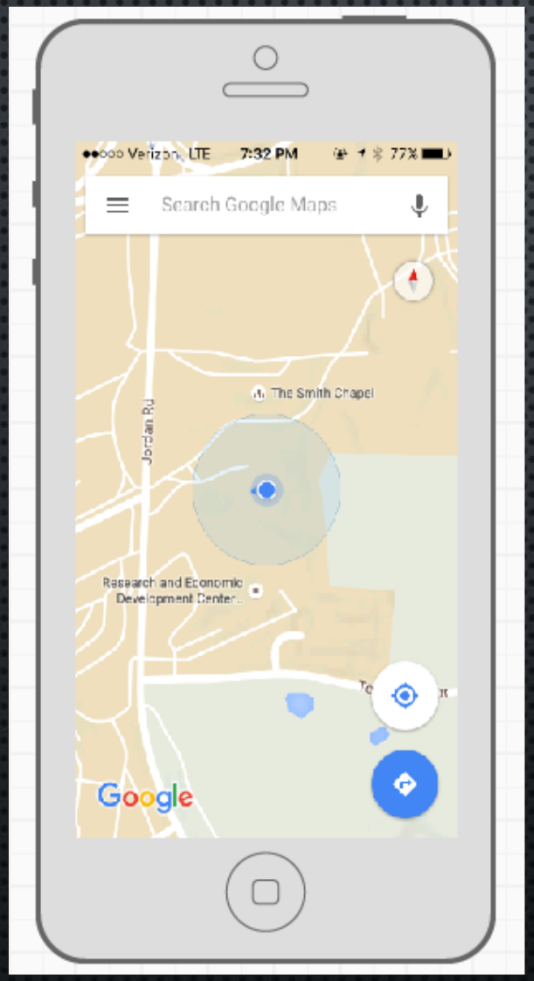
# Google maps +toll costs

*Caleb Anderson*

*MIS 430*

- Google has the well known application known as Google Maps which provides route planning and GPS navigation, however it lacks in providing toll costs. It often occurs that a trip's route will have tolls. However, it aggravates me that this is all the further information that the application provides. If this information is provided, the traveler will be able to prepare money for each toll they will encounter; saving time from looking up the exit on the toll ticket and searching for the money last minute at the toll booth. This idea will benefit Google by keeping users from looking elsewhere for another application that provides the information.

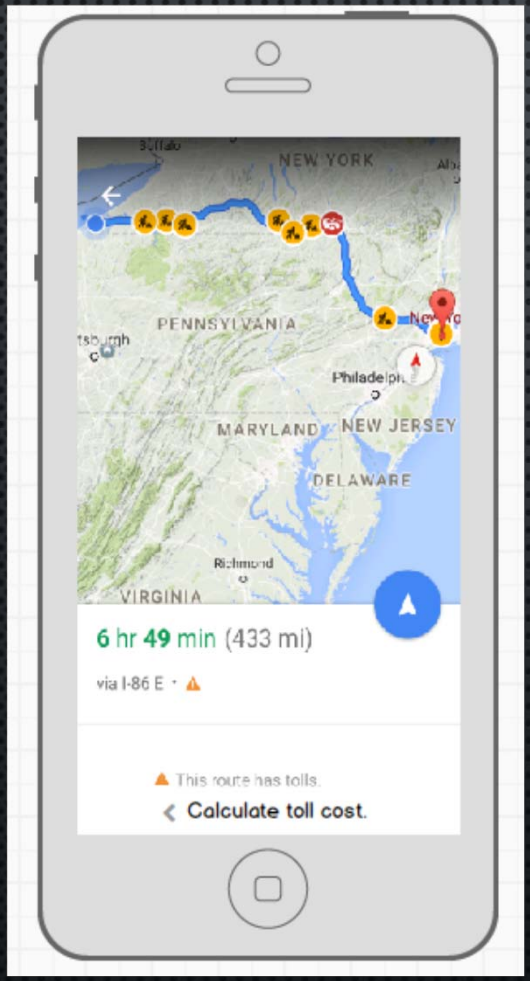
# MOCKUPS (BALSAMIQ)




INITIAL SCREEN

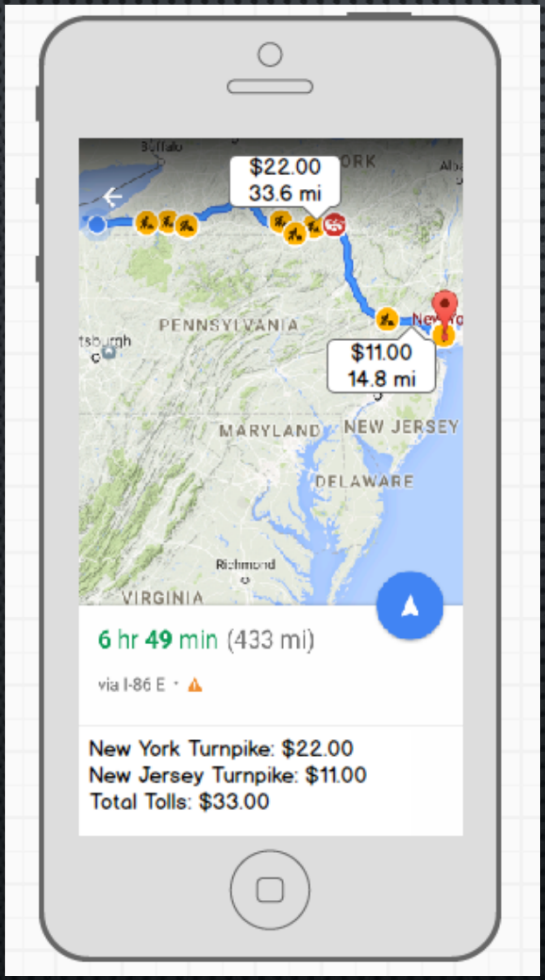
- USER SEARCHES DESTINATION.
- USER CHOOSES ROUTE.

# MOCKUPS (BALSAMIQ)



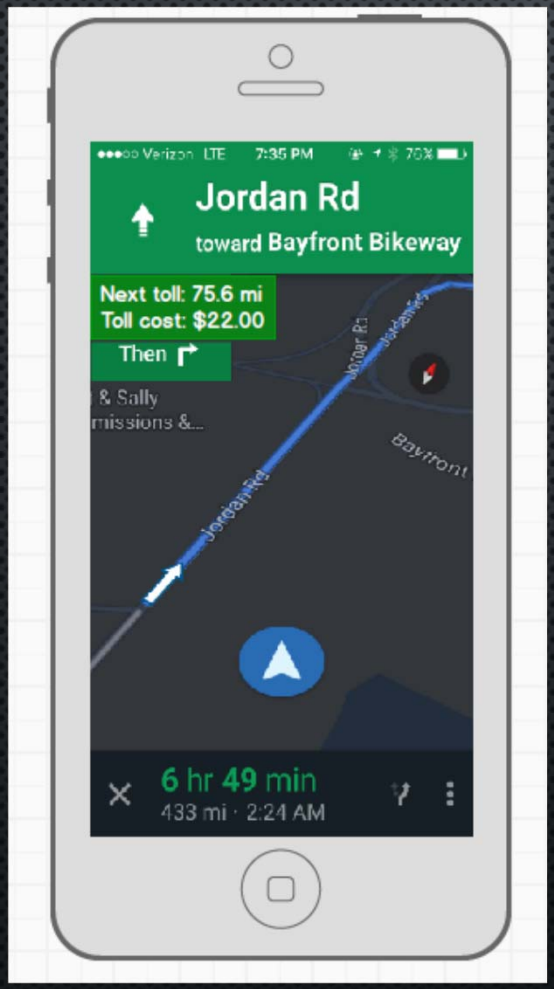

- Application indicates that chosen route has tolls.
- User slides screen to left on "calculate toll cost".

# MOCKUPS (BALSAMIQ)




- Screen indicates each toll stop and price.
- Calculation of total tolls.

# MOCKUPS (BALSAMIQ)




IN ROUTE SCREEN

- SHOWS DISTANCE UNTIL NEXT TOLL.
- SHOWS COST OF UPCOMING TOLL.

# COST BENEFIT CASE

Google is considering modifying the Google Maps application that would help users to calculate the cost of tolls for their trips.

The application would require various development resources: Computer programmers, Business and systems analysts, web designers, project manager, software licenses, server, testing, advertising, and promotion.

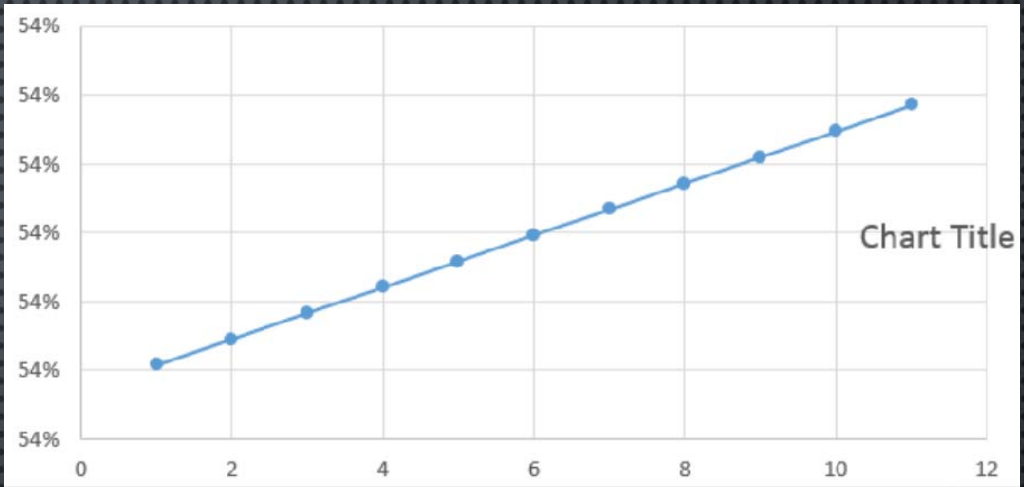
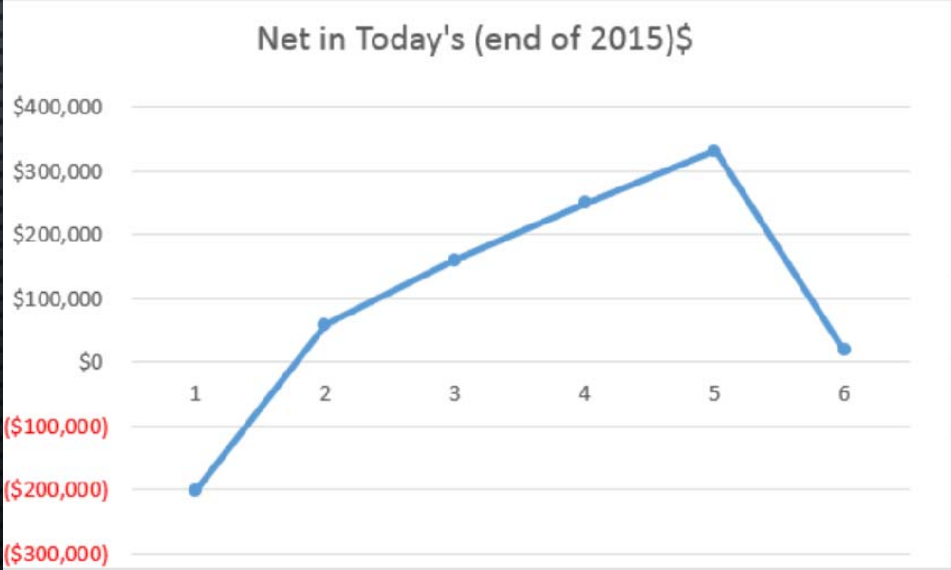
The application would also require maintenance resources for any bug fixes or enhancement updates.

Ongoing hardware costs would include server service and application upgrades.

The benefits:
a) Reduced Customer Attrition
b) Increased Google Maps users
c) Increased Application profits

# COST BENEFIT ANALYSIS MODEL

| Assumptions: | | Days | hrs/day | Cost |
|---|---|---|---|---|
| $ per programmer/test/web/support hr: | $ (50.00) | 60 | 8 | $ (24,000) |
| $ per analyst/proj manager hours: | $ (55.00) | 30 | 8 | $ (13,200) |
| Hurdle Rate | 5% | | | |
| Initial Hardware | $ (100,000) | | | |
| Initial Software | $ (75,000) | | | |
| Annual HW Cost as % of initial HW cost | 30% | | | |
| Annual SW Cost as % of initial SW cost | 20% | | | |
| Maintenance Cost as % of Dev costs | 25% | | | |
| Revenue per user | $ 3 | | | |
| Variable + Semi-Fixed Cost per user | $ 1 | | | |
| Net Contribution per user | $ 2 | | | |
| Increased users via reduced attrition | 10,000 | starting year 2, growing for 3 years. Then staying | | |
| Increased users via Advertising | 50,000 | starting year 2, growing for 3 years. Then stopping (competition) | | |

| | | 1 | 2 | 3 | 4 | 5 | 6 | |
|---|---|---|---|---|---|---|---|---|
| | MODEL | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | |
| | Reduced Customer Attrition | - | 10,000 | 20,000 | 30,000 | 40,000 | 40,000 | |
| | Increased Customer Usage | - | 50,000 | 100,000 | 150,000 | 200,000 | - | |
| | Total Increased Usage | - | 60,000 | 120,000 | 180,000 | 240,000 | 40,000 | |
| | | | | | | | | |
| | **Costs (assumed at the end of Y0)** | | | | | | | |
| | programmer/test/web/support cost: | $ (24,000) | $ (6,000) | $ (6,000) | $ (6,000) | $ (6,000) | $ (6,000) | |
| | Analyst/Proj Manager Cost | $ (13,200) | $ (3,300) | $ (3,300) | $ (3,300) | $ (3,300) | $ (3,300) | |
| | Hardware Costs | $ (100,000) | $ (30,000) | $ (30,000) | $ (30,000) | $ (30,000) | $ (30,000) | |
| | Software Costs | $ (75,000) | $ (15,000) | $ (15,000) | $ (15,000) | $ (15,000) | $ (15,000) | |
| | | | | | | | | |
| | **Benefits (assumed at end of period)** | | | | | | | |
| | Increased students Net Contribution | $ - | $ 119,400 | $238,800.00 | $ 358,200 | $ 477,600 | $ 79,600 | |
| | | | | | | | | |
| | Total Costs | $ (212,200) | $ (54,300) | $ (54,300) | $ (54,300) | $ (54,300) | $ (54,300) | |
| | Total Benefits | $ - | $ 119,400 | $ 238,800 | $ 358,200 | $ 477,600 | $ 79,600 | |
| | Net (not reflecting time value of money) | $ (212,200) | $ 65,100 | $ 184,500 | $ 303,900 | $ 423,300 | $ 25,300 | $ 789,900 |
| | | | | | | | | |
| =PV($C$5,C17,,-C34,0) | Net in Today's (end of 2015)$ | ($202,095) | $59,048 | $159,378 | $250,019 | $331,667 | $18,879 | $ 616,896 |
| =C34/((1+$C$5)^C17) | Same using power to number of periods | ($202,095) | $59,048 | $159,378 | $250,019 | $331,667 | $18,879 | |
| NPV =NPV(C5,C34:H34) | $616,896 | | | | | | | |
| IRR =IRR(C34:H34) | 71% | | | | | | | |

| | | |
|---|---|---|
| | 71% | $616,896 |
| 1 | 54% | $ 393,605 |
| 2 | 54% | $ 393,627 |
| 3 | 54% | $ 393,649 |
| 4 | 54% | $ 393,672 |
| 5 | 54% | $ 393,694 |
| 6 | 54% | $ 393,716 |
| 7 | 54% | $ 393,739 |
| 8 | 54% | $ 393,761 |
| 9 | 54% | $ 393,783 |
| 10 | 54% | $ 393,805 |
| 11 | 54% | $ 393,828 |