

Exercise #1

Introduction to Knowledge Management

Johannes Knopp, Jan Nössner

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Who are we?

Jan Nössner, Johannes Knopp

We are both PhD students at the *Knowledge Management and Knowledge Representation* group.

Jan Nössner

- ▶ interested in automatic reasoning

Johannes Knopp

- ▶ graduated 2010 in Computational Linguistics
- ▶ interested in statistical methods that find structured information in texts

Contact: km12@informatik.uni-mannheim.de

Communication

- ▷ Asking questions makes both of us smarter
- ▷ Don't be afraid to make mistakes
- ▷ Interrupt me if you have a question or if I am wrong/too fast/hard to understand...
- ▷ You can ask in German anytime and I will try to translate
- ▷ Use the the forum ¹

There are no official office hours, just discuss with us after the exercise or write an email to make an appointment if you want to talk in person.

¹https:

//ki.informatik.uni-mannheim.de/forum/viewforum.php?f=37

1 Organizational Stuff

2 Exercise #1

Exercise Sheets

- ▷ To pass the course:
 - reach $> 50\%$ of the total points
 - present your solution at least once
- ▷ Hand in solutions by...
 - 1 bringing them to the lecture
 - 2 drop them in the mail box in B 6, 26 on the first floor (“*Dekanatsbriefkasten*”)
 - 3 sending them per email (if we ask you to. PDF format only! Except code)
- ▷ Exercises can be solved alone or in a team of two people
- ▷ Submissions contain...
 - your name
 - email address
 - matricular number (only at the first time)

PDF & Windows

- ▶ If no native PDF export is available try to install...
 - 1 a PDF printer: `http://www.heise.de/software/download/7_pdf_printer/78081`
 - 2 a PDF maker: `http://www.heise.de/software/download/7_pdf_maker/68674`

Points to achieve

- ▶ There will be twelve exercise sheets
- ▶ Points for exercises vary depending on the estimated effort
- ▶ For your own sake: Do not skip exercises unless you are in a comfortable point range

Workload

6 ECTS points

14 Lectures

180 hours

-21 hours

Workload

6 ECTS points

14 Lectures
Preparation

180 hours

–21 hours
–28 hours

Workload

6 ECTS points

14 Lectures
Preparation
13 Exercises

180 hours

–21 hours
–28 hours
–19.5 hours
= 111.5 hours

Workload

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12 Exercise Sheets

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= 111.5 hours

$111.5\text{h}/12 \approx 9 \text{ hours}$ per sheet

The Unpopular Slide

Plagiarism is an attempt of deception

As passing the course depends on the exercise solutions, attempts of deception lead to immediate fail of the examination of **all** caught students.

- ▶ Now that you're warned, I hope I will never ever have to refer to this slide

What do *Basic Programming Skills* Include?

You should be familiar with

- ▷ functions
- ▷ conditions
- ▷ loops
- ▷ opening/writing/closing files
- ▷ the idea of recursion
- ▷ the idea of object orientation
- ▷ using APIs and libraries

Well, I'm not Sure...

Test yourself

Write a program that prints the numbers from 1 to 100. But for multiples of three print "Fizz" instead of the number and for the multiples of five print "Buzz". For numbers which are multiples of both three and five print "FizzBuzz".

Well, I'm not Sure...

Test yourself

Write a program that prints the numbers from 1 to 100. But for multiples of three print "Fizz" instead of the number and for the multiples of five print "Buzz". For numbers which are multiples of both three and five print "FizzBuzz".

If you need more than 10 minutes to complete it, you should train your programming skills!

Any Hints?

Further hints and links in the forum:

`https://ki.informatik.uni-mannheim.de/forum/viewtopic.php?f=36&t=293&sid=cf7f90e072f8836a6b6b8f65d55fe3f9`

Shorter link: `http://is.gd/o1s850`

Who are you?

How many of you...

- ▶ never heard of *Linux*?

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How many of you. . .

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- ▷ use Linux regularly?
- ▷ use Mac OS regularly?
- ▷ know Java?
- ▷ know Python?
- ▷ know any other programming language and didn't raise a hand, yet?

● Organizational Stuff

2 Exercise #1

Terminology

Explain in your own words the distinctions between each of the term pairs **Data & Information**, **Information & Knowledge**, and **Knowledge & Wisdom** .

You are free to use everyday examples to illustrate the differences.

Explicit vs Tacit Knowledge

▷ Which of the following concepts do you consider as tacit and which as explicit knowledge? If you are in doubt, give an explanation for your decision. Also mark if the knowledge is individual or collective.

- 1 *Personal notes on the Desktop*
- 2 *A movement a worker has to do on a machine every day*
- 3 *Outdated wiki entries*
- 4 *An instructions manual for a machine*
- 5 *The time a departement usually is out for lunch*
- 6 *The network of friends on facebook*

The Knowledge Spiral

- ▶ Explain the phases **Socialization**, **Externalization**, **Combination**, and **Internalization** by the means of an example. Make clear how the respective phase is producing explicit/tacit knowledge.

A suggestion for an example would be a child that learns how to participate in urban traffic over the years, but you are free to use any other setup.

If you are unsure where to start, read Nonaka's *The Knowledge-Creating Company* (which you should do anyways):
<http://www3.uma.pt/filipejmsousa/ge/Nonaka,%201991.pdf>

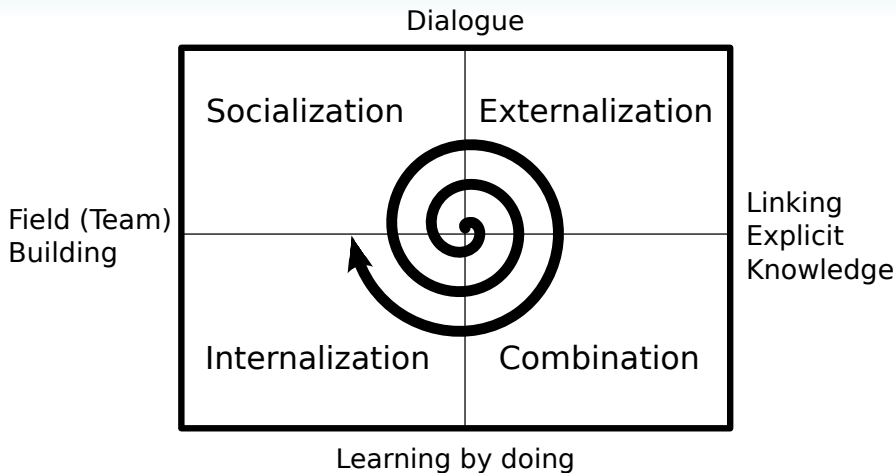


Figure: The Knowledge Spiral presented in [NT95]

Knowledge Distribution Factors

- ▷ Which of the following factors **facilitate knowledge sharing** and which **hinder** it? If you are in doubt, give an explanation for your decision!

power, independence, curiosity, recognition, idealism, social relations, position, revengefulness, introversion, empathy

Knowledge Distribution Factors

- ▷ Which of the following factors **facilitate knowledge sharing** and which **hinder** it? If you are in doubt, give an explanation for your decision!
power, independence, curiosity, recognition, idealism, social relations, position, revengefulness, introversion, empathy
- ▷ Think of actions a company could adopt to **minimize** a factor's **negative** or **maximize** its **positive effects** in order to optimize the amount of shared knowledge within the organization. Propose at least 4 actions in total and make clear which factor is tackled by your solution.

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- ▶ Which **technologies** or **methods** can support your ideas?

A fictional example

We are in the year 2020. The company **Robot Productions** wants to set up the production of a new robot that supports humans in their households. Therefore, the company needs to buy material from the **Steel and Plastic AG**. Further, the software of every robot needs to be copied several times, each for one robot. This task is fulfilled by the **Disk Copy GmbH**. Last but not least, the company **Training AG** offers courses to teach the usage of the new robot to the customers.

Comparison of Production Factors

- ▶ Discuss the different production factors of the three suppliers. What advantages or disadvantages do they have with the **ownership, use, sharing, reproduction** and **dissemination**?

	Classical Factors	Information	Knowledge
Ownership	individual ownership only	collective ownership possible	collective ownership possible
Use	loss of value due to usage	gain of value due to usage	gain of value due to usage
Sharing	loss of gain of value depending on situation	loss of gain of value depending on situation	loss of gain of value depending on situation
Reproduction	high costs	low costs	potentially high costs
Dissemination	difficult and costly	simple and cheap	difficult and costly

Table: Comparison of production factors by [RK96] (translation)

Thank you!

References



I. Nonaka and H. Takeuchi.

The Knowledge-Creating Company.

New York, 1:995, 1995.



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Managementforschung, 6:1–40, 1996.