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# Ten Common Misconceptions about Software Architecture

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## Contact info

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## We all know that ...

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- ◆ **Architecture and design are the same thing**
- ◆ **Architecture and infrastructure are the same thing**
- ◆ **<my favourite technology> is the architecture**
- ◆ **A good architecture is the work of a single architect**
- ◆ **Architecture is flat, one blueprint is enough**
- ◆ **System architecture precedes software architecture**
- ◆ **Architecture cannot be measured and validated**
- ◆ **Architecture is a Science**
- ◆ **Architecture is an Art**

# 1 Architecture is Design

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- ◆ **Yes, but there is more in design than just architecture.**
- ◆ **“Do not dilute the meaning of the term architecture by applying it to everything in sight.” (Mary Shaw)**
- ◆ **Architecture is about making decisions, it is about the how, not just the what.**
- ◆ **Architecture is one aspect of the design, focusing on major elements, elements that are both structurally important, but also those that have a more lasting impact on the performance, reliability, cost, adaptability, etc.**

## 2 Architecture is Infrastructure

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- ◆ **Yes, but no.**
- ◆ **Yes, the infrastructure is an integral and important part of the architecture, but there is more in architecture than just infrastructure.**
- ◆ **A too narrow view on architecture may lead to a very nice infrastructure, but the wrong infrastructure for the problem at hand.**

### 3 *<my favourite technology>* is the architecture

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- ◆ **No, rarely.**
- ◆ **This is the same as the previous one, but stated from the point of view of a given specialty**
  - ◆ **The Network is architecture**
  - ◆ **The database is architecture**
  - ◆ **The transaction server is architecture**
  - ◆ **CORBA is the architecture**
  - ◆ **etc.**
- ◆ **Architecture is more than just technology watch**
- ◆ **Balance**

## 4 A good architecture is the work of a single architect

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- ◆ **No, a team is usually a better solution**
- ◆ **Fred Brooks (1975), but Fred Brooks (1995)**
- ◆ **Architecture team as a team**
  - ◆ **not a committee**
  - ◆ **not a problem clearinghouse**
  - ◆ **not an ivory tower**
- ◆ **Mix of specialties, better balance, avoid 2 issues above**
- ◆ **Need a clear leader**
- ◆ **Flexibility in composition and structure**
  - ◆ **Circulate people so as not to get their skill stale**

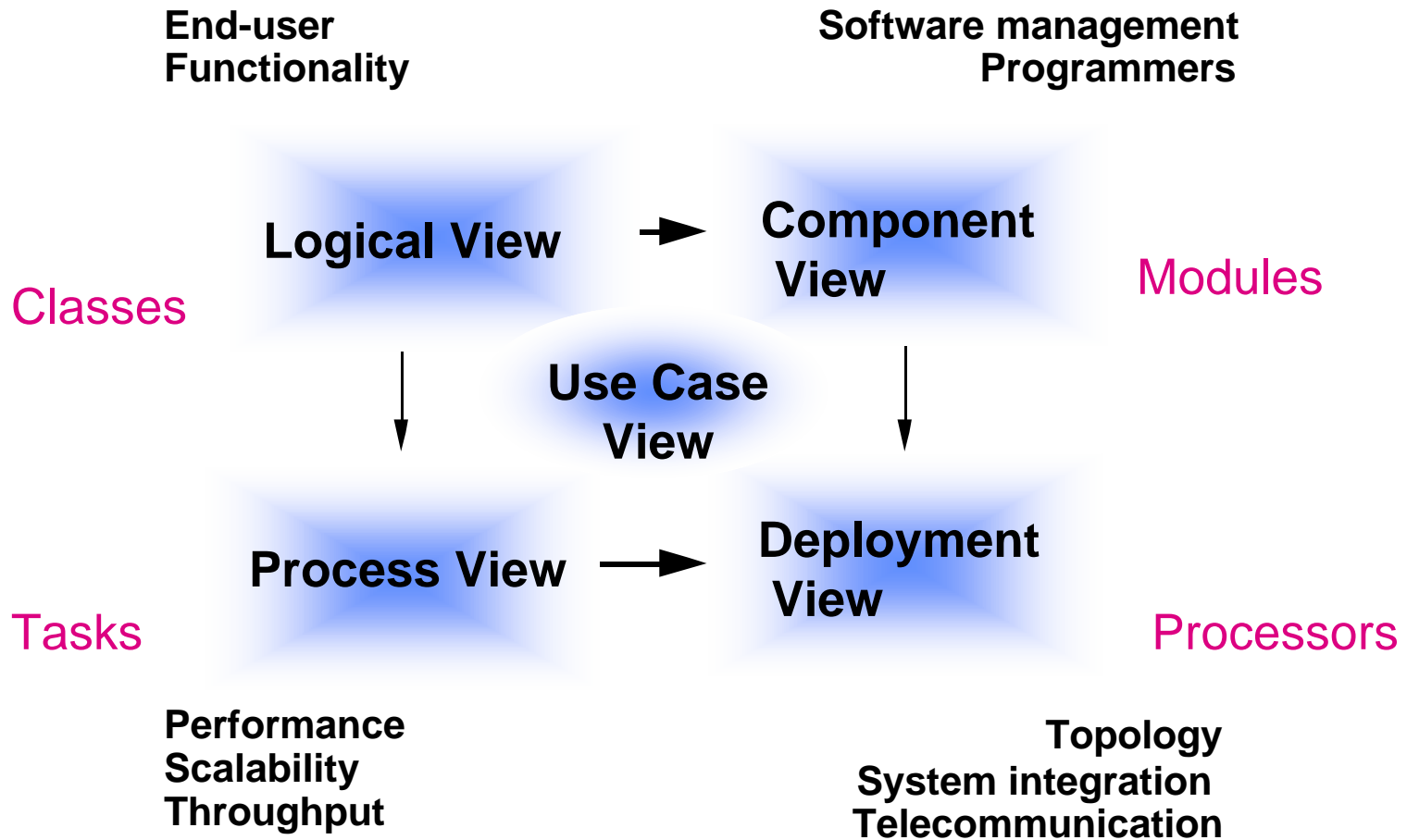
## 5 Architecture is Flat

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- ◆ **No, except for very trivial cases**
- ◆ **Same issue with ADL (?)**
- ◆ **Single blueprint to represent all or most of architecture are a semantic mess.**
- ◆ **Multiple stakeholders, multiple concerns lead to multiple views, multiple blueprints**
- ◆ **“4+1 view model”, eight years later**

# The “4+1 View” Model

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## 6 System architecture precedes software architecture

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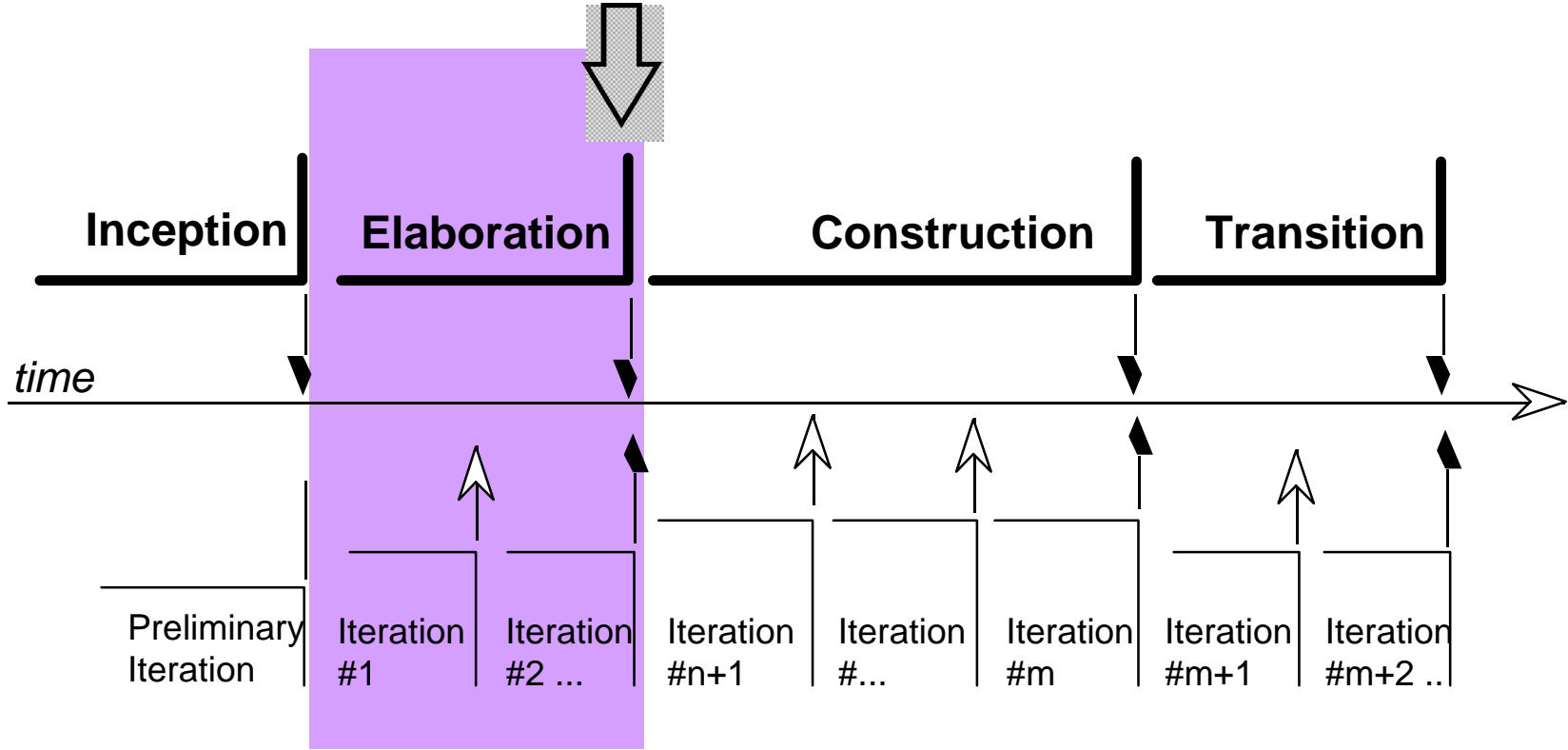
- ◆ **Not in a strict sequence**
- ◆ **The two have to be interleaved**
- ◆ **Software has a longer life than hardware**
- ◆ **Cut opportunity for large scale reuse**

## 7 Architecture cannot be measured and validated

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- ◆ **Wrong**
- ◆ **Build a skeletal architecture, using targeted technology, to:**
  - ◆ **Mitigate technical risks**
  - ◆ **Improve learning**
  - ◆ **Break down and reduce integration risks**
  - ◆ **Set up right level of expectations**
  - ◆ **Run-in development environment, toolset**
  - ◆ **Jump start testing effort**
- ◆ **Architecture is not just sketchy top-level design.**
- ◆ **A key aspect of the Rational Objectory Process**

# Objectory Process: Architecture



## 8 Architecture is a Science

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- ◆ **Not yet**
- ◆ **Scientific, analytical methods hard to apply**
- ◆ **No proof, few quantitative criteria, over-constrained problem**
- ◆ **Timeliness is the essence**
- ◆ **“The life of a software architect is a long and rapid succession of design decisions taken partly in the dark.”**
- ◆ **Experience counts.**

## 9 Architecture is an Art

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- ◆ **Let us not fool ourselves!**
- ◆ **The “artsy” part is rare, or minimal.**
- ◆ **Most of what architects do is copy solutions that have worked, assemble them in different combinations, with very modest incremental improvements.**
- ◆ **An architectural process can be set up, with definite steps, prescribed artifacts, taking advantage of heuristics which start to be better understood (see E. Rechtin & M. Maier).**
- ◆ **Body of knowledge starts to be codified: architectural patterns.**

## 10 These were the top ten misconceptions...

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- ◆ **Wrong!**
- ◆ **My misconceptions are your certitudes.**
- ◆ **My certitudes are your misconceptions.**
- ◆ **Misconceptions in software architecture are in the eye of the beholder.**

# At a Turning Point

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