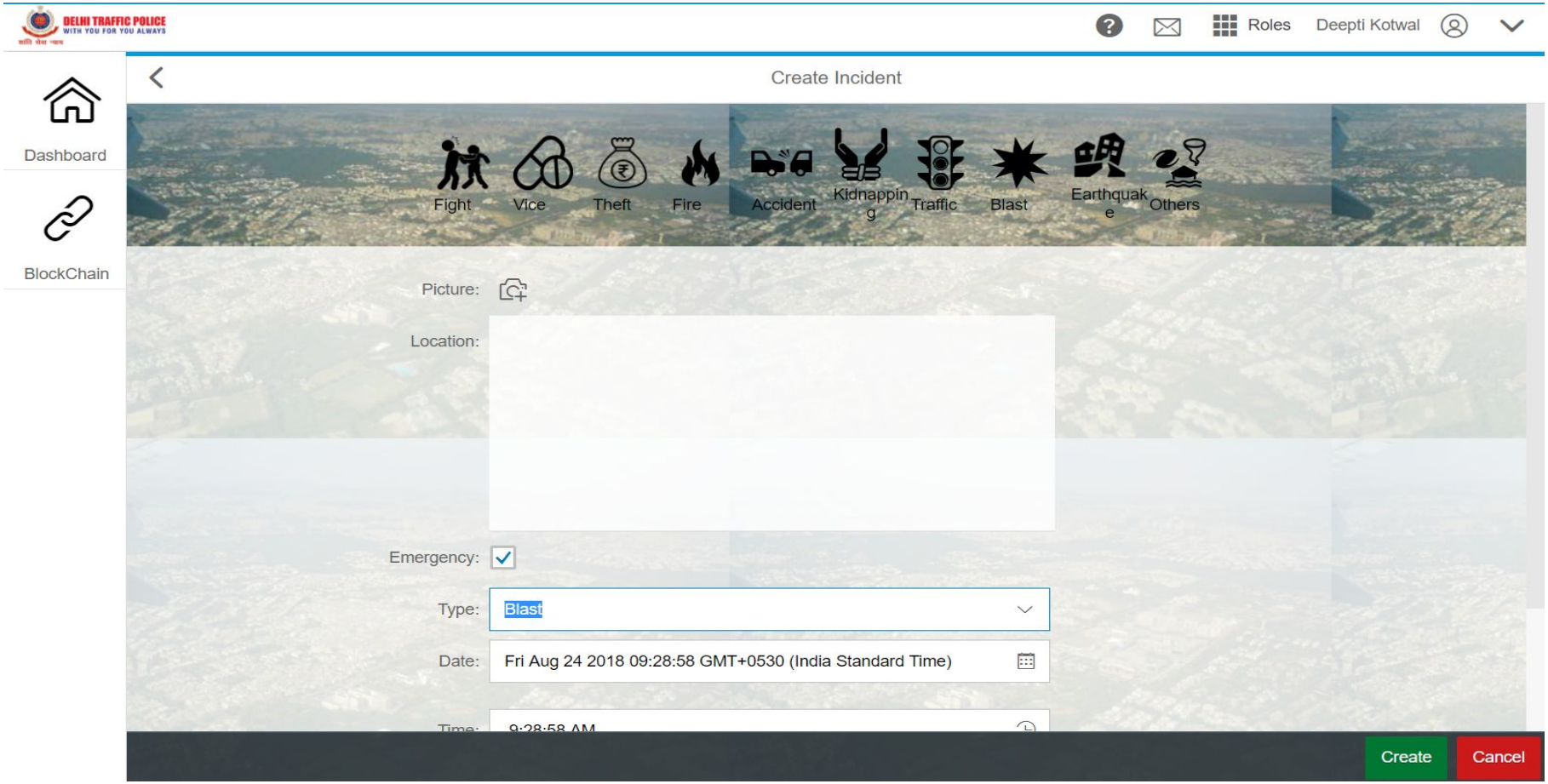
The Solution: How it works?

The technical solution demonstrates capabilities which are pluggable, extendable to 5 different personas :
Citizen, Police Officer, Dispatcher, Admin and Driver
Persona based Capabilities:

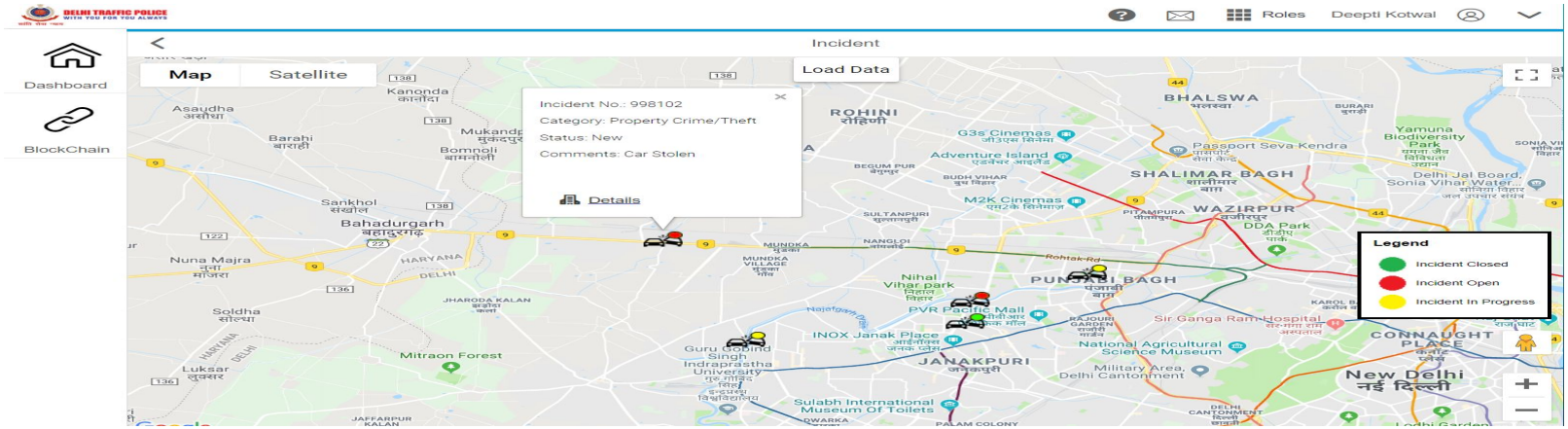
1) **As a citizen:** → Ability to create SOS: incident created automatically, added to ICM (Investigative Case management)
→ Create incident: Can directly create an incident/ticket on different categories.
→ Track the status of the incident (in progress/complete)/navigate to details of the same.
→ Provide feedback/view happiness review on the same.

The citizen functionalities are also made available on the mobile, which can provide live interactivity.

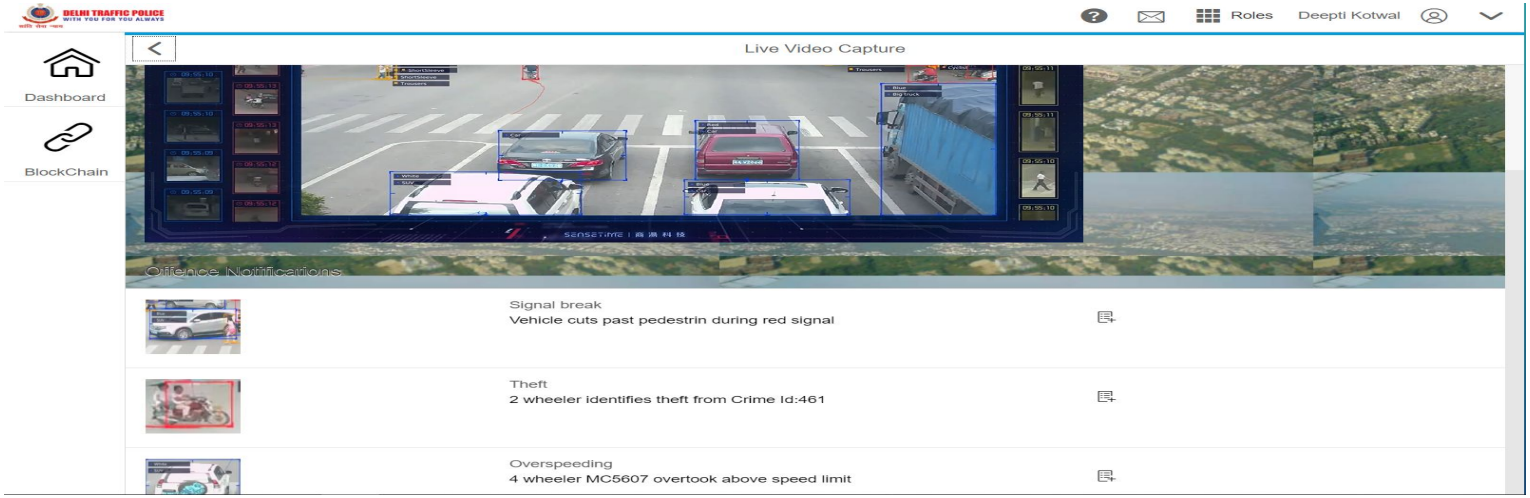


How it works?

2) As a police officer: A police officer can view incidents to which s/he is assigned. the ones new, in progress and can also upload evidence to close the same. S/he can view the same on the map and click on details to navigate further, view details, add details. All of this will be recorded in central investigative case management system (ICM).



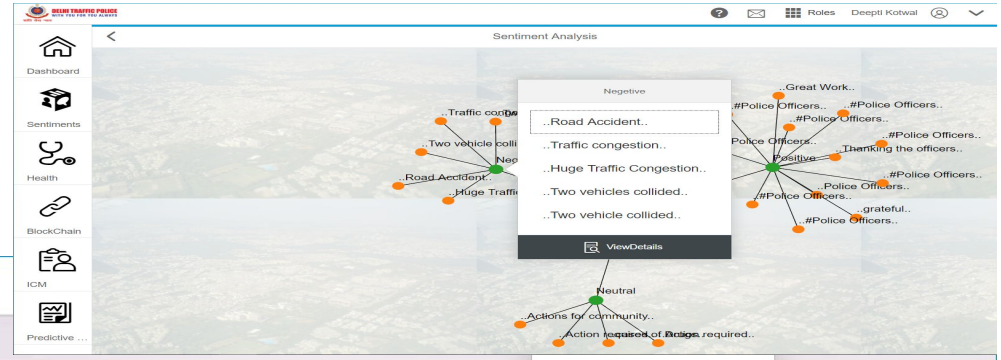
3) As a dispatcher assigning cases : Assigning incidents to police staff reported at run-time. Disptacher can view the nearest police station, which is available and can handle the cases based on their credibility. They have access to view the current situation using real-time camera application and sort information obtained from cameras. Video analytics brings in capabilities of what you could understand form the vehicles/license plates and identify suspicious object/issues.

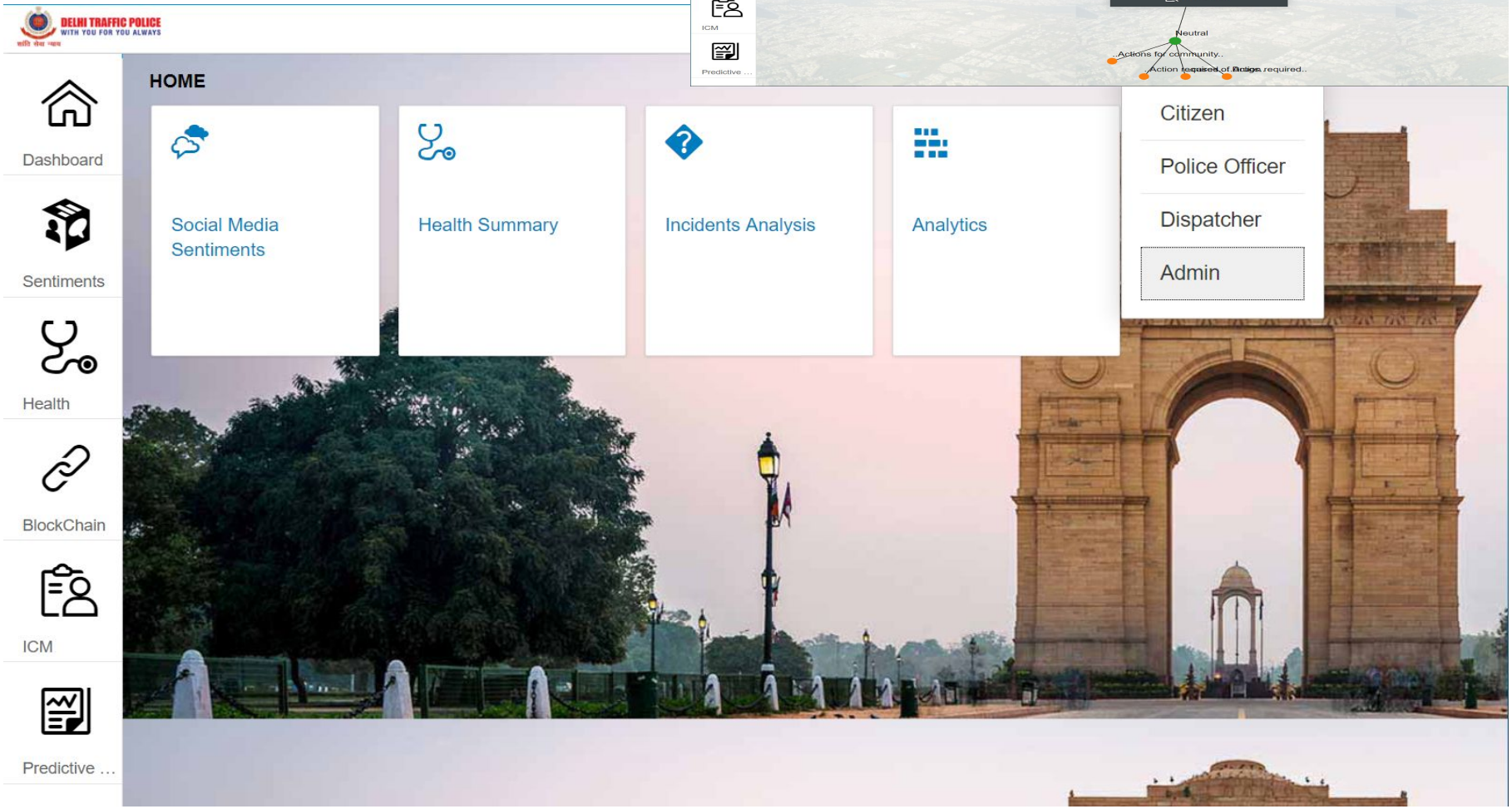


How it works?

4) **As an administrator /police head**: As an administrator, the police head could get complete overview of :

- Analytics of the incidents, road safety eco-system
- Analytics of the police force teams, staff members
- Understand social media trends, road safety norms
- Health summary of the police staff, scheduling and manging the staff, incident prevention data





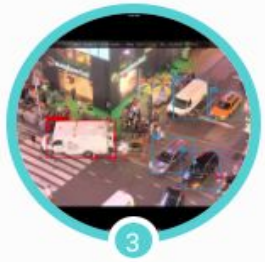
Mobile version of the Plaform: How it works?

Camera Management - add/edit/delete cameras

Click "+" icon to add cameras; Click "-" icon to delete cameras; Click "i" icon to edit cameras; Prepopulated 4 Onvif demo cameras, 10 http/rtsp cameras and 1 iOS back facing camera.

Object Detection Video Analytics Configuration

Go to Settings->Object Detection->Model to select engine; Go to Object Filters to configure selected engine object types to detect or alarm; Turn on/off detect/alarm for each object or bulk change.



Live Streaming with Object Detection Video Analytics

Implemented FFmpeg http/rtsp player; Overlays include Logo / Camera name / detected object type and location bounding boxes / Engine name and current FPS; Raise alarms in red bounding box.

Alarm Viewer - view alarms and archive in details

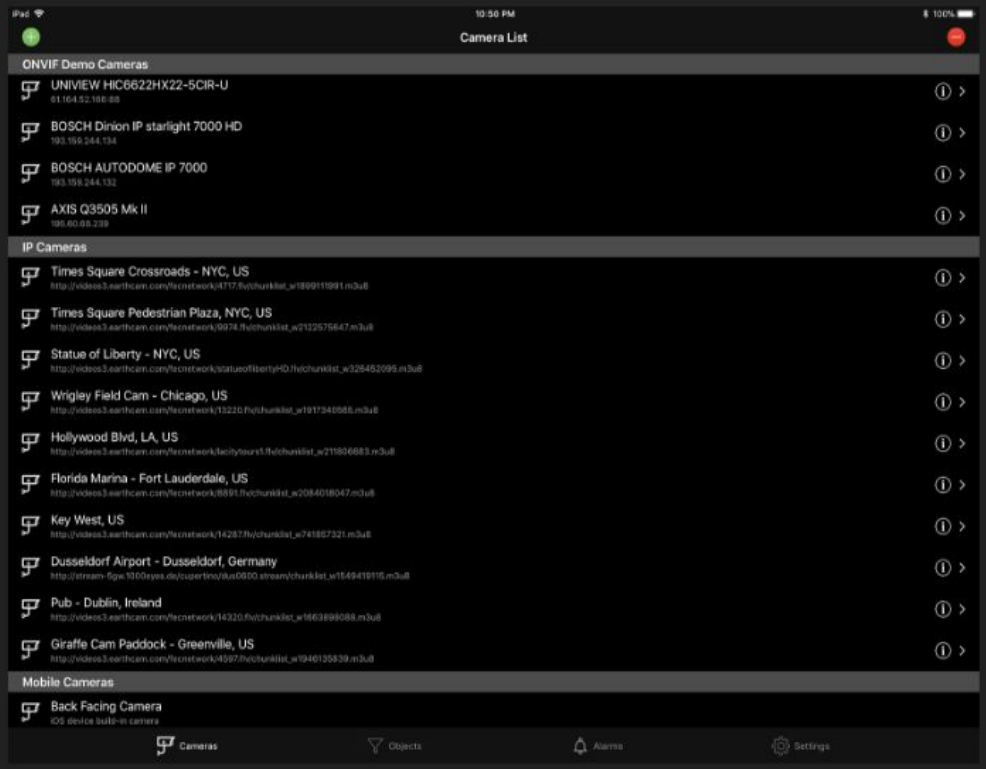
Load saved alarms (green border) from IPFS/Ethereum; Metadata includes timestamp, camera name, object type and engine; Double click alarm to show in fullscreen; Select alarm (grey back color) to save.

Blockchain Alarm Storage - alarm metadata & image

Save/Delete alarm metadata and image to/from IPFS p2p distributed web; Store the hash returned from IPFS to Ethereum Test Network; Provided links to access alarms and blockchain transaction details.

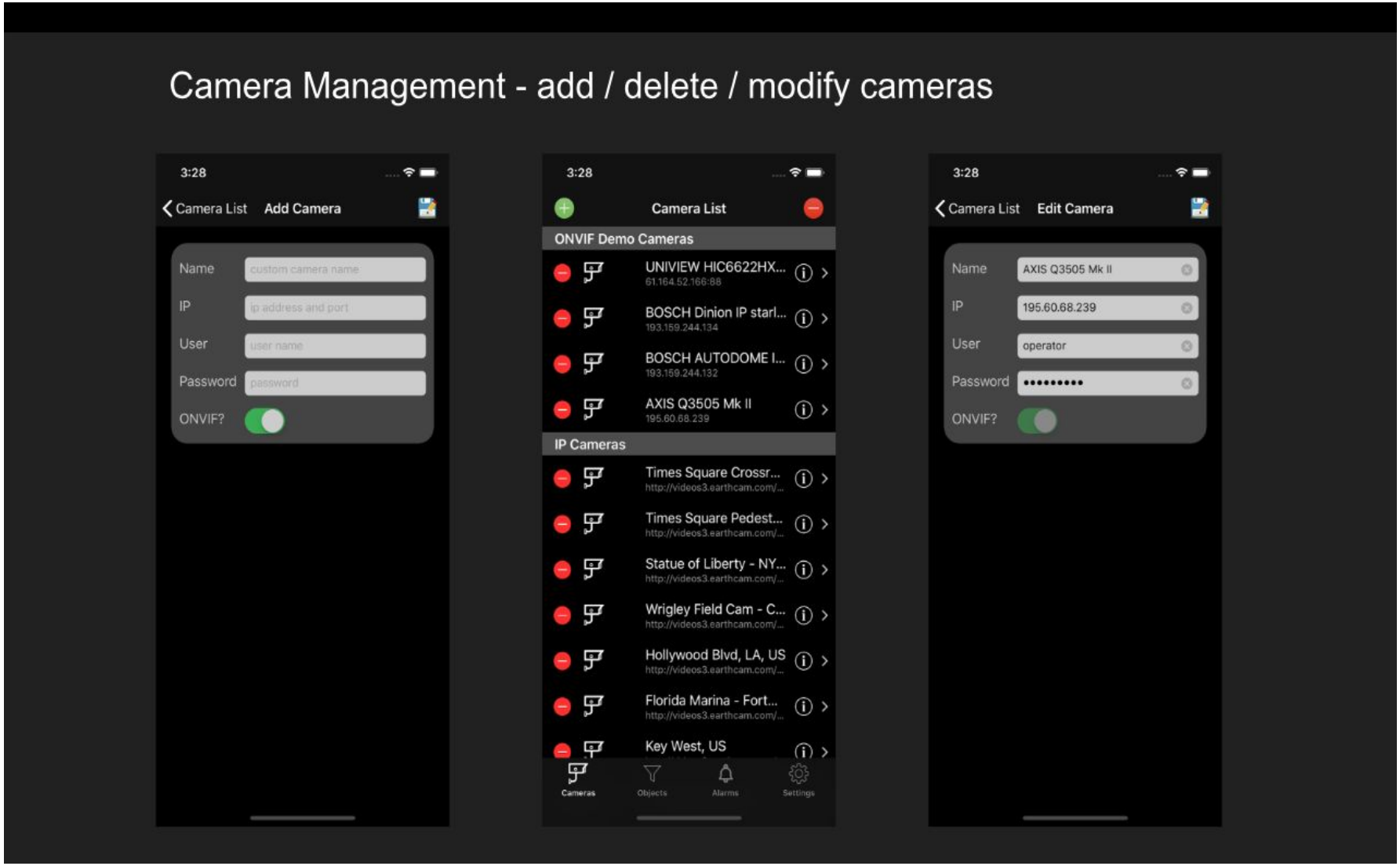
Camera Management

Camera Management - camera list



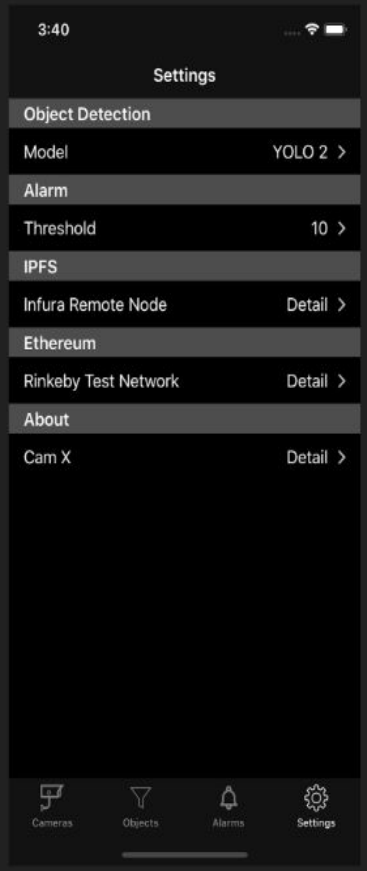
- App initial view
- Three types of cameras
  - **ONVIF** - supports onvif protocol
  - **IP -** supports http/rtsp protocol
  - **Mobile** - device build-in camera
- Prepopulated 4 ONVIF cameras, 10 IP cameras and 1 iOS back facing camera
- Click “+” icon on the top left navibar to show add camera dialog
- Click “-” icon on the top right navibar to show delete icon ahead of each camera row
- Click “i” icon at the end of each camera row to show camera edit dialog
- Click camera name to start playing live streaming

Camera Management Screens



Settings

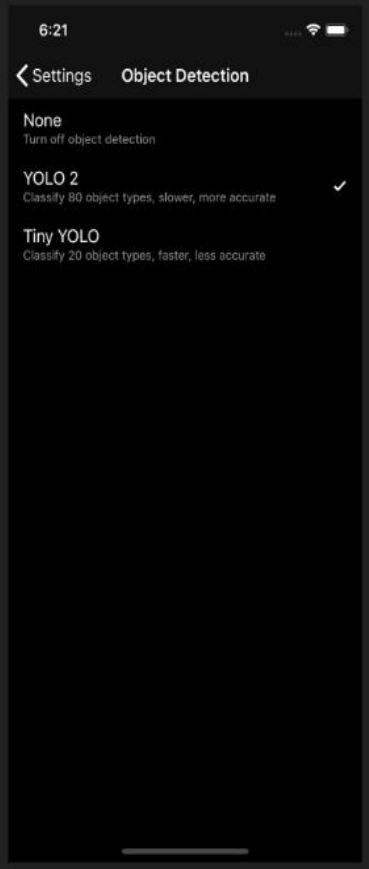
Settings



- Object Detection
  Select video analytics engine or turn off video analytics
- Alarm
  Set alarm threshold - the interval between taking alarm snapshots
- IPFS
  Infura remote node information
- Ethereum
  Wallet, balance, gas price and smart contract information
- About
  Author contact information

Settings – Object Detection selection options

Settings - Object Detection

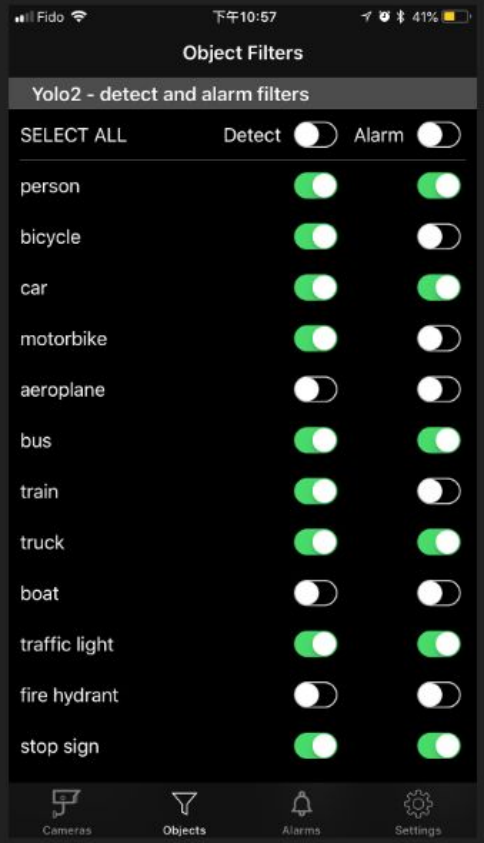


Three selection options

- None: show video streaming without running analytics
- YOLO 2: Object detection algorithm with pre-trained model can detect and localize 80 object types. It runs in 2-3 FPS on iPhone X or iPad Pro. Version 2 has better accuracy.
- Tiny YOLO: Object detection algorithm with pre-trained model can detect and localize 20 object types. It runs in nearly real-time (20-30 FPS) on iPhone X or iPad Pro. Tiny version has worse accuracy but faster detecting speed.
- YOLO 2 is the default option

Object Detection Video Analytics

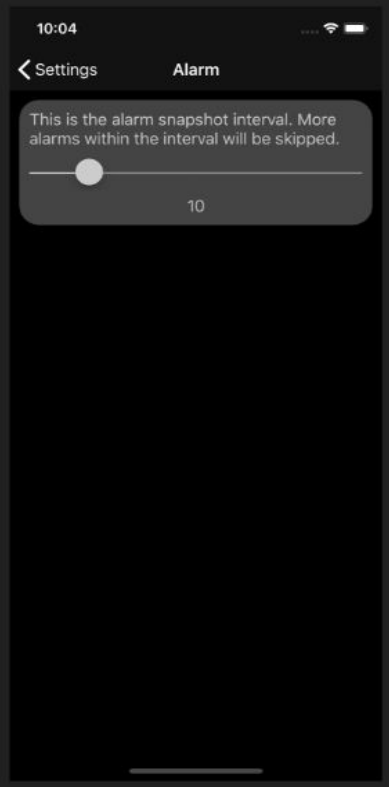
Object Detection Video Analytics Configuration



- The list content depends on the engine chosen in settings
- Yolo 2 classfies 80 object types which is listed in this diagram
- **Detect** refers to the bounding boxes and name around object on video
- **Alarm** refers to the red bounding boxes and ALARM label on object
- User can choose to turn on / off detect or alarm for each individual type
- User has option to turn on / off detect or alarm for all types
- Turn off detect would also turn off alarm automatically. If an object can't be detected, it can't be alarmed
- Detect is on by default for all object types
- Alarm is off by default for all object types

Alarm Settings

Settings - Alarm



- When an alarm occurs, a snapshot is taken
- This setting is used to avoid taking too many useless snapshots. Multiple objects could be alarmed in a frame. Alarm on still object stays for every frame.
- Minimum threshold value is 1 second
- Maximum threshold value is 60 seconds
- Default threshold value is 10 seconds
- Additional alarms generated during the interval will be ignored

Camera Live Streaming Function

Camera Live Streaming

- Decorations: Logo, camera name, detect bounding boxes with object type name, red alarm bounding boxes with alarm label, engine name and current FPS.

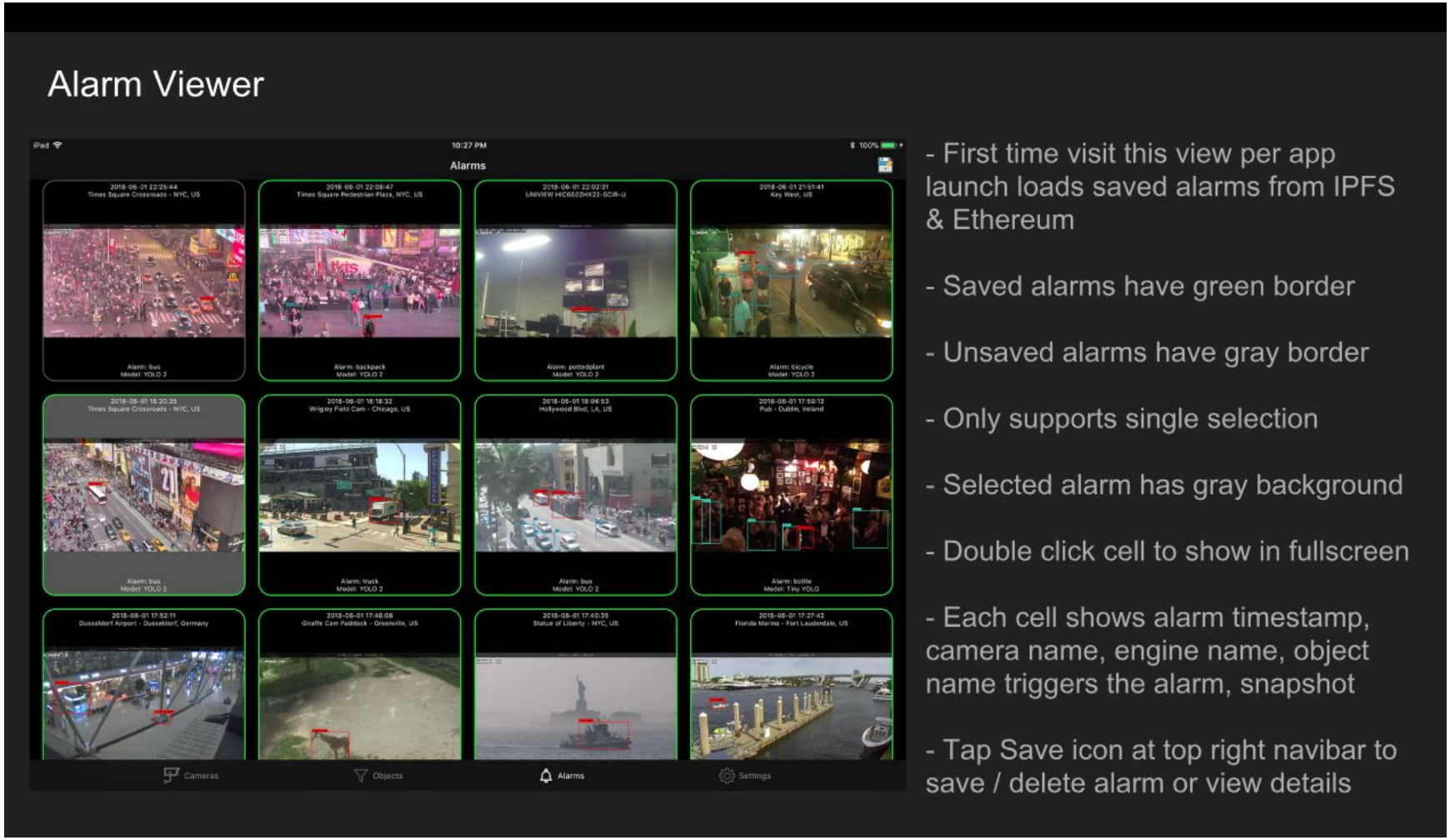
- Video decoded by FFmpeg library

- Video streaming runs in fullscreen mode. Tap on screen to bring top navibar and bottom tabbar back.

- Maximum 10 objects detected or alarmed per frame

- Alarms generate snapshots and kept in memory temporarily.

Alarm Viewer



- First time visit this view per app launch loads saved alarms from IPFS & Ethereum

- Saved alarms have green border

- Unsaved alarms have gray border

- Only supports single selection

- Selected alarm has gray background

- Double click cell to show in fullscreen

- Each cell shows alarm timestamp, camera name, engine name, object name triggers the alarm, snapshot

- Tap Save icon at top right navibar to save / delete alarm or view details

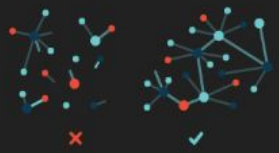
IPFS

IPFS - what?

- IPFS stands for InterPlanetary File System
- IPFS is the Distributed Web
- IPFS is a peer-to-peer hypermedia protocol to make the web faster, safer and more open.
- IPFS aims to replace HTTP and build a better web for all of us.
- https://ipfs.io/

IPFS – Why?

IPFS - why?

	HTTP	VS	IPFS
	Inefficient and expensive. Get file from a single computer at a time.		Get pieces from multiple computers simultaneously. Zero duplication saves storage.
	Humanity's history is deleted daily. The average lifespan of a web page is 100 days.		Provides historic versioning (like git). Simple to set up resilient networks for mirroring of data.
	Centralization limits opportunity. Increasing consolidation of control is a threat.		Makes the original vision of the open and flat web a reality.
	Addicted to the backbone. Developing world. Offline. Natural disasters. Intermittent connections.		Powers the creation of diversely resilient networks which enable persistent availability.

IPFS – how?

IPFS - how?

Each file and all of the blocks within it are given a unique fingerprint called a cryptographic hash.

IPFS removes duplications across the network and tracks version history for every file.

Each network node stores only content it is interested in, and some indexing information that helps figure out who is storing what.

When looking up files, you're asking the network to find nodes storing the content behind a unique hash.

Every file can be found by human-readable names using a decentralized naming system called IPNS.

Ethereum

Ethereum - what?

- Ethereum is an open-source, public, blockchain-based distributed computing platform and operating system.
- Offers smart contract (scripting) functionality enables developers to build and deploy decentralized applications (DApp)
- Supports a modified version of Nakamoto consensus via transaction based state transitions.
- Provides a decentralized Turing-complete virtual machine, the Ethereum Virtual Machine (EVM) which can execute scripts using an international network of public nodes.
- “Gas” an internal transaction pricing mechanism is used to mitigate spam and allocate resources on the network.
- Ether is a cryptocurrency whose blockchain is generated by the Ethereum platform.
- Ether can be transferred between accounts and used to compensate participant mining nodes for computations performed.

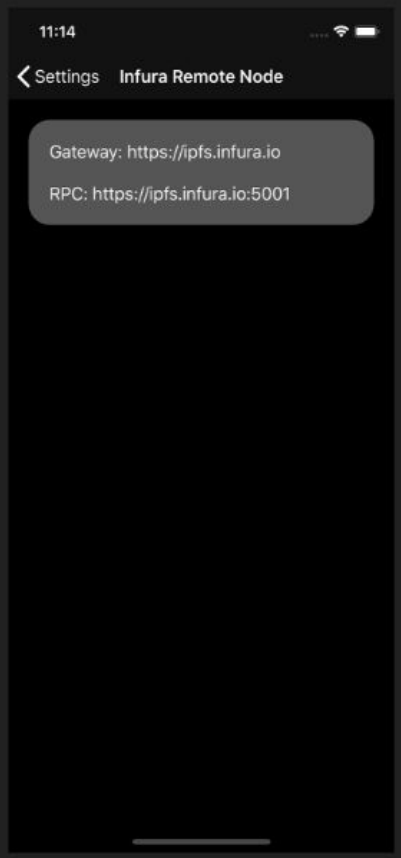
Ethereum – why?

Ethereum - why?

- Immutability: A third party cannot make any changes to data.
- Corruption & tamper proof: Apps are based on a network formed around the principle of consensus, making censorship impossible.
- Secure: With no central point of failure and secured using cryptography, applications are well protected against hacking attacks and fraudulent activities.
- Zero downtime: Apps never go down and can never be switched off.

Settings

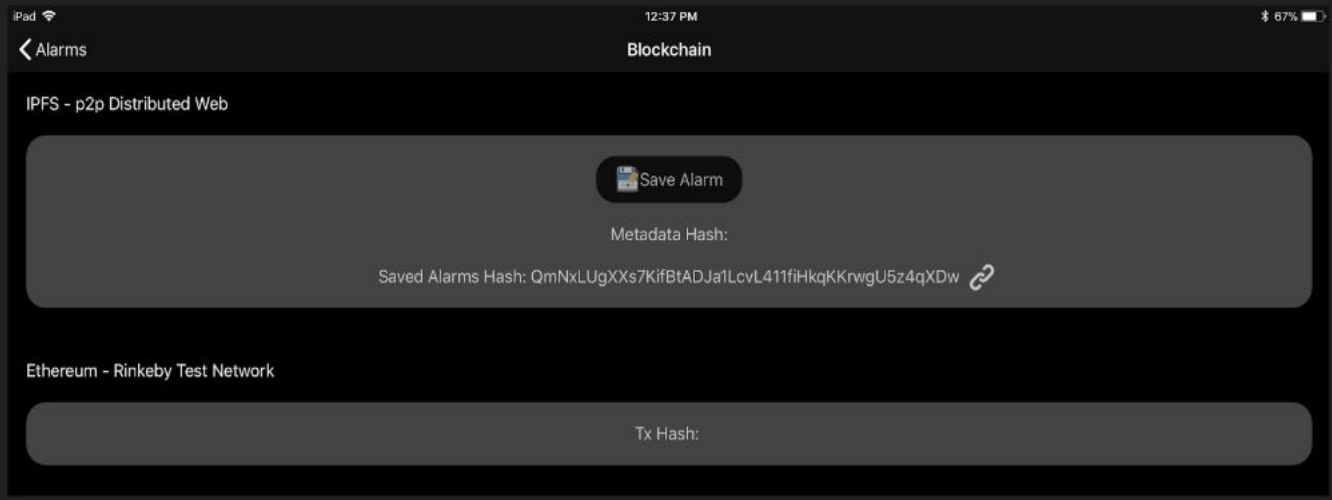
Settings - IPFS Infura remote node



- Infura provides secure, reliable, and scalable access to Ethereum APIs and IPFS gateways.
- https://infura.io

Blockchain – Save Alarm

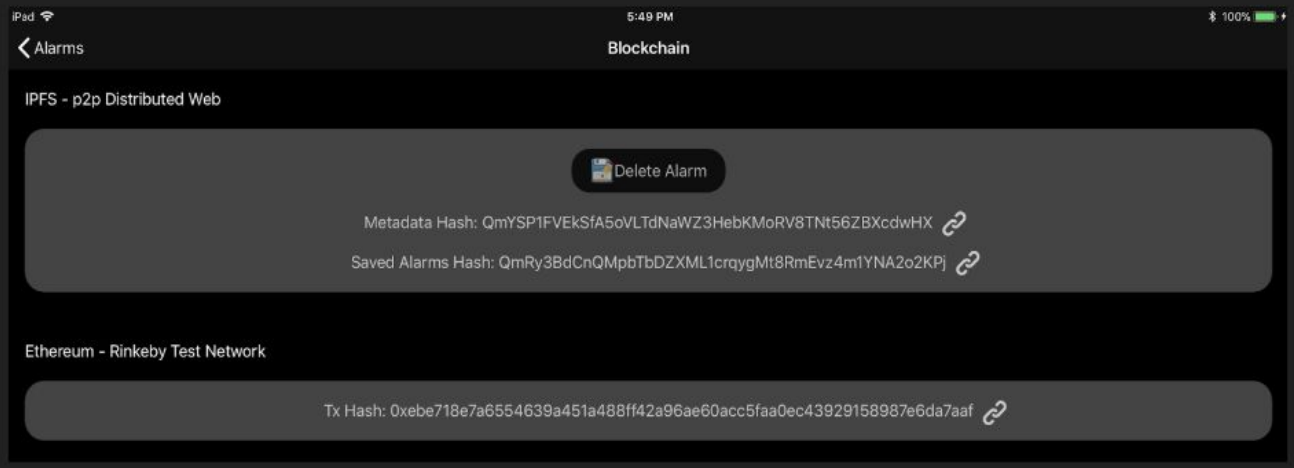
Blockchain - save alarm



- Click **Save Alarm** to save selected alarm image and metadata into IPFS.
- A **Metadata Hash** will be generated and displayed. Click link to view on web.
- **Saved Alarms Hash** is the link to file contains all saved alarms. It's empty when the user runs cam X first time after installation. An UUID generated as the hash key used in Smart Contract. Click link to view on web. The hash will change whenever the file content updates.
- Updated Saved Alarms Hash will be saved to Ethereum via smart contract.
- **Tx Hash** is the transaction receipt returned by Ethereum. Click link to view details.
- When the app runs next time, Saved Alarms Hash will be restored from Ethereum.

Blockchain – Delete alarm

Blockchain - delete alarm



- Click **Delete Alarm** to delete selected alarm image and metadata from saved alarms file. Alarm image and metadata are permanent.
- **Saved Alarms Hash** will be changed. Click to view on web and verify selected alarm deleted from the file.
- Updated Saved Alarms Hash will be saved to Ethereum via smart contract.
- **Tx Hash** is the transaction receipt returned by Ethereum. Click link to view details.

Ethereum – Smart Contract

Ethereum - Smart Contract

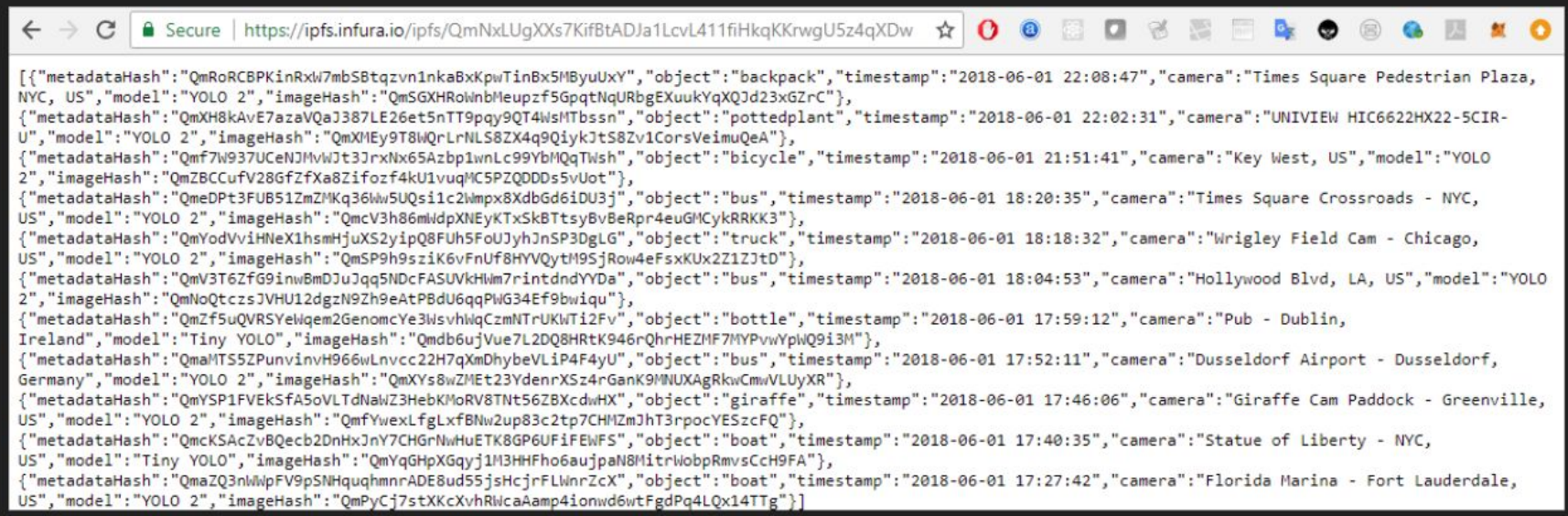

```
pragma solidity ^0.4.24;

contract CamX {

    mapping(string => string) ipfsHash;

    function addHash(string key, string value) public {
        ipfsHash[key] = value;
    }

    function getHash(string key) public view returns (string) {
        return ipfsHash[key];
    }
}
```

DApp steps:

1. Write smart contract code in Solidity *.sol
2. Compile at https://remix.ethereum.org
3. .sol binary sent back to dapp
4. Deploy contract to network
5. Return address and abstract binary interface (ABI)
6. APIs available to be called on blockchain

Blockchain – saved alarms hash web page

Blockchain - saved alarms hash webpage



[{"metadataHash":"QmRoRCBPKinRxW7mbSBtqzvn1nkaBxKpwTinBx5MByuUxY","object":"backpack","timestamp":"2018-06-01 22:08:47","camera":"Times Square Pedestrian Plaza, NYC, US","model":"YOLO 2","imageHash":"QmSGXHRoWnbMeupzf5GpqtNqURbgEXuukYqXQJd23xGZrC"},
{"metadataHash":"QmXH8kAvE7azaVQaJ387LE26et5nTT9pqy9QT4WsMTbssn","object":"pottedplant","timestamp":"2018-06-01 22:02:31","camera":"UNIVIEW HIC6622HX22-5CIR-U","model":"YOLO 2","imageHash":"QmXMEy9T8WQrLrNLS8ZX4q9QiykJtS8Zv1CorsVeimuQeA"},
{"metadataHash":"Qmf7W937UCeNJMvWJt3JrxNx65Azbp1wnLc99YbMQqTWsh","object":"bicycle","timestamp":"2018-06-01 21:51:41","camera":"Key West, US","model":"YOLO 2","imageHash":"QmZBCCufV28GfZfXa8Zifozf4kU1vuqMC5PZQDDDs5vUot"},
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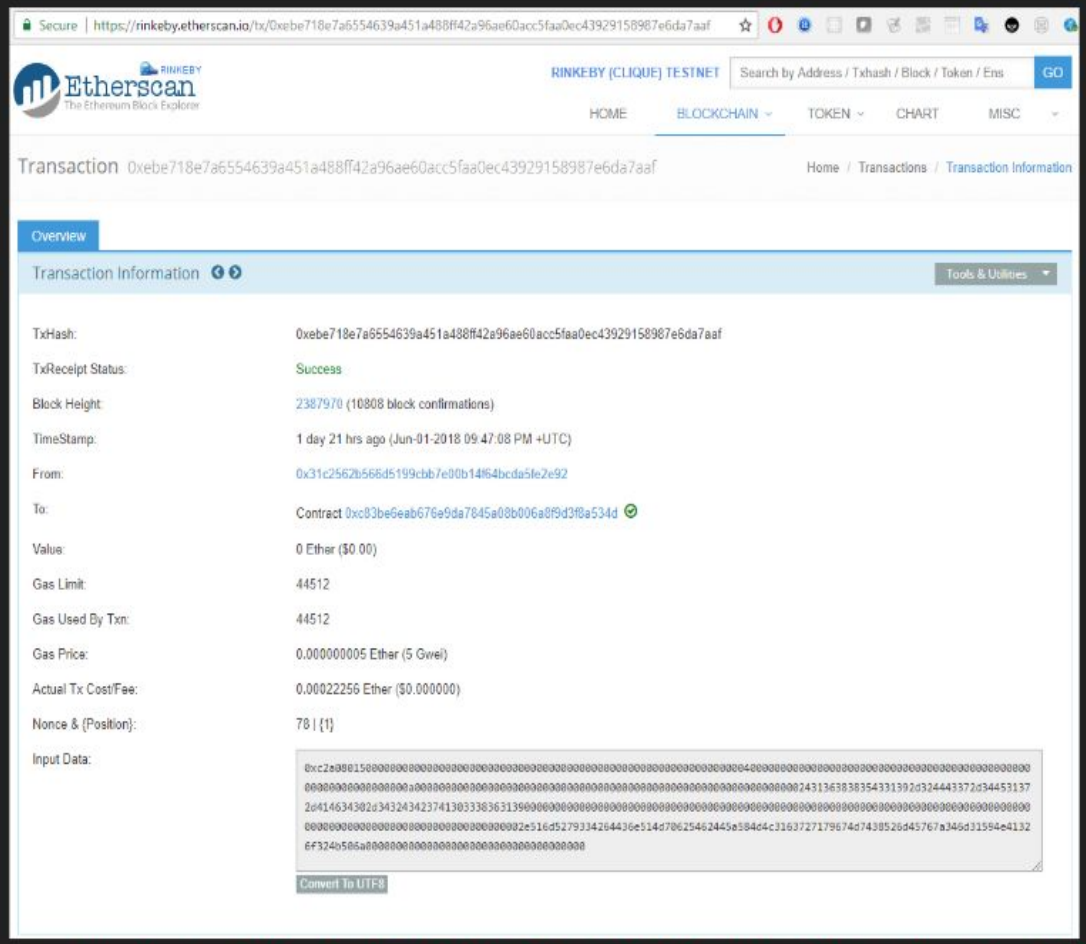
{"metadataHash":"QmZf5uQVRSYeWqem2GenomcYe3WsvhWqCzmNTrUKWTi2Fv","object":"bottle","timestamp":"2018-06-01 17:59:12","camera":"Pub - Dublin, Ireland","model":"Tiny YOLO","imageHash":"Qmdb6ujVue7L2DQ8HRtK946rQhrHEZMF7MYPvwYpWQ9i3M"},
{"metadataHash":"QmaMTS5ZPunvinvH966wLnvcc22H7qXmDhybeVLiP4F4yU","object":"bus","timestamp":"2018-06-01 17:52:11","camera":"Dusseldorf Airport - Dusseldorf, Germany","model":"YOLO 2","imageHash":"QmXYs8wZMEt23YdenrXSz4rGanK9MNUXAgRkwCmwVLUyXR"},
{"metadataHash":"QmYSP1FVEkSfA5oVLTdNaWZ3HebKMoRV8TNt56ZBXcdwHX","object":"giraffe","timestamp":"2018-06-01 17:46:06","camera":"Giraffe Cam Paddock - Greenville, US","model":"YOLO 2","imageHash":"QmfYwexLfgLxfBNw2up83c2tp7CHMZmJhT3rpocYESzcFQ"},
{"metadataHash":"QmcKSAcZvBQecb2DnHxJnY7CHGrNwHuETK8GP6UFiFEWFS","object":"boat","timestamp":"2018-06-01 17:40:35","camera":"Statue of Liberty - NYC, US","model":"Tiny YOLO","imageHash":"QmYqGHpXGqyj1M3HHFho6aujpaN8MitrWobpRmvsCcH9FA"},
{"metadataHash":"QmaZQ3nWWpFV9pSNHquqhmnrADE8ud55jsHcjrFLWnrZcX","object":"boat","timestamp":"2018-06-01 17:27:42","camera":"Florida Marina - Fort Lauderdale, US","model":"YOLO 2","imageHash":"QmPyCj7stXKcXvhRWcaAamp4ionwd6wtFgdPq4LQx14TTg"}]

https://ipfs.infura.io/ipfs/QmNxLUgXXs7KifBtADJa1LcvL411fiHkqKKrwgU5z4qXDw

Alarms serialized in json format.

Ethereum Smart Contract Receipt

Blockchain - Ethereum smart contract transaction receipt



https://rinkeby.etherscan.io/tx/0xebe718e7a6554639a451a488ff42a96ae60acc5faa0ec43929158987e6da7aaf

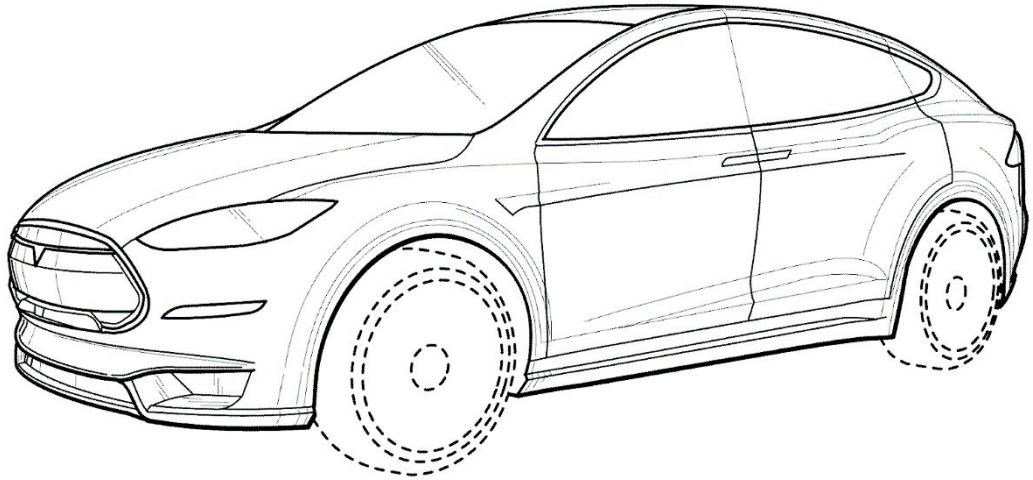
Requirement and Usage of Funds

Title	Activity	Timeline	Cost (INR)
Preliminary research & study	▪ Patent Search ▪ Prototype feature list finalization	3 weeks	1,00,000 (1200 CHF)
SKETCHING & CONCEPTUALIZATION	▪ File for provisional Patent ▪ Design configuration per Concept ▪ Design hardware Mock-ups ▪ Analyze the requirements and identify components of major units ▪ Processor, PMU, Cameras, GPS, LTE, OBD reader etc ▪ Explore technology options and perform cost/benefit analysis for each ▪ High level design and solution	5 weeks	5,50,000 (7000 CHF)
PoC Creation	▪ Create PoC based on designed specification ▪ Design a web interface	5 weeks	4,50,000 (5000 CHF)
Testing and	▪ Initial user testing, and POC refinement ▪ Prototype Release	4 weeks	3,00,000 (3600 CHF)
Prototype Manufacturing	▪ At the Vendors location	2 weeks	
Prototype validation and assembly	▪ Final Prototype assembly and validation ▪ Refinements based on the mechanical prototype ▪ Final Engineering CAD release.	2 weeks	1,00,000 (1200 CHF)
TOTAL			**15,00,000 (18000 CHF)**

SEETA

Business Plan

Questions



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