

Learning Technique for FPSS

Lecture: Future-Proof Software-Systems



«Hierarchical Transformation»

Prof. Dr. Frank J. Furrer

Different for various fields:

- Language learning
- Painting
- Piano playing
- ...
- ...
- Future-Proof Software-Systems

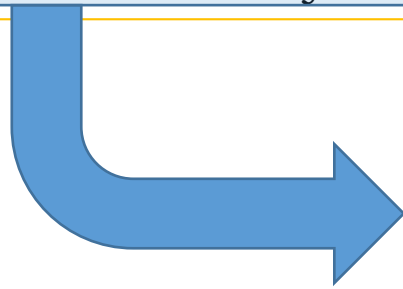
Learning Technique:

Procedure that leads and facilitates the learning

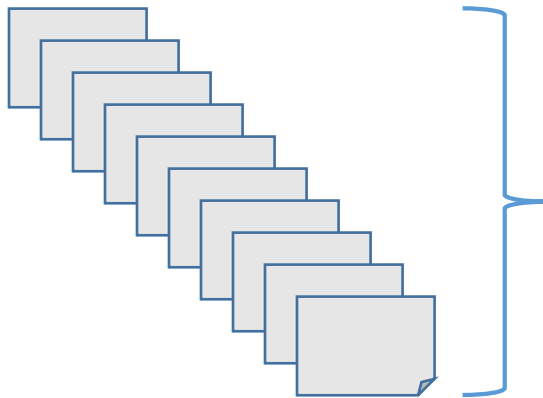
Jittomy Diaz

Objective:

Maximum learning success with minimal time effort

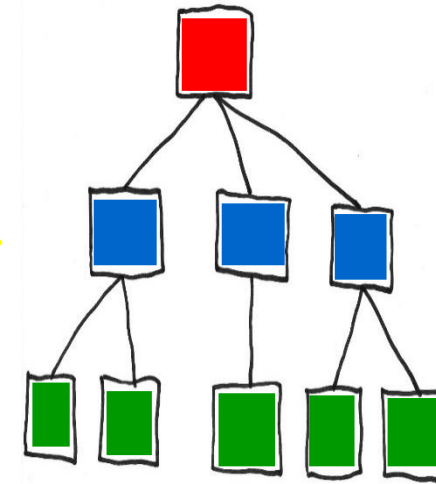


«*Hierarchical Transformation*»



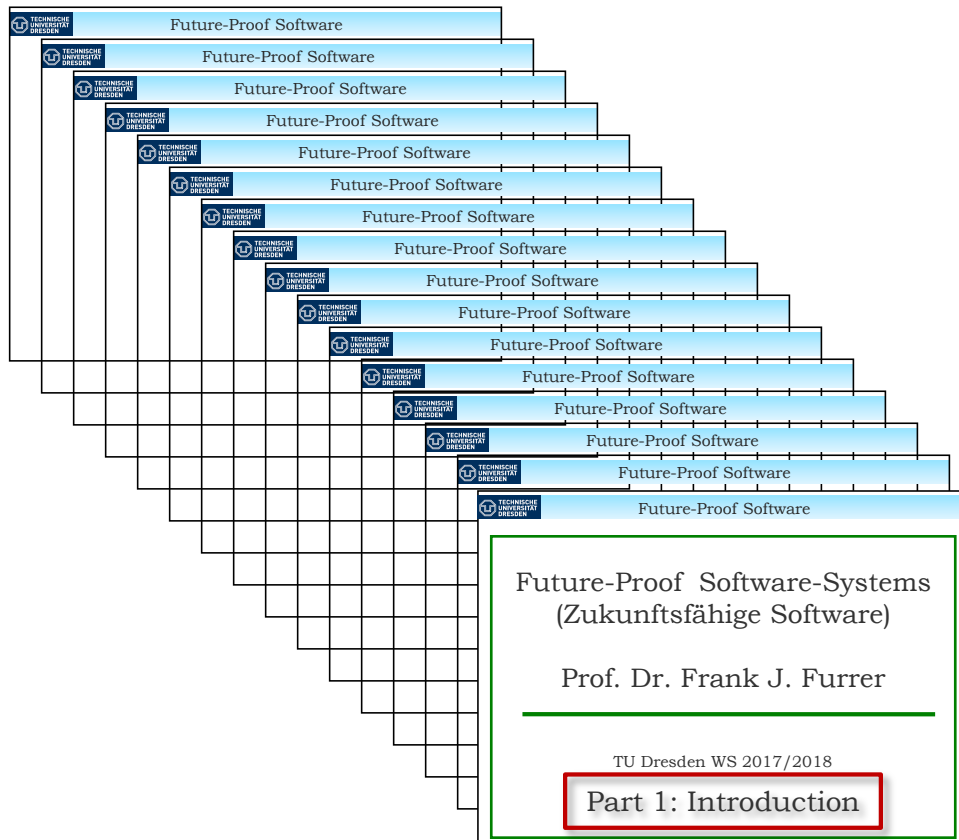
Slide Presentation
= **Linear**,
sequential
knowledge transfer

**Learning
Technique**



Hierarchical,
logical
representation

Structure of the Lecture Material = *Linear* Sequence of ppt-Slides



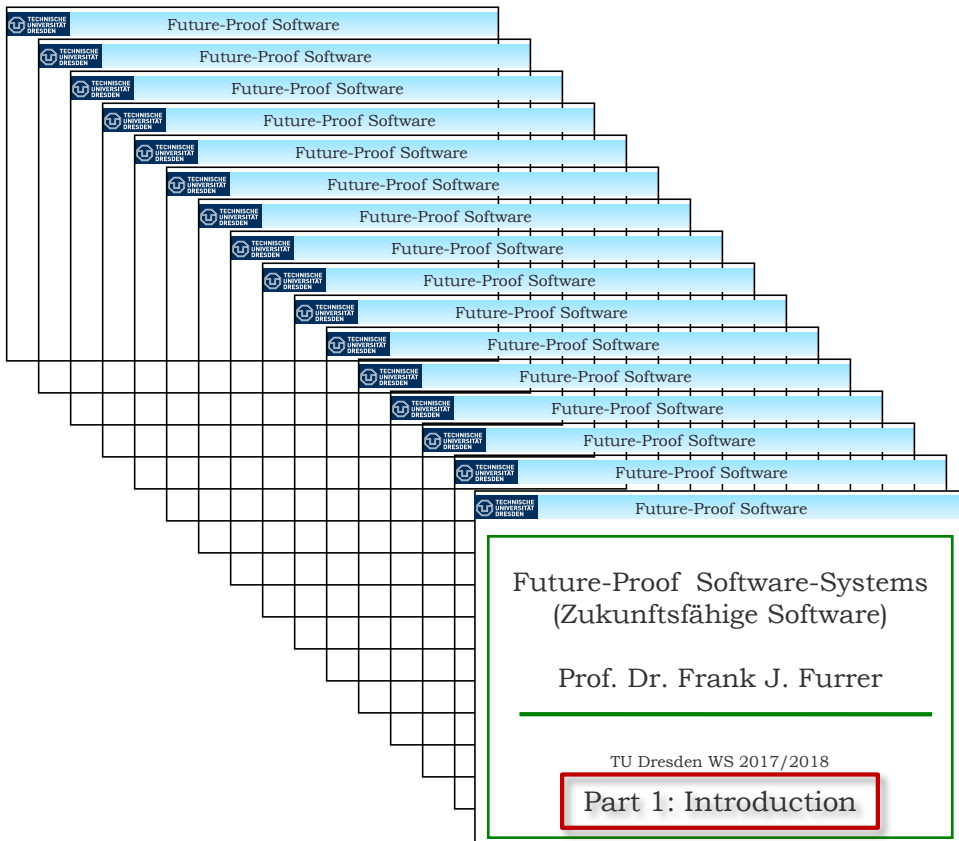
Fact 1:

Well suited for a presentation by a teacher



<http://teaching.monster.com>

Structure of the Lecture Material
 = *Linear* Sequence of ppt-Slides



Fact 2:
NOT GOOD for individual learning





Optimal FPSS learning technique

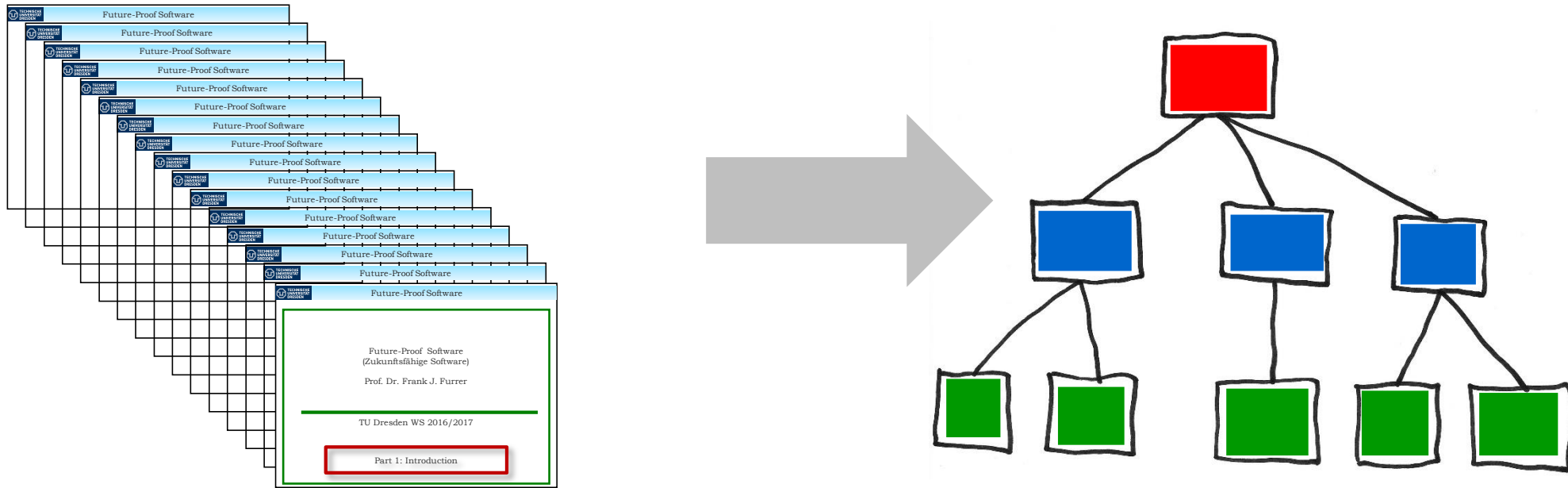
Step 1:

Transformation from linear (= slides) \Rightarrow hierarchical (= structure)

Step 2:

Representation as «learning cards»

Step 1:
Transformation from linear (= slides) \Rightarrow hierarchical (= structure)



a) Select a top-level concept

b) Identify the important sub-level concepts

c) Attach additional information

... repeat

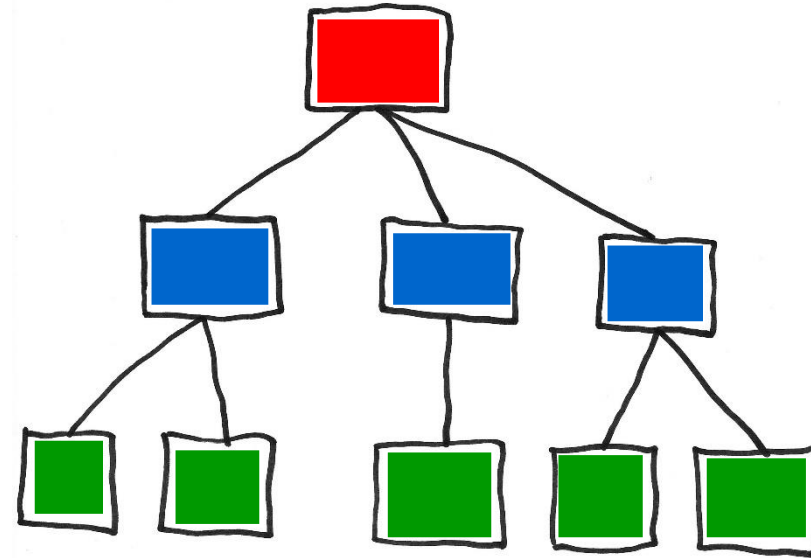
Step 1:

Transformation from linear (slides) \Rightarrow hierarchical (structure)

Top-level concepts

Important sub-level concepts

Additional information



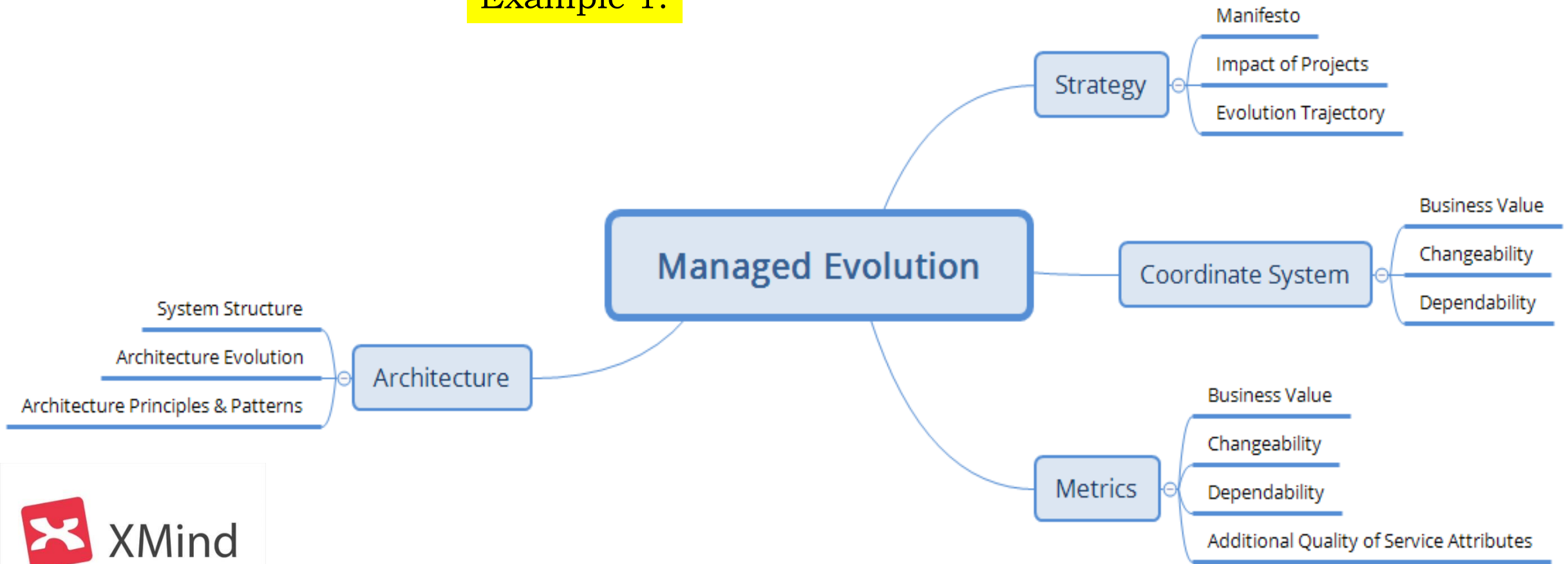
Organizing complex material into

hierarchical structures

is a natural, powerful learning technique («classification»)

Hierarchical Representation:
«Mind Map»

Example 1:

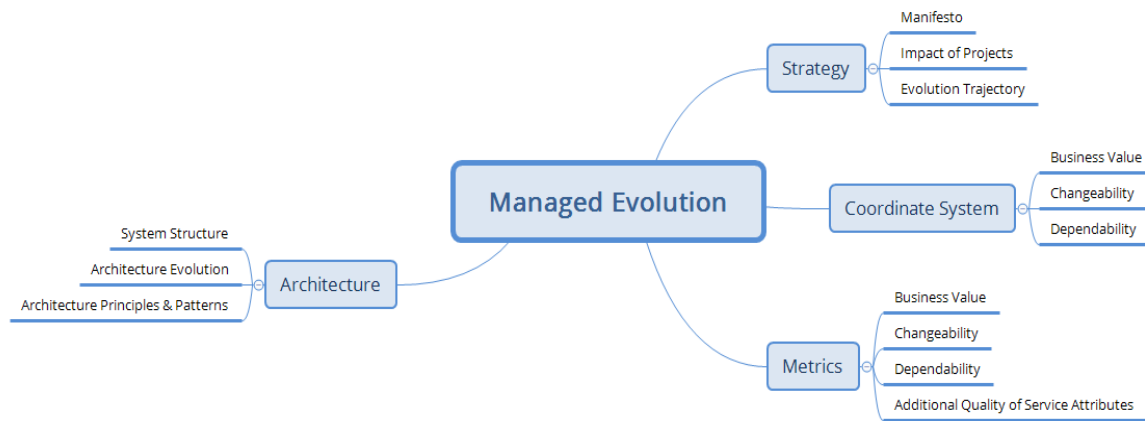


<http://www.xmind.net>

Step 2: Representation as «learning cards»

Front: Concept Hierarchy

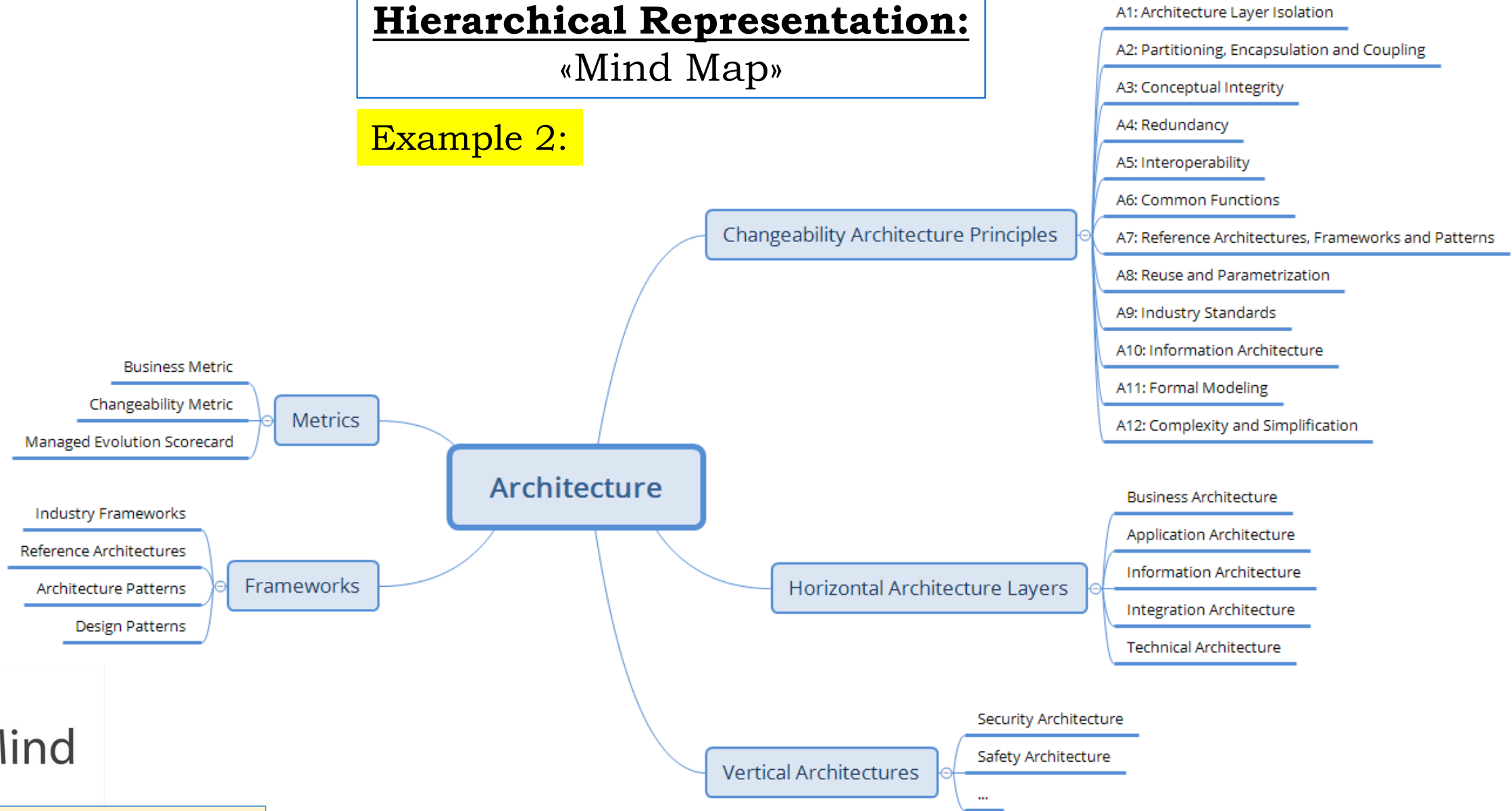
Back: Notes



- *Negative: Technical debt, architecture erosion, business + market pressure*
- *Business value, changeability and dependability are continuously improved*
- *Managed Evolution coordinate system: ME evolution channel*
- *Tracking through metrics (BV, T+M, DevC, size)*
- *Dependability = survival / Changeability = adaptability to new requirements (T+M, DevC)*
- *Architecture = Key success factor*
- *Business ↔ IT interests/conflict*

Hierarchical Representation:
«Mind Map»

Example 2:

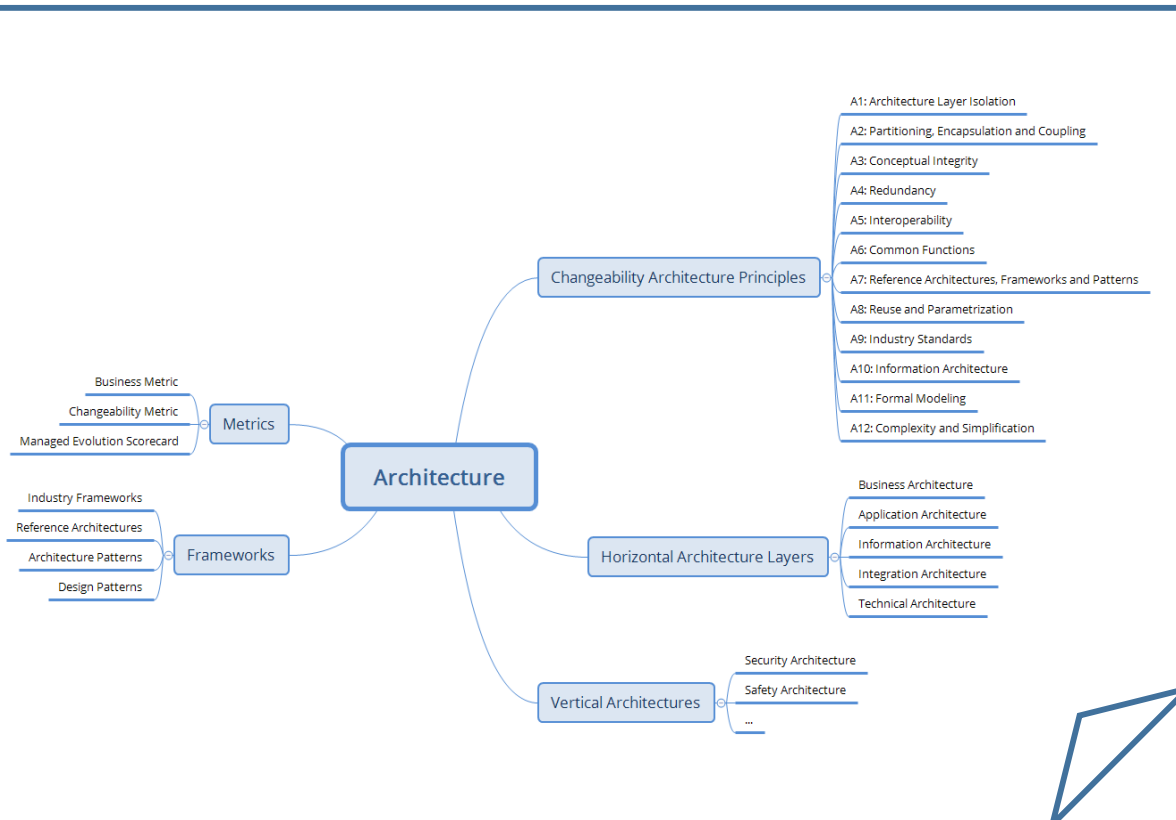


<http://www.xmind.net>

Step 2: Representation as «learning cards»

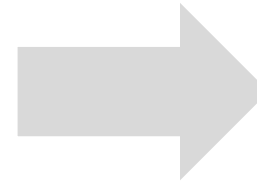
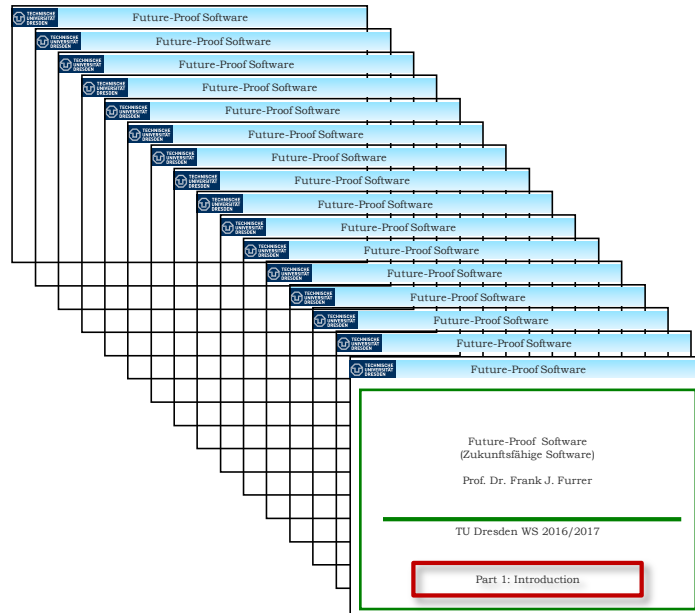
Front: Concept Hierarchy

Back: Notes

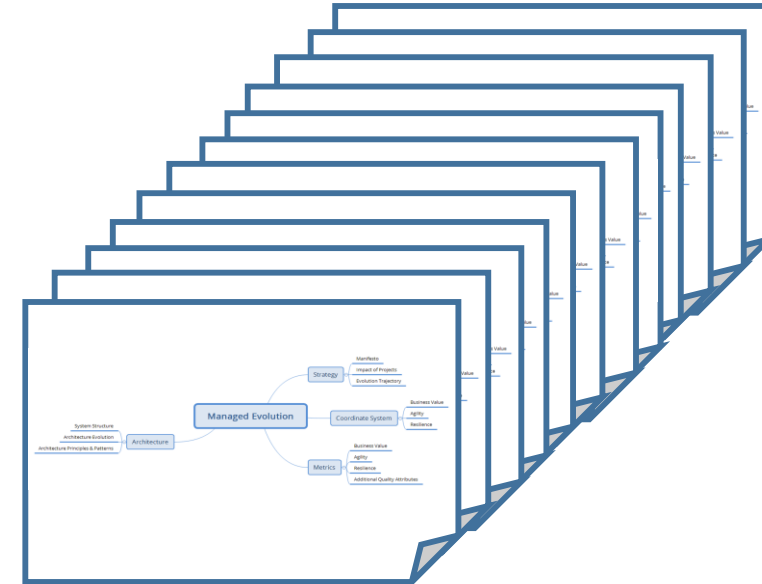


- *Architecture is the single most important key for future-proof software-systems*
- *Architecture is layered: 5 isolated layers are defined*
- *Architecture knowledge is contained in principles, patterns, frameworks and reference architectures*
- *Changeability is founded on 12 application architecture principles A1 ... A12*
- *For the vertical architectures (security, safety, ...) a great number of principles and patterns exist*
- *Architecture is not static: It needs continuous maintenance and good care*

Slide Set



Learning Cards



Production = Knowledge organization & knowledge acquisition

Repetition = Knowledge amplification

Completeness = Sufficient time investment



Hints:

- Produce the learning cards continuously (e.g. after each lecture)
- Look at the learning cards regularly & randomly
- Refine and add more notes when necessary
- **DO IT YOURSELF !!!**



Daily learning 1-hour rule



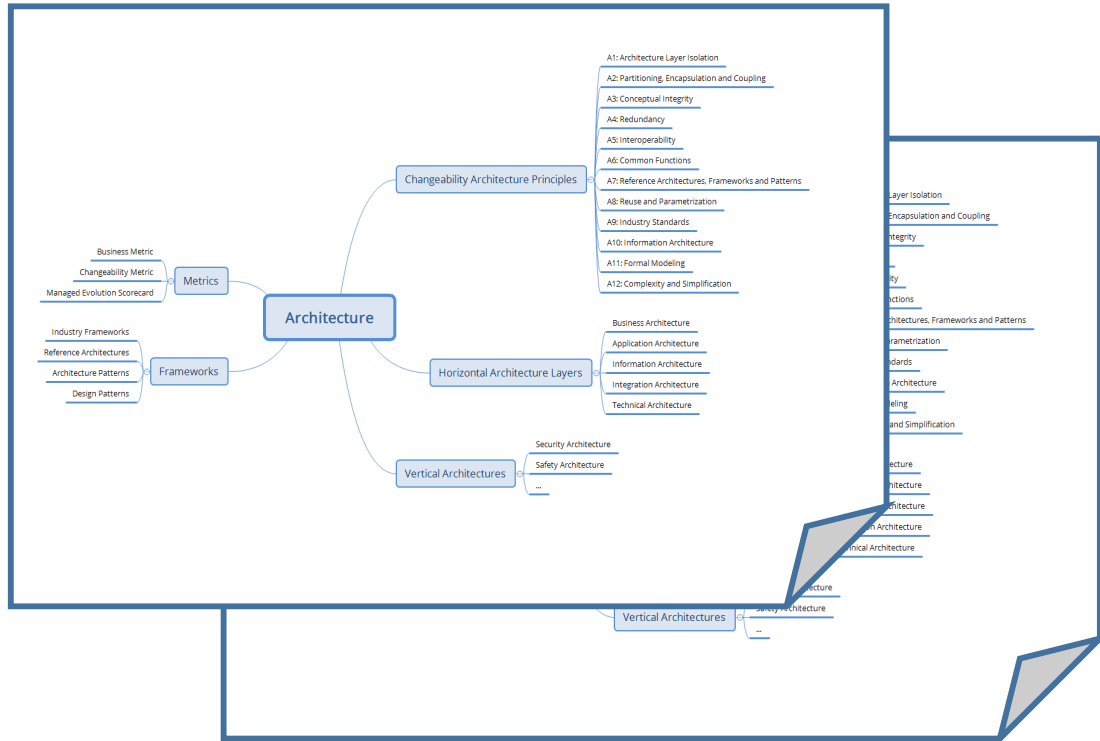
<http://www.decision-making-solutions.com>

<http://pmdaily.net>

Choose 1 hour **every day** for learning
[in addition to lectures, etc.]

Cramming all the learning before the exam:
⇒ Recipe for **suboptimal results**

FPSS Learning Technique Summary



<http://www.decision-making-solutions.com>

Learning cards:
Continuously produce learning cards
[Best: **immediately** after the lecture]

One hour rule:
Choose 1 hour **every day** for learning
[in addition to lectures, etc.]



... I wish you «good learning»