



# Bonus Level

New Data Ventures

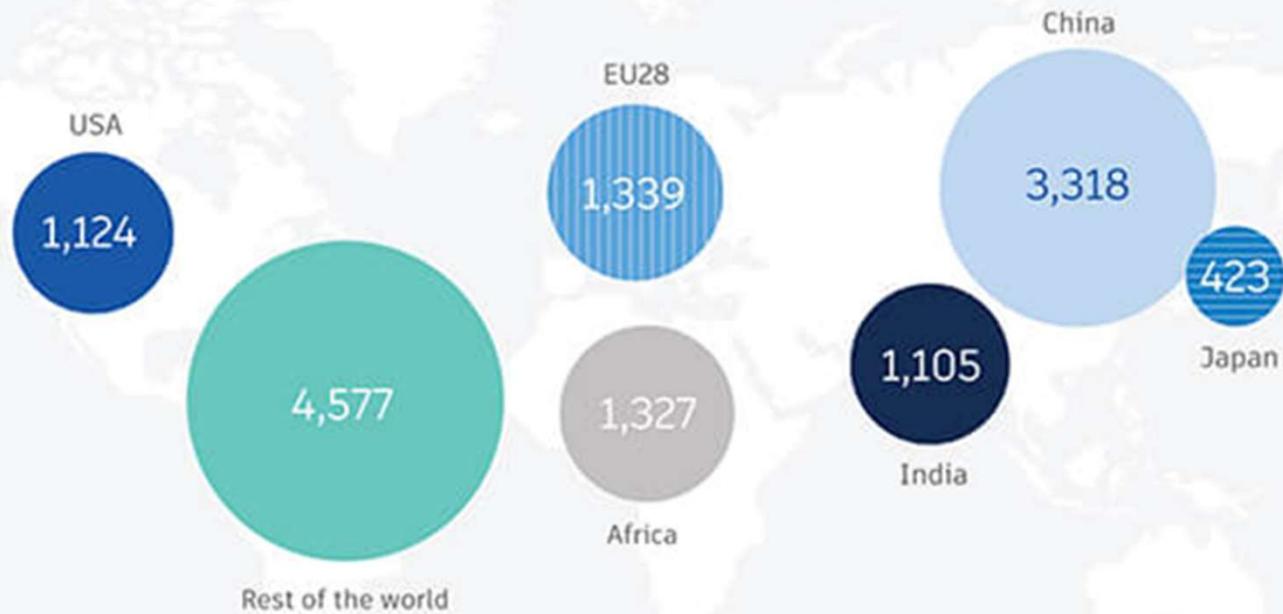


## PRESENTATION AGENDA

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

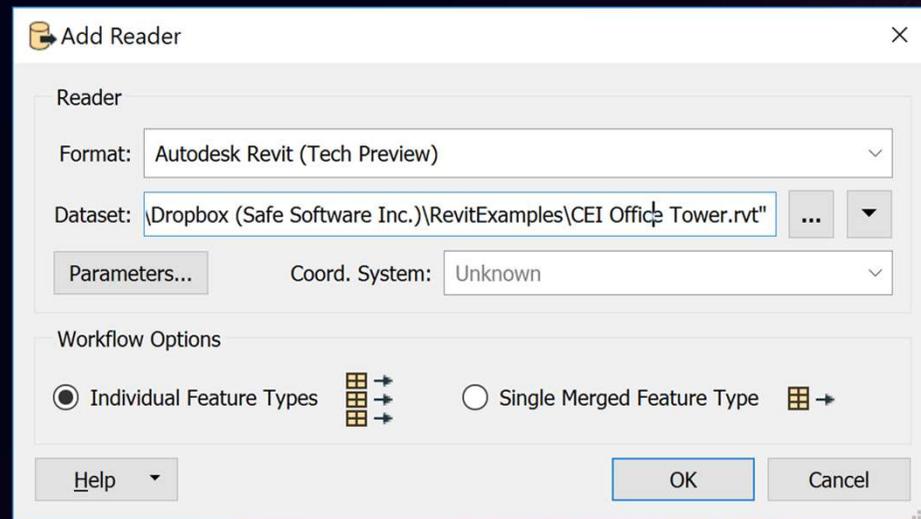
Source: STATISTA

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

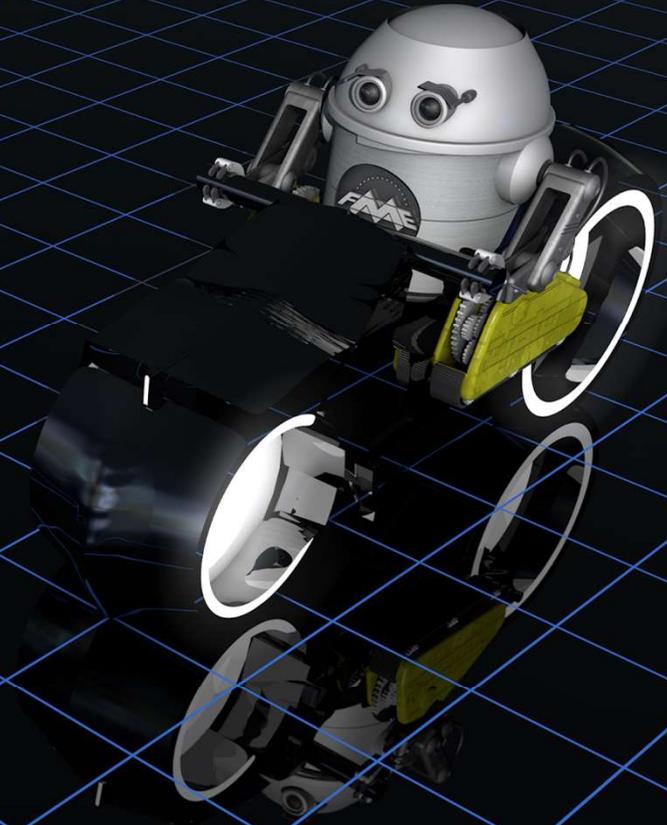
The background is a dark, gradient-colored space with a grid of glowing lines. The lines are primarily blue on the left and transition to purple on the right. There are several bright, multi-pointed star-like shapes scattered across the grid.

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

# Direct Revit reading with no intermediate files



## 2. Getting your venue into indoor navigation apps

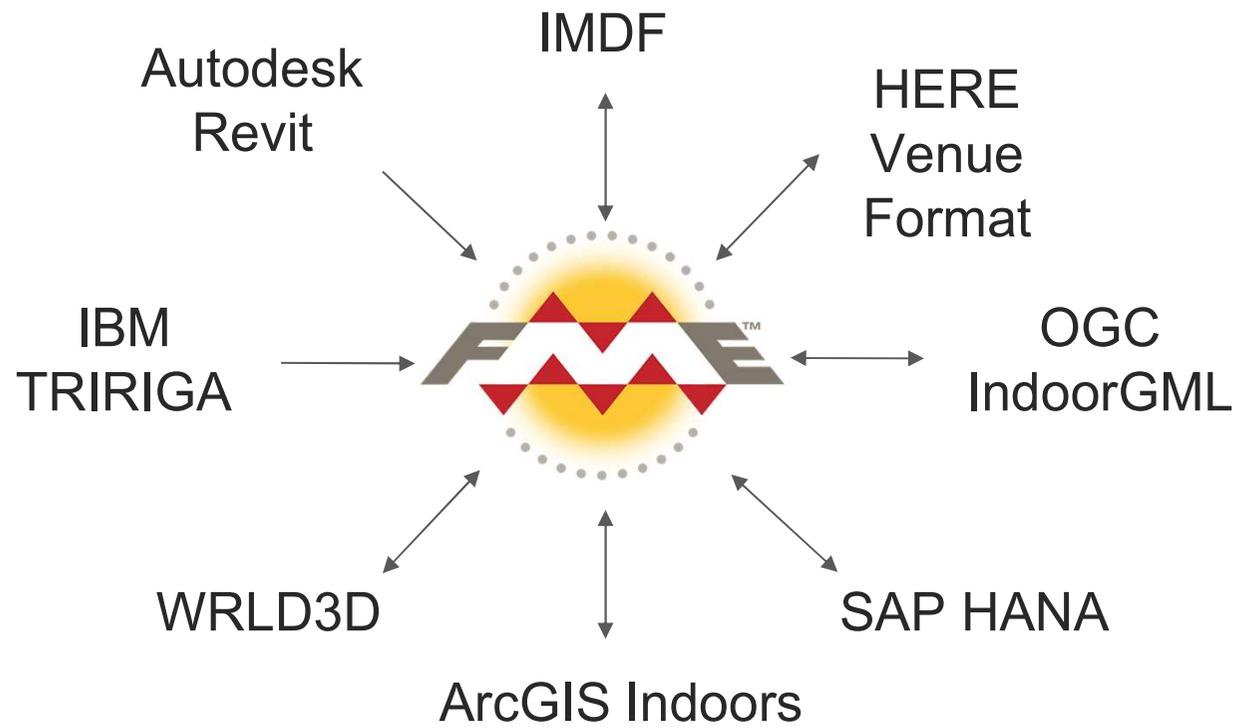




## Indoor Mapping Challenges

- 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**.





# Venues Using FME to Generate Indoor Maps

	id	category	name	alt_name	hours	phone	website
1	b34e7470-c1...	taxi	Yellow Cab Taxi Information	<null>	<null>	<null>	<null>
2	15c5166a-885...	baggag carts	Baggage Carts	<null>	<null>	<null>	<null>
3	5be7a0bb-Of...	boardinggate.aircraft	7	<null>	<null>	<null>	<null>
4	90bd7f7-48d...	information.mufid.dep...	Flight Information Display - D...	<null>	<null>	<null>	<null>
5	a35da997-406...	ticketing.shuttle	YYJ Airport Shuttle	<null>	<null>	<null>	<null>

Building Footprints in Tableau.  
Now it's ready to be connected with data tables and to run analytics

Building Id: 414  
Building Name: Parking Garage  
Point Id: 4  
Latitude: 42.39112  
Longitude: -72.52856  
Keep Only Exclude



# 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.

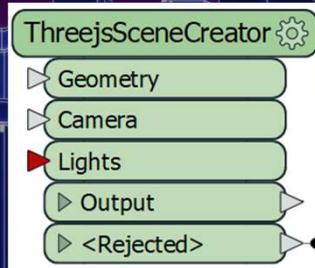


# Scenario: Augmented Objects

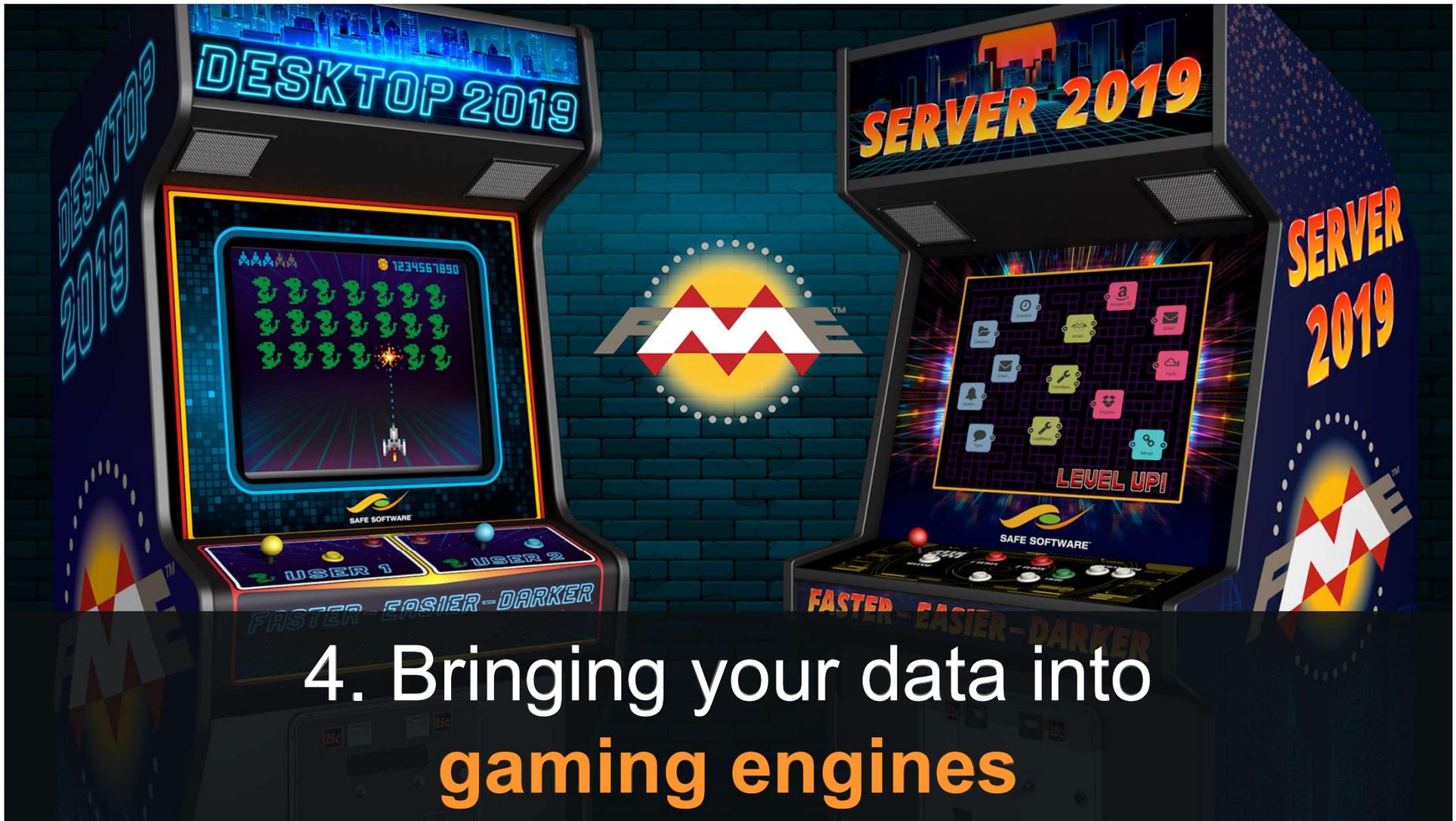


1. Create/load your floor plan.
2. Change existing objects, e.g. color or texture.
3. Add new objects, e.g. furniture, annotations, action heroes.

# Scenario: Virtual Scenes

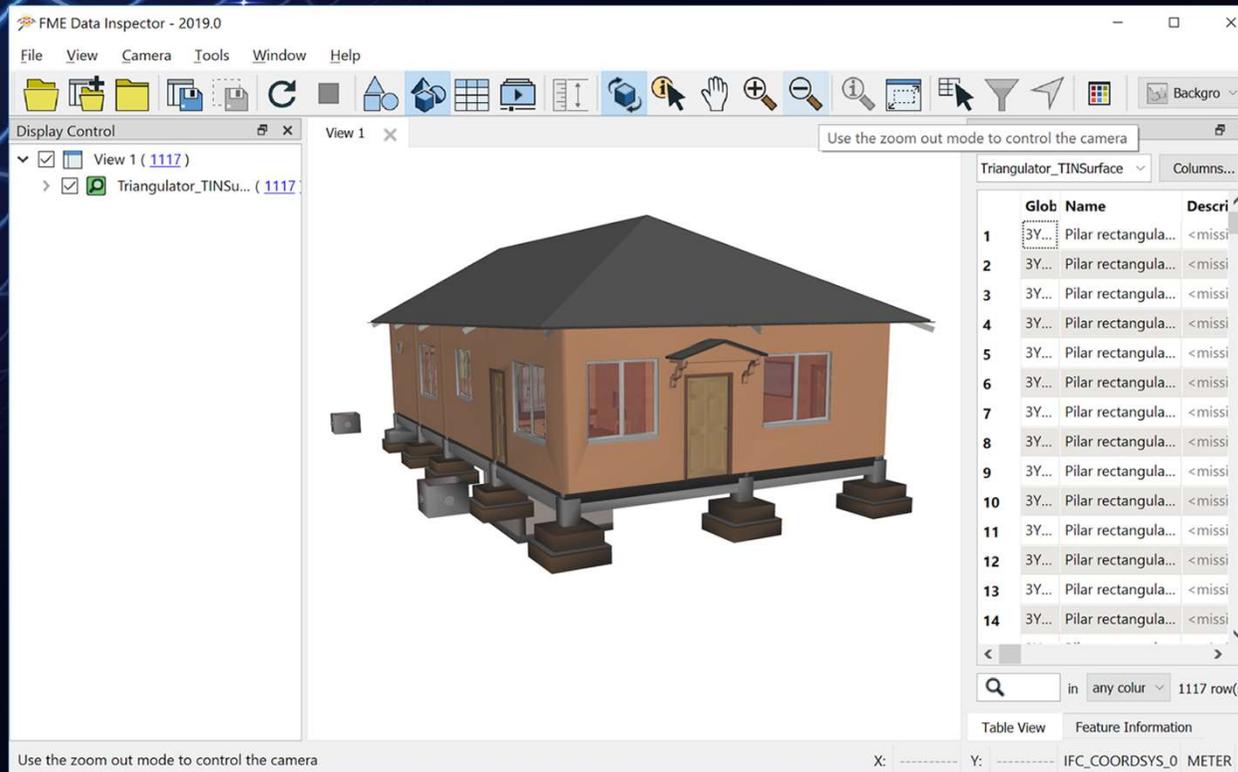


1. Read a 3D model.
2. Use the [ThreejsSceneCreator](#).
3. Write the scene and host it locally or on the web.
4. Put on your headset and explore!



## 4. Bringing your data into gaming engines

# Don't just *inspect* your data ...



The screenshot displays the FME Data Inspector interface. The central view shows a 3D model of a house. To the right, a data table is visible with the following structure:

	Glob	Name	Descri
1	3Y...	Pilar rectangula...	<missi
2	3Y...	Pilar rectangula...	<missi
3	3Y...	Pilar rectangula...	<missi
4	3Y...	Pilar rectangula...	<missi
5	3Y...	Pilar rectangula...	<missi
6	3Y...	Pilar rectangula...	<missi
7	3Y...	Pilar rectangula...	<missi
8	3Y...	Pilar rectangula...	<missi
9	3Y...	Pilar rectangula...	<missi
10	3Y...	Pilar rectangula...	<missi
11	3Y...	Pilar rectangula...	<missi
12	3Y...	Pilar rectangula...	<missi
13	3Y...	Pilar rectangula...	<missi
14	3Y...	Pilar rectangula...	<missi

At the bottom of the interface, the status bar shows: X: ----- Y: ----- IFC\_COORDSYS\_0 METER

*... experience it.*





# 5. Processing medical imaging

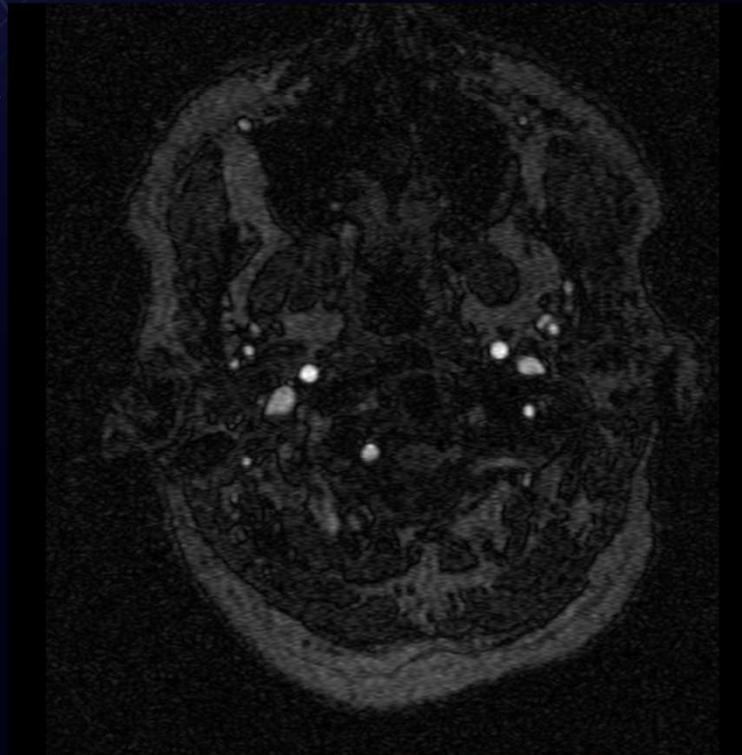
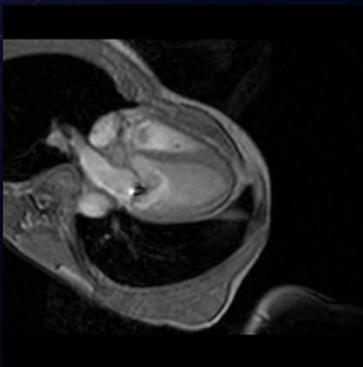
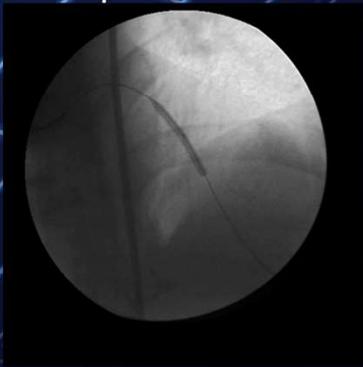




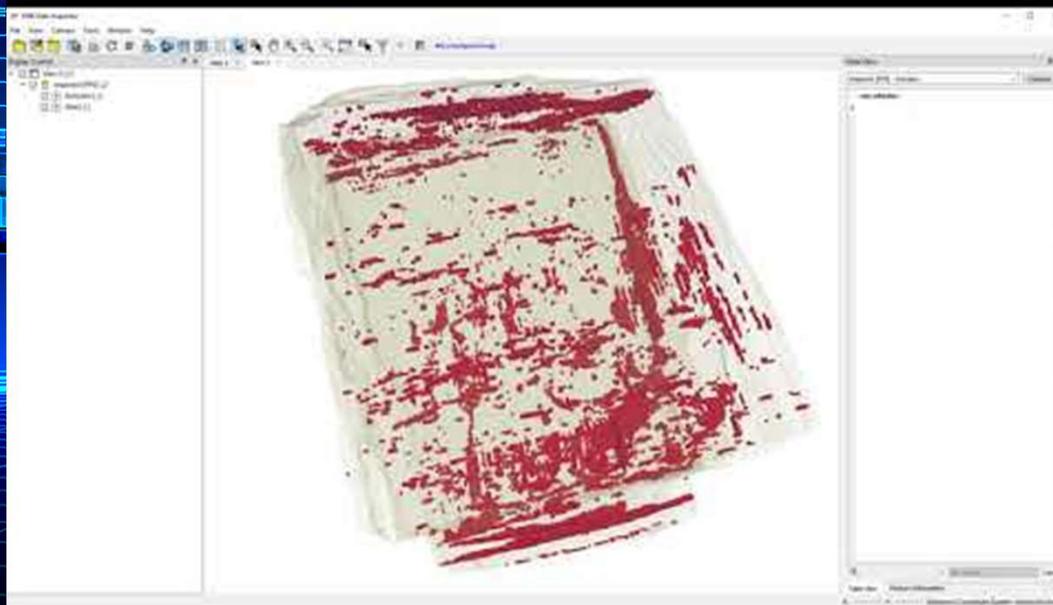
# Goal: Identify Brain Tumors

- 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.
- 

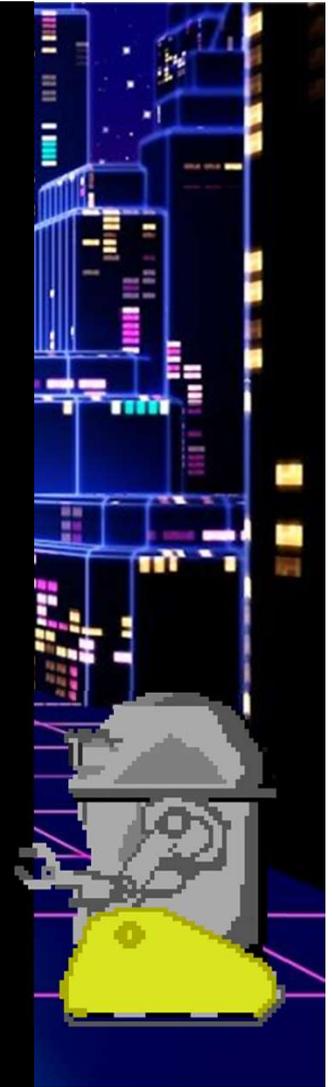
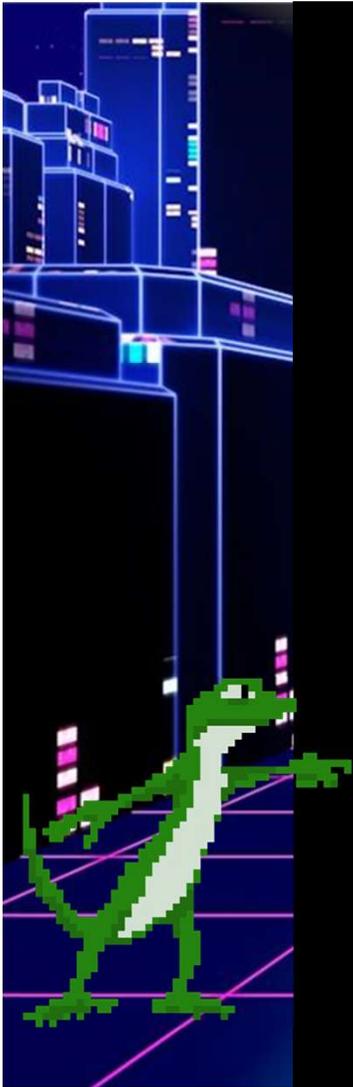
# DICOM images in time (left) and space (center/right)



# DICOM images for coal mining



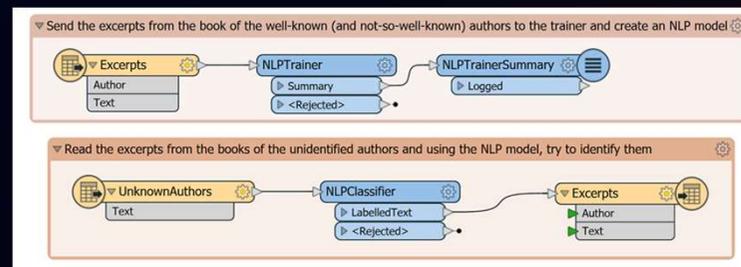
## 6. Artificial intelligence and machine learning



# Natural Language Processing

[fme.ly/languageDetector](http://fme.ly/languageDetector)

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



## Language Detector

Enter a fragment in English, French, Spanish, or German

Detect!

*FME does not recognize other languages just yet, don't try to drive an awakening mind crazy with Russian or Swahili.*

# Raster Object Detection

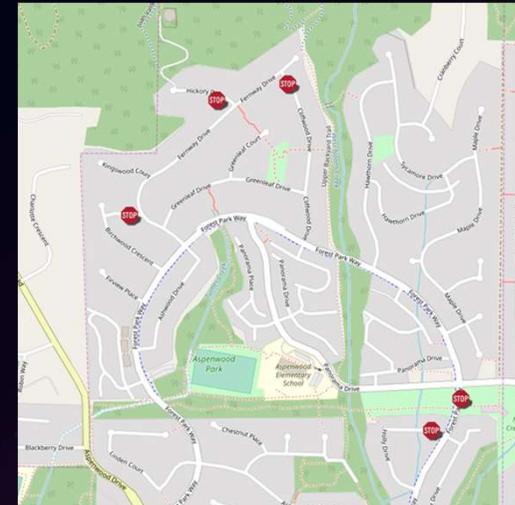
[fme.ly/stopSign](https://fme.ly/stopSign)

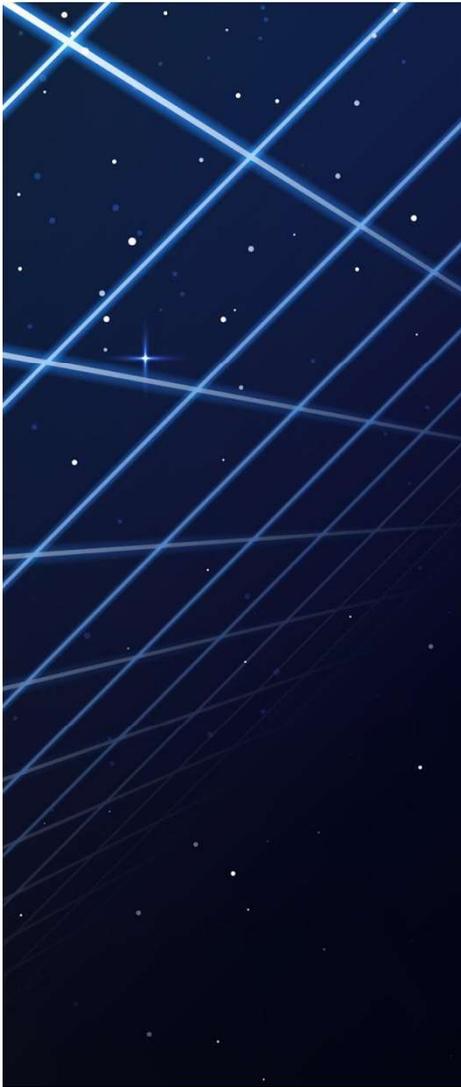
Upload an image

Select file to upload

File to Upload  No fi...hosen

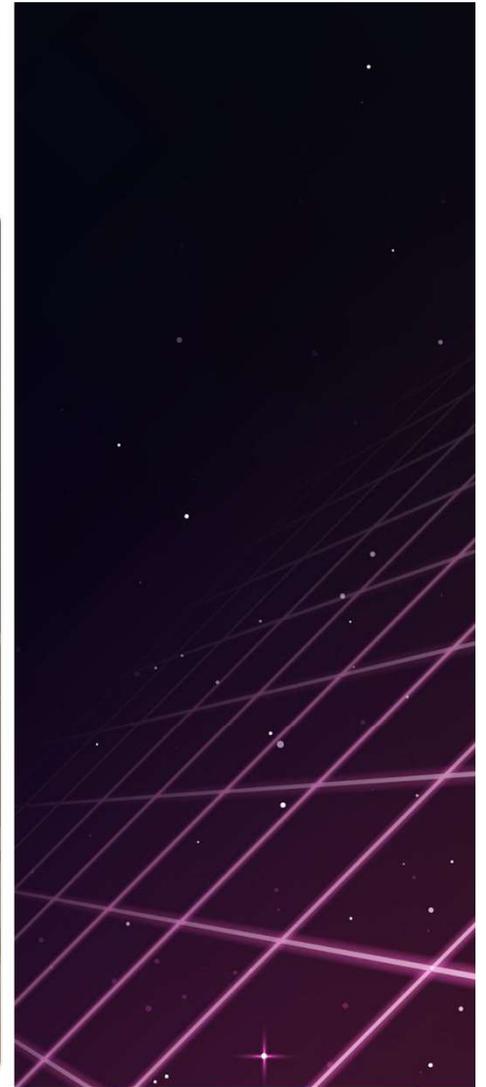
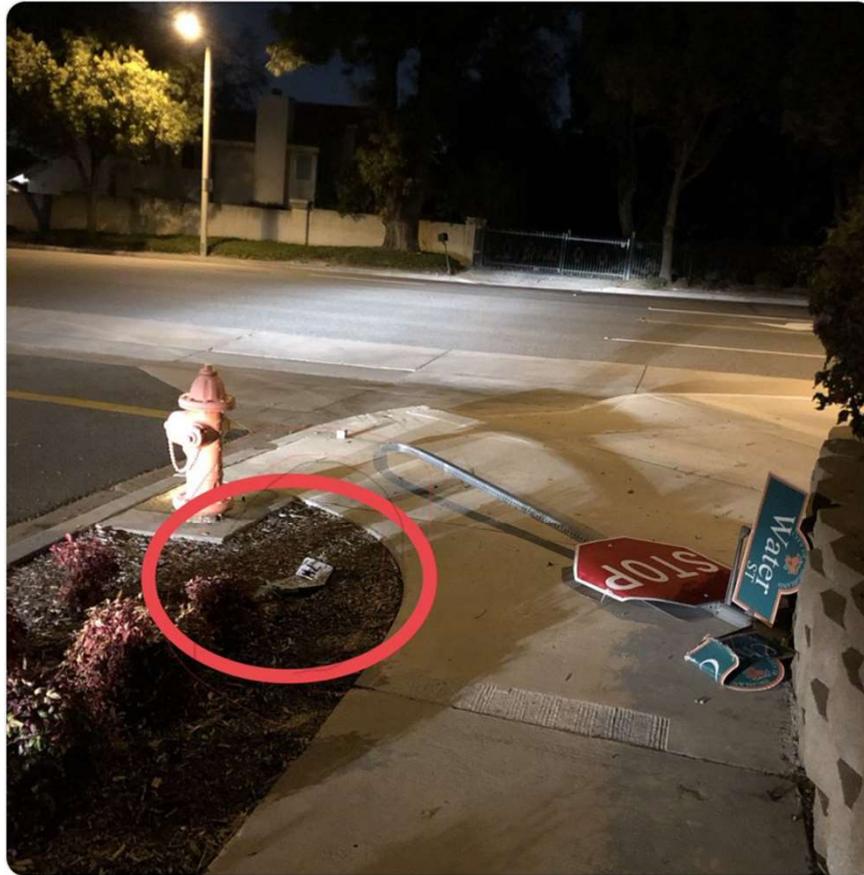
Results





**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



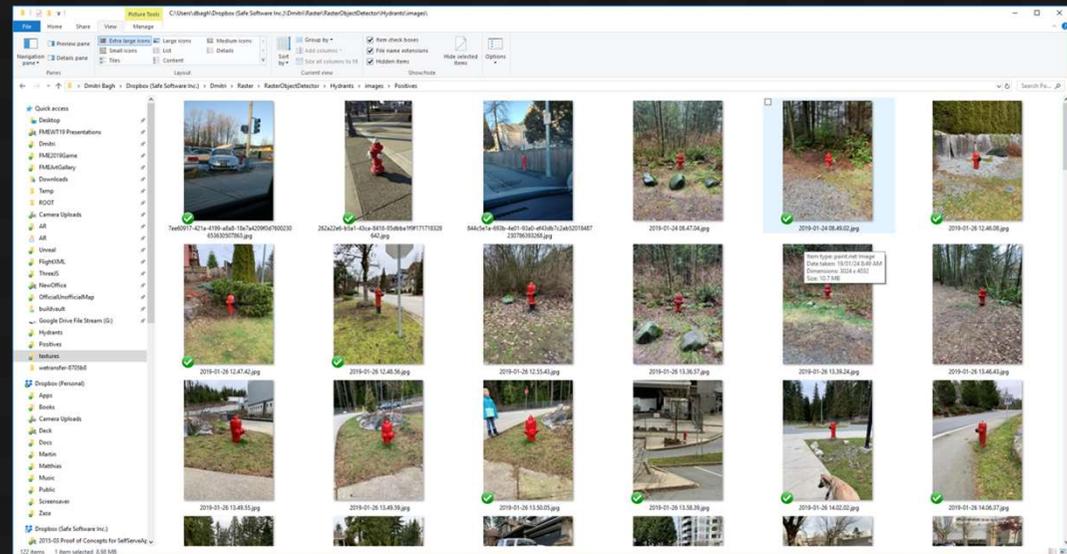
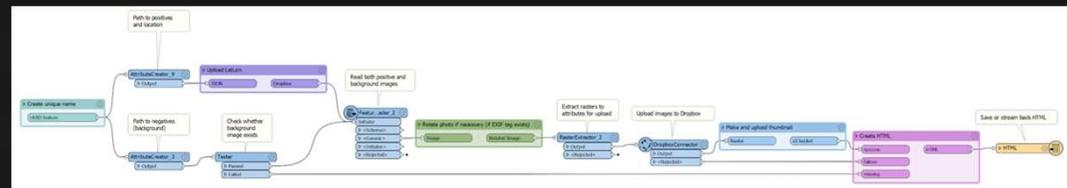
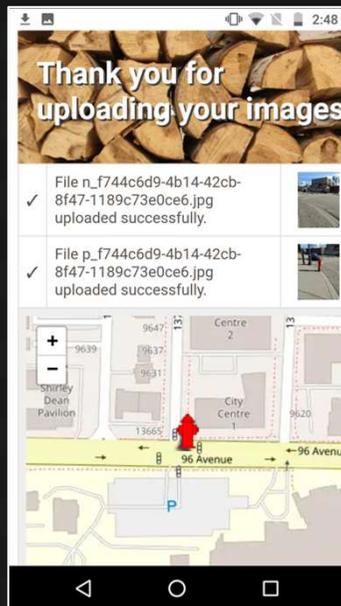
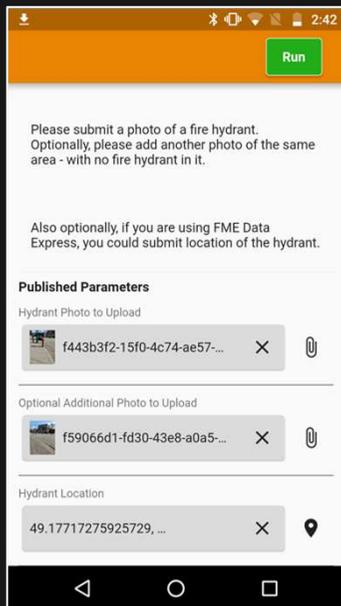
# FME Data Express

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

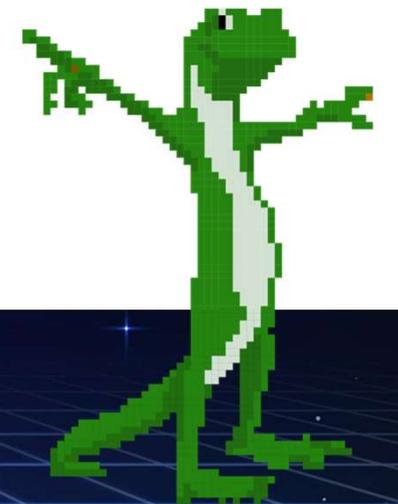


# Example: Hydrant Collector App



## Learn More

- [FME Does Computer Vision](#)
- [DIY Augmented Reality Indoor Mapping for your Venue](#)





Questions?