

# Humans and mistakes?

Have you ever  
made a stupid  
mistake?

Welcome to the real  
world!

Have you ever made a  
stupid mistake a  
hundred times over?

Welcome to software  
development!

Tom DeMarco:  
Why is software so expensive?



# Knowledge Transfer and Communication in IT Projects

SOPHIST GmbH

Vordere Cramergasse 13

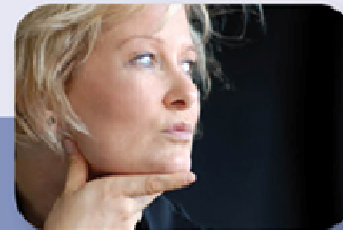
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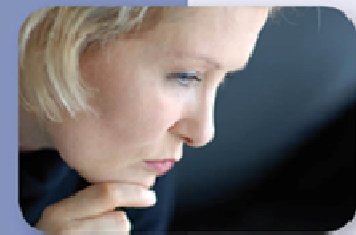
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# Chris Rupp

CEO of the SOPHIST GmbH  
Chairwoman of the IREB e.V.  
Trainer, consultant and author



# The SOPHISTs

SOPHIST GmbH



# Our clients

A few of our customers



# Publish or perish

## Books authored by the SOPHISTs

REQUIREMENTS ENGINEERING & MANAGEMENT	UML 2 GLASKLAR	AGILE SOFTWARE- ENTWICKLUNG	REQUIREMENTS ENGINEERING FUNDAMENTALS	SYSTEMANALYSE KOMPAKT	AGILITY KOMPAKT
					
Chris Rupp & the SOPHISTs	Chris Rupp, Dr. Stefan Queins & Barbara Zengler	Chris Rupp & Peter Hruschka	Chris Rupp & Klaus Pohl	Chris Rupp & the SOPHISTs	Chris Rupp, Peter Hruschka & Gernot Starke
5 <sup>th</sup> edition	3 <sup>rd</sup> edition			2 <sup>nd</sup> edition	2 <sup>nd</sup> edition
Available since July 2009	Available since August 2009	Available since February 2002	Release date: 28. April 2011	Available since March 2008	Available since April 2009
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Some chapters  
available in English!

in English

# Where in the world is Nürnberg?

It's in Bavaria, Germany



# Yep, that's Bavaria

Lederhosen, Oktoberfest and veal sausages with pretzels



# But make no mistake ...

Nuremberg isn't Munich – and it got some specialities' of its own



RE – the whys  
and wherefores

The methodical  
approach



Process  
implementation

Breaking new  
ground

Transforming knowledge into code



- Problems in modern development projects
- Drawing or writing?
- Eliciting knowledge

RE – the whys and wherefores

# An experiment ...

Multitasking isn't alien to you, is it?

- You are to piece together a puzzle
  - The puzzle has 500 pieces
  - How many people would you like to involve in the project?
  - How long are you going to take to finish?
  - Simply write down both numbers on a piece of paper
  - Feel free to change your estimate anytime in the course of the presentation!



# Problems in development projects

## Outsourcing und Offshoring

**System development is mutating into an evermore complex undertaking in communication**



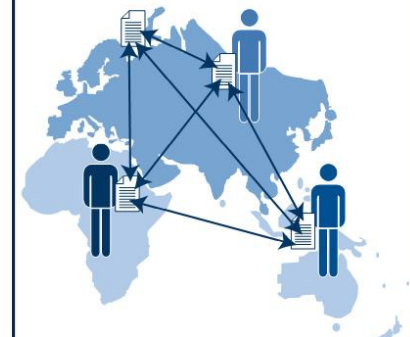
- ▶ Similar know-how and language
- ▶ Specialized departments and IT are of one enterprise and at one site

- ▶ Different cost units
- ▶ Justification struggles
- ▶ Isolated departments



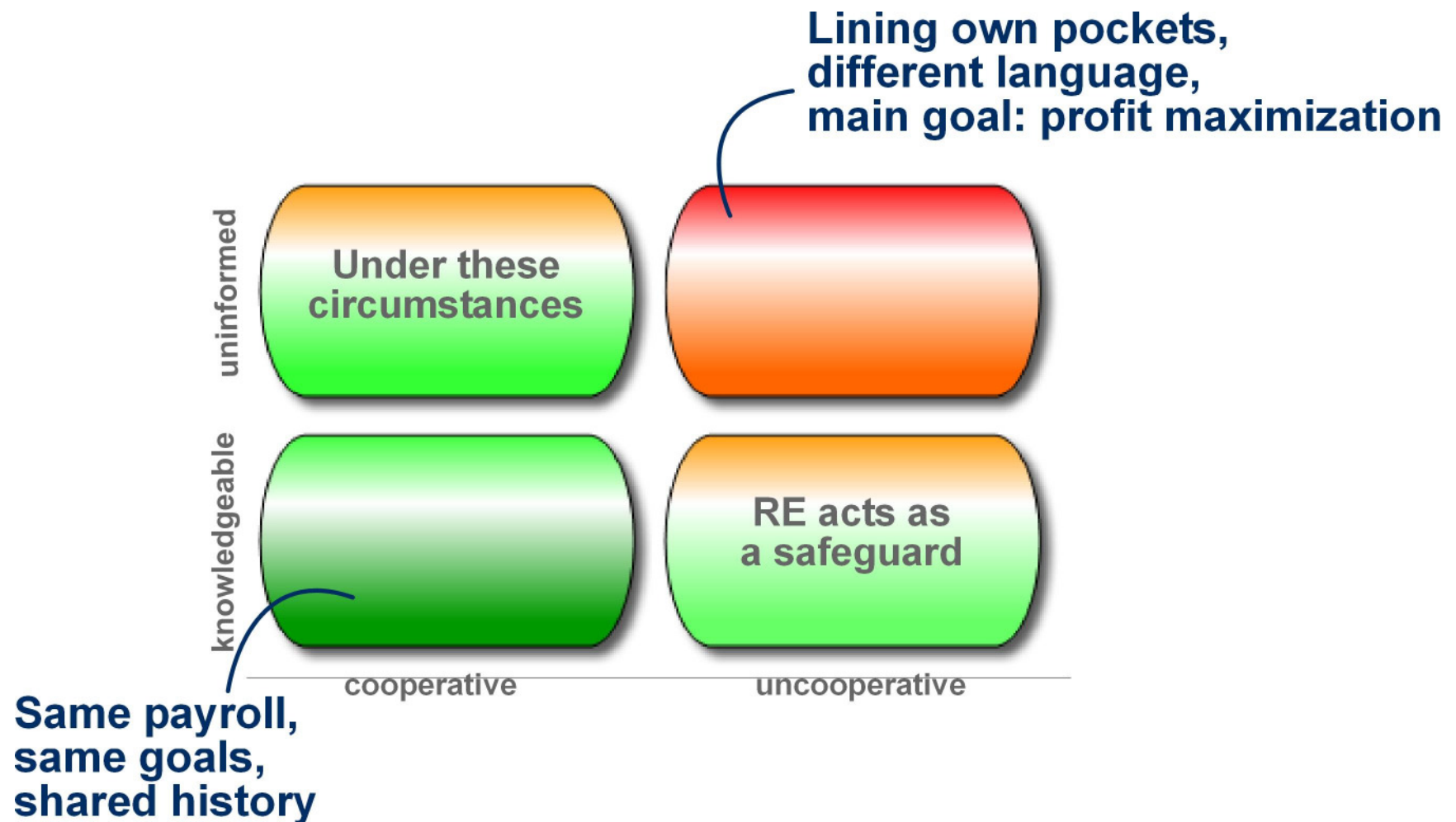
- ▶ Specialized departments and It are outsourced
- ▶ Alienation
- ▶ Contract barriers
- ▶ Language barriers

- ▶ Departments and IT are distributed all over the world
- ▶ Different languages and cultures



# Problems in development projects

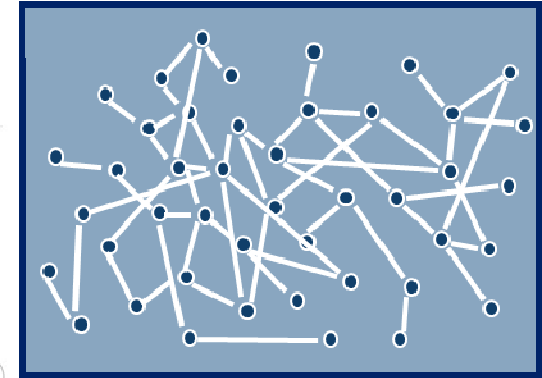
Knowledgeable – uninformed, cooperative – uncooperative



# Problems in development projects

## Conclusions

- Enterprises have a talent for bringing problems onto themselves which they cannot solve!
- Distributed development/fixed-price projects involve transmitting the requirements to someone who has little to no insights of the inner workings of the business at hand



# An experiment ...

Multitasking isn't alien to you, is it?

- By the way – have I told you that there's no pictures on the puzzle? It's plain white.



# Knowledge transfer I

Words are meaningless

Telepathy is not an option (regrettably)

Words on their own are meaningless

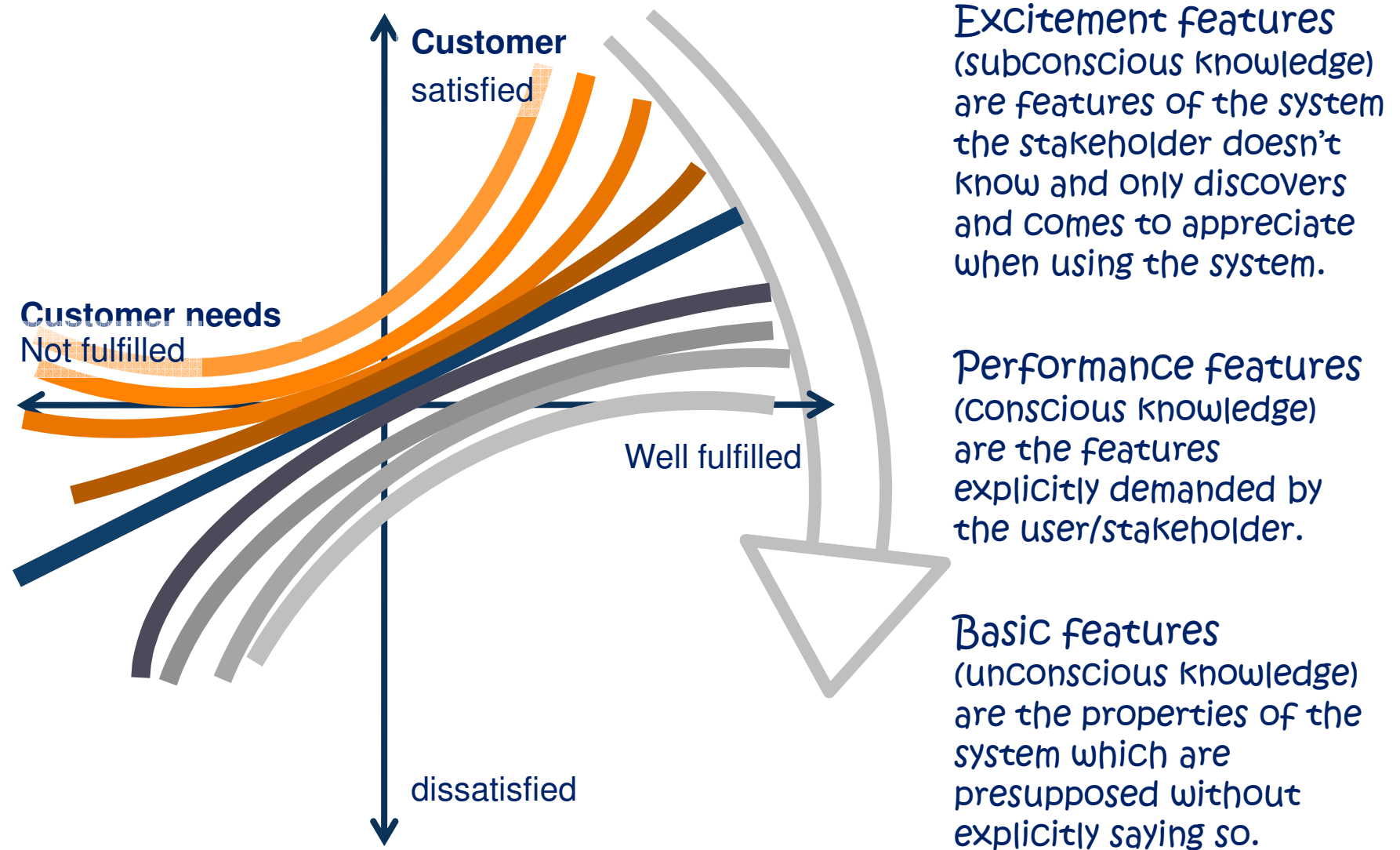
Perfect communication is unattainable!

Successful communication depends on a  
common model of reference!



# Knowledge transfer III

## The Kano-model



# An experiment ...

Multitasking isn't alien to you, is it?

- Oh and before I forget:  
the pieces are plain white  
on both sides ...



# Knowledge transfer IV

The only thing we know for sure is ...

- ... that stakeholders never deliver the requirements on a silver platter ...



Which means:  
we must work for our  
pay.

# The solution

Never outsource an unknown problem!

- Attempt complex projects if and only if
  - you have a partner who is either clairvoyant or has the necessary know-how or
  - you have the competence necessary to transmit the required know-how.

By the way:  
Knowing requirements  
engineering helps ;-))

- Knowledge transfer is the core competence of modern system development!



# An experiment ...

Multitasking isn't alien to you, is it?

- In this day and age, puzzles are three-dimensional – so is ours.

Therefore you've got to piece surfaces together ...





- Psychotherapy for requirements
- The SOPHIST Set of *RE*gulations
- The requirements-template

## The methodical approach

# Transformational processes

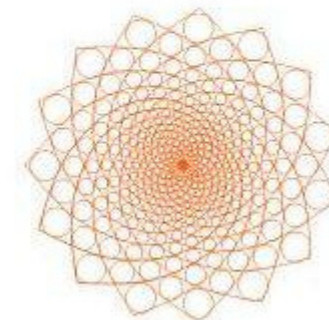
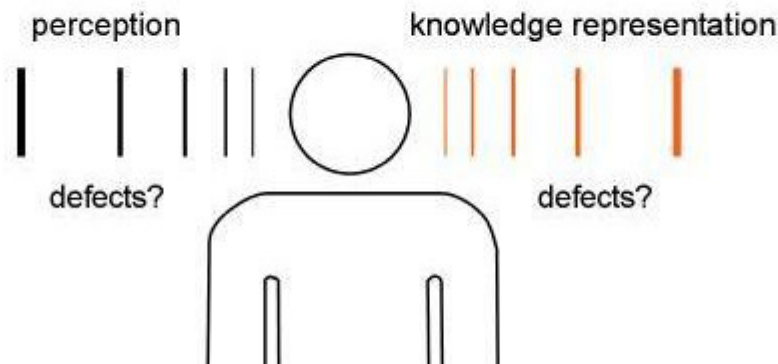
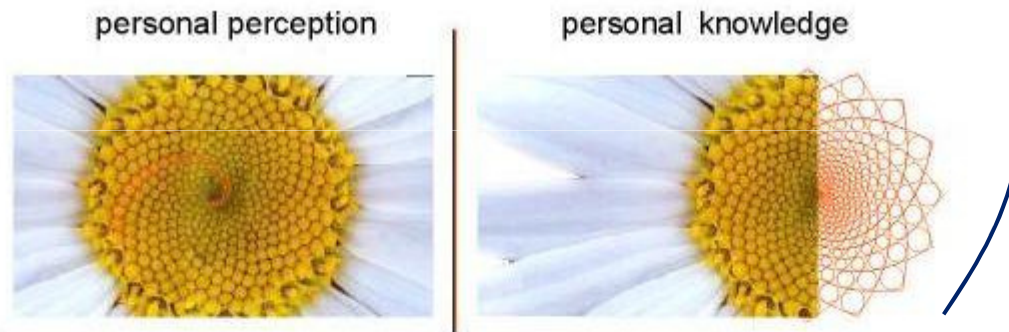
Perception and denotation eliminate information

Personal perception  
leads to transformations  
in perception

Using language to express  
knowledge leads to  
transformations in  
representation



reality



linguistic expression  
of knowledge

# Transformational effects

Categories of representational transformations according to the NLP

Deletions are an indicator for omitted information.



De

Generalizations are an indicator for faulty ... generalizations.

Ge



Di

Distortions are an indicator for statements that distort reality.



# An experiment ...

Multitasking isn't alien to you, is it?

- Cause we're megalomaniacs, our puzzle is just a wee bit bigger than usual. Each piece is about 1 by 1 by 1 meter in size.

I hope you've got some muscled people on your team ...

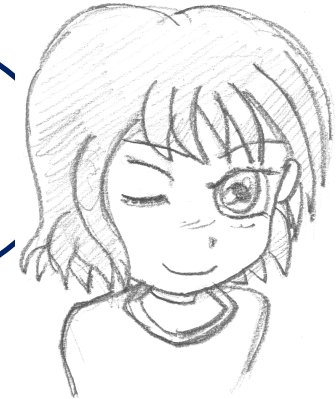


# Distortion agents

## Nominalizations

Keywords:  
„Approval“,  
„Input“,  
„Storage“, ...

Is the noun a  
nominalization? Which  
process is being omitted?



**Get rid of nominalizations.**

**Di**

Analyze every nominalization and determine if the process being omitted has been fully specified somewhere else in the specification. If this is not the case, you must:

- Write one or more requirements using a **“good” verb** OR
- Create a new entry in the **glossary**.

# Distortion agents

## Example of a nominalization

The restart of the system shall be automatic.

Under which conditions shall the system restart automatically?  
Who starts?  
Using which data?  
...

**If the event-handler throws a severe error, the system shall automatically restart.**

# Generalization agents

## Universal quantifiers

Key words:

„all“,  
„everyone“,  
„always“,  
„none“,....

Does/do the  
behavior/attributes being  
specified really apply to all  
objects? Or are there  
exceptions?



**Challenge every universal quantifier.**

Ge

Challenge the universal quantifiers used in the requirement. If they do not accurately describe the objects thusly grouped, you must:

- **Delimit the number of objects** – if only a part of the whole is affected,  
OR
  - **Expand the number of objects** – if additional objects are affected.
- Oftentimes, there are exceptions, which must be specified separately.

# Generalization agents

## Examples of universal quantifiers

The proofing system must allow **all** users to export **all** data.

Is it really necessary for every user to be able to export?

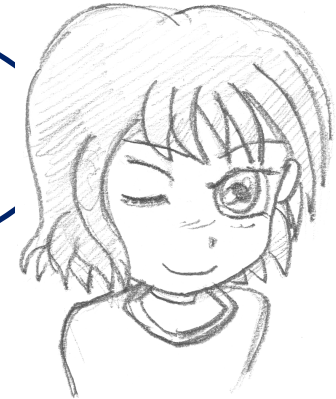
Should it really be possible for every user to be able to export all data ever stored in the system?

The proofing system must allow **every registered** user to export proofing results from **proofs he has initiated**.

# Deletion agents

## Incompletely specified verbs

Ask the Questions!  
What?, Whom?, When?,  
How?, How often?



Key words:  
„display“, „input“,  
„print“,...

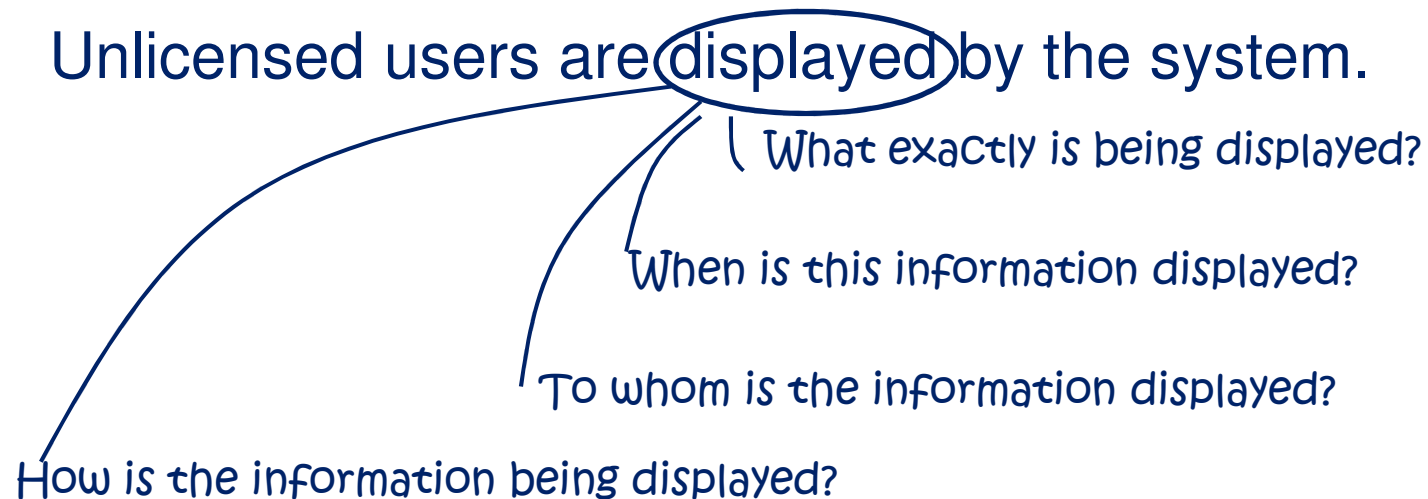
Analyze what information must be added to better  
illustrate the **verb**.

De

If the **information omitted** is of importance, amend the requirement by adding the missing information.

# Deletion agents

## Example of an incompletely specified verb



After the proofing system has read the ID-card and if the user is not licensed to carry out proofing operations on this system, the proofing system shall display the error message “User not licensed.” to the administrator.

# An experiment ...

Multitasking isn't alien to you, is it?

- O.K. It's not all that complicated after all – the pieces are all of the same size and the same shape: all of them are cubes made of Styrofoam.



# In a nutshell

## Experiences in industry with the SOPHIST Set of *RE*gulations

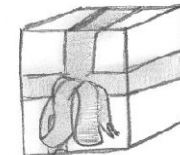
- The Set of *RE*gulations allows for the reconciliation of seemingly contradictory goals (formality and intelligibility).
- The Set of *RE*gulations can be applied to requirements and all parts of OO-designs in natural language.



# The solution

RE is vital for systems development

- It is possible to successfully develop systems – even if we're talking about innovative products!
- RE solves the most crucial problems (communication, culture)
- RE becomes more crucial and involved, the farther apart the users and the developers are!
- Your job is definitively safe – if you're a system analyst ;-))



# An experiment ...

Multitasking isn't alien to you, is it?

- Even when you're managing resources and scheduling for a mere puzzle, there's a point to doing some requirements analysis ...



**So why not do so during your next project too?**

3



- Suppressing does not equal solving
- Basics

# Process implementation

# A process of change

Suppressing does not equal solving

---

- Everything is always changing –  
regretfully not always in the right direction ...
- A word of wisdom from the Dakota Indians:

**If your horse is dead, dismount!**

# Suppressing does not equal solving

## Alternative managing strategies

- Us managers tend to try out other strategies in this situation:
  - We procure a stronger whip.
  - We replace the horseman.
  - We say: “But we’ve always ridden the horse in that way.”
  - We call for a workshop to analyze the dead horse.
  - We visit other places to find out how they ride dead horses there.
  - We increase the quality standards for riding dead horses.
  - We create a task force to resuscitate the dead horse.
  - We visit a training to learn how to ride better.
  - We compare different dead horses.
  - We change the criteria that define when a horse is considered dead.
  - We buy manpower from outside to ride the dead horse.

# Suppressing does not equal solving

## Alternative managing strategies

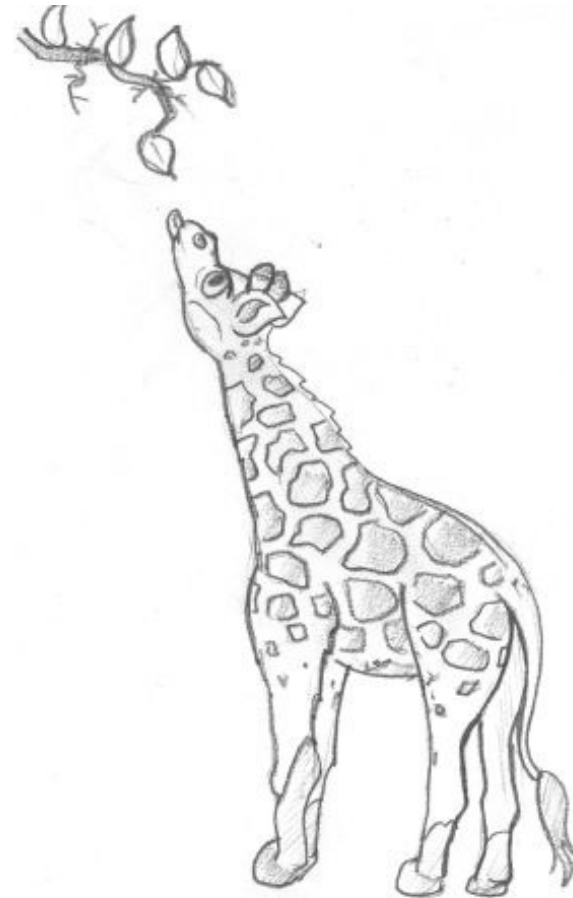
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- Us managers tend to try out other strategies in this situation :
  - We harness several dead horses together, so that they run faster.
  - We declare: “No horse can be as dead as to stop us from whipping it.”
  - We obtain more funding, to increase the performance of the horse.
  - We commission a study to determine whether there are cheaper consultants.
  - We buy something designed to make dead horses run faster.
  - We declare, that our horse is dead “faster, better and cheaper”.
  - We create a quality circle to find new uses for dead horses.
  - We rework the contracts for dead horses.
  - We create an independent cost center for dead horses.

# Basics

Change equals survival

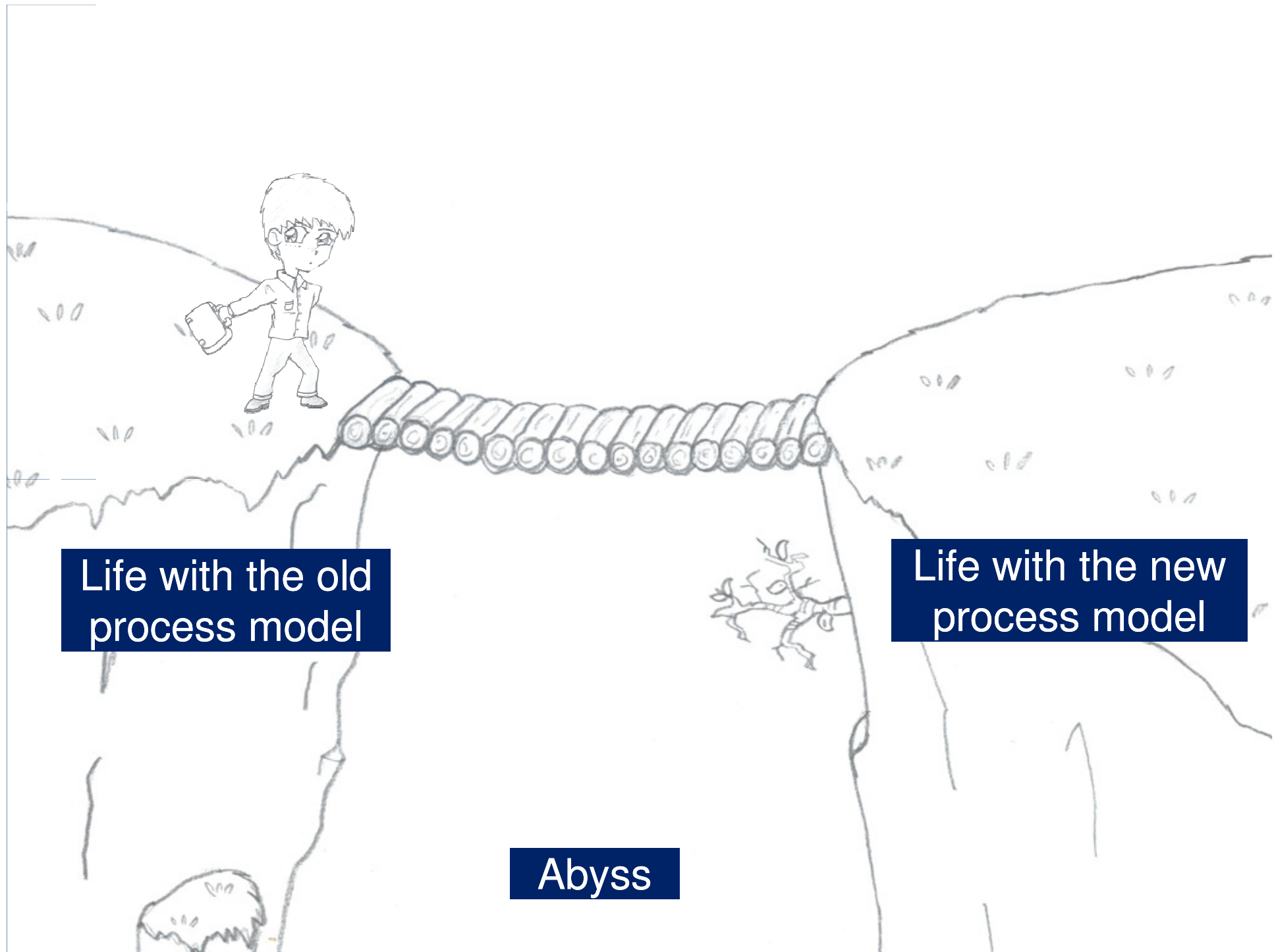
But:  
Only the one who  
adapts can survive.



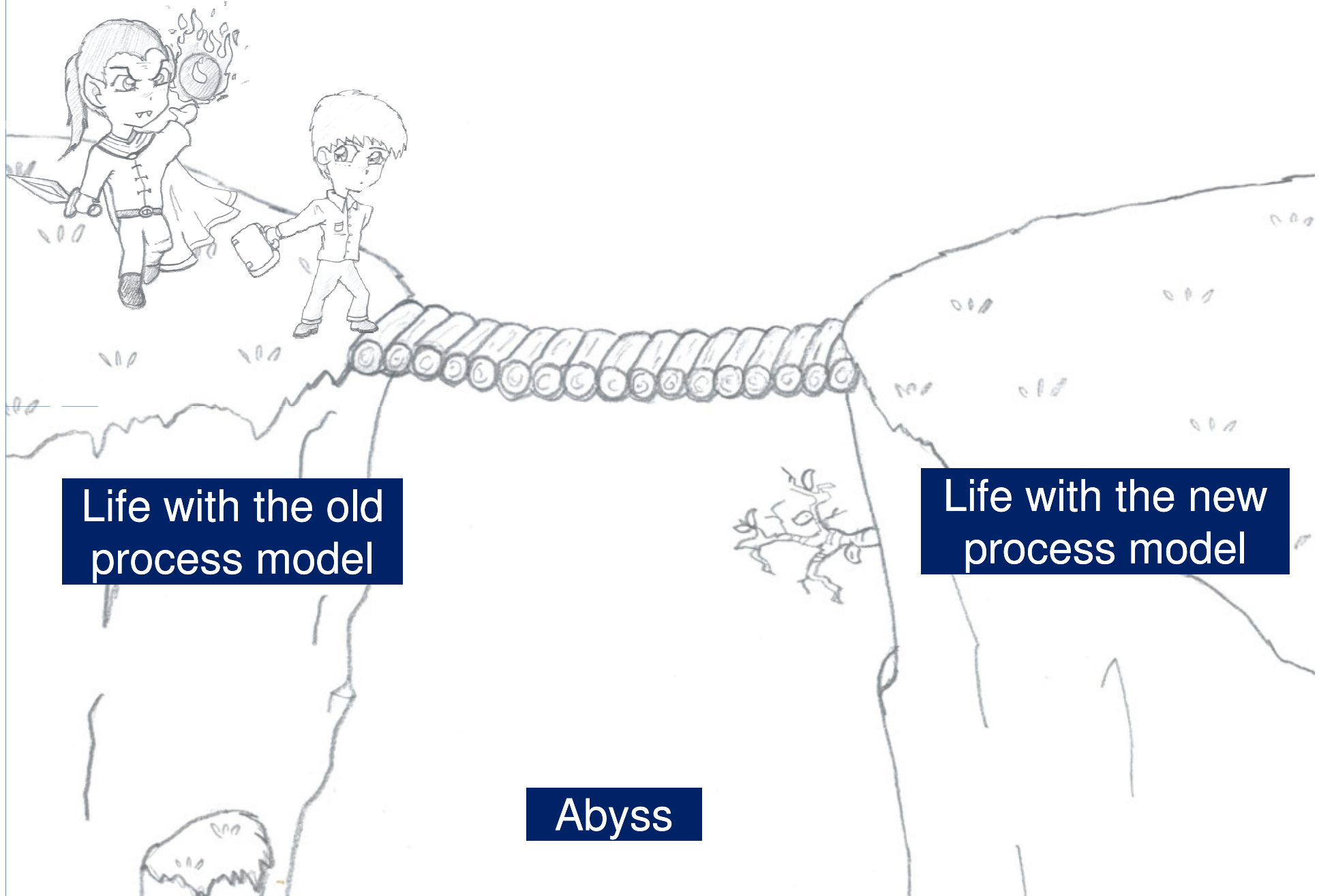


- An illustrated story

Breaking new ground



Menace

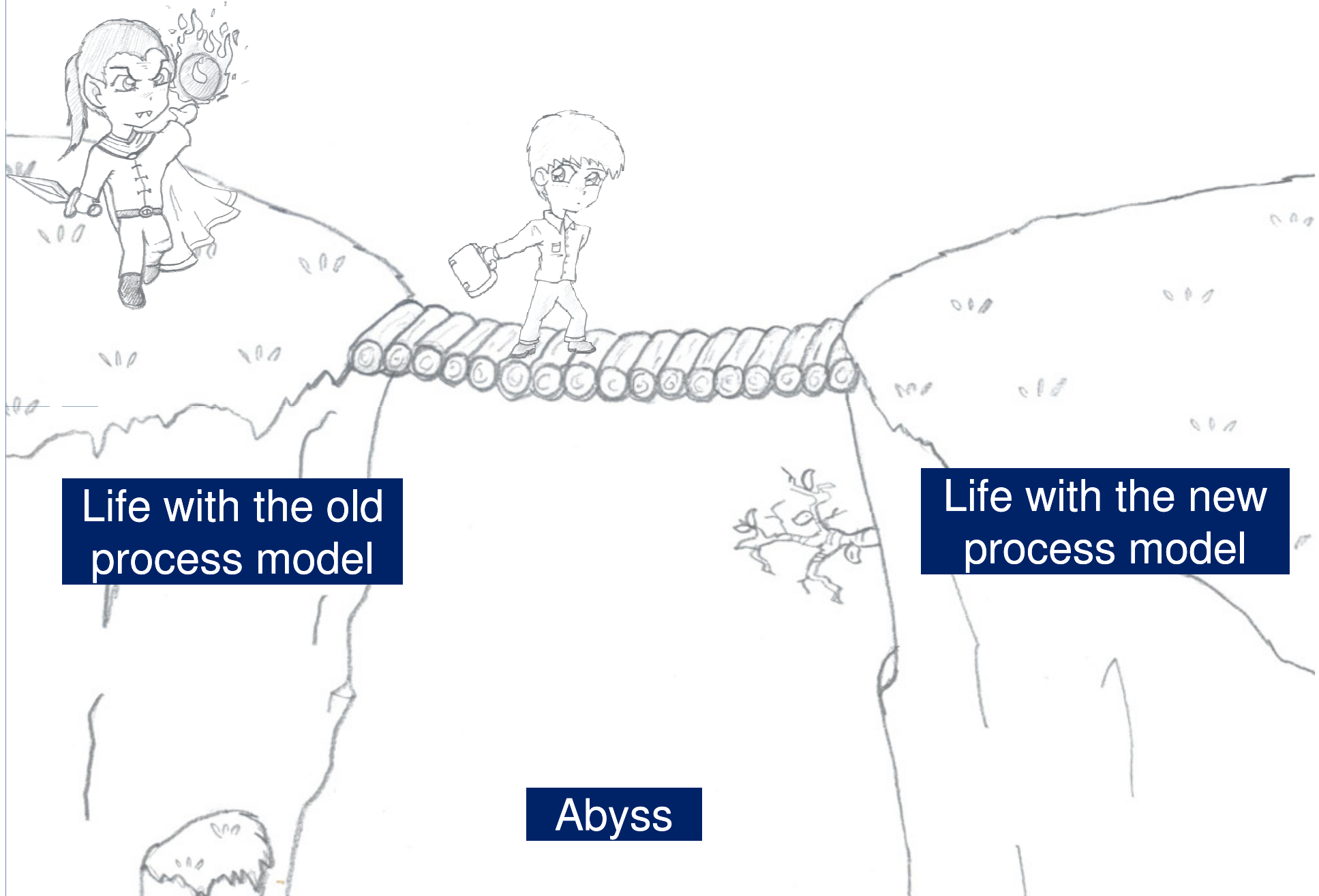


Life with the old  
process model

Life with the new  
process model

Abyss

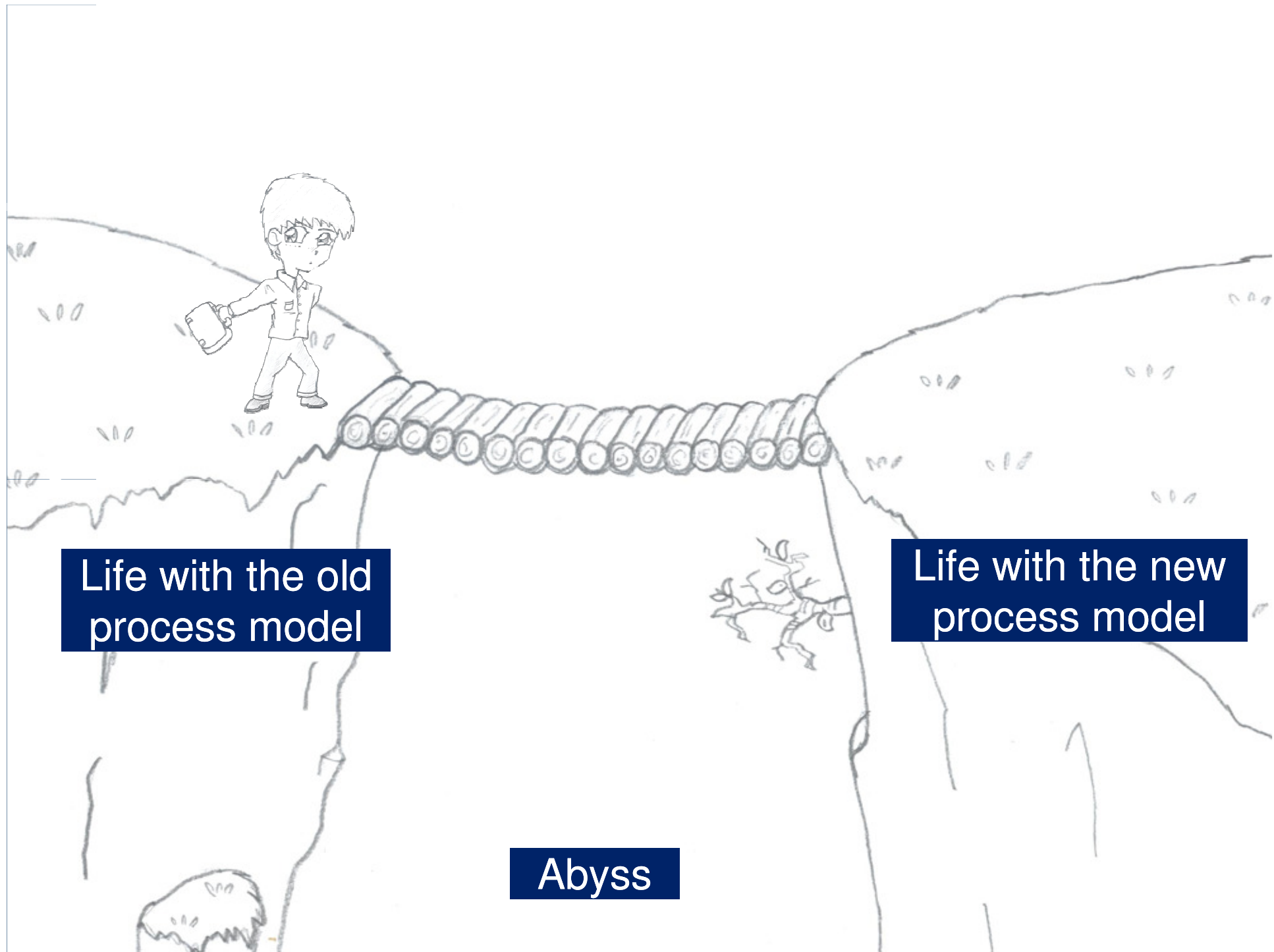
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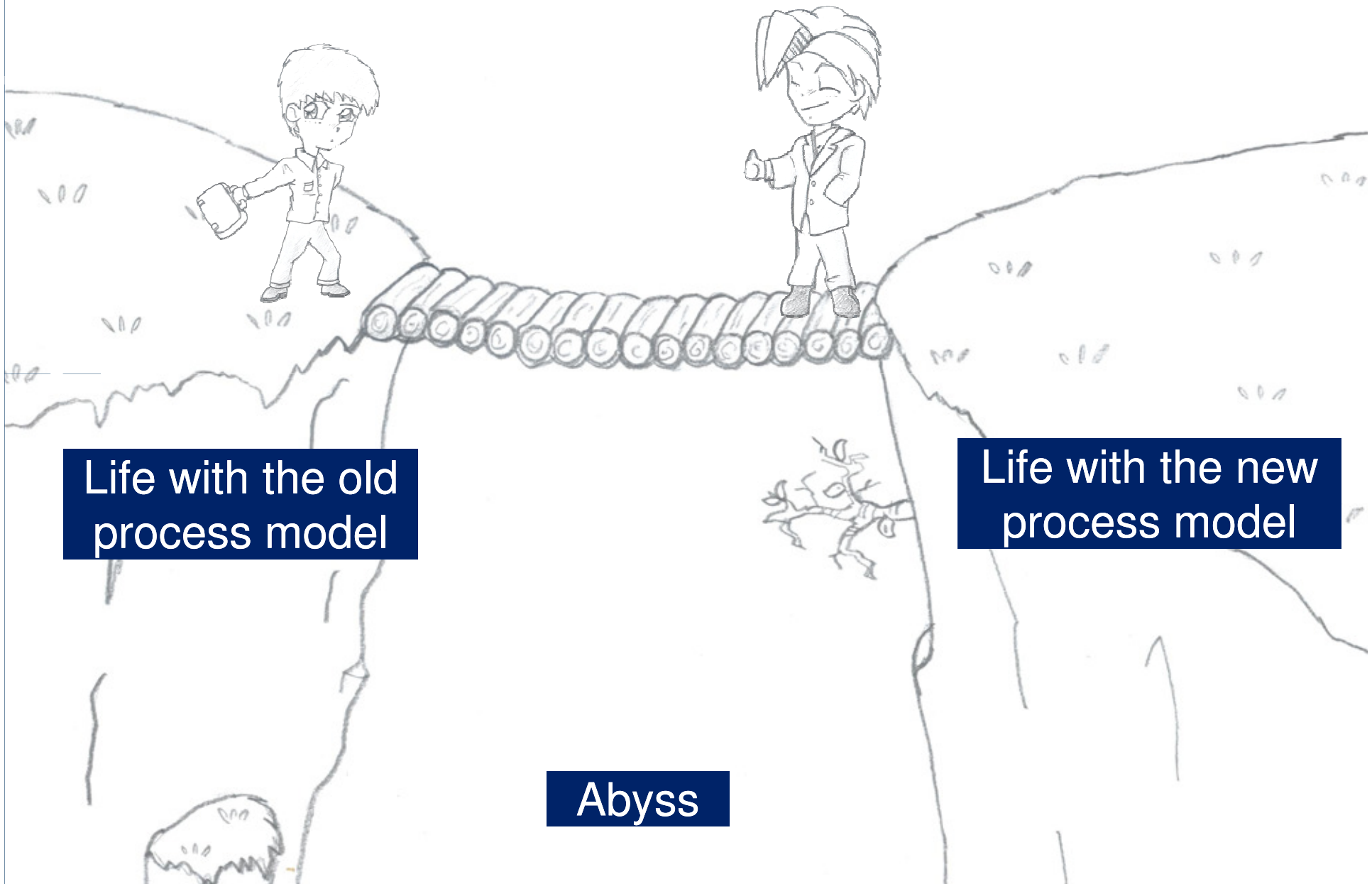


Role model

Life with the old  
process model

Life with the new  
process model

Abyss

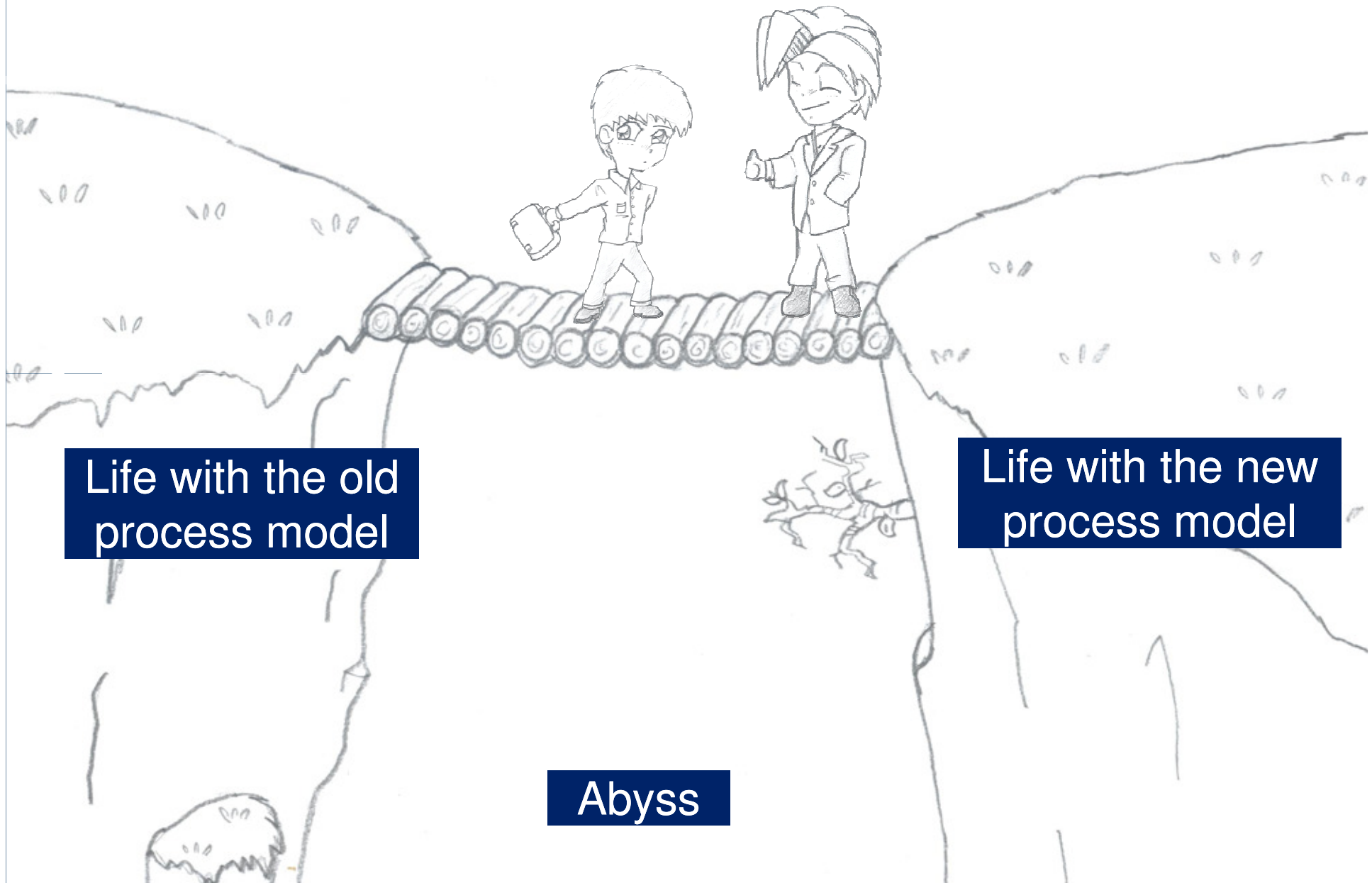


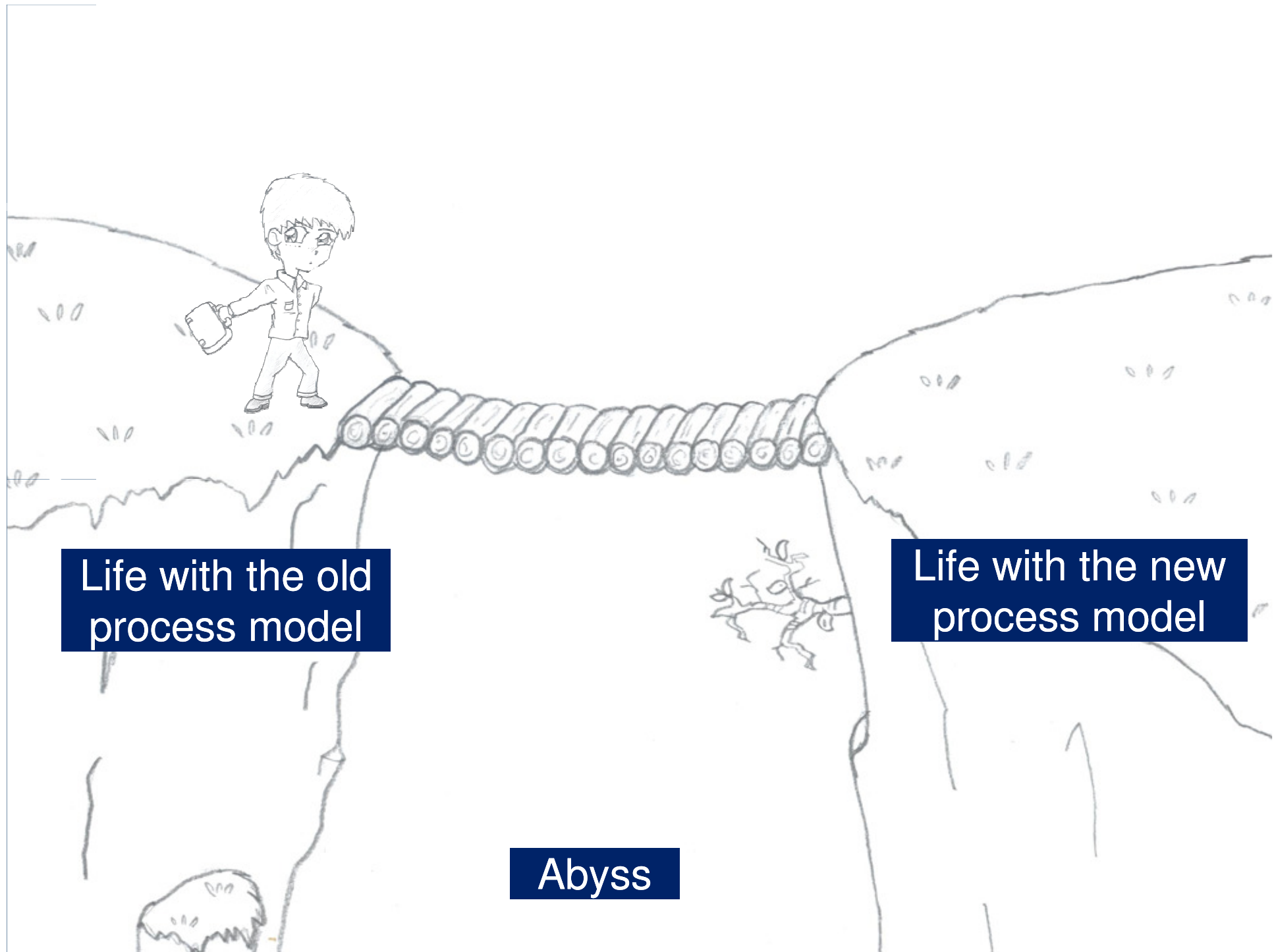
Role model

Life with the old  
process model

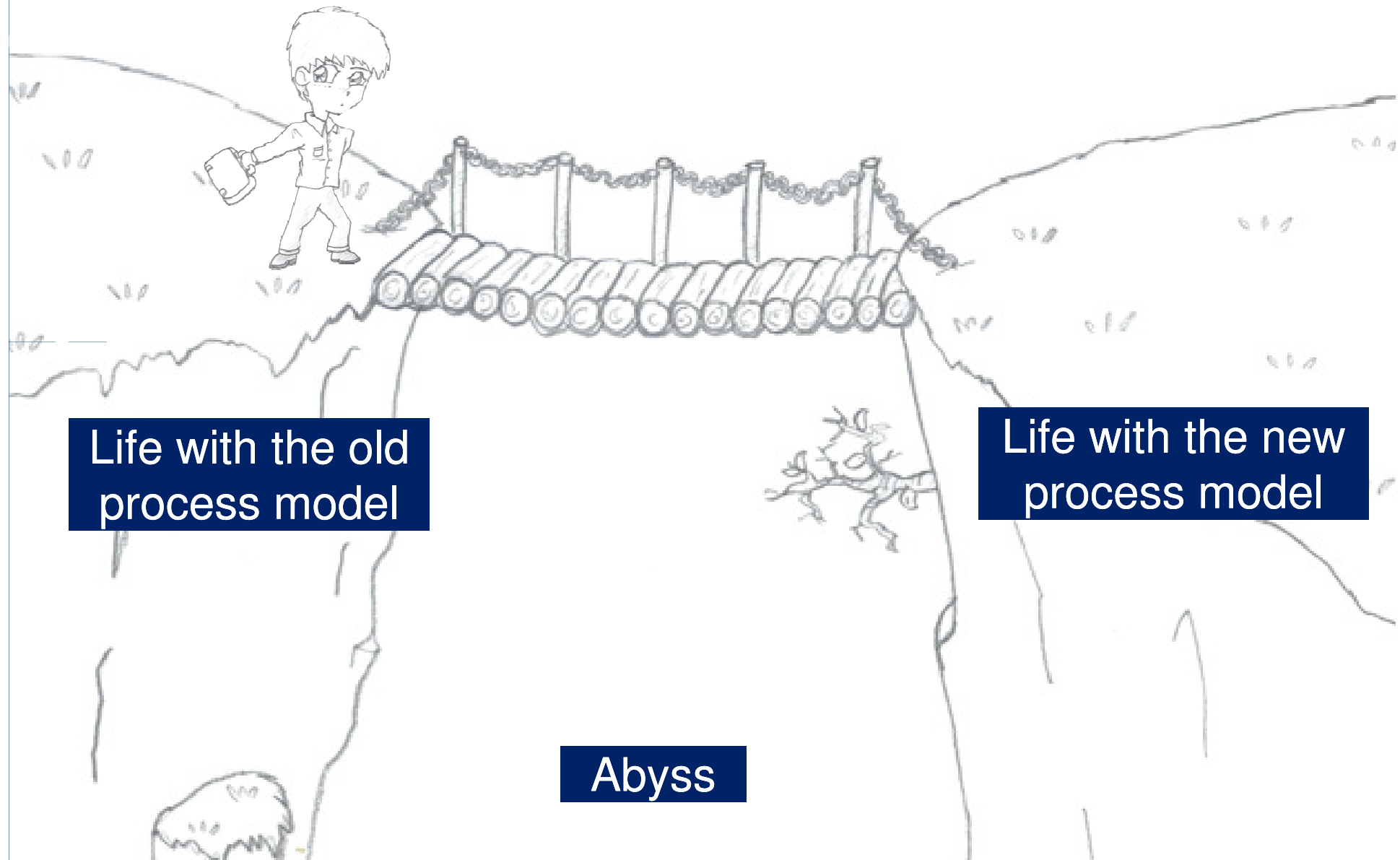
Life with the new  
process model

Abyss





## Safeguarding the path

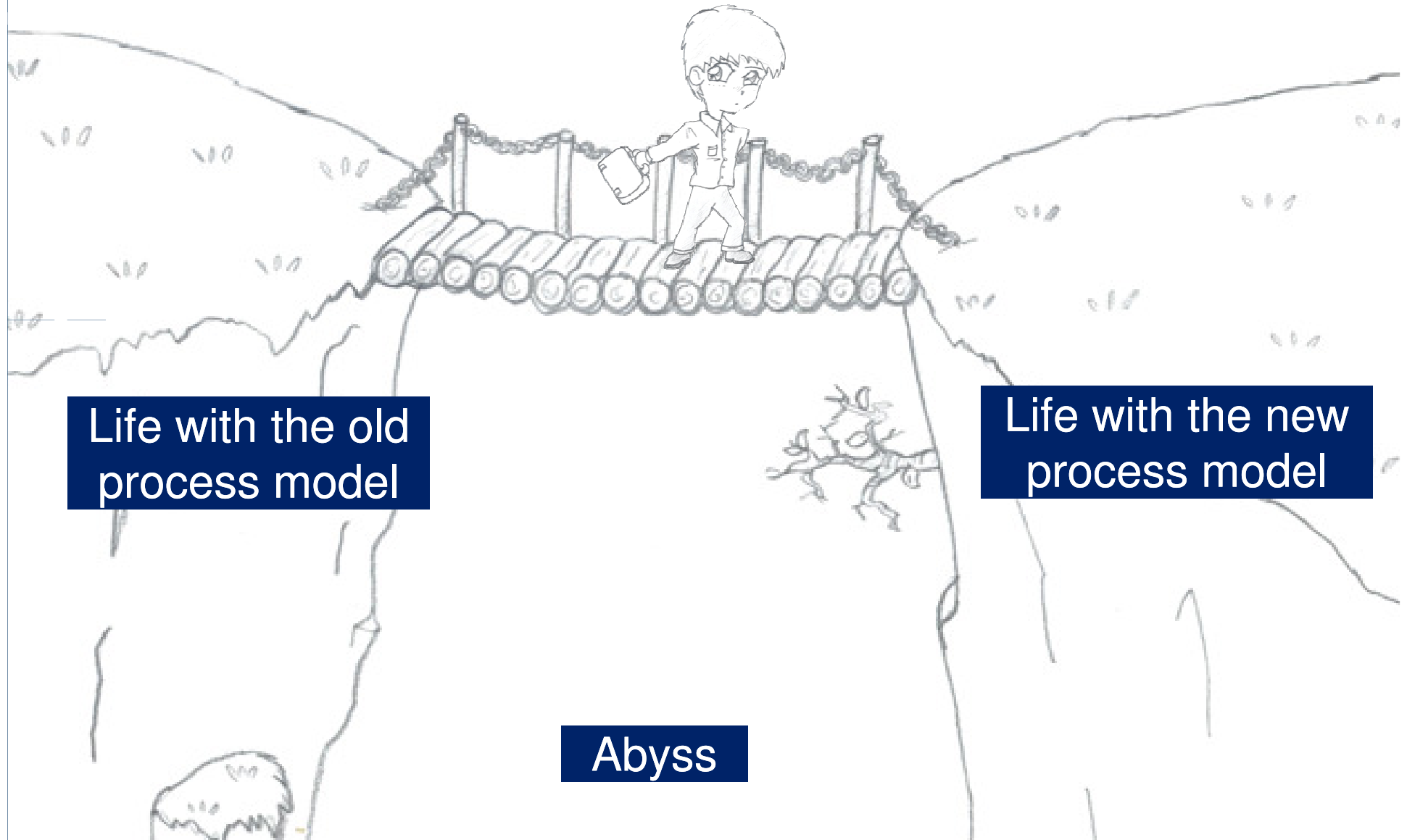


Life with the old  
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Life with the new  
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Abyss

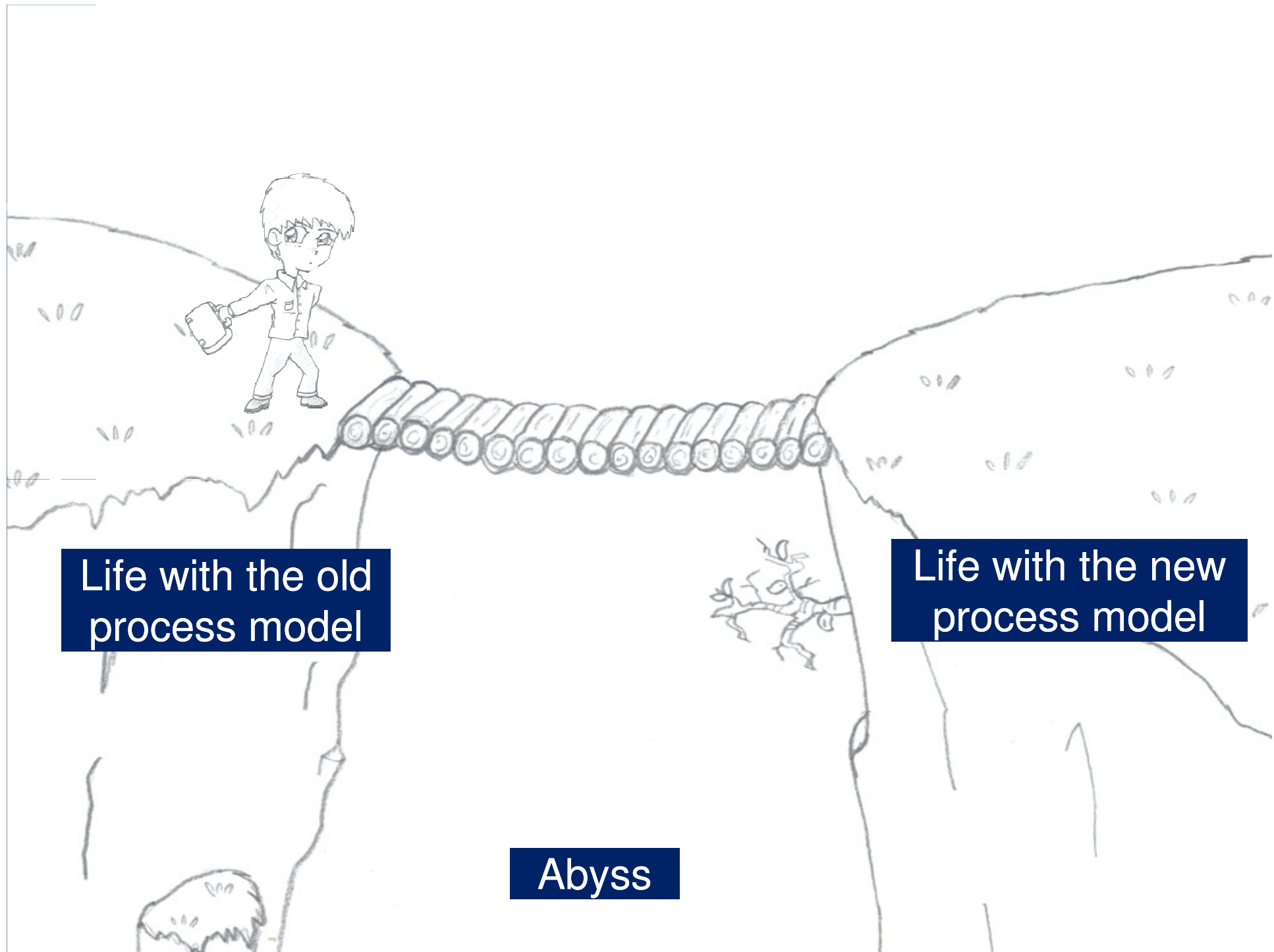
## Safeguarding the path



Life with the old  
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Life with the new  
process model

Abyss

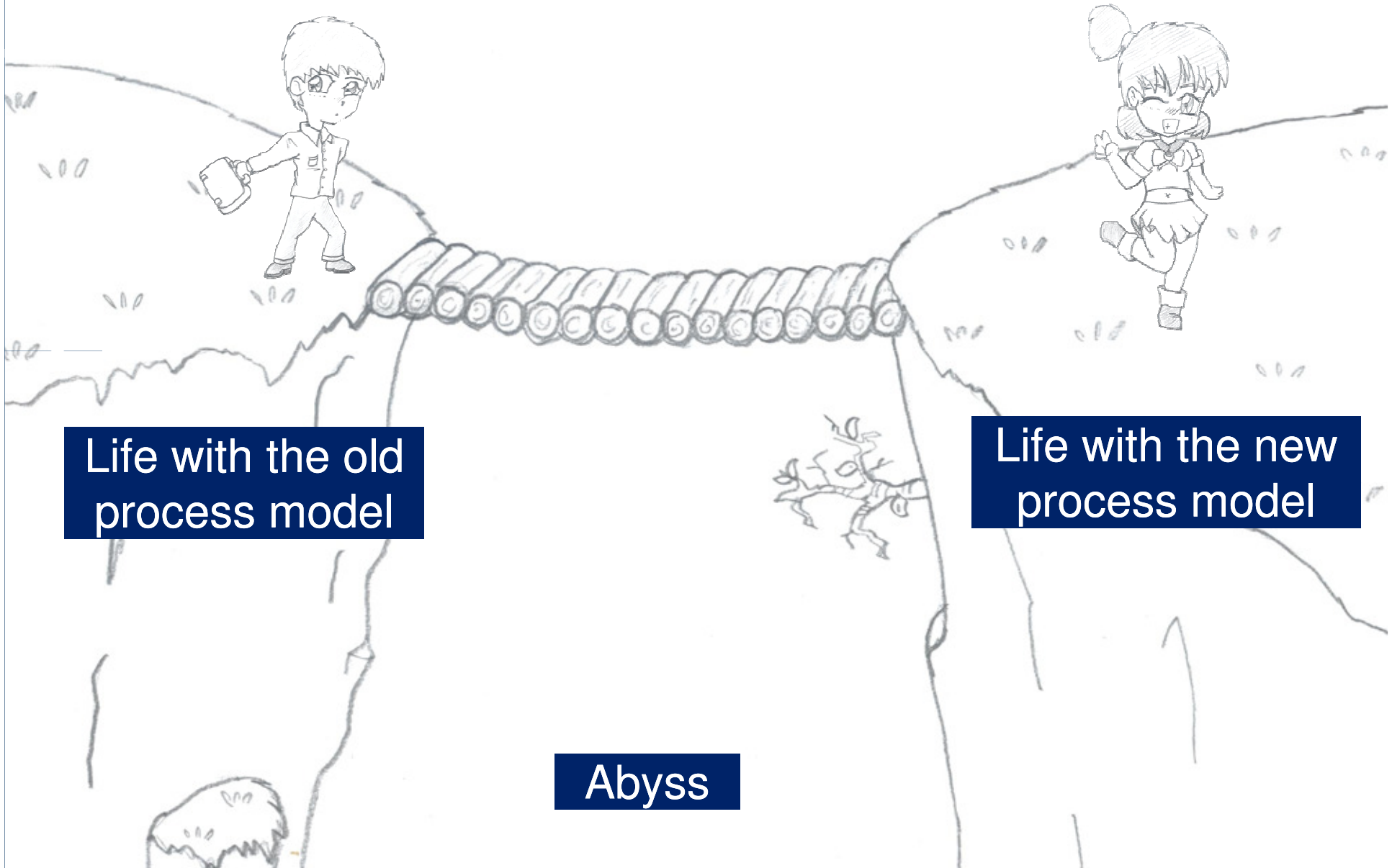


Motivation

Life with the old  
process model

Life with the new  
process model

Abyss

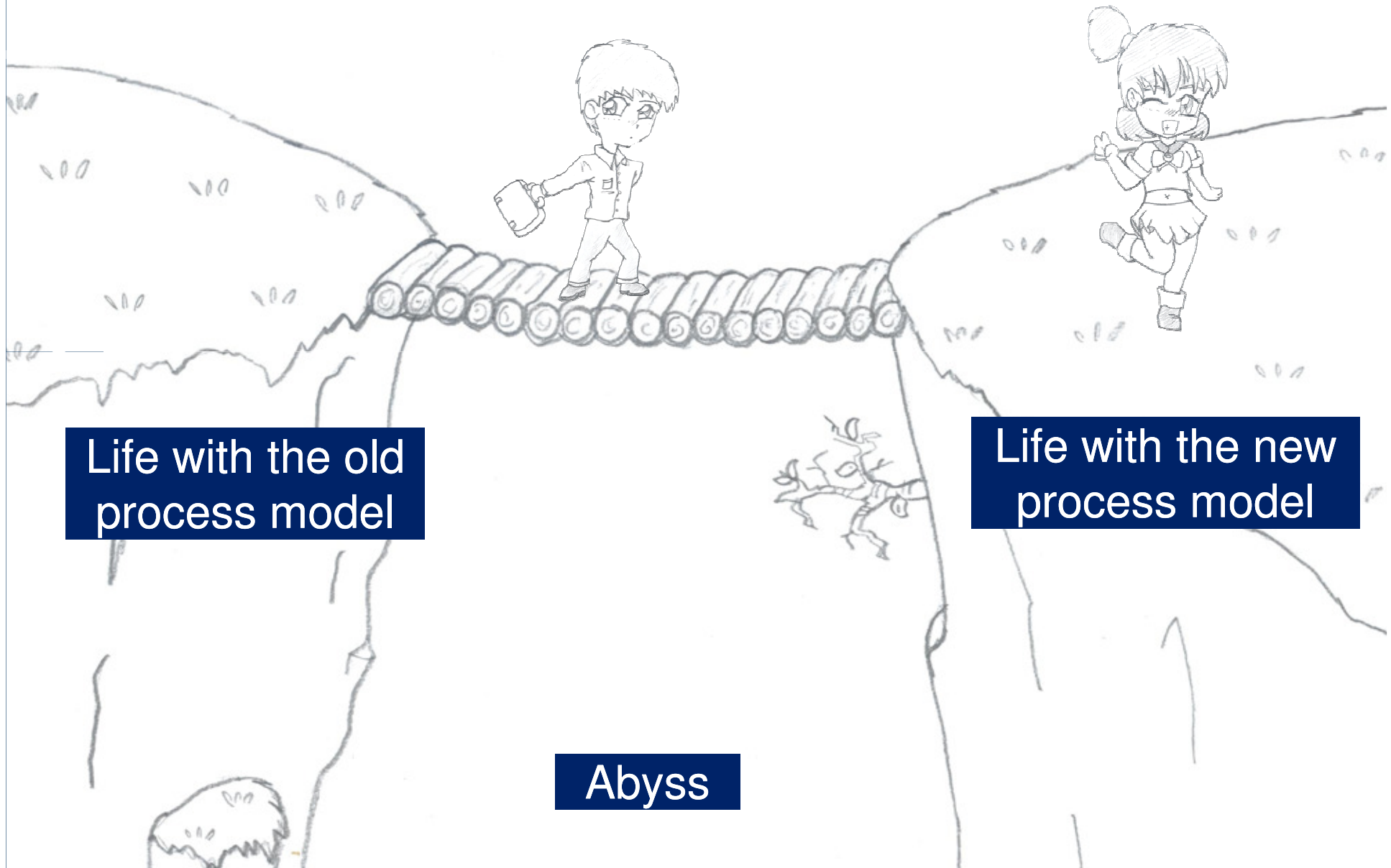


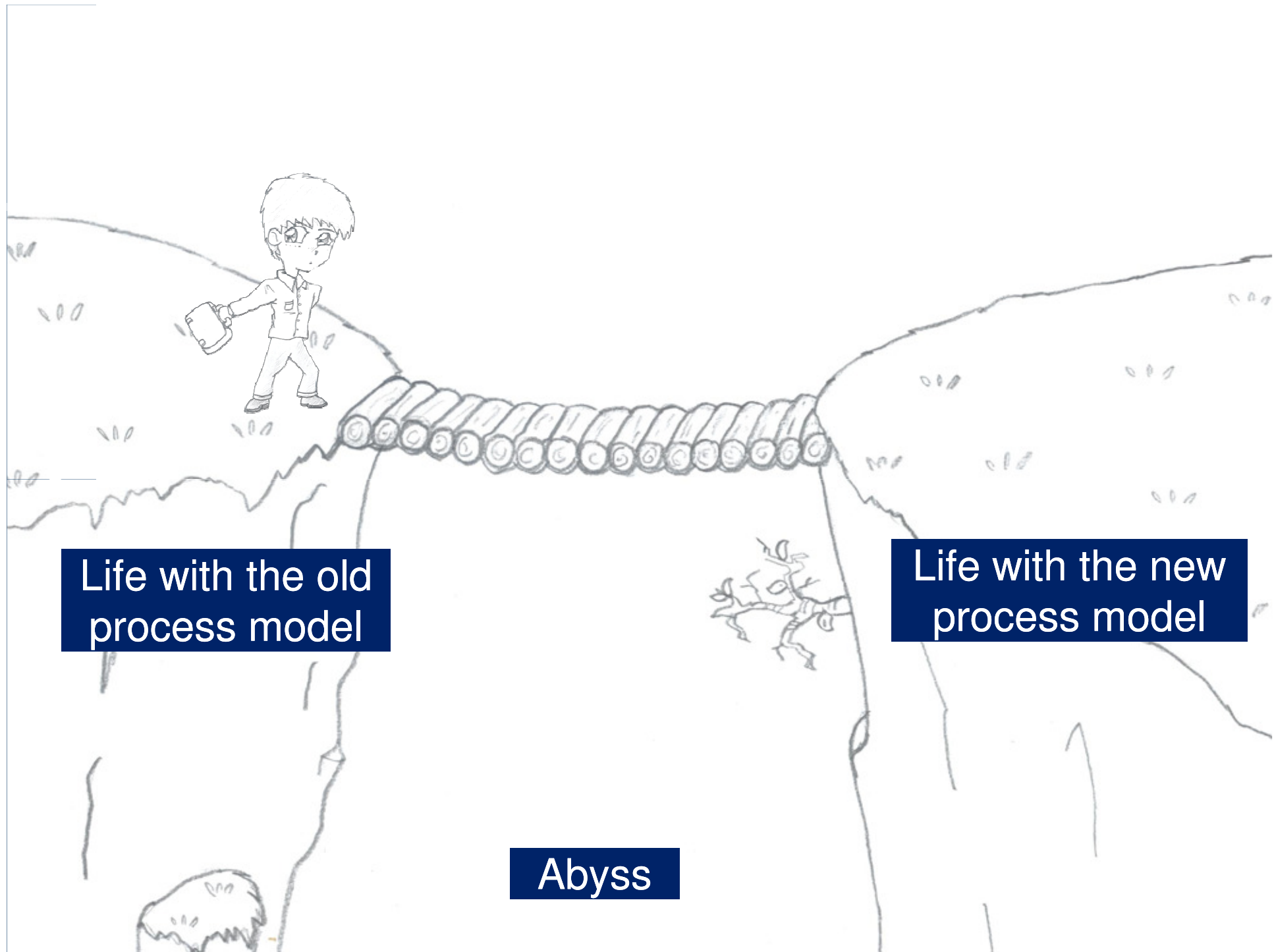
Motivation

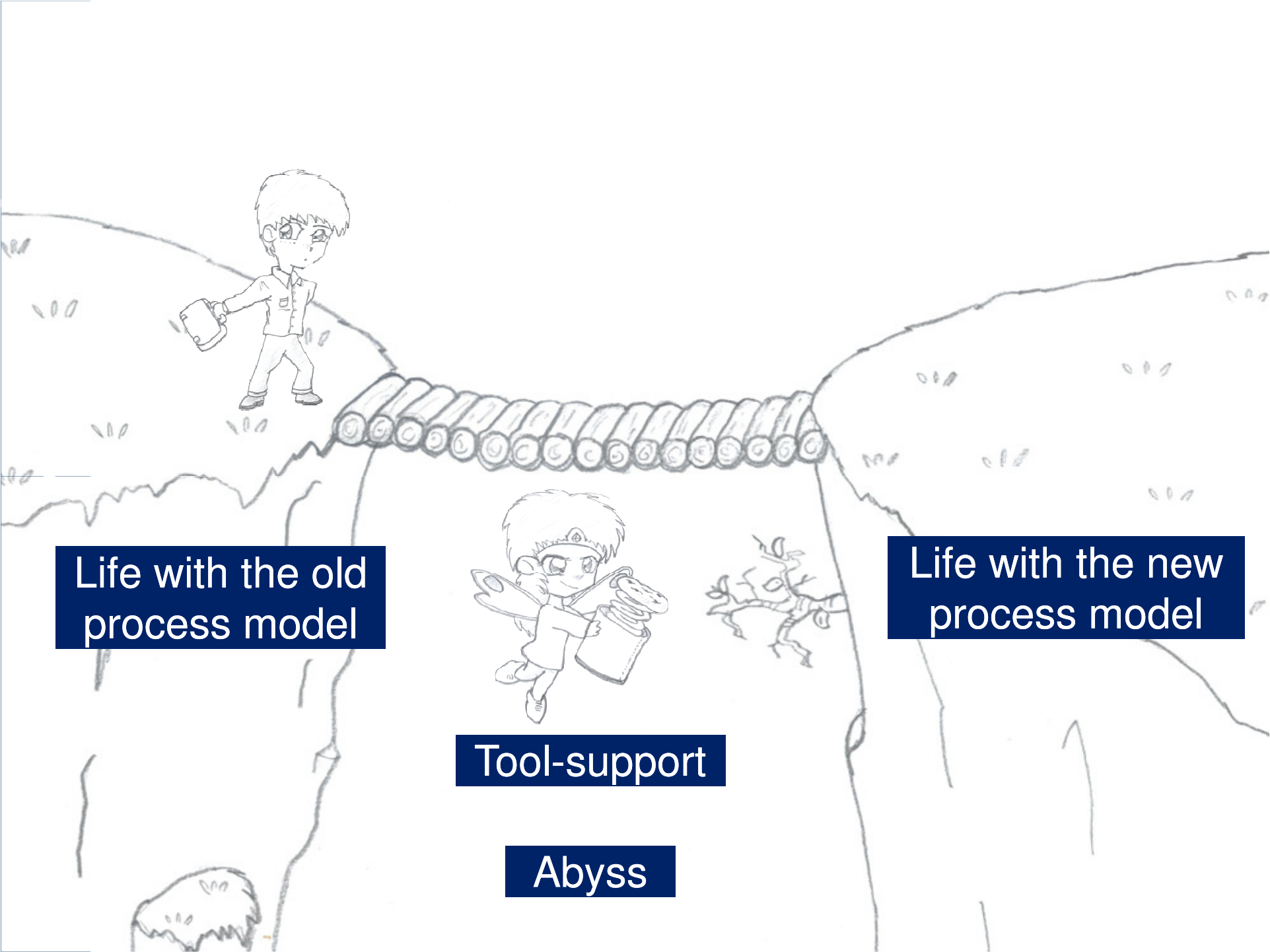
Life with the old  
process model

Life with the new  
process model

Abyss





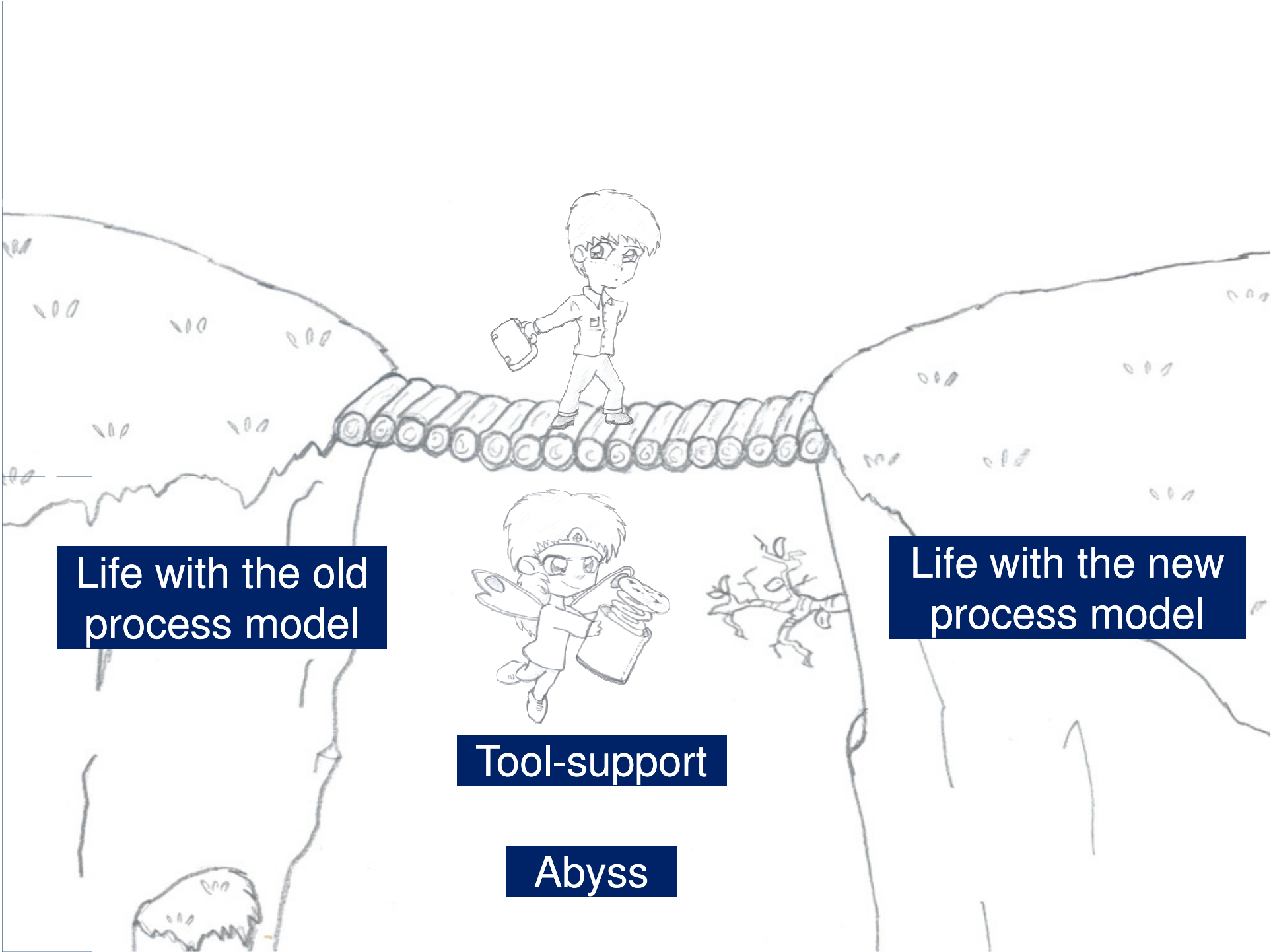


Life with the old  
process model

Tool-support

Abyss

Life with the new  
process model

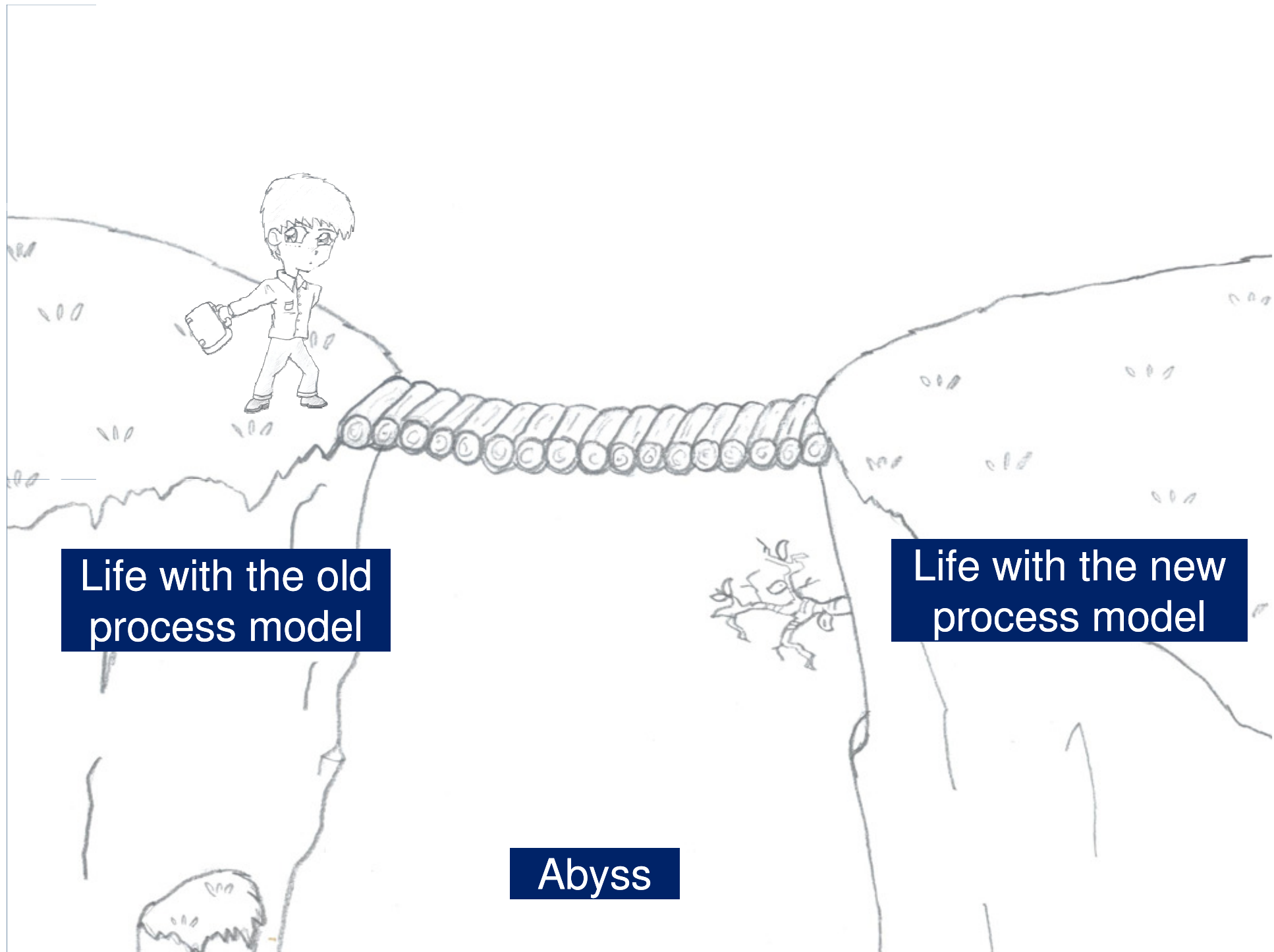


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Tool-support

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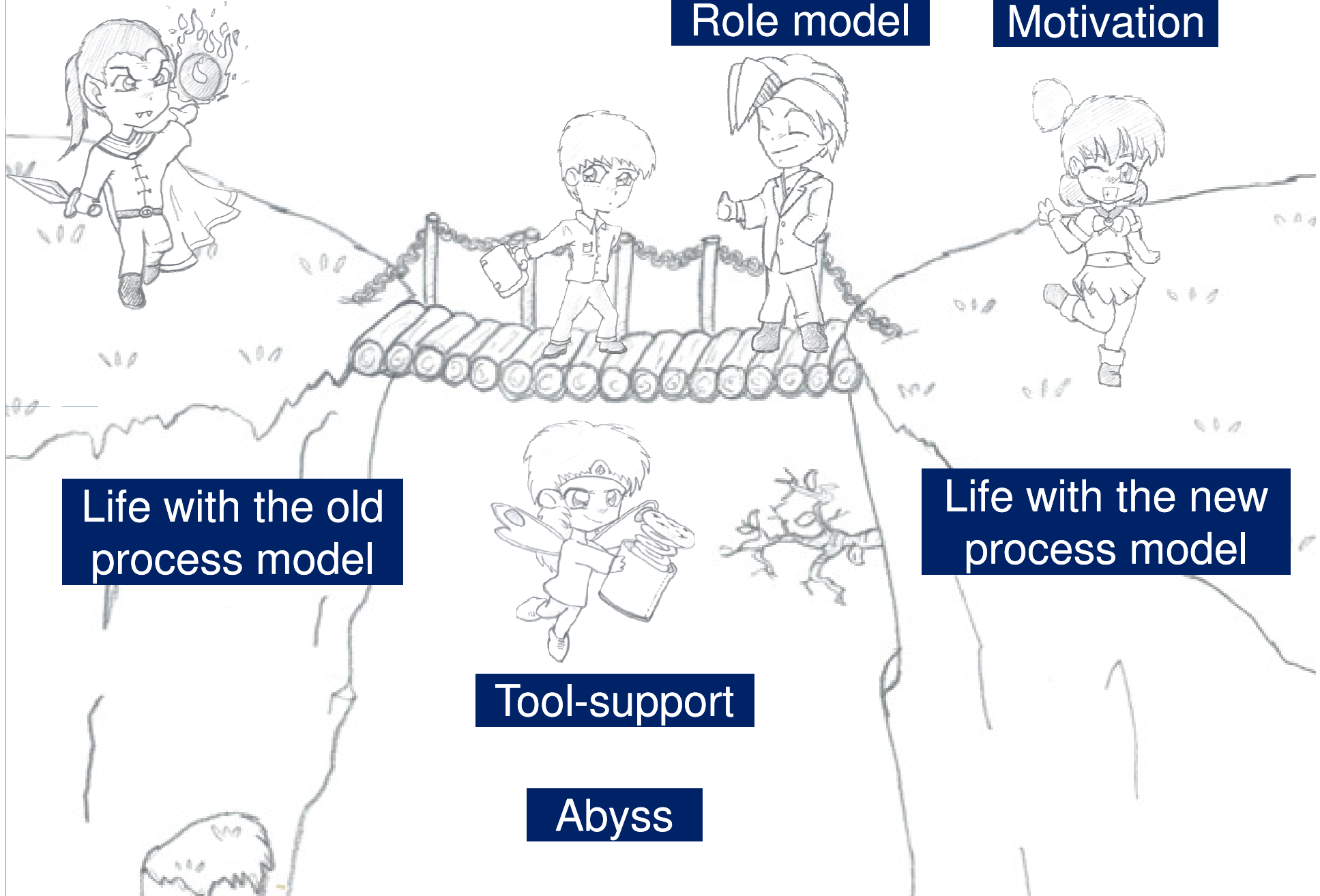


Menace

Safeguarding the path

Role model

Motivation



Life with the old  
process model

Life with the new  
process model

Tool-support

Abyss

# Any questions?

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# Info by SOPHIST



## Resistance is futile

### What awaits you:

- Articles on the subject
- The presentation as a PDF
- A login to our download area
- A newsletter about OO and RE
- Superb events

### What you need to do:

Send us an email with your address to [heureka@sophist.de](mailto:heureka@sophist.de), we'll send you a link to our download area.  
Keyword: Brazil

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