KNOWLEDGE REPRESENTATION FOR THE WORKING MANAGER

KMO’06 - Knowledge Management in Organizations
Maribor 14th June 2006

Viljem Tisnikar, Matjaž Gams

Content
- The nature of KM
- Understanding knowledge with Category Theory (CT)
- CT knowledge representation
- Real life software application
- Toward a solid theoretical model
INTRODUCTION

- Bringing two worlds together with Category Theory
- The value of intellectual capital
- From AI to management and back
- “Natural” solutions save costs in organizations

CATEGORIES FOR KM

- The meaning of the word “natural” in mathematics
- n-categories for strategic change management
- Better explanation of the real life solution with CT
- From computation to interaction
- Other authors models using CT
THE STRUCTURE OF KNOWLEDGE

3 situations with different aspects:

S1: (8, 11, 21, 26, 30)

S2: (8, 11, 22, 26, 30)

S3: (13, 14, 15, 22, 24)
The structure of Numbers

- The colimit of the pattern
- Colimit as Lowest common multiple (lcm)
  - lcm (S1) = lcm (S3) = 120120
  - lcm (S2) = 17160
- The opposite result with CT!

The structure of event

- From numbers to any other concept
- From “Category Theory for the Working Mathematician” to “Knowledge Representation for the Working Manager”
- A structure of arrows can carry the meaning
- The structure of a (good) joke
Iterated Colimits of the underlying structure


REAL-WORLD SOFTWARE SOLUTION

- Inka d.o.o. Izola, Slovenia, 2002
- Delegation of tasks
- Software without specific business content
- Goals, proposals and task conclusions
- Time management of tasks and document management
The Workflow

The Task representation

- Explicit descriptions (goal, proposal, comments...)
- Natural representation of diverse tasks
- Goal of the task as a colimit of the diagram
- The proposal as a diagram
Prototype solutions

- From tasks to projects
- Things became very complicated
- Cash flow planning tool prototype
- Documents, persons and activities need *integral* approach
Integral approach

MISSION

STRATEGIC PLAN

BUSINESS PLAN

OPERATIONAL PLAN

CT CONCEPTS FOR KM

- Functors as documents
- Natural transformation as the unit of knowledge
- Adjunctions as legal contracts
- 2-categories as rewrite systems
CONCLUSION

- Formal methods are needed to cope with growing amount of data.

- Our practical application shows that the introduction of CT is of practical use.

It was presented

- The nature of KM
- Understanding knowledge with Category Theory (CT)
- CT knowledge representation
- Real life software application
- Toward a solid theoretical model
Q & A

?  

Thank you for your attention.