

## Technical feasibility

Writers

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# 1 Evaluation goal

## **Need for evaluation:**

A feasibility study is an important phase in the development of business related services. The need for evaluation is great especially in large high-risk information service development projects. A feasibility study focuses in the study of the challenges, technical problems and solution models of information service realisation, analyses the potential solutions to the problems against the requirements, evaluates their ability to meet the goals and describes and rationalises the recommended solution.

The term “technical feasibility” establishes that the product or service can operate in the desired manner. Technical feasibility means “achievable”. This has to be proven without building the system. The proof is defining a comprehensive number of technical options that are feasible within known and demanded resources and requirements. These options should cover all technical sub-areas.

## **Goal for evaluation:**

The goal of a feasibility study is to outline and clarify the things and factors connected to the technical realisation of a information service system. It is good to outline, recognise and possibly solve these things before the actual design and realisation. Other goals for feasibility studies are:

- Produce sufficient information:
  - Is the development project technically feasible?
  - Produce base data for the requirement definition phase. E.g. what technical requirements does the production of the service place on the clients’ current technology i.e. help direct research and development investments to right things.
  - What are the realisation alternatives?
  - Is there a recommended realisation alternative?

## **Evaluation answers:**

The evaluation of technical feasibility tries to answer whether the desired information service is feasible and what are the technical matters connected to the feasibility:

- Technical feasibility from the organisation viewpoint.
- How practical is the technical solution?
- The availability of technical resources and know-how?

The evaluation backs the selection of the most suitable technical alternative.

The feasibility study is a critical document defining the original system concepts, goals, requirements and alternatives. The study also forms the framework for the system development project and creates a baseline for further studies.

## 2 Evaluation process description, scope and viewpoints

Table 1 in Appendix 1 shows the phasing and subtasks of the evaluation process.

The described evaluation process focuses only on the technical viewpoint. Also other evaluations (profitability, reliability etc.) should be carried out on the recommended information service implementation.

The evaluation process can be utilised at different stages of an information service development project:

- At the beginning of an information service development project: evaluation of the technical feasibility of the desired information service and the implementation alternatives based on the available information. Usually a more concise evaluation.
- At the beginning of an information service development project alongside requirement definition (and partly after): Produces data for requirement definition and utilises the data produced by the requirement definition process. A more demanding and in-depth evaluation process.

## 3 Evaluation methods and instruments

Feasibility analysis matrix (pre. feasibility):

Comparison of different system alternatives. The matrix defines the factors used in the feasibility evaluation and their weight is evaluated for each system. The total weight is calculated at the end defining the order of the evaluated systems.

Economical feasibility

Cost-benefit analysis

Return on investments percentage (ROI)

## 4 Presentation of evaluation results

The evaluation of the technical feasibility of an information system produces information and answers e.g. the following points:

- Definitions of feasible alternatives for information service system design and development.
- Identifies, raises and clarifies issues connected to the technical implementation of an information system.
- Produces data for requirement definition i.e. complements and utilises the information service requirement definition.

## 5 Conclusions, recommendations and reporting

The evaluation results are reported textually. Appendix 1 shows a draft for evaluation results report contents. The scope of the report depends on the scope and complexity of the evaluated information system.

## 6 Connection to other modules

The feasibility evaluation studies the information system from different viewpoints:

- Technical feasibility
- Financial feasibility
- Operational feasibility

The other modules connected to the "Technical feasibility" module are thus:

- Markets and foresight (technology foresight, mega-trends)
- Risk analyses (reliability, technical risks (?))
- Revenue and finance (economical profitability and project feasibility)

## 7 Reference studies

The following is a list of reference studies containing technical feasibility evaluation.

- Kuljetusinformaatiotarkaisu. Esiselvitys  
Granqvist, Jani; Haajanen, Jyrki; Hiljanen, Harri; Kivento, Teppo;  
Kivistö-Rahnasto, Jouni; Koskinen, Harri; Permala, Antti;  
Rummukainen, Hannu; Savola, Juha  
2004. VTT Rakennus- ja yhdyskuntatekniikka, Espoo. 15 s.  
Tutkimusraportti: 761
- Mobilizing business applications: a survey about the opportunities and challenges of mobile business applications and services in Finland  
<http://www.tekes.fi/julkaisut/Mobilizing.pdf>  
Alahuhta, Petteri; Ahola, Jari; Hakala, Hannu  
Technology Review. TEKES. Hki (2005) No: 167, 54
- A Gaming and Guiding System for Museum and Exhibition Environments (EXPLORE)
- Personal Navigation and Information System for Users of Public Transport (Noppa)
- Test environment for location-based services (NAVIttestbed)
- Mobile solution for improving the efficiency of waitresses (Tiketti)
- Novel electronic insurance services (eInsurance)
- Etätukijärjestelmä turvalasikoneissa (Etätuki)män perusteella "Tekninen toteutettavuus"-arviointimoduliin liittyvät muut moduulit ovat:

## 8 References

Whitten, J., Bentley, L., Dittman, K., 2001. Systems Analysis and Design Methods.

Defense Acquisition University (DAU) Press, 2001. System Engineering Fundamentals.

Table 1. Evaluation process phasing and subtasks.

<i>Phase</i>	<i>Task</i>	<i>Description</i>
1	Preliminary planning	
1.1	Background	Getting to know the evaluation object, information service demand, requirements, edge conditions etc.
1.2	Evaluation implementation planning	Definition of evaluation timetable, scope, methods etc.
Work plan		
2	Definition	
2.1	Description of current state	Description of current state of the information service
2.2	Information service idea	
2.3	Observed factors	
2.4	Presumptions and restrictions	
Check point/interim report		
3	Analyses	
3.1	Alternatives 1...n	Information service system alternatives
3.2	Analysis of alternatives	
3.3	Comparison of alternatives	Good and bad points, ranking, technical risks.
Check point/interim report		
4	Evaluation	
4.1	Summary	The main results and observations are composed as a summary.
4.2	Recommendations and conclusions	The technical feasibility of the information system and connected technical issues are evaluated, conclusions about progress.
5	Results	
5.1	Reporting	The results of the entire information service evaluation process are reported as a final report. The contents comply (as fit) with the contents presented in appendix 2.
Final report: Technical feasibility		

## Technical feasibility study of an information service

### Contents

#### 1 Introduction

- 1.1 Foreword and goal
- 1.2 Problem description
- 1.3 Scope of study

#### 2 General description of information service

- 2.1 Description of current state
  - 2.1.1. Current systems and processes
  - 2.1.2. Current functions
  - 2.1.3. Operation environment (HW/SW)
  - 2.1.4. Value chain actors
- 2.2 Information service idea
- 2.3 Factors to observe in the project
- 2.4 Presumptions and restrictions

#### 3 Alternatives for information service systems

- 3.1 Base, restrictions and selection criteria
- 3.2 System alternatives
  - 3.2.1. Alternative 1
    - Description
    - Pros and cons
  - 3.2.2. Alternative 2
    - Description
    - Pros and cons
  - 3.2.3. Alternative 3
    - Description
    - Pros and cons
  - 3.2.4. Comparison of alternatives

#### 4 (Cost-benefit analyses)

#### 5 (Risk evaluation)

#### 6 Summary and recommendations

- 6.1 Challenges and feasibility
- 6.2 Summary
- 6.3 Conclusions and recommendations