SCIRT Rebuilding Infrastructure

LEARNING LEGACY

Lessons learned from one of New Zealand's most challenging civil engineering projects: rebuilding the earthquake damaged pipes, roads, bridges and retaining walls in the city of Christchurch 2011 - 2016.

SCIRT Mobile Apps - Setup and operation using FME Desktop and Server

Story: Data Collection Applications

Theme: Finance and Business Systems

A presentation which was given as part of the FME Desktop World Tour in 2015 in Christchurch.

This document has been provided as an example of a tool that might be useful for other organisations undertaking complex disaster recovery or infrastructure rebuild programmes.

For more information about this document, visit www.scirtlearninglegacy.org.nz

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SCIRT Mobile Apps:
Setup and operation
using FME Desktop and Server

Ekki Scheffler

27 April 2016

ekkehard.scheffler@jacobs.com

SCIRT
Rebuilding Infrastructure

What is SCIRT?

Ekki Scheffler (ekkehard.scheffler@jacobs.com)

SCIRT
Rebuilding Infrastructure

New Zealand Government

Christchurch City Council

Fulton Hogan

Fletcher

McCONNELL DOWELL
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Consultancies

Background

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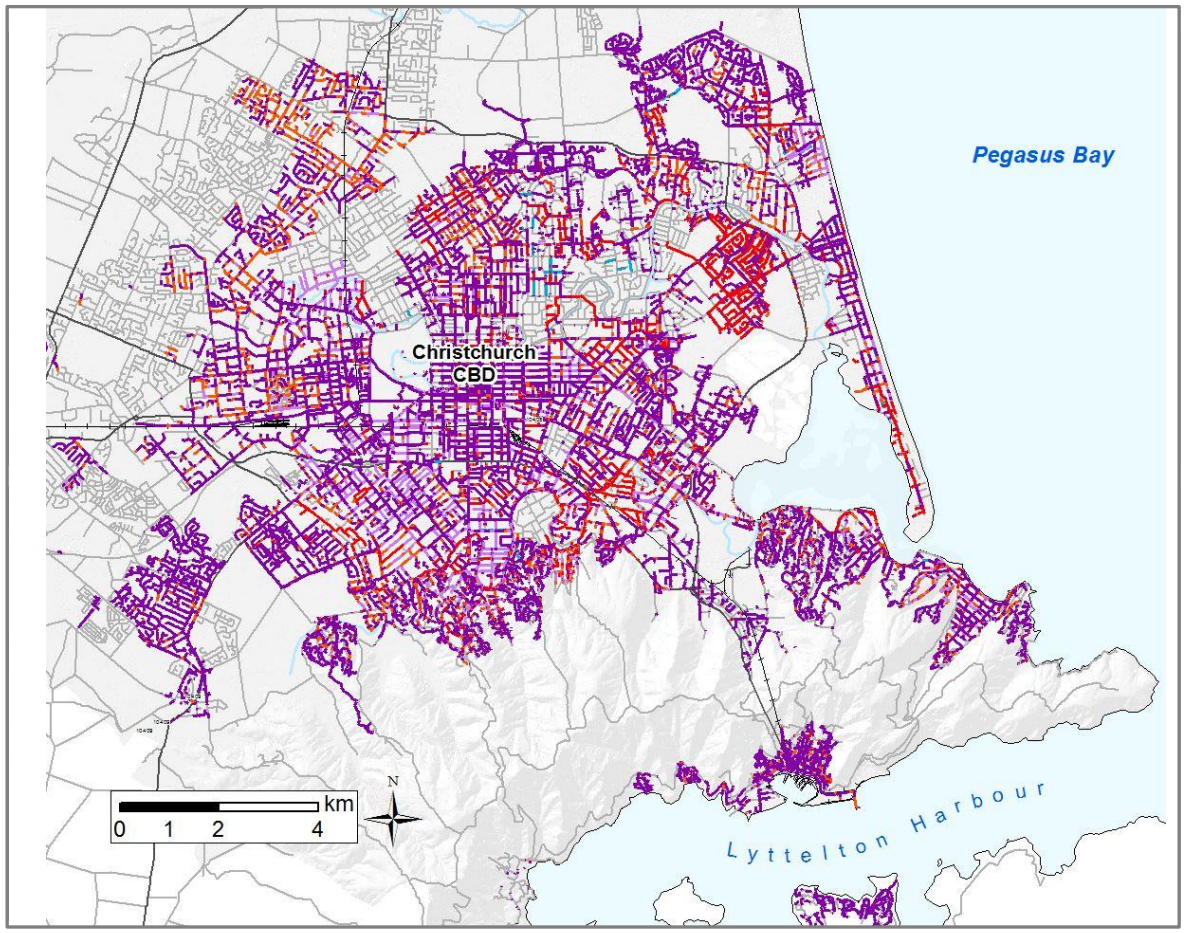

Wastewater,
Stormwater,
Water Supply:

- 25% of networks to be repaired or replaced
- 750km of pipework
- 50,000 assets to be recorded

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GIS As-Built Data

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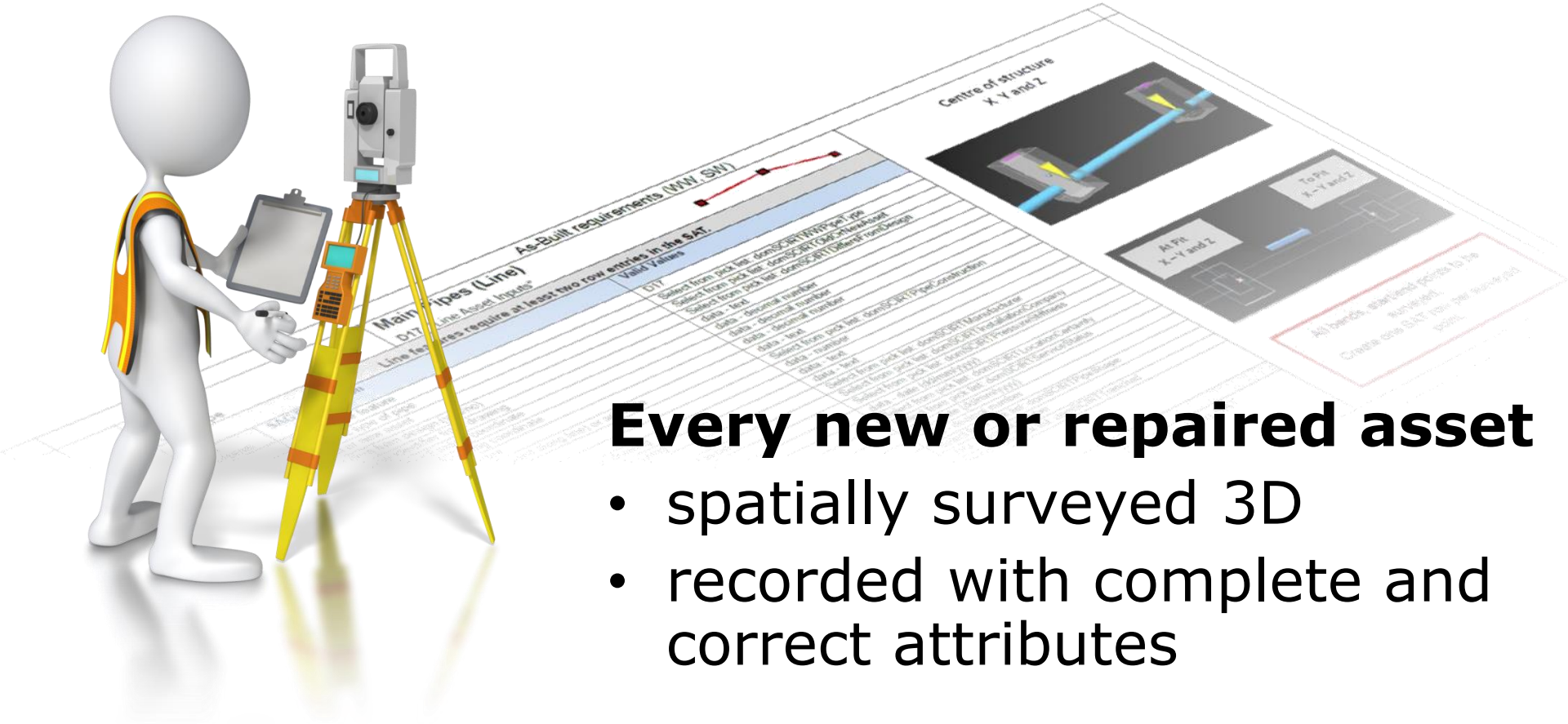

Every new or repaired asset

- spatially surveyed 3D
- recorded with complete and correct attributes

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SCIRT's Mobile Apps

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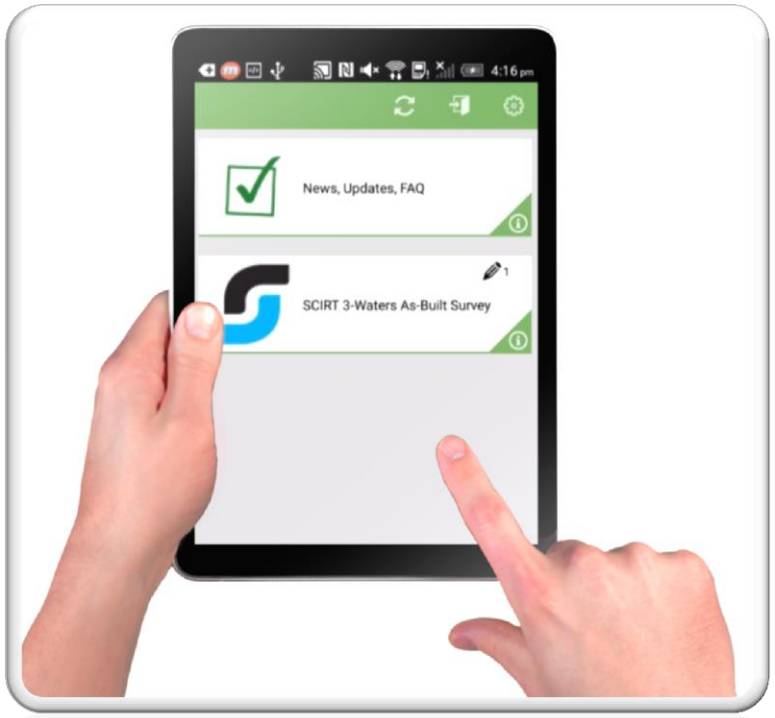
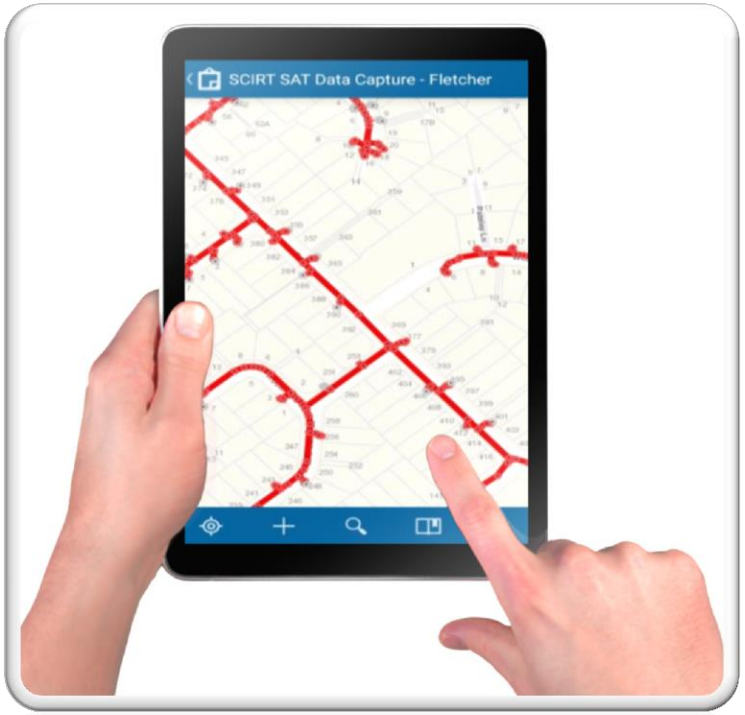
iFormBuilder
On-site attribute collection



ESRI Collector
Draft data revision



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iFormBuilder

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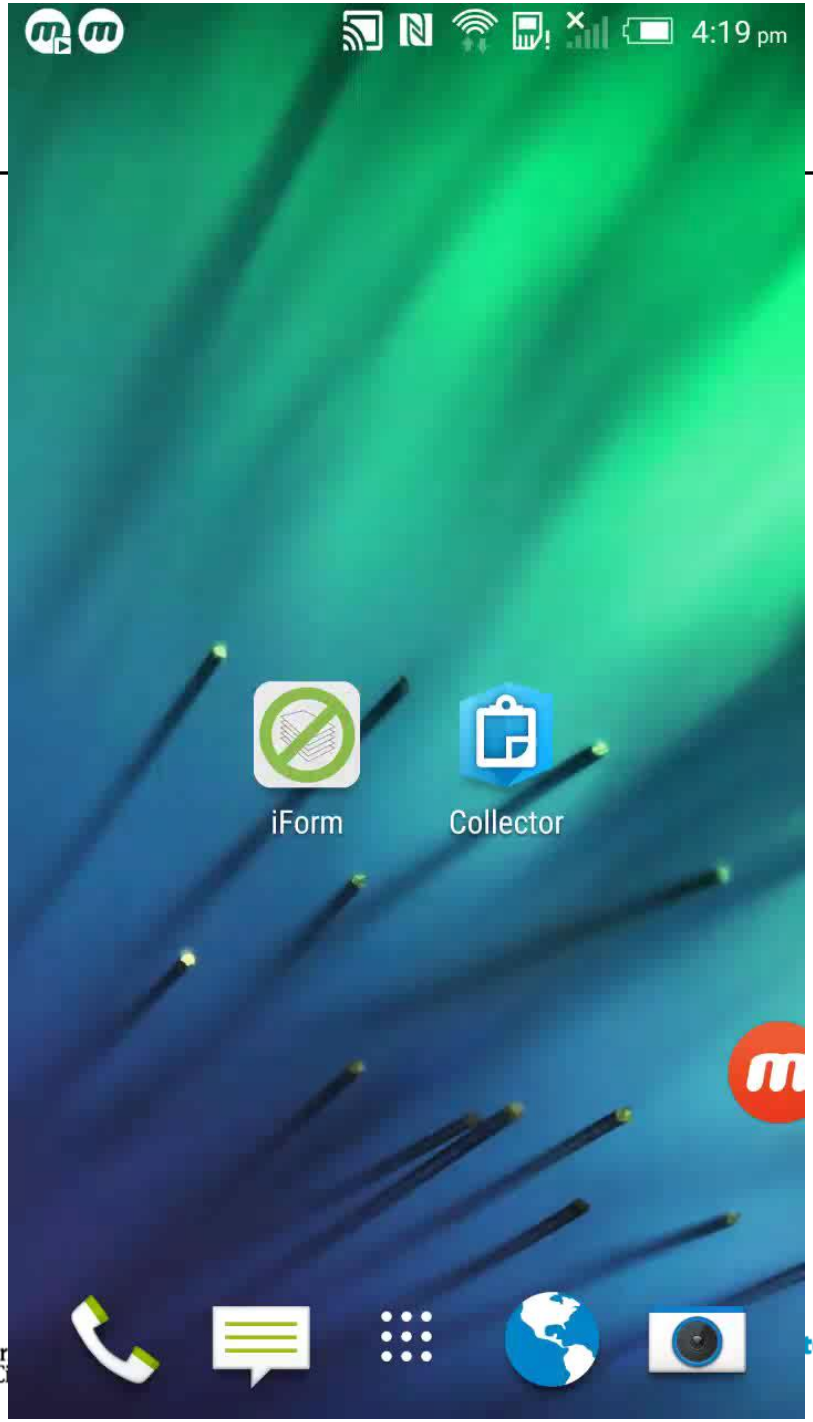

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iFormBuilder – what we need

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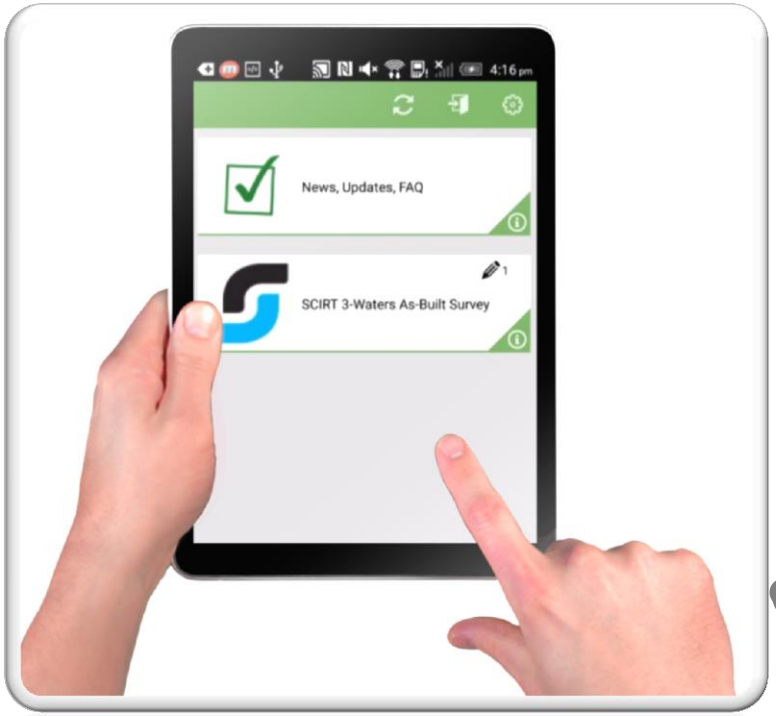
Need to create and maintain:
61 Forms with
1200 Elements and
600 Pick List Values



Need to submit records to GIS database:
Do this automatically
Don't lose anything

Must be available to users:
Downloadable anytime, correct Format and schema

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iFormBuilder – Solution

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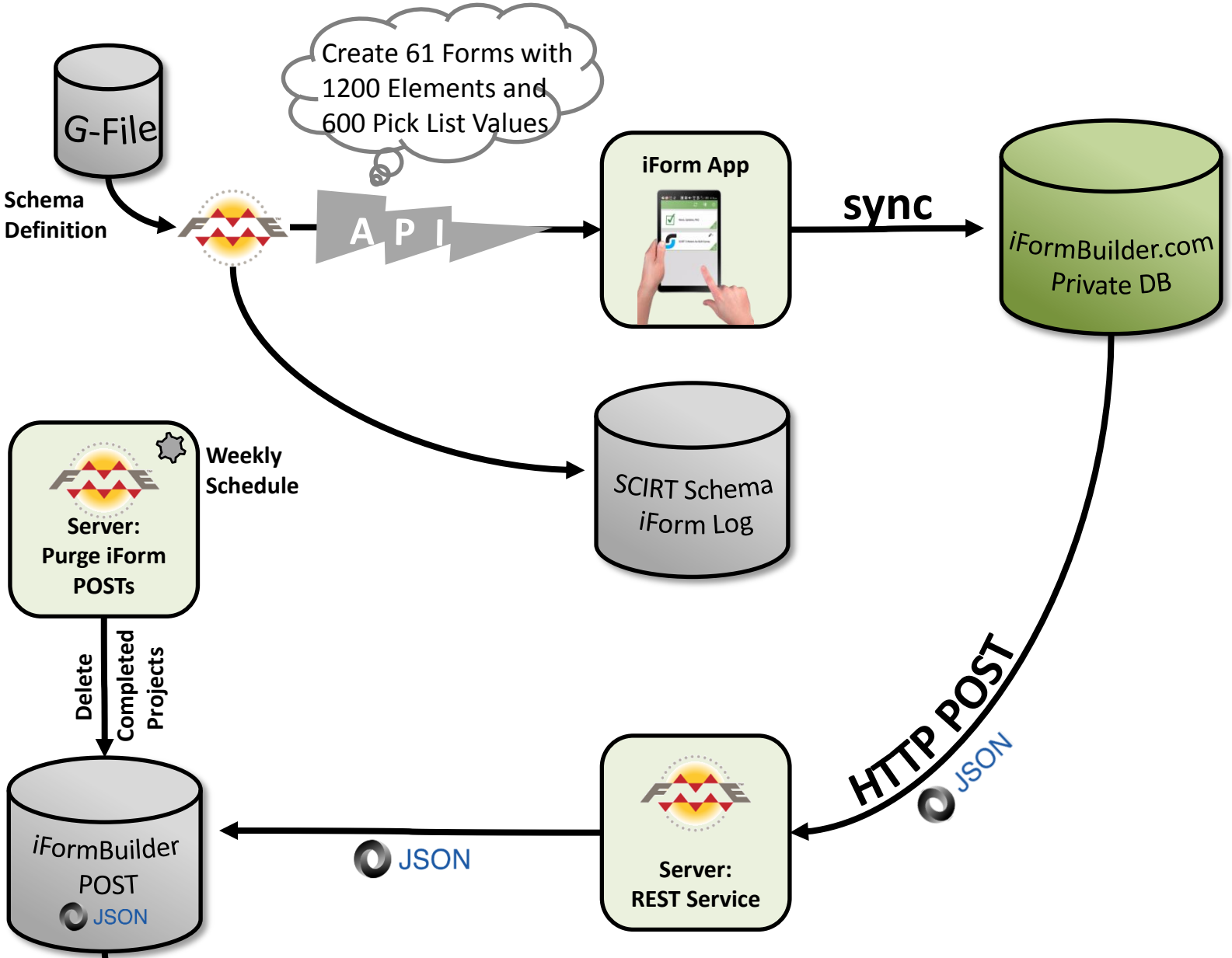

iFormBuilder – FME: Form Creation

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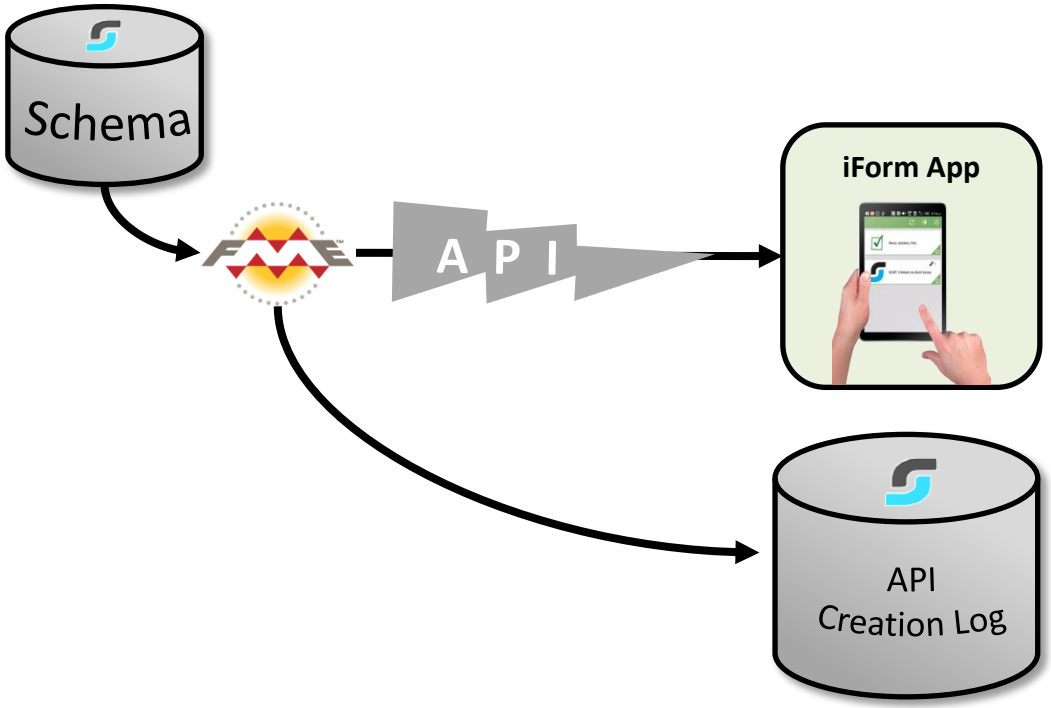

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FME and iForm API

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www.scirt.iformbuilder.com

REST

CREATE PAGE:
{“NAME”:”scirt3waters”,
“LABEL”:”SCIRT 3-Waters As-Built Survey”}

FIELD DETAILS:
{“NAME”:”drw”,
“LABEL”:”Drawing Number”}

CREATE FIELD:
{“DATA_TYPE”:Number}

CREATE FIELD:
{“DATA_TYPE”:Text}

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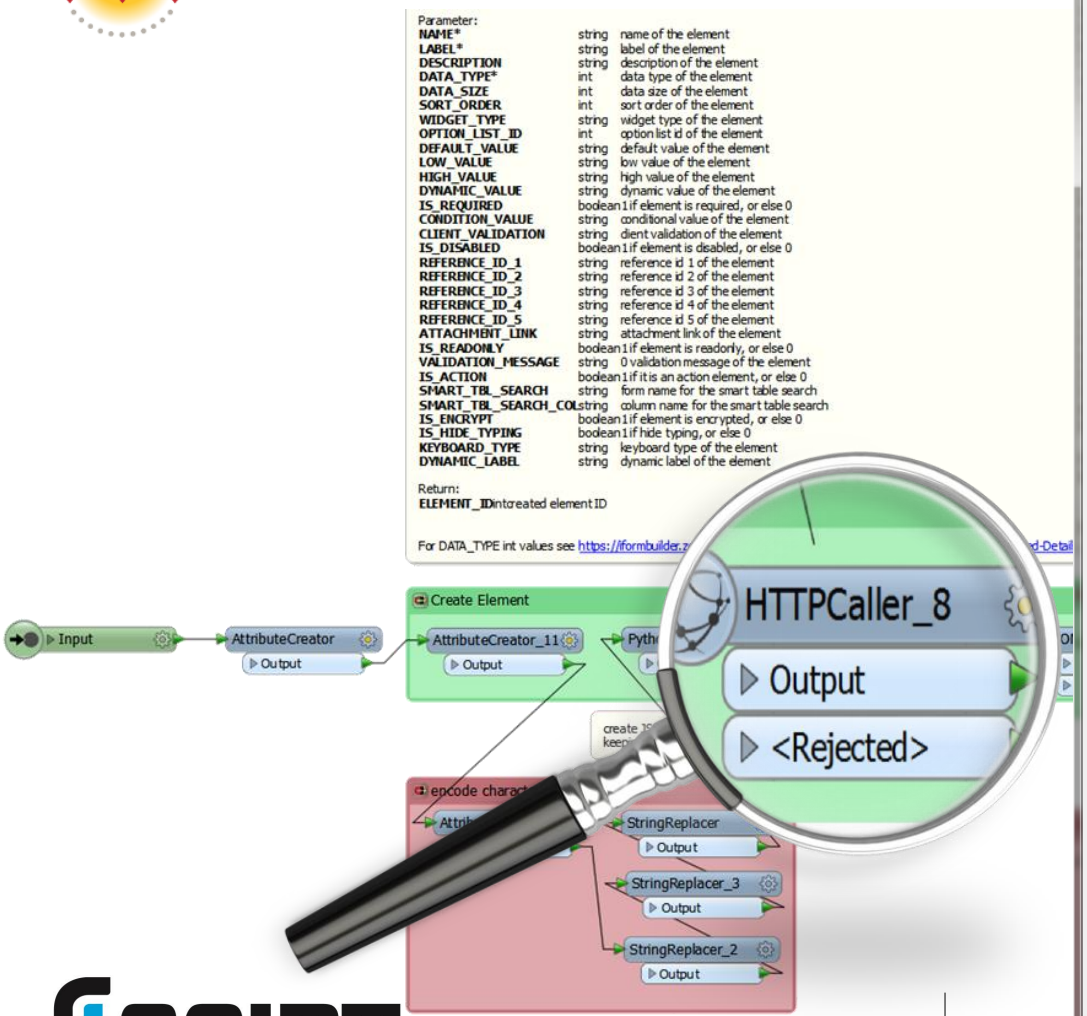
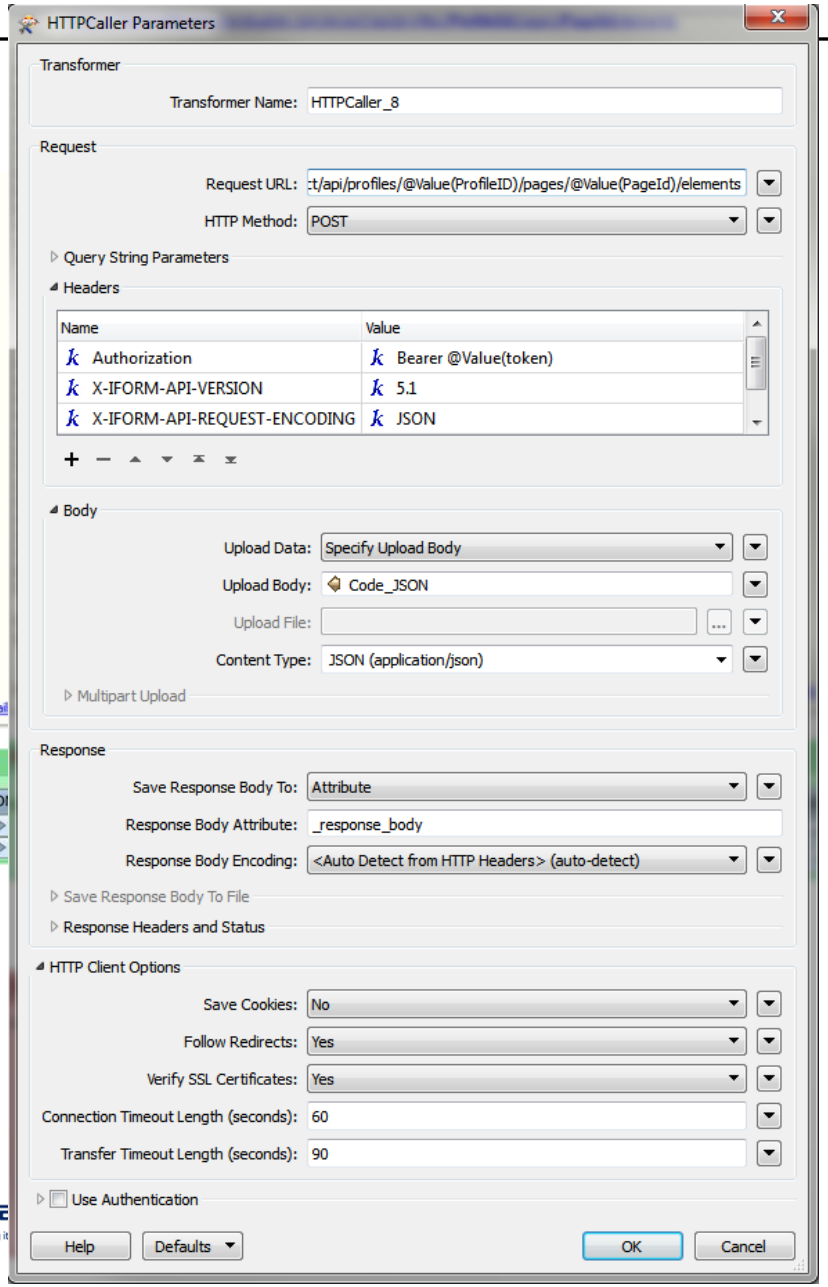
FME and iForm API





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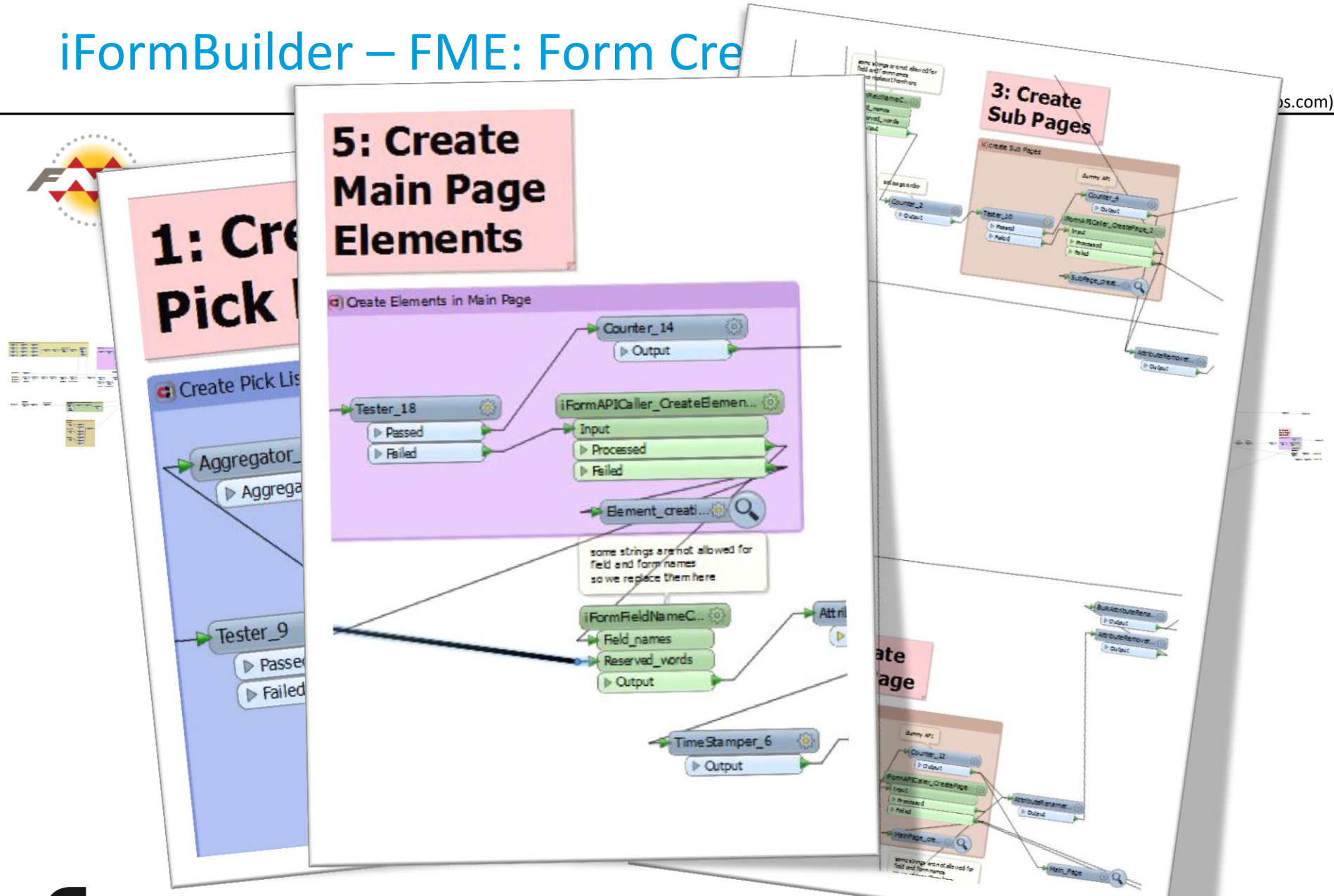
iFormBuilder – FME: Form Cre



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iFormBuilder – Submit to GIS

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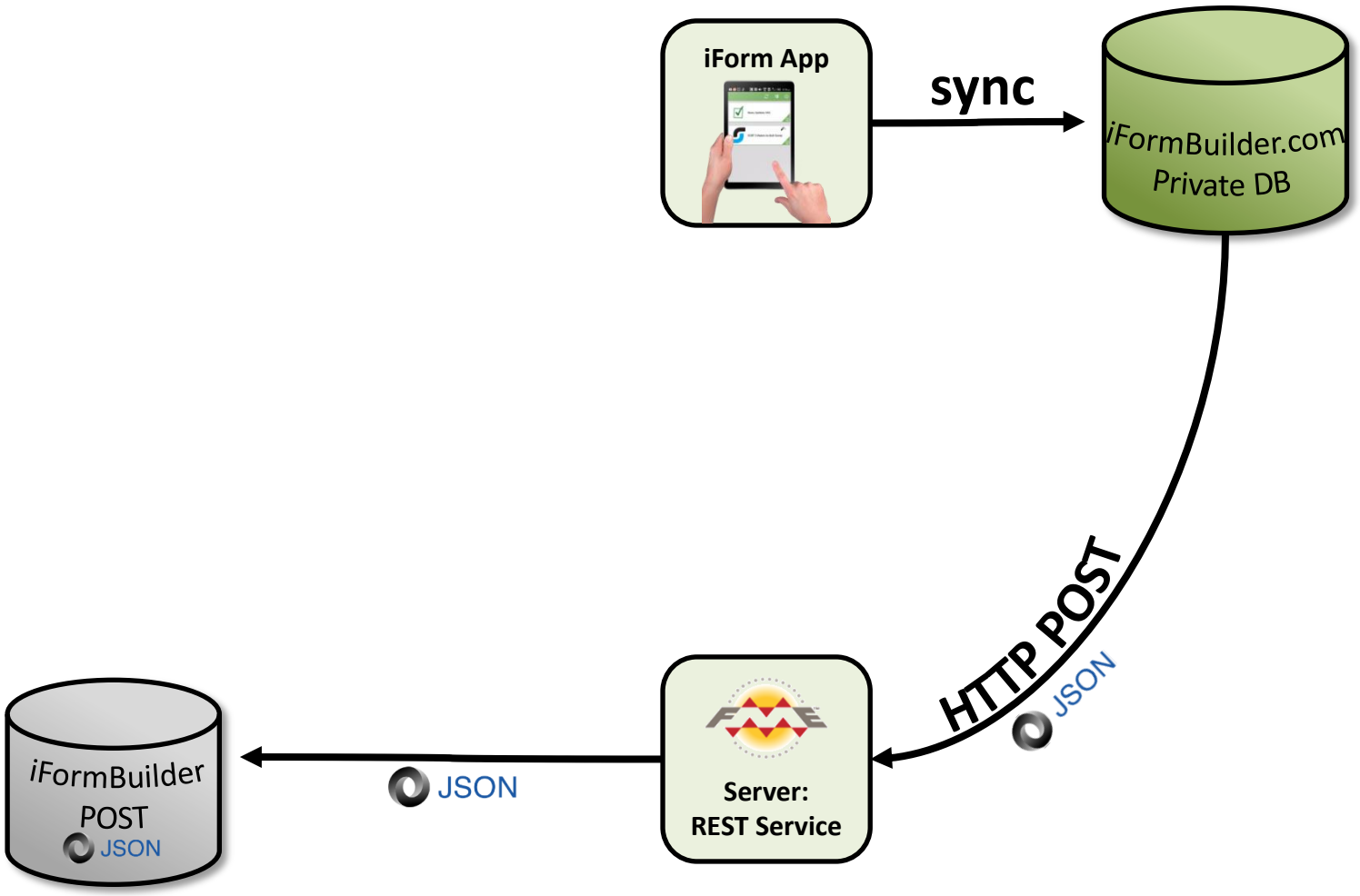

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iFormBuilder – Submit to FME Server

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SCIRT FME Server

REST

RECORD:
{"CREATED_BY":"escheffler“,
"project":"10353",
"network":"ww“,
"wwaccesstype":"manhole",
"satdesignuid":"MH55“,
"lidlevel":10.65,
"manholeinvert":8.22,
"accessmaterial":"concrete“
...}

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iFormBuilder – Submit to GIS

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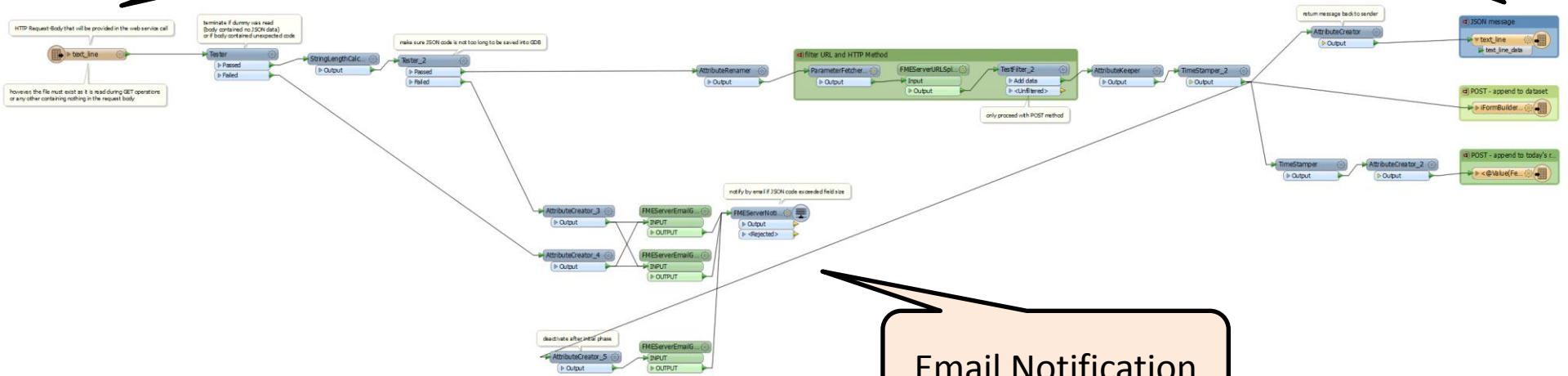
iFormBuilder
Receive JSON POST

GIS Database
Store JSON



Email Notification

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iFormBuilder – Output Data

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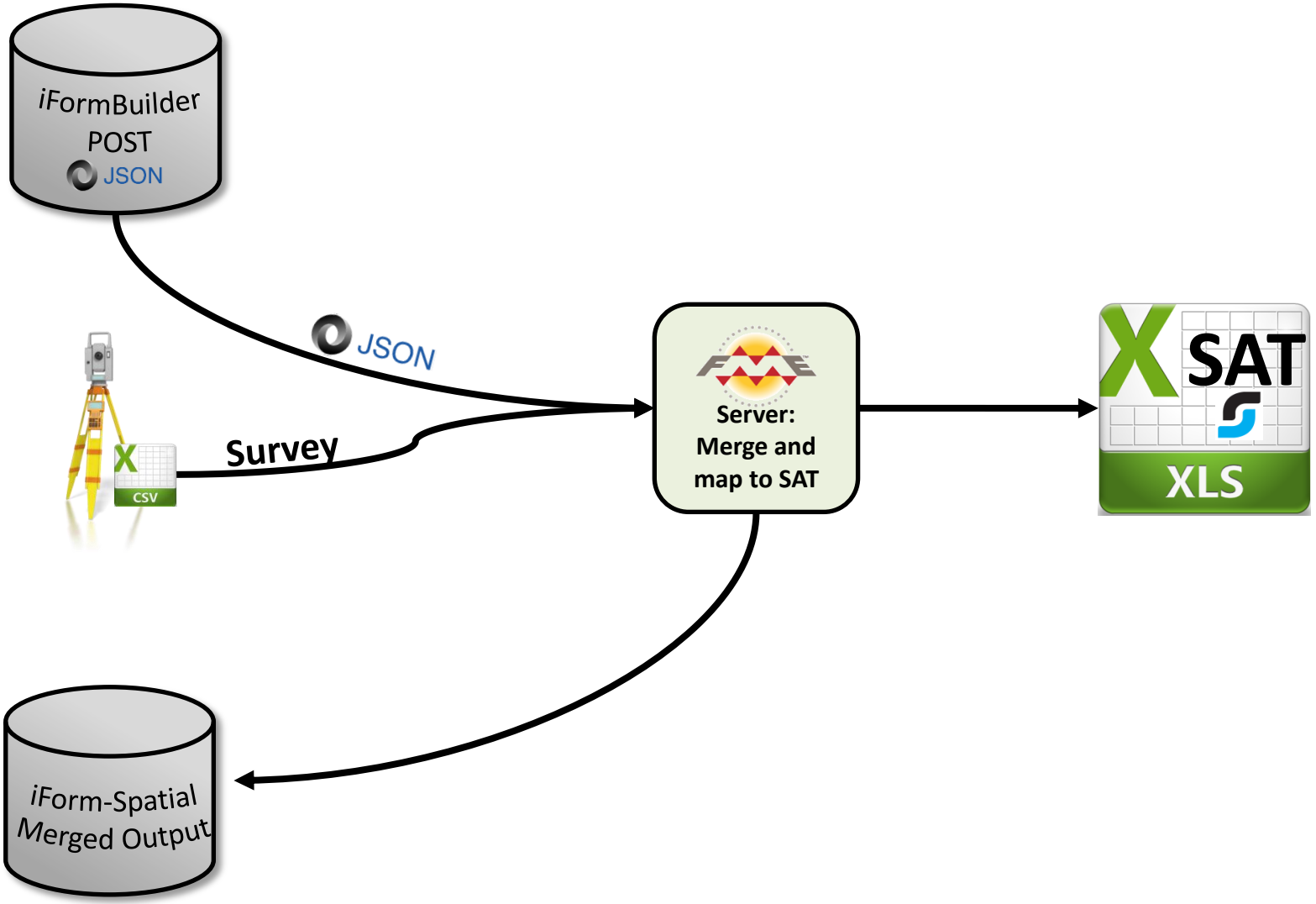

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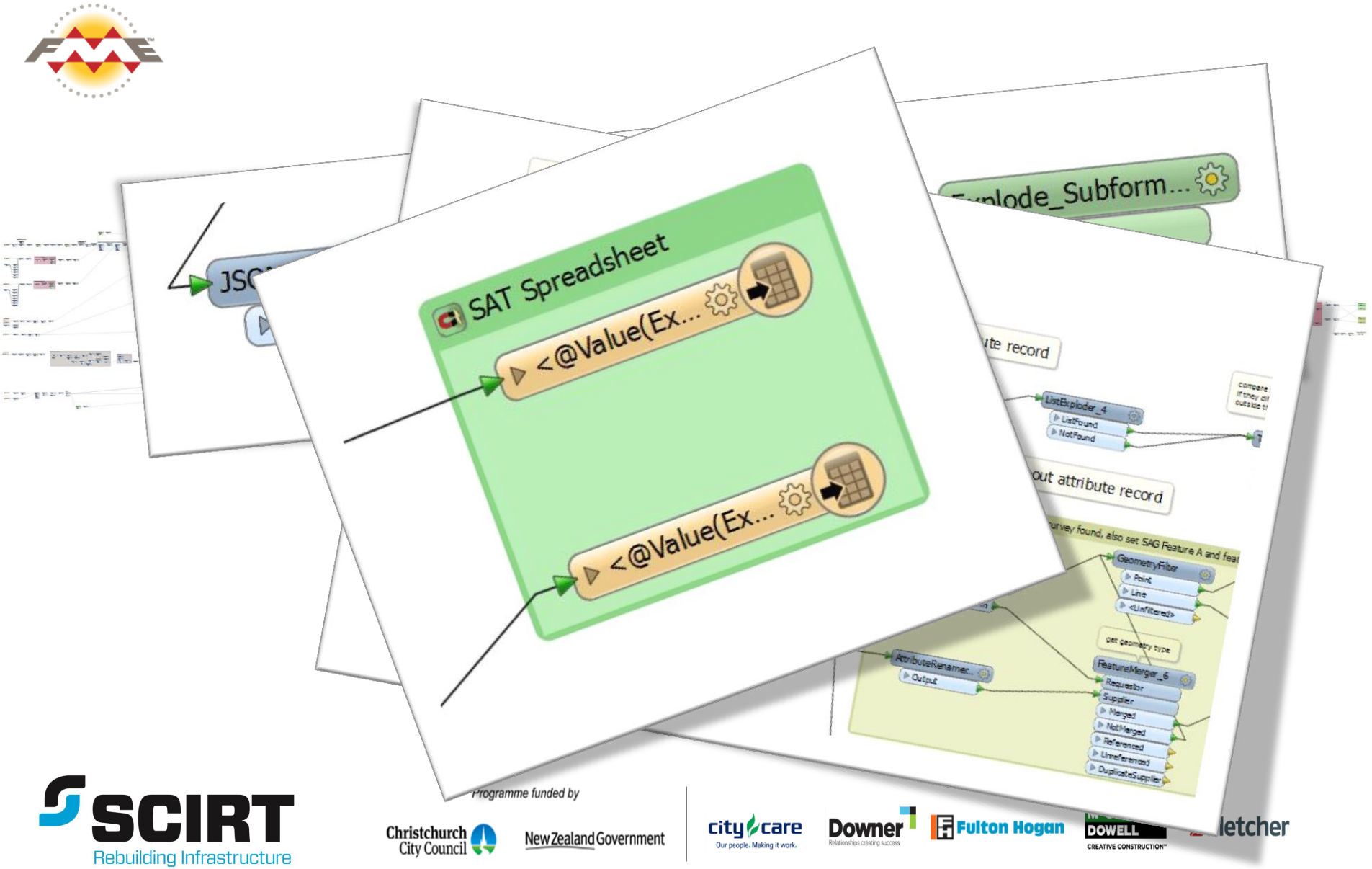

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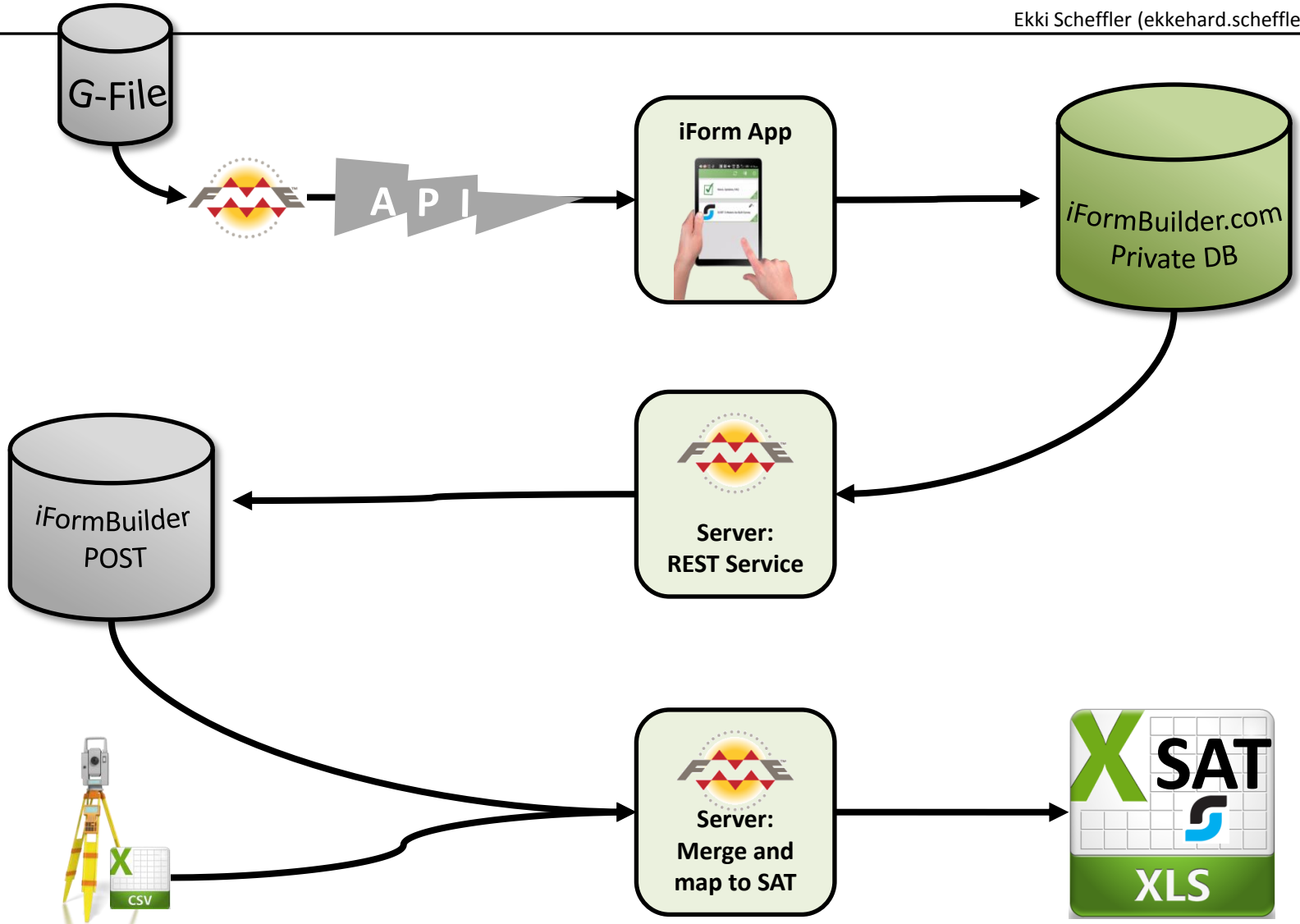

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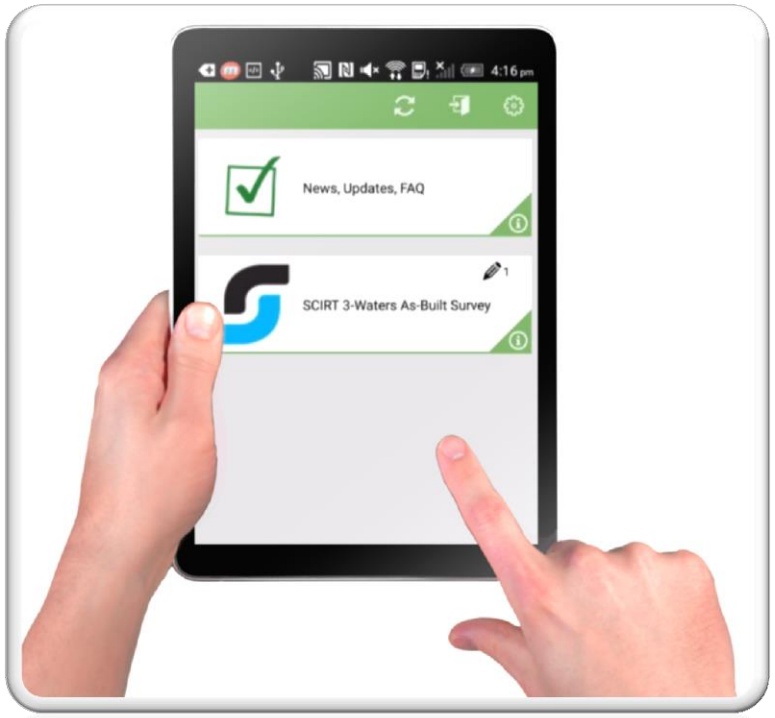
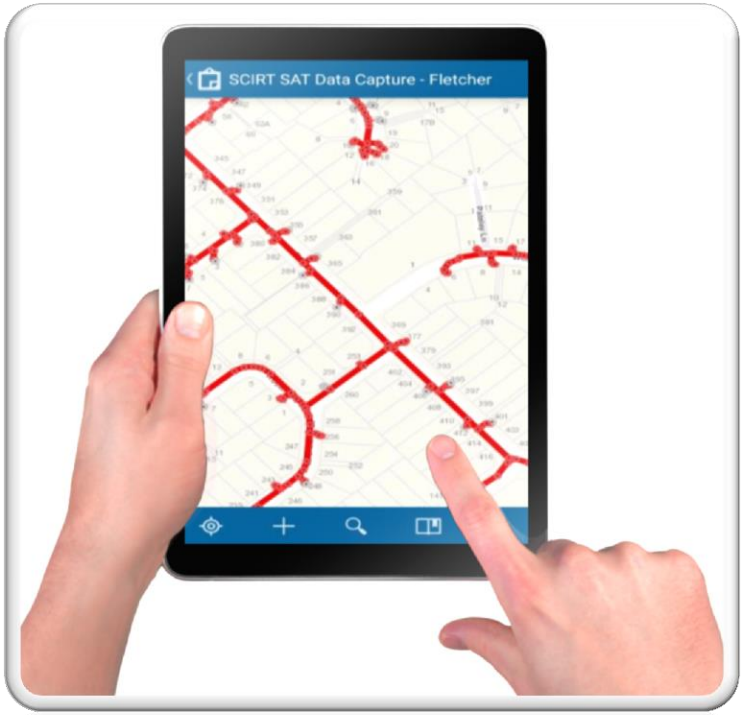
iFormBuilder
On-site attribute collection



ESRI Collector
Draft data revision



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Collector

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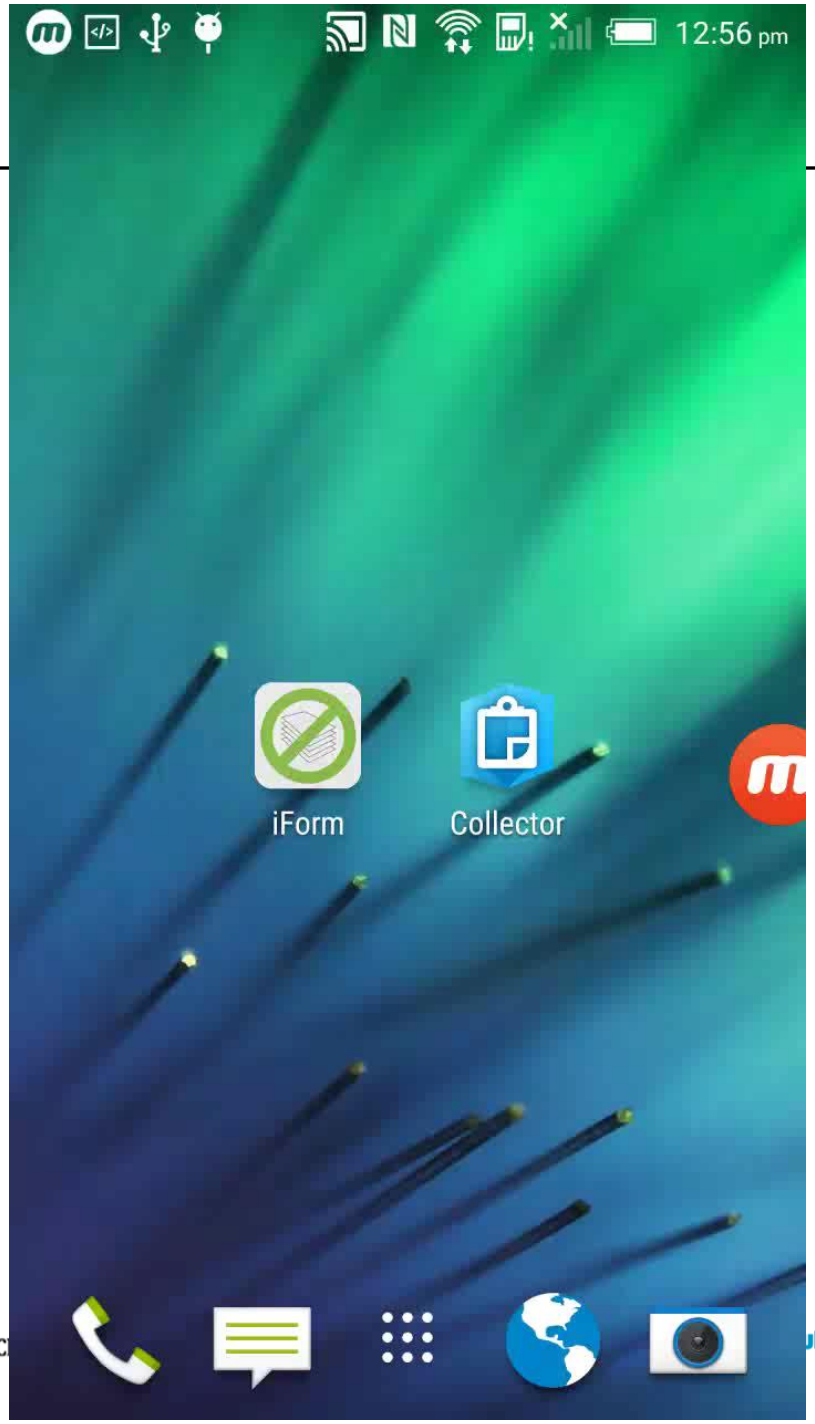

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ESRI Collector – what we need

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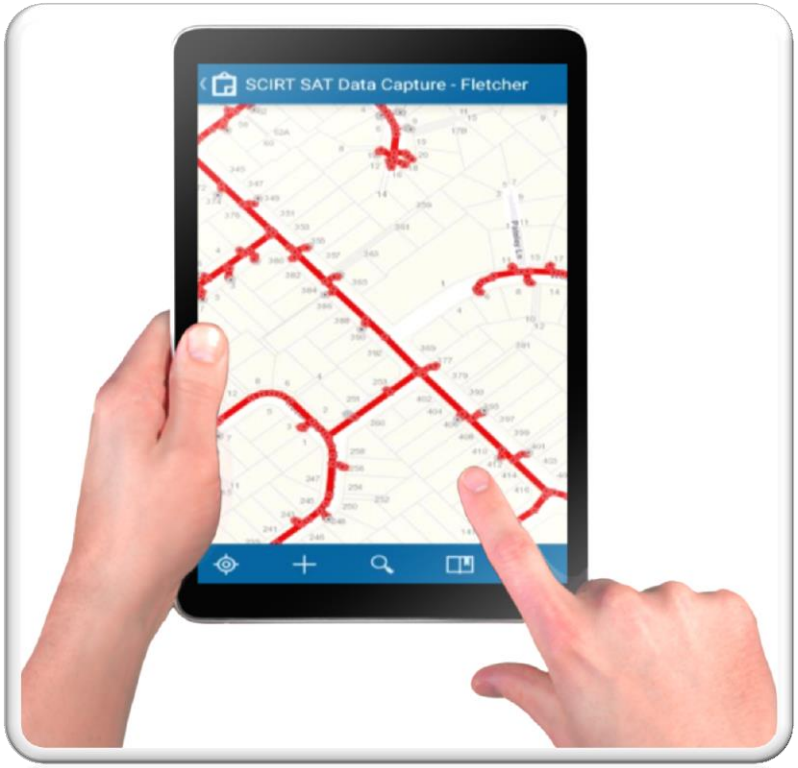
Need to create and maintain:
48 Feature Types with 1000 fields, 650 domain values in 70 domains



Users must be able to upload independently:
Map schemas
Highlight missing information

Users must be able to download independently:
Map schemas
Delete data from AGOL

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ESRI Collector – Solution

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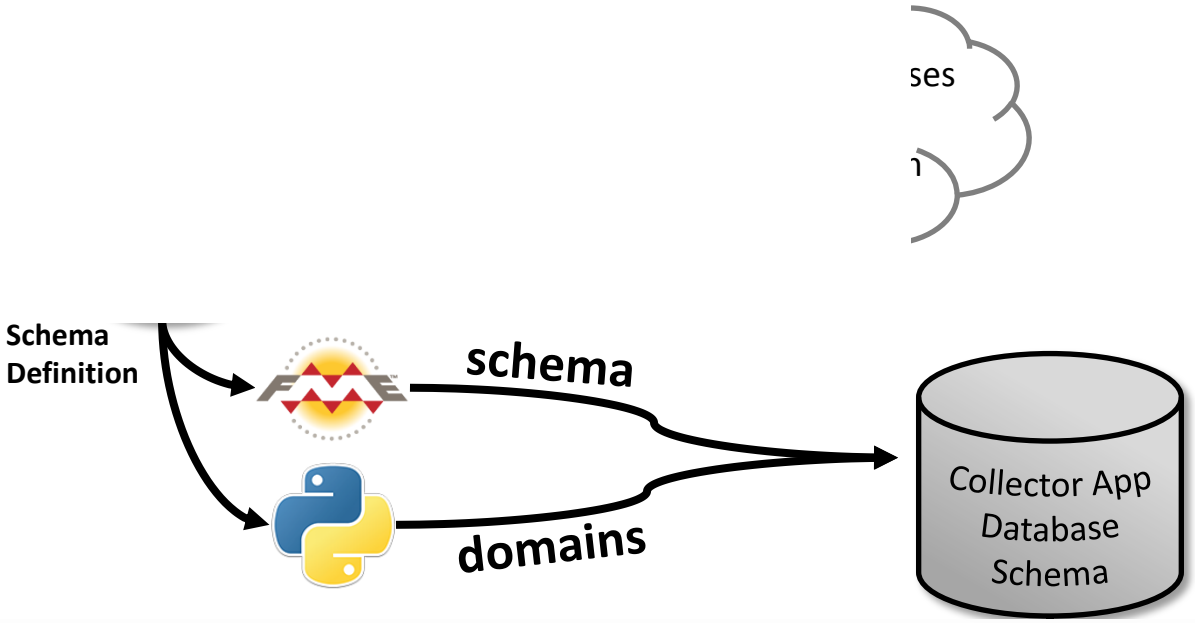

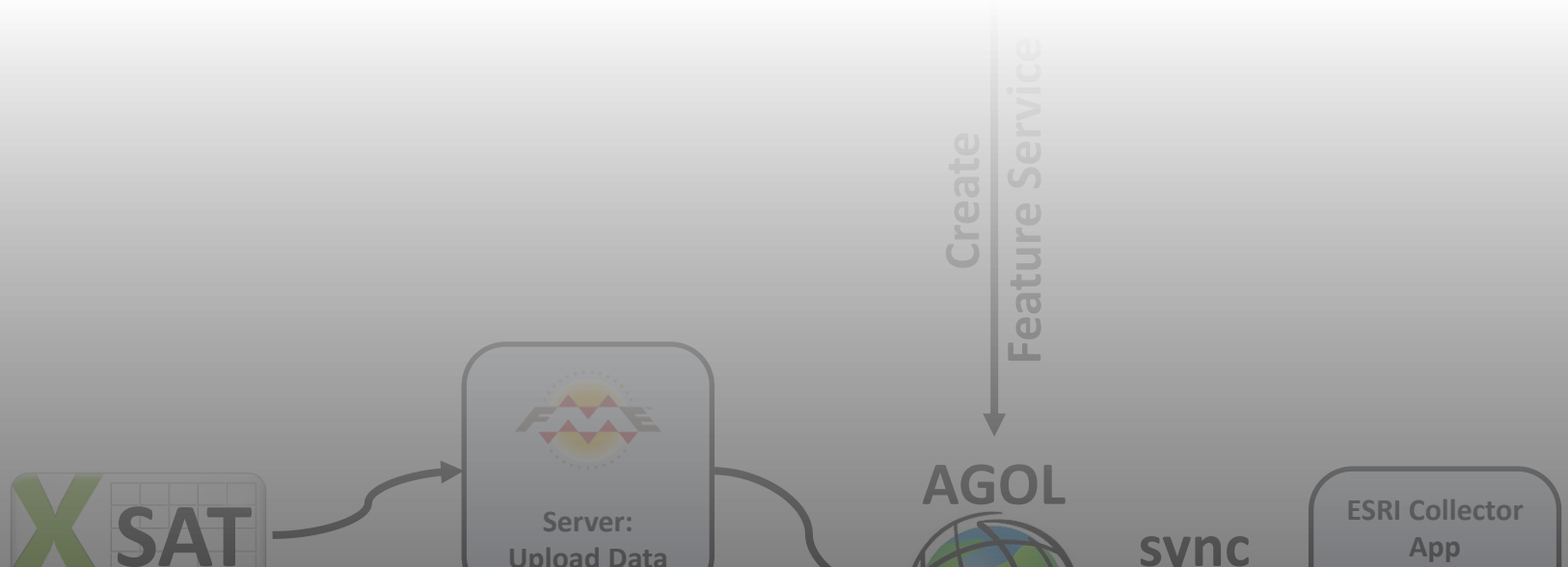

Collector – schema creation

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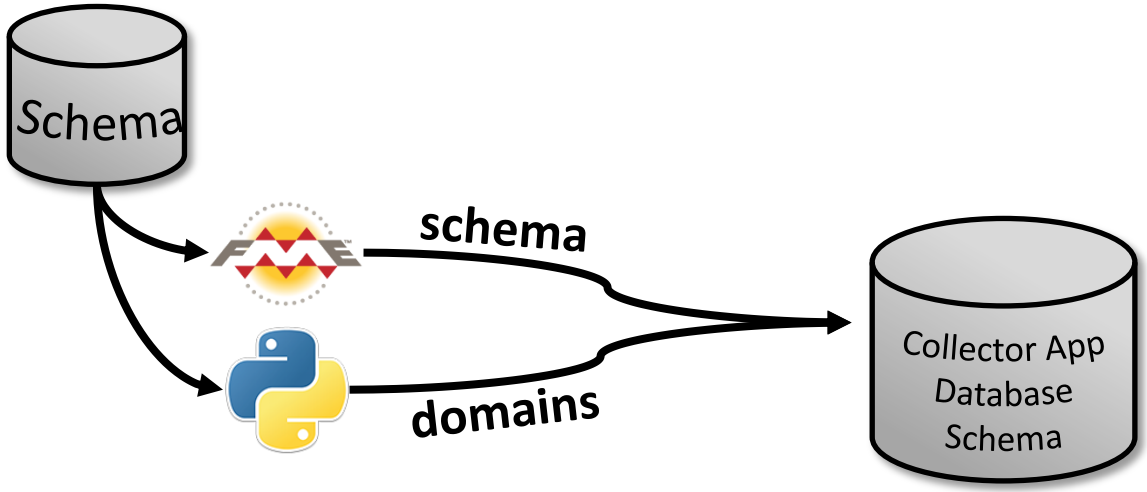

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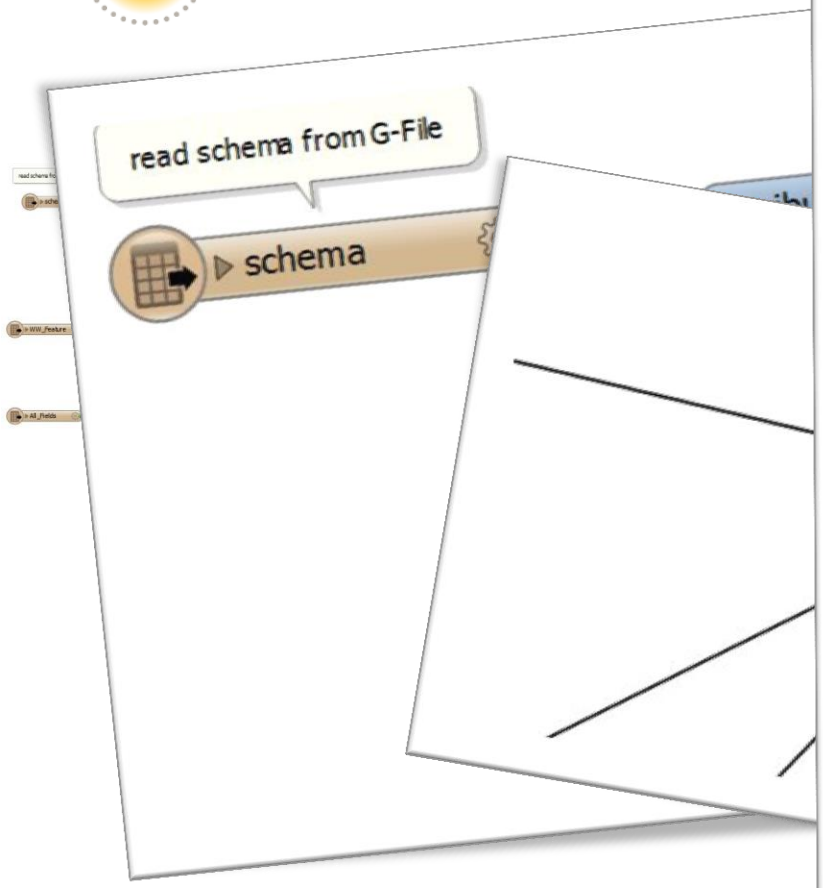
Collector – schema cre




```
try:
    print 'Obtaining Arc license...'
    import arcpy
except:
    print 'NO ARC LICENSE AVAILABLE'
    print '\nNo log file created.'
    raw_input("\n\nPress Enter to close window...")
    sys.exit()

# set source tables
domainGDB = r'G:\GIS\Asbuilt\Documents\SCIRT Schema\SC    _Domains.gdb'
schemaGDB = r'G:\GIS\Asbuilt\Documents\SCIRT Schema    llector_SAT_Sch    db'
schemaSWFeature = domainGDB + '\\SW_Feature'
schemaWSFeature = domainGDB + '\\WS_Feature'
schemaWWFeature = domainGDB + '\\WW_Feature'
schemaAllFields = domainGDB + '\\All_Fields'
logPath = r'G:\GIS\Asbuilt\Documents\SCIRT S    ema\Collect    T_Schema_proc    s_log    '
dicAllFields = {} # holds: field name - domain
schemaFeatureClasses = {} # holds: feature class - path
domainTables = [] # hold names of all domain table
code_field = 'DomainValue' # this is not being u    as w    ork with descrip    ons only
description_field = 'Description'
errorcount = 0
network = ''
log = 'Deleted existing domains GDB "SCIRT_D    ns.gdb".\nDeleted ex    ting schema GDB "Collector_
"SCIRT_Domains.gdb".\nFME pr    esses run to    te new    hema GDB "    llector_SAT_Schema.gdb".\nCr

def writeLog():
    logfile = open(log    th,'w') # creates or over    tes exist    g log file
    logfile.write(log
    logfile.close()

writeLog()

# make sure    he GDBs exist
if not os    ath.exists(domainGDB)
    print '\nCannot find "' + domain    DB +'". Process will be terminated.'
    l    = '\nCann    domainGDB +'". Process will be terminated.'
    raw_input("\    close window...")
    writeLog()
    sys.exit()
    if not os.path.exis    (schemaGDB):
    print '\nCannot    "' + schemaGDB +'". Process will be terminated.'
    lo    '\nCannot    "' + schemaGDB +'". Process will be terminated.'
    raw_i    '\n\nPress Enter    close window...")
    writeLog
    sys.exit()


print '\nCollecting list of fields and associated domains...'
log+= '\nCollecting list of fields and associated domains...'
# get table of all fields with associated domains
try:
    tableAllFields = arcpy.SearchCursor(schemaAllFields)
except:
    print 'The table at "' + schemaAllFields + '" could not be found. Terminating process.'
```

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Collector – user interaction

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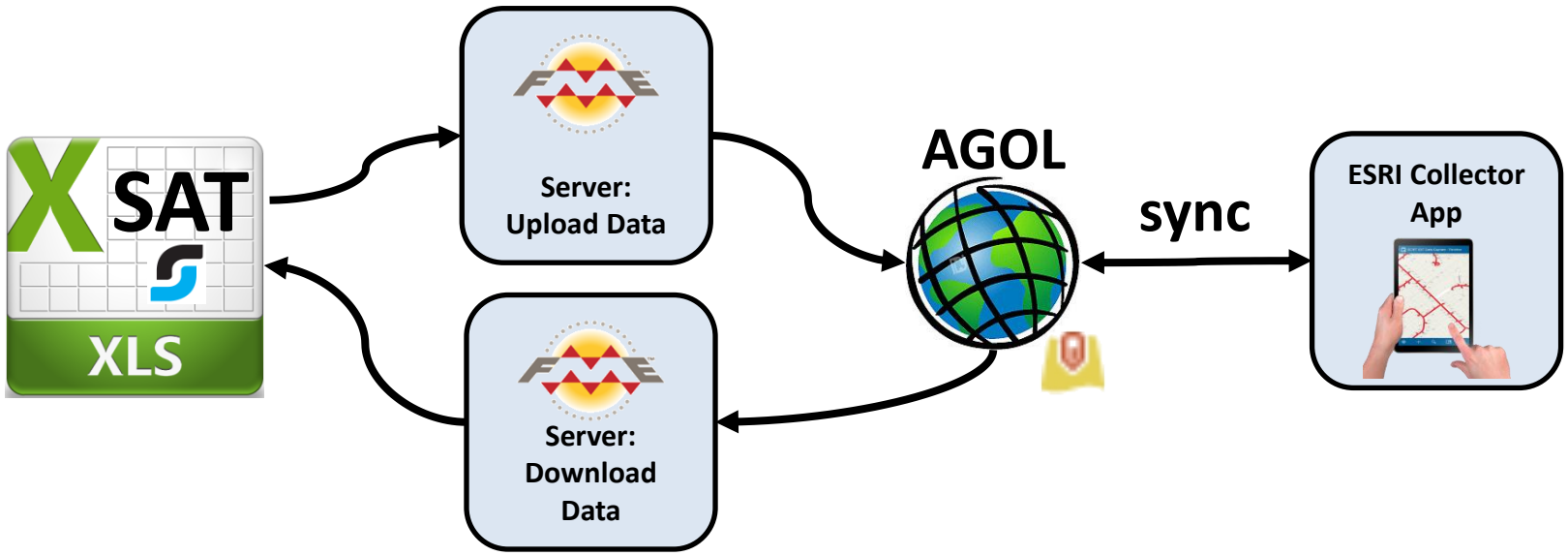

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Collector – FME Server data upload

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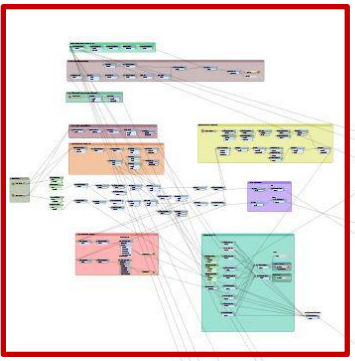
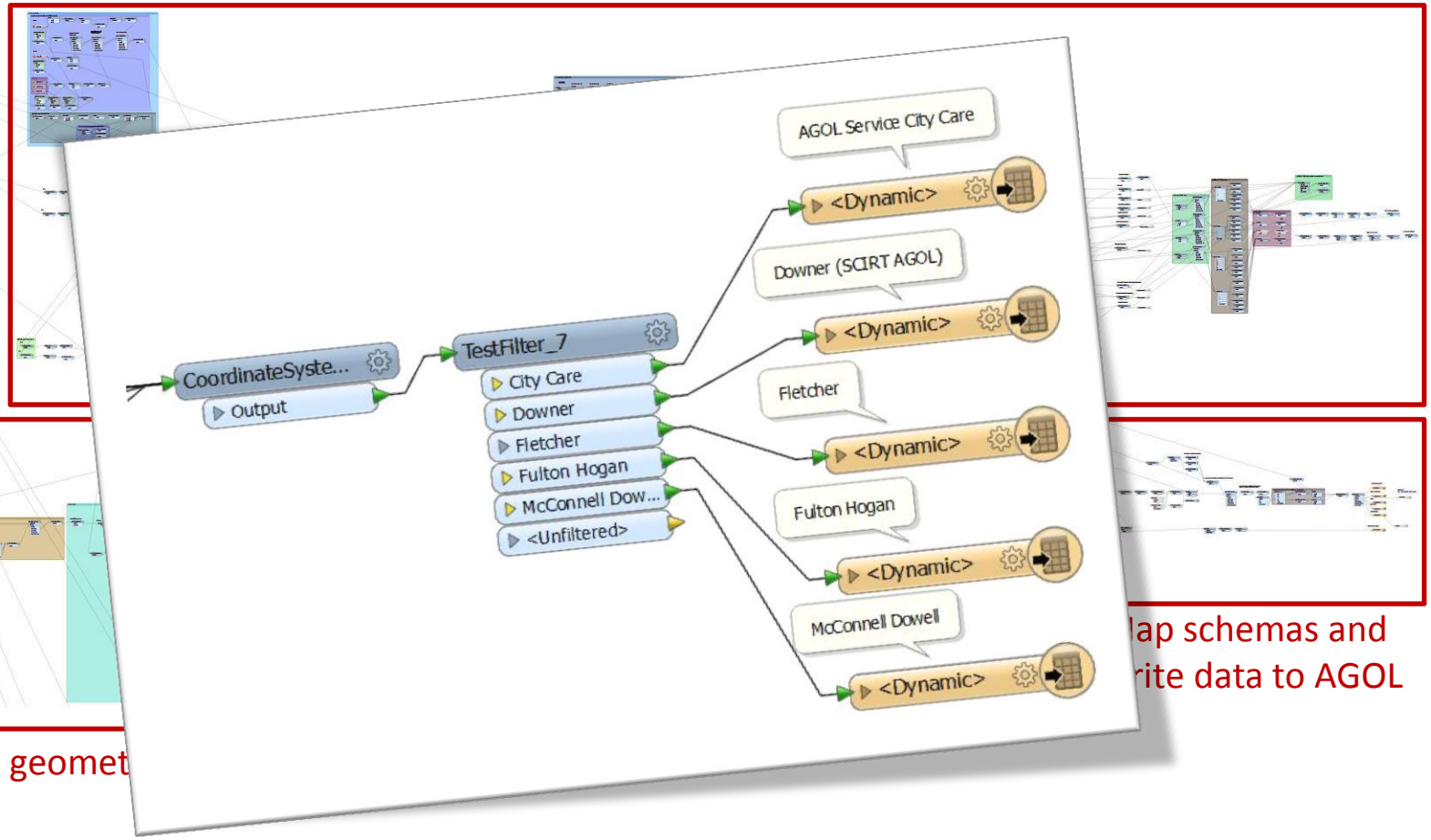
Check for missing information and tag incomplete records



Read SAT (Excel) and check



Create geomet

lap schemas and
rite data to AGOL

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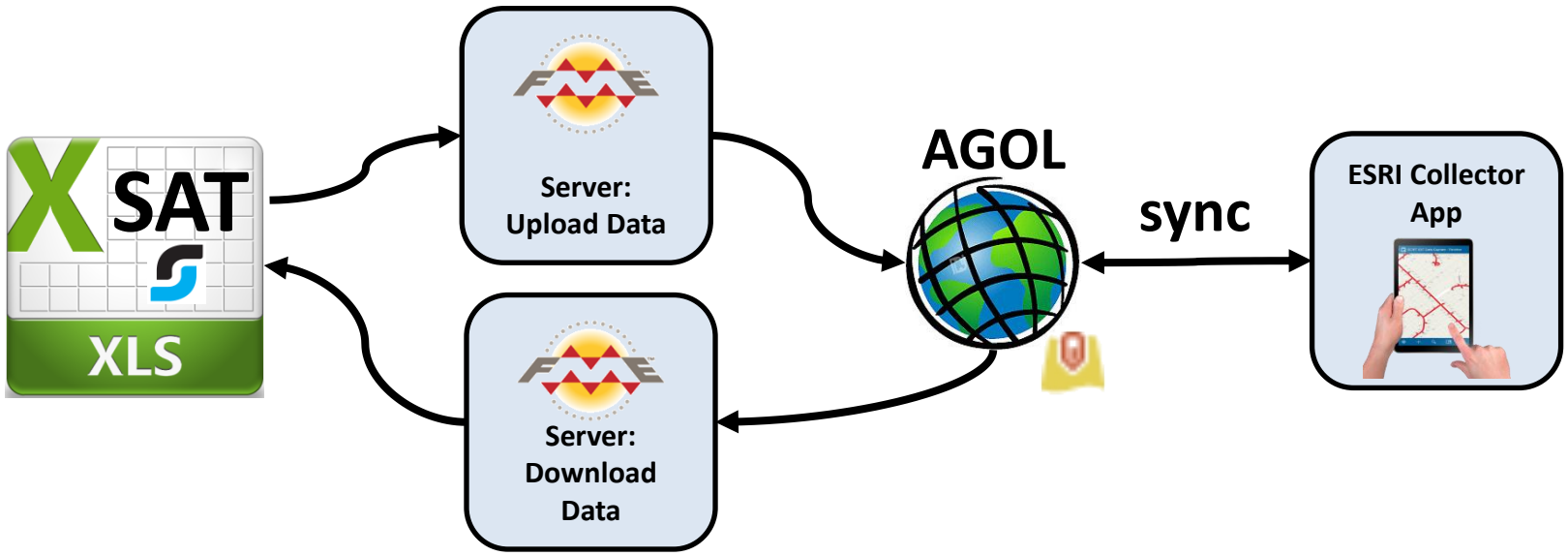

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Collector – FME Server data download

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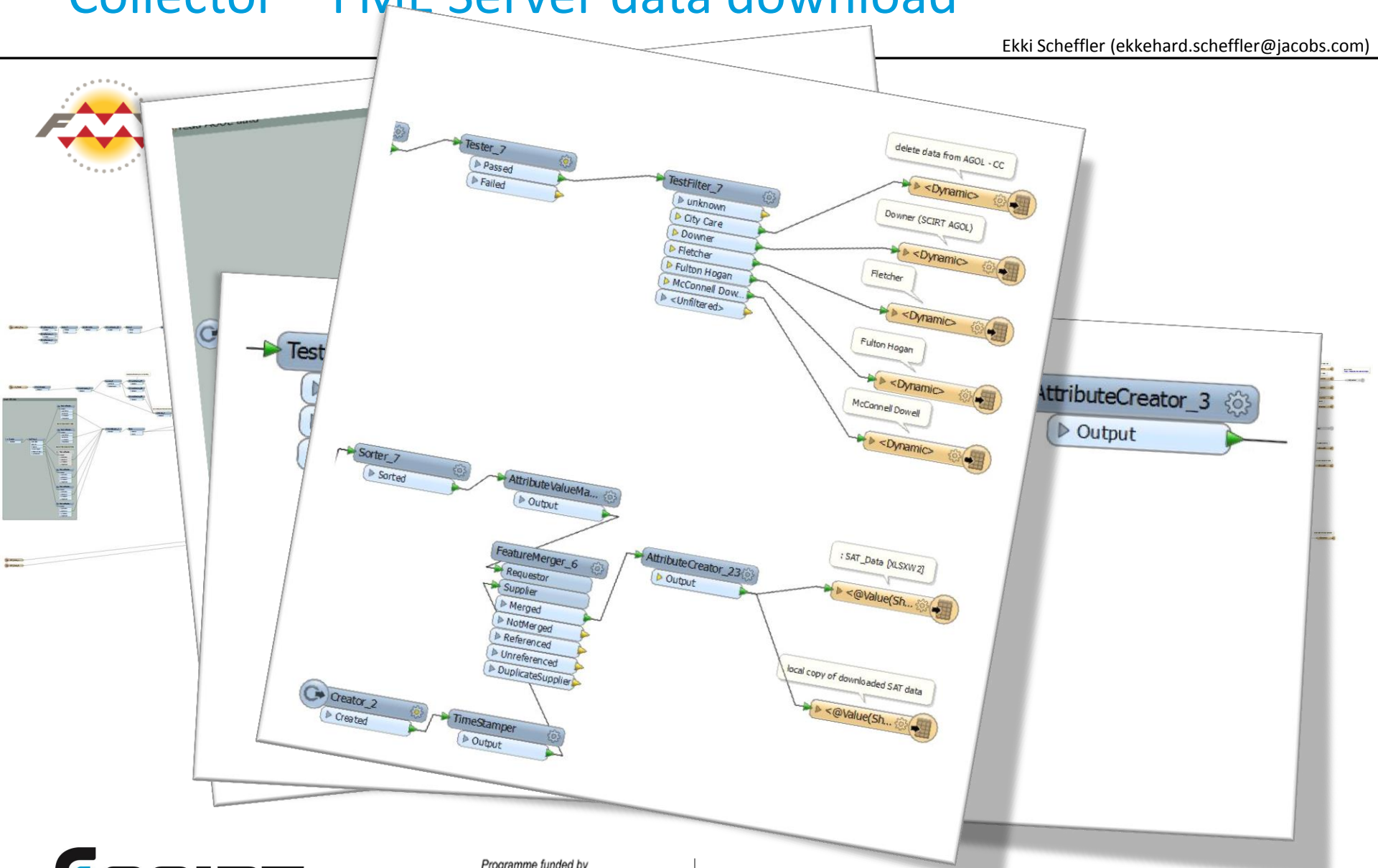

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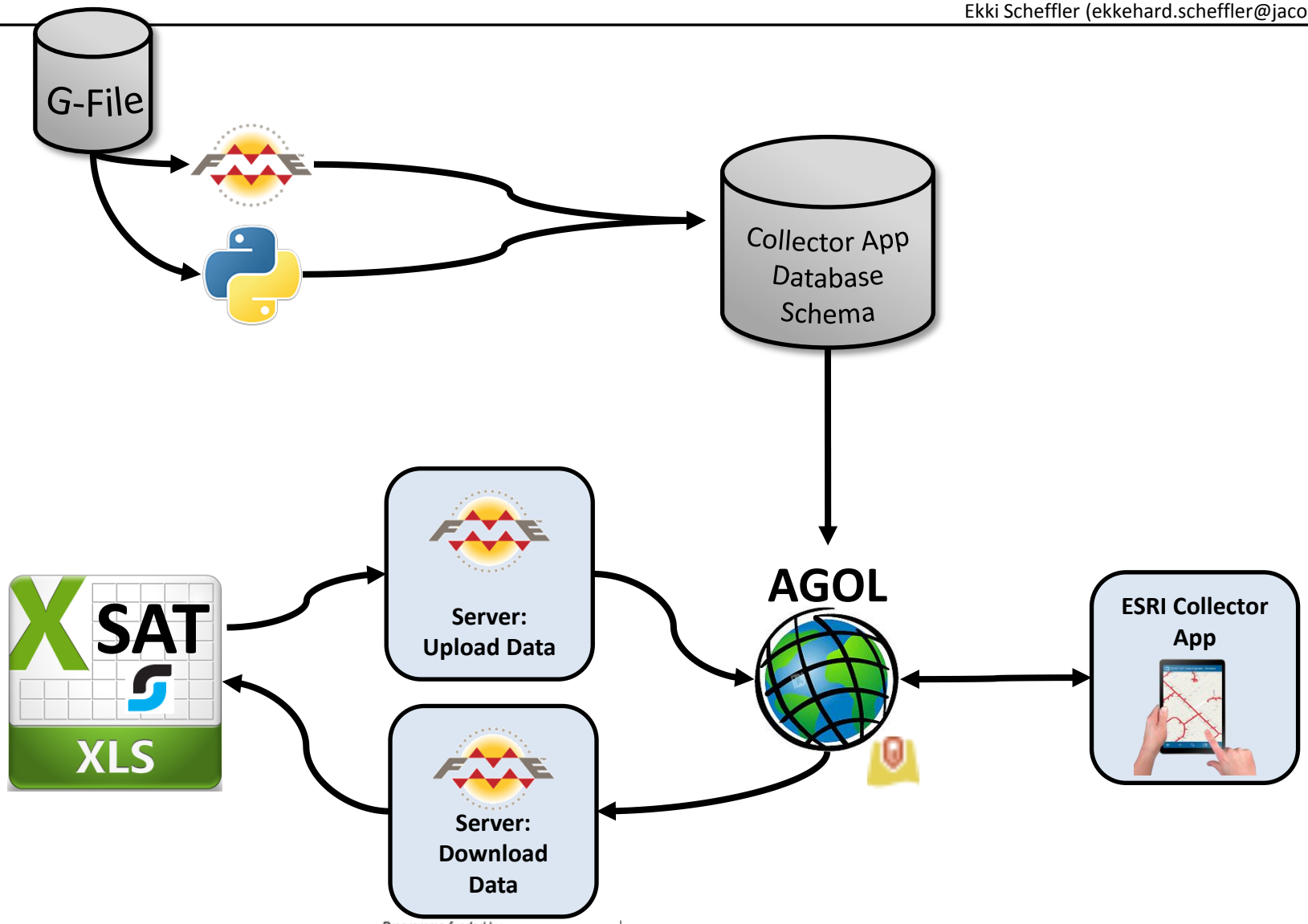

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Questions?

Comments?

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