

# **MODELOS DE ACIDENTES E APRENDIZAGEM ORGANIZACIONAL**



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# POR QUE ENTENDER SOBRE TEORIAS E MODELOS DE ACIDENTES?

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# SEGURANÇA OPERACIONAL E O TAYLORISMO

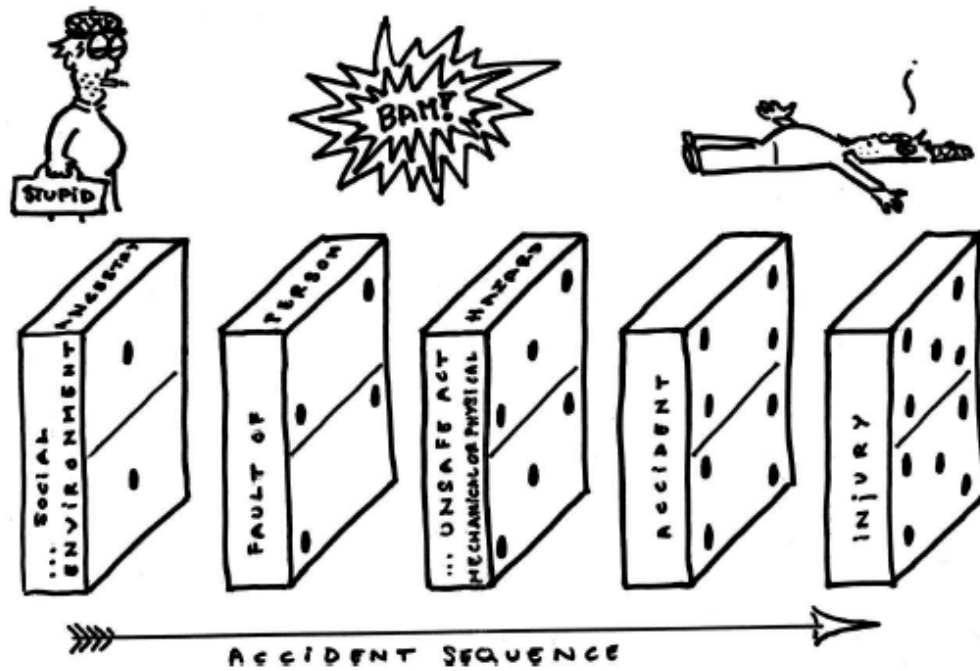
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- Segurança Operacional e a Revolução Industrial
- A Influência do Taylorismo na Segurança Operacional
  - Top-Down Safety
  - Proceduralização
  - Compliance = segurança



# HEINRICH'S DOMINO MODEL

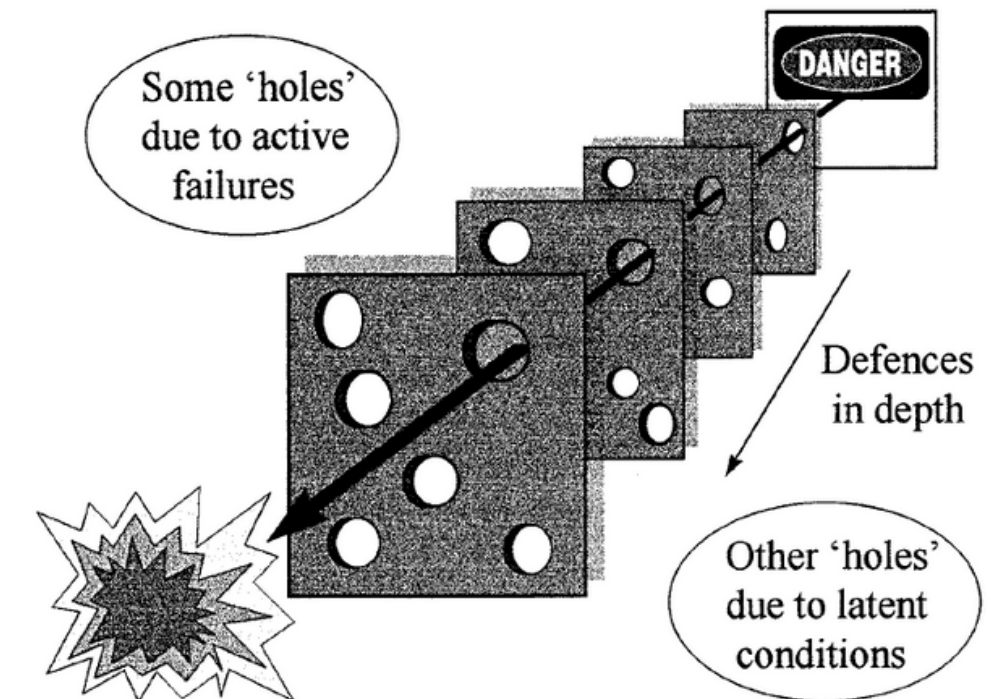
- Linearidade e Causa Única
- Intervenção no Comportamento
  - 88% das causas = Atos Inseguros
- Behavior-based Safety
  - Não considera o porquê do comportamento



(Dekker, 2019)

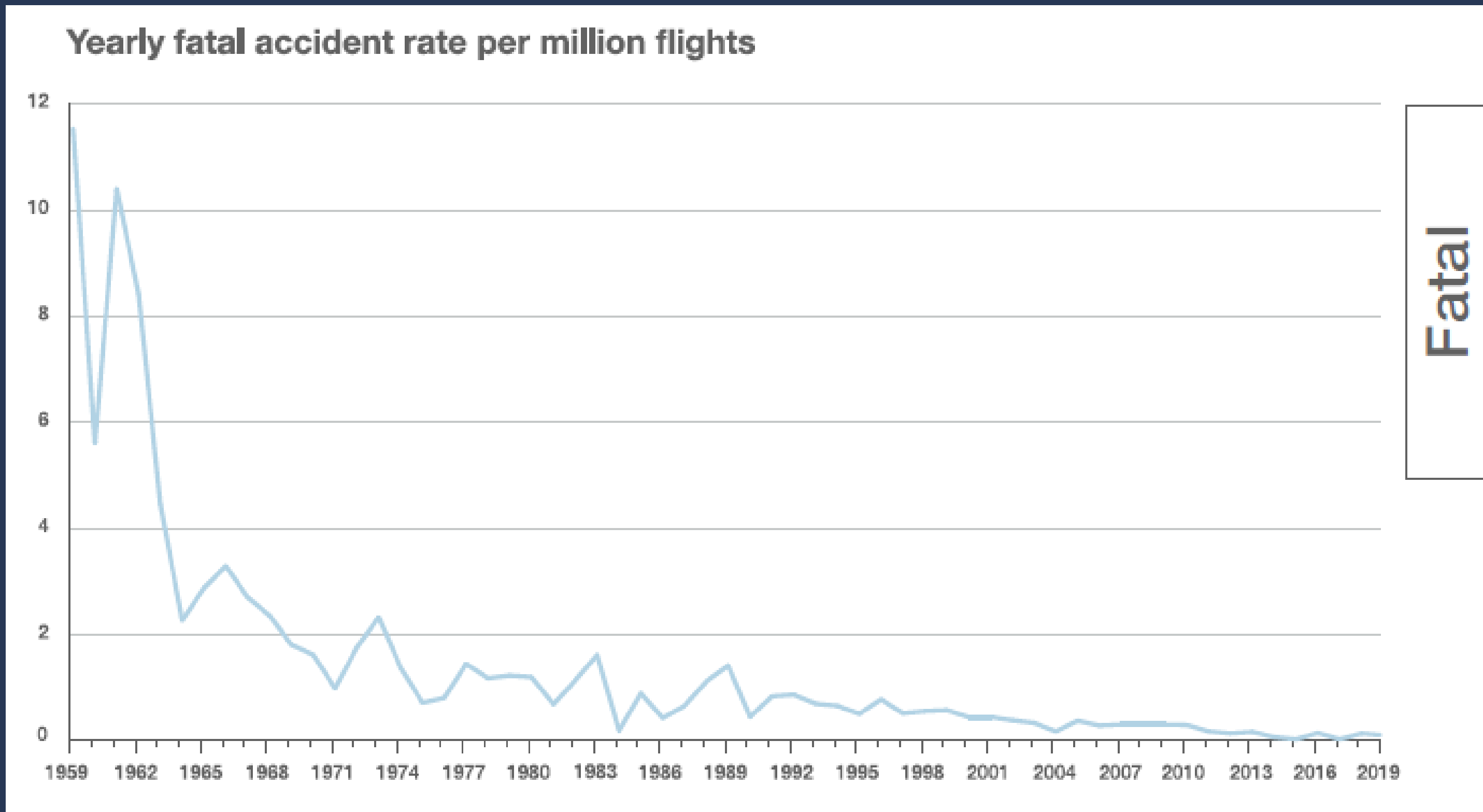
# SWISS CHEESE MODEL

- Influência de Heinrich
  - Permanência da Linearidade
  - Permanência de Atos Inseguros
    - Acidente x Incidente
- Swiss Cheese e a Culpabilização
  - HFACS
- Pessoas são um problema a ser controlado
- Não explica como os buracos não foram vistos



(Reason, 1997)

# ONDE ESTAMOS?



(Airbus, 2020)

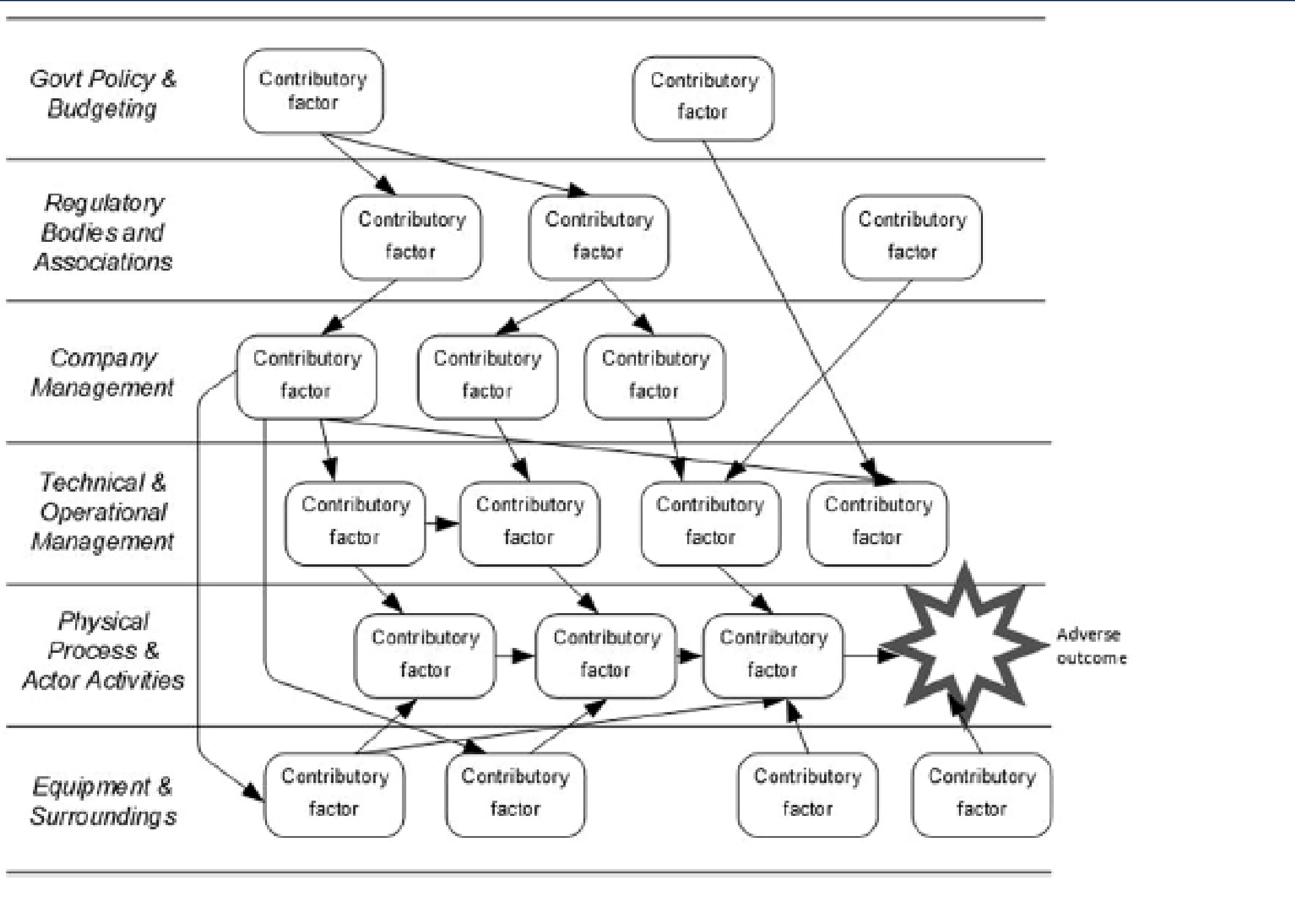
# ENGENHARIA DE RESILIÊNCIA E SISTEMAS COMPLEXOS

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- Complexidade da Operação
  - Variabilidade da performance
    - Helmreich (2000)
    - Sully and APU
- Operador responsável pelo sucesso
  - Ambiente dinâmico com incertezas residuais

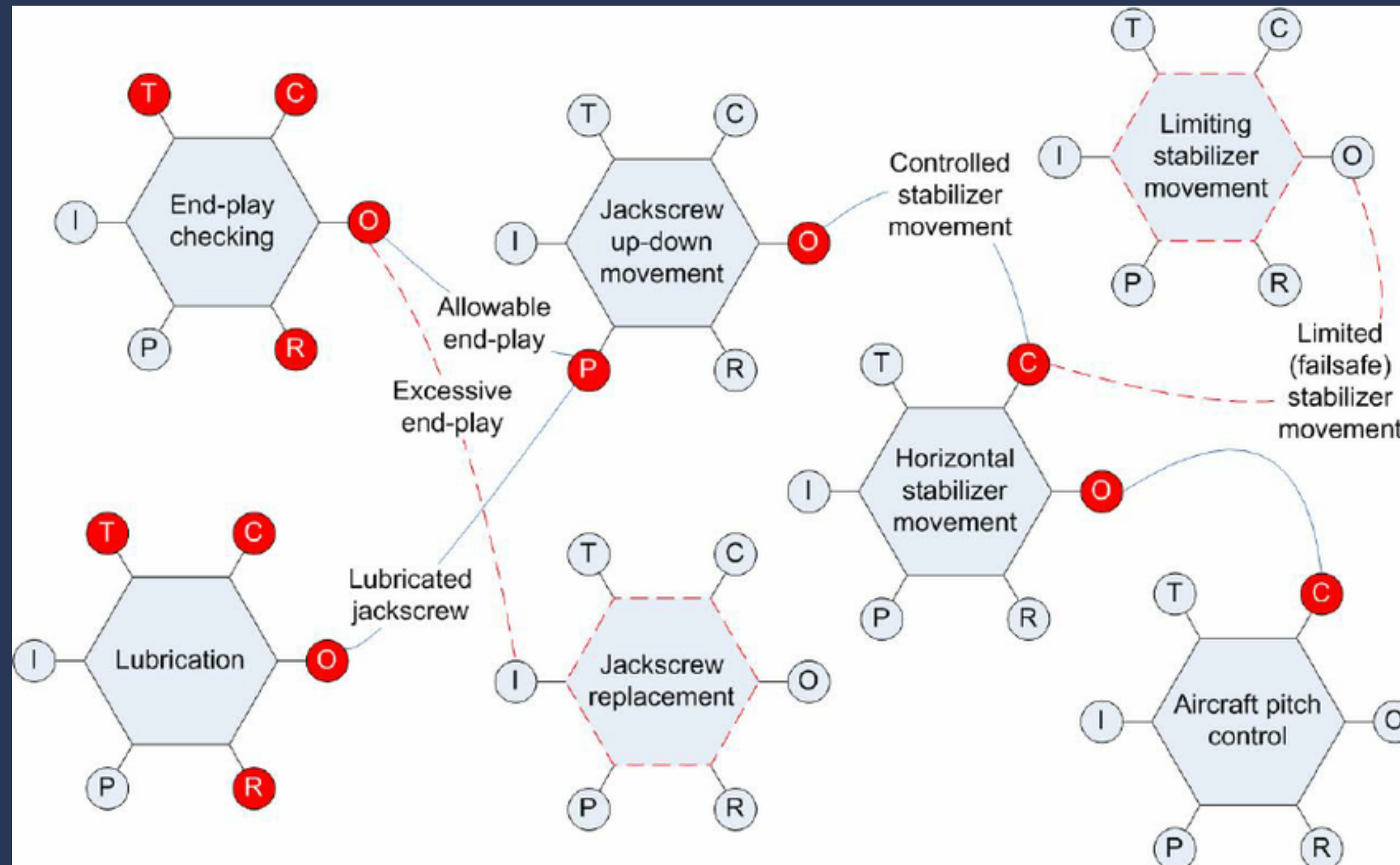


# RASMUSSEN'S ACCIMAP



(Goode et al., 2019)

# FUNCTIONAL RESONANCE ANALYSIS METHOD



(Woltjer; Hollnagel, 2007)

# RELAÇÃO ACADEMIA X BAST



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# REFERENCES

Airbus. (2020). Statistical analysis of commercial aviation accidents 1958-2019.

Branford, K., Hopkins, A., & Naikar, N. (2009). Guidelines for AcciMap analysis. In Learning from high reliability organisations. CCH Australia Ltd.

Dekker, S. (2019). Foundations of safety science: A century of understanding accidents and disasters. Routledge.

Goode, N., Shaw, L., Finch, C. F., & Salmon, P. M. (2019). Challenges of translating Rasmussen's Accimap into a usable, sustainable, and useful incident reporting system: end-user attitudes following 12-month implementation. *Cognition, Technology & Work*, 1-11.

Helmreich, R. L. (2000). Culture, threat, and error: Assessing system safety. In *Safety in aviation: The management commitment: Proceedings of a conference*. London: Royal Aeronautical Society.

# REFERENCES

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Hollnagel, E., Hounsagaard, J., Colligan, Lacey. (2014). FRAM – the Functional Resonance Analysis Method – a handbook for practical use. Center for Quality.

Rasmussen, J. (1997). Risk management in a dynamic society: a modelling problem. *Safety science*, 27(2-3), 183-213.

Woltjer, R., & Hollnagel, E. (2007). The Alaska Airlines flight 261 accident: a systemic analysis of functional resonance. In 2007 International Symposium on Aviation Psychology (p. 763).