# IT Project Risk Factors

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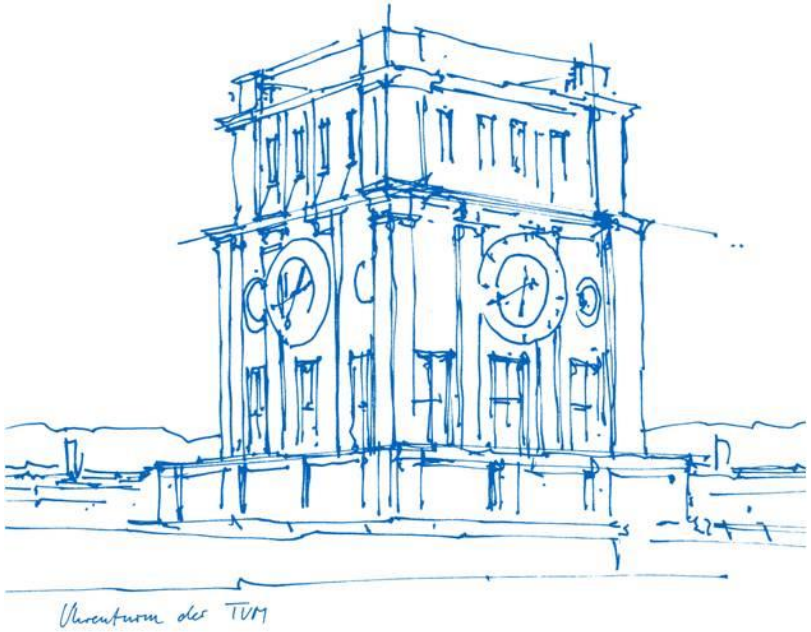


# Structure of the presentation

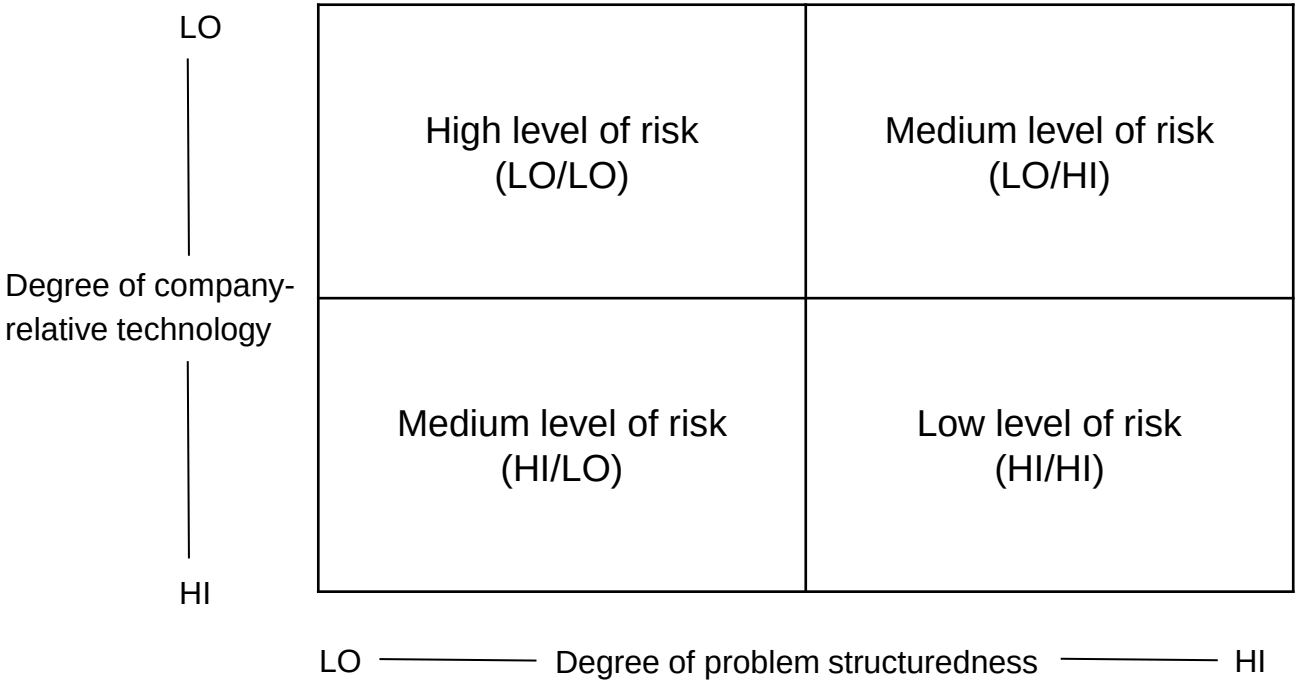
1. Introduction to Applegate's IT Project Risk Framework
2. 3 examples of failed projects
3. Classic mistakes by Nelson (2007)
4. OBRiM
5. Discussion

# Introduction to Applegate's IT Project Risk Framework

The three characteristics that influence project risks:

1. Size of project in terms of workers and years of effort
2. Degree of company-relative technology experience
3. Degree of inherent structure

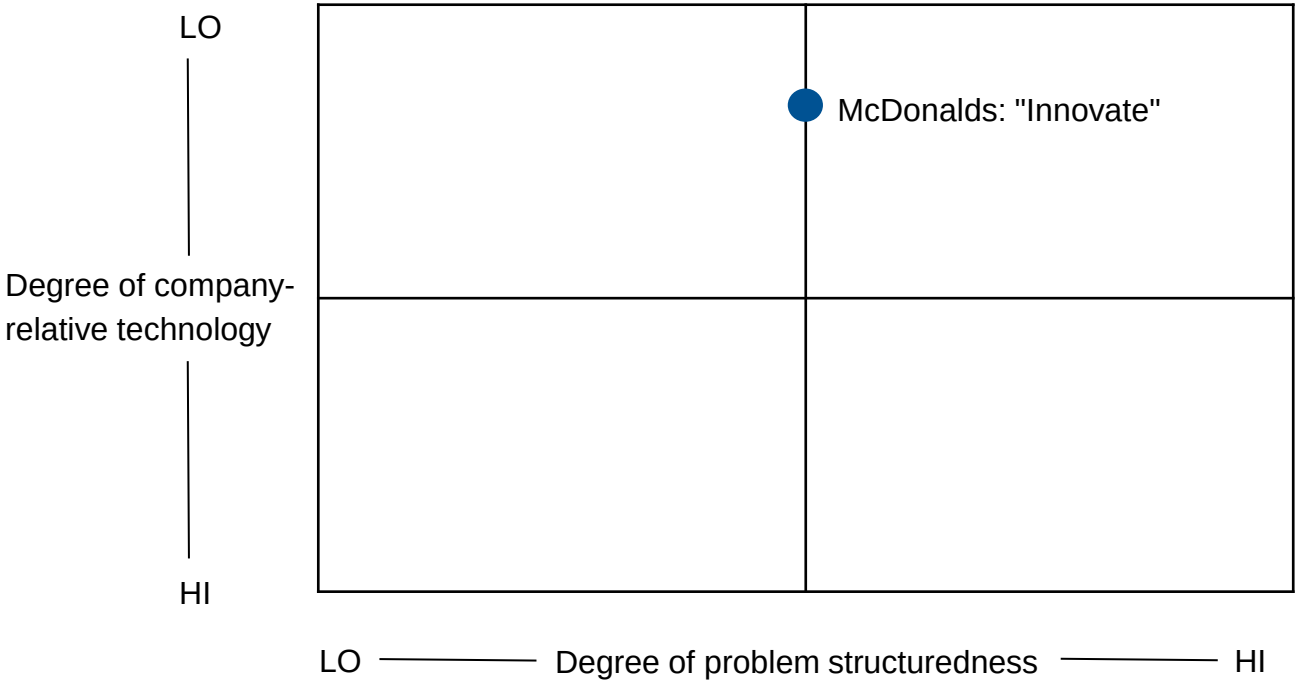
# Degree of IT Project Risk



# McDonalds Project "Innovate" 2001

| | |
|---|---|
| Plan | ❑ Turn a simple business into a real time enterprise by implementing a web-based network for information exchange with an estimated budget of 1 billion USD |
| Outcome | ❑ Stopped due to financial difficulties within the company after two years and 170 million USD spent |
| Reasons for failure | ❑ No expertise in large-scale information system implementations<br>❑ Poor prioritization of more pressing needs like improving the speed and quality of restaurant operations<br><br>❑ Not able to provide high-speed bandwidth in every location<br>❑ Resistance from franchisees community |

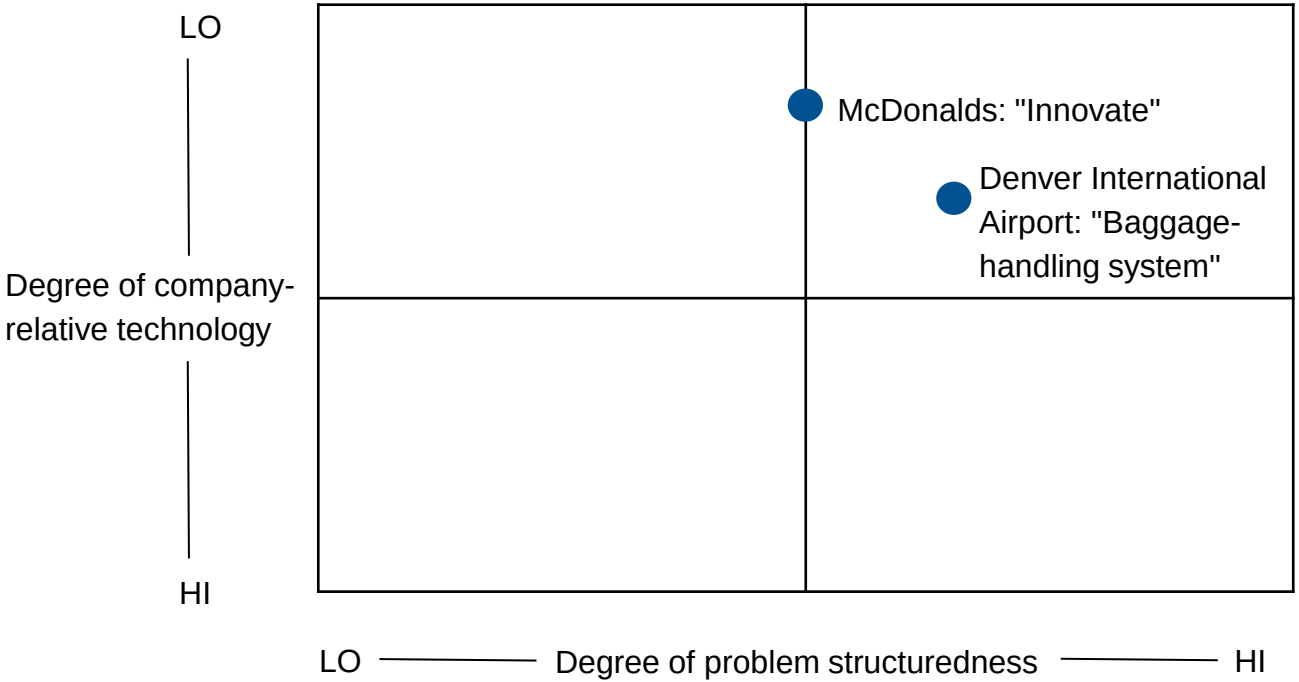
# Classification of 3 IT Project Failures



# Denver International Airport Project "Baggage-handling system"

| | |
|---|---|
| Plan | ❑ Automate baggage handling system by connecting about 300 PCs and thousands of remote-controlled carts from check-in counters to sorting areas and then to the planes |
| Outcome | ❑ Terminated after 10 years of attempting to correct system malfunction |
| Reasons for failure | ❑ Contractor failure – the system never worked as promised<br>❑ Big Bang approach instead of implementing step by step |

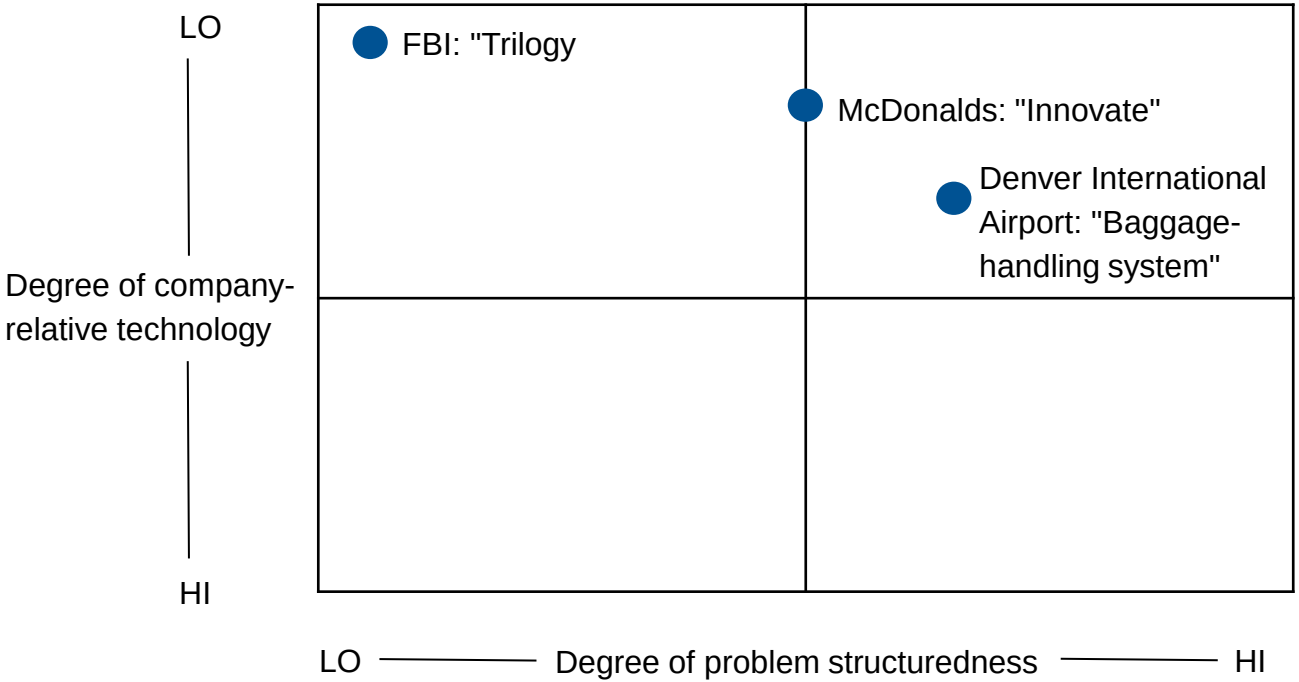
# Classification of 3 IT Project Failures



# FBI Project: "Trilogy"

| | |
|---|---|
| Plan | ❑ Many projects under one name to overhaul the whole IT infrastructure in the bureau. For example, 30.000 powerful desktop PCs for the agents and high bandwidth network to connect all FBI locations in the world.<br>❑ prestige project: Virtual Casefile (VCF): Management system of case files |
| Outcome | ❑ Stopped after 4 years and after the director realized that the project was a failure. Loss of more than 300 Million Dollars.<br>❑ Many experts think it could have been prevented |
| Reasons for failure | ❑ Constant change of requirements<br>❑ poor communication between client and contractor<br>❑ execution without questioning, no learning from bad decisions |

# Classification of 3 IT Project Failures



# Similiarities between the project failures

| Projects / Classic mistakes | McDonalds "Innovate" | Denver International Airport Project "Baggage-handling system" | FBI "Trilogy" |
|---|---|---|---|
| Poor estimation and/ or scheduling | x | x | x |
| Ineffective stakeholder management | x | | x |
| Contractor failure | | x | x |
| Requirements determination | x | x | x |
| Insufficient planning | x | x | x |
| Shortchanged quality assurance | | x | x |

# Differences between the project failures

Though the classic mistakes were made across projects, the final causes for project failure were quite different:

- McDonalds: poor timing with little knowledge about implementation. Was stopped half way.
- Denver International Airport: project was completed and partly in production but did not work properly. Was aborted after 10 years
- FBI: public project that should have been stopped much earlier. Loose specifications for the outcome, little experience with the technology. A project destined to fail.

# Implications

- Despite different circumstances of the projects, classic errors can be found in all of them.
  Can be prevented by the use of best practices.
  - These can be, for example:
    - Avoiding poor estimating and/or scheduling by using developer-based estimates, historical data, algorithms and estimation software
    - Avoiding insufficient risk management by managing a top-10 risks, appointing a risk officer and conducting interim retrospectives

# Classic mistakes in IT projects

*"Some ineffective [project management] practices have been chosen so often,*
*by so many people, with such predictable, bad results*
*that they deserve to be called 'classic mistakes.'"*

- Steve McConnell, Author of Code Complete and Rapid Development

Nelson (2007) established four categories of classic mistakes, namely:

- People
- Process
- Product
- Technology

# Prevention of classic mistakes via OBRiM

How to apply OBRiM in order to avoid classic mistakes?

During project planning:

- ❑ Map classic mistakes to OBRiM risk faktors, where possible
- ❑ Identify OBRiMs proposed options
- ❑ Build flexibility into the investments, to be able to react to risk materialization

During project execution (if identified risks materialize):

- ❑ Evaluate options based on real options models
- ❑ Determine and implement economically superior option

# Example: Poor requirement determination

Classic mistake: Poor requirement determination

| Risk Area | | Risk Factor (Opportunity) / Option | Defer | Explore: Pilot | Explore: Prototype | Stage/Incremental Development | Abandon (switch-use) | Contract | Outsource Development | Lease | Expand |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Monetary Risks | *Costs* | Firm cannot afford the project (unacceptable financial exposure) | | + [8] | | | | | | | |
| | | Development or operational costs may not remain in line with projected benefits | + [1] | | + [8] | + [4, 14] | + [18] | + [1] | + [7] | + | |
| | *Benefits* | Poor estimation, no process to harvest benefits, etc. | + [3, 25] | + [8] | | | | | | | |
| Project Execution Risks | *Project* | Staff lacks needed skills and experience | + [4, 26] | | + [4, 8, 13, 26] | + [4, 13, 26] | | | + [23, 28] | | |
| | | Project is too large or too complex | | + [8, 10, 13, 17, 20] | + [8, 10, 13, 17, 20] | + [4, 13, 22] | | + [4, 13, 17, 19, 26] | + [28] | + [27 | |
| | | Lack of architectural stability or compliance, inadequate implementation infrastructure | + [16] | | + [9, 11, 17, 20, 26, 29] | + [12] | | + [6, 17, 20, 29] | | + [27] | |
| | *Function* | Inadequate design (e.g., system does not do what is expected of it; performance shortfalls) | | | + [2, 8, 13] | + [13] | | + [4, 13] | + | + [27] | |
| | | Problematic requirements (stability, completeness, etc.) | + [21] | + [8] | + [8, 13] | + [13] | | + [4, 13] | | | |

Benaroch et al. (2006)

Real options model

# Limitations of OBRiM

- Focuses on risk handling options
  - partially applicable to other phases in risk management processes (e.g. risk identification)
  - depends on combination with other risk management approaches (e.g. real option models)
- Missing practical validation
- Flexibility for options needs to be planned upfront
- No root cause analysis

# Additional actions to prevent commiting classic mistakes

- combine multiple risk management approaches (e.g. best practices matrix presented by Nelson 2007)
- include lessons learned from past project experience - don't expect different outcome, using same methods
- execute risk retrospective on (classic) mistakes - which risks have occured in my company in the past and why? How probable are they?

# Discussion questions

- Faced with a project that is behind schedule, would you consider it appropriate to add more people to the project?

- Could you think of another failed project and map it into Applegate's IT project risk framework?

# List of references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"Insanity: doing the same thing over and over again and expecting different results"
- Albert Einstein

# Thank you for your attention!