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# Chapter III

# ITU-T Next Generation Network Vision



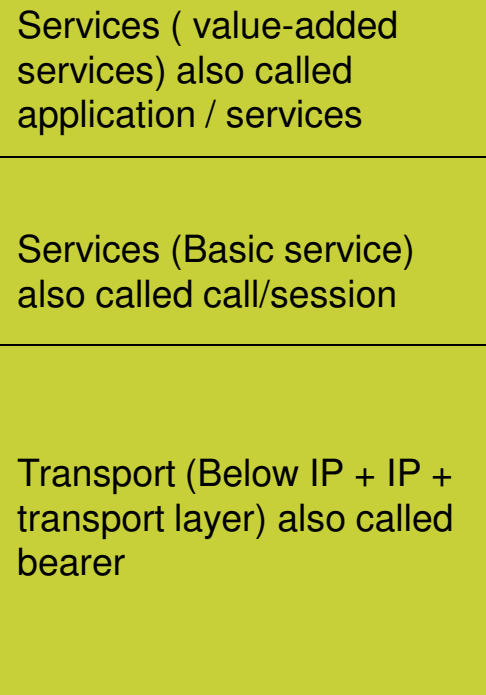
# Layering in next generation networks

Services (Basic services + value-added services)

Transport (Below IP + IP + transport layer)



# Layering in next generation networks



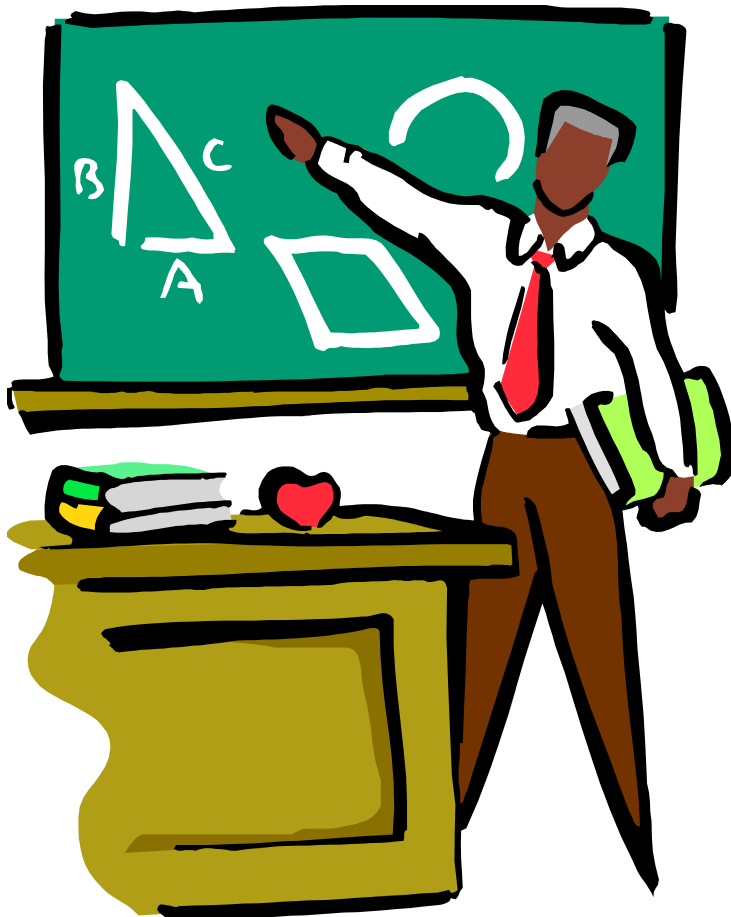


## Examples of technologies for next generation networks

- Transport technologies (Examples)
  - Wimax, long term evolution (LTE)
  - Impact all layers
- Call / session technologies (Examples)
  - SIP, H.323
- Value added services (or services technologies) - Examples
  - SIP servlets, Web services



# The ITU-T Vision of Next Generation Networks



- Fundamental characteristics
- Architectural framework



# Fundamental characteristics (or requirements, or design goals)

## Categorization scheme used in this lecture

- Layer independent characteristics
  - Impact all layers
- Layer specific characteristics
  - Impact specific layers



# Fundamental characteristics (or requirements, or design goals)

## Categorization scheme used in this lecture

- Layer independent characteristics
  - Business model
  - Separation of concerns
  - Regulatory issues
  - Inter-working with legacy
- Layer specific characteristics
  - Network capacities
  - En-user services and their provision



# Fundamental characteristics

## Layer independent characteristics

- Business model
  - Unrestricted access to different service providers
    - Has a lot of implications
      - Plug and play by end – users when it comes to subscriptions
      - Last mile from provider A
      - Internet access from provider B
      - Telephony services running on the last mile from provider C
      - Streaming services running on last mile from provider D





# Fundamental characteristics

## Layer independent characteristics

- Separation of concerns
  - Separation of control functions between bearer, call/session and application / service
  - Decoupling of service provision from transport and provision of open interfaces
  - Independence of service related functions from underlying transport technologies



# Fundamental characteristics

## Layer independent characteristics

- Compliance with all regulatory issues
  - Emergency communications
  - Lawful interception
  - Security



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## Fundamental characteristics

### Inter-working with legacy

- Through open interfaces



# Fundamental characteristics

## Layer dependent characteristics

- End-user services and their provision
  - Support of a wide range of services, applications and mechanisms based on building blocks
  - Generalized mobility (terminal, end-user and services)
  - Unified characteristics for the same service as perceived by the user
  - Converged services between fixed and mobile



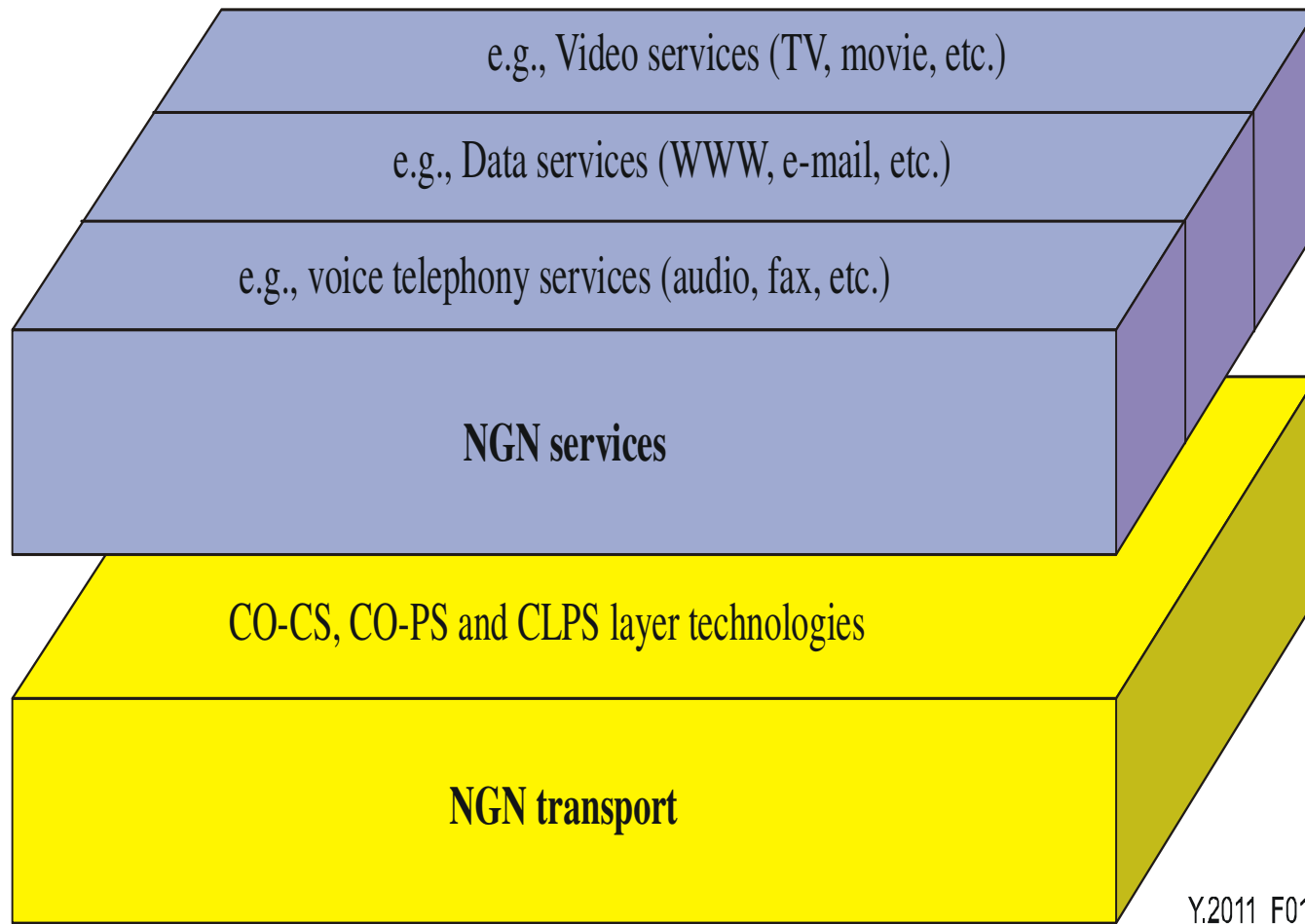
# Fundamental characteristics

## Layer dependent characteristics

- Transport and service layer
  - Broadband
  - Multiple last mile technologies
  - Packet based transfer

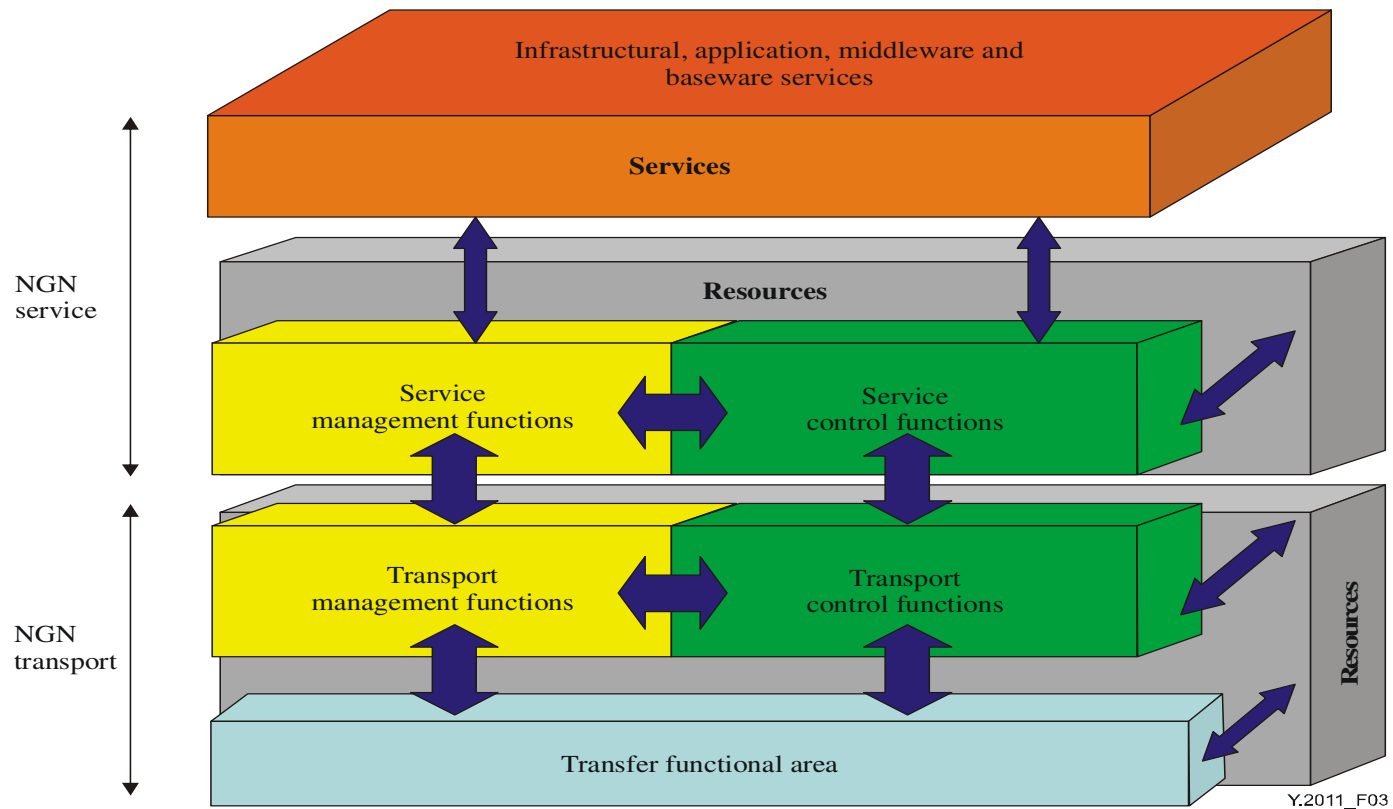


## Architectural framework



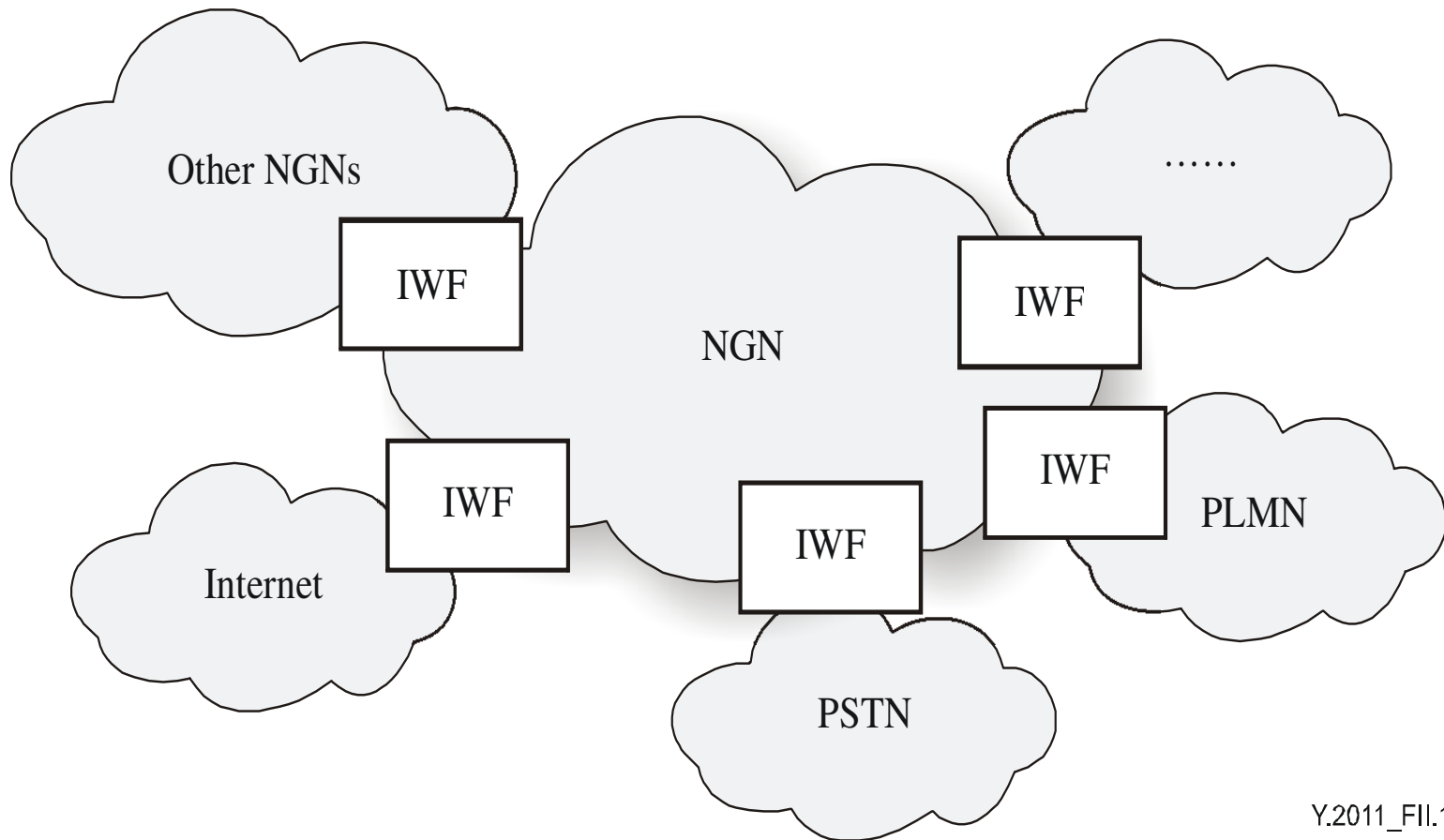


# Architectural framework





# Architectural framework



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## References

- C-S and D. Knight, Realization of the Next Generation Network, IEEE Communications Magazine, October 2005, Vol. 43, No. 10
- K. Knightson et al., NGN Architecture: General Principles, Functional Architecture, and Implementation, IEEE Communications Magazine, October 2005, Vol. 43, No. 10