

# Colin's SATURN 2016 experience

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*May 2-4, 2016 - San Diego, CA*

# Grady Booch

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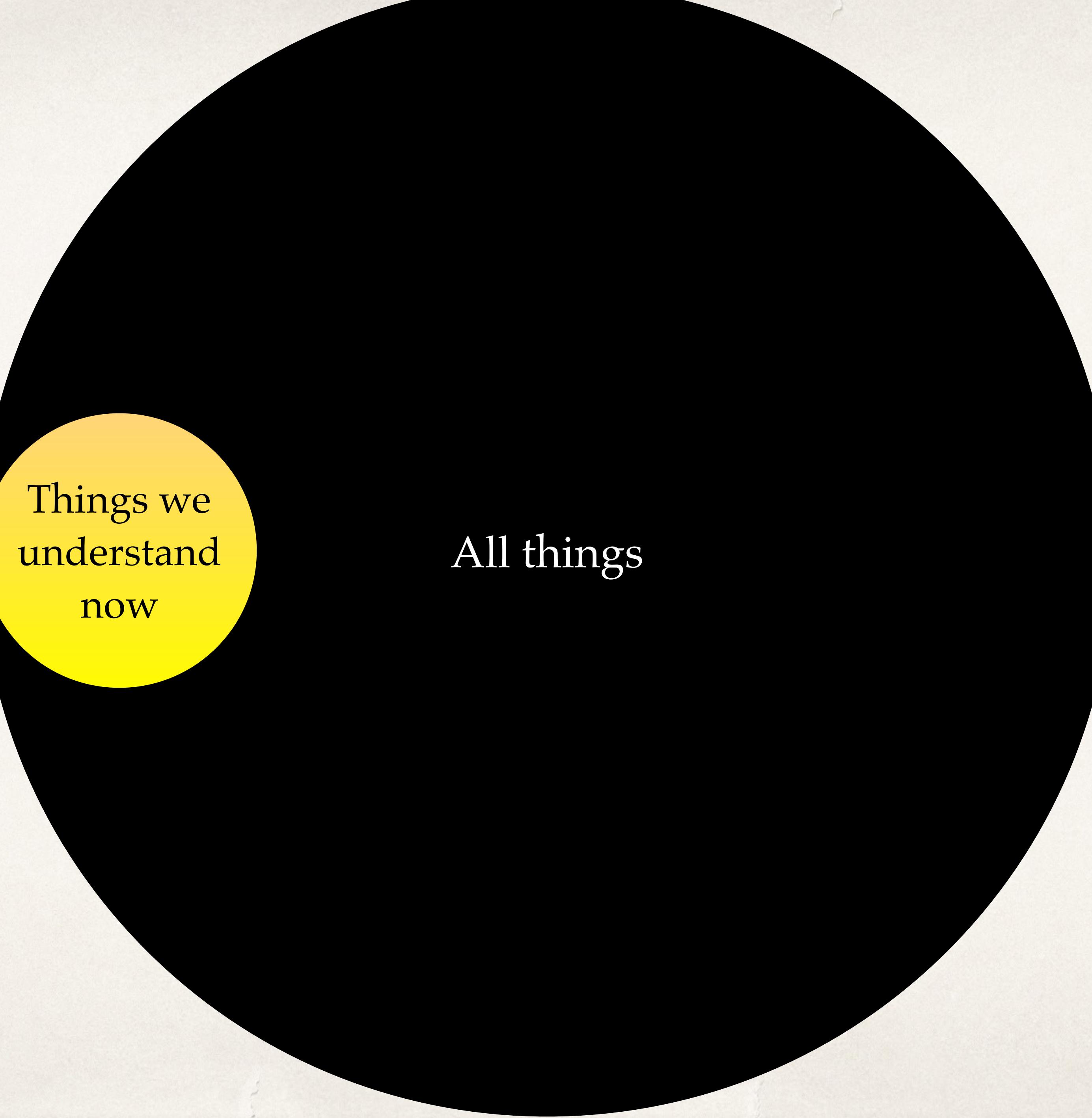
IBM Fellow

Chief Scientist, Watson/M



“If the fundamental premise of **science** is that the cosmos is **understandable**,  
then the fundamental premise of **computing** is that the cosmos is **computable**.”

*—Grady Booch*

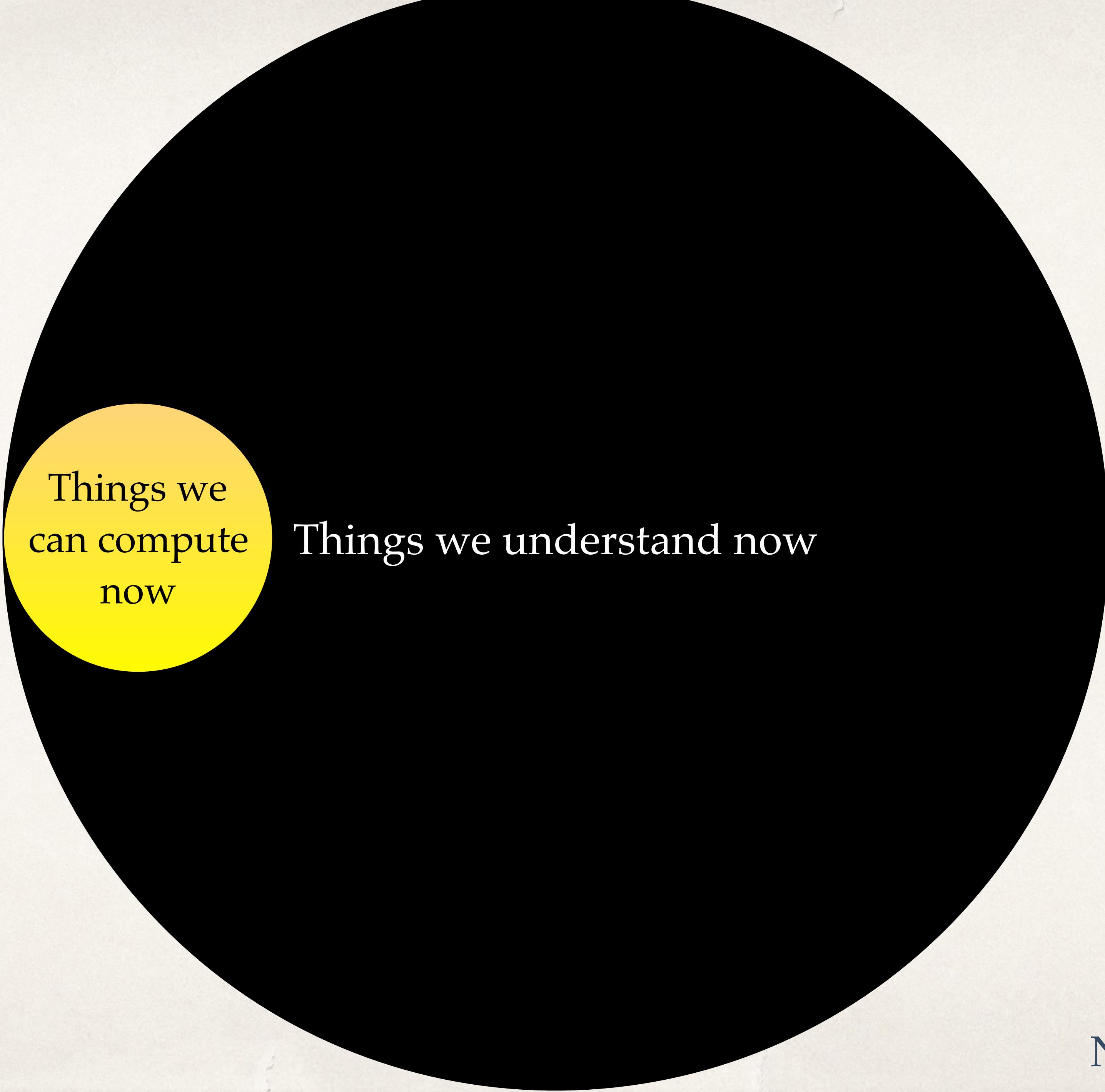


A large black circle represents the set of "All things". Inside it, a smaller yellow circle represents the subset of "Things we understand now".

Things we  
understand  
now

All things

Not to scale, obviously.



Things we  
can compute  
now

Things we understand now

Not to scale, obviously.

# All systems fall into one of three categories

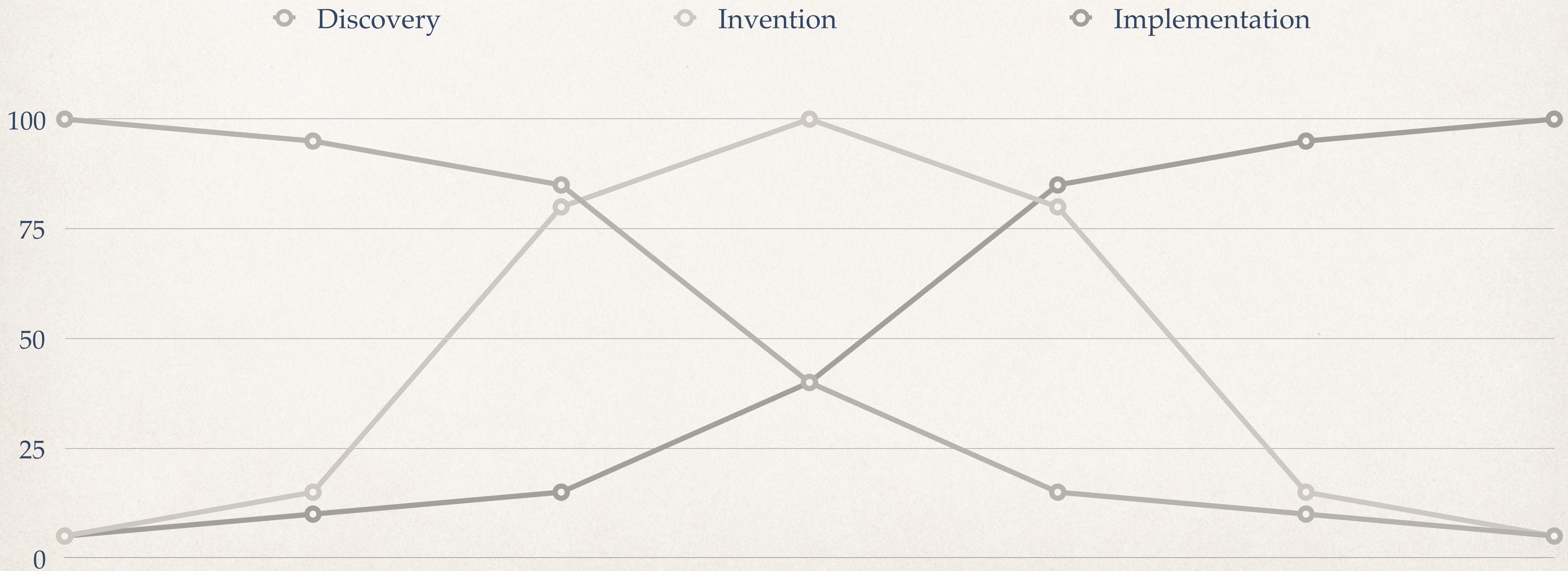
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1. Systems I do not know how to build.
2. Systems I know but lack a process to build.
3. Systems for which I have a process, but lack the resources to build.

# Three biorhythms

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# Ethics and choosing to forget

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- ✿ Facebook problem: “How do we connect everyone in a way that preserves their **dignity, privacy, and security?**”
- ✿ “Full connectivity is frictionless. Hysteresis is sometimes desirable.”

# Other important thoughts

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- ❖ Architect your team.
- ❖ Architecture is defined by what is difficult to change.
- ❖ Architecture provides a vocabulary that *transcends* code itself.
- ❖ Architects are storytellers.
- ❖ Architects start with use cases and shape the most significant design decision.

# Architects must

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“I sketched an architecture for HAL, but it took me 61 years to know how.”

*—Grady Booch*

# IoT at Statoil

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Norwegian state oil company

# Takeaways

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- ❖ Precision is key: “Just like space, we cannot simply go to the device.”
- ❖ Mandatory wearables require preservation of dignity, privacy, and security.

# Different strokes for different folks

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- ❖ Security and privacy laws differ across countries
- ❖ EU: producer of data is person, so they own their data.
- ❖ US: producer of data is the collector, so they own the data they collect.
- ❖ This creates a difficult **architectural complexity**.
- ❖ Data must be hidden because of legal and union protections.

# Model Minded Development

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George Fairbanks  
*SWE at Google*



“Modeling should be a first class activity.”

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- ❖ New requirement? Does it challenge or change models?
- ❖ “Developers weave models into programs.”

# Rethinking Software Design

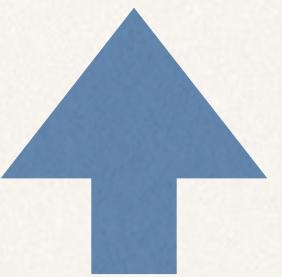
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Daniel Jackson

(ok, not that one, but who doesn't like Michael Shanks as Daniel Jackson in Stargate?)



Purpose : Concept



*fundamental principle*

# Ideal state

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$$\begin{matrix} P_1 \\ P_2 \end{matrix} \longrightarrow \begin{matrix} C_1 \\ C_2 \end{matrix}$$

# Unfulfilled purpose

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P1 → C1  
P2      C2

# Unmotivated concept

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P1 → C1  
P2 → C2

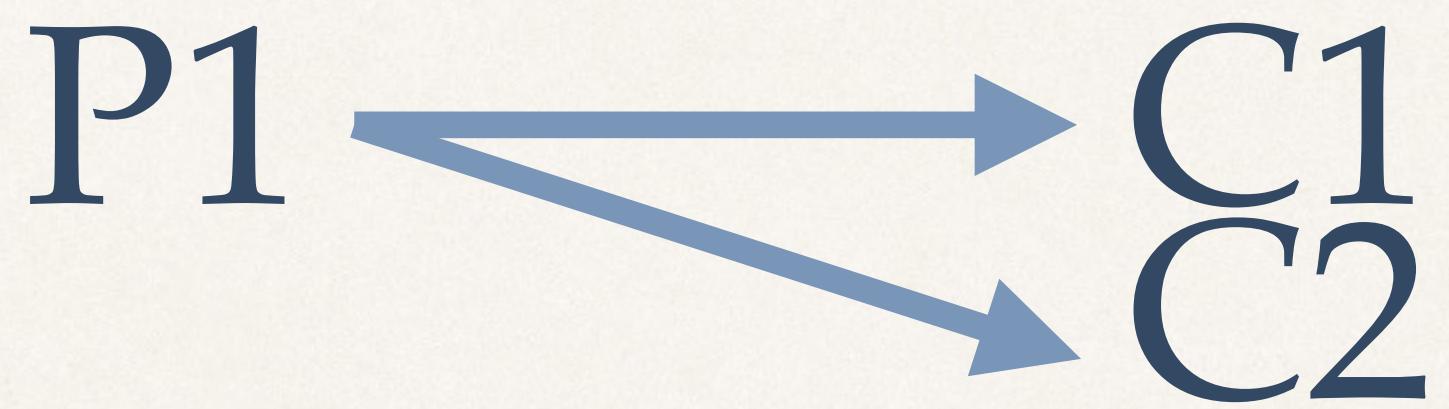
# Overloaded concept

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P1  
P2 → C1

# Redundant concept

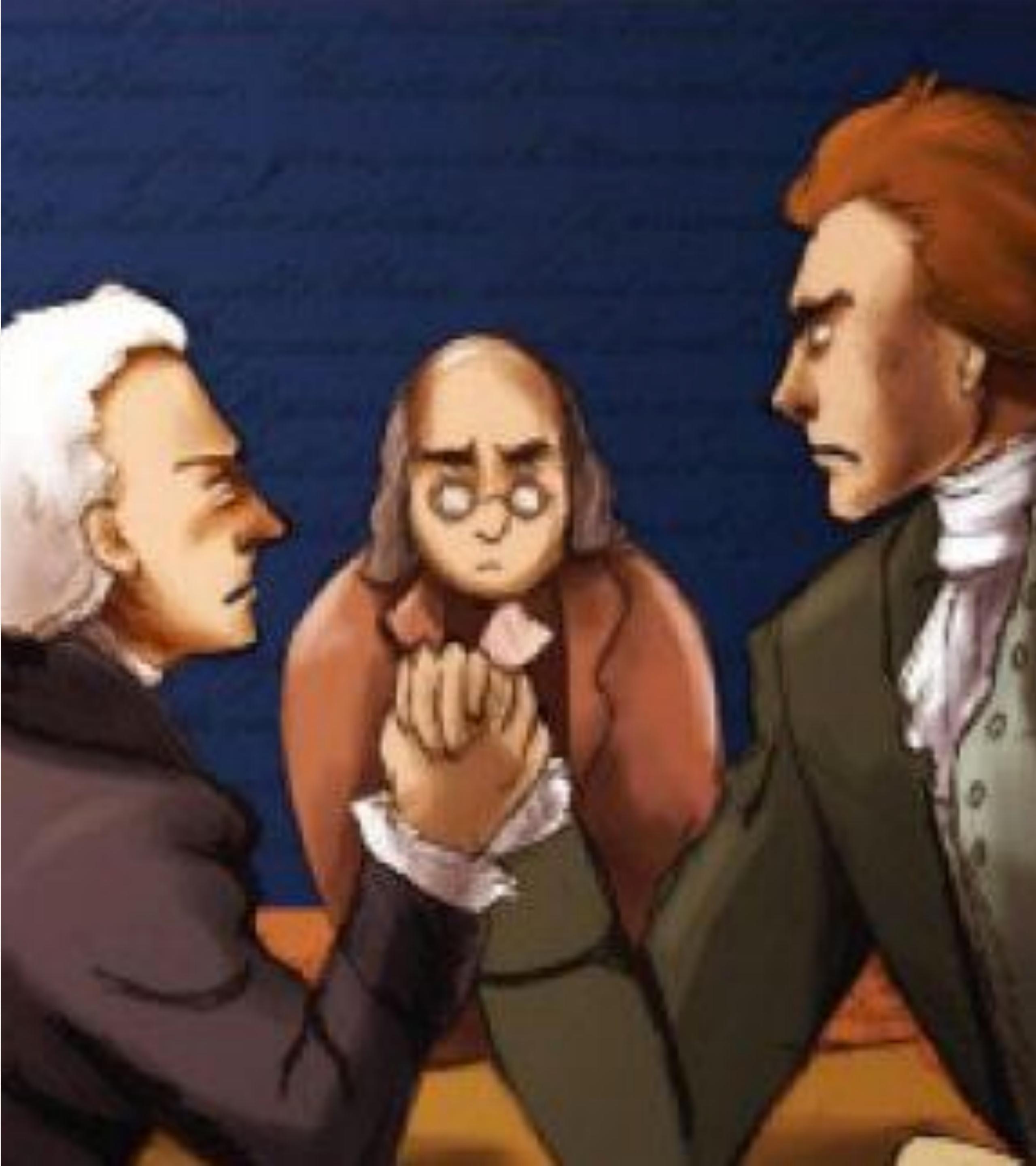
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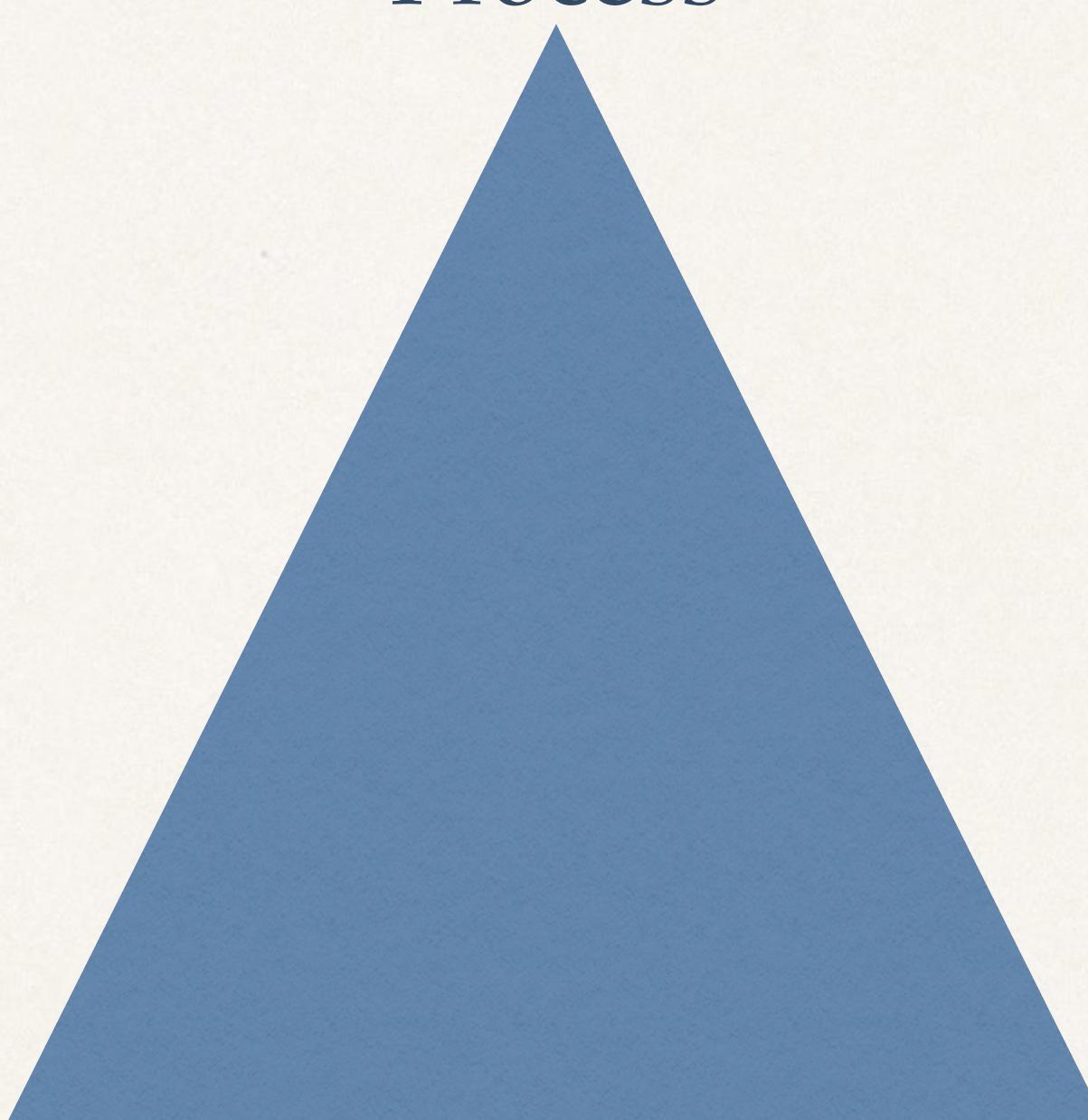
# Centralized vs Decentralized SOA

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M. Keeling  
G. Fairbanks



Watch the video.



Process

Culture

Tools

# Rick Kazman & Jungwoo Ryoo

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Professor at University of Hawaii

Professor at Penn State Altoona



# Security

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- ✿ Security practice is comprised of **patterns**, conceptual solutions to recurring problems.
- ✿ Tactics : Atoms :: Patterns : Molecules
- ✿ Take patterns to architectural level with **Architectural Analysis for Security**

# Continuous Architecture

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Pierre Pureur

*VP and Chief Enterprise Architect at Travelers Insurance*

“Two industries have users: technology and narcotics.

Narcotics users generally don’t give feedback.”

# Continuous Architecture principles

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1. Architect products, not solutions
2. Focus on QA, not on functional fit
3. Delay design decisions until absolutely necessary to keep architecture manageable
4. Architect for change
5. Architect for build, test, and deployment cycle
6. **Model your teams after design of system**

# Linda Northrop

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SEI Fellow



“Architecture is influenced by the company we keep.”

*—Linda Northrop*

**“Beware of seductive technologies.**

Be mindful of decisions and how they affect architecture.”

*—Linda Northrop*

“There is a place in architecture for **ethics**.”

*—Linda Northrop*



# Big takeaway

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- ✿ Everybody has something to bring to the table
- ✿ “I’m not locked in here with you, you’re locked in here with me.”