

OSCi Brainstorming

on a possible OSCi collaborative project
submission early 2011 to the French ANR

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Disclaimer

- A couple of hours in the French TGV serves at best rough drafts
- Anyway : this document is only meant to be a starter for discussions. The more, the better ;-)
- Why this presentation ?
 - In an e-mail exchange last week with J.-P. L., we were agree that French industries and academics are expected to foster cloud computing through national funding. OSCi partners have all that is required to be successful. We need to identify focused projects for such fundings. I've been ask to make propositions as a brainstorm starting point to foster OSCi submission to ANR Calls due to jan/feb 2011.
 - It's therefore a very personal point of view

Starting point

- What ?
 - ➔ The idea focuses on developing one of the several aspects of OSCi domain 4 (massively distributed clouds) through a collaborative project.
- idea : focusing on massively distributed **adaptive** services on cloud for **pervasive** environments

Goal

Make applications in the **cloud aware of** the **context** “on ground” for pervasive applications.

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- ➔ in pervasive applications the end-user environment obv. matters (localization, devices, connectivity, battery, etc.) and may be one bottleneck/enhancement for a service.
 - ➔ cloud adaptation is not limited to cloud elasticity and self-sizing : services in the cloud have to adapt their BL to the context of use.

Why ?

- The end-user is not in the cloud.
- He's bound to earth “somewhere”, at “some” time, with “some” device, realizing “some” tasks, even using “some” objects (web of things), being working with “some” people, etc.
- That’s quite a lot of “some” that prevent a more personal service delivery for the cloud end-user (end-user != cloud client).

Analogy

and no, I don't take drugs ;-)

- Speaking of the could metaphor, users' env. may be seen as a "ocean of data", that partially evaporates and contributes to form clouds.
 - Smaller or **bigger** clouds depending on what is evaporated and given the climate.
- What is evaporated = context

Bridge with this morning presentation Domain #1

- The application load/unload autonomic task "only" depends on workload
- What about other context elements
 - “some” localization
 - stadium ex. this morning
 - “some” device
 - resolution of video for instance: it’s no use to make the cloud grow for a 1080p broadcasting if the device is a smartphone)
 - “some” people
 - social awareness (e.g. SocEDA domain #2)
 - etc.

Remark

- We are not far from “Quality of Experience” (as a complement of QoS).
 - Super elasticity and self sizing of clouds contribute to QoS (strategies to optimize resources consumption and data placement, circuits of info, prioritization, tagging, etc.)
 - Context-awareness for clouds contributes to QoE (strategies to deliver the most adapted applications for the end-user satisfaction).

note : QoE is more than that, but this is outside the scope of this discussion

QoS/QoE : brain analogy

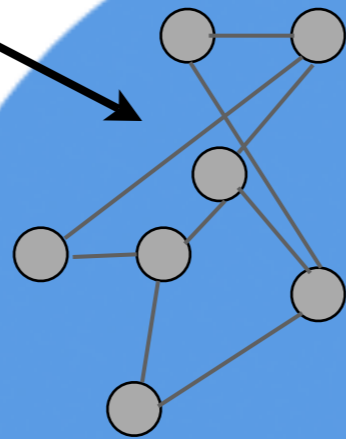
my very personal representation of Intelligent Systems

QoE strategies

(encompass context-awareness among other things)

left brain

“adapt the application”



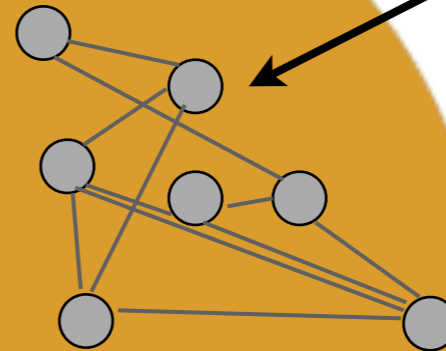
QoE

QoS strategies

(encompass elasticity and self-sizing among other things)

right brain

“adapt the infrastructure”



QoS

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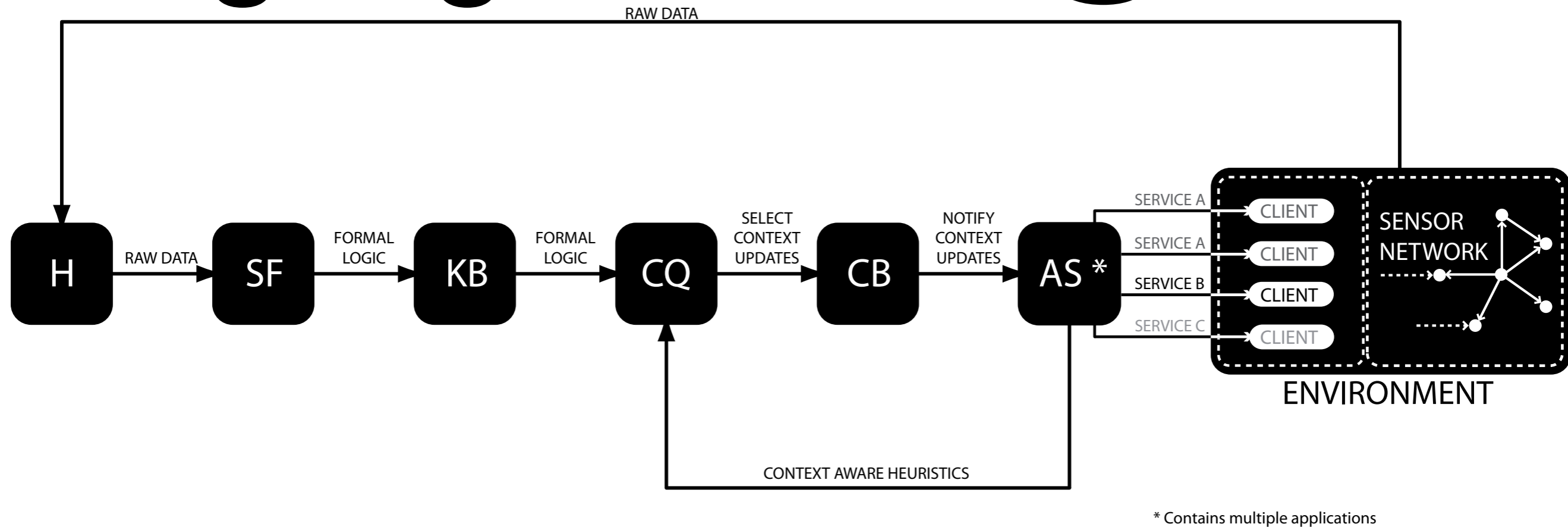
QoS

We need to **think** with **both** sides !

Do you have a plan ?

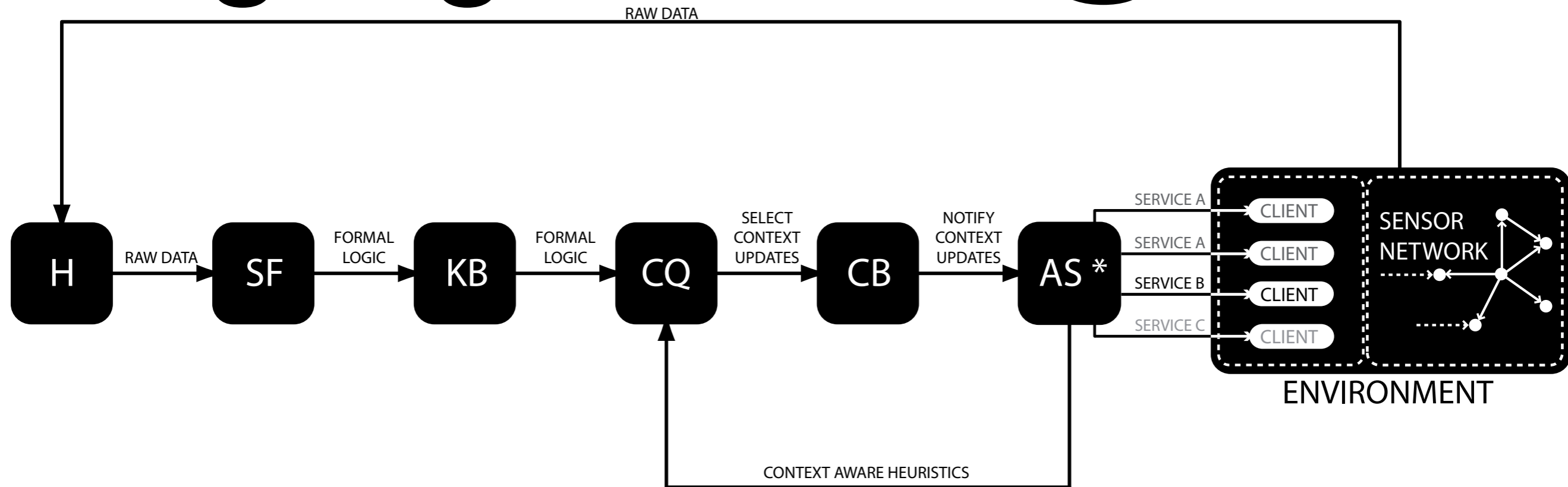
- Globally: lots of research in this field in public and private labs.
- Télécom St-Etienne: Semantic technologies in the AppServer as a mean to give sense and infer the end-user context.
- Technically speaking : i) JASMINE module ? ii) Context "layer" in clouds ? iii) context as intelligence at the interface of PaaS and SaaS ? iv) same but between PaaS and IaaS ? iv) ideas ?
- Link this with this morning -> merge ideas in the SelfXL follow-up project ?

ongoing research @TSE



Ease of authoring and migration of the App's CA, if the CA sign. is embedded with the App.

ongoing research @TSE

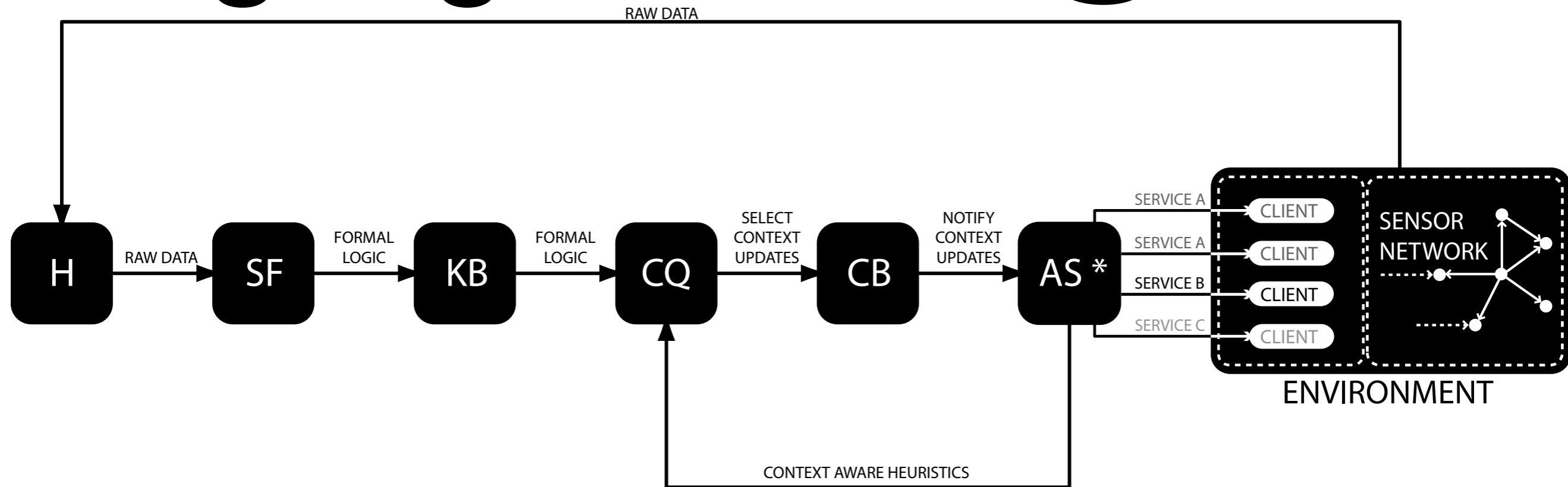


* Contains multiple applications

Context awareness signature delivered along the business logic of the application and expressed in DL (OWL + SWRL)

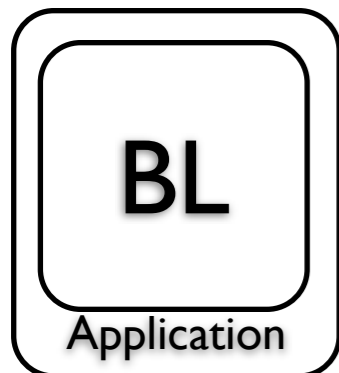
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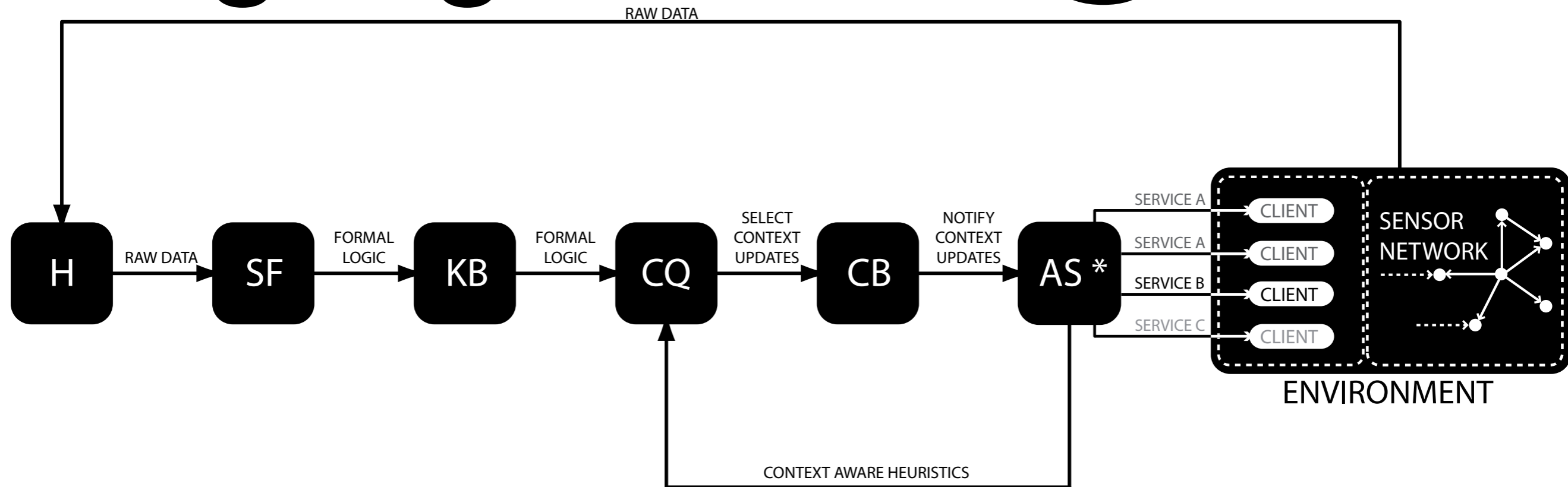
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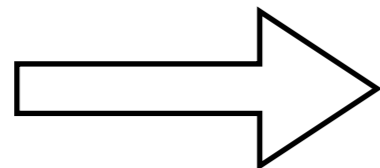
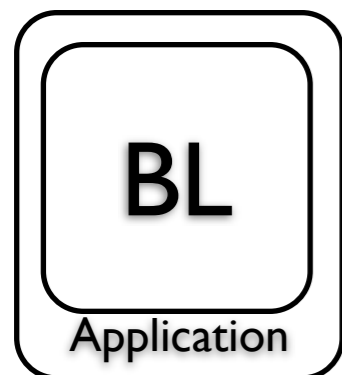
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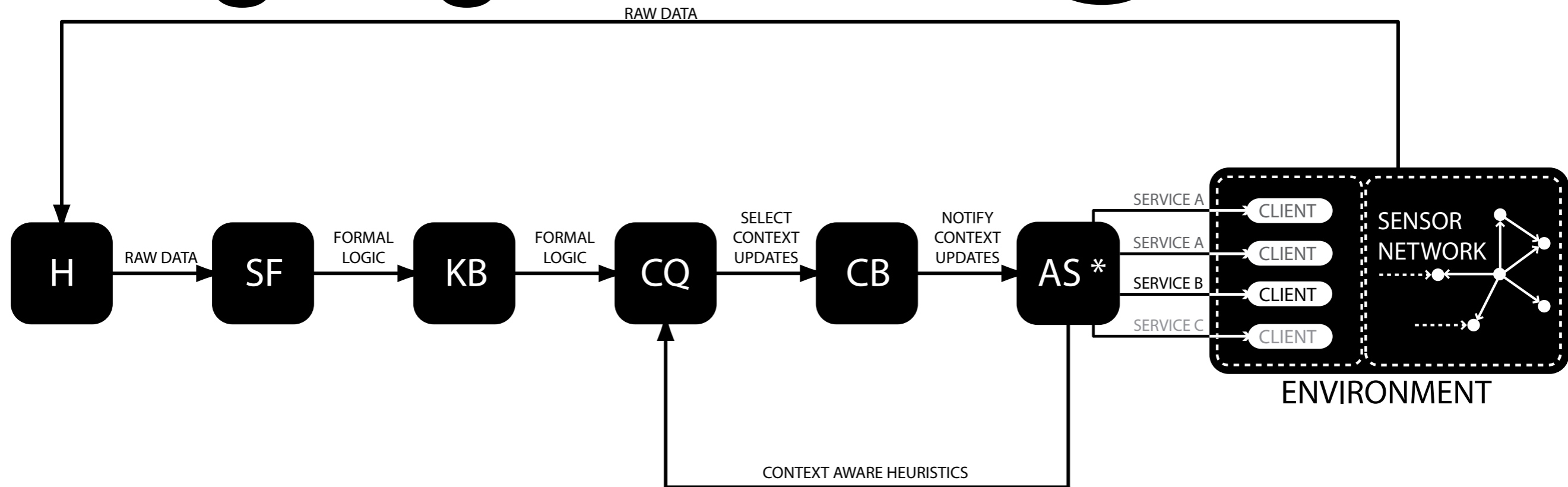
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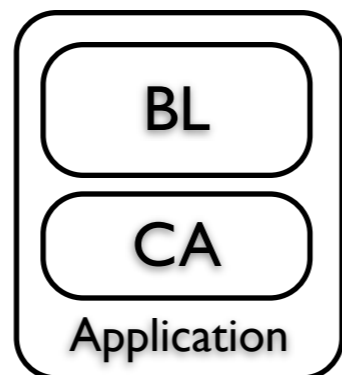
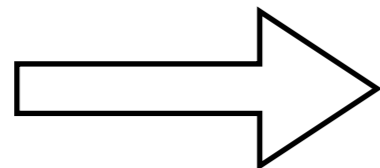
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Another thoughts

- Pluggable clouds as presented by J.-P. L. some minutes ago means distributed contexts (“home clouds” ?)
 - maybe one “context agent” per cloud in the pluggable device ?
 - for home applications as : e-health, home automation, entertainment, adaptive hypermedia, ... like presented minutes ago.
 - btw with the prepared separation of SP / ISP roles at home by EU regulation, the end-user may became his own sky prosumer (choose, host and consume clouds)
 - reasoning over “distributed contexts” is an exciting research topic.

Questions & Brainstorming

Remember the point at 1st slide: on a possible OSCi collaborative project submission early 2011 to the French ANR.