



# Assessment of Readiness for Internal Technology Transfer

- A Case Study

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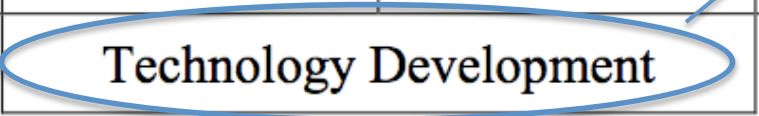
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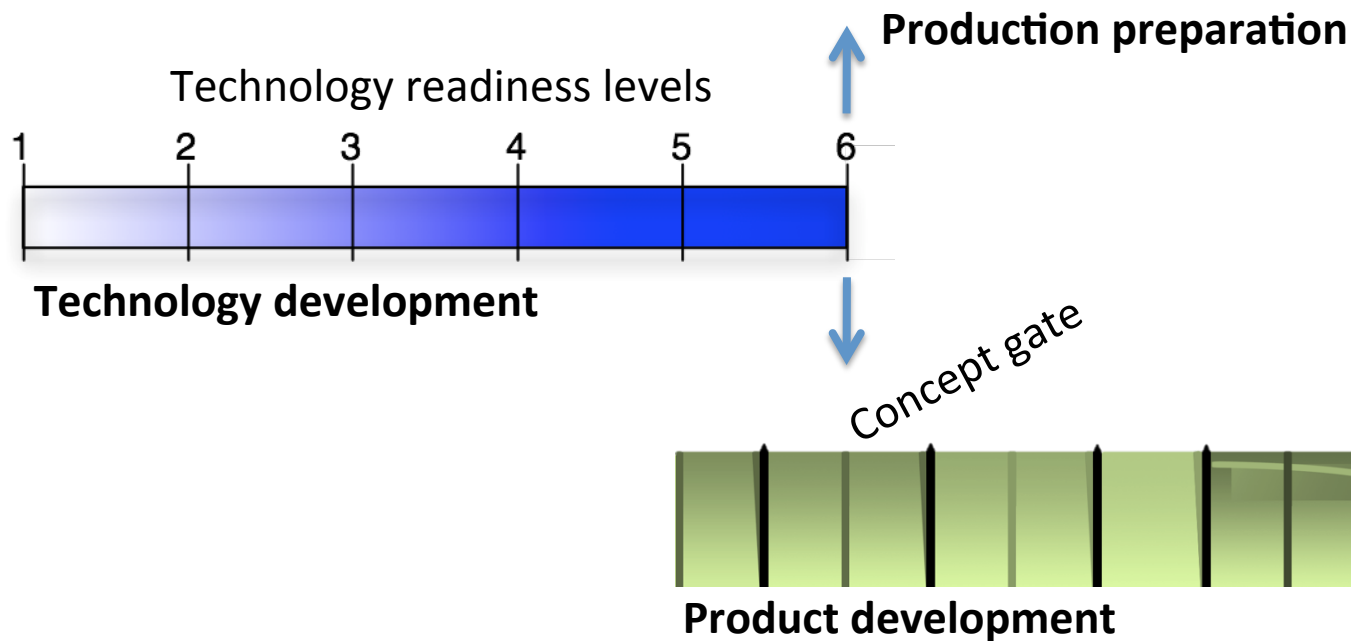
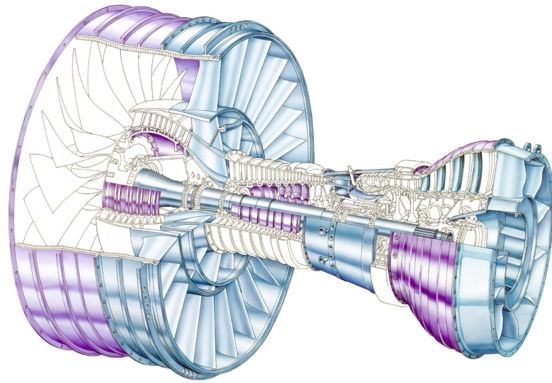
# Internal technology transfer

R&D				
Research			Development	
Basic Research	Applied Research	Advanced Engineering	Product Development	Engineering
	Technology Development			



Source: Karlsson (2004)

# Technology development at the case company



# Frame of reference

- Transfer content
  - General information, specific information, procedures/practice and hardware (Rebentisch, 1995)
  - Blueprints, prototypes, persons, methods, procedures, test results, alternative concepts, supplier suggestions, engineering reports and lessons-learned books. (Nobelius, 2002)
- Transfer timing
  - Align with concept gate (Eldred & McGrath 1997b)
  - Balance between time-to-market and risk (Magnusson & Johansson, 2008)
  - Readiness vs preparedness (Nobelius, 2003)
- Transfer management
  - It's a process (e.g. Leonard-Barton, 1995)
  - Uncertainty dictates mode of transfer (Stock & Tatikonda, 2000)



# Purpose

- Research Question 1:
  - *What are the most important factors for determining the timing and content for internal technology transfer at the case company?*
- Research Question 2:
  - *How can these factors be addressed in the methods for assessing technology readiness?*

# Methodology

- Pre-study
  - Semi-structured interviews (15) during 2009
- Literature study
  - Articles on technology transfer
- Main study
  - Semi-structured interviews (7) during 2010
  - Attended meetings
  - Review of project documentation

# Results



# What transfer content is there?

- Technical
  - Test reports
  - Robustness
  - Specifications
- Business Case
  - Profitability
  - Risk analysis
- Implementation
  - Education
  - Equipment
  - Plans
- Personnel

# How is readiness assessed?

- Gated process with technical reviews
- Checklists based on TRL as gate criteria
- TRL 6 used for transfer readiness (Prototype demonstration in relevant environment)
- Gate criteria were seen as project objectives

# Challenges

- Interpreting readiness definitions
- Knowing the target application
- Avoiding rework during product development
- Personnel to support implementation
- Background knowledge
- Preparations for implementation
  - Allocating budget
  - Educating operators
  - Ready for full-scale operating conditions

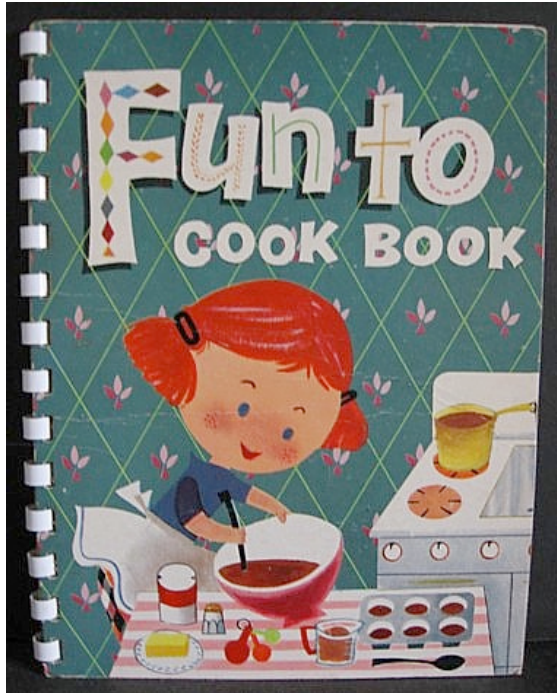
# Discussion

# Target deliverables



- Should there be more items in the checklist?
- Is TRL 6 the right level for transfer?
- Negotiate criteria with recipients?

# Quality of transfer



- Longer overlap between TD and PD?
- Transfer personnel?
- More preparation for implementation?

# Measure readiness



# Conclusion



# RQ1: Factors for determining timing and content of transfer

- TRL-based checklist works well

TQX Base Criteria	
Section	Required Form
Technical Aspects	
General Derivatives	
→ Insert technical module	
→ Insert additional relevant derivatives and/or subthreshold derivatives with explanation	
Business Case	
General Derivatives	
→ Insert additional relevant derivatives and/or subthreshold derivatives with explanation	
Implementation Aspects	
General Derivatives	
→ Insert implementation module	
→ Insert additional relevant derivatives and/or subthreshold derivatives with explanation	
Next gate	Next TQX(1) to be submitted

- Difficulty of further maturation not addressed



- Interpreting the readiness definition



- Transfer personnel to support implementation

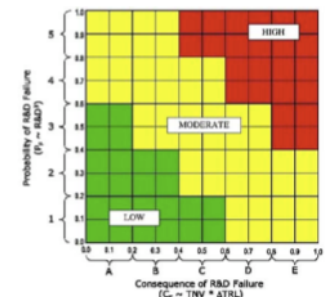


# RQ2: How can the assessments be improved accordingly?

- Adapt and negotiate readiness definition
- Multiple readiness checklists
  - Large/small
  - Critical/noncritical
  - Type of technology
- Measure preparedness
  - More criteria for implementation
  - Measures for difficulty

Project Specific Gate Criteria		
Section	Deliverables	Required Fulfillment
<b>Technical Aspects</b>		
Generic Deliverables		
	-> Insert technical module	
	-> Insert additional relevant deliverables and/or strikethrough irrelevant deliverables with explanation	
<b>Business Case</b>		
Generic Deliverables		
	-> Insert additional relevant deliverables and/or strikethrough irrelevant deliverables with explanation	
<b>Implementation Aspects</b>		
Generic Deliverables		
	-> Insert implementation module	
	-> Insert additional relevant deliverables and/or strikethrough irrelevant deliverables with explanation	
<b>Next gate</b>		Tailor TG(X+1) in collaboration

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Generic Deliverables		
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<b>Next gate</b>		Tailor TG(X+1) criteria and requirements in collaboration with TGX decision body



Thank you for listening...

...and let's hear some comments and  
questions!