Microservices

scenarios of the near and far future

Saverio Giallorenzo

Howdy

Saverio

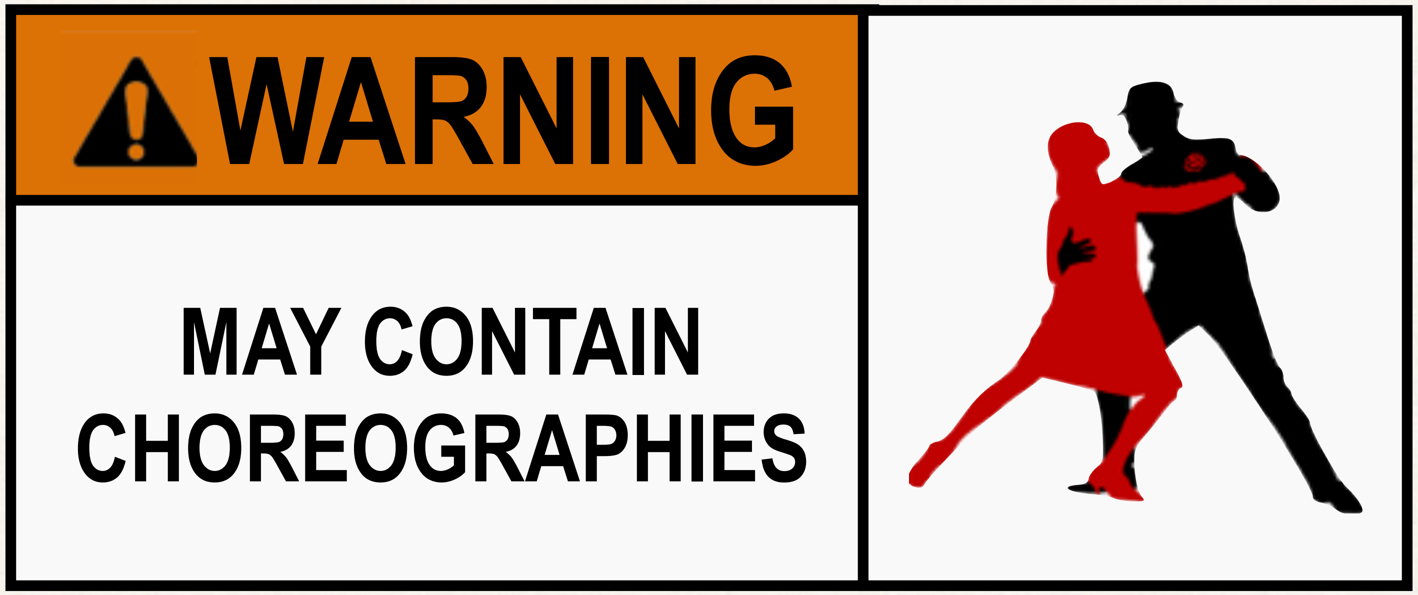
Post-doc at the **Department of Computer Science and Engineering** of **University of Bologna**.

Research topics:

- Concurrent and distributed programming;
- Choreographies, Session
- Types and Process Algebras.
- Microservices;
- Jolie;

Microservices

scenarios of near and far future



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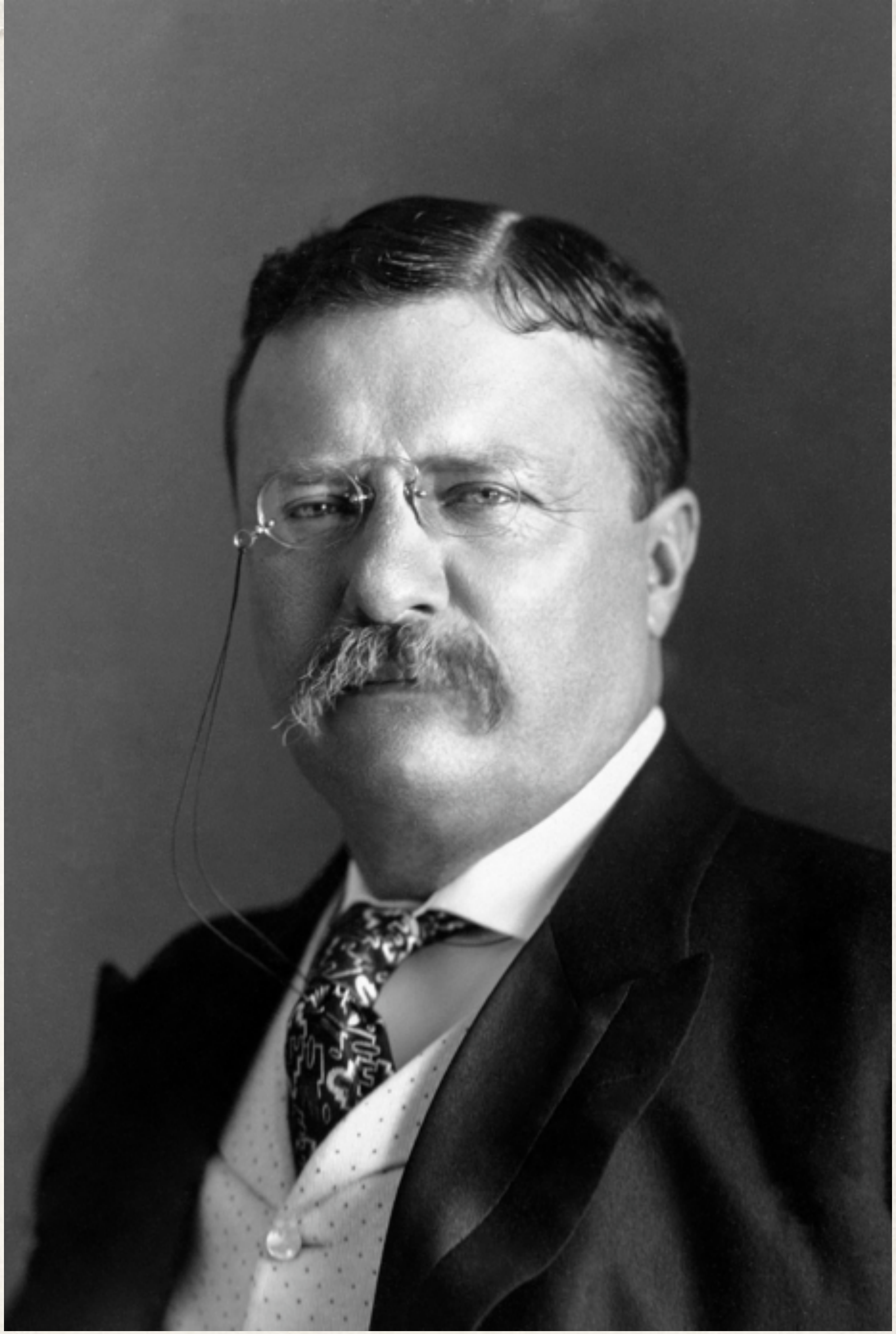
Today's Limits

There is no effort without error and shortcoming.

"Citizenship in a Republic", Theodore Roosevelt, 1910



Today's Limits

innovation

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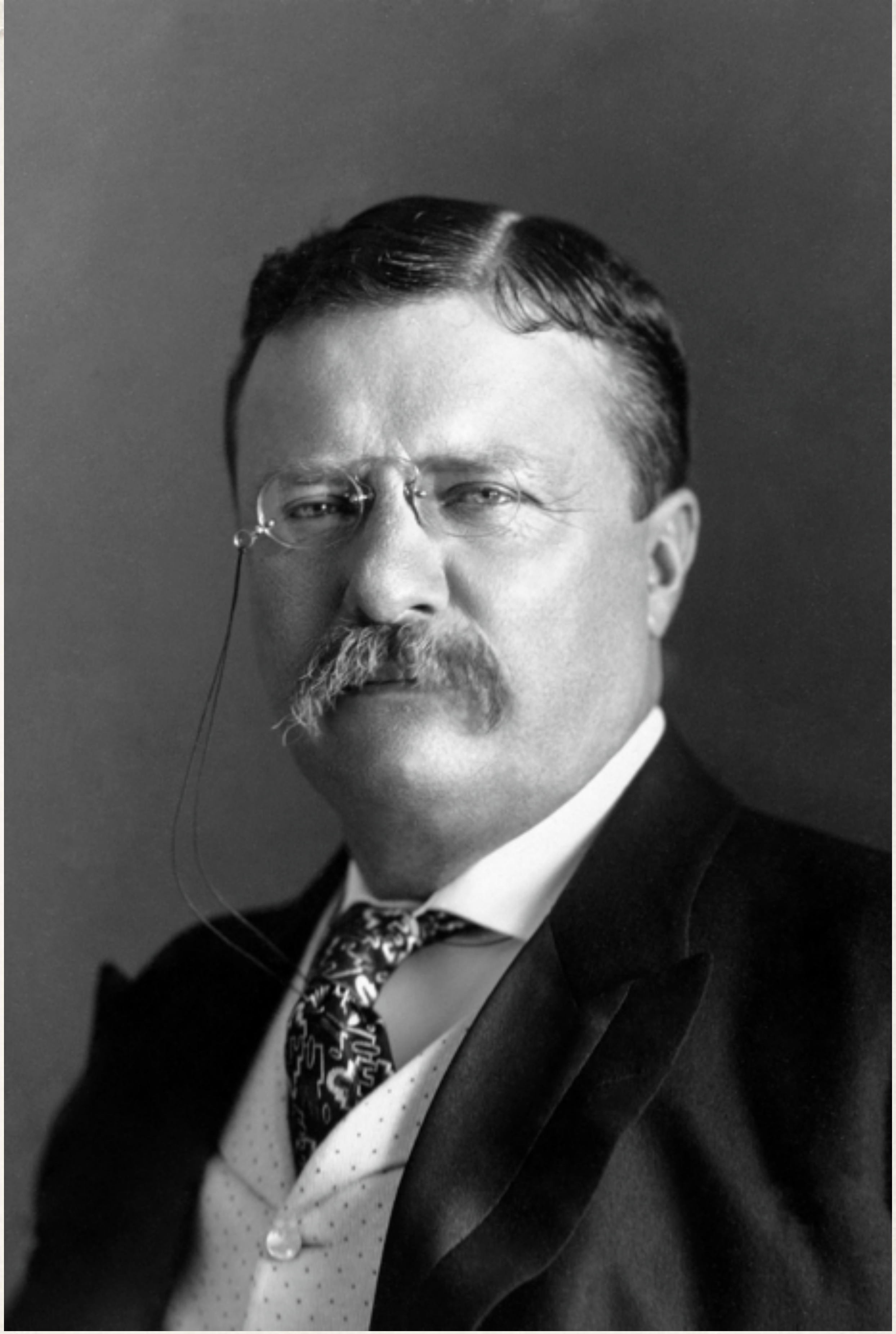
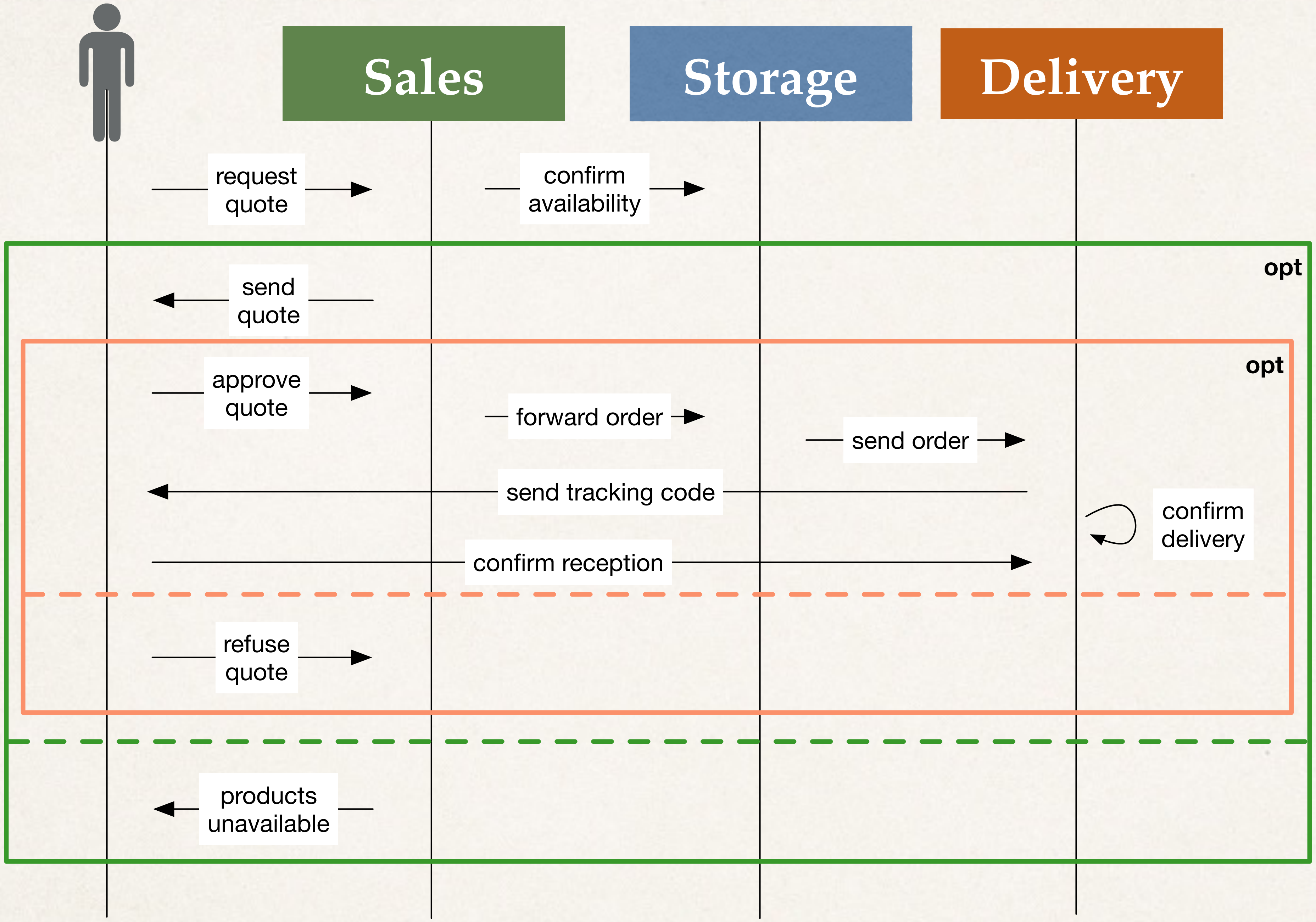
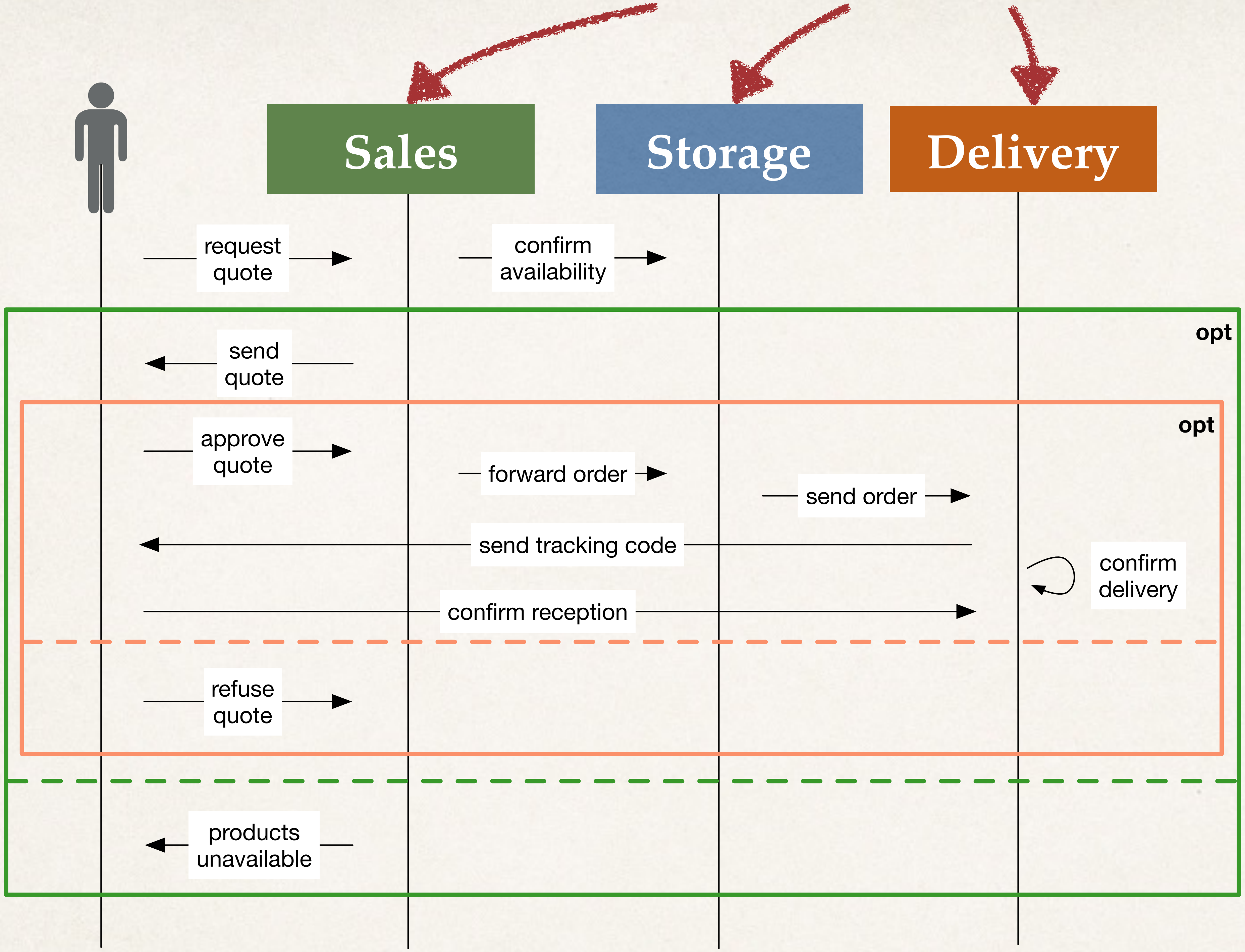




Distributed Programming

What's here inside (e.g., error tracing)?



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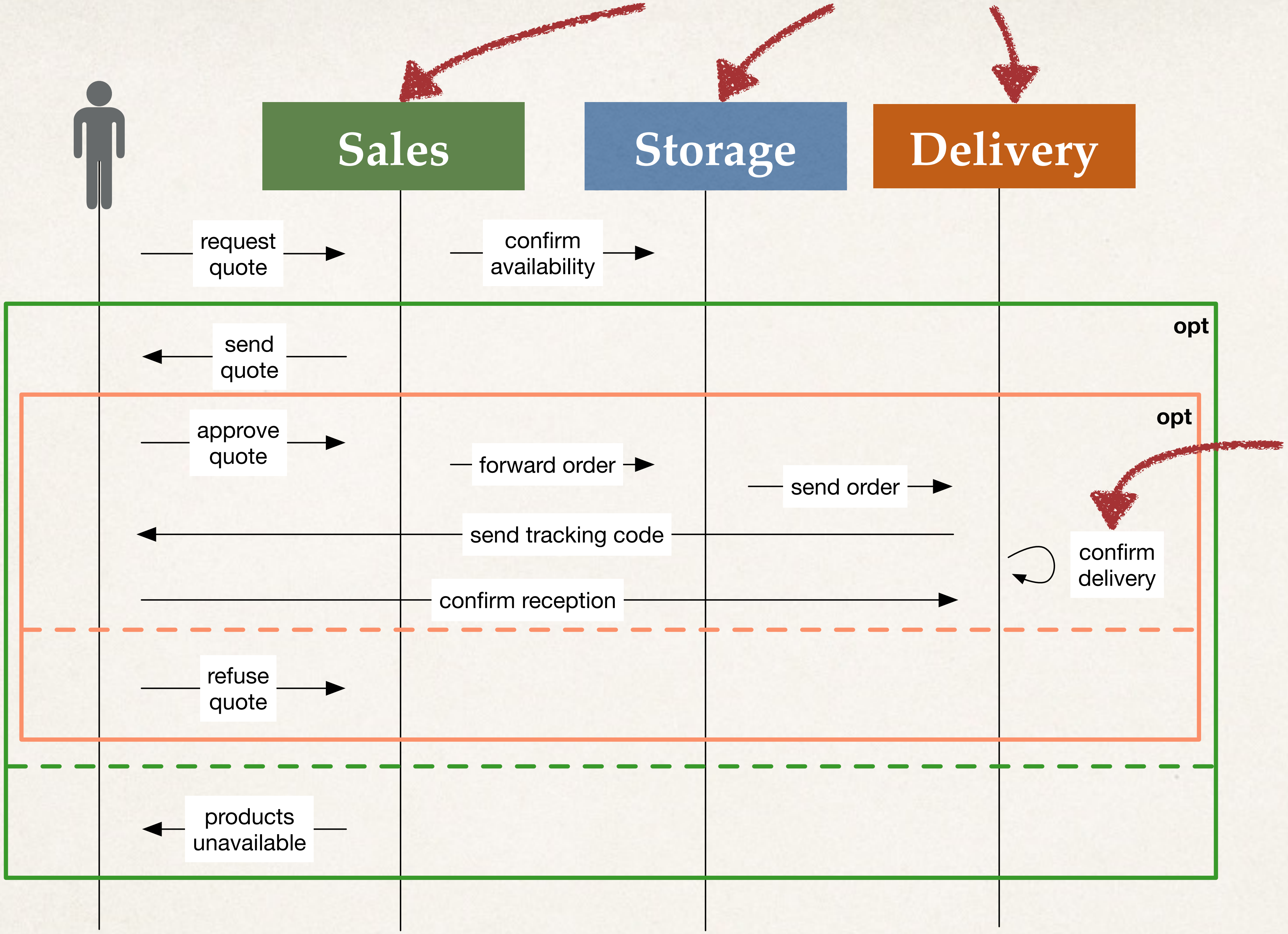

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Distributed Programming

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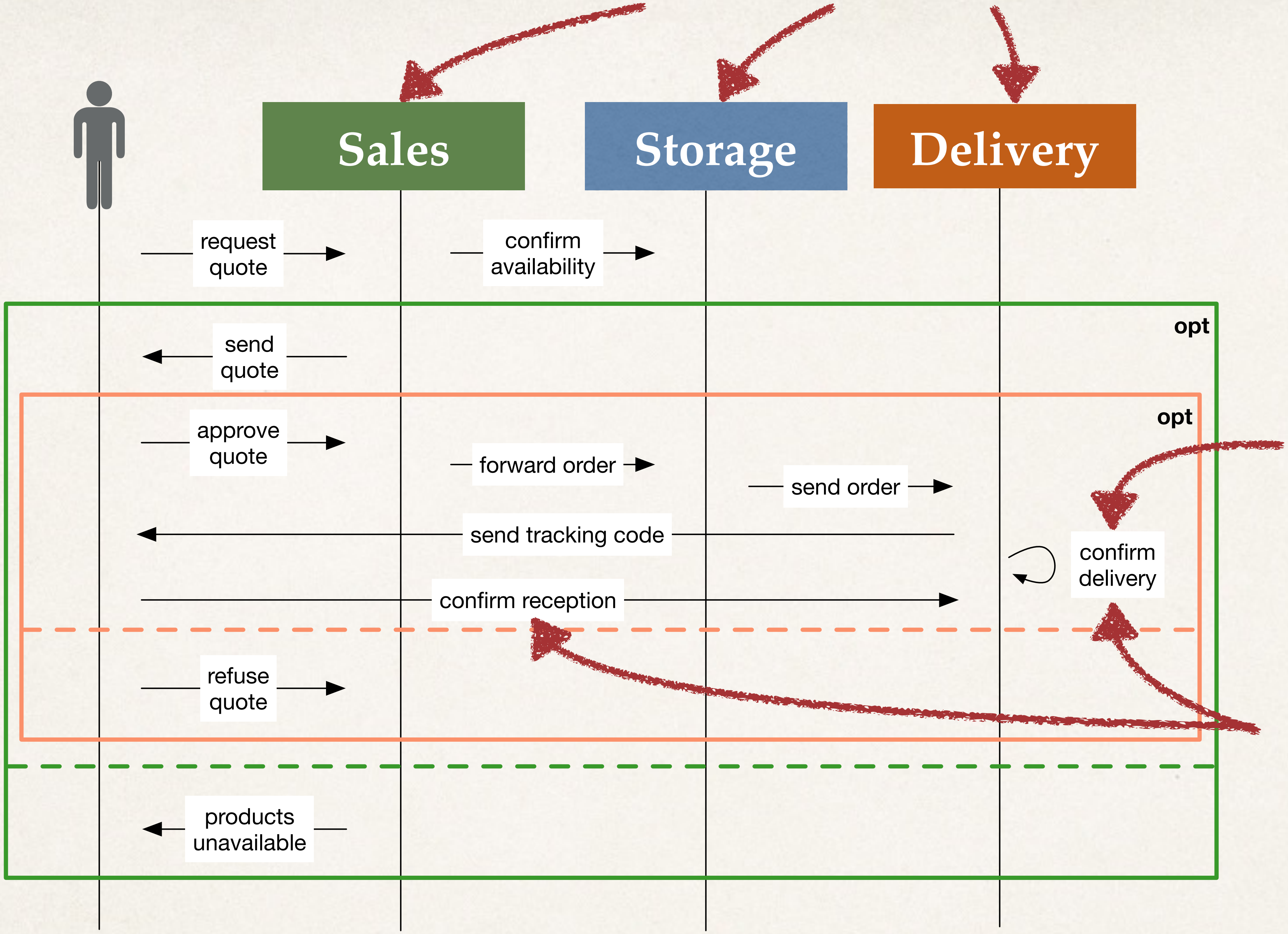


Sales

Storage

Delivery

request quote

confirm availability

opt

send quote

opt

approve quote

forward order

send order

send tracking code

confirm delivery

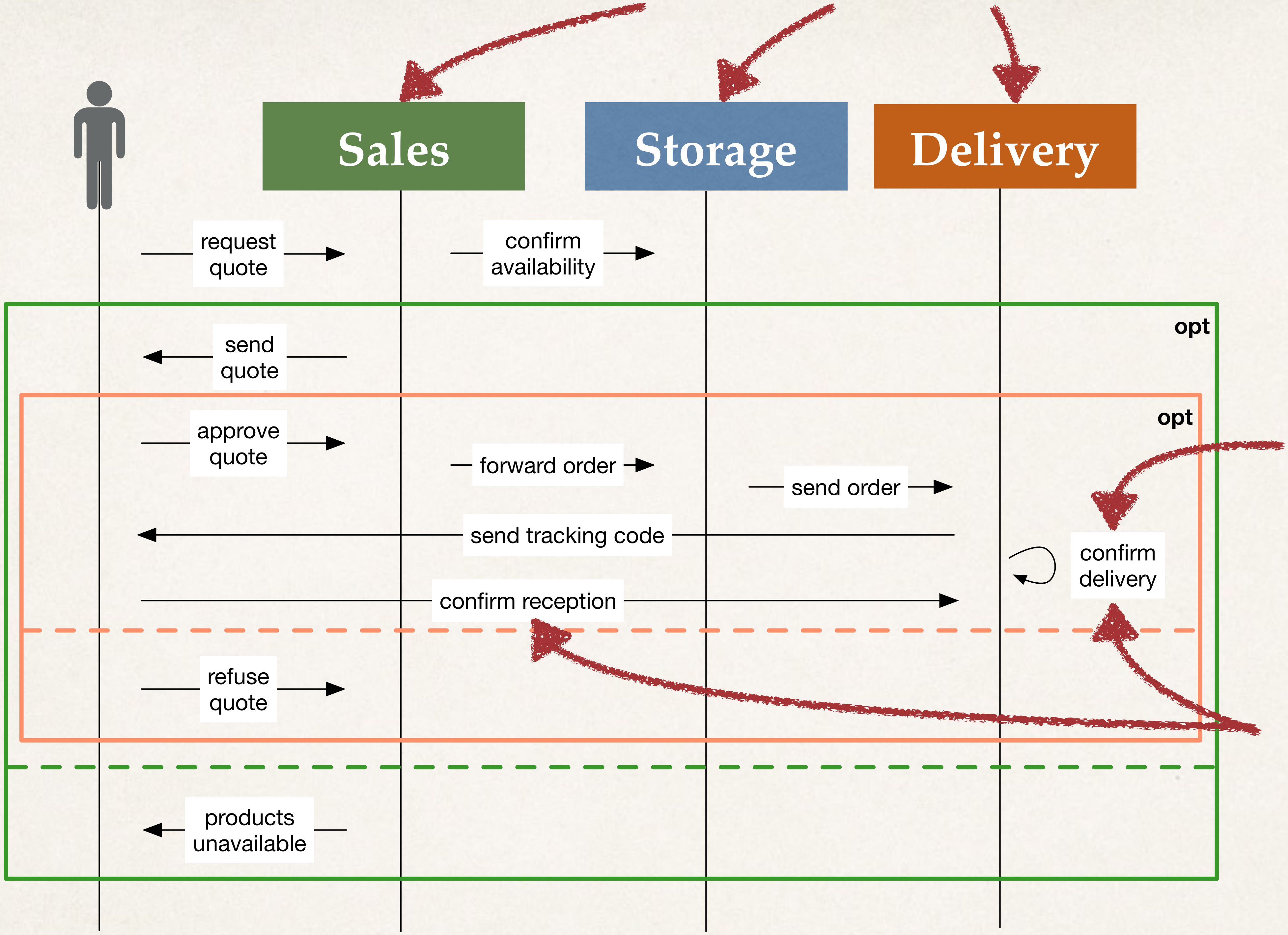
confirm reception

refuse quote

products unavailable

Internal functionality? Does the deliverer provide it? Docs / APIs?

What's here inside (e.g., error tracing)?



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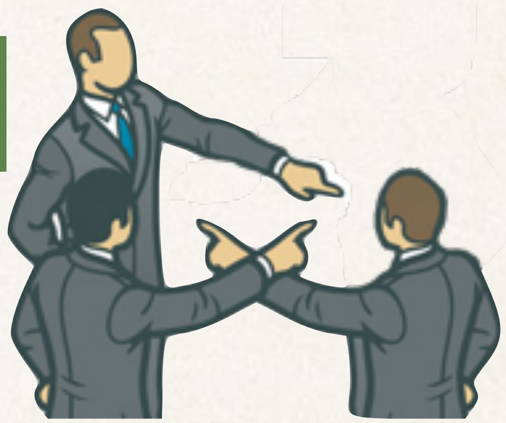
Sequential (in which order) or in parallel?

Distributed Programming

Direction

Sales

Delivery



Storage

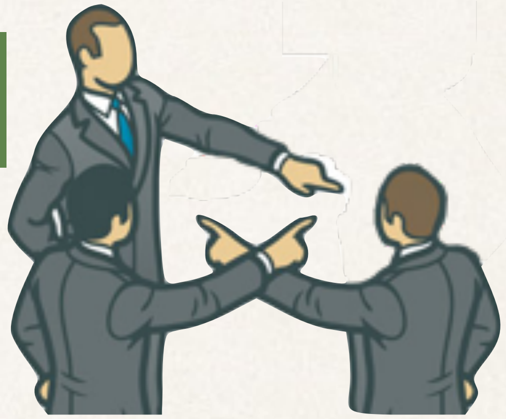
“Not my problem”

Direction

Big Picture

Sales

Delivery



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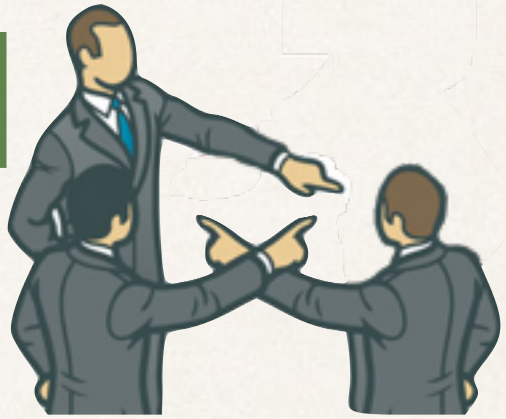
Big Picture

Gulf of execution

Sales

Delivery



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Big Picture

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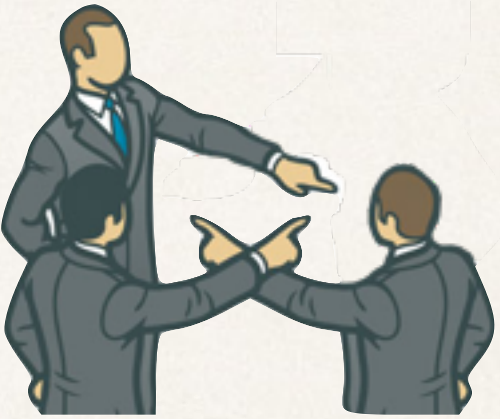
Micro-management

Sales

Delivery



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Direction

Big Picture

Gulf of execution

Micro-management

Coordination?

Accountability?

Sales

Delivery

Storage

“Not my problem”

Direction

Big Picture

Gulf of execution

Gulf of Evaluation

Micro-management

Coordination?

Accountability?

Sales

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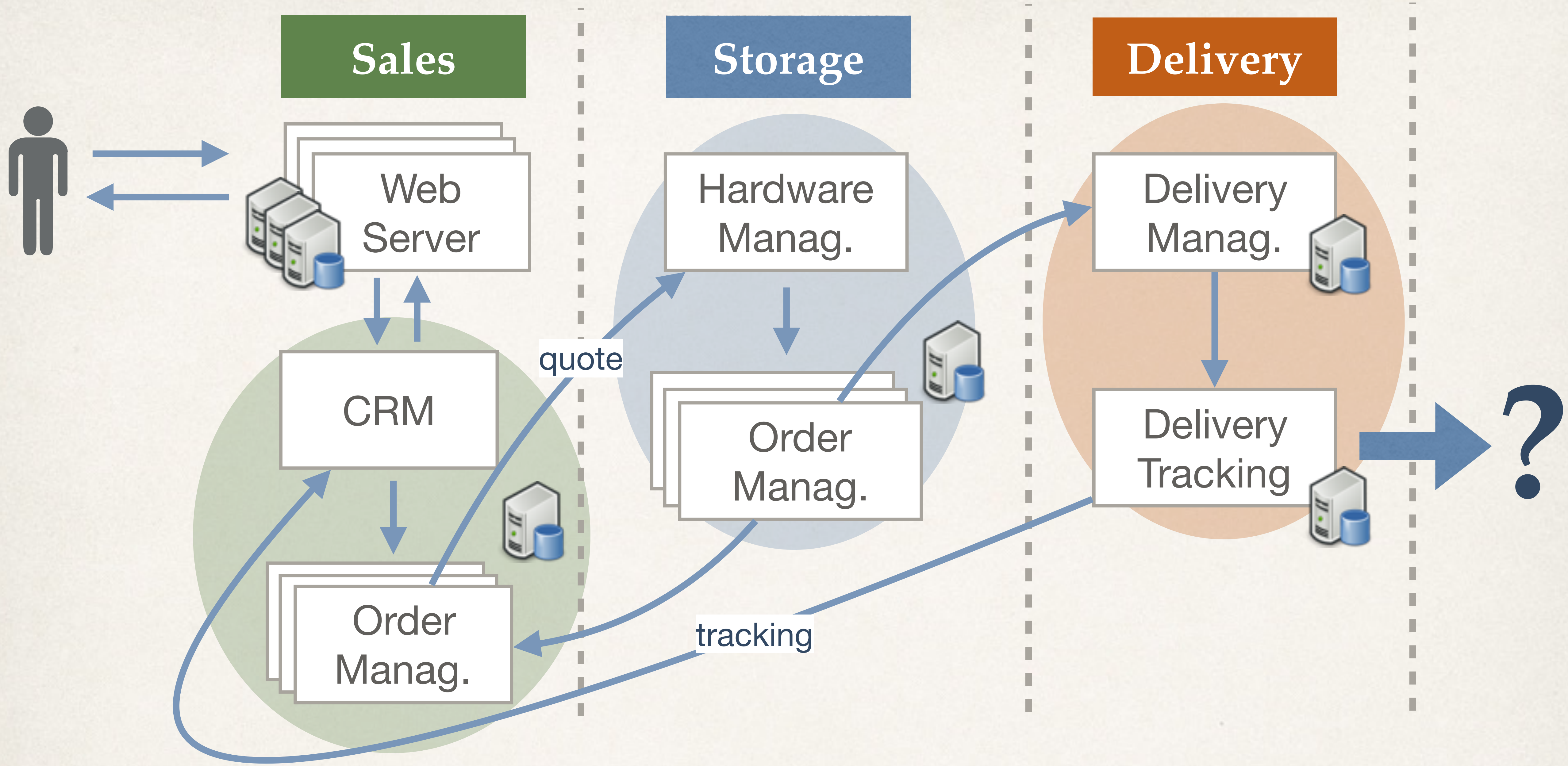
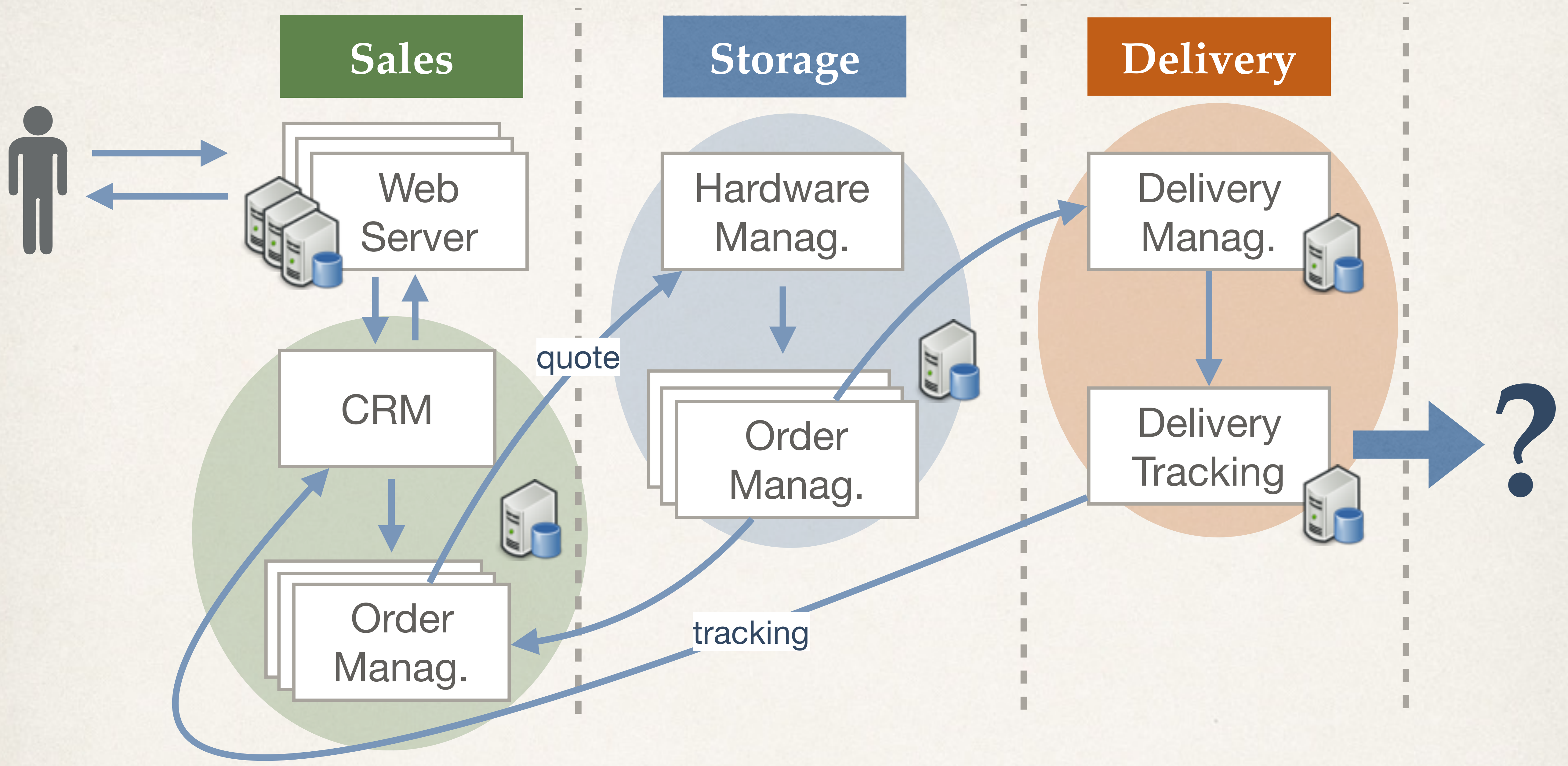


Scalable Architectures



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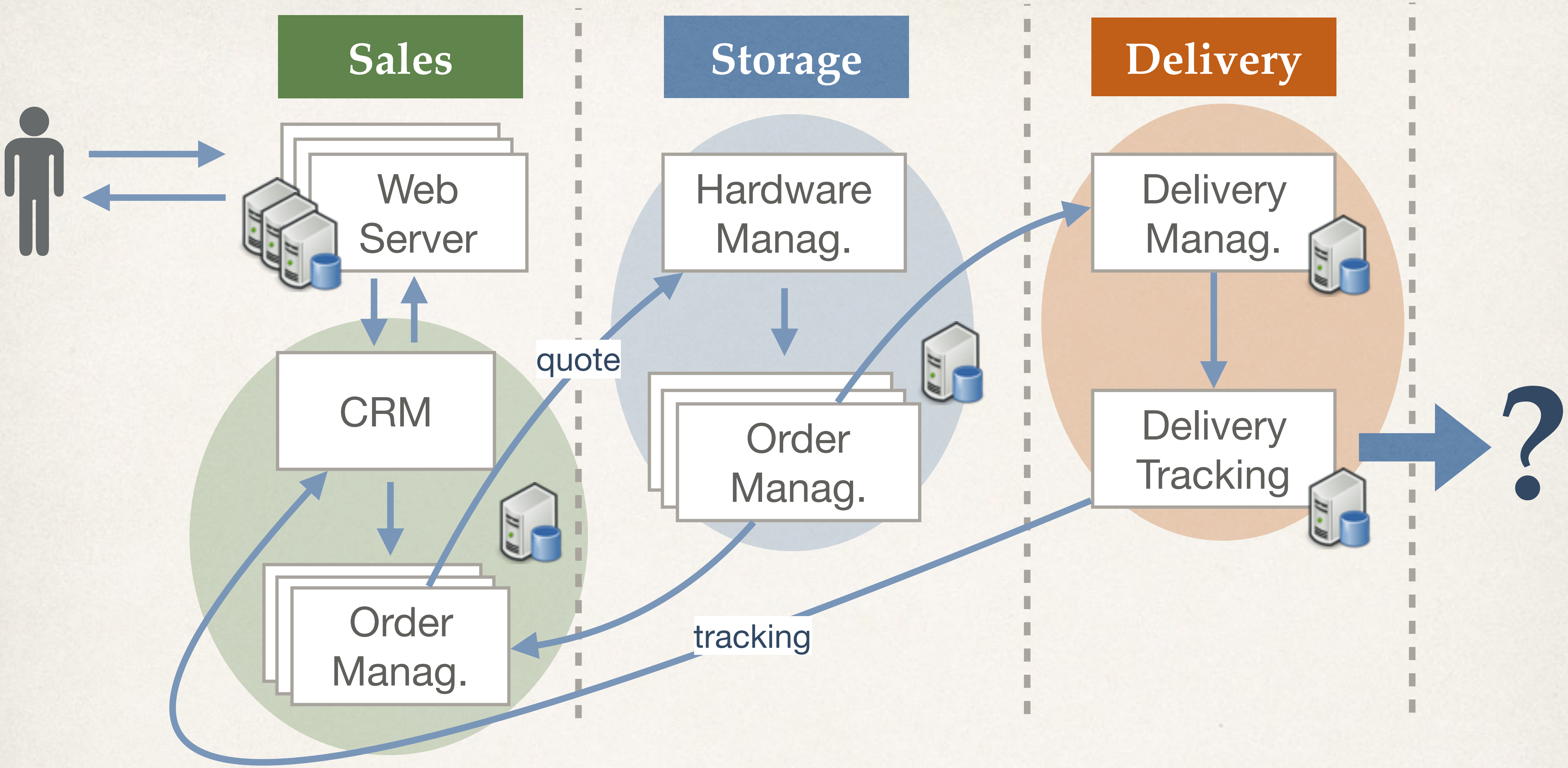
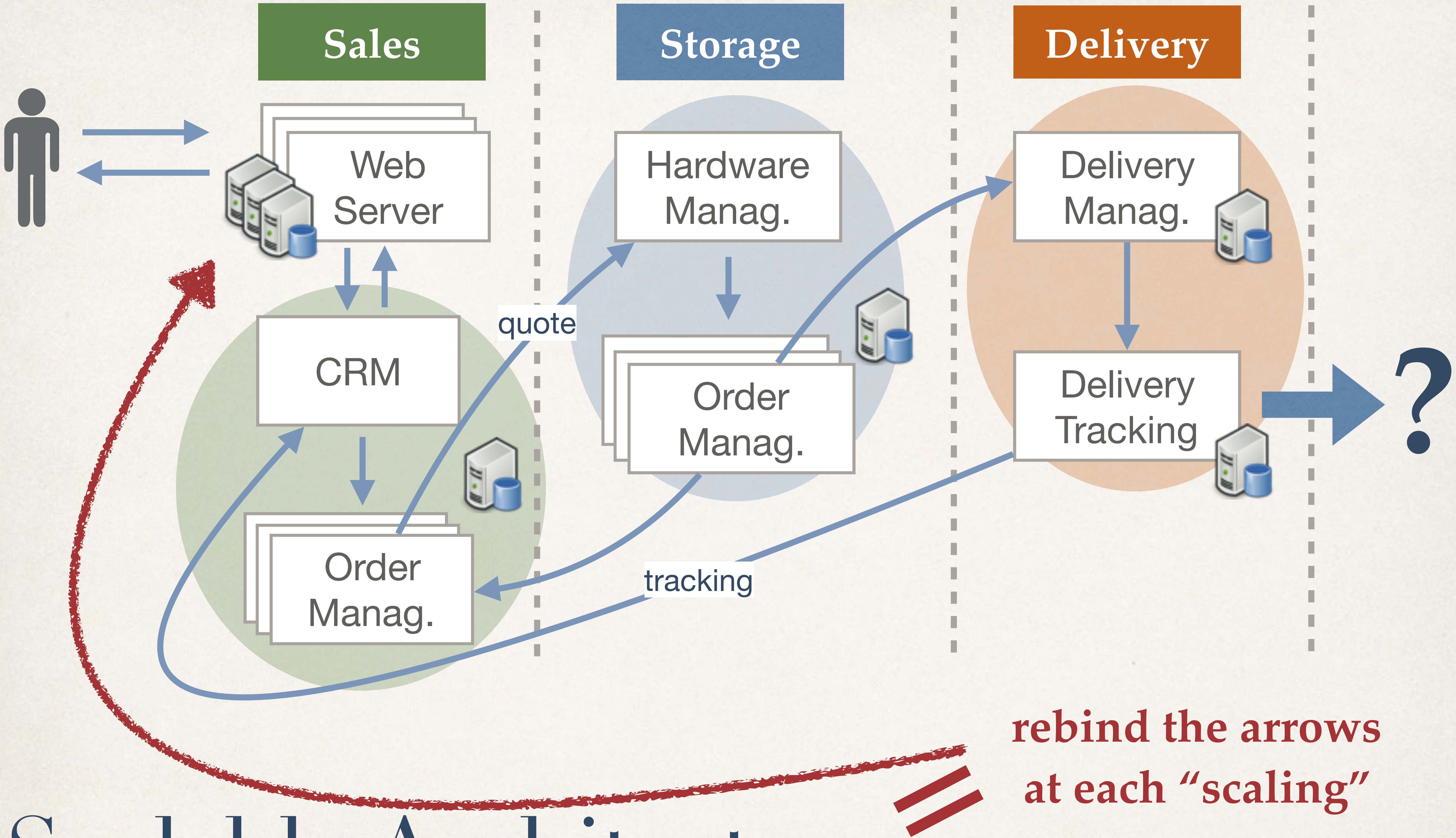


rebind the arrows at each "scaling"

Scalable Architectures



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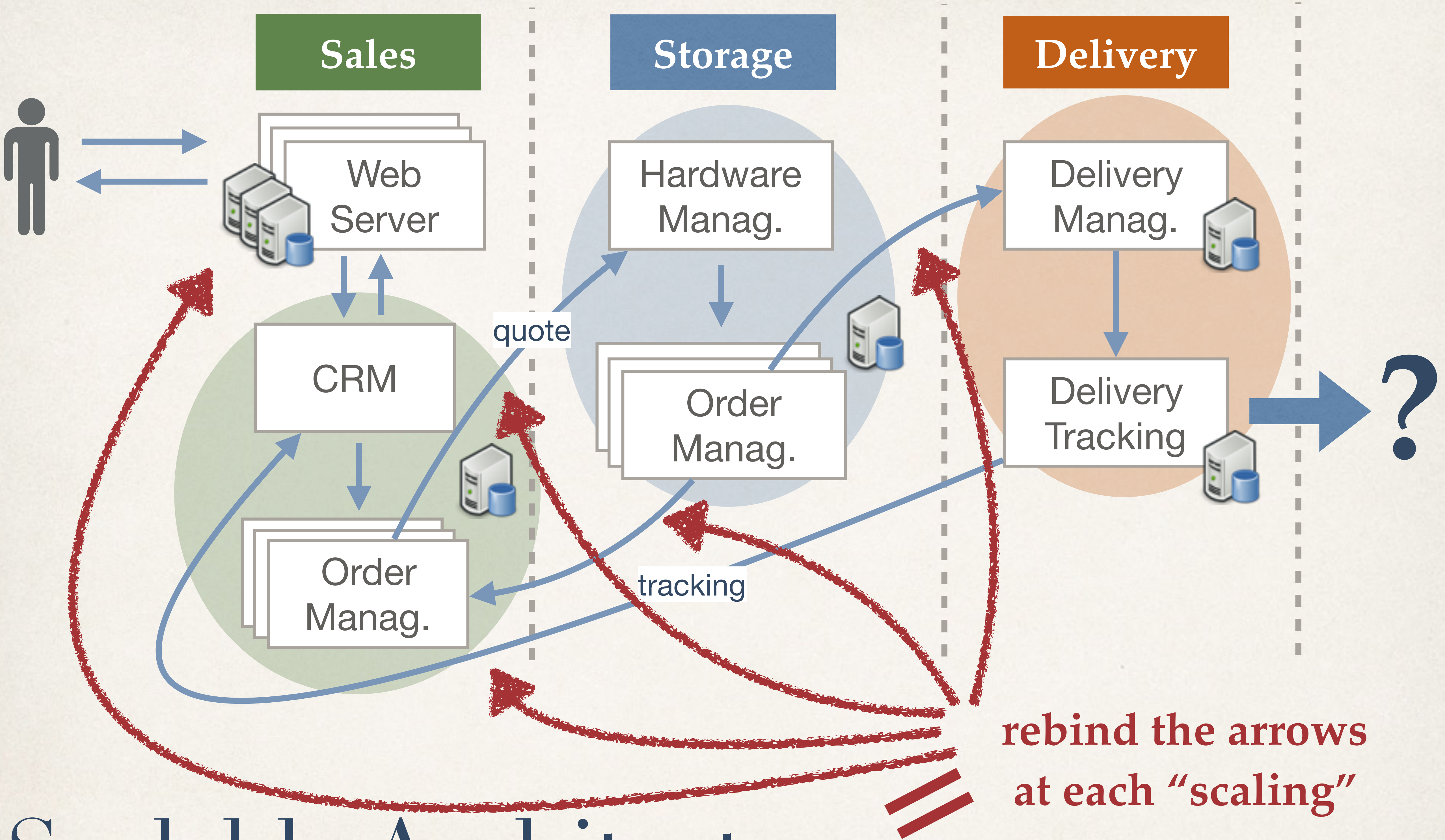


Sales

Storage

Delivery

Web Server

CRM

Order Manag.

quote

Hardware Manag.

Order Manag.

tracking

Delivery Manag.

Delivery Tracking

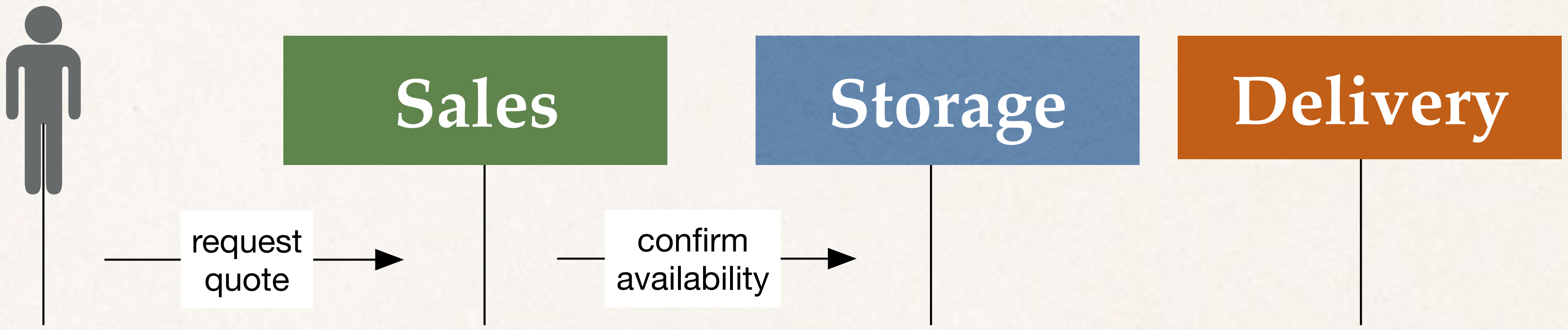
?

rebind the arrows at each “scaling”

Scalable Architectures

A look at the future
Choreographic Programming

Enter AIOCJ



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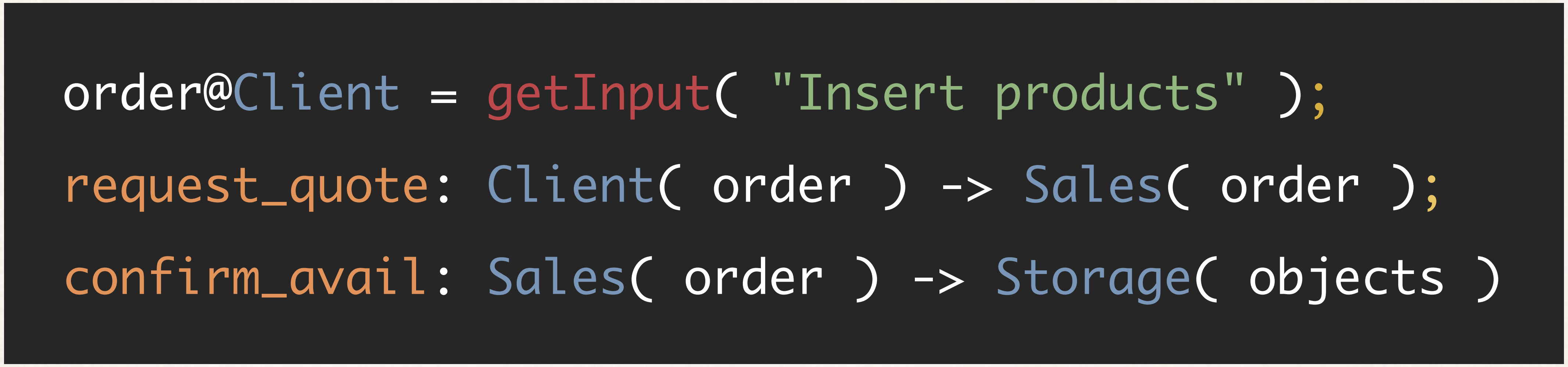
Architectural Vision



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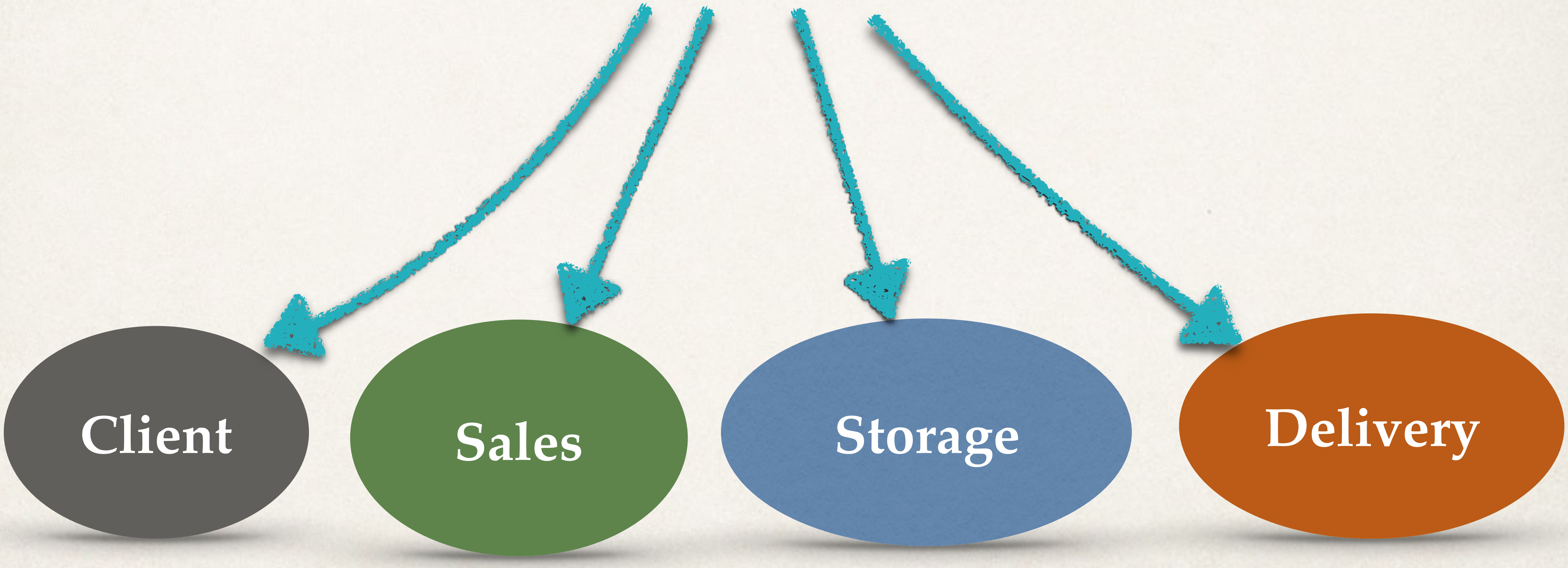

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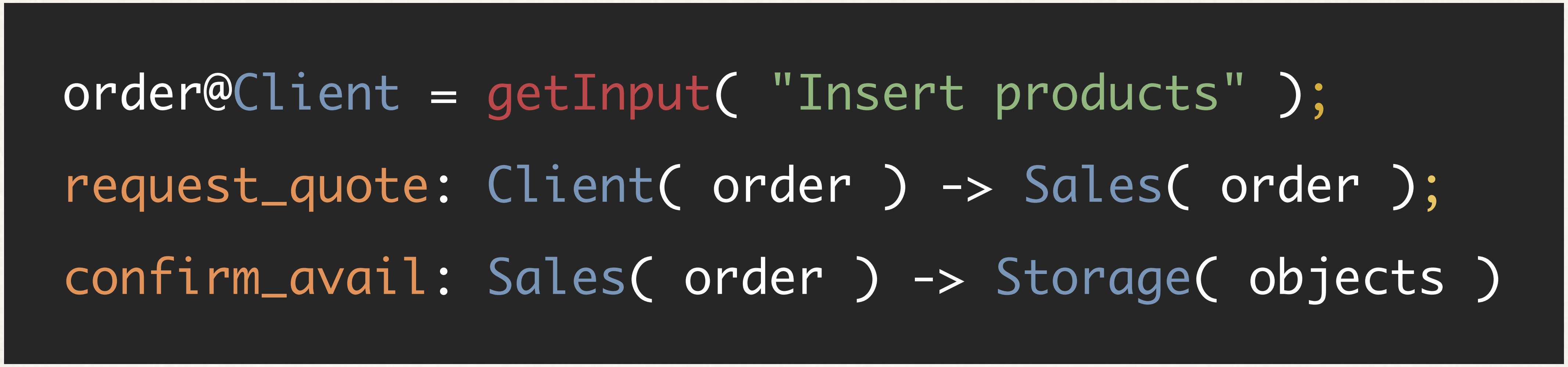

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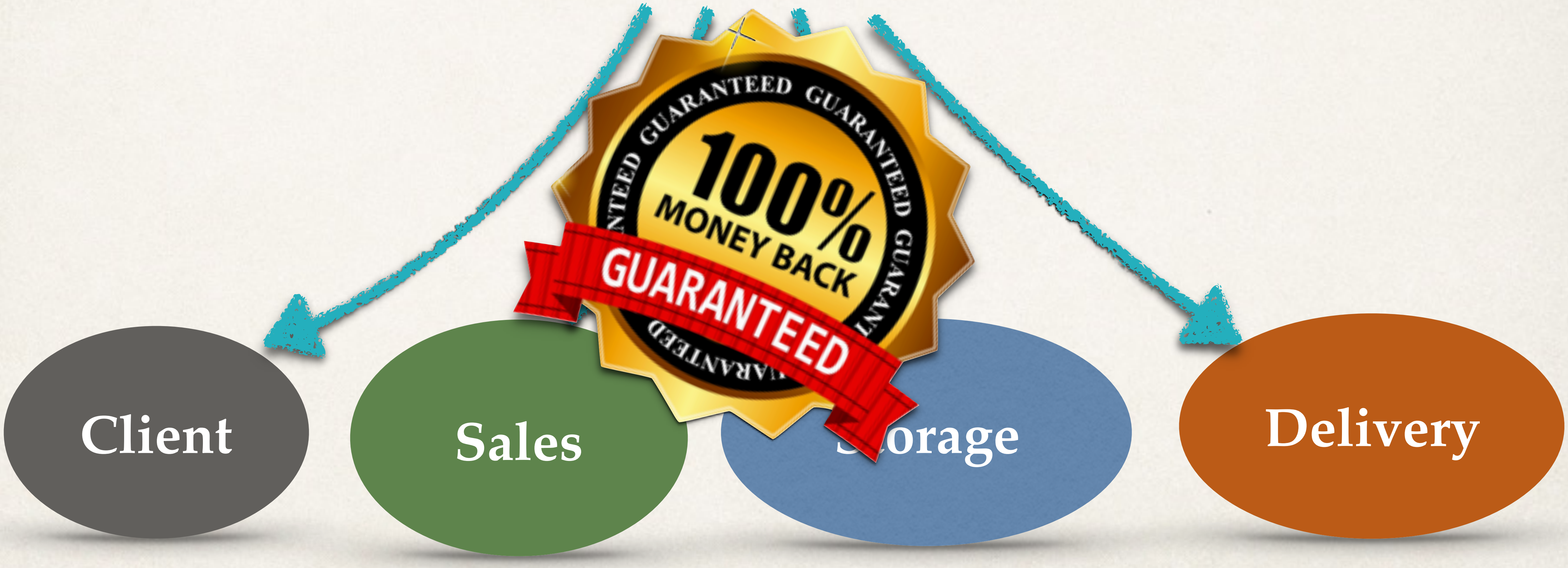

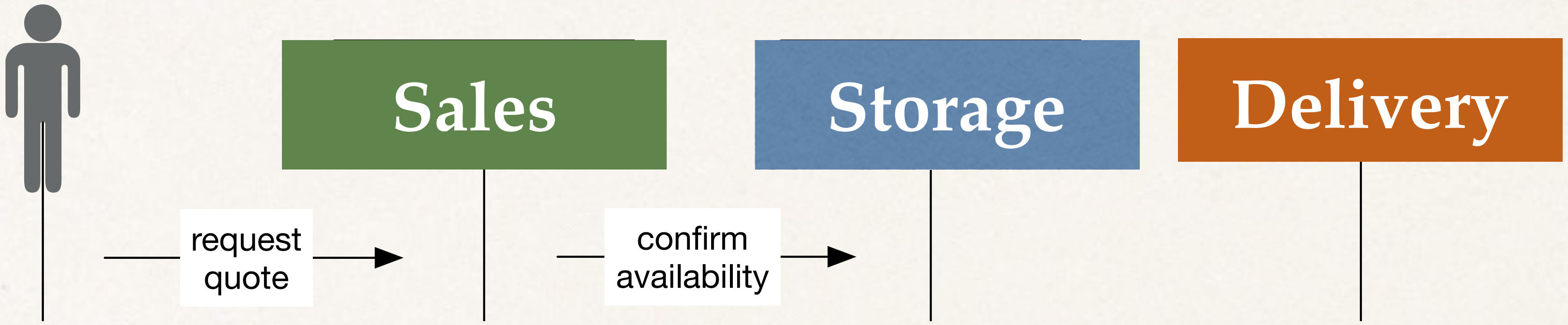

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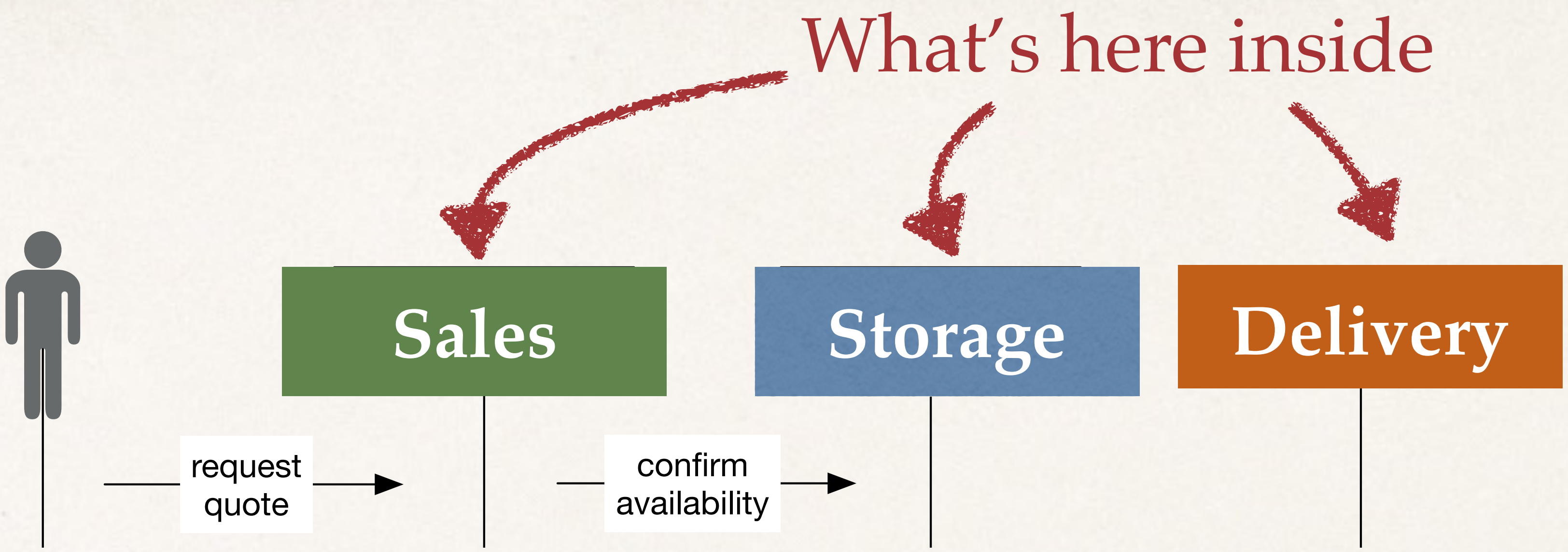

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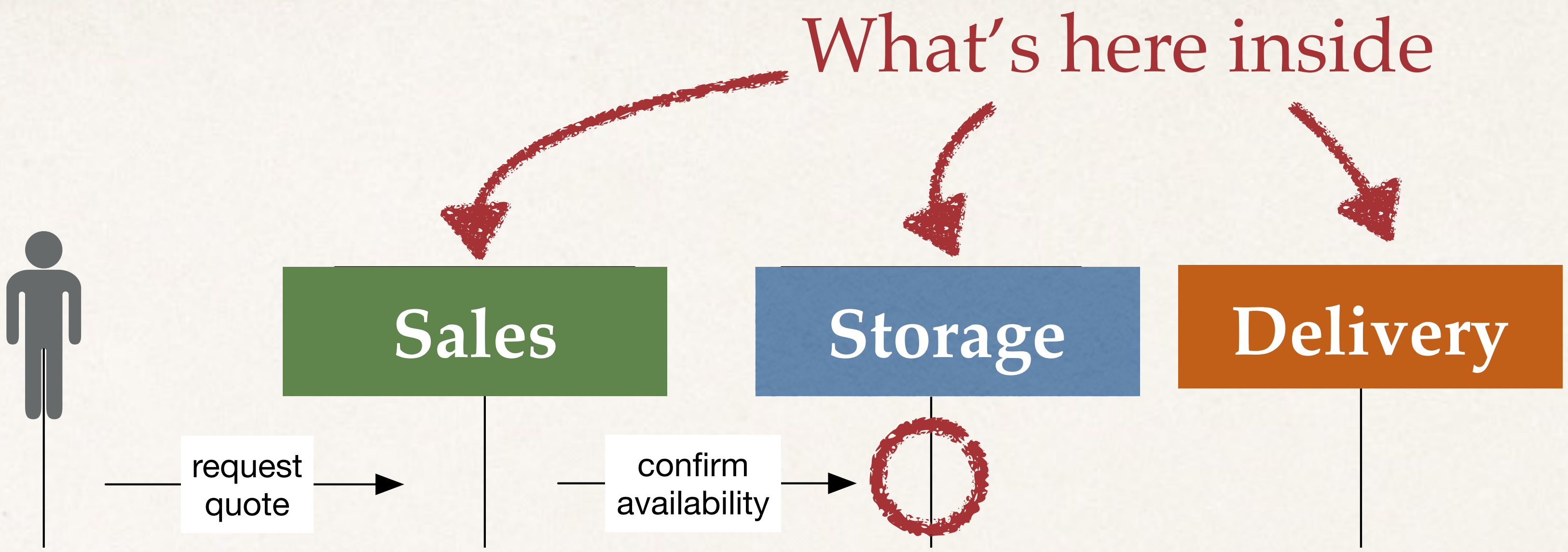

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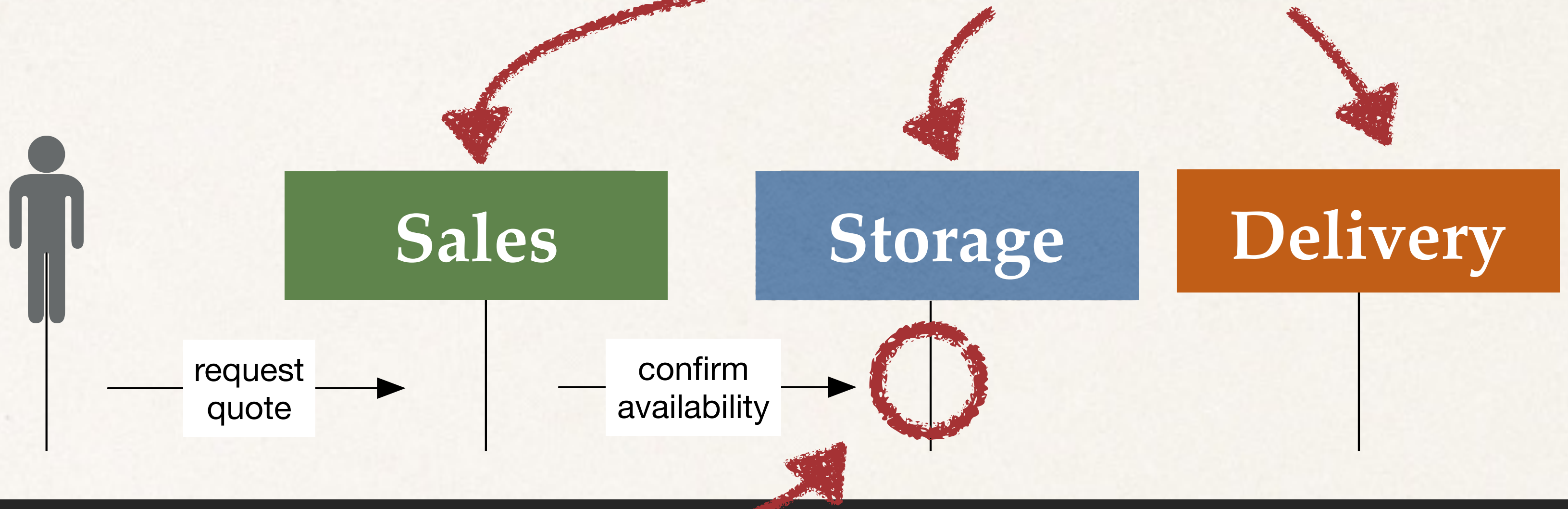

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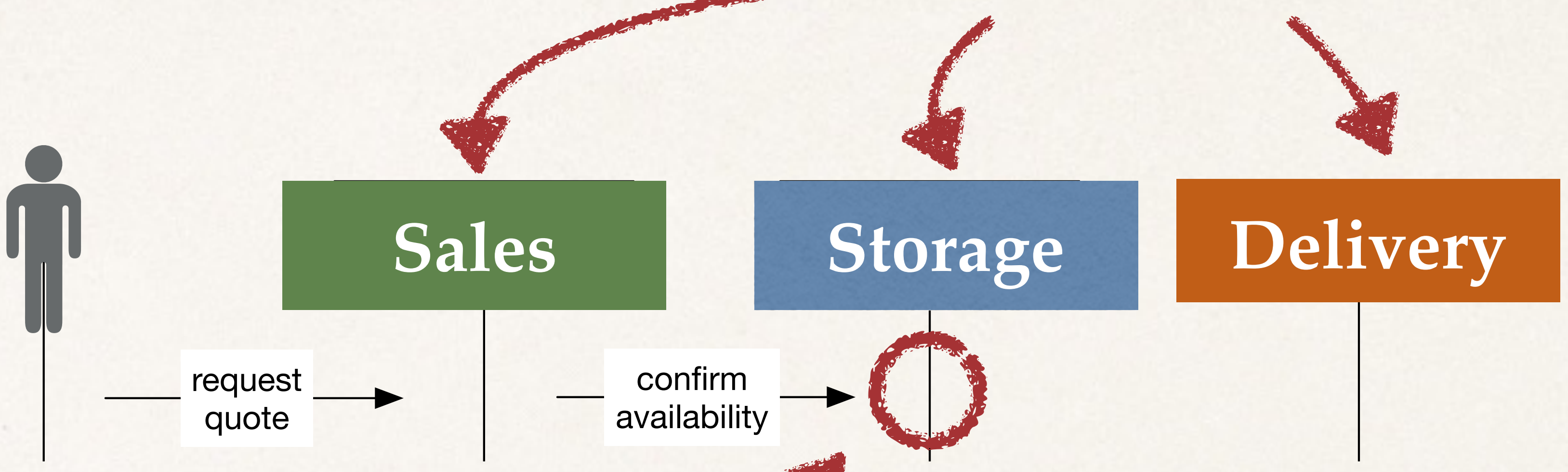

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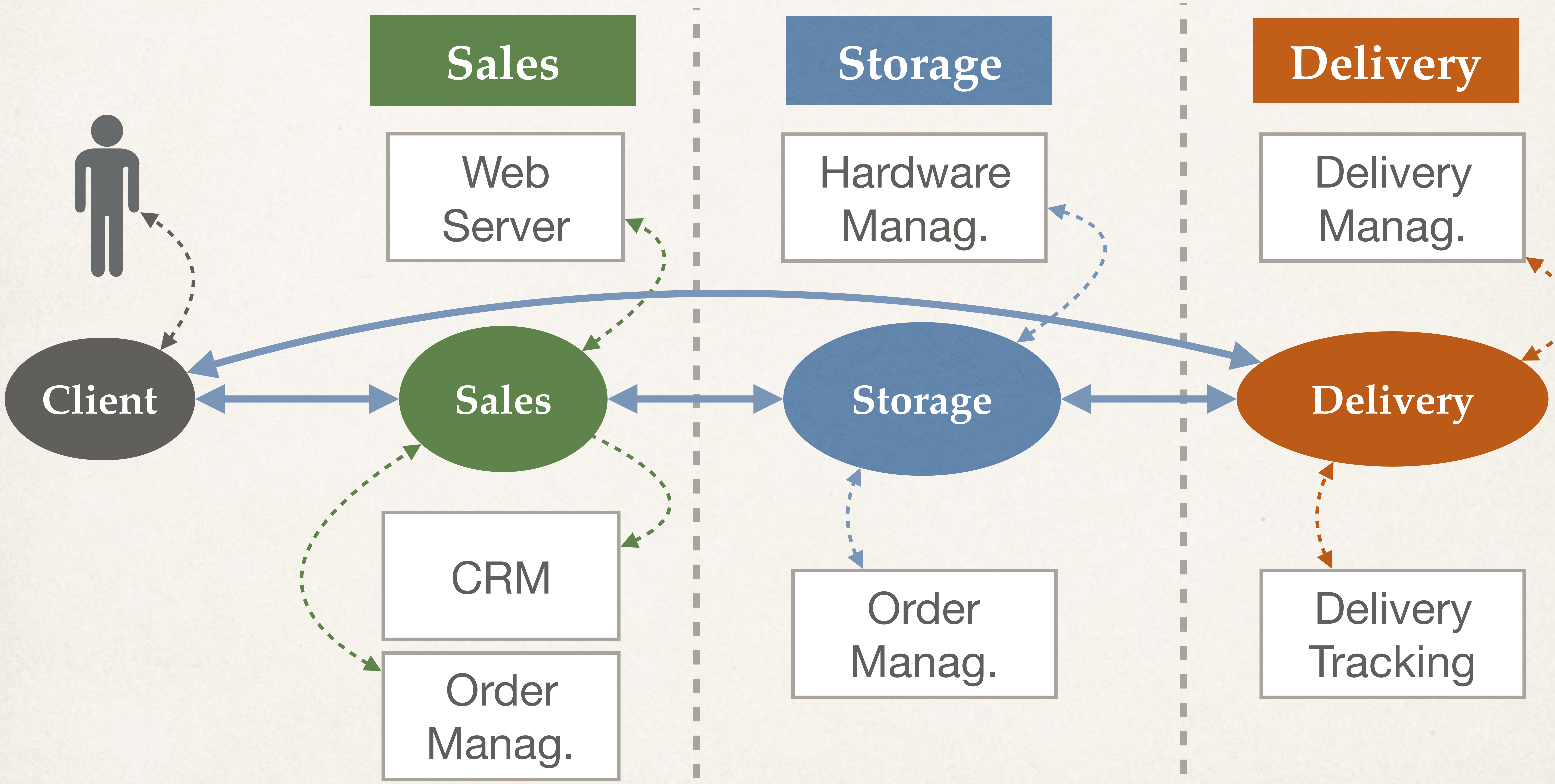

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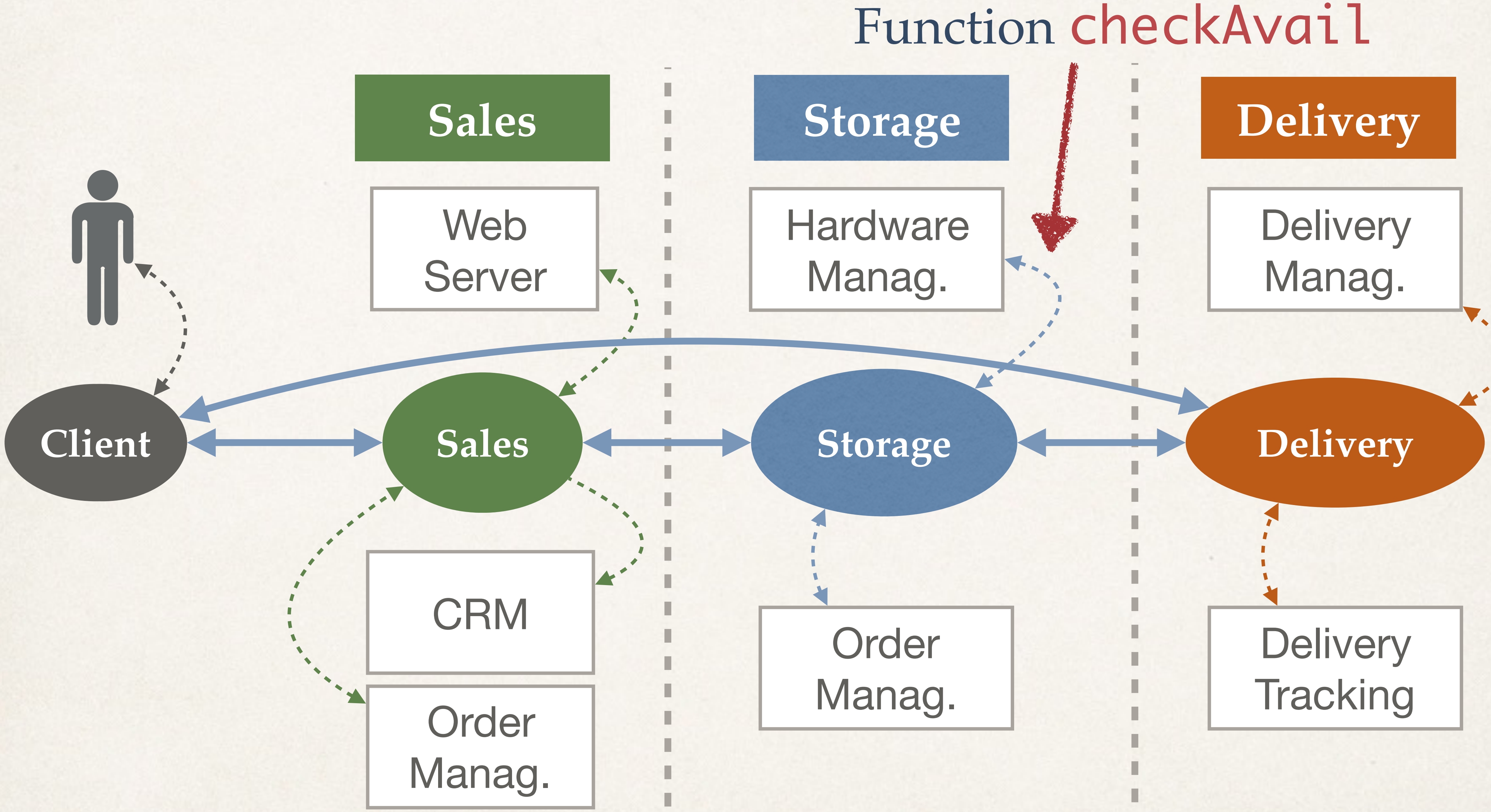

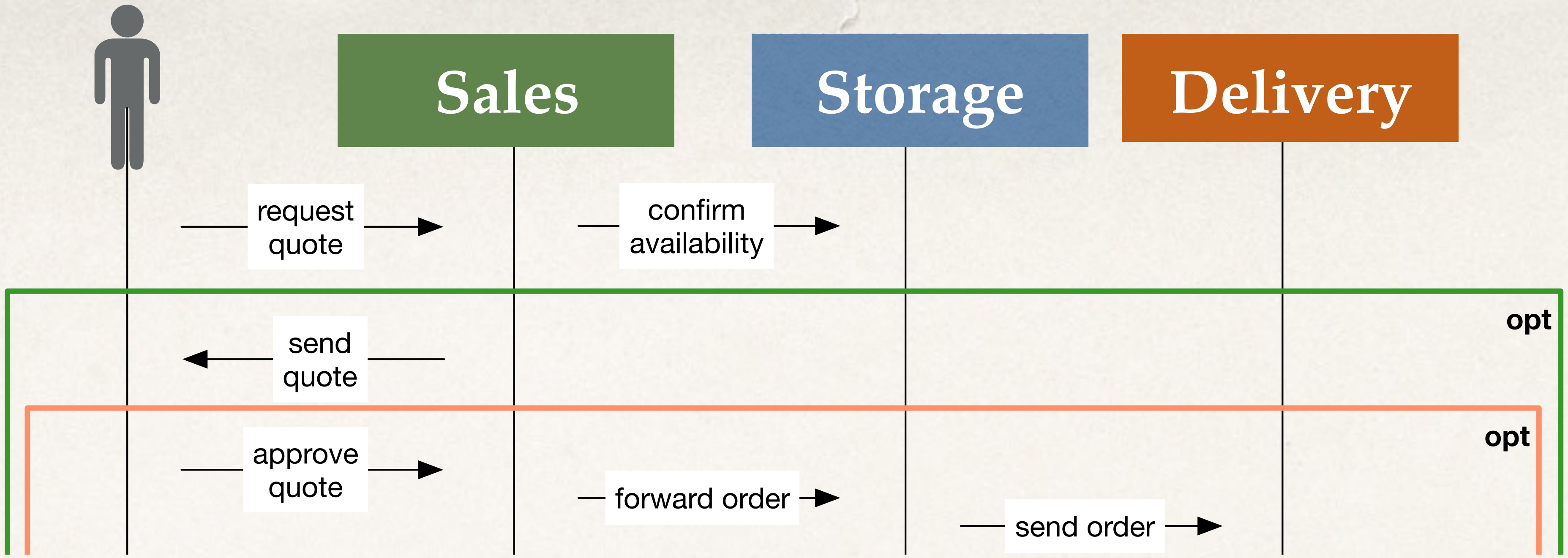

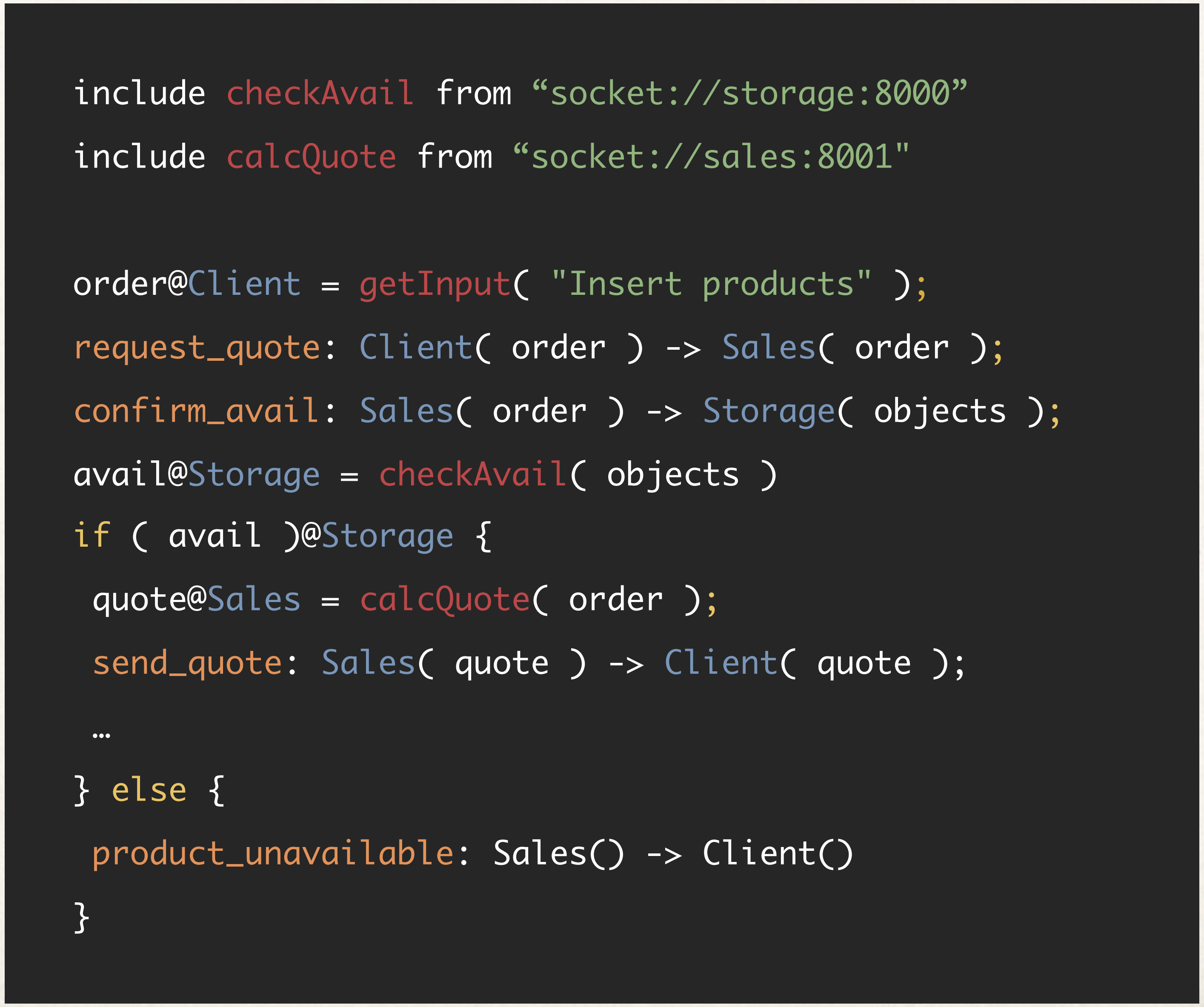

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order@Client = getInput( "Insert products" );
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confirm_avail: Sales( order ) -> Storage( objects );
avail@Storage = checkAvail( objects )
if ( avail )@Storage {
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 send_quote: Sales( quote ) -> Client( quote );
 …
} else {
 product_unavailable: Sales() -> Client()
}
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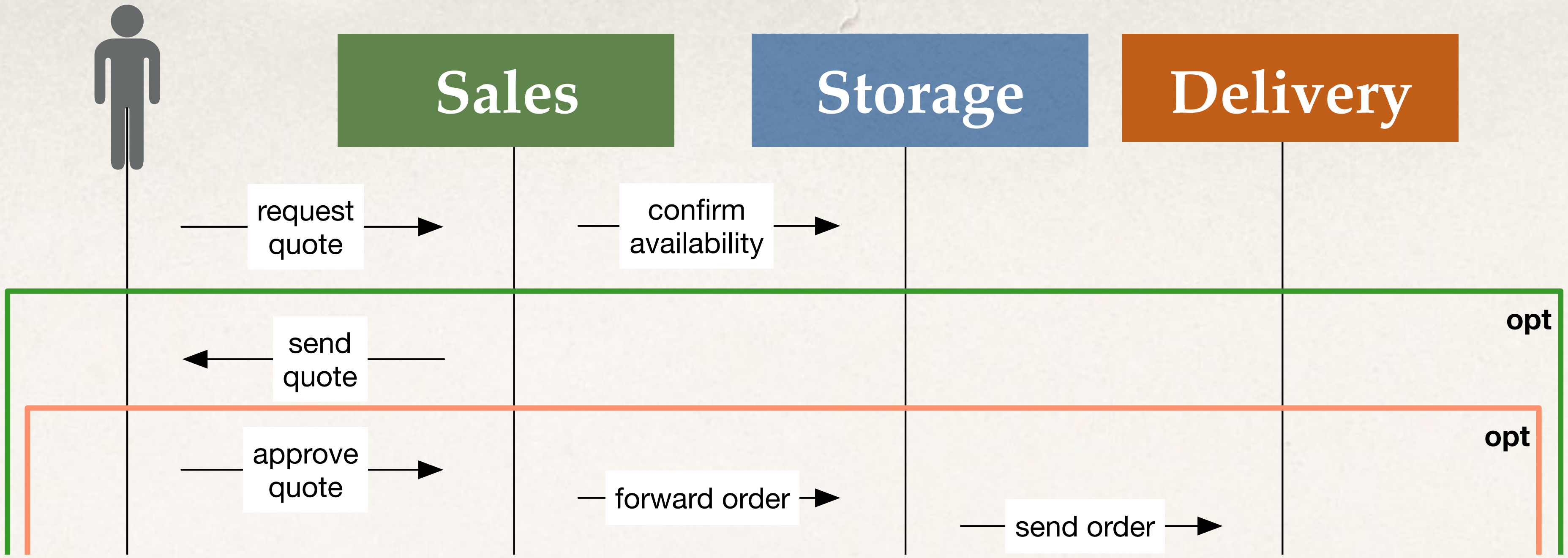

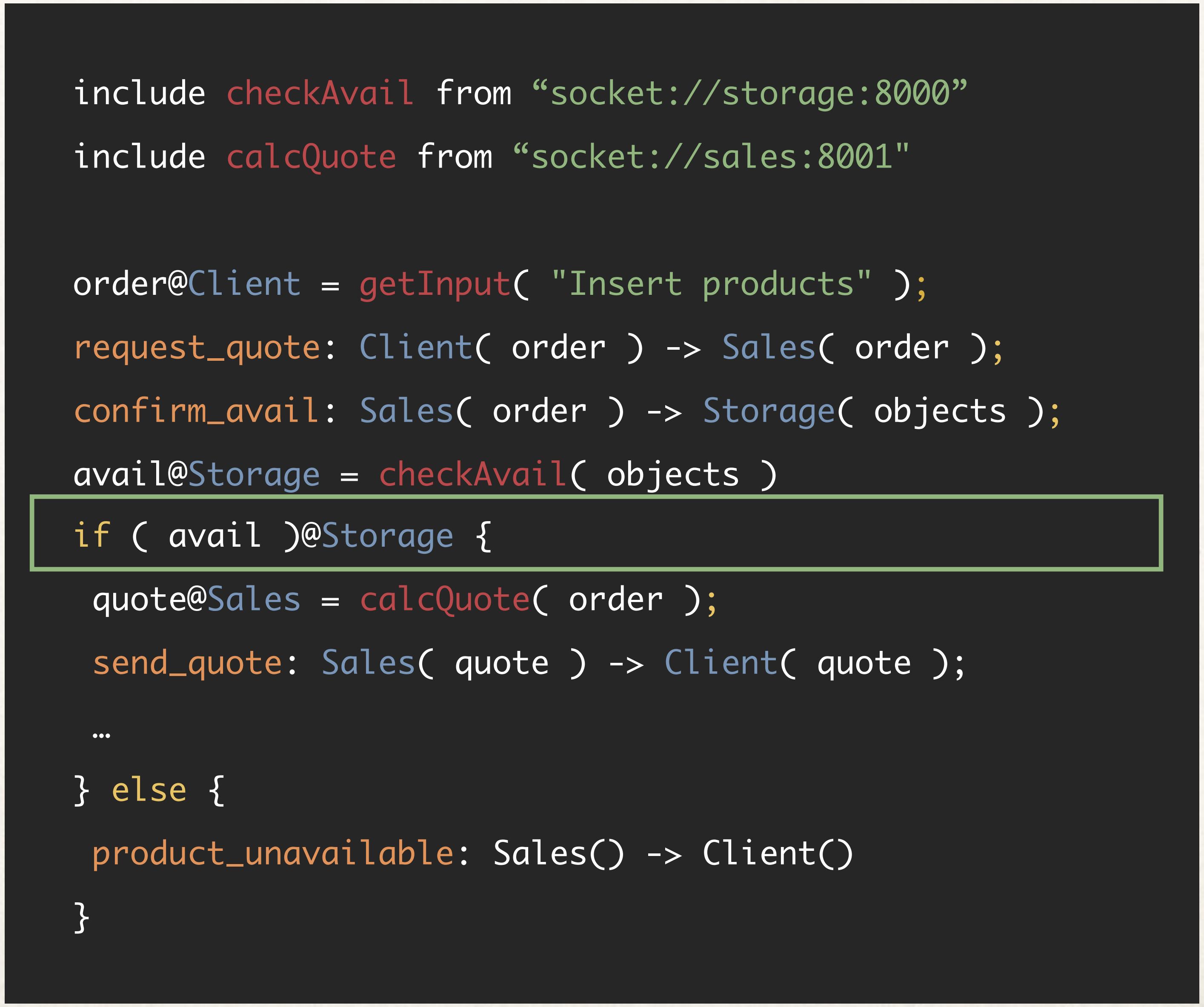

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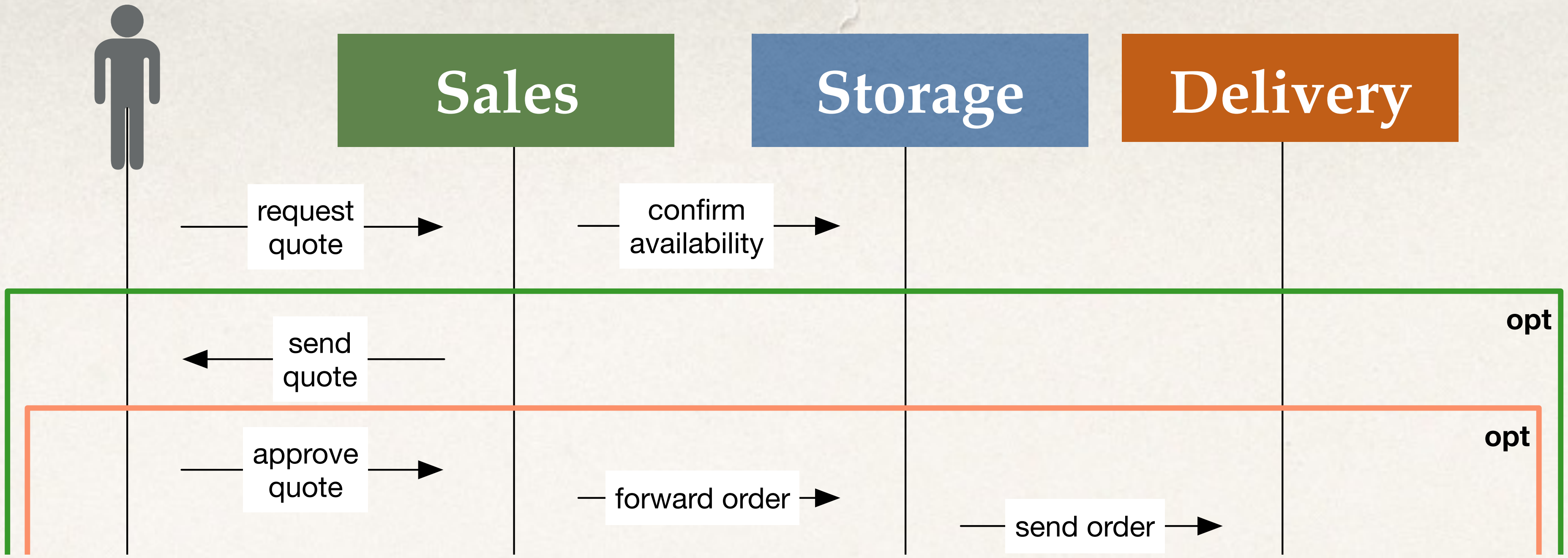

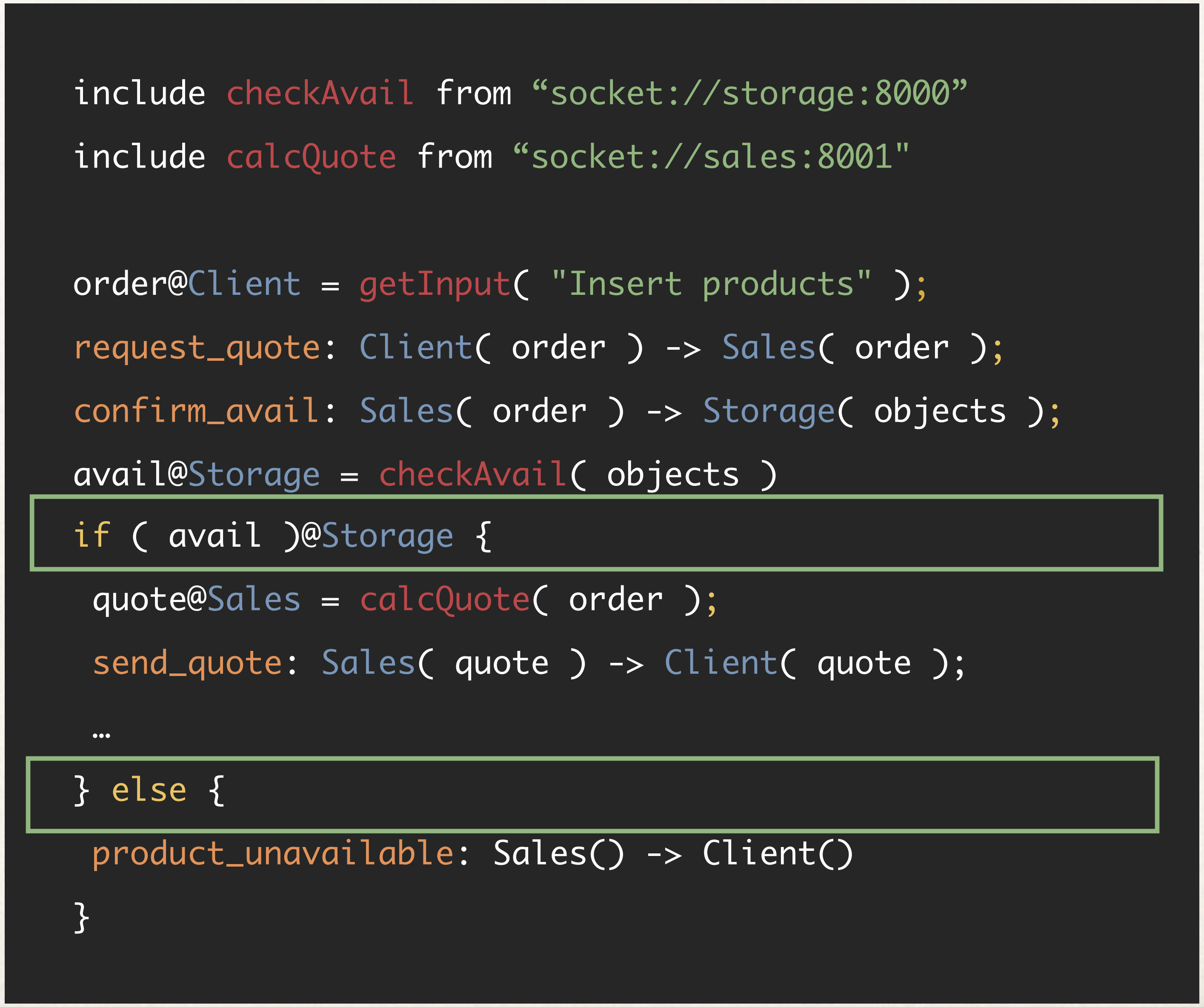

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Netflix

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Netflix

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Netflix (cont'd)

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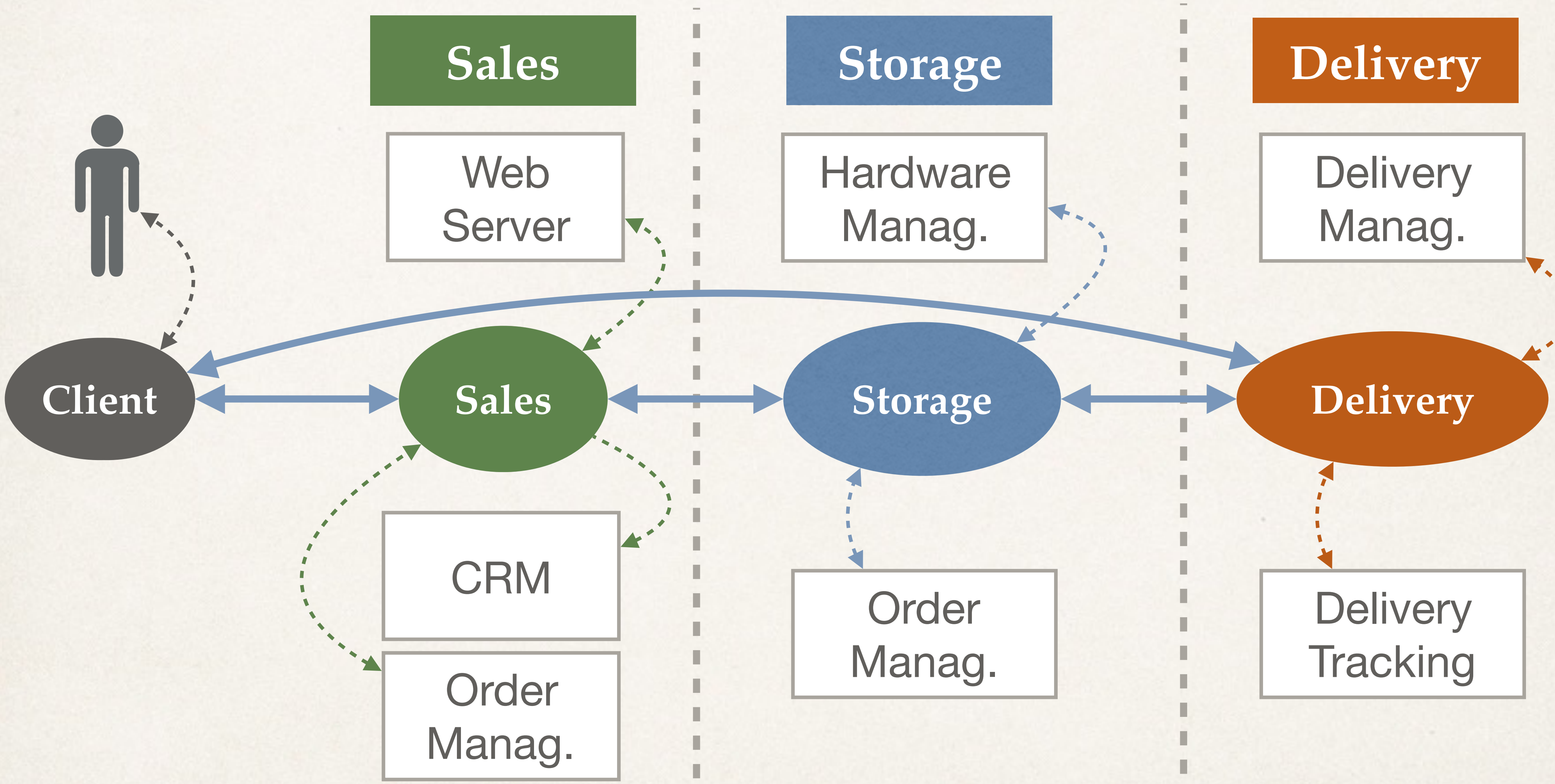
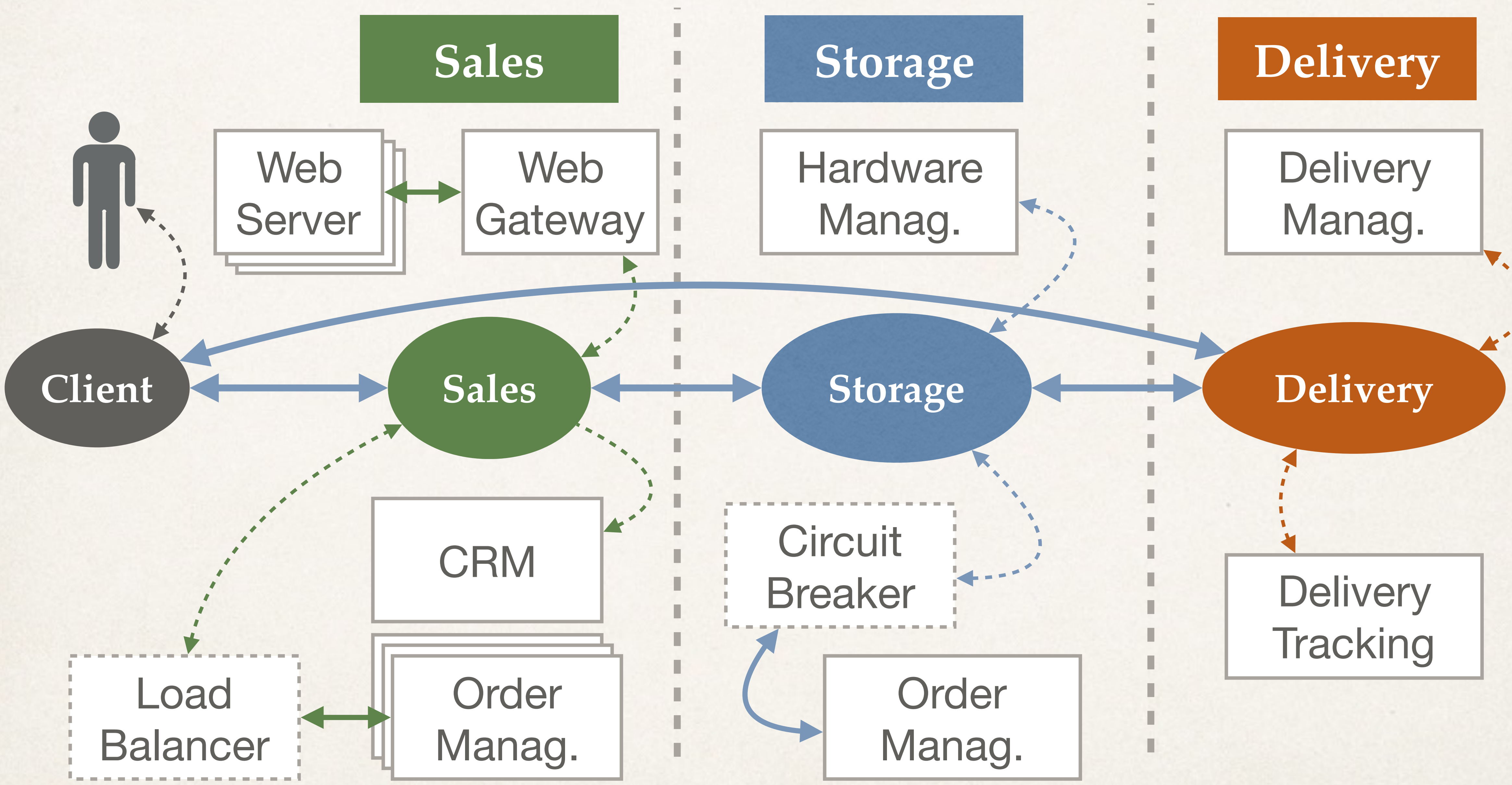
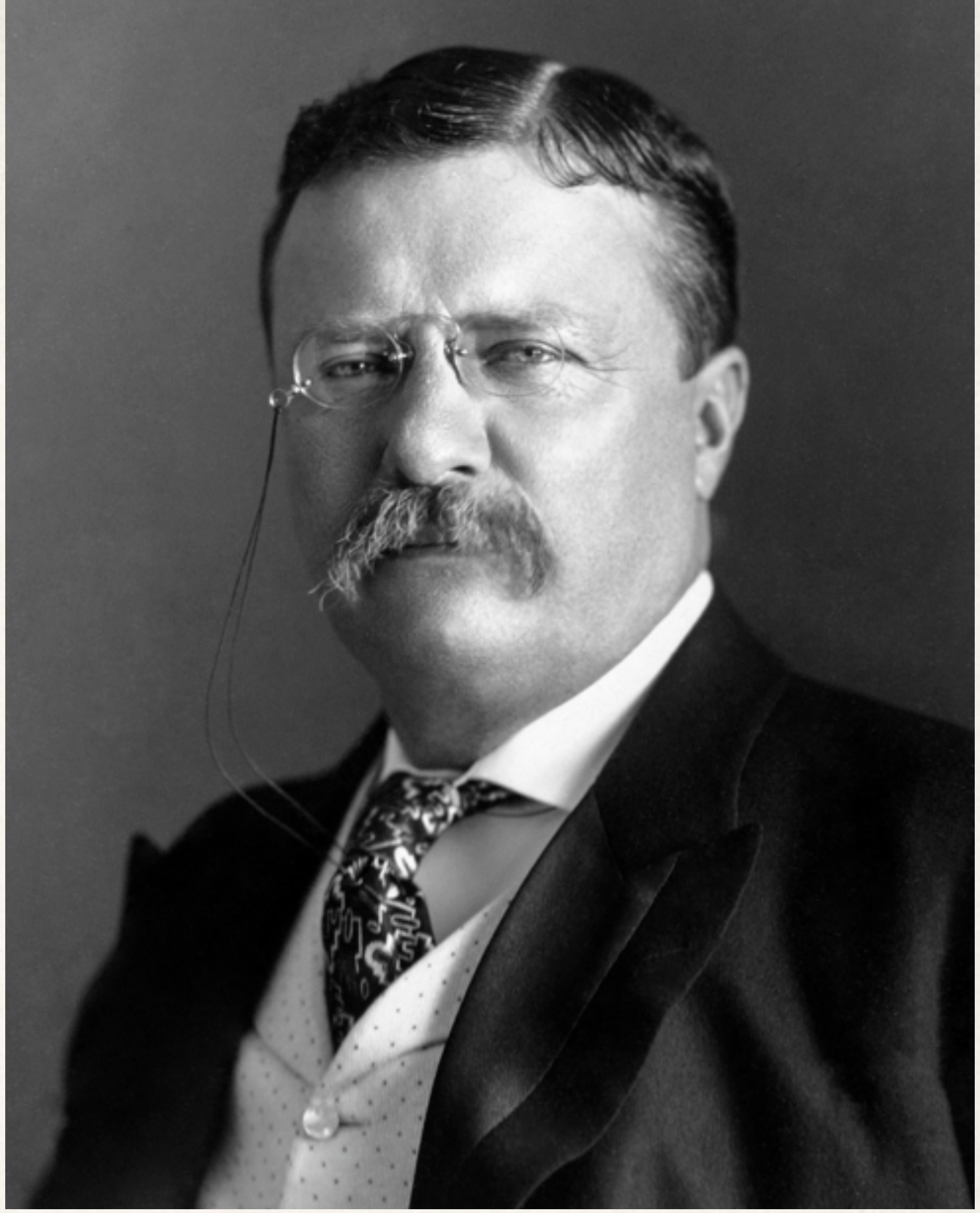
Architectural Vision (Part II)



Architectural Vision (Part III)



Today's Limits



innovation

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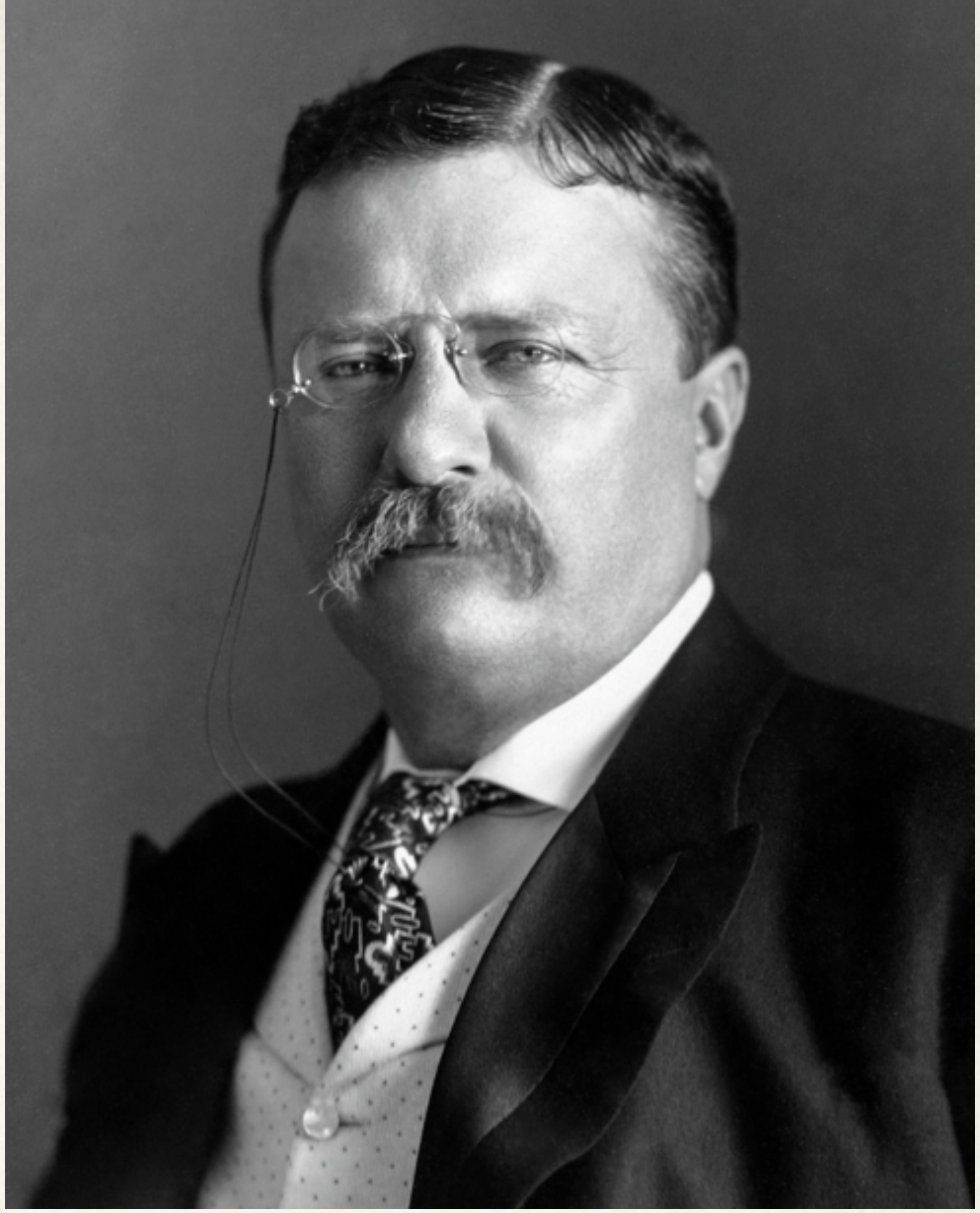

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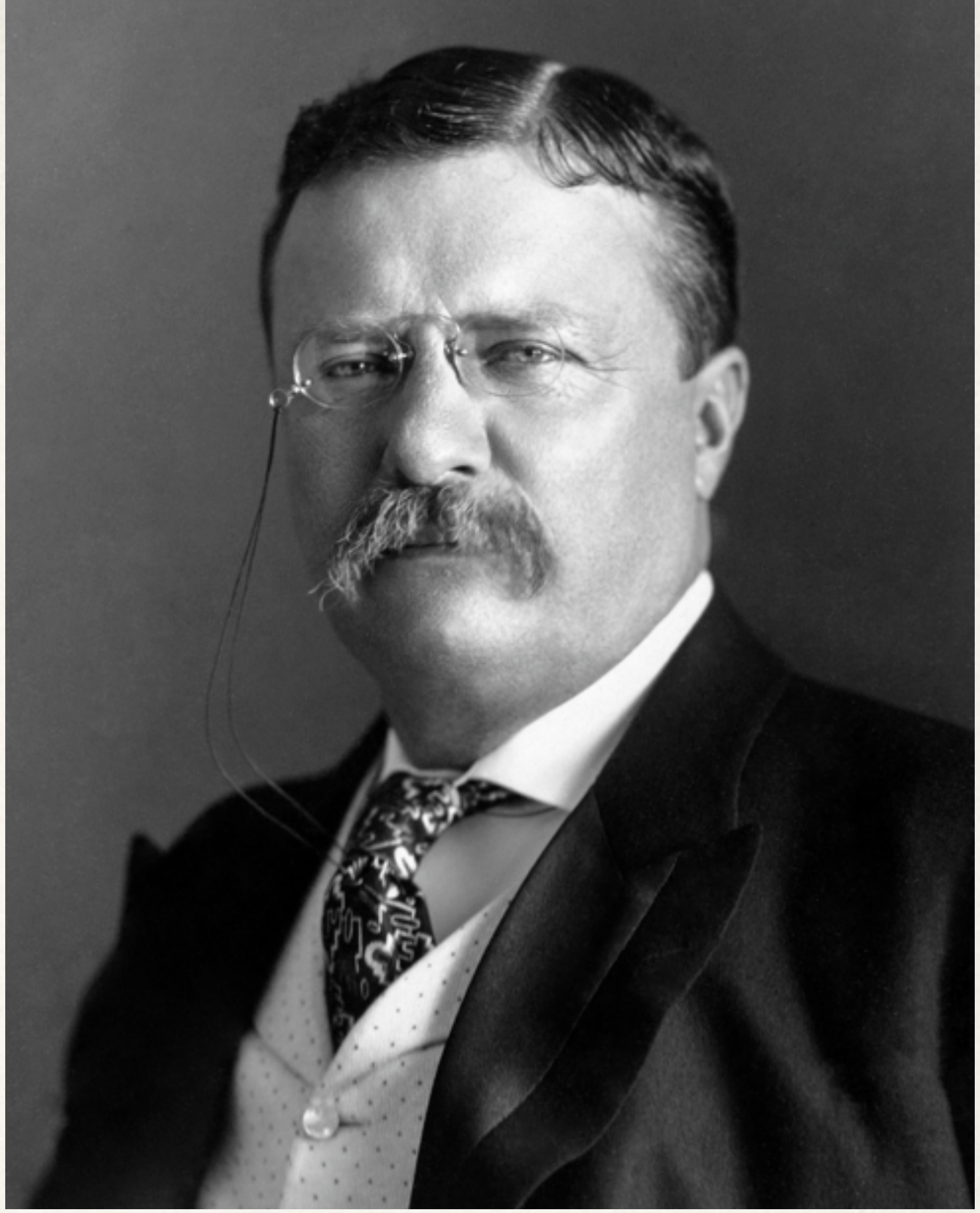
Tomorrow's Standards



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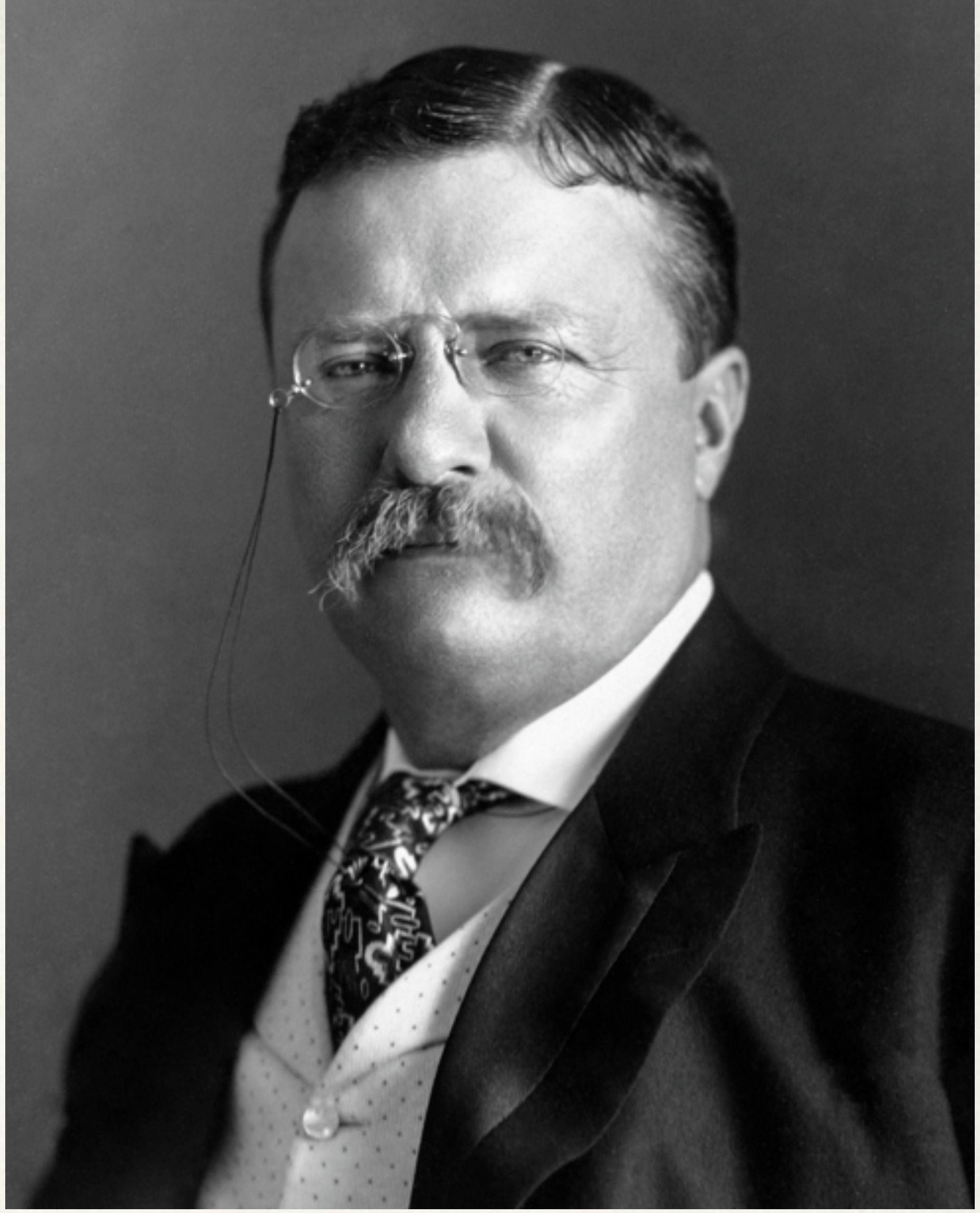

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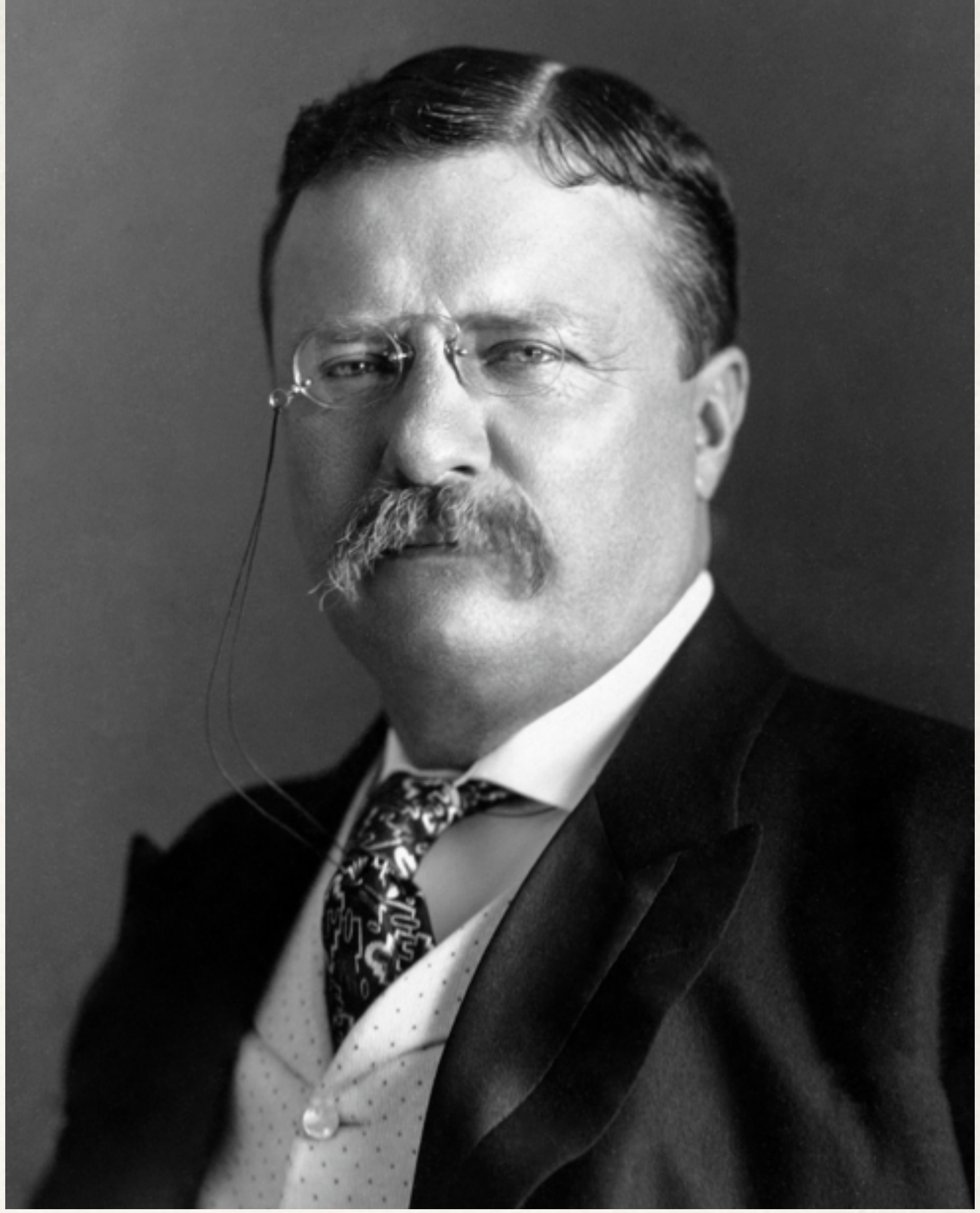
Tomorrow’s Standards

- Distributed programming becomes easier; ☑



innovation
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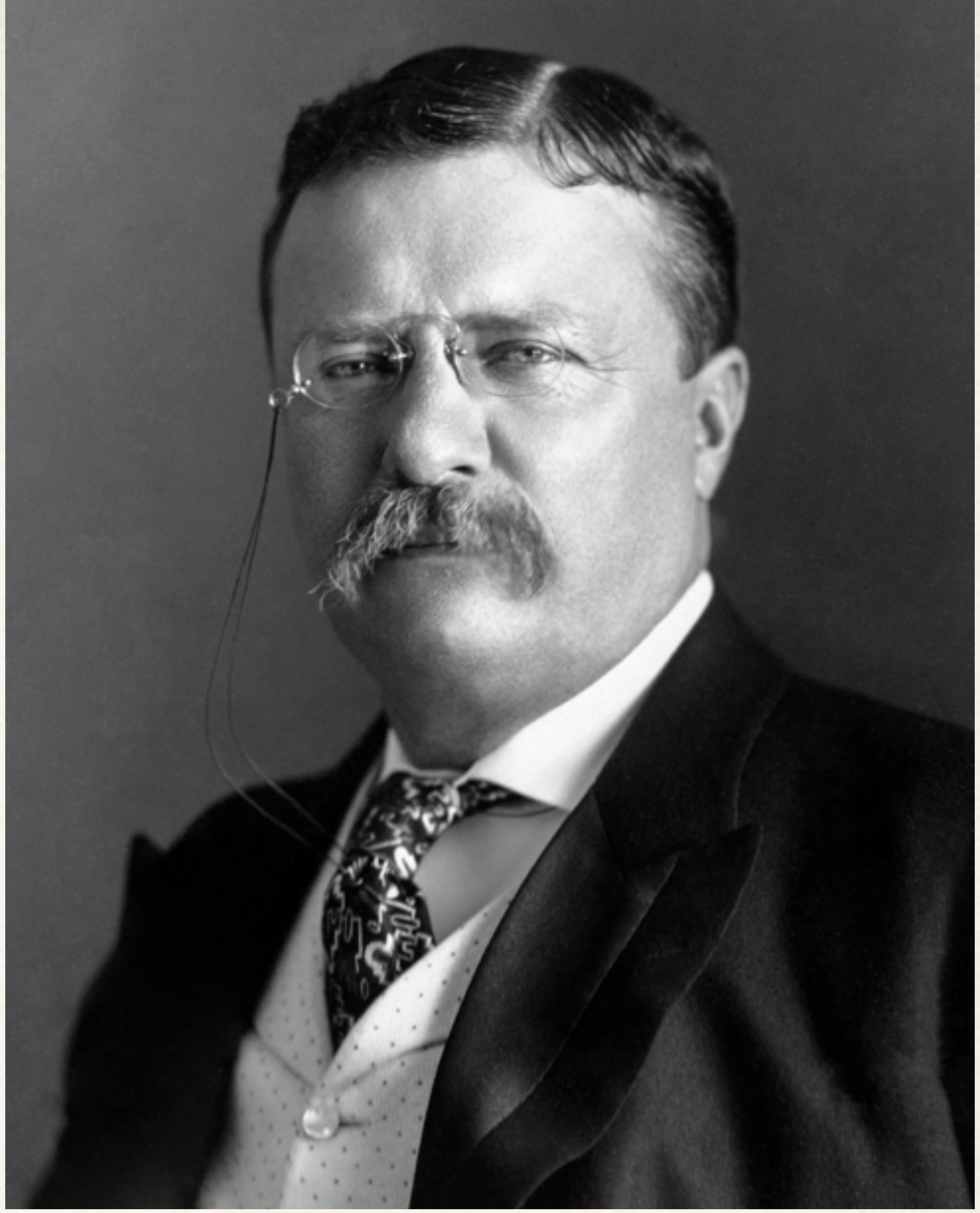
Tomorrow's Standards

- Distributed programming becomes easier; ☑
- Accountability and formal APIs; ☑



innovation

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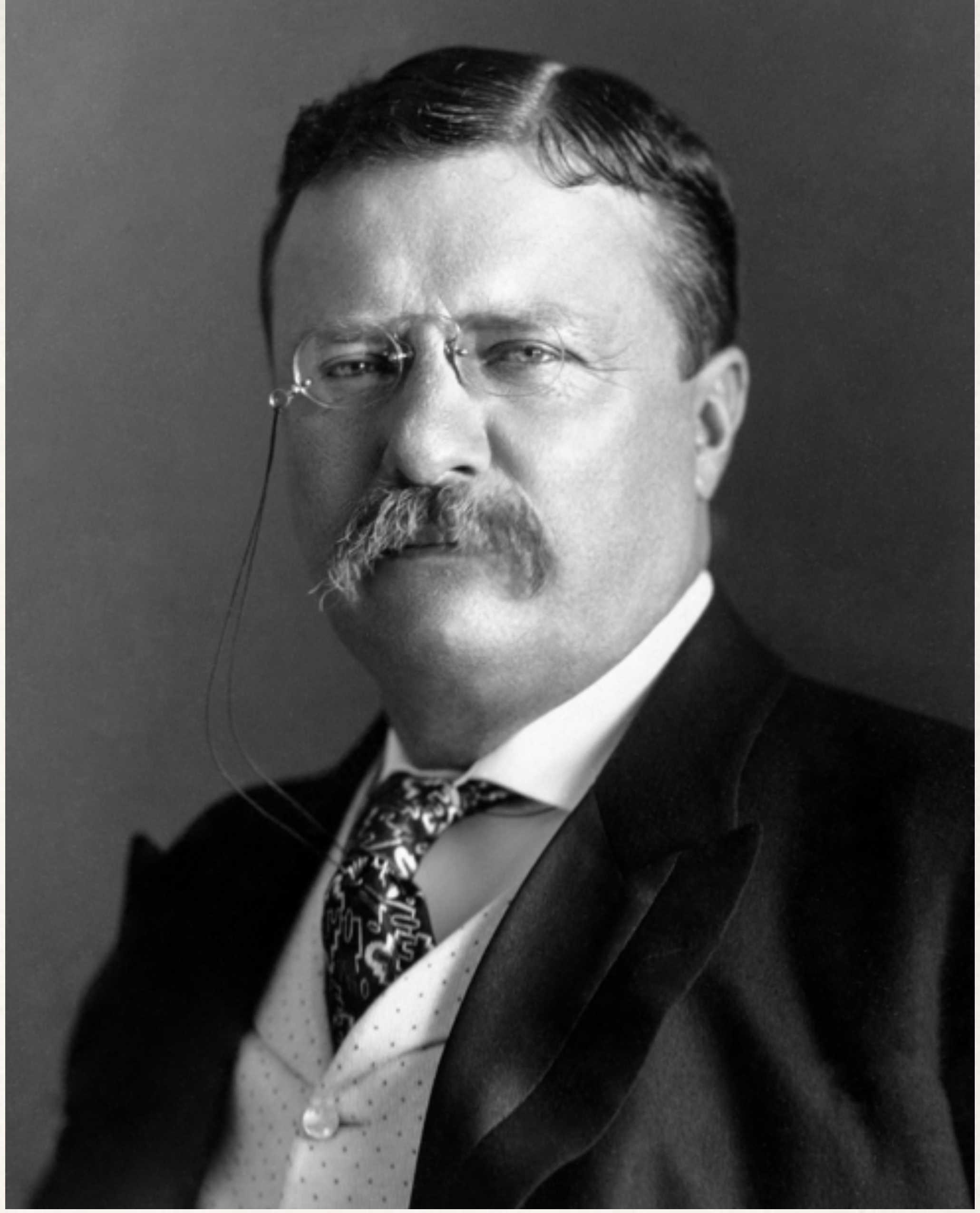
Tomorrow's Standards

- Distributed programming becomes easier; ☑
- Accountability and formal APIs; ☑
- Scalable and reliable architectures. ☑



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Thanks for the attention

```
Questions: Saverio( ? ) -> MoM2016( ! )
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