

Programming 2: Advanced OO Design

Jorge Ressia

Programming 2

Programming ?

Program ?



Dahl and Nygaard at the time of Simula's development



Dahl and Nygaard at the time

**Ole-Johan Dahl
Kristen Nygaard**

Simula 67

Friday, April 15, 2011

"Some features of the SIMULA 67 language"

"SIMULA - A language for programming and description of discrete event systems. Introduction and user's manual" by O.J. Dahl and K. Nygaard. NCC, Sept. 1967

Simula 67

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Dahl and Nygaard at the time of Simula's development



Dahl and Nygaard at the time

Turing Award
2001



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Peter Naur

1968

Christopher Alexander: Notes on the Synthesis of Form 1964

NATO Software Engineering Conference
1969

Christopher Alexander: Notes on the Synthesis of Form 1964

NATO Software Engineering Conference
1969

Peter Naur
1969

Programming as a Theory Building

Programming as a Theory Building

Peter Naur
1985



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Turing Award
2005



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OOPSLA keynote 1997



Alan Kay

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OOPSLA keynote 1997



Put all this together

Alan Kay

Simula

Programming as a Theory
building

Christopher Alexander

Biology

We need a new
metaphor

OOP

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We need things that are adapting to constant change
Biology metaphor



Object-oriented programming Smalltalk 1980



Object-oriented programming Smalltalk 1980

Turing Award
2003

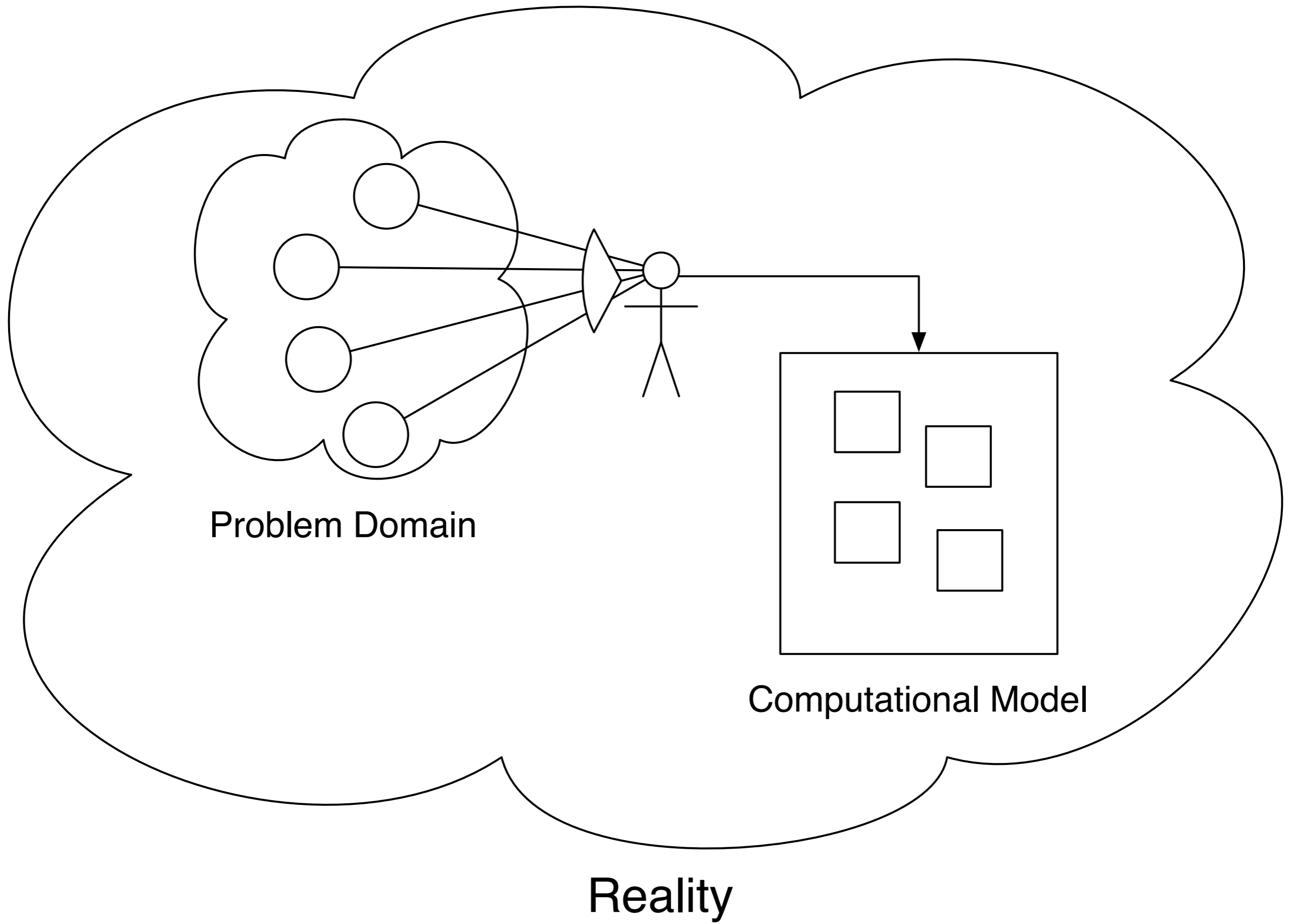
Program ?

Program ?

Computational
simulation of a
domain

Program ?

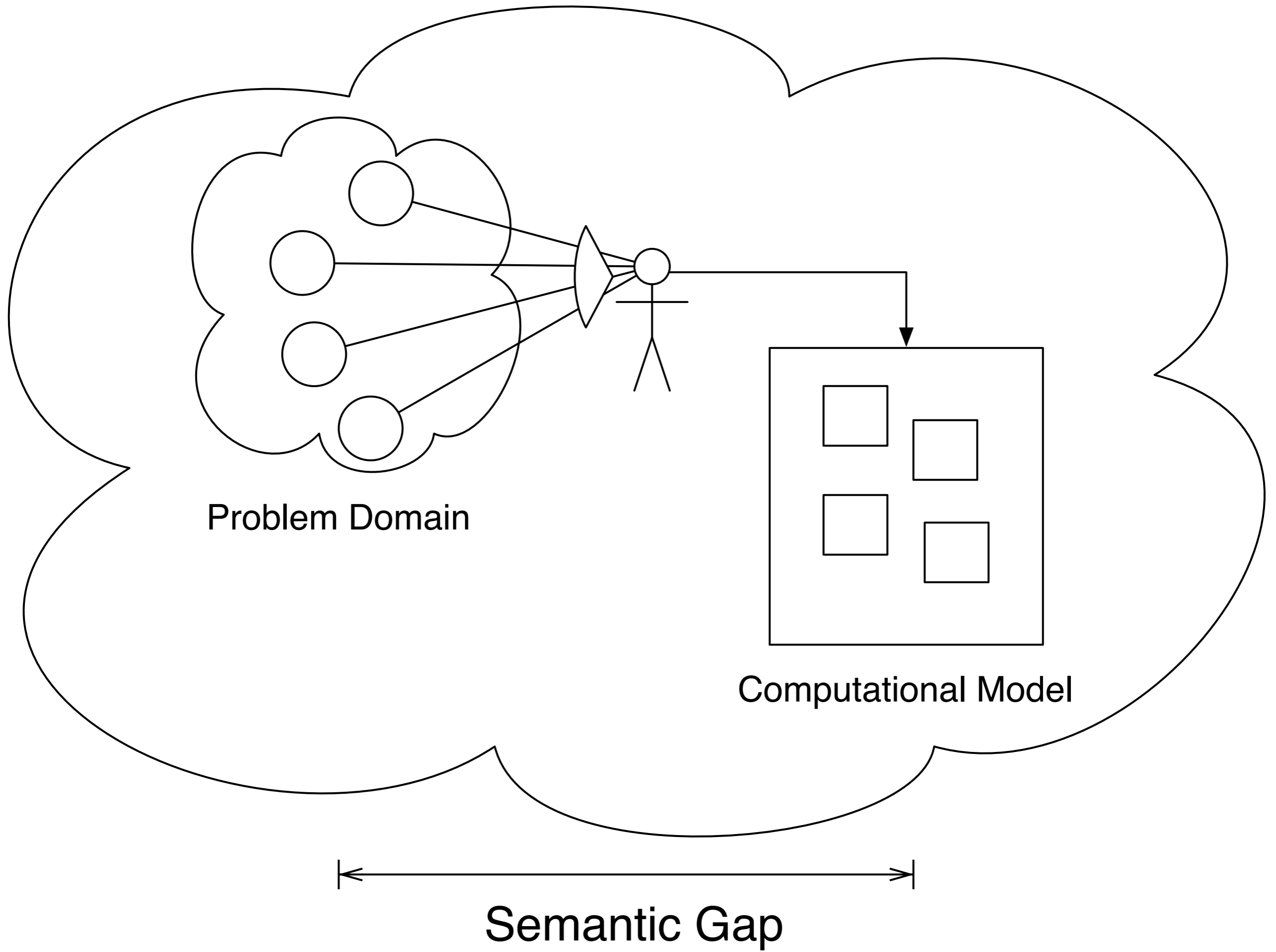
Computational
simulation of a
domain



Problem Domain

Computational Model

Reality



OOP

Program for OOP?

Program for OOP?

Set of object that

collaborate

sending messages

Program for OOP?

Set of **object** that

collaborate

sending **messages**

Let's Model:

Model a system which prints the invoices for the customers of a Telco. There are 3 different types of calls: locals, nationals and internationals.

The cost of an international call is \$2 per minute

The cost of a national call is \$1.50 per minute

The cost of a local call depends if it was done during peak hour or not. Peak hour cost is \$1 per minute, not peak hour cost is \$0.50 per minute.