The IPAM-Toolbox: An Expert System for Integrative Planning and Managing of Protected Areas

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Abstract

"Experience is growing by sharing it". The paper presents a newly developed expert system that shall support planners, managers and consulters of Protected Areas (PAs) by a system of self-assessment, focused recommendations and a comprehensive knowledge base. The interactive "toolbox" provides substantial information on integrative management of PAs by means of new information technologies. Developed in cooperation with international partners and organisations this expert system aims to be an important backbone for the future development of PAs in Middle and Eastern Europe.

Background

The protection of areas and sites is one of the most important instruments of modern, anticipating strategies in nature conservation and planning for sustainable rural development. The enormous increase of number and acreage as well as the number of types, respectively categories of sites has been pointed out repeatedly.

Since planning and managing Protected Areas (PAs) hit many different legal administrative and technical realities, the experts in charge have to face an unmanageable variety of tasks.

◆ Integration of different interests
◆ Diversity of categories
◆ Diversity of technical issues
◆ Diversity of approaches
◆ International requirement and regional demands
◆ Permanent lack of resources
◆ Permanent need of deciding, communicating, marketing, financing and creating benefits

That´s why the demand for highly skilled and highly motivated personalities has steadily increased within the last years. Many of these PAs´ managers and planners see themselves drowning in (ir)relevant information, but moan about a significant lack of knowledge. The IPAM-Toolbox intends to bridge this gap and has been developed in order to provide focused information for the question "what to do, when and how?"

The Toolbox was developed in a large-scale Interreg III B CADSES project, involving partners from Austria, Croatia, Czech Republic, Italy and Slovenia. The toolbox is based on explicit demands by IUCN (International Union for Conservation of Nature and Natural Resources), Man and Biosphere-Program of UNESCO (United Nations Educational, Scientific and Cultural Organisation) and the CBD (Convention on Biological Diversity). The development was prepared by an international inquiry among some 150 PAs in Middle and Eastern Europe and on expert interviews (Europarc, IUCN, Ramsar, MaB, WWF and many practitioners from different PAs).

Being substantially co-financed by European funds the toolbox is free of charge and provides up-to-date information that is based on an internationally accepted concept. It is applicable for all relevant international categories of PAs. The toolbox can be accessed on the IPAM-Homepage (www.ipam.info). Furthermore, a detailed technical documentation (Expert System booklet) and a demo-version are available. The technical solution is composed by a large variety of IT-tools (MySQL, PHP, eZ-publish, performed by a Linux-Server) and is not to be described in this context.
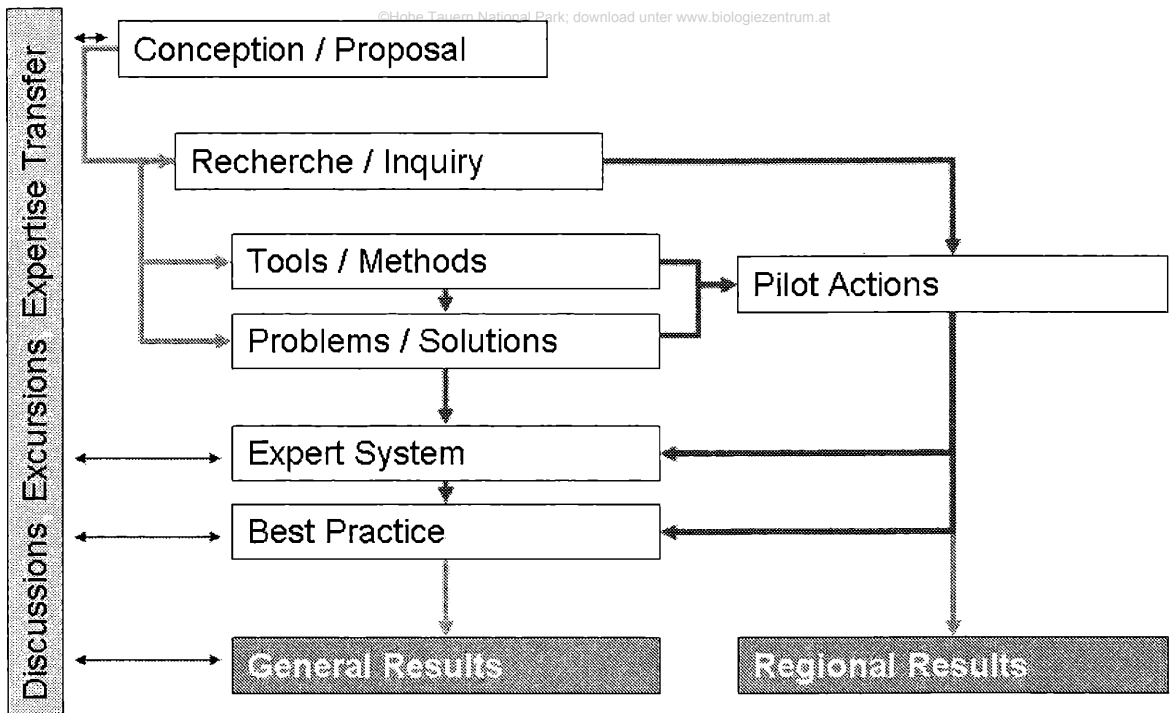
Fig. 1: The project IPAM – an overview.

Conceptual Solution

As pointed out above, the mass, sometimes the mess of available information is to get clobbered over the head. Therefore, expert systems in general, and the IPAM expert system in specific are built up in order to reduce complexity and provide focused information only. The IPAM-Toolbox consists of three components:

♦ Self-Assessment. In a procedure of self-assessment filters are set up in order to primarily eliminate information being irrelevant for the situation and to (later) rank information by importance. A major "side result" of this self-assessment is a clear positioning of the PA in different "fields of activities" (FoA). Along the life-cycle of a PA 25 FoAs were identified and described. By running through an ideal life-cycle (Preparing, Basic Planning, Detailed Planning, Implementation and Management) all FoAs are covered and therefore provide a helpful framework to determine the PA´s position. In an interactively guided process the user of the expert system answers a bundle of key questions to identify the recent position and the evident problems.

♦ Recommendations. On a general level, of course, but highly corresponding to the recent situation of the PA the expert system provides a set of recommendations. These are automatically generated by the system. The conceptual structure behind these recommendations is the analysis of the difference between FoAs needed in the very situation and the FoAs that really have been executed (well) so far. The recommendations are provided in standardised reports. So, they also allow reporting on the progress of the development or management of the PA (time series). The systems information are illustrated by some examples of "best practice" and furthermore lead to the most detailed information that is provided in the knowledge base.

♦ Knowledge Base. In a comprehensive database various examples of "best practice", in-depth information about literature, projects and available data as well as links and further expertises are proposed. The information is automatically ranked by requirements deriving from the self-assessment, but also can be selected individually. The content of the knowledge-base focuses geographically on Middle and Eastern Europe, but also provides international standards and approaches.
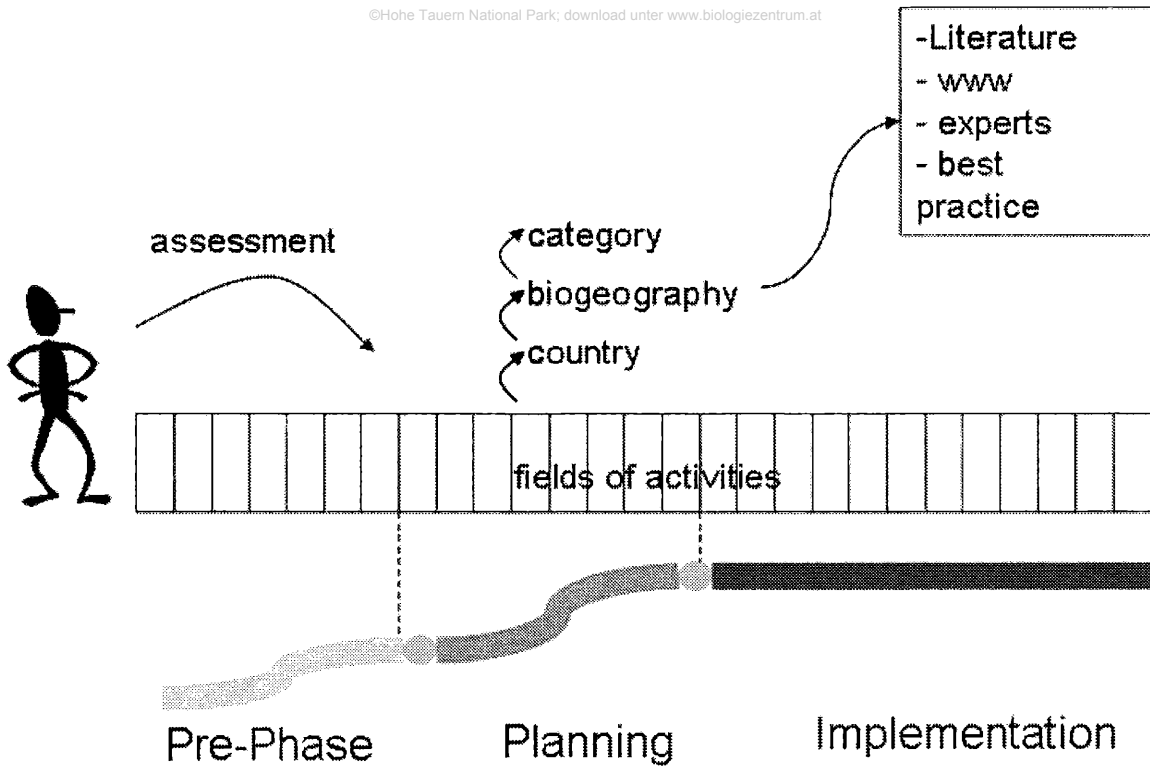
-Literature
- www
- experts
- best
practice

assessment

category

biogeography

country

fields of activities

Pre-Phase   Planning   Implementation

Fig. 2: Concept of the Toolbox – assessment by life-cycle of the Protected Area (Phases/Fields of Activities) and the knowledge base.

Pre-phase:	Development of Idea and Vision Feasibility Check Communication and Participation I Incorporation into PA-Systems
Basic Planning:	Planning Handbook Participative Planning Communication and Participation II Basic Investigation Implementation Plan Designation and Establishment
Detailed Planning:	Mission Statement and Basic Concepts Ecosystem-based Management Plans Design of (Regional) Economic Programs Specific Planning (Subsidiary Plans)
Implementation Phase:	Personnel and Organisational Development Development of Protected Area´s Region Evaluating Management Effectiveness Research Setting and Monitoring Data and Information Management Optimising Financial Situation (Business Plan) Information, Interpretation and Education Visitor Management, Services and Infrastructure Marketing and Public Relations Co-operation Design Communication and Participation III Impact Assessment and Limitation

Fig. 3: The Fields of Activities (FoA) in PA management – an Overview.

Interfaces of the IPAM-Toolbox

The technical solution of the IPAM-Toolbox is composed by a large variety of IT-tools. The chosen programming language PHP is embedded in HTML and supported by Apache Web Server, a widely-used HTTP Server for the internet. SQL is the used query language for relational databases. The technical background is supported by a content management system, called eZ-publish, and a LINUX operating system.

After the login into the IPAM-Toolbox the Self-Assessment and the Knowledge Base will be available. Additional information like a glossary, best practice examples, recommendations and the help area with the virtual assistant called IPAM Joe can be queried during the whole consulting process.
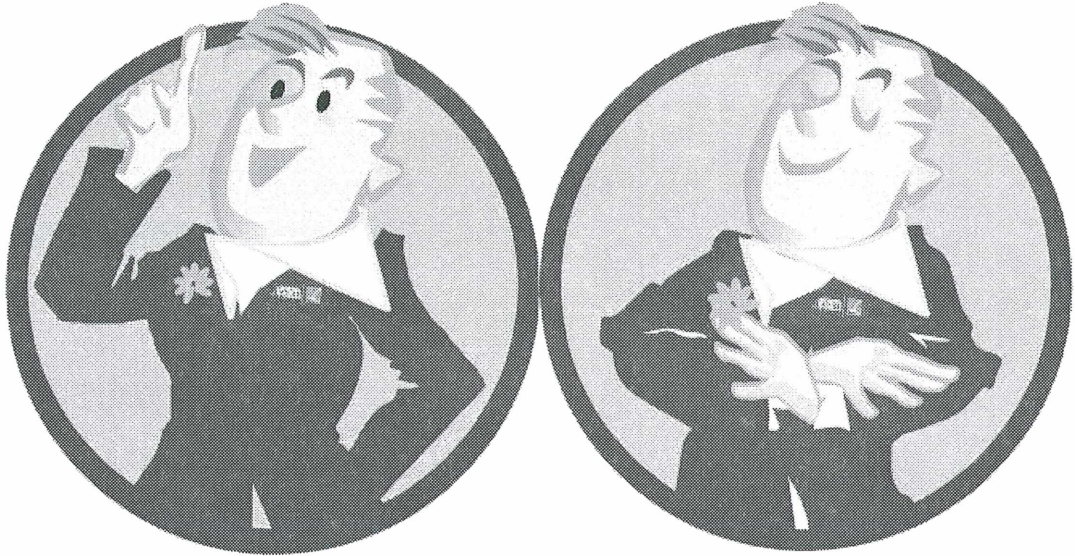

Fig. 4: IPAM Joe – the virtual assistant for the users of the Toolbox.
IPAM Joe, the virtual assistant welcomes the user and supports in running through the expert system.
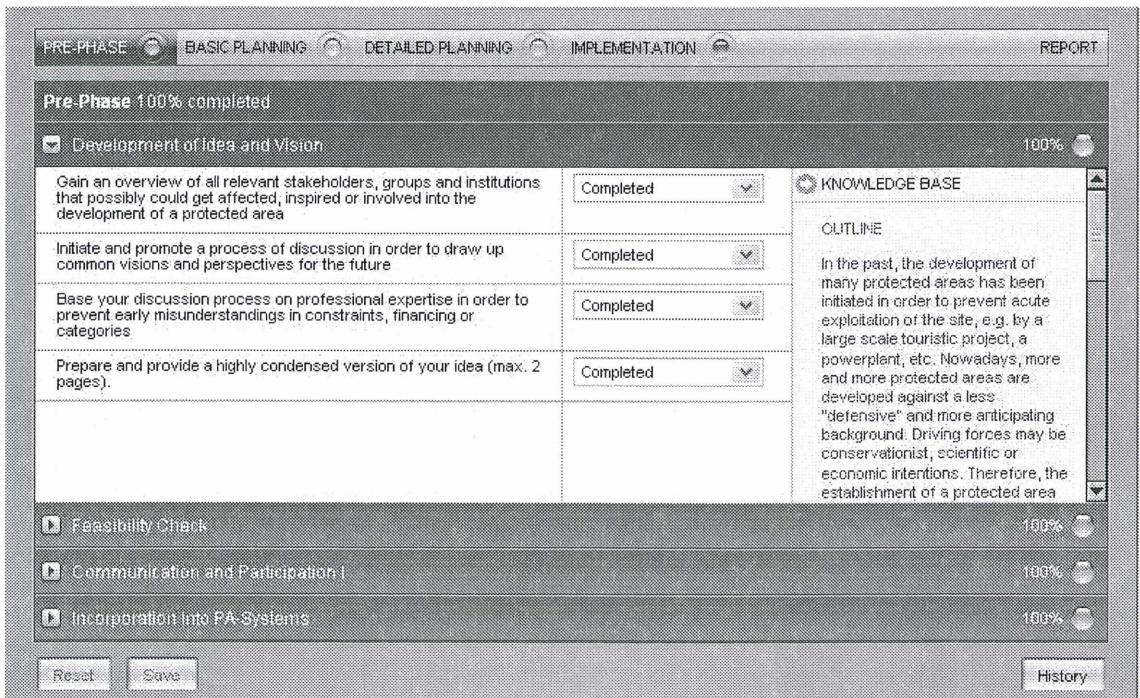

Fig. 5: Screenshot – Self-Assessment.
The visualisation of the processing status of the phases and fields of activity is prepared in a user-friendly way.
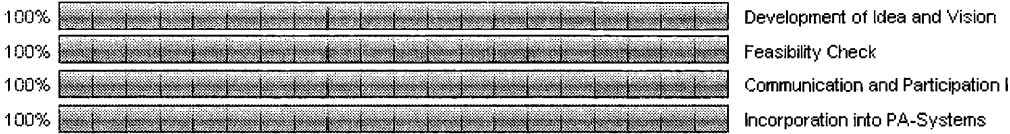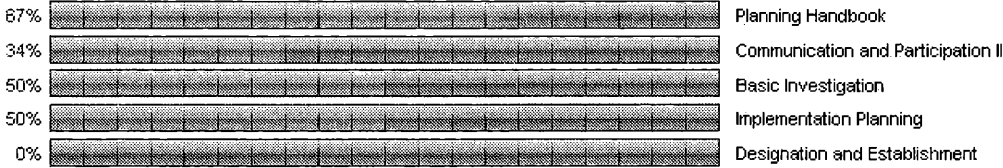
100% Pre-Phase

100%	Development of Idea and Vision
100%	Feasibility Check
100%	Communication and Participation I
100%	Incorporation into PA-Systems

41% Basic Planning Phase

67%	Planning Handbook
34%	Communication and Participation II
50%	Basic Investigation
50%	Implementation Planning
0%	Designation and Establishment

Fig. 6: Screenshot – progress report.
The progress report shows an overview of the processing status of the phases and fields of activity.

Communication and participation I

Communication design

Specify the target groups (check completenes at least three times) and make up order and mode of communication (you cant overestimate personal meeting
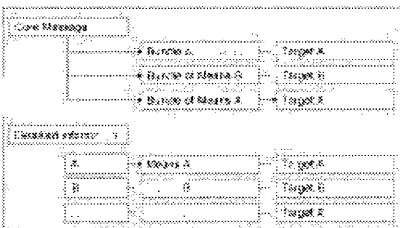
Visualisation of communication design.

To enlarge click on the picture...

The means / bundle of means have to be chosen with regards to the target groups. At this state of discussion it is better to use existing networks, structures and media than to establish new. A clear distinction has to be made between a core message relevant for all and specific information only relevant for specific interests. People should not be drowned in information. The detailed information may be distributed by sectoral or regional requirements.

Fig. 7: Screenshot – recommendation.
For each field of activity recommendations for managing protected areas are suggested.

FILTER SEARCH - EXACT MATCHES

View suggested entries ▣

FIELD OF ACTIVITY
Communication and Participation I

AREA CATEGORY
Not restricted

BIOGEOGRAFIC REGION
Not restricted

COUNTRY
Not restricted

Search for: [exact matches only ▾]

Kind	Language of source	Sort by	
all entries ▾	all entries ▾	relevance ▾	APPLY

1-7 of 7 entries for current filter settings

|||| DOCUMENT/REPORT/LITERATURE 2005/-0/4
Co-management of Natural Resources. Organising, Negotiating and Learning-by-Doing.

|||| DOCUMENT/REPORT/LITERATURE 2005/-0/4
Indigenous and Traditional Peoples and Protected Areas.

|||| DOCUMENT/REPORT/LITERATURE 2005/-0/4
Public Participation in Protected Area Management - Best Practice.

|||| DOCUMENT/REPORT/LITERATURE 2005/-0/4
Detailplanung zum Biosphärenpark Wienerwald - Bereich Wald.

|||| DOCUMENT/REPORT/LITERATURE 2005/-0/4
Guidelines for Marine Protected Areas.

|||| DOCUMENT/REPORT/LITERATURE 2005/-0/4
Naturparkstudie Karawanken. Teil 1: Machbarkeitsstudie.

|||| DOCUMENT/REPORT/LITERATURE 2005/-0/4
Machbarkeitsstudie Trilateraler Biosphärenpark Moravien.

Fig. 8: Screenshot – knowledge base (ranking).
    Examples in the form of best practice, literature, projects, links and further expertises are contained in the knowledge base.

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