Addressing Complexity and Business Values

3.1 System able to detect motion
Business Value: 10

Priority: High
Description: Software is able to use a webcam camera to detect motion in sight of camera's view. System will react to motion of webcam with user specified events.

3.1.1 System shall use a USB webcam feed to detect motion (and subsequently decide when a trespasser is present), capture images of the motion, and record the motion.
Complexity: 1 -- 10

System shall use a USB webcam feed for all motion detection. Webcam must be installed by the user prior to installing VSAS software. VSAS is not responsible for installing webcam software.

All motion detection will be processed in the backend without user administration. Software will monitor the webcam's view continuously when PC is idle. System will be responsible for deciding when motion is detected in the webcam's view. When this motion is discovered, system will record video footage of the motion and continue to do so until the motion has ceased.

3.1.2 System shall be able to detect motion with the images processed by the system retrieved from the USB webcam feed
Complexity: 5 -- 2

Using image comparison, the system shall be able to detect motion through changes within the frame (pixels in the image).

3.1.3a System shall be able to detect motion.
Complexity: 5 -- 2

System shall determine when motion has been detected based on tolerance level set by user. (see section 3.4.2 and 3.4.3 for tolerance definition).

3.1.3b System shall record video footage of detected motion until a limit is reached
Complexity: 4 -- 2.5

User has ability to give system a threshold level (see section 3.4.2 and 3.4.3 for tolerance definition) that determines if motion is considered dangerous enough to record footage of. Footage will continue to be recorded until either the motion is below the threshold level again or a maximum recording limit has been reached. If the time limit becomes reached, system will halt and alert owner of system that system has stopped all motion detection. (more information may be found in section 3.1.6) The exact time limit is still being discussed amongst the group to figure out the most appropriate maximum time limit.

3.1.4 System shall save an image of initial motion capture.

Complexity: 2 - 5

The software will save an image taken from initial motion capturing video feed for inclusion in alert email.

3.1.5 System shall save video recordings to the web hosting service Dropbox

Complexity: 4 - 2.5

This recorded video footage shall then be uploaded to the online hosting service Dropbox, and then receive and save the designated URL of the page containing the video for access by the user.

3.1.6 System shall be able to shutdown when a motion continues after a specified amount of time

Complexity: 2 -- 5

If a non-threatening continuous event happens in the camera's view (example: broken door swinging from wind blowing), system will record all of motions activity like normal and execute all instructed activities, but has ability to halt after a certain amount of time assuming that motion will never stop. This is to improve experience for user as they will not be receiving an overload of emails and videos being uploaded.

3.1.6.a If the system has to halt for reaching the excessive time limit, the system shall inform the user to manually restart the system.

Complexity: 3 -- 3.33

System will email the VSAS owner informing them that software is experiencing difficulties and user needs to manually resolve issue and start system up again.

3.1.7 System shall take in parameters concerning extended periods of motion and their alert notifications.

Complexity: 3 -- 3.33

The system shall set a maximum length of motion recording. The system will have a default time limit for recording continuous motion, at which point it will trigger the email alert process, and restart recording. This is to give the user an email in the most timely fashion possible. The system shall repeat this process up to a certain amount of times, as defined by the design team.

Once motion has stopped, subsequent video recording will stop, and user will be notified as usual.

3.2 All user and system interactions will be between software GUI interface.

Business Value: 8

Priority: High
Description: VSAS will have a GUI interface to interact with software components. Every feature of software will be presented to user in GUI form with buttons, text boxes, checkboxes and forms so software interaction is a simple click and type interaction.

3.2.1 User will access all available options concerning the software through a Graphical user interface

Complexity: 3 -- 2.66

When software is booted up, user is presented with a main screen. The screen is going to include a live stream of the webcam's view along with all available options and features to the user.

The user will be presented with way in which they may change all of the settings the software can provide. This includes options to change the motion detection sensitivity, select "dead areas" where camera should ignore motion happening, email addresses that alerts will be sent to, along with an event log where user can view all previous recording information. The user will also be able to quickly view the log details of the last video system detection. This previous recording information includes date and time of motion, length of time motion was detected, a URL to the recorded video footage online, and an event "flag". A flag is made up of three levels: red, orange and yellow. When the software tracks motion, depending on the length and size of motion, the software will label the motion as red (most serious), orange (moderately serious) and yellow (least serious). The labels will apply at specific, predefined levels of sensitivity, and when motion is detected, the software will report the alert level closest to captured motion level.
The last option that is available to the user is the ability to change the position of the camera. Anytime the user wants to move the webcam to face a different area, the user is able to select an option that tells the system to pause motion detection and allow the user to move the camera freely. Once user is satisfied with new position, user will tell system to begin motion detection again.

3.2.2 The system shall present an image of the webcam feed

Complexity: 2 -- 4

This feature will help the user more easily adjust the position of the webcam.

3.2.3 The system shall provide a way to pause or start/stop recording

Complexity: 1 -- 8

Anytime the user wants to move the webcam to face a different area, the user is able to select an option that tells the system to pause motion detection and allow the user to move the camera freely. Once user is satisfied with new position, user will tell system to begin motion detection again.

If the user decides that they want all motion detection to halt, simply exit the VSAS software and all program functionality will halt. This will stop the system from all motion detection and processing completely. To begin process back up again, user may start software back up again. This is the easiest way for user to start and stop software.

3.2.4 Anytime user does not feel able to complete a task, a "Help" option is always provided

Complexity: 1 -- 8

On any screen that user is currently viewing, a "Help" feature is always available where the user may select and be given step-by-step instructions to help complete all features available to them. For example: If user is trying to edit the Email addresses list but not quite sure how, they may select the "Help" option

and they are told exactly how to add, edit, and delete the email addresses from the system. This gives user direct access to help without having to hunt through the full software documentation to find an answer.

3.2.5 User will be given direct access to full software documentation.
Complexity: 2 -- 4

Full documentation outlining every feature of software will be given with software package. User may navigate to this documentation (locally on machine and online via software website) and browse all of the available help articles explaining every feature in the VSAS software.

3.2.6 GUI main screen will display the details of the last recorded event.
Complexity: 1 -- 8

The timestamp, alert level, and link to Dropbox URL log details from the very last system motion detection will be displayed on the main screen of the interface.

3.3 When motion is detected, user(s) are informed via Email
Business Value: 9

Priority: High
Description: User will be alerted about any motion detection through emails sent to user. These emails give user all information regarding the motion to make it a quick and easy reference to that specific motion detected by the system. In case user misplaces an email, system stores a log of all previously detected motion events (this is discussed in section 3.3.3).

3.3.1 Emails are sent to user defined list of email addresses
Complexity: 2 -- 4.5

Via the VSAS software, the user has the ability to add, edit, and delete a list of email addresses that detected motion information will be sent to.

3.3.2 User(s) will receive details concerning the captured motion
Complexity: 2 -- 4.5

All users listed inside of the VSAS user defined email list will receive an email with all of the following information:
Date and time motion was detected
Duration of how long in minutes/seconds motion was detected
URL link to recorded video footage of captured motion user may preview
System's threat level prediction flag (Red, Orange or Yellow flag demonstrating the system's guess on how threatening the detected motion is.
URL link where user may be able to unsubscribe from email alerts. This helps in case user mistypes an email address and it gets delivered to wrong recipient and also to have a lesser risk of emails being flagged as spam.

3.3.3 Software will be able to record a text description of an event whenever motion is detected

Complexity: 2 -- 4.5

The system will create an event to be placed within a log that contains a timestamp of the event, the recorded threat level (red, orange yellow further explained in section 3.2.1), duration of motion, and the URL link to recorded video footage.

The log will be a list containing all previous motion detected events. User will have the ability to delete events from the log, or reset entirely.

User will be able to access this log through a link on the main screen of the GUI.

3.4 User able to adjust settings of software to customize software to his/her needs

Business Value: 7

Priority: Medium
Description: User should be able to tell system certain values to act upon in the system monitoring process so software is tailored for the customer as much as possible.

3.4.1 System shall allow user to add, edit, delete email addresses from system that will receive motion detection alerts

Complexity: 1 -- 7

Via the VSAS software on designated PC, user will be able to add, edit, and delete list of email addresses in the software that will receive email alerts. There will be one email address designated as the admin user account that will receive all email alerts from VSAS. This includes alerts and system error reports (explained in section 3.1.6). Having this one email address makes sure that the software always has one email address to send alerts to.

VSAS would like to include another feature to software that allows user to define exactly type of information each email address receives from VSAS motion detection alerts. If user would like one email address receive all motion detection information except the video link, they may do so. If two email addresses should receive only the motion snapshot, user may also configure software to do this.

3.4.2 User may adjust a tolerance that determines when to record based on how much motion is detected

Complexity: 3 -- 2.33

This threshold is on a scale from 0-10. This ranges from a small disturbance, such as a cat or squirrel, to medium such as a dog, to high which will detect vehicles. Each disturbance level will capture any larger disturbance as well.

3.4.3 User may adjust a tolerance that determines when to record based on the length of disruption seen

Complexity: 3 -- 2.33

This threshold is also on a scale 0-10. This ranges from a small amount of time, such as 5 seconds, to medium such as 30 seconds, and then high such as 2 minutes. This means that nothing will be recorded until motion has been detected for ‘threshold’ amount of time.