Why we need
Ontological Resource Descriptions

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NICTA Members

ANU — THE AUSTRALIAN NATIONAL UNIVERSITY

UNSW — THE UNIVERSITY OF NEW SOUTH WALES

NSW First for Business — Department of State and Regional Development

Victoria — The Place To Be

THE UNIVERSITY OF MELBOURNE

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Australian Government

Department of Communications, Information Technology and the Arts

Australian Research Council

from imagination to impact

The limits of my language are the limits of my mind.
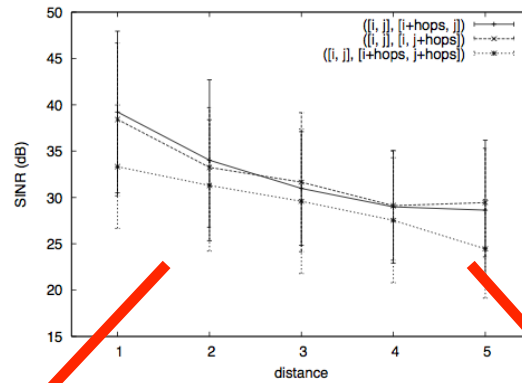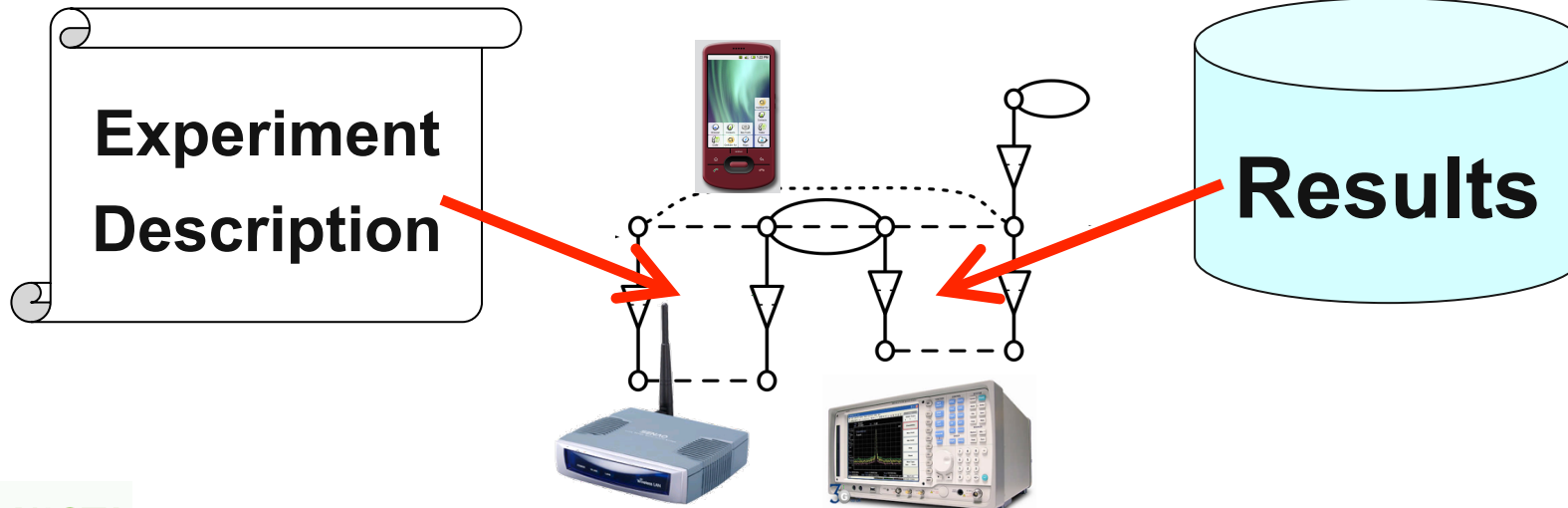All I know is what I have words for.

Ludwig Wittgenstein

Vision

Figure 8: The average link quality measurement in SINR between a pair of nodes in ORBIT.

Experiment Description

Results

What do we want to describe?

- Things we have
  - Boxes, CPU, disk, network interfaces
  - Cables, networks
  - Space, spectrum
  - <u>**People, end users**</u>

- Things we want to control (or at least capture)
  - Mobility
  - Interference, noise
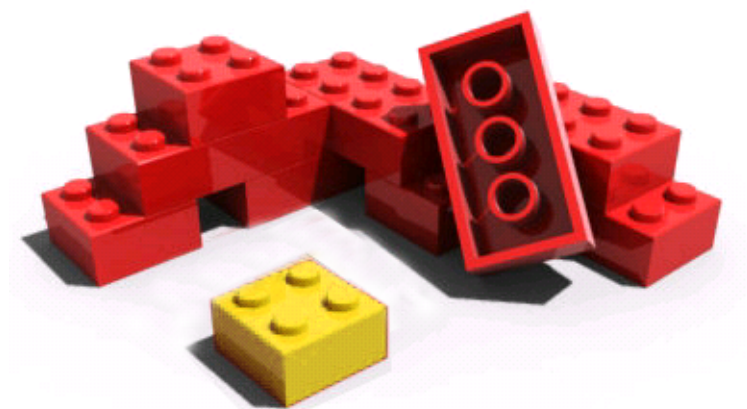 - Weather

… What do we want to describe?

- Things we can measure
  - Performance: bits/sec, load, temperature
  - Events: Start/stop of applications, shutdown, handover, nearby
  - Satisfaction: quality, happiness
  - **Accuracy:** required, achievable, impact

- Intent
  - What do we actually want to achieve
    - Not: Node A1, B3 & C7; router D2; channel 56
    - **BUT:** A topology with characteristics A, scale S, fidelity F
  - Benchmarks?

Why?

- To accurately describe experiment to peers
  - When I say 'apple' you know what I mean

- To allow others to repeat experiments
  - Requires certain level of detail – 'Granny Smith'
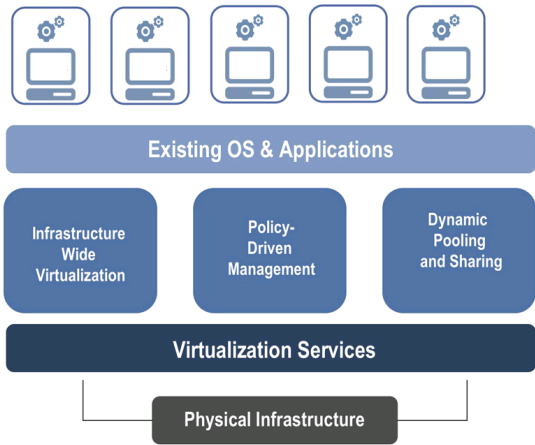
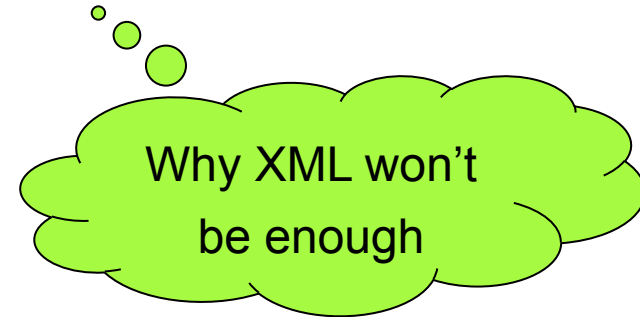- To request resources unambiguously

- ??

What are the Models?

What Level of Abstraction?

Virtualization is NOT a basic requirement

Existing OS & Applications

| Infrastructure Wide Virtualization | Policy-Driven Management | Dynamic Pooling and Sharing |

Virtualization Services

Physical Infrastructure

Fidelity <> Cost Trade-off

Describing Relationships – The Power of the Link
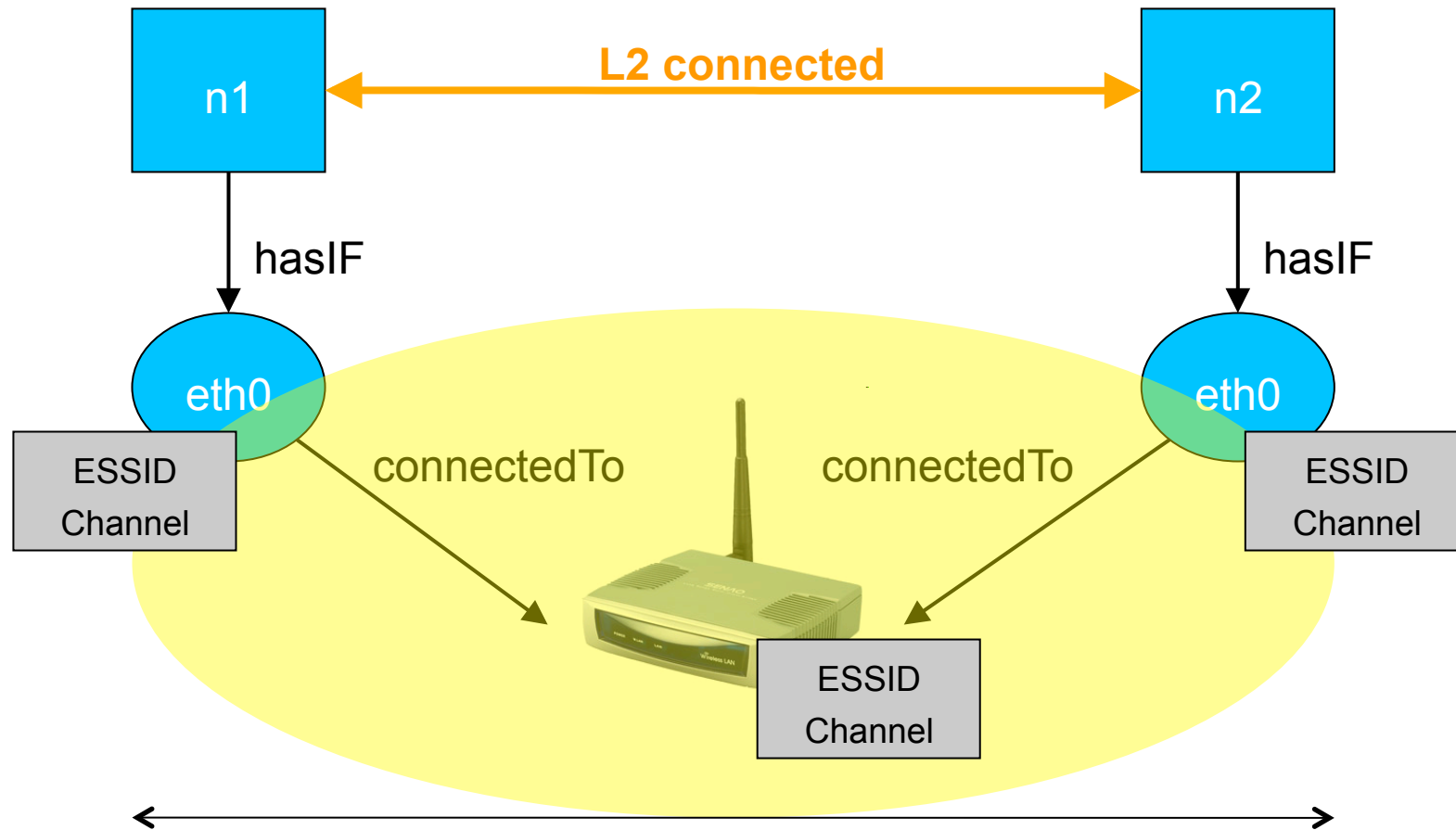
Why XML won't be enough

eth0: 10.1.1.3

?

eth0: 10.1.1.2

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Relationships + Conditions/Rules

Relationship to Measurements

n1

hasIF

eth0   MAC Addr

nearBy

MAC Addr

Sender MAC   Receiver MAC

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Hiding Details

isL2Connected

eth0 → eth0

Ethernet   GW   Fiber   GW   Wireless
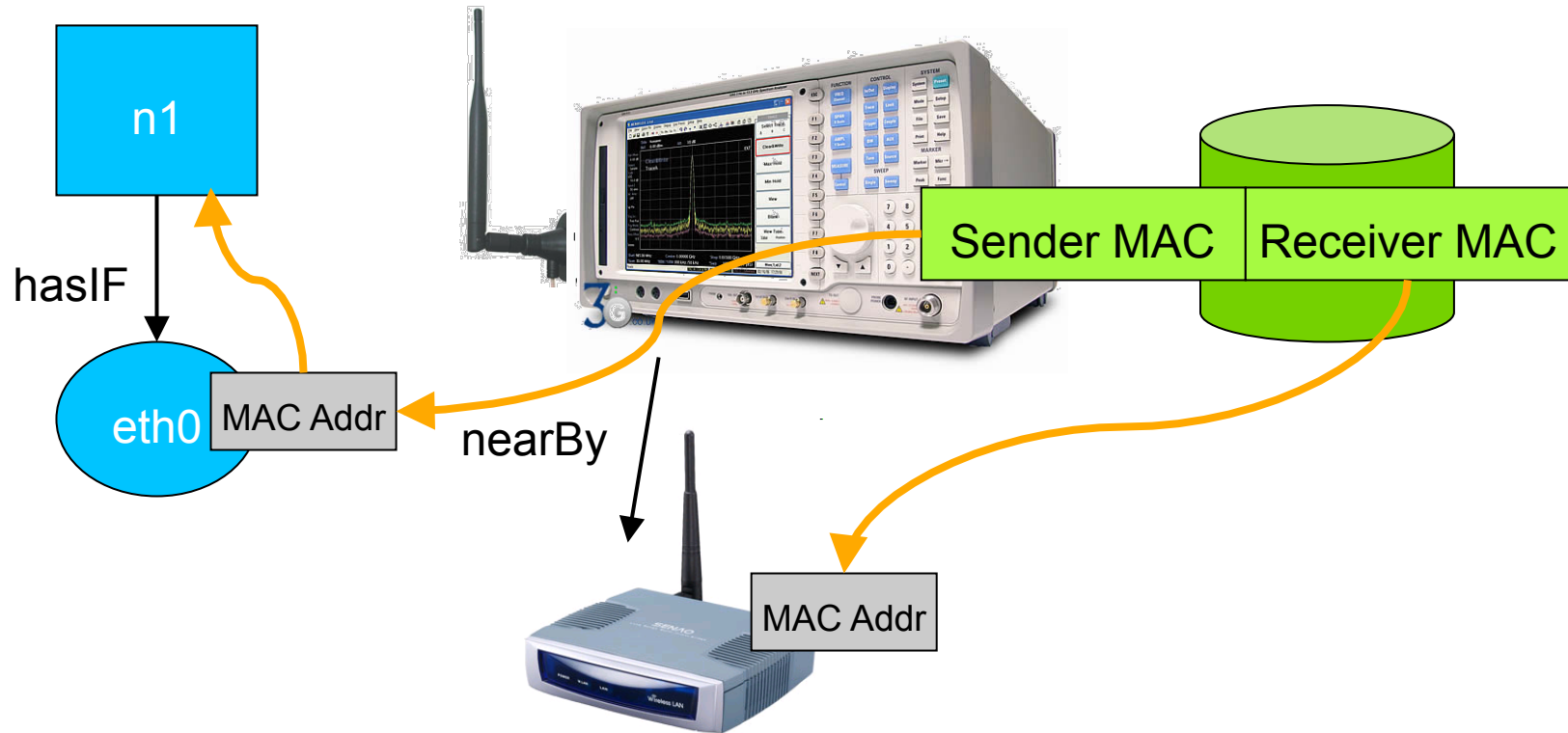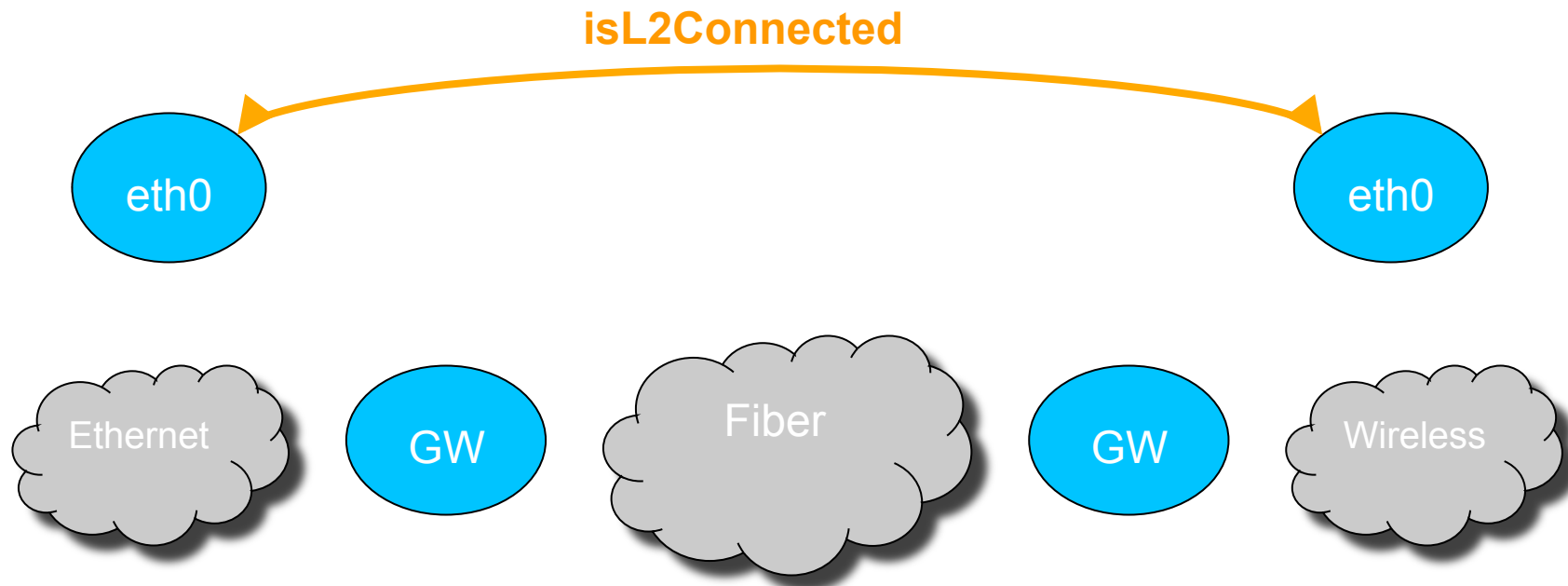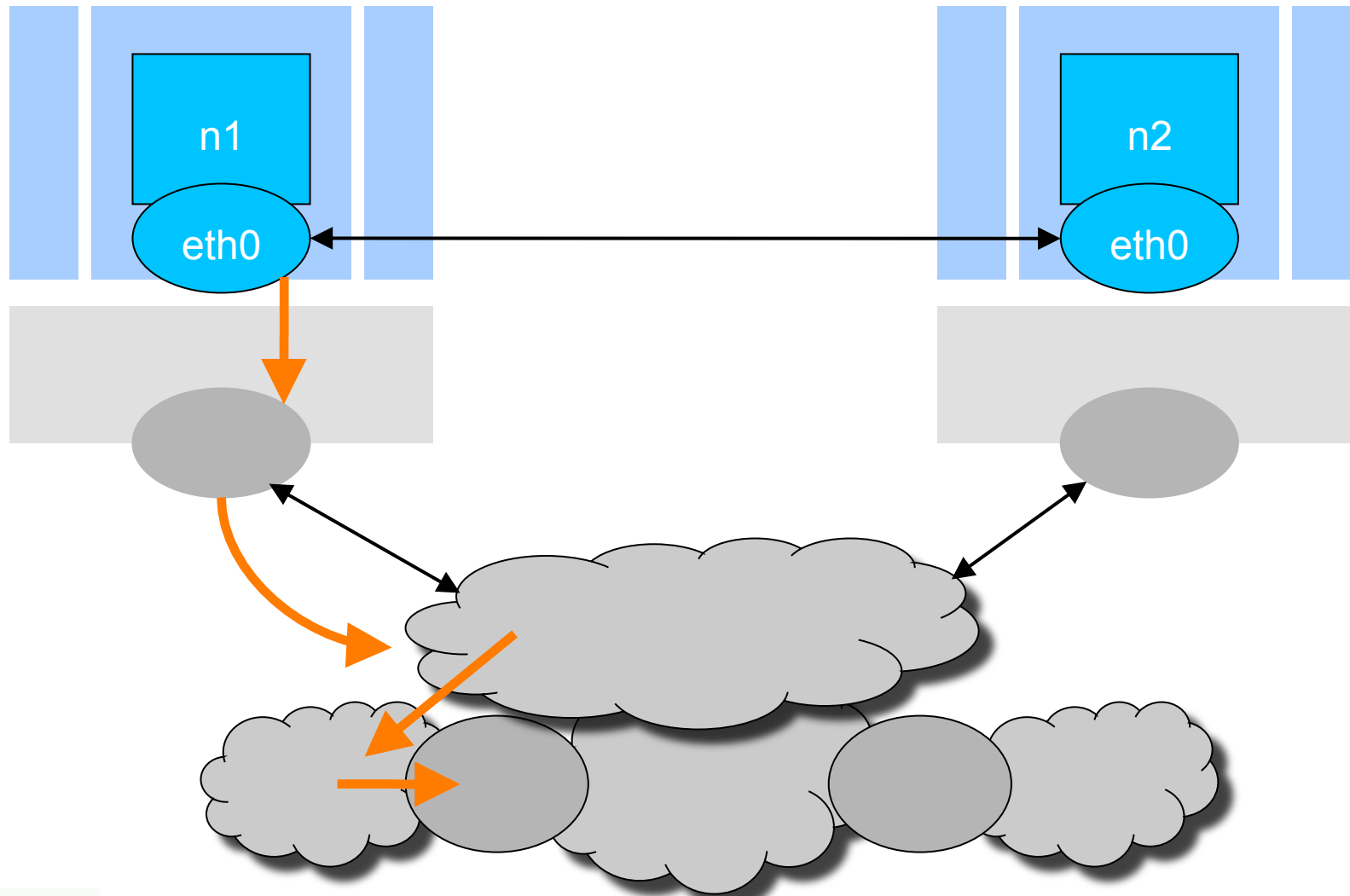
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Shit happens – Need to be able to look behind the curtain

If people never did silly things,
nothing intelligent would ever get done.

Ludwig Wittgenstein

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