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> Grandes problemas, como a execução de um processo complexo de negócio, podem ser resolvidos de forma mais fácil e eficiente quando separados em pequenas partes.

Thomas Erl

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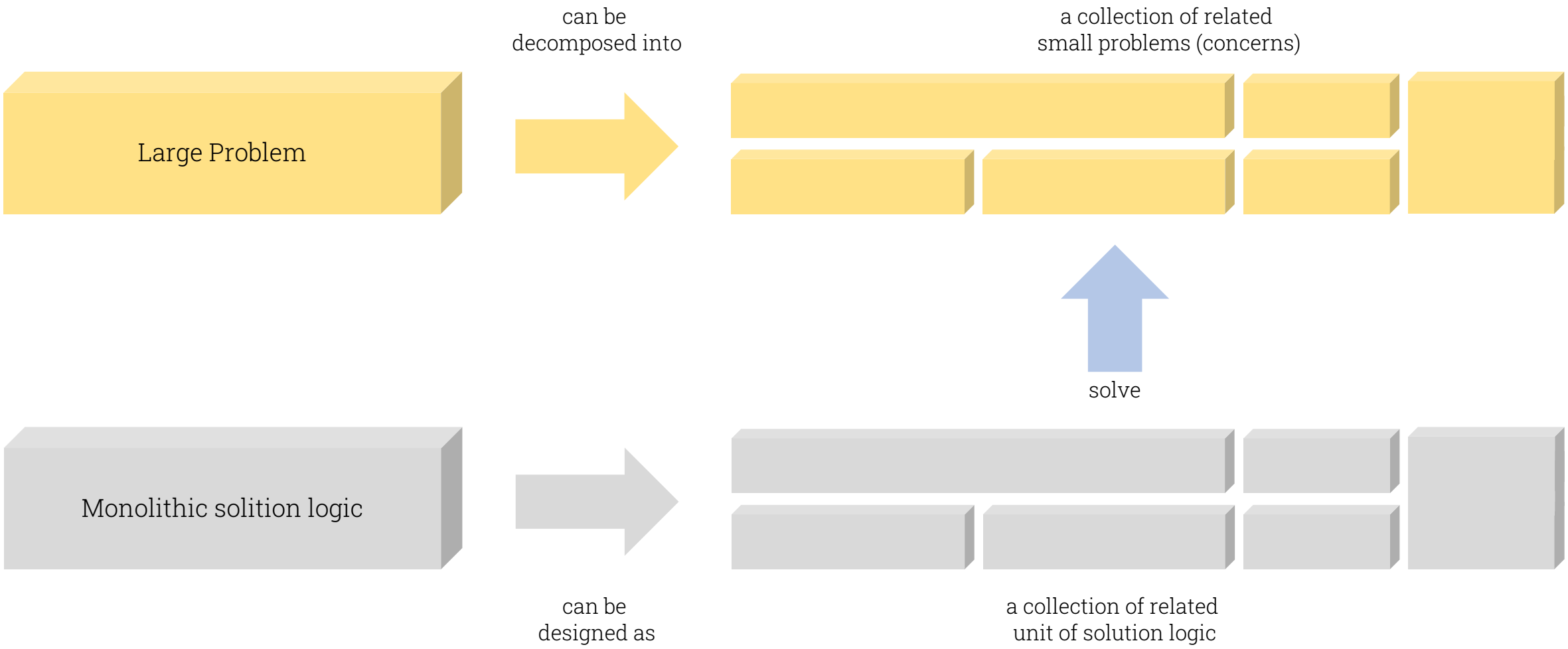

> Cada unidade de solução construída existe como um corpo lógico independente. Essa abordagem de design forma as bases da computação distribuída

Thomas Erl

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Como distribuir soluções de software?

YAN JUSTINO

Msc. Software engineering UFRN

Senior Software Architect XP Inc.

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Vamos falar sobre Multi-Agent System (MAS)

> Multi-agent systems (MAS) are gradually becoming a new paradigm for developing distributed computing systems.

Kishore & Hamesh

https://www.researchgate.net/publication/222827222_Enterprise_integration_using_the_agent_paradigm_foundations_of_multi-agent-based_integrative_business_information_systems

> An agent is a computer system that is situated in some environment, and that is capable of autonomous action in this environment in order to meet its design objectives.

Kishore & Hamesh

https://www.researchgate.net/publication/222827222_Enterprise_integration_using_the_agent_paradigm_foundations_of_multi-agent-based_integrative_business_information_systems

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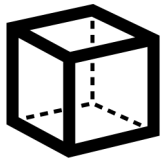
MAS

modeled using mentalistic notions, such as knowledge, belief, intention, and obligation

agents are able to decide whether or not to execute an action after receiving requests

agents engage in conversations that are task-oriented shared sequences of messages.



OOP

modeled as simply encapsulating their internal structure as methods and attributes.

Objects do not have control over their behaviors

objects that just engage in single-message exchanges.

$$R(Ag, Env)$$

$$Ag: R^E \rightarrow AC$$

$Ag = agents$

$R^E = executions$

$AC = action$

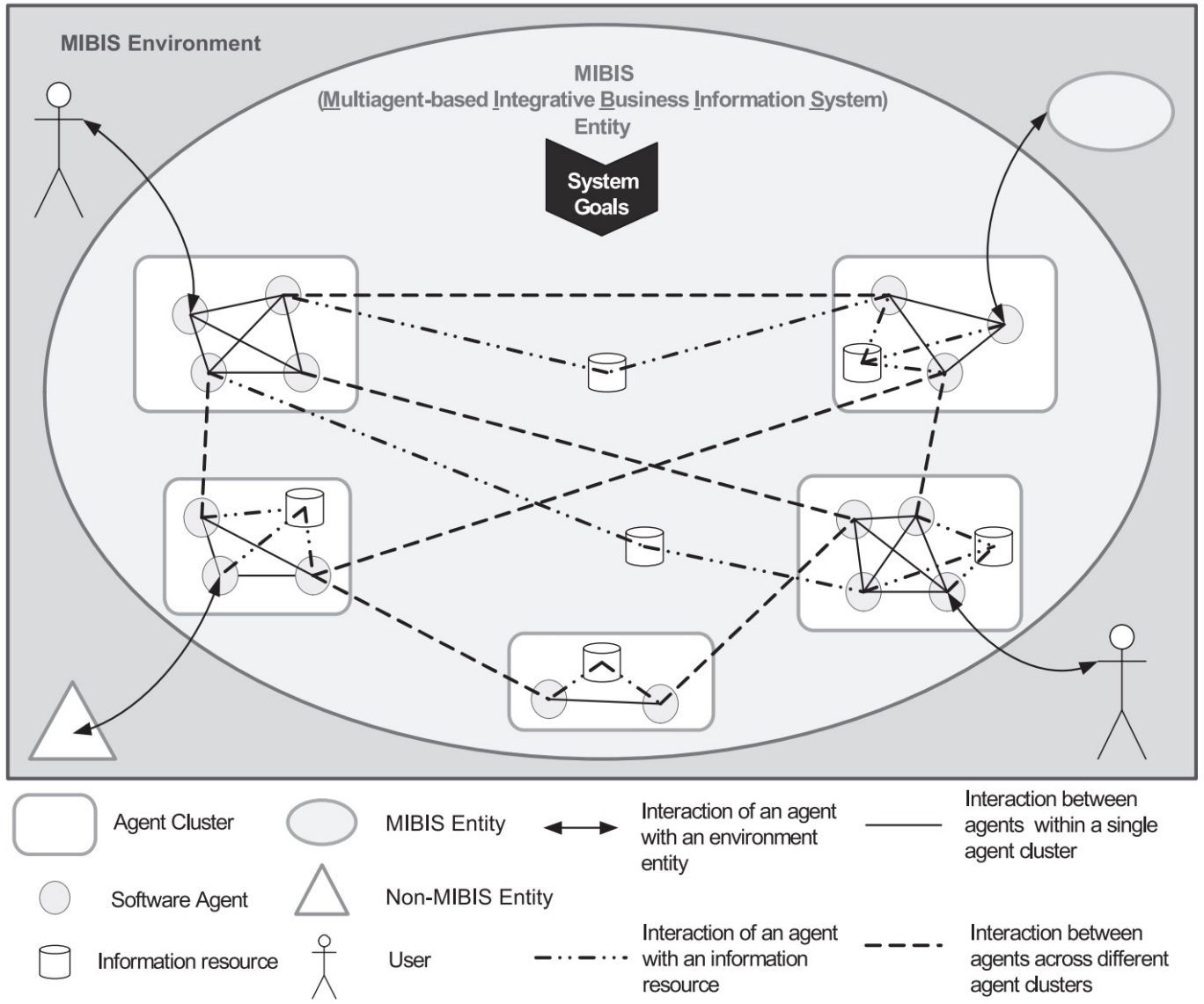
$$Env: < E, s0, \tau >$$

$E = (state,\ action)$

$s0 = initial\ state$

$\tau = ((s0,\ a0,\ s1,\ a1,\ s2,\ a2 \ldots\ an - 1))$


Agente
Ambiente
Perceber
Agir



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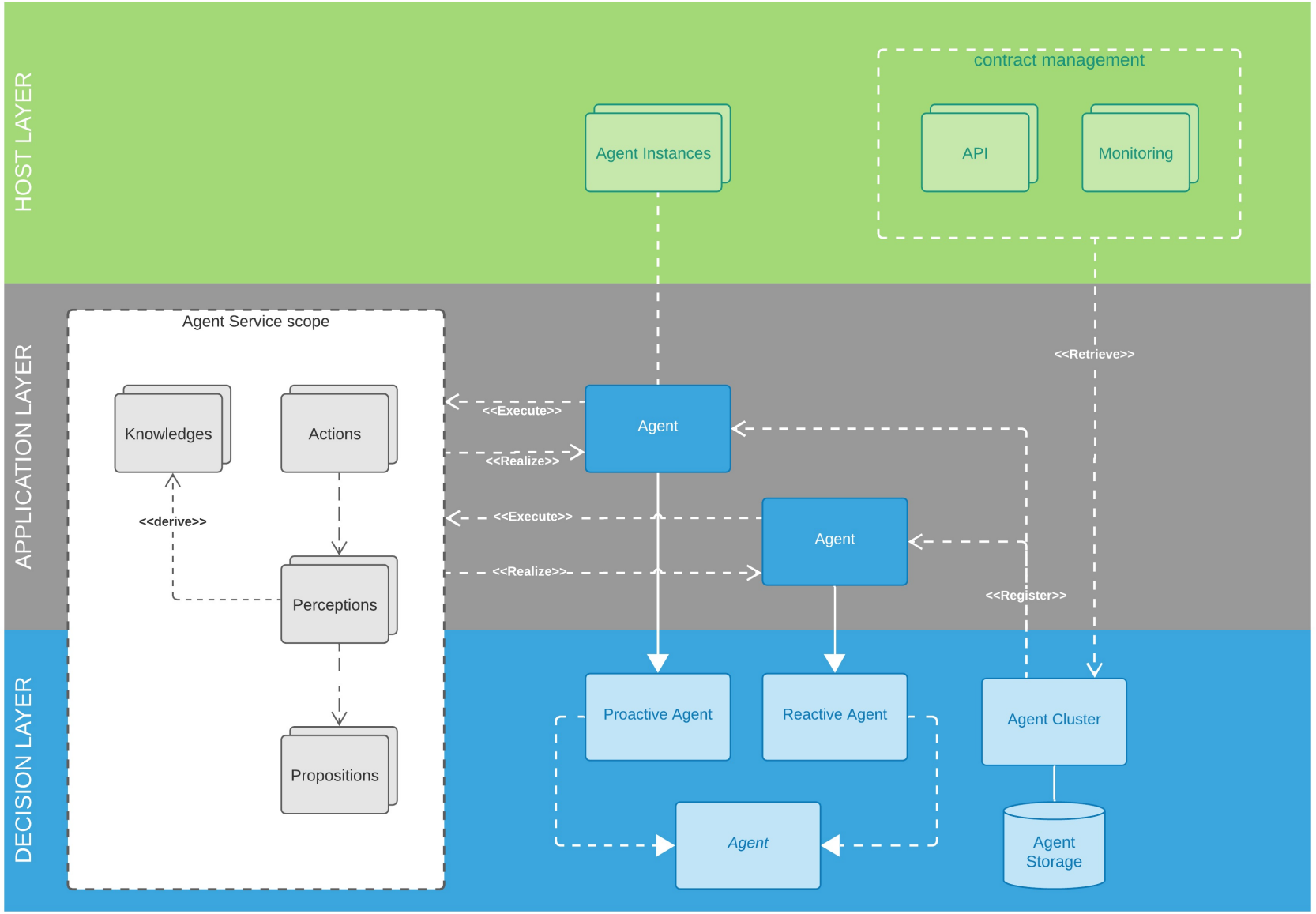
An overview of multi-agent-based integrative business information systems (MIBIS).

Demonstração

https://github.com/8T4/mas-unity




```
Project/
|
├─ Use cases/
|   |
|   ├─ Agents/
|   |   |
|   |   ├─ Actions/
|   |   |   ├─ Action.cs
|   |   |   |
|   |   ├─ Knowledges/
|   |   |   ├─ Knowledge.cs
|   |   |   |
|   |   ├─ Agent.cs
|   |   ├─ Schedule.cs
|   |   |
|   ├─ Environment/
|   |   |   ├─ Environment.cs
```

References

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2006-11
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