



MediTrack:

Generative Phase Report

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In this report, we further explored the potential of our Product Opportunity Gap. Based on our POG, we attempted to further define our service in this phase. The purpose of this report is to describe the process our team has followed in the Generative Phase as well as the results and insights that came out of it. This report is organized into the following sections: Introduction, Process Summary, Body Storming, Brainstorming, Value Opportunity Analysis, Value and Cash Flow Diagrams, Decision on a service, Persona Descriptions, Emergency Alert System Service Scenario, Research Areas, and Conclusion.

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Introduction

MediTrack offers a secure and automated service that delivers patients' medical and contact information in an emergency. During the generative phase, several versions of mobile services that fill this product opportunity gap were brainstormed and evaluated based on a number of factors. Ideas were generated and evaluated using several methods, including affinity diagramming, body storming, and even looking at existing services attempting to fill this gap. Additionally, this phase involved gathering data from people in the field to get a better understanding of the existing landscape. At the conclusion of this phase, all ideas evaluated have been focused into a single service to build on in the next phase of the project.

Process Summary

The generative phase started with a Body Storming session. The findings from the Body Storming session were used to extract more detailed service quality attributes that better define our product opportunity gap. After that we decided to conduct a new iteration of brainstorming that aimed to define the framework that will help us generate services and conduct value opportunity analysis.

The second part of our process was to build our VOA table, decide on a service, and build Value Diagrams. The result was a service definition with multiple scenarios that illustrate how this service will be used, who will use it, and how this service can be of benefit and generate value.

Body Storming

During this phase, we have conducted two Body Storming sessions. Each session included the role of a patient, paramedic and the person who calls for emergency. The most significant finding from the first session was that patient maneuvering can be difficult in an emergency situation. This is critical because should the paramedic have to search the patient physically for a wearable device, moving patients can even further exacerbate their condition.

The second Body Storming session aimed at trying some different technologies to implement the service and decide on the quality attributes our service should promote such as usability, availability, and security. Following are the criteria we began to set as well as some possible ways of implementing the service:

- Usability: paramedic should easily identify and read the tag* on the patient.
- Performance: paramedic should be able to retrieve patient info within the least time possible
- Security & Privacy: patient info should be secured, only offering access to authorized personnel and for purposes specified by the patient
- Configurability: patient should be able to update his/her medical info
- Availability: 24/7

*Tag refers to which ever form of implementation we decide on.

Possible implementations:

- Passive NFC Tag
- Bluetooth Card/Tag
- Wristband
- Stickers (on phones)
- Embedded in shoes
- Chip Implant
- Mobile Application
- Mobile Carrier Code

We have concluded that the technology is definitely available and mostly reliable, but each form of implementation must be explored to further decide which are the better options.

Brainstorming

However, after sessions of discussion amongst ourselves and with others (professors, visiting guests), our progress was halted by the viability of our scope. It seems as if we were attempting to accommodate too large of a target demographic. We therefore conducted a brainstorming session in an attempt either to refocus or redefine our research areas into one direction. The brainstorming session resulted into three directions that we can follow:

1. General Health Monitoring
2. Specific Disease Monitoring
3. Emergency Alert

With the three directions, we came to the consensus that it was more logical to continue with our original direction which is the Emergency Alert System (3). The third option "Emergency Alert" seems to be the most interesting and its impacts seem to be the most significant at an explicit level. In addition, option one, "General Health Monitoring," could be easily incorporated as part of the Emergency Alert System, offering trends and information that will benefit the paramedics diagnosis. Nonetheless, there seems to be less market competition with option three, as opposed to the first option, which would have to compete against Google Health, Microsoft HealthVault and many other similar services. The second option, "Specific Disease Monitoring," was set aside for the moment due to the lack of resource and time, but we agreed that such direction could potentially be offered as an extension to our primary service should we choose to in the future.

With a clearly defined direction, we began our Value Opportunity Analysis and the Value and Cash Flow Diagrams to help us further understand the potential and viability of our service.



Value Opportunity Analysis

We use the Value Opportunity Analysis (VOA) to gain a deep and intimate understanding of our customers and stakeholders. We break the value into specific categories and attributes, and compare three mobile services we have discussed so far, i.e. Emergency Alert System, Health Monitoring and Tracking, and MedicalAlert. The key findings are summarized in the following table.

		Emergency Alert System			Health Monitoring and Tracking		MedicalAlert		
		Paramedic	Patient	Family	User	Doctor	User	Family	Medical Personnel
Emotion	Adventure	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Independence	Yes - rely less on other people for information (such as bystanders, etc.)	Yes - less reliant on others to provide history	Yes - less needed to potentially provide history info	Yes - More control over your own medical records	Yes - rely less on other source of information	Yes - less reliant on others to provide history	Yes - less needed to potentially provide history info	Yes - rely less on other people for information (such as bystanders, etc.)
	Security/ Privacy	N/A	Yes/No (1)	Maybe - sharing contact information might be an issue	Maybe - sharing could be uncomfortable	N/A	Yes/No (1)	Maybe - sharing contact information might be an issue	N/A
	Sensuality	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Confidence	Yes - providing more confidence for emergency	Yes - people confident that if something happens their	Yes - they would be notified immediately if	Yes - knowing and having access to their medical information	Yes - better for diagnostics	Yes - people confident that if something happens their	Yes - they would be notified immediately	Yes - providing more confidence

		diagnostics	details are available	something happens			details are available	if something happens	for emergency diagnostics
	Power	Yes - Paramedic has the power to access patient info	Yes (but little) - can update their information	Yes (but little) - can update other family members' information	Yes - power to update his/her own information	Yes - access to patient information	Yes (but little) - can update their information	No	Yes - Paramedic has the power to access patient info
Ergonomics	Comfort	Maybe - Depending on the implementation (2)	Maybe - Depending on the implementation (2)	Maybe - Depending on the implementation (2)	N/A - software	N/A - software	Yes/No (9)	No	No
	Safety	Yes	Yes	Yes	N/A	N/A	Yes	N/A	Yes
	Ease of use	Maybe - The paramedic will have to identify patient using a mobile technology, which may involve a learning curve	Yes - service should be autonomous and require little patient involvement other than setting up the service	Yes - family should not have to worry about usage. Even set up can be performed by the patient	Yes - interface should be intuitive	Yes - interface should be intuitive	Yes	Yes	Maybe (10)
Identity	Timeliness	Yes	Yes/No (3)	Yes	Yes/No (7)	Yes	Yes	Yes	Yes
	Sense of place	Yes	Yes	Yes	No	Yes			
	Personality	N/A	No - But the lack of personality can eliminate	N/A	N/A	N/A	Yes	N/A	N/A

			stigmatization						
Impact	Social	Yes - helps them save lives in a timely manner	Yes - people become more aware of their medical history	Yes - peace of mind	Yes - makes aware of users health/trends/conditions...etc.	Yes (8)	Yes - people become more aware of their medical history	Yes - peace of mind	Yes - helps them save lives in a timely manner
	Environmental	Yes (4)	Yes (4)	Yes (4)	Yes (4)	Yes (4)	Yes (4)	Yes (4)	Yes (4)
Core Technology	Reliable	Yes (5)	Yes (5)	Yes (5)	Yes	Yes	Yes	Yes	Yes
	Enabling	Yes - provides more access to relevant information	Yes - medical information on demand, patients can update information	Yes - Access to medical history of family members; real-time emergency alerts	Yes - access to their information; trends can help inform better health decisions	Yes - but depends on the users information (may be positive or negative)	Yes - medical information on demand, patients can update information		Yes - provides access to relevant information
Virility	Transmissible	Maybe - depending on the implementation	Maybe - depending on implementation (6)	No	No	No	Yes	No	No
	Evangelical	Yes	Yes	Yes	Maybe	Yes	Yes	Yes	Yes
	Sustained	Yes - as long as service is easy to use	Yes - but may depend on personal habits/severity of health conditions...etc.	Yes	Yes - but may depend on personal habits/severity of health conditions...etc.	Yes	Yes - but may depend on personal habits/severity of health conditions...etc.	Yes	Yes

Notes:

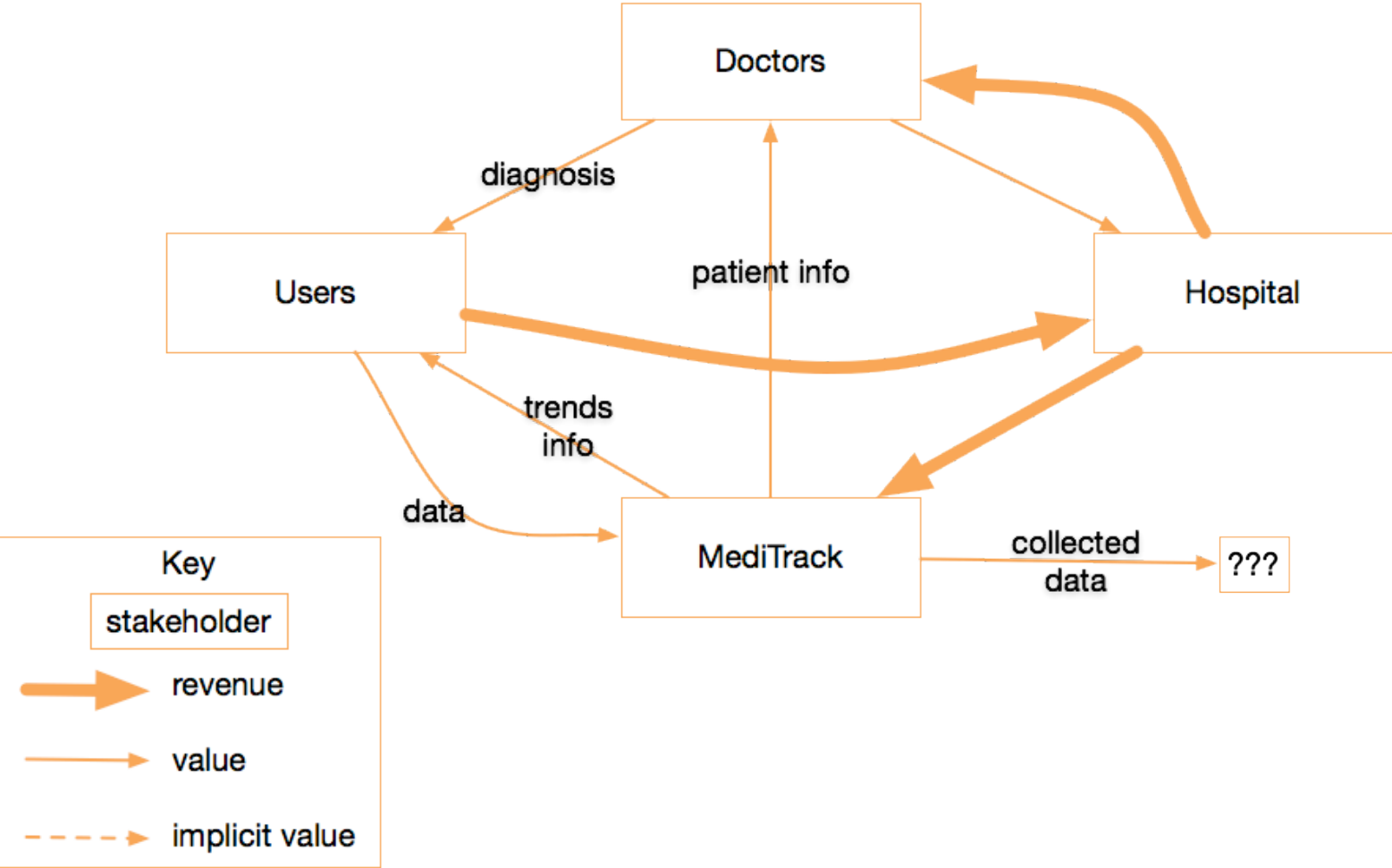
1. Patients will feel secured traveling around and being alone more. But the confidentiality and security of patient info may be compromised.
2. Depending on the form of implementation, stakeholders may have different levels of comfort. But the goal is trying to eliminate cumbersome hardware, using what's already available.
3. Timeliness might be challenged when considering the appropriate implementations for different age groups. But the right technology is available.
4. Service can eliminate paper trails and other environmental footprints. Manufacturing of extra hardware can be eliminated.
5. Technology such as RFID have a long developmental history, used in high risks scenarios, and is now widely available.
6. Depending on the form of implementation, and the age group, having a piece of transmissible hardware can have both positive and negative effects.
7. Technology is available, but the failure of competitive services (Google Health, Microsoft HealthVault) show that there may be a lack of interest in such service.
8. Can have social impact in both positive or negative ways depending on how well the users track their information.
9. The devices may be comforting to wear, but not many people would like to wear them.
10. Paramedics have to call and tell the ID to get info over the phone. It might not be very convenient and they can go over the information again.

In this VOA table, while some of the attributes are not applicable to our services (e.g. the adventure and some of the ergonomics attributes), some of them are critical and do provide us insights about how to design and refine our service (e.g. the independence, security/privacy, confidence, reliability, sustainability, etc.). Another thing to note is that some of the attributes vary depending on the implementation. However, we try not to limit ourselves to a certain circumstance, but to find out ultimate goals across three services for these attributes so that we can consider and design our service outside the box. For instance, for the comfort attribute in the ergonomics category, depending on the form of implementation, stakeholders may have different levels of comfort, but the goal is trying to eliminate cumbersome hardware, using what's already available.

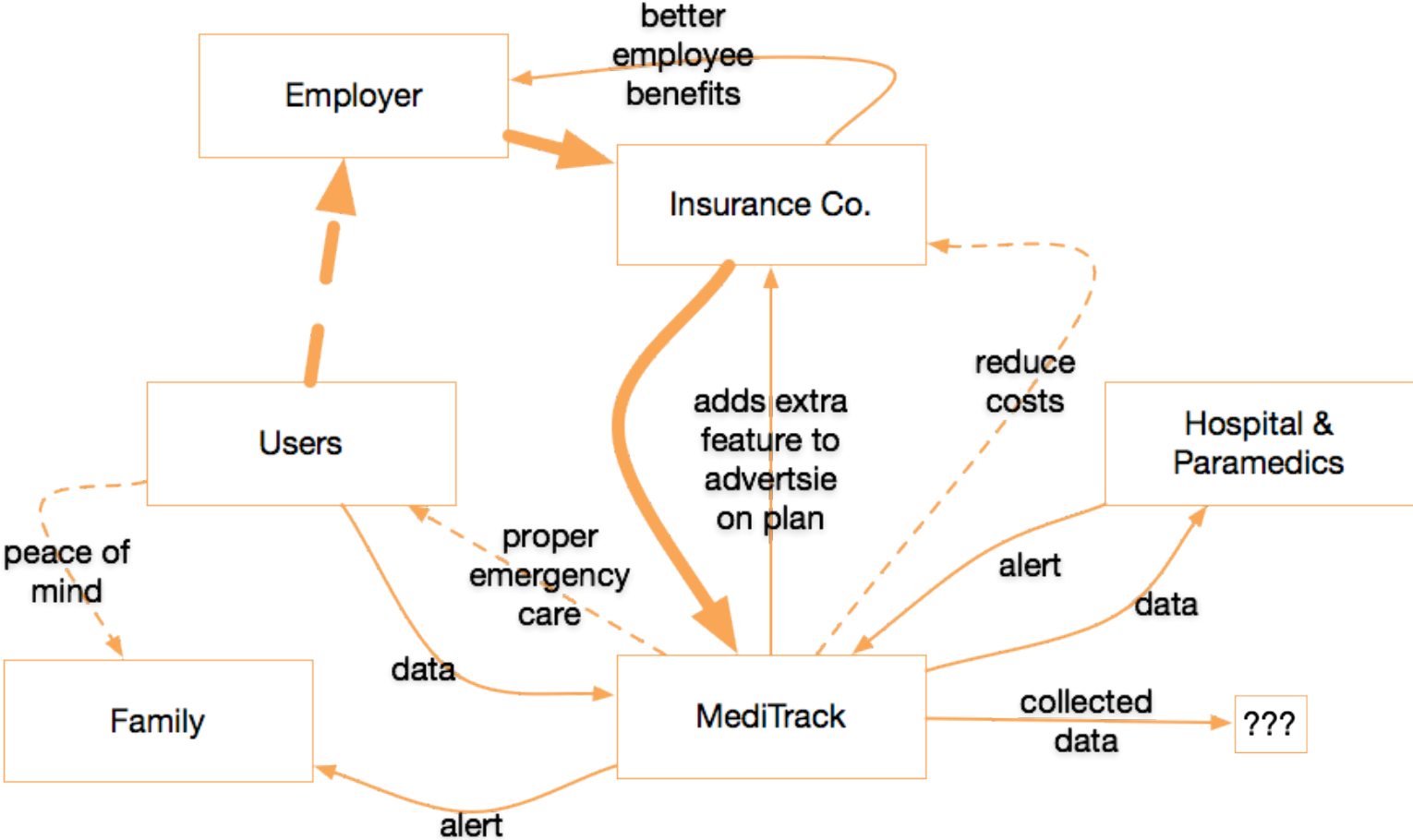
Value and Cash Flow Diagrams

The following diagrams evaluate different ways to implement the MediTrack service, focusing particularly on different ways for the service to find revenue. Many diagrams feature an unknown entity (???) benefiting from the collected data to show that the collected data does have value, however MediTrack would likely not share this data to protect the privacy of the users.

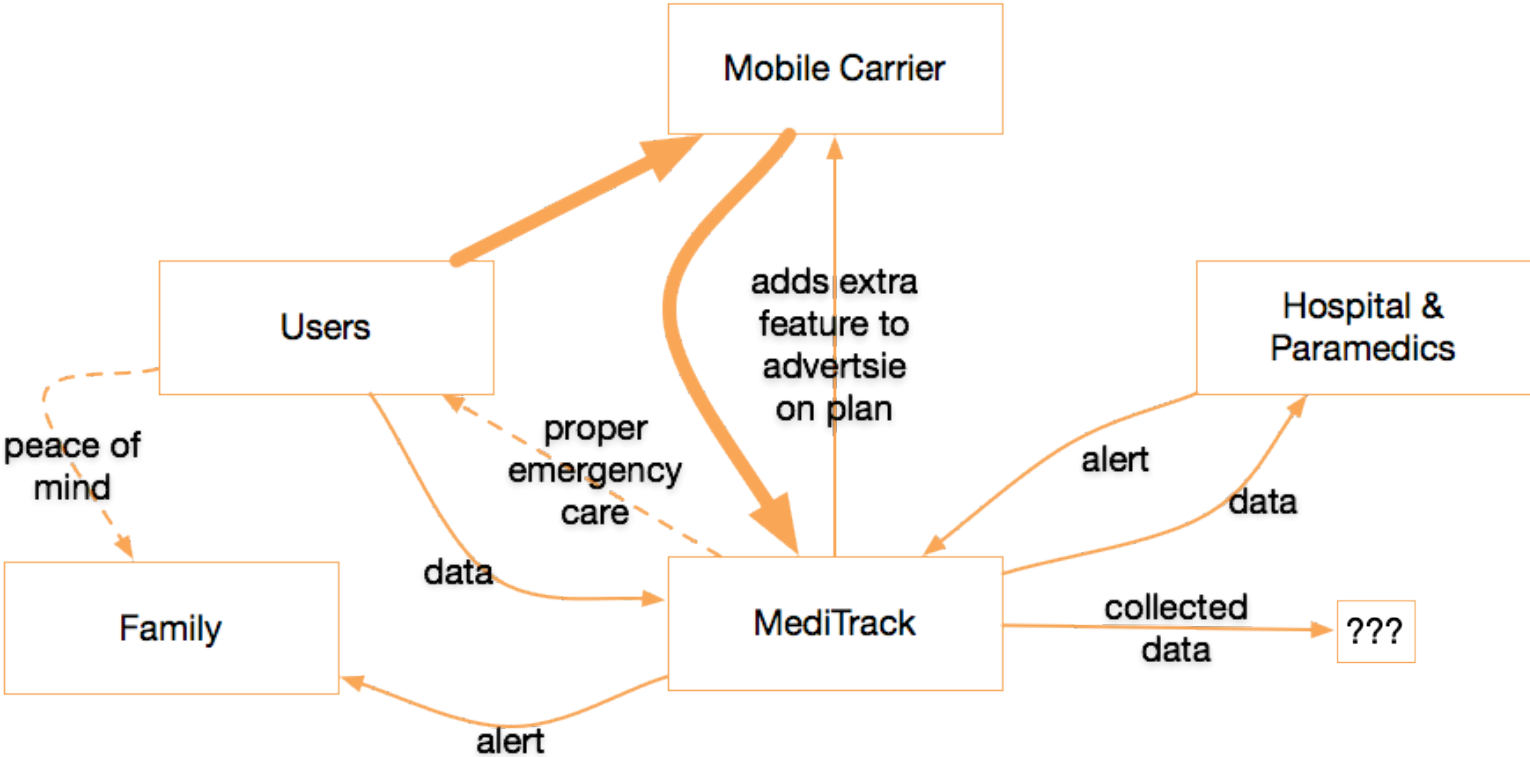
MediTrack as a Health Monitoring system.



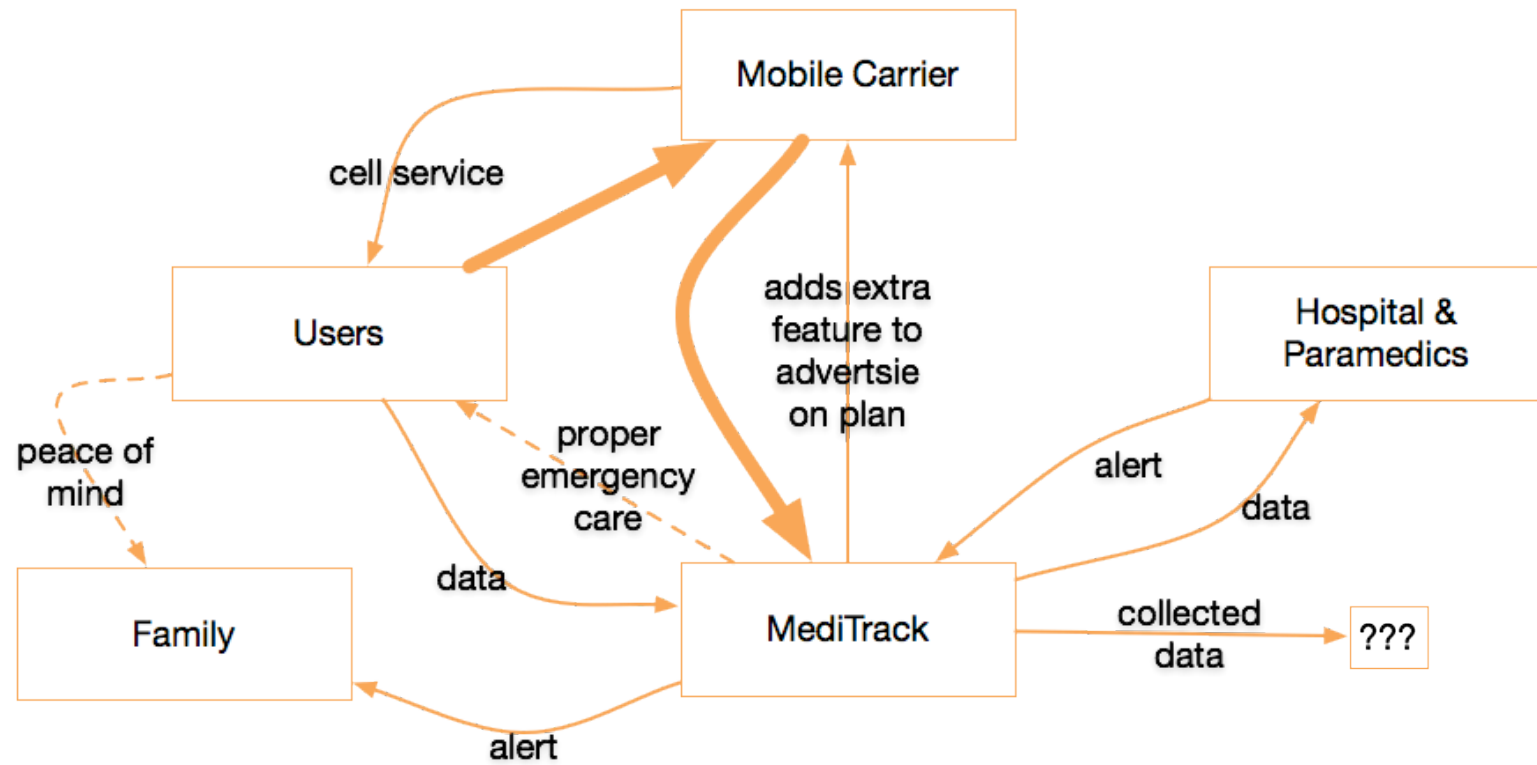
MediTrack as an alert system, paid for by an insurance company.



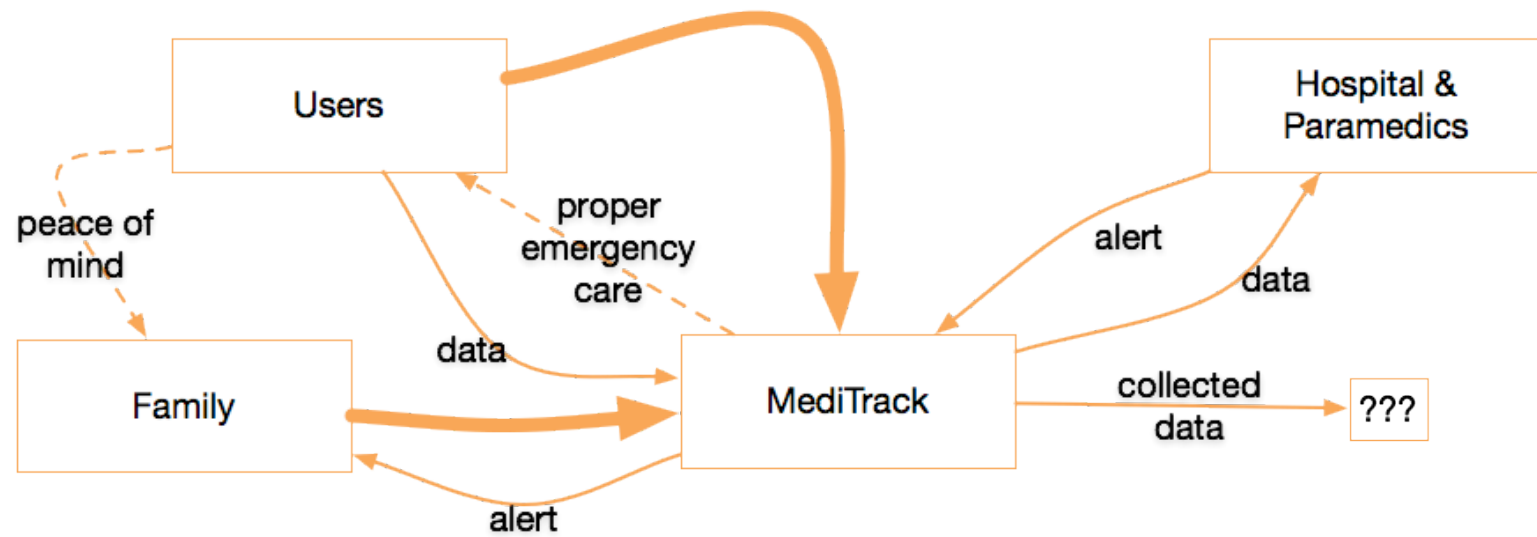
MediTrack as an alert system, paid for as an add-on to a mobile phone plan.



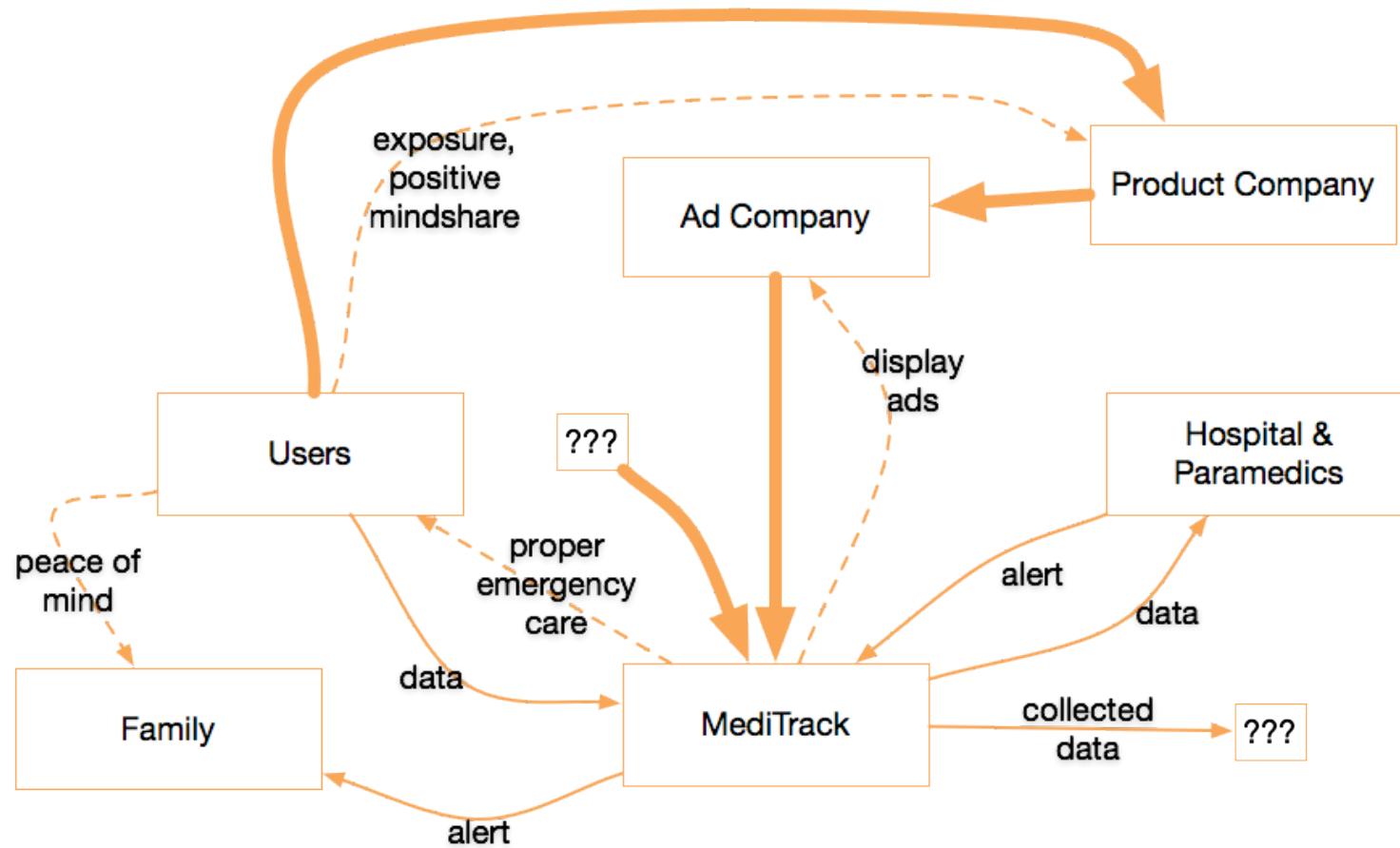
MediTrack as an alert system, paid for as part of a mobile phone plan.



MediTrack as an alert system, paid for directly by the patient and/or family.



MediTrack as an alert system, paid for by ads and possibly another source (see other Value Diagrams).

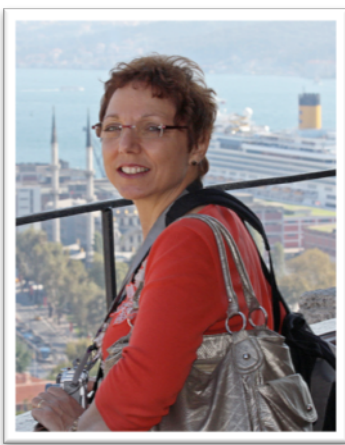


Decision on a service

We decided on “Emergency Alert System” based on our findings through the Value Opportunity Analysis and the Value and Cash Flow Diagrams, which also corresponded to our survey finding, which showed that paramedics need a mobile service that provide them with information about patients that has the potential to play a significant role in treating them during emergencies. The following are reasons for the decision:

- There is a much greater incentive for a ‘mobile’ Emergency Alert Service rather than a Health Monitoring Service, since the mobility of an emergency service can provide more explicit and significant benefit, such as decreasing the time it will take for a paramedic to diagnose the patient.
- The service has the capability to be bundled with other common services (mobile, insurance plans...etc.), which can greatly increase the virility of the service.
- There is a wide range of options available for implementation, allowing for implementations according to the specific needs and the specific demographics.
- Depending on the form of implementation, the service can eliminate social stigmas (i.e. association with illness and weakness..etc.).

Persona Descriptions



Laura Mellon, 47

Background

Laura has lived in New York all her life, and is busy with a full time consulting job. Her husband, Robert, is originally from New Jersey. They have a 17-year-old girl, Jessica, and a 13-year-old boy, Charlie. Jessica plays soccer after school and drives home three times a week. Charlie usually carools with his sister to school. Laura’s father, Frank, was recently diagnosed with heart trouble.

Goals

Experience Goal

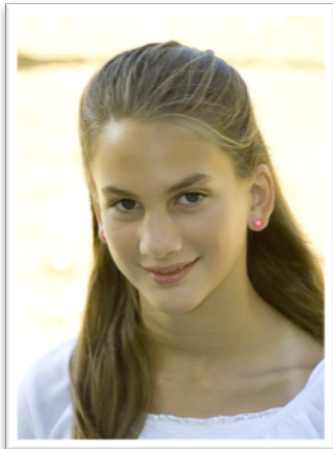
As a busy professional, Laura wants to avoid as much interaction with the service as possible, ideally using it in a “set and forget” manner.

End Goal

Laura wants to feel confident allowing her children and father to be outside her immediate supervision while at work. Additionally, she wants to be able to immediately know of any emergencies in her family.

Life Goal

As a mother, Laura wants to ensure the safety and health of her family while being able to maintain her career.



Jessica Mellon, 17

Background

Jessica is Laura’s daughter. She plays soccer after school and usually drives home three times a week. She is allergic to peanuts, while none of her classmates and teachers know the fact.

Goals

Experience Goal

As a daughter, Jessica doesn’t want her mother to be worried about her. She wants to give her mother peace of mind.

End Goal

Jessica wants to provide as much information as she can to the hospital in an emergency situation without sacrificing any privacy as well as notify her family, especially her mother, when anything goes wrong.

Life Goal

Jessica wants to keep herself safe and healthy so that she can pursue her goals without other concerns.



Michael Chalkas, 31

Background

Michael is a single paramedic who has been working with Pittsburgh EMS for 3 years now. He likes his job. His daily schedule makes him an early bird as opposed to his friends, but still, he has a good social life.

Goals

Experience Goal

Michael is well trained to provide first aid procedures and handles emergency with confidence. Michael can use the history of a patient to better aid him, but he thinks a slow service will not help in

emergencies.

End Goal

Michael wants to provide the best medical help to patients until they reach the hospital.

Life Goal

Michael is working hard to save enough money to start his own company in selling medical supplies.

Emergency Alert System Service Scenarios

Micheal Chalkas (Paramedic)

- Micheal handles a case with a fainted teenager.
During the morning hours, Micheal receives a dispatcher order to head for an emergency at a high school. There is a young girl unconscious and the teachers around her are panicked. According to the information Micheal can get from the bystanders, her name is Jessica and she is 17 years old. No one knows exactly what happened, however her friends said that she suddenly fell down while they were in the playground after lunch. They tried to call her parents, but were only able to reach voicemail.

Michael begins his first aid procedures by conducting a primary survey and then moves her into the ambulance once he assess that poses no risk. He then takes out his MediTrack mobile device and uses it to check if Jessica is registered for the MediTrack emergency service. Once Michael confirms that Jessica is registered for the service, he receives her medical background

information such as allergies and history of family illness. The relevant medical information about Jessica was entered by her mother when she registered for the service. Michael browses through the information and a few seconds later, he asks the teachers what they were serving for lunch. The teachers tell him they had lasagna and jelly with peanut butter for dessert. According to her MediTrack history, Jessica is allergic to peanuts. Michael injects Jessica with adrenaline (epinephrine) then follows with an injection of antihistamines.

Michael announced the patient's condition through his radio and rushed to the hospital.

- Micheal handles a drowning person case.

Later in the afternoon, Michael receives a dispatcher order to head for an emergency in a swimming pool. There is a teenage boy unconscious with the lifeguards nearby. The boy was supposedly swimming in the pool normally before the lifeguard spotted him drowning. By the time the lifeguard dove into the pool to save him, the boy was unconscious. The lifeguard took him out and followed protocol in order to resuscitate him. Simultaneously, someone had dialled 911 for help. While the lifeguard is trying to revive the boy, Micheal (paramedic) arrives at the scene. He instantly takes out his MediTrack mobile device to scan the patient to see if he is registered with the service, while the lifeguard continues attempting to revive him. Micheal's device picks up a signal from the waterproof MediTrack hardware the boy has and Micheal is able to get the boy's medical background. Based on this history and his primary survey, Micheal is able to conclude that the boy might have had an epileptic seizure while swimming. Micheal takes the necessary actions and rushes him to the hospital for further examination and treatment.

Laura Mellon (Family)

- Laura registers for the service

Laura hears about the MediTrack service by advertisement from her insurance company, one of the MediTrack partners. Laura is married and has two children, one of whom is allergic to peanuts. Additionally, she has a father with Type II Diabetes. Laura works full-time and is usually in meetings, so she wants a way to ensure the people in her life are properly cared for, even if she cannot be reached. She feels MediTrack offers a useful service for her situation and decides to sign up. Laura goes to the website of her MediTrack partner (her insurance company) to complete initial setup. She creates a log-in and password which can be used to access MediTrack's web-interface. From there, she creates separate profiles for each family member and fills out their medical background and registers herself as the emergency contact for all. She then proceeds to select and order appropriate hardware for each family member. In a few days she receives the hardware in the mail. Now her family wears it everyday and she can go to

work less worried about an emergency affecting her family. Laura keeps updating the information on the website as and when any changes occur.

- Laura gets a notification of an emergency while in a meeting
Laura is in her weekly meeting with a client she's consulting on compliance with a new financial standard. During the meeting she receives a notice on her blackberry that her daughter is being taken to a hospital due to an allergic reaction. The notice indicates that the emergency is not life-threatening, but also provides the information on the hospital the ambulance is heading to so Laura can meet them there. Laura discretely excuses herself from the meeting and heads straight to the hospital, calling them on the way (using the number provided in the notice) to check on the most up-to-date status of her daughter.

Insurance Company

- HealthPlus is an insurance company and looking for ways to attract more customers by offering some new services. They consider several options and determine MediTrack could be a good add-on to their package. and thus ties-up with MediTrack to provide an emergency alert system to its customers. As part of the deal HealthPlus advertises its additional options on its plans on the MediTrack website, directly targeting users who may be most interested in them based off of the information they provide to MediTrack (MediTrack does not share this information with HealthPlus, rather HealthPlus creates rules for when to show ads and MediTrack simply follows these when displaying the ads without needing to provide any user details to HealthPlus). When someone buys a plan with MediTrack service, HealthPlus pays a fee to MediTrack for the service.

Mobile Carrier

- PComm is a one of the largest wireless telecommunication companies in the country. However, it has strong competitors in the market and strives to provide additional services and options to its customers in order to gain more market share. PComm feels that medical emergency notifications are an emotional service and providing such a feature on their plans could provide them a competitive advantage. PComm researches services through hospitals and many recommend the service being offered by MediTrack (as they already use and support it). After talks with MediTrack, PComm is convinced that the service offered by MediTrack is useful and beneficial to its customers. PComm decides to launch the service and includes it as an additional package/plan which can be subscribed to by their customers. As part of the deal PComm pays MediTrack a certain amount of money per customer registered for the service. This provides continued revenue for MediTrack and a competitive advantage to PComm, leading to increase in its customer base.

Research Areas

We have started to research some areas of interest that should help us in the service implementation in the next phase.

Health Records Standards

Understanding what kind of standards the industry use, will help us implement a service that can be easily integrated with third party services. We have reached out to an IT professional from UnitedHealthCare, a company that uses technology to make the health care system easier to navigate and access, we learned that there is no public open standard for electronic medial transactions and records, but there is a proprietary standard that is considered the de facto in the industry. This standard is called "Health Level Seven International" (HL7) which is the global authority on standards for interoperability of health information technology with members in over 55 countries. By joining HL7, we can access and use standards that are most widely used standards in healthcare.

Conclusion

The major milestone of this phase was the decision on a service that fits our product opportunity gap. In our discovery phase we have started with a wide scope for a mobile service in the healthcare industry. With team brainstorming, research, and surveys, we were able to narrow down this scope and generate a few services from which our decision was made. Through out this process, we have learned and applied a variety of tools to help us refine our results. We have also evolved as a team where we believe we are in the "Norming" stage (Tuckman's stages of group development) where all team members share the same goal, and every team member is aware of his responsibilities and participation in within the team.