

The Need for Collaboration

Academia, Industry & Government

-Kenya's Experience

Presented by: J. Walubengo,
jwalubengo@mmu.ac.ke; jwalu@yahoo.com

Multimedia University of Kenya

EACO June 2016

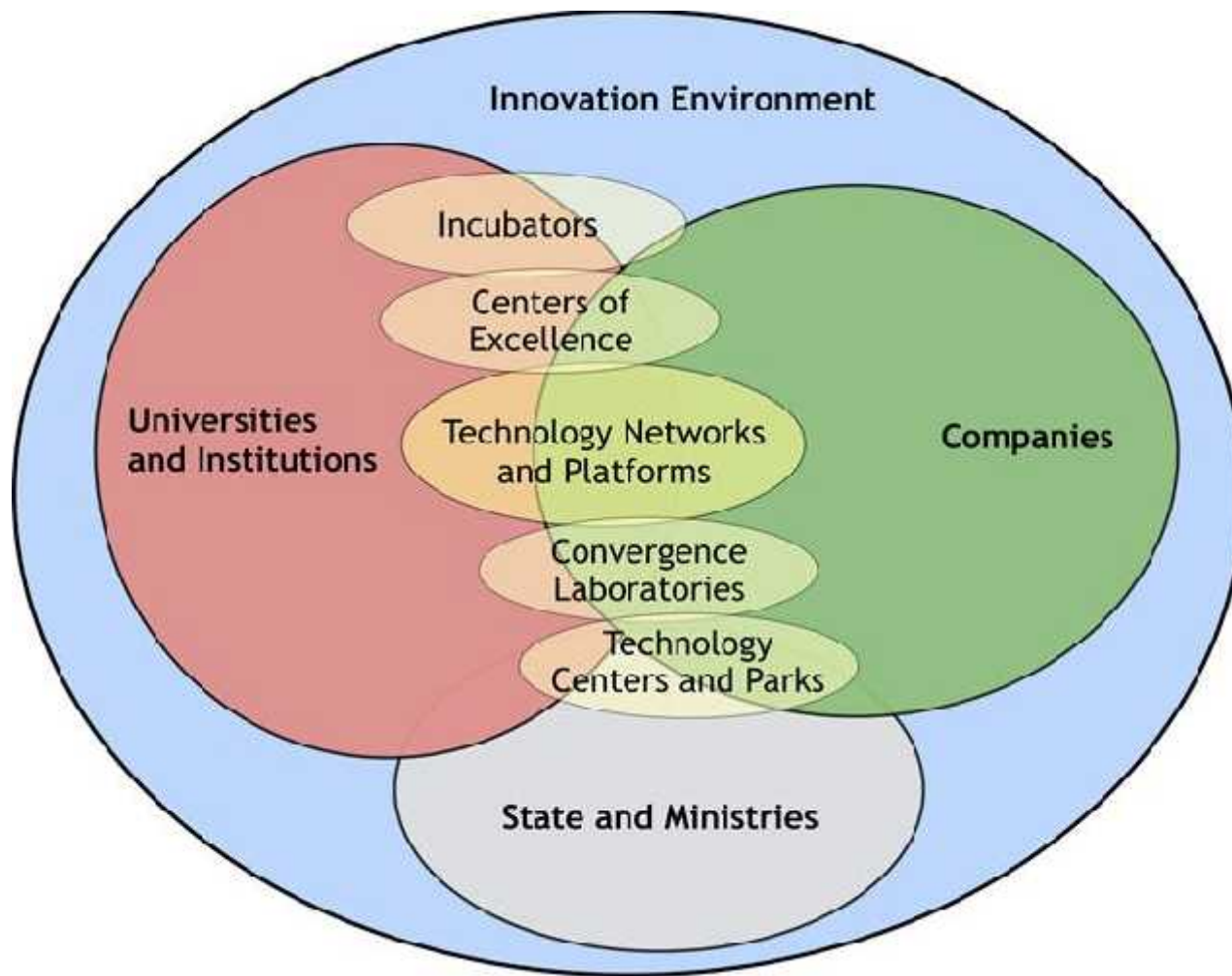
Summary

- Theoretical Foundations:-Triple Helix Thesis
- The ICT Innovation Ecosystem
 - 6 Symbiotic Relationships
 - 4 Types of Innovations (I, II, III, IV)
- Case for Kenya
 - Triple Helix Perspectiv
 - 6 Symbiotic Relationship Perspective
 - Type I, II, III & IV Perspective
- Challenges & Conclusion

Theoretical Foundations:- The Triple Helix

- The concept of the Triple Helix of university-industry-government relationships initiated in the 1990s by Etzkowitz (1993) and Etzkowitz and Leydesdorff (1995),
- The Triple Helix thesis is that the potential for innovation and economic development in a Knowledge Society lies in a more prominent role for the university and in the hybrid-isation of elements from university, industry and government to generate new institutional and social formats for the production, transfer and application of knowledge.

The Innovation Environment:- The Triple Helix



Triple Helix Configurations

- The (neo) institutional perspective distinguishes between three main configurations in the positioning of the university, industry and government institutional spheres relative to each other:
 - a *statist* configuration
 - a *laissez-faire* configuration
 - a *balanced* configuration

Triple Helix Statist Configurations

- (1) a *statist* configuration, where government plays the lead role, driving academia and industry, but also limiting their capacity to initiate and develop innovative transformations (e.g. in Russia, China, some Latin American and Eastern Europe countries);

Triple Helix *laissez-faire* Configurations

- (2) a *laissez-faire* configuration, characterised by a limited state intervention in the economy (e.g. the US, some Western Europe countries), with industry as the driving force and the other two spheres acting as ancillary support structures and having limited roles in innovation
- Universities act mainly as a provider of skilled human capital, and government mainly as a regulator of social and economic mechanisms;

Triple Helix Balanced Configurations

- (3) the *balanced* configuration, specific to the transition to a Knowledge Society, where university and other knowledge institutions act in partnership with industry and government and even take the lead in joint initiatives (Etzkowitz and Leydesdorff 2000).
- The balanced configuration offers the most important insights for innovation, as the most favourable environments for innovation are created at the intersections of the spheres.

The ICT Innovation Ecosystem

- Innovation is the creation of new knowledge relating to ***products, processes, forms of organisation, and markets*** (Harvard Univ, Prof. Joseph Schumpeter's definition).-Fransman. M (2009)
- Innovation is a process of continuous experimentation, combination, and recombination (Brynjolfsson 2011)
- Examples:
 - Production process (e.g., digital networks, LTE)
 - Product or service (e.g., broadband Internet access, WhatsApp)
 - Marketing method (e.g., self-selection pricing)
 - Organizational method (e.g., unbundling)
 - Design, “soft” innovation (e.g., look and feel)

How is new knowledge endogenously created in the ICT Sector?

Fransman M (2009) observed two ways.

- Through the symbiotic interactions between the creators and users of this knowledge
- Other ways include basic or longer term research, where there is no immediate user, in universities and corporate R&D labs, and exogenous change coming from other sectors.

But, who are the main creators and users of knowledge in the ICT Sector?

The Creators and Users of Knowledge in the ICT Sector

At a high level of aggregation there are 4 groups of players who create and use knowledge.

(1) networked element providers

(2) network operators

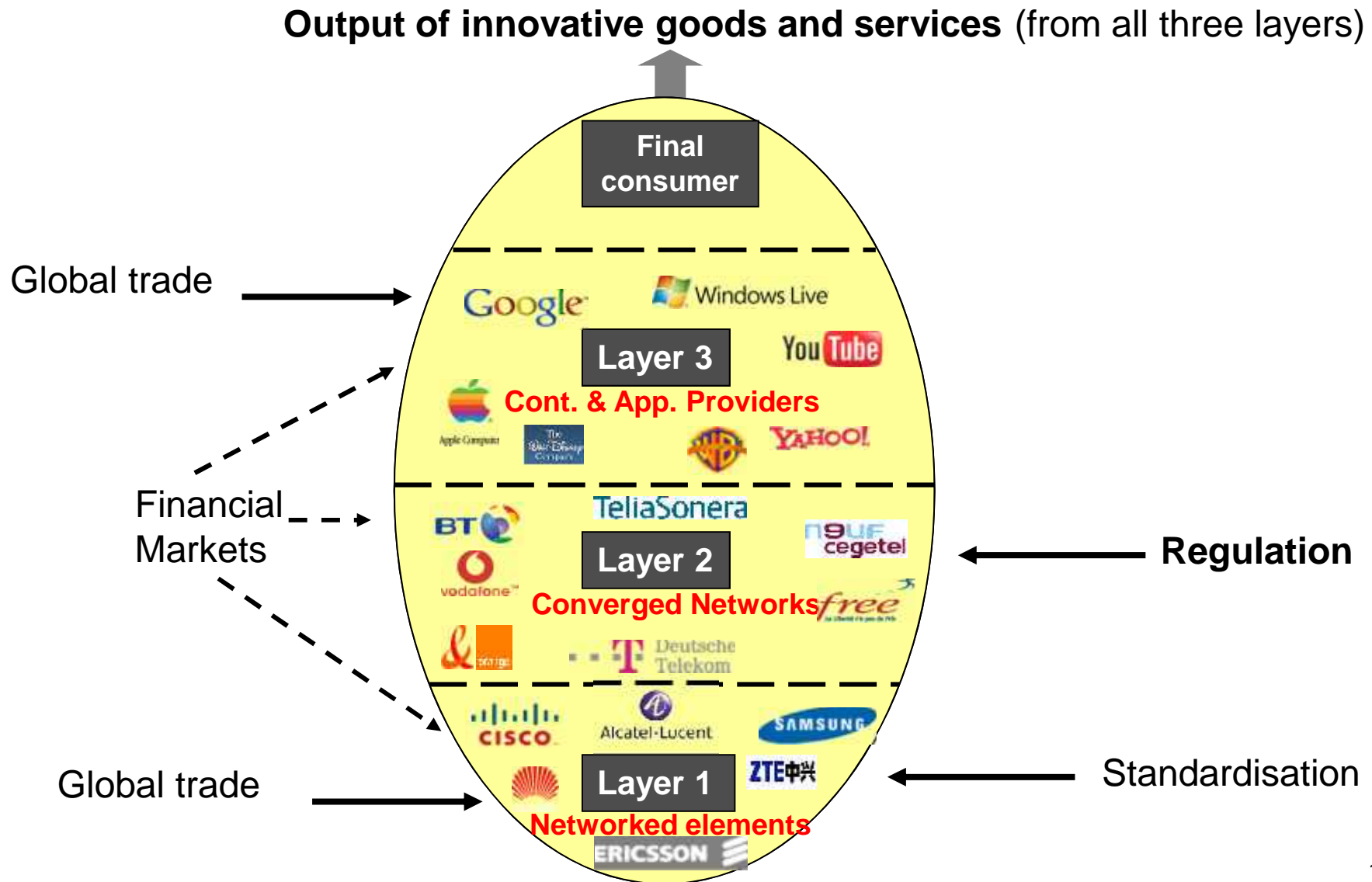
(3) platform, content & applications

providers

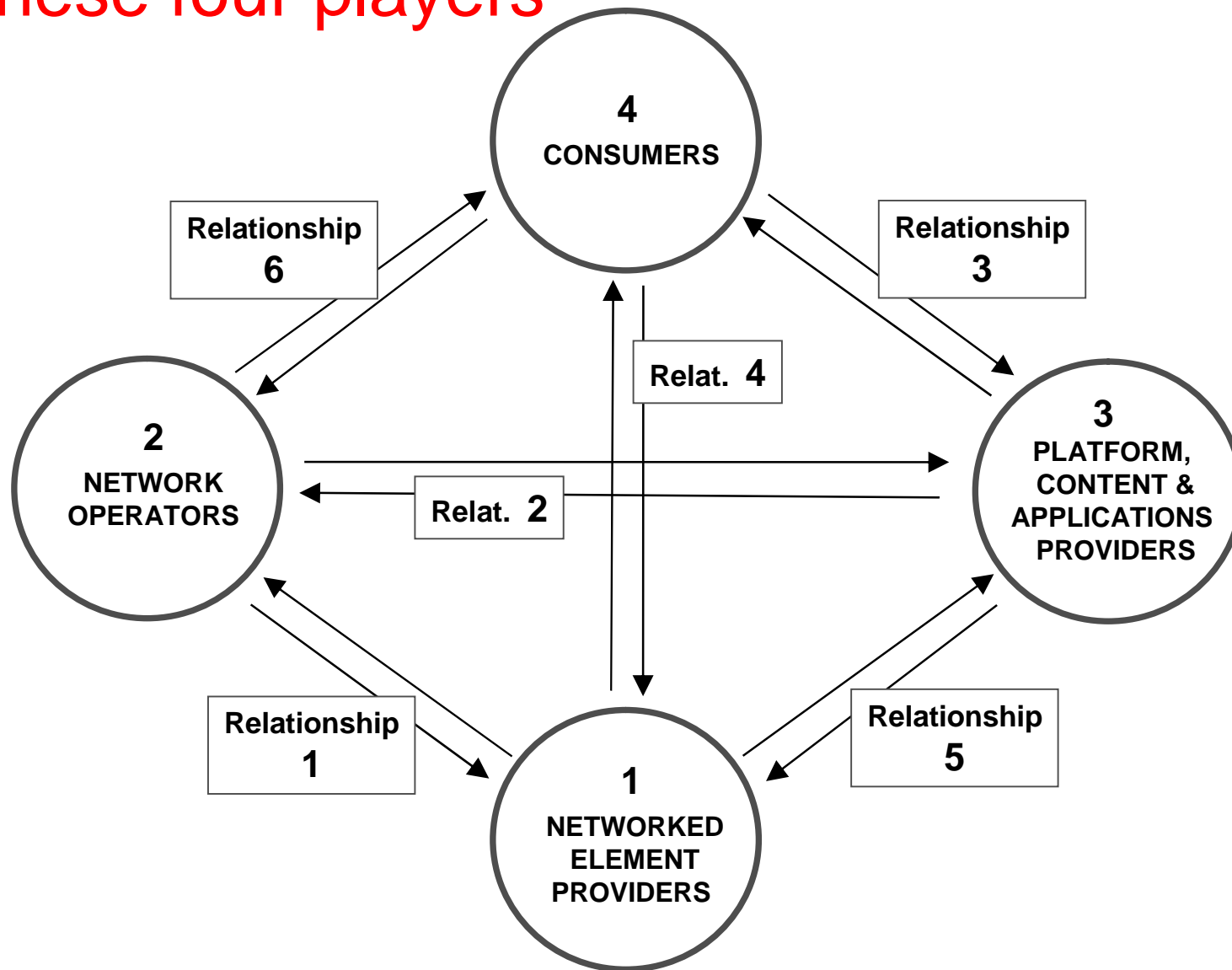
(4) final consumers

[NOTE: The first 3 are intermediate consumers.]

A Simplified Model of the New ICT Ecosystem



There are 6 symbiotic relationships between these four players



3 Flows within the Symbiotic Relationships

1. **Financial flow**, emerging from the buyer-seller relationship.

This creates financial incentives for knowledge-creation.

2. **Information flow**, as creators and users get to know more about each other.

3. **Material flow**, as the creators provide inputs (atoms or bits) for their users.

Examples of Symbiotic Relationships

Example 1

- **Symbiotic Relationship 1** between telecoms operators and their network element suppliers.
- While the suppliers do most of the R&D, the operators provide both the investment and user-knowledge feedback (see data at end).

Example 2

- **Symbiotic Relationship 3** between content & applications providers and final customers.
- E.g. web 2.0 relationships where the consumer is also an innovator and information provider.

Example 3

- **Symbiotic Relationships 1 & 6** Japan's overly innovative mobile phone makers who are not internationally competitive
- Who provide functionalities such as: digital broadcast (“One Seg”), camera and video, wireless LAN, high-speed data communication, IC credit payment.

Symbiosis – example 4

Apple's iPhone

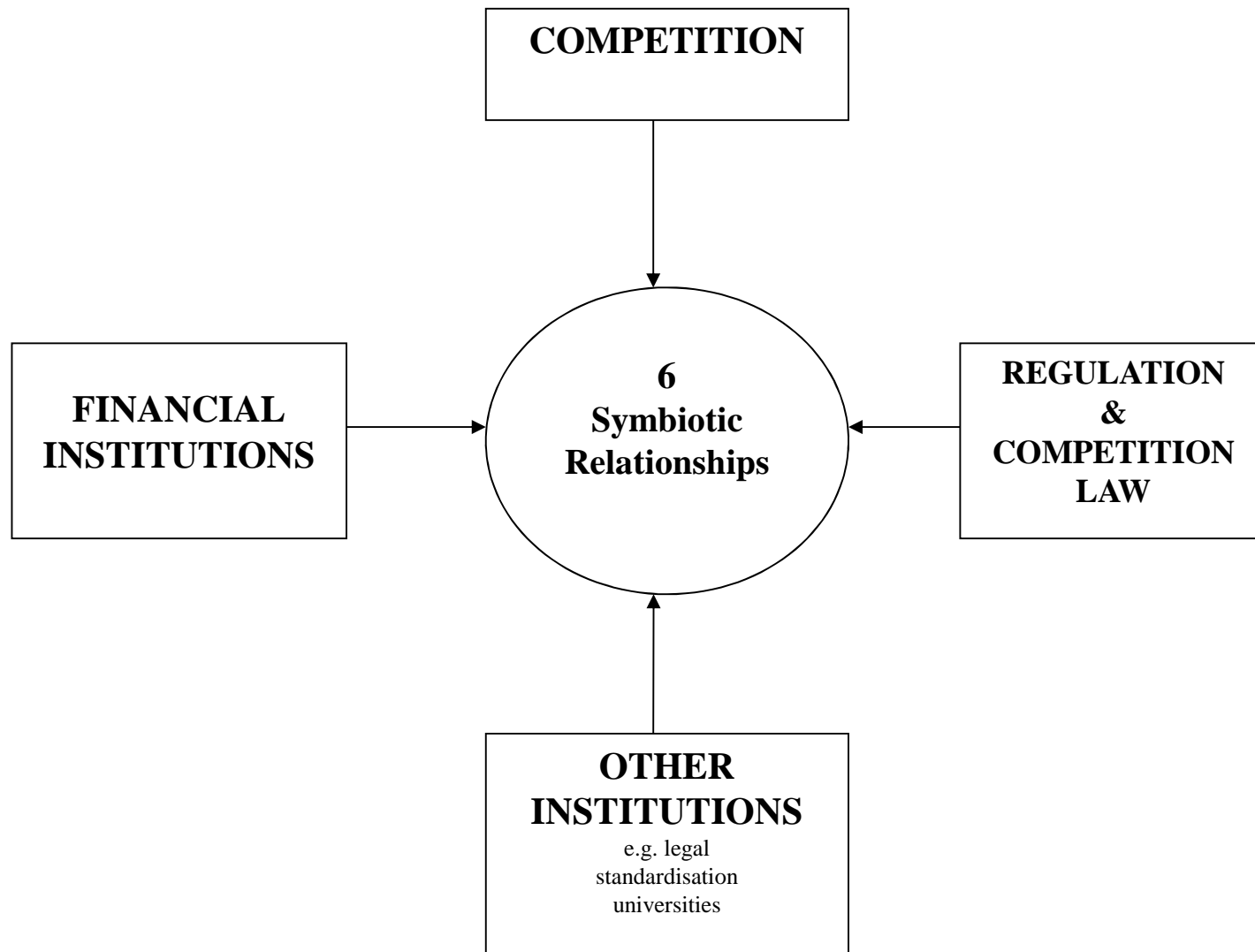
- Symbiotic relationship 4, between network element providers and final consumers (e.g. great design)
 - and symbiotic relationship 1, between network element providers and telecoms operators (e.g. AT&T)



The Environmental Context of the Knowledge-Creating Symbiotic Relationships

- Knowledge is always created locally within specific contexts, Antonelli (2008).
- There are 4 sets of influences on the symbiotic relationships, as shown in the next slide.

Influences to Symbiotic Relationships



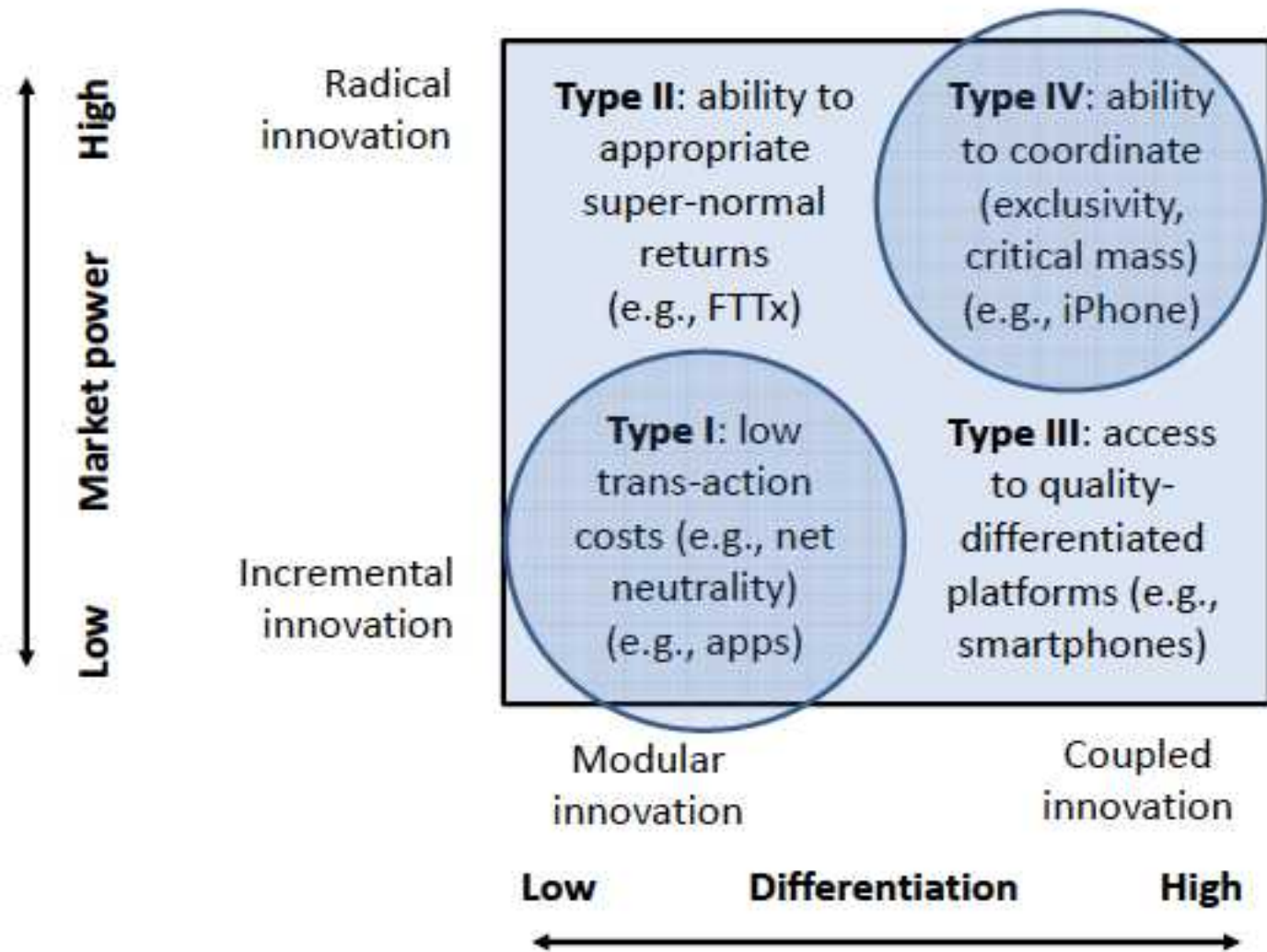
Innovation Perspectives (Bauer 2014)

- Coordination amongst players
 - Modular innovations (e.g., apps): coordination can effectively be achieved via interface (e.g., APIs)
 - Coupled innovations (e.g., mobile Internet) require cooperation beyond definition of an interface (e.g., security, synchronization of many players)

Innovation Perspectives

- Magnitude & Risk
 - Incremental innovations (affecting limited attributes of a product or service)
 - Radical innovations (change many attributes or alter them in more extensive ways)

Innovation Types I, II, III & IV



Case for Kenya-Institutional Frameworks

- ST&I Policy
- Science, Technology & Innovation Act 2013
- National Commission for Science Technology & Innovation, NACOSTI <http://www.nacosti.go.ke/>)
- Copyright Act
- KIRDI <http://www.kirdi.go.ke/>
- Konza Technocity (<http://www.konzacity.go.ke/>)
- Universities/Innovation/Incubation Centers

Despite above , In Kenya the Triple-Helix synergies are not yet active/actualized

Case for Kenya-Symbiotic Frameworks

From the perspective of the 6 symbiotic relationships, Kenya has the following situation:

Rel1: Net Element Providers & Operators

Excellent:-Operators & Equip Manufacturers
(not local)

Rel2: Net Operators & Content/App Providers

Excellent:-Zero rated Services (e.g Freebasics,
not local); Good no. on local Safaricom
Appstore

Rel3: Consumers & Content, App Providers

Poor: e.g Local Blogs, Apps exist but not yet
financially sustainable

Case for Kenya-Symbiotic Frameworks

Rel4: Network Elem Providers & Consumers

Poor: Most of these relationships commercialised abroad; output sold in local markets (iPhone, Samsung)

Rel5: Network Elem Providers & Content, App Providers

Average: Very few local apps making it to AppStore, Galaxy Apps;

Rel6: Operators & Consumers

Excellent: Voice, Data & Video services continue improving sales for Operators

Case for Kenya-Innovation Types

- **Type I** innovations are simple, require little co-operation and coordination between different stakeholders to achieve.
 - They are common in Kenya, particularly in our now famous innovation labs such as [C4DLab](#), [iHub](#), [Nailab](#) and [iLabAfrica](#). They simply need a skilled young man or woman, armed with a laptop and a bright idea to actualise.
- While Type I innovations are good and must be celebrated, they belong to the lower league in terms of their level of impact, both in terms of financial returns or scale.

Case for Kenya:-Innovation Types

- **Type II** Innovations have a larger, international scale and often require significant market power to execute. They include engineering products such as mobile Internet modems or wireless cards.
 - M-Pesa belongs in this category and is extremely successful in Kenya, and averagely successful regionally; not successful in SA.
- **Type III** innovations require moderated cooperation and coordination between different stakeholders to realise. E.g the smartphone market that has been dominated by Korean brands.
 - No Kenyan products available at the moment, though iHub had a product called **BRCK** designed locally but fabricated abroad

Case for Kenya-Innovation Types

- **Type IV** innovations require significant market power, extensive collaboration and coordination between international stakeholders to realise.
- Apple, Mac+ “i-Products”, belongs in this category. Google, Cisco, IBM, Microsoft and other major brands contribute innovations in this category.
- No Kenyan product in this category as yet.
 - KONZA Technocity aims to create the conducive environment for Type IV innovations in Kenya

Case for Kenya-Challenges

- Despite supporting Policy and Legislative framework, Research and Innovation output in Kenya is not yet globally competitive (no of patents, publications output)
- Position 92 (KE), 60(SA), (76) Tunisia, 49 (Mauritius) out of 141 economies, [Global Innovation Index 2015](#))
- Existing /ongoing ICT innovations tend to be individualistic and restricted within incubations & innovation centers and has little ability to scale up to global levels (Type III/IV innovation).
- Universities tend to be too academic (teaching) focused with little or no research output, let alone linkages to industry and public sector (government).
- Inability to absorb allocated limited national research budgets; allocation ends up as recurrent expenditure

Case for Kenya-Conclusions

- There maybe need to identify or create research based technology universities (e.g. Korea Inst of Advanced Science & Technology).
 - This would form the conducive environment for an active industry-academia-govt linkage that can harness the innovation opportunities within the ICT sector.
- Regulatory agencies should appreciate Symbiotic dynamics to avoid over-reliance on Competition as the sole driver for innovations.

References

- Theoretical Foundations, Triple Helix:-
http://triplehelix.stanford.edu/3helix_concept
- Fransman, M. (2009). Innovation in the new ICT ecosystem
- Bauer, J. M. (2014). Platforms, systems competition, and innovation:
- Brynjolfsson, E. (2011). Innovation and the E-economy
- ST & I Act 2013,
[/kl/fileadmin/pdfdownloads/Acts/ScienceTechnologyandInnovationNo28of2013.PDF](#)

ENDS

Thank YOU

Q& A