

The Role of Technology in an Environment Requiring Rapid Response

1st Edition



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Introduction

This white paper is intended to cover the general features of drones and the site inspection software, Spex, and their roles in assisting in rapid responses in the construction and insurance industries. This is not an in-depth guide to using Spex or flying a drone, but an introduction to their capabilities. Spex and drones provides many benefits to all construction projects, such as document maintenance, daily photo logs, and project progress tracking allowing for more efficient methods in lieu of current outdated means. This paper will highlight the roles of Spex and drones for rebuilding physical property in the aftermath of catastrophes.

For more information on Spex, please visit <https://spexreport.com> to schedule a demonstration on using the Spex application and the web interface. For more information on drones please visit <https://www.faa.gov/uas/> for official US regulations.

Drones

BACKGROUND

The industrial world is larger than it's ever been, as such, the damage from storms has mirrored this growth. In our age of information, our demands have increased in both speed and volume of data. For years there have been amateur radio controlled (RC) pilots taking to the skies with model planes, but more recent innovations in both lithium ion batteries and GPS technology have allowed for drones to take flight. Demand for drones for both recreational and commercial purposes are at all-time highs as they are now powerful and affordable enough for even budget conscious consumers.

FEATURES AND CAPABILITIES

Whether it be on the ground in a CAT or at an everyday loss, drones give a pilot the ability to survey vast areas in a relatively short period of time. Depending on project requirements, drones have the capability to record video or take photographs, all in 4k resolution. The uses for a drone on a job can vary greatly, for example, drones can be used to evaluate work site damage after flooding or look at the roofs of buildings too dangerous to walk on after a fire.

Response time was a key feature of drone use during the nation's recent catastrophes. A pilot can be on site and in the air in a matter of minutes, avoiding the need to wait for ladders or man lifts for access. This allows for several sites to be inspected in one day. In addition, once in the air, the drone can conduct an inspection and document the loss faster than someone on the ground. In one recent case, a drone and pilot were able to document 200 buildings, at 85 unique locations, in 8 days. By avoiding the need to climb up and down every roof, a drone can cover a lot of ground. This not only makes inspections faster, but more accurate by seeing damage closer to the time of loss.

Safety is always a concern in the construction industry. Falls account for one-third of all construction

related deaths. Steep pitches, damaged sheathing and framing members, and poor fall protection are all ways in which accidents occur. By avoiding the need to climb a roof we can eliminate the possibility of a fall occurring.



Roof deemed unsafe to inspect. A drone was the best and most timely way to inspect the damage.

Many drones on the market today provide high quality images in 4k, allowing the user to zoom in and maintain image quality. Cameras on drones can look in almost all directions including straight down giving the pilot an ability to see the entire roof in a single shot. Most drones have displays built into their controllers or smart phones (which can be attached to their controller) giving the pilot a real-time look at what the drone is seeing. Photos and video photography can be used in tandem, meaning still photography can be used to highlight specific areas while a video can capture the overall site.

Beyond an insurance property damage capacity, drones can also be used across a spectrum of construction or insurance related fields such as builder's risk claims, owner's rep, or surety work to inspect or track the progress of projects. Drones may be used in conjunction with oblique aerial imagery services, such as Eagle View, to view both past site status and monitor current progress.

LIMITATIONS

As with any new technology, there are weaknesses. For drones there are two limitations which could hinder field use.

The FAA heavily restricts the use of drones in many areas across the country. These restrictions dictate who, where, when, and how they can be flown. To fly a drone commercially, a pilot must obtain a Small Unmanned Aircraft System (SUAS) license. To obtain this license a pilot must successfully pass

an exam on the FAA’s rules and guidelines of drone flight. All pilots, both recreational and commercial, must adhere to these rules, though only commercial pilots are required to take and pass the exam. The FAA also limits where drones can be flown. National Parks, near airports/military bases, around active sporting events, over people, and even specially designated areas such as a 30-mile circle around Washington, DC are all regulated areas which require authorization prior to flight. These regulations cover large areas of the country and can make drone flying difficult or impossible in certain major cities.

The FAA also puts limits on when you can fly. Windspeed, cloud cover, and chance of precipitation are all reasons why a given flight may be grounded. Luckily, there are several websites designed to detail expected weather in any location in the country and will inform any pilot if it is both safe and legal to fly.

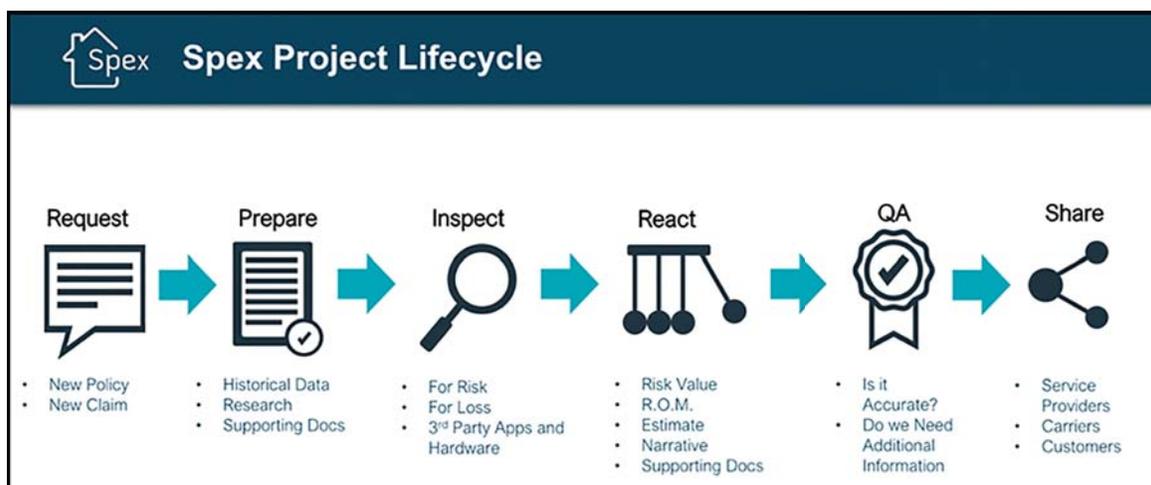
These regulations have been put into place to keep the public safe. They are designed to avoid incidents on the ground and in the air. Internationally, many countries have implemented similar restrictions. Information on FAA drone regulations can be found at: <https://www.faa.gov/uas/>.

Beyond regulations, drones are limited by their own technology. The lithium ion batteries only last about 30 minutes in flight, even less in windy conditions, and can take several hours to recharge.

Spex

BACKGROUND

What is Spex? Spex is a platform that allows for a more seamless experience when documenting in-the-field. Spex is the brain child of former insurance adjusters who experienced firsthand the complications and disorder of property damage inspections after the wake of Superstorm Sandy in October 2012. With the realization of the archaic and inefficient methods, the co-founders set out to create a means to integrate the many steps involved with inspections, such as photographs, measurements, sketches,



field notes, etc., into one platform. The platform is used as a one-stop shop for inspections eliminating the use of note pads and digital cameras during field inspections.

Although Spex was born in the wake of a catastrophe, Spex is a tool to assist all users through the phases of all types of projects. In other words, Spex can be catered to user needs and preferences, aside from insurance inspections.

FEATURES AND CAPABILITIES

Prior to performing the in-field inspection of a project, Spex is best used by first creating the project through the Spex web interface at <https://spexreport.com>, which will require that an account be set up for each user. The Spex application (“app”), which is available at the app store, must be downloaded to a tablet or device that will be used for the in-person inspection. Users can then load the project(s) that was created on the web onto the Spex app, via a sync.

Upon completion of an in-field inspection through the mobile app, the inspection information must be synced to the cloud. The inspection information will then be visible on the web interface.



a. Create Project

Within each project or site listed, is the background information of the site including, but not limited to:

- Insured’s name;
- Loss location/address;
- Type of loss;
- Date of loss;
- Insurance company;
- Tasks, and;
- Due dates.

New Project

Assign To *	Task
<input type="text"/>	<input type="text"/>
Due	Notify when task is completed
<input type="text"/>	<input type="text"/>
Team	Report Profile
<input type="text"/>	Default
Check-in Form	Check-out Form
<input type="text"/>	<input type="text"/>

Client / Insured

Name *

Phone Email

Property Address

Address * Address Cont.

City * State / Province

Zip / Postal Code County

Insurance Information

Insurance Company

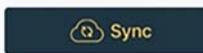
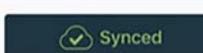
Policy Number Claim Number

Date of Loss Type of Loss

Once the project is created through the Spex web interface and the applicable information is entered, the project is ready for download to the mobile device's Spex application in preparation for the in-field inspection.

b. Field Inspection

Multiple projects and sites can be stored in the mobile Spex app. The list of projects is available and listed in the overview upon opening the application.

Search...						New Project
PHOTO	INSURED/ADDRESS	CURRENT TASK	ASSIGNED DATE ^	TASK STATUS	SYNC STATUS	
 	ABC Corp 12345 Main Street Fairfax VA 22030		3/1/18	● In Progress	 Sync	
 	TEST 1111 blank street Washington	—	2/1/18	● Overdue Due: 12/31/01	 Synced	

Opening a project in the application, will allow users to “start inspection”, in which users can first capture a property photo, typically a front elevation photo.

< Projects
ABC Corp
Edit



ABC Corp
12345 Main Street
Fairfax VA 22030

 Property Photo

 Map

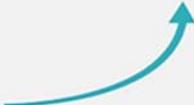
 Not Available

 Not Available

Last Assigned	Due	Last Completed	Current Task
3/1/18	3/8/18	—	—

Internal Notes

Attachments  Add New

You have not uploaded any documents yet. 

 Sync
Start Inspection

Once an inspection begins, photographs, notes, sketches, videos, can be captured and categorized into areas specified by the user.

Users must first choose a “structure” followed by an “area” and may be organized and entitled at the user’s discretion. As every project is unique, users may choose to organize what’s most suitable for the project.

Once a structure and an area are setup, the user/inspector has various options as to what can be captured, which includes:

- Photo
- Video
- Note
- Audio
- Form
- Diagram

The option for “photo”, allows for in-app editing once a photo is captured, such as adding text or markups.

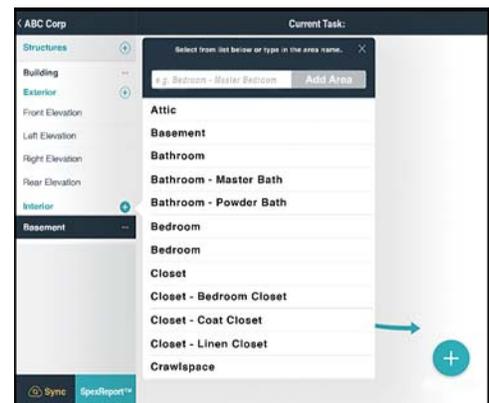
The option of “diagram” allows for Spex to be compatible with other applications, such as sketching, measuring, and photo measurements. Applications, such as *Bosch Floor Plan*, *Spike*, and *Penultimate* will need to be downloaded from the app store if intended to be used with Spex.

The option for “form” provides forms for different purposes, i.e.: Interior, Exterior, Roofing, etc., that are used as a checklist for users during their inspections to make sure all relevant information is captured at the site.

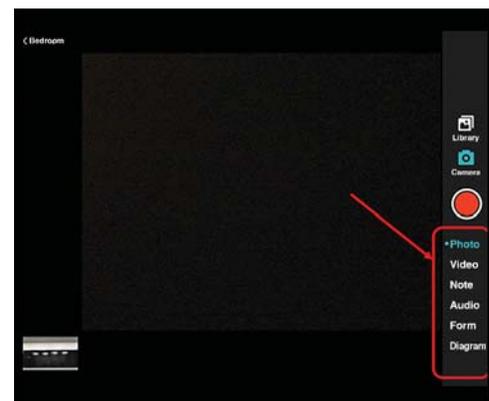
Upon completion of an inspection, users must sync the project to the cloud, which requires connection to wi-fi. Syncing is the only time the Spex app requires internet access as it’s designed as an “offline” application.



Documenting in the field



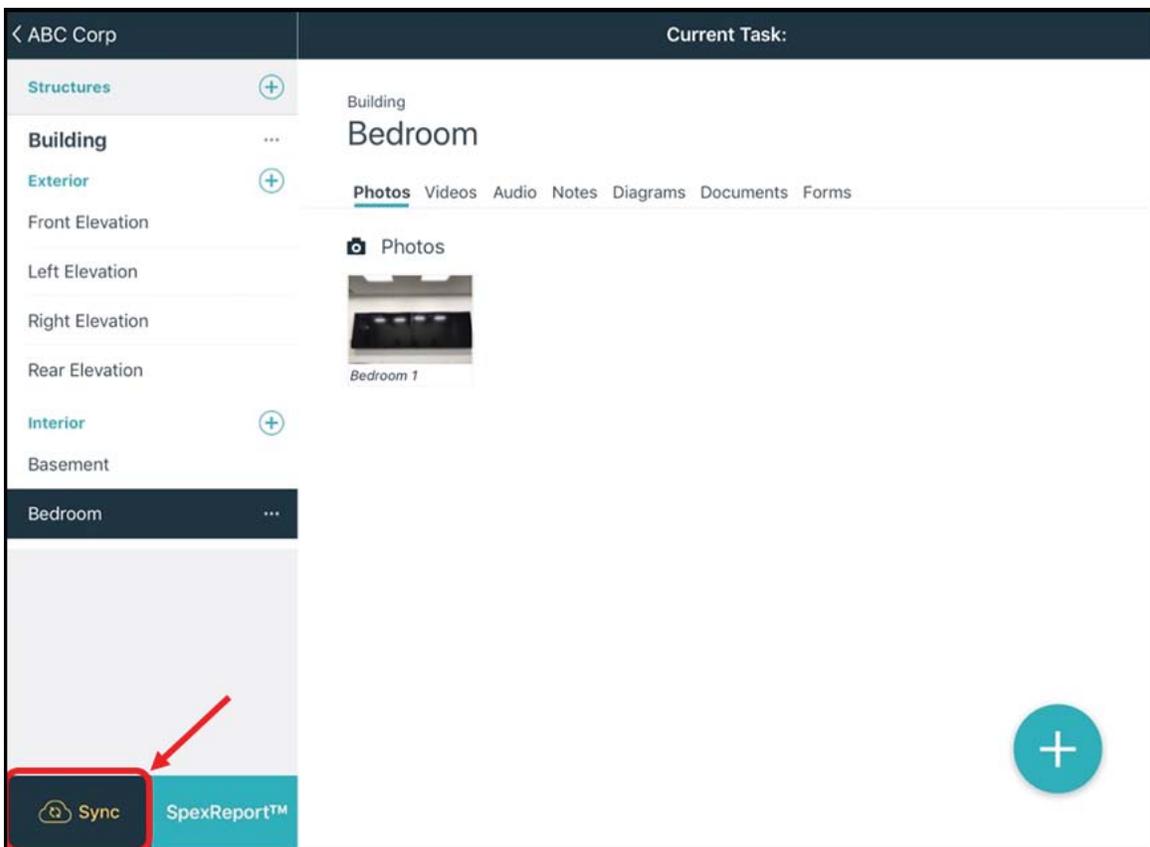
Example of selecting “structure” and “area”



Example of capture options



Example of apps that can be used with Spex



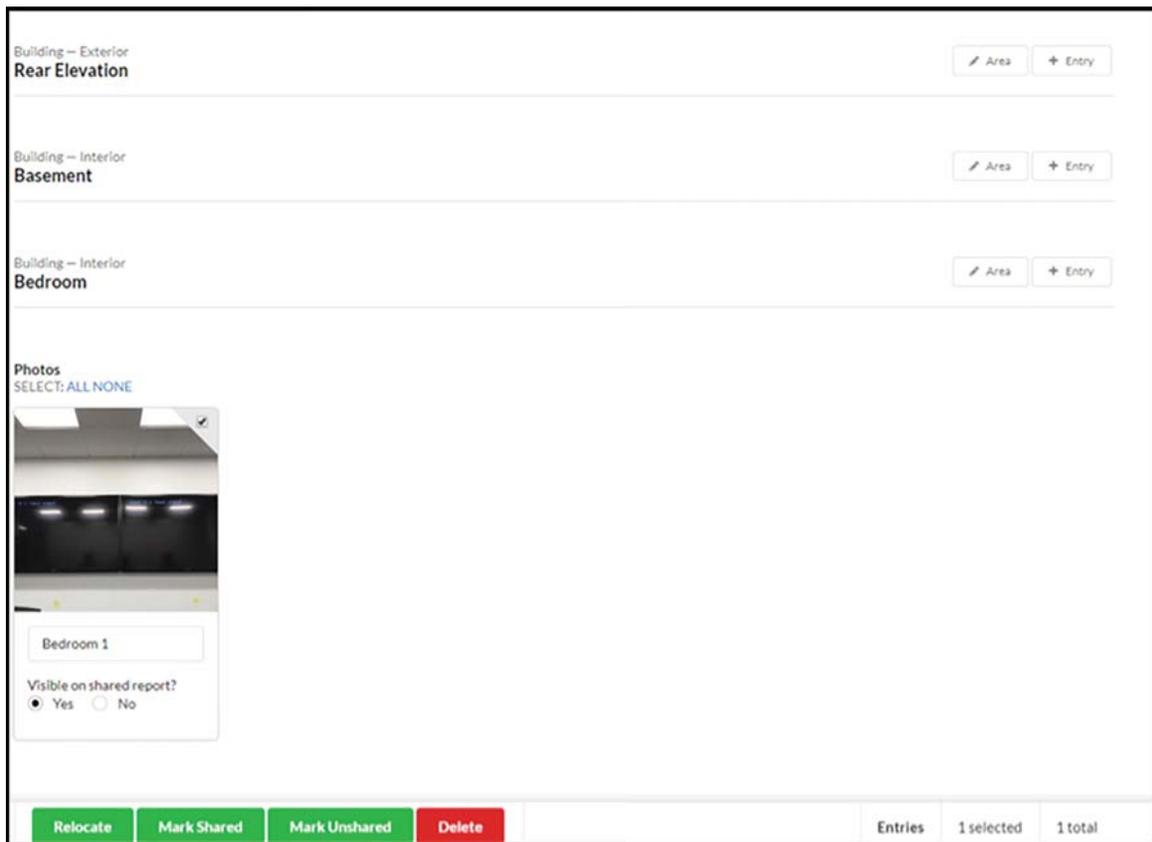
Example of where to sync your project

c. Edit Project & Produce Deliverables

Once synced, users can access all inspection documentation through <https://spexreport.com> following the inspection.

Users can send “Spex Reports” through the web interface via links to relevant parties that may require immediate access to the documentation.

Spex Reports can be sent through the application as well. Users may choose to exclude certain photos, notes, videos, etc. from the “Spex Report” if they are duplicative, blurry, or irrelevant. These may also be “relocated” within the project from one structure and area to another if they were improperly captured and categorized during inspection.



Spex report example

Users may also download the assets (photos, videos, notes, etc.) in which all documentation will automatically be sorted into folders named exactly as shown in the app and on the web. For example, if a photo is taken in “Building 1” (structure), in the “Entryway” (area), the image will be downloaded into a folder titled “Entryway” in a “Building 1” folder. Lastly, photo sheets may be produced as supplemental documentation to a report or estimate that are prepared outside of Spex by the user.

Prepared for	Prepared by	
ABC Corp 12345 Main Street Fairfax, VA 22030	J.S. Held LLC - 2018 50 Jericho Quadrangle Suite 117 Jericho, NY 11753 T: (516)621-2900 E: info@jsheld.com	
Insurance Info	Summary Statement	
Policy # Claim # Loss Date Loss Type		
Building - Interior Bedroom 1		
Taken by Que-Anh Pham, Mar 1, 2018		

Spex report example

Should users find themselves needing to include photos that were captured outside of Spex after the inspection is completed, these photos can be added into the project. In the mobile or tablet application, photos that were captured on the device and not within the Spex app can be added from the “library”, which is an option when the “photo” option is active. In case photos are taken on another device such as another tablet or on a digital camera, these photos can be added to the project within the web interface. In addition, photos and videos captured using the drone can also be loaded to a Spex project and report.

Case Study

2017 was a record year for natural disasters. Specifically, in a period of two months, three of the largest and most devastating hurricanes caused widespread and lasting damage in the Southeast region of the U.S. In the wake of the first hurricane to make its mark in history, Hurricane Harvey, many people were left stranded as their homes quickly became flooded. The southern and eastern coasts of Florida were also hammered with wind and rain from Hurricane Irma. The final damaging hurricane in the two-month period, Hurricane Maria, managed to uproot and wipe entire homes away in the Caribbean islands. Maria's destructive path included Puerto Rico, Barbuda, St. Martin, Virgin Islands, and Cuba, to name a few.

In response, many first and secondary responders were sent to the devastated areas in Texas, Florida, and the Caribbean Islands. To provide rapid assessments of the widespread damage, J.S. Held utilized Spex and drones.

In Florida, insurance claims were coming in quicker than they could be inspected. At times, owners had multiple properties throughout the state that required inspection. In one instance, there were upwards of 400 sites to inspect, document, and evaluate. Spex was a key tool in performing such a task and in providing swift response to insurance companies and the insured. Each site required its own inspection, estimate, and photo sheet. Prior to inspections, a list of sites was provided which were first created through the web interface and synced to the tablet app. Spex's ability to handle multiple projects at once was essential. Inspecting, photographing, and measuring the damages at 20 locations a day was possible with Spex. Spex increased the efficiency of the front-end work in the field. It also increased the efficiency of the back-end file handling for each site. With the use of digital cameras in the past, additional hours had to be spent to organize each photo into specific folders. In addition, more time was also spent creating photo sheets in other computer applications. These outdated steps were bypassed, and essentially eliminated, as Spex has the capability to download all assets in their respective folders and create pdf photo sheets with a single selection.

At the same time in Texas, drones were being used to survey damage all along the coast where the storm hit the hardest. Often inspections required a detailed look at large industrial sites and facilities. One such site involved a complex claim on a 1.2 million square feet manufacturing plant which was damaged across several points of the building envelope. Portions of the building were still under construction while other parts had already been turned over to the owner. As such, the site needed to be carefully inspected for both a builder's risk and property damage claim. Walking the roof was not only unsafe in certain locations but simply infeasible due to the scale and time constraints of the

project. A drone and pilot from J.S. Held were able to collect video and photographic documentation of the site in a single day with enough time to inspect two smaller associated administrative buildings and a laydown yard used for the ongoing construction.

Overall, J.S. Held inspected thousands of sites/buildings across the country and in the Caribbean in the aftermath of Hurricanes Harvey, Matthew, Irma, and Maria.

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