OSI (OPEN SYSTEMS INTERCONNECTION) MODEL

OSI (Open Systems Interconnection) is a standard description or "reference model" for how messages should be transmitted between any two points in a network.

There are 7 layers in this model:

7	APPLICATION
6	PRESENTATION
5	SESSION
4	TRANSPORT
3	NETWORK
2	DATA LINK
1	PHYSICAL

THE PROCESS

When a device wants to send information to another one, its data must go from top to bottom layer. But when a device receives this information, it must go from bottom to top to “de-capsulate” it.

Note: The OSI model layers are often referred to by number than by name (For example, we refer to Network Layer as "Layer 3").

When the information goes down through layers (from top to bottom), a header is added to it. This is called encapsulation because it is like wrapping an object in a capsule. Each header can be understood only by the corresponding layer at the receiving side. Other layers only see that layer’s header as a part of data. At the receiving side, corresponding header is stripped off in the same layer it was attached.

To help you remember the functions of each layer more easily, here's a fun story in which Henry (English) wants to send a document to Charles (French).

UNDERSTANDING EACH LAYER

Layer 7 – Application layer
This is the closest layer to the end user. It provides the interface between the applications we use and the underlying layers. But notice that the programs you are using (like a web browser – Firefox…) do not belong to Application layer. Telnet, FTP, email client (SMTP), Hyper Text Transfer Protocol (HTTP) are examples of Application layer.

Layer 6 – Presentation layer
This layer ensures the presentation of data, that the communications passing through are in the appropriate form for the recipient. In general, it acts as a translator of the network. For example, you want to send an email and the Presentation will format your data into email format. Or you want to send photos to your friend, the Presentation layer will format your data into GIF, JPG or PNG… format.

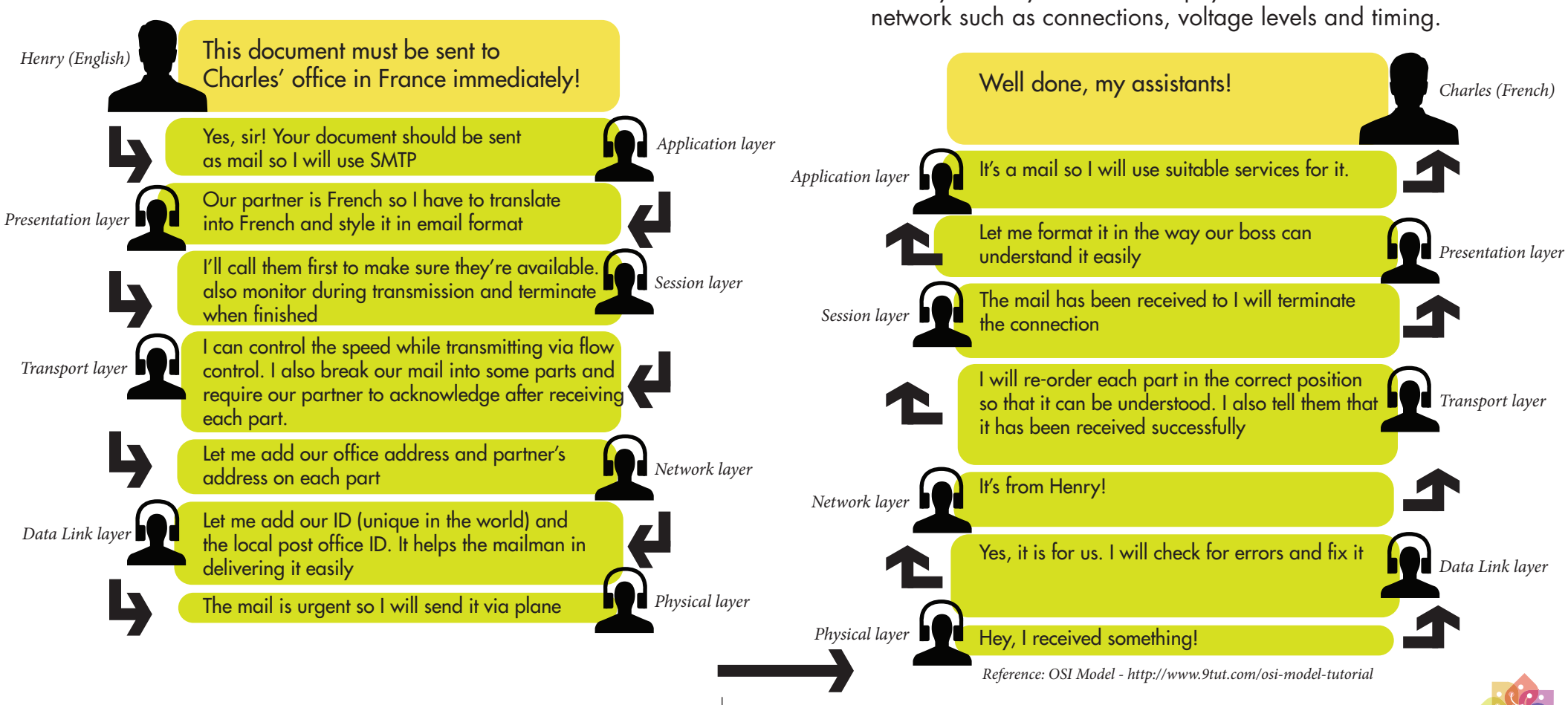
Layer 5 – Session layer
Layer 5 establishes, maintains and ends communication with the receiving device.

Layer 4 – Transport layer
This layer maintains flow control of data and provides for error checking and recovery of data between the devices. The most common example of Transport layer is Transmission Control Protocol (TCP) and User Datagram Protocol (UDP).

Layer 3 – Network layer
This layer provides logical addresses which routers will use to determine the path to the destination. In most cases, the logic addresses here means the IP addresses (including source & destination IP addresses).

Layer 2 – Data Link Layer
The Data Link layer formats the message into a data frame, and adds a header containing the hardware destination and source address to it. This header is responsible for finding the next destination device on a local network.
Notice that layer 3 is responsible for finding the path to the last destination (network) but it doesn’t care about who will be the next receiver. It is the Layer 2 that helps data to reach the next destination.

Layer 1 – Physical layer
The Physical Layer defines the physical characteristics of the network such as connections, voltage levels and timing.



Reference: OSI Model - http://www.9tut.com/osi-model-tutorial

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