ESRI EPUG
2015 Novembre

Data Governance
What Hazard Studies Taught Us

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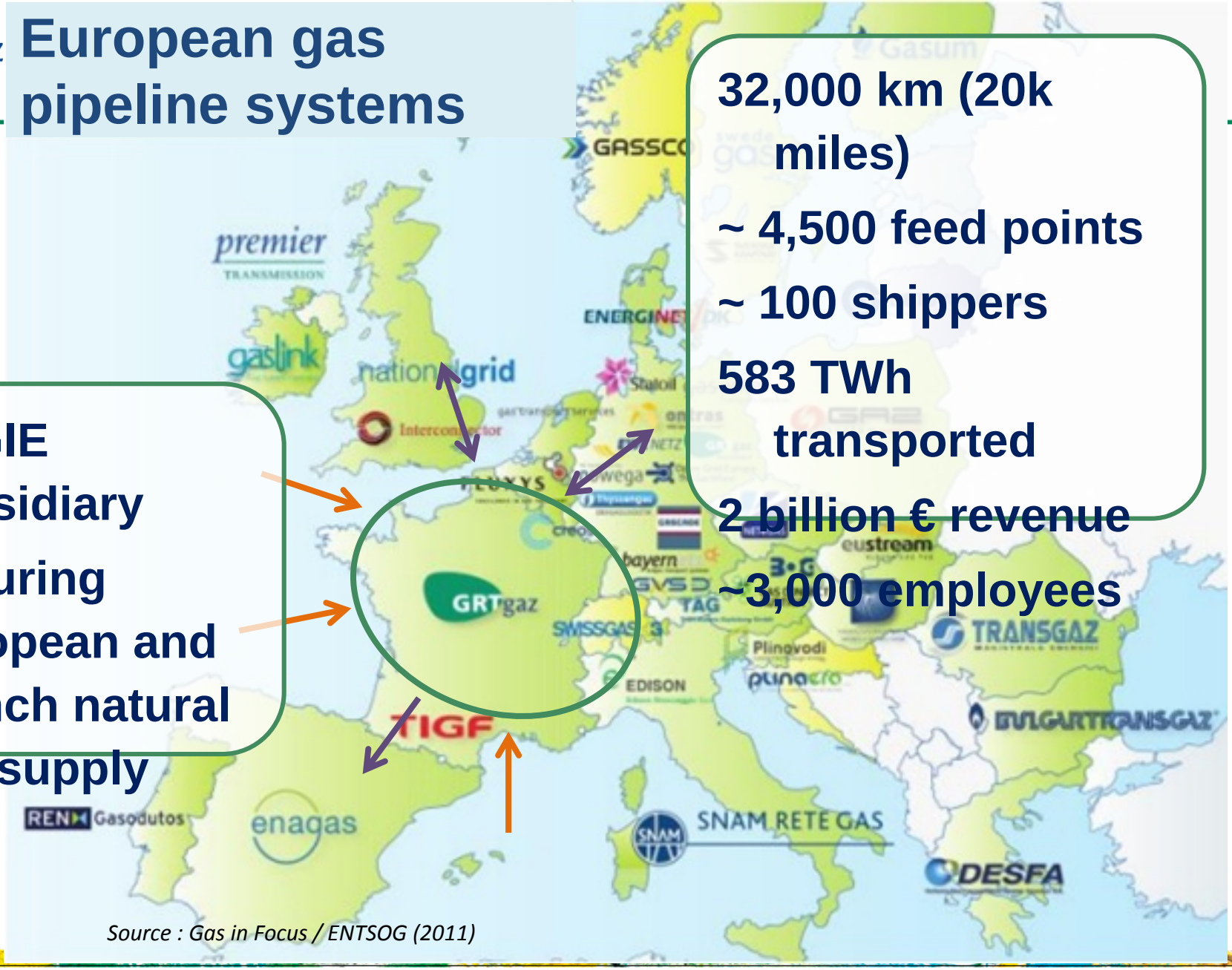
European gas pipeline systems



ENGIE Subsidiary

Ensuring European and French natural gas supply

32,000 km (20k miles)

~ 4,500 feed points

~ 100 shippers

583 TWh transported

2 billion € revenue

~3,000 employees

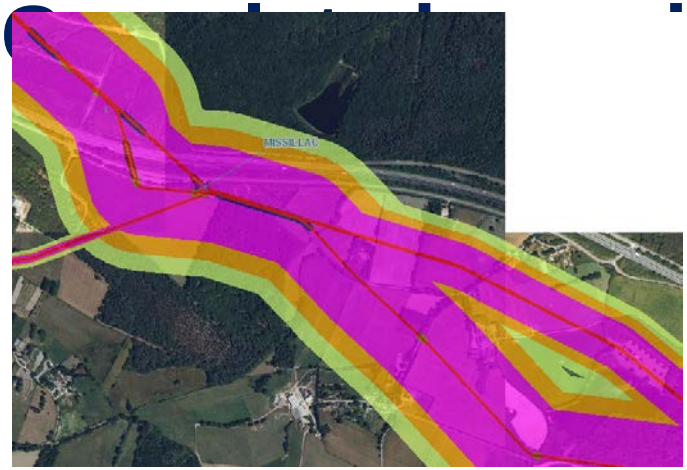
Source : Gas in Focus / ENTSOG (2011)

Agenda

1. Pipeline Hazard Studies
2. Data issues
3. Lessons we learned

2006/2014 Legislation

- **Stricter design rules with respect to security**
- **studies every 5 years**

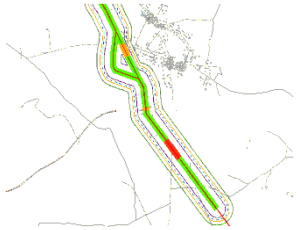


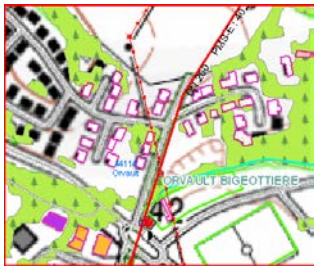
- **Yearly report through GIS DB**

Roadmap

2012

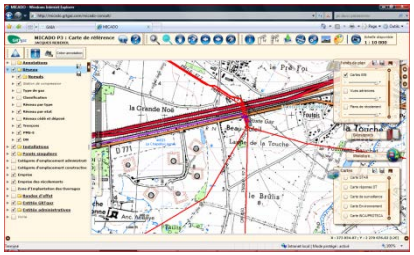
Hazard study module “CESAR”





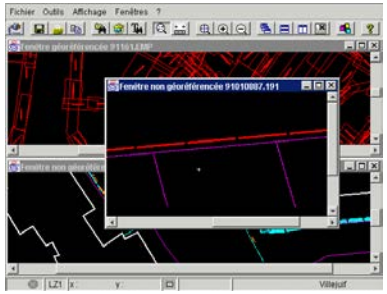
2010

Industrialization of data entry and publication module – “MICADO”

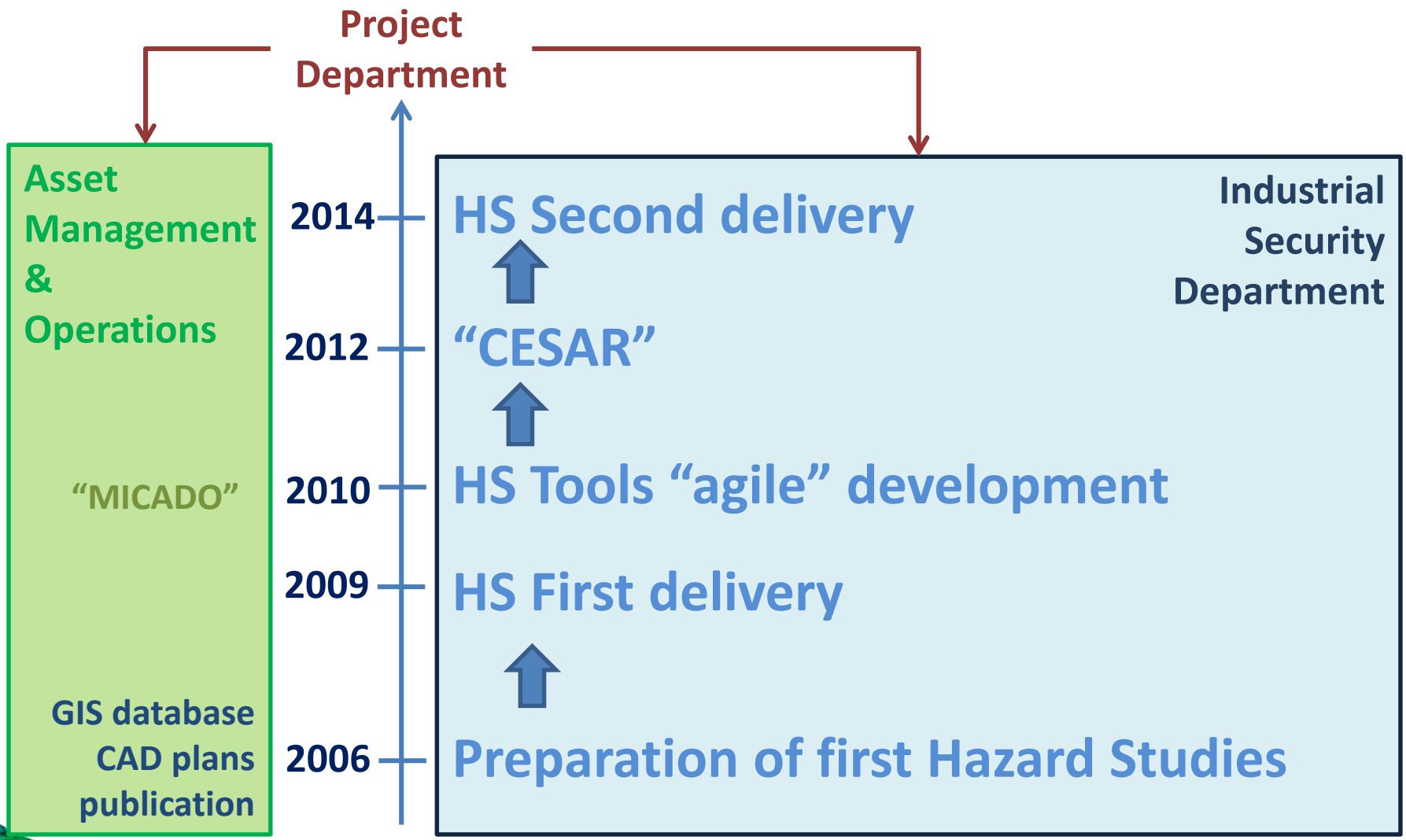


2006

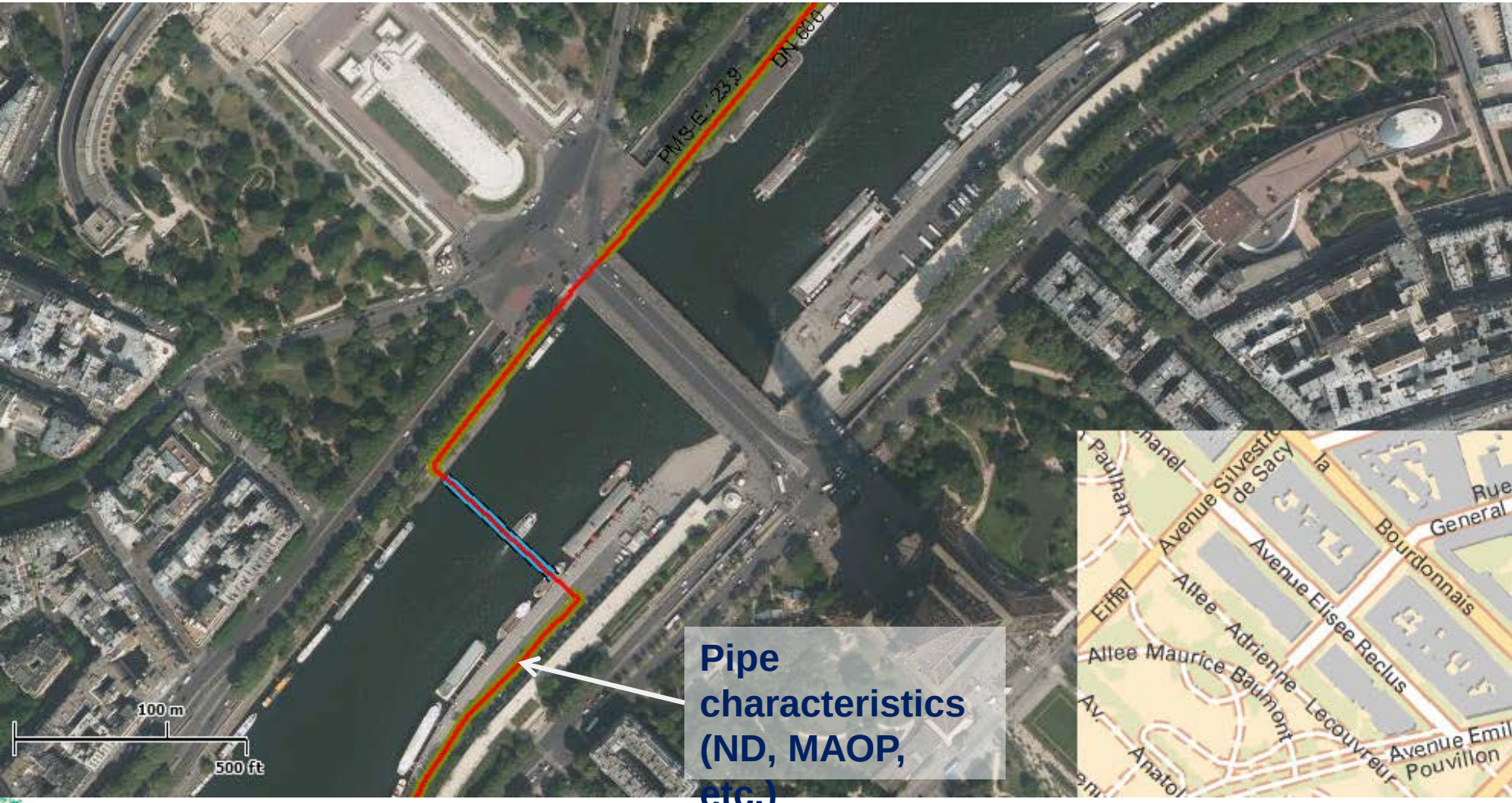
GIS database
CAD plans publication



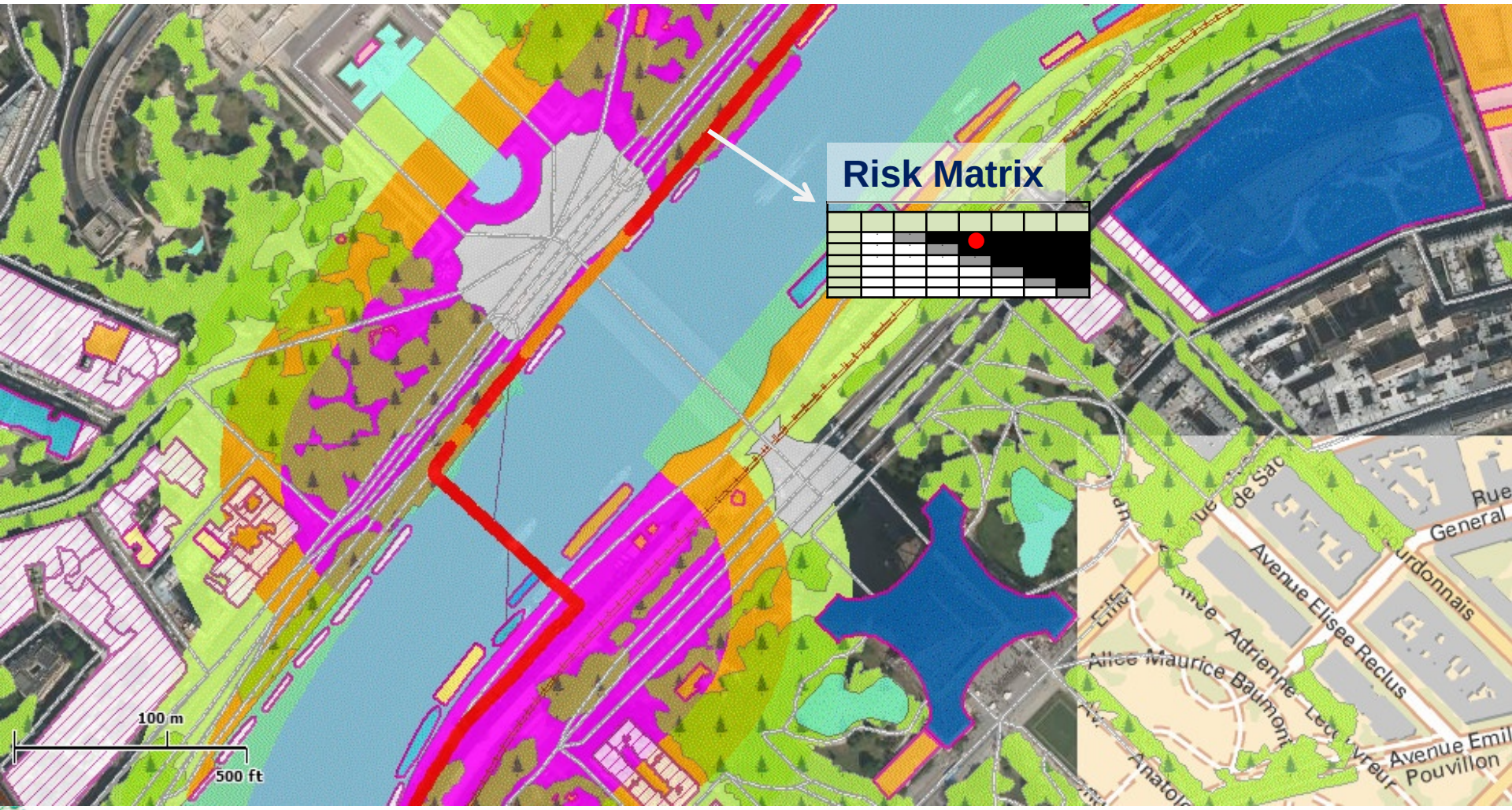
Detailed Planning – The tale of two cities



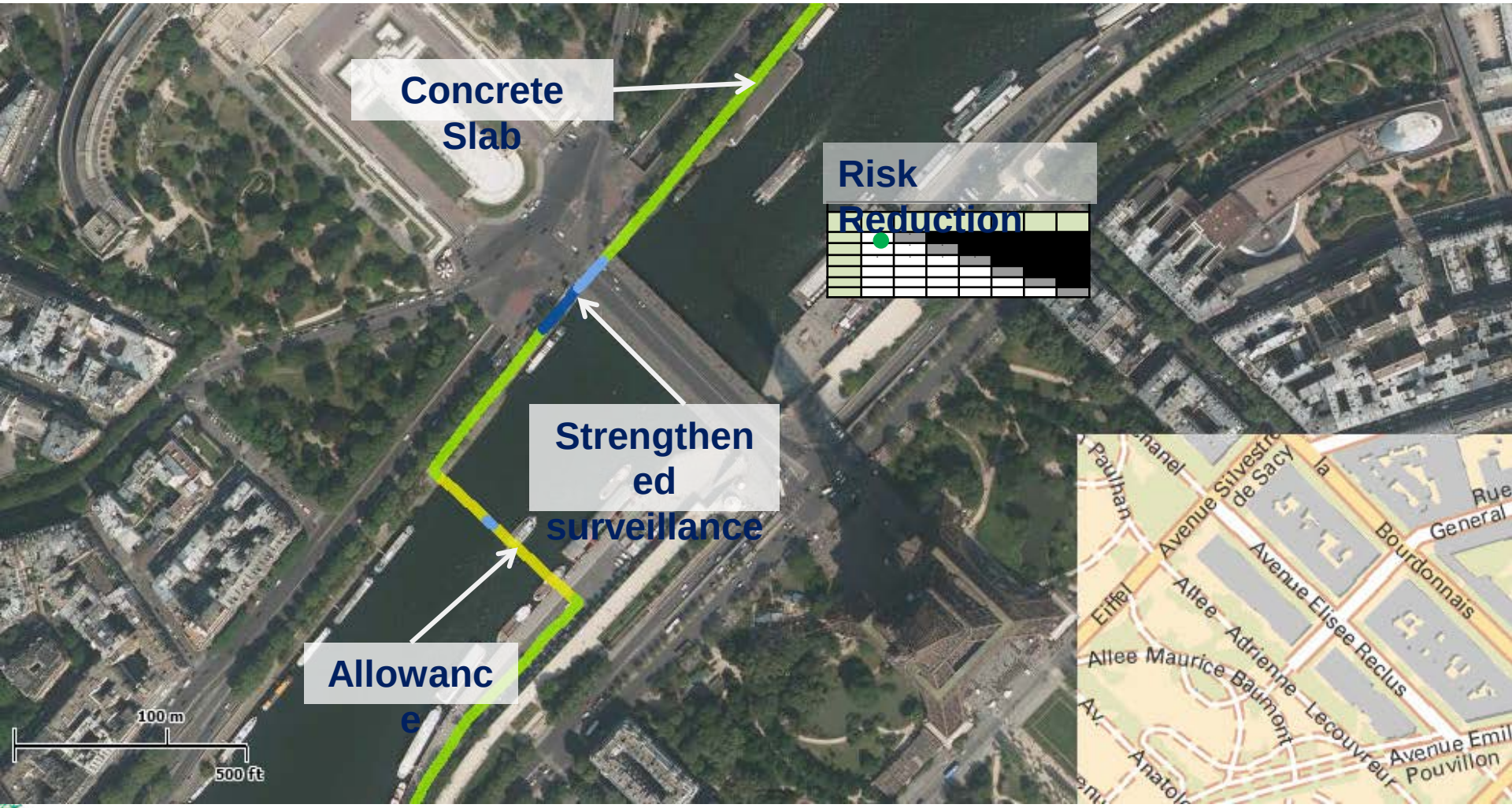
Pipeline hazard studies – Example



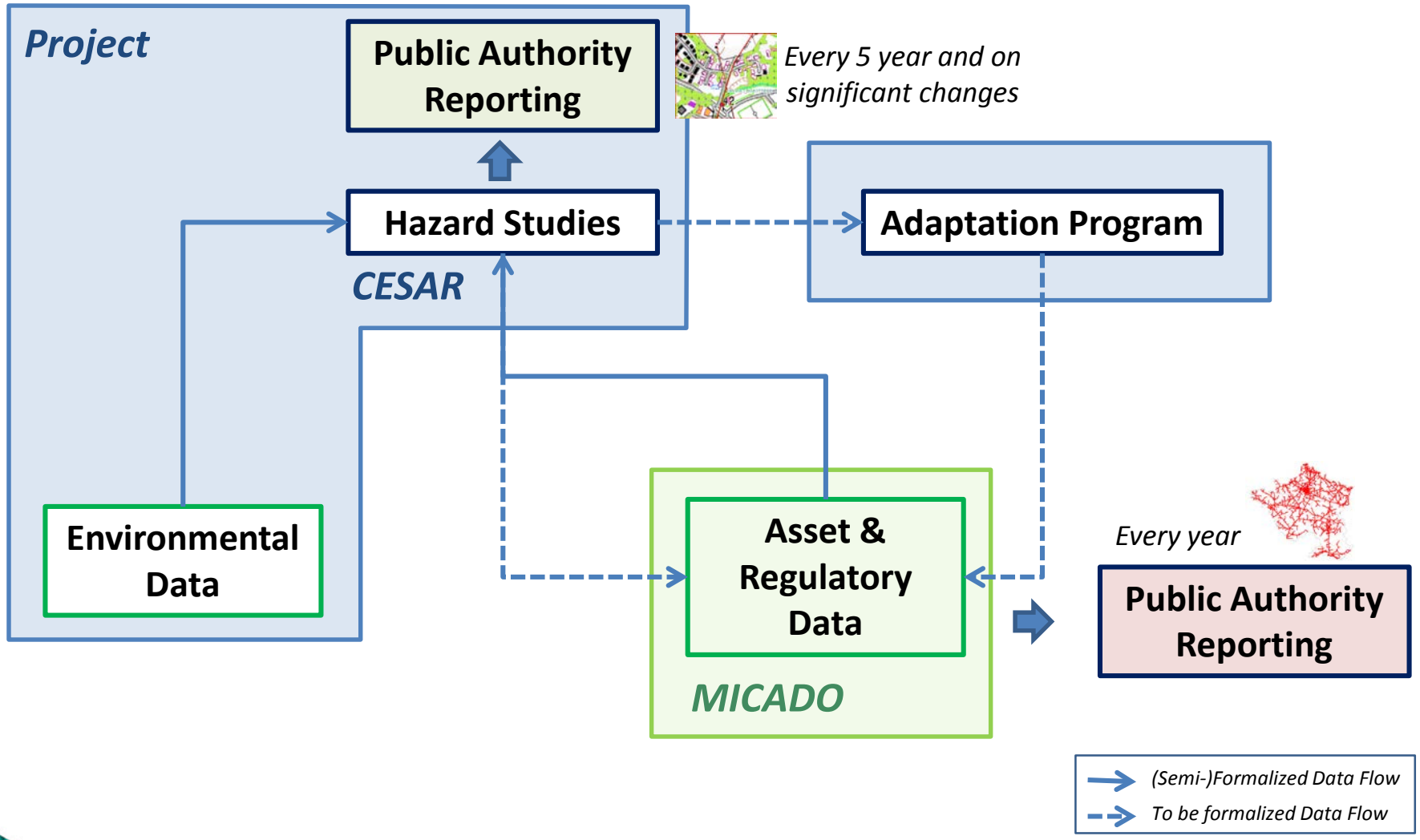
Pipeline hazard studies – Risk Analysis



Pipeline hazard studies – Compensatory measures



Pipeline hazard studies – principles



(Half-)Success story

- **Meet the regulatory constraints** (→)
  - Main goal → Was a definite success
- **Leverage produced data to empower operations** (⇢)
  - Goal was set but but abandoned
  - Issues were not identified
  - Implicitly left as a legacy to the current organization

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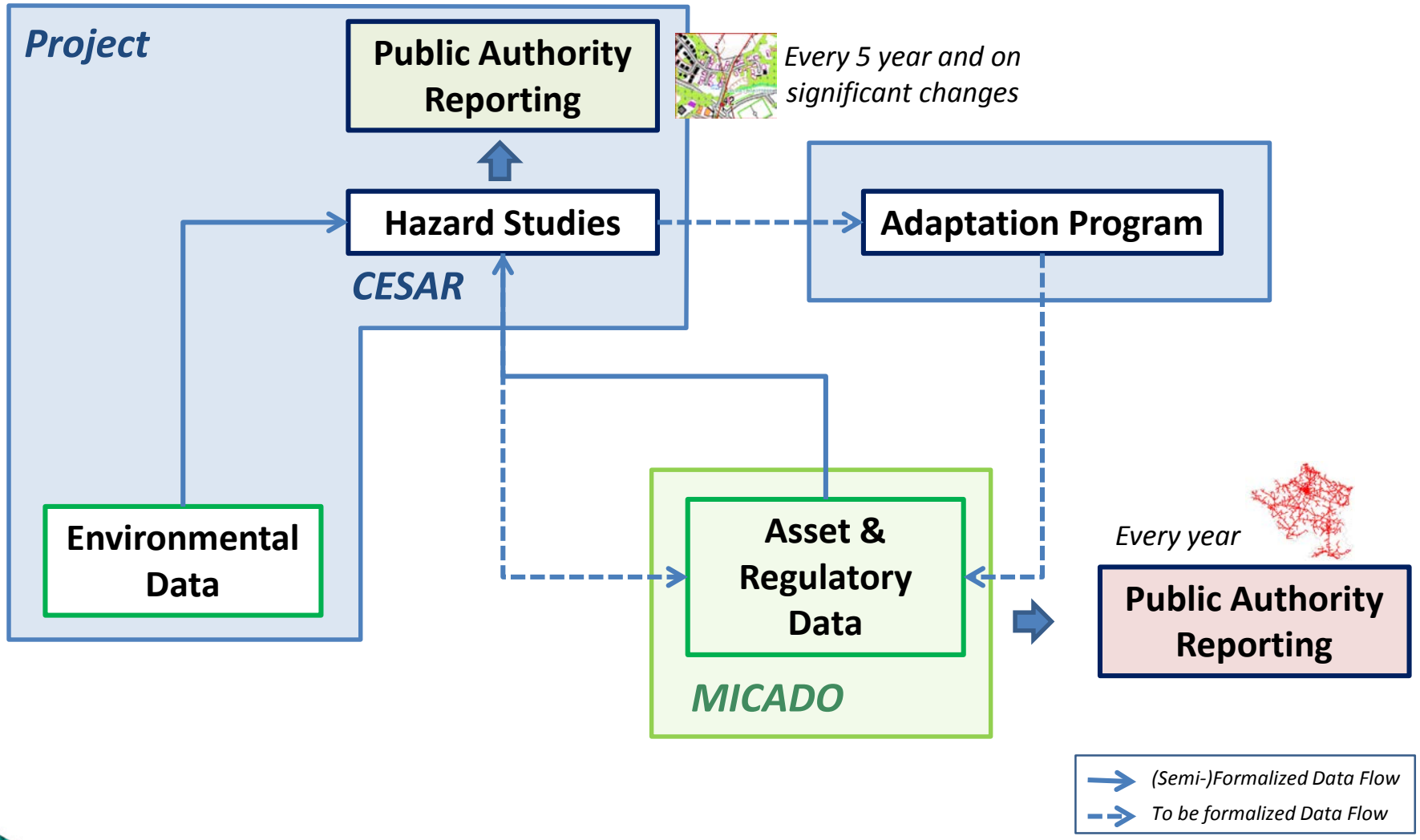
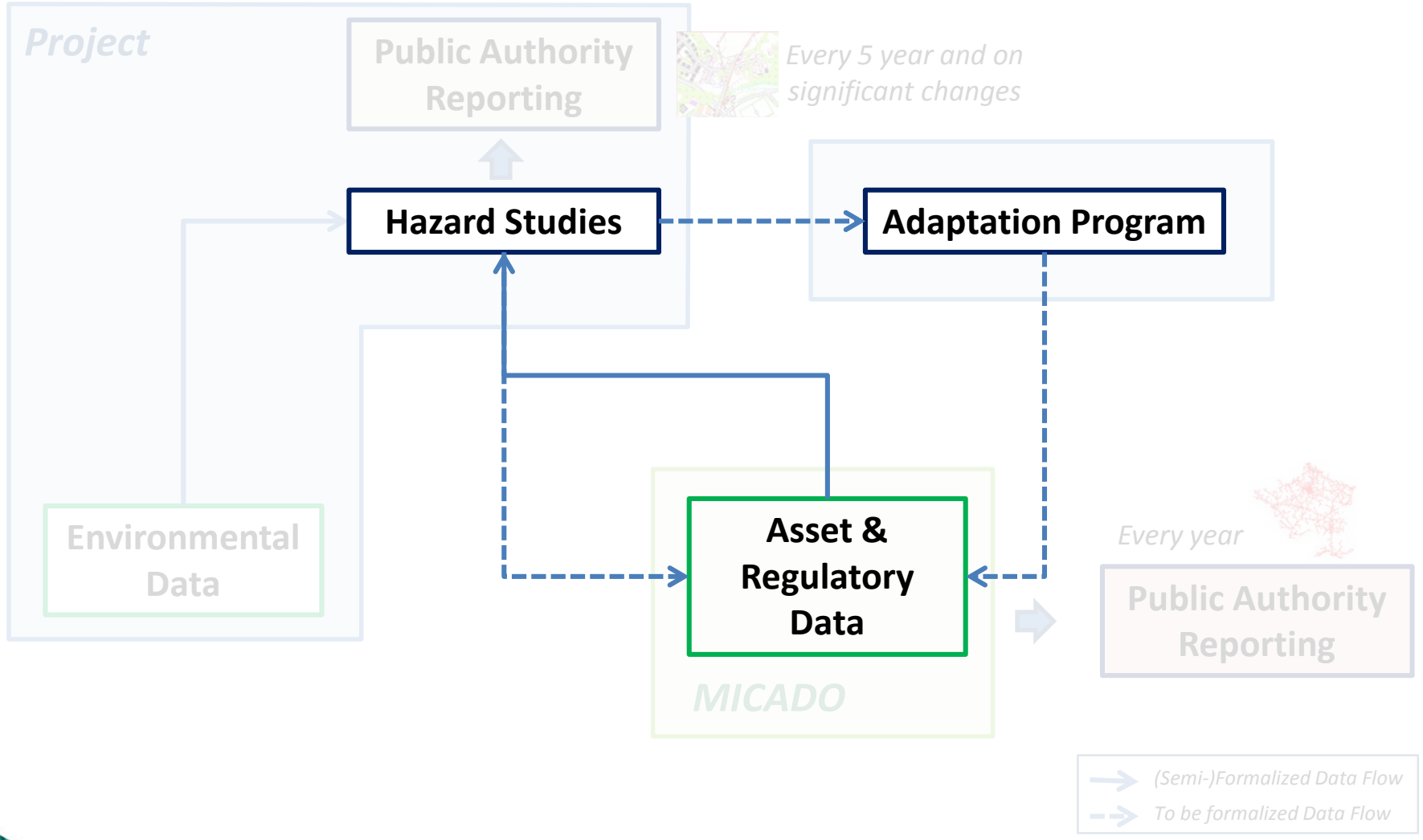
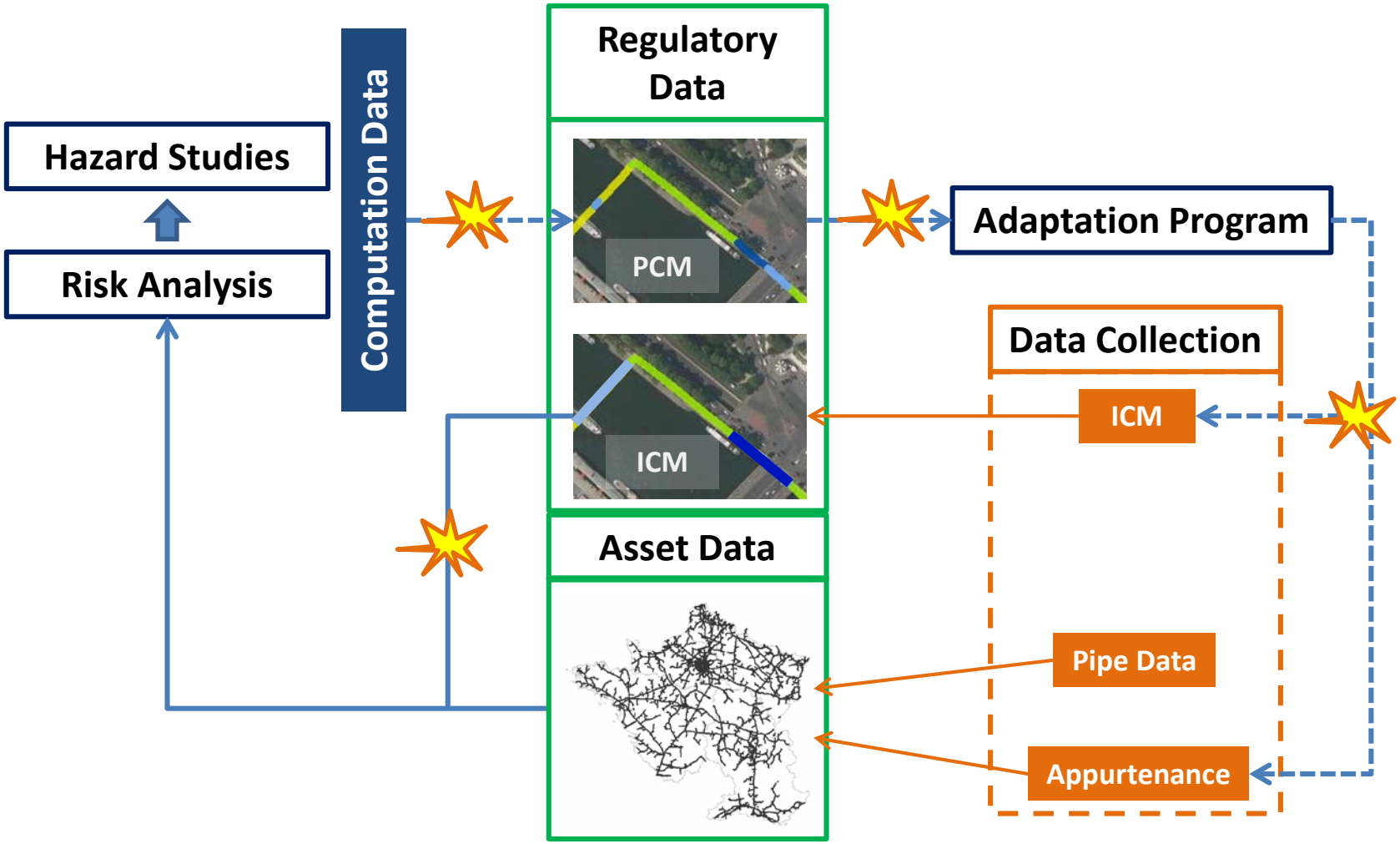
Pipeline hazard studies – principles



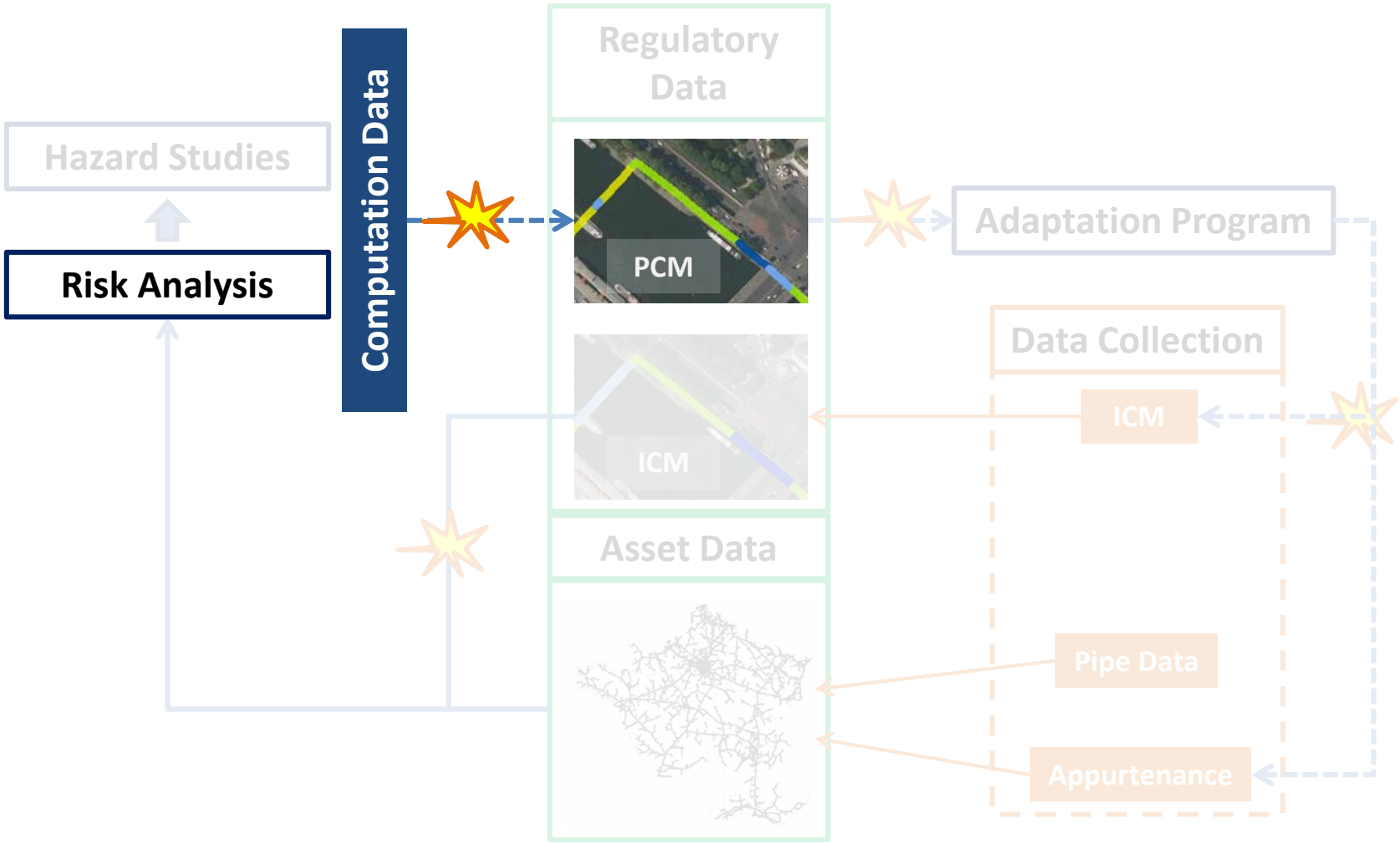
Addressed subdomain



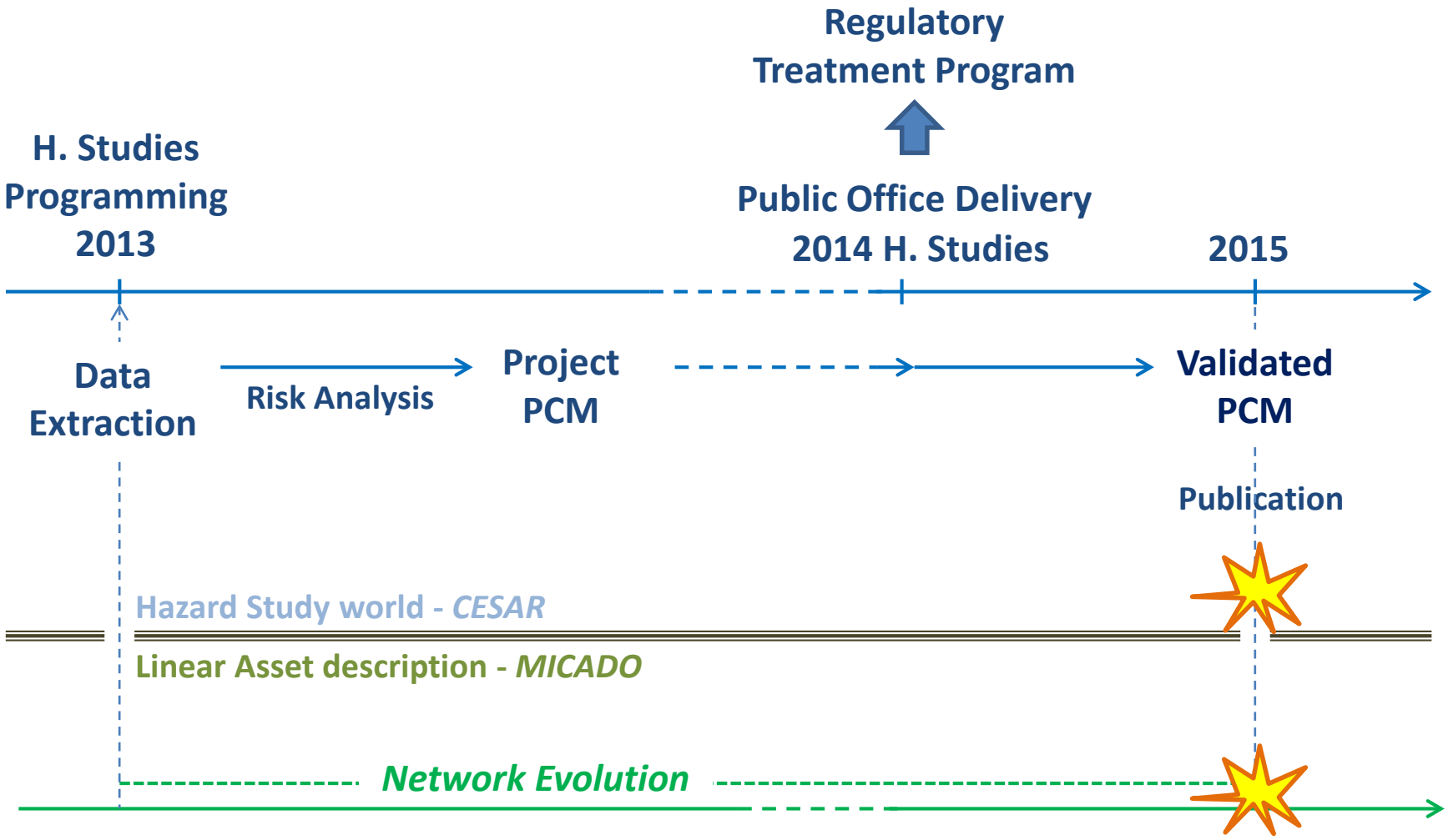
Data circuit



Data mayhem – Publication Issues



Publication issues – changing worlds



A very complex publication process

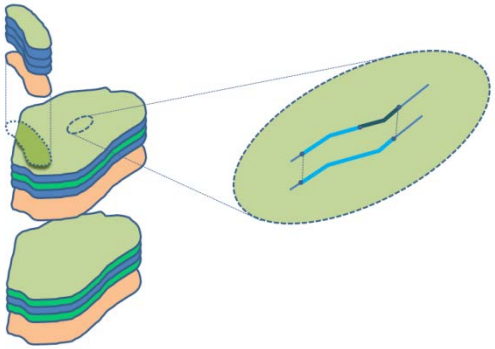
« CESAR »

« MICADO »

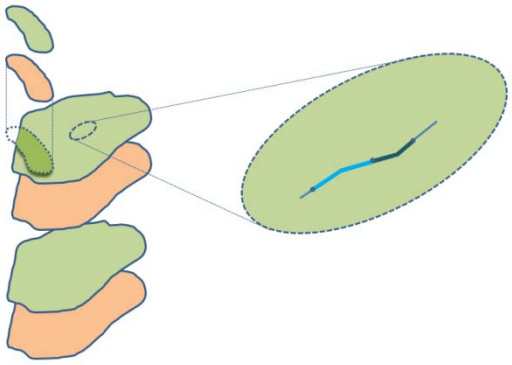
Risk Analysis Data

Selection → Consolidation → Integration

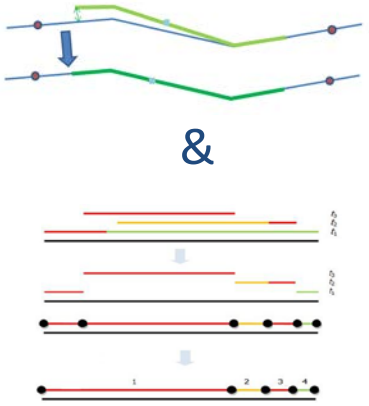
Data used for validated risk analysis



Data Simplification



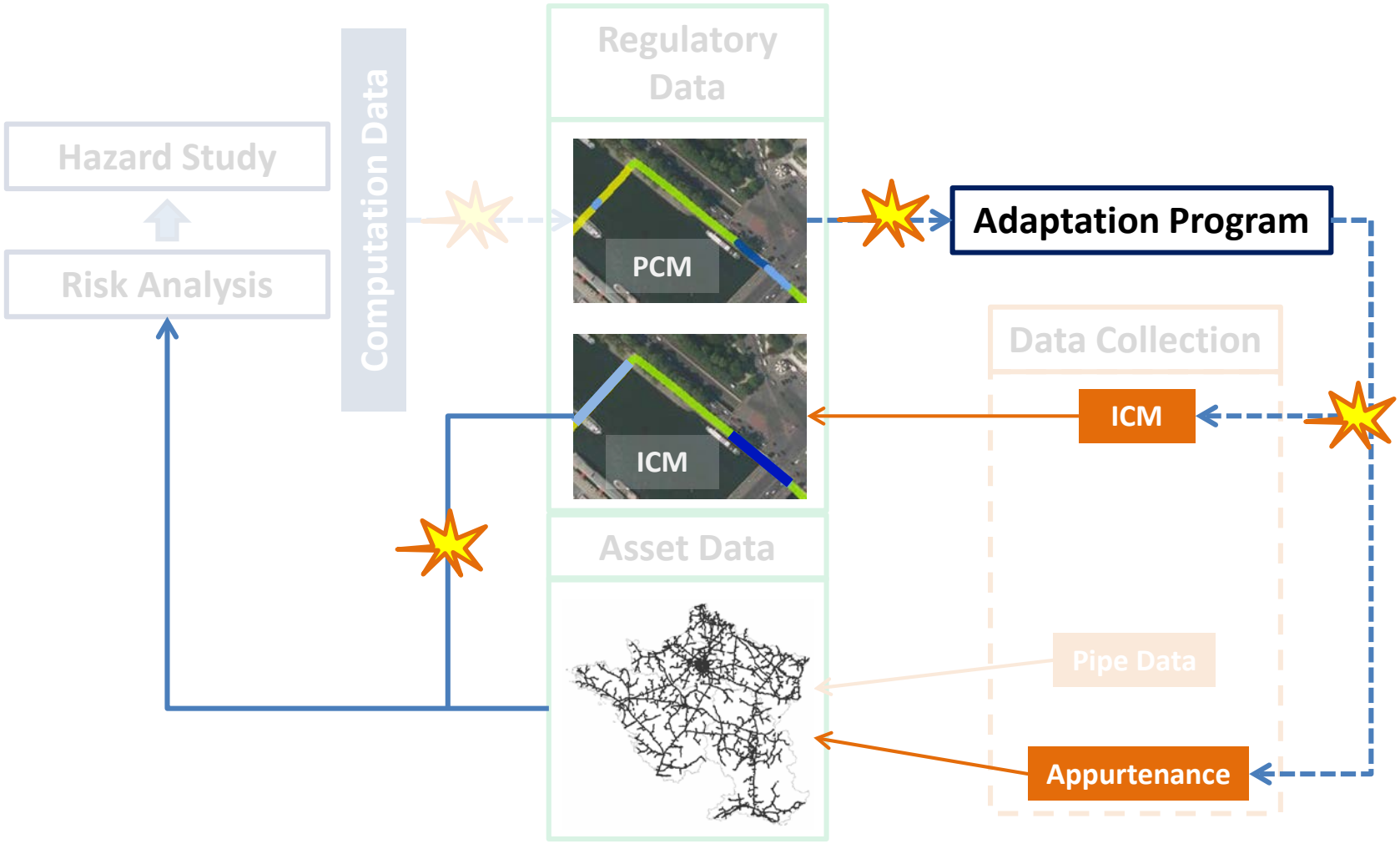
Projection on current geometry and fusion



Data mayhem – Some publication issues

- **How to control complexity of stratified hazard study data?**
  - Complex derivation of integrated data from h.s. data
  - Errors are hard to detect
  - Leads to complex validation process
- **What should we do when integration is not possible?**
  - What is a proper critical distance?
  - Should hazard studies be reprogrammed and when?
  - Possibility of preventing misprojections (early warnings?)
- **Hard to explain → IT got it wrong the first time**
- **Paying the complexitity price of disconnected production / publication processes**

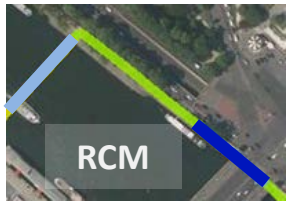
Data mayhem – CM Issues



Data mayhem – CM issues

Regulatory Adaptation Program

Operational Adaptation Program



2009 H. Studies

2014 H. Studies

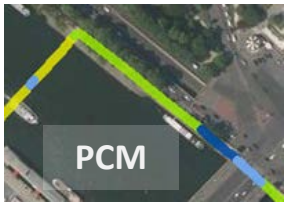
Proposed CM

Feasibility

"Planned" CM

Implementation

Implemented CM



Operational ICM
- Surveillance
- Information
- …

Construction ICM
- Mechanical Protection
- Marker Tape
- …

Reinitialized

Data mayhem – CM issues

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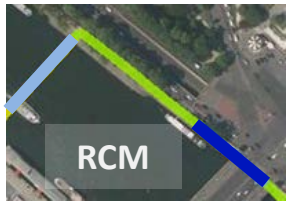
Operational Adaptation Program



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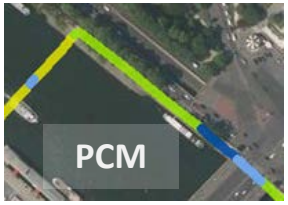

Reused

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Data mayhem – CM issues

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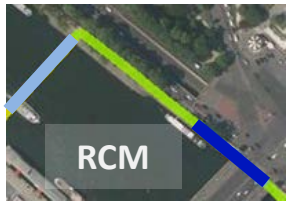

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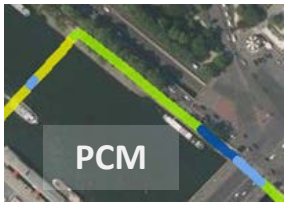

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Reused

Reinitialized

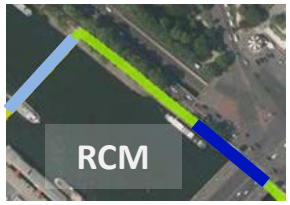
Data mayhem – Some CM issues – Treatment Program

- **Feasibility may induce changes in PCM**
  - **Should the feasibility process be mirrored in specific (new) data such as “Planned” CM?**
  - **Should a PCM defined before or after feasibility?**
  - **What exactly should be transmitted, and when, to public agencies?**
- **Paying the price of not fully correlating data production with final processes (and insufficient definition sharing)**

Data mayhem – CM issues

Regulatory Adaptation Program

Operational Adaptation Program



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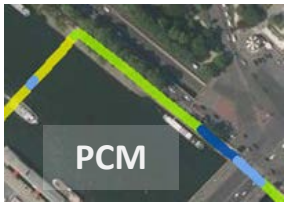

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- …

Reused

Reinitialized

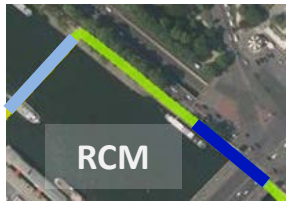
Data mayhem – Some CM issues - RCM

- **How should Operational ICM data be managed?**
  - **We “discovered” in 2015 that they should be reinitialized…**
  - **… and we still are to finalize the update process definition**
- **Paying the price of not defining data complete life cycle in final processes**

Data mayhem – CM issues

Regulatory Adaptation Program

Operational Adaptation Program



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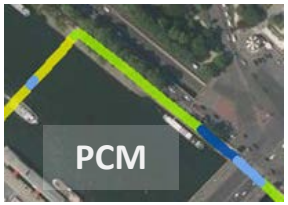

Reused

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Construction ICM
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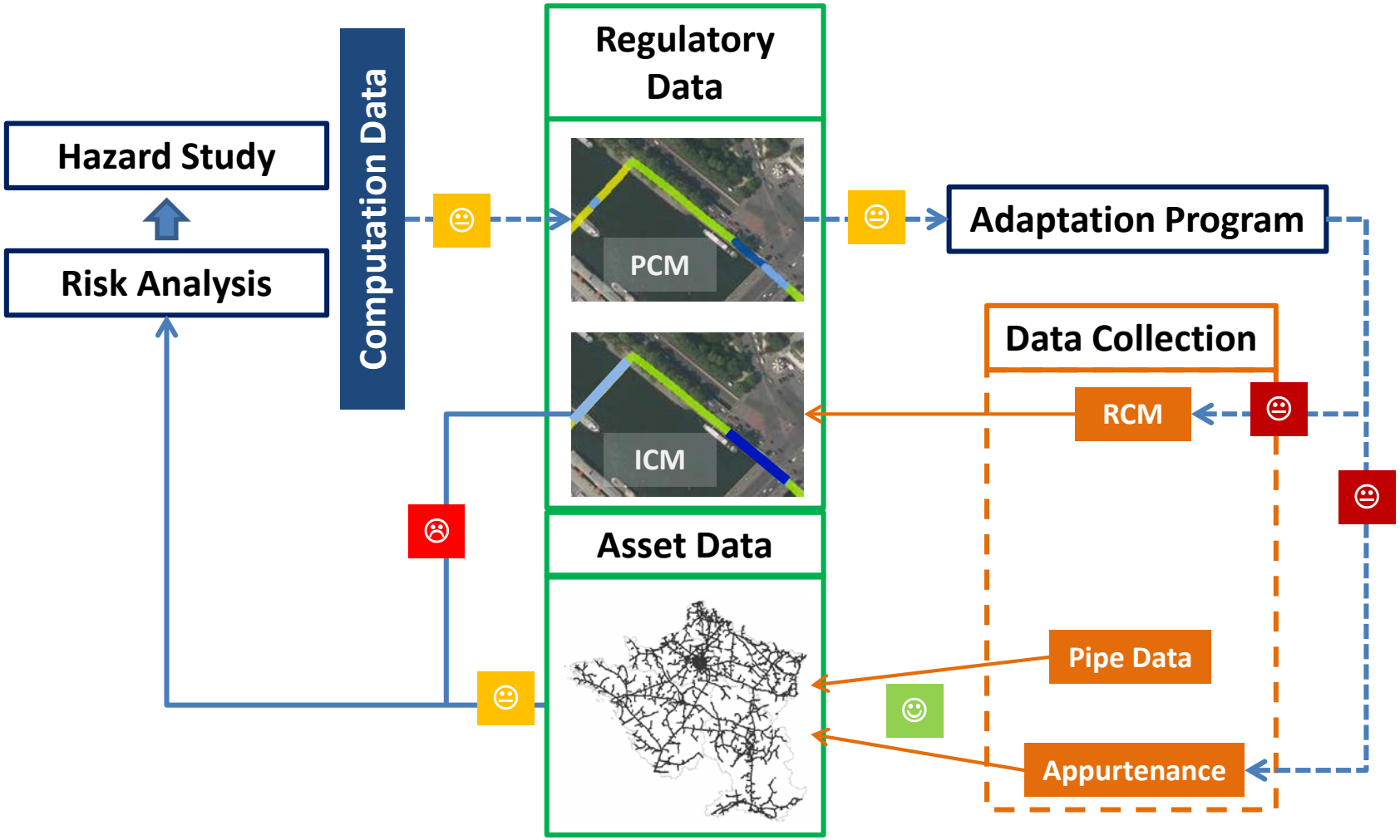
- …

Reinitialized

Data mayhem – Some CM issues - RCM

- **How should Construction ICM data be managed?**
  - **Definition issue: misunderstanding between *construction ICM* and the actual *appurtenances* in the Risk Analysis tools**
  - **Induces extra gesture to qualify non ICM slabs (eg) as ICM**
  - **Induces a data semantic flaw**
- **Paying the price of insufficient definitions and no clear data responsibility**

Data circuit – issue overview (simplified!)



Agenda

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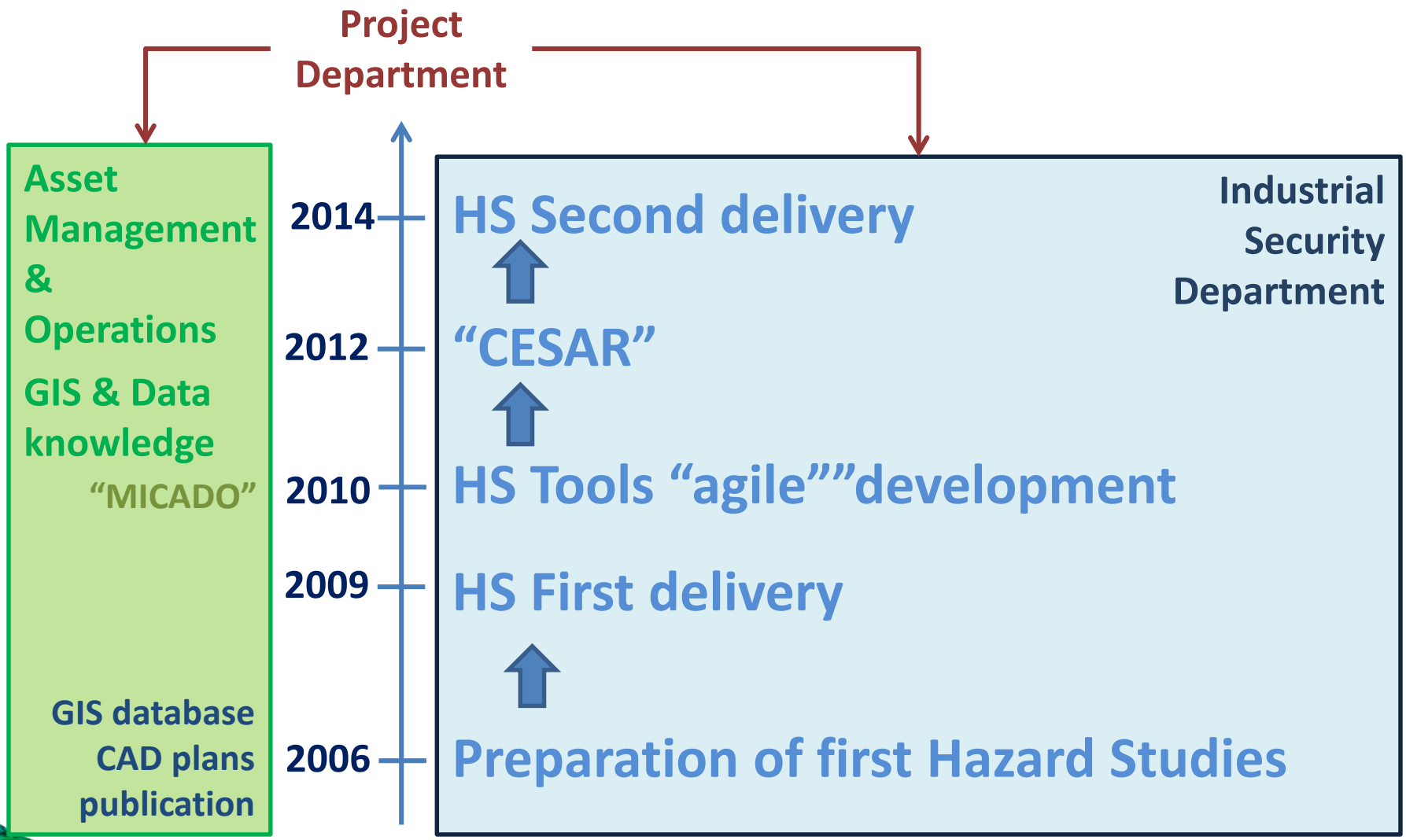
What we did well

- Deliver an efficient Linear Asset Description tool
  - Separating Collection from Usage…
  - … and defining clear responsibilities and animation
- Devise functional hazard study tools…
  - Complying with the law…
  - … on a very tight schedule
- … using enterprise data asset
  - Without disturbing collection processes
- … and devising some collection processes for new data

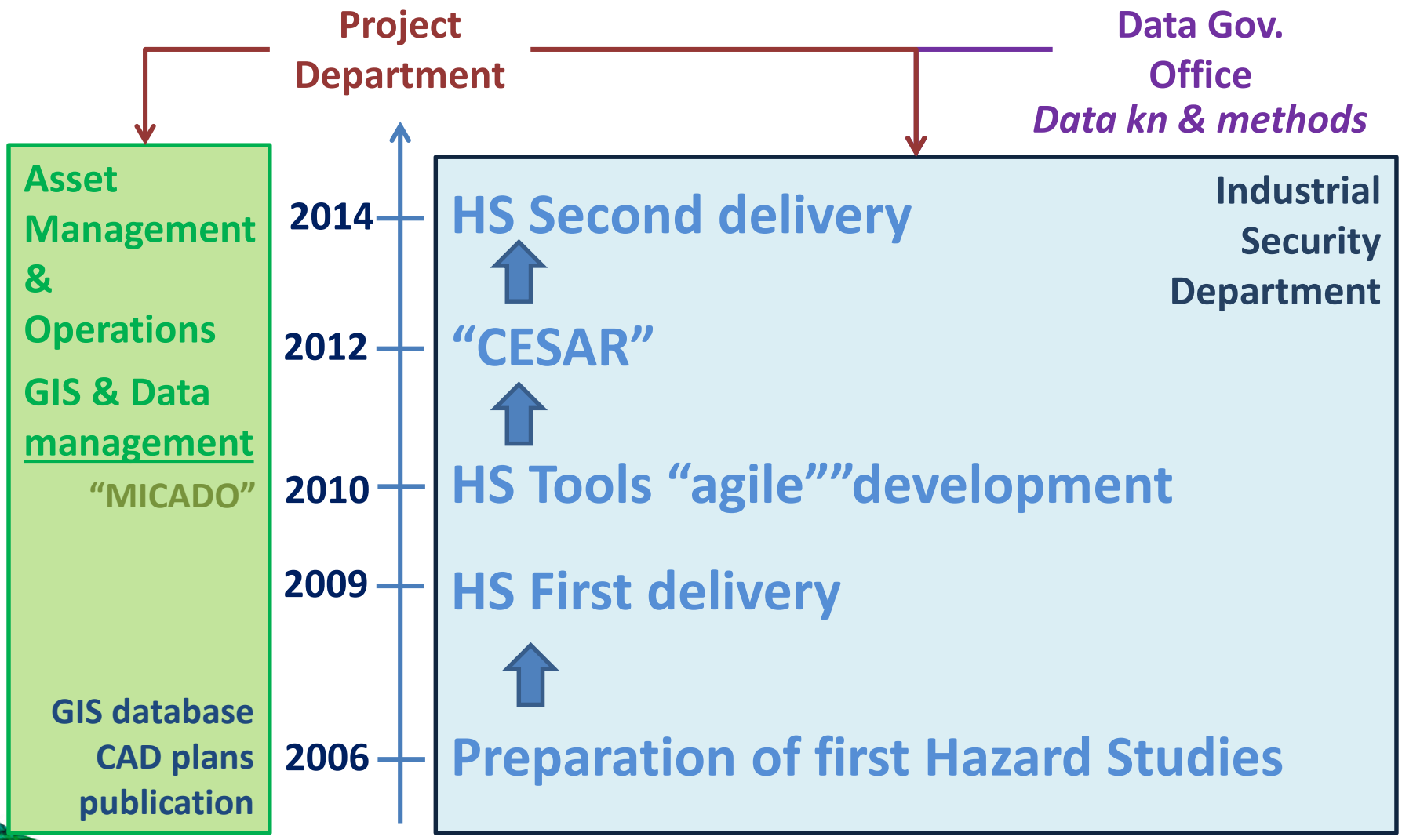
What we could have done better

- **Design data supply chains as early as possible**
  - "We will have time to think about this later on"… Indeed !
  - *The early bird catches the worm*: teach business how to design ahead of (its) immediate use
- **Emphasize definitions**
  - *Knowledge is power*: define terms, ensure adequacy, and share!
  - Be as versatile as data is: through the processes tough skins
- **Treat all data processes as mandatory deliverables**
  - *No such thing as a free lunch*: Definitions and rules have strong impacts on business!
  - ⇒ Process adaptation is not "mere" change management

One reason why we failed



Mirandian “brave new world” vision



Fixing problems – 2016... 2019 ?

- **Define data and data supply chains**
  - Produce and promote the rules in and out hazard study data must obey
- **Redesign Hazard Study Workflow**
  - Production – Publication delay
  - Hazard Study black box must become semi-transparent
- **Harmonize Reportings**
  - Ensure no discrepancy between datasets
- **Extend Best Practice to Facility Hazard Studies**

Preventing problems (while fixing them ☺)

- **Formalize data accountability & responsibility**
  - Each (important) data should be given a owner and a steward…
  - … in charge of data business adequacy, definition and quality, etc.
- **Formalize (in)formation towards all data stakeholders**
  - Data should be a shared concern
- **Promote metadata and DQA**
  - Build, share and manage knowledge about data & data quality
- **Understand & control linear geographical data specificity**
- **So… Let's treat data as assets!**

Thanks for attending!

Do you have any questions?