"What's App With That?"

A Closer Look at how Technology can Assist us with our Animal Goals

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Technology has changed the way we communicate. In our field, possibly more than others, we still rely on actual physical communication to facilitate our jobs. What if there is a way to keep that personal connection while still allowing us to achieve animal-based goals with a better antecedent arrangement? At NEI, we have decided to embrace the future and find new ways to help us achieve our goals using current technology. This paper will look at the specific tools and scenarios in which these technological applications might be beneficial to you to achieve your animal goals.

TECHNOLOGY I: The BDC

At NEI we believe that clear communication with both animals and people can best set us up for success. The hardest part about this for our team is that we can often be scattered across the state, country, and sometimes even the globe. How can we have a real time notation system that will allow us all to share anything we could possibly think of in regard to animals in our care? In, 2014 Steve Martin, President of Natural Encounters, Inc., Dr. Susan Friedman, PhD, and Daniel Ladner, software engineer, collaborated in the design and creation of the innovative internet-based database affectionately referred to by our staff as the BDC. This acronym stands for Behavior and Data Catcher.

First, this internet-based technology allows us to physically locate and keep a current data file on every individual bird that is part of the company from anywhere with internet access. In the year 2018 alone, we had birds and team members at our home Ranch facility, two separate facilities at Disney's Animal Kingdom, as well as a team at the Indianapolis Zoo. If you wanted to review medical or training records on a bird in Indianapolis and you were in Florida at the Ranch, it could be done instantly. Suddenly, any information you could possibly need about any animal is at your fingertips. The birds are organized by location. If a bird moves to a new location, we can transfer their entire record, see exactly what has happened recently, as well as historically, and often troubleshoot any challenges we might be having by simply looking through these files. For example, let's say we move Sweet Pea, a Trumpeter hornbill, from the Ranch up to one of the Orlando teams. Once we import that file (with just a few clicks), we can see her diet records, medical history, training history, and all relevant notes in one place.

Second, this allows us to streamline our husbandry routines. We weigh all of the birds regularly as a source of preventative medical monitoring. Trainers text the weights to our diet writer as they weigh the birds using WhatsApp, a technology we will discuss in detail later. As the weights come in, our diet writer enters the bird's diet for the day into the bird's record in the BDC. Each daily record for each animal is called a "vital". The collection of all the bird's daily vitals comprises the bird's complete "record". From that point, since it is all streamed through the internet (encrypted for safety), our diet makers can pull up the individual animal records on a "Kitchen List", which lists all the birds and their diets for the day, and make the diets in an entirely separate location as the diets are being written. This clearly beats the older, more time-consuming method of first writing down weights and then diets on paper charts and then turning those papers over to a diet maker to begin making diets. As diets can now be made simultaneously while they are being entered, we are also saving a significant amount of paper.

Third, this is a great tool to quickly review past diets and quickly and easily vary what diet items an animal gets on a day-to-day basis. This allows us to keep the diets and, therefore, the reinforcers we will use in training and shows variable, which in turn can help lead to more consistent and desirable behaviors. Each bird record has a number of fields in which a diet item and amount of that item can be entered. Each field has a drop-down menu with all possible food items listed to choose from **(See Figure 1)**. For a raptor for example, the diet writer would enter amounts (weighed in grams) in fields for day old chick, rabbit, mouse, rat, BOP meat (carnivore diet), etc. For a parrot, the fields could include pellet, fruit and vegetable mix, any one (or more) of a number of types of nuts, etc.

FIGURE 1
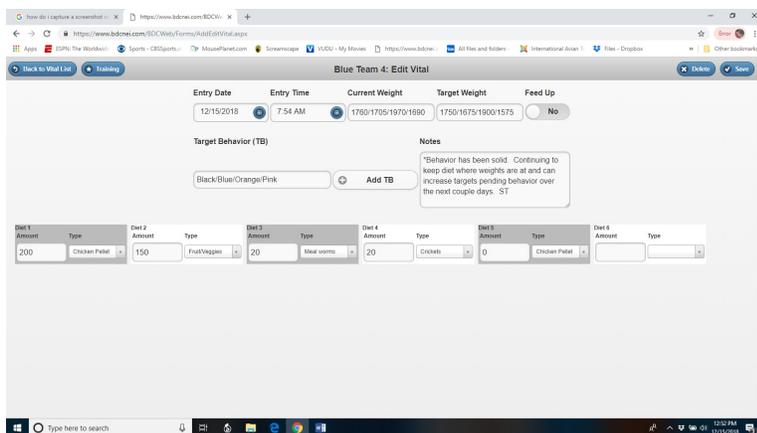
When we go to create a diet in the morning, there are two possible ways to add a vital and each way gives slightly different background information. 1. Go to the bird record and hit "add vital"- that brings you to a page with the past four days. 2. Go to the bird record and click on (open) the record. You see all the bird's vitals. From that screen you can also click on "add

vital". Like #1 it shows the past four days, but doing it this route you can see more than four days before writing the diet.

Another benefit to this system is the ability to write down any relevant notes in that animal's vital. There is a general note field in each bird's vital in which we can write down detailed training, medical, show, and other notes. This is a huge help in finding trends as to why a behavior might be breaking down, whether or not to increase a bird's target weight, and other pertinent information. There is also the ability to write a "common note". This is used when we want to put the same information in several birds' vitals. For example, we have flocks of parrots that contain anywhere from 6 to 20 birds in a flock. If we want to add a training note to the vital of every bird in the flock, we can click "select", then click on each bird's vital that we want to include the note in, and then click on "common note" and add the note. We also have the option to add a "milestone" note, such as a vaccination or other relevant medical information, an ad lib weight, or any other information we want to be able to see every day without having to click on a vital and search the bird's record. In addition to this, when a diet writer writes a note in the general note field of a bird's vital, that note will carry over to the next vital the trainer opens until the trainer changes the note.

Like all things we do in life, we are constantly observing, evaluating, and adjusting our practices in an effort to improve them. We have found that it is best to have a strong internet connection with plenty of bandwidth to use the BDC to its fullest capabilities (such as having multiple people using the database simultaneously during morning husbandry). Also, to pull up an entire record for a bird that has a long history with the company can take unnecessary amounts of download time when you just need to review the bird's recent history. For this reason, our BDC has the time saving option of pulling up records for 3, 7, 14, or 30 days, in addition to the entire record for an individual.

While this technology proves invaluable on a daily basis, it should be noted that starting up an entirely new and custom database can present its own challenges. In order to design something this complex, it takes a collaborative effort and people with the right skill sets. You need a software engineer for the build, a liaison that understands how both the software engineer and the animal care process works, and a strong grasp of the exact needs for the program development. Our common note feature listed above was an addition to our original database built well after the software originally rolled out due to the needs of our Winged Encounters team. Making sure edits or additions can be made, or that your software is flexible to change, is another thing to consider. Building a database from scratch, as well as building in any additions or changes, can end up being costly, too. Make sure to weigh the pros and cons and see what might work best for your individual situation.

TECHNOLOGY II: Box

Box Sync is a desktop sync application that keeps all your files safe and secure in the cloud while having them available on your computer and accessible from anywhere with Wi-Fi, on any device with Box mobile app. This software, and its applications over the cloud, allows us to share documents company-wide with a simple login. We use this technology in a variety of ways.

First, we use it for our important company-wide documents. These include things such as our employee handbook, AZA accreditation manuals and forms, etc. This allows all employees the option of viewing any materials from either their phones, tablets, or computers whenever they like. Also, as a company dedicated to being as green as possible, this saves on countless pages of paper that would've potentially been printed before we had this file sharing technology.

Another benefit for us is sharing our schedules. Once again, this saves us having to print them out and post them at each location, but there is also a greater benefit. In our company, it is common for people to be trained at multiple facilities. In the event that there will be reduced staffing at a location one day, or if there may be a special event at another location, the management can quickly review all schedules and see where they can pull staffing from without having a negative impact on any team. All staff has access to all schedules which may facilitate trainers spending time together on their days off.

Box can also be used to share educational and enriching materials including but not limited to our monthly newsletter. This technology allows us to view a really entertaining compilation of the goings on in the company at each location over the past month. Each team contributes an update and photos so everyone gets a peek into how all areas are running. Any and all team members are encouraged to contribute content. It's stunning to look at, keeps our company more informed about each other, and aids in information sharing, thus reducing the likelihood of communication breakdowns and creating a more cohesive team.

TECHNOLOGY III: Snapchat

This technology is probably more common to the younger crowd. While we don't utilize this as a primary tool, we do use it as a different form of communication for staff entertainment. Each area has their own snapchat group and we tend to post things that we think will brighten each other's days. These may be something goofy someone is doing or just something that may make you smile. Positivity and laughter are always appreciated so this technology helps us achieve that.

TECHNOLOGY IV: Google Maps

This technology has been around for quite some time and people are probably quite familiar with it. The real benefit is the application of it towards our specific jobs. It isn't a technology that we utilize daily, but, when we need it, it becomes quite handy. For example, during a fly off where you don't have line of sight with the bird and you send out staff to canvas a large area, we have found it helpful to have individual staff drop a pin on a map of the area to show where they are **(See Figure 2)**. This helps us optimize coverage by avoiding having areas that are either too dense with staff or too lean.   This same principle applies during a fly off when we do have line of sight with the bird and we want trainers optimally spread out to hopefully see where the bird goes when it flies from its current location **(See Figure 3)**. The question then arises, "How do we share these pins with the team quickly?" The answer lies in one of our favorite technologies to date.
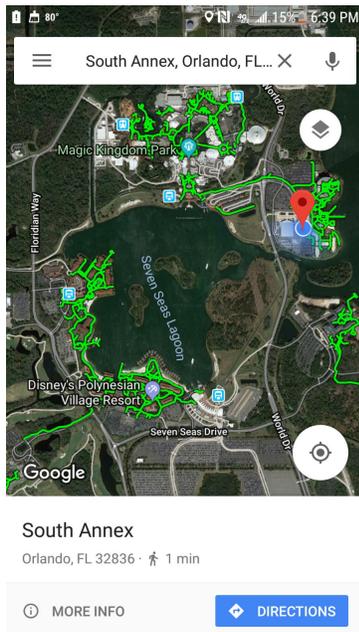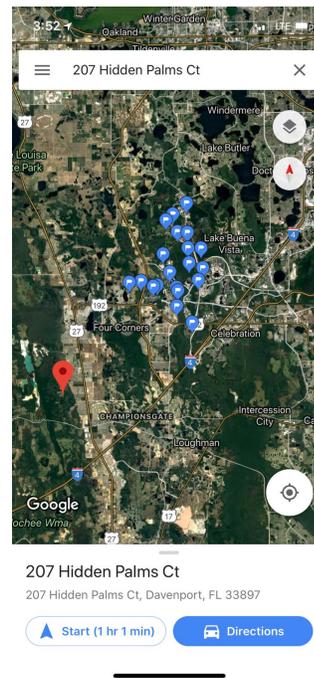
FIGURE 2

FIGURE 3

TECHNOLOGY V: WhatsApp

This application has been a game changer for our company. WhatsApp Messenger is a FREE messaging app available for iPhone and other smartphones. WhatsApp uses your phone's Internet connection (4G/3G/2G/EDGE or Wi-Fi, as available) to let you message and call friends and family across the world. You can create groups with multiple trainers in each group and it is easy to add or remove people as staffing changes. It also allows for multimedia messages. You can send and receive photos, videos, and voice messages. Most people are already familiar with this technology, so once again, how can it help us?

First, like Box and Snapchat, we created a variety of groups to help with communication streams. We have a company-wide group, individual team groups, and even sub team groups for specific areas of show or husbandry. These small groups allow for critical information sharing about specific topics among trainers that don't have many overlapping work days. For example, we have a "Macaw only" chat for those trainers who are developing and evolving the behaviors of the macaw teams in our new show. We have a "Photo Friday" group for posting medical related bird photos so we can quickly reference and compare these photos to see, for example, how injuries are healing over time. We also had a "Presenter" group for our stage presenters to share script changes. These smaller groups allow us to pinpoint the audience we wish to share information with.

In our daily routines, we weigh birds every day, with each individual being weighed several times a week, as weights can be one indicator of health for an individual. At one of our show facilities, we have several trainers all weighing different birds at the same time. All of these people enter the weights into the app on their phones and we have a diet writer at a computer in a different location (even at their house, if needed) entering the weights into the BDC and writing diets for the birds. This facilitates a much quicker, smoother, and more eco-friendly transfer of information as opposed to writing down every weight on a sheet of paper and bringing those papers to the diet writer (not to mention the paper method wouldn't allow diets to easily be written from off-site when necessary).

We also use WhatsApp to upload pictures and videos of animal behavior. Sometimes this might be pictures of a feather abnormality or an injury. Other times, it might be pictures to monitor foot conditions on birds. If we see a behavior that is out of the ordinary, we can quickly share a video of exactly what we are seeing instead of relying on the telephone game to describe the behavior. It can also be used to share show behaviors or training sessions so others can offer input or maybe just give the trainers some good old R+.

Where we have seen it come in handy most is during flyoffs. When we were training 24 macaws for the opening of our new show in April 2018, flyoffs were part of the learning process. We had several instances of birds leaving the theatre and, therefore, discovering the park and, more importantly, how to get back home from a variety of places once they flew out. Some birds were familiar with the area and had flown in our previous show, but we also had some newer birds in our flocks as well. One day, we had a longer than usual flyoff with two blue-throated macaws named Juan and Callie. This multiple day flyoff allowed us to really put this app to use.

As mentioned above, when we started spreading out, we would use pin drops from Google Maps and upload them onto the WhatsApp. The pin drops have been used to show where staff were stationed looking for the bird and where they may have heard or seen the

bird. We also use radios, but the pin drops got us much more accurate information. The app was also helpful as our form of communication when radio signals and transmissions were spotty or when radio batteries died.

We were also able to share some entertainment during what could've been a stressful time. When we saw wildlife that was unique, we would share it. Some trainers uploaded videos of their experiences that were often times quite unique.

This experience also allowed us to document some of the strategies we used in order to see what worked well and could be used in the future versus what might not be as helpful. For example, Dan Blair had the unique idea to utilize two other blue-throated macaws named Mondo and Cletus who had been flown in various locations in our camp programs that year. Their behavior in camp was to be released in a field from way across the park and fly back home to Site B where they lived. This was captured on cameras and Skype and kids could see the entire process all while watching from the field where the macaws initially flew from. On day 3 of the Juan and Callie flyoff, Dan convinced Steve Martin to attempt his idea of releasing Mondo and Cletus from the front parking lot (close to where we last heard vocalizations from Juan and Callie), and see if their calling as they flew would draw out Juan and Callie. They had never been near this area before, but Dan was confident they were the right tools for the job as they had reliably flown home from various long-distance locations. Never in a million years would I have thought that the way to recover two birds in a flyoff was to release more birds in a novel location. Mondo and Cletus did great. They screamed and flew quite a bit and eventually made it home to Site B about 10 minutes after their release. Juan and Callie vocalized in return, but Mondo and Cletus didn't draw them to fly like we had hoped. This idea was an overall success that could be used in future flyoffs, thus adding an additional tool to our training toolbox.

Ultimately, Juan and Callie were recovered about 8 miles from the park (14 miles driving time) the following morning. WhatsApp did a great job in helping us come together and successfully achieve our goal. It has often been used since and will continue to be used in the foreseeable future.

TECHNOLOGY VI: Everything Else

There is so much technology out on the market these days. I, for one, never thought when I first heard of WhatsApp that we would be using that in the animal training field, but we found ways to adapt it to our needs. Anything can be utilized depending on your individual needs. In one of our shows, we are working on extending the time of the shows. We have found that the stopwatch function on our phones, combined with WhatsApp has given us the data we need to grow that show. We time each show with the stopwatch and then screenshot

the show time to the group WhatsApp so we can track show lengths. Something as simple as this could be all you need to elevate your work to new heights that were previously unreachable in the past. Just remember to ask yourself, "What do we need to get done?" and the tools will be out there to answer your question (It just might take your younger staff members to help you learn how to answer it better).