/fieldOps Improvements

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Agenda

Wednesday, January 28, 2020

- /fieldOps – Shapefile Export Overview
- New Machine and Operator ID‘s
- File Size: Why so big?
- New Shapefile Options
- Which Option Is Best?


/fieldOps/{fieldOperationId}
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Shapefile Export Overview

- /organizations/{organizationId}/fields/{fieldId}/fieldOperations
  - Returns a list of Field Operations. Each Field Operation represents one operation (Planting, Application, Harvest) performed in one field
  - You can get totals and a map image for a Field Operation
- /fieldOps/{fieldOperationId}
  - Exports a shapefile containing point-by-point data for a Field Operation

- Documentation on developer.deere.com


New Machine & Operator ID‘s
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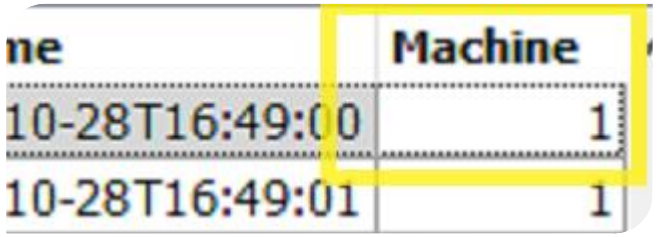
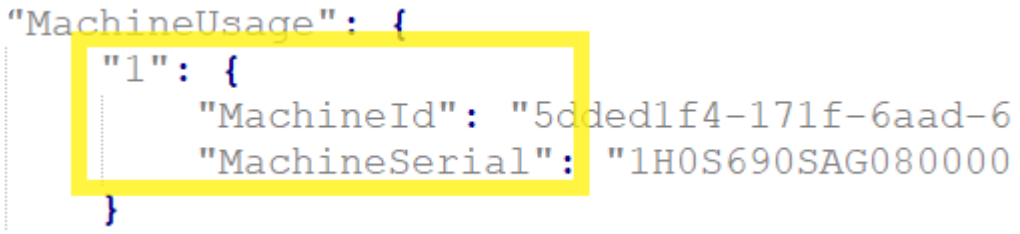
New Machine and Operator ID‘s

- Which part of the field was harvested by each combine?
- Which operator performed each part of the work?
- New column in the .dbf contains an index value.
- Json file contains ID‘s for each index
  - MachineId
  - MachineSerial (when available)
  - OperatorId (when available)



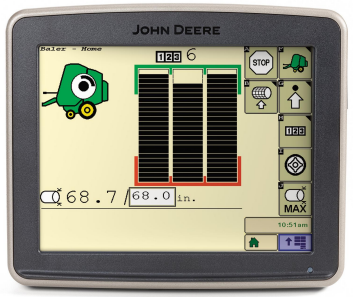


File Size: Why So Big?

Data Increased Over Time

– For each GPS reading, our shapefiles hold one point per implement section

GS3 2630



1 hz * 16 sections = 16 measurements per layer per second

GS4 4600

5 hz * 90 sections = 450 measurements per layer per second

Legacy Shape Types

- API edict: Don‘t break existing consumers!
- Apex generated PointZM shapefiles, so MyJohnDeere generates PointZM shapefiles
  - PointZM saves space for measurements and elevation data in the .shp file
  - All our measurement and elevation data are in the .dbf file
- Going forward, MyJohnDeere will generate 2-D Point or Polygon shapefiles

New Shapefile Options

New Parameters on /fieldOps/{fieldOperationId}

- Select a shapefile format using two new query parameters
  - `shapeType` lets you specify Point or Polygon
  - `resolution` lets you specify EachSection, EachSensor, or OneHertz

/fieldOps/{fieldOperationId}?shapeType=Polygon&resolution=EachSensor

/fieldOps/{fieldOperationId}?shapeType=Point&resolution=EachSensor

/fieldOps/{fieldOperationId}?shapeType=Polygon&resolution=OneHertz

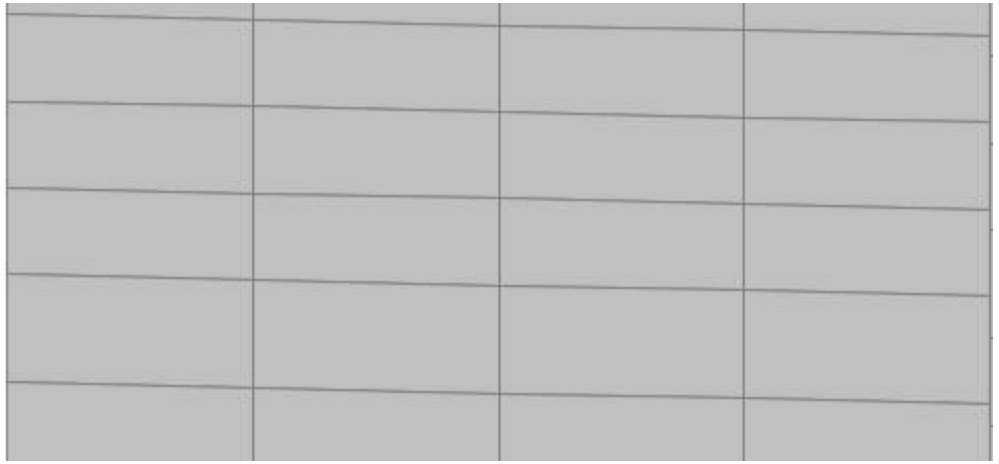
/fieldOps/{fieldOperationId}?shapeType=Point&resolution=OneHertz

Point Per Sensor

- One point per sensor on the implement
- Compatible with the existing shapefile format
  - If you can process our shapefiles today, this will „just work“
- ~85% reduction in file size
- No loss of precision

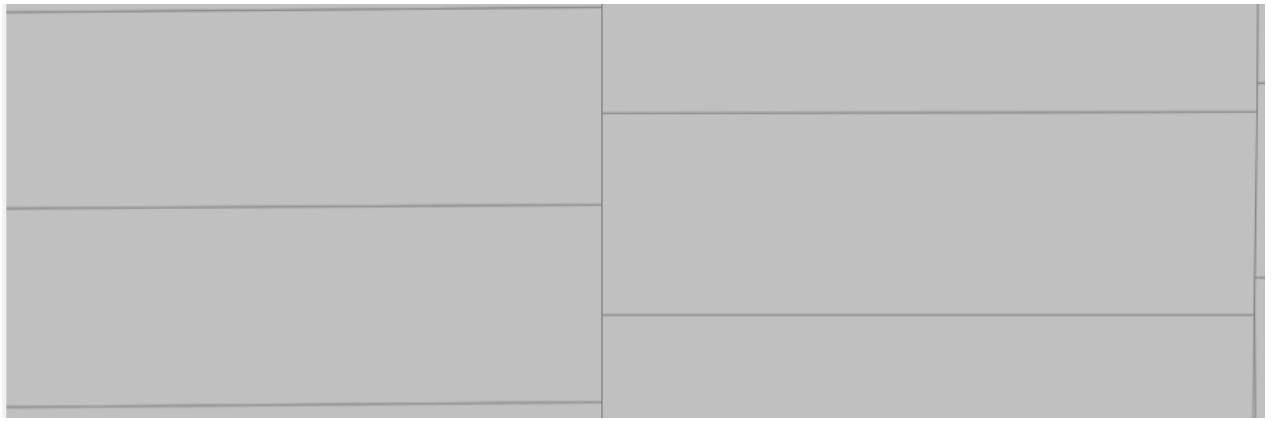
Polygon Per Sensor

- One polygon per sensor on the implement
- Easier to visualize than point-based files
- Same data in the .dbf
- ~79% reduction in file size
- No loss of precision



One Hertz

- Available in point or polygon shapes
- Still generates one shape per sensor on the implement
- Down-converts to one data row per second
- ~95% reduction in file size
- Potential loss of precision
  - Test data showed 0.01% error



Which Option Is Best?

Which Option Is Best?

- **Anything that is not the default option**
  - For backwards compatibility, we default to existing behavior
  - The current default (Point per Section) will be deprecated by January 2021
  - The default behavior will change at that time
- See detailed options on developer.deere.com

Which Option Is Best?

- Harvest
  - Consider One Hertz
  - Combines move slowly – 3.5 mph is 1.5 m/sec
- Application
  - Consider Per Sensor
  - Sprayers move fast – 18 mph is 8 m/sec
  - You might want 5hz data resolution
- Consider your business needs
  - Weigh file size and processing cost vs. data resolution


Q&A / Feedback
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