

Protocol Suites and Layering

David Morgan

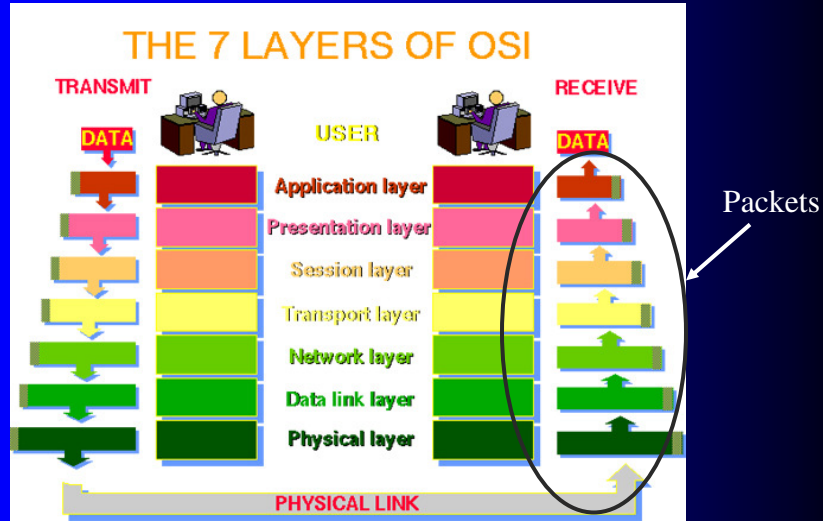
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Benefit of a “suite”

- division-of-labor motivated
- led to functional “layer” concept
- IP excelled at conjoining heterogeneous nets
- nets therefore all implemented IP

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Functional layering



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Functional layering



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Philosophical layer

NAIROBI

TOKYO

Kenyan philosopher



Japanese philosopher

Nature of man
or
Good versus evil
or
The existence of God

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Linguistic layer

NAIROBI

TOKYO

Swahili linguist

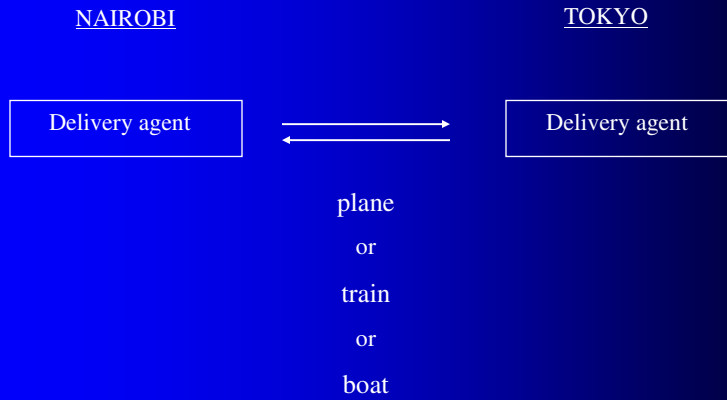


Japanese linguist

Arabic
or
Navajo
or
French
(or even,
Swahili or Japanese)

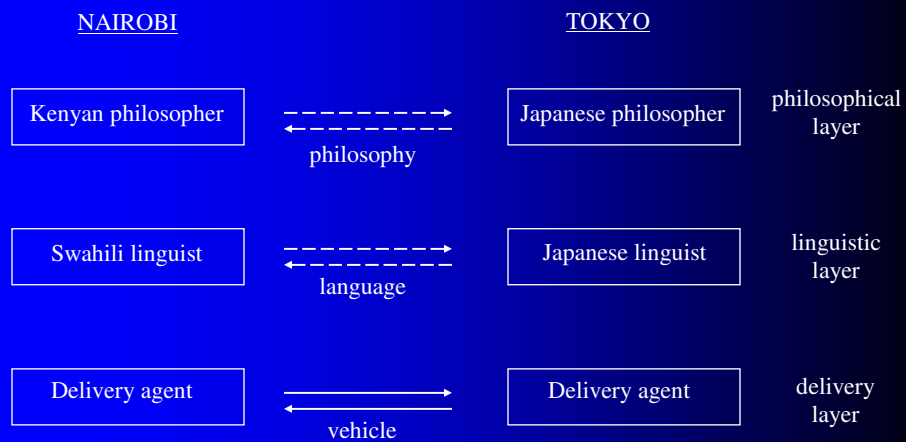
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Conveyance layer



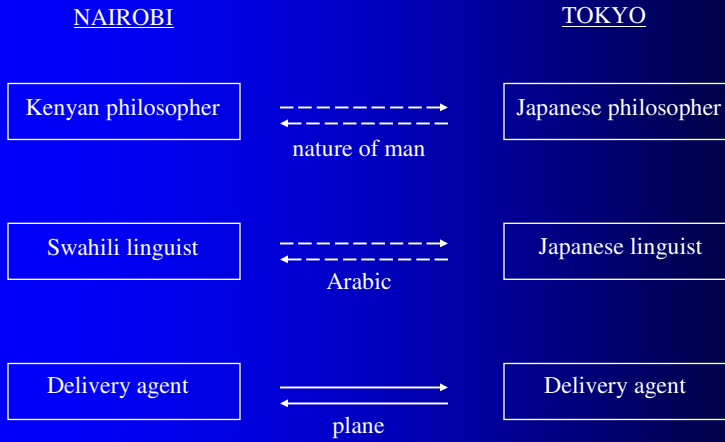
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Functional layering



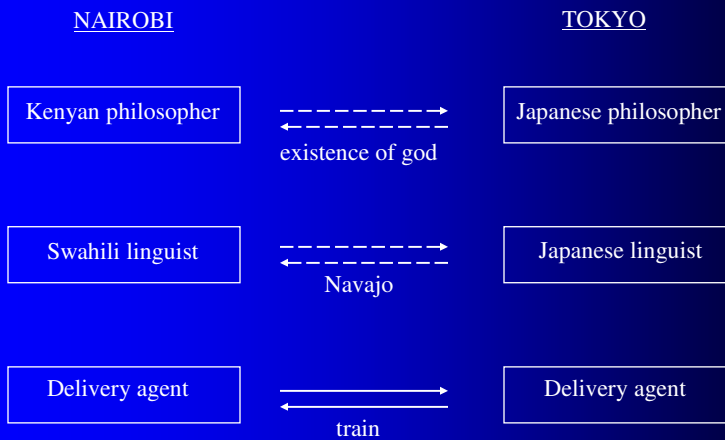
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One possibility ...



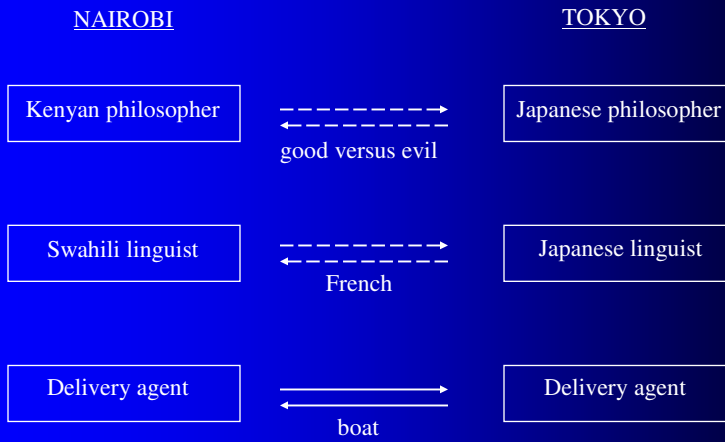
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... another possibility ...



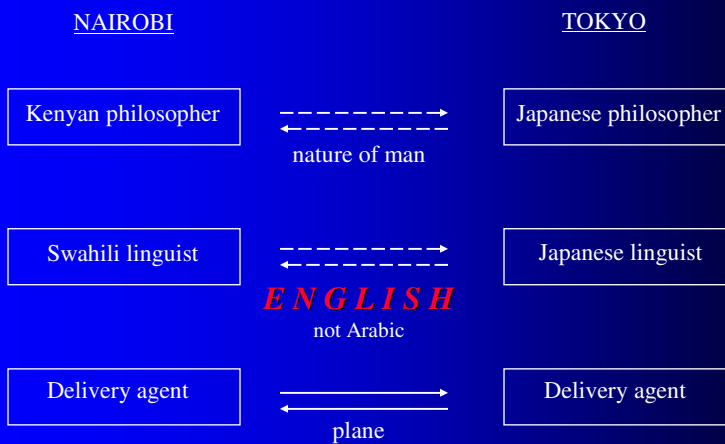
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...yet a third possibility ...



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More likely ...



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... and ...

NAIROBI

TOKYO

Kenyan philosopher

Japanese philosopher

----->
-----<
existence of god

Swahili linguist

Japanese linguist

----->
-----<
ENGLISH
not Navajo

Delivery agent

Delivery agent

----->
-----<
train

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... and

NAIROBI

TOKYO

Kenyan philosopher

Japanese philosopher

----->
-----<
good versus evil

Swahili linguist

Japanese linguist

----->
-----<
ENGLISH
not French

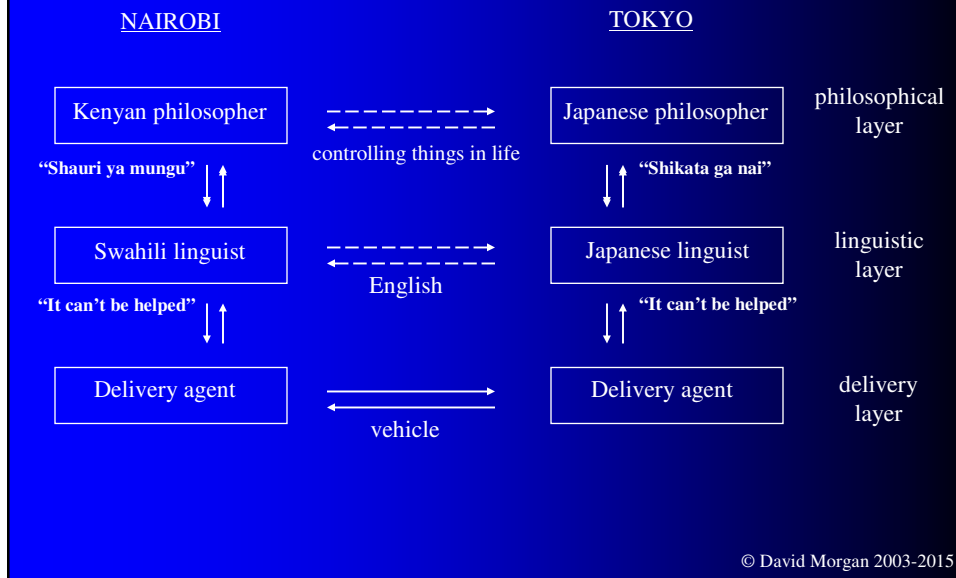
Delivery agent

Delivery agent

----->
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boat

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Functional layering



English

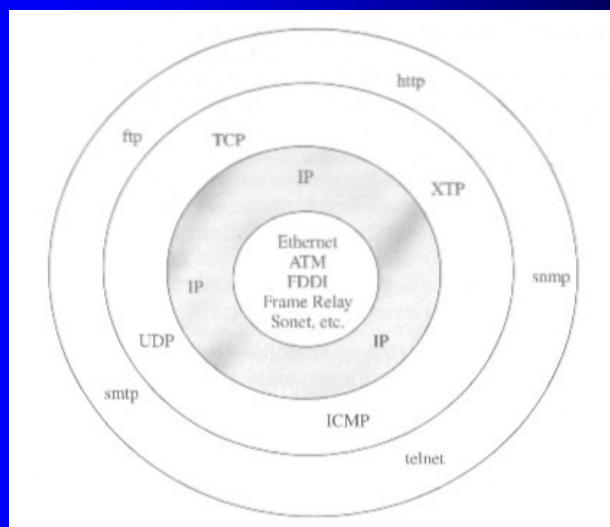
- carries any philosophical discussion
- carried by any delivery technique
- "language of commonality" - has become the standard for doing so

IP is like English

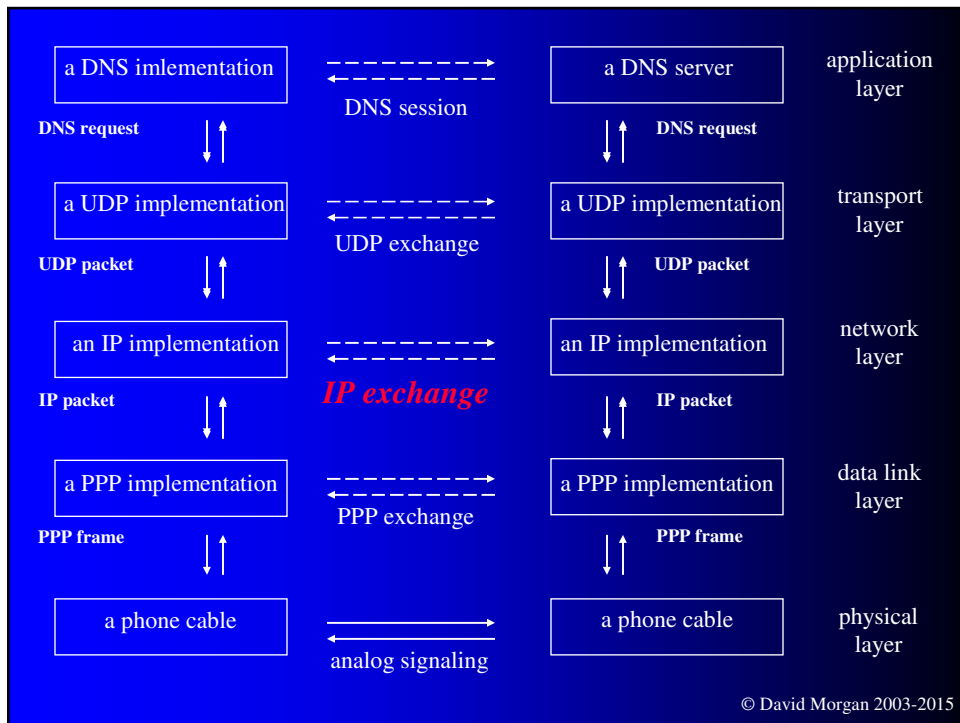
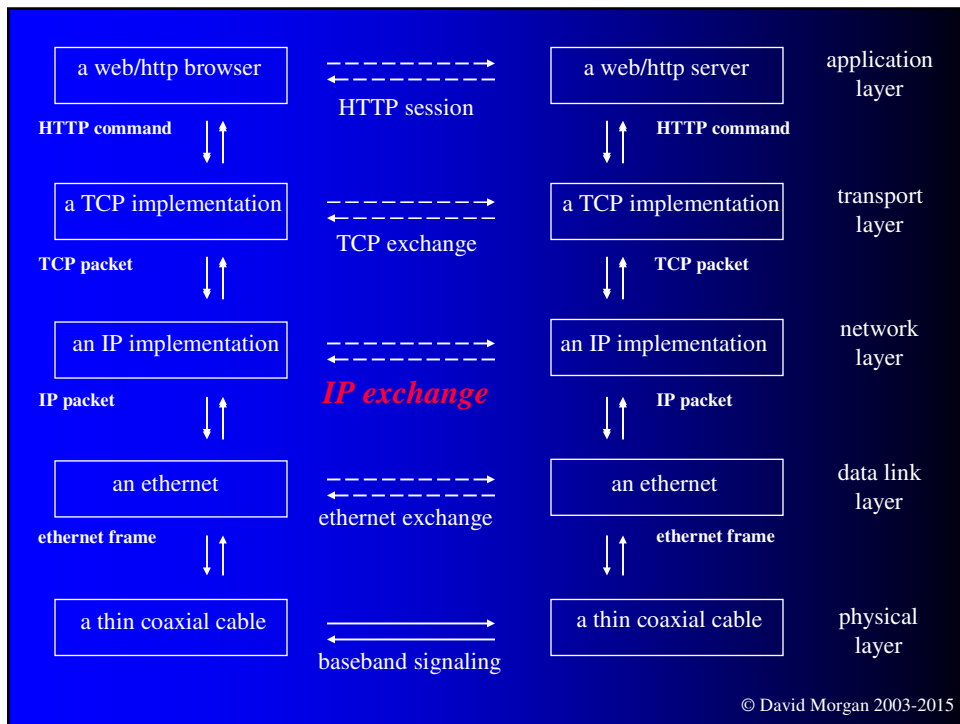
- carries any application and end-to-end protocol (ftp, smtp, http...TCP, UDP)
- carried by any data link and physical technique (ethernet, ATM, frame relay, wireless)
- “layer of commonality” - has become the standard for doing so

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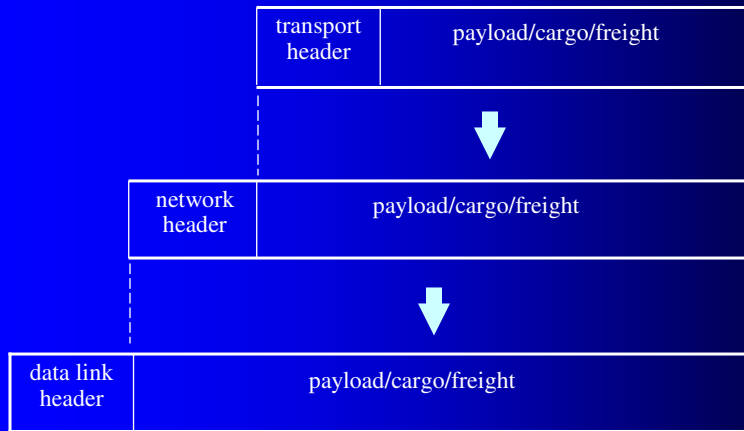
IP - common protocol



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Layer-wise encapsulation



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