The economics and policy implications of infrastructure sharing and its role for the development of ICT networks in Africa

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Infrastructure sharing (IS) framework models and examples

1. IS framework
2. IS models and dimensions
3. IS examples in different network segments
4. IS as a tool to reduce market and regulatory failures
5. IS as a source of market distortions and potential solutions
6. Policy recommendations

Internet Supply chain

Internet Networks

International Connectivity

National Backbone

Backhaul Network

Access Network

Services

Connectivity

Management
& Intelligence

Value Added

Assets

Passive Infrastructure

Active Infrastructure

Intangible

Agents and Environment

Market agents	Environment	Regulators
Want to obtain a competitive advantage ↓ Business Model	Market competitive structure Market features Market and regulatory failures Existing technology	Want to reduce market failures and achieve redistribution policy goals ↓ Regulation

External factors: Demand and supply trends

Demand trends

NEW DEVICES

MUTIMEDIA CONTENT DEMAND GROWTH

NEW TYPES OF TRAFFIC

Technical progress

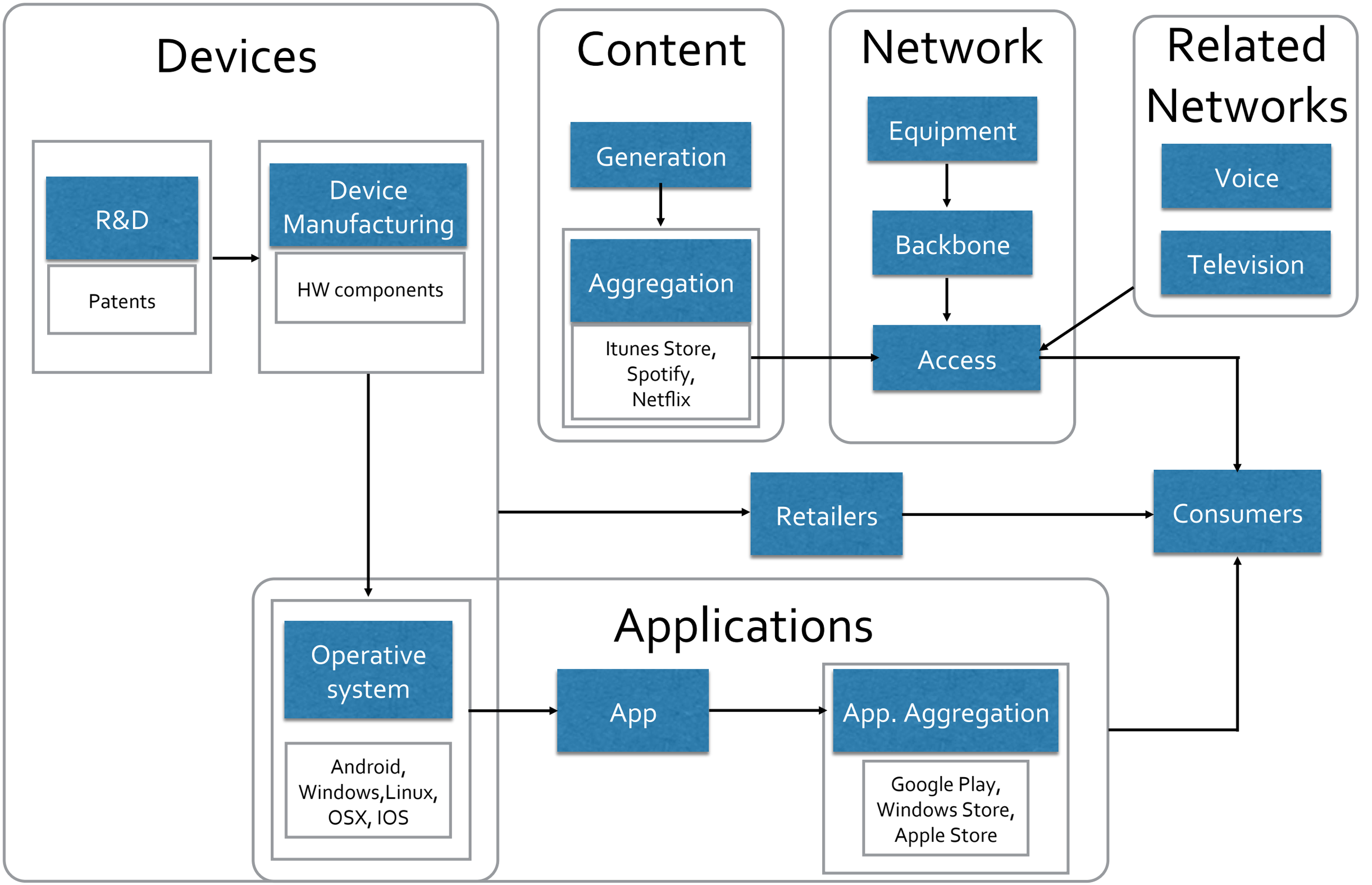
INNOVATIVE ACCESS

MULTICASTING - NGN
- Shift interconnection point

SPECTRUM SHARING
- Light Licensing

CONGESTION CONTROL TECHNOLOGIES

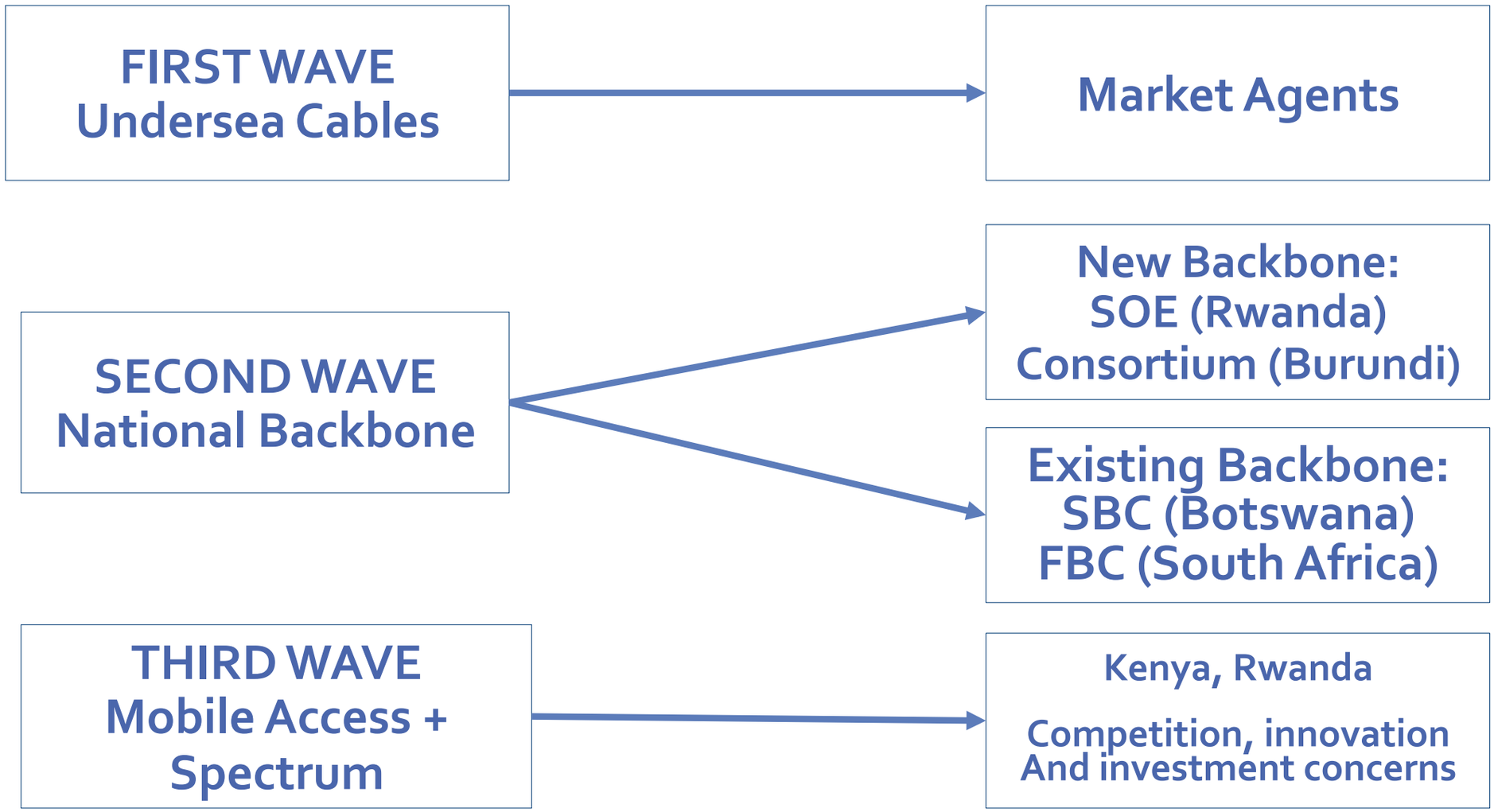
External factors: Internet Ecosystem



Infrastructure Sharing

MODELS	DIMMENSIONS
INFRASTRUCTURE ASSETS SHARING	COMMERCIAL
MUTUALISATION	REGULATORY
COOPERATION	TECHNOLOGICAL

Mutualisation waves in Africa



SBC: Service Based Competition
FBC: Facility Based Competition

Backbone Infrastructure Sharing

ASSETS SHARING

Access/ Interconnection

Transit Payments
(Tier 3 – ISP)

Peering
(Tier 1,2 – IBP)

Bargaining Power

Type of traffic
Geography
Competition if Multi-homing

MUTUALISATION

PUBLIC PRIVATE PARTNERSHIP
Ownership Structure
Risk Sharing

MULTIHOMING
International + National Backbone

MUTUALISATION VS NETWORK DUPLICATION

Fixed Access Infrastructure Sharing

ASSETS SHARING

Full unbundling (Technology neutral)
Line Sharing (Not neutral)
Virtual unbundling (Control of access)

Point of interconnection/ Multicast

Competition VS Coordination Complexity

MUTUALISATION

Bitstream Access (Bandwidth for entrants)
Next generation (Flexibility)

Service Based Competition

Entry VS Innovation

High Sunk Cost- Entry barriers

Network: Asymmetry (xDSL) Mandated Sharing / Symmetry (NGN)

Mobile Access Infrastructure Sharing

ASSETS SHARING

Passive
Uncoordinated (Technology neutral)
Active
Coordination(Control of access)

Site Sharing (30% Sharing)

Tower sharing (30% Sharing)

RAN sharing (Rural Access)

Network Symmetry
Service based or Facility Based
Competition

MUTUALISATION

MARKET AGREEMENT

National roaming (Early rollout Stages)

Core Network Sharing (Uncertain)

MNVO (Only Retail)

Outsourcing (TowerCo & Tenancy Ratio)

MANDATED MUTUALISATION

Participation of operators is KEY
Risk of reduced investment& innovation
Share of existing sites
Other option: Refarming of existing bands

Reduction of market and regulatory failures

1. Externalities: Leverage Positive - Reduce Negative

2. Reduce entry barriers- Increase competition in the access network

3. Reduce coordination failures - Leverage synergies in construction, operation and maintenance of linear infrastructures.

4. Remove regulatory failures / Efficient spectrum allocations

   (Shared use, Light licenses, refarming)

Market Distortions

CHALLENGES

IS leads to SBC (Short Run Competition)
BUT
FBC (Long Run Competition) is the real competition

Leads to disincentives to investment & Innovation

Disincentives to enhanced network quality but incentives to cost reduction in service provision

SOLUTIONS

Ladder of investment: Increase Price of a shared asset over time to foster investment. Cave(2006)

Incorporate risk in Access Price from the beginning to reduce asymmetric allocation of risk - Pindyck (2007)

Control the ecosystem markets:
Economies of scope- bundling
Economies of scale- TowerCo

Efficiency: Allocative/ Productive/ Dynamic

Policy Recommendations

1. Enable commercially driven sharing when it doesn't distort competition.

2. Enable the environment to leverage the opportunities of the collaboration among linear infrastructures providers.

3. Subsidies and State Aid to support mutualized network infrastructures should only be granted in cases where the private sector is not able to operate correctly.

4. Mandated sharing is the last resource to reduce infrastructure bottlenecks when infrastructure competition is not possible.

5. Political economy matters. Simple solutions, without complex regulatory changes are effective in most cases

Policy Recommendations

6. Demand side policies help. The aggregation of demand is a good measure to reduce connectivity prices.

7. The Government might better promote investments in the ICT sector acting as a demand anchor client rather than creating State Owned Enterprises

8. Remind the importance of the interactions of the Internet supply chain with the markets of the Internet ecosystem.

9. Tackle spectrum allocation bottlenecks, with additional allocations to mobile and innovative authorization regimes allowing the shared use of spectrum.

Thanks

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