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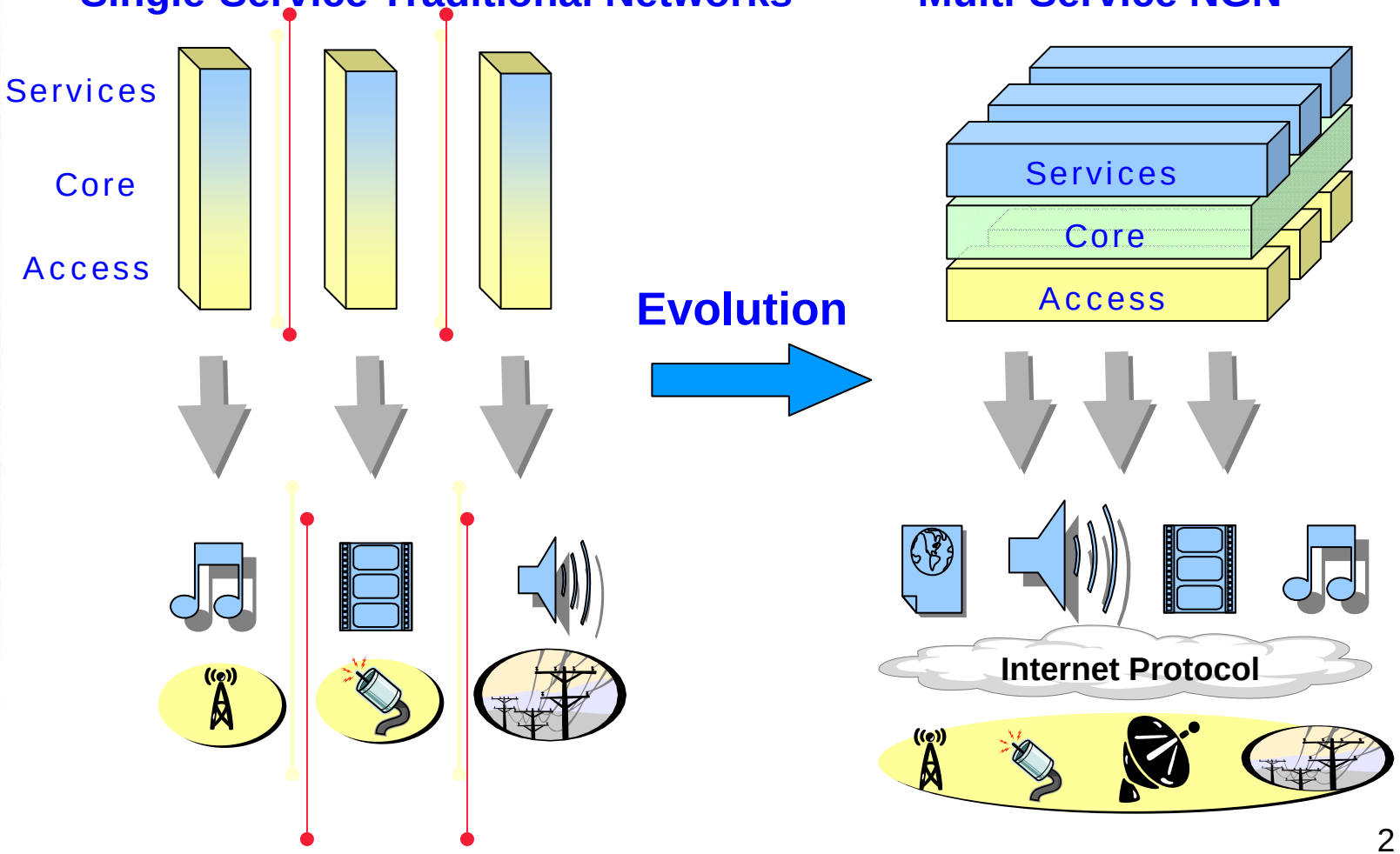
Consultancy Study in Relation to Implications of Next Generation Network (NGN) on Regulation of Telecommunications Services in Hong Kong

Legislative Council
Panel on Information Technology and Broadcasting

12 March 2012

Traditional Telecom Network vs NGN



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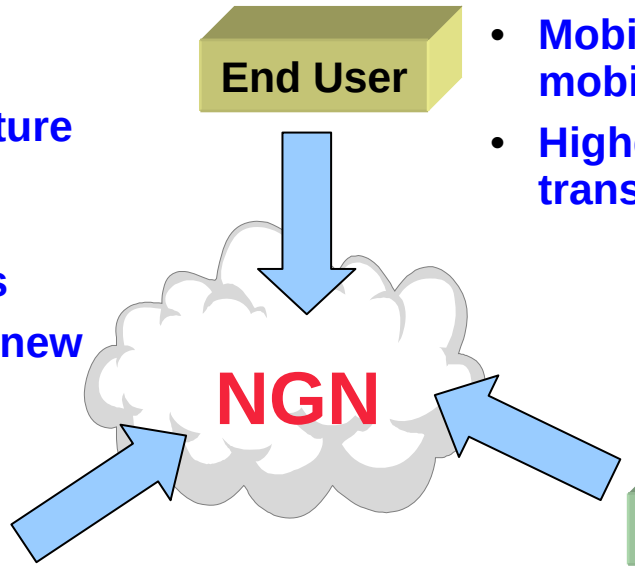
Benefits of NGN

- Lower capital expenditure and operating cost
- Support service and network convergences
- Faster introduction of new services
- New business opportunities



- Multimedia services
- Mobility through fixed-mobile convergence
- Higher bandwidth for data transmission

- New products
- More revenues

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Carriers in all advanced economies are in the process of rolling out, or migrating to, NGN.

NGN Development in Hong Kong

- **A few carriers have already launched their NGNs**
- **Other carriers are in the process of migrating their existing networks to NGNs**
- **NGN development in Hong Kong is market-driven without any government funding**
- **In face of the advent of NGN, the Government's main roles are:**
  - To act as a facilitator
  - To ensure that consumer benefits are safeguarded and effective market competition is sustained

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International Telecommunications Union (ITU) News

"***Hong Kong China could act as a test laboratory for the rest of the world for high density, high penetration broadband roll-out***.

Hong Kong China has a leading telecommunications economy, with world-class infrastructure. Digitized since 1995, the Special Administrative Region has been wired extensively with optical fibre cables. The vast majority of households are covered by the extensive broadband network […] the roll-out has been characterized by the use of practically every type of technology.

General guiding principles for government are simple: "big market, small government" and "market leads, government facilitates". ***The role of government is to provide a facilitating environment and to intervene only where there are obvious imperfections in market mechanisms.***

This macro-economic policy applies to the telecommunications sector, resulting in one of the most competitive markets in the world. *The government has not provided any direct investment or any forms of subsidy for network construction or for providing telecommunication services in Hong Kong. But there has been no shortfall either in consumer demand or in private-sector investment."*

(http://www.itu.int/net/itunews/issues/2011/07/29.aspx)

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ITU Global Symposium for Regulators

2011 Discussion Paper on *"Setting National Broadband Policies, Strategies and Plans"* prepared by ITU Senior Telecom Expert

"With a high density population in an urbanised environment and high penetration rates, Hong Kong has opted to remain faithful to ***pro-market mechanisms, facilities-based competition, technology neutrality, light handed regulation****, and a dependence on* ***totally private investment*** *in telecommunications.*

As a result, Hong Kong has been able to maintain ***consistency, continuity and certainty*** *in its policies for the telecommunications sector and in* ***encouraging innovation.***

Whilst these circumstances are not reflected in most countries, ***Hong Kong nevertheless gives us some understanding of the future dynamics we are moving towards*** *as penetration of broadband increases, and urban population density grows."*

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(http://www.itu.int/ITU-D/treg/Events/Seminars/GSR/GSR11/documents/03-Broadband%20Policies-E.pdf)

The New York Times

Cheap, Ultrafast Broadband? Hong Kong Has It

“Hong Kong residents can enjoy astoundingly fast broadband at an astoundingly low price […] a new option for its fiber-to-the-home service: a speed of 1,000 megabits a second for less than $26 a month.

In the United States, we don’t have anything close to that.”

Published on 5 March 2011
(http://www.nytimes.com/2011/03/06/business/06digi.html)

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Objective of the Study

- **To have a holistic review of the implications of development of NGN on the existing regulatory framework**
- **To identify the necessary changes to the framework to ensure that it remains updated and appropriate in the NGN era**

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The Consultant's Recommendations

- **The study reviewed a range of issues in relation to the telecommunications regulatory framework, including:**
  - Interconnection
  - Next generation access
  - Network security
  - Emergency call service
- **Some recommendations could be taken forward by OFTA in the short term**
- **Some recommendations are for longer term implementation**

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Recommendations that could be taken forward by OFTA in the short term

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Interconnection (1)

- **Three types of voice telephony traffic**
  - Between two mobile phones
  - Between a fixed line and a mobile phone
  - Between two fixed lines

- **Mobile-Mobile Interconnection Charge**
  - No regulatory guidance
  - Determined by the market through commercial negotiations

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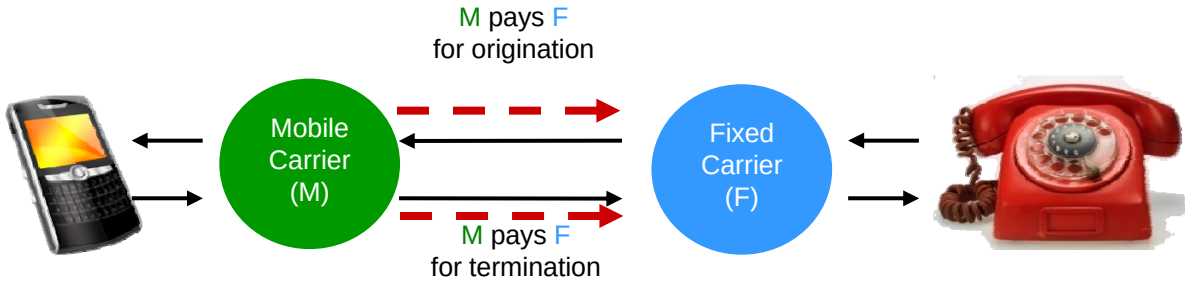
Interconnection (2)

- **Fixed-Mobile Interconnection Charge**
  - Prior to April 2009 – Subject to regulatory guidance of "Mobile Party's Network Pays (MPNP)" model



MPNP: Interconnection charge was paid by the mobile carrier

  - Regulatory guidance was withdrawn in April 2009 in view of fixed-mobile convergence
  - Since then, the industry has in general adopted "Bill and Keep (BAK)" arrangement, i.e. interconnecting parties agree to exchange traffic with each other without the levy or payment of interconnection charges

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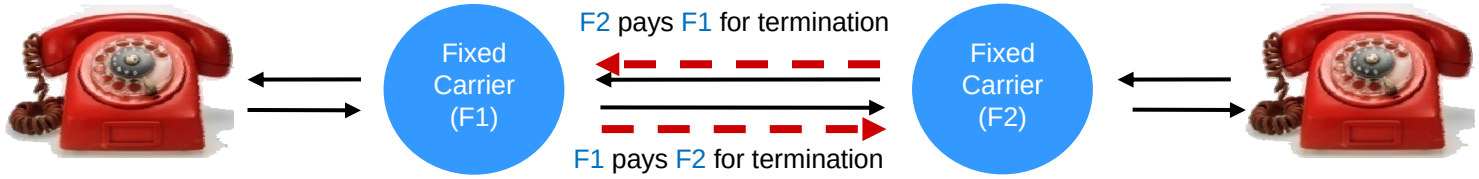
Interconnection (3)

- **Fixed-Fixed Interconnection Charge (FFIC)**
  - Still subject to regulatory guidance of “Calling Party’s Network Pays (CPNP)” model



CPNP: The originating fixed carrier pays a termination charge

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Interconnection (4)

- **Strong case for withdrawing the regulatory guidance for FFIC such that all types of voice interconnection charging in Hong Kong will be left to the market to decide through commercial negotiations**
- **Likely to lead to an outcome of Bill and Keep arrangement for FFIC**
  - Obviate the need for cost allocation in estimating the cost of voice termination on a multi-service NGN
- **Recommendation**
  - OFTA should consult the industry on the withdrawal of regulatory guidance for FFIC as soon as possible

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Interconnection (5)

- **NGN interconnection architecture**
  - Direct bilateral interconnection or interconnection through common location?
  - Choice is usually driven by commercial considerations of the interconnecting parties
- **Standards for ensuring interoperability with NGNs**
- **Under the Government's light-handed and market-driven approach, it will be more appropriate for the industry to discuss and reach consensus on these issues**
- **Recommendation**
  - NGN Working Group and Technical Standards Advisory Committee of OFTA should discuss and develop the appropriate interconnection architecture and standards for interoperability for Hong Kong

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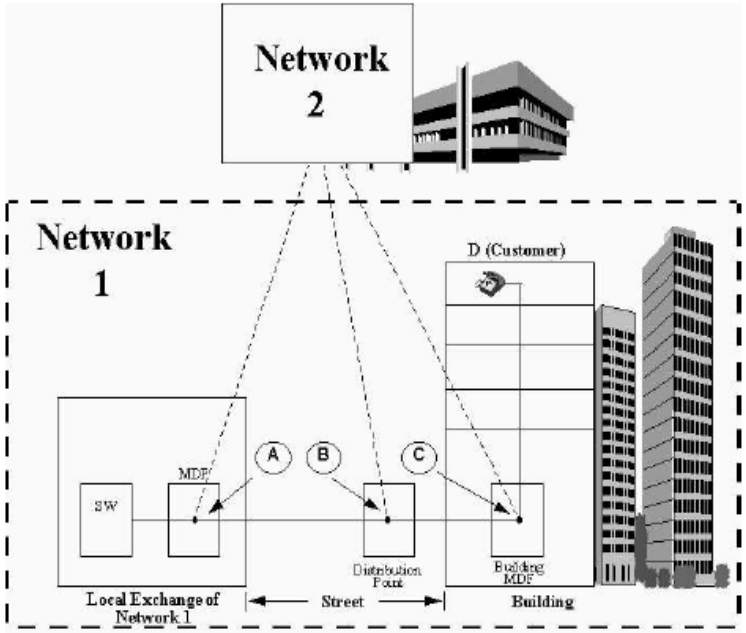
Next Generation Access (NGA) (1)

- **NGA**
  - Access network of an NGN
  - May be wired or wireless
- **Wired access network runs from telephone exchange (A) to the building (C), via the in-building telecommunications system (IBTS) within the building, to individual customer (D)**



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NGA (2)

- **If a fixed carrier does not have its own IBTS inside a building, it would need to share the existing IBTS in order to provide services to residents or occupants of that building**
- **Effective sharing of IBTS within buildings is a critical requirement for the comprehensive rollout of NGA and the provision of high-speed broadband services to end customers in the buildings**
- **Recommendation**
  - Technical Standards Advisory Committee of OFTA should consider whether standards are required at the relevant interfaces for effective sharing of IBTS among fixed carriers

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Network Security (1)

- The architecture of NGN moves from a closed platform to an open platform that runs everything over Internet Protocol (IP) technologies
- The chance of network intrusion will inevitably increase
- NGN needs to have proper security measures in place to fend off malicious attacks

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Network Security (2)

- **With a view to enhancing network security in Hong Kong, OFTA has issued:**
  - NGN security guidelines
  - Guidelines on security aspects for public Wi-Fi service
  - Guidelines for cable-based external carriers and ISPs to report network and service outage to OFTA
- **There are currently no minimum network security standards in Hong Kong**
- **Recommendation**
  - Technical Standards Advisory Committee of OFTA should establish minimum network security standards as well as a mechanism for ensuring compliance with these standards

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Emergency Call Service (ECS)

- **Based on public interest ground, NGN carriers should provide the public with free access to ECS, same as traditional network carriers**
- **NGN carriers should ensure that emergency calls can be reliably and immediately delivered across their networks and network gateways to the ECS centres of the Police**
- **Recommendations**
  - Technical Standards Advisory Committee and the NGN Working Group of OFTA should develop NGN signalling standards as well as specifications for reservation of sufficient transport capacity in NGN to enable prioritisation of delivery of emergency calls over NGN

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Recommendations to be considered in the longer term

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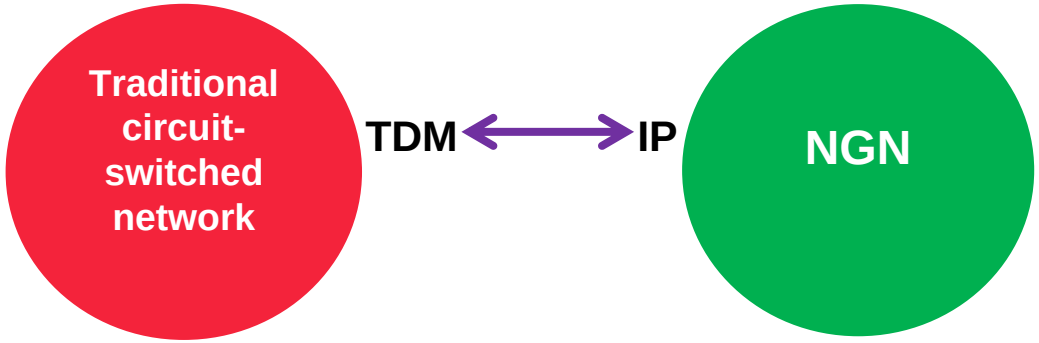
Interconnection (1)

- **Time Division Multiplexing (TDM) – technology adopted by traditional circuit-switched telecommunications networks**
- **IP – technology adopted by NGNs**
- **When a message is transmitted between a traditional network and an NGN, technical conversion between TDM and IP needs to take place and cost will be incurred**



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Interconnection (2)

- **Currently, we have fewer NGN carriers in Hong Kong than traditional network carriers**
- **TDM-IP conversion cost is fully borne by NGN carriers**
- **As more traditional networks migrate to NGN in the future, such cost arrangement may not be reasonable**
- **Recommendation**
  - OFTA should consider issuing guidance in due course if the issuing of sharing TDM-IP conversion cost cannot be resolved by the industry

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Interconnection (3)

- **Under section 36A of the Telecommunications Ordinance (Ordinance), the Telecommunications Authority (TA) is empowered to determine the level of interconnection charge**

- **The interconnection charges in a determination shall be based on the relevant reasonable costs attributable to interconnection**

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Interconnection (4)

- **The TA, in determining interconnection charges, should be provided with the flexibility to adopt more economically efficient models, instead of simply cost-based models**

- **The requirement to set cost-based interconnection charges in a determination may create uncertainty for the industry as carriers may commercially agree not to impose any interconnection charges among themselves**

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Interconnection (5)

- **Recommendation**
  - OFTA should consider a review of section 36A of the Ordinance in due course such that the basis for determining interconnection charges under the Ordinance can reflect economic efficiency, which includes but is not limited to cost-based considerations

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NGA (1)

- **Local fixed carriers may need to have access to common parts of buildings to install telecommunications facilities for provision of services to the residents or occupants of the buildings**

- **The TA may grant authorisation under section 14(1) of the Ordinance to a local fixed carrier for accessing common parts of buildings**

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NGA (2)

- **Fixed carriers encounter difficulty in gaining access to common parts of “single-owner” buildings**
  - Difficult to demonstrate that there are common parts in “single-owner” buildings
  - This creates obstacles for fixed carriers in rolling out their NGA to these buildings
- **Recommendation**
  - OFTA should consider a review of section 14 of the Ordinance in due course such that fixed carriers will have the same access right to common parts of “single-owner” buildings, which they currently enjoy for “multiple-owner” buildings

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Way Forward

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Way Forward (1)

- **Some recommendations have already received broad support from the industry and OFTA will follow up on them shortly**
  - To consult the industry on withdrawal of regulatory guidance for fixed-fixed interconnection charge
  - To task the relevant working groups and advisory committees to start discussion on:
    - Interconnection architecture
    - Standards for interoperability
    - Standards for effective sharing of in-building telecom systems
    - Minimum network security standards
    - Signalling standards as well as specifications for reservation of transport capacity for prioritisation of delivery of emergency calls over NGNs

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Way Forward (2)

- **Some recommendations are to be taken forward in the longer term**
- To consider issuing guidance if the issuing of sharing TDM-IP conversion cost cannot be resolved by the industry
- To consider a review of the Ordinance in relation to:
  - The basis of determining interconnection charges
  - The access right to common parts of “single-owner” buildings

- **OFTA will closely monitor the NGN development in Hong Kong and follow up on these issue in due course**

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Way Forward (3)

- **OFTA will consult the relevant stakeholders and the public before any final decision is to be made as regards the existing telecommunications regulatory framework in response to the NGN development**

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End

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