The seven golden rules for being successful in research

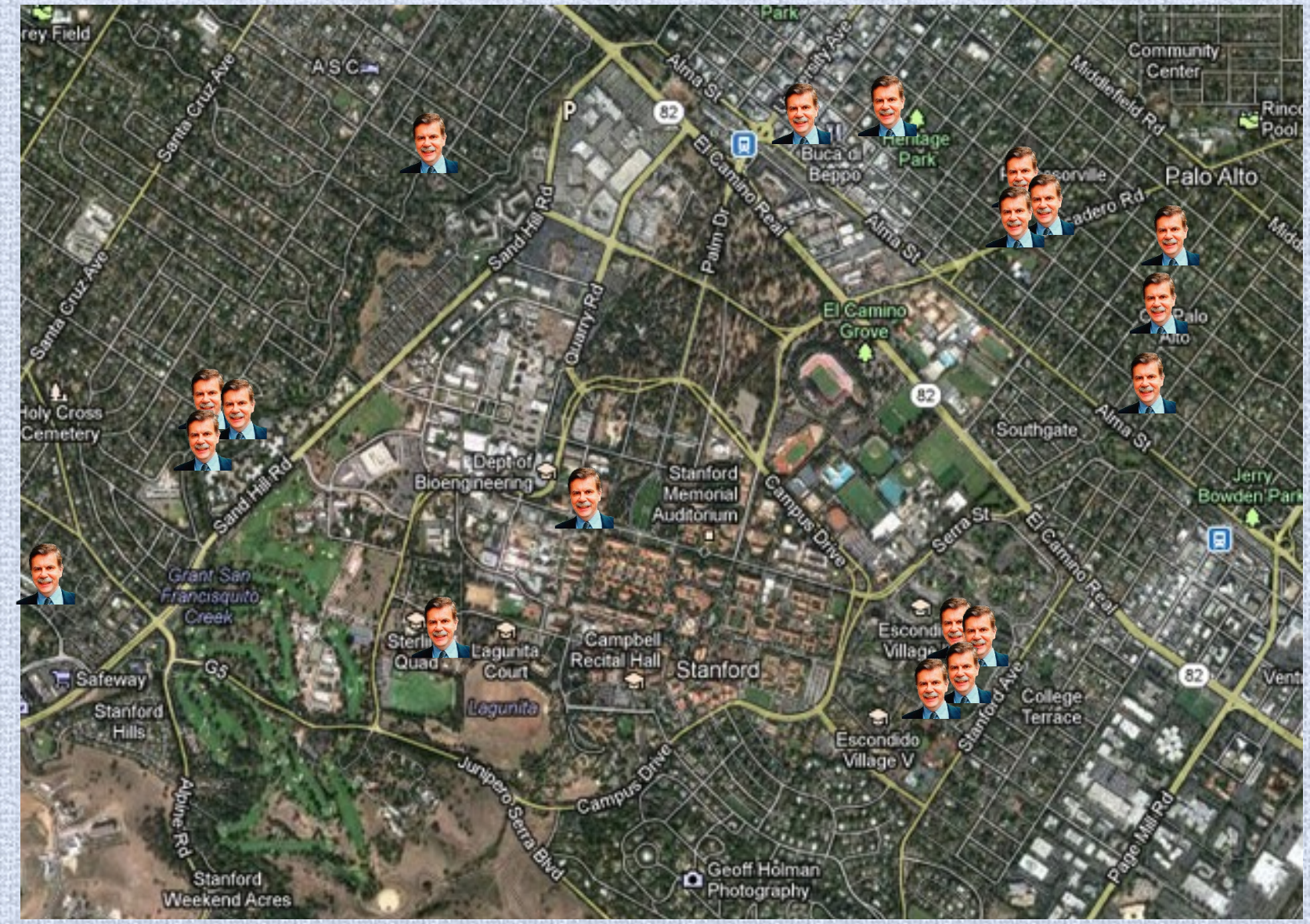
Stefano Ceri

Politecnico di Milano

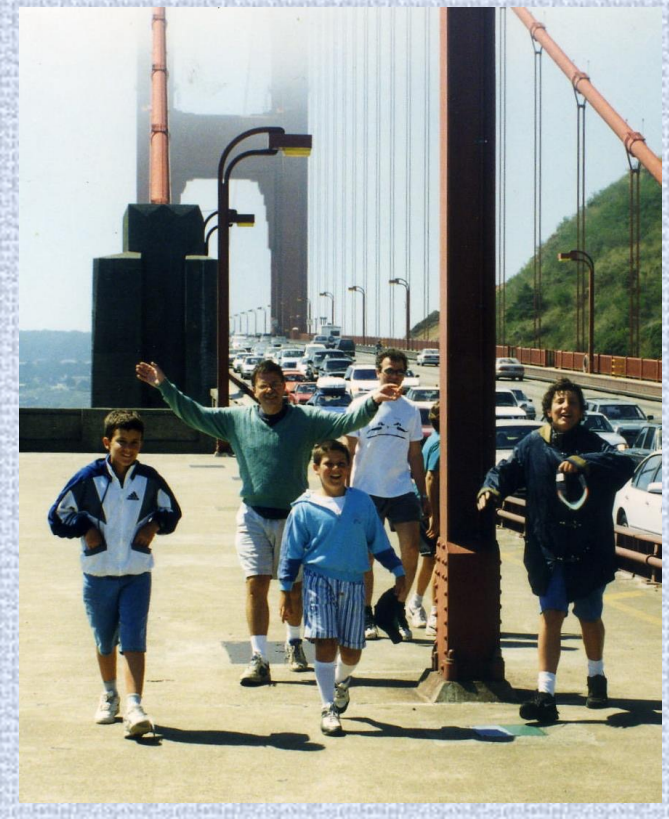
Education

- «Doctoral» degree @ Polimi in 1978
- Master @ Stanford in 1981
- Professors at Stanford: Bob Floyd, Don Knuth, John Hennessy, John McCarthy, Jeff Ulmann, Gio Wiederhold, Terry Winograd

Seasonal immigrant



Seasonal immigrant



The seven golden rules for being successful in research

1. Invest in education

Even when you don’t need the title…

The masters

Sergio Rinaldi

The masters

Jim Gray

The companions

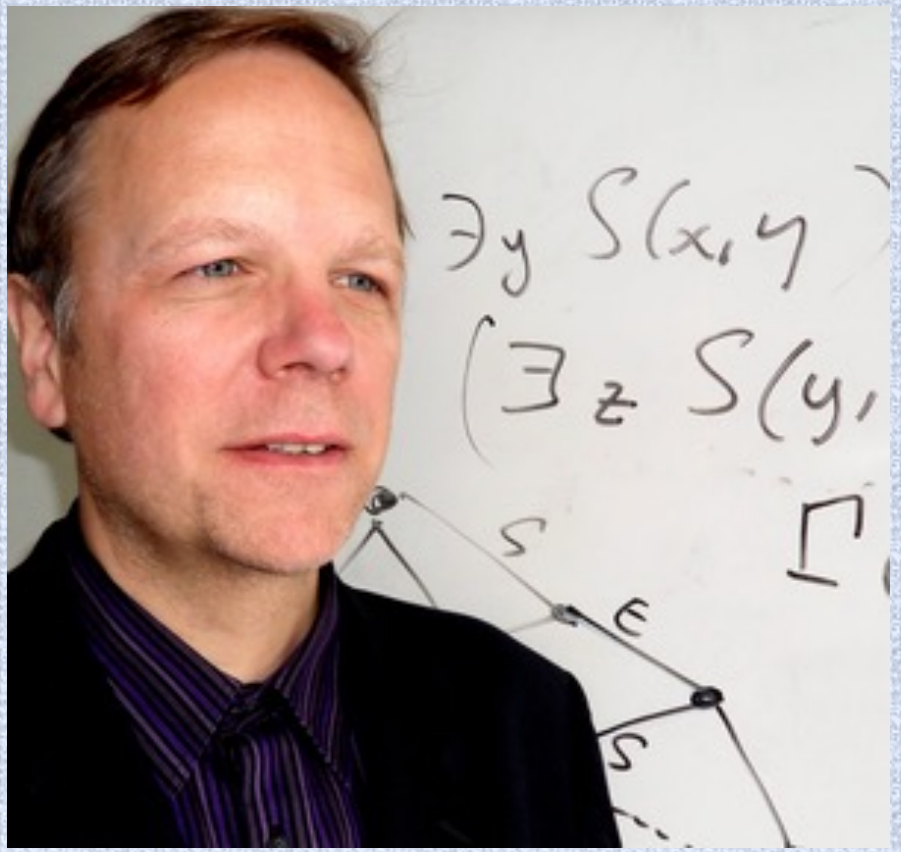
Giuseppe Pelagatti

The companions

Gio Wiederhold

The companions

Georg Gottlob



(Courtesy of) Jennifer Widom

- Incredible run of summer collaborations (IBM and Stanford)
- Jennifer ∧ Stefano ⇨ Success

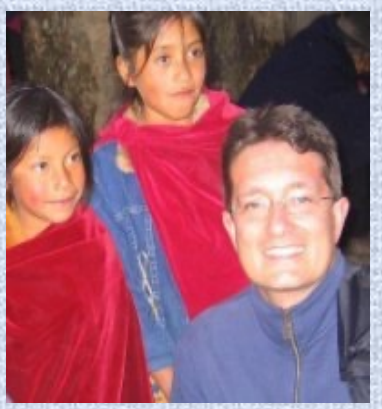
Details **Intuition**

The companions

Joachim Schmidt

And younger companions

Letizia Tanca
Piero Fraternali and Stefano Paraboschi
Ioana Manolescu
Daniele Braga and Alex Campi
Michael Grossniklaus
Emanuele Della Valle
Fabio Casati
Alessandro Bozzon
Marco Brambilla
Maristella Matera
Marco Masseroli



The seven golden rules for being successful in research

1. Invest in education
2. **Choose the right co-workers**

Modeling, Modeling, Modeling

Systems vs Applications

The most performing system doesn't work if the application is wrong!

But doing applications right requires:

- Languages
- Methods
- Tools

Why Modeling?

The seven golden rules for being successful in research

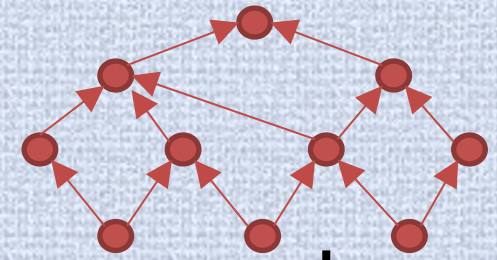
1. Invest in education
2. Choose the right co-workers
3. **Take context into account**

...while deciding your research agenda

Conceptual Data Modeling

RELATIONAL MODEL

SEMANTIC NETWORK



ER MODEL

AGGREGATE OF ENTITIES

PARTICIPANT — PAYS — FEE

AGGREGATE OF CLASSES

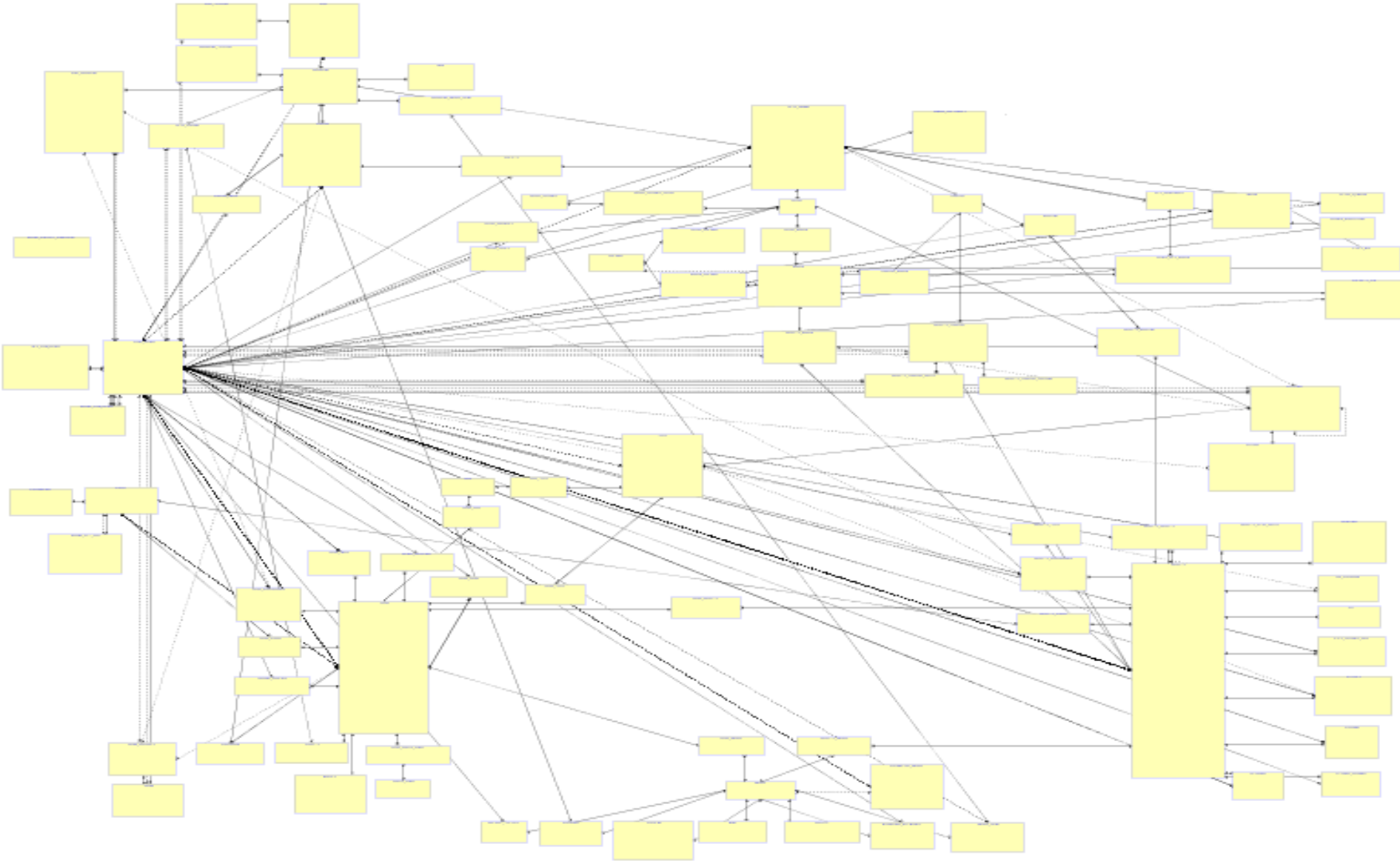
KEY	NAME	...

1, 2, 3 — John, Bob, Alice

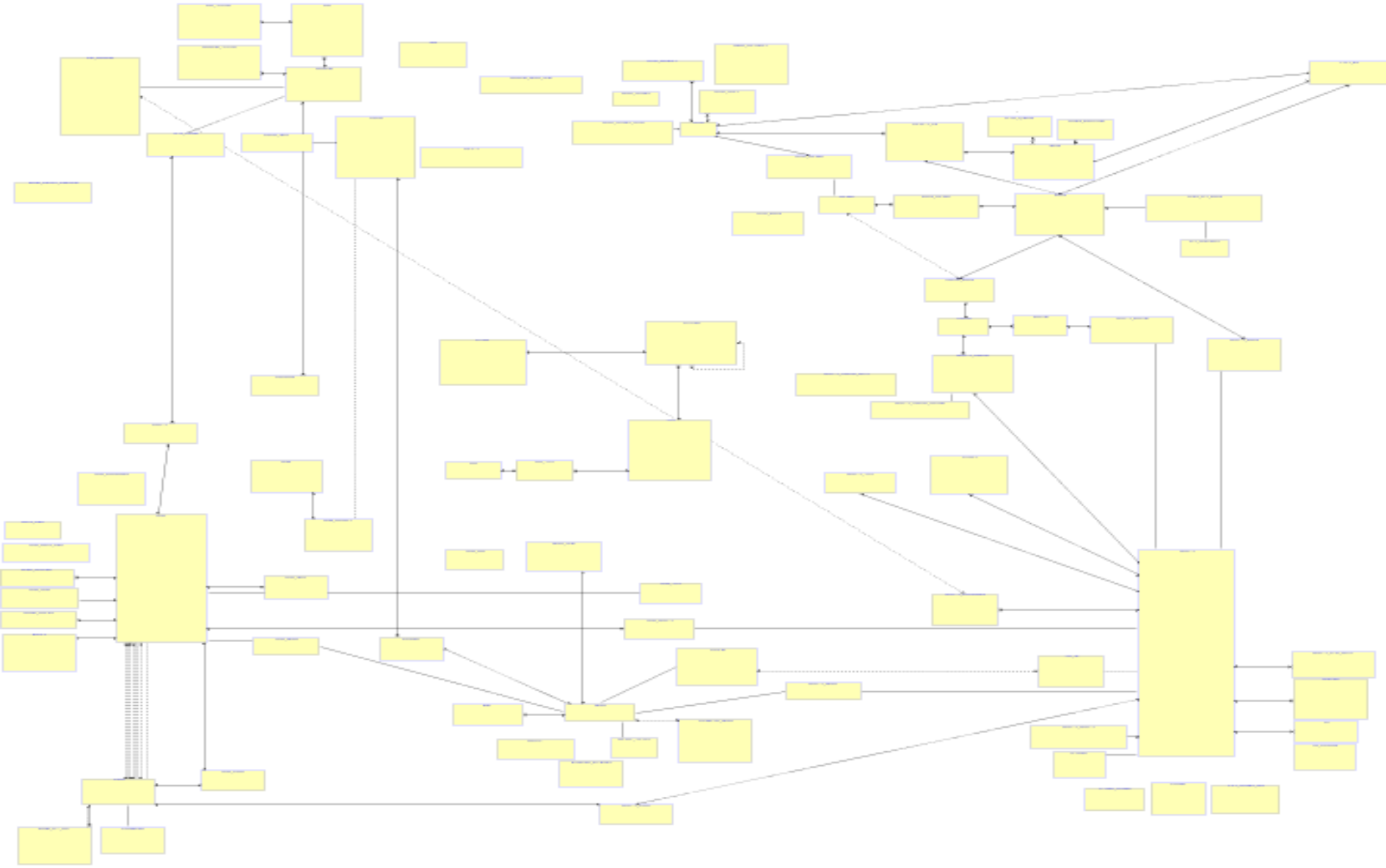
GENERALIZATION OF ENTITIES

EURO-FEE

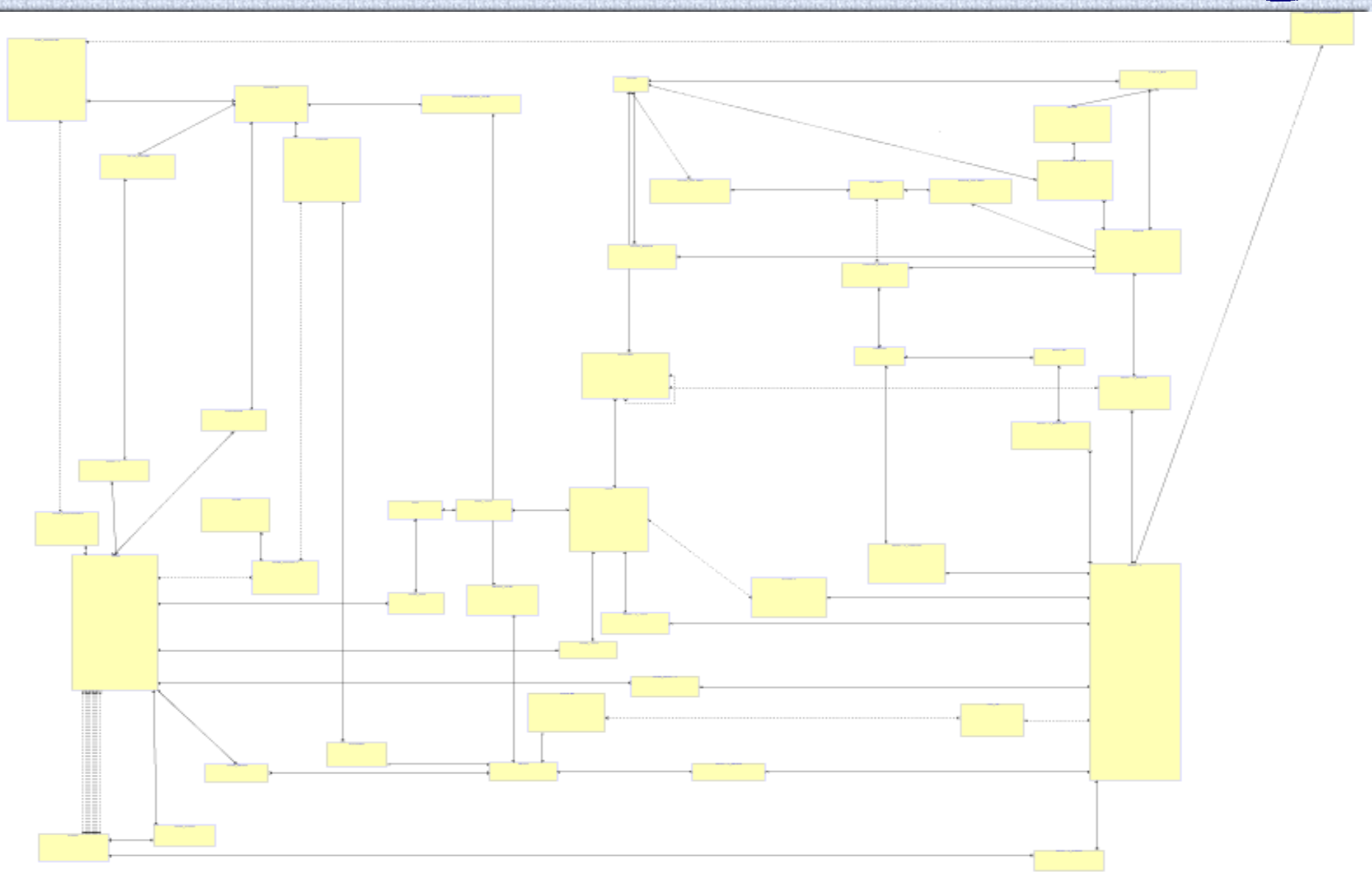
Initial design



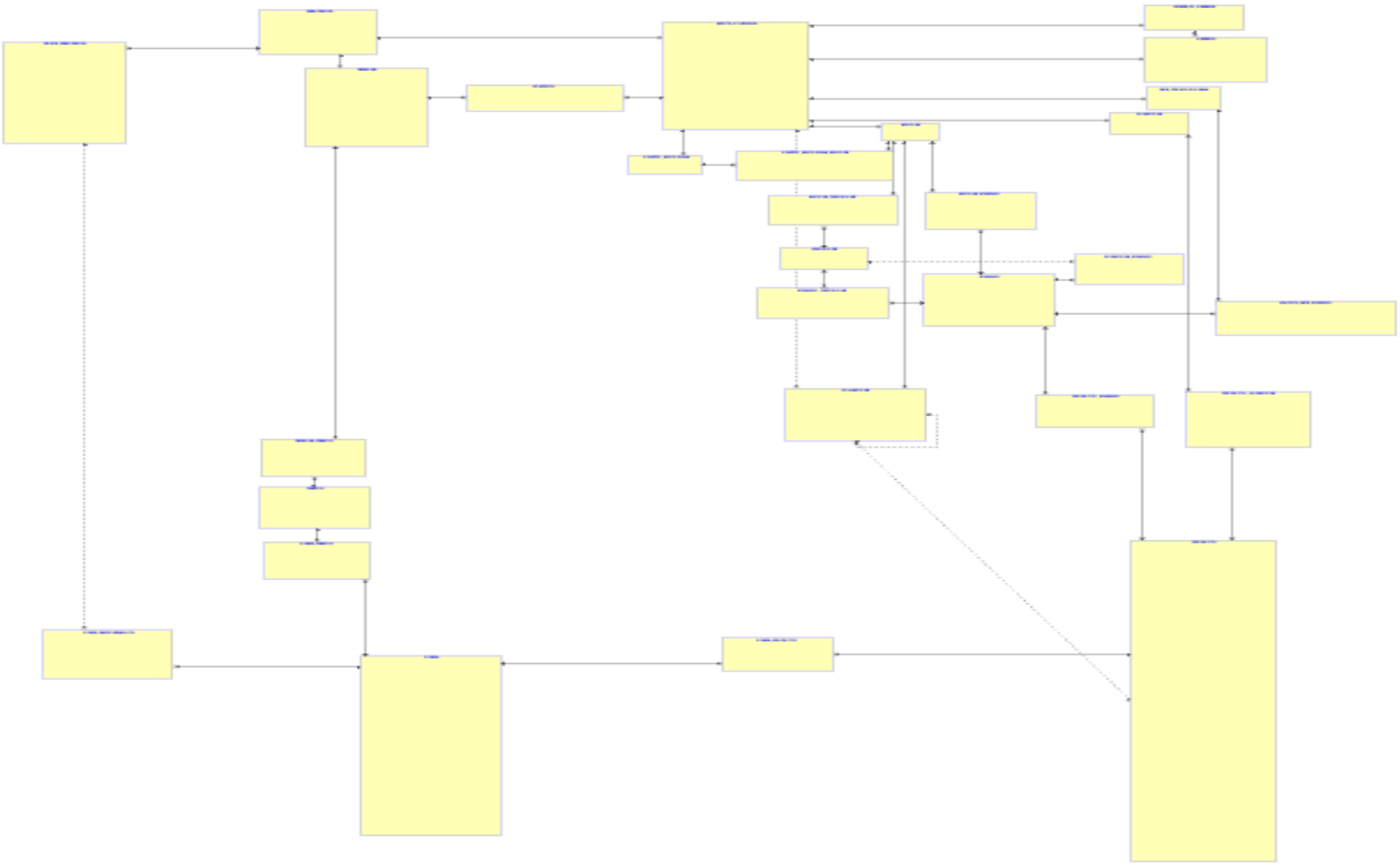
No domains, graphic readability



Core network

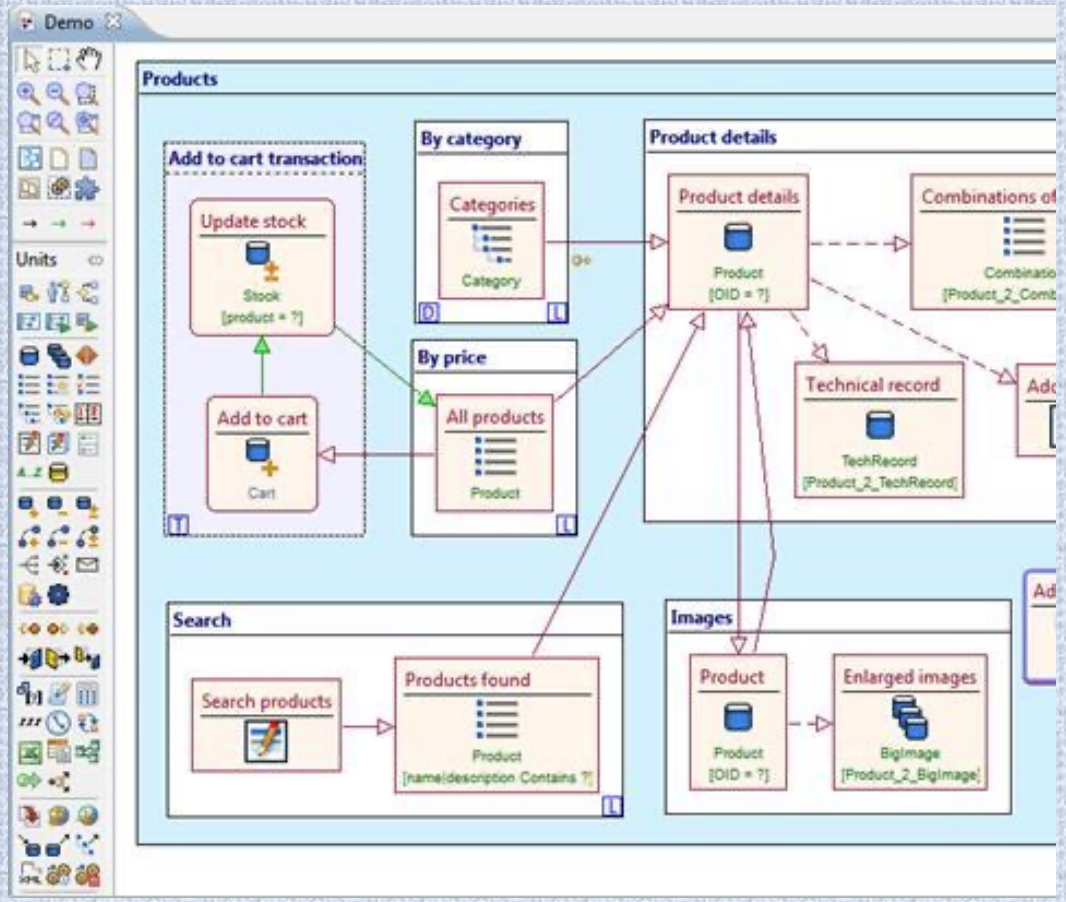


Core network after deeper analysis



Web Modeling (Ceri-Fraternali)

- Web pages assembled by predefined query types
- Links between pages and inside pages activated
  - implicitly
  - by user's clicks
- They carry the context – and this is the main aspect of the model



WebRatio

WEB RATIO®
Think it, Get it!

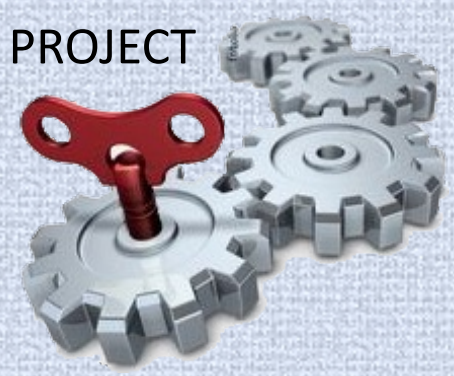
OMG®
WE SET THE STANDARD®

IFML™

The cycle of research

SMELL THE FIELD

START THE PROJECT



CHOOSE CO-WORKERS

PUBLISH ON CONFERENCES

PUBLISH ON JOURNALS

PUBLISH A BOOK

CONSIDER PATENT OR SPINOFF

The seven golden rules for being successful in research

1. Invest in education
2. Choose the right co-workers
3. Take context into account
4. **Write!**

My cycles of research

1976 2013

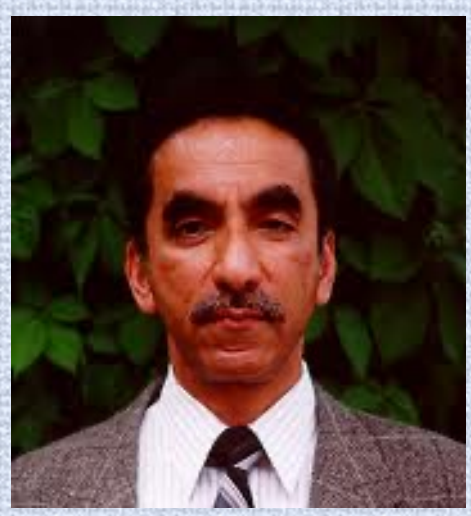
76 84

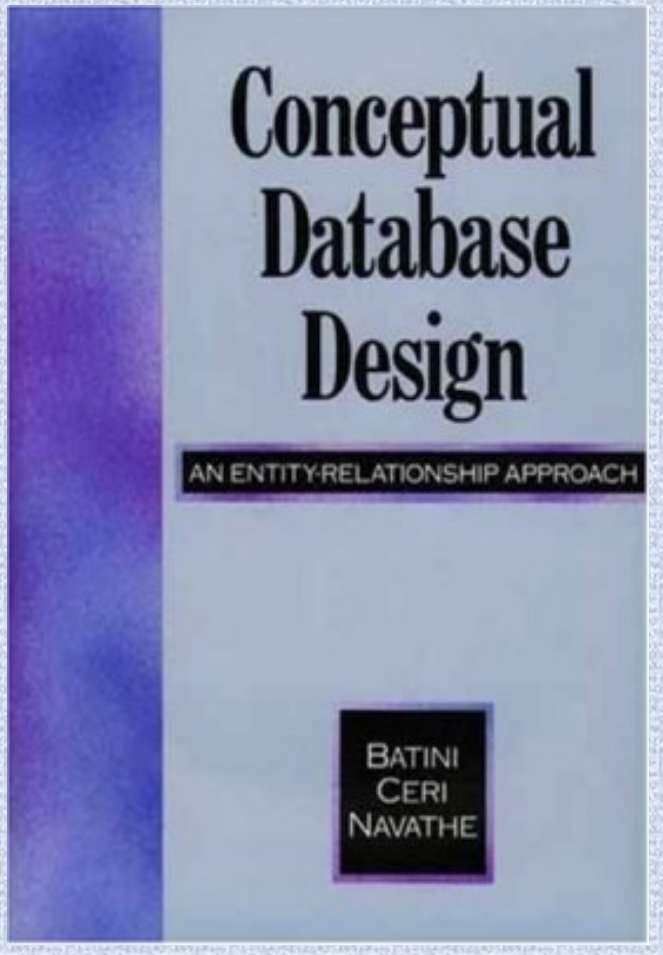
Distributed Databases with Pelegatti

My cycles of research

1976 2013

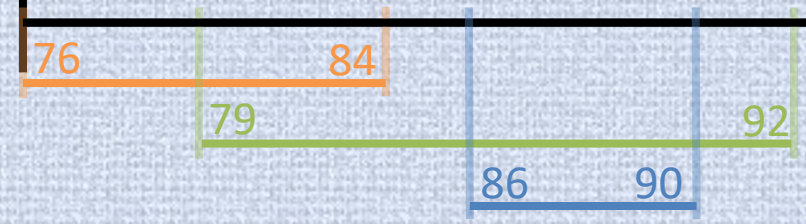
Conceptual Database Design with Batini & Navathe





My cycles of research

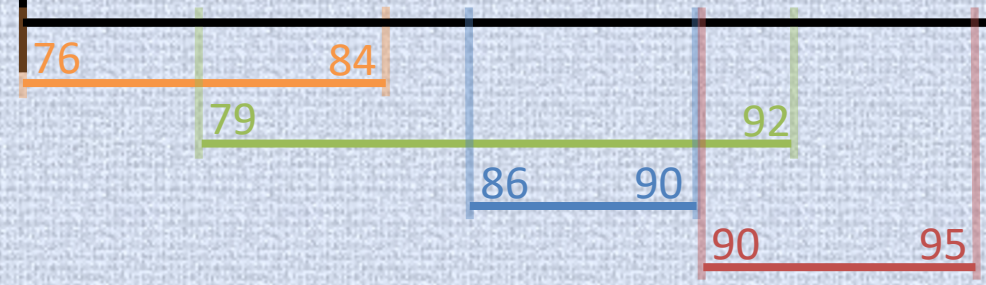
1976 2013



Logic Programming and Databases with Gottlob & Tanca

My cycles of research

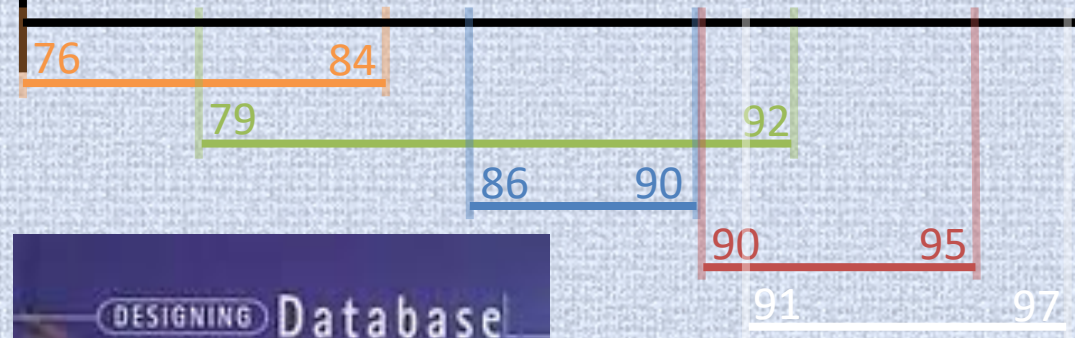
1976 2013

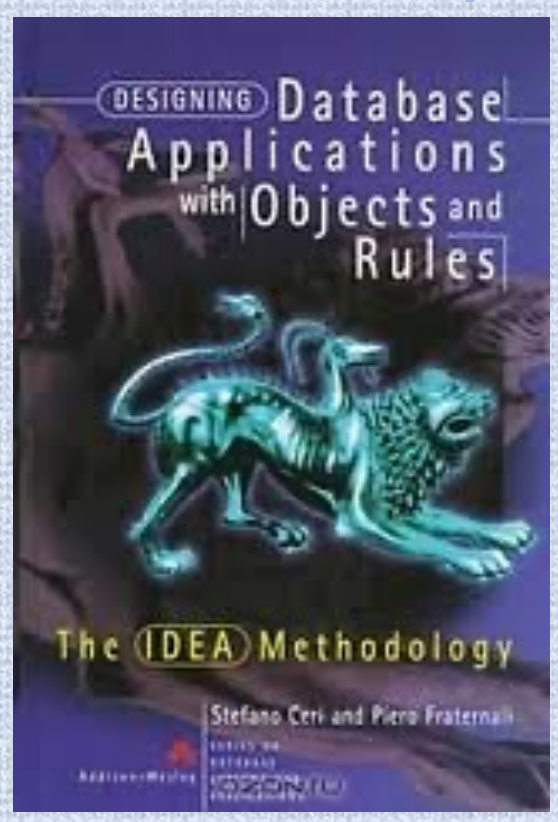


Active Databases
with Widom

My cycles of research

1976 2013

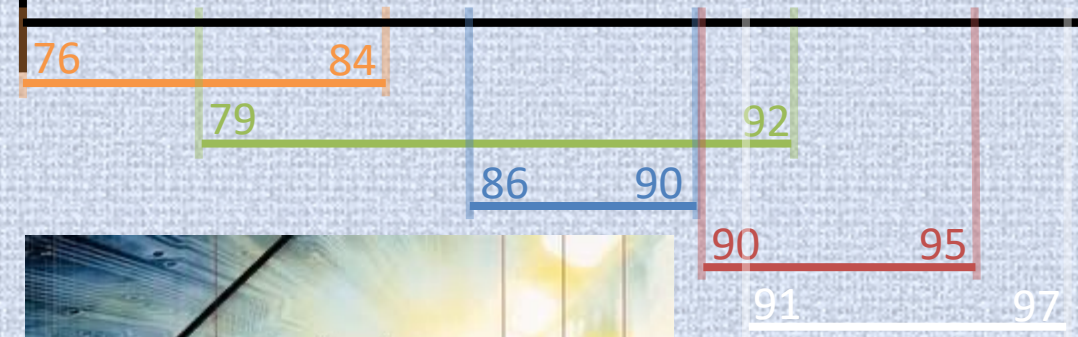


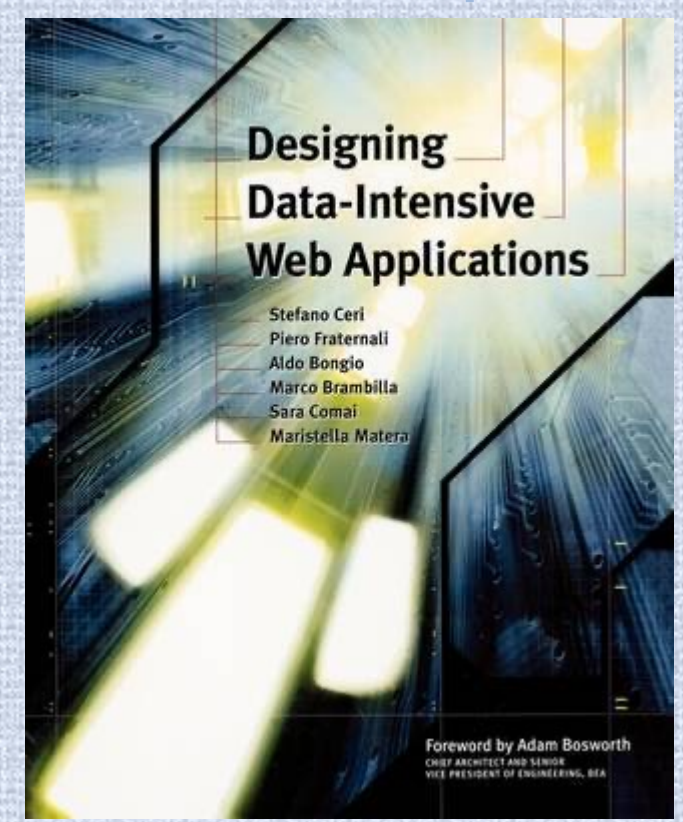


Designing Database Applications with Objects and Rules with Fraternali

My cycles of research

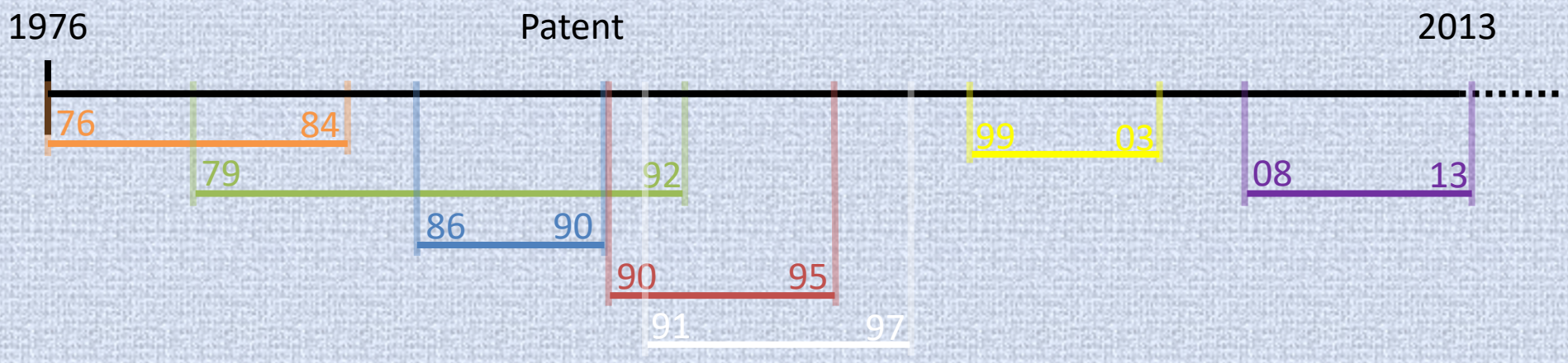
1976 patent + spinoff (WebRatio, 2001-?) + OMG Standard (IFML, 2013) 2013

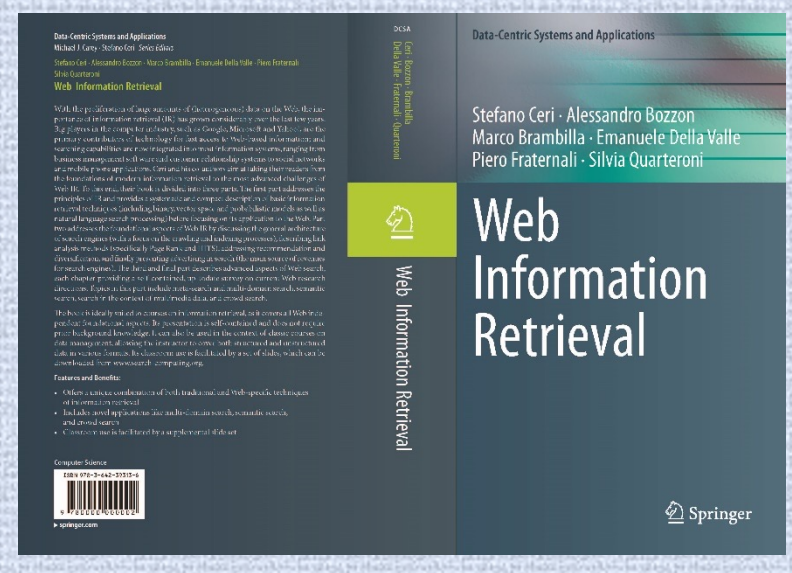




Designing Data-Intensive Web Applications
With Fraternali & Brambilla

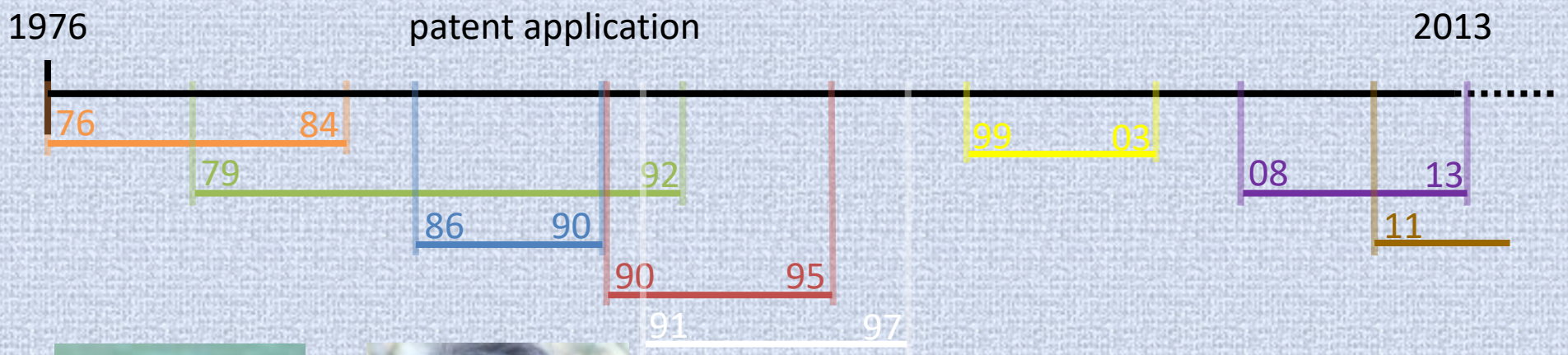
My cycles of research





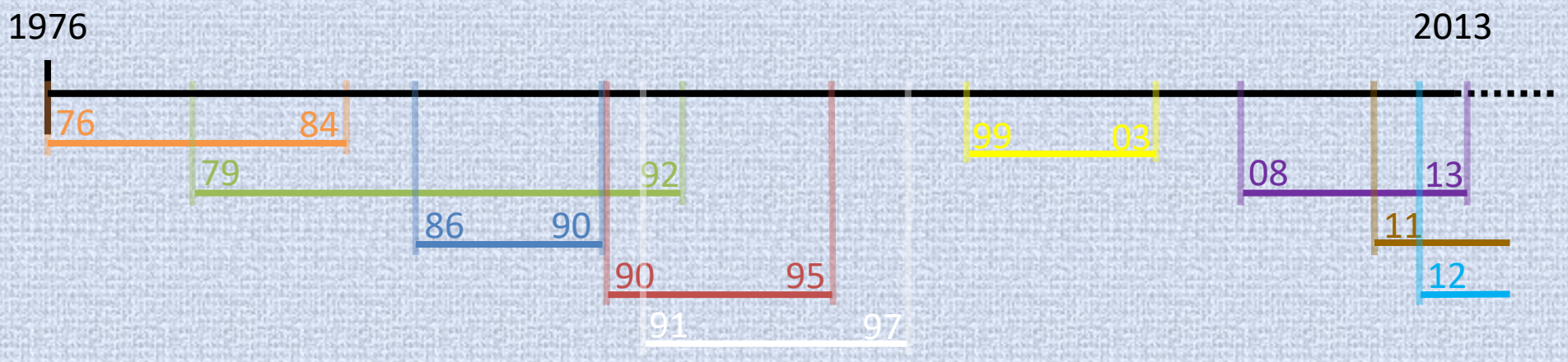
Search Computing
With Fraternali & Brambilla

My cycles of research



Crowd Searching
With Brambilla and Bozzon

My cycles of research



Genomic Computing
With Masseroli and Muller

My cycles of research

1976 2013

76 84

79 92

86 90

90 95

91 97

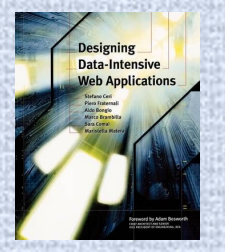
99 03

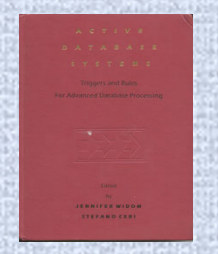
08 13

11

12

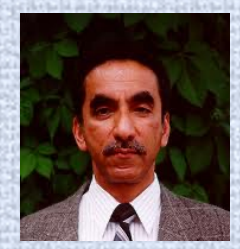
Active Databases





Distributed Databases

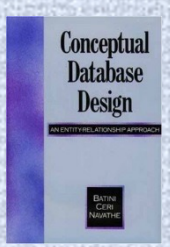
Genomic Computing



Search Computing

Designing Database Applications with Objects and Rules

Crowd Searching



Designing Data-Intensive Web Applications

Logic Programming and Databases

Conceptual Database Design

The seven golden rules for being successful in research

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2. Choose the right co-workers
3. Take context into account
4. Write!
5. **Diversify your research**

ALTA SCUOLA POLITECNICA
POLITECNICO DI MILANO
POLITECNICO DI TORINO

PASSION
MULTIDISCIPLINARITY
INNOVATION

ASP

POLITECNICO MILANO

Alta Scuola Politecnica

School of Excellence of

Politecnico di Milano and Politecnico di Torino

PASSION
MULTIDISCIPLINARITY
INNOVATION

ASP courses

- Innovation and Society
- Design Methods
- Innovation Management
- Decision Making in the Public and Private Sphere
- Global Change and Sustainability
- The Dynamics of Creativity (and de-growth)

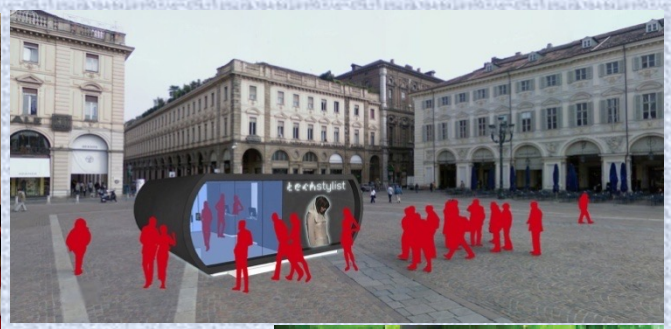
www.youtube.com/asppoli
www.asp-poli.it

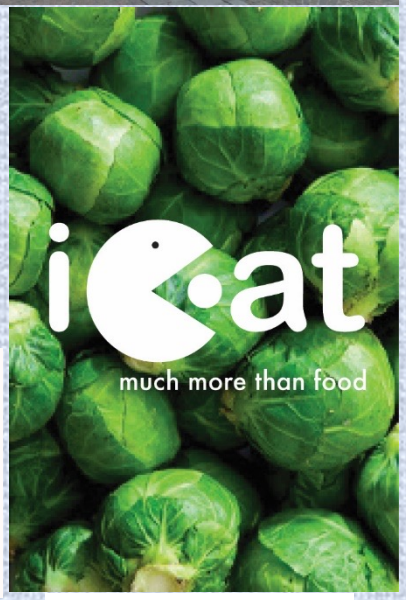
ALTA SCUOLA POLITECNICA
POLITECNICO DI MILANO
POLITECNICO DI TORINO

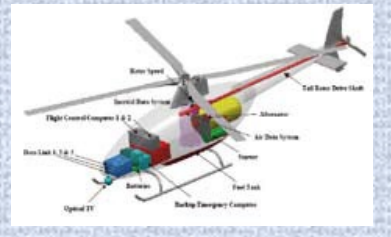
PASSION
MULTIDISCIPLINARITY
INNOVATION

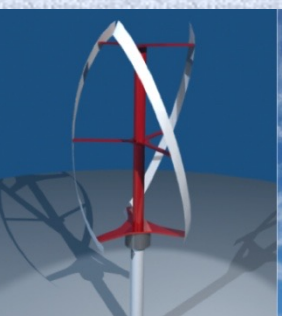
ASP projects

POLITECNICO MILANO









PASSION
MULTIDISCIPLINARITY
INNOVATION

ASP in public

www.comosummit.org

The seven golden rules for being successful in research

1. Invest in education
2. Choose the right co-workers
3. Take context into account
4. Write!
5. Diversify your research
6. **Learn from other disciplines**

Marathons, concerts, social work

Associazione Lombarda
Fibrosi Cistica

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7. **Don’t always work!**

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In conclusion…

5th International Very Large Data Bases,
Rio de Janeiro, Brazil, October 3-5, 1979

22nd International World Wide Web 2013
Rio de Janeiro, Brazil, May 13-17, 2013