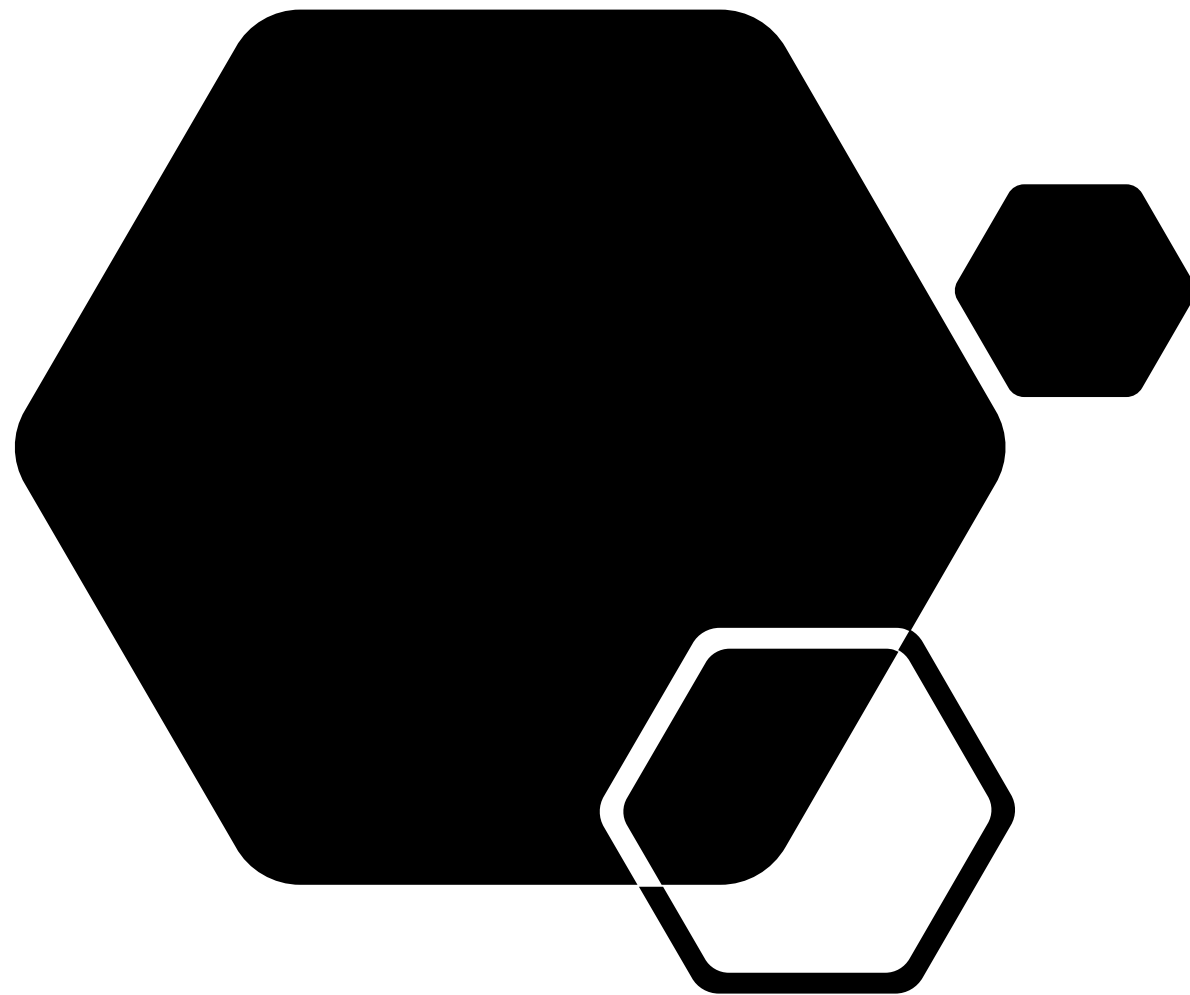


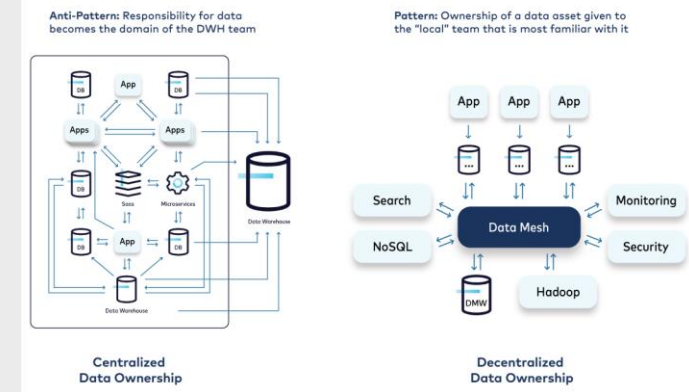
# Arquitetura Event-Driven

Por Victor Osório



# Motivação

- Limitações da Arquitetura Cliente-Servidor
  - Síncrona & Bloqueante
  - Alto acoplamento
  - Processos complexos
  - Latência
  - Centralização
  - Dependência e disponibilidade
    - The Calculus of Service Availability<sup>[1]</sup>



[1] <https://queue.acm.org/detail.cfm?id=3096459>

# Novo paradigma

Asíncrono/Não-Bloqueante

Reativo [\[2\]](#)

Data Mesh [\[3\]](#)

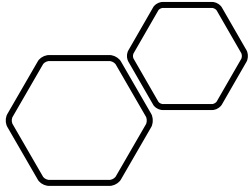
Pipeline de dados

Desacoplado

[2] <https://www.youtube.com/watch?v=VWrpnT8rwVY>

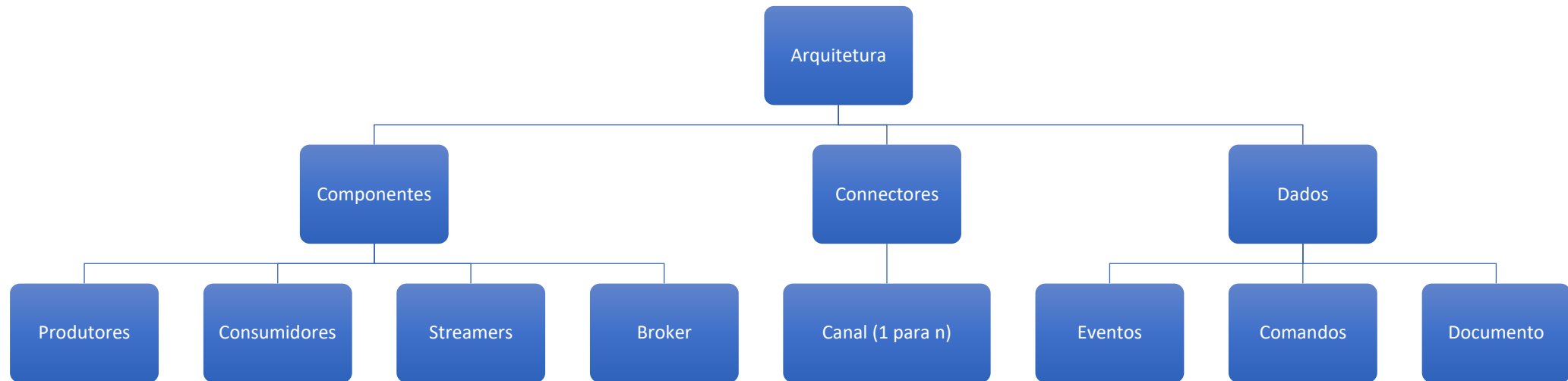
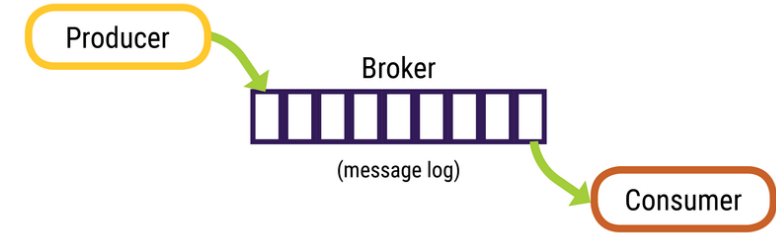
[3] <https://martinfowler.com/articles/data-monolith-to-mesh.html>

The screenshot shows a video player interface. On the left, a small inset video shows a woman with glasses speaking at a laptop. The main area displays a diagram comparing two data processing models. The top model shows a linear flow: 'data' points to a red oval labeled 'function f', which then points to 'f(data)'. The bottom model shows a decoupled flow: 'input topic' (with a bell icon) points to a red oval labeled 'event handler', which then points to 'output topic' (with a bell icon). Below the diagram is the 'strangeloop' logo, consisting of two interlocking green loops. Text at the bottom of the slide reads 'Oct 1-2, 2021' and 'this is the idea behind event driven architecture'. The video player controls at the bottom show a progress bar at 0/34:55 and a play button.



# Arquitetura Event-Driven

Serviços se comunicam através da emissão de eventos



# Tipos de Eventos

- Evento de Notificação
  - Identificador do evento
  - Identificador do dado
- Evento de Transporte de Dado
  - Evento contém todas informações relacionadas ao evento



# Padrões de Event-Driven



## Database Change Capture

Dados mutáveis

Eventos refletem  
alterações dos dados

Database first

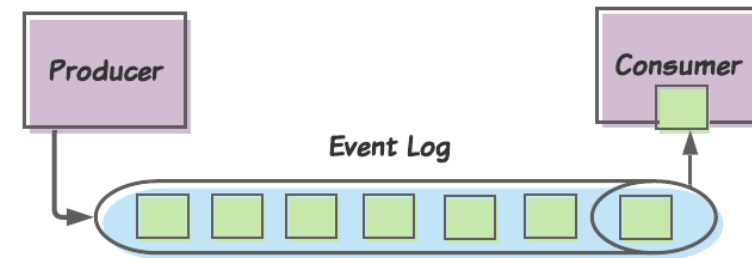


## Event Sourcing [\[4\]](#) [\[5\]](#)

Dados imutáveis

Eventos sequenciais

Event first



[4] <https://martinfowler.com/eaDev/EventSourcing.html>

[5] <https://www.sciencedirect.com/science/article/pii/S0164121221000674#b26>

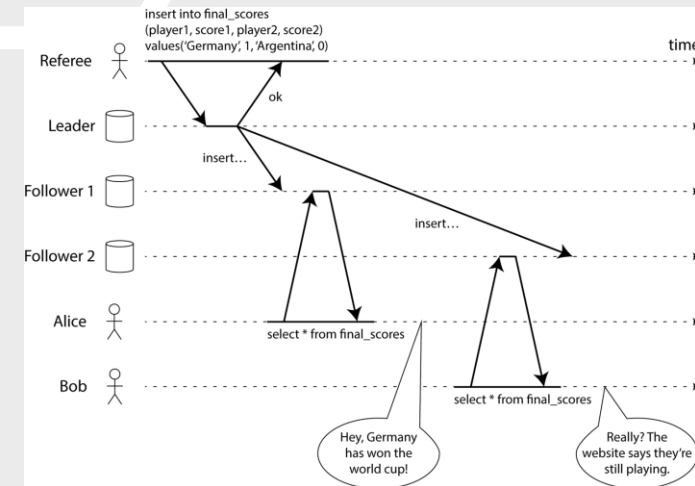
# Anatomia da Mensagem/Evento

- Chave
  - Usado para particionamento
- Metadados
  - Informações de envio
- Cabeçalhos
  - Dados não pertencentes ao domínio da aplicação
- Corpo
  - Dados do evento



# Transações

- Teorema de CAP [\[6\]](#)
  - Consistência eventual
- SAGAS [\[7\]](#)
  - Coreografadas
  - Orquestradas



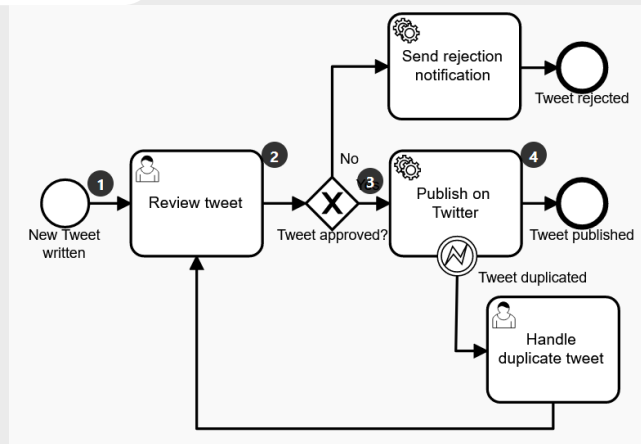
[6] <https://martin.kleppmann.com/2015/05/11/please-stop-calling-databases-cp-or-ap.html>

[7] <https://microservices.io/patterns/data/saga.html>



# Documentação

- Modelar manipulação do dado
  - BPMN [8]
- Documentar topologia
  - AsyncAPI [9]



[8] [https://link.springer.com/chapter/10.1007/978-3-319-06257-0\\_24](https://link.springer.com/chapter/10.1007/978-3-319-06257-0_24)

[9] <https://www.asyncapi.com/>