UNIVERSITÄT DES SAARLANDES

30 YEARS DFKI Human Centric AI.

Summary

Architectural Thinking for Intelligent Systems

Winter 2019/2020

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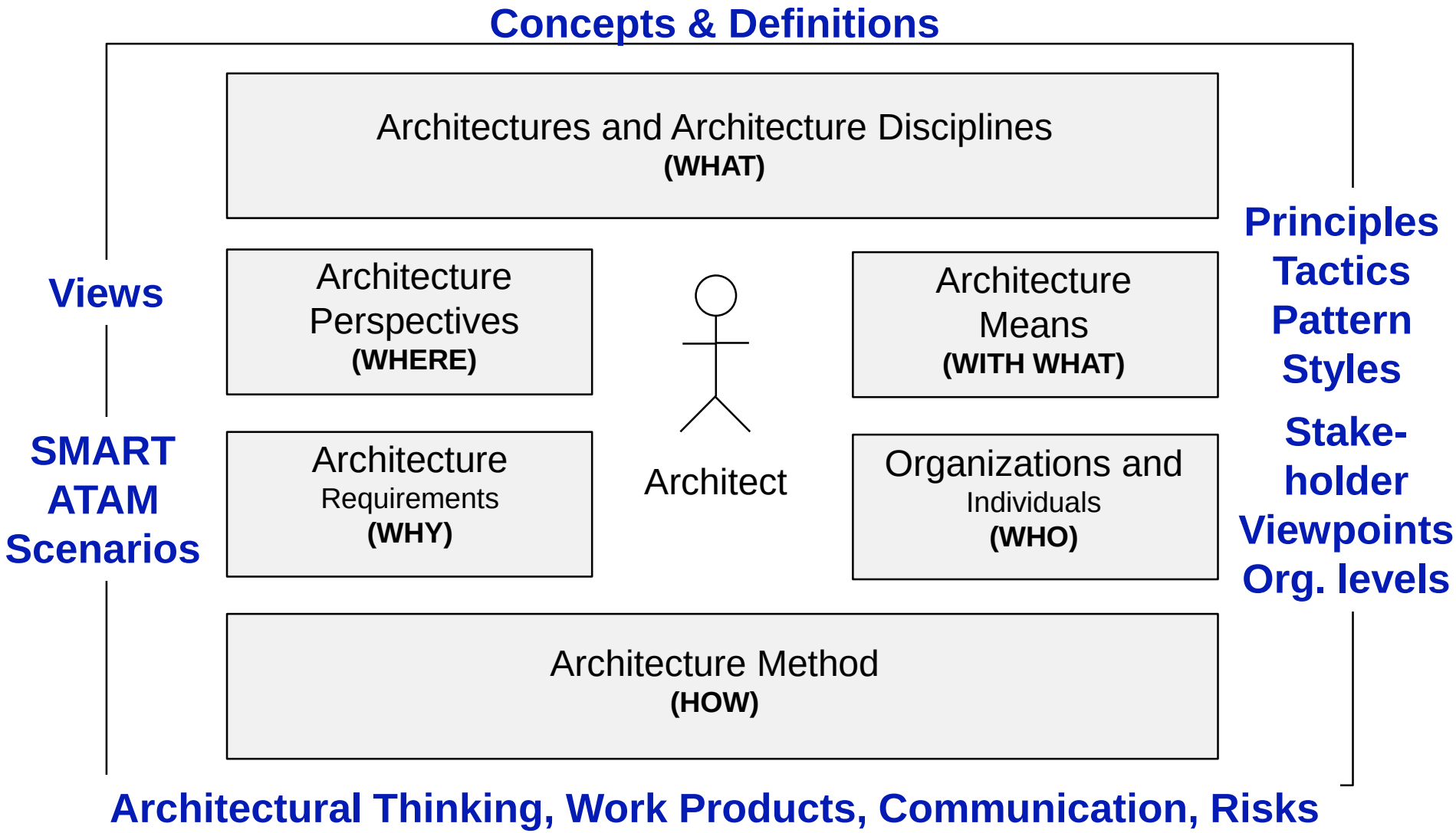
Agenda

- A high-level view on what we learned
- Challenges & Risks in architectural thinking
- Profession of the IT Architect
- Career paths

Summary: The Journey We Took in this Course



The Process of Architectural Design

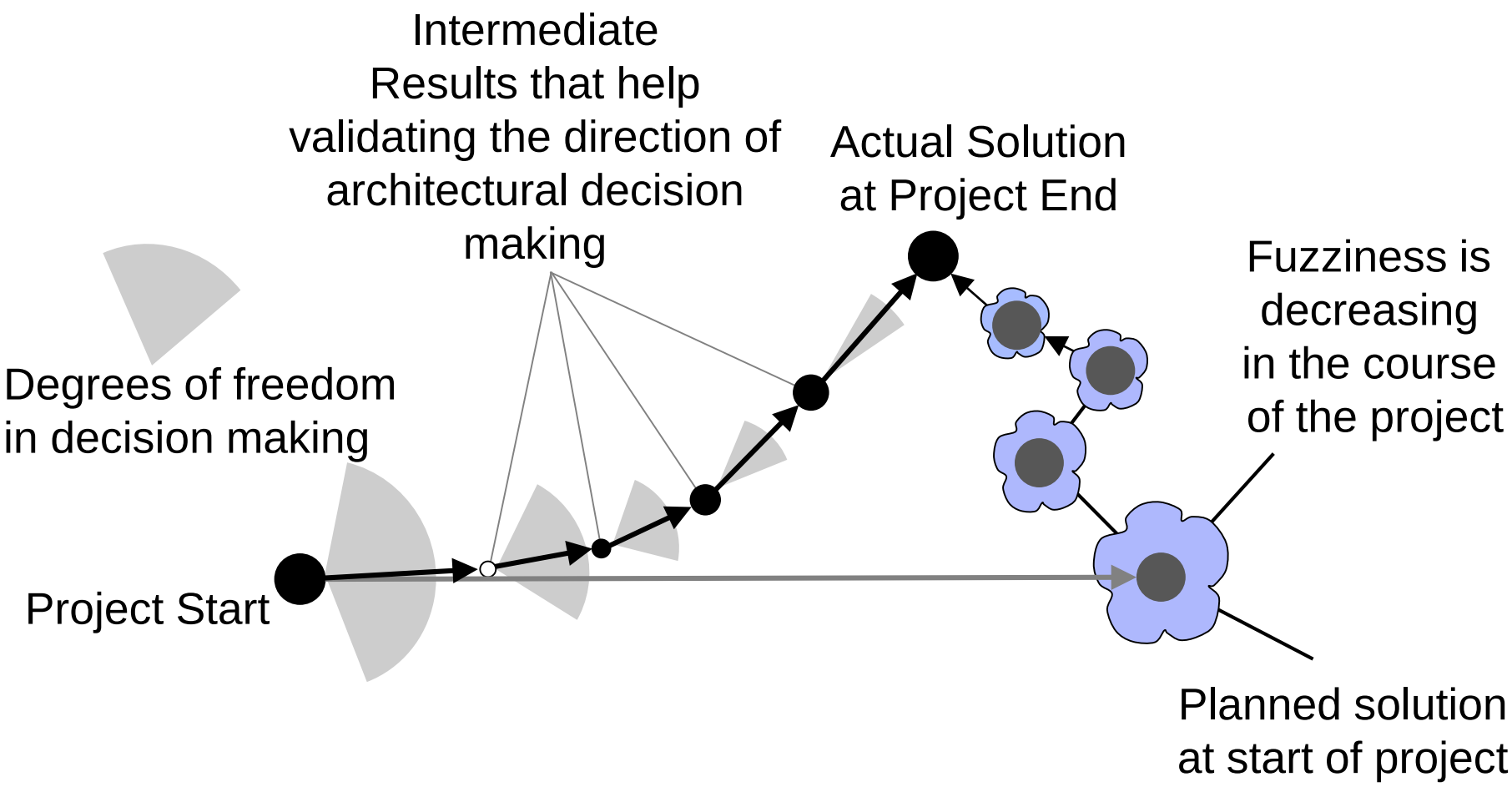
- Thinking in systems
  - What are the basic system elements?
  - How do they differentiate themselves?
  - What relationships are there?

- Application of principles, tactics, styles, patterns
  - Which should be implemented how in the structures?

- Evaluation of the design

➢ **What makes this process difficult or easy?**

Solution as "Moving Target"

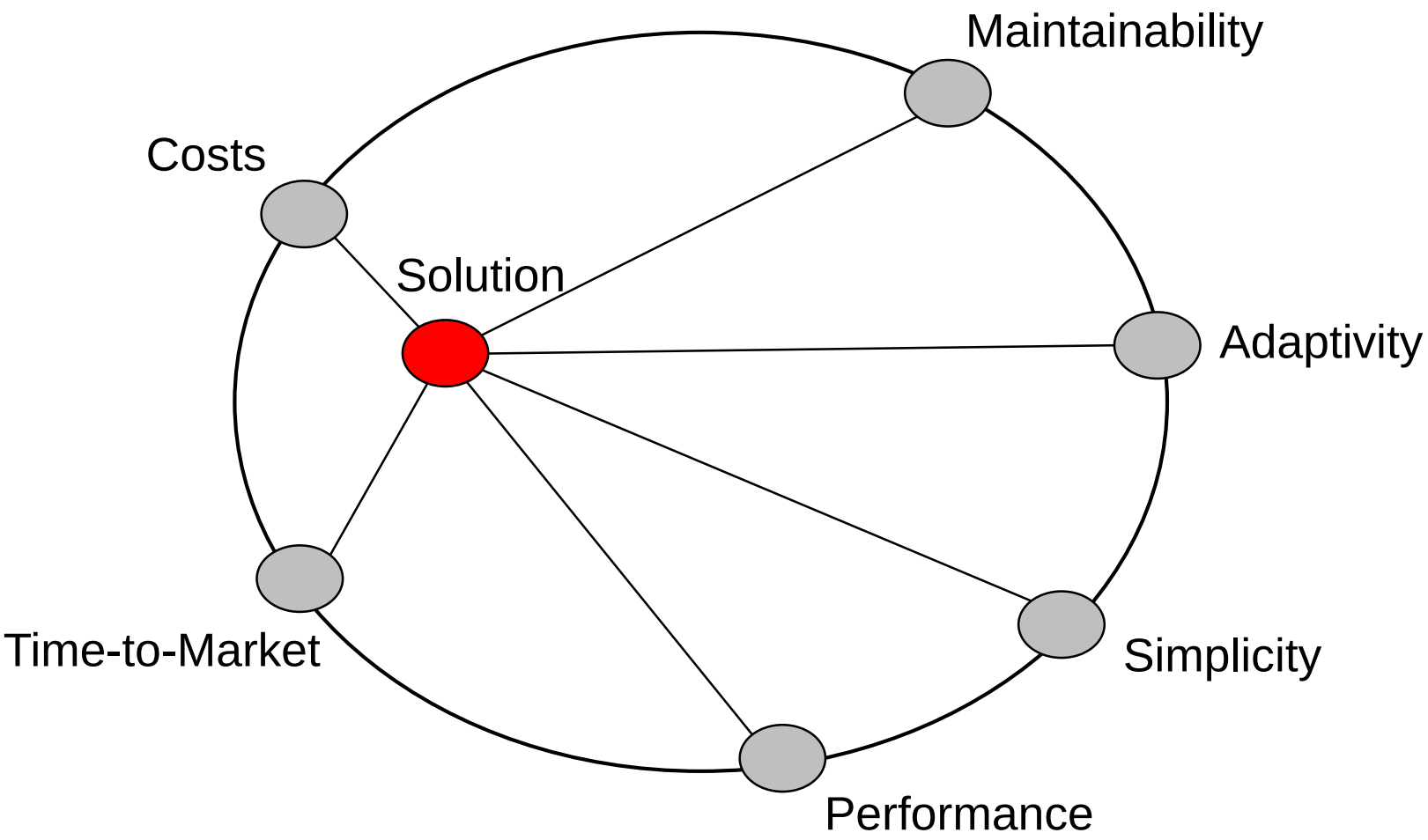


Starke: Effektive Software Architekturen

Incremental and Structured Approach

- Analysis of requirements and resolution of conflicts
- Application of principles, tactics & patterns
- Generating models & prototypes
- Providing views for participants
- Documentation of decisions

Solution as compromise ("Balancing the Forces")



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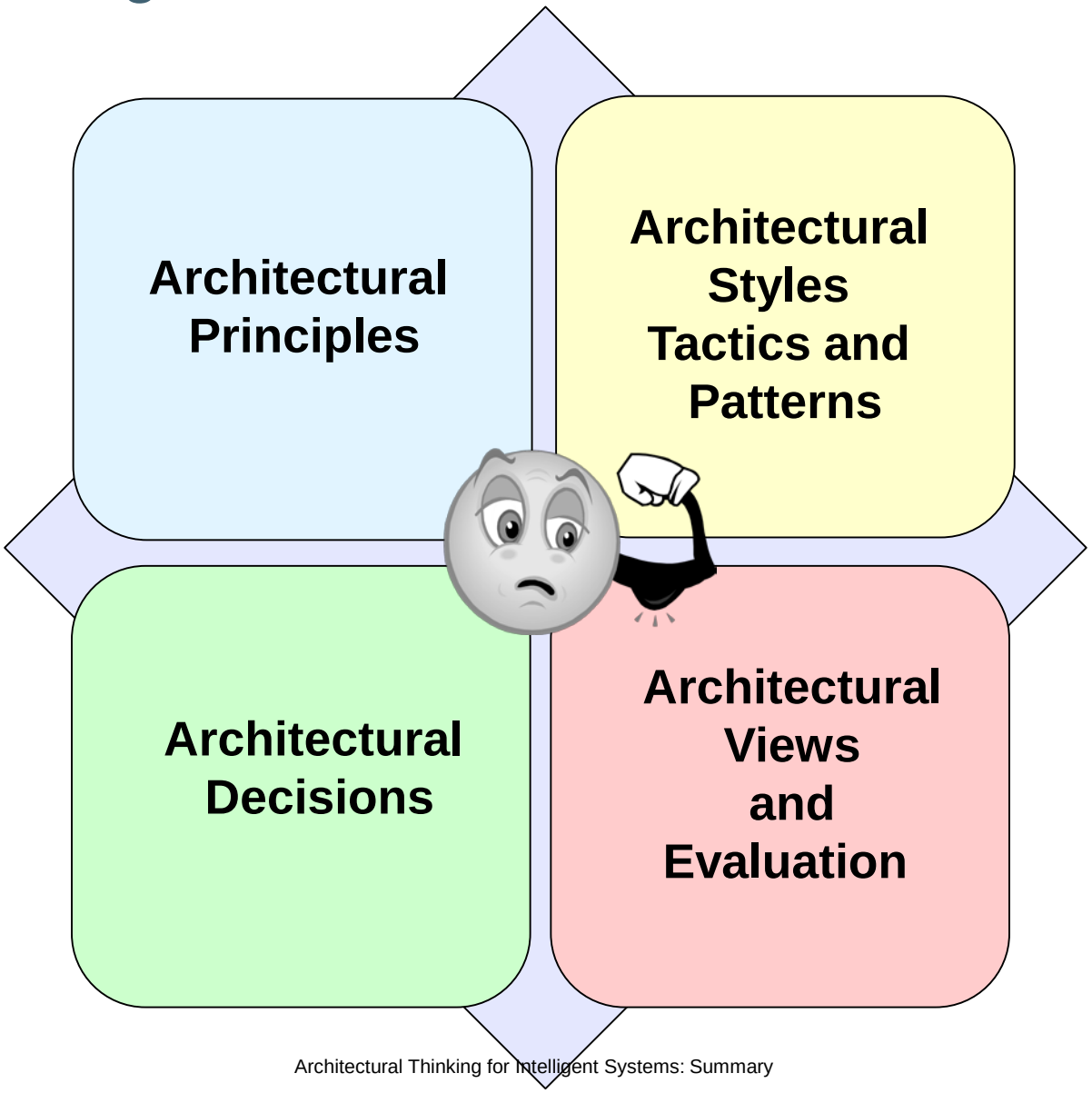
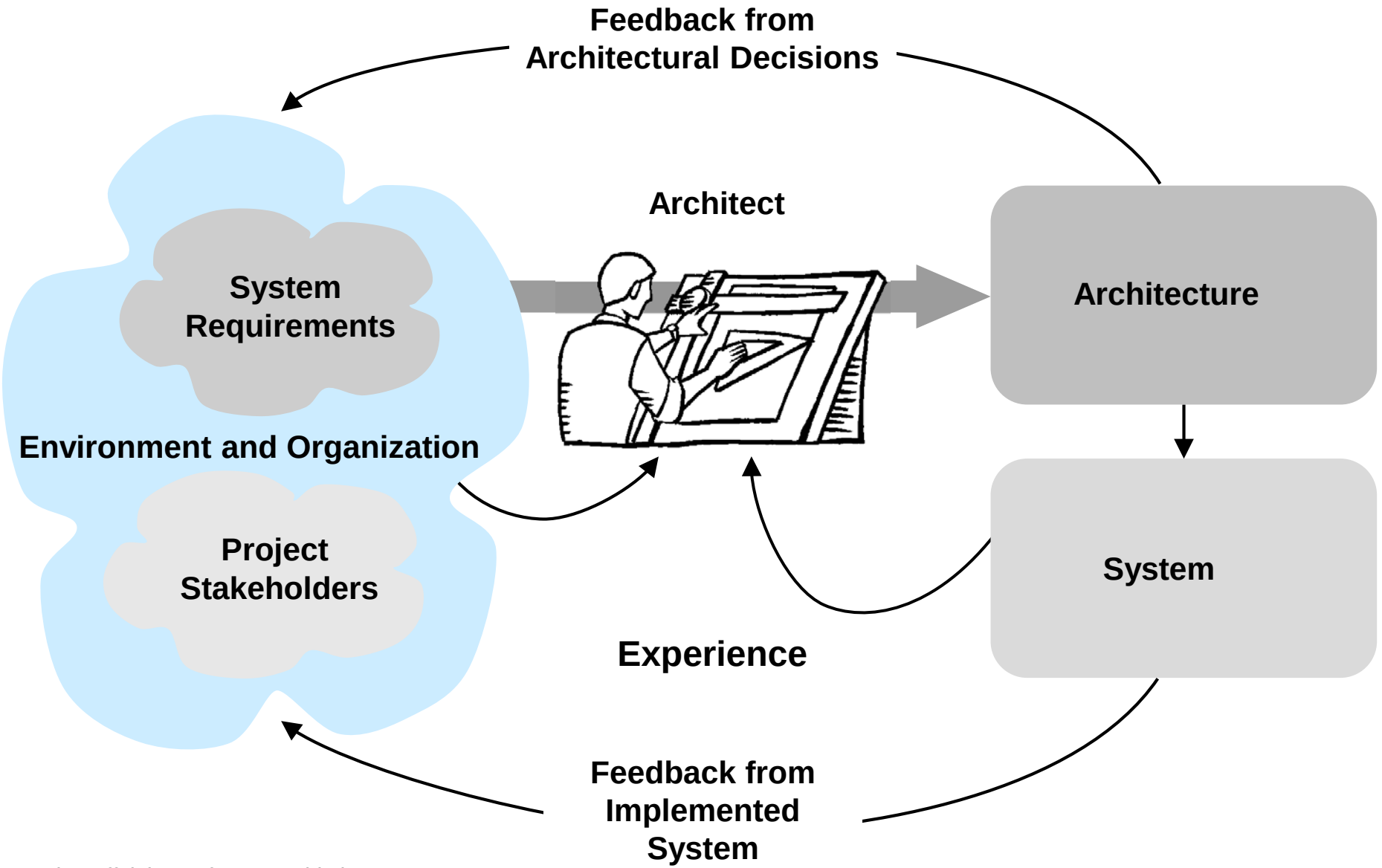
Basic Knowledge of the Architect





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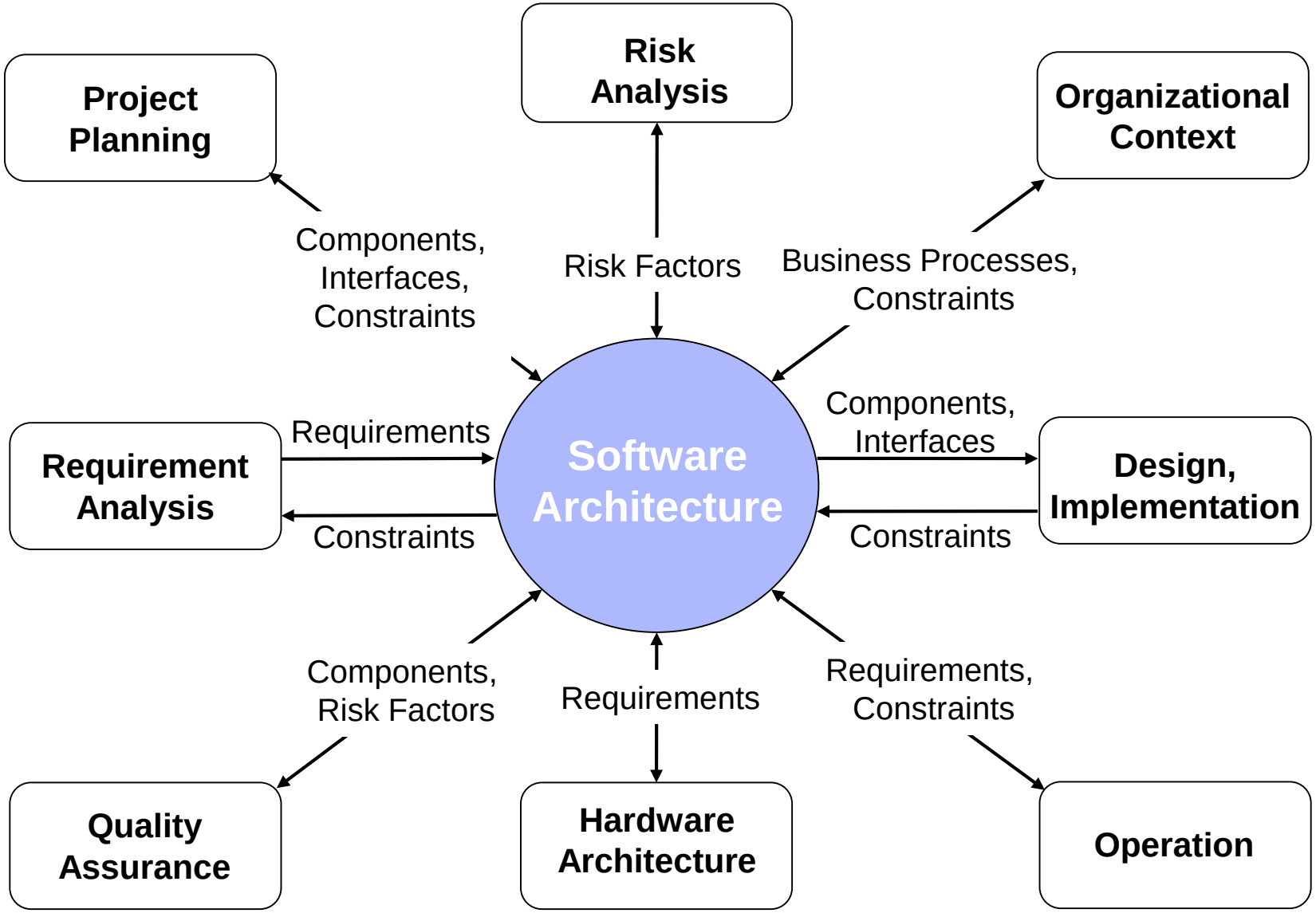


Starke: Effektive Software Architekturen

The Essence of Architecture (according to Woods)

- Stakeholder focus
  - Bringing together of different positions
  - Eliminating ambiguities, identifying risks
- Balancing of interests
  - No simple answers, good/bad alternatives
- Design focus
  - Quality Attributes, overall system view, system context
- Leadership qualities

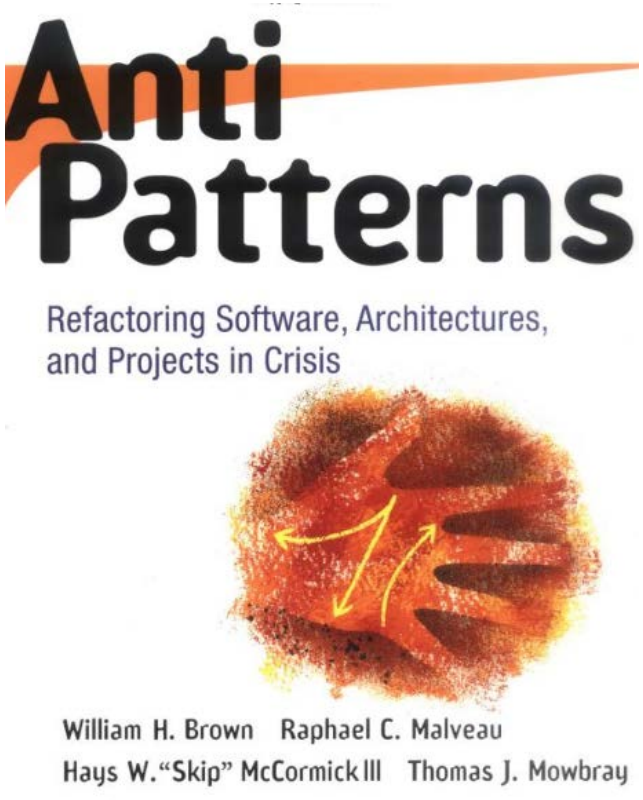
Tasks of the Architect

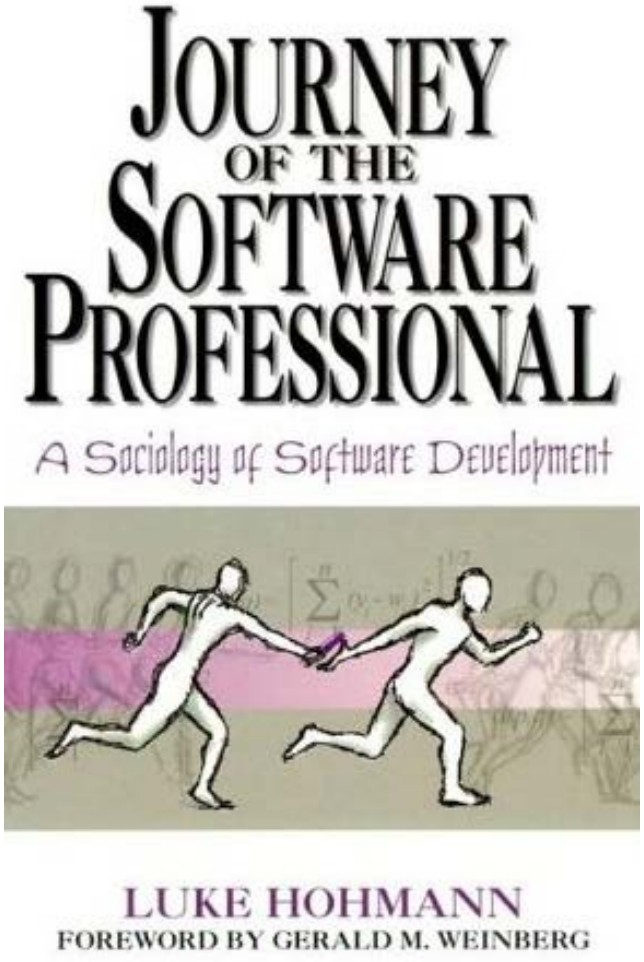
- Organisational tasks
  - Distribute tasks, evaluate architecture, integrate, document, demonstrate viability, „market“ the architecture
- System structures
  - Components, couplings, internal and external interfaces, pattern & styles, reference architectures, separation of technology and domain
- System qualites and non-functional requirements
- Technical solutions and technology choices
  - Software frameworks, tools, user interaction, business processes and rules, ….

Important Skills for Architects

- Architectural knowledge and experience
- Technical scope and understanding of technology
- Disciplined, method-based work
- Experience with the entire software lifecycle
- Leadership and communication skills

Learn from Experience





Top 5 Mistakes

- Believing the requirements
- Being seduced by the technology
- Majoring on your strengths and neglecting other areas
- Not stopping designers from designing
- Thinking you can do it all yourself

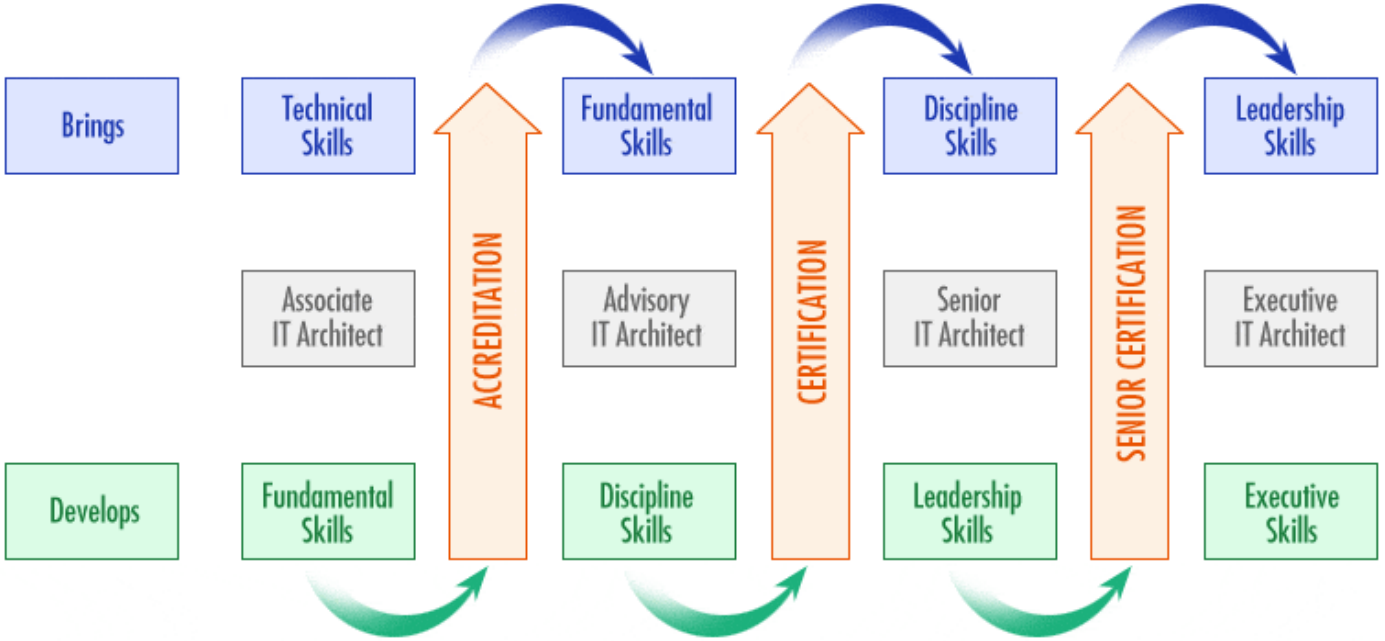
Top 10 Mistakes (according to Woods)

- Scoping Woes
- Not Casting Your (Stakeholder) Net Widely
- Focusing on Functions (Forgetting Qualities)
- Using Box and Line Descriptions
- Forgetting that it Needs to be Built
- Lack of Platform Precision
- Performance Assumptions
- Do-It-Yourself Security
- Lack of Disaster Recovery
- No Backout Plan

Certification Model (Open Group)

Current levels: Certified, Master, Distinguished in:

IT Architecture
Business Architecture
Enterprise Architecture



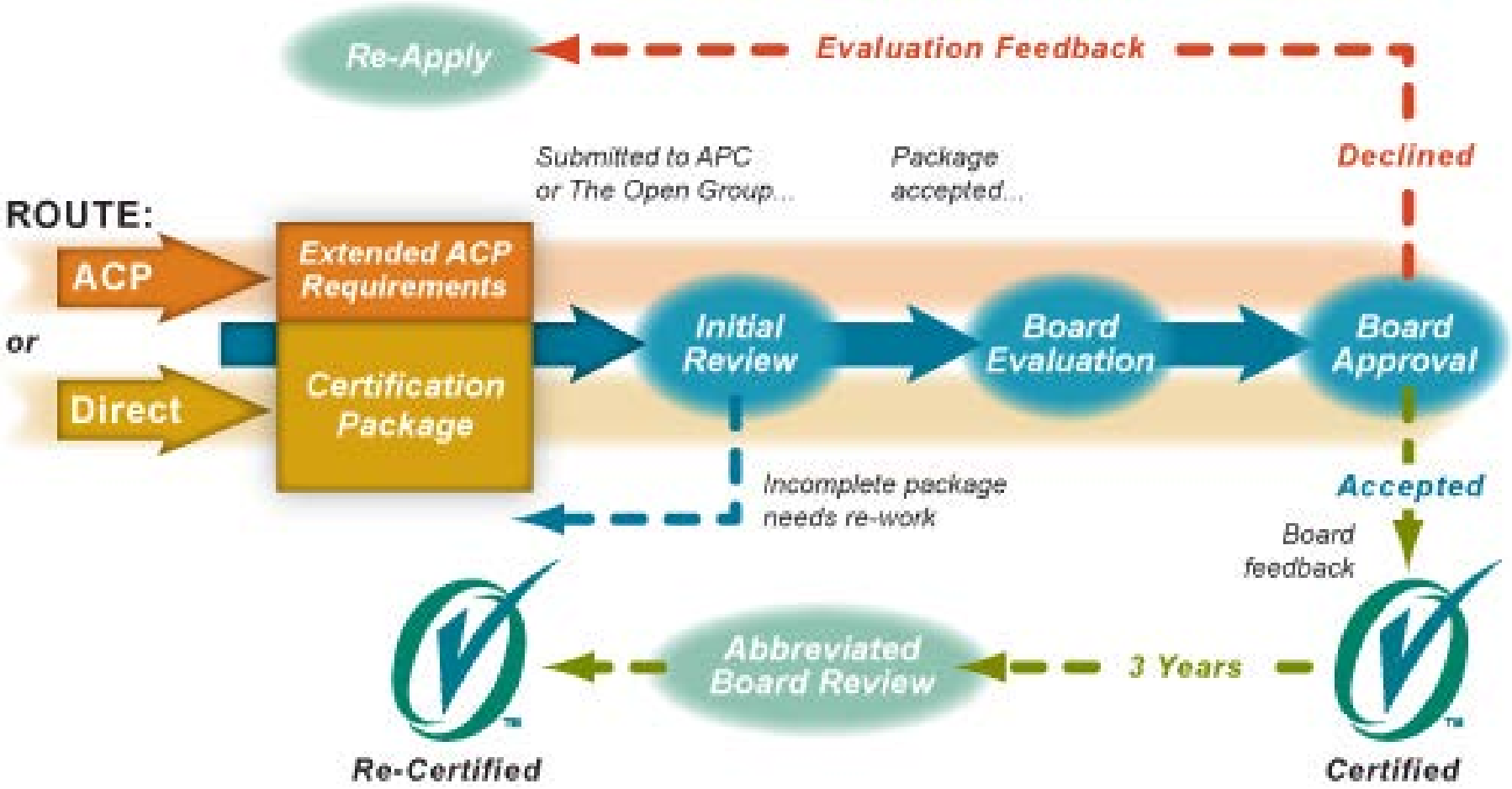
picture: IBM

- http://www.opengroup.org/openca/cert/docs/OpenCA_Certification_Guide.html
- http://www.opengroup.org/openca/isac/
- http://www.opengroup.org/openca/isac/ita-1-2-20160601/ita-1-2-20160601.htm

Certification levels (Open Group)

- **Level 1**: Certified
  - able to perform with assistance/supervision, with a wide range of appropriate skills, as a contributing architect
- **Level 2**: Master
  - able to perform independently and take responsibility for delivery of systems and solutions as lead architect.
- **Level 3**: Distinguished
  - has significant breadth and depth of impact on the business through the application of IT architecture.

Certification Process



direct or through third-party programs accredited by The Open Group. Accredited Certification Programs (ACP)

Working Questions

1. What are key skills of architects?
2. Why is professional experience so important for an architect?
3. Name essential challenges of the architectural profession.
4. What are the most important risks in the architectural thinking process?
5. What are the most common mistakes that are made? How can you avoid them?
6. What is your personal "lesson learned" from the architecture thinking course?