Value Chain Mapping

Flood Management Use Case

The Added Value of 3D Geo-information

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Agenda

- Purpose: why look at flood management?
- Approach: what we did.
- Results: what we achieved
  - Value chain
  - Qualitative Benefits
  - Reference material

Why Flood Management?

- Number of incidents across Europe have increased in frequency and intensity in recent years
  - High public profile, so politically important
  - Strongly linked to climate change
- The problem is geo-centric
  - The “where” question is central to effectively planning and reducing risk
- It requires a 3D (and arguably) a 4D information base
- The damage and losses of floods are economically very significant
- The response requires choices
  - It is too expensive to comprehensively protect all vulnerable areas
- In order to make informed choices about what actions to take and where, it is necessary to understand the relative costs and benefits

“Main losses in France are due to floods” - CCR

Caisse Centrale de Réassurance (CCR), a public reinsurer

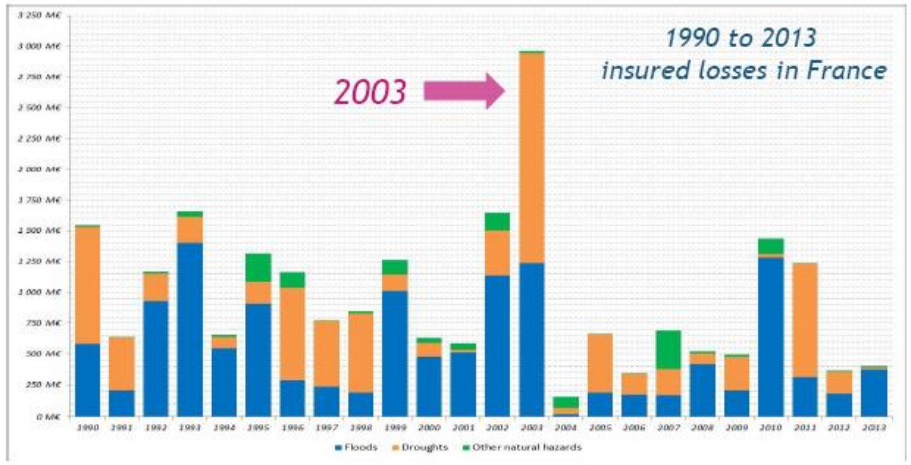
- Natural Disaster compensation scheme
- Impact models for flood, drought, storm surge

In France, the Nat Cat scheme covers the insured losses

- Following a municipal-level recognition
- For direct damages and business interruption on property

Main losses are due to

- Floods
- Droughts
- Storm surges
- Cyclonic winds

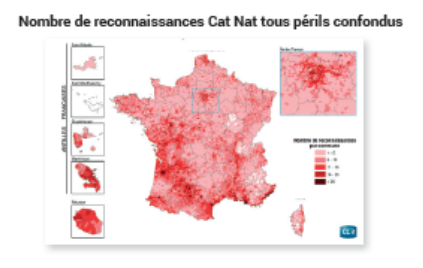


Technical Studies - Public Reinsurance

26/10/2016 Workshop EuroSDR @ IGN 2

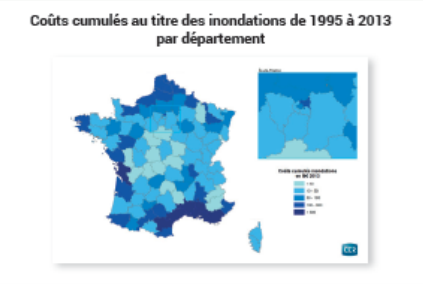
BILAN 1982 – 2015 : CHIFFRES CLÉS

CARTE DES ARRÊTÉS CAT NAT DEPUIS 1982



La **quasi-totalité des communes françaises** a été reconnue au moins une fois

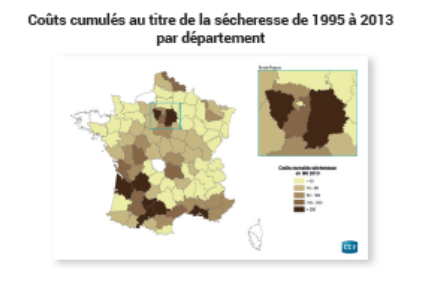
FOCUS INONDATIONS / SÉCHERESSE



521 millions d'euros / an en moyenne de sinistralité inondations

Le Sud, le Nord de la France et la **côte atlantique** particulièrement touchés

Cas de l'Outre-mer 3,5% du montant de la sinistralité du marché français (1,8% des primes Cat Nat)



368 millions d'euros / an en moyenne de sinistralité sécheresse.

L'Ile-de-France et le **Sud-Ouest** particulièrement touchés

https://www.ccr.fr/-/bilan-cat-nat-1982-2015

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Scope of Use Case

- **Costal flooding : tsunami, combination of large tide / strong swell / strong wind**

Xynthia storm (53 dead people in Fra
February 27th 28th 2010

3

- **Overflowing rivers (Seine, Loire, Rhône, etc.)**

Alexander IIIrd Bridge, Paris June

4

- **Floods by runoff (combination of heavy rains / storms and relief)**

Nîmes (1988), Vaison-la-Romaine (19
'2010) ,Alpes-Maritimes (2015) etc

- **Floods by groud water level rises**

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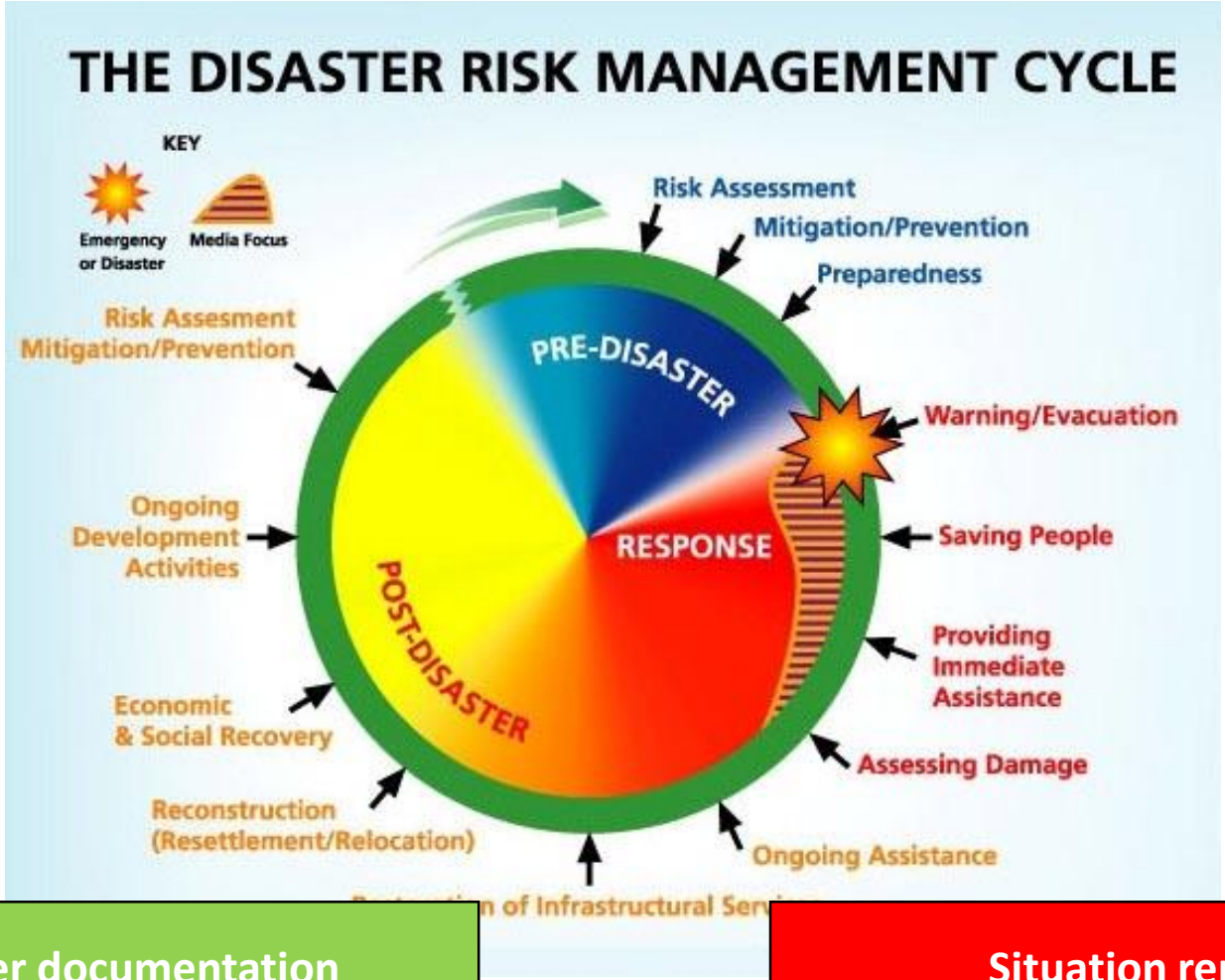
Disaster Risk Management Cycle



Disaster documentation (ACCURATE)

Situation report (FAST)

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Approach

- Workshops in Paris
- Representatives from:

  Swisstopo, OS Ireland, SDFE (DK)

  CCR, SHOM, Predict Services, Hydratec, EIVP, IGN France
- What we learned

  Flood management is a sensitive current subject in many countries

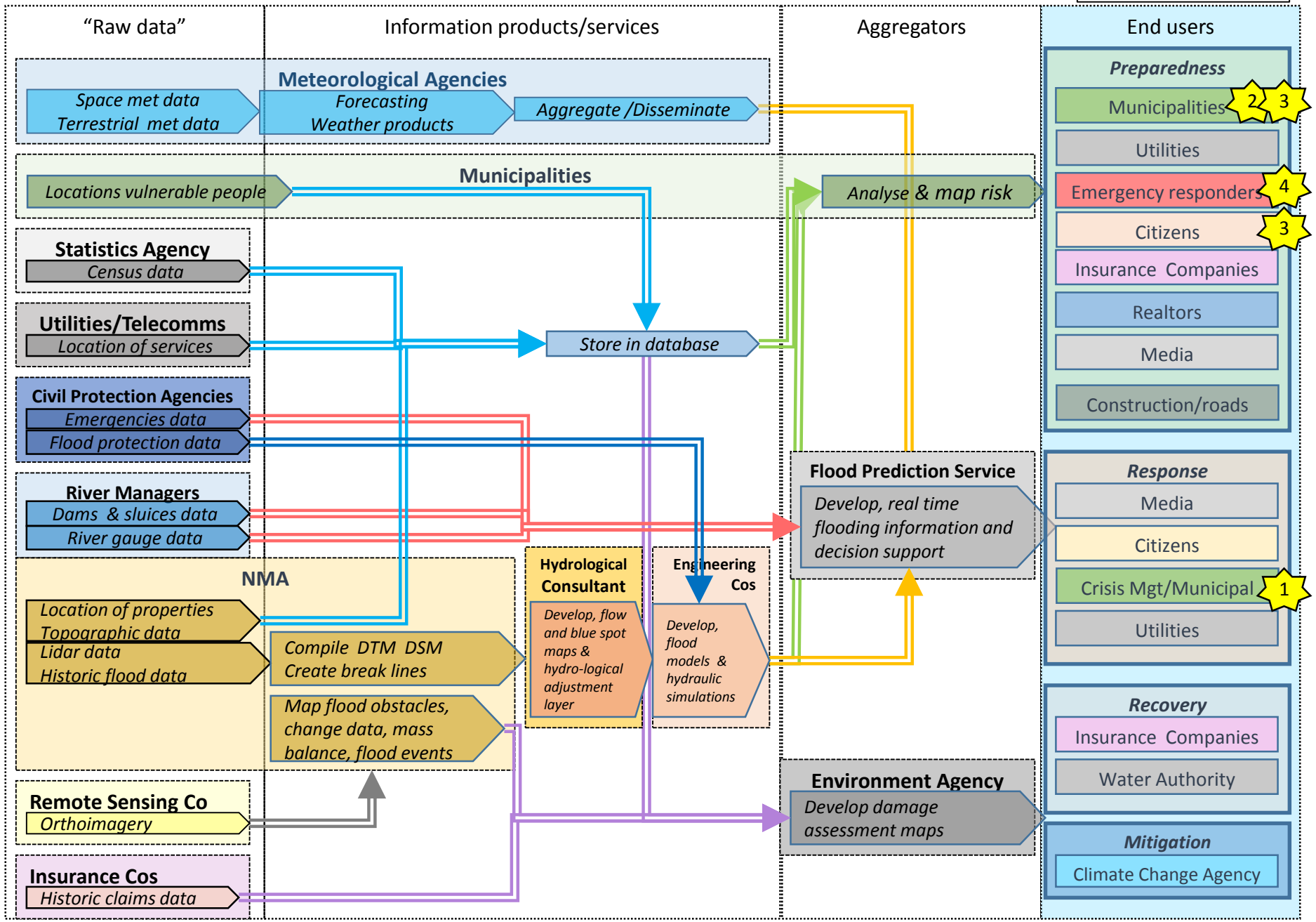
  The main value add resulting from more accurate 3D data supply is the ability to improve the accuracy of flood models.

  Flood models are used to create risk maps supporting real-time decision making. The better the 3D data, the more value the information adds to the flood management value chain.

  The scope for utilisation of 3D by end users is very wide

Flood Management - Value Chain

Note: coastal and marine not included



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Top Qualitative Benefits

1. Early warning for emergency services saves lives.

2. More accurate and reliable risk analysis tools result in better development planning decisions and more appropriate construction.

3. Risk analysis tools that are, easier to use and understand, result in a reduction in time spent justifying the evidence and so reducing the administrative costs of consenting.

4. More accurate and reliable risk analysis tools result in better emergency response planning (including simulations) and a more effective response.

5. More accurate risk analysis increases the confidence of insurance providers when setting premiums and allows for more competitive premiums for some customers.

Key Learning Points

Supply side

- Major products are Flood Risk Maps (prediction)
  - topographic data on the location of properties provided by the NMA;
  - transport data provided by the Road and Traffic Agency;
  - demographic data provided by the Statistics Agency and the Municipalities;
  - utility installation locations provided by the Utility Companies.
- Real-time decision support systems (incident management)
  - Combine static flood risk maps with meteorological data and hydrological models

Demand side

- Preparedness
  - Municipalities for urban development control
  - Emergency services evacuation plans
  - Insurance companies for premium calculation
- Response
  - Early warning systems for citizens
  - Transport and Utility availability
- Mitigation
  - Construction of defences

Thank You

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