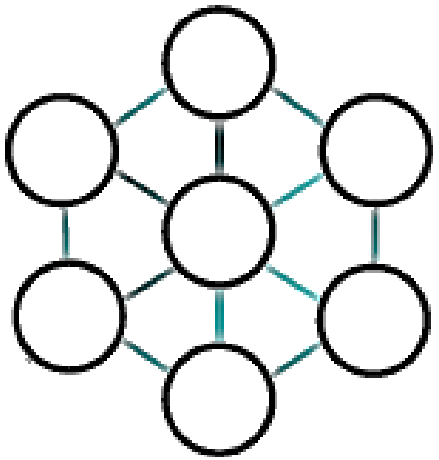
Enterprise Service Bus

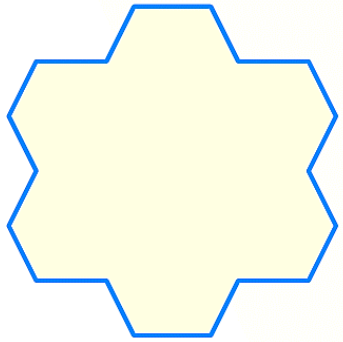
Sogelink So easy

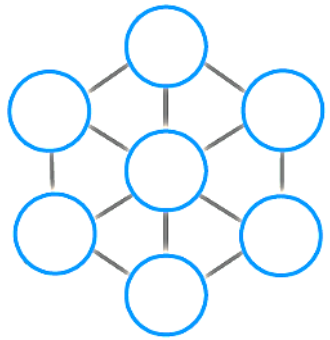
Que sont les microservices ?

- Les microservices constituent une approche **architecturale et organisationnelle** du développement logiciel, dans laquelle le logiciel se compose de **petits services indépendants** qui communiquent via des API bien définies.



Monolithes vs Microservices





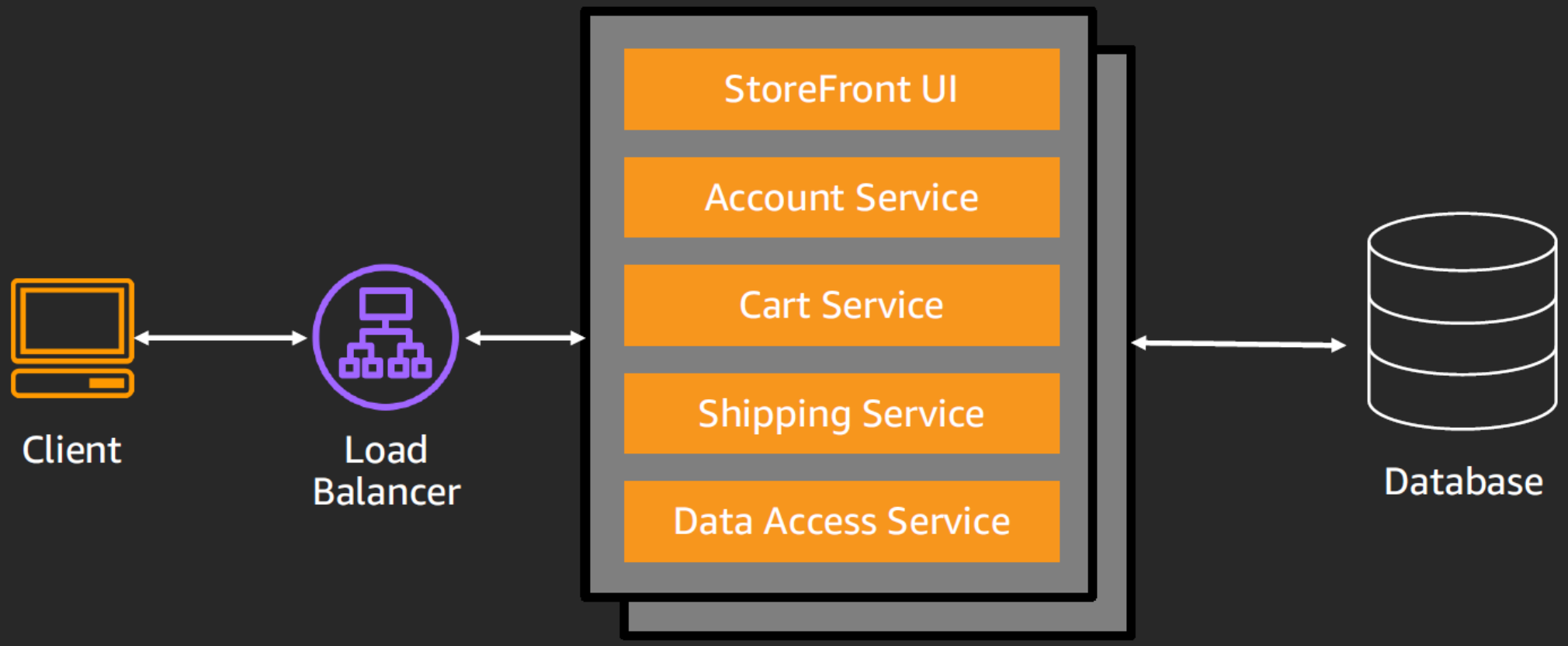
Monolithes

- Applications composées d'un seul bloc
- Mettre à l'échelle une partie de l'application
  =
  Mettre à l'échelle de l'ensemble de l'application
- Avec le temps, les changements de code deviennent de plus en plus difficiles à cause des impacts
- Les équipes ont une autonomie limitée

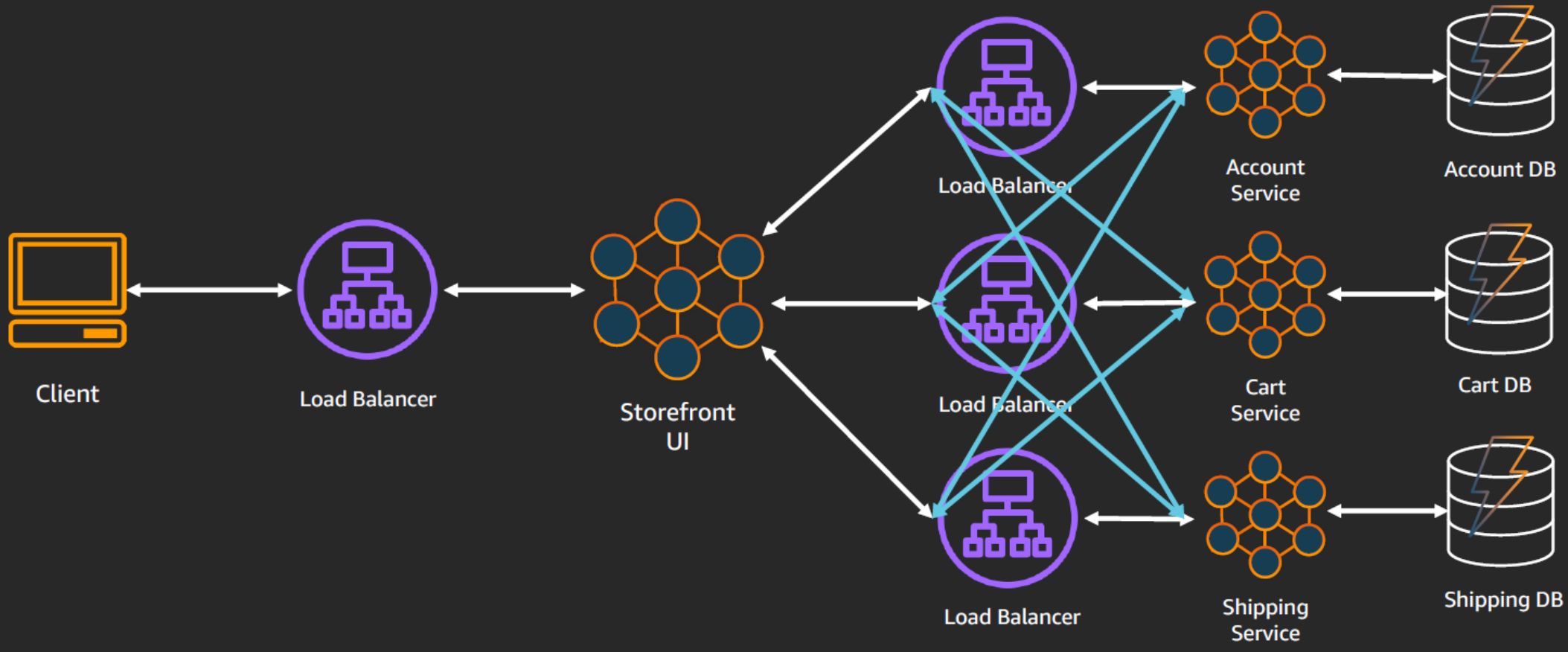
Microservices

- Applications composées d'une série de composants individuels
- Chaque composant peut être scalable
- Les changements de codes pourront être plus simple s'ils sont limités à des composants isolés
- Les équipes ont plus d'autonomie pour réaliser les changements sur leurs composants

Monolithic architecture: example

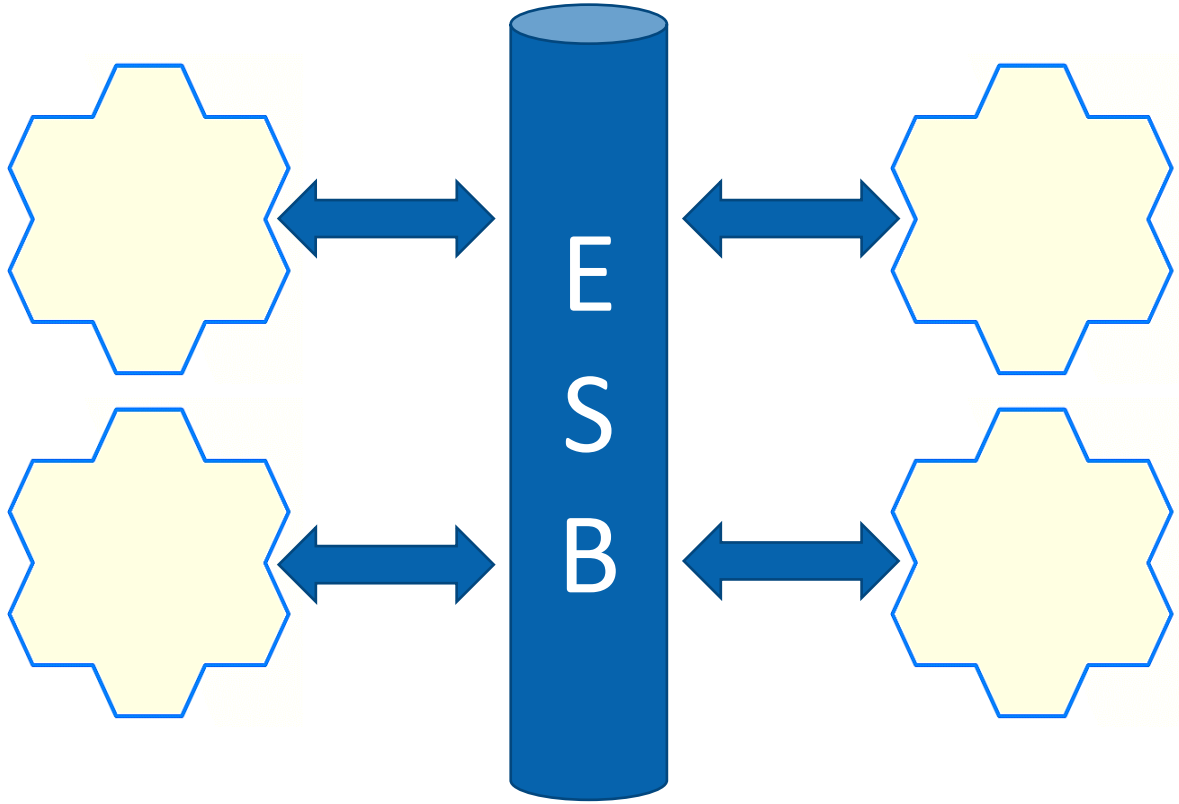


Microservices architecture: example



Enterprise Service Bus

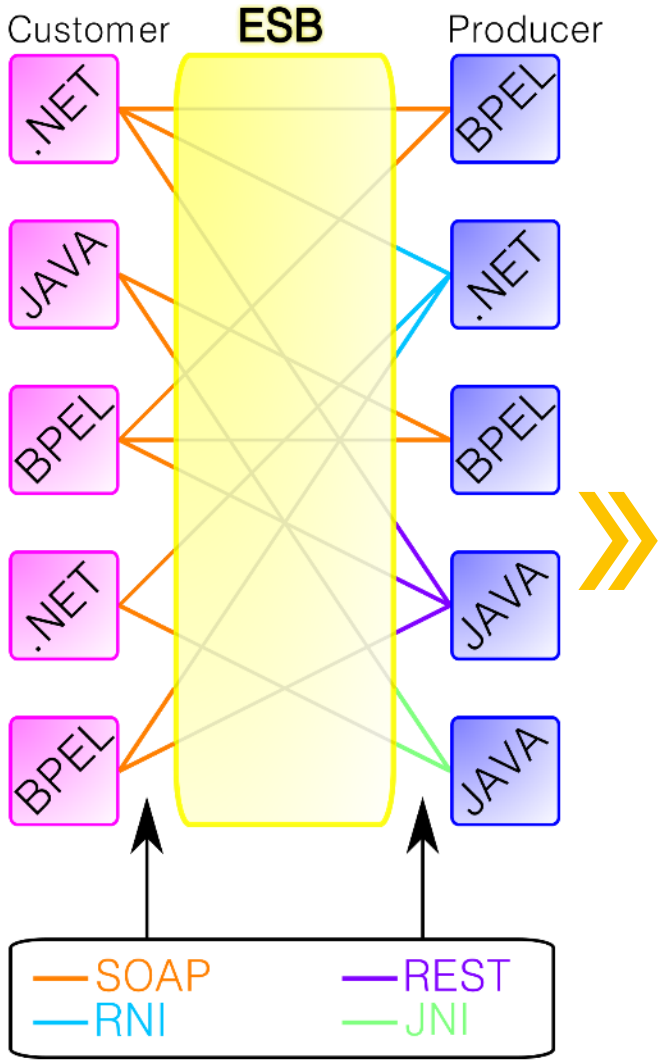
- L'**ESB** est un outil informatique middleware qui a pour objectif de **faciliter la communication et le fonctionnement d'applications entre elles**. Il a été conçu pour garantir la sécurisation d'échanges de plusieurs composants au sein d'un système d'information en normalisant ces échanges



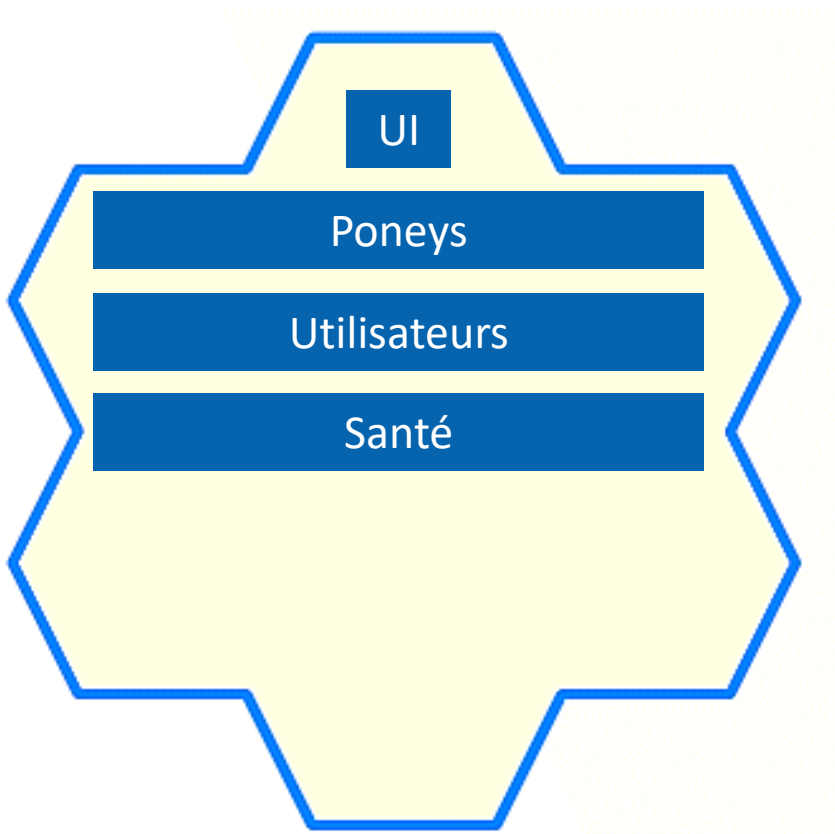
Enterprise Service Bus

"Connect anything to anything"

- Le but de l'ESB est avant tout de permettre la communication d'applications qui n'ont pas été conçues pour fonctionner ensemble



Enterprise Service Bus : cas d'utilisation



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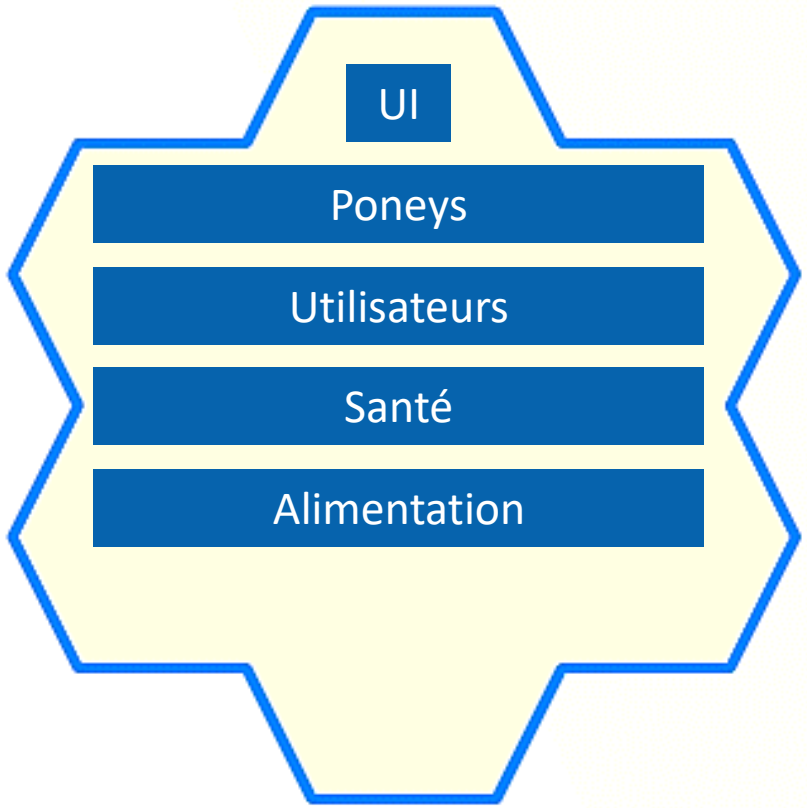

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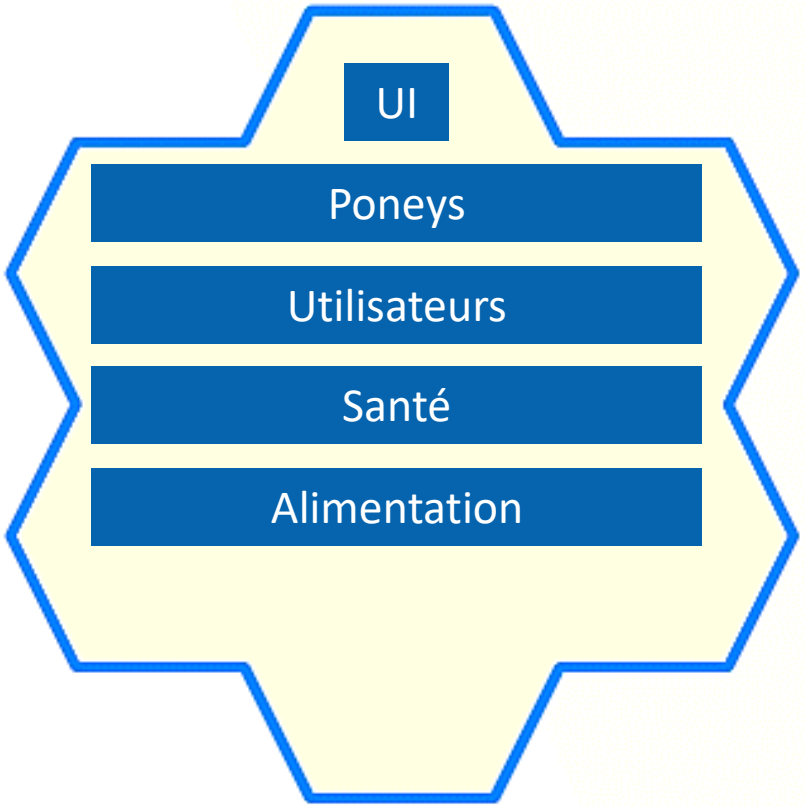

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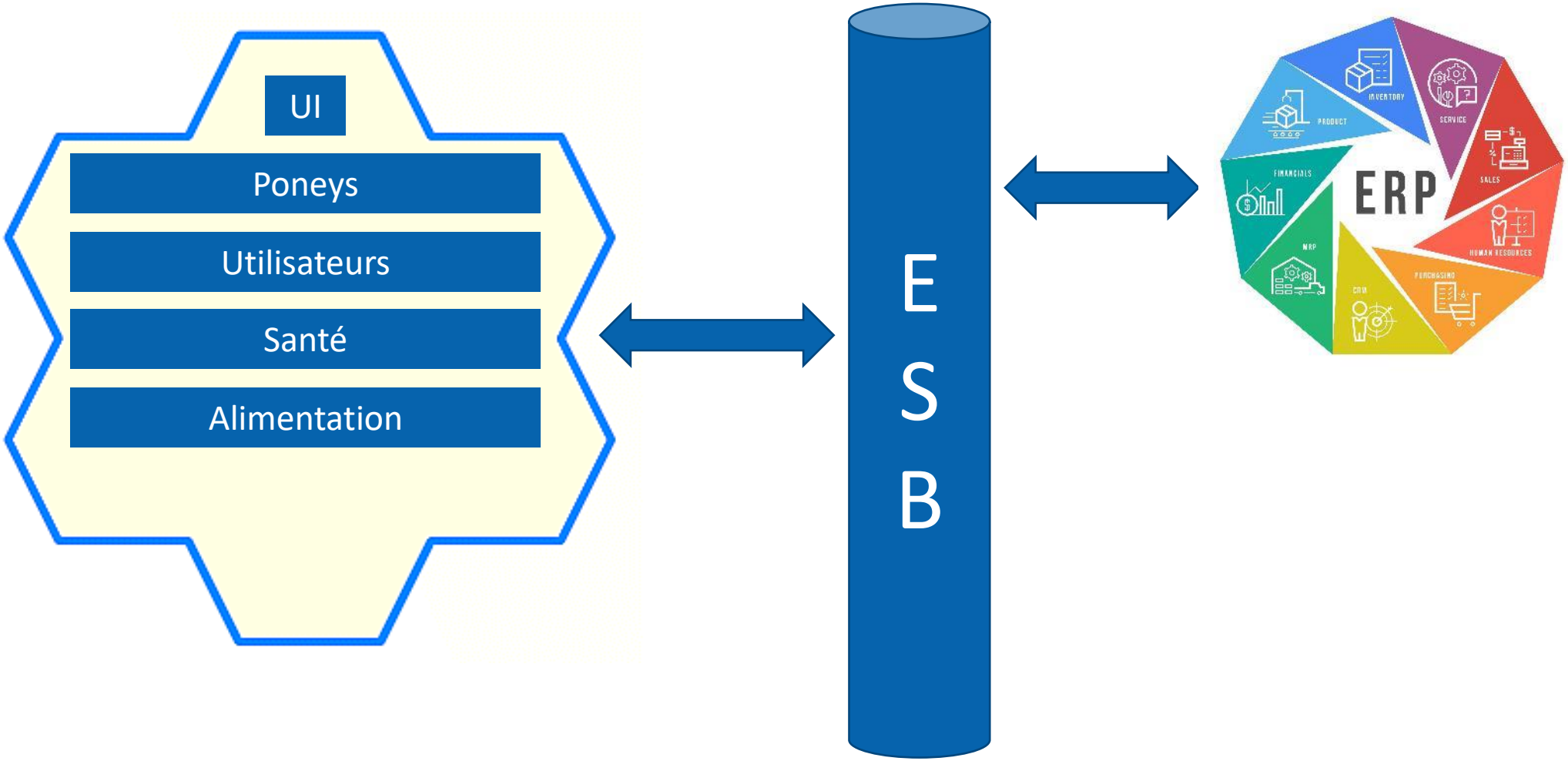

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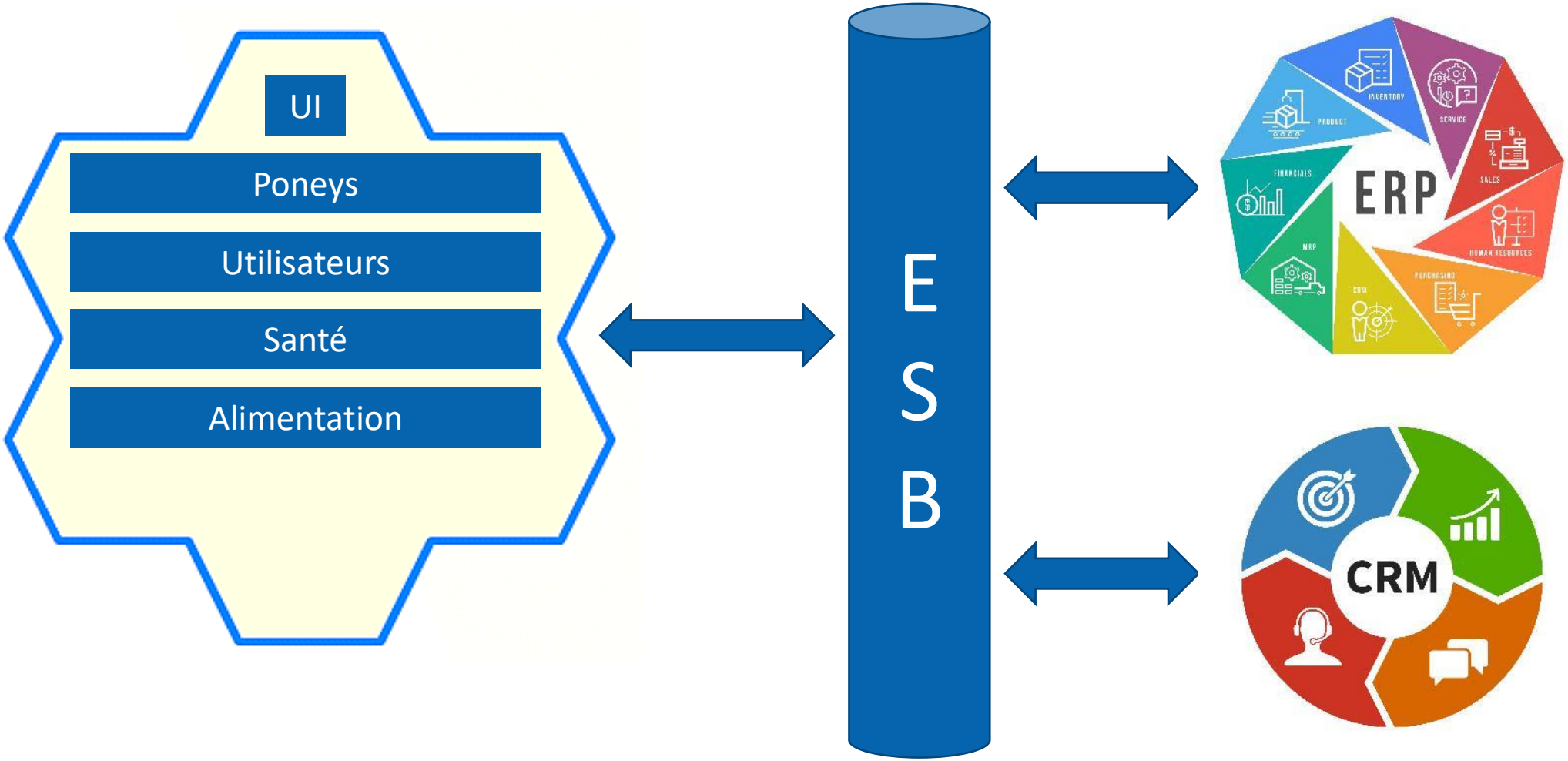


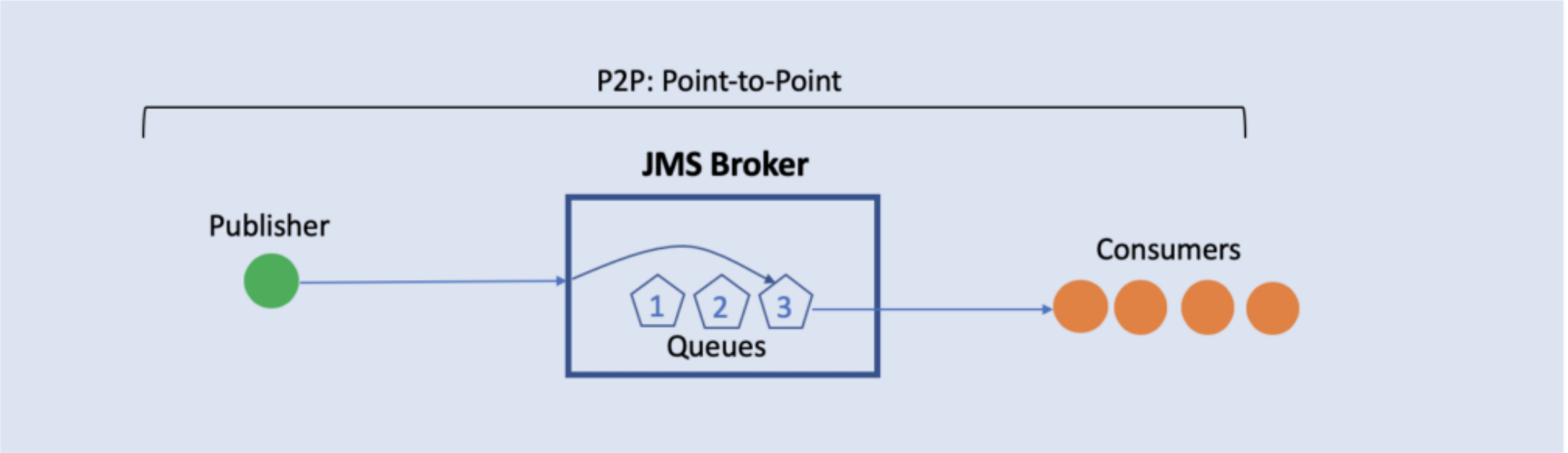
ESB : Exemple

- Talend ESB
- ESB Blueway
- ActiveMatrix Business Works de Tibco
- Mule
- Apache ServiceMix

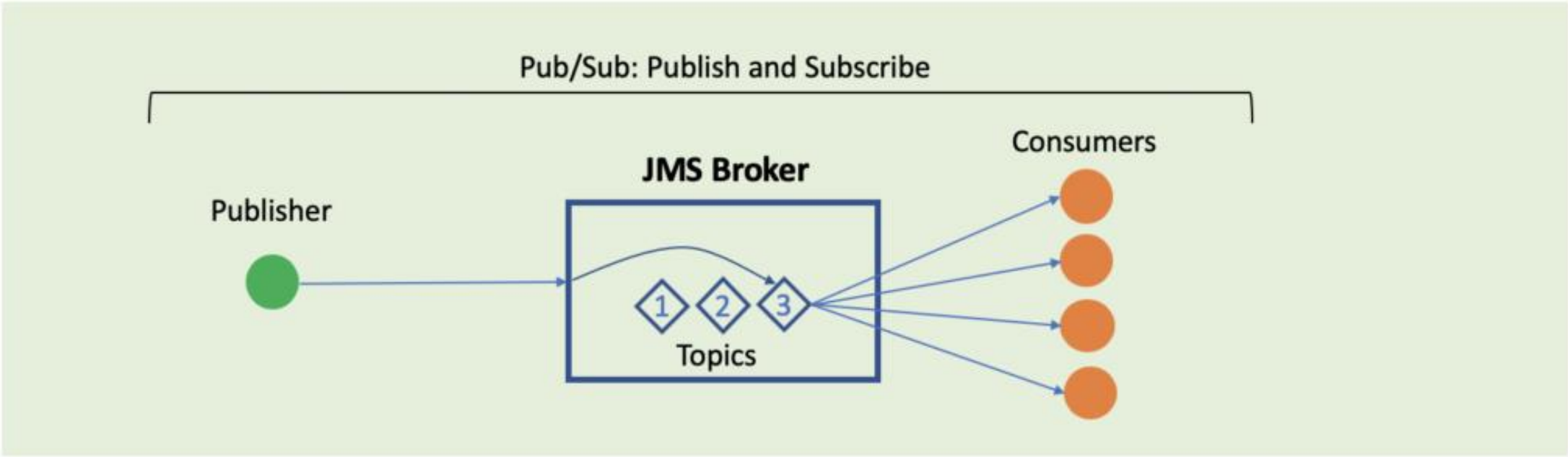
Message broker

- Le *message broker* (ou *message-oriented middleware*, ou agent de message) est au cœur des ESB
- Il permet l'échange de messages entre les applications
- Il agit comme médiateur entre les émetteurs et les récepteurs en leur permettant de communiquer efficacement avec un couplage minimum entre eux
- Il permet une communication asynchrone entre les applications :
  - L'application A envoie/publie des messages dans une file du *message broker*
  - L'application B écoute/s'abonne à la même file de message et peut consommer ceux-ci
  - Si l'application 2 n'est pas disponible, les messages s'empilent dans la file et seront dépilés plus tard

Queues


P2P: Point-to-Point
JMS Broker
Publisher
1
2
3
Queues
Consumers

Topics


Pub/Sub: Publish and Subscribe
Consumers
JMS Broker
Publisher
1
2
3
Topics

Topics vs Queues

- Topics
  - In JMS a Topic implements publish and subscribe semantics. When you publish a message it goes to all the subscribers who are interested - so zero to many subscribers will receive a copy of the message. Only subscribers who had an active subscription at the time the broker receives the message will get a copy of the message.

- Queues
  - A JMS Queue implements load balancer semantics. A single message will be received by exactly one consumer. If there are no consumers available at the time the message is sent it will be kept until a consumer is available that can process the message. If a consumer receives a message and does not acknowledge it before closing then the message will be redelivered to another consumer. A queue can have many consumers with messages load balanced across the available consumers.

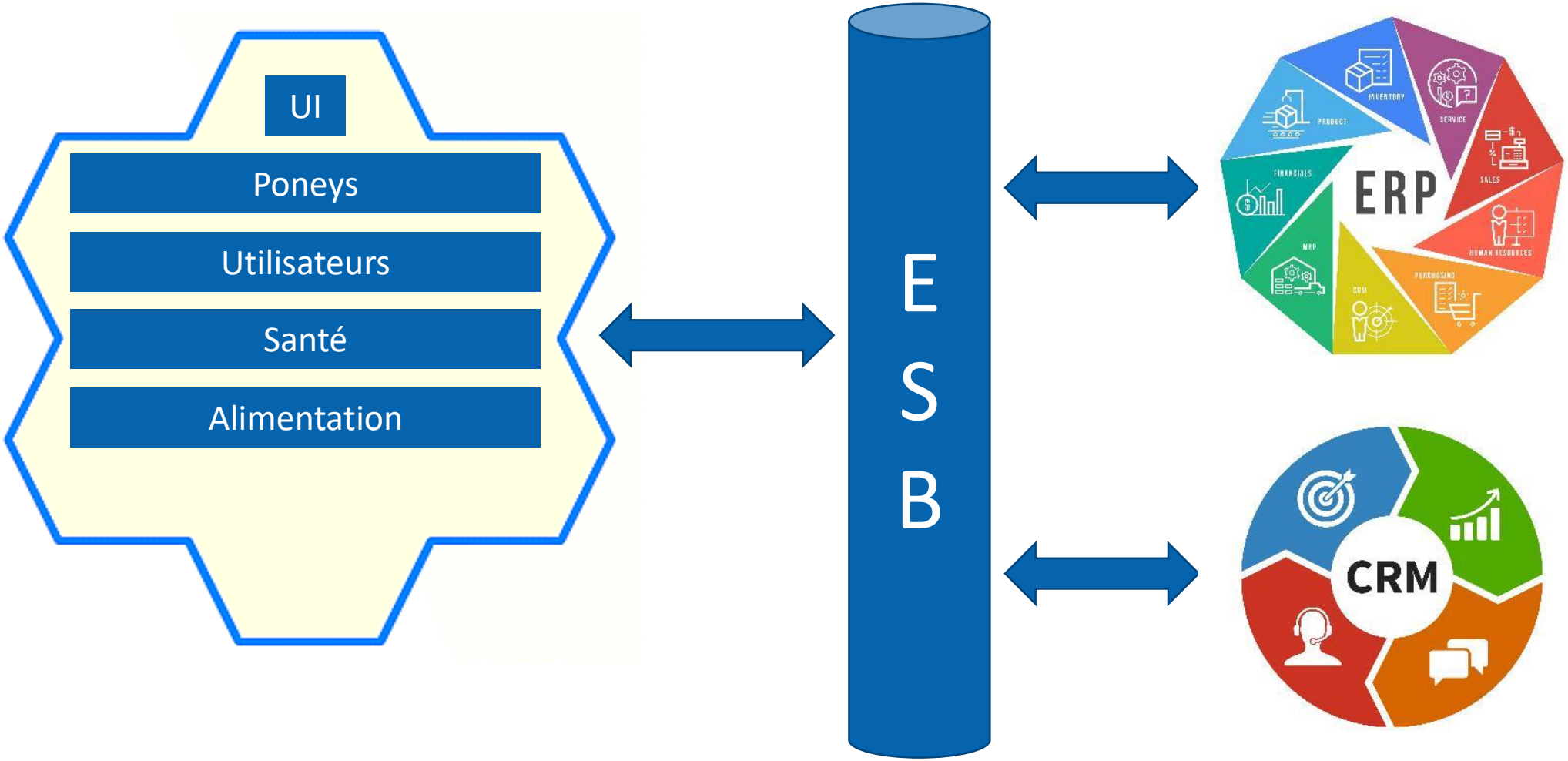
Source : ActiveMQ documentation

Exemple de *Message broker*

- Développé par Apache Software Foundation
- Ecrit en Java
- Protocoles:
  - OpenWire (Implementation JMS)
  - STOMP
  - MQTT
  - AMQP
  - WebSocket

- Développé par Pivotal
- Ecrit en Erlang
- Protocoles
  - AMQP
  - STOMP
  - HTTP
  - MQTT
  - Compatible JMS avec l'ajout d'un plugin

Enterprise Service Bus : cas d'utilisation



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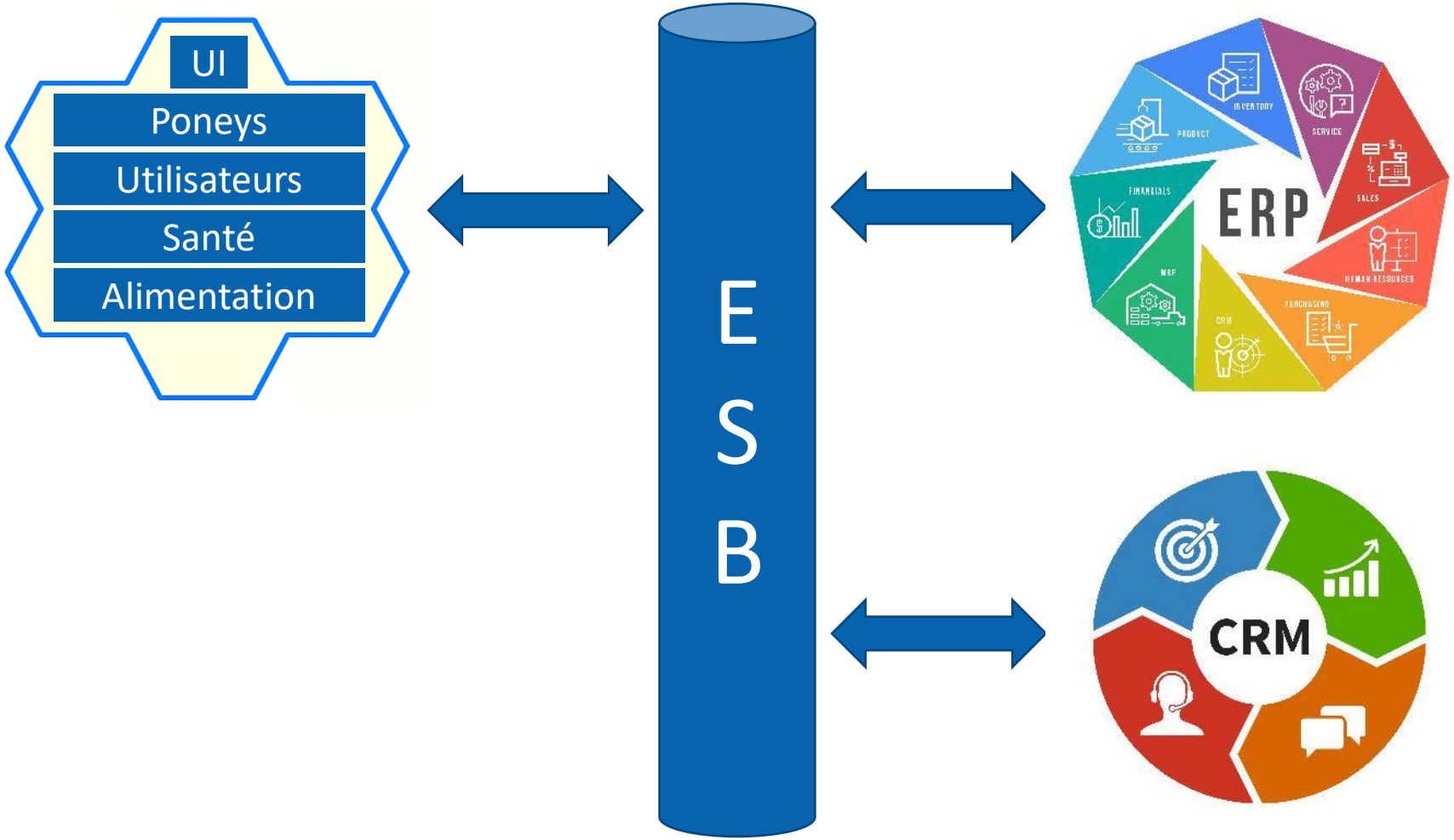

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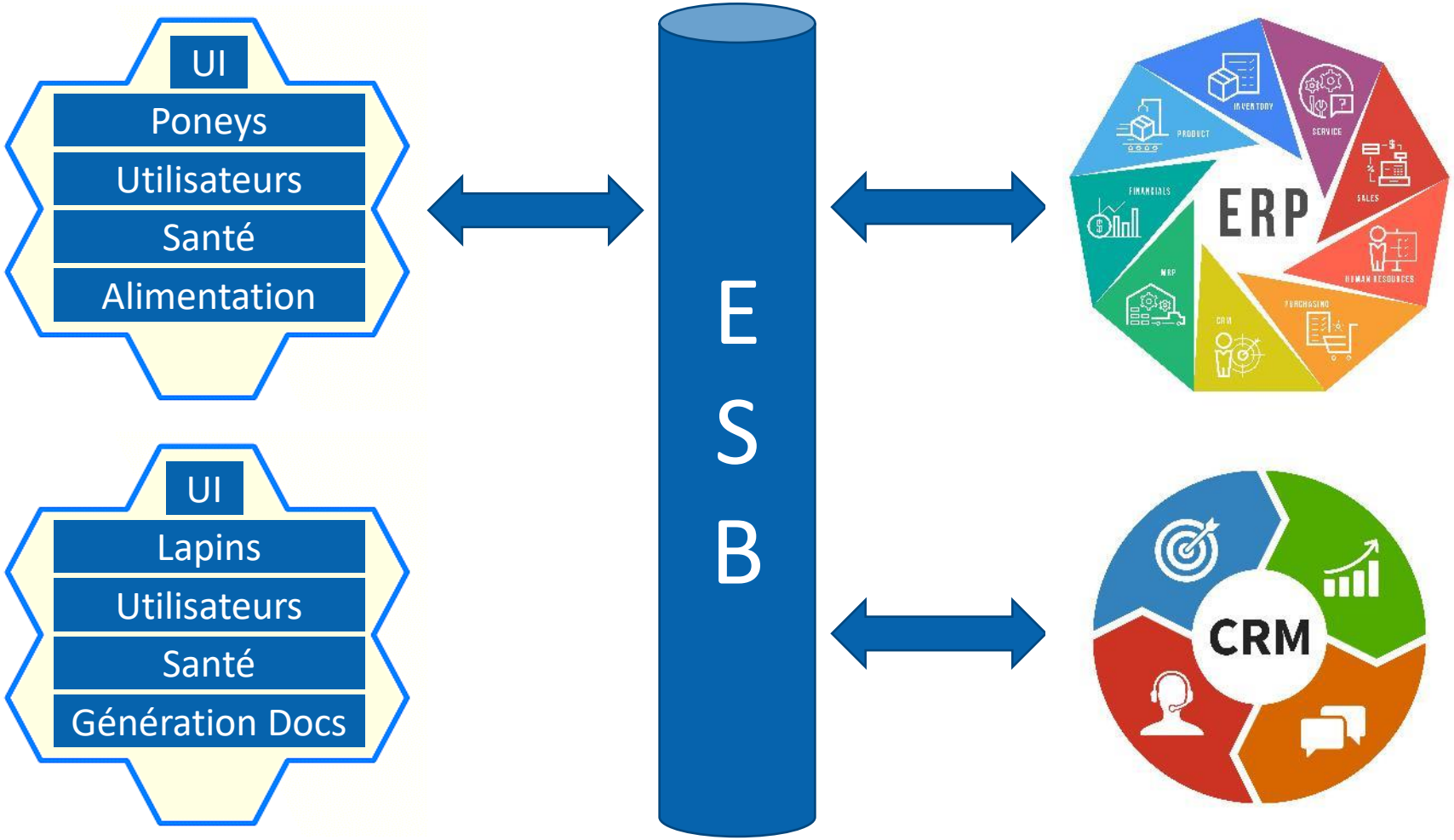

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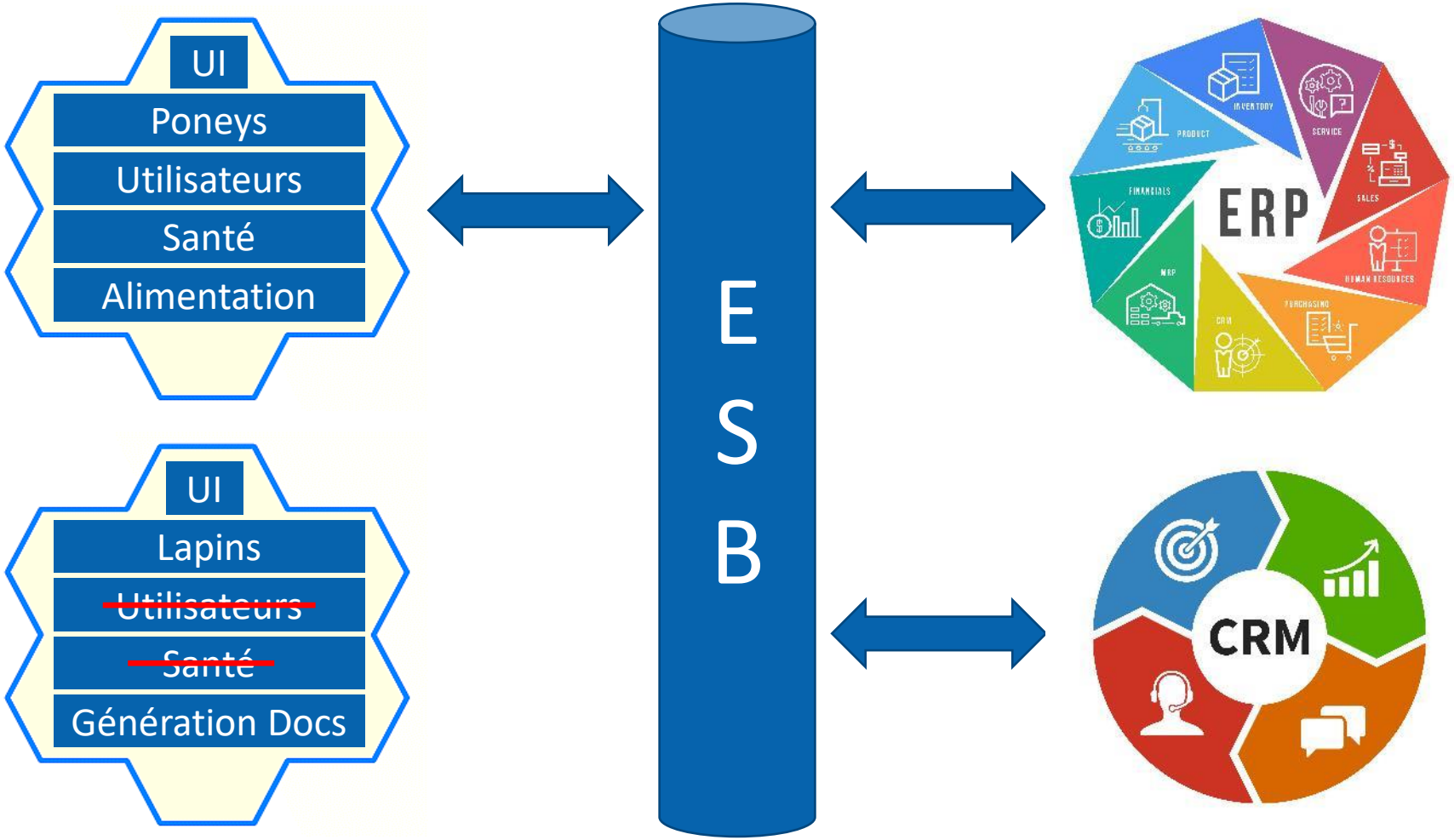

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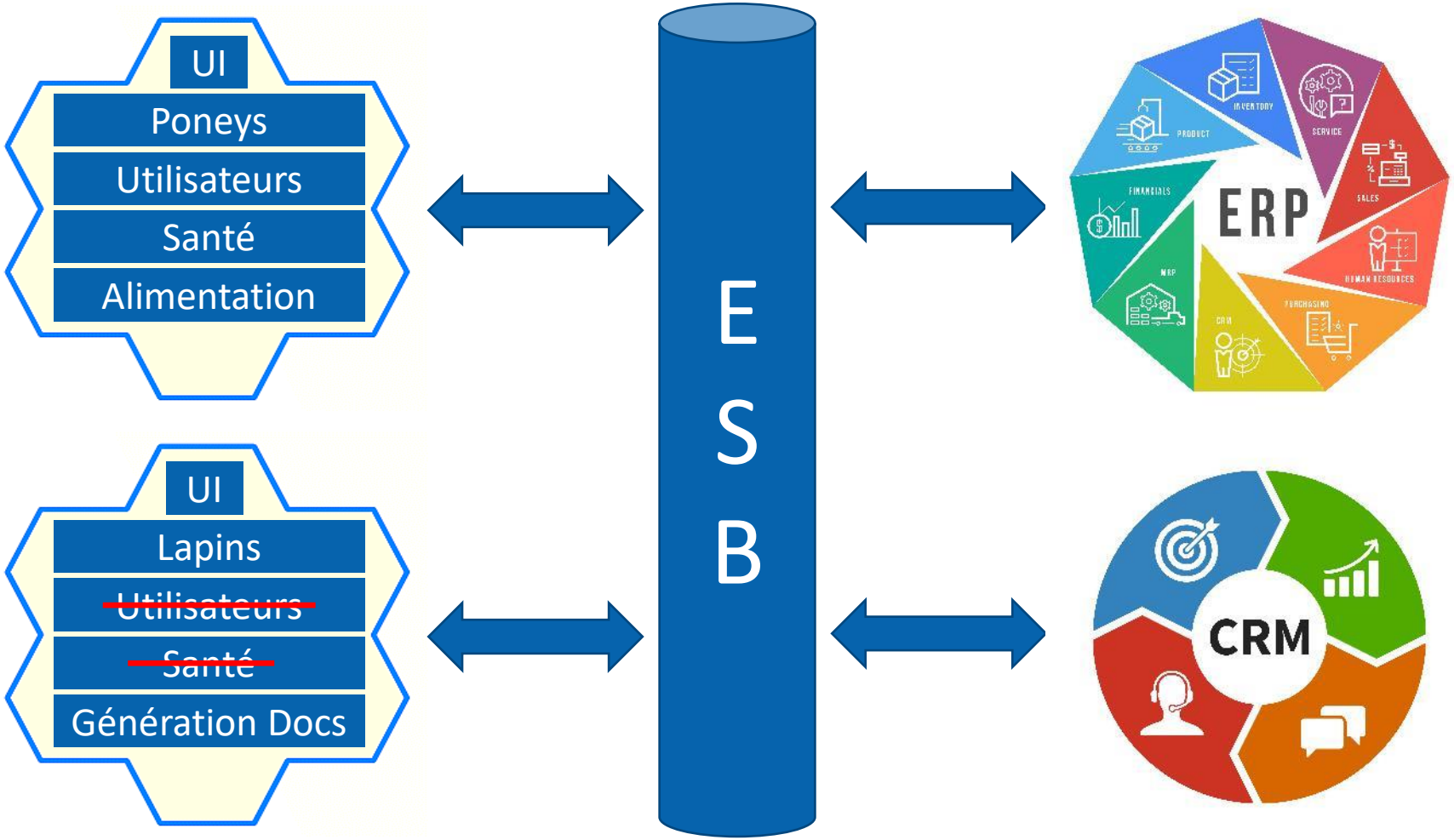

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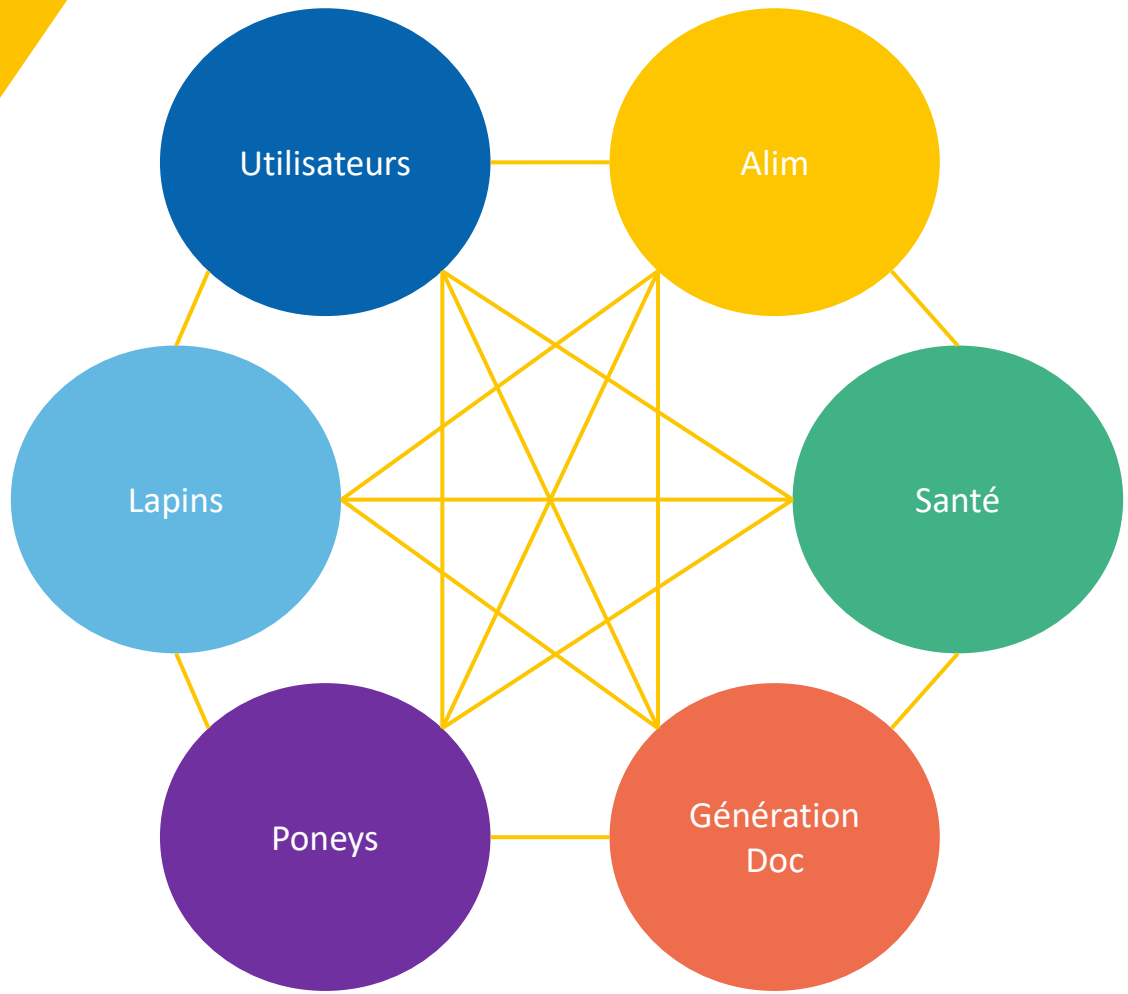

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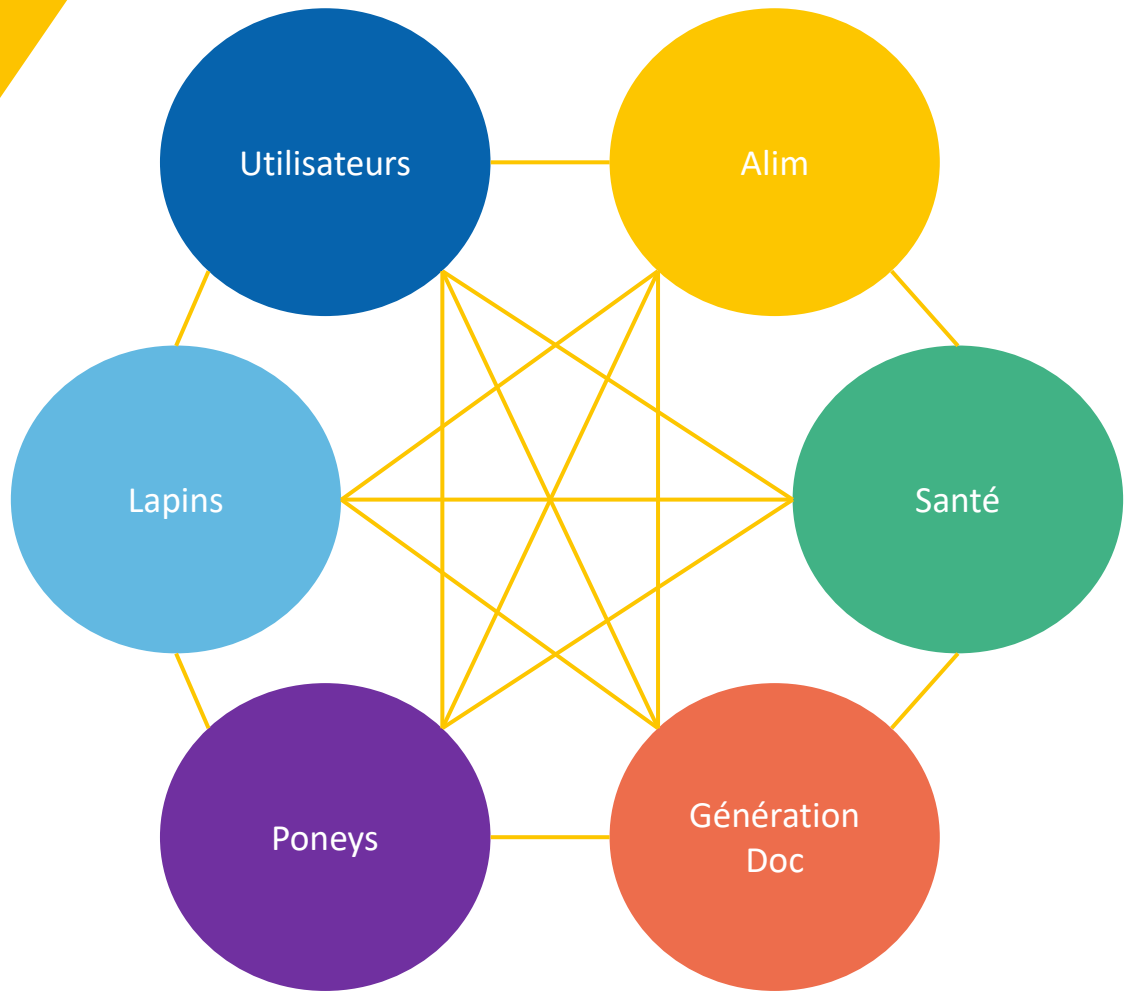
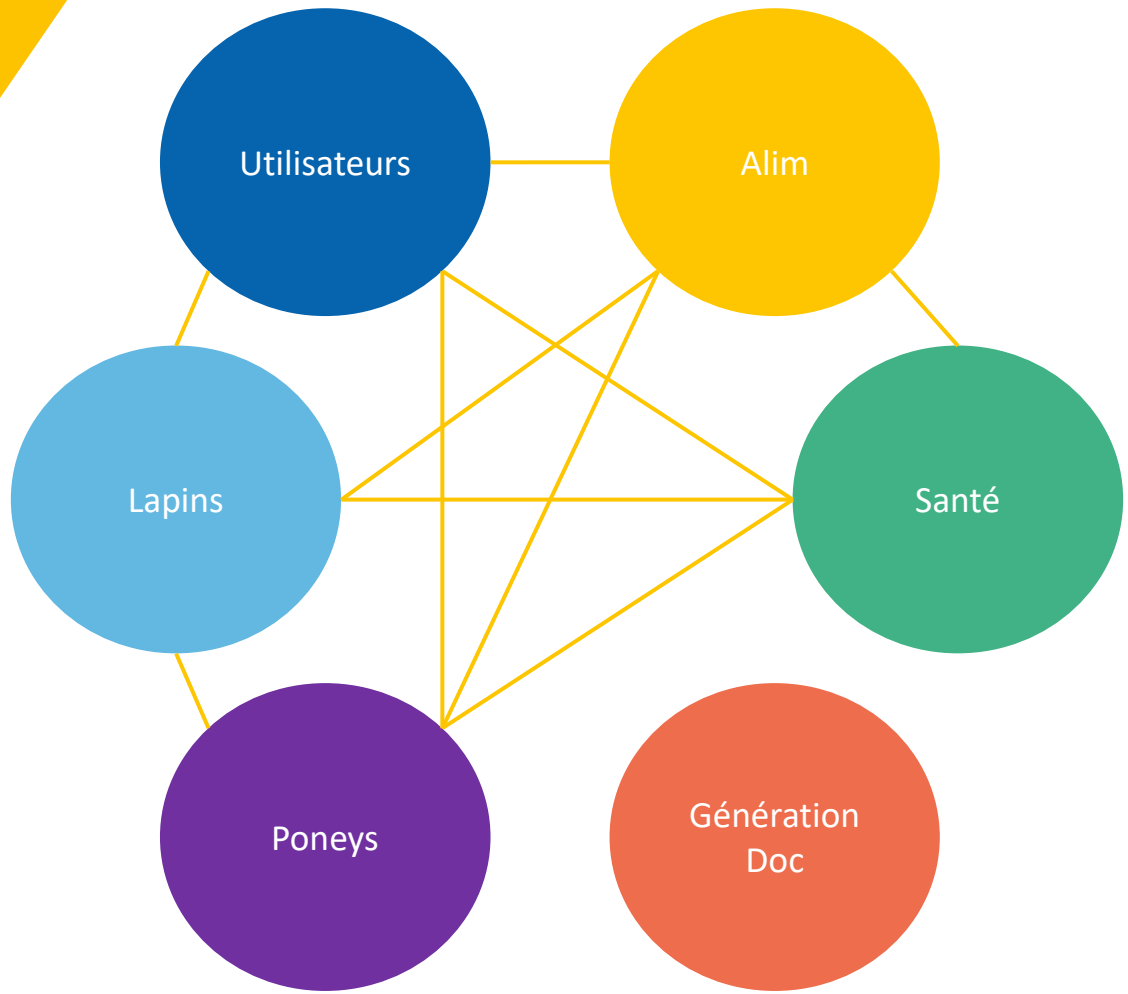
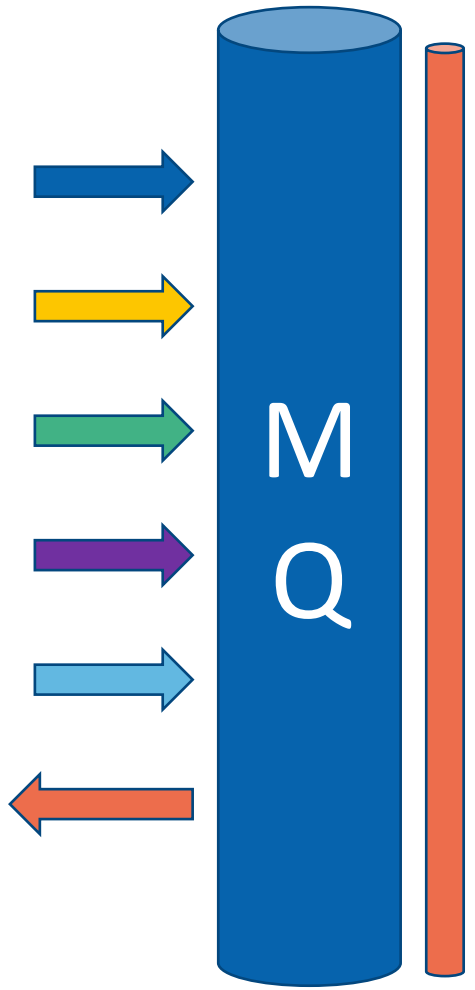


Génération de documents longue qui engendre des timouts, des erreurs de traitements…

Enterprise Service Bus : cas d'utilisation





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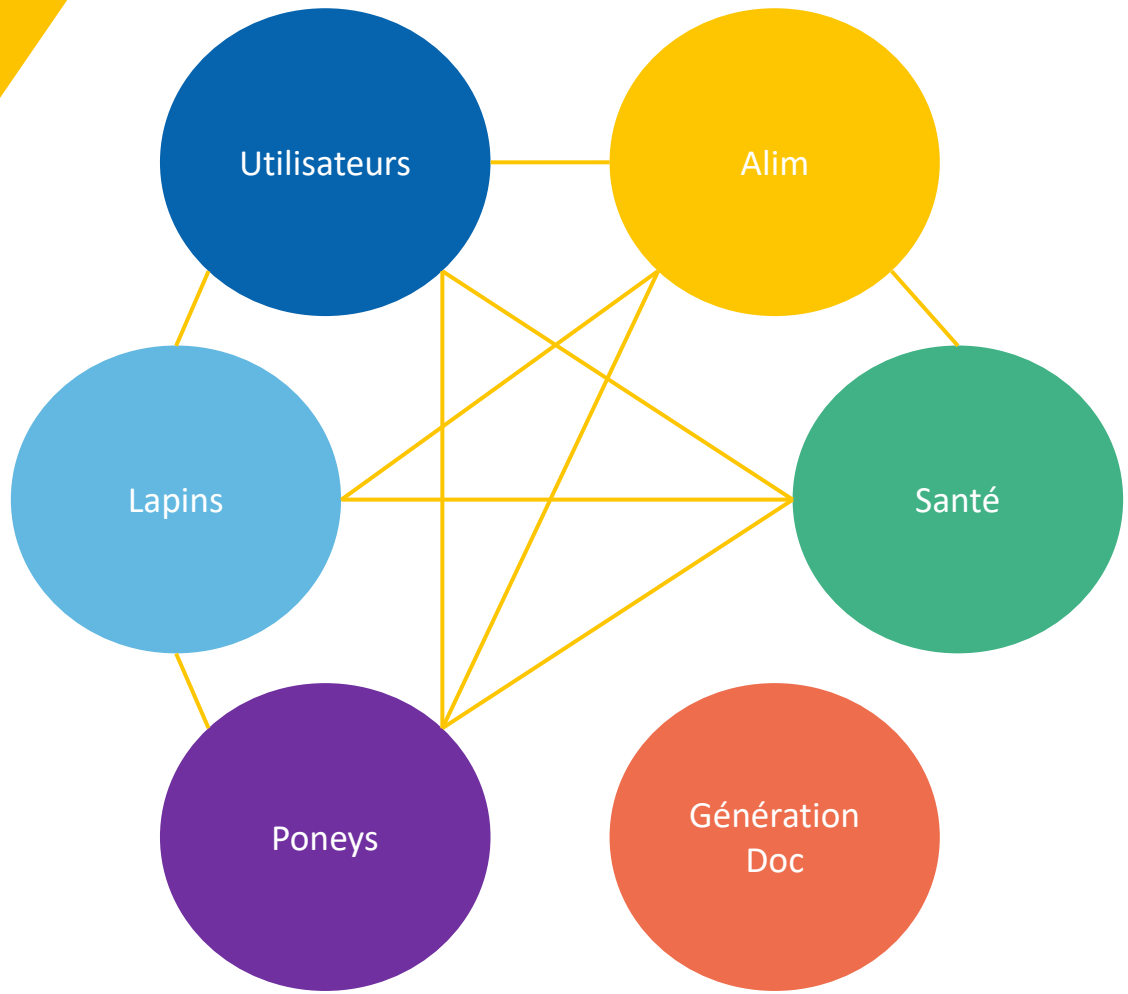

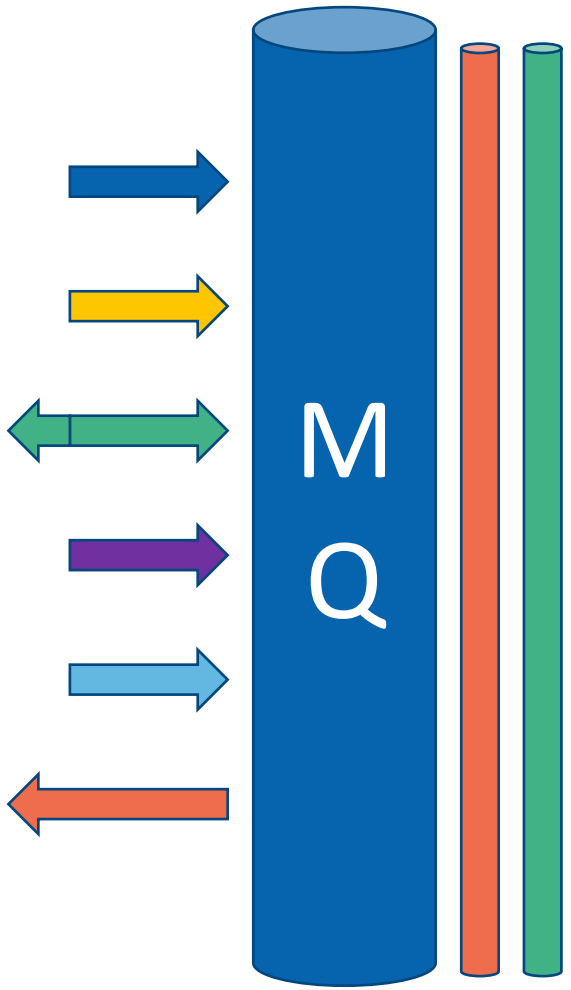

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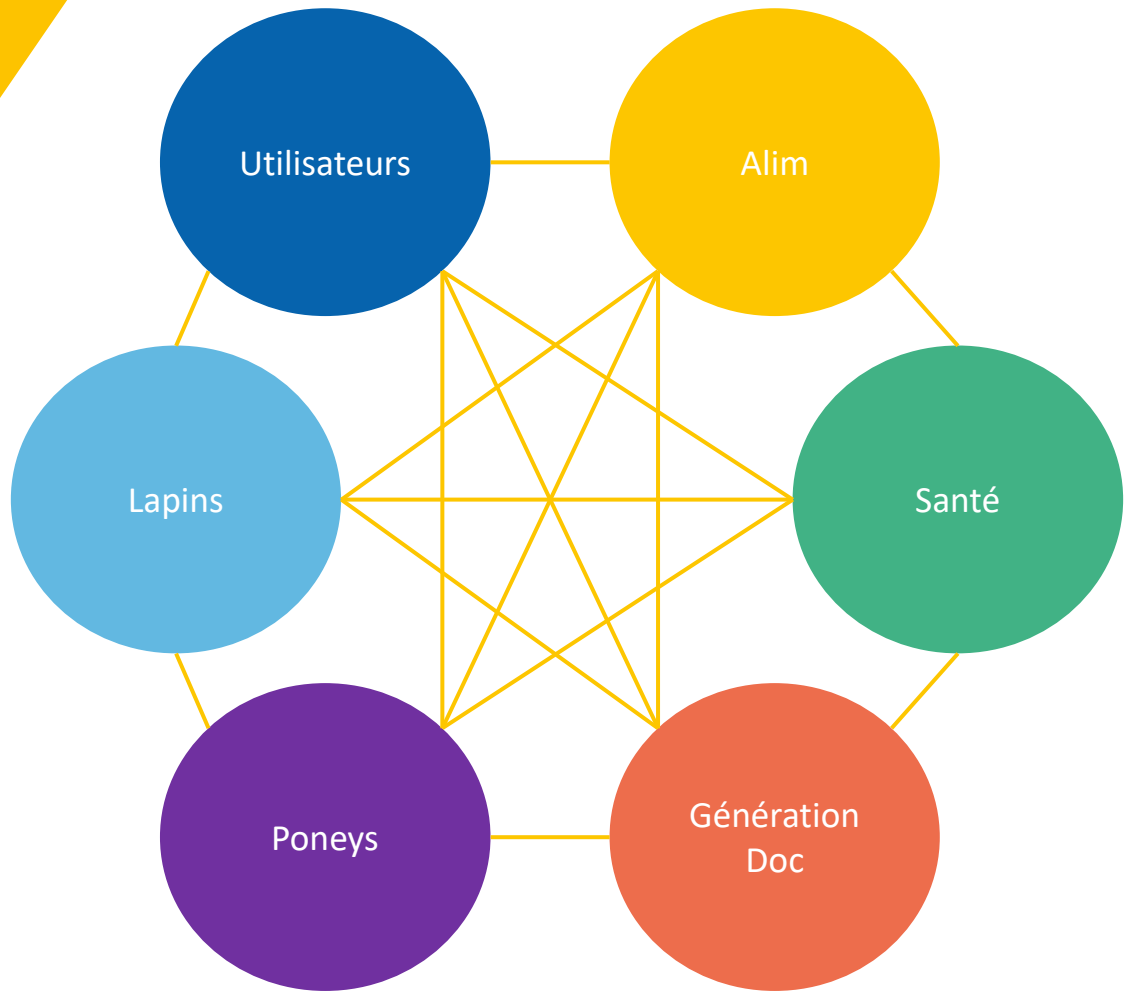

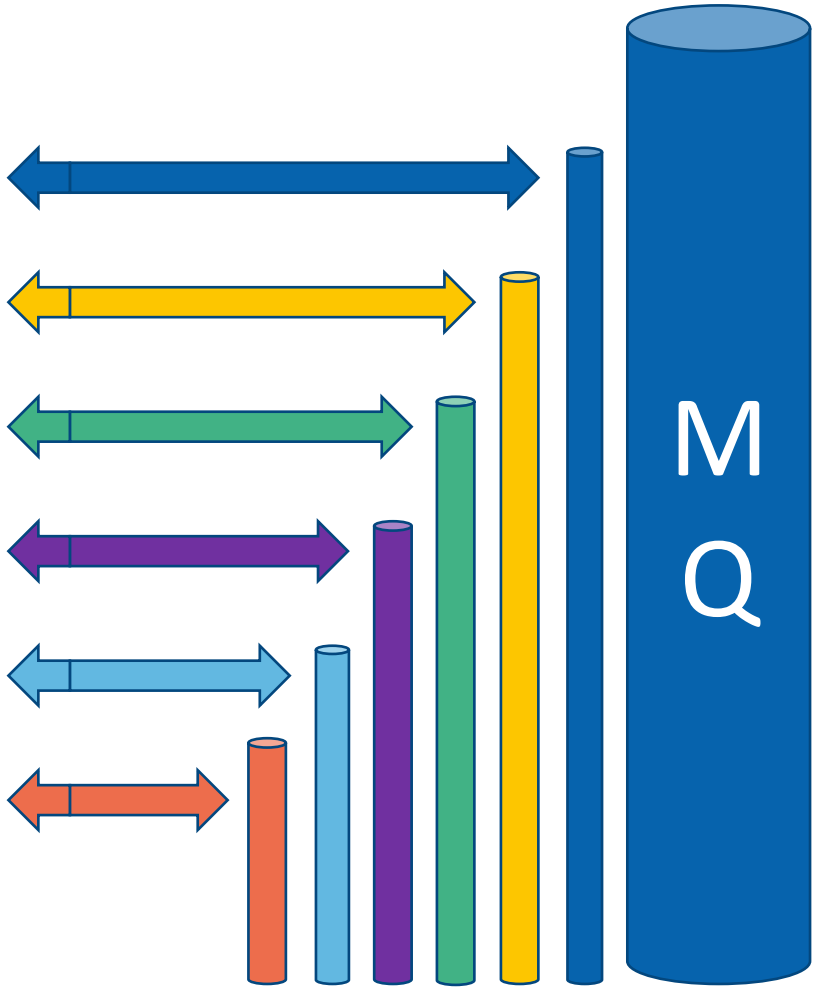

Merci pour votre attention