

Eight Information Pieces

1. External - General Phone Usage

Your team has contacted a subject matter expert on phone behavior to better understand what the average phone usage looks like. The discussion notes state that the majority of smart phone usage, among all age groups, is when users are in bed or want to avoid being bored (or avoid other people), followed by usage on the toilet and in conjunction with another screen. In addition to the above, smart phones also play an important role in helping their owners navigate their environment and get where they need to go, especially as a mobile GPS for real-time driving directions.

According to the expert, more than 60% of smartphone owners use their phones at least occasionally for turn-by-turn navigation while driving, with 31% saying that they do this “frequently.” Smart phones are also used to get public transit information and to reserve a taxi service. Studies on actual usage seem inconclusive. One study on European countries specified that the number of drivers who use telephones while driving is between 1 and 11%, while another study declares that 4 out of 10 drivers use their mobile phones while driving in the car. Another study indicates that roughly half of all motorists use their phones while driving.

2. Domain Specific - About Omaha

With a population off around 450,000 people, Omaha is the largest city in the state of Nebraska and the 40th largest city in the U.S. The city area spans about 140 square miles, resulting in a population density of roughly 3100 people per square miles. With around 52,000 students enrolled across all five campuses, the University of Nebraska system is the largest higher education system in Nebraska. Many of these students are commuters: either living off campus or having to travel between campuses. Although traffic in the city at large usually consists of work commuters as well, there is no shortage of events and activities in the city which cause additional spikes.

To provide for the safe, environmentally compatible, and efficient movement of pedestrians, bicyclists, and motor vehicles, the City of Omaha Traffic Engineering Division is in charge of the design, construction, operation, and maintenance of traffic control systems. The Traffic Engineering staff maintains 120,000 traffic signs, administers 56,000 street lights, more than 1000 traffic signals, lane lights and flashers, 1160 lane miles of streets (striped annually), and conducts 350 traffic studies and 600 traffic counts per year. This is a year-round task, especially since Omaha weather is known to fluctuate a lot with highs of over 90 °F and lows of -5°F. Additionally, the city is rather windy and sees an average of 26 inches of snow and 30 inches of rain per year.

3. Ends - University Requirements

There are certain expectations for the project that your team must meet for the University system's standards on the design project. The solution must be completed within the agreed upon time between your team and the university, the amount of time the solution will take to achieve is open depending upon the solution. This solution must also reduce the rate of accidents by at least 10% across the university campus. The solution should be made with all students, faculty, and staff of the university in mind and should thus be inclusive of those with disabilities.

All aspects of the solution should be accessible and user-friendly for all individuals regardless of background. With this in mind, the solution should be able to be widely used, by many individuals at the same time. The solution should also not interfere with or disrupt any learning inside classrooms on campus. The solution should be safe for all users and should not pose a threat to any individual's physical, mental, or emotional well-being. This includes bodily harm, bullying, theft or distribution of personal and sensitive information, etc.

4. Concrete - Traffic Crashes

The State of Nebraska conducted a state-wide traffic-accident report in 2016 that outlined details for the different types of accidents. In this report, the state noted that there was one car crash every 15 minutes, 49 people injured every day, and one person killed every 40 hours in 2016. Of these crashes 1% involved a pedestrian for a total of 372 crashes. These crashes resulted in 380 injuries and 11 deaths. Many different conditions can have an impact on driving, three of the most prominent ones shown in the accident-report are weather conditions, location, and time of day.

In 2016, 81% of total crashes occurred during dry weather conditions, 10% during wet, 7% during snow or ice, and 2% during other conditions. The locations of these crashes were reported with 63% in local areas, 30% in other state systems, and 7% on the interstate. The time of day for these crashes was reported in 3-hour intervals, with 5% of crashes occurring between midnight and 3am, 3% between 3am and 6am, 15% between 6am and 9am, 13% between 9am and noon, 17% between noon and 3pm 25% between 3pm and 6pm, 14% between 6pm and 9pm, and 8% between 9pm and midnight.

5. Abstract - Dangerous Driving

The Department of Transportation for the State of Nebraska (NDOR) issued a notice a few months back informing drivers that there has been a rise in the number of accidents occurring this year within the state. In an attempt to keep this number from growing any larger throughout the rest of the year, this notice included a message that drivers and pedestrians alike should be more mindful of their whereabouts at all times and to especially be more aware of the traffic conditions around them.

NDOR also noted that all individuals should take equal responsibility for their possible contributions to accidents and spread awareness of traffic conditions and the number of accidents to all of those around them. On these lines, NDOR reported that it will be conducting a report of traffic collisions at the end of the year and advertised that there is information on its website regarding driving safety, crash data, and accident reporting.

6. Internal - Expected time to complete

Your team member knows how long certain things might take. For example, developing software programs vary depending on the scope of the software, the experience of the team members and the size of the team. On average, a mobile phone application might take around 4 to 6 months to complete, while a software program for your desktop or laptop tends to take 4 to 9 months. However, without clear constraints or changing recommendations, these development cycles can go for much longer.

Constructing any sort of physical solution that would change the architecture and infrastructure of the campus would take anywhere from 5 to 9 month. This would depend on a number of factors such as the location of the solution, how much legal documentation and processes you are required to go through, how much resistance there is to the idea and when construction would begin (which will usually be in summer due to less students being on campus). The duration of type of legal or policy change on campus differs greatly on the type of change proposed, how many people are in favor or against it, who needs to approve it and how well the change matches overall campus policy and goals. As such, this can take anywhere from a couple of weeks to several years.

7. Cross Cutting - Cause and Consequences of Distraction

Distraction in general occurs when attention shifts away from a desired area of focus, thereby blocking or diminishing the reception of desired information. Distraction is caused by: the lack of ability to pay attention, lack of interest in the object of attention, or the great intensity, novelty or attractiveness of something other than the object of attention. The consequences of distraction can range from mildly frustrating to deadly. For example, distractions during class lead to lower attention to the professor or material studied, consequently reducing the amount of information that is processed, thus reducing the amount of learning.

Distraction can be caused by both internal and external sources. Sources that come from the human itself are for example hunger, fatigue, illness, worrying, stress and daydreaming. Additionally, the intake of certain medicines and drugs are also known to influence a person's ability to focus and pay attention to the task at hand. External sources of distraction are social interactions, music, text messages, and phone calls. These have the potential to be distracting because they all compete for the human's attention during a task. More abstractly speaking, any auditory, visual or olfactory trigger can be distracting as well, as it directs the mind away from the task to some other phenomena.

8. Means - Available University Departments

A number of different colleges have offered up the time of their staff, faculty, and student volunteers, as well as other resources their departments have to offer. The list of colleges offering aid to help find a solution to this problem include the colleges of Arts and Sciences, Business Administration, Information Science and Technology, Public Affairs and Community Service, Engineering, and Communication, Fine Arts and Media.

Under these colleges, individuals from varying fields including political science, neuroscience, psychology, sociology, journalism and media, computer science, the emergency services program, and more are offering their expertise, aid, and resources. Some of these resources include access to software development, robotics equipment, the campus magazine, the campus radio station, 3D printers, information about campus policies, information about road and pathway construction, and more are available to you.