# Applications of FME in the UK Water Industry

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# PRESENTATION AGENDA

| 1 | Bio |
|---|---|
| 2 | WSP & Severn Trent |
| 3 | Dynamic data management |
| 4 | Delivering intelligence |

Bio

# Bio

- Geographer

- Regulated water industry

- Asset management

- Data management

- Spreading message of FME:

  - WSP UK Community of Practice

  - 3 month secondment to NZ

WSP and Severn Trent

# WSP

- Multi-disciplinary, engineering consultancy
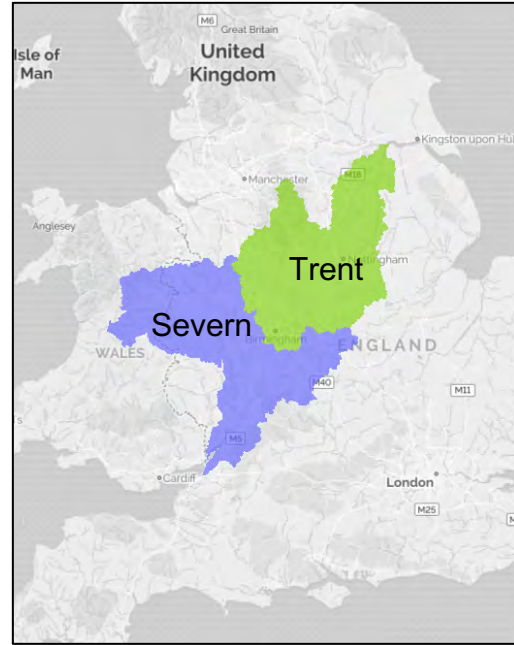


**The Shard & London Bridge Station, UK**



**Kaikōura Earthquake Emergency, NZ**

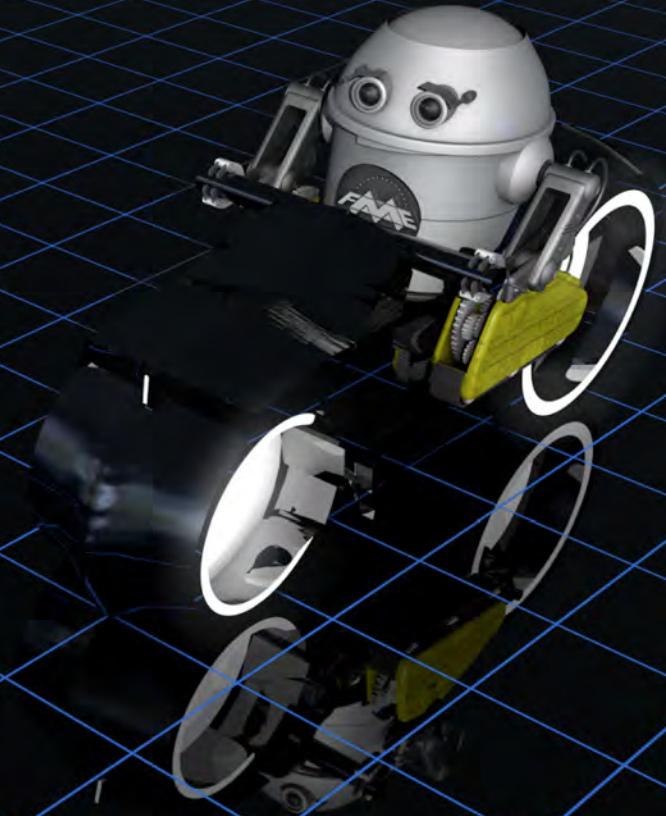- Water infrastructure planning & engineering

# Severn Trent

- Water supply & waste water services

- Population: 11.3M
- Sewerage assets: 1.4M (56,000km)

- £3.3bn capital investment (2015-20)

- Regulated by Ofwat, delivering outcomes.

- Asset Management Plan (AMP) – 5yrs

How can WSP help
Severn Trent achieve
customer, environment
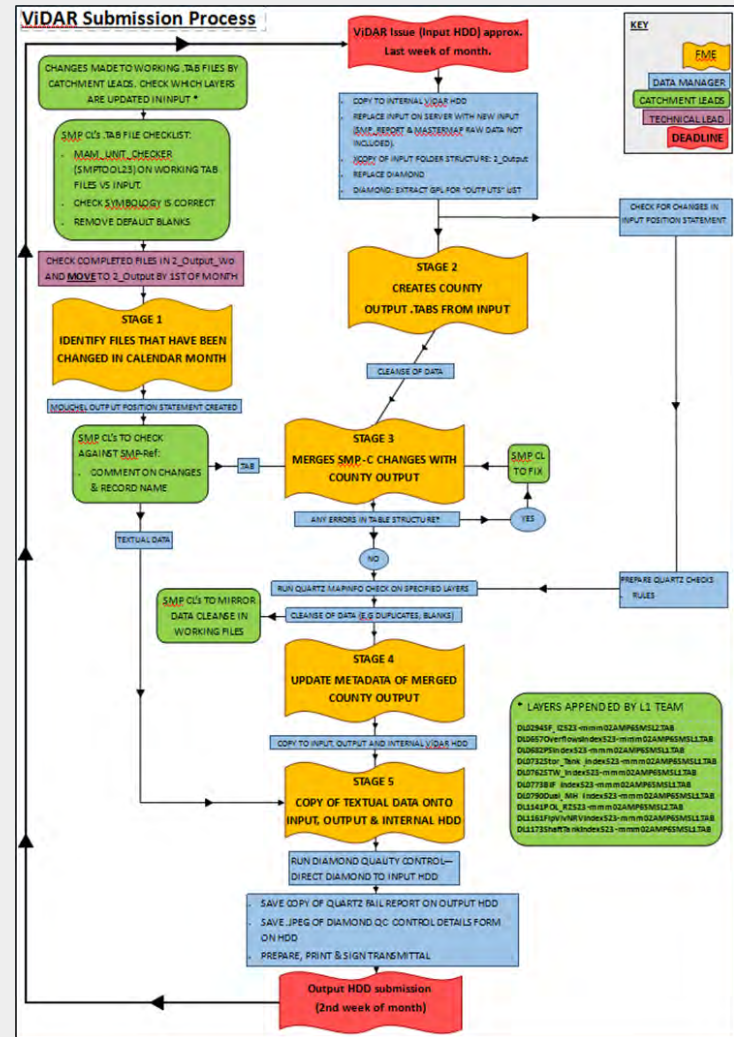and regulatory
commitments?

**Dynamic data management**

# Virtual Data Refresh Cycle
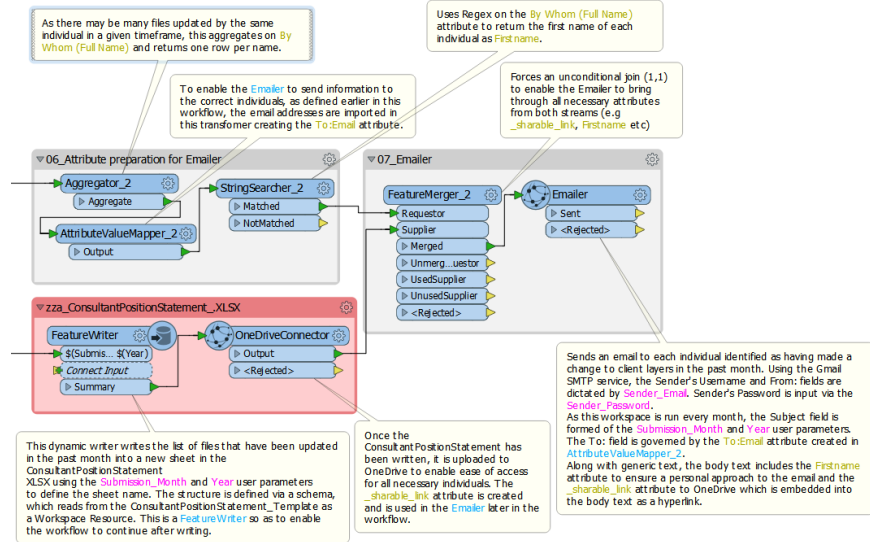
How to manage ever-changing data?

- **Identify**
- **Integrate**
- **Validate**

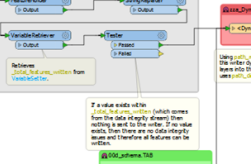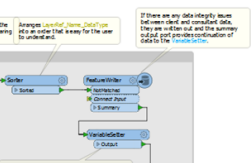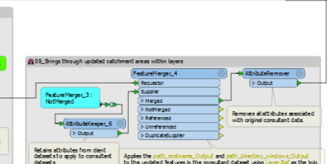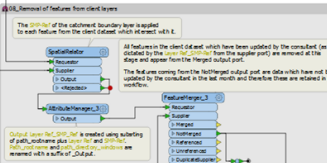# Identify changes in data: who, what, when
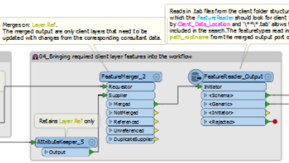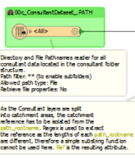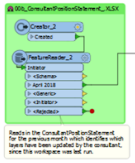
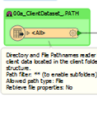# Identify changes in data: who, what, when

- Writes data changes and uploads to OneDrive

- Merges staff details, enabling Emailer to communicate changes and request more info

# Integrate consultant changes into client data

# Integrate consultant changes into client data



- Compares schemas of consultant vs client data

- Writes list of errors out where applicable

- No. of errors used as VariableSetter, passed to writing section

# Integrate consultant changes into client data

- Only writes data out where no integrity issues.

- Dynamic writer w/ Fanout to correct location
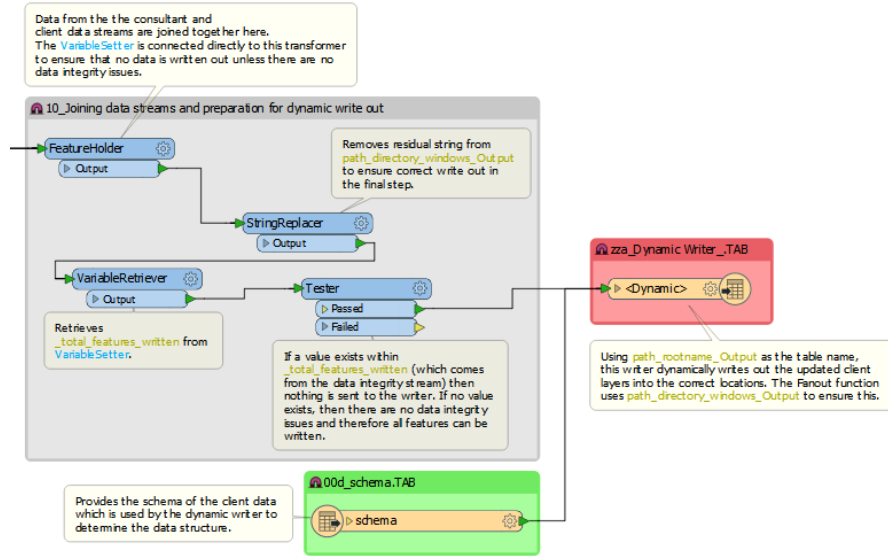
# Validate attributes for spec adherence

- Potentially 100,000k attributes to QA

2019-05-08 09:00:15| 1.7| 0.0|INFORM|FME Session Duration: 1.9 seconds.

# 80%

…efficiency saving: time and cost.

Removes laborious activities from workforce.
Ensures QA and adherence to client spec.
Enables time to think smarter!

WORLD TOUR
2019

Delivering Intelligence

# A need to prioritise investment

- Maintain network serviceability

- 'We will safely take your wastewater away'

- Target high consequence of service failure
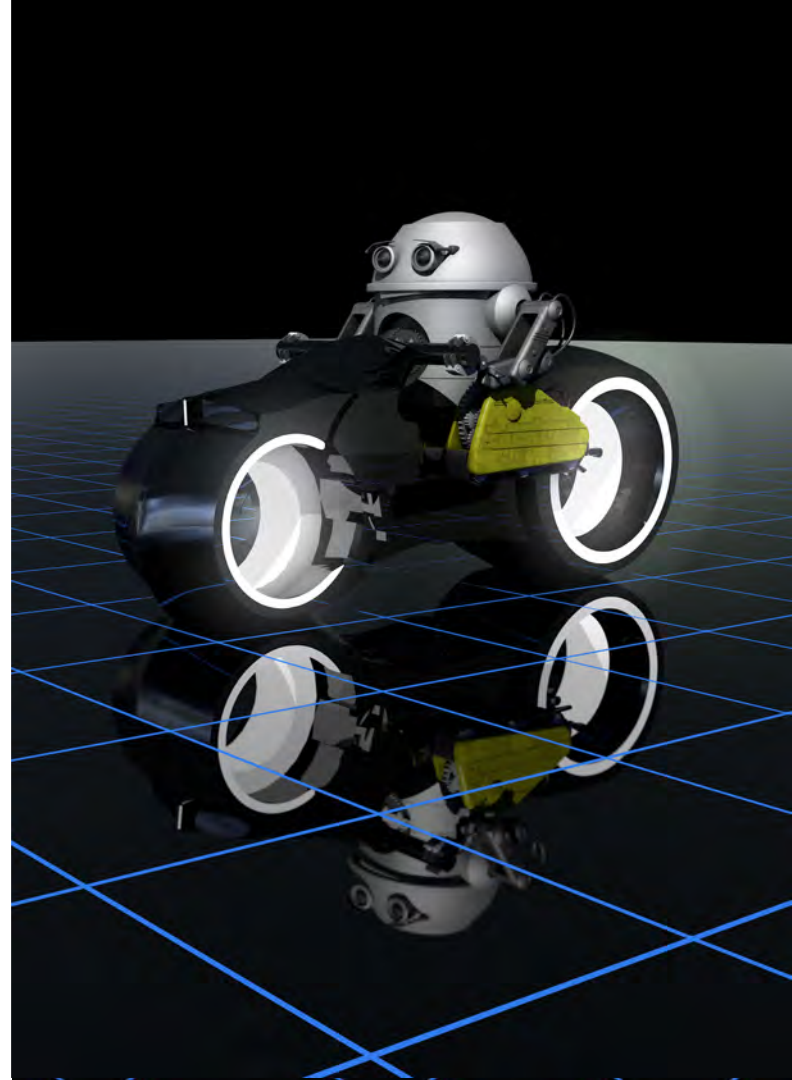
# £20m

Thames Water pollution fine in 2017.
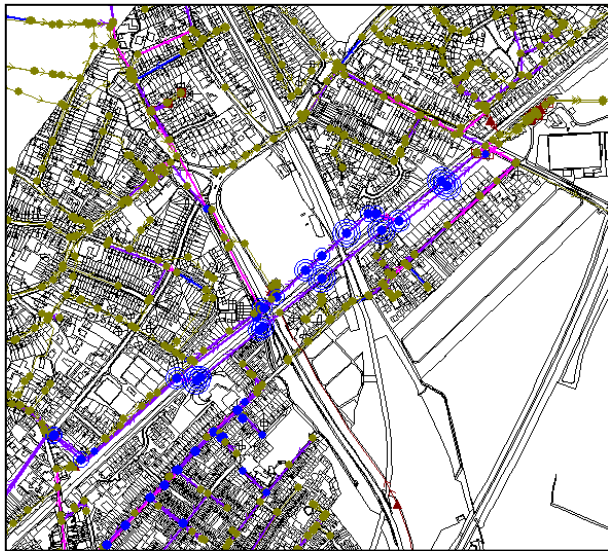
A) 1D flood volume output from hydraulic model

B) 2D representation of flow paths and depths, predicting detriment
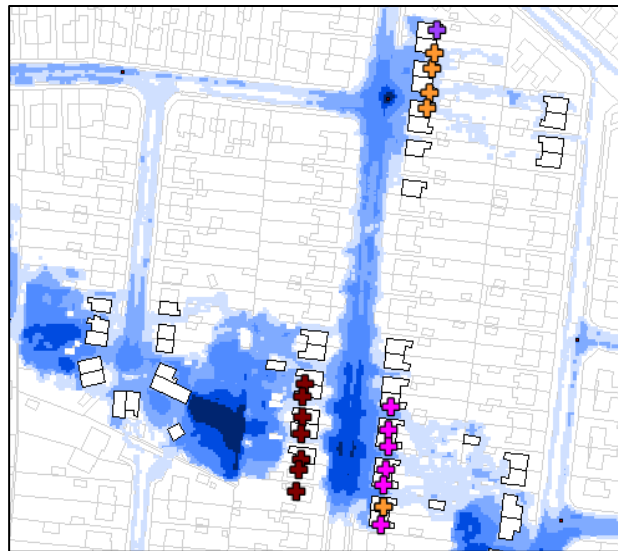
How do we get from
A to B?

# An irreplaceable tool: Pre-process



Flood Risk Mapper software

Topo

Surface Grid

2D model

DTM

Hydraulic parameters

Flood sources

# An irreplaceable tool: Visualisation



1 in 1 Year rainfall event

1 in 10 Year rainfall event

1 in 40 Year rainfall event

Strategic Planning

# Strategic Planning

- Identify predicted flooding 'clusters' to target capital investment at strategic level.



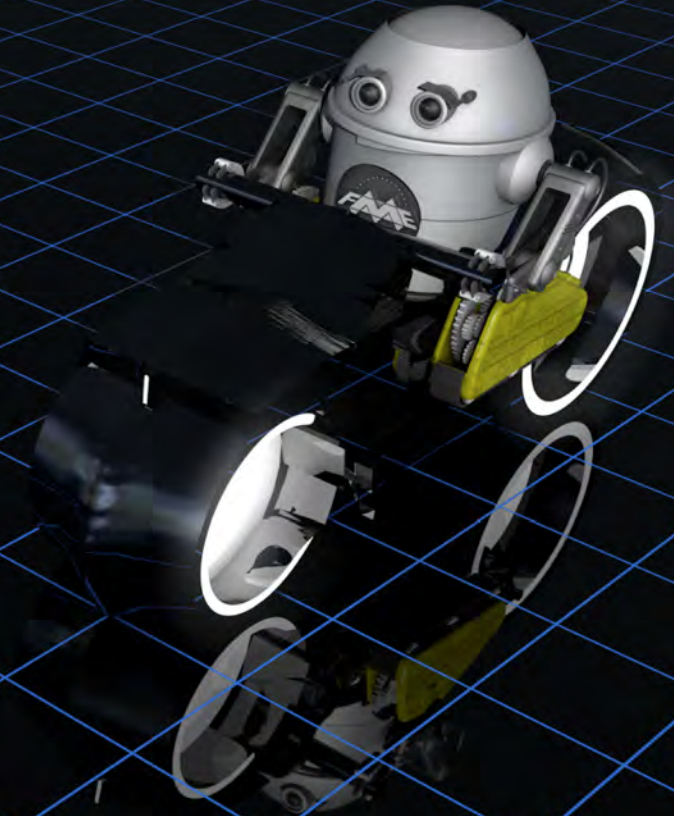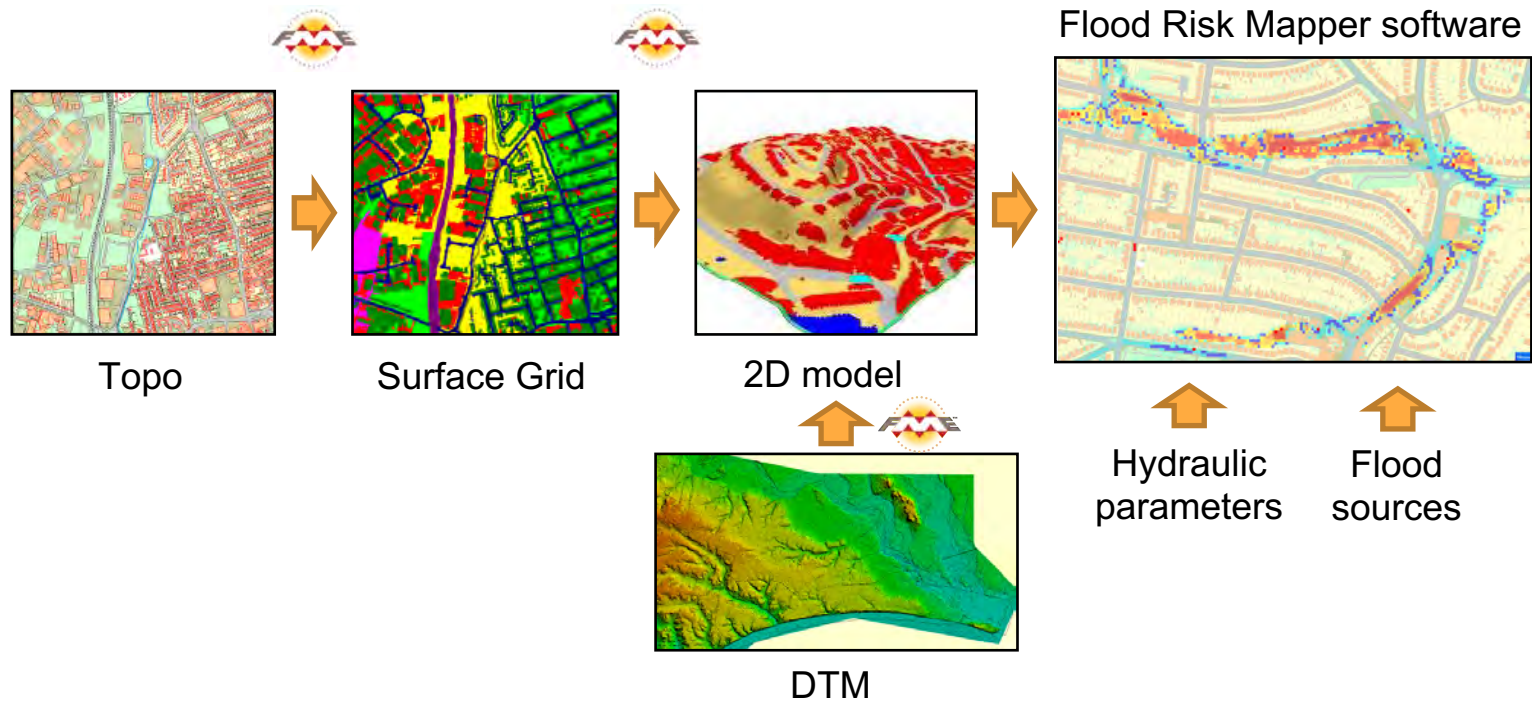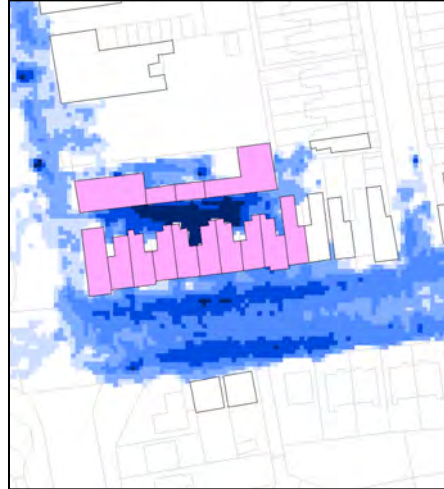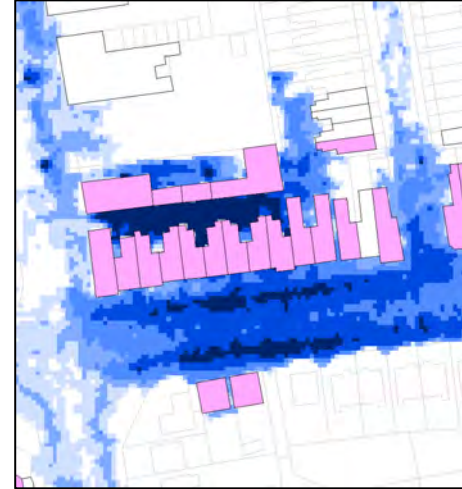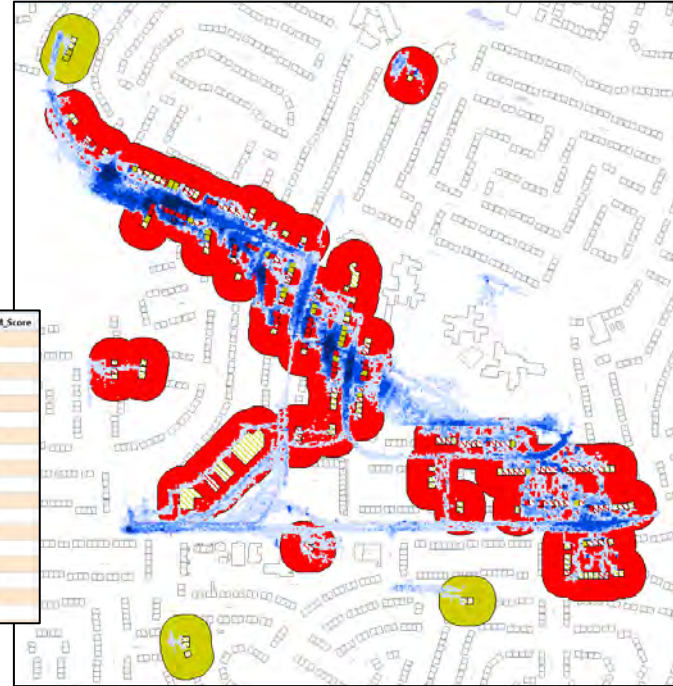| Predicted_1_1 | Predicted_1_2 | Predicted_E_1 | Predicted_E_2 | Predicted_E_1_ST4 | Predicted_E_2_ST4 | 1_1_Score | 1_2_Score | E_1_Score | E_2_Score | E_1_ST4_Score | E_2_ST4_Score | Total_FRM_Score |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 105 | 107 | 29 | 101 | 85 | 52 | 256.62 | 81.855 | 19.111 | 17.574 | 56.015 | 9.048 | 440.223 |
| 55 | 123 | 68 | 94 | 172 | 151 | 134.42 | 94.095 | 44.812 | 16.356 | 113.348 | 26.274 | 429.305 |
| 88 | 75 | 78 | 118 | 3 | 1 | 215.072 | 57.375 | 51.402 | 20.532 | 1.977 | 0.174 | 346.532 |
| 77 | 94 | 40 | 76 | 58 | 35 | 168.188 | 71.91 | 26.36 | 13.224 | 38.222 | 6.09 | 343.994 |
| 47 | 88 | 148 | 243 | 0 | 0 | 114.868 | 67.32 | 97.532 | 42.282 | 0 | 0 | 322.002 |
| 69 | 78 | 105 | 125 | 0 | 0 | 168.636 | 59.67 | 69.195 | 21.75 | 0 | 0 | 319.251 |
| 61 | 84 | 108 | 143 | 0 | 0 | 149.084 | 64.26 | 71.172 | 24.882 | 0 | 0 | 309.398 |
| 63 | 86 | 10 | 9 | 103 | 70 | 153.972 | 65.79 | 6.59 | 1.566 | 67.877 | 12.18 | 307.975 |
| 51 | 70 | 71 | 94 | 29 | 22 | 124.644 | 53.55 | 46.789 | 16.356 | 19.111 | 3.828 | 264.278 |
| 35 | 53 | 86 | 126 | 41 | 37 | 85.54 | 40.345 | 56.674 | 21.924 | 27.019 | 6.438 | 238.14 |
| 29 | 50 | 100 | 223 | 20 | 9 | 70.876 | 38.25 | 65.9 | 38.802 | 13.18 | 1.566 | 228.574 |
| 16 | 66 | 143 | 187 | 8 | 1 | 39.104 | 50.49 | 94.237 | 32.538 | 5.272 | 0.174 | 221.815 |
| 20 | 42 | 107 | 395 | 0 | 0 | 48.88 | 32.13 | 70.513 | 68.73 | 0 | 0 | 220.253 |
| 40 | 50 | 81 | 90 | 0 | 0 | 97.76 | 38.25 | 53.379 | 15.66 | 0 | 0 | 205.049 |
| 26 | 57 | 117 | 117 | 0 | 0 | 63.544 | 43.605 | 77.103 | 20.358 | 0 | 0 | 204.61 |
| 46 | 57 | 42 | 52 | 0 | 0 | 112.424 | 43.605 | 27.678 | 9.048 | 0 | 0 | 192.755 |
| 40 | 50 | 73 | 44 | 0 | 0 | 97.76 | 38.25 | 48.107 | 7.656 | 0 | 0 | 191.773 |
| 33 | 56 | 80 | 72 | 0 | 0 | 80.652 | 42.84 | 52.72 | 12.528 | 0 | 0 | 188.74 |

THANK YOU!

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