

Application of learning from Fukushima Daiichi to severe accident management for a major fuel cycle facility.

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<http://www.sellafieldsites.com/>

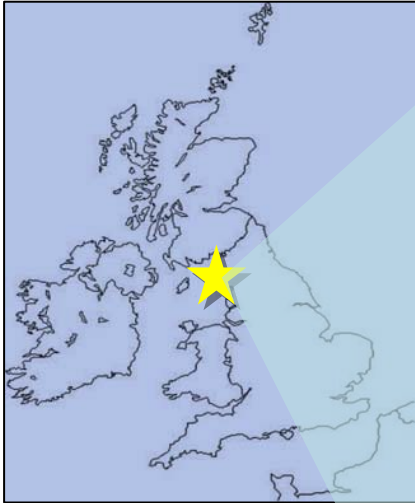
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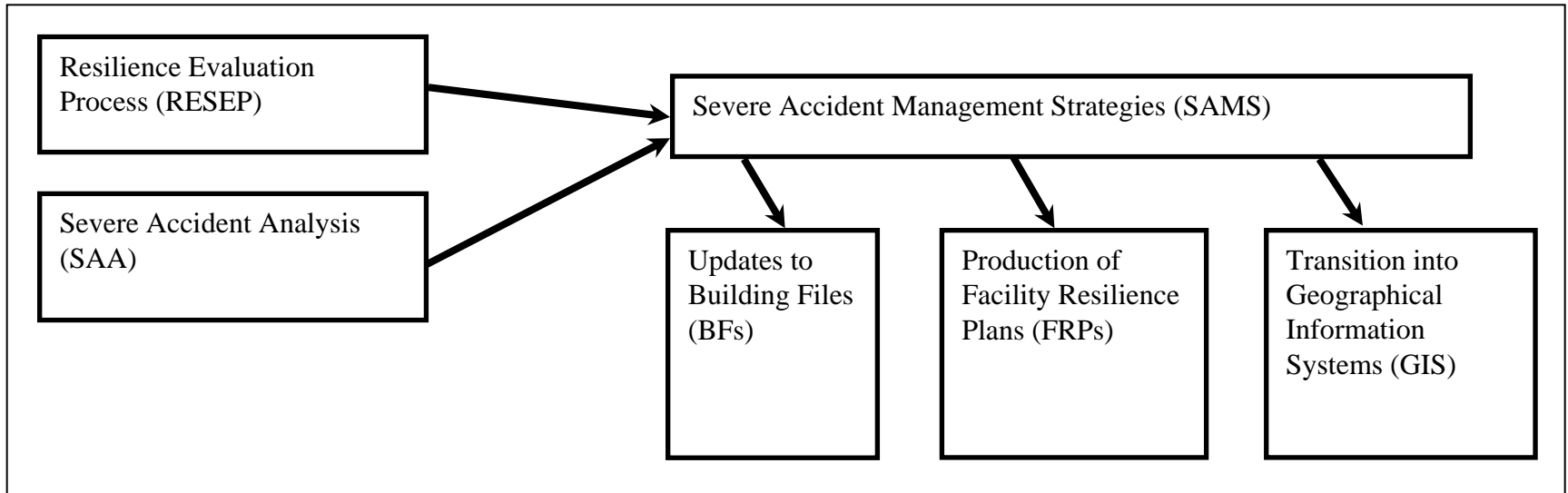
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Sellafield – Location and Context



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Severe Accident Management Strategies (SAMS) - Context



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Nuclear Safety Principles

- Confirming the Critical Safety Functions (CSF)
 - Containment
 - Cooling
 - Criticality
 - Control
 - Shielding
- Hierarchy of Hazard Reduction
 - Remove
 - Prevent
 - Mitigate
 - Monitor

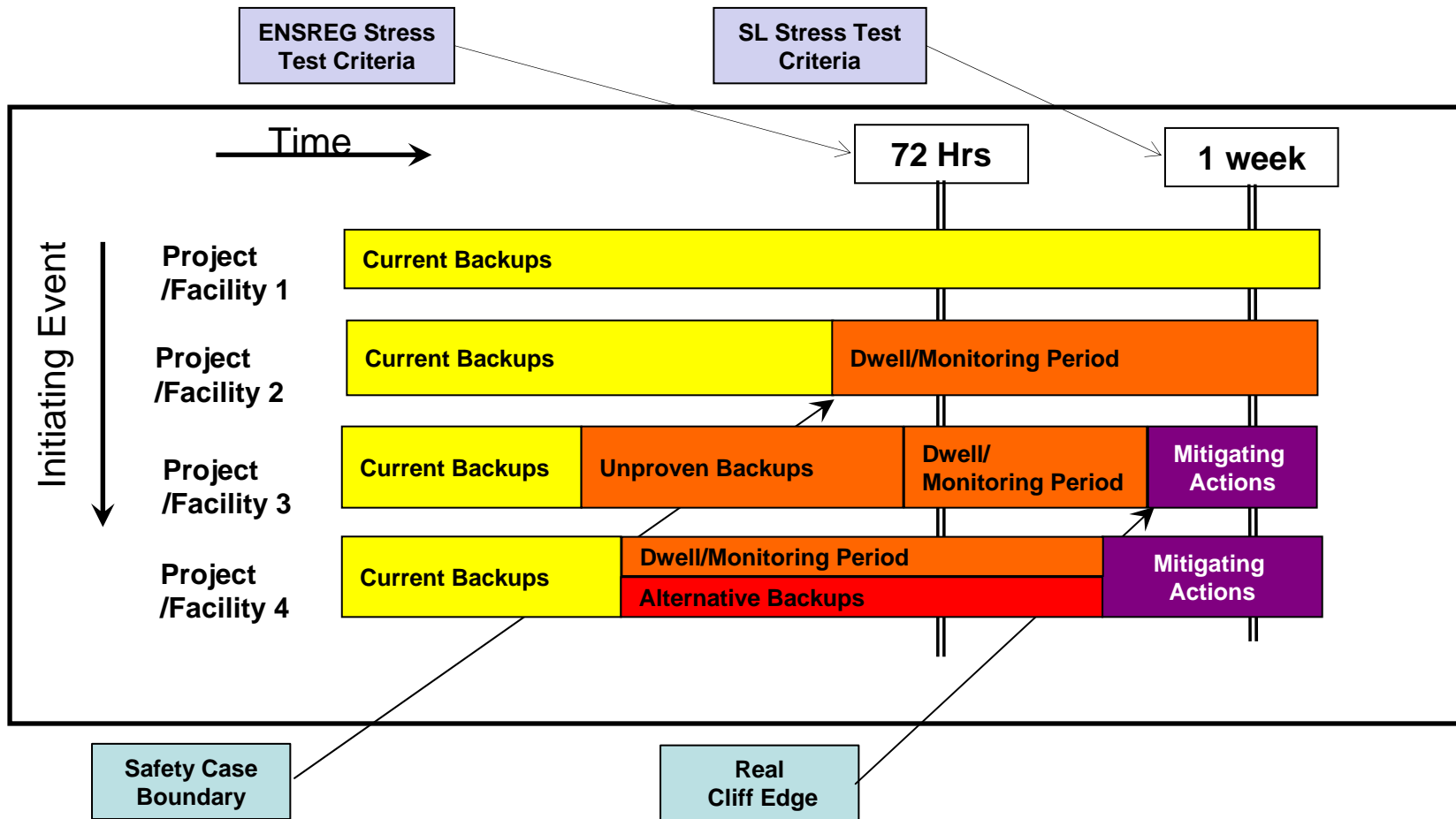
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Resilience Evaluation Process (RESEP)

- Provides a structured approach for the whole site
- Allows for progression of events from single plant to whole site
- Searches for and identifies 'cliff edge' effects
- Develops timelines for critical safety functions (CSF)
- Addresses infrastructure requirements on and off site
- Identifies opportunities for resilience enhancement

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Timelines - Conceptual



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New Response Equipment



New fully equipped
ACP trailer



Submersible
pumps



New
diesel
powered
generator



New diesel
powered
Lighting tower

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Work Completed - Selected Examples

- Emergency Cooling Water (ECW) system
 - ECW hoses placed in correct positions & added to tracking system
 - Individually, physically tested 350+ fire hose connection points
 - ECW pipework labelled at short intervals in black bands for identification
 - New version of the emergency cooling water operating instruction developed



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Work Completed - Selected Examples

- Backup Electrical Power systems
 - Fitted signs to outside of building, clearly identifying location of mobile diesel generator connections points
 - Organised inspection of portable diesel generator hook up points then physically tested mobile diesel alternator at each emergency hook up point to ensure accessibility
 - Full load test of standby generator



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Shared Learning and Co-operation

- Joint UK industry working group, established by the UK Safety Directors' Forum.
- Weekly co-ordination discussion, among major operators
- WANO interactions
- Support to IAEA
- Joint working with overseas fuel cycle facility operators
- Sellafield briefings

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Fukushima Working Group



Wider learning → better outcomes

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Geographical Information Systems (GIS)

business & specialist maps

interactive maps covering welfare, emergency, safety, infrastructure, land, utilities + more.

panoramic imagery

see your object or location of interest via interactive streetview images

grids

sellafield, olivers, ordnance survey + more

basemaps

switch between site plan, aerial photo, hybrid, ordnance survey

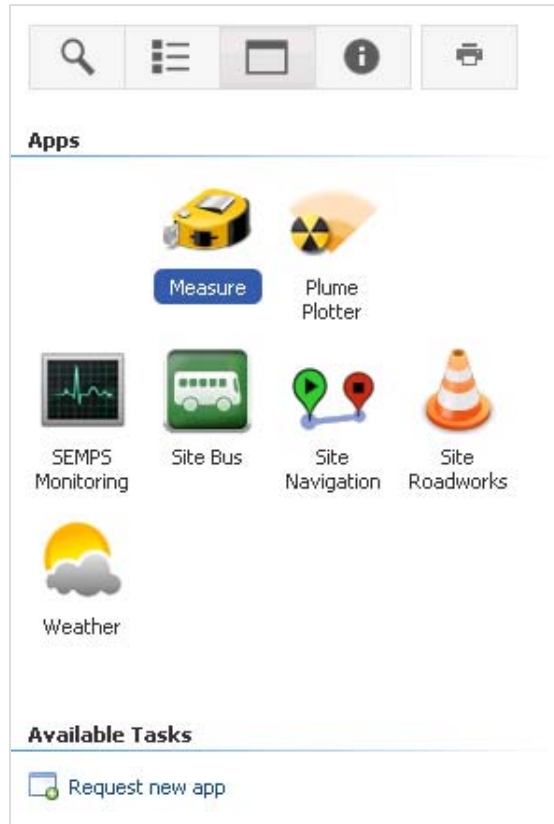


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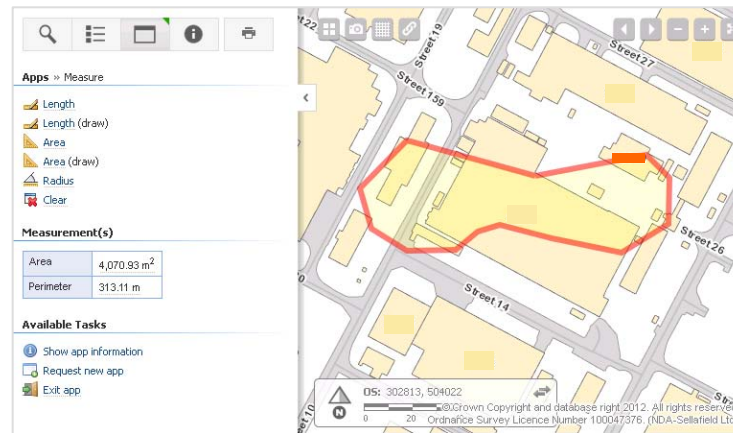
Geographical Information Systems (GIS)

integrated apps

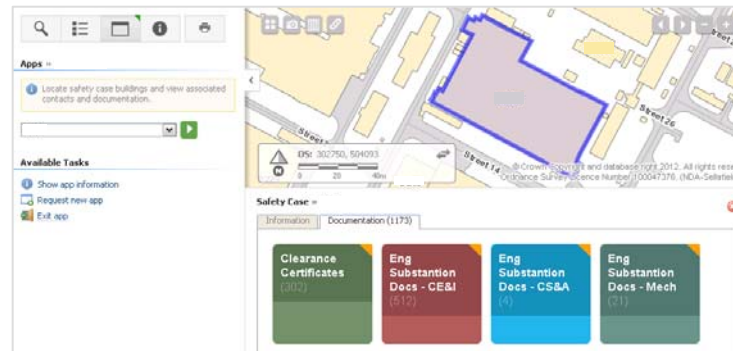
apps framework enabling extension of functionality for designated users groups



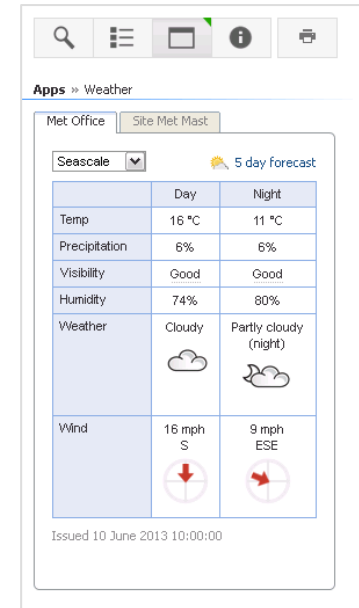
The screenshot shows a mobile application interface with a top navigation bar containing icons for search, list, home, information, and print. Below the bar is a section titled "Apps" with a grid of icons: a measuring tape for "Measure", a radiation symbol for "Plume Plotter", a heart rate monitor for "SEMPs Monitoring", a bus for "Site Bus", a location pin for "Site Navigation", and a traffic cone for "Site Roadworks". At the bottom, there is a "Weather" icon and an "Available Tasks" section with a "Request new app" button.



The screenshot shows the "Measure" app interface. It features a top navigation bar and a central map with a red polygon drawn over a building. On the left, there is a sidebar with "Apps" (Length, Length (draw), Area, Area (draw), Radius, Clear) and "Measurement(s)" (Area: 4,070.93 m², Perimeter: 313.11 m). Below the map, there are "Available Tasks" (Show app information, Request new app, Exit app) and a "Safety Case" section with buttons for "Clearance Certificates (302)", "Eng Substation Docs - CE&I (517)", "Eng Substation Docs - CS&A (9)", and "Eng Substation Docs - Mech (11)".



The screenshot shows the "Safety Case" app interface. It features a top navigation bar and a central map with a blue polygon drawn over a building. On the left, there is a sidebar with "Apps" (Locate safety case buildings and view associated contracts and documentation) and "Available Tasks" (Show app information, Request new app, Exit app). Below the map, there are "Available Tasks" and a "Safety Case" section with buttons for "Clearance Certificates (302)", "Eng Substation Docs - CE&I (517)", "Eng Substation Docs - CS&A (9)", and "Eng Substation Docs - Mech (11)".

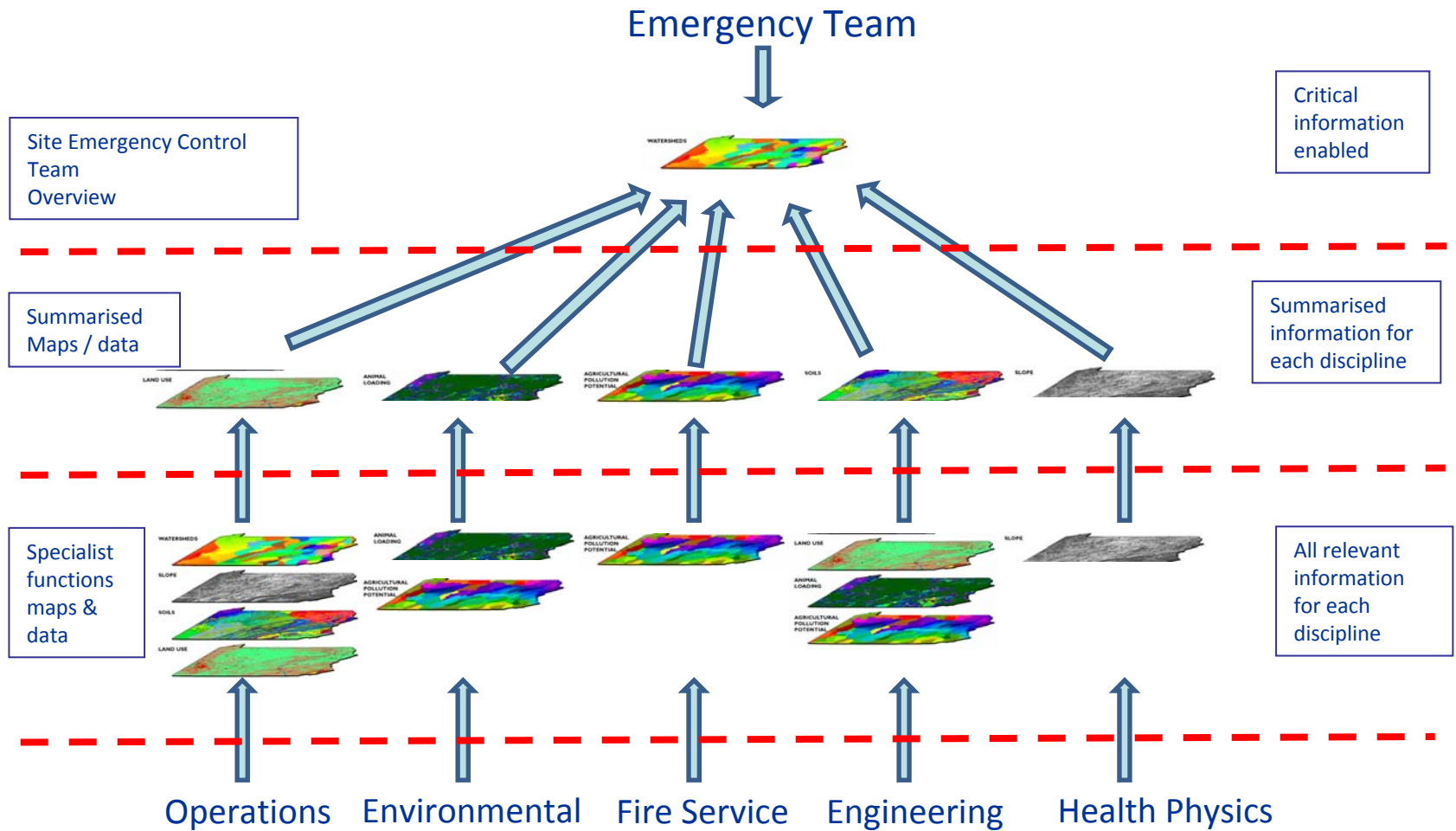


The screenshot shows the "Weather" app interface. It features a top navigation bar and a central weather forecast table. The table has columns for "Day" and "Night" and rows for "Temp", "Precipitation", "Visibility", "Humidity", "Weather", and "Wind". Below the table, there is a "Issued 10 June 2013 10:00:00" timestamp.

	Day	Night
Temp	16 °C	11 °C
Precipitation	6%	6%
Visibility	Good	Good
Humidity	74%	80%
Weather	Cloudy	Partly cloudy (night)
Wind	16 mph S	9 mph ESE

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Geographical Information Systems (GIS)



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Concluding Remarks

- For legacy facilities the current focus on accelerated hazard reduction remains paramount
- Emphasis on wider learning – across industry – has provided benefits
 - Sharing ideas + developing connectivity
 - Coordinated responses to ‘industry’ recommendations
- This is an important opportunity to build on existing experience in Emergency Preparedness
- Great benefit in this work from working with highly skilled and experienced suppliers, as well as with subject matter experts from each plant.

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