# WiBe 4.1

## Recommendations on Economic Efficiency Assessments in the German Federal Administration, in Particular with Regard to the Use of Information Technology

Version 4.1 – 2007

Edited by WiBe-TEAM PR 2011

Bundesministerium des Innern

*KBSt*

# Federal Ministry of the Interior

Federal Government Co-ordinating and
Advisory Agency for Information Technology
in the Federal Administration (KBSt)

IT 2 - 195 058/14#14

# Economic Efficiency Assessment

# (WiBe) 4.1

## Recommendations on Economic Efficiency Assessments in the German Federal Administration, in Particular with Regard to the Use of Information Technology

Version 4.1 – 2007

Prepared on behalf of the KBSt

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# Economic Efficiency Assessment (WiBe) 4.1: Foreword - Version 4.0 (2004)

**Introduction:**

The technical concept and methodology were modified in certain areas compared to the predecessor version, i.e. "WiBe 21". Besides certain re-edited sections, the criteria for assessing the "Effects related to citizen orientation" were eliminated from module Q (quality/strategy criteria) and integrated into the newly designed module of "external effects ("WiBe E)". The weights attached to the individual aspects were adapted to reflect the changes. The methodology for determining monetary efficiency and extended economic efficiency (benefit analysis) remains unchanged.

The newly designed "external effects (WiBe E) module[1]" measures and evaluates for the first time the effects of IT measures on external customers in a dedicated effect dimension.


The forewords of versions 1.0, 2.0 and 3.0 still use the old term of "IT WiBe". The technical concept of this version 4.0 uses the term "WiBe" and thereby also underlines the transferability of the  technical  concept  to  economic efficiency  assessments  of  capital  investment in areas other than information technology. Furthermore, the term "IT measure" was introduced for the terms "IT project" and "IT process" in line with the philosophy of the IT framework concept.

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1    Refer to section 4.5.

## Economic Efficiency Assessment (WiBe) 21: Foreword - Version 3.0 (2001)

Compared to the 1997 predecessor version, the technical concept of the IT WiBe was modified in a few respects. Notwithstanding this, however, it was named "WiBe 21" rather than "Version 3". This is to underline that this present version of the technical concept and, above all, the pertinent software contain certain special features of which the following deserve special mention:

- The technical WiBe concept has amended the "general catalogue of criteria" for calculating IT measures by adding certain criteria and has updated the contents of this catalogue in a number of further areas.

- Thanks to the technical concept and the software, it is possible to relate monetary costs and benefits to different calculation years (the version concept now enables not just discounting of future disbursements and payments, but also accumulation of amounts already accrued).

- The software was revised and amended. It now enables the development and use of criteria catalogues which are no longer linked to the four main groups of criteria which were previously given.

  This gives the user agencies ample space to adapt the tried-and-tested WiBe concept to their own needs and subjects even in areas other than information technology.

Users and decision-makers thus have once again access to an up-to-date and proven set of tools for calculating the economic efficiency of projects of all kinds.

## Version 2.0 (1997), Foreword

What was said in the foreword to version 1 from 1992 basically still holds true *(see below)*. Version 2.0 incorporates certain modifications and amendments as follows:

- The concept of the IT WiBe is today generally accepted (even outside the federal administration) and meets with a high degree of acceptance among users and decision-makers.
- The fact that the technical concept was implemented in a software solution has contributed to this positive resonance.
- With version 2 of this recommendation, the completely redesigned version 2.0 of the IT WiBe software will also be available.

Users and decision-makers thus have access to an up-to-date and proven set of tools for calculating the economic efficiency measures in the field of information technology.

# Version 1.0 (1992), Foreword

The recommendation concerning the performance of economic efficiency assessments in information technology applications is particularly designed to address IT coordinators in the federal administration who are responsible for developing and updating the IT framework concept. Together with those in charge of the specific IT measure in question, they have to ensure the economic efficiency of the IT measure.

Just like the public administration in general, the federal administration is obliged to orientate its work and internal organization towards the principle of economic efficiency. IT systems are increasingly used to this effect in order to boost the efficiency and effectiveness of structures and work processes.

A **decision to emp loy IT** is then also subject to **economic efficiency requirements**. IT measures must hence be subjected to an economic efficiency assessment[2] .

Besides the guidelines for the use of information technology in the federal administration (**IT guidelines**) from August 1988, federal authorities are expected to present and update economic efficiency assessments within the scope of their IT framework concept. This requirement is also part of the general administrative regulations related to section 7 of the Federal Budget Code (§ 7 BHO) and endorsed by the Federal Court of Audit. The **KBSt publication title d "Gliederung der IT-Rahmenkonzepte"** (Structure of IT Framework Concepts) from 1997 contains a reference to the necessary economic efficiency assessments and supplements these by success monitoring measures for existing IT measures.

> ▸     **The IT WiBe recommendations represent a comprehensive evaluati on concept  for the economicall  y  efficient  use of IT b   y  the fe deral administration.**

The nation-wide use of information technology (in the longer term) means that the federal administration is facing complex decision-making and investment challenges. Planning and budgeting (as well as success monitoring) of IT use will be difficult as long as general, suitable evaluation criteria are not available.

It is the **purpose of this recommendation**,

- to offer those responsible for IT measures **methodological and substantive support** in order to enable them to develop **well-founded and reproducible statements concerning the economic efficiency of IT measures**,

- to present a frame of reference for **economic efficiency assessments** for IT measures to serve as a basis for **methodological and uniform** assessments **by the federal administration**,

- to foster the discussion related to targeted processes for economic efficiency assessments of IT measures.

The recommendation considers existing contributions and papers concerning economic efficiency and/or procedures related to the use of IT. The general

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2       This will be abbreviated "WiBe" in the following.

administrative regulations related to section 7 of the Federal Budget Code (§ 7 BHO) are also taken into consideration.

This also raises the question concerning the **input required to perform an IT WiBe** as well as the relation between this input and the IT measure concerned as a whole. The following **general rule**[3] **can be applied**:

- You will need approximately one day for an IT WiBe on the basis of the procedure presented herein *(on condition that no extensive data gathering work is required)*. More time will be needed if you have to gather the information necessary for the (first-time) performance of the IT WiBe from scratch. (Note, however, that a large part of this information will be necessary anyway even *without* an IT WiBe in order to carry out the IT measure in question.)

- In the case of extensive IT measures involving a high amount of capital investment, an IT WiBe is always necessary **no matter what the rela ted input requirements**.

- In the case of *smaller* IT measures, one can generally say that the time needed for the IT WiBe, expressed in (manpower) expenditure, should not exceed a share of 5% of the total costs earmarked for the IT measure in question. In the event that this share would be definitely exceeded, a quality assessment should be carried out instead in the sense of a "substantiated economic efficiency forecast"[4].

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[3]   Statements of this kind are of course of a very general nature: The concrete input for the IT WiBe depends, amongst other things, on the complexity of the IT measure, your information concerning contents and concepts of the IT measure, as well as your experience with the performance of economic efficiency assessments in the IT sector.

[4]   According to the general administrative regulations concerning section 7 of the Federal Budget Code (§ 7 BHO), the method being the simplest and economically most effective way to meet the requirements of the given case must be generally adopted when performing economic efficiency assessments.

# 1    INTRODUCTION AND OVERVIEW

## 1.1    Introduction to the methodology

The WiBe[5] is based on two steps as follows:

- The first step is to identify the parameters which have an impact on the economic efficiency of the measure (project) to be examined and the manifestations of these influences (criteria).

  **Chapters 3 and 4** explain the **preparatory steps** *specifically for IT measures*; these explanations are based on considerations related to the "General catalogue of criteria for the WiBe".

- The second step is then to **determine economic efficiency**. This step is explained in **chapter 5** *specifically for IT measures*. It is based on considerations concerning "economic efficiency in the monetary sense" and concerning "economic efficiency in a broader sense" and discriminates between four "ratios" (see below).

- **Chapter 6** contains **more detailed information and hi nts** as to how the WiBe 4.0 concept also to other measures (projects) in areas **other than information technology** can be applied.

### (General) catalogue of criteria

The **catalogue of cri teria** is the structure underlying your WiBe. It contains all the criteria to be considered within the scope of a WiBe. The catalogue of criteria is your tool for recording and assessing the effects of your measure.

The project will have **costs and benefits which can be quantified in monetary terms** in four areas or **dimensions** (1st dimension; economic efficiency in a monetary sense). The **urgency** (2nd dimension) of the project can vary, and the project can vary in terms of its **qualitative and strategic importance** (3rd dimension) and, if applicable, with a view to **external effects** (4th dimension).

### Economic efficiency in a monetary and in a broader sense

**Costs and benefits w hich can be quant ified in monetar y terms (WiBe KN)** represent economic efficiency in a monetary sense.

The **urgency** (**WiBe D**), the **qualitative and strategic importance (WiBe Q)** and, if applicable, the **external effects (WiBe E)** of the measure are parameters of extended economic efficiency.

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5    In the following, the abbreviation "WiBe" will be generally used for "economic efficiency assessment(s)" or "economic efficiency calculation(s)". The formerly used abbreviation "IT WiBe" will instead be used in statements which refer to IT measures only.

The compilation of costs and benefits in the **WiBe KN** is based on the **net present value method** in order to give adequate consideration to the *development* of costs and benefits *over the time*.

The calculation of urgency and qualitative and strategic importance in the **WiBe D and Q** as well as of external effects in the **WiBe E** is based on the **benefit analysis** as a standard method for assessing qualitative factors.

This short overview constitutes a complete list of the WiBe modules. The method itself and its individual phases are described in detail together with additional application and implementation information.


## 1.2 Goals and success monitoring (administrative regulation concerning section 7 of the German Budget Code (§ 7 BHO)

Pursuant to No. 2.1 of the general administrative regulation (VV-BHO) concerning section 7 of the German Budget Code (§ 7 BHO), statements concerning at least the following detailed aspects must be made and recorded in writing as early as during the planning phase of economic efficiency assessments:

- An analysis of the starting situation and of the need for action

- Goals, priority concepts and potential target conflicts

- Relevant solution options as well as their costs and benefits (including follow-up costs) even if these cannot be expressed in monetary terms

- The financial implications for the budget

- The suitability of the individual solution options with a view to achievement of goals taking the legal, organizational and human resources framework into consideration (effect analysis)

- The time schedule for implementing the measure

- Criteria and methods for monitoring success (such as ratios, indicators or technical standards)

Furthermore, the following questions which are potentially relevant for the strategic assessment of an IT measure should also be answered in the run-up to a concrete WiBe:

- What is the investment expected to yield?

- Which requirements must a new system / new method fulfil to this end?

- Are these requirements fulfilled by the proposed new system / new method?

- Are the resources needed to carry out the investment project available? What happens if the necessary resources are not available?

For the purposes of sound project planning, it also helps to consider factors and circumstances which must be adequately addressed in the run-up in order to avoid jeopardizing a measure's economic efficiency. Such factors and circumstances typically include the following:

- Resource bottlenecks (availability of financial and human resources) can delay a measure or even make it fail.

- Insufficient or careless financial planning for all the phases of a project can bring it to a halt.

- Insufficient support by the management of a public agency (lack of a promoter) and/or lack of acceptance among the staff concerned (lack of awareness) can delay the project.

- False estimation of the actual demand delays the project.

- Premature decision in favour of a particular system/approach; insufficient consideration of alternative solutions can lead into an implementation stalemate.

- Too ambitious a time schedule causes delays and skyrocketing project costs.

- Lacking or insufficient controlling causes an uncontrolled outflow of funds and hence rising project costs.

- Lack of concrete measurement categories the success of the project prevents any assessment of the efficiency and effectiveness of the project and its implementation.

As a first step, the public agency's operative goals laid down in the IT framework concept or already derived from the strategic aims should be identified and reconciled with the proposed investment project. This prevents the risk of potential target conflicts with other projects.

The development of a higher-level target system in the form of the benefit analysis is a tool which initially enables a statement as to whether a particular IT solution is suitable for a given problem, irrespective of the solution's economic efficiency. This means that several solution options are available for a problem which are capable of achieving the desired goal to varying degrees. The examination of several solution variants should hence be based on the development of a compact catalogue of criteria specifically tailored to the needs of the targeted goal. The result of this is then the degree of target fulfilment of the potential solution options. This analysis can then be confronted with the results from the WiBe 4.0 for further analysis and decision-making.

The next step is the development of answers to project planning issues. These have an essential role to play in the efficient implementation of the project.

Individual criteria of the catalogue can, for their part, be used for subsequent monitoring of the success of the solution variant actually adopted (refer also to Nos. 2.1 and 2.2 of the administrative regulation concerning section 7 of the Federal Budget Code (§ 7 BHO)).

## 1.3    Structure of the technical WiBe concept

**Chapter 2 "Assessing the economic efficiency   of IT measu res"** briefly addresses the most important terms. The economic efficiency assessment is put into the context of a general IT phase model and the resultant possible time frame for the WiBe versions is derived therefrom. The chapter ends with a summary of the individual steps of the WiBe process.

**Chapter 3 "On the identifica   tion of criteria for the WiBe using the example of IT measures"**   presents you with a frame of reference for planning and implementing economic efficiency assessments. **Section 3.1** contains the general **catalogue of criteria** *specifically for IT m easures* the elements of which can become part of a WiBe. Depending on the contents and extent of your concrete IT measure, you will have to adjust and modify this catalogue in order to reflect your particular needs (section 3.2).

**Chapter 4 "On the determination of th e relevant criteria manifestations with IT measures"** addresses the method of data gathering and data compression. This chapter is orientated towards the structure of the IT criteria catalogue in chapter 3.1.

**Chapter 5 "Compiling the data gathered  in the assessment of the economic efficiency of IT measures"** contains the real calculation which provides an overall statement concerning the economic efficiency of the IT measure concerned.

## 1.4    On the cost-and-benefit approach of the WiBe

The **cost-benefit analysis** is the precondition for assessing the monetary effects. This is subject to the following principle:

- The **distribution of costs and benefits over the time** must be considered in the assessment.

A temporary increase in total costs is often necessary during the initial phase of a project in order to achieve cost recovery at a later stage.

A **full cost anal ysis** should be generally aimed at: all costs and benefits which can be directly and indirectly quantified in monetary terms must be allocated to the project.

- The WiBe must consider even those costs and benefits which are **not budget-relevant**.

Budget-relevant costs and benefits arise only *as a result of the project in question* and which will lead to higher or lower fund applications in the (next) budget.

Non-budget relevant costs and benefits are incurred at the same level *even without the project in question*.

*Examples for explanation:*

- If personnel available within a public agency are employed for a project, the resultant project costs are *not budget-relevant*.

- If new personnel are hired and/or if external consultancy services are employed for a project, the resultant project costs are *budget-relevant*.

- If a new method or process saves users working time and if these time savings can be measured and are employed (on a general basis) for other tasks of the public agency or its users, the resultant cost savings (benefits) are *not budget-relevant*.

- If a new method or process saves users working time and if these savings can be measured and demonstrably lead to reductions in the public agency's payroll, the resultant cost savings (benefits) are *budget-relevant*.

The economic efficiency calculation *(refer to chapter 5)* includes a differentiated presentation of costs and monetary benefits: budget-relevant additional costs and cost savings on the one hand are distinguished from non-budget relevant amounts.

**A "purely" *monetary* cost-to-benefit analysis would disregard important qualitative factors.**

A purely monetary cost comparison during the initial phase of complex projects is often insufficient when it comes to demonstrating the economic efficiency of such projects. The share of *non-quantifiable benefit criteria* can be substantial.

**With regard to the WiBe of projects, this means**

- that for the proposed project all the **costs and benefits which can be assessed in monetary terms** must be compared to the previous solution; **capital budgeting** methods must be applied to this effect,

- that all further **qualitative decision facts** must be reasonably and fully considered within the framework of a **benefit analysis**.

## 1.5    Note concerning the use of the term "costs"

The monetary cost-and-benefit analysis methodologically refers to the so-called net present value method *(see below, section 5.1.2)* which considers different points in time of payments and disbursements.

The correct commercial terminology would hence be "expenditure" or "disbursement" rather than "costs".

In colloquial usage, however (and in the previous versions of this recommendation), the terms "costs/benefits" are generally used in conjunction with economic efficiency assessments.

These terms will therefore be used in the following despite terminological reservations.

# 2 ECONOMIC EFFICIENCY ASSESSMENTS (WiBe) FOR IT MEASURES

## 2.1 On the integration of economic efficiency assessments into IT phase models

Economic efficiency assessments related to IT use form part of any IT measure and are hence also integrated into project phase models.

You can submit a WiBe for your IT measure at different points in time *(see illustration)*:

- On preparation of the **rough concept** -
  **WiBe version 1** as a "preliminary costing" document

- On preparation of the **detailed concept** -
  **WiBe version 2** as an "intermediate costing" document

- If applicable, also immediately prior to **introduction** -
  **WiBe version 3** as a "release costing" document

- During the **application / use phase** -
  **WiBe version 4** as a "success monitoring" document

| Distinction acc. to **IT framework concept** | **IT measure** | | | | | |
|---|---|---|---|---|---|---|
| | **Planning** | | **Implementation** | | **Application** | |
| Distinction acc. to **IT phase concept** | Rough concept | Detailed concept | Method/ process-develop-ment | Testing and acceptance | Intro-duction | Operation |
| **Econ. efficiency assessment (WiBe)** | Version 1 | Version 2 | | Version 3 | | Version 4 |
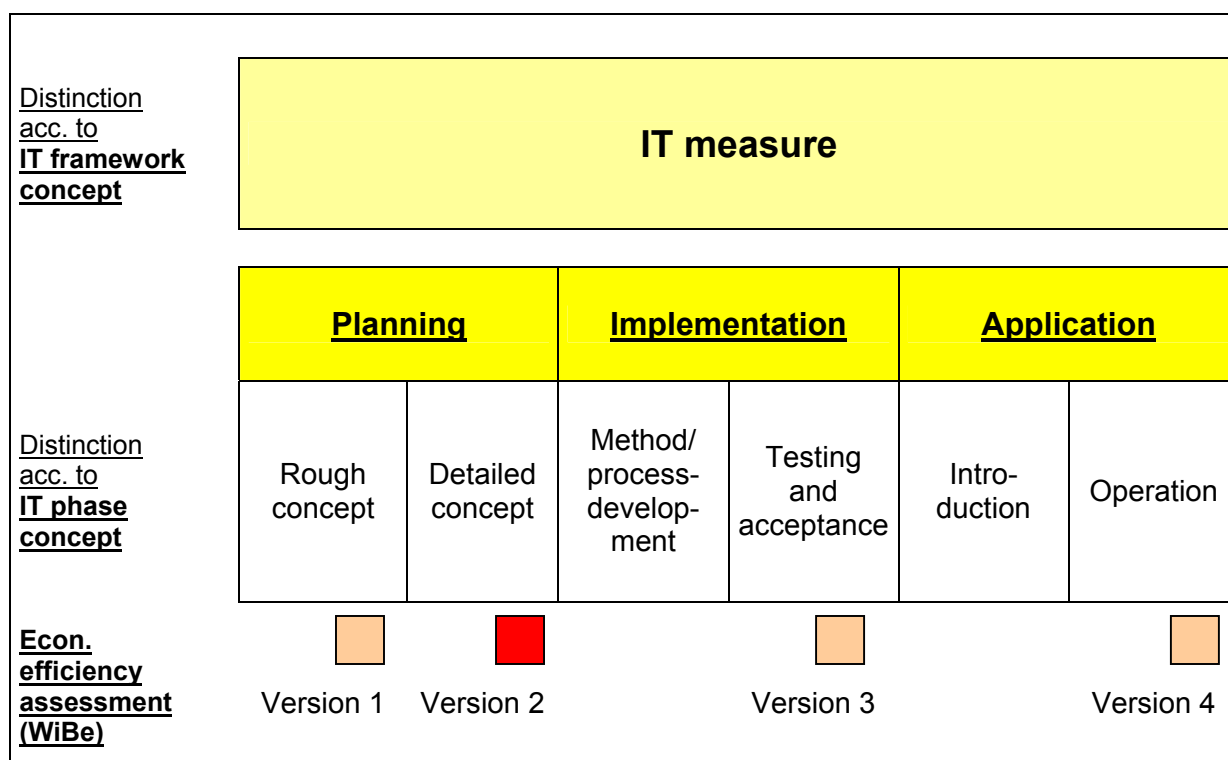
This leads to the following recommendations for the different types of IT measures:

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**Small administrative IT measures[8]**

**Performance of WiBe 1** (and 4)
(during the preparation of the rough concept)

In the case of small administrative IT measures, the project dimension corresponds to less than 0.5 man-years with a staff of one to two.

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**Medium-sized administrative IT measures**
**Small, technical/scientific IT measures[9]**

**Performance of WiBe 1 and 2** (and 4)
(during the preparation of the rough and detailed concepts)

In the case of medium-sized administrative IT measures, the project dimension corresponds to less than 5 man-years with a staff of less than 5. Small technical/scientific IT measures correspond to a project dimension of typically less than 5 man-years with a staff of less than 5.

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**Large-scale administrative IT measures**
**Large, technical/scientific IT measures**

**Performance of WiBe 1, 2, 3 and 4**
(during the preparation of the rough and detailed concepts as well as before and after introduction as a success monitoring measure)

Large IT measures are projects involving more than 5 man-years with a staff of more than 5.

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**Selection, procurement and**
**adaptation of commercial off-the-shelf products**

**Performance of WiBe 1 and 4** (preparation of the rough concept and success monitoring after introduction)

The selection, procurement and adaptation of external products typically correspond to a project dimension of less than 0.5 man-years with a staff of less than two.

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WiBe versions 2 to 4 are based on the preceding analyses and calculations (*version concept*); the procedure is generally the same for all WiBes[10]. The data will become increasingly exact in this context.

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[8]   **Administrative IT measures** typically feature the following properties: no realtime data processing, usually less complex functions, but more complex data structures, often use of large databases.

[9]   **Technical/scientific IT measures** typically feature the following properties: in many cases realtime data processing, in most cases relatively complex functions, often with complex algorithms, but often less complex data (structures), in most cases no use of databases.

## 2.2    Steps in the performance of a WiBe

A WiBe is performed or created in **three steps** (these three stages are also analogously represented in the WiBe 21 software which is at present still applicable):

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**1st   step of the WiBe**
        Selecting the relevant criteria for the WiBe

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**Note specifically for IT measures:**

*-Refer to chapters 3.1 and 3.2 -*

Chapter 3.1 contains a compilation in the form of a check-list of all conceivable/possible criteria (influence parameters) for a WiBe. From this compilation, you can pick the relevant criteria for assessing the economic efficiency of your specific IT measure and adapt these to your needs, if necessary *(refer to chapter 3.2)*.

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**2nd   step of the WiBe**
        Data gathering

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**Note specifically for IT measures:**

*- Refer to chapter 4 -*

Chapter 4 explains the individual criteria which may have to be considered within the framework of a WiBe, and deals with aspects of data gathering.

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**3rd   step of the WiBe**
        Overall assessment of the project

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**Note specifically for IT measures:**

*- Refer to chapter 5 -*

The criteria which you have selected for the WiBe as well as their respective manifestation (quantified in monetary terms or described and defined in more detail in qualitative terms) are subsequently included in the real economic efficiency assessment. For this purpose, chapter 5 offers you two (hierarchically structured) modules and explains the calculation method and the related reasoning.

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10    The accompanying software enables a much larger number of versions which can additionally be available in a host of alternative forms. This supports selection among different technical concepts.

With WiBe version 2 and higher, you can also carry out a "deviation analysis" from the preceding WiBe in addition to the real economic efficiency assessment. This opens up ways to assess future IT measures.

## 2.3   Experience with the introduction and application of the WiBe

The tried-and-tested WiBe concept has been in use for more than 15 years. The WiBe is used not just by ministerial administrations at federal government level, but also in federal states, municipal organizations and outside public administrations, by banks and consultancy firms.

First-time users of the WiBe may find the following information helpful.

- The use of the WiBe is typically not a once-off event but will generally apply to all (major) IT measures. This means that the introduction of the WiBe itself must be seen as a project and handled accordingly. This includes early training of key staff (project officers) and, above all, parallel information for executive staff in the organization.

- The project manager (a member of the project team) is generally responsible for providing/gathering the necessary data. This responsibility cannot be shifted to other units or people ("WiBe representative", etc.).

- Offering conceptional and logistic support for the WiBe has turned out to be a helpful approach. This support can, for example, take the form of explaining the WiBe concept to project officers, performing the software processing work related to the WiBe or answering questions concerning data capturing.

- In the case of larger organizations (with many IT measures), it will certainly make sense to appoint a dedicated organizational unit/personnel in charge of this support. This support will then also include the provision of standardised answers (as far as possible and sensible) to frequently asked questions related to data capturing.

- The WiBe asks questions concerning the performance of the respective IT measure: the WiBe hence also supports the critical evaluation and further development of the technical concept and of project management in general. In this way, the WiBe concept can also be used to evaluate different solution variants of the technical concept and to identify the economically most effective solution.

- The preparation of a WiBe requires much less time that newcomers might expect; furthermore, this time becomes shorter and shorter as experience grows.

- In the interest of a fair assessment of the extended economic efficiency of WiBe D, Q and E, this should be carried out as a joint exercise by a group of experts.

- The application of the WiBe and/or its results generally serves as the foundation for project-related budget estimates.

The technical discussion of the WiBe led to additional hints and recommendations:

- omitted  in this edited version ...

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Finally, one should not forget that a positive result of the WiBe KN (*the IT measure in question is economically  effective in monetary terms*) is typically linked to personnel cost reductions. Rather than being caused by the WiBe, this effect becomes apparent thanks to the WiBe concept. This transparency is desirable in the sense of economical budget management and commercial controlling in public administrations too.

# 3 ON THE IDENTIFICATION OF CRITERIA FOR THE WIBE USING THE EXAMPLE OF IT MEASURES

As a precondition for a high quality result supplied by the WiBe, all criteria (*parameters having an influenc e on the economic efficiency of the project* ) must be considered to the maximum extent possible. A **multi-dimensional approach** (i.e. an approach that goes beyond parameters that can be quantified in monetary terms) **is required** because projects can cover different facts and circumstances. As the person in charge of the WiBe, you are also responsible for contributing further specific points, including reasons, to the WiBe as long as these additional points are relevant for your project.

**The general catalogue of criteria** is the **starting point** and support for your considerations.

The general catalogue of criteria for **IT measures** is contained in **chapter 3.1**. This catalogue is the underlying template for the contents and structure of your WiBe. Chapter 3.2 provides you with information and hints as to how you can tailor this catalogue of criteria to your specific IT measure.

## 3.1 General catalogue of criteria for the WiBe

The general catalogue contains *all* the criteria which can be applied to a WiBe. **The criteria are divided into four classes (** *"effect dimensions"***).**

### *Economic efficiency in the monetary sense (profitability)*

> All the **cost** and **benefit parameters w hich can be quantified in monetary terms** and which result from the IT measure belong to this dimension which is at the **heart of the WiBe**.

> Costs and benefit can be of a *once-off* (typically at the beginning of the development phase) and of an *ongoing* nature. Furthermore, costs and benefits can be quantifiable in monetary terms either *directly* or *indirectly* (via suitable quantity and time frames).

> Benefit criteria usually occur as once-off or ongoing *savings* and may sometimes even generate actual increases in income (for example, due to higher fees) or secure public revenues.

### *Urgency of the IT measure*

> This effect dimension encompasses criteria which are related to the **urgency of the IT measure** . Monetary quantification of these criteria is usually not possible. They do, however, have a significant influence on economic efficiency in a broader sense.

> Discontinuation of a manufacturer's support for certain hardware and software solutions (in the existing system) can, for example, be an important point in favour of an IT measure in an economic efficiency

assessment designed to cover a longer-term horizon. Furthermore, amended administrative regulations and laws can necessitate a new IT measure which would not be justified by a purely monetary cost-and-benefit analysis alone.

### *Qualitative and strategic importance of the IT measure*

The criteria in this dimension can usually **be described in qualitative terms "only"**. The effect dimension encompasses criteria related to effects which are (at present) not quantifiable in monetary terms. The effects are crucial for the **"extended economic efficiency assessment"**: An IT measure can, for example, be economically effective thanks to its pilot nature even if monetary cost-to-benefit considerations and urgency aspects suggest a different classification.

### *External effects of the IT measure*

IT measures with effects on customers (citizens, companies, other administrative organizations) are covered by these criteria in qualitative terms. In analogy to urgency criteria and quality and strategy criteria, criteria for external facts cannot be quantified in a monetary sense but can merely be described in qualitative terms.

### The general catalogue of criteria serves as a check-list:

- Not all criteria will be relevant for every IT measure. Furthermore, additional criteria may exist which are mentioned only briefly in the list and which require more detailed consideration in a given application.

- Please remember that the catalogue of criteria attempts to be exhaustive. This means that certain effects of your IT measure may be considered under several criteria.

- Please note that the criteria of groups 1 and 2 are evaluated in monetary terms whilst the criteria of groups 3, 4 and 5 are expressed in "merely" qualitative terms (as score on a scale).

- As already mentioned, it may happen that not all the relevant evaluation aspects for assessing an IT measure are included in the general catalogue of criteria. It is then necessary to adapt the general catalogue of criteria. Chapter 7.3 "Special catalogue of criteria for IT-based workflow management" at the end of the WiBe manual already contains proposals for specific criteria catalogues. Furthermore, application-specific evaluation criteria can be added within the framework of the given categories of WiBe D, Q and E. This means that suitable evaluation scales must then be developed for such new criteria too. This freedom is, however, restricted to the development of an application-specific criteria catalogue for a particular case or for a particular public agency and must be thoroughly justified. Development of application-specific criteria catalogues for individual IT measures is not acceptable.

**During the first step of y our WiBe, please pick the criteria relevant for your  IT measure from the catalogue of criteria.** For further  details con-cerning the procedure, please refer to chapter 3.2.

# General catalogue of criteria

**Dimension: Economic efficiency
in a monetary sense (profitability)**

## 1 Development costs and development benefits

**1.1 Development costs of the new IT measure**

**1.1.1 Planning and development costs**

1.1.1.1 Personnel costs (own personnel)
1.1.1.2 Costs of external advisors
1.1.1.3 Costs of the development environment
1.1.1.4 Other costs of physical resources / auxiliary resources
1.1.1.5 Travel costs (own personnel)

**1.1.2 System costs**

1.1.2.1 Hardware costs

1.1.2.1.1 Host/server, network operation
1.1.2.1.2 Workstation computers

1.1.2.2 Software costs

1.1.2.2.1 Costs of the development and/or acquisition of software
1.1.2.2.2 Costs of the modification of software and/or interfaces
1.1.2.2.3 Costs of the evaluation, certification and quality assurance of software

1.1.2.3 Installation costs

1.1.2.3.1 Construction and building costs
1.1.2.3.2 Installation and deployment of technical infrastructure
1.1.2.3.3 Office equipment, fixtures and fittings, accessories
1.1.2.3.4 Personnel costs of system installation

**1.1.3 Costs of system introduction**

1.1.3.1 System and integration testing
1.1.3.2 Import of existing data
1.1.3.3 Initial training for users and IT specialists
1.1.3.4 Familiarization costs of users and IT specialists
1.1.3.5 Other costs of adaptation/change

**1.2 Development benefits due to replacement of the old process**

**1.2.1 Once-off cost savings**
(avoidance of maintenance/upgrading costs of the old system)

**1.2.2 Once-off revenue** (from the disposal of the old system)

## 2 Operating costs and operating benefits

**2.1 Operating costs / savings of operating costs**

**2.1.1 (Pro-rata) line/communication costs**

2.1.1.1 Operating costs of NEW IT measure
2.1.1.2 Operating benefits from discontinuation of OLD IT measure

**2.1.2 (Pro-rata) host, server and network costs**

2.1.2.1 Operating costs of NEW IT measure
2.1.2.2 Operating benefits from discontinuation of OLD IT measure

**2.1.3 (Pro-rata) costs of workstation computers**

2.1.3.1 Operating costs of NEW IT measure
2.1.3.2 Operating benefits from discontinuation of OLD IT measure

**2.1.4 Hardware consumables**

2.1.4.1 Operating costs of NEW IT measure
2.1.4.2 Operating benefits from discontinuation of OLD IT measure

**2.1.5 Energy and space costs**

2.1.5.1 Operating costs of NEW IT measure
2.1.5.2 Operating benefits from discontinuation of OLD IT measure

**2.2 Operating personnel costs / savings of personnel costs**

**2.2.1 Personnel costs related to system use**

2.2.1.1 Operating costs of NEW IT measure
2.2.1.2 Operating benefits from discontinuation of OLD IT measure

**2.2.2 Costs/benefits due to changes in job description**

2.2.2.1 Operating costs of NEW IT measure
2.2.2.2 Operating benefits from discontinuation of OLD IT measure

**2.2.3 System management and administration**

2.2.3.1 Operating costs of NEW IT measure
2.2.3.2 Operating benefits from discontinuation of OLD IT measure

**2.2.4 Ongoing training / qualification**

2.2.4.1 Operating costs of NEW IT measure
2.2.4.2 Operating benefits from discontinuation of OLD IT measure

**2.3 Operating costs / savings for maintenance / system service**

**2.3.1 Hardware maintenance/service**

2.3.1.1 Operating costs of NEW IT measure
2.3.1.2 Operating benefits from discontinuation of OLD IT measure

**2.3.2 Software maintenance/update**

2.3.2.1 Operating costs of NEW IT measure
2.3.2.2 Operating benefits from discontinuation of OLD IT measure

**2.3.3 Replacement/supplementing costs**

2.3.3.1 Operating costs of NEW IT measure
2.3.3.2 Operating benefits from discontinuation of OLD IT measure

**2.4      Other operating costs and savings**

**2.4.1      Data protection / data backup costs**

2.4.1.1      Operating costs of NEW IT measure
2.4.1.2      Operating benefits from discontinuation of OLD IT measure

**2.4.2      Costs of supporting external advisors**

2.4.2.1      Operating costs of NEW IT measure
2.4.2.2      Operating benefits from discontinuation of OLD IT measure

**2.4.3      Insurance, etc.**

2.4.3.1      Operating costs of NEW IT measure
2.4.3.2      Operating benefits from discontinuation of OLD IT measure

**2.4.4      Other operating costs and benefits**

2.4.4.1      Operating costs of NEW IT measure
2.4.4.2      Operating benefits from discontinuation of OLD IT measure

## Dimension: Urgency of the IT measure

## 3    Urgency criteria

| | |
|---|---|
| **3.1** | **Urgency to replace the old system** |
| **3.1.1** | **Support continuity for the old system** |
| **3.1.2** | **Replacement urgency due to logistic/capacity aspects** |
| **3.1.3** | **Stability of the old system** |
| | 3.1.3.1    Bugs, errors and downtime |
| | 3.1.3.2    Service problems, personnel bottlenecks |
| **3.1.4** | **Flexibility of the old system** |
| | 3.1.4.1    Limits of expansion / upgrading |
| | 3.1.4.2    Interoperability, present/future interface problems |
| | 3.1.4.3    Operability and ergonomics |
| | |
| **3.2** | **Compliance with administrative regulations and laws** |
| **3.2.1** | **Compliance with laws** |
| **3.2.2** | **Fulfilment of data protection/security requirements** |
| **3.2.3** | **Correct procedures and work processes** |
| **3.2.4** | **Compliance with other requirements and recommendations** |

**Dimension: Qualitative and strategic importance of the IT measure**

## 4   Qualitative and strategic criteria

| | |
|---|---|
| **4.1** | **Priority of the IT measure** |
| **4.1.1** | **Relevance within the IT framework concept** |
| **4.1.2** | **Integration into the IT landscape of the federal administration in general** |
| **4.1.3** | **Pilot project nature of the IT investment project** |
| **4.1.4** | **Use of existing technologies by other organizations** |
| **4.1.5** | **Platform/manufacturer independence** |
| | |
| **4.2** | **Increase in quality of dedicated tasks** |
| **4.2.1** | **Improved job performance** |
| **4.2.2** | **Acceleration of work procedures and processes** |
| **4.2.3** | **Standardised and uniform administrative work** |
| **4.2.4** | **Image improvement** |
| | |
| **4.3** | **Control of information of the administrative/political level** |
| **4.3.1** | **Provision of information for decision-makers and controllers** |
| **4.3.2** | **Support for decision-making/leadership tasks** |
| | |
| **4.4** | **Staff-related effects** |
| **4.4.1** | **Attractiveness of working conditions** |
| **4.4.2** | **Ensuring/expanding qualifications** |

**Dimension: External effects
of the IT measure**

## 5      External effects

| | |
|---|---|
| **5.1** | **Replacement urgency from the external customer's perspective** |
| **5.1.1** | **Urgency due to demand (intensity)** |
| | |
| **5.2** | **User friendliness from the customer's perspective** |
| **5.2.1** | **Implementation of a uniform and standardised access** |
| **5.2.2** | **Increasing understandability and reproducibility** |
| **5.2.3** | **Help functions for customer support** |
| **5.2.4** | **Benefits due to the timely availability of information** |
| | |
| **5.3** | **External economic effects** |
| **5.3.1** | **Immediate economic benefits for customers** |
| | |
| **5.4** | **Increased quality and performance** |
| **5.4.1** | **Follow-up effects for communication partners** |
| **5.4.2** | **Externally perceived acceleration of administrative decisions** |
| **5.4.3** | **Simplification/support of multi-level / multi-agency cooperation** |
| **5.4.4** | **Extension of services offered** |
| | |
| **5.5** | **Synergies** |
| **5.5.1** | **Use of project results for comparable projects** |

## 3.2 Project-specific adaptation of the catalogue of criteria

The general catalogue of criteria (from chapter 3.1) is your underlying model. The next step which now follows in the WiBe, i.e.

- **selecting the relevant criteria**
  *- from the list in chapter 3.1 -*

is in principle the same for all WiBes.

⇨ Check which of the criteria from the five groups (1 development costs and development benefits, 2 operating costs and operating benefits, 3 urgency, 4 qualitative and strategic importance as well as 5 external effects) are relevant for your IT measure.

**You have now completed the "rough layout" of your WiBe.** During this early phase of your WiBe, please note

- that you will have to determine precise monetary figures for all the criteria of groups 1 and 2, whilst groups 3, 4 and 5 require qualitative assessments;

- that the effect of a criterion can generally occur at different points, so that certain parameters may also have to be determined at several points:

  - the costs and benefits of an IT measure can occur in conjunction with a single, concrete workplace (or a particular type of workplace) and can be determined there accordingly (*"workplace-related costs/benefits"*),

  - the costs and benefits of an IT measure can occur beyond individual workplaces (or types of workplaces) in one or more organizational units (group, unit, department) or throughout the organization (*"workplace-independent costs/benefits"*),

  - "external" costs, benefits and follow-up effects can finally occur in the environment (in other administrations and in the private sector). Although external effects are triggered by the IT measure, they have a remote effect: the resultant costs and benefits "hit" and concern third parties who are *not* directly involved in the IT measure[14].

Your considerations will also affect the form of subsequent data capturing and data aggregation!

In this way, you have then adapted the general catalogue of criteria to your IT measure and thereby determined the procedural pattern for your economic efficiency assessment.

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[14] This is also why these external effects are <u>not</u> included in the monetary figures of development and operating costs (criteria groups 1 and 2), they are considered in qualitative terms in the WiBe E module (criteria group 5). Pursuant to the general administrative regulations concerning section 7 of the German Budget Code (§ 7 BHO), the effects on revenues of territorial communities must be shown and included in the assessment at least at a qualitative level whenever cases of financial relevance are concerned.
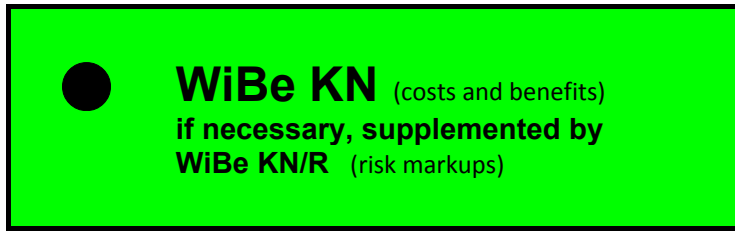
**Guidelines for the implementation of the
catalogue of criteria in the economic efficiency assessment**

- All the **criteria which can be quantified in monetary terms** must be summarized **in one calculation** (a ratio).

- The **development costs** and the future **operating costs** must be shown separately.

- Budget-relevant and non-budget relevant ("imputed") items must also be shown separately.

- The principle of commercial prudence requires that

    - **cost criteria**, the calculation of which is subject to *uncertainty*, be considered in the economic efficiency assessment with an additional **risk markup**,

    - monetary **benefit criteria** which do not (yet) appear to be quantifiable with sufficient reliability, so that **merely qualitative** estimates are possible, **not** be included in the monetary calculation.

These guidelines lead to the structure of the WiBe calculation modules:

## Overview of the criteria modules of the WiBe

The WiBe discriminates between **four modules**:

**● WiBe KN** (costs and benefits)
**if necessary, supplemented by**
**WiBe KN/R** (risk markups)

cost and benefit criteria suitable for monetary quantification; divided into **development and operating costs**
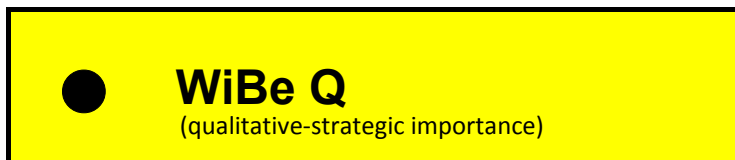
[if necessary, supplemented by **R**isk markups for the criteria a **WiBe KN/R**].

► The WiBe KN (supplemented, if necessary, by the WiBe KN/R) represents the **economic efficiency in a monetary sense**.
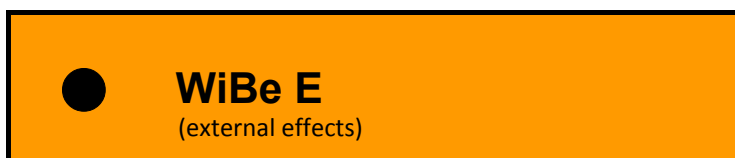
**● WiBe D**
(urgency)

Urgency of the IT measure

**● WiBe Q**
(qualitative-strategic importance)

**Q**ualitative and strategic importance

**● WiBe E**
(external effects)

**E**xternal effects

► WiBe D, WiBe Q and WiBe E represent
the **extended economic efficiency**.

The four modules are once again briefly explained in the following.

The following **illustration** shows you the (simple) "design" used to assign the criteria to the individual modules.

► **Starting point of the WiBe are the criteria which can be quantified in monetary terms.**

## ECONOMIC EFFICIENCY
**(in a monetary sense)**

●   The **WiBe KN** covers all the cost and benefit parameters which can be quantified in monetary terms (*all the criteria of groups 1 and 2 of the catalogue of criteria*),

**WiBe KN/R** amends the WiBe KN, if necessary:

The only difference between KN/R and WiBe KN is a **risk markup** which is included in the criteria in order to anticipate increased costs and/or benefit shortfalls to be expected in a worst-case scenario.

The **extended economic efficiency assessment** supplements the economic efficiency assessment in a monetary sense. The extended economic efficiency assessment covers all the criteria which determine the urgency, the qualitative and strategic importance as well as the external effects of the IT measure.

## ECONOMIC EFFICIENCY
**(in a broader sense)**

●   **WiBe D** (**urgency**) covers all the criteria of *criteria group* 3 of the catalogue of criteria.

The *qualitative and strategic* effects of the IT measure are addressed by the WiBe Q.

●   **WiBe Q** (**qualitative and strategic importance**) covers all the criteria of *criteria group* 4 of the catalogue of criteria.

The *external* effects of the IT measure are addressed by the WiBe E.

●   **WiBe E (external effects)** covers all the criteria of *criteria group 5* of the special catalogue of criteria.
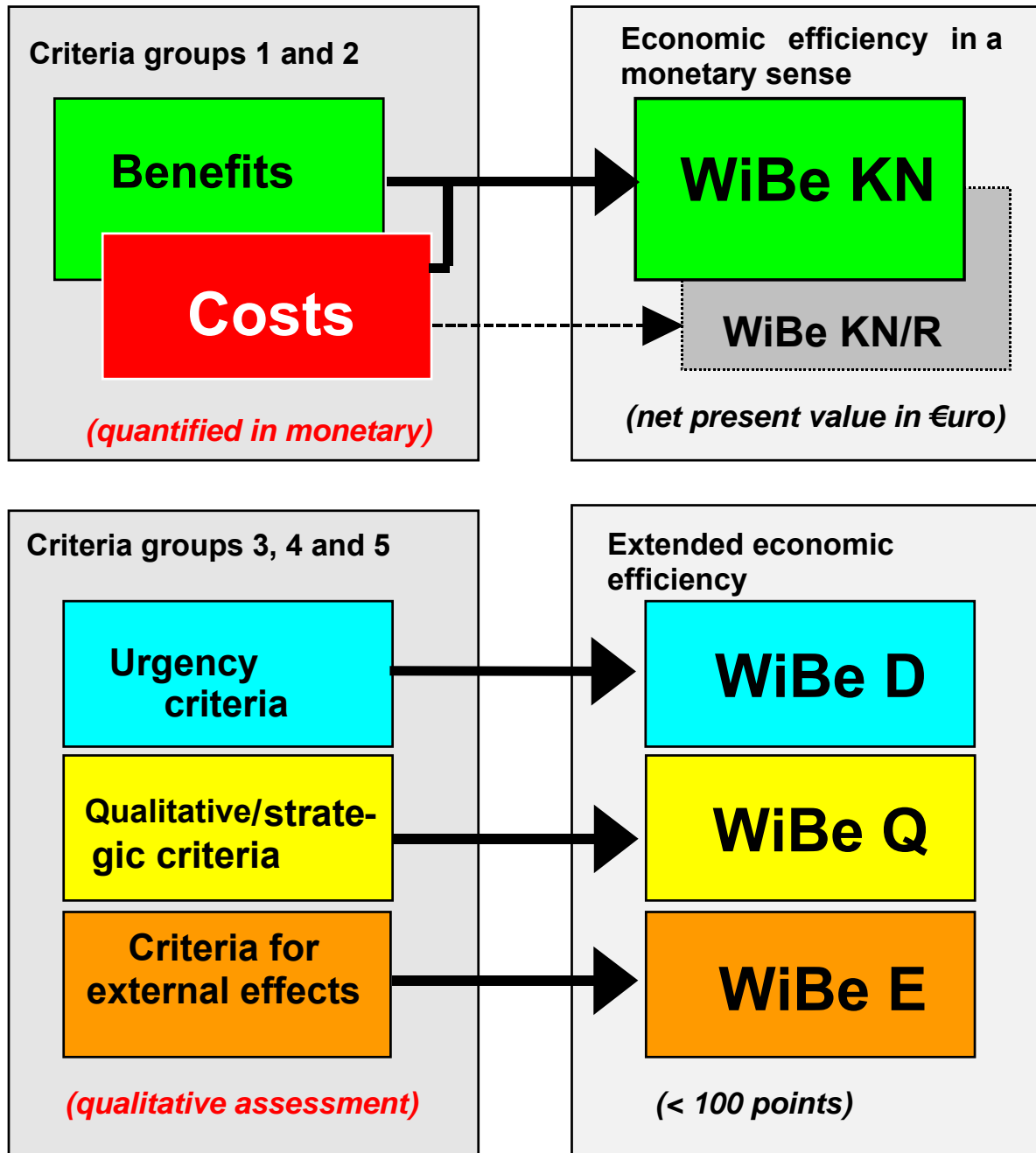
# 4 ON THE DETERMINATION OF THE RELEVANT CRITERIA MANIFESTATIONS WITH IT MEASURES

This chapter contains specific information concerning the criteria *(refer to chapters 3.1 and 3.2)* and the determination thereof. The structure is oriented towards the structure of the catalogue of criteria. The number of the criterion is preceded by the number of this chapter (4) (i.e. section 4.1.1.2 contains a more detailed description of criterion 1.1.2).

By referring to the criterion number, you will first find an explanation and/or definition of the criterion. This is followed by data capturing information.

## 4.1 Development cost and development benefit criteria

Group 1 of the catalogue of criteria covers the development costs and development benefits which will occur prior to the introduction of an IT measure. The real development costs (*criteria group 1.1*) may be balanced against monetary benefits due to the replacement of the old, former process *(criteria group 1.2)*.

- Please remember to split up all the monetary figures into a budget-relevant and a non-budget relevant portion.

**Please generally note for all individual monetary criteria:**

● As long as it is not possible to **numerically quantify a criterion with sufficient precision**, this criterion will affect both the WiBe KN and the supplementary WiBe KN/R ratio.

  With regard to data capturing, you must present a "plausible and well-founded" approach which is included as the **"probable estimate"** in the monetary economic efficiency assessment (WiBe KN). Enter any increases in this estimate which can happen under worst-case conditions as **risk markup** for the risk estimate (WiBe KN/R).

● As long as effects related to a **monetary benefit criterion (savings) can be described in qualitative terms only, do not** enter a monetary value for this criterion.

  Instead, consider the qualitative effect in the assessment of the related qualitative and strategic criterion in the **WiBe Q** (*usually in sub-groups 4.2, 4.3 or 4.4*).

## 4.1.1  On the determination of development costs

Development costs are incurred <u>before the use (or completion, respectively) of the new IT measure</u> and end when the IT measure is officially handed over to its user organization units for use. Any costs incurred thereafter constitute *operating costs* according to *group 2* of the catalogue of criteria.

### 4.1.1.1    Planning and development costs

This item covers all budget-relevant costs as well as any costs with no immediate budget relevance which are related to the preparation, planning and development of the IT measure. Examples of this are personnel costs of the own project team as well as costs of external consultants. Examples in the broader sense are special training courses for those involved in the IT measure as well as technical equipment, if any, and travel costs.

The costs of system support and maintenance/updating following its deployment do not constitute planning and development costs. Any such costs must be recorded as operating costs (i.e. group 2 criteria).

The cost (types) must be generally considered in the WiBe in the sense of a full cost analysis: all the cost (types) must be considered and calculated no matter whether or not separate funds will have to be applied therefore in the budget.

4.1.1.1.1    **Personnel costs (own personnel)**

The costs of the agency's own personnel (*the working time of those involved in the IT measure* ) must be quantified indirectly. This requires a *project plan/budget* which indicates the "man-days" planned for the project personnel. You can convert this information into personnel costs of the measure.

The development of the organizational/technical design concept and the definition of requirements for system selection will be the major factors determining the necessary personnel costs. Visits to reference installations and tests must also be considered, if applicable, in this context.

When planning the man-day requirement, please also remember the need to ensure **interoperability**[15] even beyond your own agency, and carefully check and calculate the time required to this end.

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[15]    The term "interoperability" is a quality assurance term which describes the ease with which two or more systems can exchange information and make use of the information exchanged.

Neglecting the **internal ("imputed") personnel costs** would distort the economic efficiency assessment. **Consideration** of these costs is **mandatory**.

The full amount determined must be generally recorded under the "non-budget relevant" heading.

#### 4.1.1.1.2     Costs of external advisors

The costs of external advisors can be found more or less directly in the relevant contracts and agreements.

Please note that this criterion may overlap in some cases with criterion 1.1.2.2. If external consultants are commissioned with aspects of the technical concepts as well as with software-related concepts and if a pro-rata distribution is not possible or sensible, the costs must then be shown under this criterion 1.1.1.2. The gross principle must be applied, i.e. the costs of external advisors also include any ancillary costs (such as travel cost refunds, statutory value-added tax, etc.).

The full amount determined must be generally recorded as "budget-relevant".

#### 4.1.1.1.3     Costs of the development environment

Under this criterion, you have to show all the costs incurred in conjunction with the acquisition of hardware and software *for the developer team*. Purchases of hardware and software for testing are also covered by this criterion.

The costs of the development environment *in the broader sense* also include the costs resulting from the necessary configuration management and/or generally from the federal government's procedure model (like V-Model XT).

If existing hardware and software are used (for all or part of the work), it is not necessary to calculate such pro-rata (non-budget relevant) costs[17].

As long as costs of *external* training of the officers involved in the IT measure are incurred, the pure training costs (*"seminar fees"*) must be recorded under this criterion.

The full amount determined must be generally recorded as "budget-relevant".

---

[17]   This is a simplification – alternatively, you can include these costs as non-budget relevant in your calculation (which would be the commercially sensible approach). Otherwise the **principle of causation** is generally applicable: the project which actually triggers an expenditure is then considered to be the cost unit for the purposes of the WiBe. If a clear relationship with other projects can be established, it is then possible to distribute these costs to the IT measures involved.

4.1.1.1.4    **Other costs of physical resources / auxiliary resources**

These costs include (in analogy to the previous criterion) costs of materials, auxiliary resources and equipment necessary to support the officers involved in the IT measure. If existing hardware and software are used in this context (for all or part of the work), it is not necessary to calculate such pro-rata (non-budget relevant) costs.

The full amount determined must be generally recorded as "budget-relevant".
As long as internal cost rates are available for existing space, such costs must be included as "non budget-relevant" in the WiBe. If suitable space must be rented for project officers, the resultant costs must be recorded as budget-relevant.

4.1.1.1.5    **Travel costs (own personnel)**

This is the criterion under which all costs of travel, accommodation and daily allowances for the officers involved in the IT measure must be recorded.

The full amount determined must be generally recorded under the "budget relevant" heading.

When necessary, please check to what extent travel costs are necessary: almost every provider and supplier today offers a host of information via the Internet, so that selective planning of information visits is possible.

## 4.1.1.2    System costs

This item covers any budget-relevant as well as not directly budget relevant costs related to the production (provision) of the necessary hardware and software.

These costs *do not* include the costs of the real system introduction. These costs must be recorded separately in criteria group **1.1.3**.

► You must also decide whether your IT measure replaces an existing IT system and whether this generates once-off **depreciation expenditure for the old system** . Any such imputed "residual-value depreciation" must be additionally recorded under criterion 1.1.2.1.

4.1.1.2.1    **Hardware costs**

Direct monetary quantification of hardware costs (and the pertinent costs of system accessories and/or materials) is usually possible. Offers and/or orientation values from the different suppliers are also available in this respect in the preliminary study.

The criterion is broken down in terms of host/server, network operation (1.1.2.1.1) and workstation computers (1.1.2.1.2). As long as your organization plans to install larger quantities of workstation computers in forthcoming years, we recommend using flat-rate costs for this purpose in order to simplify and standardise the calculation in the individual WiBes.

The amount determined must be generally recorded under the "budget relevant" heading.

### 4.1.1.2.2    Software costs

In the case of software produced by or obtained from *external suppliers*, direct monetary quantification is possible and the costs can be fully recorded as budget relevant.

As long as software is developed *internally by your organization*, please check whether you have already recorded these costs under item 1.1.1.1 (personnel costs, own personnel). Otherwise the software costs must be calculated indirectly. Multiply the necessary man-day input of software developers by the applicable personnel cost rate (rather than recording the costs as non-budget relevant).

At the beginning of the IT measure, you will have to rely on estimates unless you can make use of empirical values from comparable IT measures. However, make sure to avoid "polished-up" figures: system development estimates often turn out to be over-optimistic.

This criterion is broken down into real development costs (1.1.2.2.1; *core of the IT measure*), cost of adaptation of other software and interfaces (1.1.2.2.2) and cost of software evaluation, certification and quality assurance[18] (1.1.2.2.3).

### 4.1.1.2.3    Installation costs

The installation costs cover several individual items which are used to consider the necessary building costs as well as costs of fixtures, furniture and equipment. In order to quantify the first three (budget-relevant) items, you will have to refer to figures from quotations by external suppliers and/or to internal empirical values and estimates.

The fourth criterion can be typically derived from the project planning of the IT measure as non-budget relevant costs.

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[18]   This item covers any budget-relevant as well as not directly budget-relevant costs related to the testing of software with regard to its suitability for the specified purpose. Furthermore, this item also covers costs of software certification, if necessary, by an authorised company or organization, costs of preparing a list of defects and nonconformities, as well as the costs of rework or trouble-shooting (unless such costs are covered by guarantee and support services or considered in other criteria of the IT WiBe).

The individual sub-criteria are the following:

| | |
|---|---|
| 1.1.2.3.1 | Building costs |
| 1.1.2.3.2 | Installation and deployment of technical infrastructure |
| 1.1.2.3.3 | Office equipment, fixtures and fittings, accessories |
| 1.1.2.3.4 | Personnel costs of system installation |

## 4.1.1.3   System installation

This item covers all budget-relevant as well as all costs which are not directly budget relevant which refer to the change from the old process to the new IT measure and which ensure that the new IT measure can be used by the users without any restrictions.

These costs *do not* include the costs of ongoing support and maintenance/updating of the system after the introduction phase; such costs must be recorded later as ongoing operating costs according to criteria group 2.2.3.

### 4.1.1.3.1   System and integration testing

The costs of system and integration testing are not incurred with external suppliers or providers.

In the case of an internal development, the necessary personnel and host time can already be included in the development costs (1.1.2.1 or 1.1.2.2). Separate recording is not necessary in this case. Otherwise you can calculate the costs by multiplying the personnel and CPU time by the pertinent rates. Other cost types (consumables, energy) may have to be considered in the form of a flat rate.

The full amount determined must be generally recorded under the "non-budget relevant" heading.

### 4.1.1.3.2   Import of existing data

Any costs that will arise in conjunction with the import of existing data must be indirectly quantified in monetary terms. For this purpose, you will have to apply a suitable scale in order to determine the data volume and derive the costs[19].

### 4.1.1.3.3   Initial training for users and IT specialists

The costs of initial training for users and support staff can be quantified exactly for each participant in *external training* programmes. If special certification costs *(for example, by the software manufacturer)* are incurred for IT specialists, these costs must then be considered under this criterion.

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[19]   In one case, for example, the time necessary for the initial manual entering of 100 addresses that were not yet electronically stored was determined in order to extrapolate the total time needed to enter the data and to convert this time to (manpower) costs on the basis of the officers' salary grade.

In this case too, budget-relevant and non-budget relevant shares must be discriminated. According to the full cost approach, these include not just seminar fees and ancillary costs (business travel, accommodation), but also personnel costs of the time of absence from the job.

In the case of larger public agencies, flat rates should be calculated for *internal training* programmes, representing the training costs per training programme type and training day[20] and, together with the personnel costs of the applicable salary grade, expressing the total training costs.

#### 4.1.1.3.4    Familiarization costs of users and IT specialists

Familiarization costs of users are always incurred if a transitional familiarization phase is necessary (despite of initial training).

In the case of new processes, users will not be able to immediately use all functions with the desirable routine. During an initial phase, this means reduced work output (in quantitative terms). These familiarization costs (which vary from individual to individual) are difficult to quantify[21].

It is hence not possible to make any generally valid statements. Experience has shown so far that this criterion is seldom used even though users would be well-advised to apply it in most projects.

#### 4.1.1.3.5    Other costs of adaptation/change

Depending on the type of IT measure concerned, the other costs of adaptation/change must be shown and justified under this heading.

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[20]  Depending on the typical design of such internal training activities, the flat-rate costs can, for their part, be broken down further into "budget-relevant costs" and "non-budget relevant costs" per training day. If, for example, the agency's own internal further training unit acts as an agent for the related training services, the resultant costs with be both budget-relevant (for external teachers, etc.) and non-budget relevant (provision of the agency's own space and infrastructure, personnel services).

[21]  In the case of new software, users will depend on manuals, online help functions as well as trial-and-error procedures during the first weeks after initial training. More time than before the introduction of the system will then be necessary to do the same work. Generally the following can be said with regard to the *approximate calculation of familiarization of non budget-relevant costs.* These costs result from a temporary additional working time requirement of IT users on their specific tasks. The following factors must then be justified: (1) time markup as a percentage of the standard working time per task as additional familiarization time, (2) length of the familiarization phase, (3) frequency of occurrence of the task during the familiarization phase. For *example*: the future standard working time for an accounting job totals 15 minutes. Take a 20% familiarization markup during a four-week familiarization phase. A total of 3000 accounting jobs must be completed by all the users during the first four weeks. This gives an additional time requirement of 9000 minutes (3'*3000) during the familiarization phase. These minutes can be directly quantified as personnel costs for the purpose of the WiBe.

## 4.1.2   On the determination of development benefits

The term "development benefits" in this context represents the benefits which can be quantified in monetary terms and result from the (agency-wide) application of the IT measure. Development benefits end when the IT measure is officially handed over to the user organization for its use[22].

### 4.1.2.1   Once-off cost savings

Development benefits initially reflect the relatively rare case of **savings** which can result from the fact that the IT measure helps avoid investment in the existing system. As long as investment and/or maintenance costs are finally earmarked or technically inevitable for the old system, these sums can be regarded as savings.

- **Material and operating costs of** *maintenance* include, for example, future replacement investment in hardware components, etc. Material and operating costs of *upgrading* include, for example, the purchase of data storage capacity, peripheral equipment as well as external software with extended functionality.

- **Personnel costs of** maintenance and/or upgrading are, for example, costs related to changes in hardware or software characteristics on condition that this work is carried out by *internal* staff.

If the IT measure helps avoid costs of this kind, the related sums must be considered in the WiBe. As long as funds are already earmarked for these purposes in the budget, the related savings are also budget relevant. In any case, however, the ways of calculating such cost savings must be precisely justified and documented.

### 4.1.2.2   Once-off revenue

Once-off revenue – if at all – results from the disposal of the old system by way of selling the hardware (or, rarely, the software).

As long as no concrete sums have already been agreed to with regard to such revenues, it must be examined whether and at what price disposal is possible. The revenue must be considered as (once-off) monetary development benefits in the WiBe.

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[22]   Any subsequent monetary benefits are shown under group 2 of the catalogue of criteria! The term "development benefits" is hence the counterpart of "development costs" (i.e. the costs during the development phase) and should not be mistaken for the benefits of the IT measure as a whole.

# 4.2 Operating cost and operating benefit criteria

Group 2 of the criteria catalogue contains the operating costs and benefits which will arise following introduction of the IT measure.

> These operating costs and benefits are to be typically determined for a period which, *together with the time required for the development* of the IT measure in question, results in a calculation period of **5 financial years**. A different period can be chosen in justified cases[23].

- Please remember to split up all the monetary figures into a budget-relevant and a non-budget relevant portion.

**General considerations** related to data capturing:

- Operating costs and operating benefits can be related to **material costs** (section 2.1), **personnel costs** (2.2), **maintenance and/or system updating** (2.3) and other items (2.4).

- **Operating costs are incurred as a result of the use of the new process**. All costs must be considered in this context in the sense of a full cost analysis.

- (Monetary) **operating benefits occur in the form of savings** due to the discontinuation of the previous, old process.

- The economic efficiency determination generally analyses *every single criterion* with regard to the **costs of using the new process** and confronts these with the **savings** which can result from the **discontinuation of the old process**.

- The **balance** represents **additional operating costs** or **lesser operating costs** (savings) for each criterion. These balances are subsequently considered in the **WiBe KN**.

**Please generally note for all following individual criteria:**

- As long as it is not possible to **numerically quantify a criterion with sufficient precision**, this criterion will affect both the WiBe KN and the supplementary WiBe KN/R ratio. With regard to data capturing, you must present a "plausible and well-founded" monetary approach which is included as the **"probable estimate"** in the monetary economic efficiency assessment (WiBe KN). Enter any increases in

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23    In the case of major IT measures with several years of development, it may be advisable to increase the 5-year period by this development time. Infrastructure projects (such as the installation of cabling systems in buildings) may justify even longer periods. If, however, it is foreseeable and justifiable from the outset that the life of an IT measure will be less than 5 years, a shorter time horizon is mandatory for the IT WiBe.

this estimate which can happen under worst-case conditions as a **risk markup** for the risk estimate (WiBe KN/R).

- As long as effects related to a **monetary benefit criterion (savings) can   be described in qualitative terms only,  do not** enter a monetary value for this criterion.

  Instead, consider the qualitative effect in the assessment of the related qualitative and strategic criterion in the **WiBe Q** (*usually in sub-groups 4.2, 4.3 or 4.4*).

## 4.2.1   On the determination of operating costs / savings of operating costs

**Operating costs** are costs that result from the operation of the *new* IT measure and which represent neither personnel nor maintenance costs.

**Savings of operating costs** are all the costs of the *old* process which will become obsolete once the new IT measure is introduced and which represent neither personnel nor maintenance costs.

### 4.2.1.1   (Pro-rata) line / communication costs

The criterion of the "line and communication costs" is related to costs which an agency has to pay to third parties as a result of the IT measure. Such costs chiefly concern the use of public networks and similar data transmission systems.

The determination of line and communication costs of the *"old"* IT measure is not a problem because you can refer to budget-relevant bills issued by third parties in this respect. As long as *pro-rata* costs must be determined for the old process because the same transmission systems were used by several processes, you will have to develop suitable distribution criteria[24].

In contrast to this, determining the line and communication costs of the *"new"* measure poses more of a problem because concrete indications of future price trends for external communication services and the agency's own user behaviour are not always available. However, you will have to develop reasonable cost estimates and statements on the basis of the technical concept of the IT measure in question.

Experience shows that it often appears to be easier to quantify the net effect between "old and new" and to give plausible reasons therefore. This "differential view" is acceptable. When in doubt, we

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[24]   A reasonable approach may be the assignment of pro-rata costs simply on the basis of the number of IT measures involved. Otherwise you will have to develop distribution key parameters (such as times of use and/or volumes of data transmitted) with reasonable effort.

generally recommend that you assume higher costs and include a risk markup in the calculation.

### 4.2.1.2 (Pro-rata) host, server and network costs

The criterion of the "(pro-rata) host, server and network costs" refers to (imputed) costs caused by the IT measure at the computer centre, in host mode, and/or in local networks (client/server architecture). Usually these costs must be considered as *non-budget relevant* in the WiBe (*exception*: the IT measure in question requires upgrading measures[25]).

The costs include (besides hardware rental costs, if any) the costs of personnel in charge of operating the host/server and the operability of the infrastructure of internal networks.

The exact calculation of such costs (both for the present and for the new process) poses a problem if detailed cost accounting (cost recording) is not performed at your agency. A cost rate for the "actual costs per CPU second" should be available as a minimum, approximate basis to be used in your calculations[26].

### 4.2.1.3 (Pro-rata) costs of workstation computers

The criterion of the "(pro-rata) costs of workstation computers" refers to operating costs caused by the IT measure at the users' workplaces. The costs must usually be considered as non-budget relevant operating costs in the WiBe. (*Exception*: the IT measure in question necessitates upgrading and/or replacement of *leased/rented* hardware at the users' workplaces).

These costs also include the costs of the pertinent periphery (workplace printers, etc.).

Hardware and software for the individual workplaces are typically bought rather than rented or leased. This means that no sums have to be considered in conjunction with this criterion.

### 4.2.1.4 Hardware consumables

Costs of hardware consumables include costs of paper, diskettes, toner for copiers and laser printers, ink ribbons, etc.

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[25] The principle of causation is applicable in this case too: the new IT measure which is responsible for the need for upgrading is also regarded as the sole cost unit for the purposes of the IT WiBe. If a clear relationship with other projects can be established, it is then possible for the purpose of the economic efficiency assessment to share these costs among the IT measures involved.

[26] Remember that new IT measures will also lead to new host CPU cost rates. This will require further clarification from case to case.

In order to determine these costs, you can refer to the technical specifications of the equipment and information concerning the expected quantitative utilisation thereof. A reasonable approach for these amounts is often the use of flat rates in order to keep the calculation effort within sensible limits.

Experience shows that the net effect of "old to new" is often assumed as 0 for many IT measures in the interest of simplification. You will have to find out for your project whether this simplification is acceptable.

### 4.2.1.5    Energy and space costs

Energy and space costs do not have to be calculated or considered:

–    as long as your organization does not attribute these costs in other projects or in calculating the costs of IT measures adopted,

–    for smaller IT measures or measures where you can justify a net effect of 0 between the "old and new" processes.

In other cases, you will have to carry out a detailed calculation, considering the technical specifications of the hardware (i.e. mainly the power consumption of each device in terms of kWh, the number of devices, the costs per kWh when it comes to calculating energy costs).

With regard to space costs, you can refer to the rent actually paid, to the figures used in the cost-to-benefit calculation, or to the personnel rates of the Federal Ministry of Finance.

### 4.2.2   On the determination of personnel costs / savings of personnel costs

**Personnel costs** are costs that result from the operation of the *new* IT measure and which represent neither material nor maintenance costs.

**Savings of personnel costs** are all the costs of the *old* process which will become obsolete once the new IT measure is introduced and which represent neither material nor maintenance costs.

### 4.2.2.1    Personnel costs related to system use

The criterion of the "personnel costs related to system use" must be considered if you expect that the users' time requirement for the use of the system will change. This item concerns *all* personnel costs incurred in the <u>user</u> organization unit in

conjunction with the new process. System downtime must also be considered in this context. This means that the entire annual working time must be determined which will be "tied up" at all the workplaces and/or organization units as a result of the use of the new process.

**Savings of personnel costs in conjunction with the use of the system** represent **all personnel costs** which were previously incurred **in the user organization units** together with the **old process** and which are now obsolete. This means that the entire annual working time must be determined which is currently "tied up" at all the workplaces and/or organization units as a result of the use of the old process. System downtime must also be considered in this context. Since this is a "fictitious" calculation, you will have to enter the total working time of all staff involved in the base year and update this figure for the following years, if necessary, subject to a correction percentage value[27].

Please note that these savings (as a quantitative effect in monetary terms) are also addressed in terms of their qualitative effect in conjunction with criterion 4.2 (improved job performance).

With regard to the **calculation** of personnel costs and personnel cost savings, you can refer to **methods of personnel demand calculation**[28]. Your determination will then focus on the following questions:

- Which **technical and dedicated tasks** in the user organization units are affected by the old process and/or by the new process?
- What are the average **actual processing time requirements** of each technical and specialist task with the old process for all those involved?
- What are the average **future standard processing times** of each technical and specialist task with the new process for all those involved in the future?
- What are the **occurrence frequencies** of the **technical and dedicated tasks** in the base year of the WiBe, and how will the occurrence frequencies change in subsequent years?

The total personnel costs result from the salary grade and/or remuneration group (based on the currently valid personnel cost rates).

In many cases the **"earned benefit"** of calculated personnel cost savings is the critical parameter of an IT measure: in most cases, potential personnel cost savings are the crucial elements which contribute to the positive net present value for an IT measure. Special attention must hence be devoted to calculating the net

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[27] This correction is due to the assumption of rising personnel cost rates in future years as well as the assumption of rising (or falling) frequencies of occurrence of the technical tasks connected to the old process.

[28] Concerning methods and data capturing techniques for personnel demand determination, refer to "HdP Handbuch der Personalbedarfsermittlung" [Handbook of personnel demand determination], 2nd edition, revised by P. Röthig, published by the Federal Ministry of the Interior, Bonn 1995.

effect of the personnel costs. Net effects which enable staff reductions ("cost-relevant jobs") typically call for special measures in order to implement these potential savings in a budget-relevant manner.

## 4.2.2.2    Costs/benefits due to changes in job description

Whether the new IT measure will lead to **cost increases** due to upgrading of job descriptions can only be judged on a very general level in advance. In this respect precise statements cannot seriously be made before the IT measure is implemented. The reason is that a separate analysis of the organization is typically required in cases like this.

However, if the technical concept of the IT measure already suggests that users of the system will have to fulfil significantly higher qualification requirements, it is better that you consider these effects in your WiBe as a precautionary measure.

You can directly calculate the costs resulting from an increase by one remuneration group *(as additional costs of n jobs)* and consider these under this criterion.

This is also applicable in the opposite direction, i.e. that demands on (individual) users decrease as a result of the new IT measure. However, since it will be significantly more difficult to collect these savings effects, we recommend initially leaving these sums aside in your considerations or treating them as non-budget relevant.

Practical experience shows that this criterion was used in a few exceptional cases so far.

## 4.2.2.3    System management and administration

**Personnel costs** of management and administration of the new IT system arise if staff of central support units (*user service*) are appointed to answer questions from system users. (These costs *do not* relate to maintenance and updating costs).

The costs must be calculated indirectly from the annual number of hours (or the percentage of the total annual working time) which staff will probably have to devote to user support services within the framework of this IT measure.

This criterion also covers **all personnel costs** incurred **at central support units** (computer center operation) for the administration of the IT system.

The determination of manpower requirements for system support and administration is dependent, in particular, on the development level of the IT equipment and the complexity of the applications.

These costs may already be included in the pro-rata host costs (2.1.2), so that this item can be omitted here. Otherwise quantification is necessary: the annual working hours for system administration must be roughly applied in the WiBe on the basis of the personnel cost rates of the respective salary grade.

These considerations apply analogously to the calculation of personnel cost savings due to the discontinuation of the old process.

## 4.2.2.4    Ongoing training / qualification

Personnel costs for training and further qualification of system users are a result from the need to familiarise, following initial training *(refer to criterion 1.1.3.3)*, new users with the system and/or to introduce subsequent new features related to system operation to all users. Furthermore, selected user groups may also need further training.

The considerations concerning initial training apply analogously *(refer to criterion 1.1.3.3)*.

As an orientation value, you may instead *(in the absence of other, specific data and/or in the event that the calculation of such figures seems to require unreasonable costs and effort )* use an annual value of 10% of the initial training costs.

## 4.2.3  On the determination of operating costs / savings in conjunction with maintenance / system updating

**Maintenance/system updating costs**  are costs that result from the operation of the *new* IT measure and which represent neither material costs nor personnel costs.

**Savings of maintenance/system updating costs** are all the costs of the *old* process which will become obsolete once the new IT measure is introduced and which represent neither material nor personnel costs.

### 4.2.3.1    Hardware maintenance/service

If an *external supplier* is responsible for hardware maintenance/ service, an agreement is made which also states the costs. Otherwise you can calculate 10% of the investment costs as an *approximate value*. If maintenance is carried out by your agency's own staff, you can adopt this flat rate if you prefer to do without a more detailed analysis.

### 4.2.3.2    Software maintenance/update

Initially, third-party software does not involve any maintenance. However, costs can arise for updates. Besides the real update price, installation costs (i.e. time spent by the staff employed for this purpose) are then also incurred. In the case of software *developed within your agency* , more concrete empirical values and/or update plans (version concept) may be available. The maintenance costs can then be calculated indirectly on the basis of the necessary manpower and CPU time.

### 4.2.3.3    Replacement/supplementing costs

You can use this criterion in order to consider, in addition to standard maintenance costs, any costs which may result from ongoing, planned upgrading of hardware and software during the operating phase of the IT measure.

Replacement costs are related to the partial or complete replacement of commercially available hardware (such as components of workplace printers, etc.).

Supplementing costs are related to foreseeable upgrades of commercially available hardware and software during the operating phase.

## 4.2.4    On the determination of other operating costs and savings

### 4.2.4.1    Data protection / data backup costs

Costs of data protection and data backup will be relevant to a major extent for a few cases of individual IT measures only. Furthermore, such costs can already form part of other cost criteria, depending on the design of the technical system

concept[29]. Please check whether the IT measure includes provisions for data protection and data backup requirements [if necessary, following a related risk assessment (refer also to the IT Baseline Protection Manual and/or the IT Protection Manual)] and which costs (and cost types) are foreseen therefore. This cost type usually refers to personnel and material costs for backup routines, for access and privilege checks, for the protection of (electronically stored) data against fire and theft, etc. The related operating costs and/or cost savings must be calculated indirectly for the different cost types.

### 4.2.4.2    Costs of external advisors

As long as external consulting services appear to be necessary even following completion of the system introduction, more detailed information, including figures related to the costs to be budgeted, will already have to be given when planning the IT measure.

### 4.2.4.3    Insurance costs, etc.

The self-insurance principle is generally applicable to public administrations. In exceptional cases, costs (premiums) of insurance policies can be usually directly quantified in monetary terms.

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[29]    All the related once-off costs are already included in the criteria under 1.1. Further operating costs for data protection and data backup measures may already be considered in the criteria concerning 2.1 (material costs) and/or 2.2 (personnel costs, in particular, for user support).

# 4.3    On the determination of the urgency criteria

Urgency criteria (group 3 of the catalogue of criteria) refer to the **urgency to replace the existing sy stem**[30] on the one hand and to **comply with administrative rules and laws** on the other.

Monetary quantification of these criteria is not possible. They are, instead, subjected to a **benefit analysis (WiBe-D module)**. The WiBe D, Q and E modules have in common that the criteria to be assessed are described in **qualitative terms**. This description, for its part, must be translated to a **score** for every criterion. A scale from 0 to 10 is available for this purpose for each criterion.

By referring to the number of a criterion in the general catalogue of criteria, you will first find an explanation and/or definition of the criterion. This is then followed by the table with the scale which assigns a score for implementation[31].

## 4.3.1   Urgency to replace the old system

### 4.3.1.1    Support continuity for the old system

This criterion refers to the current status as it is: as long as hardware and software is already used with the actual state, the extent of (future) support by the supplier is important. If the supplier discontinues this support[32], this can mean that it becomes necessary to internally replace the (functioning) old system. The importance of this criterion must be assessed in qualitative terms.

4.3.1.1        Support continuity for the old system

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Not endangered. | No bottleneck foreseeable. | Support is about to be phased out; replacement at present not necessary. | Support is about to be phased out; no problems in the short term. | Support is about to be phased out; replacement is urgently needed. | Support is discontinued, new solution is vital. |

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30    The old system may even be a "*non*-IT system".

31    The table only contains even score values. It goes without saying that you are free to assign intermediate values for all criteria.

32    Examples are: no updates of earlier versions, no adaptation to new standards and new peripheral systems or even phasing out of product lines by the manufacturer.

## 4.3.1.2 Urgency to replace the old system due to logistic/capacity aspects

This criterion evaluates the extent to which the former type of work using the old system approaches logistic or capacity limits. Possible reasons for this can be, for example, that the circulation of files within the organization and with other organizations is no longer possible or requires unreasonably high additional effort, or that the archive's file storing capacity is exhausted.

4.3.1.2　　Urgency to replace the old system due to logistic/capacity aspects

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Irrelevant | Almost no logistic and/or capacity problems. | Only minor logistic and/or capacity problems. | Moderate logistic and/or capacity problems. | Serious logistic and/or capacity problems. | Insuperable logistic and/or capacity problems. |

## 4.3.1.3 Stability of the old system

This criterion evaluates the existing solution with a view to its suitability for "everyday" use. In this context relevant information includes both qualitative statements concerning error and fault frequencies or even system crashes as well as evaluations of system maintenance problems (technical aspects) and/or related personnel bottlenecks (availability of trouble-shooting know-how)[33].

4.3.1.3.1　　Stability of the old system:
Bugs, errors and downtime

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Not endangered. | Hardly en-dangered. | Endangered to a minor extent, still acceptable. | Endangered to an average extent, problematic. | Above-average risk, highly problematic. | Very seriously affected, not acceptable. |

4.3.1.3.2　　Stability of the old system:
service problems, personnel bottlenecks

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Irrelevant | Seldom, low. | To a minor ex-tent, still accept-able. | Low, however, with a foreseeable increasing trend. | Medium, increasing. | Permanent, serious. |

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[33] As long as you can assign concrete costs to error and fault frequencies, you should calculate these and consider them under the group-2 criteria (operating costs and/or operating benefits).

## 4.3.1.4    Flexibility of the old system

This criterion evaluates the existing solution with a view to its future suitability. Relevant information in this context concerns future upgrading and expansion options[34], interoperability[35] and/or (future) interface problems with other IT systems as well as operability and ergonomics of the old system.

The sub-criteria can be described in qualitative terms only[36].

### 4.3.1.4.1    Flexibility of the old system: Limits of expansion / upgrading

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Not restricted. | Hardly restricted. | Restricted, minor requirements can be fulfilled. | Restricted; medium require-ments are hard to be fulfilled. | Seriously restricted; many requirements cannot be fulfilled. | Expansion and/or upgrading not possible, but necessary. |

### 4.3.1.4.2    Flexibility of the old system: Interoperability, present/future interface problems

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Not restricted. | Problems at present unlikely. | Problems foreseeable, no adaptation problems. | Necessary adaptation difficult, but urgent. | Numerous, difficult adaptation tasks, urgent. | Adaptation urgently necessary, overdue. |

### 4.3.1.4.3    Flexibility of the old system: Operability and ergonomics

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Irrelevant | Minor ergonomic shortcomings. | Minor degree of work impairment. | Medium degree of work impairment. | Serious shortcomings, change necessary. | Very serious shortcomings, intolerable. |

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34    These upgrading and expansion options can be both of a qualitative (integration of additional functional requirements) and quantitative nature (for example, adding further workstation computers to a network).

35    The term "interoperability" describes the ease with which two or more systems can exchange information and make use of the information exchanged.

36    As long as you can assign concrete costs to the "limits of expansion/upgrading" criterion, you should calculate these and consider them under the group-2 criteria (operating costs/benefits).

## 4.3.2 Compliance with administrative regulations and laws

### 4.3.2.1 Compliance with laws

This criterion is used to determine the extent to which existing, old systems meet with existing or amended legal requirements, i.e. with formal legislation.

**This criterion is a so-called MUST criterion** : If you assign a score of "10 points" to this criterion, it is mandatory that you immediately perform the IT measure in any case[37].

4.3.2.1      Compliance with laws

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Ensured. | Foreseeable amendments to laws already taken into consideration. | Foreseeable amendments to laws partially taken into consideration. | Pending amendments to laws not taken into consider-ation. | Insufficient degree of compliance with applicable laws. | **No compliance with applicable laws.** |

### 4.3.2.2 Fulfilment of data protection and data security requirements

This criterion refers to the question whether all legal data protection requirements are fulfilled by the existing IT system and/or the present process solution. Furthermore, data security must be evaluated here, i.e. the question as to what extent the existing system is protected in technical and organizational terms against loss of confidentiality, integrity and availability of data. As long as the analysis of the existing IT system shows any deviations from requirements and recommendations (for example, recommendations by the Federal Government Co-ordinating and Advisory Agency for Information Technology in the Federal Administration (KBSt)) (such as the IT Baseline Protection Manual and/or the IT Protection Manual), these deviations must be considered here.

4.3.2.2      Fulfilment of data protection and data security requirements

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Not impaired. | Minor, negligible shortcomings. | Minor short-comings, can be remedied elsewhere or in other ways. | Minor shortcomings, medium-term need for a change. | Insufficient compliance with data protection and data security requirements. | Serious violations, adaptation urgently needed. |

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37      The WiBe analysis then focuses on identifying the economically most effective alternative for remedying the shortcomings.

## 4.3.2.3    Correct procedures and work processes

Workflows and business processes as well as the related IT measures must comply with certain rules of procedure, for example, according to the Joint Rules of Procedure of the Federal Ministries (GGO). These rules of procedure supplement existing laws (for example, with a view to auditability/transparency, correct file-keeping and/or documentation). The criterion expresses the extent to which these (internal) guidelines are fulfilled by the existing IT system. The error rate of the old system can serve as an evaluation aid.

Furthermore, the correctness of workflows and work processes is also regarded as a crucial precondition for reducing corruption among officers. If the existing system fails to ensure the correctness of workflows and work processes, investment into a new system is necessary which must be capable of restoring correctness and thereby of limiting potential abuse.

4.3.2.3        Correct procedures and work processes

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Irrelevant | Minor impairment, minor relevance. | Correctness ensured, but complex process. | Correctness occasionally impaired and complex process. | Correctness permanently impaired and complex process. | Correctness not ensured. |

## 4.3.2.4    Compliance with other requirements and recommendations

Another important aspect is the answer to the question whether and to what extent license-conforming work is currently ensured in the organization. Proprietary software, for example, is subject to license and use restrictions which vary depending on the particular product and/or the related agreement and adherence to which requires special care.

4.3.2.4        Compliance with other requirements and recommendations

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| No deviations. | Minor deviations, not substantial. | Minor deviations which can, however, be overcome even without a new system. | Many deviations. | Process as a whole in need of improvement because of sub-stantial deviations. | Process in conflict with concrete require-ments or recom-mendations. |

# 4.4 On the determination of the quality and strategy criteria

Group 4 of the catalogue of criteria contains the quality and strategy criteria of IT measures. These criteria are related to the **priority of the IT measure**, to **quality improvements** within the public agency, and to the **effect on the staff** of the public administration. Just like the WiBe D, the WiBe Q also uses a scale in order to rate the criteria in qualitative terms.

## 4.4.1 Priority of the IT measure

### 4.4.1.1 Relevance within the IT framework concept

You can use this criterion in order to assess your IT measure in qualitative terms with a view to its contribution towards implementing the applicable IT framework concept (compared to other ongoing and/or proposed IT measures). The importance of the IT measure as a precondition for other, subsequent measures must be justified.

**This criterion is a** *"quasi*-MUST criterion"**: if you assign a score of "10 points" to this criterion, the IT measure must generally be carried out. As a precondition for this score, the IT measure in question must be a condition sine qua non for the implementation of much of the plans of the IT framework concept.[38] This means that only a few IT measures of a public agency can be given 10 points, i.e. only IT measures with *top* priority. We hence recommend assigning priorities to all the IT measures of a public agency and using these priorities as a basis for justifying the points awarded in this criterion.

4.4.1.1        Relevance within the IT framework concept

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Irrelevant | Minor relevance. | Important IT measure, however, not urgent in terms of time. | Implementation is a precondition for further, important IT measures. | Important, time-critical IT measure. | **Key role in the IT framework concept.** |

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[38] The WiBe then focuses on identifying the economically most effective alternative for implementing the specified functionality.

## 4.4.1.2   Integration into the IT landscape of the federal administration

You can use this criterion in order to determine whether the IT measure fits into the federal government's information management strategy[39] , i.e. you rate the <u>agency-spanning</u> importance of the IT measure. This aspect refers to all parameters aimed at a joint (integrating, standard-setting and/or standard-conforming) development of information technology[40].

4.4.1.2        Integration into the IT landscape

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Irrelevant or no positive effect, respectively. | Minor support of the IT landscape. | More far-reaching support of the IT landscape. | IT measure is important, but not time-critical. | IT measure is important and time-critical. | IT measure is vital for IT integration in the federal adminis-tration. |

## 4.4.1.3   Pilot project nature of the IT measure

The first-time development and use of innovative processes and methods can be economically ineffective in WiBe KN monetary terms for the investing administrative unit. At the same time, however, this method can generate important results for subsequent projects which lead to development cost savings in other administrative units. Ideally, it should be possible to transfer the IT solution developed to other administrative units of the federal government ("one for all" principle). This pilot project nature is considered by this criterion. The strategic rank must be rated higher the more expanded and the more wide-spread the range of application of the innovative solution in the federal administration is.

4.4.1.3        Pilot project nature of the IT measure

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Irrelevant | First-time use of a standard solution. | First-time use of an in-house develop-ment, further development stages are planned. | Pilot project within a public agency, no standard solution, follow-up invest-ment. | Pilot project with further, agency-spanning fields of application. | Pilot project with proposed, agency-spanning use (one for all principle). |

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39   IT measures at federal-state or communal level are examined with a view to their integration into the respective strategy of the federal state or municipality.

40   This also includes the evaluation of the extent to which the proposed solution will (also) enable in future compliance with the EU directives for the information society (as contained, for example, in the eEurope2002 action plan; refer to "eEurope2002 Eine Informationsgesellschaft für alle" ("eEurope2002 – an information society for all). Draft action plan of the European Commission for presentation during the meeting of the European Council on 19/20 June 2000 in Feira).

## 4.4.1.4     Use of existing technologies by other organizations

You can use this criterion in order to evaluate whether the proposed IT measure uses technical solutions (processes) which have already demonstrated their value in other administrative units of the federal government. The use of existing technical solutions by other organizations often not only minimises investment costs but also contributes towards the establishment of technological standards and thereby towards avoiding isolated solutions within the administration.

**Important:** Approaches related to the use of existing technology by other organizations which can be evaluated in monetary terms are already assessed within the framework of the WiBe KN. The purpose of this criterion is to address aspects which can be evaluated in qualitative terms only.

4.4.1.4     Use of existing technologies by other organizations

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Adoption of a process is not possible. | Adoption of a process: major adaptation effort, minor degree of dissemination. | Adoption of a process: medium adaptation effort, minor degree of dissemination. | Adoption of a process: minor adaptation effort, minor degree of dissemination. | Adoption of a process: medium adaptation effort, higher degree of dissemination. | Adoption of a process: minor adaptation effort, higher degree of dissemination. |

## 4.4.1.5     Platform/manufacturer independence [*)]

You can use this criterion in order to determine the extent to which the proposed solution can be used on different platforms and if it permits further development levels of the IT architecture as freely as possible and independent from specifications by the hardware or software manufacturer. It refers to hardware, operating system, infrastructure, standard software and development platforms.

4.4.1.5 Platform/manufacturer independence

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Irrelevant, or no apparent effects to be expected | Minor quality improvement without strategic importance ("pseudo inde-pendence"). | Software is easi-ly portable to other platforms, existing hardware/peri-phery can remain in use within the planned periods. | Proposed solu-tion contributes towards expand-ing development options, platform/ manufacturer inde-pendence ensured | Manufacturer independence and investment protection for existing hardware are ensured, guidelines of IT architecture are complied with. | Long-term design autonomy, along with continued use of existing hardware. |

*) This criterion was modified from "Manufacturer independence" to "Platform/manufacturer independence" in version 4.1 (2007). German explanations were shortened in this edited English version.

## 4.4.2   Increase in quality of dedicated tasks

### 4.4.2.1    Improved job performance

This criterion evaluates the **qualitative** effects related to work, i.e. whether the quality of the work process as such and hence also of the product is improved. Qualitative improvements to be assessed can, for example, be improved transparency of administrative work, simplified internal workflows, as well as elimination of redundant and routine operations. Other examples include more up-to-date, less redundant and more complete information sources as well as a lower error rate thanks to interactive help and user support functions. IT measures can also contribute towards higher quality standards (for example, quality management according to the ISO 9001 standard or according to the EFQM model) of complex processes.

When evaluating this criterion, the effects should be differentiated in terms of formal improvement (the workflow improves itself) and material improvement (the result of the workflow is improved).

4.4.2.1          Improved job performance

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Irrelevant or no positive effects, respectively. | Minor improvement of the formal work process. | Medium improvement with regard to the formal work process. | Significant improvement of the formal work process. | Significant improvement of the material work result. | Significant improvement of the formal work process and of the material work result. |

### 4.4.2.2    Acceleration of work procedures and processes

IT measures usually improve work quality by speeding up work procedures and processes. As long as these effects can be calculated in the form of shorter working time, they are already considered in monetary terms as operating benefits in the WiBe KN.

Acceleration of work procedures and processes enables faster performance (reducing cycle time). The effects are due to electronic communications, elimination of media inconsistency, access to up-to-date databases by all authorised users, and even by elimination of individual working positions. More up-to-date and more precise forms of communication reduce transport time, dead time and preparation time.

The assessment of the qualitative criterion is the result of a critical evaluation of the improvements which the IT measure will offer to users in the organization unit concerned.

4.4.2.2 Acceleration of
work procedures and processes

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Irrelevant or no positive effects, respectively. | Minor acceleration can be expected, but effects cannot be assessed. | Present cycle time can be reduced by up to 10%. | Present cycle time can be reduced by up to 30%. | Present cycle time can be reduced by up to 50%. | Present cycle time can be reduced by more than 70%. |

## 4.4.2.3 Standardised and uniform administrative work

This criterion deals with the extent to which the new IT measure will replace formerly different workflow procedures (both in formal and in material terms) with uniform standards in future. This can be due to up-to-date access to data with uniform structures and due the harmonisation of administrative procedures on both organizational and IT level. The external effect (in the sense of: "how is the process perceived by different external addressees?") must be considered in any case with this criterion.

4.4.2.3 Standardised and uniform administrative work

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Irrelevant or no positive effects, respectively. | No significant reduction of special cases to be expected. | Occasional improvement within the public agency. | Significant improvement with regard to one type of process. | Significant improvement thanks to standardisation of data structures and process routines within the public agency. | Significant improvement thanks to agency-spanning standardisation of data structures and process routines. |

## 4.4.2.4 Public image improvement

The image of the public administration in public is rather negative (*"red tape"*) in some areas. The image can be improved by improved service quality (rated as described above) and a more effective communication of this improved performance to external addressees. As long as the IT measure can make a positive contribution to this end (despite subjective assessment and many uncertainties), this effect must be considered here.

4.4.2.4 Image improvement

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Irrelevant or no positive effects, respectively. | No significant change in the short term. | Positive effect can be expected with individual addressees. | Positive effect in the medium term with many addressees. | Sustainable positive effect with several addressees. | Sustainable positive effect with many addressees. |

## 4.4.3 Control of information of the administrative/political level

### 4.4.3.1 Provision of information for decision-makers and controllers

IT measures go beyond the real workflow; qualitative effects must be aimed at on the decision-making level and for purposes of internal controlling. On the long term your IT measure will lead to a more up-to-date, complete information basis additionally being presented in a problem-centred manner. The qualitative effects must be considered in conjunction with this criterion.

4.4.3.1    Provision of information for decision-makers and controllers

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Not improved / irrelevant. | Minor improvement. | Medium improvement in a few areas. | Medium improvement in several areas. | Significant improvement in a few areas. | Significant improvement in several areas. |

### 4.4.3.2 Support of decision-making/leadership tasks

A higher decision-making competence in the sense of a better quality of decisions is based on problem-adequate information and new, formerly unavailable decision-making aids. As long as the IT measure provides decision-makers with transparent information concerning alternative decision options, including the consequences thereof, significant improvement is possible and can be expected even with regard to decision-making behaviour.

4.4.3.2    Support of decision-making / leadership tasks

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Not improved / irrelevant. | Minor improvement. | Medium improvement in a few areas. | Medium improvement in several areas. | Significant improvement in a few areas. | Significant improvement in several areas. |

## 4.4.4 Staff-related effects

### 4.4.4.1 Attractiveness of working conditions

The introduction of new IT solutions typically changes former work processes and also involves the use of new hardware and software. Users may perceive this as boosting the (subjectively felt) attractiveness of their jobs. This can also be achieved by higher qualifications based on the use of state-of-the-art technology. A positive influence on job attractiveness will also foster a trend towards greater job satisfaction and hence towards higher productivity.

4.4.4.1 Attractiveness of working conditions

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Not improved / irrelevant. | Minor improvement. | Medium improvement in a few areas. | Medium improvement in several areas. | Significant improvement in a few areas. | Significant improvement in several areas. |

### 4.4.4.2 Ensuring/expanding qualifications

The introduction of new IT solutions can (in the medium term) influence the qualification of the staff concerned in two ways. On the one hand, IT solutions lead to the development of skills in handling IT systems. The introduction of such solution then indirectly contributes towards higher user qualifications. However, the use of new IT solutions can also lead to more demanding and more complex tasks on the other hand. Together with user training, this may yield enhanced qualifications in the direct sphere of responsibility.

4.4.4.2 Ensuring/expanding qualifications

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Not influenced or no positive effects, respectively. | Minor effects to be expected with a view to IT operation. | Significant effects to be expected with a view to IT operation. | Significant effects with IT handing and task-related further development. | Significant increase in task-related qualifications. | Significant increase in technical qualifications. |

# 4.5    On the determination of the external effects

Group 5 of the catalogue contains the criteria for evaluating external effects. These are typically impossible or at least very difficult to quantify in monetary terms. They are hence evaluated on a scale and the points awarded are justified in just the same manner as with the above-discussed benefit analyses.

By referring to the number of a criterion in the general catalogue of criteria, you will first find an explanation and/or definition of the criterion. This is then followed by the table with the scale which assigns a score for implementation.

**Structure of the WiBe E**

The general statements concerning the target groups are followed in the first category by the evaluation of the urgency to replace the old system from the customer's perspective[41]. Using the following categories, i.e. system requirements, economic effects, increased quality and performance in the overall process, and other synergies, the benefits of the new system compared to the old system from an external perspective can be evaluated.

**General statements – target groups**

Prior to determining the extended economic efficiency from the external customer's perspective, some general aspects must be addressed as follows.

### Target groups

A. Who are my customers?
B. What do my customers want?
C. Which technical equipment do my customers have?
D. What expectations exist regarding use intensity of the offer?

The result of the examination should be supported by a brief and focused outline which should primarily give a realistic estimate of development trends and potentials. The space for answering the questions should not exceed one DIN A4 page. The answers to the questions should, if possible, be supported by quantitative information in order to increase the precision and validity of the target group information.

### A.    Who are my customers?

Identification of the specific customer group for which the IT measure is designed.

### B.    What do my customers want?

Identification of the actual customer demands in order to ensure the target-group specific orientation of the services offered.

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41    In the WiBe E module, the term "customer" means the external addressees of the administrative service, i.e. citizens, companies or other public agencies / administrative units.

**C.    Which technical equipment do my customers have?**

Check whether the members of the target group have access to the technical equipment and technical capabilities which they require in order to make use of the service.

**D.    What expectations exist regarding use intensity of the offer?**

A realistic assessment of the future intensity of use of the online offer forms the basis of a forecast as to how many of the addressees will make use of the service and to what extent and how the intensity of use might generally develop in future.

## 4.5.1    Replacement urgency from the external customer's perspective

### 4.5.1.1    Urgency due to demand (intensity)

This criterion reflects the direct time pressure to replace the old system[42] from the perspective of the external customer as described in the target group statement above. Criteria which can justify immediate urgency include, for example:

- Complex system changes by external customers necessitate adaptation/replacement of the old system.

- Reliability of the old system: it must be decided whether an application (accessible to the addressee) offers a sufficient level of reliability from the addressee's perspective (for example, 99.9% availability of the offer due to redundant systems, clear status messages, completeness of the information offered).

In the event that the IT investment project is not designed to replace an old system, the urgency to introduce a new system/service can be evaluated from an external perspective.

4.5.1.1        Urgency due to demand (intensity)

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Irrelevant, or no obvious reasons for urgency. | Minor degree of urgency to replace the old system; however, not pressing. | Moderately pressing need on the part of external customers to replace the old system. | Immediate need on the part of a small number of external customers to replace the old system. | Immediate need on the part of a large number of external customers to replace the old system. | Replacement of the old system is vital from an external perspective. |

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[42] The term "old system" may also mean a non-IT measure.

## 4.5.2   User friendliness from the customer's perspective

### 4.5.2.1   Implementation of uniform and standardised access

The criterion of the "implementation of uniform and standardised access" is used to evaluate whether the IT measure contributes towards the implementation of uniform and standardised access (one-stop shop principle) which enables external users to avail themselves of various services offered by the administration via a single point of access. Criteria to be evaluated include, for example, the ease of identifying responsible officers and units as well as the degree of integration into the overall offering of a public online access.

4.5.2.1          Implementation of uniform and standardised access

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Irrelevant; no support. | Minor degree of support of uniform and standardised access. | Partial support in the implementation of uniform and standardised access. | Contributes directly, but not significantly, towards the implementation of uniform and standardised access. | Contributes directly and significantly towards the implementation of uniform and standardised access. | The new system has a key function to play for the implementation of uniform and standardised access. |

### 4.5.2.2   Increasing understandability and reproducibility

This criterion evaluates the contribution of the IT solution towards increasing the understandability and reproducibility of administrative work. One major aspect can, for example, be the transparency of administrative decisions and the communication thereof to citizens and other recipients.

4.5.2.2          Increasing understandability and reproducibility

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Irrelevant or no positive effects, respectively. | Only minor change compared to the current as-is status. | Various minor shortcomings eliminated. | Major former shortcomings eliminated. | Qualitatively directly perceivable improvement for individual addressees. | Qualitatively directly perceivable, significant improvement for many addressees. |

### 4.5.2.3   Help functions for external customer support

The criterion of the "help functions for external customer support" is also orientated towards assessing the user front-end. The evaluation focuses on the help functions offer, supporting external users in availing themselves of the service and minimising incorrect entries (and thereby also contributing to

reduced process costs). The help functions offer can include the following features:

- simple and easy-to-understand help functions
- clear and understandable error messages in the case of incorrect entries
- automatic plausibility checks
- support functions (such as service e-mail, user help-desk) with prompt reply to questions.

### 4.5.2.3    Help function for customer support

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Irrelevant, or no improvement of the help functions to be expected. | Only minor improvement of the help functions to be expected. | Individual, new functions lead to improvement. | Individual, new functions and elimination of major shortcomings lead to improvement. | Combination of several functions leads to significant improvement. | Comprehensive help function concept directly leads to significant, directly felt improvement. |

## 4.5.2.4    Benefits due to the up-to-date availability of information

The criterion of the "benefits due to the up-to-date availability of information" shows in how far the new system creates a real added value if the new system provides information (such as topical political issues, latest court decisions, water levels of rivers, etc.) faster than the old system was able to. The faster provision of information must be justifiable by an urgent interest on the part of the external customer. Up-to-date data concerning the water level of the Rhine is, for example, of essential importance for navigation, whilst up-to-date information concerning Deutsche Bahn (German rail) might be interesting for those interested in railway history, but otherwise of a relatively minor importance. Criteria for analysing an information offer can be, for example:

- Information offering by the federal government and its ministries / agencies in an integrated presentation (including references to further bodies and institutions, if necessary)
- Reference to more detailed / additional information via hyperlinks
- Latest versions of documents / forms
- Compliance with statutory information obligations
- Offering of coherent services to the general public possible (life circumstances, business episodes)

Furthermore, the following properties of information can be used as evaluation aids:

- Topicality: the information on offer represents the latest state.

- Contents: the information offered is comprehensive and exhaustive.
- Supplement: the information offered supplements the issue concerned.
- Demand: topicality of the information is necessary and in demand.

### 4.5.2.4        Benefits due to the up-to-date availability of information

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Irrelevant, or no improvement of the access to information to be expected. | Only minor improvement of the access to information. | Selected information is offered on an up-to-date basis. Moderate demand, but not a must. | Selected information is offered on an up-to-date basis. High demand, but not a must. | Comprehensive information is offered on an up-to-date basis. High demand, but not a must. | Comprehensive information can is offered on an up-to-date basis and in a user-friendly manner. Very high demand and need. |

## 4.5.3  External economic effects

### 4.5.3.1    Immediate economic benefits for customers

The criterion of the "immediate economic benefits for customers" is used to evaluate whether the IT measure will yield direct economic (monetary) benefits for customers (addressees of the service: citizens, companies). Important parameters of the evaluation are:

- Material cost reduction (avoidance of postage, paper, telephone, travel costs)
- Cost benefits due to process (time) savings
- Avoidance of misinvestment
- Increase in productivity for businesses thanks to reduced process and administrative costs

### 4.5.3.1        Immediate economic benefits for customers

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Irrelevant; no economic benefit to be expected. | Minor economic benefit, not noticeable for external customers. | Economic benefit is directly felt in individual areas. | Economic benefit is directly felt in several areas. | Immediate, wide-spread economic benefit for addressees to be expected. | Immediate, significant and wide-spread economic benefit for addressees to be expected. |

## 4.5.4 Increased quality and performance

### 4.5.4.1 Follow-up effects for communication partners

The criterion of the "follow-up effects for communication partners" is used to evaluate the agency-spanning availability (interoperability) of the IT measure. IT measures can necessitate other standard formats for data interchange and further use/processing. The more unnoticed the related secondary effects go for other communication partners (citizens, companies, other administrative units), the higher the quality of the solution.

For example, the recommendation to use Adobe PDF formats for the exchange of information facilitates the dissemination of information in a standardised and uniform format, but also poses restrictions to the further editing of documents. Only the use of a uniform PDF converter which re-converts PDF documents, for example, into a Word format permitting further editing would yield advantages for everybody with minimum follow-up effects.

4.5.4.1      Follow-up effects for communication partners

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| No positive effects on an agency-spanning level. | No improvement of information exchange felt by users to be expected. | Occasional improvement in agency-spanning information exchange to be expected. | Significant improvement with regard to one type of process can be achieved. | Significant improvement with regard to several process types can be achieved. | Significant improvement thanks to agency-spanning standardisation of data structures and process routines. |

### 4.5.4.2 External effect of the acceleration of administrative decisions

This criterion demands a qualitative assessment from the perspective of external customers and addressees. Does the IT measure offer external customers a significant acceleration of administrative work, and does it reduce the waiting time for services by the public administration? Possible criteria include, for example, the following:

- Quick identification of responsibilities
- Reducing external (mail) delivery times
- Finding of documents and files at each online workplace
- Reducing the number of interfaces
- Avoiding media inconsistency
- Shorter decision-making time

4.5.4.2    External effect of the acceleration of administrative decisions

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Irrelevant or no positive effects, respectively. | No noticeable reduction to be expected. | Significant reduction to be expected. | Reduction of the former cycle time by more than 25% to be expected. | Reduction of the former cycle time by more than 25% ensured. | Reduction of the former cycle time by more than 50% possible. |

## 4.5.4.3    Simplification/support of multi-level / multi-agency co-operation

The criterion of the "simplification/support of multi-level / multi-agency co-operation" considers the overall process and evaluates whether the use of the IT system and/or the newly designed way of performing a service will simplify and streamline multi-level/multi-agency processes (for example, avoidance of media discontinuity, harmonisation of processes between administrative units, creation of interfaces with other administrative units involved). Furthermore, it remains to be checked whether the investment will support multi-level / multi-agency co-operation. Possible criteria include the following:

- Media-consistent processing of workflows across hierarchical boundaries
- Simplification of co-signing procedures
- Support of co-operation between administrative units
- Streamlining and reducing the time of the service process
- Simplified access to necessary information/documents
- Transparent presentation of responsibilities

4.5.4.3    Simplification/support of multi-level / multi-agency co-operation

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Not improved / irrelevant. | Minor improvement. | Medium improvement in a few areas. | Medium improvement in several areas. | Significant improvement in a few areas. | Significant improvement in several areas. |

## 4.5.4.4    Increased range of services on offer

The criterion of the "increased range of services on offer (increased quality in the sense of an extended offer)" is used to evaluate whether the existing service offering is extended or whether even new types of services are created as a result of the introduction of the new IT measure and/or the newly designed way of performing a service.

### 4.5.4.4 Increased range of services on offer

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| No increase (further development or new services) in the service offering to be expected. | Further development of the existing service offering is not perceived by external customers. | Further development of the existing service offering is perceived by external customers to a minor extent only. | Further development of the existing service offering is perceived by external customers to a significant extent. | Besides the further development of the existing service offering, individual new services are created for customers. | Besides the further development of the existing service offering, comprehensive new services are created for external customers. |

## 4.5.5 Synergies

### 4.5.5.1 Use of project results for comparable projects

The use of project results for comparable projects is one goal of public investment (refer also to the Kiel Resolutions). The more plausible the concept for the use of an IT measure for comparable projects, the higher its rating. In contrast to criterion 4.4.1.3 of the WiBe Q, i.e. "pilot project nature of the IT measure", this criterion is used to evaluate the suitability of all project results rather than a specific product for re-use by third parties.

The following list contains some criteria which show whether the results of the IT measure were adapted or are suitable for re-use in other projects:

- Quality and scope of the result documentation
- Use of standard technologies and processes
- Degree of the necessary modifications (adaptation effort)
- Ways of cooperation during implementation and further development
- Implementation of the "one for all" principle for Bund Online services

### 4.5.5.1 Use of project results for comparable projects

| 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| No re-use of project results to be expected. | Minor degree of re-use of project results to be expected. | Re-use of project results in individual areas to be expected / supported. | Re-use of project results in several areas to be expected / actively supported. | Project results constitute a reference for further projects / active support. | Project results are transferred to many other projects in a generally valid manner. |

# 5    COMPILING THE DATA GATHERED IN THE ASSESSMENT OF THE ECONOMIC EFFICIENCY OF IT MEASURES

After you have compiled the specific criteria catalogue for your IT measure *(on the basis of the guide in chapter 3)* and have subsequently determined the data *(following the hints in chapter 4)*, you can now proceed and calculate the economic efficiency.

For this purpose *(as already explained in se ction 3.2)* **four calculation modules** are at your disposal *(as already explained in section 3.2)*.

● **WiBe KN**
**if necessary, supplemented by**
**WiBe KN/R**

cost and benefit criteria suitable for monetary quantification; divided into **development and operating costs**

[if necessary, supplemented by **R**isk markups for the criteria a **WiBe KN/R**].

► Refer to **section 5.1**.

All other economic efficiency considerations are dealt with within the scope of examining the urgency of the project, the evaluation of the qualitative and strategic aspects of the project and, if applicable, in the evaluation of external **e**ffects in the case of projects with external effects. These three modules lead to the **extended economic efficiency** and are based on a *benefit analysis*.

● **WiBe D**
● **WiBe Q**
● **WiBe E**

**D** Urgency of the IT measure

**Q**ualitative and strategic importance

**E**xternal effects

► Refer to **section 5.2**.

# 5.1 Calculating the economic efficiency in monetary terms

The economic efficiency as long as it can be quantified in monetary terms is calculated in the **WiBe KN** which you can supplement by risk markups for individual criteria, if necessary.

The WiBe KN supplies a **statement concerning the costs and benefits** of your IT measure **in monetary terms**. In this context, you discriminate between **development costs** (at the beginning of the project) and subsequent **operating costs and benefits**, consider the development during the course of time using the **net present value method** and distinguish between budget-relevant and non-budget relevant (*imputed*) costs and benefits. The individual steps of this approach are explained in the following sections.

## 5.1.1 Compilation of costs and benefits suitable for monetary quantification

In the first step, you compile the results of your data capturing exercise in the form of a table. This compilation contains all the once-off and operating costs as well as all the once-off and operating monetary benefit parameters which you have calculated. **The basis of your calculation must be documented in a reproducible manner in an appendix attached to the WiBe**[43].

The illustration below shows the layout and structure of this table[44]. The figures were taken, in simplified form, from an IT measure and merely serve illustrative purposes. They will also be used in the following section in conjunction with the calculation of the net present values.

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[43]     You should hence attach an appendix to your calculation, documenting the data capturing approaches and results separately for the individual criterion numbers. You can also use the note function of the IT WiBe software for this purpose.

[44]     Only the "total" and "1st year" columns are shown for reasons of space.

| Criteria (group) | TOTAL Budget-relevant | TOTAL Not budget-relevant | 1st year 2011 Budget-relevant | Not budget-relevant |
|---|---|---|---|---|
| **1   Development costs and development benefits** | | | | |
| **1.1   Development costs** | | | | |
| 1.1.1 Planning and development | - 180,000 | - 270,000 | - 120,000 | - 150,000 |
| 1.1.2 System (HW, SW, installation) | - 750,000 | - 50,000 | - 260,000 | - 20,000 |
| 1.1.3 System introduction | | - 180,000 | | - 80,000 |
| **1.2   Development benefits** | + 70,000 | | + 70,000 | |
| **Development costs / development benefits** | **- 860,000** | **- 500,000** | - 310,000 | - 250,000 |
| **2   Operating costs and operating benefits** | | | | |
| **2.1   Material costs / savings** | - 180,000 | - 280,000 | - 20,000 | - 40,000 |
| **2.2   Personnel costs / savings** | | + 2,280,000 | | + 120,000 |
| **2.3   Maintenance costs / savings** | | + 120,000 | | + 24,000 |
| **2.4   Other costs / savings** | | | | |
| **Operating costs / operating benefits** | **- 180,000** | **+ 2,120,000** | - 20,000 | + 104,000 |
| **BALANCE of development costs and operating costs / operating benefits** | **- 1,040,000** | **+ 1,620,000** | - 330,000 | - 146,000 |

Table 1: Compilation of results *(sample)* -
development costs/benefits and operating costs/benefits

This compilation of results enables a **first, preliminary statement concerning the economic efficiency of the project** . The balance of the items at the end of the table roughly indicates whether the project "pays off". Furthermore, it already shows how the project will burden or relieve the budget.

This first "extrapolation" does not consider the development of costs and benefits vs. the time as well as any risks related to the criteria. The "extrapolation" must hence be refined in another two steps.

## 5.1.2  Determining present values and net present value

The calculation of economic efficiency in monetary terms is based on the net present value method[45]. The **costs**[46] and the **monetary benefits** are **discounted** to the base year of the calculation *(i.e. the year of commencement of the IT measure)*.

The net present value of the IT measure is the **sum of all the net values** of the calculation period (typically 5 financial years). The present values, again, are obtained by **discounting** the amounts to the base year. Discounting (for calculating the net values) is described by the following formula:

$$d \; = \; \frac{1}{\left[1 + \frac{p}{100}\right]^n}$$

where  d  = discounting factor[47]
        p  = internal rate of discount
        n  = number of years between payment
              and base year.

Use the interest rate which is published (annually) by the Federal Ministry of Finance along with the personnel cost rates[48] as the internal rate of discount for discounting the individual amounts.

**The calculation is carried out in individual steps as follows:**

- From the table with the compilation of results (refer to section 5.1.1), take all the **sub-totals of the individual calculation years** for the following items:

    1       Development costs and development benefits
    2.1    Material costs and/or material cost savings
    2.2    Personnel costs
              and/or personnel cost savings
    2.3    Operating costs and/or savings
              for service and system maintenance/updating
    2.4    Other operating costs and/or savings

- From the sub-totals, calculate the corresponding **net values** and, from these, determine the **net present value components** (budget-relevant and non-budget relevant amounts) and finally the **net present value WiBe KN**.

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[45]     In contrast to traditional approaches of the cost comparison method, the net present value method considers the fact that monetary operating costs and benefits can occur at different levels during the life of an IT measure. Once-off development costs regularly occur before the benefits start to pay off.

[46]     Refer also to chapter 2.1 for the use of the term "costs".

[47]     The discounting factors can also be taken from interest tables. The software already comes with the discounting factors for all the interest rates, so that it is not necessary here to print the table.

[48]     The currently valid personnel cost rates (March 2011: 2,2% or 3,4%) can be downloaded from the website of the Federal Ministry of Finance (www.bundesfinanzministerium.de).

The table uses the figures used as an example in the previous section, and explains the calculation further.

| Criterion | TOTAL present value | Present value com-ponents | Present values 1st year **2011** | Present values 2nd year **2012** | Present values 3rd year **2013** | Present values 4th year **2014** | Present values 5th year **2015** |
|---|---|---|---|---|---|---|---|
| Discounting factor 6 % | | | 0,9434 | 0,8900 | 0,8396 | 0,7921 | 0,7473 |
| **1  Development costs and development benefits** | **- 1,238,792** | | | | | | |
| *Budget-relevant* | | - 781,954 | - 292,454 | - 489,500 | | | |
| *Not budget-relevant* | | - 456,838 | - 235,850 | - 195,800 | - 25,188 | | |
| **2  Operating costs and operating benefits** | | | | | | | |
| **2.1** Material costs / material cost savings | **- 383,504** | | | | | | |
| *Budget-relevant* | | - 149,628 | -18,868 | - 35,600 | - 33,584 | - 31684 | - 29892 |
| *Not budget-relevant* | | - 233,876 | - 37,736 | - 53,400 | - 50376 | - 47526 | - 44,838 |
| **2.2** Personnel costs / savings of personnel costs | **+ 1,861,008** | | | | | | |
| *Budget-relevant* | | 0 | | | | | |
| *Not budget-relevant* | | + 1,861,008 | + 113,208 | + 320,400 | + 503,760 | + 475,260 | + 448,380 |
| **2.3** Operating costs / savings for service / system maintenance | **+ 101,097** | | | | | | |
| *Budget-relevant* | | 0 | | | | | |
| *Not budget-relevant* | | + 101,097 | + 22,642 | + 21,360 | + 20,150 | + 19,010 | + 17,935 |
| **2.4** Other operating costs and savings | | | | | | | |
| *Budget-relevant* | | | | | | | |
| *Not budget-relevant* | | | | | | | |
| **NET PRESENT VALUE** | **+ 339,809** | | | | | | |
| *KN-h (budget-relevant)* | | - 931,582 | | | | | |
| *KN-n (not budget-relevant)* | | + 1,271,391 | | | | | |

Table 2: Compilation of present values and determination of the
net present value components and of the total net present value *(sample)*

**The  following  rule can be applied as a preliminary  WiBe decision-making aid:**

> **The project is economically  efficient if the net present value is positive** and if no risk markups were applied to the criteria.

**Otherwise the results of the supplementary risk assessment (WiBe KN/R), of the urgency examination  (WiBe D),  of the qualitative and  strategic evaluation (WiBe  Q)  and,  if applicable, of the external effects (WiBe E) must be integrated into the assessment!**

## 5.1.3  Supplementary risk assessment

A risk assessment is only necessary if

- you have, as a precautionary measure, used a *risk markup percentage* for individual **cost criteria** (of criteria groups 1 and 2). This markup is additionally included in the calculation of economic efficiency.

- you have, as a precautionary measure, used a *risk markdown percentage* for individual **benefit criteria** (of criteria groups 1 and 2). This markdown is additionally included in the calculation of economic efficiency.

> **The WiBe KN/R differs from the WiBe KN *only in those criteria* for which *higher* costs or lower monetary benefits are considered possible *("risk markup"* or *"risk markdown"*, respectively).**

The calculation is carried out analogously to the calculation of the net present value[49] *(refer to section 5.1.2)*.

If, for example, you assume a trend that can be considered to be realistic for a *cost criterion* as shown in column (2) of the table below, and further if you assume the risk markup factors shown in column (3) in the case of unfavourable development, the following amounts will then be considered when calculating the net present value WiBe KN (column 4) and the net present value, including risk assessment WiBe KN/R (column 5):

| (1) Year | (2) Costs determined | (3) Risk markup | (4) ... included in the **WiBe KN** | (5) ... included in the **WiBe KN/R** |
|---|---|---|---|---|
| 1 | - 40,000 | 0 % | *same as column (2)* | - 40,000 |
| 2 | - 60,000 | 5 % | *same as column (2)* | - 63,000 |
| 3 | - 60,000 | 10 % | *same as column (2)* | - 66,000 |
| 4 | - 60,000 | 15 % | *same as column (2)* | - 69,000 |
| 5 | - 60,000 | 20 % | *same as column (2)* | - 72,000 |

If you assume a trend that can be considered to be realistic for a *benefit criterion* as shown in column (2) of the table below, and further if you assume the risk markdown factors shown in column (3) in the case of a negative trend, the following amounts will then be considered when calculating the net present value WiBe KN (column 4) and the net present value, including risk assessment WiBe KN/R (column 5):

| (1) Year | (2) Monetary benefits determined | (3) Risk markup | (4) ... included in the **WiBe KN** | (5) ... included in the **WiBe KN/R** |
|---|---|---|---|---|
| 1 | + 40,000 | 0 % | *same as column (2)* | + 40,000 |
| 2 | + 60,000 | 5 % | *same as column (2)* | + 57,000 |
| 3 | + 60,000 | 10 % | *same as column (2)* | + 54,000 |
| 4 | + 60,000 | 15 % | *same as column (2)* | + 51,000 |
| 5 | + 60,000 | 20 % | *same as column (2)* | + 48,000 |

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[49] This calculation with differentiated risk markup and risk markdown factors (which you can also generally pre-define as defaults for certain classes of IT measures) is integrated in a clear and easy-to-use form in the software.

## 5.1.4  Summary of results concerning economic efficiency in monetary terms

The calculation of the economic efficiency of your project in monetary terms (WiBe KN and WiBe KN/R) ends with a **summary of results** . The table refers to the example discussed in the previous sections and illustrates the structure and layout of the summary.

| | TOTAL | | 1st year **2011** | 2nd year **2012** | 3rd year **2013** | 4th year **2014** | 5th year **2015** |
|---|---|---|---|---|---|---|---|
| Amounts <u>without</u> discounting: 1 Development costs and development benefits | - 1,360,000 | | | | | | |
| *Budget-relevant* | | - 860,000 | - 310,000 | - 550,000 | | | |
| *Not budget-relevant* | | - 500,000 | - 250,000 | - 220,000 | - 30,000 | | |
| 2 Operating costs and operating benefits | + 1,940,000 | | | | | | |
| *Budget-relevant* | | - 180,000 | - 20,000 | - 40,000 | - 40,000 | - 40,000 | - 40,000 |
| *Not budget-relevant* | | + 2,120,000 | + 104,000 | + 324,000 | + 564,000 | + 564,000 | + 564,000 |

| | |
|---|---|
| **NET PRESENT VALUE** (WiBe KN) | **+ 339,809** |
| *KN-h (budget-relevant)* | - 931,582 |
| *KN-n (not budget-relevant)* | + 1,271,391 |

| | |
|---|---|
| **WiBe KN/R** (WiBe KN <u>including</u> risk assessment) | + 292,199 |
| *KN/R-h (budget-relevant)* | - 931,582 |
| *KN/R-n (not budget-relevant)* | + 1,223,781 |

Table 3: Summary of results from WiBe KN and WiBe KN/R *(sample)*

**The following can be applied as a preliminary decision guidance:**

► **The project is economically effective in monetary terms if the net present value is positive.**

In this case, you can do without the WiBe D (urgency criteria), WiBe Q (qualitative and strategic criteria) and WiBe E (external effects) in the extended economic efficiency analysis.

It is, however, vital to pay special attention to potential risk factors during the further course of the project and to implement suitable precautions in order to eliminate these risks to the maximum extent possible.

► **The project is economically not effective in monetary terms if the net present value is negative.**

In this case, the monetary calculation **must be supplemented** by the extended economic efficiency analysis **WiBe D, WiBe Q and WiBe E, if applicable**.

## 5.1.5 Stability value as an interpretation and decision-making aid

- omitted in edited English version 4.1 -

## 5.1.6 On the updating of the WiBe during the lifecycle of the project (version concept)

You can present a WiBe at different points in time during the course of your project *(see page 11, section 2. 1.: On the integration   of econom ic efficiency assessments into IT phase models)*. Four versions of the WiBe can, for example, originate during the course of a larger project:

- **Version 1** as a "preliminary costing" document
  during the preparation of the **rough concept**

- **Version 2** as an "intermediate costing" document
  during the preparation of the **detailed concept**

- **Version 3** as a "release costing" document
  immediately before **introduction**, if necessary

- **Version 4** as a "success monitoring" document
  during the **application / use phase**

WiBe versions 2 to 4 are each based on the preceding analyses and calculations; the procedure is the same for all WiBes. For each version, you will have to check and update the sums and assessments calculated and completed up to this point.

In the case of projects covering a longer period of time, the individual versions will originate in different years. Several years can lapse between version 1 (from the *year the project starts* ) and subsequent versions. However, the basic form of the net present value method nevertheless discounts all the amounts to the start year.

We hence recommend making use of an option from version 2 onwards which was implemented for the first time in the WiBe 21 software and which is based on the so-called "crawling peg principle".

- In WiBe version 2 and higher, it is possible to **replace the ori ginal start year by another calculation year** *(i.e. the present year)*.

All the amounts from the calculation year *(i.e. the present year)* until the end of the project are then discounted to the calculation year using the defined discount rate. All the amounts before the calculation year are compounded to the calculation year using a compounding rate.

The discount and compounding rates are generally identical.

**The pictures illustrate the principle:**

- **Version 1** is set up in the year **2011**;
  all the amounts are discounted to the base year 2011.



| **WiBe version 1 in the year 2011**: |
| (base year of the project) |

| 2011 | 2012 | 2013 | 2014 | 2015 |
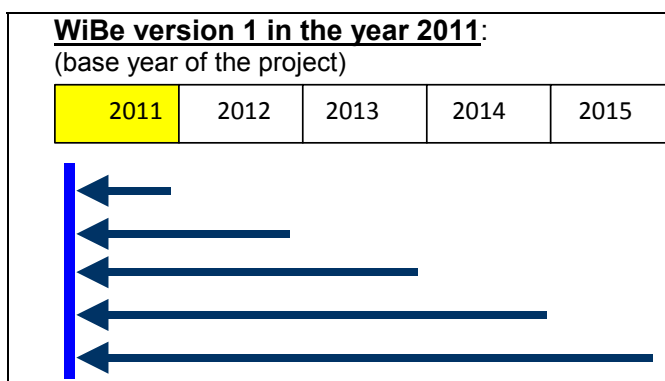
- A **version 2** is set up in the year **2013**;
  The calculation year of version 2 is the current year – all the amounts from the years 2013 to 2015 are discounted to the year 2013; all the amounts from the years 2011 and 2012 are compounded to the year 2013.



| **WiBe version 2 in the year 2013**: |
| (2011 as the base year of the project) |

| 2011 | 2012 | 2013 | 2014 | 2015 |
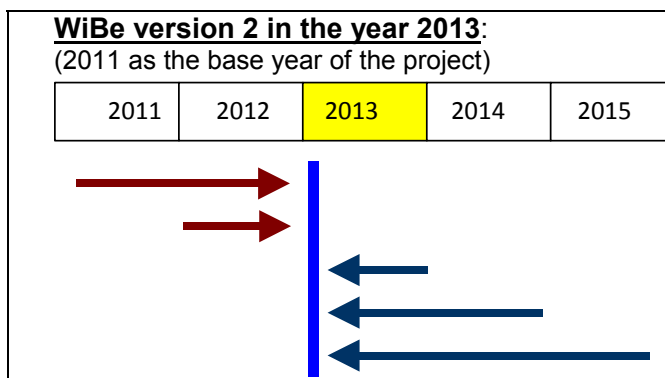
# 5.2    Calculating the extended economic efficiency

The extended economic efficiency analysis focuses on the **qualitative aspects and effects** of the project. In the interest of a complete WiBe, this calculation should always be carried out. It is **mandatory if** the monetary WiBe KN related to the net present value suggests a negative intermediate assessment of the project.

In methodological terms, the extended economic efficiency analysis follows the **benefit analysis** which is applied to the urgency (WiBe D), the qualitative and strategic importance (WiBe Q) and, **if applicable**, to the external effects (WiBe E) of the project.

## 5.2.1    Calculating the urgency of the project

Group 3 of the catalogue of criteria *(refer to chapter 3.1)* covers the criteria which can be used to assess the urgency. The evaluation is based on a scale of 10. Please refer to chapter 4.3 for details.

> ► If you have awarded 10 **points** in the evaluation of criterion **3.2.1 Compliance with law**, the IT measure <u>must</u> be generally carried out even if its economic efficiency could not be demonstrated in monetary terms.

The **urgency of the project is determined** in two separate steps as follows.

- Justify the **score on the scale of 10** which you have awarded to every single criterion by reference to chapter 4.3. A criterion which is *not* relevant for your project receives "0" points.

- In order to calculate the urgency, multiply the score of each criterion by its weight and add up the results.

The **weight of the individual criteria** reflects their relative importance and is **set at a fixed value by default**[52]. The weights are added up to 100, so that the maximum score possible totals 1000. The **urgency of the project** is obtained by dividing the score by ten, i.e. it ranges between 0 and 100.

---

[52]    The weights can be changed under special conditions, for example, if a criterion is not relevant for all the IT measures of your organization. The sum of the weights must then also total 100.

The table below gives an example which illustrates the procedure.

| No. | Criterion | Weight | Points | Total |
|-----|-----------|--------|--------|-------|
| 3.1.1 | **Support continuity for the old system** | **5** | 4 | 20 |
| 3.1.2 | **Urgency to replace the old system due to logistic/capacity aspects** | **5** | 8 | 40 |
| 3.1.3.1 | **Bugs, errors and downtime** | **10** | 6 | 60 |
| 3.1.3.2 | **Service problems, personnel bottlenecks** | **10** | 6 | 60 |
| 3.1.4.1 | **Limits of expansion / upgrading** | **5** | 5 | 25 |
| 3.1.4.2 | **Interoperability, present/future interface problems** | **5** | 6 | 30 |
| 3.1.4.3 | **Operability and ergonomics** | **10** | 6 | 60 |
| 3.2.1 | **Compliance with laws** | **20** | 0 | 0 |
| 3.2.2 | **Fulfilment of data protection/security requirements** | **5** | 4 | 20 |
| 3.2.3 | **Correct procedures and work processes** | **15** | 6 | 90 |
| 3.2.4 | **Compliance with requirements and recommendations** | **10** | 4 | 40 |
| | Total | 100 | | 445 |
| | **Urgency value** | | | **44** |

**WiBe D**: Urgency analysis *(example)*
Calculating the urgency value

## 5.2.2 Calculating the qualitative and strategic importance of the project

Group 4 of the catalogue of criteria *(refer to chapter 3.1)* covers the criteria which can be used to assess the qualitative and strategic importance of a project. The evaluation is based on a scale of 10. Please refer to chapter 4.4 for details.

► If you have awarded 10 **points** in the evaluation of criterion **4.1.1 Importance within the IT framew ork concept**, the IT measure can be carried out even if its economic efficiency could not be demonstrated in monetary terms.

The **qualitative and strategic importance the project is determined** in two separate steps as follows.

* Justify the **score on the scale of 10** which you have awarded to every single criterion by reference to chapter 4.4. A criterion which is *not* relevant for your project receives "0" points.

- In order to calculate the qualitative and strategic importance, multiply the score of each criterion by its weight and add up the results.

The **weight of the individual criteria** reflects their relative importance and is **set at a fixed value b y default**[53]. The weights are added up to 100, so that the maximum score possible totals 1000. The **quality value of the measure** is obtained by dividing the score by ten, i.e. it ranges between 0 and 100.

The table below gives an example which illustrates the procedure.

| No. | Criterion | Weight | Points | Total |
|-----|-----------|--------|--------|-------|
| 4.1.1 | Relevance within the IT framework concept | 5 | 6 | 30 |
| 4.1.2 | Integration into the IT landscape of the federal administration in general | 5 | 2 | 10 |
| 4.1.3 | Pilot project character | 5 | 2 | 10 |
| 4.1.4 | Use of existing technologies by other organizations | 5 | 5 | 25 |
| 4.1.5 | Platform/manufacturer-independence | 10 | 6 | 60 |
| 4.2.1 | Improved job performance | 15 | 6 | 90 |
| 4.2.2 | Acceleration of work procedures and processes | 10 | 4 | 40 |
| 4.2.3 | Standardised and uniform administrative work | 10 | 6 | 60 |
| 4.2.4 | Image improvement | 5 | 4 | 20 |
| 4.3.1 | Provision of information for decision-makers and controllers | 10 | 6 | 60 |
| 4.3.2 | Support of the decision-making process / leadership tasks | 10 | 4 | 40 |
| 4.4.1 | Attractiveness of working conditions | 5 | 8 | 40 |
| 4.4.2 | Ensuring/expanding qualifications | 5 | 4 | 20 |
| | **Total** | **100** | | **505** |
| | **Quality value** | | | **50** |

**WiBe Q**: Qualitative and strategic importance *(example)*

## 5.2.3  Calculating the external effects of the measure

Group 5 of the catalogue of criteria *(refer to chapter 3.1)* covers the criteria which can be used to assess the external effects of a measure. The evaluation is based on a scale of 10. Please refer to chapter 4.5 for details.

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[53]  The weights can be changed under special conditions, for example, if a criterion is not relevant for all the IT measures of your organization. The sum of the weights must then also total 100.

The **external effects of the measure are d etermined** in two separate steps as follows.

- Justify the **score on the scale of 10** which you have awarded to every single criterion by reference to chapter 4.5. A criterion which is *not* relevant for your project receives "0" points.

- In order to calculate the criteria of the external effects, multiply the score of each criterion by its weight and add up the results.

The **weight of the individual criteria** reflects their relative importance and is **set at a fixed value b y default[54]**. The weights are added up to 100, so that the maximum score possible totals 1000. The **quality value of the project** is obtained by dividing the score by ten, i.e. it ranges between 0 and 100.

The table below gives an example which illustrates the procedure.

| No. | Criterion | Weight | Points | Total |
|-----|-----------|--------|--------|-------|
| 5.1.1 | **Urgency due to demand intensity** | **10** | 6 | 60 |
| 5.2.1 | **Implementation of a uniform and standardised access** | **5** | 6 | 30 |
| 5.2.2 | **Increasing understandability and reproducibility** | **5** | 2 | 10 |
| 5.2.3 | **Help function for customer support** | **5** | 5 | 25 |
| 5.2.4 | **Benefits due to the up-to-date availability of information** | **10** | 6 | 60 |
| 5.3.1 | **Immediate economic benefits for customers** | **25** | 4 | 100 |
| 5.4.1 | **Follow-up effects for communication partners** | **5** | 4 | 20 |
| 5.4.2 | **Externally noticed speeding up of administrative decisions** | **10** | 6 | 60 |
| 5.4.3 | **Simplification/support of multi-level / multi-agency co-operation** | **10** | 4 | 40 |
| 5.4.4 | **Increased range of services on offer** | **5** | 6 | 30 |
| 5.5.1 | **Use of project results for comparable projects** | **10** | 6 | 60 |
| | **Total** | **100** | | **495** |
| | **External value** | | | **49** |

**WiBe E**: External effects *(example)*

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## 5.2.4 Overall interpretation of the results related to monetary and extended economic efficiency

The calculation of the extended economic efficiency of your project (WiBe D, WiBe Q and, if applicable, WiBe E) concludes with a **summary of all results so far available**. The table refers to the example discussed in the previous sections and illustrates the structure and layout of the summary.

| | TOTAL | Of which |
|---|---|---|
| Amounts <u>without</u> discounting: | | |
| 1   Development costs and development benefits | - 1,360,000 | |
| *Budget-relevant* | | - 860,000 |
| *Not budget-relevant* | | - 500,000 |
| 2   Operating costs and operating benefits | + 1,940,000 | |
| *Budget-relevant* | | - 180,000 |
| *Not budget-relevant* | | + 2,120,000 |

| | | |
|---|---|---|
| **NET PRESENT VALUE (WiBe KN)** | **+ 339,809** | |
| *KN-h (budget-relevant)* | | - 931,582 |
| *KN-n (not budget-relevant)* | | + 1,271,391 |

| | | |
|---|---|---|
| **WiBe KN/R** (WiBe KN <u>including</u> risk markup factors) | + 292,199 | |
| *KN/R-h (budget-relevant)* | | - 931,582 |
| *KN/R-n (not budget-relevant)* | | + 1,223,781 |

| | |
|---|---|
| **Urgency value** | **44** |

| | |
|---|---|
| **Quality value** | **50** |

| | |
|---|---|
| **External value** | **48** |

Table 4: Overall compilation of the WiBe results *(sample)*

The final **evaluation of the economic efficiency** of the project is based on the **net present value** (or the components of the net present value, respectively), the **urgency, the quality and, if applicable, the external value**.

The <u>BASIC RULE</u> of the economic efficiency evaluation means:

> ► **The project is economically effective in monetary terms if the net present value WiBe KN is positive.**

### The underlined differentiated view is represented in the overview below.

❶ **WiBe KN > 0** (net present value is positive)
**The project is economically efficient**

☐ **WiBe KN/R < WiBe KN**
Controlling impulse to those responsible for the project:
The criteria with risk markup must be considered with priority during the further course of the project work.

☐ **WiBe KN h < 0** (or more generally[55] KN h < KN n)
Controlling impulse to those responsible for the project:
The technical concept must be examined with regard to identifying options and possibilities which have not been used so far,

- in order to reduce budget-relevant development and/or operating costs, or
- in order to make appropriate decisions, so that benefits so far classified as non-budget relevant become budget-relevant *("benefit collection")*. **This is particularly applicable to projects where personnel cost reductions were identified.**

❷ **WiBe KN < 0** (net present value is negative)
**The project can be economically efficient in the broader sense under *special conditions***

☐ **Criterion 3.2.1**
**"Compliance with law" was given 10 points, MUST condition:**
The IT measure must be carried out.

Controlling impulse to those responsible for the project:
The technical concept must show that the alternative offering the most favourable costs was chosen for the specified functionality.

☐ **Criterion 4.1.1**
**"Relevance within the IT framework concept" was given 10 points, quasi-must condition:** The IT measure can be carried out[56].

Controlling impulse to those responsible for the project:
The technical concept must show that the alternative offering the most favourable costs was chosen for the specified functionality.

☐ **WiBe D** and/or **WiBe Q** and/or **WiBe E with a high value (>50)**
**CAN condition**: The IT measure can be carried out. A clear, generally valid

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[55]  **WiBe KN h** refers to the net present value component which results from the present values of all **budget-relevant** amounts. **WiBe KN n** refers to the net present value component which results from the present values of all **non-budget relevant** amounts.

[56]  In this case, you will have to demonstrate in more detail that otherwise other, important projects cannot be carried out (i.e. if this project would be postponed).

decision-making rule does not exist for this case. However, a detailed justification is mandatory. The specific decision in each case is also dependent upon the absolute amount of the negative net present value and its relation to the (budget-relevant) total costs of the project.

Controlling impulse to those responsible for the project:
The technical concept must be examined *("value analysis")* with a view to reducing development and/or operating costs.

Controlling impulse to agency management:
It must be checked, in particular, whether the funds applied for with regard to this project could be applied in an economically more effective manner to other projects and/or uses.

❒ *Special case***: WiBe KN h > 0**
The IT measure can be carried out under certain conditions.

Controlling impulse to those responsible for the project:
The technical concept must be examined in order to ensure the economically efficient use of the agency's own funds earmarked for the development *and* operating phase of this project.

Controlling impulse to agency management:
It must be checked, in particular, whether the manpower required for the IT measure (and/or its future operation) can be deployed in an economically more effective manner in other projects and/or uses.

The setting up of these decision-making aids concludes the economic efficiency analysis of your project in the present version. The **results** must be **documented** in an appropriate format and prepared as a decision-making base document.

**❸    Notes concerning the prioritisation of projects on the basis of the WiBe ratios**

You can use the results of the WiBe in order to establish an overall ranking for many projects[57]. The following should be noted in this context:

❒    Prioritising (ranking) is *by default* carried out on the basis of the **WiBe KN ratio**.

❒    Diverging from this standard ranking, prioritising can also be carried out *in special cases* on the basis of the

    ❒    **WiBe KN h[58]** ratio if
    budget bottlenecks must serve as a first selection criterion,

    ❒    **WiBe D[59]** ratio if
    serious functional shortcomings of the existing IT support must be eliminated,

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[57]    For this purpose, the current "WiBe 21" software offers you the "Analysis" module with several ranking lists and a graphic presentation format as a portfolio rendering of the most important projects.

[58]    WiBe KN h refers to budget-relevant costs and benefits only.

[59]    WiBe D refers to the urgency criteria only.

❏ **WiBe Q**[60] ratio if
the priority is to improve the quality of the existing IT support
for internal addressees ("customers"),

❏ **WiBe E**[61] ratio if
the existing IT support for external addressees is to be
improved.

❏ The **"intersection line"** *(starting, continuing or stopping, interrupting a project)* is then a function of

❏ **financial (budget) constraints**
(aggregate of allocated budget funds from the string of projects, if
necessary, selected according to budgetary items)

❏ **manpower constraints**
(aggregate of allocated manpower capacities
from the string of projects)

---

[60]   WiBe Q refers to the qualitative and strategic criteria only.

[61]   WiBe E refers to the criteria with external effects only.