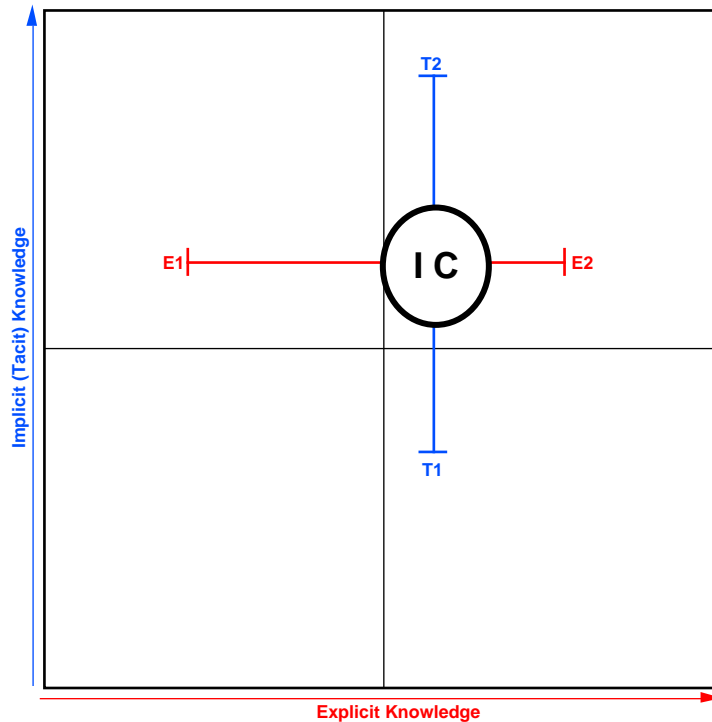


Intellectual Capital PORTFOLIO **ICP**



Intellectual Capital (IC) is widely recognised to be an important innovation driver and a key resource for each type of organisation*. Stakeholders (especially investors) ask in these days for intellectual capital statements in addition to the conventional financial reports. Thus, practicable tools are needed to include intangibles in the organisation's performance reports.

Intellectual Capital Portfolio (ICP) is a derivative of the Portfolio Analysis introduced by Boston Consulting Group 1974. ICP declares the organisational intellectual capital status compared to an aspired goal (= internal benchmark). Its quantified results allow further *best in class assessments* as seen in sustainability report reviews (= external benchmark).

** In this paper, organisation is used as a general term for a private enterprise, a public institution, a part of a group or any other organisational unit which intellectual capital statements are developed for.*

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^(*) Pos. 1.2. - 1.4. is copied with the friendly permission by the leading authors Profs. Jan Mouritsen & Per Nikolaj Bukh from ***Intellectual Capital Statements - The New Guideline; Danish Ministry of Science, Technology and Innovation. ISBN 87-91258-50-2***

^(*) The mentioned knowledge management model has been modified with the friendly permission of Prof. Gilbert Probst to serve as framework for the knowledge BSC application



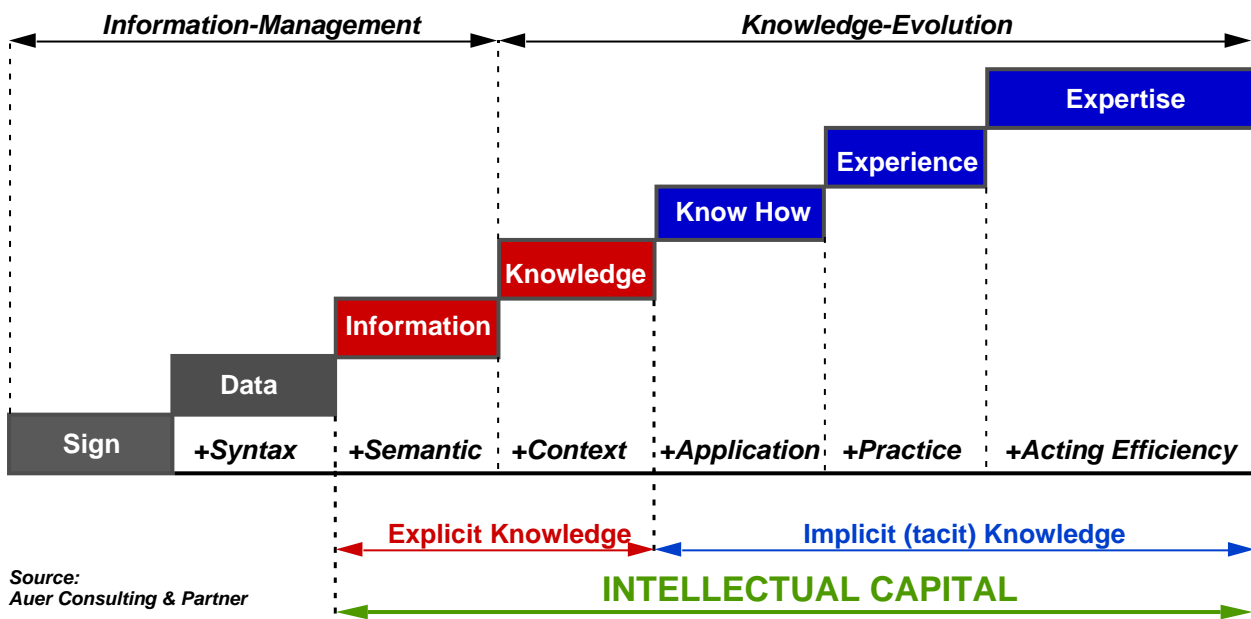
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1. Background Information on Intellectual Capital

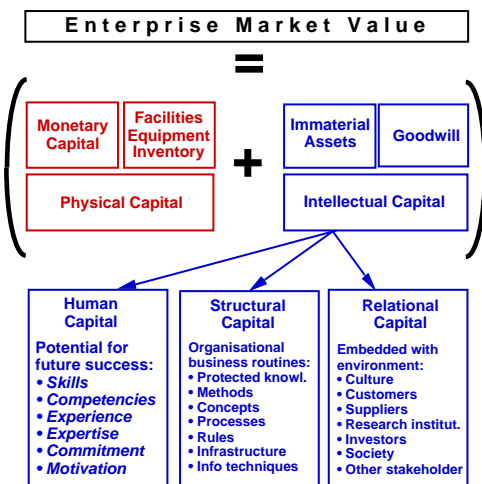
1.1. Intellectual Capital (IC): Fundamentals

The total of the relevant organisational knowledge is often called "the intellectual capital". IC not only includes knowledge as a single conception (as a human's individual resource), but as knowledge of an organisation appearing in patents, in specific process models and routines. Even the organisation's culture as well as customer- and supplier relationships belong to the intellectual capital. The knowledge evolution process demonstrates the composition of IC:

Figure 1: The Knowledge Evolution Process



Source:
Auer Consulting & Partner



Intellectual Capital is often described as the difference between the market- and the booking value of an enterprise. It is undisputed that the intellectual capital represents the most important asset of a knowledge based organisation. This value is usually not declared in annual reports and does not appear in conventional analysis models. Intellectual Capital must be converted into knowledge resources to formulate an intellectual capital statement. The most common classifications or types of knowledge resources are technologies, processes, stakeholders and (of course) employees. The three components of intellectual capital are interactive: The human capital raises the the structural capital; both together generate the relational capital.

raises the the structural capital; both together generate the relational capital.

1.2. Introduction: Why Intellectual Capital statements?*(1)

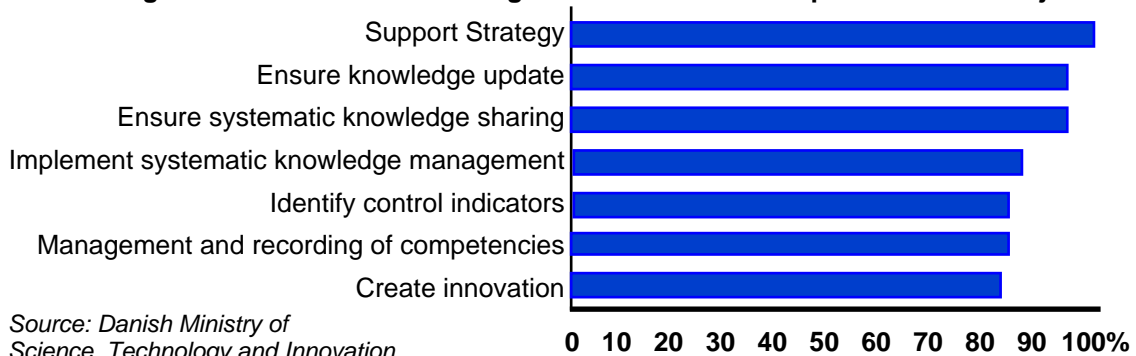
An intellectual capital statement is an integrated part of organisation's knowledge management. It identifies the organisation's knowledge management strategy, which includes the identification of its objectives, initiatives and results in the composition, application and development of the organisation's knowledge resources. It also communicates this strategy to the organisation and the world at large.

The intellectual capital statement is therefore a management tool used to generate value in an organisation and a communication tool to communicate to employees, customers, co-operative partners and investors how a organisation generates value for them. The intellectual capital statement, like any other accounting statement, monitors initiatives and results and shows whether an organisation is developing its resources in the right direction. In this case, intellectual capital statements show whether an organisation has improved the development and management of its knowledge resources.

1.3. Intellectual capital statements' internal objectives*(1)

Intellectual capital statements are a part of organisations' knowledge management strategy. If an organisation does not manage its knowledge resources, working with intellectual capital statements can develop this resource. If knowledge resources are already being managed in one form or another, working with intellectual capital statements can help systemise knowledge management, add other relevant initiatives and through this develop a proper strategy for knowledge management. Organisations with experience in preparing intellectual capital statements have seen their primary management role as being to gain control of organisation strategy knowledge management. They have been looking for a coherent update of their knowledge and a systematic approach to managing and to sharing knowledge, which supports their organisation's general strategy. See figure 2.

Figure 2:
Proportion of organisations with the following internal intellectual capital statement objectives:



Source: Danish Ministry of Science, Technology and Innovation
 Profs. Jan Mouritsen & Per Nikolaj Bukh

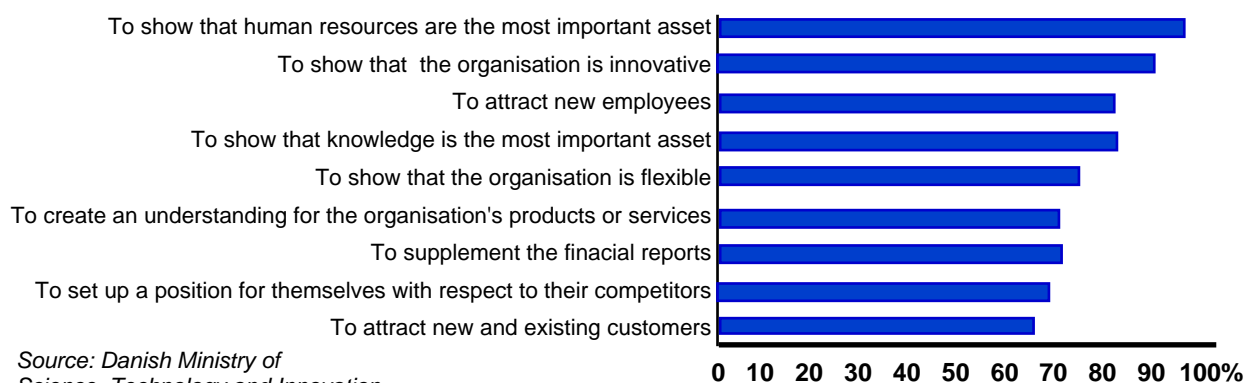
1.4. Intellectual capital statements' external objectives^(*)

Intellectual capital statements can also be used to communicate knowledge management's objectives, initiatives and results to a number of target groups:

- **To the organisation** it communicates identity, who 'we' are, and what the development strategy is.
- **To potential employees** it gives an impression of what it is like to be an employee including how their resources will be used and developed.
- **To customers** it sends a signal of what it is like to be a customer, including into the future.
- **To co-operative partners** it illustrates what it is like to co-operate with the organisation.
- **To investors** it documents the organisation's ability to survive future competition.
- **To citizens** it explains what is being done to secure the best possible services for users of public services for example.
- **To the political system** it gives insight into how the organisations are run, allowing politicians to better estimate its competencies and quality.

Organisations therefore become more visible and probably more interest to these target groups. External intellectual capital statements can in other words make it easier to get an organisation's interests known and therefore attract new employees, customers or even investors. Most organisations that have already published intellectual capital statements state that one of the statement's objectives is to communicate the organisation's 'invisible assets' and attract more employees and customers. These organisations often want to show that they are innovative and flexible, and that knowledge and human resources are important assets. See figure 3.

Figure 3:
Proportion of organisations with the following intellectual capital statement objectives:



Source: Danish Ministry of
 Science, Technology and Innovation
 Profs. Jan Mouritsen & Per Nikolaj Bukh

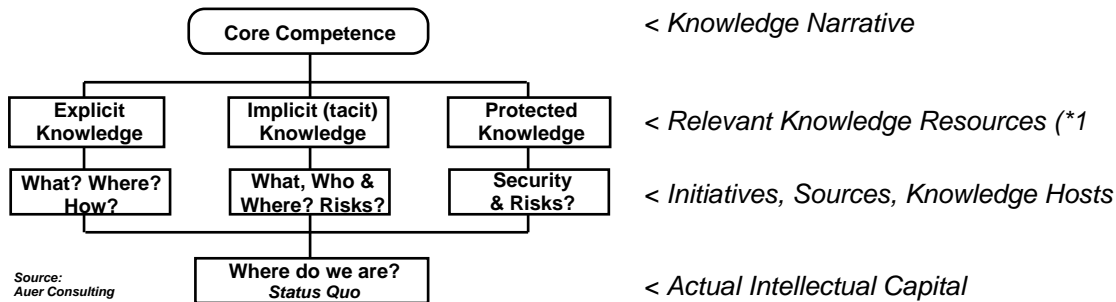
2. Managing Intellectual Capital

2.1. Analysing Status Quo

Each organisation has to determine individually, which knowledge initiatives are important and necessary to treat for its operations. This presupposes the concentration on key factors and includes the courage to discharge obsolete knowledge.

This sounds simple but is in fact often underestimated. A useful way is breaking down first the organisation's core competencies into knowledge resources. The next step includes the discovery of knowledge sources, hosts and risks.

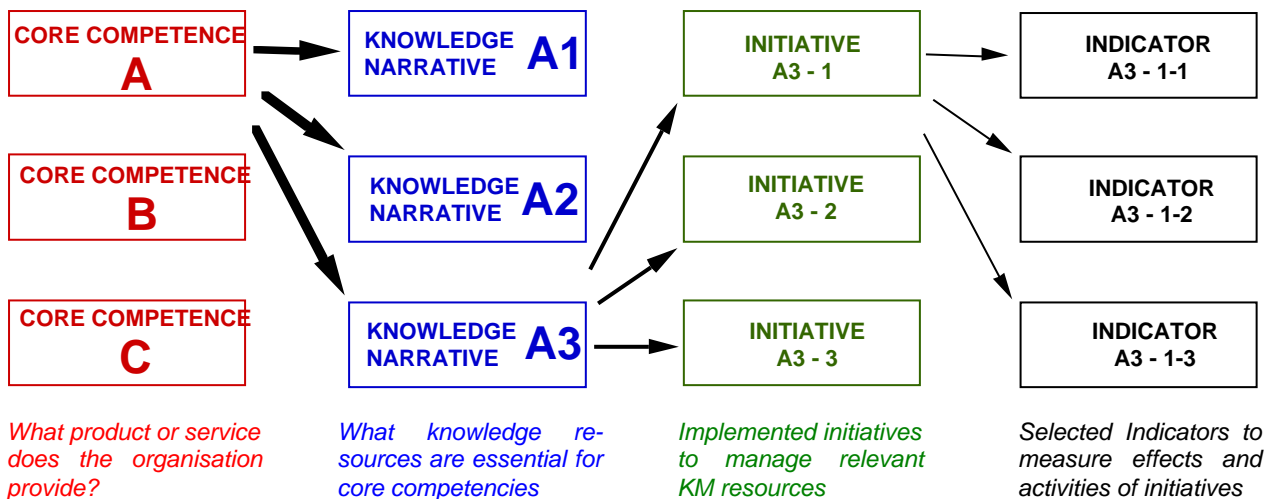
Figure 4: Evaluating the Organisational Knowledge



(*1 = Protected Knowledge (Patents, Secrecy) is part of the "Explicit Category", but treated separately

Since Knowledge cannot be measured, it needs to be dismantled to predicable indicators as shown in figure 5:

Figure 5: The Intellectual Capital Interaction Model



The accuracy of the above model depends on the quota of intangibles involved in specific products or services. Evaluating indicators requires considerable discipline to avoid misleading conclusions.

2.2. Definition of Indicators

Indicators are *Intellectual Capital Statement Figures*. They serve to assess the organisation's knowledge work and to raise external IC reports. Those figures should be accessible in the organisation, reliable, calculable and reportable over time.

Selecting meaningful indicators for IC is sometimes tricky and requires considerable discipline. A pragmatic approach is to define a sub-goal of the knowledge initiative, since reaching for a specific goal leads always to alteration(s), which in most cases can be measured. In the work to find indicators, it may be necessary to reconsider a choice of an initiative.

If an indicator belonging to an initiative cannot be found, the initiative is often kept in general terms and thus, useless. The same applies to indicators like "Average skills training per employee": This gives an idea about the organisation's investment in education, but doesn't inform about the scope and quality of the training.

The big challenge is the quantification of intangibles, since their effect and resource figures are loosely linked to initiatives. The below checklist is one possible answer to this challenge:

- 1 Set-up of an interdisciplinary team (1 representative from each department involved in the relating knowledge narrative > Figure 5)
- 2 Define a quantitative sub-goal of the initiative (As good as necessary, not as good as possible!)
- 3 Evaluate alteration(s) generated by actions to reach the defined sub-goal
- 4 Define the aspired alteration(s) and score the expected outcome with value-max = 10
- 5 Evaluate the actual status
- 6 Find a team consent, where the actual status is (referring to value-max on "1 to 10-scale")

Example: *(Operational knowledge goal)*

Knowledge Narrative: Multinational enterprise needs to improve insight in a critical market immediately

Proposal **Initiative A3-1:** Increase Field Force > Easy to do, but too expensive > Not realistic

Proposal **Initiative A3-2:** Establish "Lesson Learned Program" > Useful, but takes too long

Proposal **Initiative A3-3:** Embed customers with Newsletter and Helpline communication > Accepted

Sub-Goal A3-3-1: Number of direct customer contacts = 2000/year (= value max 10)

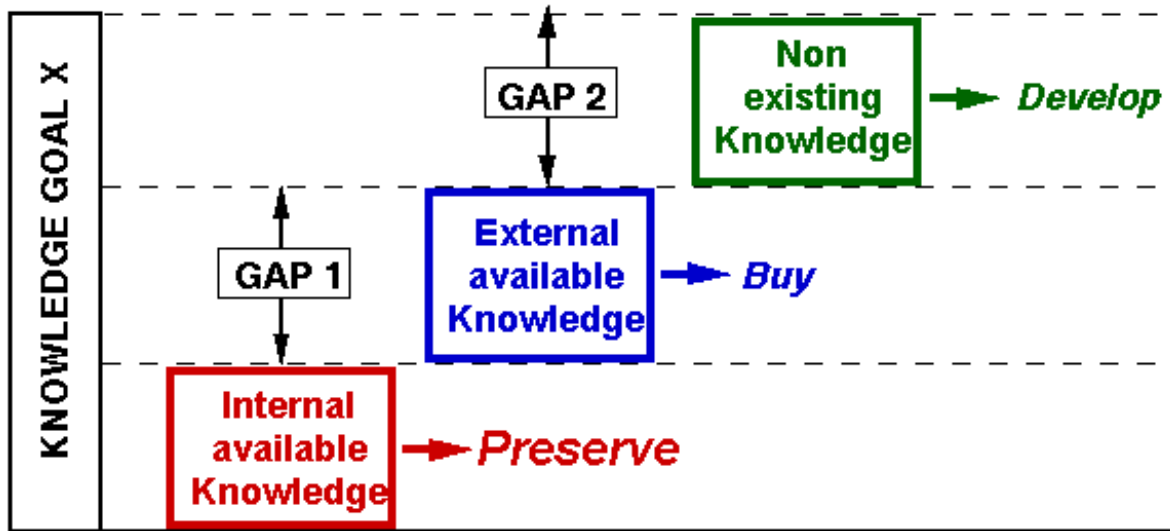
Actual status: Present direct customer contacts = 600/year (= actual value 3)

Additional indicator examples are listed in APPENDIX I, page 11 - 13

2.3. Determining Knowledge Goals

Innovations, organisational changes, business re-engineering etc. have a direct impact to the organisational knowledge. Thus, intellectual capital needs to be adapted to overcome the detected knowledge gaps as illustrated in figure 6.

Figure 6: Discoverage of Knowledge Gaps



Source: Wissenmanagen, Probert et al. ISBN 3-409-3917-X

Knowledge goals are categorised in *Normative*, *Strategic* and *Operational*, where normative goals deal with superior items like the organisation's culture and the management's commitment to knowledge work. Strategic and operational goals refer to a selected knowledge initiative and have to be converted into indicators.

Once the indicators have been determined, it is necessary to separate them in an EXPLICIT and an IMPLICIT group to get two operand axes for a portfolio matrix. Each indicator has to be weighted and multiplied with a common max-value. The sums of all indicator values reflect to the aspired IC alterations for the selected initiative.

Figure 7: Calculating a knowledge goal (= Internal benchmark for each initiative)

Explicit Knowledge			
Indicator	Weight	Max.	Total.
1	5	10	50
2	3	10	30
3	4	10	40
4	3	10	30
5	5	10	50
Sum of Explicit Knowledge			200

100% of explicit knowledge = 200
1% of explicit knowledge = 2

Implicit (tacit) Knowledge			
Indicator	Weight	Max.	Total.
1	4	10	40
2	4	10	40
3	5	10	50
4	3	10	30
5	3	10	30
Sum of Implicit Knowledge			190

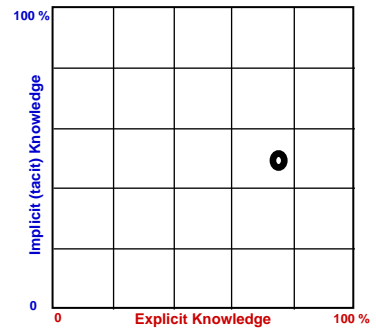
100% of implicit (tacit) knowledge = 190
1% of implicit (tacit) knowledge = 1.9

2.4. Raising the Intellectual Capital Portfolio (ICP)

The ICP shall demonstrate the organisation's actual IC score compared to its defined IC objective. The portfolio co-ordinates of each knowledge category is the total of all initiative scores divided by the number of initiatives:

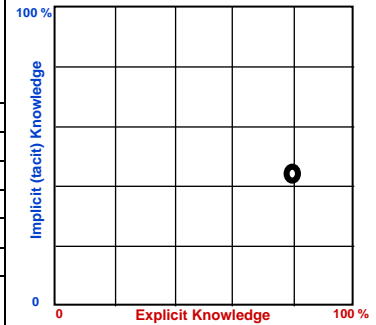
<i>Initiative</i>	Explicit Score in %	Implicit Score in %
1	95	10
2	70	60
3	80	50
4	65	70
Total	310	190
/ 4 =	77.5%	47.25%

Resulting Portfolio >



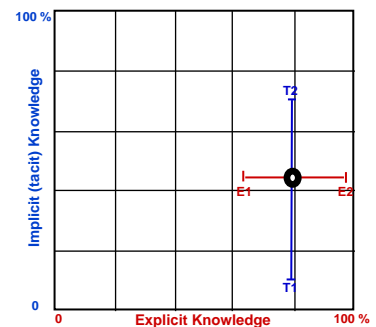
The above example pre-supposes, that all initiatives are of similar importance. The consideration of different weights for initiatives leads to more accurate results:

<i>Initiative</i>	Weight	Explicit Score in %	Explicit Final Score	Implicit Score in %	Implicit Final Score
1	5	95	475	10	50
2	4	70	280	60	240
3	4	80	320	50	200
4	3	65	195	70	210
Total	16		1270		700
/ 16 =			79.4%		43.75%



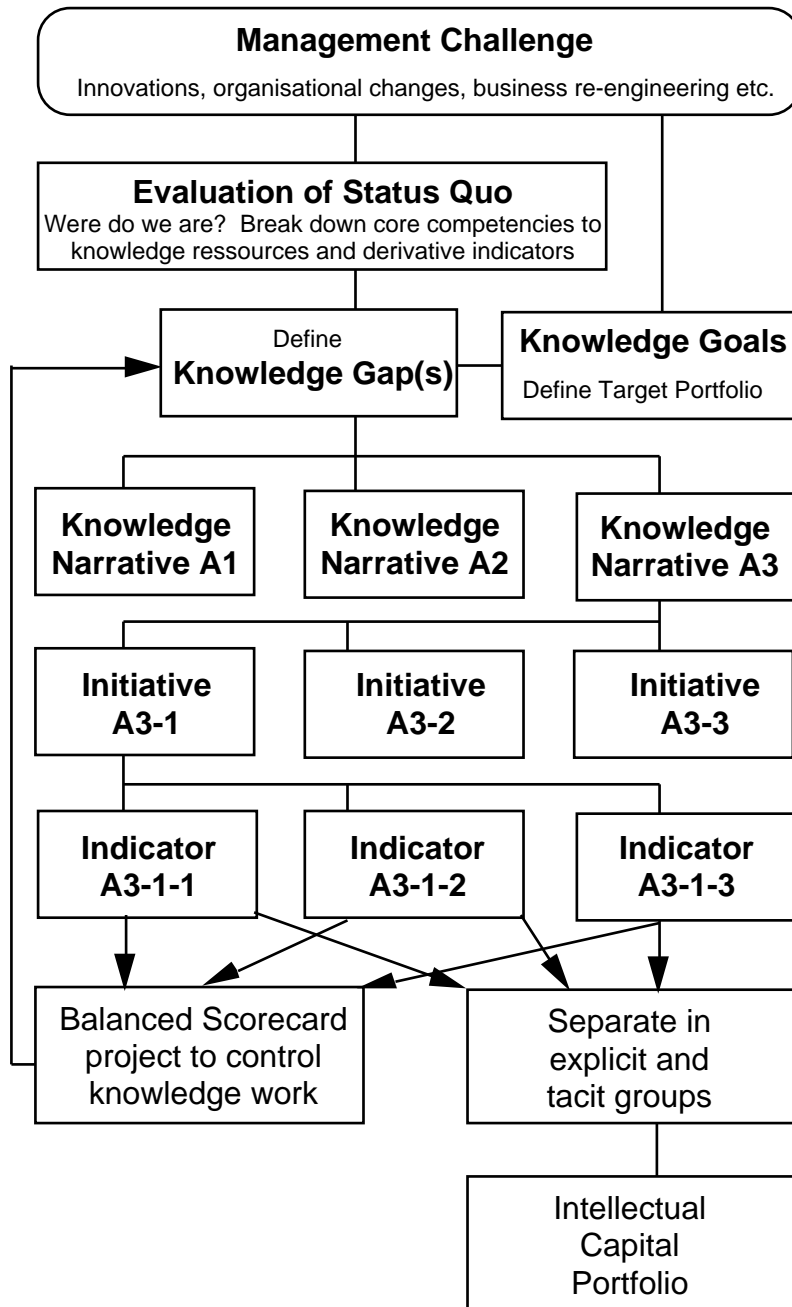
The above graphs submit an overall impression about the organisation's actual IC position showing anonymous mean values. To get an idea how the result was realised, the extremes of explicit and implicit results are indicated too. Those extremes are displayed as runaways, showing the most and least fulfilled scores covering all knowledge initiatives.

ICP offers an unequivocal report, since any misleading interpretation (caused by verbal communication) is eliminated. The big challenge is similar to every other IC research model to find meaningful indicators and their quantification. Furthermore, ICP is an internal benchmark system, allowing further "Best in Class-Comparisons" by comparing the overall results.



The limitation of ICP is its focus on reports. To steer, control and assess knowledge initiatives serves the modified Balanced Scorecard (described in APPENDIX II, page 14ff).

2.5. Intellectual Capital Flow Chart



APPENDIX I: Indicator Sample List

Indicators shall show "good figures" in terms of being reliable, fair and calculable. Indicators may not be dedicated to a specific knowledge initiative and can be used for different research items. Table 1 presents samples of indicators without claim to be complete.

Table 1: List of Indicators		<i>NOTE: Indicators in Italic-Style contain "tacit-approach"</i>
Knowledge Narrative	Knowledge Initiative	Indicators & Metrics
Knowledge Identification	Transparency of internal experts	# of: • Clicks on yellow pages system • <i>Initiatives to detect knowledge hosts</i> • <i>> Age distribution of knowledge hosts</i>
	Transparency of external experts	# of: • Alterations in blue pages system • Performed quality audits at supplier's site
	Documentation of project history	# of: • Interactions in lesson learnt program • Lost documentation of earlier projects
	Deep insight of customers exceptions	# of: • <i>Newsletter-Feedback from customers</i> • Customer satisfaction measurements • Claim reports • <i>Spontaneous feedback</i>
	Discovery of knowledge gaps	# of: • Outsourcing projects • Benchmark researches • <i>Knowledge links</i>
	Insight of stakeholder knowledge	# of: • Established stakeholder communication • Feedback on annual & sustainability reports
Knowledge Acquirement	Hiring experts	# of: • Hired experts • Management on time contracts
	Develop or buy new knowledge	# of: • Outsourced projects • <i>License contracts</i> • <i>Knowledge link agreements</i> • Development orders to R&D • <i>Morphologic workshop sessions</i>
	Adequate IT tools	# of: • Customised SW applications • Standard SW applications
	Knowledge links	# of: • Strategic alliances • <i>Co-operations with Universities</i> • <i>Participation at congresses</i> • <i>Membership in federations</i>
	Acquiring knowledge potential(s)	# of: • <i>Trainee programs</i> • Mergers & acquisitions
	Improving employee competencies	# of: • Learning exams after skills training • <i>Knowledge sharing events</i> • Annual qualification dialogues

Knowledge Narrative	Knowledge Initiative	Indicators & Metrics
Knowledge Development	Collective knowledge development	# of : <ul style="list-style-type: none"> • <i>Established interaction "battlefields"</i> • <i>Think tanks</i> • <i>Teaching arenas</i>
	Externalisation of tacit knowledge	# of: <ul style="list-style-type: none"> • <i>Coaching projects</i> ◦ <i>Mentoring programs</i> ◦ <i>Interdisciplinary competence centres</i> • <i>Social events</i> • <i>Participation's at congresses</i>
	Innovation management	# of: <ul style="list-style-type: none"> • <i>Interactions in lesson learnt program</i> • <i>Early adopter's feedback</i> • <i>Projects finished in time</i> • <i>Projects kept in budget</i> • <i>Products containing acknowledged USP</i> • <i>Products protected by patents</i> • <i>Improvement proposals by stakeholders</i>
Knowledge Distribution	Internal communication technology	<ul style="list-style-type: none"> • Average top-down communication speed • Ratio Staff / IT-workstations • # of letters to the president
	Education	# of: <ul style="list-style-type: none"> • Job changes within organisation • Applications for specific learning goals • Job-related training • <i>Leadership training</i>
	Best practices	# of: <ul style="list-style-type: none"> • Internal best practices reports • external best practices reports
	Transfer of experience & expertise	# of: <ul style="list-style-type: none"> • <i>Coaching & Mentoring projects</i> ◦ <i>Phase-out programs</i> ◦ <i>Interdisciplinary conferences</i> • <i>Top management seclusion</i> • <i>Social events</i>
	Willingness to share knowledge	# of: <ul style="list-style-type: none"> • <i>Claims concerning knowledge prohibition</i> • <i>Incentive programs for sharing knowledge</i> • Positive feedback on satisfaction surveys • Participants in yellow pages system
	Protection of sensitive knowledge	# of: <ul style="list-style-type: none"> • "Right to access"- levels • Attacks against firewall(s) • <i>Early retirements of knowledge hosts</i>
Use of Knowledge	Access the organisational knowledge	# of: <ul style="list-style-type: none"> • Clicks on yellow pages system • Interactions in lesson learnt program • Knowledge documents accessible for all • <i>Participation in learning arenas / think tanks</i>
	Knowledge management resources	# of: <ul style="list-style-type: none"> • <i>Proposals to improve user friendliness</i> • <i>KM education events</i> • Updated documents • Improved processes and instruments • <i>Initiatives to eliminate organisational barriers</i>

Knowledge Narrative	Knowledge Initiative	Indicators & Metrics
Knowledge Preservation	Preserving protected knowledge	# of: <ul style="list-style-type: none"> • Patent protection = > 10 years • Patent protection = 5 - 10 years • Patent protection < 5 years • <i>Holders of secrecy knowledge</i> • Trademarks TM • Registered trademarks [®] • Products to be protected in the pipeline
	Retaining key employees	# of: <ul style="list-style-type: none"> • <i>Incentive programs</i> • <i>Restraint clauses</i> • Employee satisfaction surveys > <i>Age distribution of knowledge hosts</i>
	Anchor organisational knowledge	# of: <ul style="list-style-type: none"> • <i>Interdisciplinary workshops</i> • <i>Coaching & Mentoring projects</i> • <i>Running knowledge transfer processes</i> • Alterations in collective vocabulary rules • Document actualisation procedures • Accesses on lesson learnt database

APPENDIX II: Using the Balanced Scorecard (BSC) for Knowledge Work^(*)2)

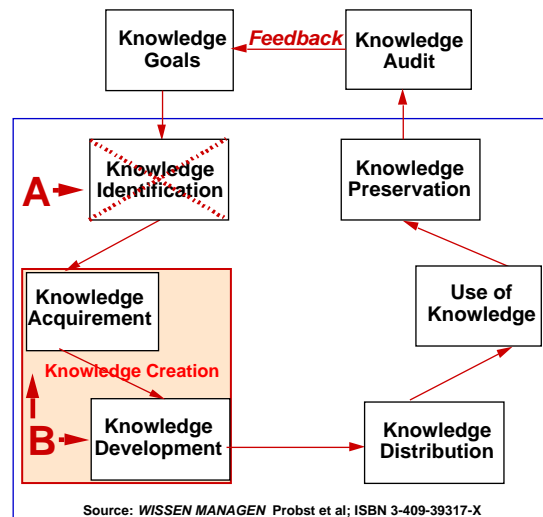
The BSC covers the demand to use perspective parameters instead of relying on past financial reports when an organisation has to be evaluated. It is a steering- and controlling system combining strategic and operative planning. It allows judging an organisation from the view of the most important perspectives. Strategic and operative goals and their derivative key performance indicators (KPI's) describe these perspectives. Norton & Kaplan define four perspectives:

- the financial perspective
- the customer perspective
- the internal process perspective
- the innovation perspective

To adapt the BSC for specific inquiries the original four perspectives can be changed and/or extended according to the defined subject. The flexible architecture makes the BSC to an attractive and versatile tool.

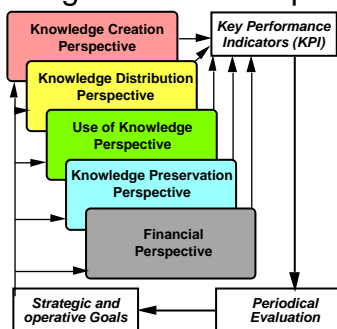
• Steering and controlling knowledge work

Using the BSC for knowledge management applications needs an adaptation of the perspectives. Knowledge perspectives are defined according to the knowledge management model introduced by Probst et al^(*)2). This model puts six operative core processes into a co-ordinating frame (see Graph). On the strategic level this model includes two additional processes: *Knowledge Goals* and *Knowledge Audit* are essential for the BSC application. Strategic goals are the basis for each knowledge perspective. Auditing knowledge is (besides steering) the main reason for the BSC invention. The strategic goals of knowledge work need to be defined for each perspective individually. Each organisation has to define its own knowledge strategies, which are products of the superior economic goals. The core process *Knowledge Identification* (A) is not foreseen to act as a perspective, since knowledge transparency is expected as to be at hand in a BSC-based management process.



Modified Knowledge Management Model

Since all knowledge work activities shall impact the success, a financial perspective is added to the knowledge perspectives. Thus, the Balanced Scorecard for knowledge management work consists of five perspectives.



BSC for Knowledge Management

The four remaining knowledge perspectives are described hereafter:

Continuation APPENDIX II: Using the Balanced Scorecard (BSC) for Knowledge Work

- Knowledge Creation Perspective

Knowledge Creation is focussed on Knowledge Acquisition and Knowledge Development. This perspective aims at the set up and/or expansion of the organisational knowledge base. Strategies of this perspective deal with the acquirement of external knowledge and the development of the organisational knowledge. Operative actions can be the set up of strategic alliances, the purchase of knowledge products or headhunting experts. Goals of knowledge creation could be the extension of R&D, research co-operations and lesson-learned-programs. Optimising the structure of organisational learning (Think Tanks, Learning Arenas) belongs to this perspective too.

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- Knowledge Distribution Perspective

This perspective deals with the optimal knowledge distribution and the procedures assuring the distribution. Besides adequate tools like Intranet and/or GroupWare, transfer of best practices, incentive systems and the skill management belong to this perspective.

- Use of Knowledge Perspective

This perspective deals with a productive use of organisational knowledge. Strategies of this perspective focus on the access of expert knowledge using knowledge maps, yellow pages or expert directories. In addition methods and processes shall be developed, which support the use of new knowledge. Tools are incentive programs or an optimised infrastructure allowing an exchange of ideas and experiences.

- Knowledge Preservation Perspective

Knowledge Preservation means durable memorisation of the relevant knowledge. Goals in this perspective are the electronically data acquisition, the indication and categorisation of the available knowledge as well as the separation of obsolete knowledge. Knowledge preservation is especially laborious when dealing with tacit knowledge, which is human property. In this context knowledge preservation requires to isolate tacit knowledge from individuals, as long as they are available.

APPENDIX III: Literature

(¹) "Intellectual Capital Statements - The New Guideline",
Danish Ministry of Science, Technology and Innovation; (ISBN 87-91258-50-2)

"Intellectual Capital Analysis as a strategic tool"
Roos/Bainbridge/Jacobsen, Strategy and Leadership Journal 4/2001

"Assessing knowledge assets: a review of the models used to measure intellectual capital"
Nick Bontis, International Journal of Management Reviews 3/01

"Intellektuelles Kapital: Eine Benchmarkgrösse?"
T. Auer, Auer Consulting Working Paper

"Wissensaustausch fördern",
T. Auer, Alpha-Kadermarkt 25.05.02 (PDF*)

„Intellectual Capital: Accumulation and Appropriation“,
Laurie Hunter, Melbourne Institute, Working Paper No. 22/02 (PDF*)

"Ich weiss, was Du nicht weisst",
F. Malik, Dt. Handelsblatt 29.09.00, (PDF*)

"Wissenssicherung im Kontext mit Personalentwicklung",
T. Auer, Schweiz. Arbeitgeber, 2000, (PDF*)

"Steuerung und Erfolgsmessung im Wissensmanagement mit BSC",
Holger Nohr, Internet 2001

"Balanced Scorecard",
Kaplan, R/Norton, D., Strategien erfolgreich umsetzen, Stuttgart 1997

(²) "Wissen managen",
Probst / Raub / Romhardt, 1997, (ISBN 3-409-39317-X)

"Lehrgang Wissensmanagement"
Curriculum, T. Auer, Auer Consulting (PDF*)

"Lehrgang Nachhaltige Unternehmensführung & Nachhaltigkeits-Berichterstattung"
Curriculum, T. Auer, Auer Consulting (PDF*)

"Sustainability in context of knowledge society and demography",
T. Auer, Auer Consulting, prepared for publication in September 2003

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