

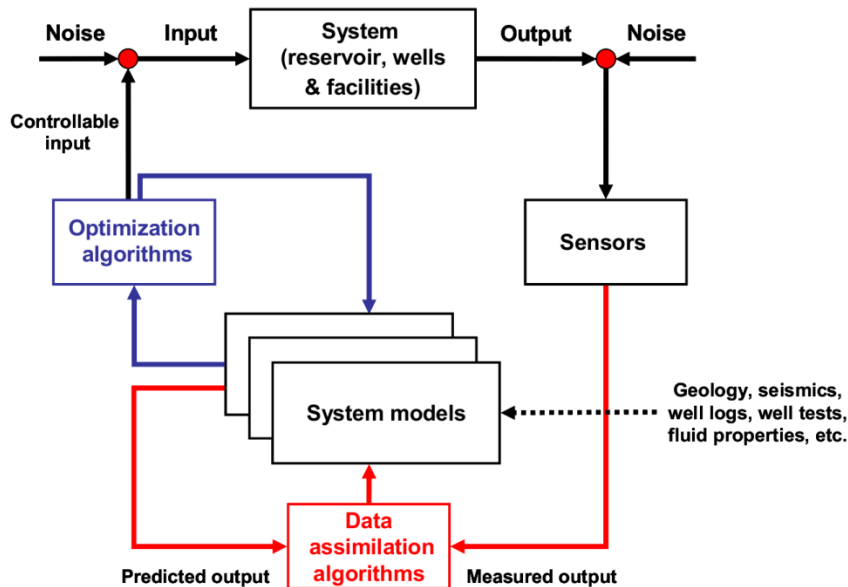
# My personal experience as a PhD-Student

Andres Codas

# Expectations

- Why did I decided to get a PhD education?.
  - Curiosity.
  - Because I like studying and understanding how things work.
  - To get involved with the development of new exciting technologies.
  - To discover the world and to be qualified to work anywhere in the globe.
  - To have a challenging and different everyday task.

# My PhD Project



- Oil Field development planning.
- Life cycle optimization.
- Well flow control.
- Risk management.
- Integrated operations.



# Voador Oil Field

## Campos Basin - Brazil

- Optimal control.
- Nonlinear programming.
- Numerical computing.
- Process modeling and control.

# Integration in research environment

## The IO Center

Center for integrated operations in the Petroleum industry

### Research partners



### Industry partners



### Collaborating research institutions



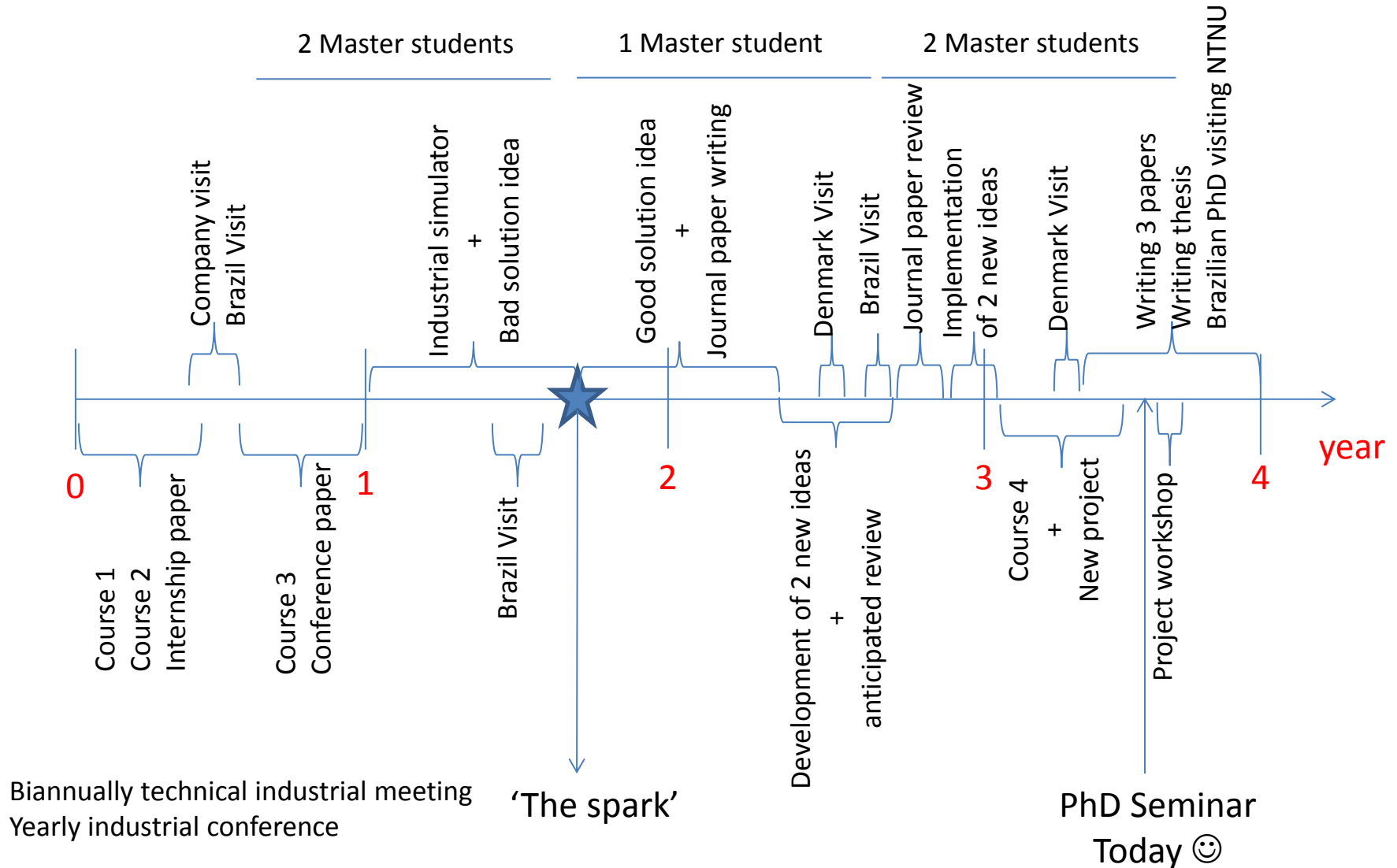
- Technical committee meetings.
- IO conferences.
- Research visit to the industrial partners.
- Tight collaboration with the research partners

## Within NTNU

- Supervision/collaboration with Master Students.
- Joint projects with other PhD students and researchers.
- Informal (but VERY important) meetings with other PhD students.
- Collaboration with other departments.
- Resources: High performance computing laboratory. Vilje.
- Courses.
- Seminars

The best that NTNU provides is the research environment USE IT

# My Project Timeline



# Collaboration with my supervisor

- Him
    - Board member of NTNU
    - Program manager at Research Center
    - Founder of 2 companies. Board member of 1.
    - Supervises 6 PhD students
    - Lectures & Master students
  - Me
    - Full-time on my research project
- ## Learning
- He has limited time
  - My project is mine. He provides 'path directions'
  - He has a lot of experience
    - It is important to provide brief and concise descriptions about my challenges, so he can help.

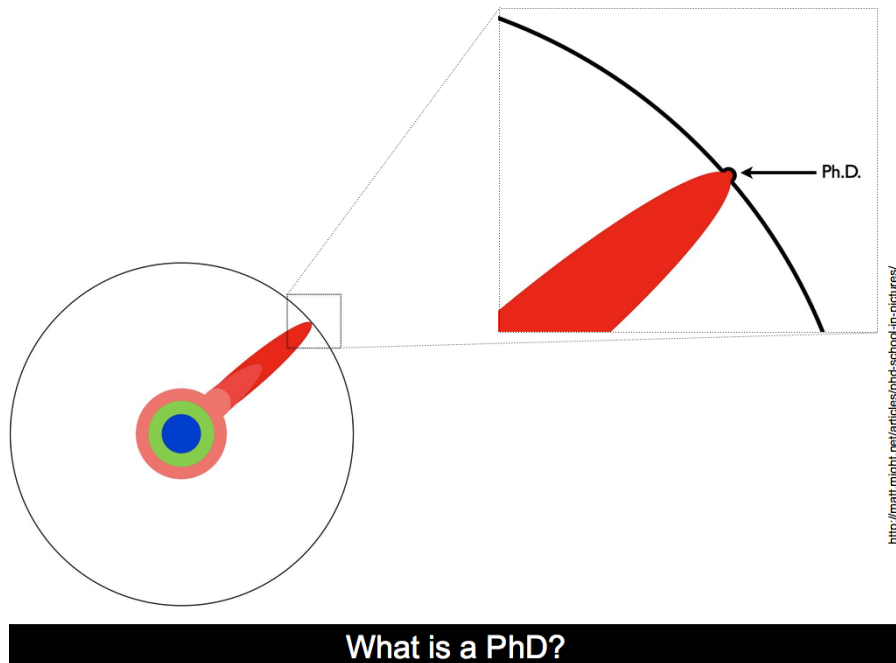
# Publishing

“What an astonishing thing a book is. It's a flat object made from a tree with flexible parts on which are imprinted lots of funny dark squiggles. But one glance at it and you're inside the mind of another person, maybe somebody dead for thousands of years. Across the millennia, an author is speaking clearly and silently inside your head, directly to you. Writing is perhaps the greatest of human inventions, binding together people who never knew each other, citizens of distant epochs. Books break the shackles of time. A book is proof that humans are capable of working magic.” *Cosmos - The Persistence of Memory - Carl Sagan.*

- Every good (or bad) idea that is not written is lost in time.
- Writing is the most powerful tool of every researcher.
  - ✓ It helps you to communicate with your supervisor and with other researchers.
- As researchers, our main duty is to develop and report knowledge. Any development only inside our minds is useless for others.
- I see writing as an iterative process.
  - I try to write a bit every day, maybe I need to re-write it afterwards, but in time it gets better and better.

# Freedom vs responsibility

I would say: We have freedom & responsibility.



- As we advance in our studies we get to be THE EXPERT in our very specific area.
- Nobody can help us
  - Therefore we have freedom to make our own choices.
  - And we are responsible for them.

This fact emphasize the need of publishing:

- We get help from other researchers to understand if our choices are reasonable



# General Advice / Experience

- Embrace all the opportunities that NTNU provides.
- Find research partners for collaboration.
- Enrich yourself with the unique international environment at NTNU.
- To the foreigners: learn Norwegian!.