

Architectural Skills

CSSE6400

Richard Thomas

May 18, 2026

Quote

Architecture is the stuff you can't Google.

– Mark Richards *[Richards and Ford, 2020]*

Quote

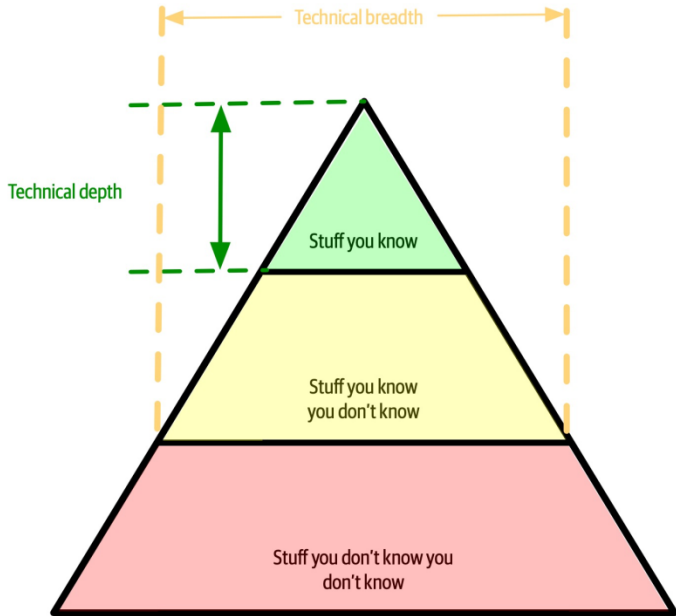
There are no right or wrong answers in architecture—only trade-offs.

– Neal Ford *[Richards and Ford, 2020]*

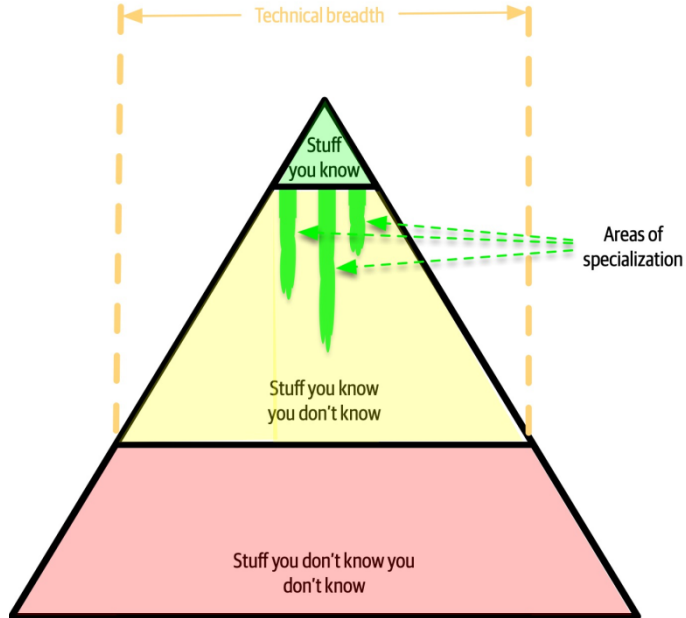
Architectural Design

Architects use knowledge and experience to analyse trade-offs to design architectures appropriate to the system context.

Developers – Technical Depth *[Richards and Ford, 2020]*



Architects – Technical Breadth *[Richards and Ford, 2020]*



Definition 0. Conway's Law

Organisations design systems whose structure is inevitably a copy of the organisation's communication structure *[Conway, 1968] [MacCormack et al., 2012]*.

Conway's Law Consequences

- Business Process Management
- Microservices to reflect organisation structure
- Teams formed around services

Conway's Law Consequences

Team insularity – more loyal to team than organisation

Conway's Law Issues

- Cross-cutting concerns
 - e.g. Security
- Organisation structure should align with market structure
- Physical location of teams

Definition 0. Peopleware^[Neumann, 1977]

People involved in development of systems.

– Peter G. Neumann

Stakeholders *[Coplien and Bjørnvig, 2010]*

- End Users
- Organisation
- Customers / Sponsors
- Domain Experts
- Developers

Communication

- Written
 - For those who are not there
- Oral
 - Immediate & interactive

Circumventing Conway's Law *[Woods, 2017]*

- Cloud Platforms
- Microservices
- APIs
- *Culture*

Evidenced-Based Software Engineering

Don't follow fads, seek evidence for good practice.

Let's hear from an expert

Software Engineering's Greatest Hits

what we actually know about software development
and why we believe it's true



Greg Wilson

<http://third-bit.com/talks/greatest-hits/>



1 / 47

References

- [Conway, 1968] Conway, M. E. (1968).
How do committees invent?
Datamation.
- [Coplien and Bjørnvig, 2010] Coplien, J. O. and Bjørnvig, G. (2010).
Learn Architecture for Agile Software Development.
Wiley.
[https://www.amazon.com/
Lean-Architecture-Agile-Software-Development/dp/0470684208](https://www.amazon.com/Lean-Architecture-Agile-Software-Development/dp/0470684208).
- [MacCormack et al., 2012] MacCormack, A., Baldwin, C., and Rusnak, J. (2012).
Exploring the duality between product and organizational architectures: A test
of the “mirroring” hypothesis.
Research Policy, 41(8):1309–1324.

[Neumann, 1977] Neumann, P. G. (1977).

Peopleware in systems.

Peopleware in Systems, pages 15–18.

[Richards and Ford, 2020] Richards, M. and Ford, N. (2020).

Fundamentals of Software Architecture: An Engineering Approach.

O'Reilly Media, Inc.

[Woods, 2017] Woods, D. (2017).

How platforms are neutralizing conway's law.

<https://www.forbes.com/sites/danwoods/2017/08/15/how-platforms-are-neutralizing-conways-law/>.