

A simplified service engineering approach used by an industrial service solutions provider

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Aim and research questions of paper

Objective:

This paper aims to fill some of this gap of how Service Engineering (SE) is implemented to structure complex service offerings by studying how an aircraft maker, providing complex hardware with long operation times, makes use of this approach to develop maintenance, repair and overhaul services and improve its service solutions.

Research questions:

RQ1: What parts of the suggested SE approaches are particularly useful for a product-based service provider when developing a service solution for products late in their life- cycle?

RQ2: How is the SE approach used to structure and formalize the new service business?

RQ3: Is SE used as a one-off event, or can it be used also for continuous improvement of the results?

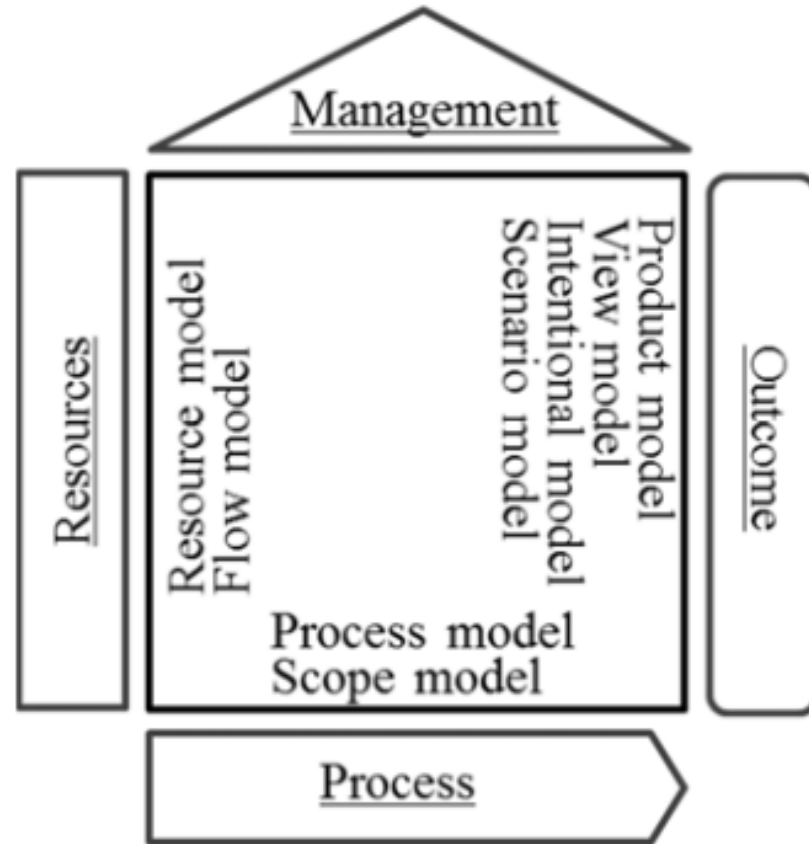
Framework: Service Engineering (eg references)

Bullinger, H-J, Fähnrich, K-P, Meiren, T. Service engineering – methodological development of new service products. International Journal of Production Economics 2003;85:275-287.

Sakao, T, Shimomura, Y. Service Engineering: a novel engineering discipline for producers to increase value combining service and product. Journal of Cleaner Production 2007;15:590-604.

Shimomura, Y, Hara T. Method for supporting conflict resolution for efficient PSS development. CIRP Annals – manufacturing Technology 2010;59:191-194.

Rolland, C, Kirsch-Pinheiro, M, Souveyet, C. An Intentional Approach to Service Engineering. Transactions on Services Computing 2010;3:292-305.

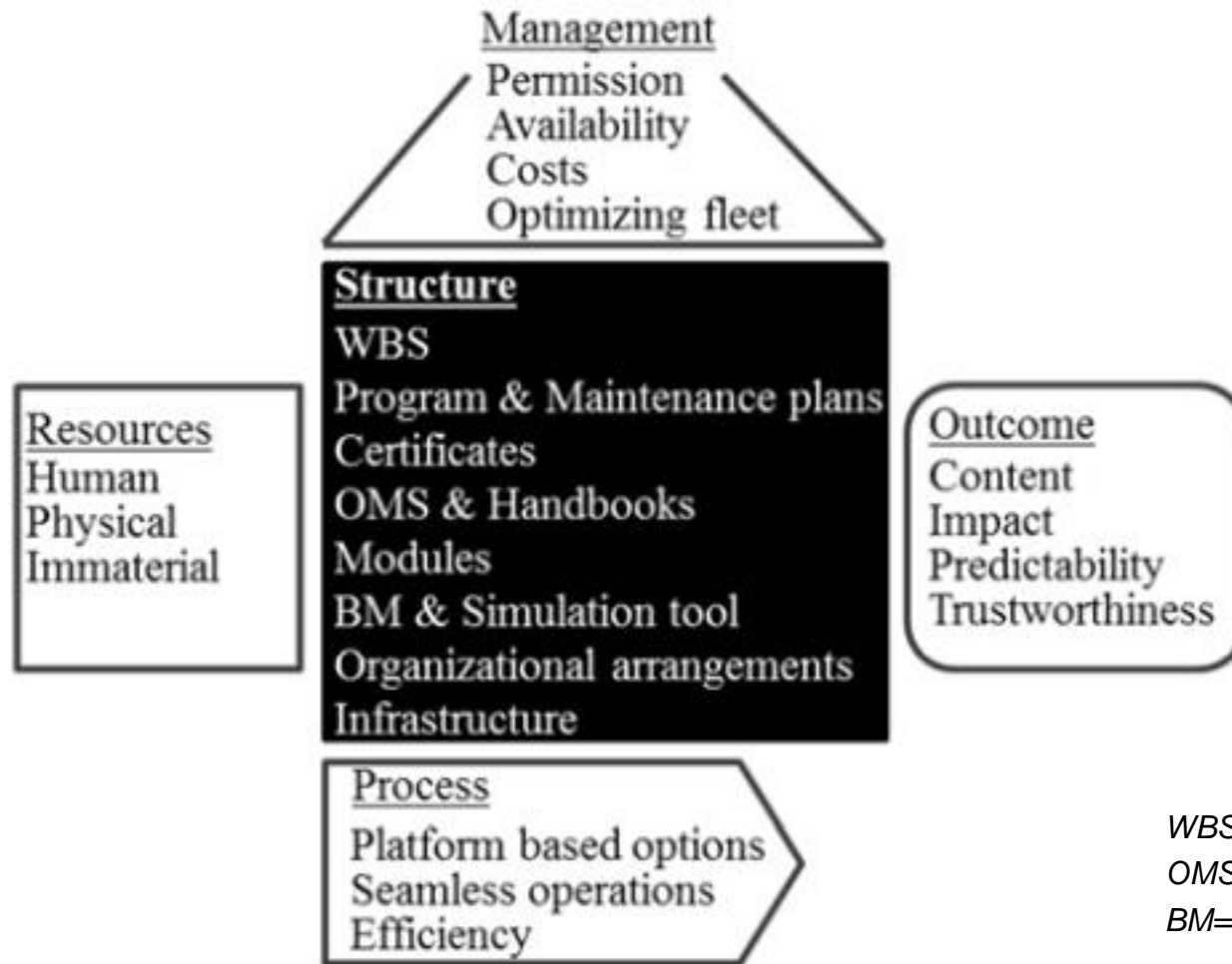


Research methodology: A case study

- An ongoing longitudinal case study which started in 2010.
- **The unit of analysis** is one of four service divisions within a large product-based, high- technology business corporation with more than 10,000 employees.
- **Seven service solutions** for different product platforms, aircraft as well as helicopters.
- **The main focus:** development and delivery of a service business for an aircraft platform with an installed base of 80 aircrafts and auxiliary equipment.
- The aircrafts have been in operation since the middle of the 1960s and the provider has executed MRO since then, but for the major customer the set-up has been changed from a cost-plus agreement to a service solutions business.

(MRO: maintenance, repair and overhaul business)

Discussion of the value of the simplified approach – revisited 5 years later



*WBS=Work Breakdown Structure
OMS=Operations Management Systems
BM=Business Model*

Figure 2: Four dimensions in SE and the unifying structure, exemplified with details from the industrial service solutions case.

Conclusions from case study 1(2)

- **The use of a simplified service engineering model supports** the development, implementation and maintenance of a comprehensive service business for long-lived complex products.
- **The importance of the following key factors:**
 - A systematic engineering method
 - A systematic way of controlling human and physical processes
 - An ability to articulation of new roles
 - Dedicated service champions
 - Deep technical knowledge of involved hardware
- The study further indicates that the approach suggested by Shimomura et al. where human processes are complemented with detailed physical processes **might also be useful.**

Conclusions from case study 2(2)

- The structuring of materials flow via an **ERP system seems both important and difficult, but not indispensable.**
- **Role articulation** is another important factor (industry specific)
 - Safety responsibilities
 - Formal permissions
- **Dedicated service champions played a great role** during the entire process, from development to the implementation and operation of the new service solution
- **The provider's intimate knowledge of the hardware** was a basic condition for reliable and trustworthy service solutions.



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Thank you for your attention!

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