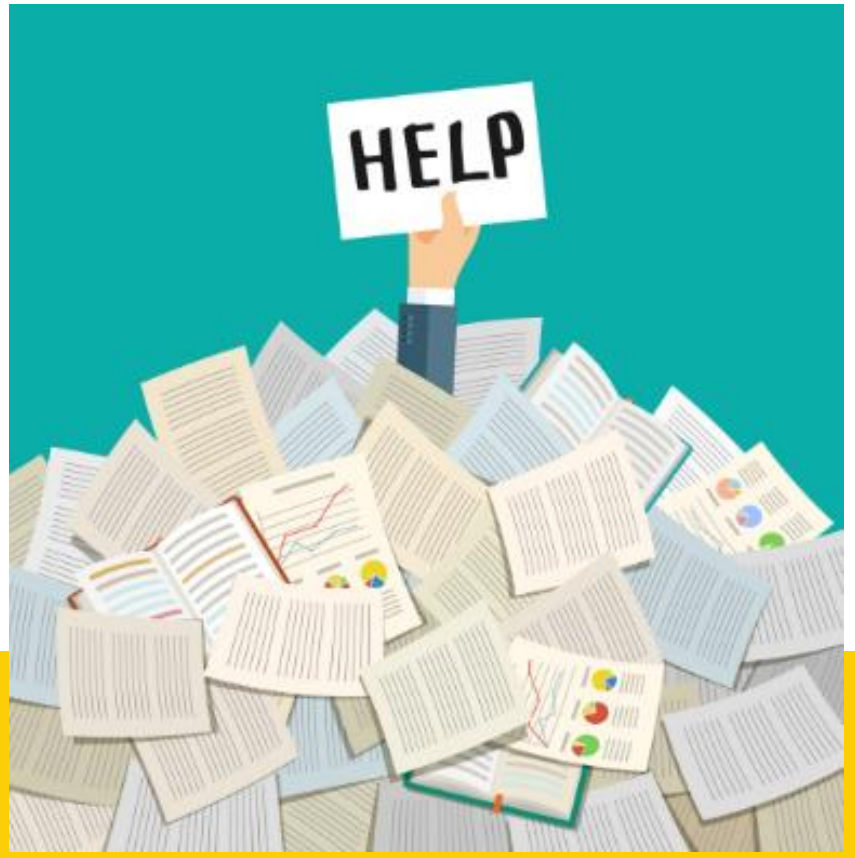
Incident Data Management



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Definitions & cautionary note

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The Incident Data Management Challenge

- The scale
- The complexity
- How do we test it?
- Where do we start?

Oil Spill Response / Emergency / COP Response Data Model

DRAFT - version 3.2 (28th October 2016)

Authors: Nick Lake, Ryan Brothers
Reviewers: Jeff Arnett, Alison Muratore, Bart Hulshof, Mark Jones

General / Common

Most feature classes in this model have a common structure as follows:

```
feature_class_name
  Shape (Point / Polyline / Polygon)
  Display_Status (DOMAIN)
  Response_Status (DOMAIN)
  Operational_Period_Start (DateTime)
  Operational_Period_End (DateTime)
  Last_Update (DateTime)
  Updated_By (String)
  ICS_213 (string)
  Assigned_Team (string)
  ID (string)
  Label (string)
  Comments (string)
  Incident_Name (string)
  ...
```

WHERE

Shape	The geometry
Display_Status	A domain that indicates if the feature occurred in the past, or applies to the current or future operational period
Response_Status	A domain that indicates if the feature represents a planned or actual activity
Operational_Period_Start	The start date and time of the operational period to which the feature applies. If a feature has value acquisition, one might do: Just set the start and end time to the same time of the acquisition.
Operational_Period_End	The end date and time of the operational period to which the feature applies.
Last_Update	The date and time that the feature was last updated.
Updated_By	The UserID of the person who last updated the feature.
ICS_213	A reference to any ICS form (i.e. MR, RR or OR from which the underlying information was obtained for this feature. (maybe too much)
ID	Any identifier for this feature.
Label	Any label to be displayed with the feature.
Comments	Any additional comments.
Incident_Name	The name of the incident. This is required as legacy incidents may need to be stored for remediation or legal purposes.
Assigned_Team	Used to describe the assignment of a strike team, task force or any other logical grouping of resources to a particular task or activity.

COMMON DOMAINS:

```
DOMAIN: Area_UNITS          DOMAIN: Volume_UNITS
  sf                          cubic meters
  sm                          cubic feet
  ha                          liters
  acre                        gallons
  hectare                     barrels
  square miles
  square miles/ sec

DOMAIN: Length_UNITS        DOMAIN: Rate_UNITS
  m                           m / s
  km                          m / sec
  ft                          km / h
  yard                        ft / sec
  mile                        miles / s
  nautical miles              miles / h
                              knots

DOMAIN: Display_Status      DOMAIN: Response_Status
  0 - Past                    0 - Planned
  1 - Current                 1 - Actual
  2 - Future

DOMAIN: Boolean_Status
  0 - No
  1 - Yes
```

Response Organisation, Assets & Resources

Describes the structure and set up of a response organisation, including all available response resources and their past, current and planned locations. It also includes general or generic feature types that are important contextually to the response. This is a functional substitute for "COP Editable Layers".

```
Response_Resources
  Defines response resources and assets. The type
  of resource or asset is defined using subtypes
  (i.e aviation, marine, infrastructure etc)

  Shape (Point / Polyline / Polygon)
  Display_Status (DOMAIN)
  Response_Status (DOMAIN)
  Operational_Period_Start (DateTime)
  Operational_Period_End (DateTime)
  Last_Update (DateTime)
  Updated_By (String)
  ICS_213 (String)
  Resource_Type (DOMAIN)
  Type (DOMAIN)
  ID (string)
  Label (string)
  Comments (string)
  Purpose (string)
  Incident_Name (string)
```

The response resources subtypes are defined below. The subtype defines a thematic segregation based on the domain value of the "Resource_Type" field. The values should not be considered exhaustive and may be modified or added to as necessary.

```
General_Resources          (SubType)
Aviation_Resources         (SubType)
Marine_Resources           (SubType)
Infrastructure_Facilities  (SubType)
Generic - dropped          (SubType)

DOMAIN: General_Resources_Types
  General response resources and assets described
  using typical ICS terminology

  Airport Runway Strip
  Airspace Area
  Helicopter Landing Area
  Staging Area
  Operations Operating Area
  Response Operations Center
  Area Contamination Control
  Boom
  Dock
  Vessel
  Vessel Tender
  Helicopter
  Fixed Wing
  Drone
  Other Small Vessel
  Small Craft Staging Area
  Pier
  Commercial Port of Refuge
  Port of Refuge
  Anchorage
  Aquatic Habitat Restoration Staging Area
  Recreation Boating
  Protected Marine Habitat (MPA)
  ATON
  Drift Aid
  Fuel Barge
  Floating Hotel
  LightVessel
  Buoy Tender
  Tank Barge

DOMAIN: Aviation_Resources_Types
  Aviation resources that are either participating in the
  response, are involved in the incident, are potentially
  available for tasking into the response or need to be
  considered in some manner. In many cases the workflow
  position of aviation resources may be provided instead
  by a typical vessel tracking feed such as AIS.

  Helicopter
  Fixed Wing
  Drone
  Other Small Vessel
  Small Craft Staging Area
  Pier
  Commercial Port of Refuge
  Port of Refuge
  Anchorage
  Aquatic Habitat Restoration Staging Area
  Recreation Boating
  Protected Marine Habitat (MPA)
  ATON
  Drift Aid
  Fuel Barge
  Floating Hotel
  LightVessel
  Buoy Tender
  Tank Barge

DOMAIN: Marine_Resources_Types
  Marine resources that are either participating in the
  response, are involved in the incident, are potentially
  available for tasking into the response or need to be
  considered in some manner. In many cases the workflow
  position of marine resources may be provided instead
  by a typical vessel tracking feed such as AIS.

  Response Vessel
  Shoreward Vessel
  Shoreline Vessel
  Shallow Vessel
  Small Vessel
  Vessel Tender
  Helicopter
  Fixed Wing
  Drone
  Other Small Vessel
  Small Craft Staging Area
  Pier
  Commercial Port of Refuge
  Port of Refuge
  Anchorage
  Aquatic Habitat Restoration Staging Area
  Recreation Boating
  Protected Marine Habitat (MPA)
  ATON
  Drift Aid
  Fuel Barge
  Floating Hotel
  LightVessel
  Buoy Tender
  Tank Barge

Response_Stations
  Geographic regions that are defined in the response
  organisation (e.g. operations divisions). Use ICS Labels/
  Comments for Division name and type of division.

  Shape (Point, polyline, Polygon)
  Display_Status (DOMAIN)
  Response_Status (Response_Status)
  Operational_Period_Start (DateTime)
  Operational_Period_End (DateTime)
  Last_Update (DateTime)
  Updated_By (String)
  ICS_213 (string)
  Type (DOMAIN)
  ID (string)
  Label (string)
  Comments (string)
  Incident_Name (string)

DOMAIN: Aviation_Resources_Types
  Aviation resources that are either participating in the
  response, are involved in the incident, are potentially
  available for tasking into the response or need to be
  considered in some manner. In many cases the workflow
  position of aviation resources may be provided instead
  by a typical vessel tracking feed such as AIS.

  Helicopter
  Fixed Wing
  Drone
  Other Small Vessel
  Small Craft Staging Area
  Pier
  Commercial Port of Refuge
  Port of Refuge
  Anchorage
  Aquatic Habitat Restoration Staging Area
  Recreation Boating
  Protected Marine Habitat (MPA)
  ATON
  Drift Aid
  Fuel Barge
  Floating Hotel
  LightVessel
  Buoy Tender
  Tank Barge

Team_Assignment
  Defines the typical areas of operations, influence or
  responsibility for a field "team". A team is a loose construct
  that implies the combination or pooling of resources and
  need not necessarily be strictly geographically assigned.
  It is included in this model such that the notion of a "team"
  or resource pool can be assigned to specific actual or
  planned operational tasks through the "Assigned_Team"
  field.

  Shape (Point, polyline, Polygon)
  Display_Status (DOMAIN)
  Response_Status (Response_Status)
  Operational_Period_Start (DateTime)
  Operational_Period_End (DateTime)
  Last_Update (DateTime)
  Updated_By (String)
  ICS_213 (string)
  ID (string)
  Label (string)
  Comments (string)
  Incident_Name (string)

DOMAIN: Infrastructure_Facilities_Types
  Infrastructure or facilities that are involved in the incident
  / response or need to be considered in some manner.

  Airport
  Port
  Harbor
  Anchorage
  Boat Ramp
  Marina
  Dock
  Pier
  Wharf
  Boat Yard
  Boat Repair
  Boat Maintenance
  Boat Storage
  Boat Rental
  Boat Sales
  Boat Fuel
  Boat Pump Out
  Boat Wash
  Boat Launch
  Boat Hoist
  Boat Lift
  Boat Ramp
  Boat Trailer
  Boat Trailer Parking
  Boat Trailer Storage
  Boat Trailer Repair
  Boat Trailer Sales
  Boat Trailer Rental
  Boat Trailer Wash
  Boat Trailer Fuel
  Boat Trailer Pump Out
  Boat Trailer Hoist
  Boat Trailer Launch
  Boat Trailer Lift
  Boat Trailer Ramp
  Boat Trailer Dock
  Boat Trailer Pier
  Boat Trailer Wharf
  Boat Trailer Marina
  Boat Trailer Boat Ramp
  Boat Trailer Boat Launch
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  Boat Trailer Boat
```

1 Aerial Surveillance Flight

- From 1 basic overflight, no video, no sensors:

Output	Approx. Size	Total per flight
Report	2.5 MB	1
Track shapefiles	600 KB	1 set
Track KMZ	2 MB	1
Photos (original)	2.8 MB	50 – 100
Photos (compressed)	500 KB	50 – 100

- That's between 170MB and 335MB of data per flight.

Aerial Surveillance

3 flights/day =

750 MB

On Average
250MB/flight

90 day response =

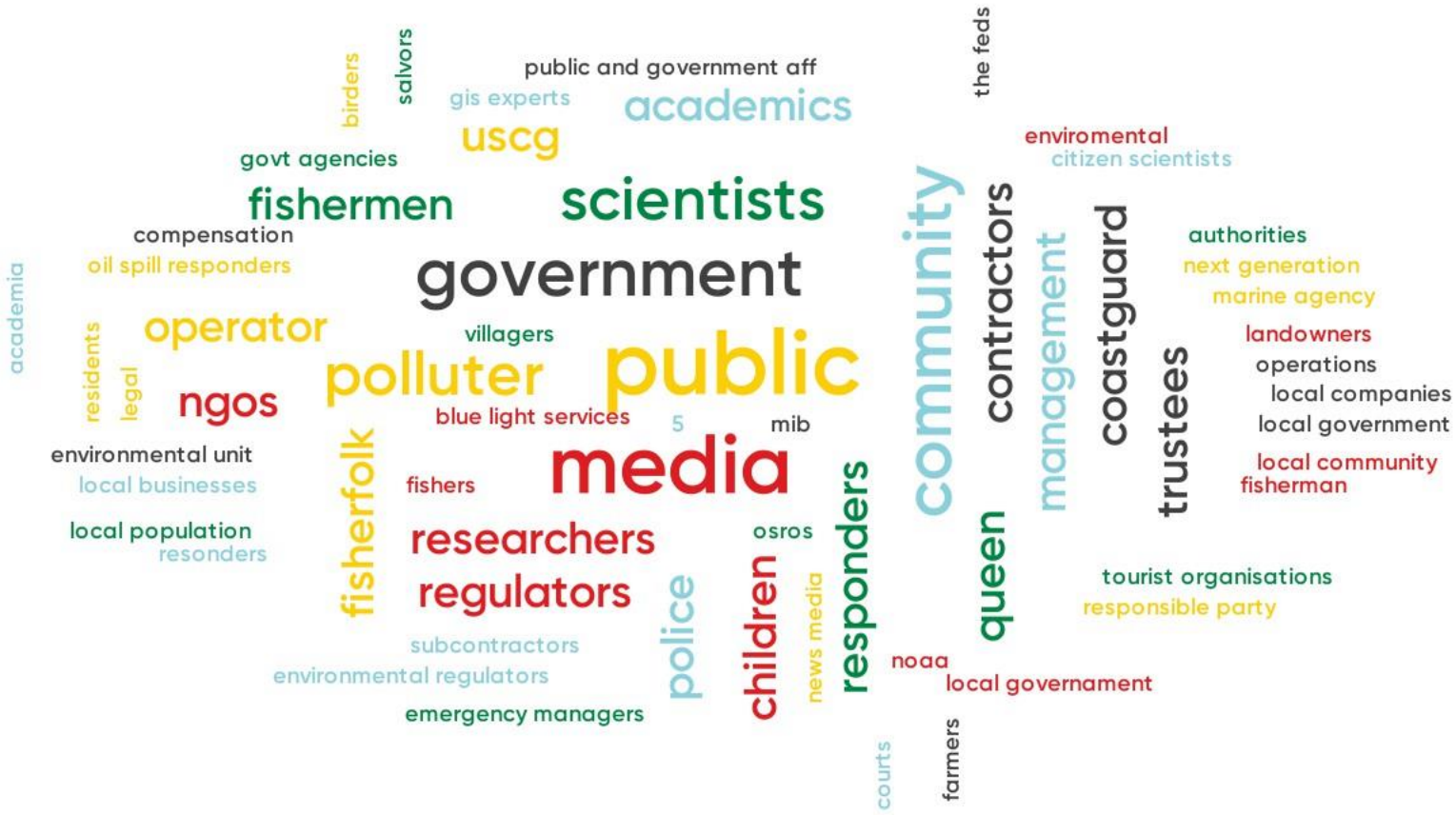
65GB

270 Reports
270 Track logs
> 20,000 photos

What types of data do we collect in an incident?

149

Which stakeholders need to be involved in incident data management?



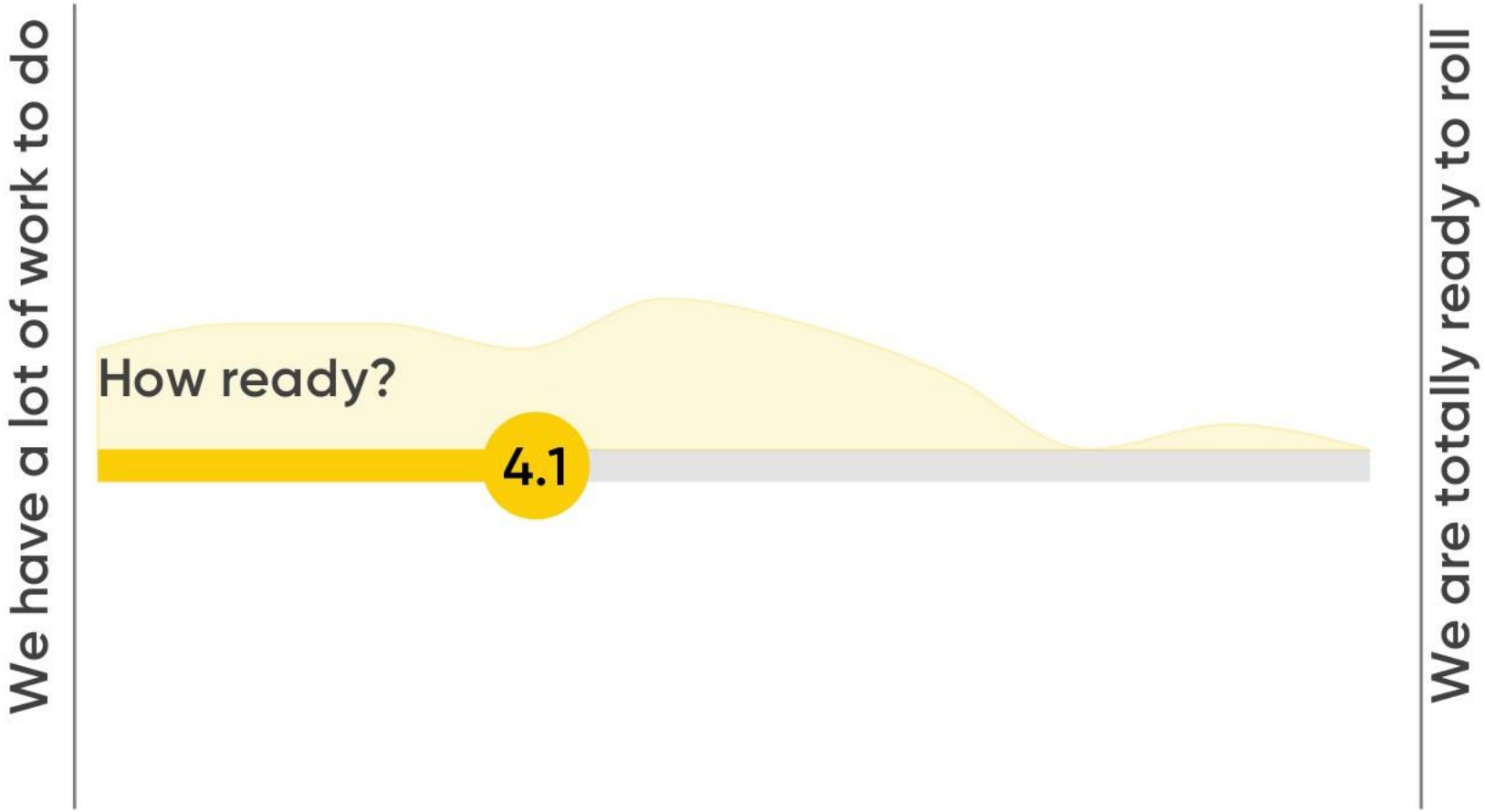
Deliverables

1. Data Collection and Management Plan Framework/Template
2. Defined roles and responsibilities within the IMT
3. Data Storage/repository for non-geo spatial data
4. Data handover plan – IMT to Business Unit
5. Guidance for contractors on data management, storage and handover
6. Guidance for Business Units on Group and local requirements for data storage.

Next Steps

- Can this be addressed as an industry-wide challenge?
- Testing in bite-sized pieces
- Ensuring our response contractors and parnters are aware of how we need data collected, stored and transferred.

How ready is your organisation to analyse, process and store mutliple streams of data during a major incident?



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