



**go safer.**

DECI - Geeks  
DECI Mid – Year Competition

Transportation Track  
DECI Level Two

## TEAM MEMBERS

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Abdullah Yasser Mohammed Elazab

● Leader

Shahd Yasser Mohammed Elazab

● Member

Nooreldin Hamdy Beder Elghanam

● Member

Marum Mohey Ibrahim Arafa

● Member





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# 01 | Team Profile

Name	E-mail	School Grade	Governorate	Photo
Abdullah Yasser Mohammed Elazab	abdallahelazab16@gmail.com	11	Kafr El-sheikh	
Shahd Yasser Mohammed Elazab	448032033@kafrelsheikh2.moe.edu.eg	11	Kafr El-sheikh	
Noureldin Hamdy Beder Elghanam	noorhamdy428@gmail.com	11	Kafr El-sheikh	
Marum Mohey Ibrahim Arafa	marum.1821554@stemksheikh.moe.edu.eg	11	Kafr El-sheikh	

# 02 | Team Roles

Name	Roles
Abdullah Yasser Mohammed Elazab	Leader, Graphic Designer, Video Editor, and Writer
Shahd Yasser Mohammed Elazab	Coder, writer, and Researcher
Noureldin Hamdy Beder Elghanam	Researcher, writer, and Data analyst
Marum Mohey Ibrahim Arafa	Researcher, writer, and Data analyst

## 03 | Team Rules

Our team was formed based on some things, the first of which is that the members will be selected based on their distinction in a certain skill from the rest of the members, and the second is that each member is effective at work and not lazy at work, and the third is that each member works in all fields required to complete the project with the change of time

For example, he can work in writing one day and the next day he works in research and gives the writing to someone else, and these roles are divided by the team leader. Also, the team was formed by the leader, and he chose members who could communicate with them easily, such as his sister, who participated with him in the initiative, and also two colleagues with him in the same

school who participated in the initiative as well, and this made it easier for all the team to see each other and hold periodic meetings, whether these meetings Online or offline. The rules of the team were very clear and simple. They consisted of three rules, the first of which is the necessity for all team members to attend the meetings that are held periodically to discuss what each member of the team has reached based on his research, and the second is the commitment to do all the duties that the team leader divides on the rest of the team, and the third It is to tell any member of the team while facing a specific problem. The name of the team was chosen by nominating all members of the team for certain names, stating the reasons for choosing this name, then voting for the best name, and the name Go Safer was chosen because the word Go indicates the best and fastest way to the destination, and the word Safer indicates safety of arrival.



## 04 | Project Scope

We have known the problems of traffic jams, its impact and its causes, so we must also mention the importance of transportation, which we cannot do without. The principal role of transport is to provide or improve access to different locations for businesses and individuals, for both freight and personal movements. Traffic congestion will greatly reduce the importance of transportation, so we had to find a solution. The problem can be solved in some ways, such as using modern technology

that helps all the people. Therefore, we decided to create a mobile application. The application has objectives to support. The main objectives are to inform the app users as to whether or not the roads they intend to use are crowded. The app will be helping in identifying the suitable and the least crowded road to travel by creating a poll based on voting if the road on which the application user chose to travel on is crowded or not. The ones who will vote are those who visited or travel on that road previously. Of course, voting rates will change as time passing; because roads are crowded at different

times of the day. The second goal is that the application will contain a database carrying all speed limits for all Egyptian roads, and will contain a GPS speedometer. So if the driver exceeds those limits, an alarm will ring to remind him of the maximum speed limit he can reach. The application's third goal is that it will contain extra features like having a list of road safety rules and pieces of advice on how to reach your destination to decrease the percentage of accidents that are caused by the lack of awareness. It will also contain all emergency numbers in case having trouble with the car. The app will send notifications to users in the form of advice as well. The application's final objective is to include a section where users can file complaints about damaged roads or other issues that lead to accidents.



Traffic congestion



## 05 | Track

The chosen track is the track of **transportation**. Egypt's transportation problems are getting worse every day as a result of the country's expanding population. Egypt's traffic, therefore, becomes a big problem. Traffic delays are a common occurrence. Because of the serious negative impacts of this issue—such as the high number of traffic accidents, the lack of adequate road safety, the rise in noise pollution, the stress that drivers experience, and the decrease in mental well-being—this issue is a concern. Additionally, traffic congestion reduces the lifespan of the roads. The Egyptian government has started working on a number of projects, including bridge construction, to address the traffic problems. So, if we use our project idea to work on these problems and solve at least some of them, there will be many advantages, like decreasing the number of accidents and decreasing the trip time.

## 06 | Problem Statement

Egypt's transportation issues are getting worse by the day due to Egypt's growing population. Thus, traffic in Egypt became a major issue. We've all heard about traffic jams. Given that this problem has significant adverse effects such as a lot of accidents on the roads, road safety lack, an increase in noise pollution, stress among drivers, and a decline in mental contentment. Traffic jams affect the economic situation as a result of wasted time

spent by the driver stuck in congestion, as a result of delaying the arrival of goods and other important

work that is not completed on time and that is delayed due to the number of hours that go wasted due to traffic jams. Also, traffic jams cause environmental pollution such as increasing in the air pollution and global warming. A road can become crowded with too many vehicles and create a

traffic jam for a number of reasons. A traffic jam is when there is a long queue of cars on the road that have either stopped moving or are going very slowly. Most people assume that traffic is caused by auto accidents or stranded vehicles. Among the reasons that lead to traffic congestion:

1-Roads are narrow, inconsistent, poorly organized and engineered.

2-Drivers' non-compliance with traffic laws

3-Lack of parking spaces.

Traffic jams are also largely attributed to road development. While it is true that accidents and construction produce a lot of congestion when they occur, a large portion of daily traffic jams on a commute is brought on by drivers' choices. In a traffic jam, many accidents occur. A car accident on the road can suddenly halt progress. Drivers must stop at the scene of the accident so that emergency vehicles can go around. A car accident can stop many lanes of traffic on even a large highway. More vehicles are accessing the road and adding to the already heavy traffic the entire time a road is closed due to an accident. Damaging some roads can be a reason for the transportation problem, as if the driver drives slowly, it will increase the time of the trip. On the other hand, if he drives faster on these roads, he could have an accident, and in both cases, the car can be damaged. So, the damaged roads are a big point in the transportation problem.



Traffic jam in Egypt

# 07 | Suggested Solution

Our idea is simply to create an Android application to solve traffic congestion problems in Egypt and also work to increase road safety to reduce the number of deaths due to accidents every year. The application will work on two main things, which is choosing the appropriate road for drivers, which is the least crowded road, and it will also work to increase road safety by alerting drivers of their excessive speed. The application will contain two main features listed below:

## The first feature :

The first feature of the application will reduce congestion on Egyptian roads by informing drivers before they leave the house about the state of the road, and whether it is congested or not. This feature will work using a popular term called voting. The most crowded streets in the application will be voted for by individuals who have previously visited the road, after which the application will perform data analysis and tell the application user that the street that received many votes is that this road is crowded while the least crowded road did not get votes, the application will understand that the road The one with the most votes is crowded, and the road that did not get votes is not crowded, and it will simply display this data so that the application user can understand it.

## The second feature :

The second feature is setting an alarm in the application to alert drivers to reduce their speed if they are driving at an illegal speed. The application will contain a database containing all Egyptian street speed limits, and it will also contain a GPS speedometer, and this speedometer and the database will be used to activate this feature. It will work first to determine the driver's location via GPS, and then he will use the database to know the speed limits of this street. then it will be over two condition. The first condition is that the driver has exceeded the legal speed, then the application alarm will start ringing to warn the driver to reduce the speed, and the second condition is that the driver is driving at a legal speed, then the application will leave him in peace waiting for him when he reaches his destination.

## Extra features :

The application will contain additional features such as that it will contain a list of road rules and safe rules to remind the driver of them if he forgets them, and it will send periodic notifications to the driver to remind him of these rules, and it will also contain a place designated for complaints, and this place will be managed by a specialized team to communicate with government affairs for assistance In meeting this complaint, whether it is a defect in the road or the lack of shortcuts in certain areas.

## Technical part :

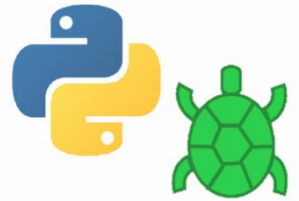
Kivy library in python was chosen to apply our project. Kivy is an open-source Python library for developing mobile and other multi-touch applications with a natural user interface. It can run on Android, iOS, Linux, Mac OS, and Windows. Kivy is released under the MIT License and is 100% free to use and is professionally developed, backed and maintained. Kivy lets you design a full app from scratch — you can use it to create both the frontend and the backend of your application. Kivy is very fast and efficient for a lot of things - in terms of basic graphics operations you can easily push and manipulate thousands of vertices with complex effects at no perceptible slowdown. So, we will use it to make the application because it is the most suitable way for us.



Kivy Library

## Simulation :

We worked on a simulation code using the turtle library, play sound library, and define function (def), if, and nested if. It simplifies what we want to achieve in the application. Firstly, the code asks whether the main street is busy or not. If it is busy, the turtle will choose the sub-street to reach its destination. If the main street isn't busy, the turtle will take the main street by default. Secondly, the turtle asks us what speed it will walk with. If the speed we choose is very high, the speed alarm will ring and the turtle will ask us to decrease the speed. The turtle won't move until decreasing the speed. And if the speed is normal, the turtle will take the street it chose at first.



Turtle library

```
sample.py > ...
1  #The turtle's speed lies in the range from 0 to 10.
2  #If input is a number greater than 10 , speed is set to 0.
3  #If input is a number smaller than or equal 0.5 , speed is set to 0.
4  #Negative vaiues make the speed very fast.
5  #turtle's speed is increasing gradually from 0.6 to 10.
6  #'fastest' : 0
7  #'fastest' : 10
8  #'normal' : 6
9  #'slow' : 3
10 #'slowest' : 1
11 from playsound import playsound
12 import turtle
13 shahd = turtle.Turtle()
14 shahd.color("red")
15 x = str(input("Vote here whether the main street is busy or not :"))
16 def speedofshahd(y):
17     if y > 6 or y <= 0.5 :
18         playsound('speedalarm.wav')
19         print("You have exceeded the speed limit. You must reduce your speed.")
20     else:
21         if x=="busy":
22             print("You must take the other street because the main street is busy.")
23             shahd.forward(20)
24             shahd.right(90)
25             shahd.forward(100)
26         else:
27             print("You can take the main street because it isn't busy now.")
28             shahd.right(180)
29             shahd.forward(20)
30             shahd.left(90)
31             shahd.forward(100)
32
33 z=float(input("Enter your speed here : "))
34 speedofshahd(z)
35 turtle.mainloop()
```

Simulation code

To get growth in any business, some steps need to be made. Thus, the first step is knowing the competitors of our application in the market. Competitor analysis can be defined as identifying and assessing the strengths and weaknesses of our competitors in comparison to our own application and can help in uncovering new opportunities for this business.

### **The competitors :**

- Google maps
- Waze
- MapQuest
- HERE WeGo

*And this graph shows the order of these apps according to no.of uses monthly:*

*Google maps: 158 million per month*

*Waze: 140 million per month*

*MapQuest: 40 million per month*

*HERE WeGo: 92 million per month*

### **Google maps**

#### **Strengths:**

- Saves frequent locations.
- Links to Google Reviews for points of interest and recommendations.
- Download maps for areas where you're headed.
- Projects what time you should leave locations to make your next appointment.

#### **Weaknesses:**

- Sometimes unsure which direction the user is traveling.
- It drains the battery.

### **Waze**

#### **Strengths:**

- Voice controls for hands-free navigation and event reporting.
- Alerts-only mode for heads up on road hazards and police without turn-by-turn directions.
- Reports your ETA to friends and allows them to track your progress.

#### **Weaknesses:**

- Cluttered maps can be confusing.
- Battery drain higher than Google Maps.

### **Map Quest**

#### **Strengths:**

- Access to traffic cameras to see road conditions.
- Turn-by-turn directions and alternative routes based on live traffic conditions.
- Customization for icons and frequent destinations

#### **Weaknesses:**

- Map data is not as robust as Google-based options.
- May track your location in the background (check your settings), which is hard on battery life.

### **HERE WeGo**

#### **Strengths:**

- Downloading maps to work offline keeps you in the know even when you're on a subway or running out of data.
- Choose from options like shortest distance or fastest in selecting your route.
- Public transportation information, including fares.









#### **Weaknesses:**

- Voices are a little robotic-sounding.
- Does not automatically convert to your current location's units of measure if you travel.



Market share(Audience reach) for each app:

Google maps 72%  
Waze 12%  
MapQuest 10%  
Here WEGO 9%

	Google maps	Waze	MapQuest	Here WeGo
Icon	 Google Maps			
Market share	 72%	 12%	 10%	 9%
Reviews of users	<p><b>Pros:</b>1.great features and easy to use.</p> <p>2.Many documentations are available for API navigation.</p> <p><b>Cons:</b></p> <p>1. The app can't be used without the internet.</p>	<p><b>pros:</b></p> <p>1.Crowdsourced traffic conditions mean better routes.</p> <p>2.Bright, colorful</p> <p><b>Cons:</b></p> <p>1. Difficult to create directions from places other than your current location</p>	<p><b>Pros:</b> Multi-segment routing.</p> <p>Built-in traffic information.</p> <p><b>Cons:</b> 1. No public transit directions.</p> <p>2. Occasional quirks for walking directions.</p>	<p><b>Pros:</b> app has good local search, directions for driving, and a great way to save locations in collections.</p> <p><b>Cons:</b> There is no visual component like Street View or 3D views</p>

Competitors analysis

Survey :

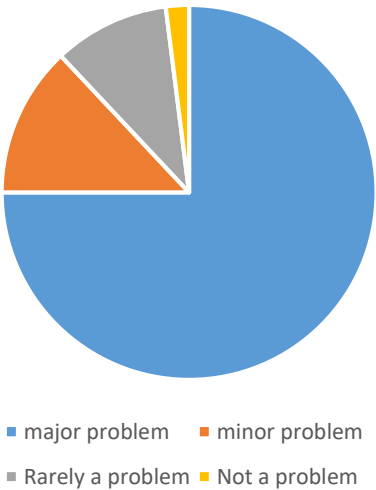
To Make a Survey, we make a google form to collect data about the reviews about the main challenge and our proposed solution. This survey will help us in analyzing the data to predict if our application will succeed or not.

These are the questions in this form:

- 1.Do you see traffic congestion in Egypt as a problem?
- A major problem
  - A minor problem
  - Rarely a problem
  - Not a problem

The result was ∴

- 1. major problem:75%
- 2. minor problem:13%
- 3. rarely a problem: 10%.
- 4. not a problem:2%

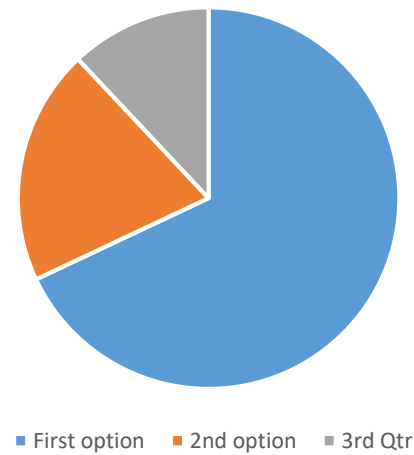


2. Since living, working, or visiting any where have you ever done the following (check all that apply)?

- Used Google Maps, Waze, or another app to check if there are any other free roads.
- Arrived late to a destination because of congestion.
- Changed to a different route while traveling to a destination to avoid congestion.

**The result was:**

- 1. The first option:68%
- 2. The second option: 20%
- 3. The third option : 12%

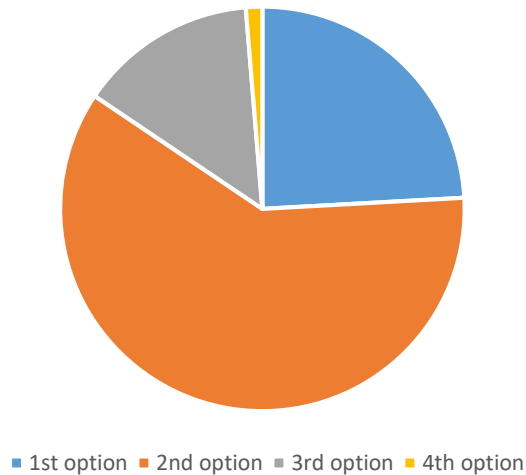


3.How much do you agree that the following factors contribute to congestion in Egypt?

- Crashes
- Increasing the rate of vehicles in the same road.
- Construction
- Inclement weather Inclement weather

**The result was:**

- 1. The first option: 22%
- 2. The second option: 55%
- 3. The Third option:13%
- 4. The Forth option:10%

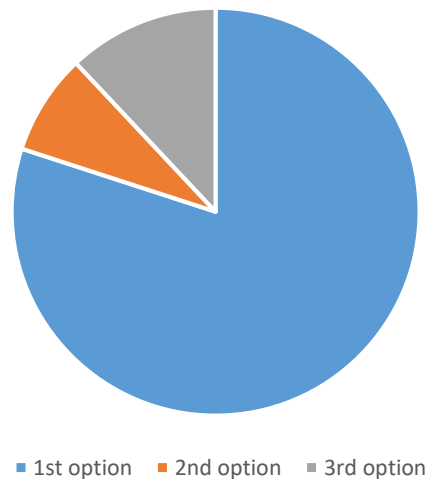


4.How much do you agree that the following strategies would help reduce congestion in Egypt?

- Make an software application to solve these problems.
- Improve roadway operations.
- Improve safety to reduce crashes.

**The result was:**

- 1. The first option:80%
- 2. The 2<sup>nd</sup> option:8%
- 3. The 3<sup>rd</sup> option:12%



Thus We conclude some of the important points relative to the application:

- The option of making an application is considered a sufficient decision to solve the main challenge (Traffic congestion) as the majority of people chose this option by a large percentage (80%).
- Furthermore, the main two objectives of the app were the most appropriate objectives for the application as it solves the main two problems which cause traffic congestion from the point of their view. As mentioned before in graph(4), these problems are Crashes and increasing the rate of vehicles in the same road.

Mobile app marketing is like a journey that gathers us with our customers or audience from the very first moment they hear about our app and may be potential users to the moment they become loyal users.

**Acquisition:** the first stage in a user's interaction with our app, **Activation** which refers to a user's first actions, such as adding their email address or making an initial purchase, **Engagement** that begins when we are personally and respectfully able to engage with our customers and begin to monetize the app, and finally **Loyalty** which is earned through relevant experiences that drive satisfaction and advocacy to our customers.

All of those elements combined explain the phases of the journey between the costumer and the service provider.

In this project our targeted audience are the car owners and drivers which are more likely to be middle-aged adults and above reaching 60 to 70 years old according to recent statistics. And our main marketing and selling strategy is using social media platforms. **Social media marketing** is a form of digital marketing that leverages the power of popular social media networks to achieve the marketing and branding goals.

2022 Facebook demographics data:

Facebook is the number one platform for adults.

**Active daily users:**

1.96 billion Active daily users.

**Age of internet users who use Facebook:**

- 86% of people ages 18–29 use Facebook
- 77% of people ages 30–49 use Facebook
- 51% of people ages 50–65 use Facebook
- 34% of people that are 65+ years old use Facebook

**Income:**

- 85% of households with an annual income of less than \$30,000 use Facebook
- 88% of households with an annual income between \$30k–\$60k use Facebook
- 81% of households with an annual income between \$60k–\$70k use Facebook
- 88% of households with an annual income between \$70k–\$80k use Facebook
- 86% of households with an annual income between \$80k–\$100k use Facebook
- 86% of households with an annual income above \$100,000 use Facebook

**Time:**

On average, Facebook users spend 30.1 minutes a day on the platform.

**2022 Instagram demographics data:**

About 1.44 billion people use Instagram every month

**Active daily users:**

Instagram has 500 million active daily users.

**Age:**

- 67% of people ages 18–29 use Instagram,
- 47% of people ages 30–49 use Instagram
- 23% of people ages 50–64 use Instagram
- 8% of people that are 65+ years old use Instagram

**Income:**

- 44% of households with an annual income of less than \$30,000 use Instagram
- 45% of households with an annual income between \$30k–\$60k use Instagram
- 36% of households with an annual income between \$60k–\$70k use Instagram
- 55% of households with an annual income between \$70k–\$80k use Instagram
- 46% of households with an annual income between \$80k–\$100k use Instagram
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**Time:**

On average, Instagram users spend 30.1 minutes per day on the platform

**Businesses and shopping:**

- An estimated 71% of U.S. businesses have Instagram accounts.
- 83% on Instagram users say they discover new products and services on Instagram.

**2022 YouTube demographics data:**

With 2.6 billion monthly active users, YouTube offers expansive opportunities for businesses to share and market information.

**Active monthly users:**

YouTube has 2.6 billion monthly active users

**Active daily users:**

YouTube has 122 billion daily active users

**Age:**

- 81% of people ages 15–25 use YouTube
- 71% of people ages 26–35 use YouTube
- 67% of people ages 36–45 use YouTube
- 66% of people ages 46–55 use YouTube
- 58% of people that are 56+ years old use YouTube

### **Income:**

- 83% of households with an annual income of less than \$30,000 use YouTube
- 81% of households with an annual income between \$30k–\$60k use YouTube
- 80% of households with an annual income between \$60k–\$70k use YouTube
- 80% of YouTube users have an annual income between \$70k–\$80k use YouTube
- 82% of households with annual income between \$80k–\$100k use YouTube
- 89% of households with an annual income above \$100,000 use YouTube

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- 66% of people ages 46–55 use YouTube
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## Income:

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- 82% of households with annual income between \$80k–\$100k use YouTube
- 89% of households with an annual income above \$100,000 use YouTube

✚ From the previous illustrated data it's clear to deduce that social media platforms are the new fertile soil for marketing, the most efficient and effective path. It suits this era we're living in a hi-tech era.

✚ We have chosen the platforms Facebook, integral, YouTube to be able to spread the most possible awareness about our app and reassure reaching our targeted audience and deliver our message to them.

The tactic we plan to use in Facebook marketing is personalizing the ads by targeting specific audiences.

This will be achieved considering the Facebook users' location, interests, demographics, connections and behaviors. This approach will deliver a special community with each customer linking between us and him giving him his most desirable experience and preferences.

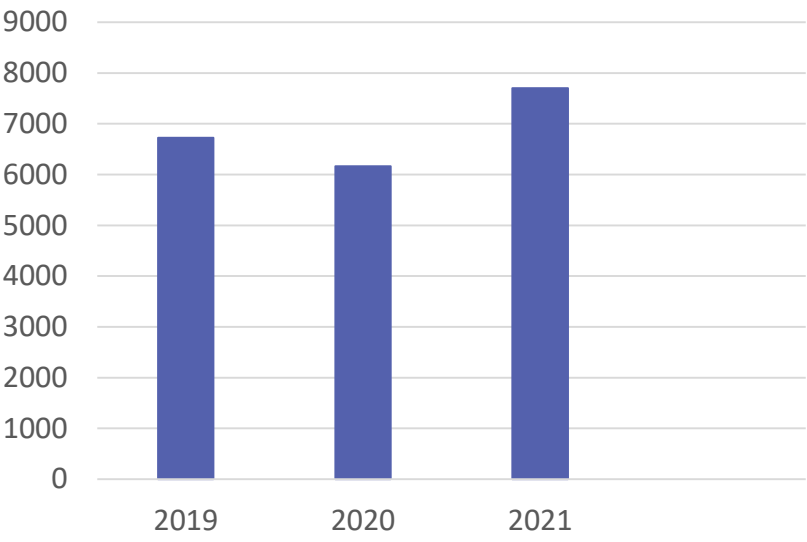
As for Instagram, knowing our brand story and using Instagram as our medium to spread it is a very effective way of exploiting the algorithm of Instagram, the platform of the so called fairy tales, thus delivering our app idea in a more of a moral fairy and a deep story, will serve us well and help us approach more and more viewers in a wider manner. And as a result of increasing exposure the engagement is going to rise enormously.

And finally the marketing tactic on YouTube will be a combination of active and consistent engagement with the audience beside constructing and sharing high quality and visually representative graphics for shorts and ads that can easily catch the sight and attention of the YouTube user.

✚ Combining those different tactics on those three platforms will result a greater hormonal strategy increasing our exposure, reaching our audience and growing our app.

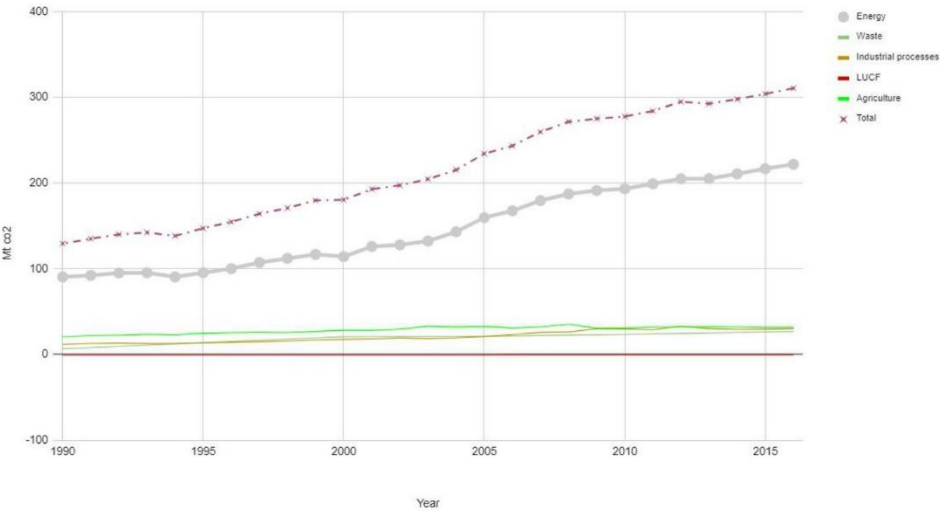
Our app will be available on Google play and app store and the countries that support them. And in order to achieve our strategy some resources are needed.

For instance an initial budget to help increase the boost as the beginning of the marketing champagne, in addition a technical support team is needed to deal with any problems that might occur, and finally a social media management team to simulate and regulate the marketing process.



The number of death because of accidents per year in Egypt

Change in GHG Emissions in Egypt (1990–2016)



The increase in carbon dioxide emissions in Egypt

# 11 | Resources

- <https://kivy.org/>
- [https://en.m.wikipedia.org/wiki/Kivy\\_\(framework\)](https://en.m.wikipedia.org/wiki/Kivy_(framework))
- <https://en.m.wikipedia.org/wiki/Speedometer>
- <https://www.geeksforgeeks.org/play-sound-in-python/>
- <https://www.livescience.com/61862-why-phantom-traffic-jams-happen.html>
- <https://ccsenet.org/journal/index.php/jsd/article/view/31519>
- <https://www.ukessays.com/essays/tourism/causes-of-traffic-congestion-in-cairo-egypt-tourism-essay.php>
- <https://m.apkpure.com/speedometer-widget/com.horty2.tachimetrowidget20>
- <https://www.geeksforgeeks.org/what-is-kivy/>
- <https://onlinemasters.ohio.edu/blog/traffic-congestion-problems-and-solutions/>
- <https://khoros.com/resources/social-media-demographics-guide>
- <https://www.statista.com/statistics/1041145/us-car-owners-by-age-group/>
- [https://pubmed.ncbi.nlm.nih.gov/7203662/#:~:text=The%20stages%20of%20adulthood%20examined,\(ages%2065%20and%20older\).](https://pubmed.ncbi.nlm.nih.gov/7203662/#:~:text=The%20stages%20of%20adulthood%20examined,(ages%2065%20and%20older).)
- <https://www.airship.com/resources/explainer/mobile-app-marketing-explained/#:~:text=What%20is%20Mobile%20App%20Marketing,what%20to%20say%20to%20them.>

# 12 | Future Work

- Put the addresses of as many petrol stations as possible and car maintenance places to help drivers as much as possible.
- Adding a widget speedometer on the mobile interface to calculate the speed that the driver use .
- Putting our application on Google review to help our application stand out.
- Making the app in Arabic and English as well.
- Creating an advertising campaign to introduce people to our application and aware them, whether through social media or face to face.
- Providing some informational signs with Intelligent Transport Systems (ITS) to clarify some information of interest to the driver.



Widget speedometer

