

Interconnection Regulation

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Presentation to
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For newly established regulators in the
Asia Pacific region

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Agenda

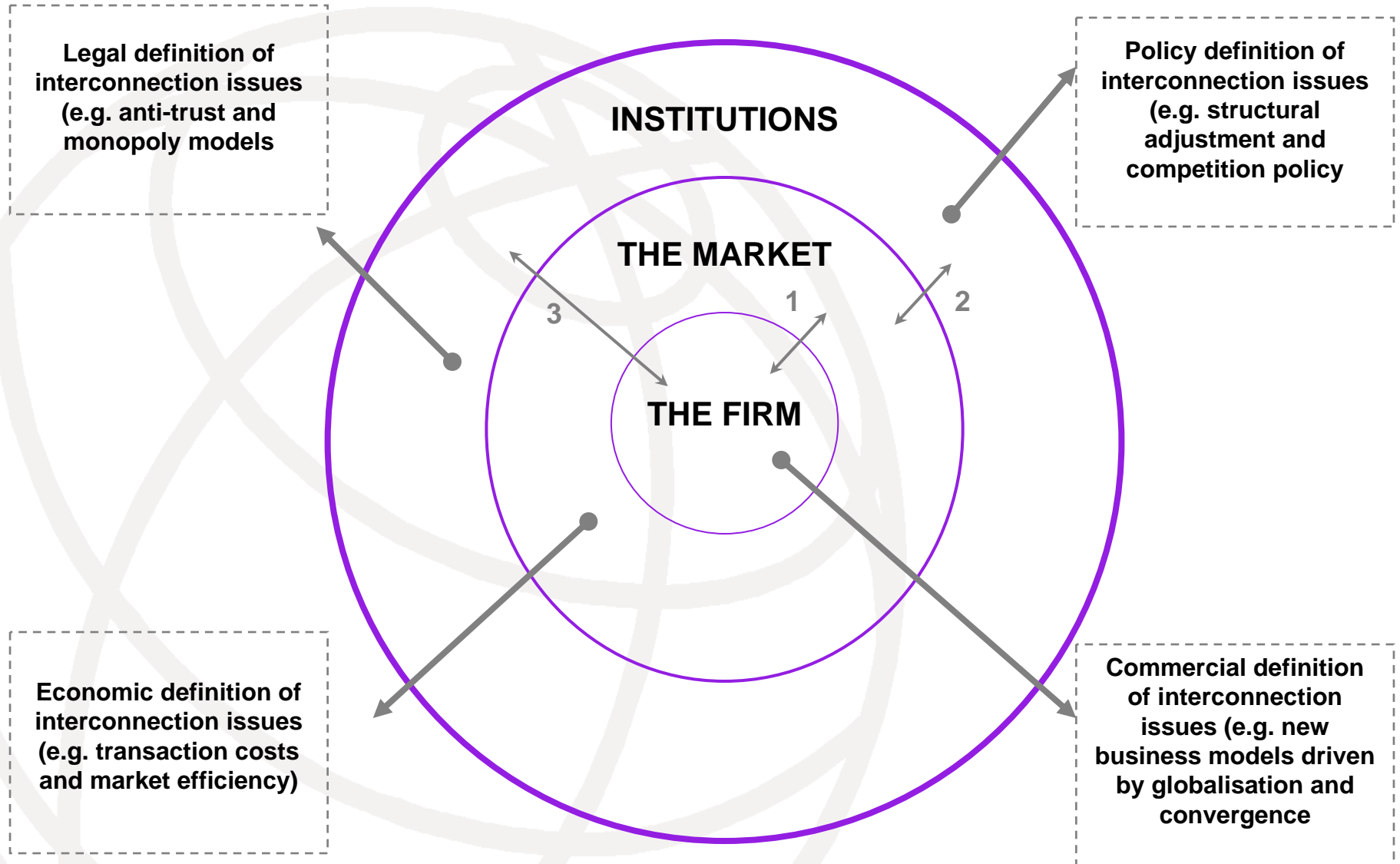


The agenda for today's presentation is:

1. Fundamentals of Interconnection
2. Interconnection Regulation
3. Key Interconnection Services
4. Interconnection Costing
5. Trends in Interconnection
6. Lessons for New Regulators

1. Fundamentals of Interconnection
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Interconnection In Context



What Is Interconnection?



The International Telecommunications Union defines interconnection as:

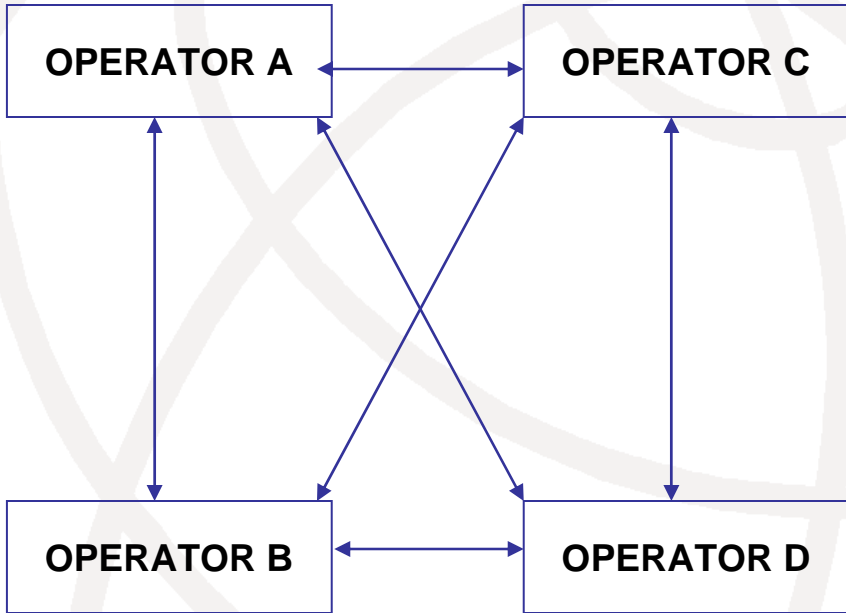
‘the set of legal rules, technical and operational arrangements between network operators that enable customers connected to one network to communicate with customers of other network’

The World Bank defines interconnection as:

‘the physical and logical linking of public electronic communications networks used by the same or a different undertaking in order to allow the users of one undertaking to communicate with the users of the same or another undertaking or to access services provided by the parties involved or other parties who have access to the network’

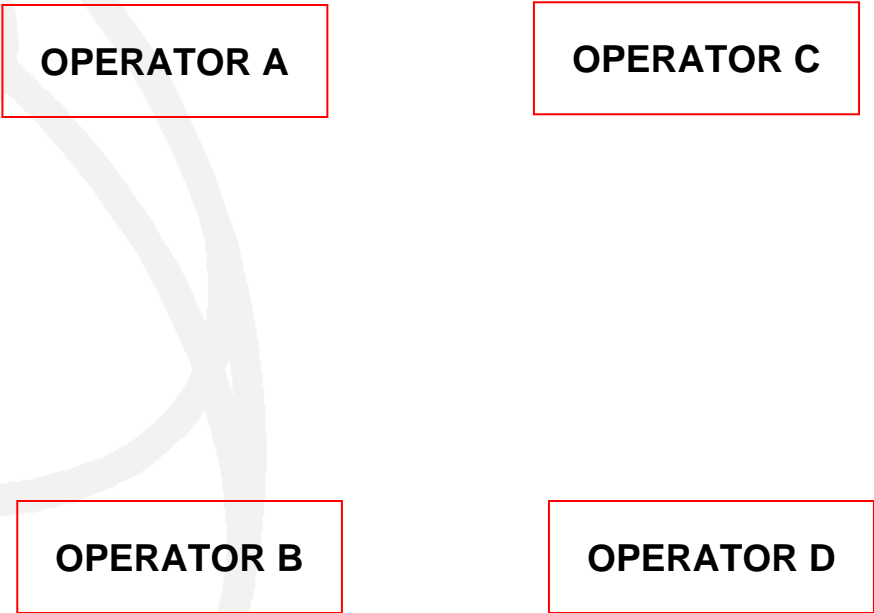
Interconnection v No Interconnection

Interconnection



- Any to Any Connectivity
- Six ICAs in the above example

No/ Limited Interconnection



- Only 'on-net' calls
- Limits your addressable market

Importance of Interconnection



Interconnection is required because:

- No single operator can own or lease all the network required to switch calls to and from all possible locations
- No operator has ever owned or leased all the network components for international calls
- The requirement for any to any connectivity is paramount

Interconnection Drivers

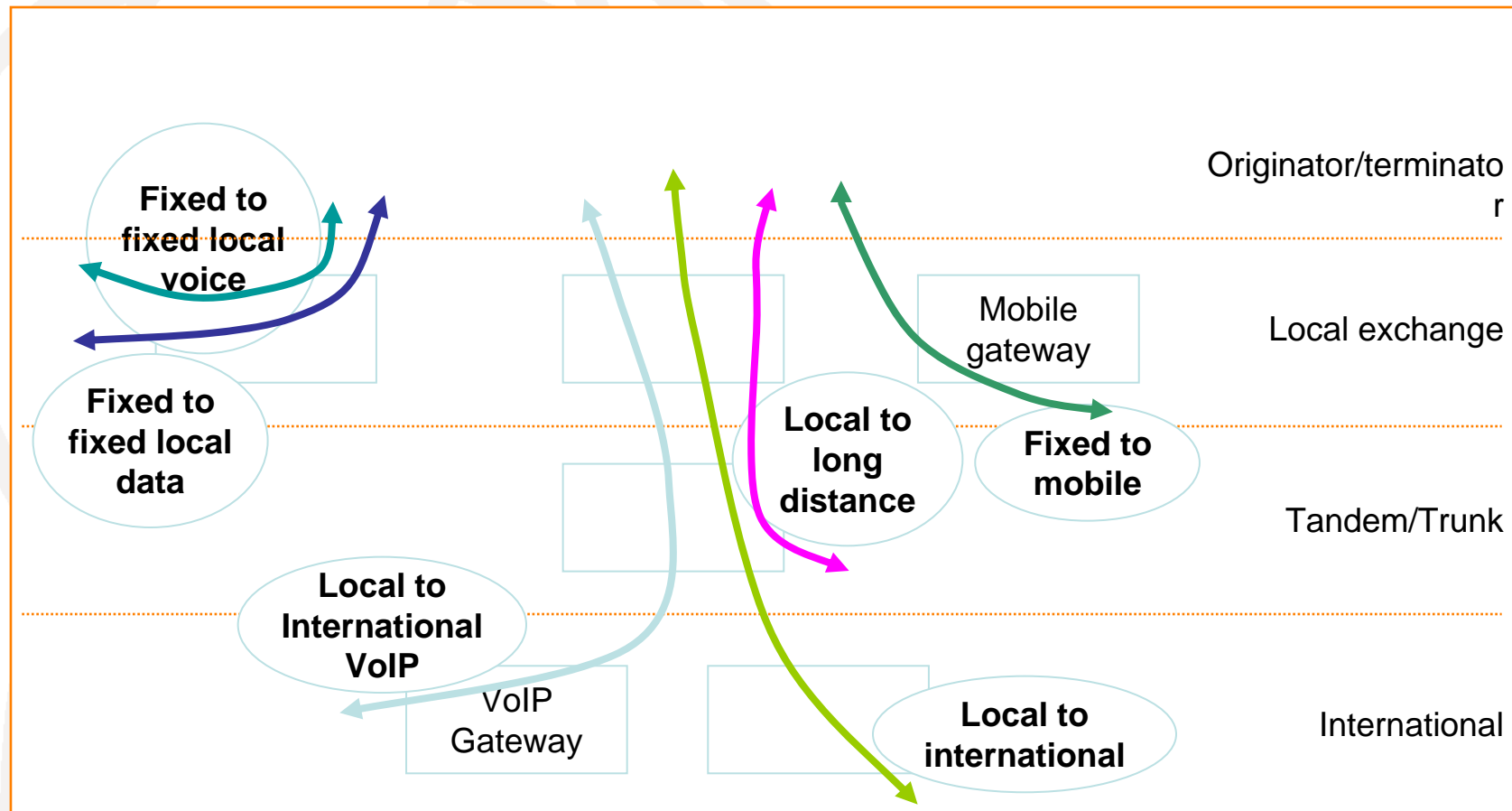


- Promotes efficient inter-network trade
- Avoids wasteful duplication of infrastructure and services
- Ensures users are not closed out
- Essential to drive competition policy, I.e. enabling efficient entry to monopoly markets
- Ensures users can communicate with all other users
- Ensures users can exercise choice in supplier of service

Call Types under a Standard Interconnection Agreement



Interconnection and access: illustrative range of possible call types)



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Why Interconnection Regulations are Important



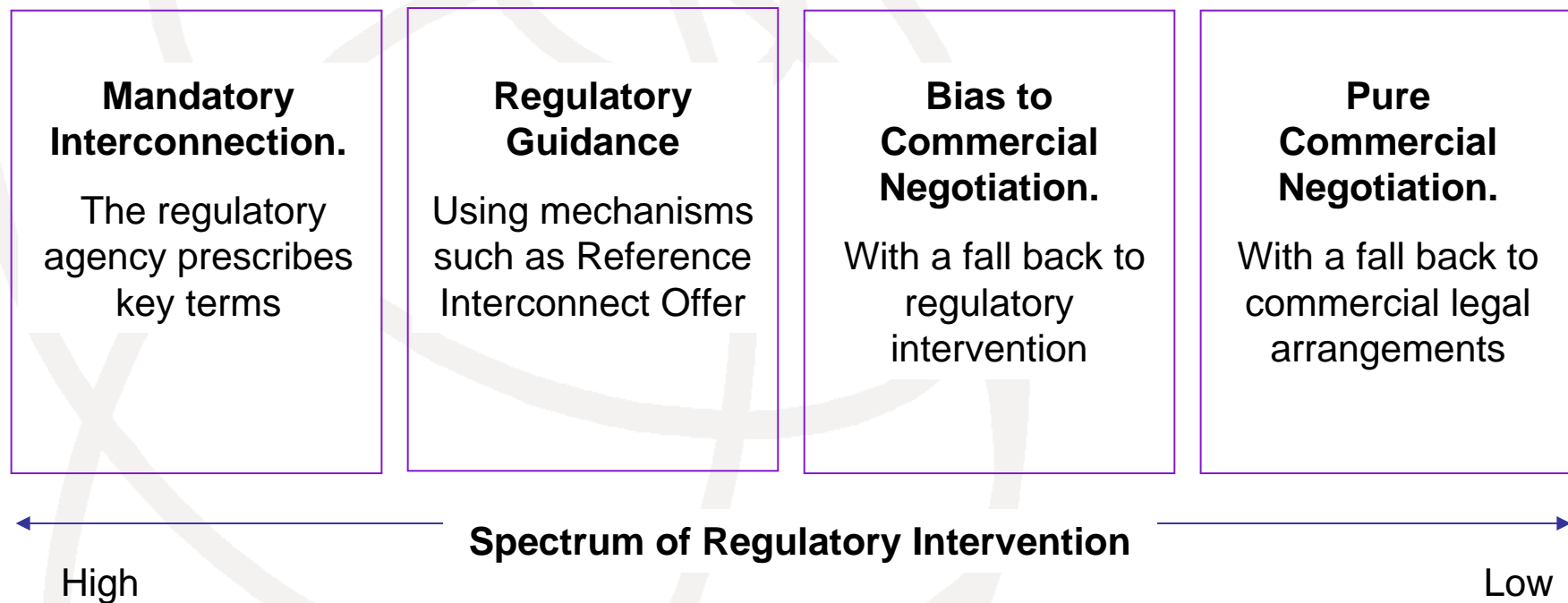
Through interconnection, an established operator can frustrate competition in a variety of ways including:

- Charging **excessive rates** for access;
- Unnecessarily **delaying the provision of equipment and facilities** needed for interconnection;
- **Misuse of customer and competitive information;**
- Imposing **limits on the number of points of interconnection;**
- Imposing unnecessarily **stringent technical standards** on interconnection; and
- Supplying a **lower grade of interconnecting services** to interconnecting parties.

Generic Types of Interconnection Regulation

In terms of regulation of interconnection, there are four generic approaches.

Effective and efficient interconnection arrangements need to be backed by the regulator.



The regulation of interconnection is being driven **at the international level across different jurisdictions by multilateral treaties:**

- WTO
- APEC
- European Commission

The interconnection models put forward by the WTO, APEC and the EU provide a **common basis for identifying ‘high level’ interconnection principles:**

- Provides regulatory guidelines in advance
- Dominant carrier (or significant market power - SMP) focus
- Transparency
- Non-discrimination
- Cost orientation

Interconnection Principles

The development of a robust and workable interconnection framework is critical for the long-term success of a country's telecommunications sector.

As a minimum, an interconnection framework should encompass the following interconnection principles:

- **General principles** including the duty to interconnect with other licensed operators and the principles of non-discrimination;
- Principles relating to **interconnection charging** (wholesale prices which licensed operators will pay for call termination and other carrier-to-carrier services and facilities);
- The **regulator's proposed approach and deadlines** with respect to interconnection negotiations;
- **Technical issues** related to interconnection including those related to the important point of interconnection; and
- Promotion of **customer/consumer interests** and **provision/protection of information**.

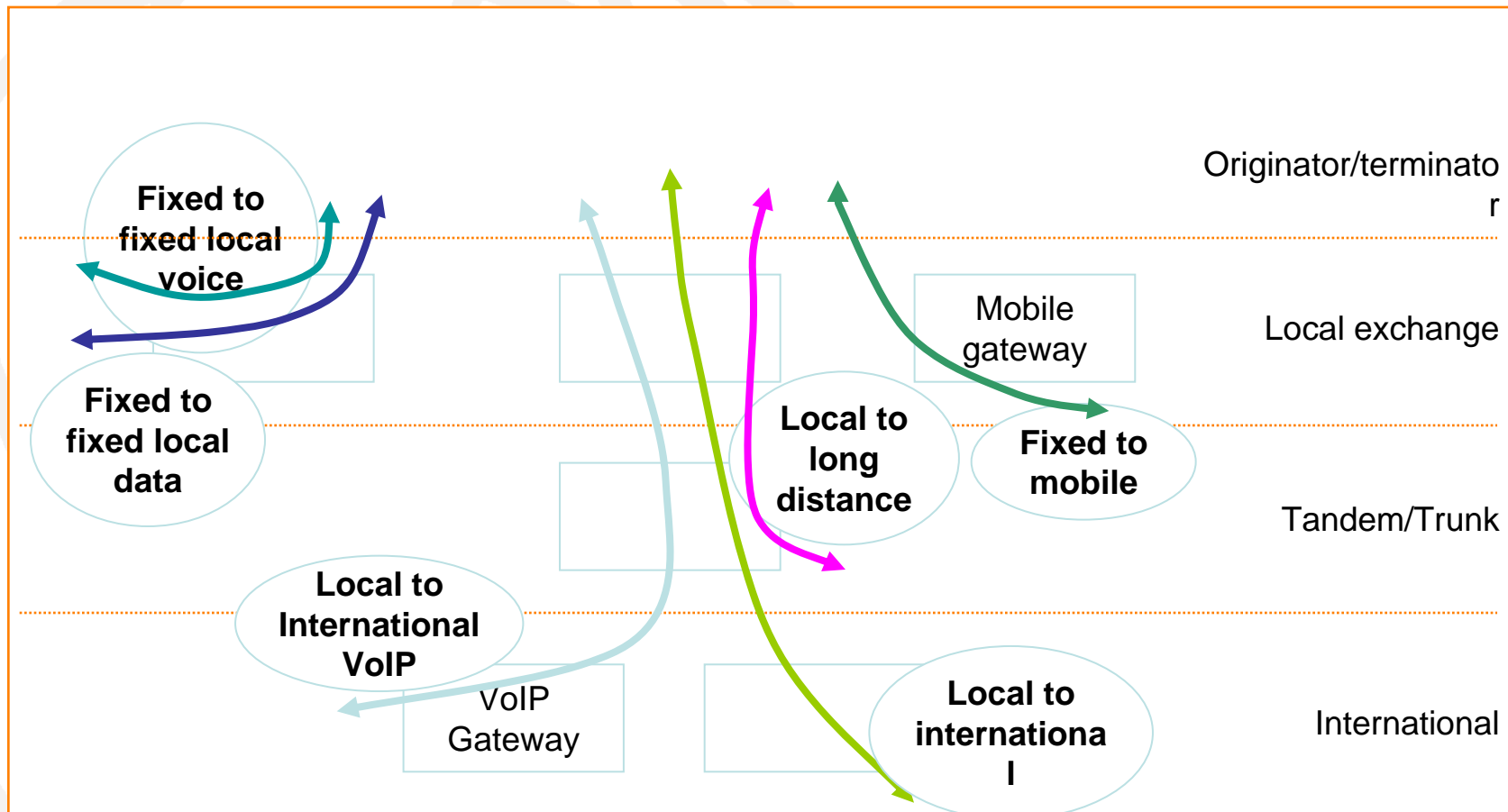
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Interconnection services are defined as encompassing:

- Basic interconnection services (such as origination, termination and transit services)
- Ancillary services (such as operator assisted services)
- The use of network elements (such as local loops, switches, transmission facilities, network access devices, operating support systems, signalling systems and call-related databases)
- Enabling services (such as equal access, preselection and number portability)

Call Types Under A Standard Interconnection Agreement

Interconnection and access: illustrative range of possible call types)



Origination and Termination Service



Origination Service is a service for carriage of call communications to a POI/POP from a calling party directly connected to the Access Provider's fixed or mobile network

Termination Service is a service for the carriage of call communications from a POI/POP to a called party directly connected to the Access Provider's fixed or mobile network

Interconnect Capacity service is a facility and/or service which enables the physical connection between the Access Provider's network and an Access Seeker's network for the purpose of providing an interconnection service.

The preferred mode of provisioning Interconnect Capacity Service between the operators is in-span interconnection.

- This means that the physical connection for a POI lies at some point along the physical cable linking the Operators networks.

Transmission capacity service is a service for the supply by an Access Provider to an Access Seeker of transmission capacity (other than interconnect capacity) where requested for operation and use as part of, in or in connection with the Access Seeker's network, whereby call communications are carried between transmission points (not being customer transmission points) via network interfaces at such transmission rate as may be agreed by the operators on a permanent basis

In some countries, certain transmission routes have been deregulated in light of a range of emerging factors which include *inter alia* competitive transmission supply including use of microwave technology and the substitutability of unbundled local loop for transmission tails.

- For example, in Australia, the Australia Competition and Consumer Commission decided that there was sufficient competition in all intercapital routes to warrant deregulation on those routes.

The International Telecommunications Union defines infrastructure sharing as:

‘the sharing of airtime and/or network facilities between one or more operators’.

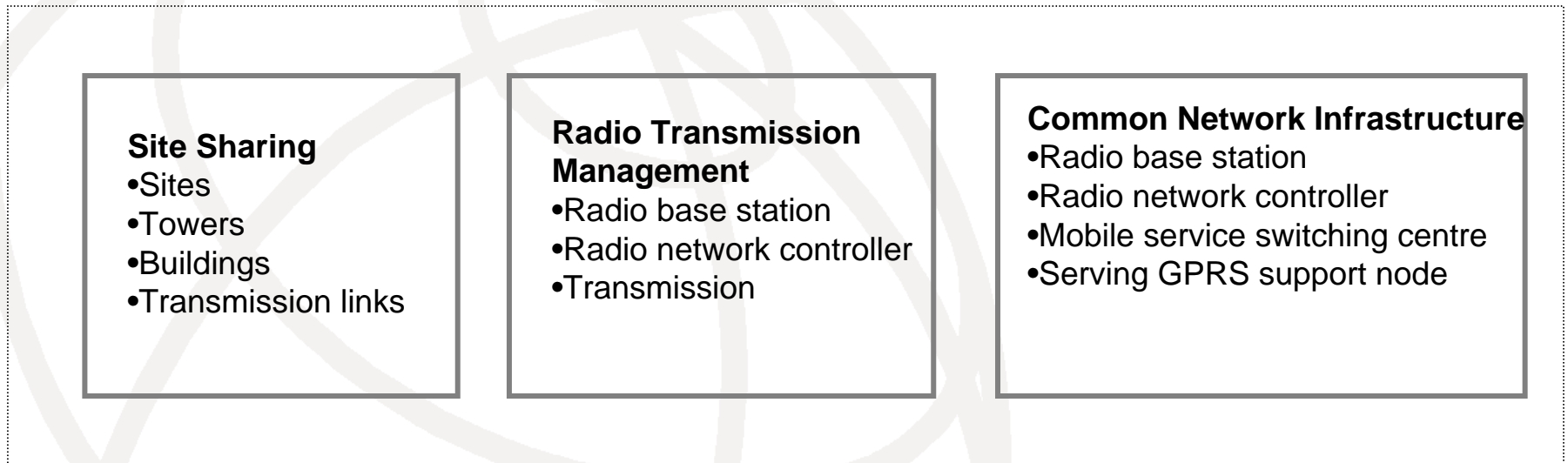
The objective of infrastructure sharing is to facilities **maximise the use of existing network** which includes *inter alia*:

- Network capacity and capabilities;
- Existing base station sites;
- Backbone;
- Radio links; and
- Other resources to reduce infrastructure duplication and costs.

Infrastructure sharing is particularly established in the **mobile sector**.

Infrastructure Sharing Models

Mobile networks can be shared to different degrees and all parts of a mobile network can be shared between two or more network operators.



Increasing level of sharing

Basic Elements of Interconnection Architecture and Design



- Point of Interconnection
- Access and Symmetrical Interconnection
- Hand over
- Call Collection Areas
- Equal Access
- Pre-selection

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Interconnection Costing In Context



- Interconnection charges are typically the largest single cost item for new entrants.
- Interconnection charges are central to the success of competition.
- The objective of interconnection cost setting is to approximate the outcome of long run competitive conditions.
- Interconnection costing is laden with complex and often subjective issues.

Interconnection costs typically fall into two broad categories:

Set up or Establishment Costs:

- These are once off costs incurred in preparing or conditioning networks for interconnection.
- Little controversy surrounds set up interconnection costs.
- These are “once only” costs which are typically shared between incumbent and new entrant networks.

Subsequent Costs:

- Recurrent costs incurred in providing interconnection services.
- These costs are the “main game”

There is a wide number of approaches that have been proposed in the economic literature and/or have been practically applied in overseas jurisdictions which could be used to determine the subsequent cost of providing interconnection.

The major alternative approaches for determining interconnection costs are:

- Long run incremental cost (LRIC)
- Fully distributed cost (FDC)
- Opportunity cost approach (ECPR)

Benchmarking is the process of establishing interconnection charges based on charges in other jurisdictions.

Benchmarking has two main purposes in interconnection pricing:

- Where detailed cost models can be estimated, benchmarking can be used as a common sense check on the results of the cost modelling.
- Alternatively, benchmarking can be used to directly set interconnection charges.

Regulators in many jurisdictions have used benchmarking to set initial interconnection rates. For example, New Zealand and Sri Lanka.

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Key trends that are emerging or likely to emerge in the future which may redefine the terms under which interconnection is regulated and negotiating include:

- the development of **multiple interconnection agreements** with **differentiated arrangements**;
- the introduction of **volume-sensitive interconnection pricing** and the **erosion of wholesale/retail differentiation** for network pricing;
- **Service unbundling**;
- More **selective network unbundling** and **de-averaging of interconnect prices**;
- Pricing based on **contracted capacity** rather than actual traffic volumes;
- The **internationalisation** of interconnect arrangements; and
- The **packetisation** of telecoms networks.

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Key Challenges Faced By New Regulators



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Establishing a regime to develop and implement interconnection charges, interconnection terms and conditions and other provisions can place significant demands on a country's legal and administrative infrastructure.

Key challenges include:

- Transparency and access to information;
- The physical state of telecommunications networks in the country;
- Regulating state-owned operators at arm's length basis;
- Resolution of interconnection disputes; and
- Compliance with WTO obligations and free trade negotiations.

Lessons For New Regulators



- Regulators should be proactive rather than reactive to changes in the environment.
- Regulators need to look beyond the present and set trends for future interconnection.
- Merely setting up regulatory agencies is insufficient. The regulatory agencies need to be vested with adequate autonomy, functionality and enforcement powers in regulating interconnection matters.
- Regulatory agencies must have the requisite technical background and mindset to adopt new models which facilitate sector growth.
- Efficient interconnection charges should depend on both cost and demand. That is, the more elastic the demand, the less should be the access price.
- Before adopting any cost model, it would be best to see the context of its usage and the assumptions under which it operates.
- Availability of data is critical to calculation of interconnection costs.
- Technology neutrality is key in regulation of interconnection services and setting of interconnection charges.

Thank You...

**I would be pleased answer to any queries
you might have ...**