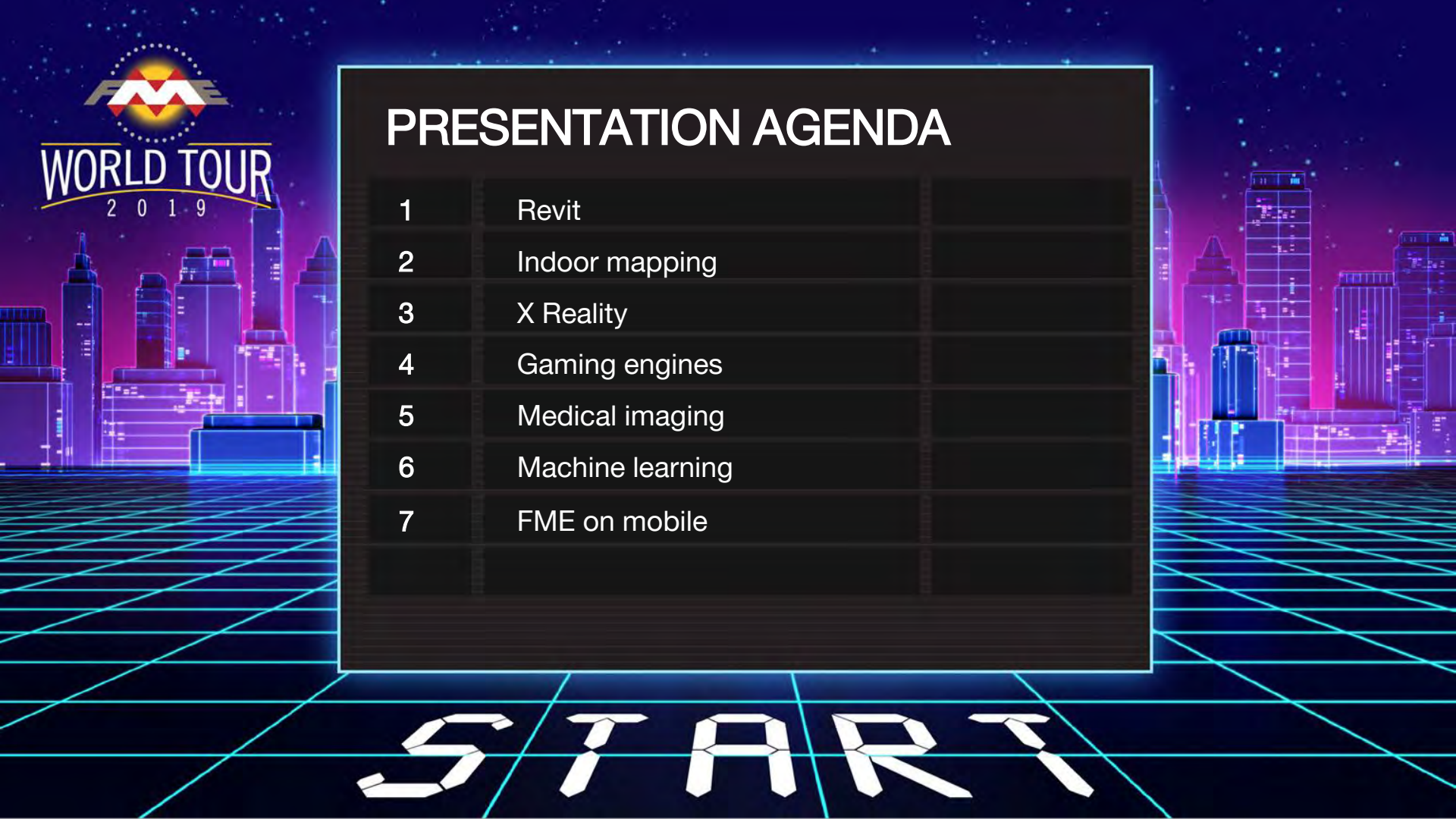
SAFE SOFTWARE

Bonus Level

New Data Ventures


WORLD TOUR
2019
PRESENTATION AGENDA
1 Revit
2 Indoor mapping
3 X Reality
4 Gaming engines
5 Medical imaging
6 Machine learning
7 FME on mobile
START

Average number of buildings constructed in urban areas daily (2018–2050)*

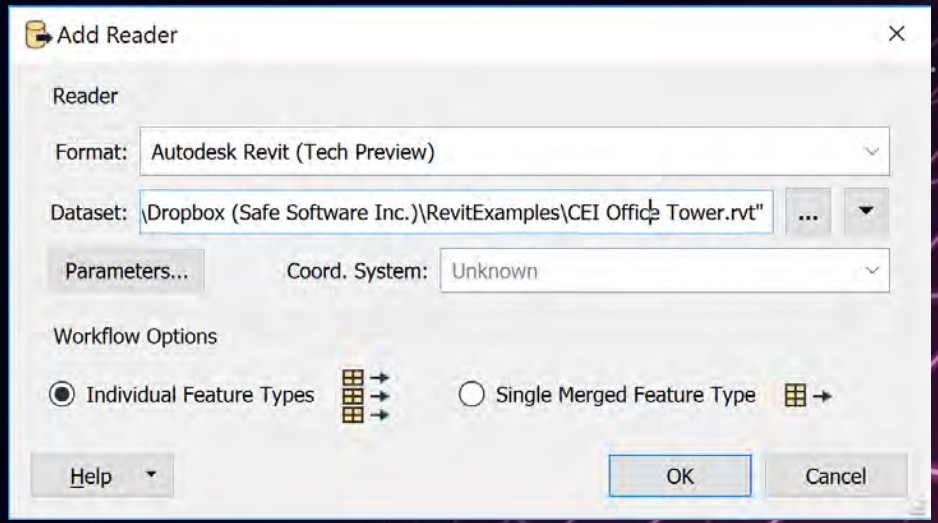
* All nonresidential and residential buildings (excl. single family homes) in urban areas

Source: STATISTA

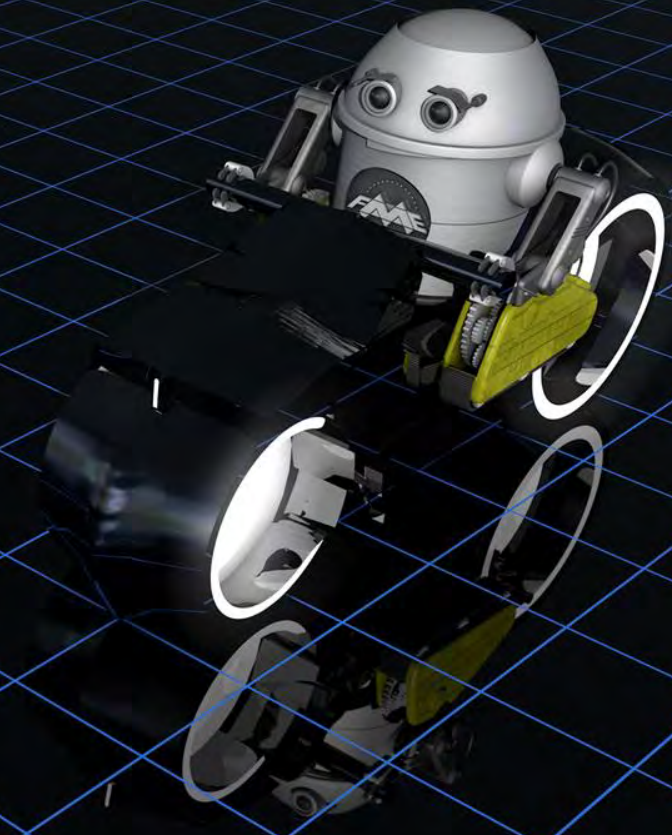
Average number of buildings constructed in urban areas annually (2018–2050)*

1. One-step **Revit** integration *(beta)*

Direct Revit reading with no intermediate files

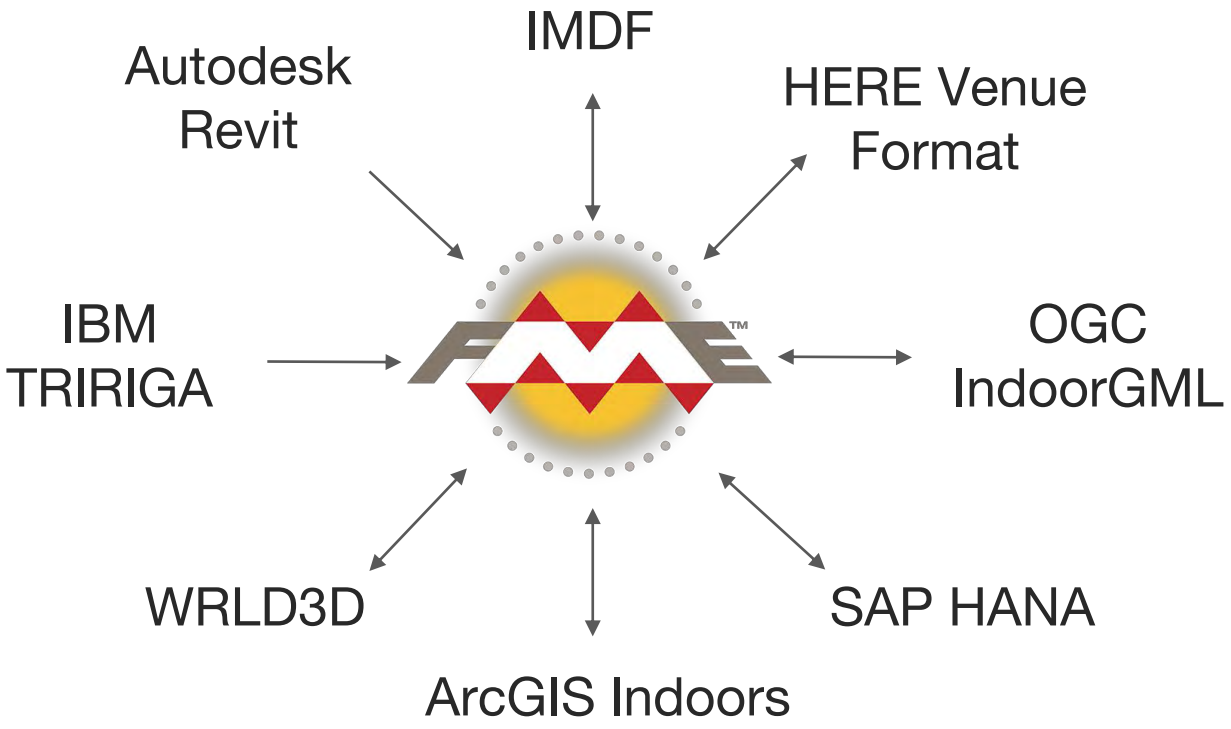


2. Getting your venue into **indoor navigation** apps

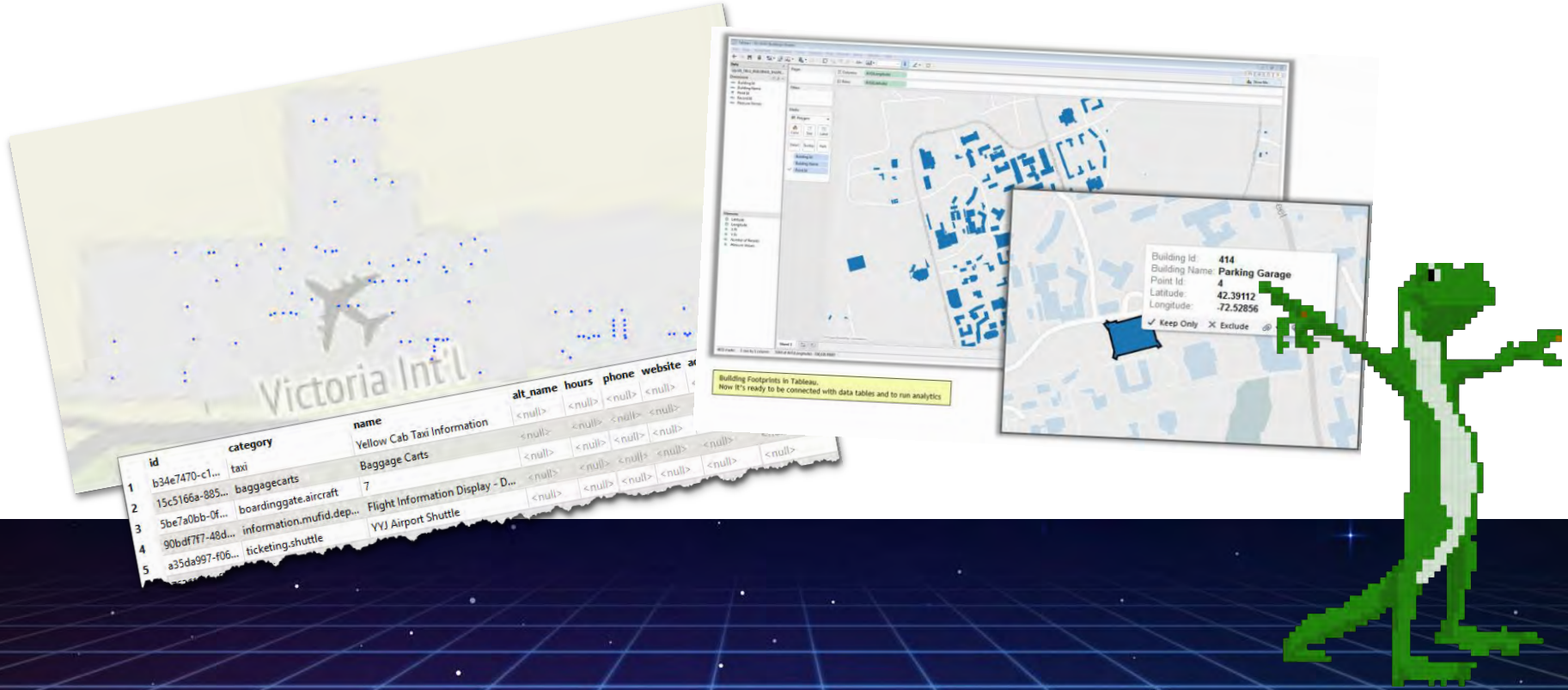


Indoor Mapping Challenges

- Must **integrate** multiple sources to produce an indoor map.
  - GeoJSON, Revit, IFC, CAD (Autodesk, Bentley), Civil 3D, Esri Geodatabase, databases, CityGML …
- Must **transform** inconsistent data.
- Must **comply** with specifications of the indoor format, e.g. IMDF, HERE, ArcGIS Indoors, IndoorGML.
  - Strict data models and explicit spatial relationships.
- Venues constantly change, so maps need to be updated **automatically**.


IMDF
Autodesk Revit
HERE Venue Format
IBM TRIRIGA
OGC IndoorGML
WRLD3D
SAP HANA
ArcGIS Indoors

Venues Using FME to Generate Indoor Maps



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3	5be7a0bb-0f...	boardinggate.aircraft	7	<null>	<null>	<null>	<null>
4	90bdf7f7-48d...	information.mufid.dep...	Flight Information Display - D...	<null>	<null>	<null>	<null>
5	a35da997-f06...	ticketing.shuttle	YVJ Airport Shuttle	<null>	<null>	<null>	<null>

3. Exploring your data
in X Reality

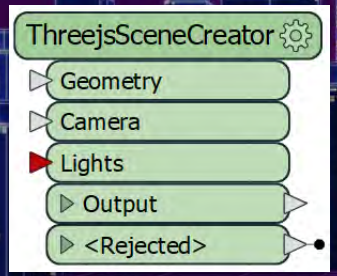
Scenario: Augmented Wayfinding

1. Create floor network dataset.
2. Use the ShortestPathFinder.
3. Write to FMEAR format.
4. Make a webpage that opens the FME AR app.

Scenario: Augmented Objects

1. Create/load your floor plan.
2. Change existing objects, e.g.color or texture.
3. Add new objects, e.g. furniture, annotations, action heroes.

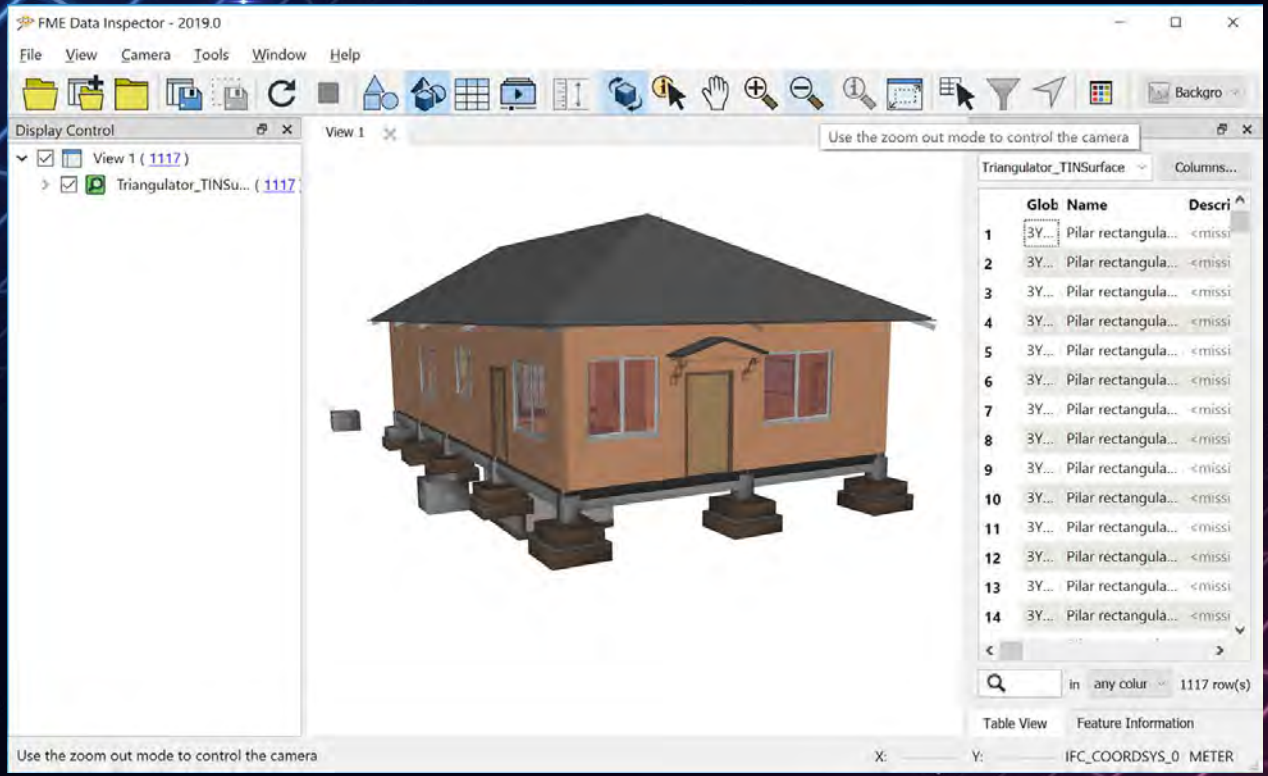
Scenario: Virtual Scenes



1. Read a 3D model.
2. Use the ThreejsSceneCreator.
3. Write the scene and host it locally or on the web.
4. Put on your headset and explore!

4. Bringing your data into gaming engines

Don’t just ***inspect*** your data …



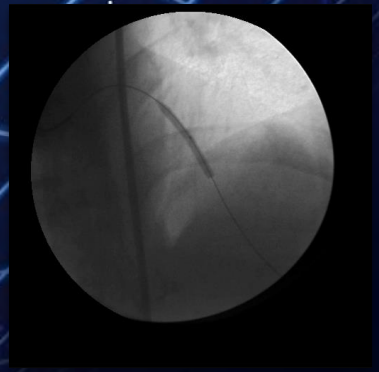
... experience it.

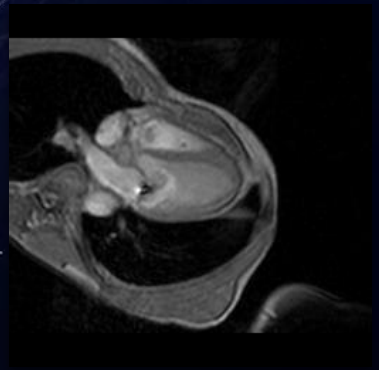
5. Processing medical imaging

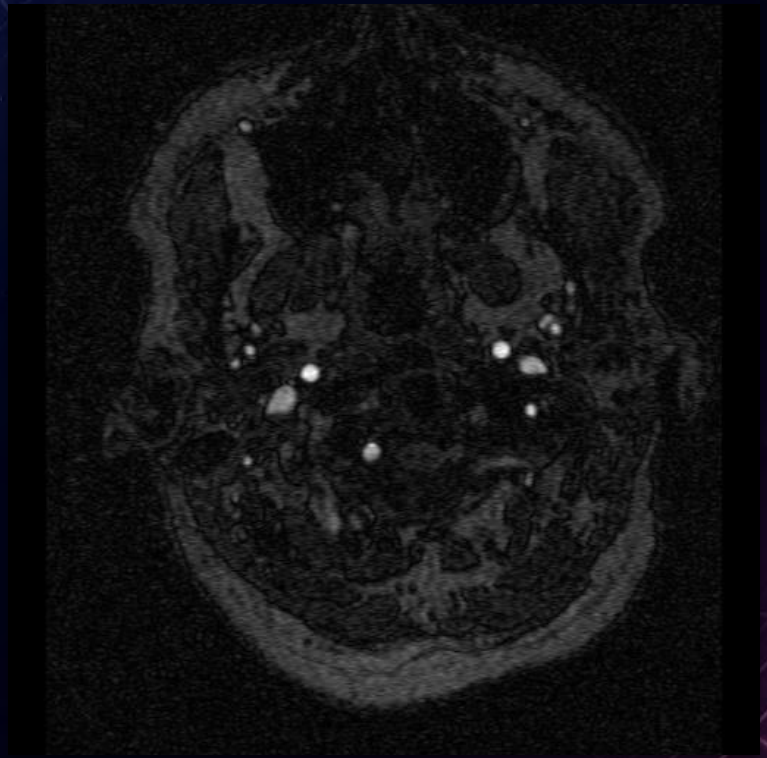
Goal: Identify Brain Tumors

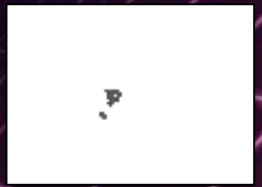
- Can we analyze brain scan data (CT, MRI) to identify brain tumors?
    - Knowing a tumor's location and type would help reduce radiation damage to healthy tissue.
- Manual approach is prone to human error and time consuming.
- Helpful FME capabilities:
    1. Process **huge volumes** of images.
    2. Do **object detection**, which would help isolate a tumor's location.
    3. **Classify** data, which would help identify the tumor subtype.

DICOM images in time (left) and space (center/right)

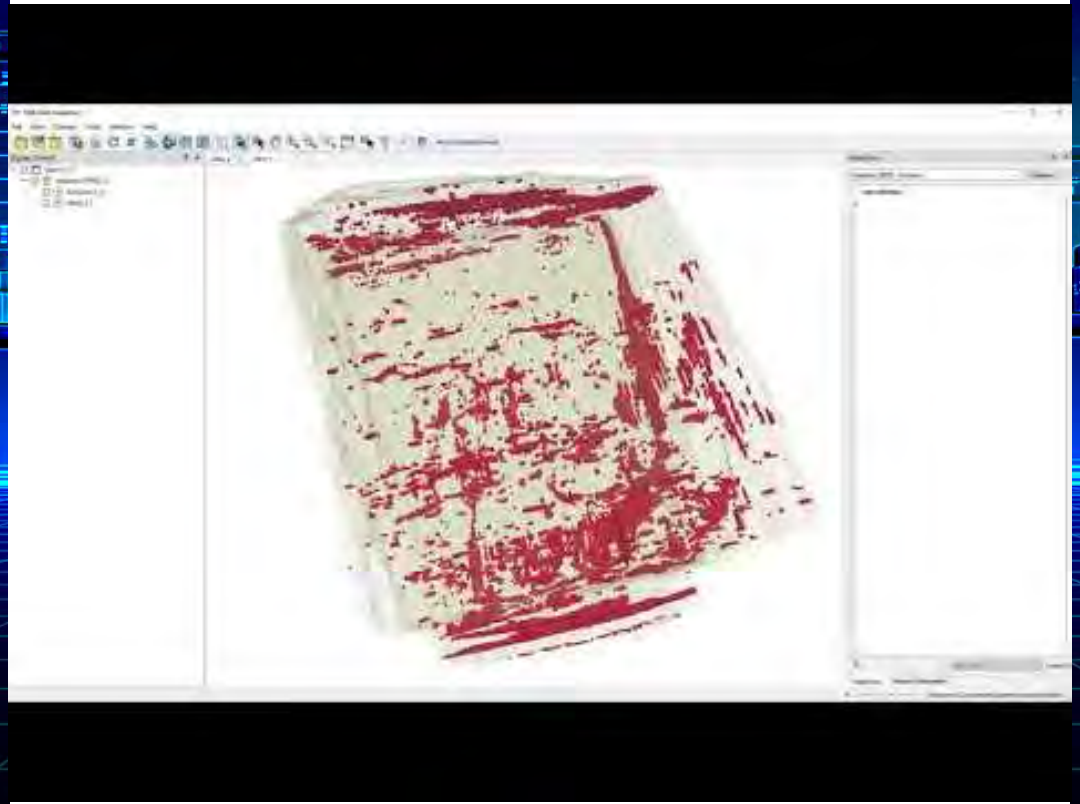


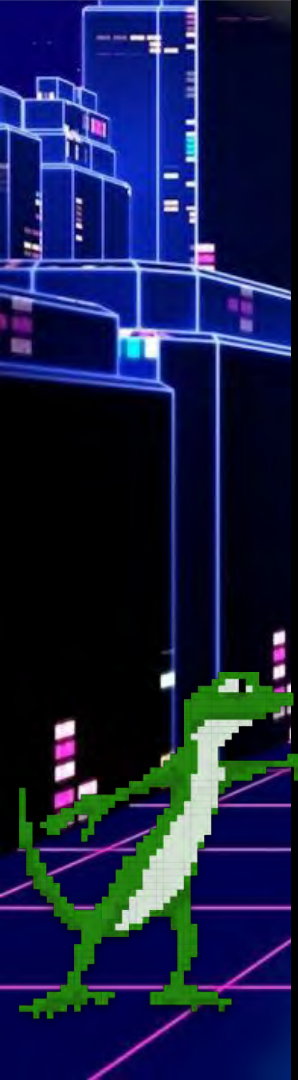






DICOM images for coal mining

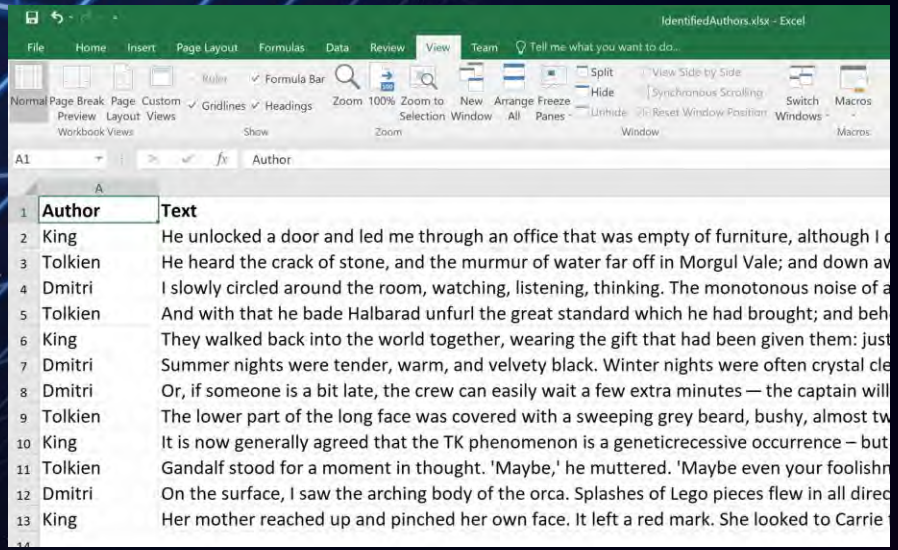




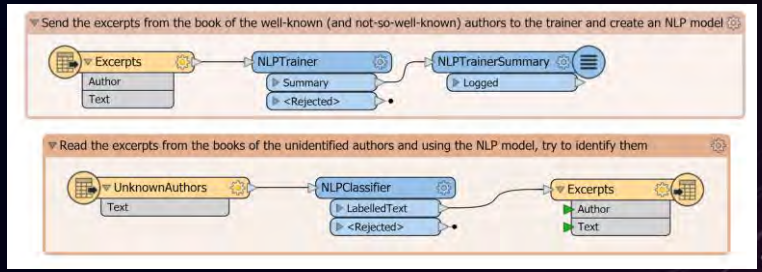
6. Artificial intelligence and machine learning

Natural Language Processing

fme.ly/languageDetector

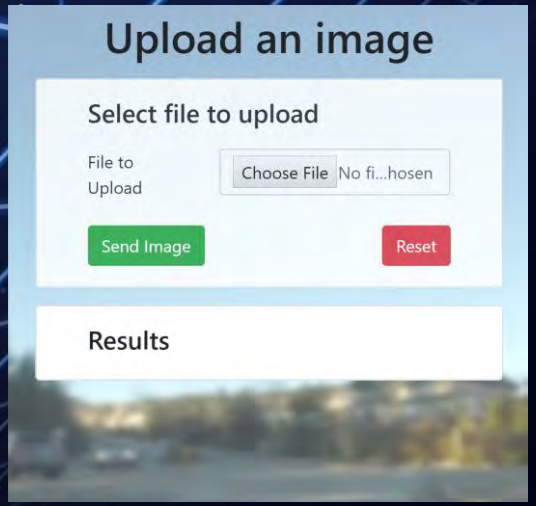


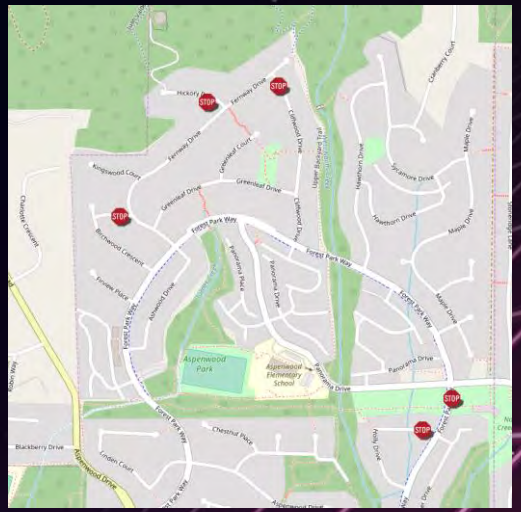
	A	Text
1	Author	Text
2	King	He unlocked a door and led me through an office that was empty of furniture, although I c
3	Tolkien	He heard the crack of stone, and the murmur of water far off in Morgul Vale; and down av
4	Dmitri	I slowly circled around the room, watching, listening, thinking. The monotonous noise of a
5	Tolkien	And with that he bade Halbarad unfurl the great standard which he had brought; and beh
6	King	They walked back into the world together, wearing the gift that had been given them: just
7	Dmitri	Summer nights were tender, warm, and velvety black. Winter nights were often crystal cle
8	Dmitri	Or, if someone is a bit late, the crew can easily wait a few extra minutes — the captain will
9	Tolkien	The lower part of the long face was covered with a sweeping grey beard, bushy, almost tw
10	King	It is now generally agreed that the TK phenomenon is a geneticrecessive occurrence – but
11	Tolkien	Gandalf stood for a moment in thought. 'Maybe,' he muttered. 'Maybe even your foolishn
12	Dmitri	On the surface, I saw the arching body of the orca. Splashes of Lego pieces flew in all direc
13	King	Her mother reached up and pinched her own face. It left a red mark. She looked to Carrie



Raster Object Detection

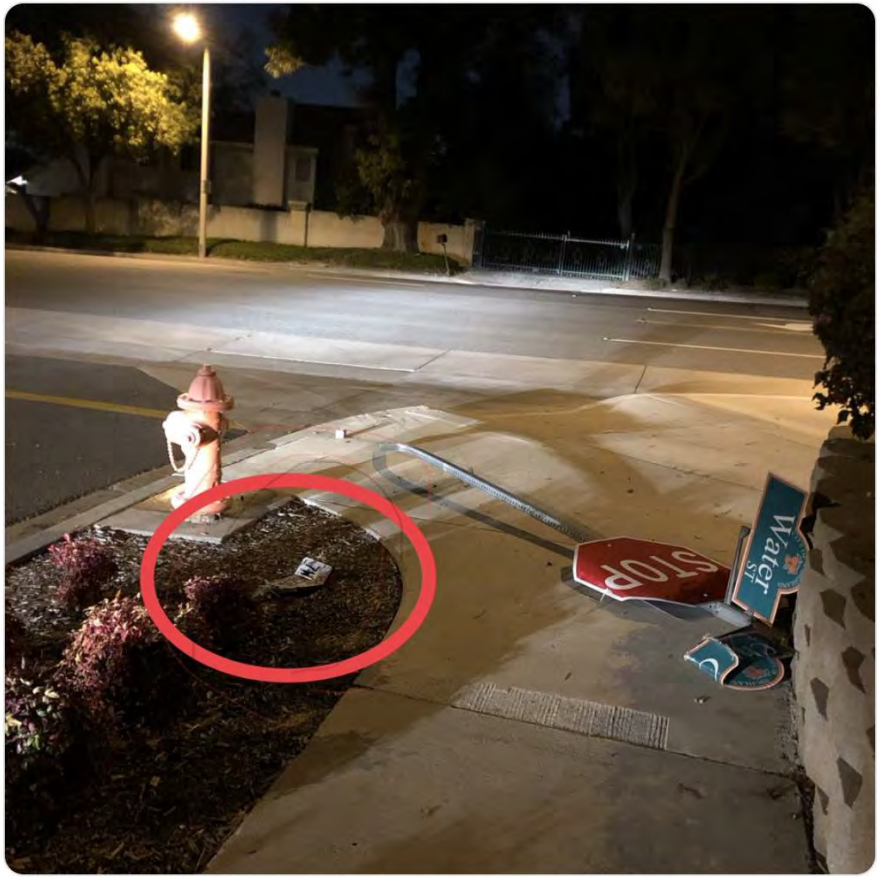
fme.ly/stopSign





Jeff Shaner @jeffshaner · 9h

To the idiot that just took out the stop sign at intersection of Church & Water Street in Highland, you left your license plate behind! @HighlandPolice @HighlandHaps @sbcountysheriff Lucky you missed the @eastvalleywater fire hydrant. Have a fab rest of your evening.



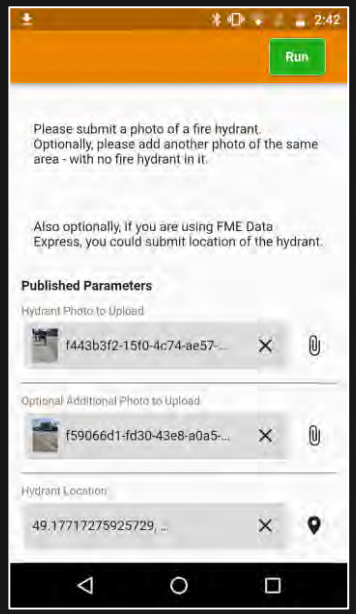
7. FME on Mobile

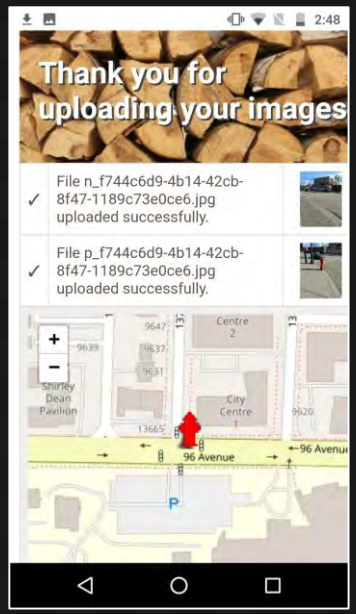
FME Data Express

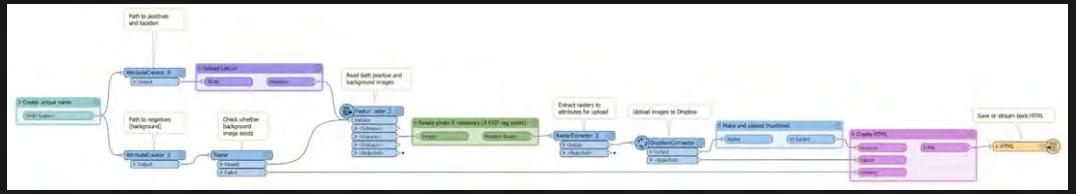
Making it easy for anyone to run FME Workspaces as apps on their mobile device.

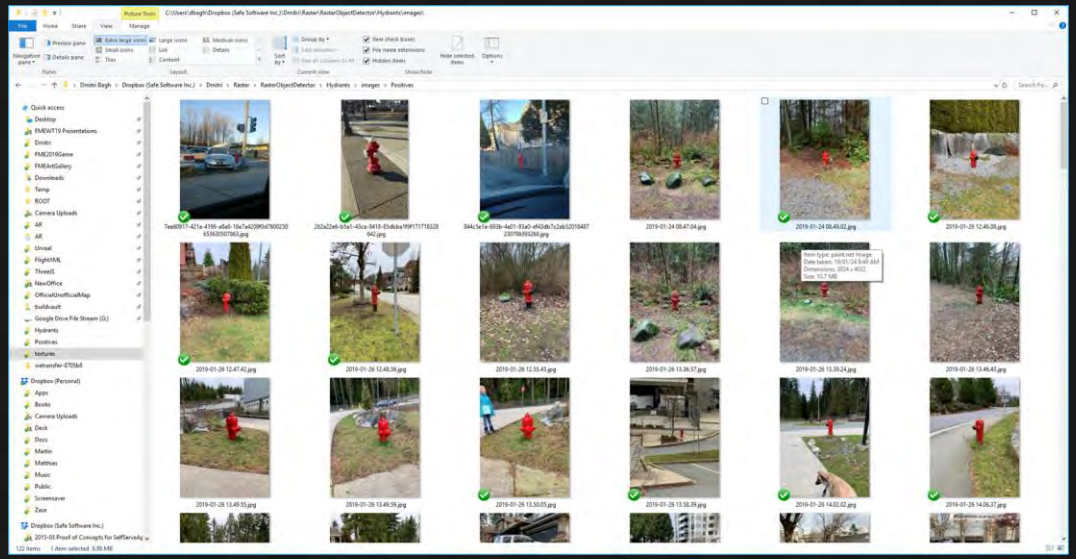
- Leverage device info like location and camera.
- Control permissions with tokens.

Example: Hydrant Collector App









Questions?