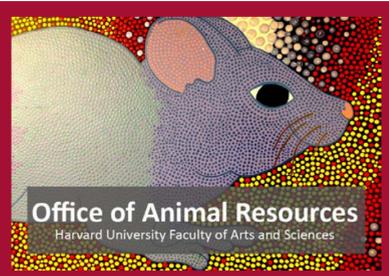


AppSheet – DIY Mobile App Creation for Vivarium Operations

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BACKGROUND

In these times of increasing costs and decreasing research funding, data-driven decisions for increased productivity are more important than ever. But where does the data come from, who collects it, and how does it get to management?

The typical approach is to create multiple paper lists to display tasks and collect data. However, paper forms must be continually recreated, are easily lost or damaged, cannot be viewed except in situ, and require time consuming processing before data analysis can occur. Software could help transfer these paper-based data to something easier to use and accessible to more people from multiple locations. However, most software is expensive and not user friendly.

AppSheet (www.appsheet.com) automatically builds a mobile app based upon the structure of a spreadsheet saved in a cloud file system. This basic app can be further customized without the need to write code. With this no-code, app development product one can create custom tools for reference, data recording, and notification. Here are two examples of how the Office of Animal Resources (OAR) has used AppSheet in our routine vivarium processes.

HOW IT WORKS

Starting with your spreadsheet stored in the cloud (e.g., Google Drive), AppSheet infers the type of data in each column and automatically renders functionality in an app – e.g., a phone number column can be dialed or texted. If you permit spreadsheet data to be added or updated, AppSheet will automatically generate the precise input form – e.g., launch the camera to take a picture.

The web-based app editor is used to brand your app, configure behaviors, add additional tables of data, and distribute the finalized app to your users. The app editor includes a live, fully interactive app emulator – allowing you to test the app functionality during development.

The finished product is a real mobile app and your spreadsheet behaves like a database. AppSheet apps run on iOS (V9.0 or higher), Android (V4.4 or higher), and desktop browsers (Chrome recommended).

CONCLUSIONS

AppSheet provides a quick, easy, and affordable means for anyone to create a mobile app. Our AppSheet subscription includes 16 licenses for unlimited apps at a cost of \$40 per month (\$480/yr) with our non-profit discount. Several AppSheet apps have proved to be valuable additions to the OAR tool set. The next targets for app development include: a rack sanitation tracking app, and an animal husbandry task management app.

RESOURCES



AppSheet website
(www.appsheet.com)



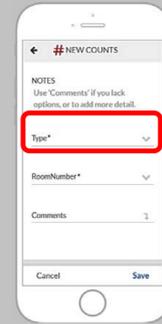
AppSheet's
YouTube Channel

APP #1 – NEW COUNTS

A recent project investigating the efficiency of dirty cage changing required a lot of data to be collected from OAR animal technicians. Rather than create paper task lists and forms, we used AppSheet to create an app called New Counts. The finished app was deployed to the work dedicated iPhones of all OAR animal technicians. Data submitted through the app flowed automatically into a central spreadsheet for quick and easy analysis.



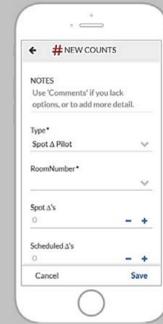
Launch app from icon on home screen



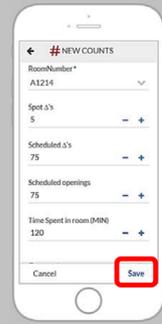
Initial view showing form controls
Tap "Type" control to open options



Select "Type" of data to report



The form changes to prompt for specific data (in this case # of cage Δ's)



Add data
Tap "Save"



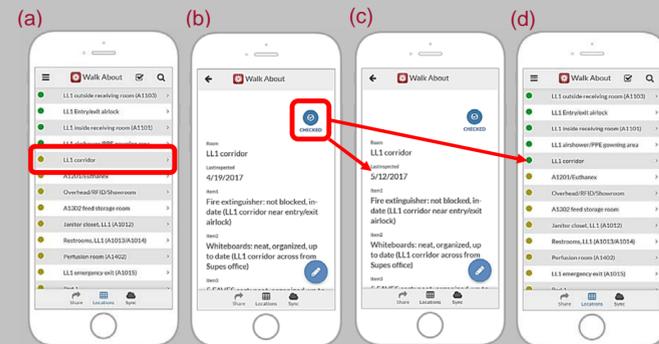
AppSheet saves data

These data are automatically added as a new record in the spreadsheet (above). Data in this format is easy to analyze. For example (right), I have compiled all the weaning data by PI and protocol for April 2017 using a simple pivot table.

APP #2 – WALK ABOUT

OAR animal care managers asked for a tool to help them evaluate the animal care program and facilities during regular inspections called "walk abouts". The tool had to list all animal housing, procedure and support spaces, and the specific criteria to evaluate in each area. Management wanted to use the same tool to document and track any problems/issues observed during the walk about. AppSheet was used to create the Walk About app to meet these requirements.

Staying on track...



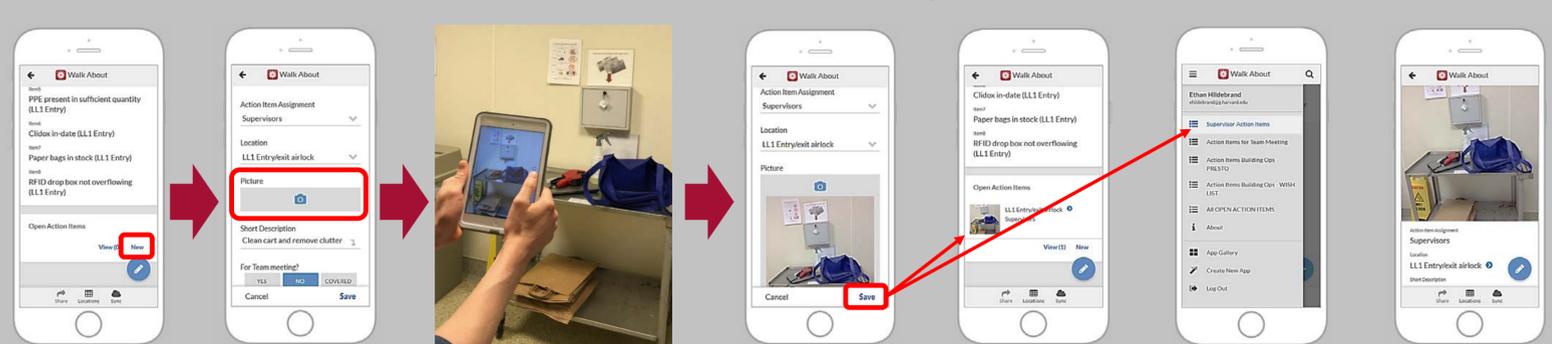
Launch app from icon on home screen

(a) Initial view shows a list of all areas with last inspection indicated by color: ● = done recently; ● = due

(a)-(b) Tap an area to drill down to the date of last inspection and a list of the specific items to assess in each area

(b)-(c) Tap "CHECKED" button to update the last inspection date; this also updates the color code in the initial view (d)

If a problem is found it can be documented within the app for tracking and follow-up...



Scroll to bottom of list for area being inspected

Tap "New" under Open Action Items

Describe the problem
The form includes a picture control

The picture control automatically opens the camera
Take a picture of the problem

The picture is added to the description
Tap "Save"

Action Item is associated with the area

Action Items are also added to a Library filed by the responsible party

Action Items can be opened from Library, or area lists and edited (e.g., marked resolved)