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Distributed Water Information Systems for water resources and risk management ...

Water Information System for France

Laurent Coudercy
Data administrator

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WIS-Fr, a distributed information system which

- ***reflects the distributed nature of water public stakeholders in France***
- ***is aligned on the public environment/water policy***
- ***endorses the " evaluate, perform, report " schema, with risk assessment as a key component, and reporting as a linking process across geographic levels***
- ***is endowed with a shared information framework, consistent with external requirements and an information infrastructure based on open standards and metadata***

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WIS-Fr is a distributed information system

- not a choice
- but **a reflection of the distributed nature of water public stakeholders** in France:
  - multiple independent objectives
  - information sharing is a “service of general interest”
- since 1992: a network of cooperating public authorities and bodies

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WIS-Fr, as a distributed information system

• in itself is not a booster for cooperation (it is not a clearing house)!

• but does **expose possible failures of the organisation's governance**

• needs first to be **aligned on** the organisation's strategy/policy (as any information system):

- **Environmental information policy** (Rio, Århus, ...): a comprehensive view (state, pressures, impacts, economy, ...), free public access to data
- **Public water policy** ...

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WIS-Fr / public water policy

- First France's Water Act (1964): "general inventory"
- Second France's Water Act (1992): "integrated management plan" (aka "SDAGE")
- Water Framework Directive (2000)
  - The **synthesis**:
    - Monitoring programme
    - Management plan / PoM
  - Plus **reporting**

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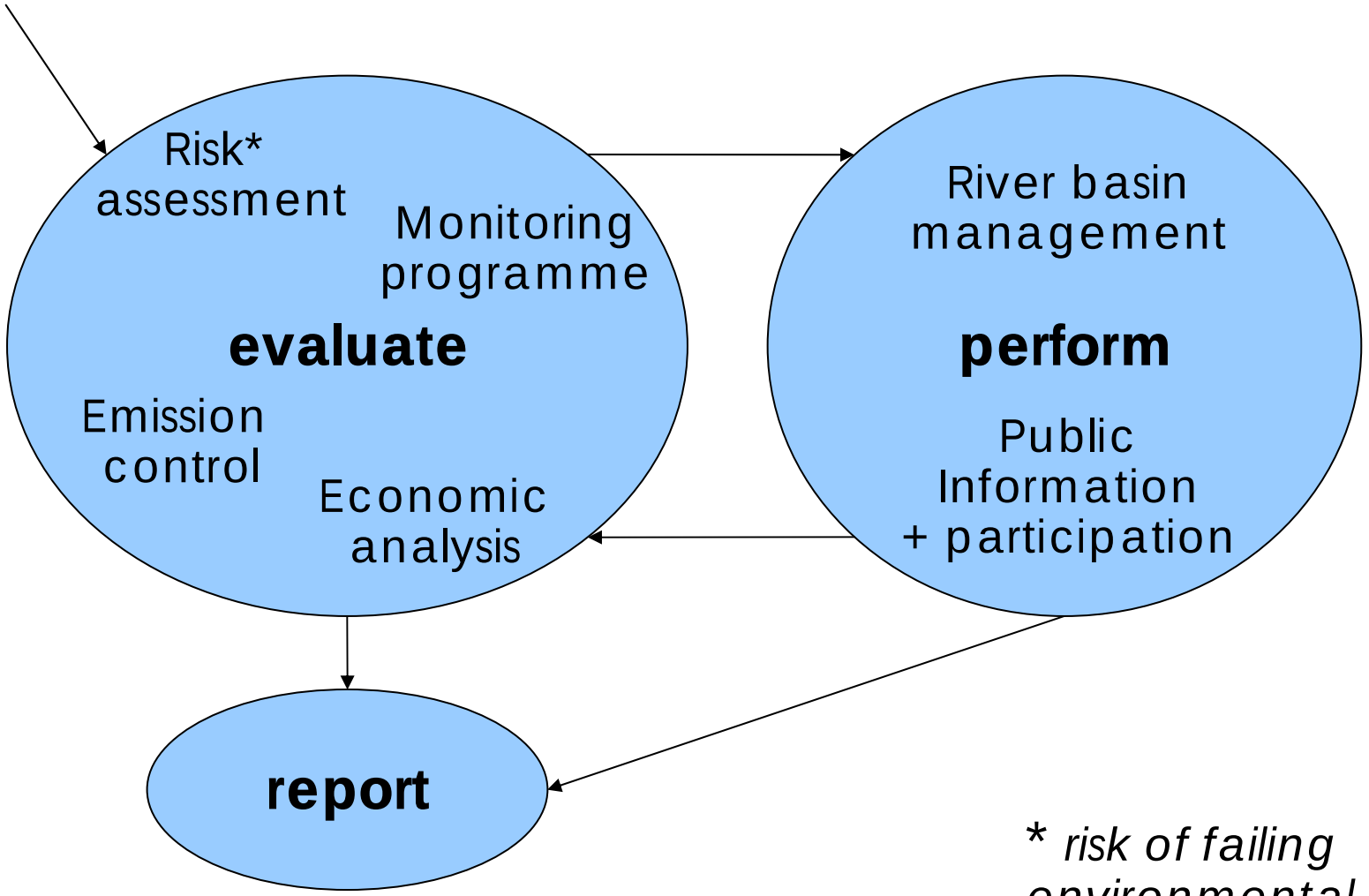
WFD's schema



* *risk of failing environmental objectives*

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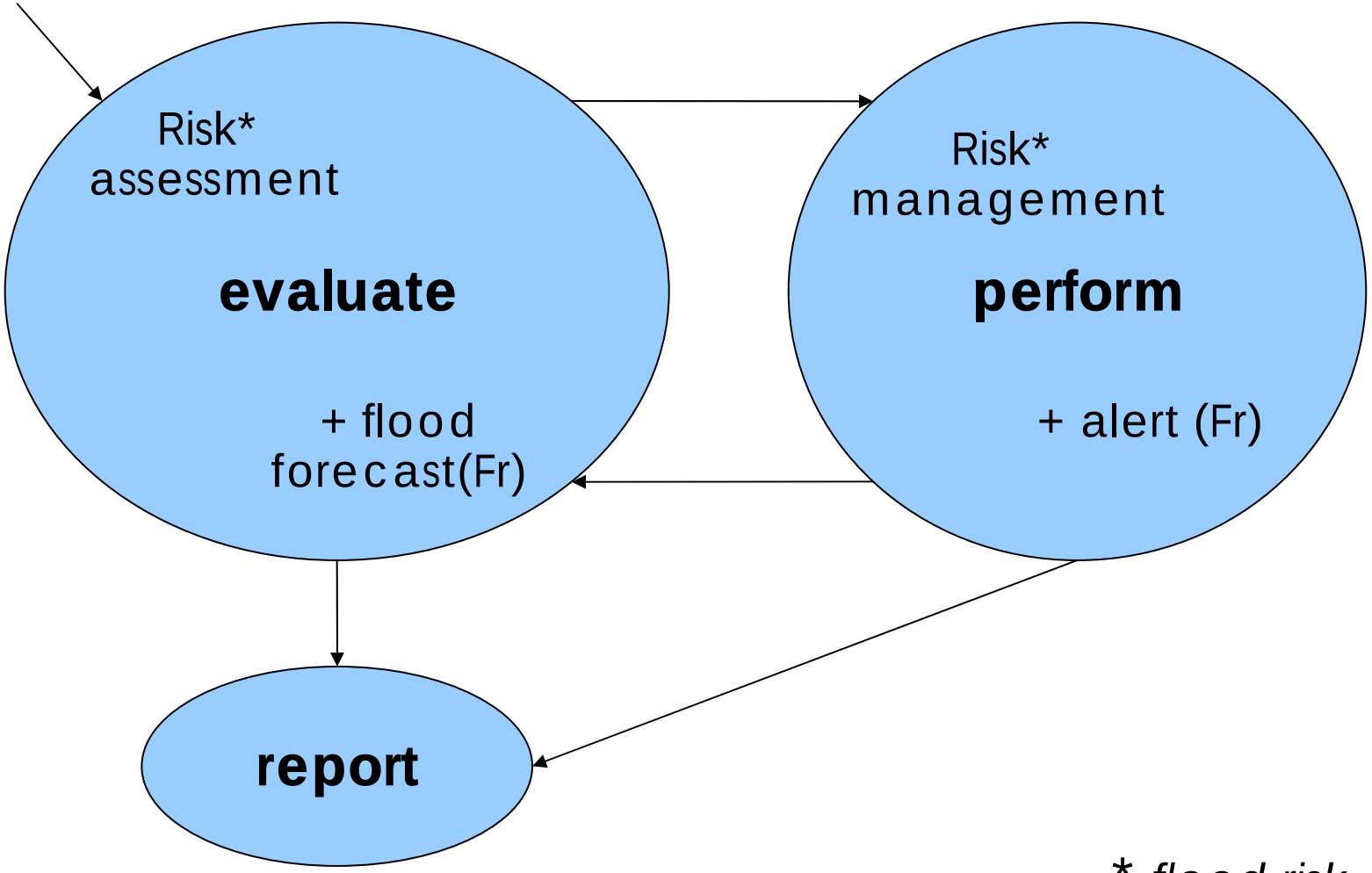
Floods directive (proposal) schema



* *flood risk*

A generic informational schema

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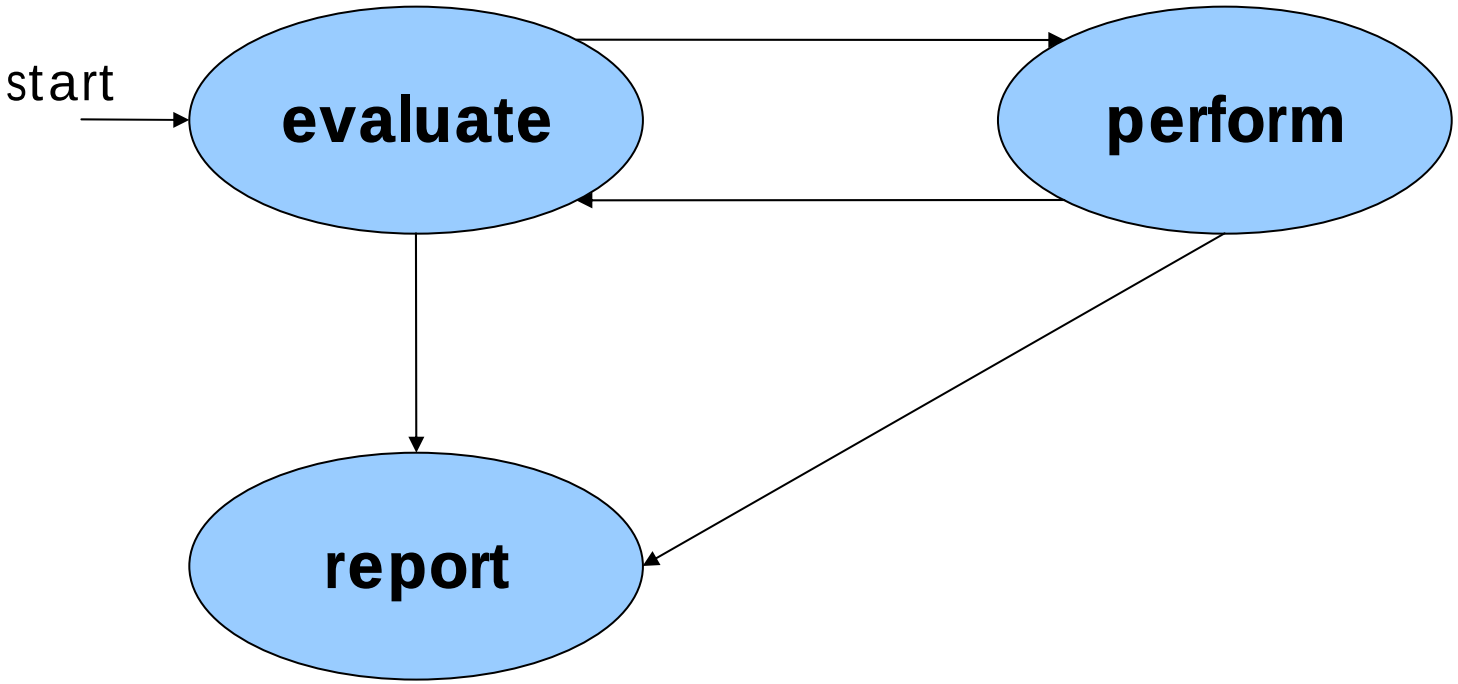

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Inside: a distributed information system

• needs a shared **information framework** to secure internal interoperability:

• **Conceptual interoperability**
ex: what an “agglomeration” actually is

• **Referential interoperability**
ex: what WWT plant #060913001005 refers to, in the real world

• **Syntactic interoperability**
ex: how to write and read messages like

```
<StationMesure>
  <CodeStationMesure>K4350020</CodeStationMesure>
  <LbStationMesure>La Loire à Orléans</LbStationMesure>
</StationMesure>
```

Outside: interactions of national/European levels

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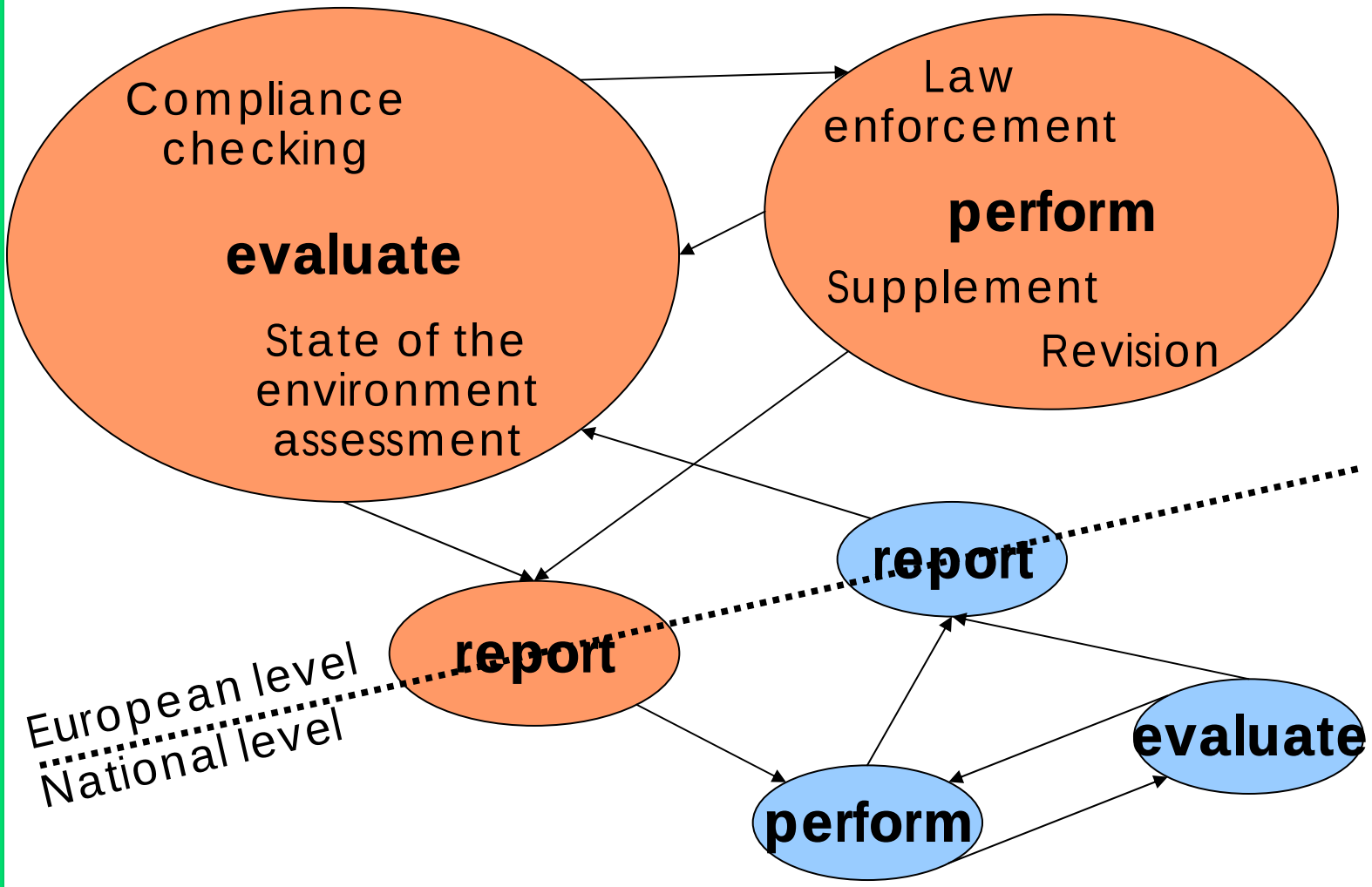

Linking levels via reporting

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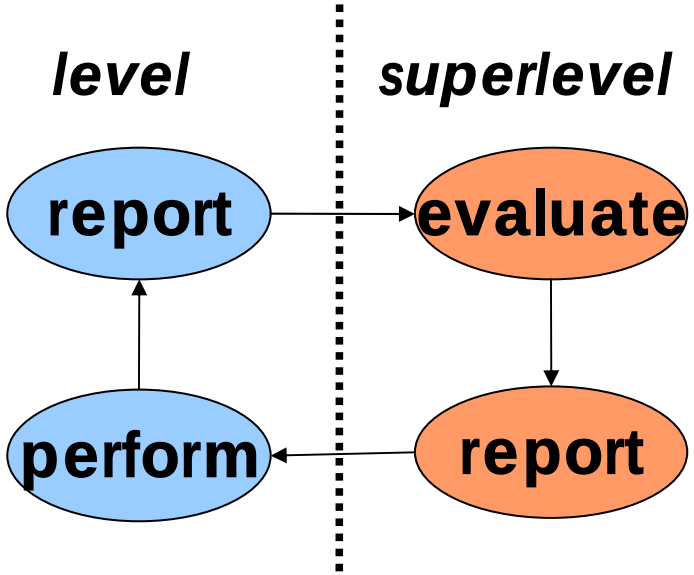

May apply to different geographical levels :

- national / international,
- river basin / national, ...

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A (distributed) information system lives in multiple global contexts

- the information framework must be **consistent with external requirements**:
  - European Commission
  - European Environment Agency
  - OECD
  - UNEP
  - International conventions, ...
- these external requirements should be **mutually consistent**!

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A distributed information system lives in heterogeneous technical contexts

- needs an information infrastructure
  - based on **open standards** (W3C, OGC) – for system interoperability
  - enhanced with **metadata** – for information usability
- is implemented by **web sites** accessing metadata catalogues and databases via **web services**
- a picture ...

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4th World Water Forum

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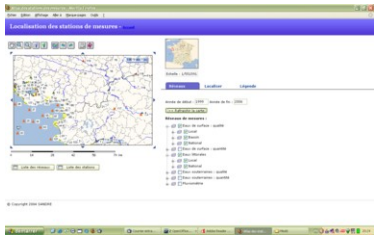

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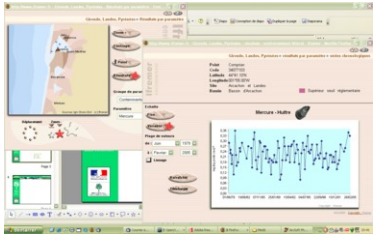

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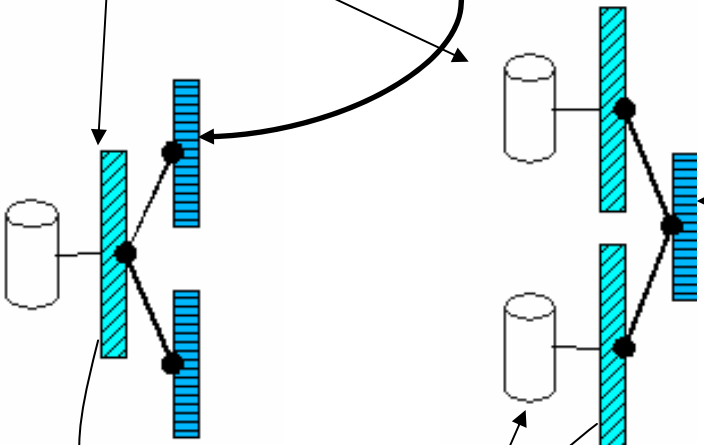

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