



Converged Infotainment Delivery Platform for Smart Vehicles

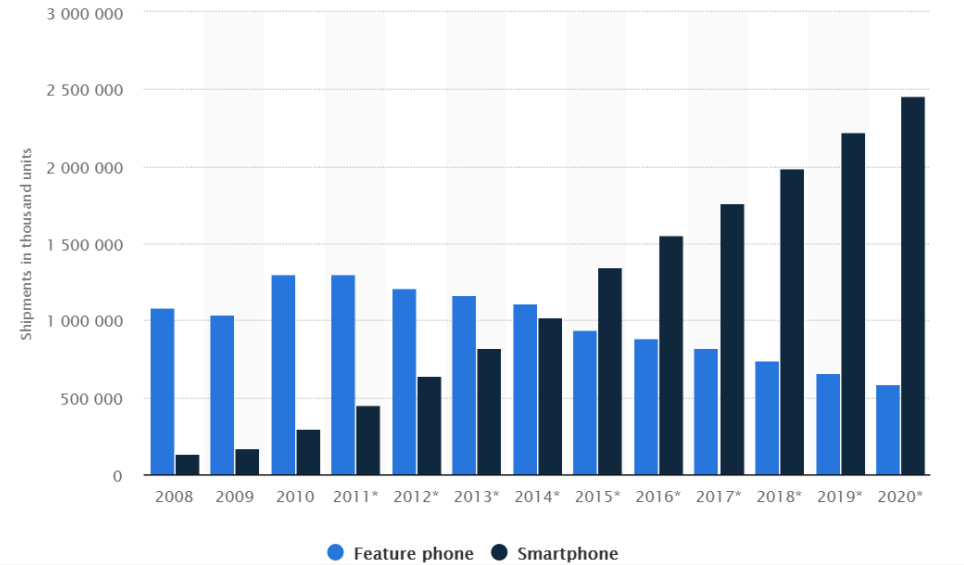
**Dr. Hui Liu, Chief Scientist
New York Broadband (NYBB)/Silkwave Holdings**

ITU SG16 July 2018

A page from history



1973



Smartphones revolutionized society in less than a decade

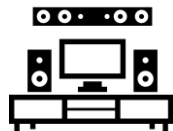
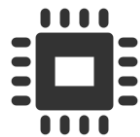
A much more powerful “device”



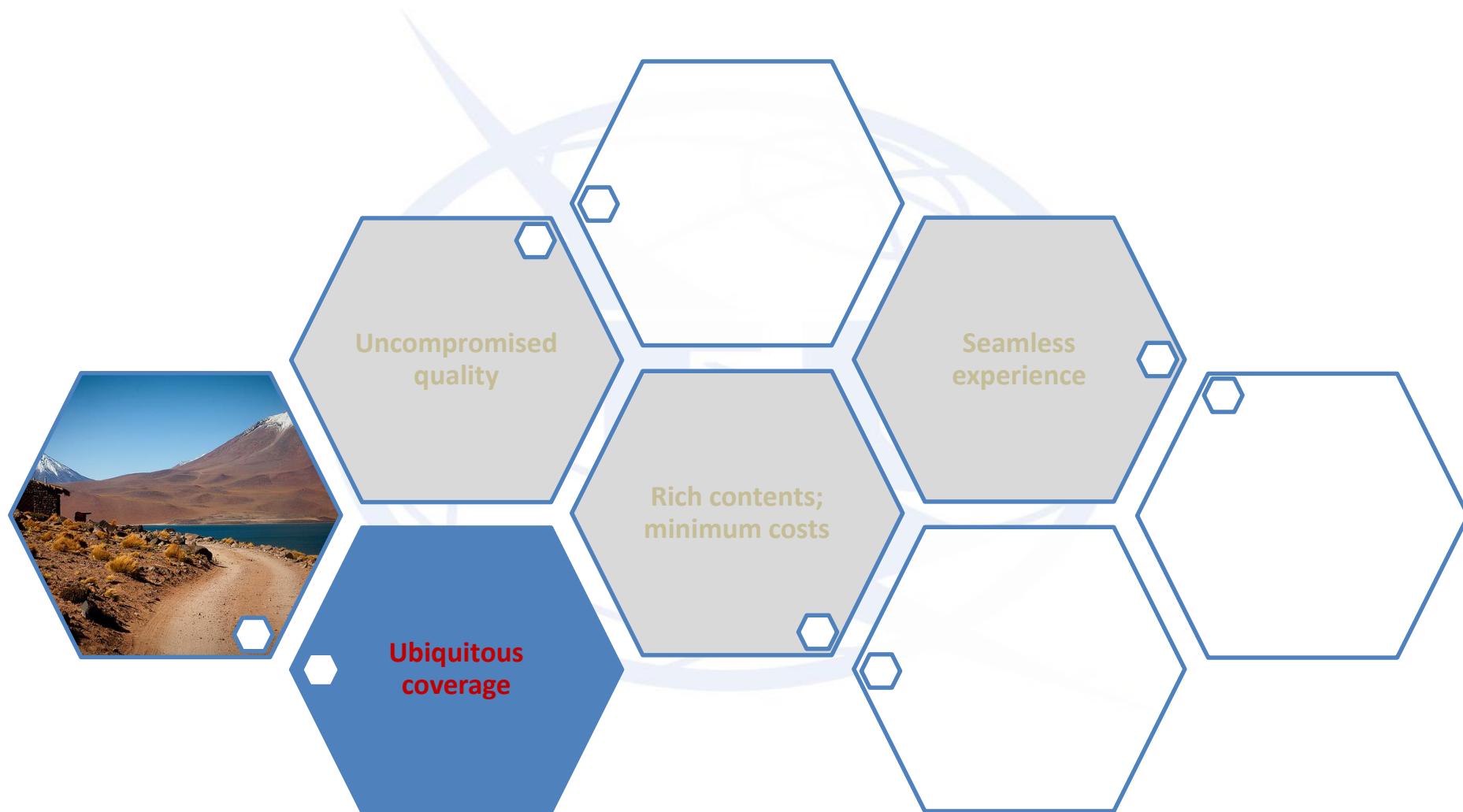
1886



From “feature” car to “smart” vehicle



A wish list for smart car infotainment



A wish list for smart car “infotainment”



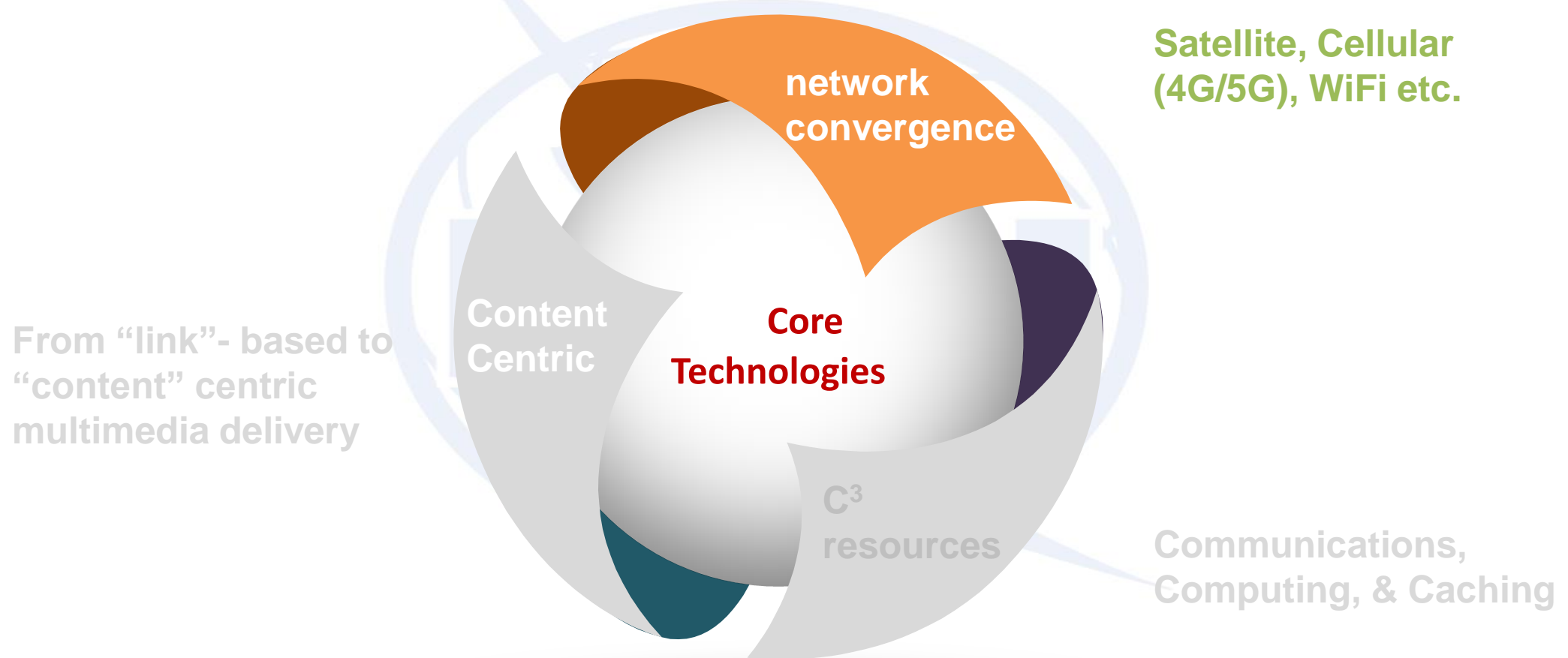
A wish list for smart car “infotainment”



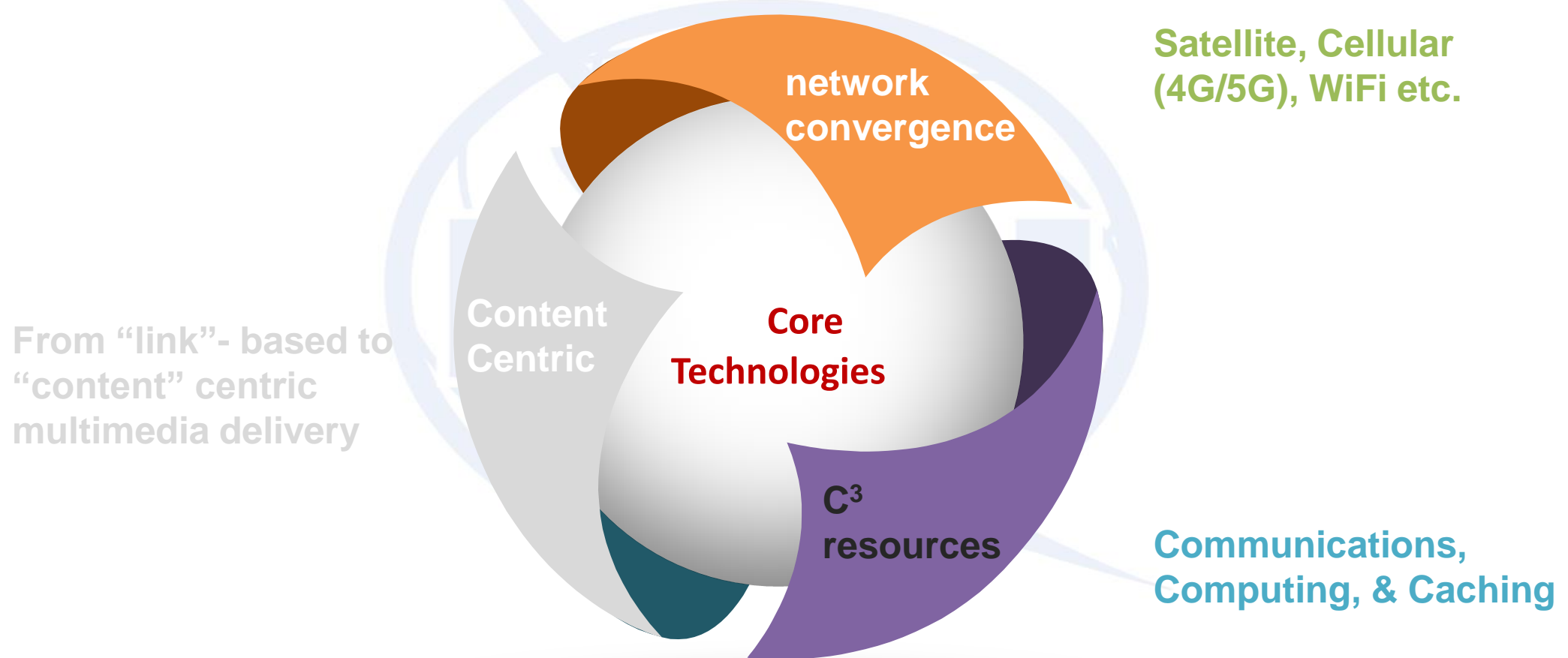
A wish list for smart car “infotainment”



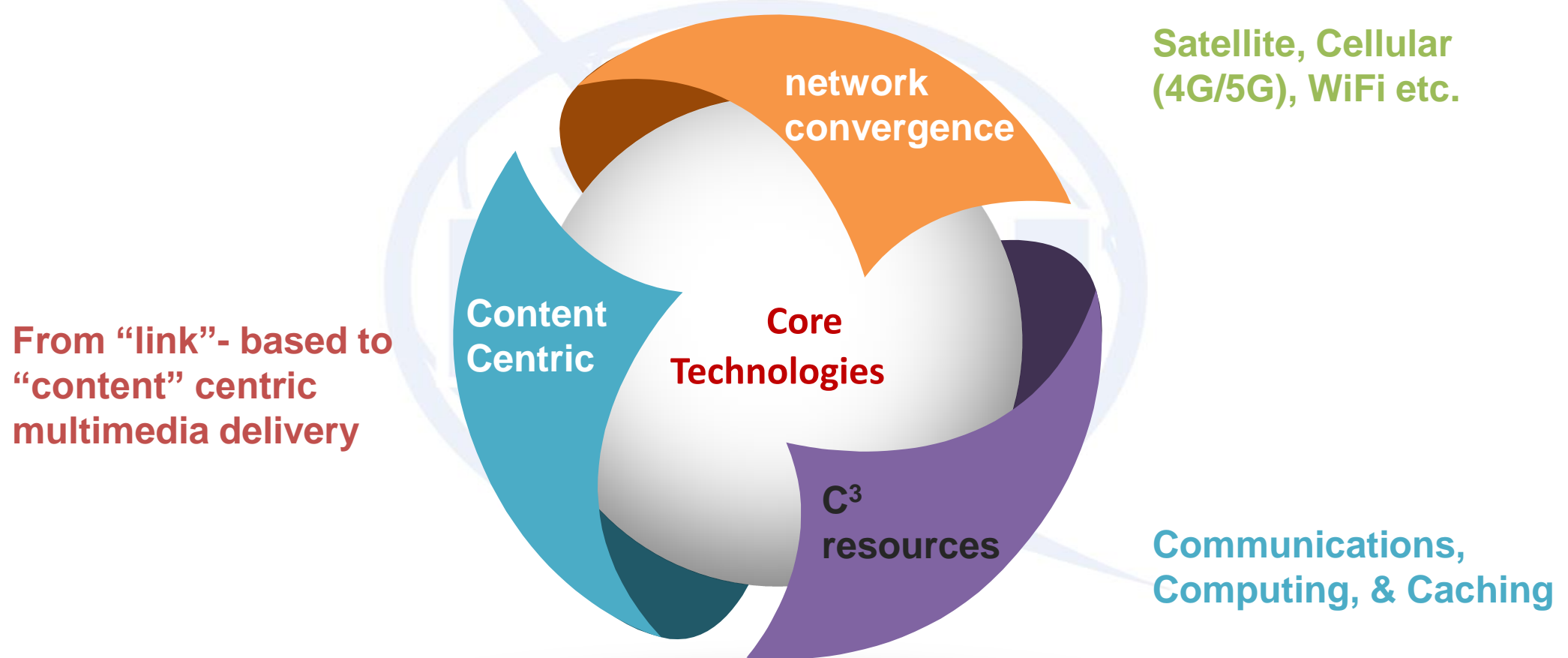
A new paradigm for the design challenges



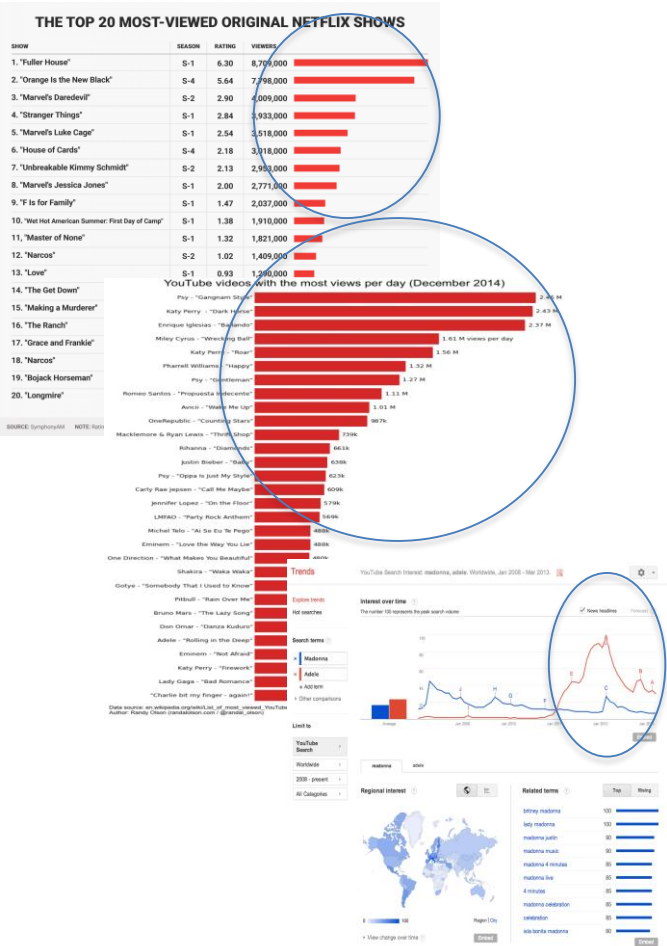
A new paradigm for the design challenges



A new paradigm for the design challenges



Network convergence



Broadcast Satellite Terrestrial cellular WiFi infostation V2V



↑
Number
of Views

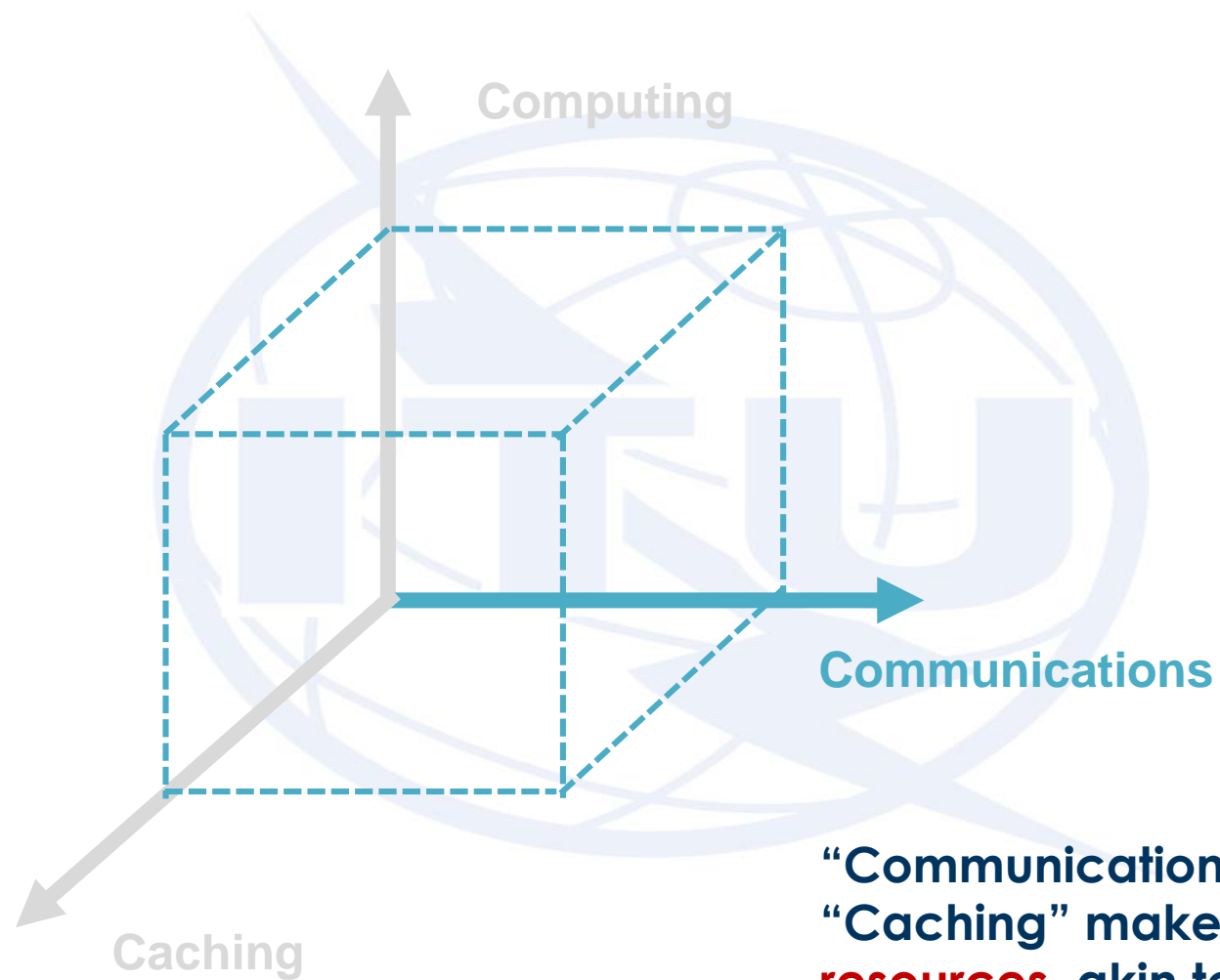
broadcasting/pushing
The high demand content can be delivered far more efficiently via broadcasting and device caching.

unicast
Individualized and niche content is requested and delivered via unicast.

Title Popularity, Audience Size, or Time from Content Release →

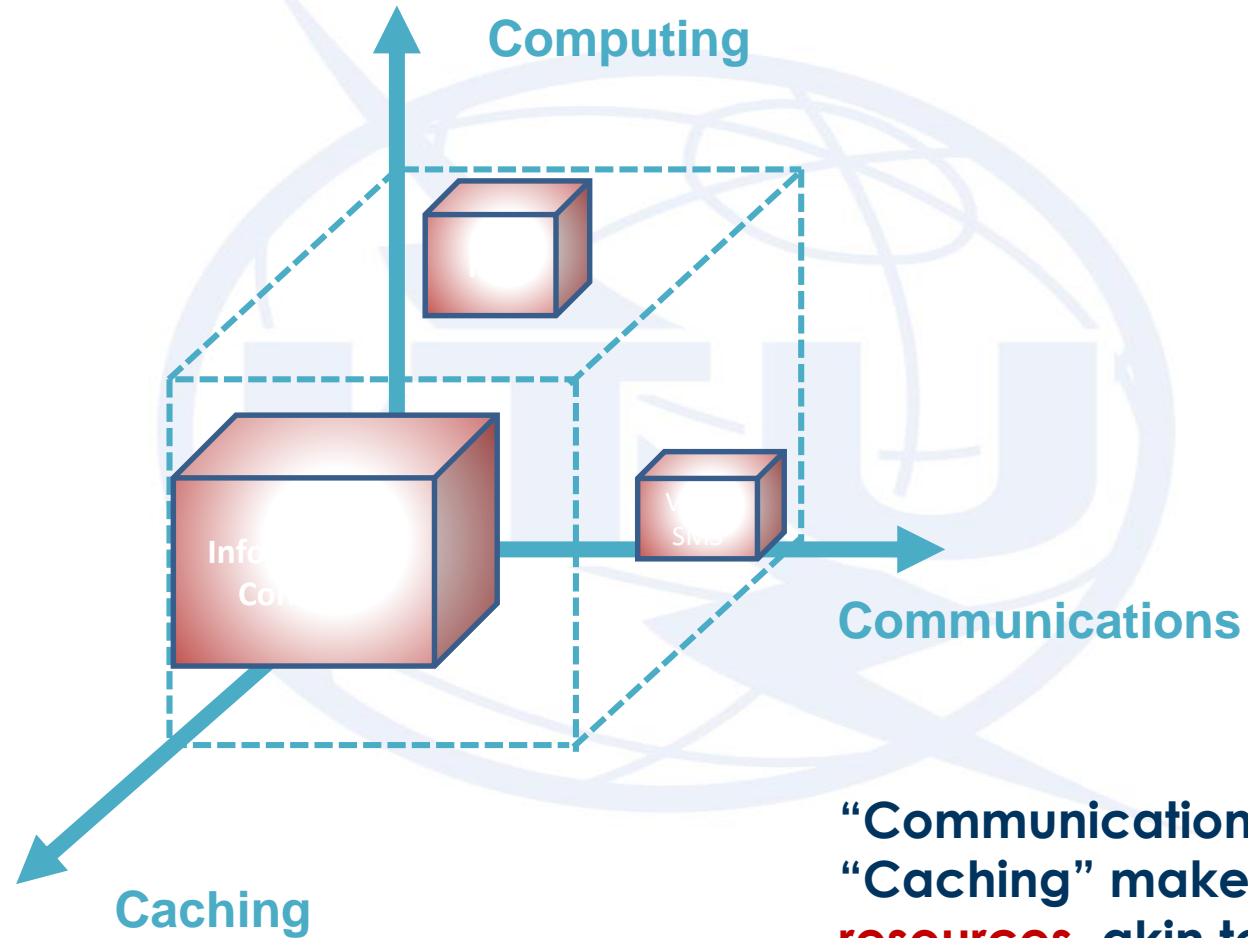


C³ infrastructure



“Communications”, “Computing”, and “Caching” make up the **three primary resources**, akin to the three primary colors, for a mobile system

C³ infrastructure



“Communications”, “Computing”, and “Caching” make up the **three primary resources**, akin to the three primary colors, for a mobile system

Content/Information centric networks

NETFLIX

hulu

You Tube

Google TV



XBOX LIVE

*The Unicast
Bottleneck
Challenge*

mobile content accessing via
a **link session** (IP-based) form
a bottleneck in massive
multimedia delivery



content or information-centric
networking (ICN) **decouples**
content from its sources,
allowing it to be placed
anywhere

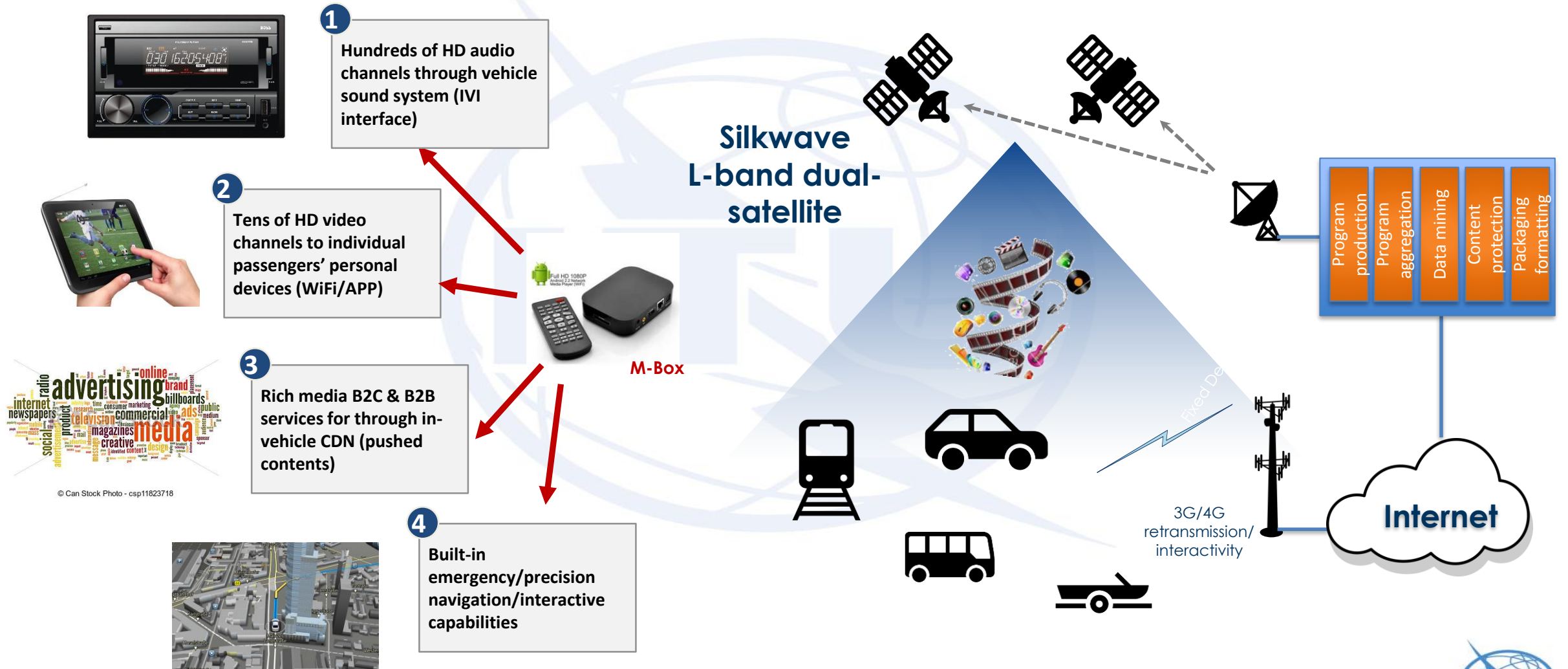


interest

content

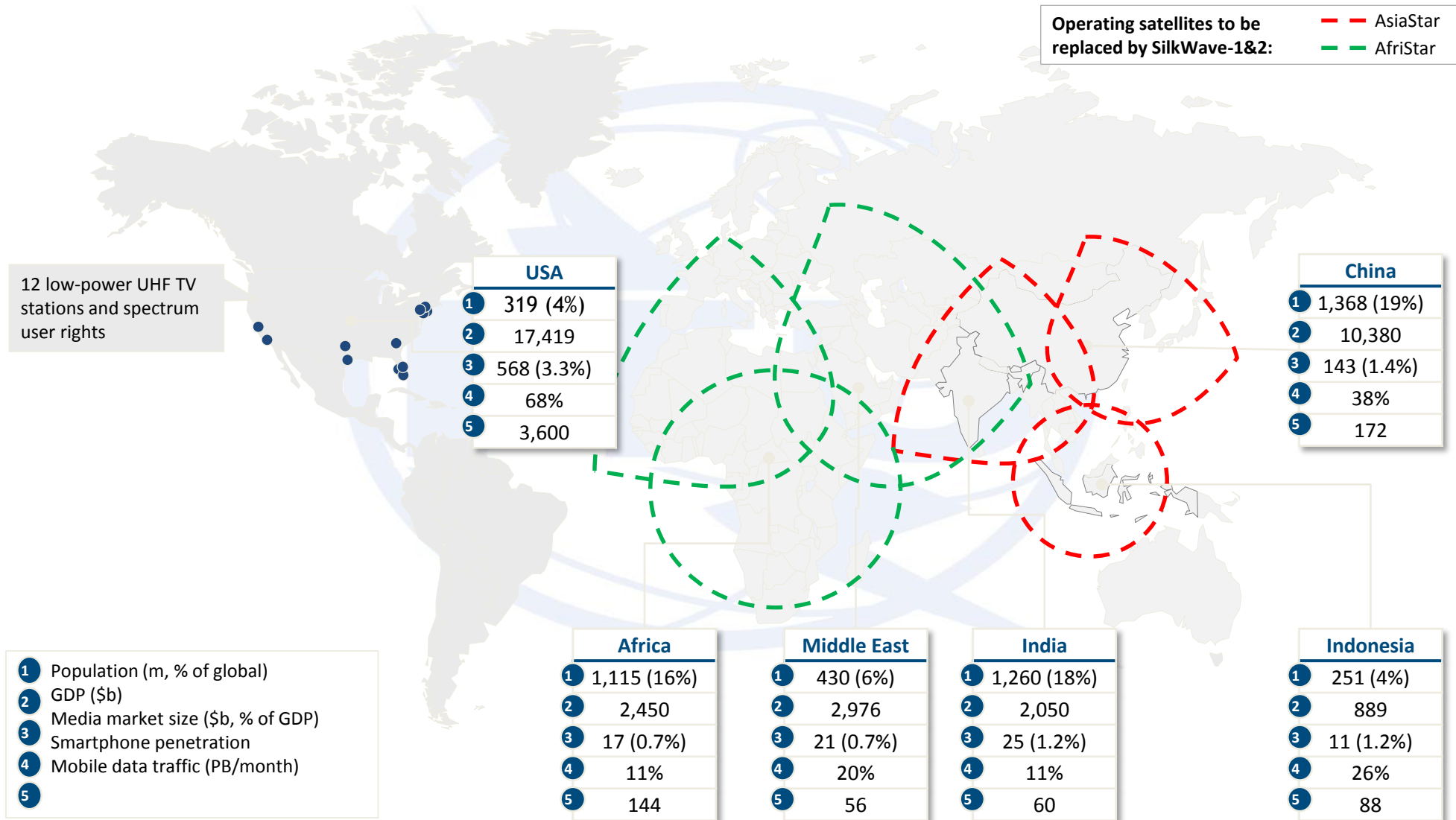


Smart vehicle infotainment delivery architecture



© Can Stock Photo - csp11823718

NYBB coverage



Source: CMMB Vision



Three classes of data pipes



Satellite-only data pipe:

- Satellite data broadcast
- Erasure channel reception
- "Free" data flow to vehicles



Integrated data pipe:

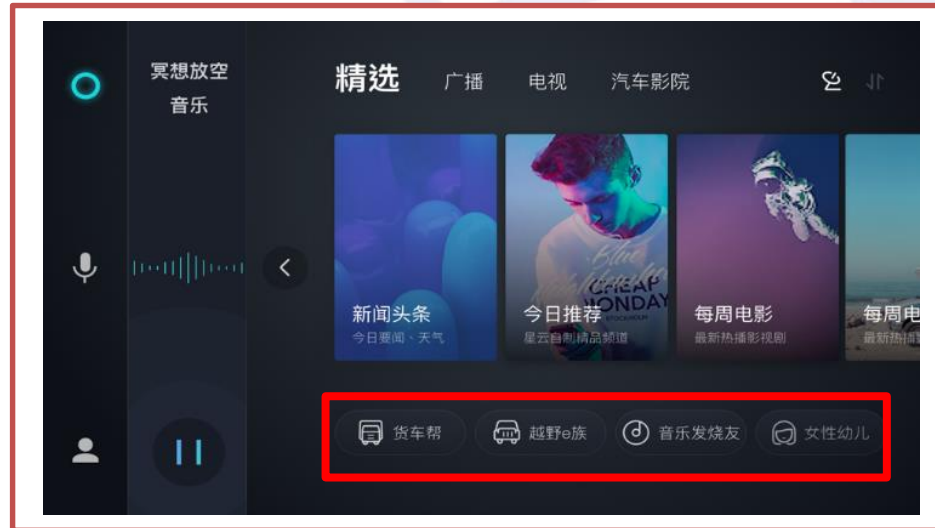
- Satellite as prime channel
- Cellular as auxiliary channel
- Lowest cost of data flow



Mobile internet data pipe:

- Cellular data unicast
- Internet protocol
- Standard mobile data fee

Infotainment tailored for smart vehicles – personalized services



User profile

- User portrait, favorite channels, real-time news/recommendations/alerts
- User ID based Management & Control System



Versatile services

- Telematics, SBAS navigation etc.
- Location-based content pushing
- Big data and precision advertisement

Infotainment tailored for smart vehicles – rich form-factors

