

The Connected Apps for GNSS Data Collection Comparison

By: Electronic Data Solutions



There is a new trend in GNSS Data Collection software to support the BYOD (Bring Your Own Device) and instant data transfer world we now live in. Keeping up with all the apps and software available and which one best suits your needs is not an easy task. Here is a comparison of a few of the current top solutions.

TerraFlex™ is Trimble®'s Mapping and GIS solution and is being rapidly updated to meet the demands of its growing customer base. It is specifically designed for those getting started with GNSS data collection and looking to go paperless in the field. Disconnected editing, ease of form creation, direct connection with ArcMap through the TerraFlex ArcMap Plugin, and the ability to run on high accuracy receivers are some of the reasons it is standing out from all the others.

Esri®'s Collector for ArcGIS App is another popular choice. Collector allows you to capture and update data and attribute information using the built-in GPS capabilities of your smartphone or tablet or by digitizing on the map. Field crews can use Collector to plan routes, get directions to work locations, use data-driven forms to improve data input quality, capture photos and videos of assets, and seamlessly integrate information back into the organization's ArcGIS Online or ArcGIS for Server.

GeoSpatial Expert's GeoJot+ is an annual subscription service that enables your organization to quickly capture field data on mobile devices with geotagged photos, automatically upload the photos and data to the cloud, then process the information back in the office creating reports, maps and database input. For this comparison sheet purpose, we will be using the Team level license. You can find more info on the different license levels [here](#).

Survey123 for ArcGIS is a form centric data collection app that is based on questions. Survey123 allows you to record answers to question forms with or without a GPS location. The question forms are built in XLSforms which allows you to create your own picklist, use calculations, and will soon allow video and audio recording. The information can be directly synced to ArcGIS Online for data editing and analysis.

*For this comparison we will be using comparing Collector and Survey123 with ArcGIS Online or ArcGIS for Server as the office software.

		TerraFlex Basic Advanced		Esri Collector App	Geo Jot+	Survey 123
Hardware Support	Windows Mobile support	Trimble Geo 6000, Geo 7X, Trimble Juno 3 and 5, Nomad 1050 Windows 7/8 (Yuma 2 and Motion tablets)		N/A	Windows Mobile 6.X	Windows 7 and 10, Mac
	iOS and Android support	iOS 7 or later Android v4.x or later		iOS 7 or later Android 4.0 or later ¹	iOS Android	iOS Android v4.x Windows Phone
GNSS	SBAS ² support	Yes		Yes ³	Yes ³	No
	VRS or Single Base support ⁴	Yes		No	No	No
	Post-processing support	No		No	No	No
Field Software Features	Feature Collection	Point, Line, Area		Point, Line, Area	Points	Points ⁵
	Disconnected data collection	Yes		Yes	Yes	Yes
	Navigation	Straightline to Feature		Address	Address ⁶	No
	Estimated accuracy display	Yes		Yes	Yes	No
	Accuracy-based logging ⁷	No	Yes	Yes	Yes	No
	Measure lengths and areas	Yes		Yes	No	No
	Background map cache	Yes		Yes	No	Yes ⁸
	Digitizing Capability ⁹	Yes		Yes	No	Yes

¹ These are the required operating systems for the latest version of Collector. Earlier versions may be compatible with earlier operating systems, but all functionality is not guaranteed.

² Satellite Based Augmentation System used for real-time differential correction. Accuracy potential based on receiver.

³ Some smartphones and tablets apply this correction automatically and the corrected position is used by the software. The Collector and GeoJot apps have no functionality to turn SBAS on or off.

⁴ Real-time connections to a base station or network of stations (VRS) can provide much higher accuracy than SBAS. Depending on the receiver and proximity to the base station, typical VRS corrections are capable of 10 cm to 1 meter accuracy. Available only on supported receivers.

⁵ Line and polygon feature collection will be added in the future.

⁶ This function will use a separate mapping app, Google Maps. This functionality isn't available for Windows Mobile.

⁷ Software prevents the collection of a feature with GNSS until required accuracy is achieved.

⁸ Creating and sharing a tile package is required. Visit the blog post [here](#) for more information.

⁹ Create positions for a feature by selecting location on the map. A line or area can contain both GPS and digitized positions.

	Edit existing data in field	No ¹⁰	Yes ¹⁰	Yes	Yes	No
	Customizable User Interface	No		No	No	Limited
	Project Creation in the Field	No		No	Yes ¹¹	No
	Real-time sync with Cloud	Yes		Yes	Yes	Yes
	Real-time sync with ArcGIS for Server	No		Yes	No	Yes ¹²
	Search for projects tool	No		Yes	No	No
Form Functionality	Photo attribute	Yes		Yes	Yes	Yes
	Video attribute	No		Yes	No	No ¹³
	Conditional attributes	No ¹⁴	Yes	Yes ¹⁵	No	Yes
	Radio button	Yes		No	No	Yes
	Checkbox	Yes		No	No	Yes
	Allow selection of multiple values	Yes		No	No	Yes
	Signature attribute	Yes		No	No	Yes
External Sensor Support	Laser Rangefinder Interface ¹⁶	Yes		No	Yes ¹⁷	No
	Barcode scanner	No		No	Yes	Yes

¹⁰ Only data that has been collected in the field and has not been removed from the device can be edited in Basic version. Existing data can be moved from the TerraFlex Cloud or TerraFlex ArcMap Plugin to the field with Advanced version. Existing data cannot currently be transferred to the field from the Positions Desktop add-in.

¹¹ This functionality is only available on iOS and Android.

¹² The form has to be published from Survey123Connect with the option to create a default web map.

¹³ This functionality will be added in the future.

¹⁴ TerraFlex Basic has limited conditional attributes. For more conditional attributes, you must update to the Advanced version.

¹⁵ If subtypes are used in the geodatabase, specific picklists and default values can be set based on the subtype selected.

¹⁶ Allows use of laser rangefinders for creating GPS offsets. Check software documentation or speak with a dealer to find supported laser rangefinders.

¹⁷ This functionality is only available on iOS and Android.

Office Software Features	Geocode addresses	No	Yes	No	No	
	Cloud Service	TerraFlex Cloud	ArcGIS Online or ArcGIS for Server	Dropbox	ArcGIS Online or ArcGIS for Server	
Remove	Background Maps	Google Maps and Imagery, ESRI Basemaps	Esri Basemaps, Web Map Services	Google Maps and Imagery		
	Form Creation	Yes	Yes ¹⁸	Yes	Yes	
	Form distribution to field	Push via TerraFlex Cloud	Push via web maps	Email	Push via cloud	
	Form import format	ArcGIS XML, ESRI Geodatabases ¹⁹	ArcGIS XML, ESRI Geodatabases, Shapefiles ¹⁷	Feature Services ²⁰	Shapefiles, CSV, GPX, NMEA	XLSForm
	Edit data in office software	No	Yes	Yes	Yes	Yes
	Track edits by user	Yes	Yes	Yes	No	Yes
	Export formats	ArcGIS XML, Shapefile, Geodatabase ²¹ , KML/KMZ, CSV, WFS	Shapefile, File Geodatabase, CSV	ArcGIS Shapefiles and Geodatabases, PDF, Word Doc, HTML report, KML, KMZ, CSV, TXT, PTS, MDB, XML, GPX	Shapefile, File Geodatabase, CSV, GeoJson,	
	ArcMap Extensions	TerraFlex ArcMap Plugin or Positions Desktop Plugin	ArcGIS Online Dialog and Share As options	GeoJot+ ArcMap toolbar	None	
Photo Management	Photo Storage	Cloud (BLOB)	Attachment to Feature Service	JPG	JPG	
	Multiple photos per feature	Yes	Yes	Yes	No	
Data Maintenance	Update feature position	No	Yes ²²	Yes	Yes ²³	No
	Update feature attribute	No	Yes ²⁰	Yes	Yes	No

¹⁸ Data Collection forms in the field are created from the geodatabase design. Knowledge and understanding of geodatabase domains is required.

¹⁹ TerraFlex Cloud Basic can import an XML only and TerraFlex Cloud Advanced can import XML and Shapefiles created from an Esri Geodatabase to create a Project. The TerraFlex ArcMap Plugin or Positions Desktop add-in allows direct creation of a TerraFlex project from an Esri Map and Geodatabase.

²⁰ ArcGIS Online and Collector forms are created with feature services hosted by ArcGIS for Server, ArcGIS Online or Portal for ArcGIS. Feature services in ArcGIS Online can be created from a number of different file types, including GPX, CSV, Shapefiles and KML.

²¹ TerraFlex Cloud can export to a File Geodatabase or the TerraFlex ArcMap Plugin can download directly to the geodatabase used to create the project.

²² Existing data can be moved from the TerraFlex Cloud or TerraFlex ArcMap Plugin to the field with Advanced version. Existing data cannot currently be transferred to the field from the Positions Desktop add-in.

²³ Direction of photo can only be changed in GeoJot Core.

License	Annual maintenance fee	Yes	Yes ²⁴	Yes	Yes ²⁶
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Conclusion

If you are an advanced user who needs field functionality like support for relational tables, snapping or buffers in the field, then a simplified data collection app may not be the right choice. If your functionality requirements aren't as stringent and you are looking to move your field crew to smartphones and tablets, there is a choice for you. This comparison is meant to scratch the surface of what is, and will soon be, available. Electronic Data Solutions sells and supports all of these options, so please do not hesitate to contact us with your questions and comments.

For pricing, please contact Electronic Data Solutions at (208) 324-8006.

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²⁴ Esri Collector is a free app. However, logging in requires an ArcGIS Online account, which requires an annual subscription or a Desktop license that is under current maintenance.