

Back to the Future!

Cees de Laat

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Why?



I want to:



“Show Big Bug Bunny in 4K on my Tiled Display using green Infrastructure”



Why?



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“Show Big Bug Bunny in 4K on my Tiled Display using green Infrastructure”



Why?



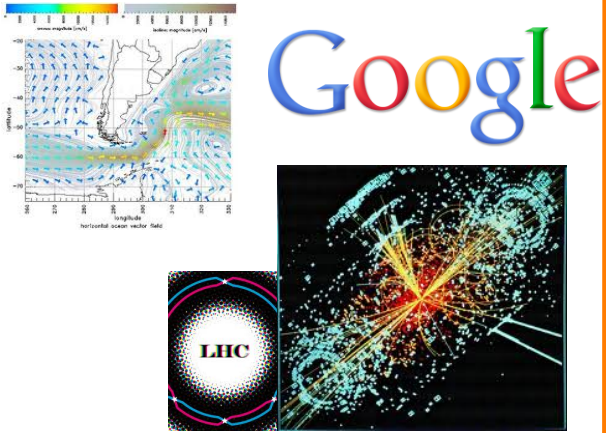
I want to:

“Show Big Bug Bunny in 4K on my Tiled Display using green Infrastructure”

- Big Bugs Bunny can be on multiple servers on the Internet.
- Movie may need processing / recoding to get to 4K for Tiled Display.
- Needs deterministic Green infrastructure for Quality of Experience.
- Consumer / Scientist does not want to know the underlying details.
➔ His refrigerator also just works.

Many demands....

... more data!



... more realtime!

LinkedIn

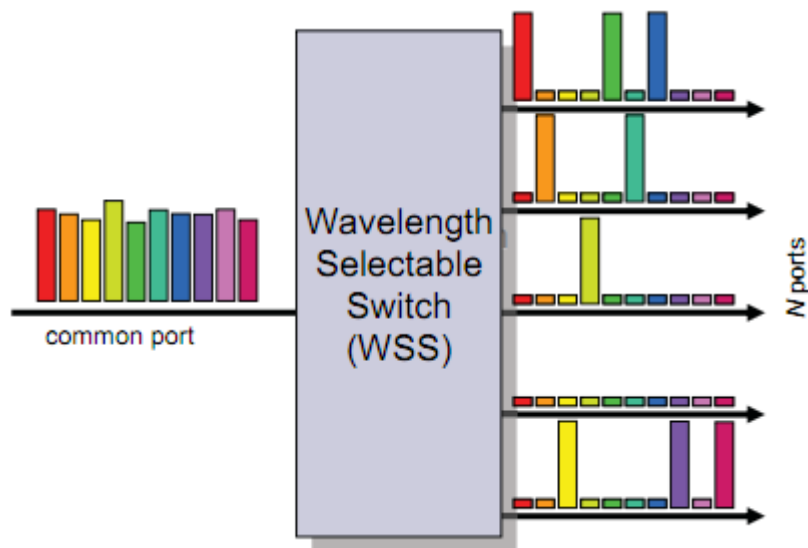
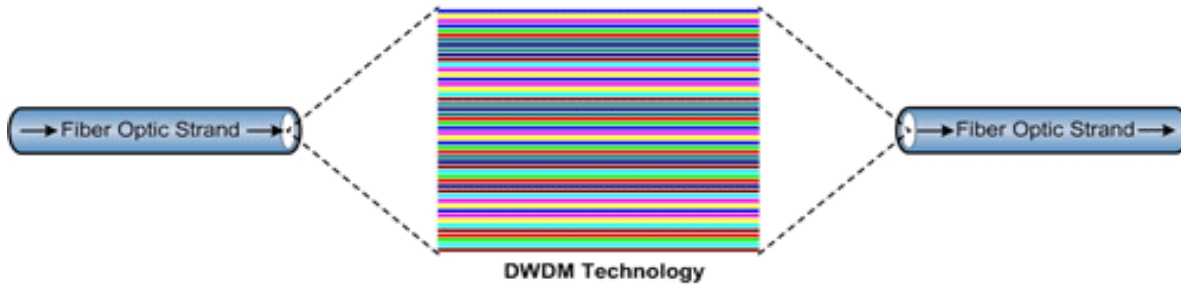
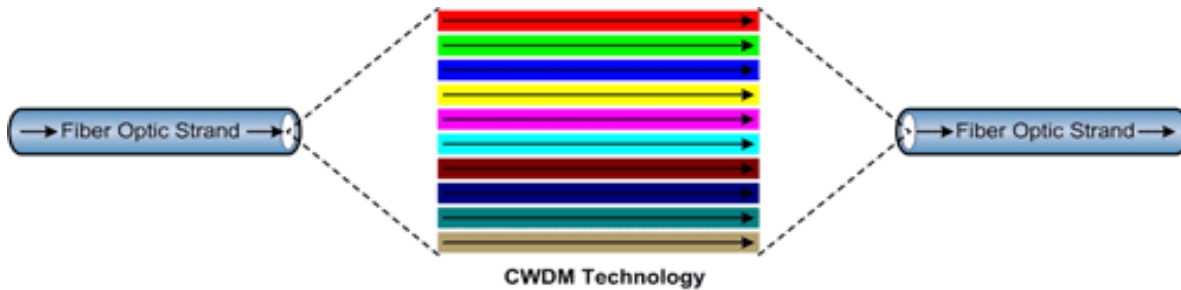
Hyves



... more users!

Optical transmission

... more possibilities



Virtualization



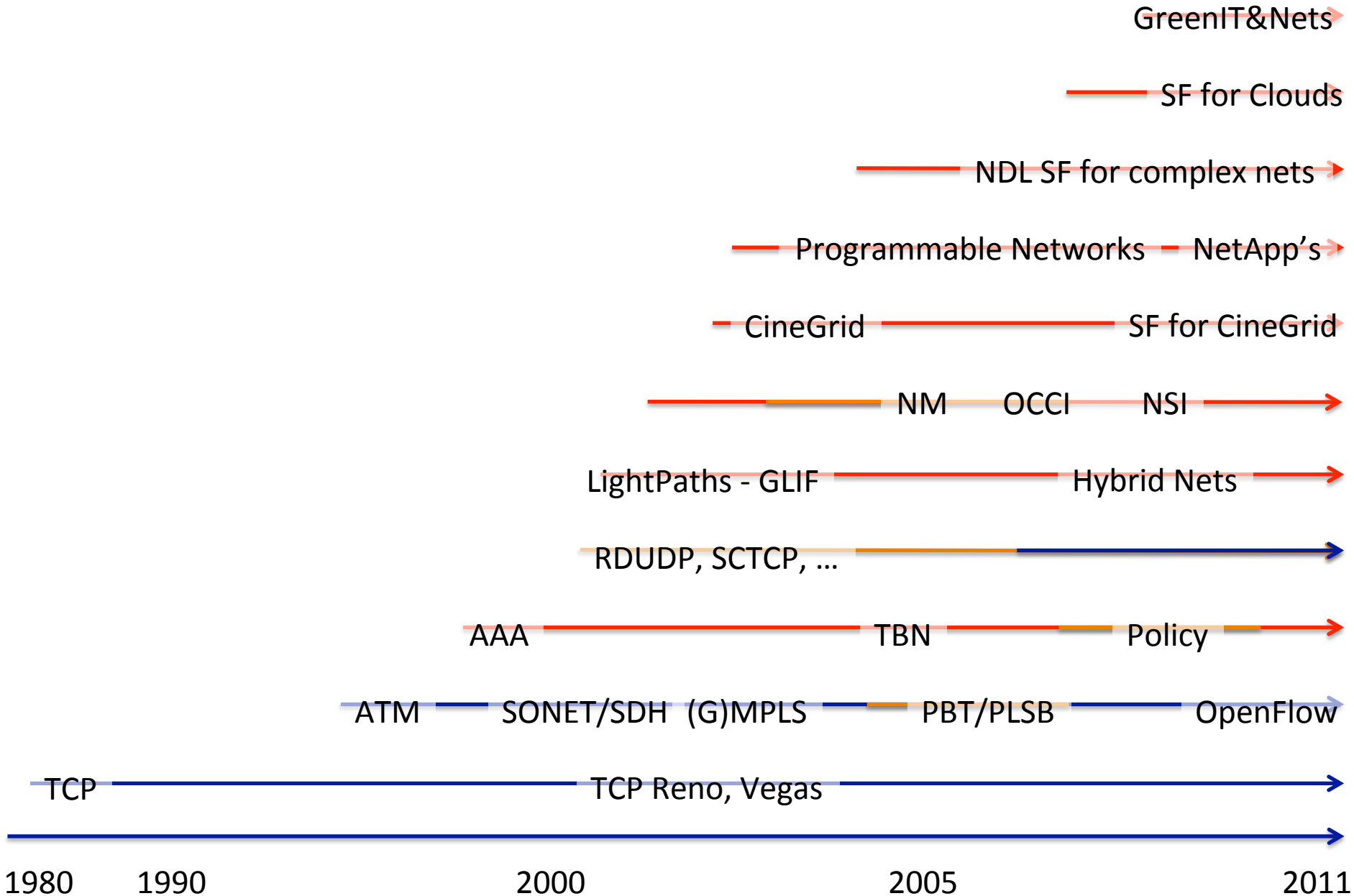
The Ten Problems with the Internet

1. **Energy Efficient Communication**
2. Separation of Identity and Address
3. Location Awareness
4. **Explicit Support for Client-Server Traffic and Distributed Services**
5. Person-to-Person Communication
6. Security
7. **Control, Management, and Data Plane separation**
8. **Isolation**
9. Symmetric/Asymmetric Protocols
10. **Quality of Service**

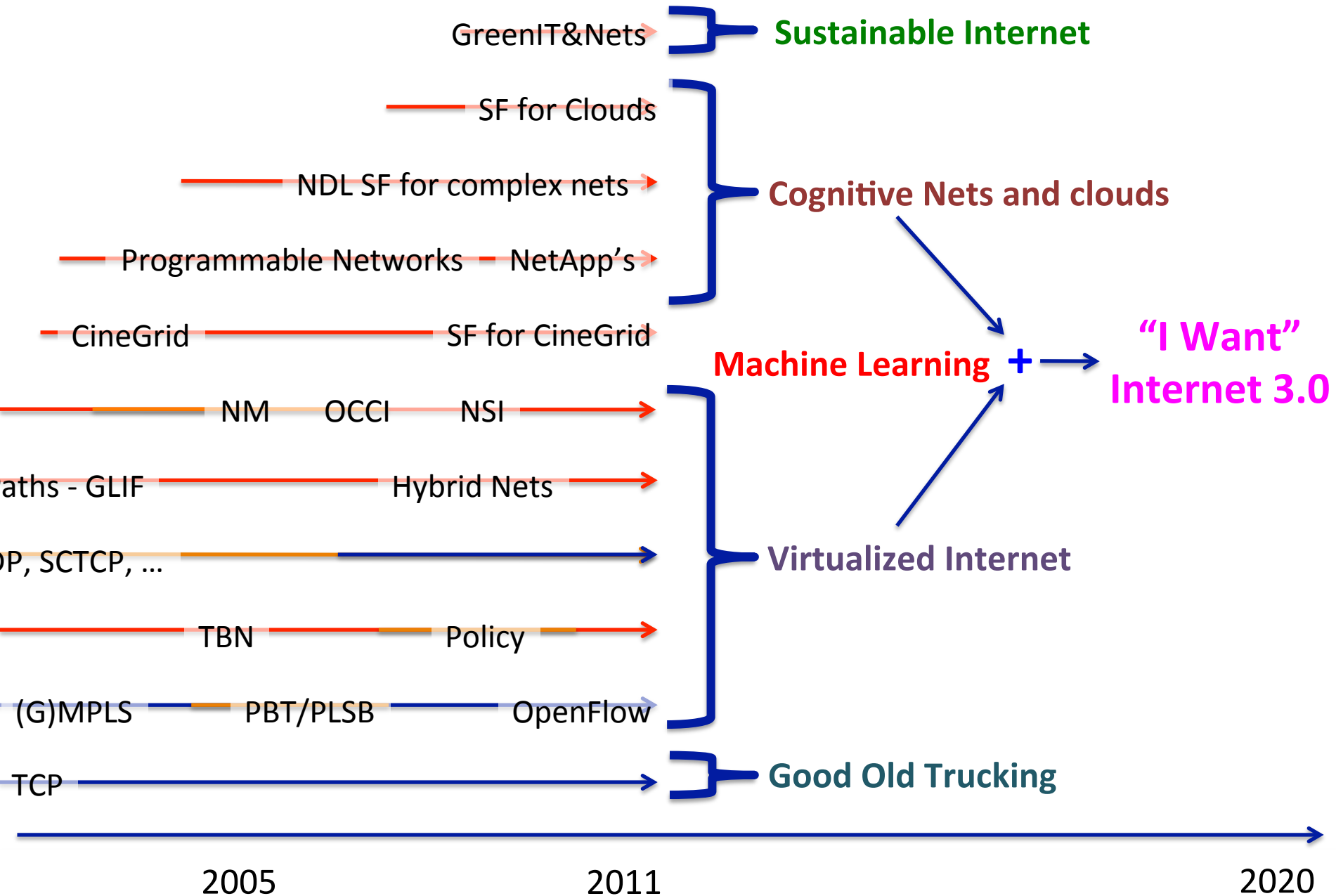
Nice to have:

- Global Routing with Local Control of Naming and Addressing
- **Real Time Services**
- **Cross-Layer Communication**
- Multicast
- Receiver Control
- Support for Data Aggregation and Transformation
- **Support for Streaming Data**
- **Virtualization**

TimeLine



TimeLine



TimeLine

• Sustainable Internet

• Cognitive Nets and clouds

• Machine Learning +

• Virtualized Internet

• Good Old Trucking

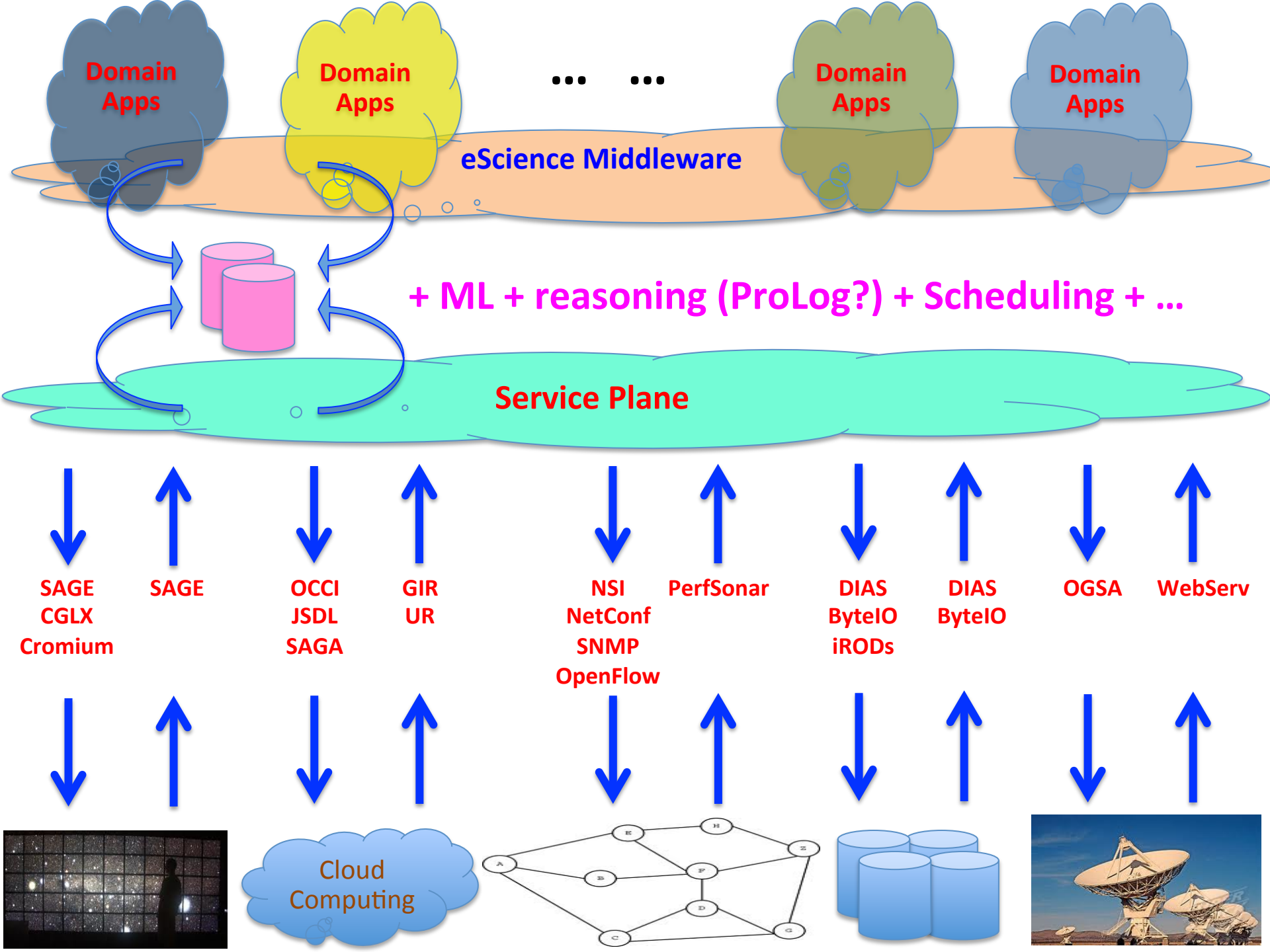
“I Want”
Internet 3.0



I
retire

2020

2040



Domain Apps

Domain Apps

... ..

Domain Apps

Domain Apps

eScience Middleware

+ ML + reasoning (ProLog?) + Scheduling + ...

Service Plane



SAGE
CGLX
Cromium

SAGE

OCCI
JSDL
SAGA

GIR
UR

NSI
NetConf
SNMP
OpenFlow

PerfSonar

DIAS
BytelO
iRODs

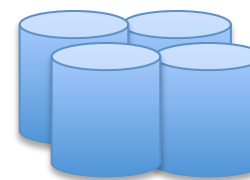
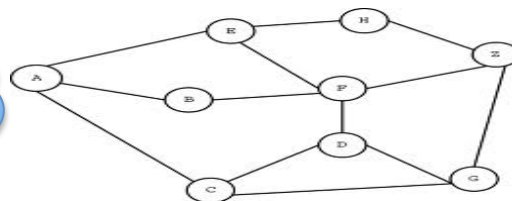
DIAS
BytelO

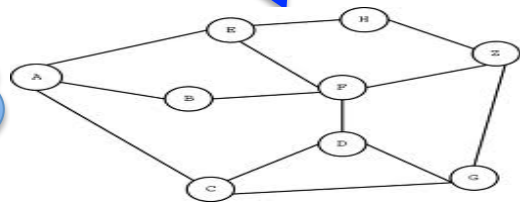
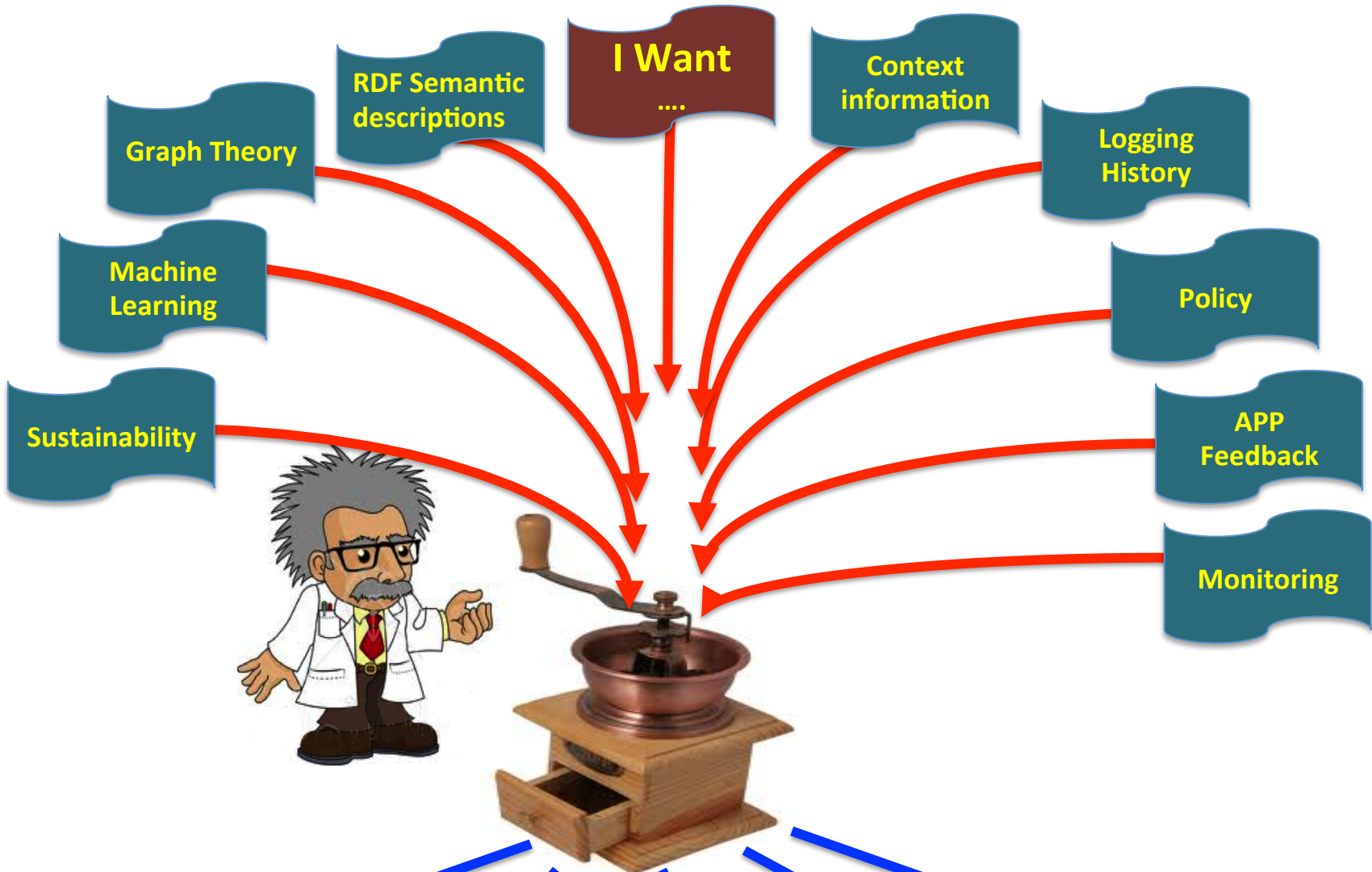
OGSA

WebServ



Cloud Computing





Q & A

Visit:

<http://sc.delaaat.net/>

Slides thanks to:

- Paola Grosso
- SNE Team & friends
- Sponsors see slide 1. 😊

