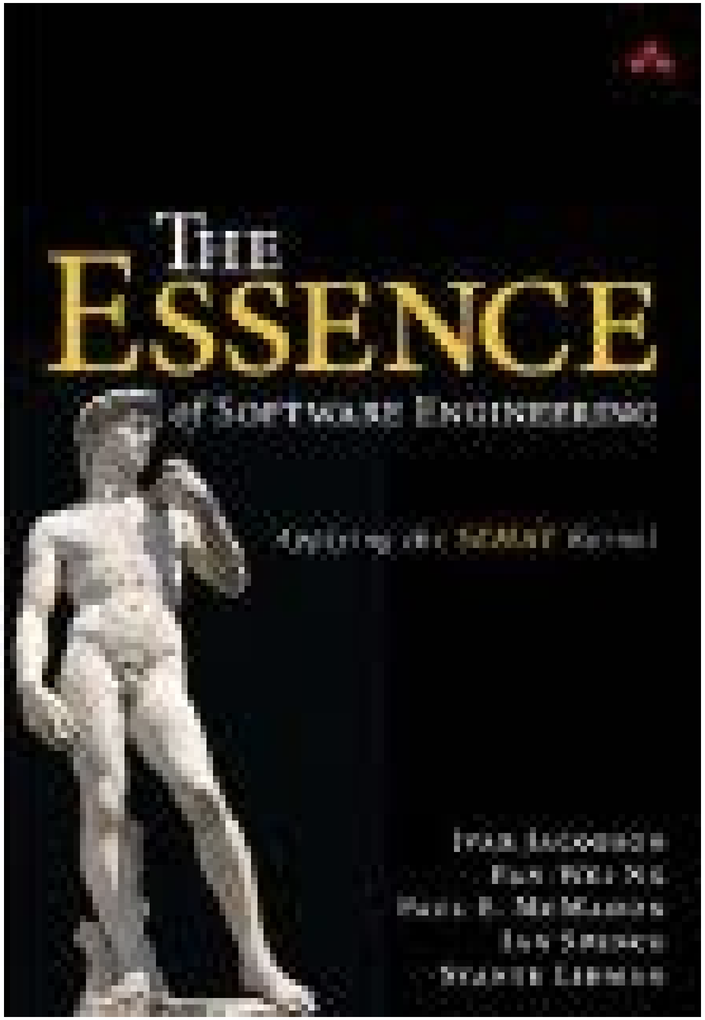
# The Essence

## Initiative

Ivar Jacobson

SEMAT



IVAR JACOBSON
INTERNATIONAL

# Agenda

Specific Problems

A Case for Action

- Defining a solid theoretical base
- Finding a kernel of widely agreed elements

Using the Kernel

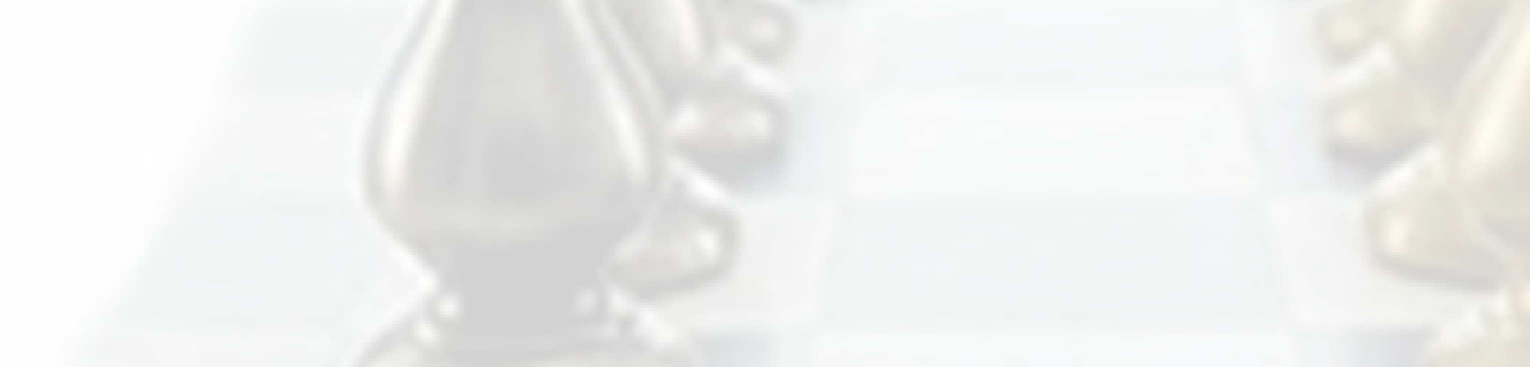
Final Words

# Being in the software development business

Everyone of us knows how to develop **our** software,

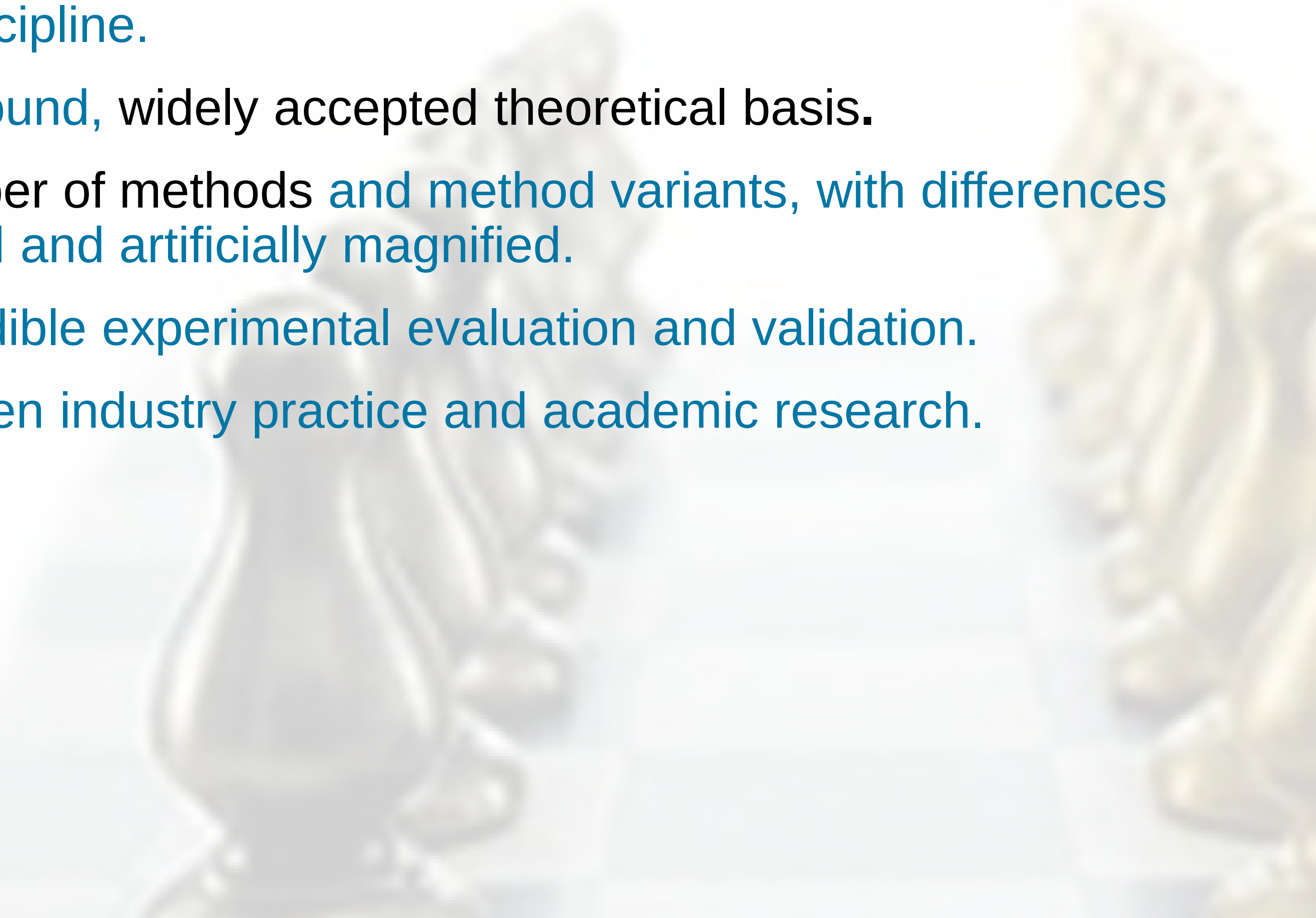
but as a community we have **no**

widely accepted common ground



# A CASE FOR ACTION STATEMENT

- Software engineering is gravely hampered today by immature practices. Specific problems include:
  - The prevalence of fads more typical of fashion industry than of an engineering discipline.
  - The lack of a sound, widely accepted theoretical basis.
  - The huge number of methods and method variants, with differences little understood and artificially magnified.
  - The lack of credible experimental evaluation and validation.
  - The split between industry practice and academic research.



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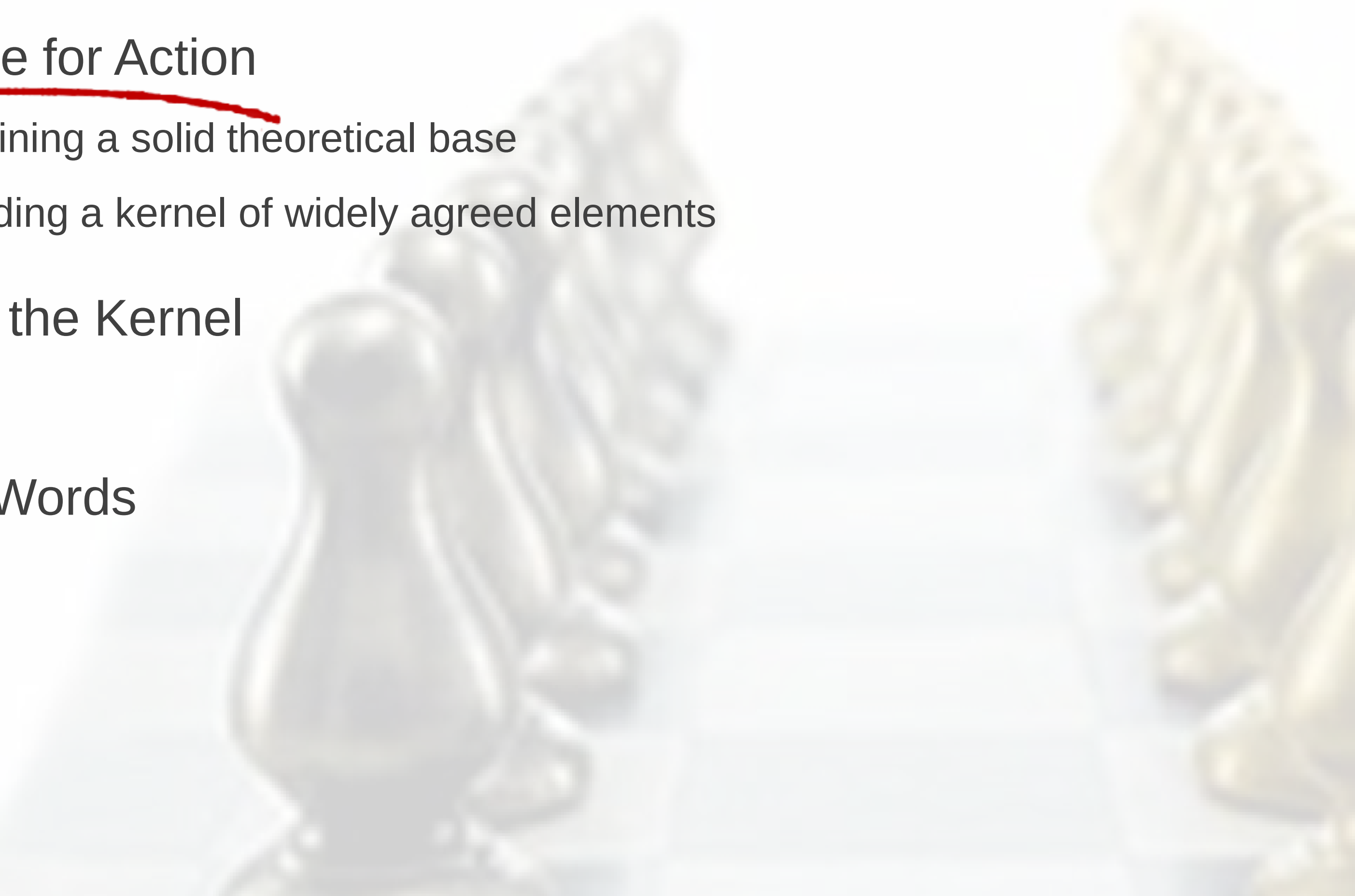


# The SEMAT initiative

SEMAT

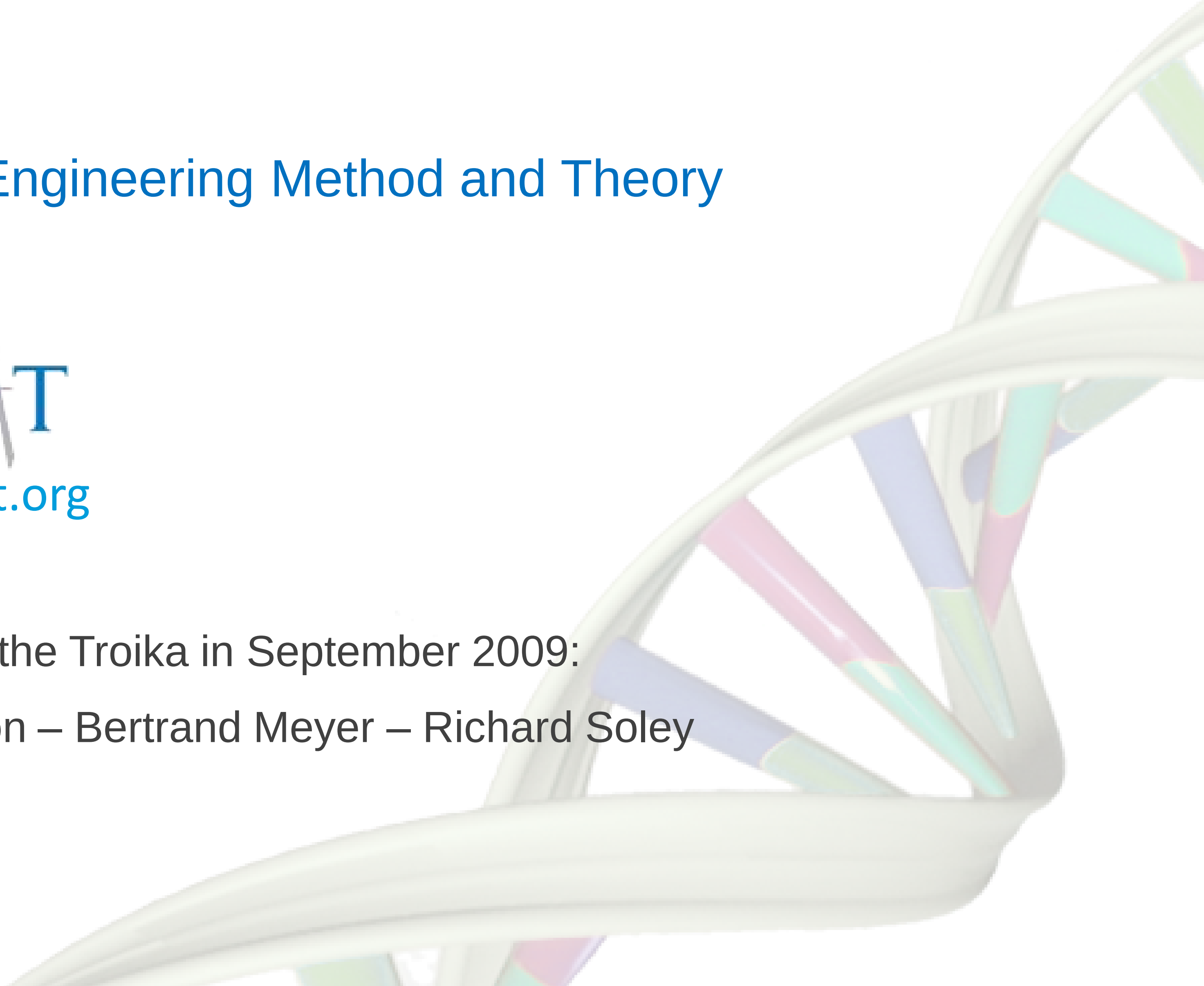
## Software Engineering Method and Theory

SEMAT

www.semat.org

Founded by the Troika in September 2009:

Ivar Jacobson – Bertrand Meyer – Richard Soley



# What are we going to do about it?

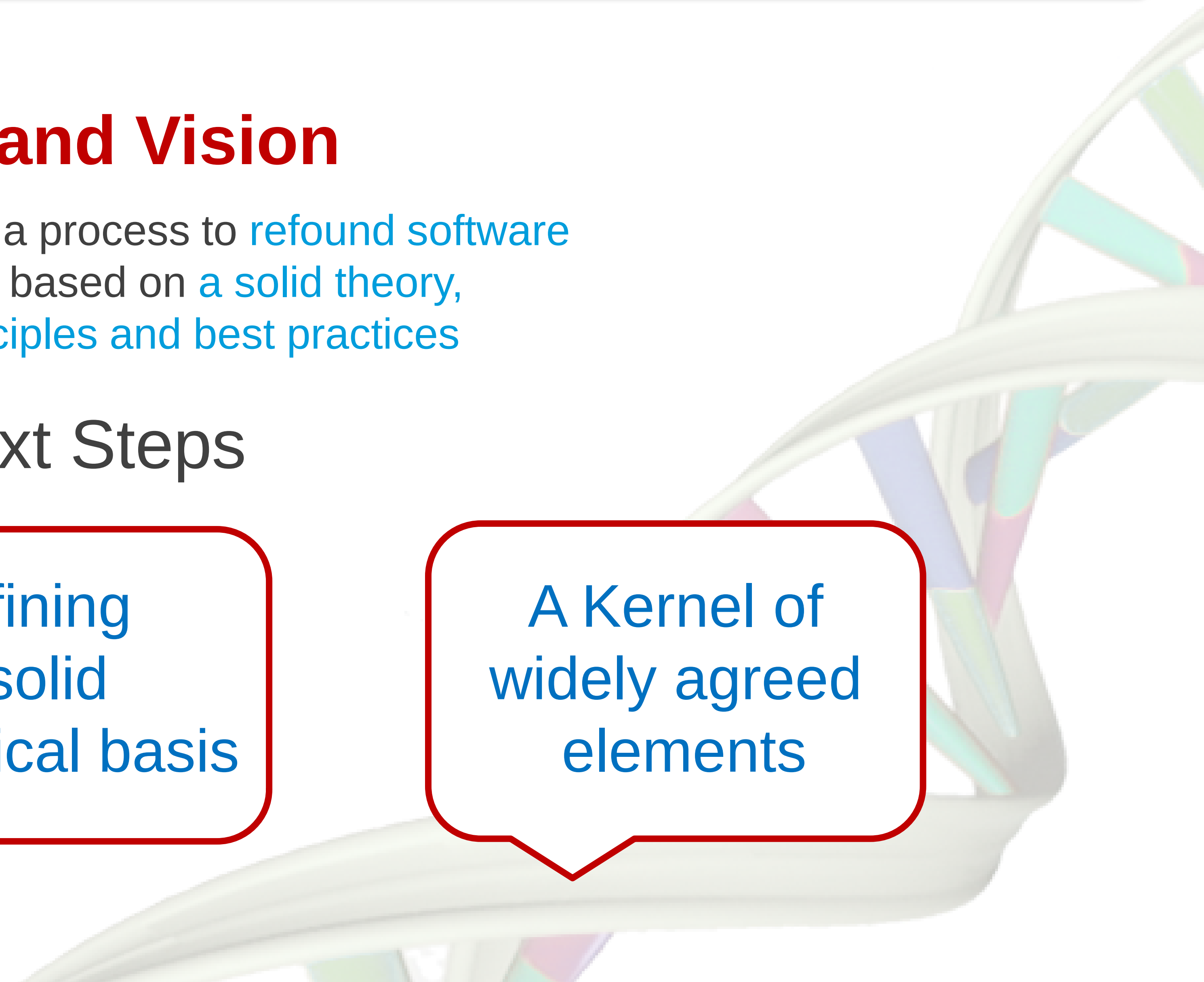
## The Grand Vision

We support a process to refound software engineering based on a solid theory, proven principles and best practices

## The Next Steps

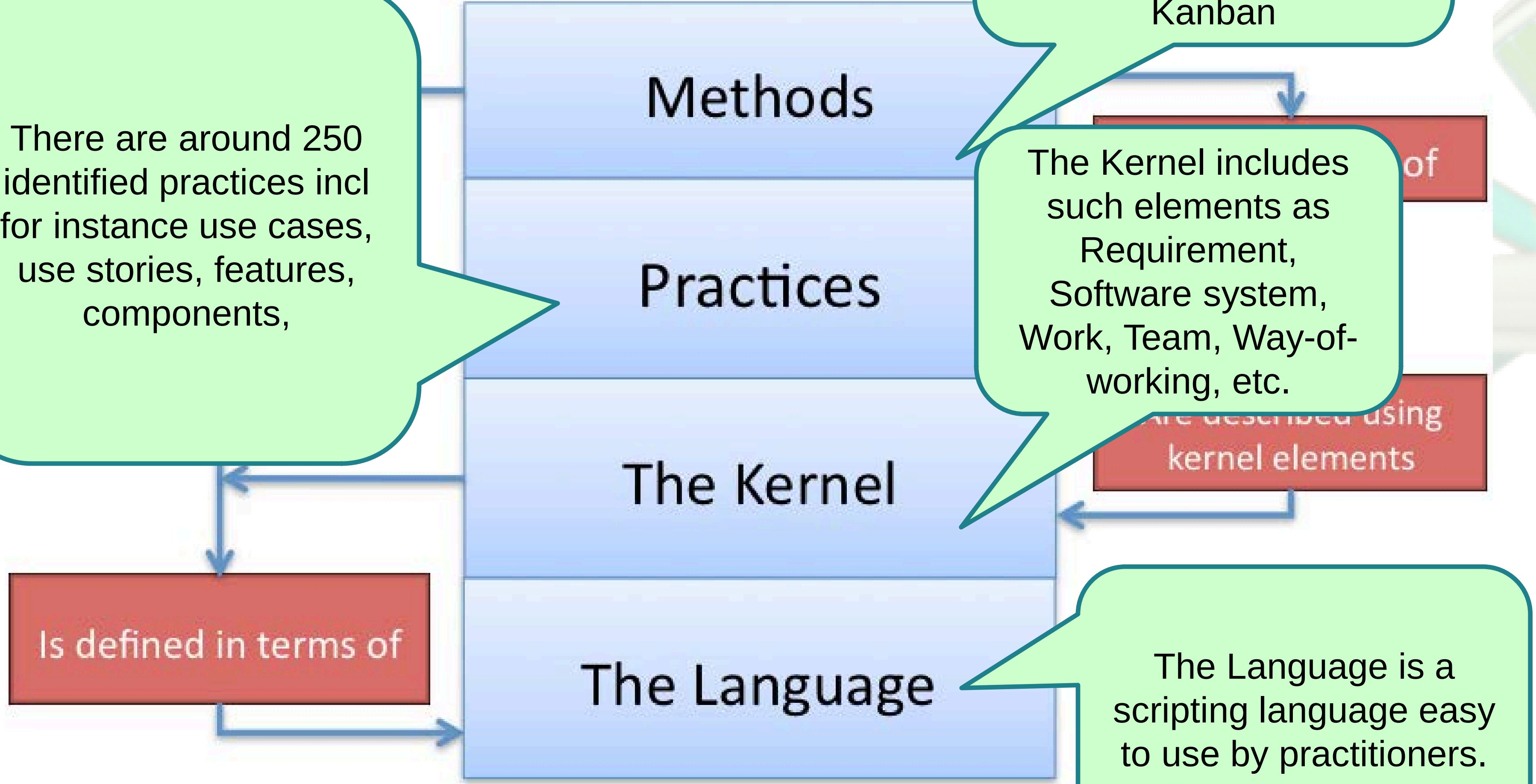
Defining
a solid
theoretical basis

A Kernel of
widely agreed
elements



# Desired solution: Method Architect

There are probably more than 100,000 methods incl. for instance SADT, Booch, OMT, RUP, CMMI, XP, Scrum, Lean, Kanban



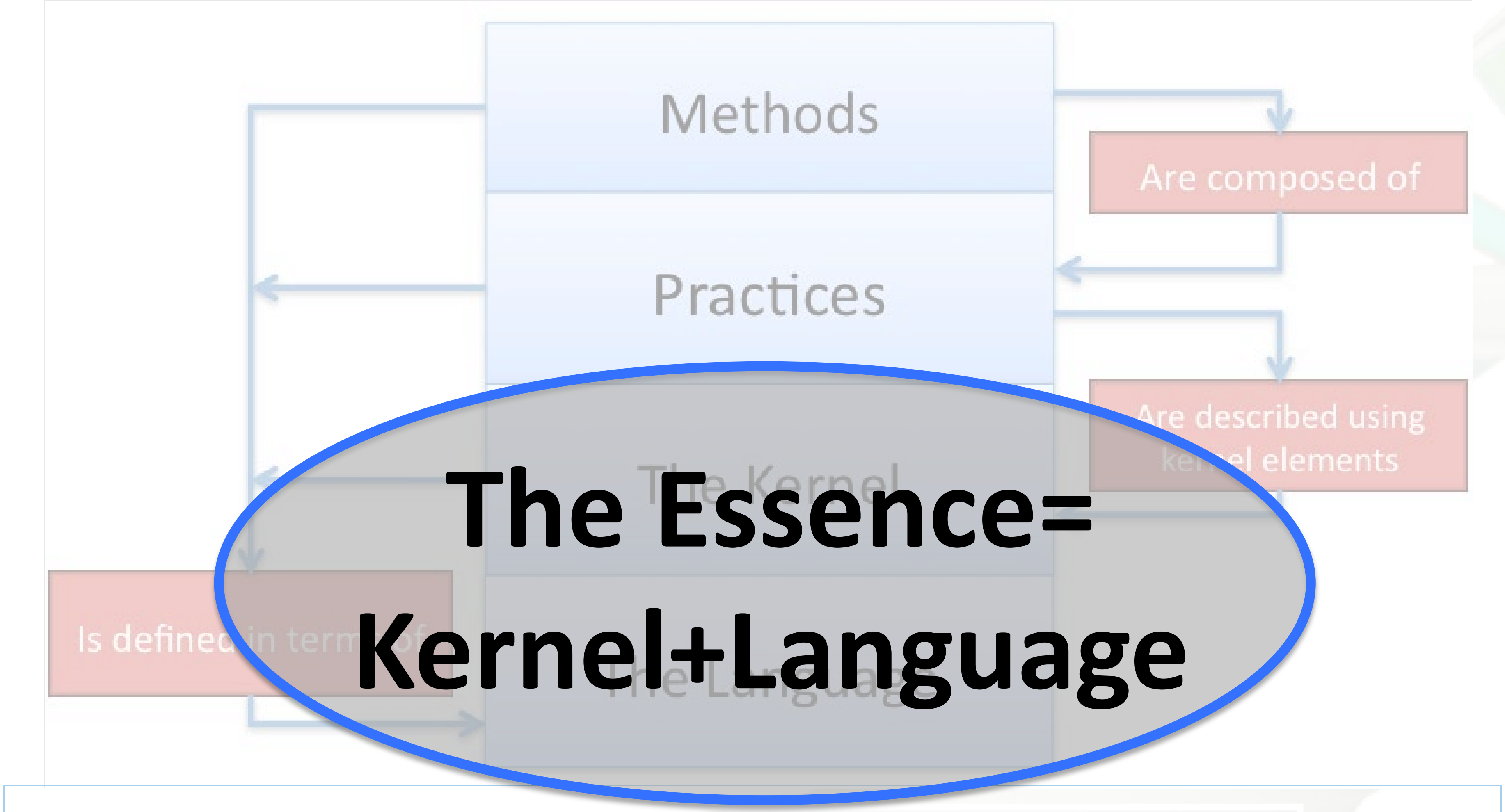
There are around 250 identified practices incl for instance use cases, use stories, features, components,

The Kernel includes such elements as Requirement, Software system, Work, Team, Way-of-working, etc.

The Language is a scripting language easy to use by practitioners.

Standing on a solid theoretical basis

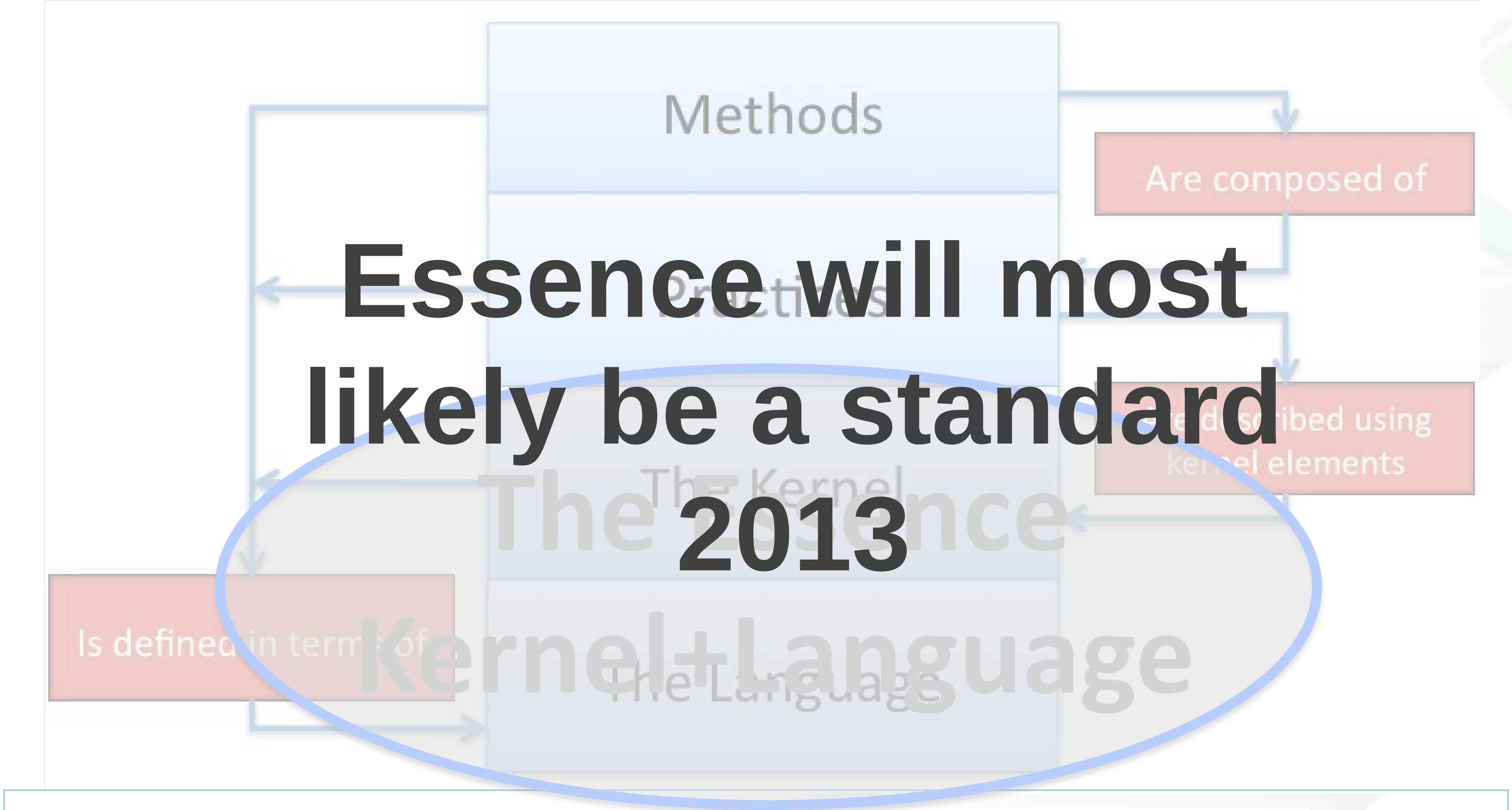
# Desired solution: Method Architecture



The Essence=
Kernel+Language

Standing on a solid theoretical basis

# Desired solution: Method Architecture



**Essence will most likely be a standard 2013**

Standing on a solid theoretical basis

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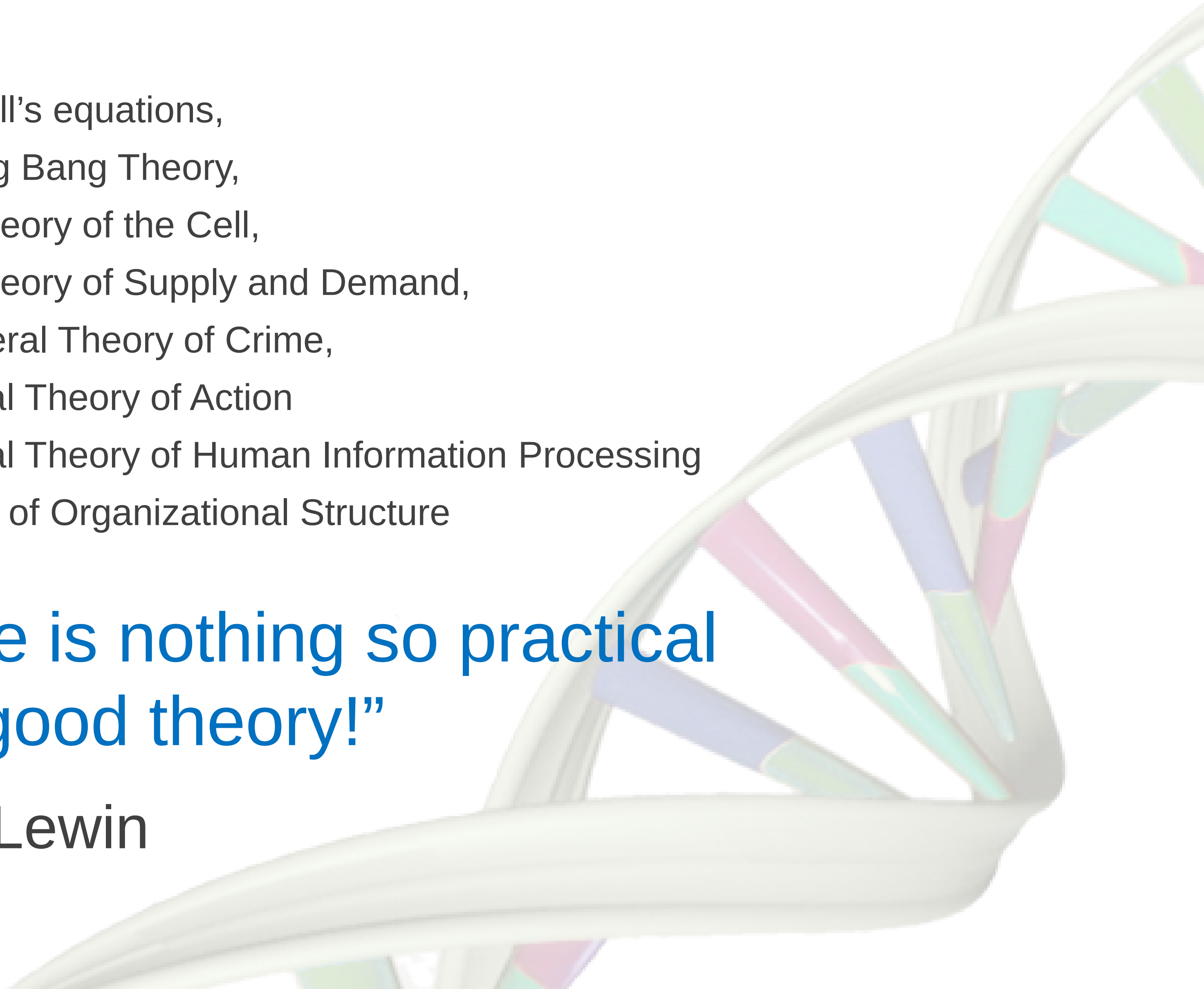
# Standing on a Solid Theory

Examples:

- Maxwell’s equations,
- The Big Bang Theory,
- The Theory of the Cell,
- The Theory of Supply and Demand,
- A General Theory of Crime,
- General Theory of Action
- General Theory of Human Information Processing
- Theory of Organizational Structure

> “There is nothing so practical as a good theory!”
>
> - Kurt Lewin



# Software Engineering doesn’t lack theories

There are abundant theories in software engineering:

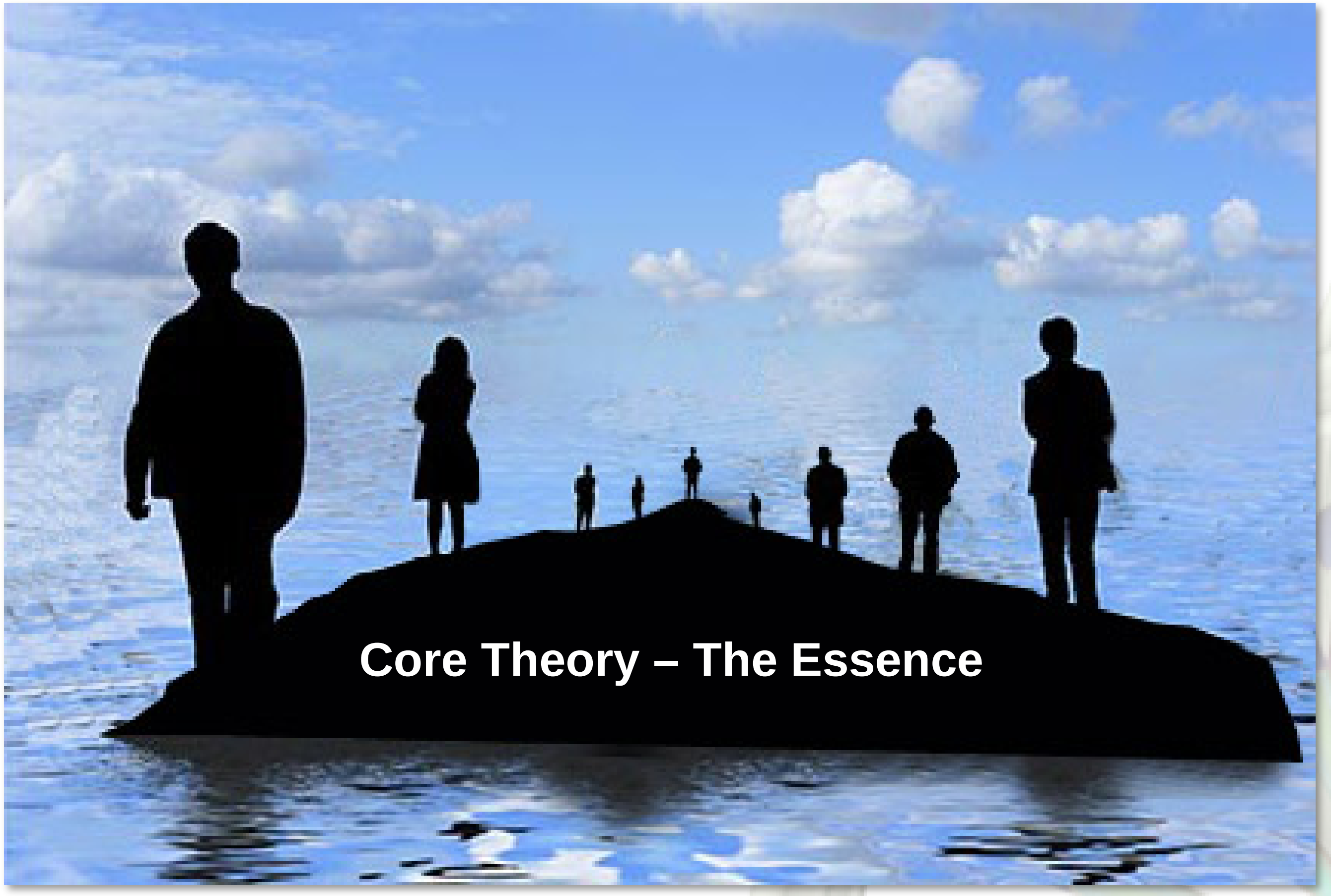
- Boehm’s The Constructive Cost Model – COCOMO,
- Parnas’ principle of information hiding,
- Constantine’s Cohesion and Coupling,
- Conway’s Law,
- Dijkstra’s theory of cognitive limits
(“Go to statement considered harmful”),
- Wirth’s stepwise refinement,
- Meyer’s Design by Contract,
- Etc., etc., etc..

But none of these theories are foundational

# Software Engineering doesn’t lack theories

SEMAT

# Software Engineering doesn’t lack theories



**SEMAT wants to provide the core theory on which more specialised theories can stand**

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SEMAT

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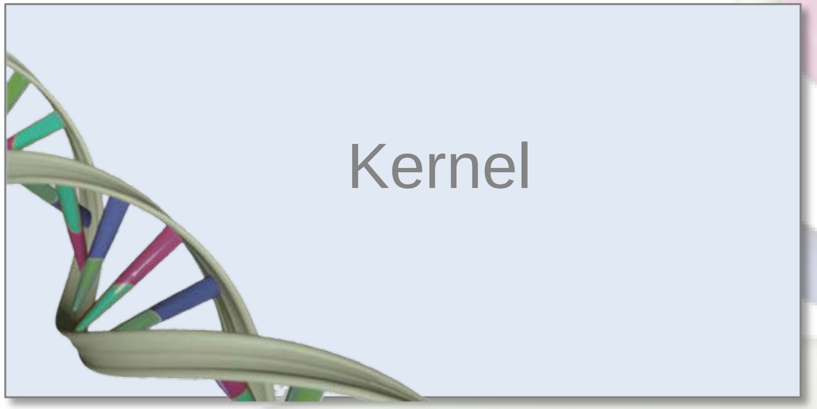
# A kernel of widely-agreed elements

The Kernel includes elements which are **universal** for all software development efforts

- The Kernel should be harvested from a large number of methods
- The Kernel is practice and method independent



Kernel

# Include a kernel of widely-agreed elements

SEMAT

## The Kernel includes the essence of software engineering

"I am freeing the statue from the block"
- Michelangelo (attributed)

So to paraphrase Michelangelo:
"We are freeing the kernel
from the methods"

# In a Nut Shell – what we WILL change

SEMAT

## Industry

## Academics

### Professionals

Want to become experts.  Challenges:

-**Their skills are not easily reusable for a new product.**

-Their career path follows a zig-zag track from hype to hype.

### Executives

Big companies have many processes. Challenges:

-**Reuse practices**

-Reuse training

-“Reuse” of people

-**Evolutionary improvement is hard**

### Education

-**Teaching instances o methods** such as Scrum, RUP, instead of common base; doesn’t create generalists

### Research

-**The Gap between research and industry**

-No widely accepted theory

SEMAT targets the whole software community.

# Summary – What is new?

"This (SEMAT) meeting in Zurich (2010) is likely to be an historic occasion much like the 1968 NATO session in Garmish."

- Watts Humphrey (CMMI)