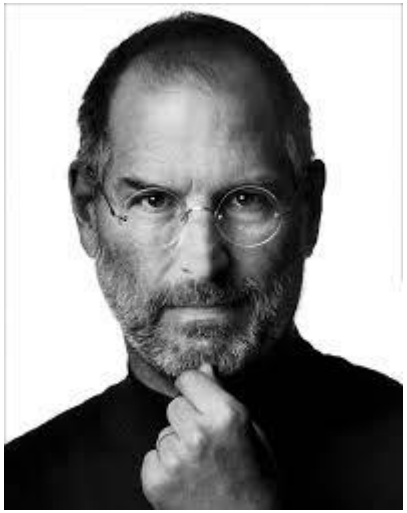
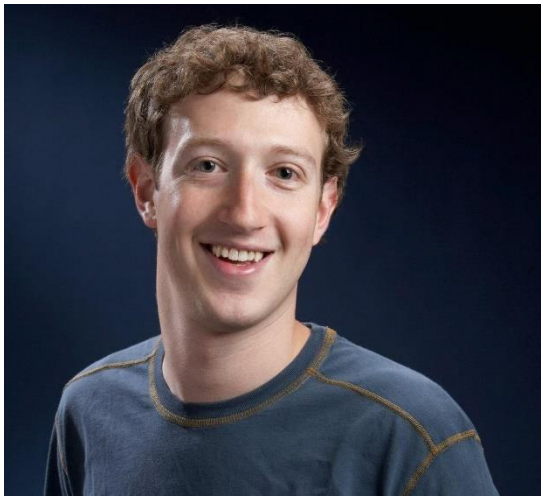
Uma breve história do desenvolvimento de sistemas

Eduardo Bezerra
CEFET/RJ
ebezerra@cefet-rj.br

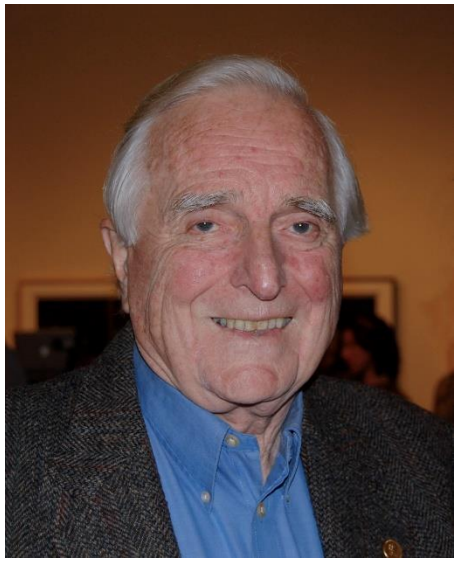
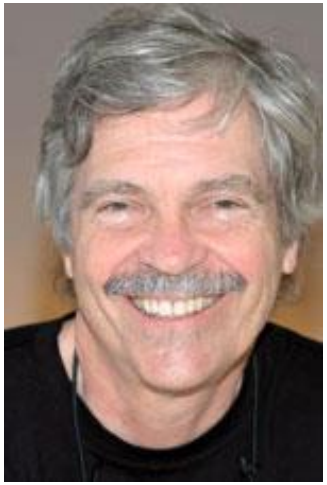
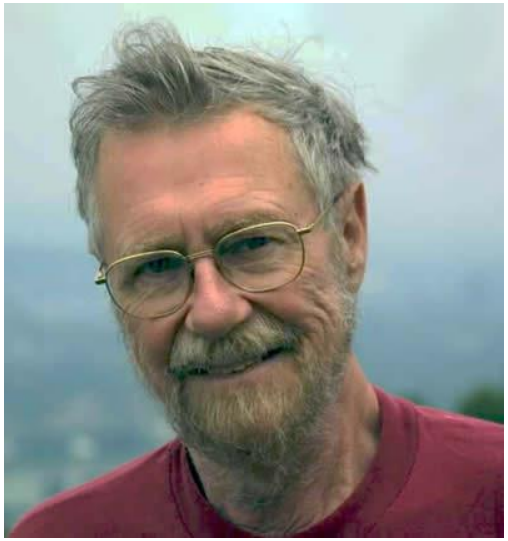
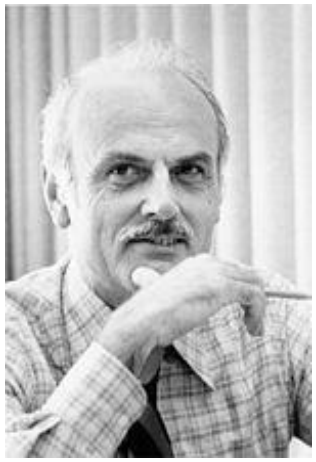
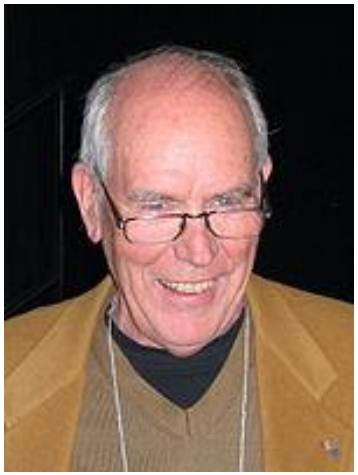
Maio de 2015

Conhece?





Conhece?

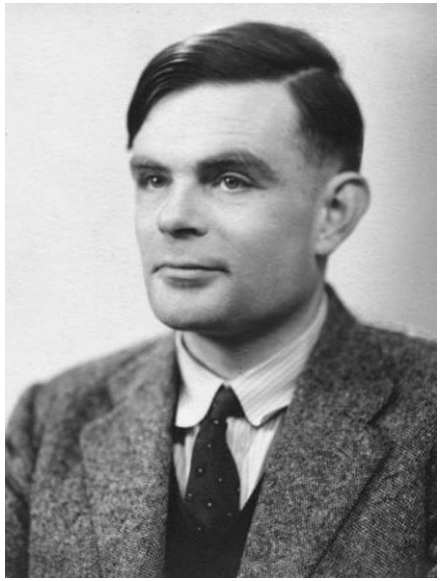






1936

ON COMPUTABLE NUMBERS, WITH AN APPLICATION TO THE ENTSCHEIDUNGSPROBLEM

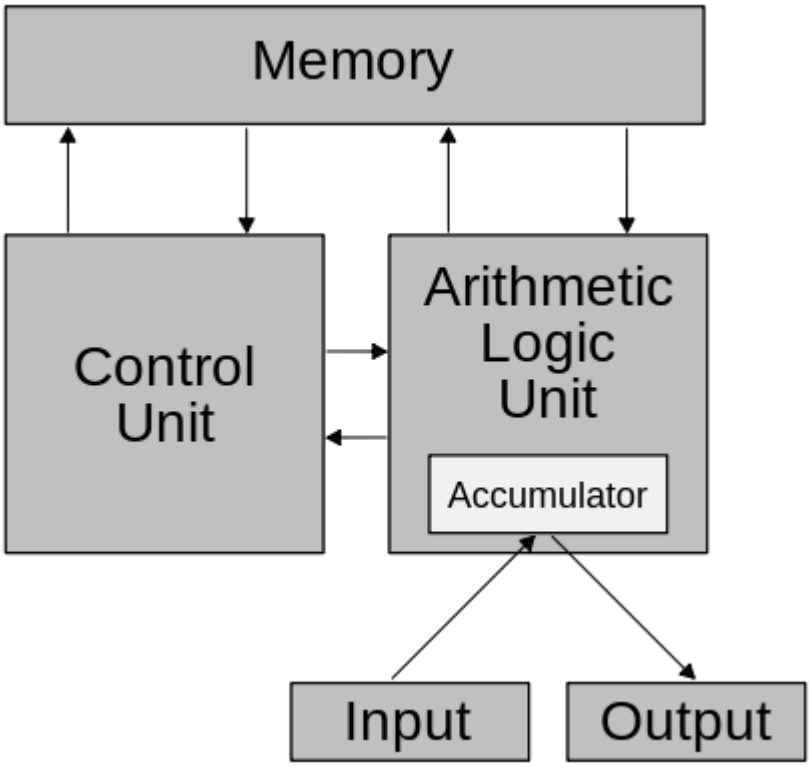
By A. M. TURING.

[Received 28 May, 1936.—Read 12 November, 1936.]



Alan Turing

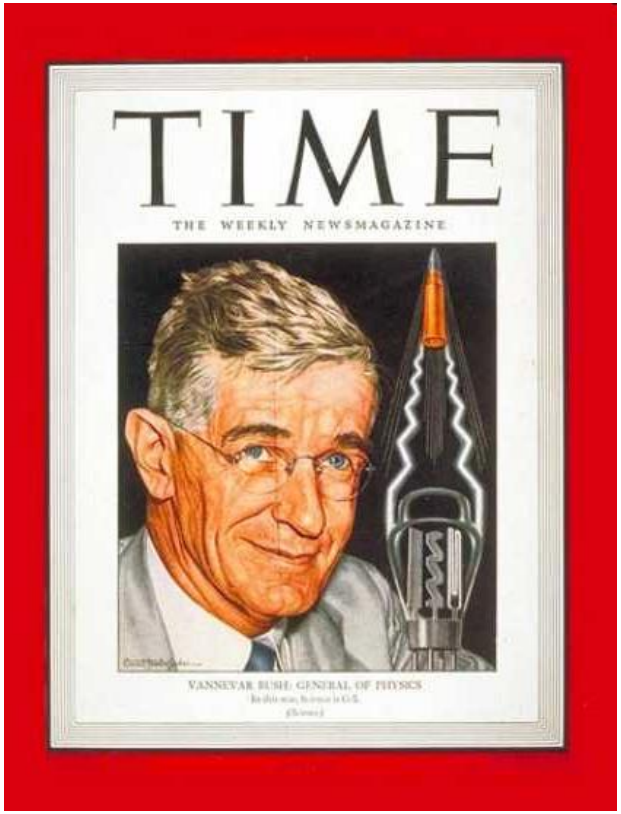
1945



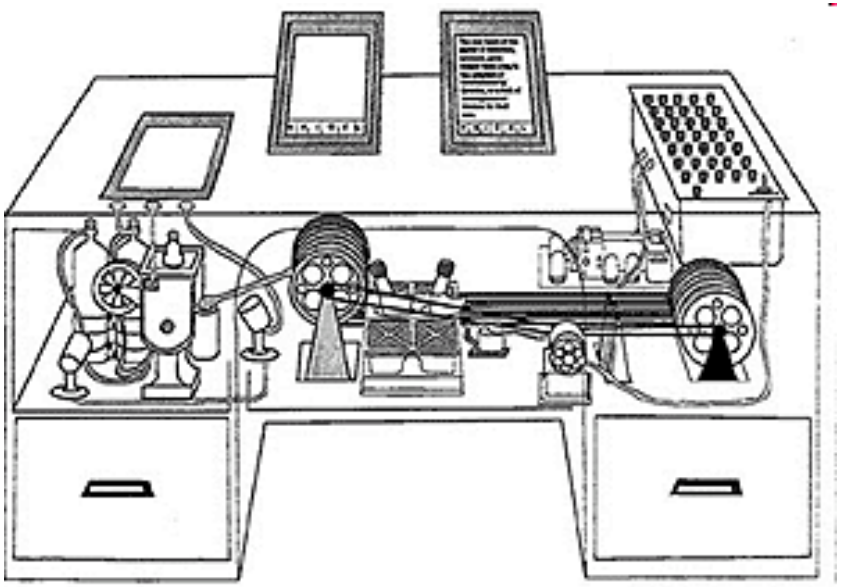
Von Neumann

MEMEX

1945

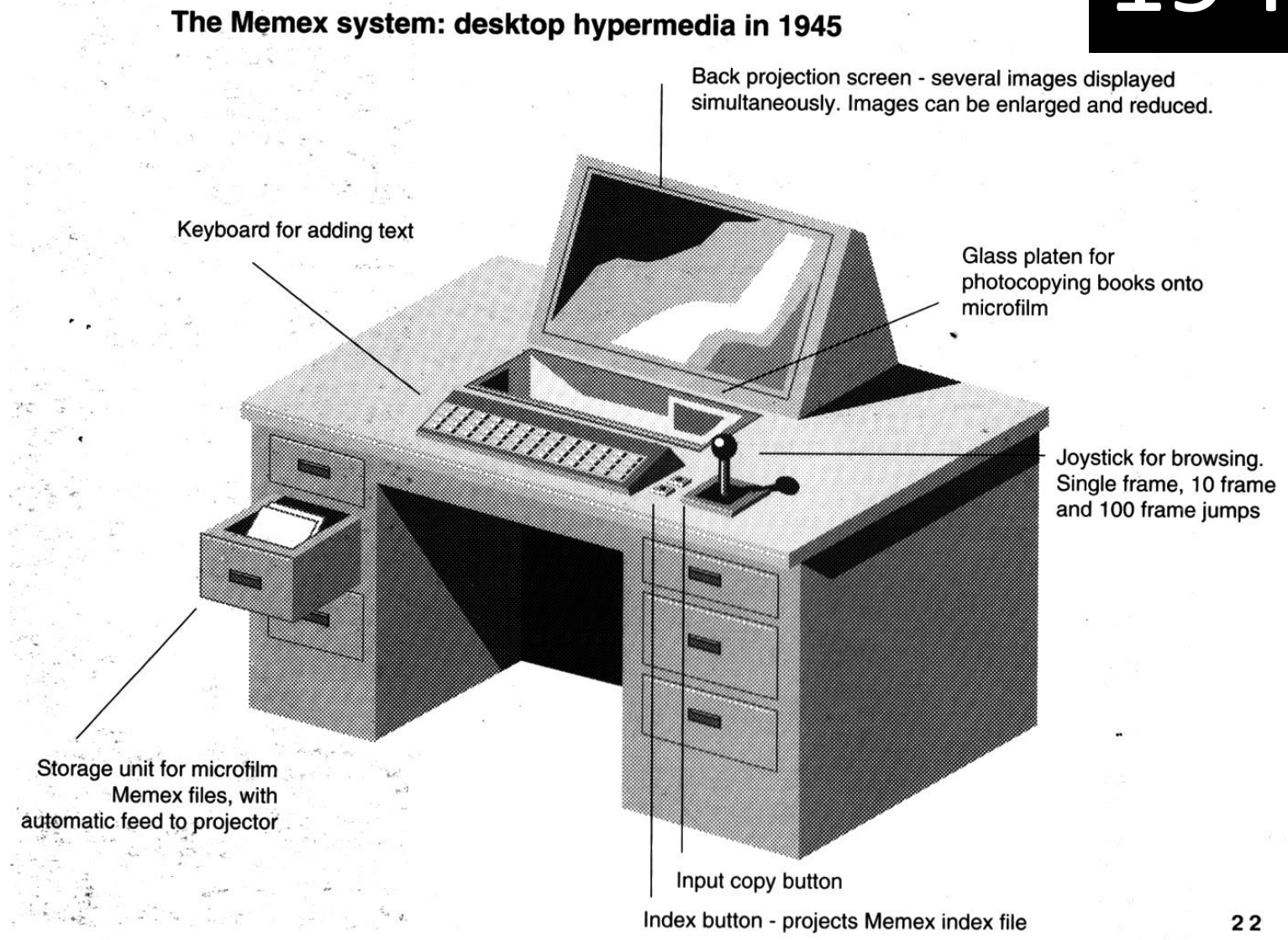


Vannevar Bush



MEMEX

1945


The Memex system: desktop hypermedia in 1945
Back projection screen - several images displayed simultaneously. Images can be enlarged and reduced.
Keyboard for adding text
Glass platen for photocopying books onto microfilm
Joystick for browsing. Single frame, 10 frame and 100 frame jumps
Storage unit for microfilm Memex files, with automatic feed to projector
Input copy button
Index button - projects Memex index file

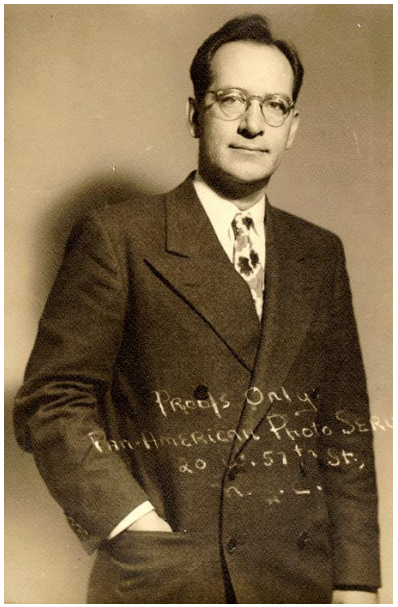
Linguagem Short Code

```
a = (b+c)/b*c
```

```
X3 =  (  X1 +  Y1 )  /  X1 * Y1
X3 03 09 X1 07 Y1 02 04 X1   Y1
```

```
07Y10204X1Y1
```

1949



John Mauchly

A-0

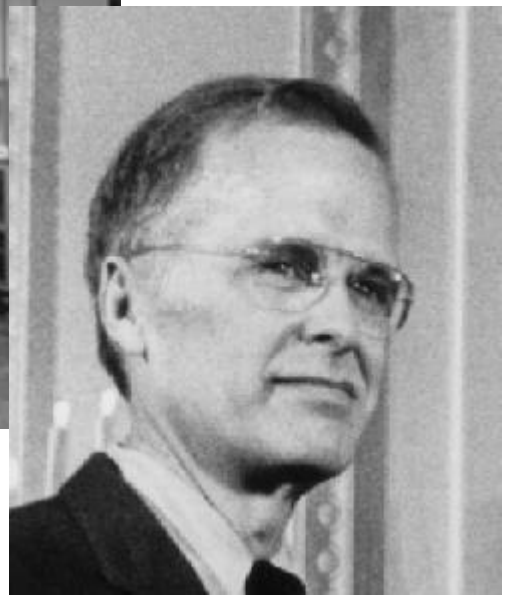
UNIVAC I

1952

Grace M. Hopper

FORmula TRANslator

IBM 704



John Backus

1957

COBOL

Micro Focus Data Access - connx.com
Ad www.connx.com/
Secure, realtime, read/write access to Micro Focus data on LUW

Risk free COBOL migrations - asysco.com
Ad www.asysco.com/
Proven automated migration solutions to eliminate runtime fees

COBOL Compiler for .NET - raincode.com
Ad www.raincode.com/
Download free COBOL compiler and move your code off the mainframe

Resultado de consulta no Google em maio/2015!

1959

Grace M. Hopper

QuickSort

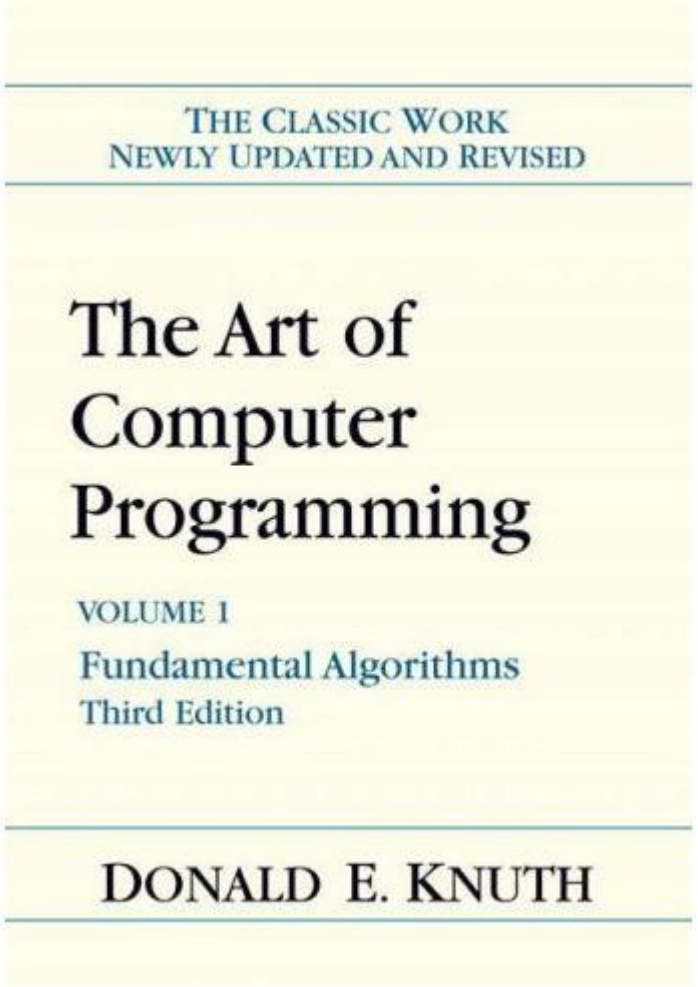
- QuickSort (1961)

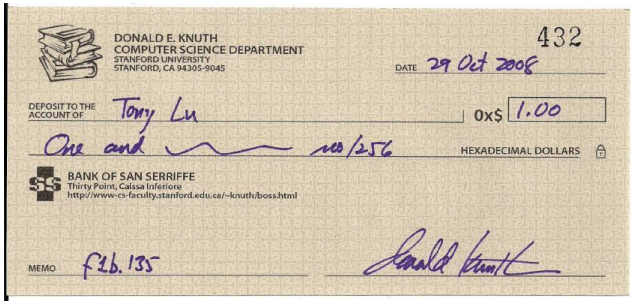
“There are two ways to construct a piece of software: One is to make it so simple that there are obviously no errors, and the other is to make it so complicated that there are no obvious errors.”

1961

Tony Hoare

TAOCP





1962

Donald Knuth

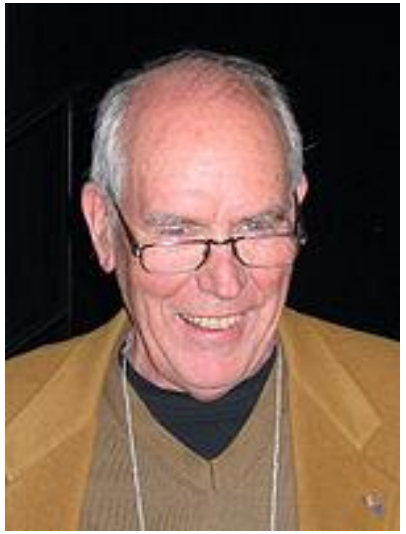
Início da IHC: Sketchpad (MIT)

SKETCHPAD, A MAN-MACHINE GRAPHICAL COMMUNICATION SYSTEM

by

IVAN EDWARD SUTHERLAND

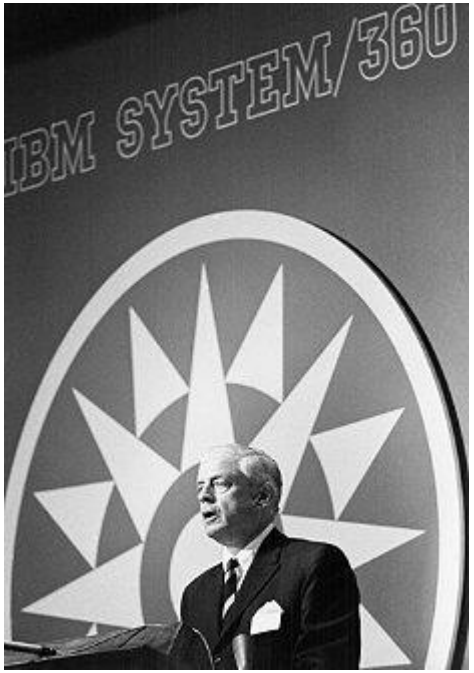
1963



Ivan Sutherland

IBM System/360

1964



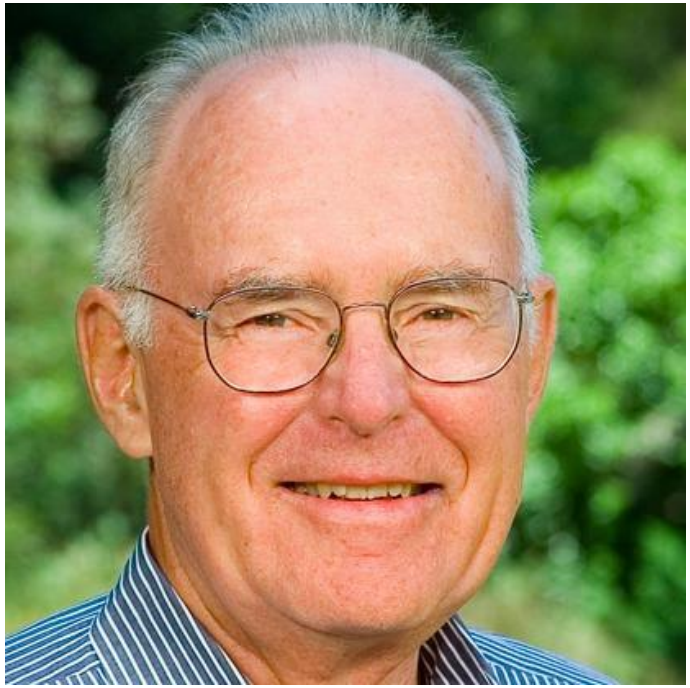
Tom Watson, Jr

Lei de Moore

- *"[...] a densidade de um transistor dobra em um período entre 18 e 24 meses".*

Gordon Moore, 1965

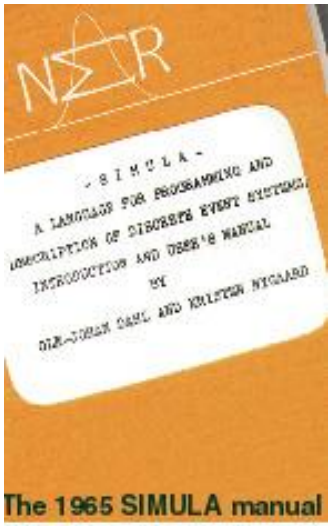
1965



Gordon Moore

Simula67 – Orientação a Objetos

Ole-Johan Dahl (1978)



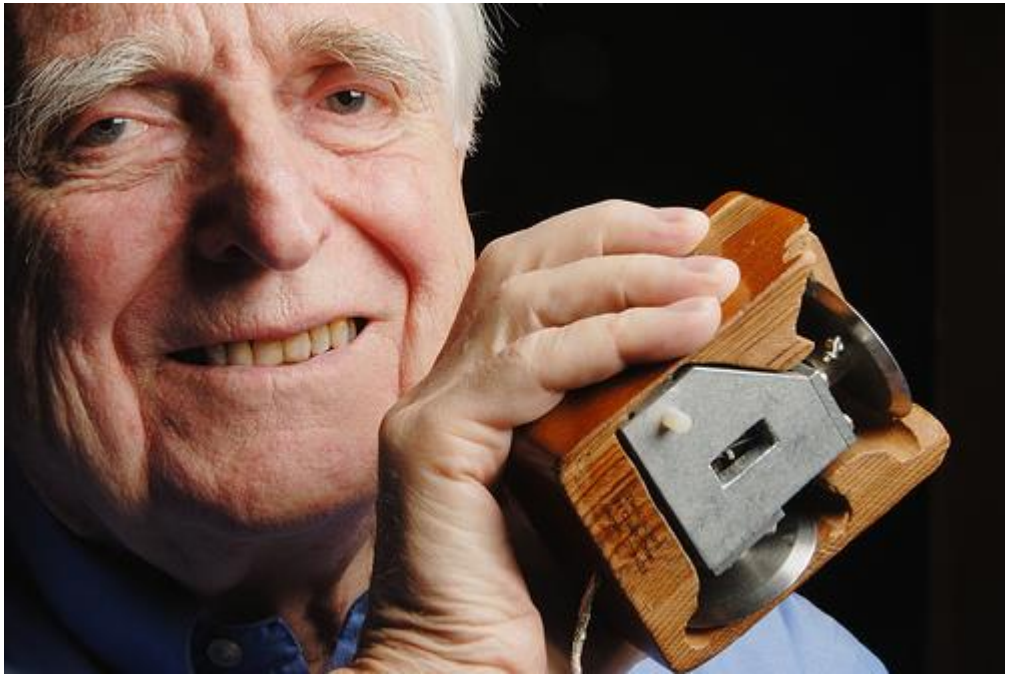
The 1965 SIMULA manual
The first object-oriented report

Kristen Nygaard (1978)

1967

Inovações:
objetos,
classes,
herança,
métodos virtuais,
garbage collection.

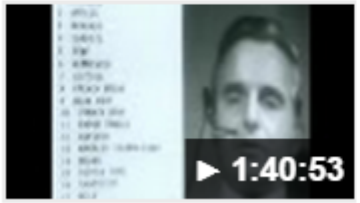
A Mãe de Todas as Demos



Douglas C. Engelbart

1968

The Mother of All Demos, presented by Douglas Engelbart ...



www.youtube.com/watch?v=yJDv-zdhzMY

Jul 9, 2012 - Uploaded by MarcelVEVO

"**The Mother of All Demos** is a name given retrospectively to Douglas Engelbart's December 9, 1968 ...

Conferências NATO

- Popularização dos termos Crise de Software e Engenharia de Software.

"[…] when we had a few weak computers, programming became a mild problem, and now we have gigantic computers, programming has become an equally gigantic problem."

Edsger Dijkstra, 1972

1968/1969

Programação Estruturada

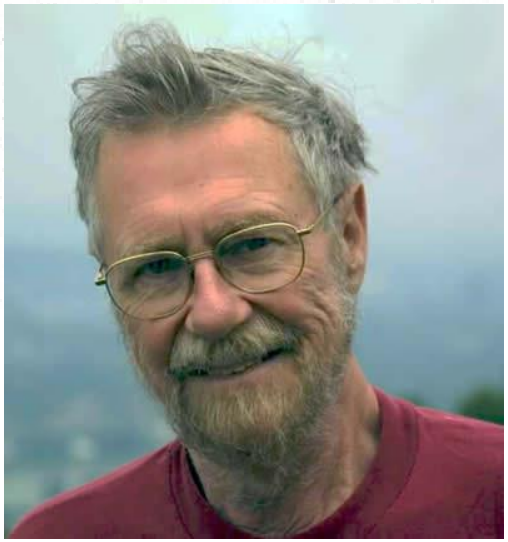
Edgar Dijkstra: Go To Statement Considered Harmful

Go To Statement Considered Harmful

Key Words and Phrases: go to statement, jump instruction, branch instruction, conditional clause, alternative clause, repetitive clause, program intelligibility, program sequencing

CR Categories: 4.22, 5.23, 5.24

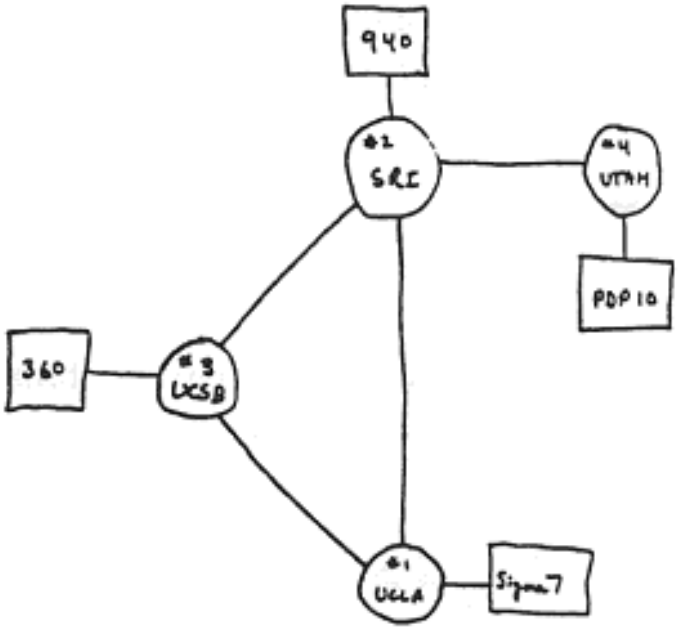
EDITOR:



Edsger Dijkstra

1968

ARPANET



THE ARPA NETWORK

DEC 1969

1969

Ciclo de Vida do Software

MANAGING THE DEVELOPMENT OF LARGE SOFTWARE SYSTEMS

Dr. Winston W. Royce

INTRODUCTION

I am going to describe my personal views about managing large software developments. I have had various assignments during the past nine years, mostly concerned with the development of software packages for spacecraft mission planning, commanding and post-flight analysis. In these assignments I have experienced different degrees of success with respect to arriving at an operational state, on-time, and within costs. I have become prejudiced by my experiences and I am going to relate some of these prejudices in this presentation.

1970

Inovações:

Desenvolvimento iterativo

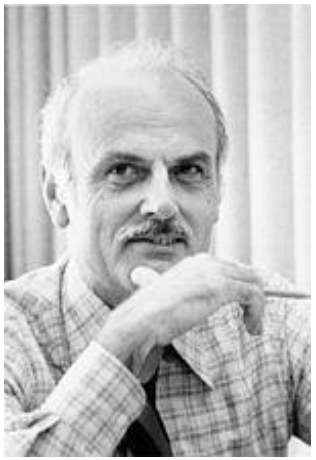
Uso de prototipagem

Modelo Relacional

A Relational Model of Data for Large Shared Data Banks

E. F. Codd
IBM Research Laboratory, San Jose, California

Future users of large data banks must be protected from having to know how the data is organized in the machine (the internal representation). A prompting service which supplies such information is not a satisfactory solution. Activities of users

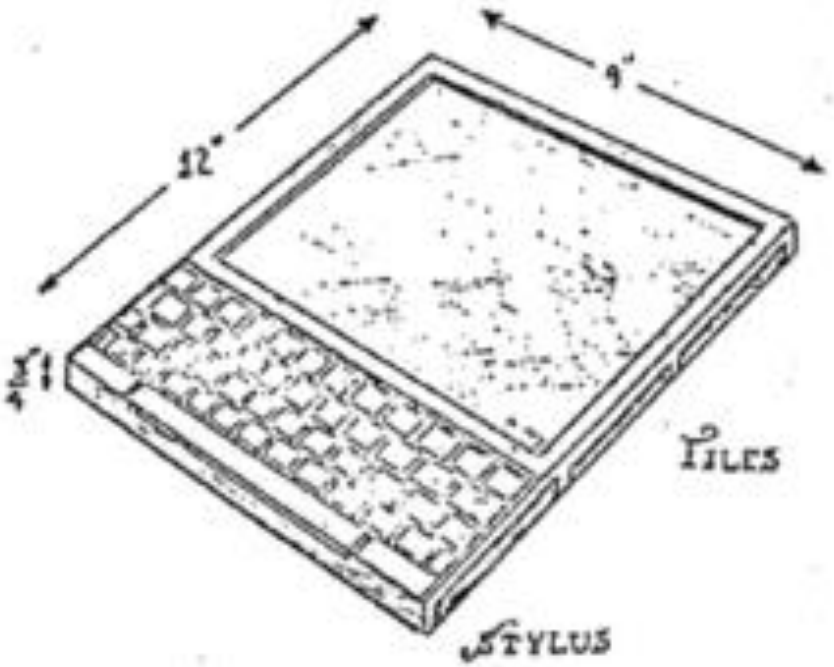


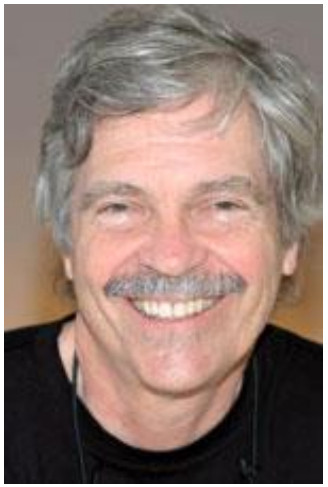
Edgar Frank Codd

1970

Base teórica para SGBDRs e SQL

Dynabook





Alan Kay

1972

Programação Estruturada

David Parnas

1972

Programming Techniques — R. Morris Editor

A Technique for Software Module Specification with Examples

D. L. Parnas
Carnegie-Mellon University*

This paper presents an approach to writing specifications for parts of software systems. The main goal is to provide specifications sufficiently precise and complete that other pieces of software can be written to interact with the piece specified without additional information. The secordary goal is to include in the specification no more information than necessary to meet the first goal. The technique is illustrated by means of a variety of examples from a tutorial system.

Key Words and Phrases: software, specification, modules, software engineering, software design
CR Categories: 4.0, 4.29, 4.9

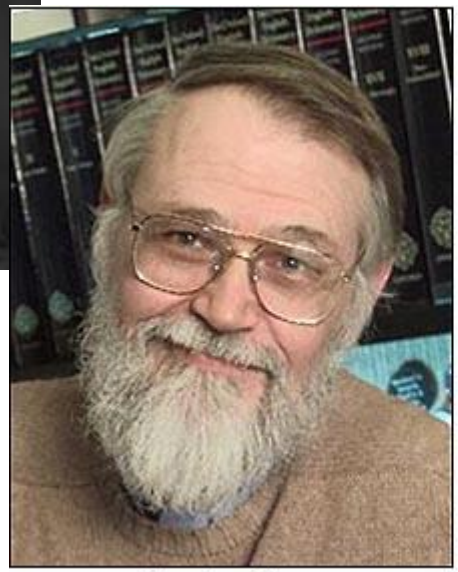
Because of the growing recognition that a major contributing factor in the so-called "software engineering" problem is our lack of techniques for precisely specifying program segments without revealing too much information [1, 2], I would like to report on a technique for module specification which has proven moderately successful in a number of test situations.

Without taking the space to justify them [2] I would like to list the goals of the specification scheme to be described:

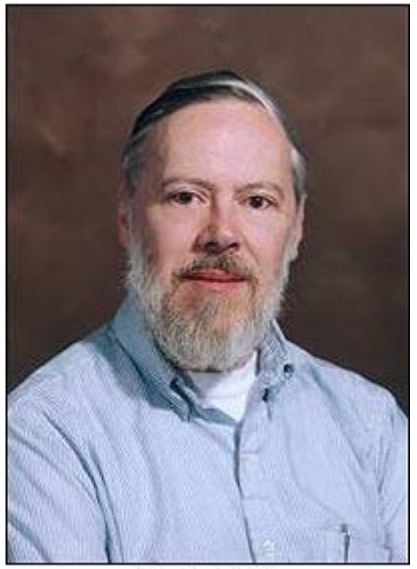
1. The specification must provide to the intended user *all* the information that he will need to use the program

C

1972



Brian Kernighan



Dennis Ritchie

Modelo Entidade-Relacionamento

The Entity-Relationship Model—Toward a Unified View of Data

PETER PIN-SHAN CHEN

Massachusetts Institute of Technology

A data model, called the entity-relationship model, is proposed. This model incorporates some of the important semantic information about the real world. A special diagrammatic technique is introduced as a tool for database design. An example of database design and description using the model and the diagrammatic technique is given. Some implications for data integrity, information retrieval, and data manipulation are discussed.

The entity-relationship model can be used as a basis for unification of different views of

1976

Peter Chen

Trinity

Commodore PET

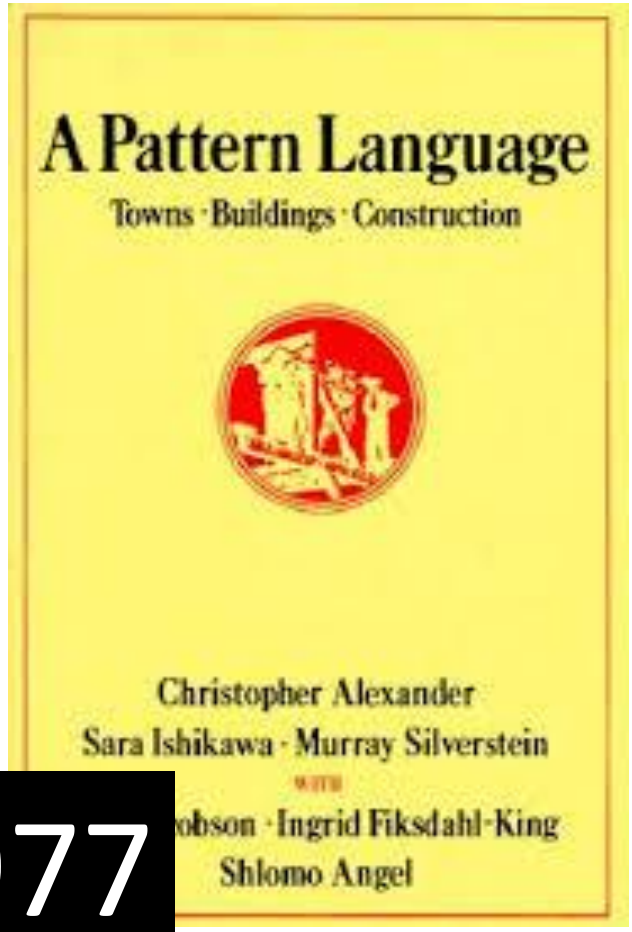
Apple II

TRS-80

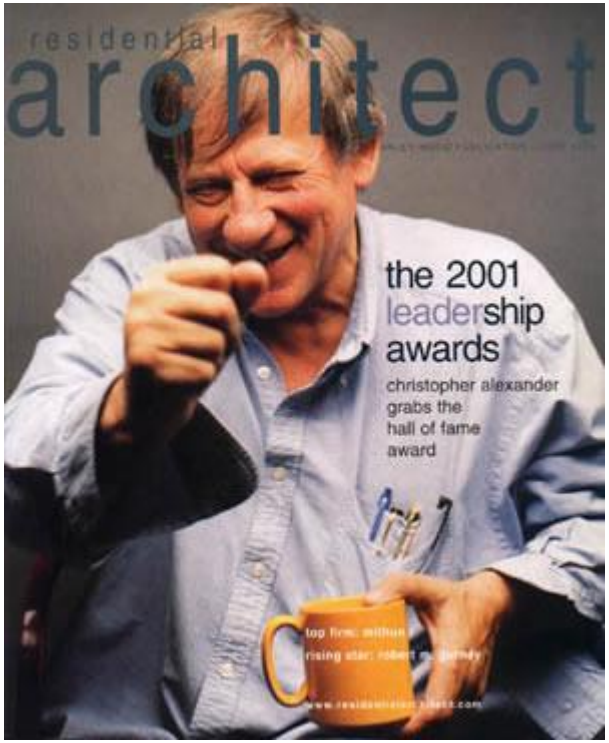
1977

TRS-80

Padrões



1977



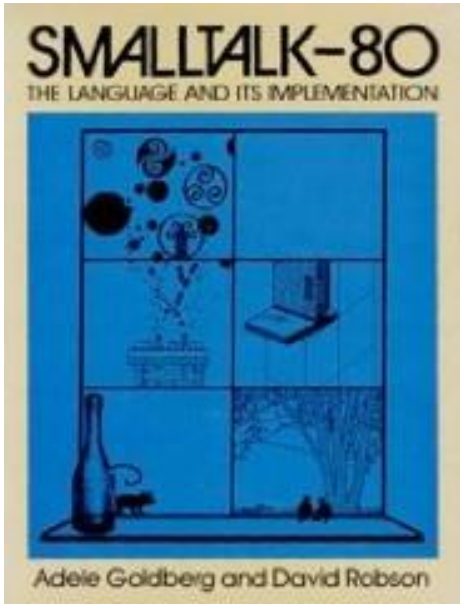
Christopher Alexander

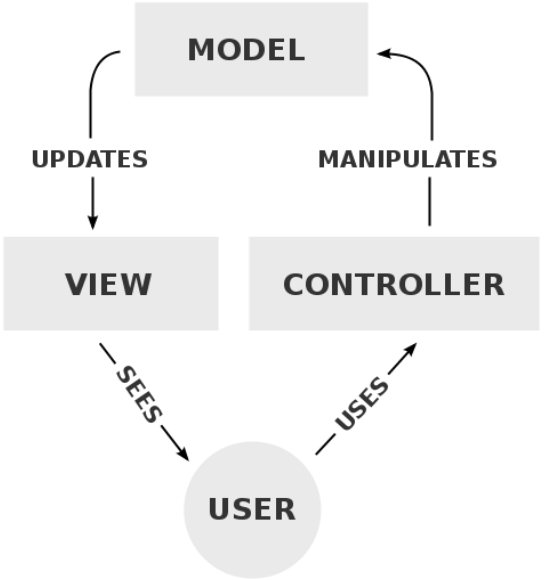
Crescimento da Análise Estruturada

1978

Tom DeMarco

SmallTalk-80





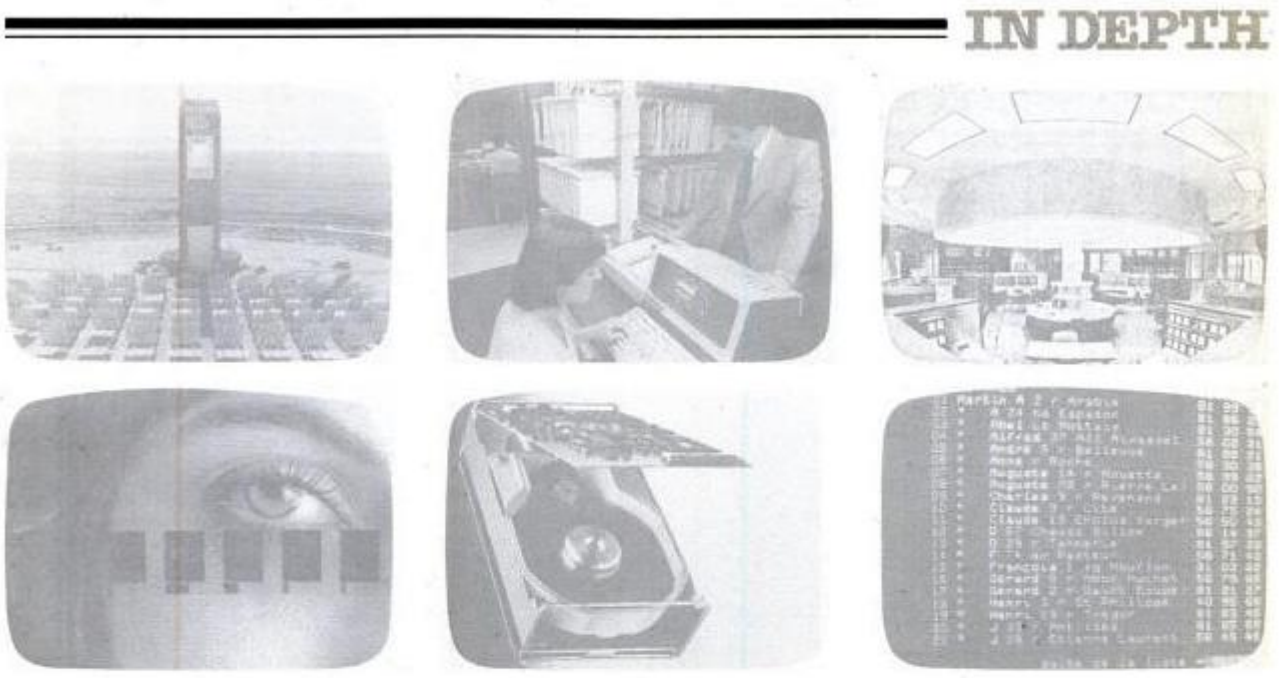
1980

MVC
WYSIWYG
GUI
IDE

Adele Goldberg

Engenharia da Informação

1981



INFORMATION ENGINEERING

The articles cover the following topics: (1) information engineering methodologies, (2) developing a corporate data model, (3) information analysis, (4) data analysis and data base design, (5) procedure formation and (6) information engineering development.

By Clive Finkelstein

RPC

Implementing Remote Procedure Calls

ANDREW D. BIRRELL and BRUCE JAY NELSON
Xerox Palo Alto Research Center

Remote procedure calls (RPC) appear to be a useful paradigm for providing communication across a network between programs written in a high-level language. This paper describes a package providing a remote procedure call facility, the options that face the designer of such a package, and the decisions we made. We describe the overall structure of our RPC mechanism, our facilities for binding RPC

1984

C++

Bjarne Stroustrup

1985

Modelo em Espiral

A Spiral Model of Software Development and Enhancement

Barry W. Boehm, TRW Defense Systems Group

"Stop the life cycle—I want to get off!"
"Life-cycle Concept Considered Harmful."
" The waterfall model is dead."
"No, it isn't, but it should be."

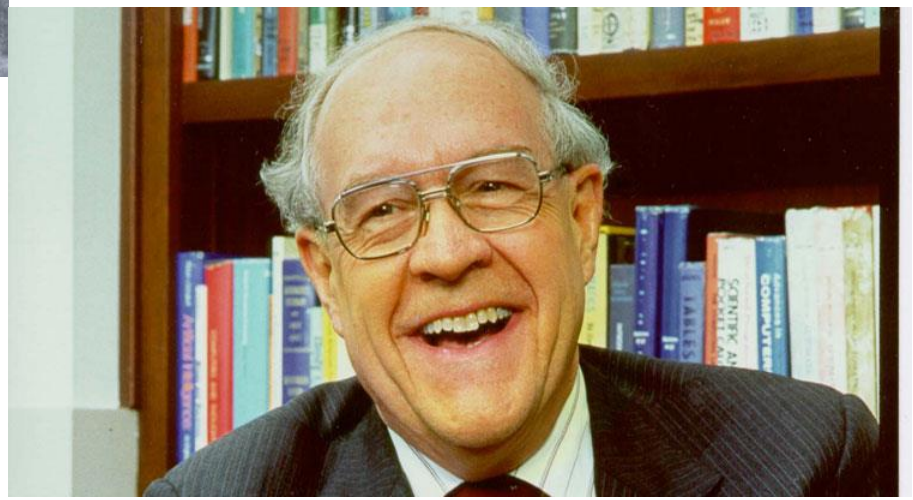
1986

Barry Boehm

No Silver Bullet

Complexidade essencial

1986



Fred Brooks

Armazéns de Dados

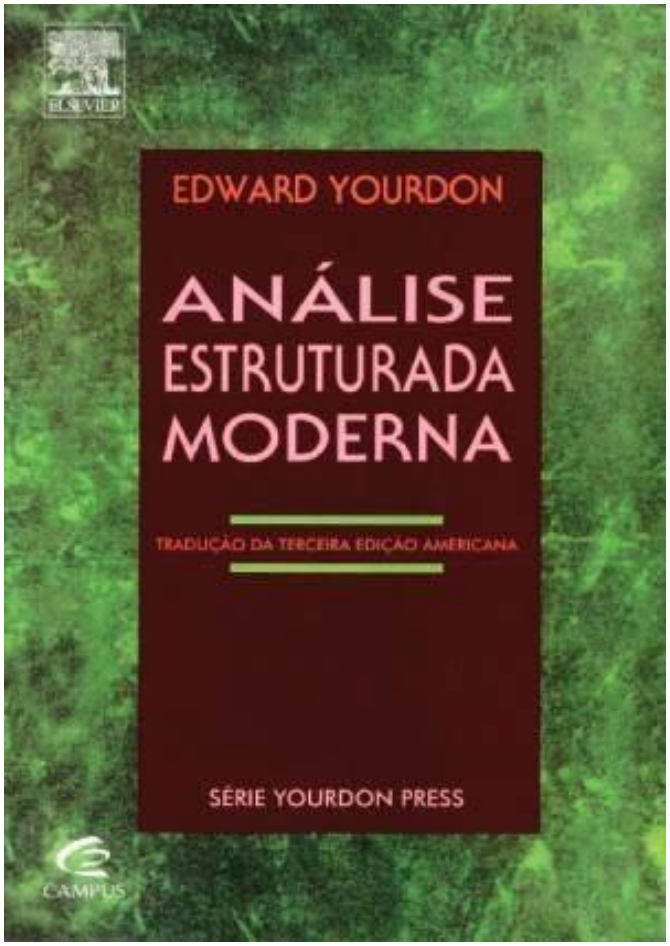
An architecture for a business and information system

by B. A. Devlin
P. T. Murphy

The transaction-processing environment in which companies maintain their operational databases was the original target for computerization and is now well understood. On the other hand, access to company information on a large scale by an end user for reporting and data analysis is relatively new. Within IBM, the

1988

Apogeu da Metodologia Estruturada

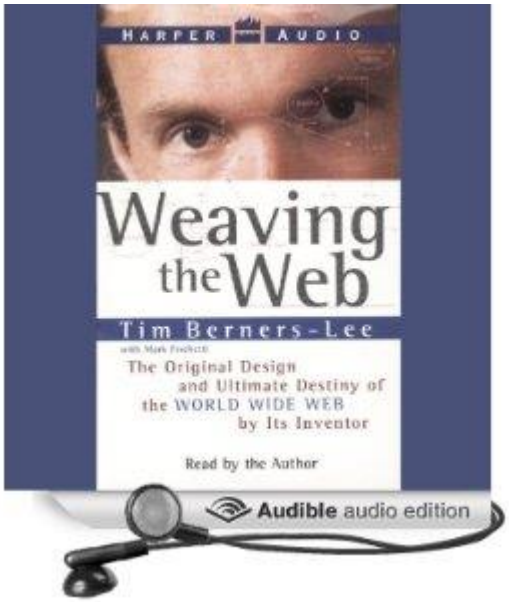


1989

Edward Yourdon

WWW

Primeiro Web Server

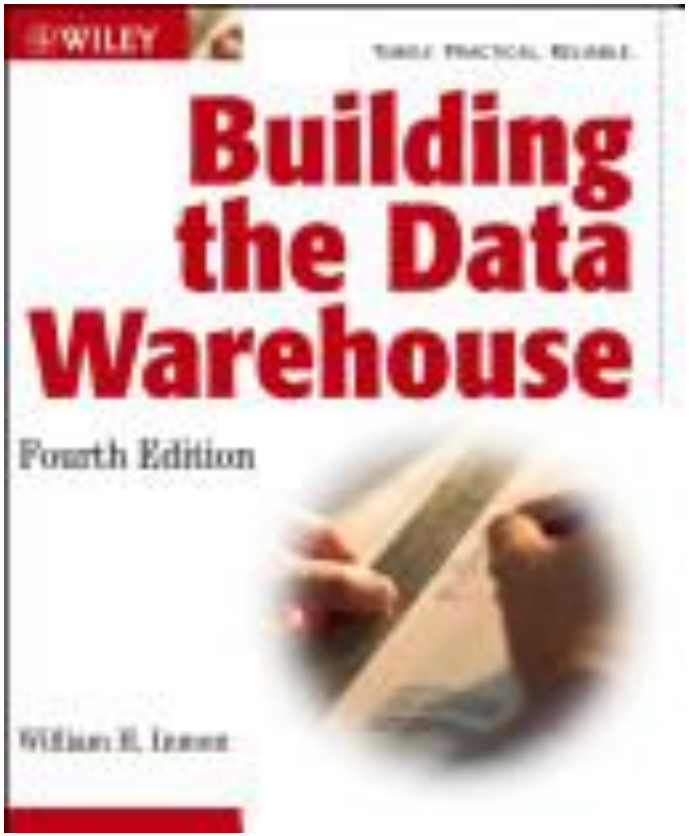


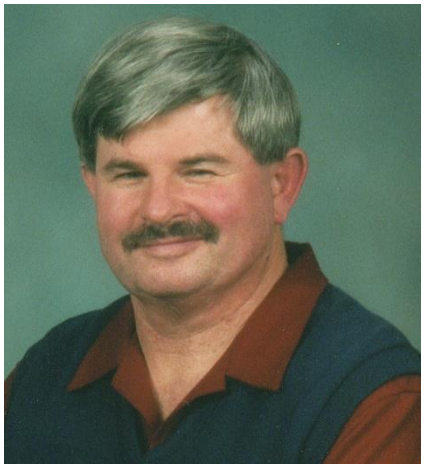
1990

Tim Berners-Lee

Armazéns de Dados

1992





Bill Inmon

Refatoração de Código

REFACTORING OBJECT-ORIENTED FRAMEWORKS

William F. Opdyke, Ph.D.
Department of Computer Science
University of Illinois at Urbana-Champaign, 1992
Ralph E. Johnson, Advisor

1992

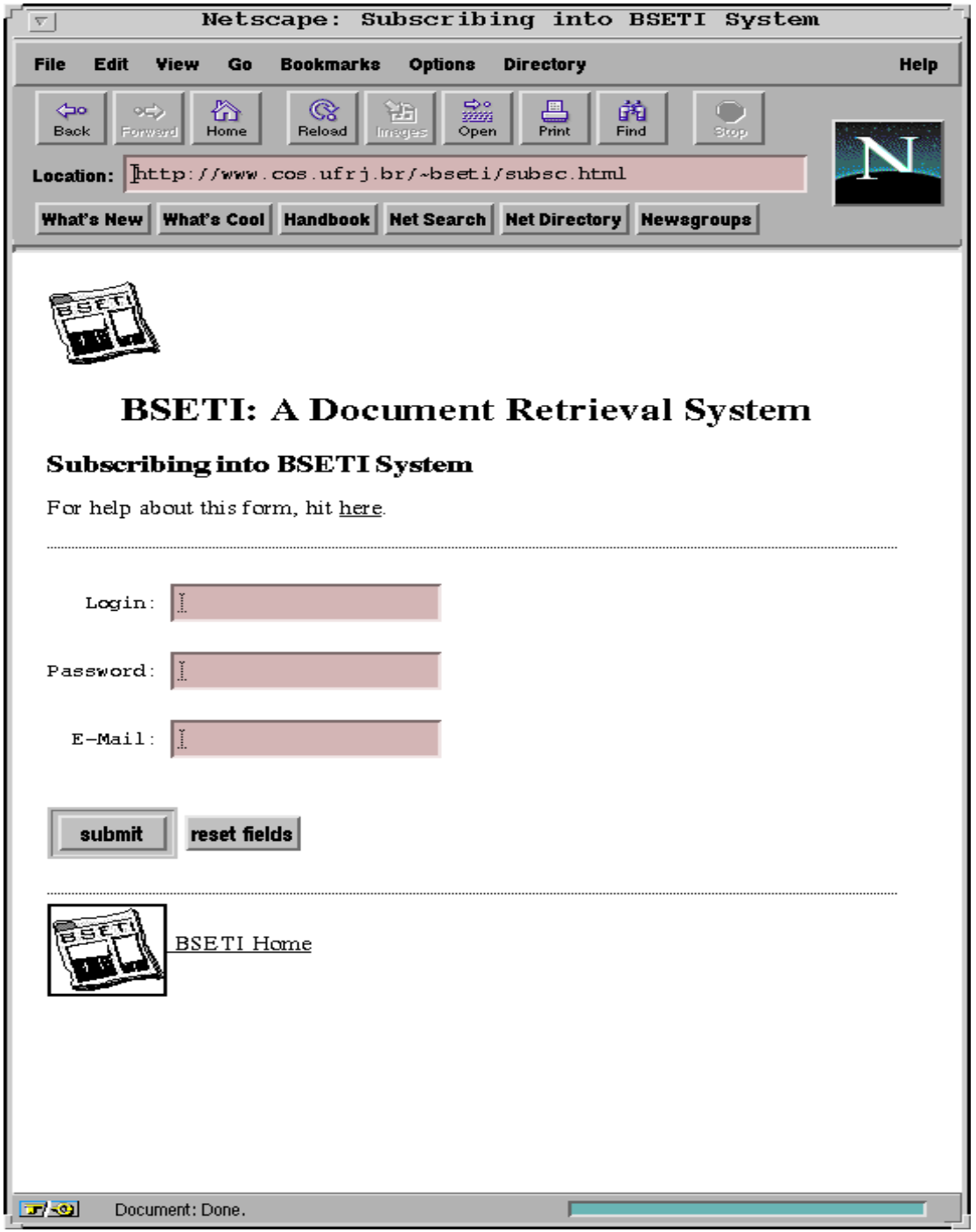
William Opdyke

Mosaic & Netscape

Marc Andreessen

1993

1994



1995

http://web.archive.org/

A Plea for Lean Software

Niklaus Wirth
ETH Zürich

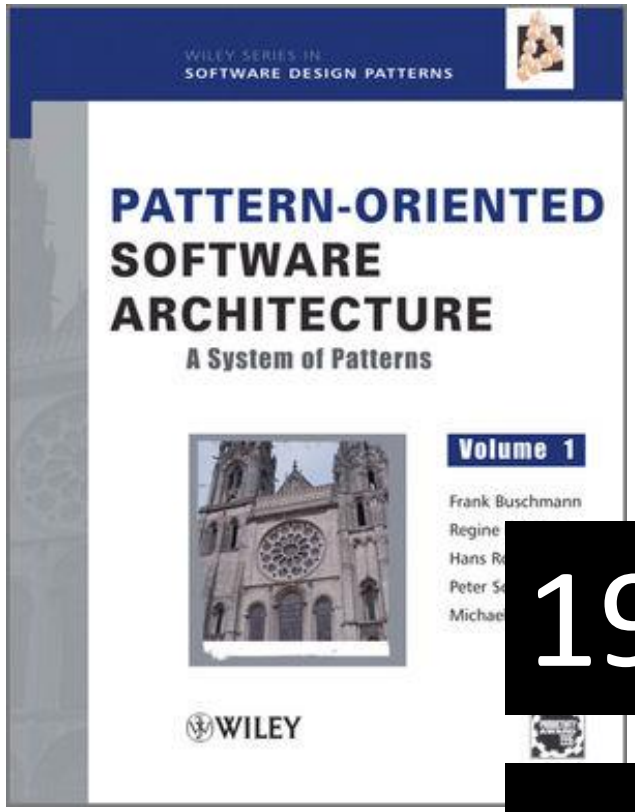
Memory requirements of today's workstations typically jump substantially—from several to many megabytes—whenever there's a new software release. When demand surpasses capacity, it's time to buy add-on memory. When the system has no more

"software is getting slower more rapidly than hardware becomes faster."

1995

Niklaus Wirth

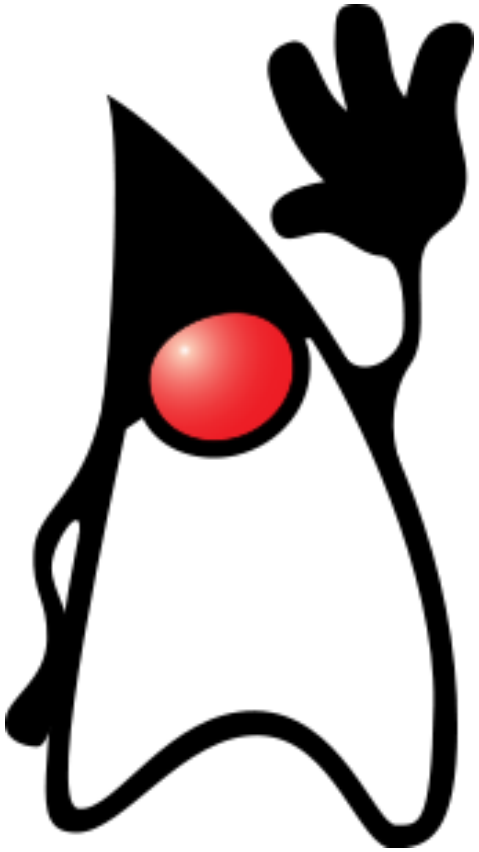
Padrões de Software



1995

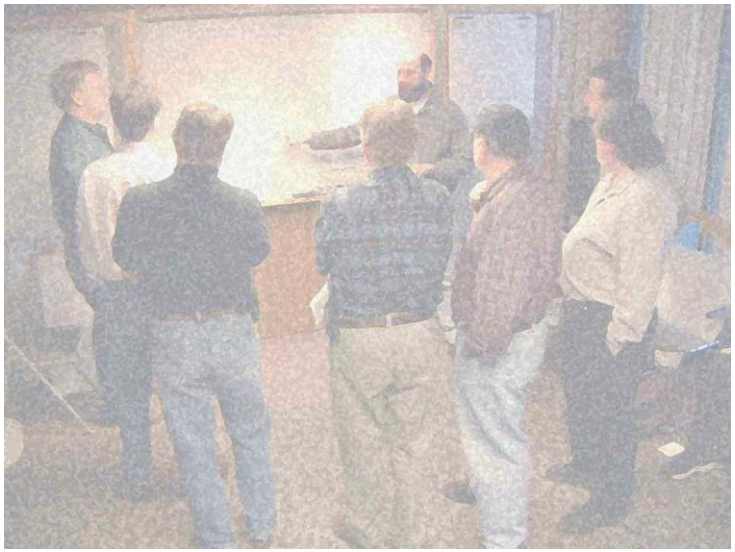
1996

Java



1995

Metodologias Ágeis



1996

Extreme Programming

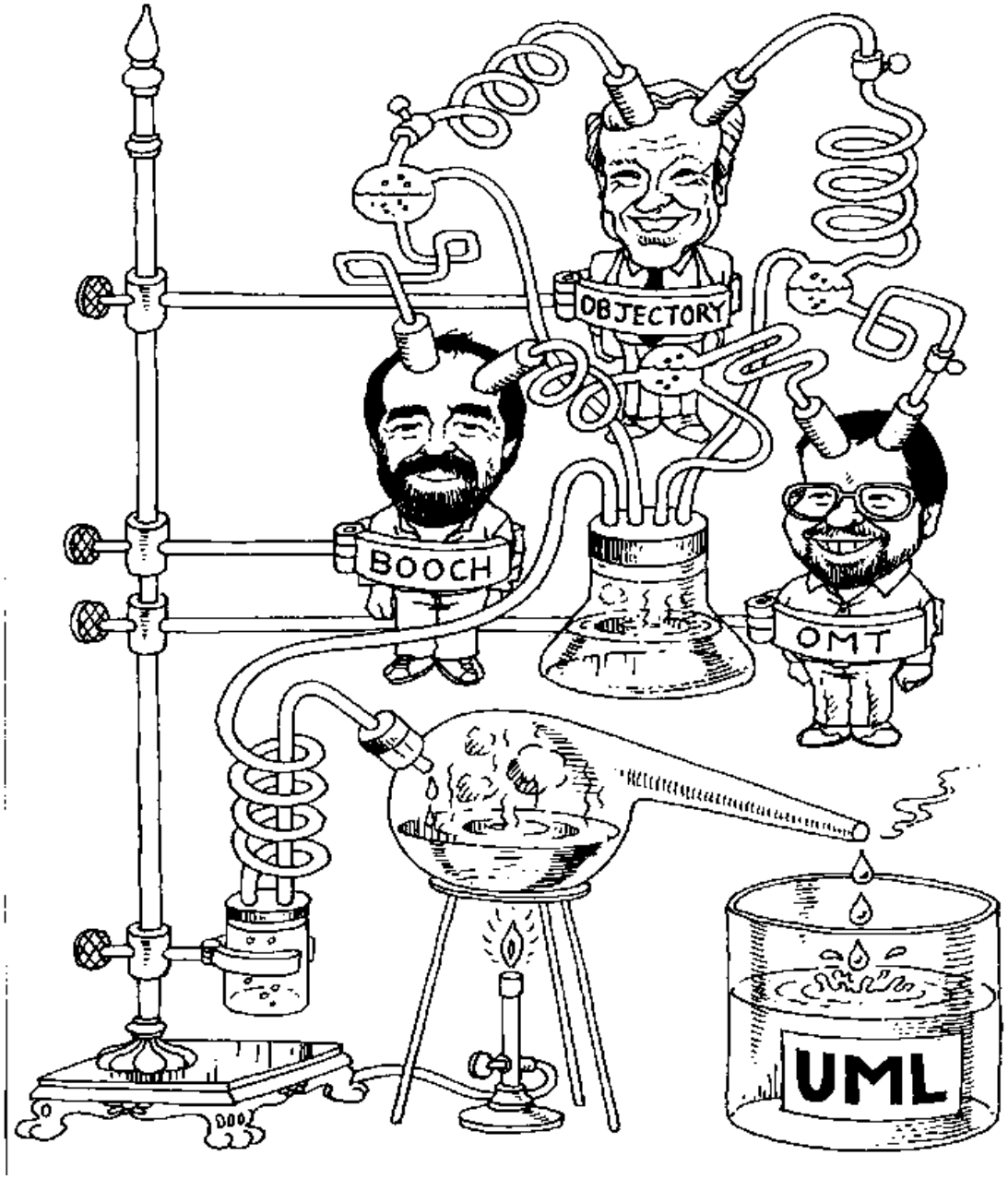
Kent Beck

Guerra de Métodos OO

Ano	Autor(es)
1990	Shaler & Mellor
1991	Coad & Yourdon (OOAD – Object-Oriented Analysis and Design)
1993	Grady Booch (Booch Method)
1993	Ivar Jacobson (OOSE – Object-Oriented Software Engineering)
1995	James Rumbaugh et al. (OMT – Object Modeling Technique)
1996	Wirfs-Brock (Responsibility Driven Design)
1996	(Fusion)

1990 a 1996

1997



MapReduce

MapReduce: Simplified Data Processing on Large Clusters

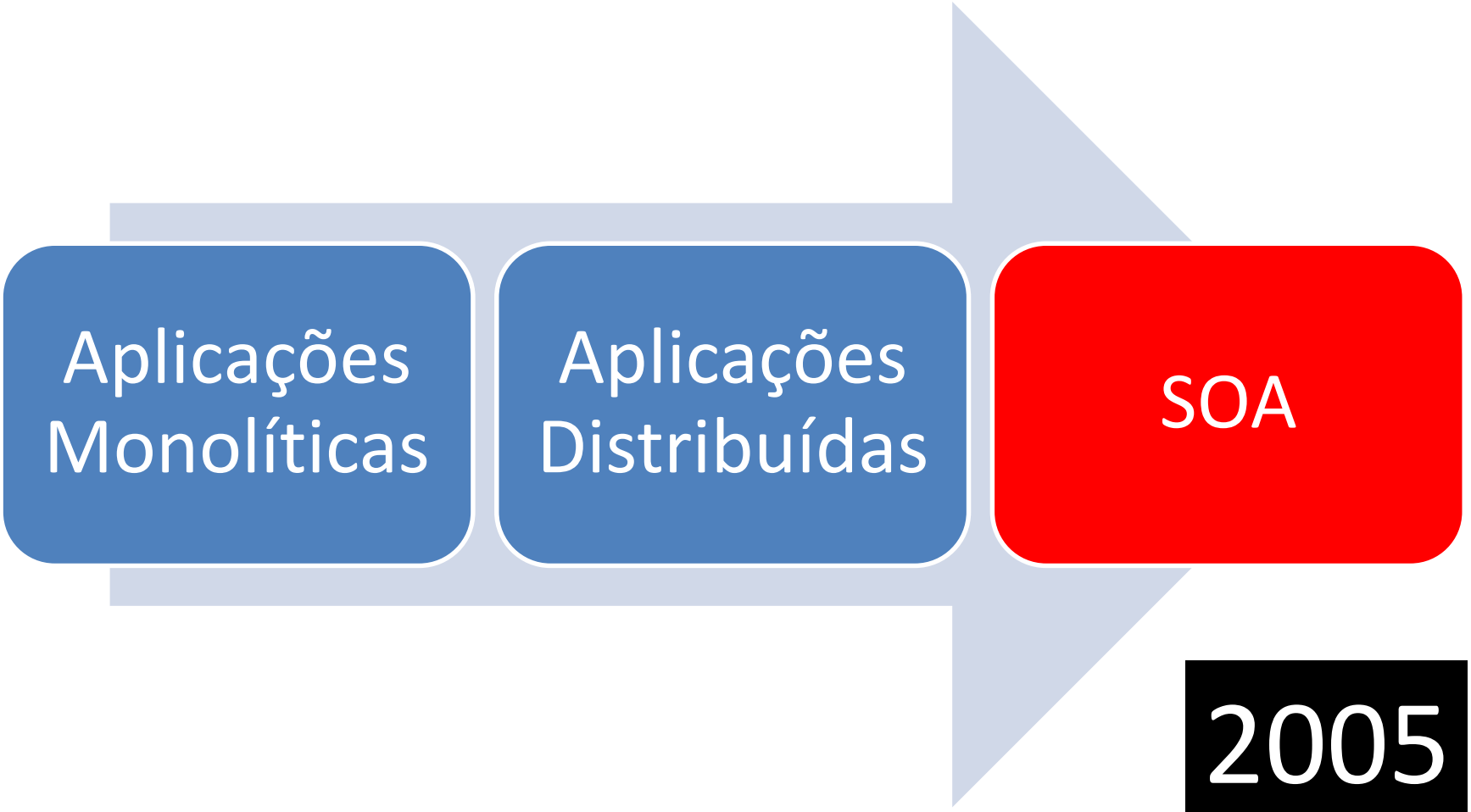
Jeffrey Dean and Sanjay Ghemawat

jeff@google.com, sanjay@google.com

Google, Inc.

2004

Orientação a Serviços



Smartphones

2007 2008

2008-2015

Futuro