DPM Case Study v1.1

Colour – Actors (Vet, Senior Vet, Owner)

Colour – Requirements

Colour – Requirements formal form

Colour – System

**Background**

AIK9 Limited is an Auckland-based start-up company that has developed an advanced and realistically trainable robotic dog, the AIK9-C.

The AIK9-C is the size and weight of an average adult female border collie, and was initially intended as a personal companion for families living in urban environments where “real” pets are not practical or allowed. However, the company intends to eventually promote the AIK9-C as a herding dog for the agricultural sector. The company is also developing a larger model, the AIK9-G, that will be targeted at emergency response, police, and military applications.

The company has already sold several hand-made AIK9-C dogs to research labs at New Zealand and Australian universities. Other dogs have been sold (at cost price) to friends and family of AIK9’s staff for the purpose of in-home testing.

**The Problem**

Every AIK9-C owner already has an account for the AIK9 website and mobile app. Owners use those services to access a dog’s features and diagnostics. However, all technical support and service cases are currently handled via email.

An email support system worked well when there were just a few AIK9-C dogs in the market, and one employee was responsible for supporting all of them. However, the support system has not scaled well. Now there are more than fifty AIK9-C dogs deployed across two countries, and support is handled by three employees (called “vets” or veterinarians) and a team leader (called a “senior vet”). The senior vet also handles support cases like any other vet. The support system will eventually need to handle thousands of dogs and tens or even hundreds of vets worldwide. This support network is called the “AIK9 Clinic”.

Technical support is a key part of AIK9’s business, and the company’s founders wish to implement a custom support system that will allow vets to handle support cases in a way that fits with the company’s business rules and policies.

**Creating a Support Case**

All support cases are created by a dog’s owner (*An owner shall be able to create a support case*). A single AIK9 dog may have multiple owners (e.g. several members of the same family may be registered as owners for one dog). One owner can also have multiple dogs.

Owners are already registered in AIK9 Limited’s system as part of their dog’s set-up process and will always be logged in to the AIK9 website when creating a new case (*An Owner must be registered with the system. An Owner will be able to login once for constant access.*), (*The Web System must check identity of owner when logging in)*. There is no need to collect or store any owner information apart from their “owner name”, which is unique throughout the existing AIK9 system.

Each support case is associated with a single AIK9 dog. The company already has a complete record of each owner’s dogs; the only thing the support system needs to collect and store for each case is the dog’s model name (e.g. “AIK9-C”) and serial number. Serial numbers are only unique *to a specific model*: for example, in future there could be AIK9-C and AIK9-G dogs, each with the serial number “27”.

However, no two AIK9-C dogs (or no two AIK9-G dogs) will ever have the same serial number.

When an owner creates a case they must provide an initial comment consisting of a short description (e.g. “*Dog won’t* *get up when charged.*”) and a long description of the problem (e.g. “Our *AIK9-C* *won’t stand up from* *her charging* *mat, even though the battery meter in the app and the lights on her collar show she’s fully charged – photo of collar attached.*” (*An owner shall be able to create a support case with a short description. An owner shall be able to create a support case with a long description. An owner shall be able to attach images to a support case.)* Anowner may also include one ormore attachments to that comment such as images, videos, or other files to illustrate the problem. There are no limitations on the number, type, or size of files attached. (*An owner shall be able to attach any file to a support case*), (*The Web System must be able to store images, text and any other type of file*)

When a case is created, it must enter the AIK9 clinic queue as “New”, the company’s term for a case that hasn’t been taken on by a vet. Owners can see the status of case(s) for the dog(s) they own via the AIK9 website. (*Owners shall be able to view status of their support case*)

**Taking on a Case**

When a vet starts work for the day, they need to see a list of all the “Open” and “Stalled” cases in their personal queue. (*A vet shall be able to view all stalled cases. A vet shall be able to view all Open cases.*) They’re most interested in the “Open” cases, things they’re currently working on. If they have no “Open” cases, then it’s time to take on a new case from the clinic queue. (*A vet shall be able to start a new case from the clinic queue*)

A vet can scroll through and read all the “New” cases, looking for particularly urgent issues or for things they specialise in. (*A vet shall be able to select a specific case of their choice. A vet shall be able to prioritise cases*) Viewing a case doesn’t change its status. When a vet finds a case they can help with, they can choose to take that case on – that means the “New” case becomes “Open” and moves from the clinic queue to the vet’s personal queue. There is no way for a vet to “un-open” a case and put it back into the clinic queue.(*The Web System must be able to move cases to a vets personal queue once case becomes ‘open’*) However, one vet can give any “Open” case from their personal queue to another vet; (*A vet shall be able to give an open case to another vet*) for example, if they’re unable to solve the issue or they’re going on holiday and handing over their cases. A senior vet can also transfer cases from one vet to another; (*A senior vet shall be able to transfer cases from vet to vet.*) for example, if a vet is away on unscheduled leave, or suddenly leaves the company, any senior vet can transfer that absent vet’s cases to any other vet. When a case is transferred from vet-to-vet, it always becomes “Open” regardless of its previous status: there’s work to be done, because the new vet needs to review the case. (*A vet shall be able to receive transferred cases. A vet shall be able to review transferred cases*)

**Working on a Case**

When a vet works on a case, they may need to keep notes or communicate with the owner. (*A vet shall be able to write notes. A vet shall be able to keep written notes. A vet shall be able to communicate to an owner*) Like an owner does when they create a new case, a vet can also add comments with a short description, long description, and optionally one or more attachments. (*A vet shall be able to expand on a case. A vet shall be able to comment on only an open case. A vet shall be able to add a short description as a comment. A vet shall be able to add a long description as a comment. A vet shall be able to add attachments of any kind to a case.*) Vets can only add comments to an “Open” case.

AIK9 Limited has a strict policy that all support actions are visible to the owner, including a vet’s personal case notes. (*The Web System must display all veterinarian personal case notes to owner*)(*An owner shall be able to view all support actions on their case. An owner shall be able to view all personal vet notes on a case*) Market research has shown that people can be extremely attached to pet and service robots and can be distrustful of technical support if they feel their robot might be replaced or otherwise modified without their permission. Therefore, the company intends to create an open culture where owners are never “out of the loop” (*An owner shall have full access to their support cases.)*

DPM Case Study v1.1

Due to this policy, all vet comments are visible to the owner. All of a dog’s owners are notified by email when a new comment is available. (*The Web System shall send notifications to the owner about veterinarian comments. The Web System shall send notifications to the owner about veterinarian updates. The Web System shall send notifications to the veterinarian about owner comments*) (*An owner shall be notified by email of new comments*) There is no need for the support system to know the owners’ email addresses: the existing AIK9 system can contact any owner with just their unique “owner name”.

Sometimes, a vet may not be able to progress a case; for example, while they’re waiting on further information from the owner, or a new part from a supplier. In such situations, a vet can set one of their “Open” cases to “Stalled”. Any change to a “Stalled” case, such adding a comment, sets it back to the “Open” status.

(*A vet shall be able to change an open case to stalled. An owner is able to add comments to stalled cases. An owner shall be able to view their stalled cases. A vet shall be able to view stalled cases.*), (*The Web System shall change a stalled case to open when new comments or data is available*)

**Owner Interaction**

Owners may want to add their own comments to a support case because they have discovered or thought of something new, or in response to a comment made by a vet. At any time, owners can comment on a “New”, “Open”, “Stalled”, “Resolved”, or “Closed” case. (*An owner shall be able to comment on a new case. An owner shall be able to comment on an open case. An owner shall be able to comment on a stalled case. An owner shall be able to comment on a resolved case. An owner shall be able to comment on a closed case.*) An owner’s comment is like a vet’s comment: it must include a short description, long description, and can optionally include attachments.

When an owner comments on a “New” case, it remains “New”: it is still in the clinic queue and has not been taken by a vet. When an owner comments on an “Open” case it remains “Open”, and the vet that has the case is notified by email (*The Web System shall notify a veterinarian when an owner comments on their case*) (any vet can be contacted through the existing AIK9 company system using their unique employee number; it is not necessary to maintain vet email addresses within the support system). When an owner comments on a “Stalled” case, the vet that has the case is notified by email and the case is automatically moved into “Open” status, as there’s now work for the vet to do (*The Web System shall notify a veterinarian when a stalled case has been moved to open*) (i.e. read and possibly respond to the owner’s comment).

Owners can comment on a previously “Closed” or “Resolved” case, which could be recent or from years in the past. (*An owner shall be able to view any closed or resolved case they have ever made. An owner shall be able to comment any closed or resolved case they have ever made.*) If the vet that closed or resolved the case is still employed by AIK9 Limited as a vet, they are notified by email and the case remains in their personal queue with the new status “Open”. (*The Web System shall notify a veterinarian when a resolved case has been commented on. The Web System shall notify a veterinarian when a case has been moved from resolved to open*) However, if that vet is no longer with the company, the case is set back to “New” and placed in the main clinic queue. This is the *only* way a case can ever become “New” again. (*The Web System shall be able to move a resolved case into the main clinic queue as a new case*)

**Case History**

Any vet should be able to view and full-text search through all cases overall, all cases for a specific model (e.g. “AIK9-C”), or all cases for a specific dog (e.g. “AIK9-C, serial #27”). (*Any vet shall be able to view any cases overall. Any vet shall be able to view cases for specific models. Any vet shall be able to view all cases for specific dogs. Any vet shall be able to full-text search for any cases overall. Any vet shall be able to full-text search all cases for specific models. Any vet shall be able to full-text search all cases for specific dogs*) Reviewing other potentially relevant cases and how they were resolved is one of the key strategies used by vets, and currently relies on shared email folders and a manual tagging system that’s subject to user-error. (*A vet shall be able to use past cases to solve current cases.*)

Senior vets should also be able to view all cases owned by any specific vet. (*Senior vets shall be able to view all cases owned by a specific vet*) This enables senior vets to monitor workload and reallocate cases as necessary.

**Completing a Case**

When a case has been solved, either by the vet or if the owner reports they’ve solved the problem themselves, the case must be classified as “Resolved” by the vet. (*A vet shall be able to resolve a solved case*) A case can also be completed as “Closed” if it doesn’t appear to be an actual problem requiring resolution. For example, if an owner reports normal AIK9 behaviour as faulty, and the vet explains the situation to the owner’s satisfaction. (*A vet shall be able to satisfy the owner with explanations. A vet shall be able to contextualise AIK9 behaviour if classified as normal. A vet shall be able to close a case*) “Closed” cases are classified separately because they often represent common issues that AIK9 Limited could avoid by improving its product manuals or the Frequently Asked Questions section of its website. These “Closed” cases used to be called “Rejected” within the company, but some vets didn’t think owners would respond well to the term when it became visible in the new system. (*The Web System shall be able to display the owner case status to the owner*)

The vet will no longer see “Resolved” and “Closed” (completed) cases in their personal queue, but any vet can see Resolved cases when searching or reviewing case histories. (*A vet shall not be able to view resolved or closed cases in their personal queue.*) Owners can see completed cases for their dogs.

Vets can re-“Open” their own “Resolved” or “Closed” cases, for example if they decide they have closed a case in error. (*Vets shall be able to reopen a resolved case. Vets shall be able to reopen a closed case.*) Senior vets can explicitly “Open” any vet’s “Resolved” or “Closed” case (leaving it in the original vet’s personal queue), or implicitly “Open” a case by transferring it from one vet to another (any transferred case becomes “Open” as it must be reviewed by the new vet). (*A senior vet shall be able to open any vets closed case. A senior vet shall be able to open any vets resolved case. A senior vet shall be able to put an opened case in the original vet’s queue. A senior vet shall be able to transfer an opened case to a new vet. A vet must review any transferred cases*)

**Deleting a Case**

Owners may accidentally submit duplicate cases or submit a case without an attachment and then re-submit the entire case again with the attachment included. (*An owner shall be able to re-submit a case with newer information. An owner shall be able to re-submit a case with newer or previously missing attachments*). In these and similar situations it may not be useful to store duplicate or incomplete case records in the system. At a senior vet’s discretion, any “New” case can be deleted from the system entirely. (*A senior vet shall be able to permanently delete any new case from the system*) Once the case has been taken on by a vet, it can no longer be deleted and must be “Closed” or “Resolved”. (*A senior vet will not be able to delete opened cases. A senior vet will not be able to delete stalled cases. A senior vet shall be able to delete closed cases. A senior vet shall be able to delete resolved cases.*) Deleted cases should not be visible in any search results or case history views, as they do not contain useful information. In the current email-based support system, “Deleted” cases are permanently deleted from the support system while all other emails are archived for later retrieval.

**Managing Workload**

Senior vets need to be able to view the current “Open” and “Stalled” cases of all other currently employed vets. (*Senior vets must be able to view all currently open cases. Senior vets must be able to view all currently stalled cases.*) They should also be able to view the number of cases “Resolved” or “Closed” by each vet in total, in the last and current calendar months, and in the last and current calendar weeks. (*Senior vets shall be able to view the number of resolved or closed cases by each vet in total. Senior vets shall be able to view the number of resolved or closed cases by each vet in the last calendar months. Senior vets shall be able to view the number of resolved or closed cases by each vet in the current calendar months. Senior vets shall be able to view the number of resolved or closed cases by each vet in the last calendar weeks. Senior vets shall be able to view the number of resolved or closed cases by each vet in the current calendar weeks*) Other metrics may be required in future, but these are the metrics currently complied and used by the existing senior vet for each of the three vets. As the team grows, manually compiling this information is likely to become too time-consuming.

In future, the system may need to support multiple teams of vets, each supervised by one or more senior vets. However, *teams should not be part of the* *initial solution*. The company will not need this functionality for a year or more,and wishes to keep the system simple until team management is truly necessary.