



# Radio Station Licensing





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- Introduction
- Radio Station Licensing of some Administrations
- Notification of Frequency Assignments for MIFR
- View of Future Radio Station Licensing

# 1. Introduction

Radio station is the source of radio wave, and the management of radio station is the most important foundation of spectrum management.

## DEFINITION & PROVISION

- **Definition of Station:** One or more transmitters or receivers or a combination of transmitters and receivers, including the accessory equipment, necessary at one location for carrying on a radio-communication service, or the radio astronomy service.
  - RR Article 1.61
- No transmitting station may be established or operated by a private person or by any enterprise without a license issued in an appropriate form and in conformity with the provisions of these Regulations by or on behalf of the government of the country to which the station in question is subject.
  - RR Article 18.1

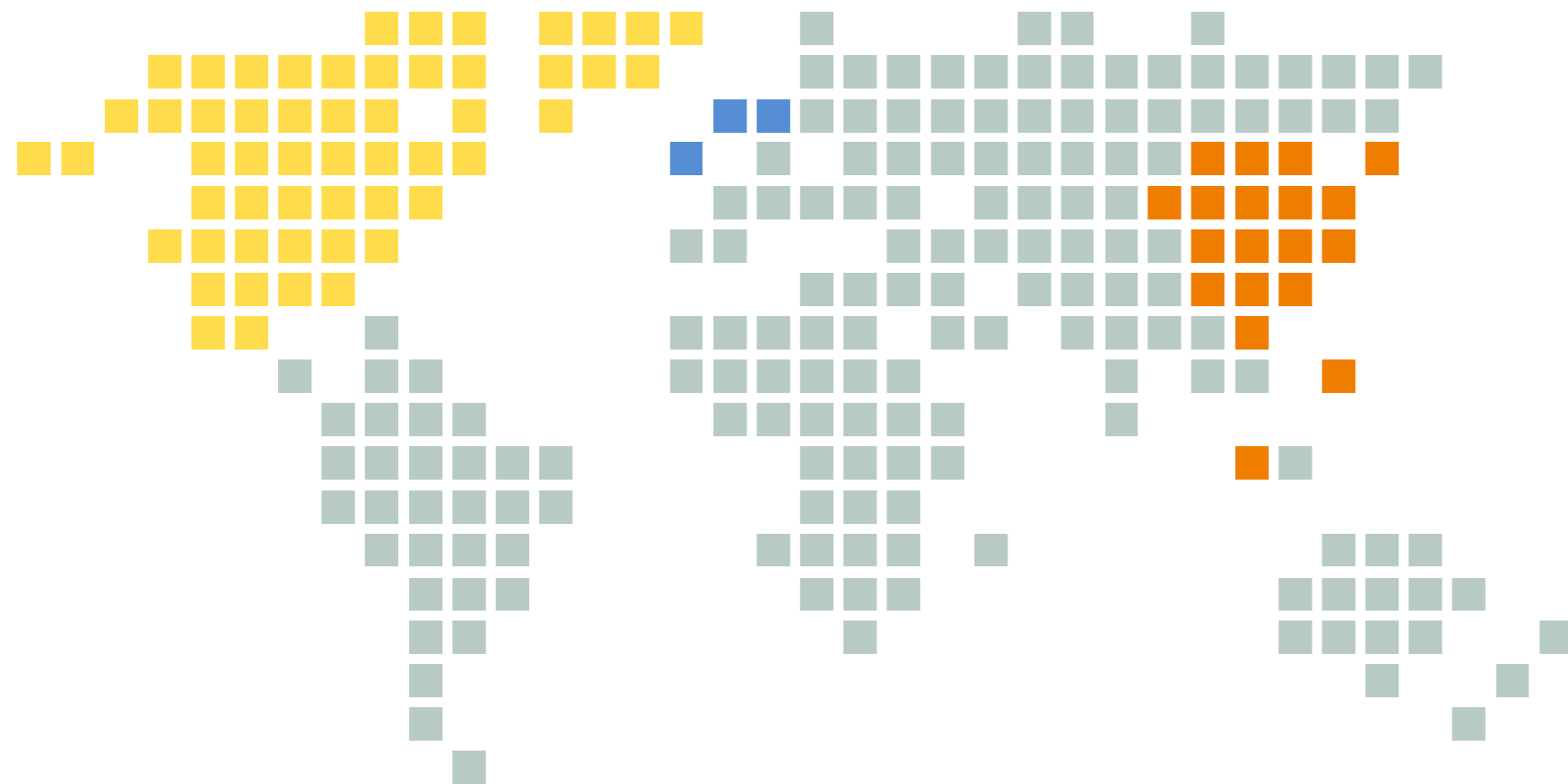


# 1. Introduction

For terrestrial service, ITU defines 26 types radio station.

Service	Code	Station	Service	Code	Station
Fixed	FX	Fixed station	Aeronautical mobile Off Route	FG	Aeronautical station
Generic Mobile	FL	Land station	Generic Radionavigation	RN	Radionavigation land station
	MO	Mobile station		NR	R adionavigation mobile station
Land Mobile	FB	Base station	Maritime Radionavigation	NL	Maritime radionavigation land station
	ML	Land mobile station		RM	Maritime radionavigation mobile station
Maritime Mobile	FC	Coast station	Aeronautical Radionavigation	AL	Aeronautical radionavigation land station
	FP	Port station		AM	Aeronautical radionavigation mobile station
	MS	Ship station	Radiolocation	LR	Radiolocation land station
	OE	Oceanographic data interrogation station		MR	Radiolocation mobile station
	OD	Oceanographic data station		SM	Meteorological aids base station
Generic Aeronautical mobile	FA	Aeronautical station	SA	Meteorological aids mobile station	
	MA	Aircraft station	SS	Standard frequency and time signal station	
Aeronautical mobile Route	FD	Aeronautical station	Broadcasting	BC	Sound broadcasting station

## 2. Radio Station Licensing of some administrations



The United States  
The United Kingdom  
Korea  
Singapore  
China



## 2-1 U.S .A (1/6)

- National Telecommunications and Information Administration (NTIA):
  - Management of Radio stations which belong to Federal government
  - The Federal Communications Commission(FCC):
  - Management of Radio stations ,which do not belong to Federal government
- Applicants submit application forms.
  - FCC conducts technical reviews (If it is a land mobile station, the applicant may directly seek technical review from third parties), and send coordination notice to relevant departments for comments.
  - Give radio station license and stored in database.
  - The Licensee shall, within 1 years of obtaining the license, report the construction and use of the station to FCC through ULS, otherwise the license shall be cancelled.



# 2-1 U.S.A (2/6)

- **Online management**—get register, processing, search and feedback from ULS when licensing.



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Tell us what you think and help shape the future »

FCC Federal Communications Commission

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**Universal Licensing System**

FCC > WTB > ULS Home

**ULS Online Systems**  
All applications are operating properly.

**NEW USERS** ● REGISTER To use the FCC Online Systems, you first need to register with the FCC.  
[Learn more](#)

**ONLINE FILING** ● LOG IN Apply for a new license, renew, modify, assign authorization, transfer control, manage licenses and applications, associate call sign(s) and more.  
[Forgot Password?](#)

**NARROWBAND** ● LOG IN **Modify Wideband Emissions:** Modify licenses to narrowband emissions on frequencies that only have wideband emissions.

● LOG IN **Remove Wideband Emissions:** Modify narrowband-compliant licenses to only remove wideband emissions. These are transition licenses with frequencies that have both a wideband and narrowband emission.

**SEARCH** ● LICENSES Find licenses across all services.  
● APPLICATIONS Find applications.  
● ARCHIVES Find archived licenses using the **enhanced** license archive search.

**QUICK LINKS**

**Help**

- ▶ [Obtain Official ULS Authorization](#)
- ▶ [Contact Us](#)
- ▶ [TCNS/E-106](#)
- ▶ [Submit a Pleading](#)
- ▶ [Hearing Aid Compatibility Status Reporting](#)
- ▶ [AM Tower Locator](#)
- ▶ [Public Access to 3650 Grandfathered Wireless Protection Zone Filings](#)

**Systems**

- ▶ [Pay Fees](#)
- ▶ [Antenna Structure Registration \(ASR\)](#)
- ▶ [TOWAIR](#)

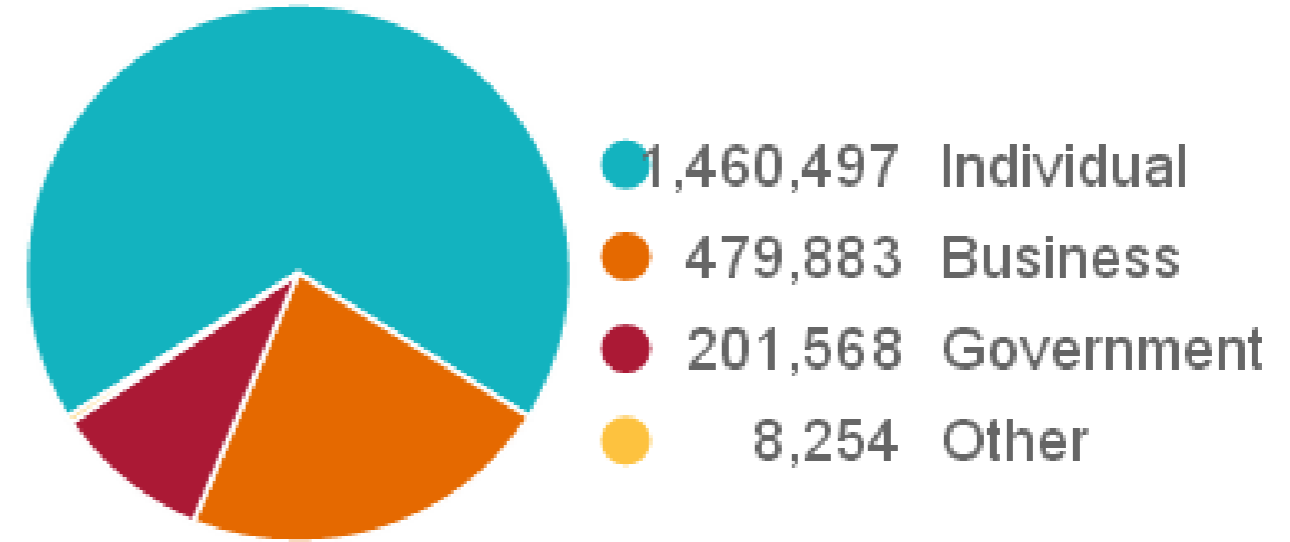
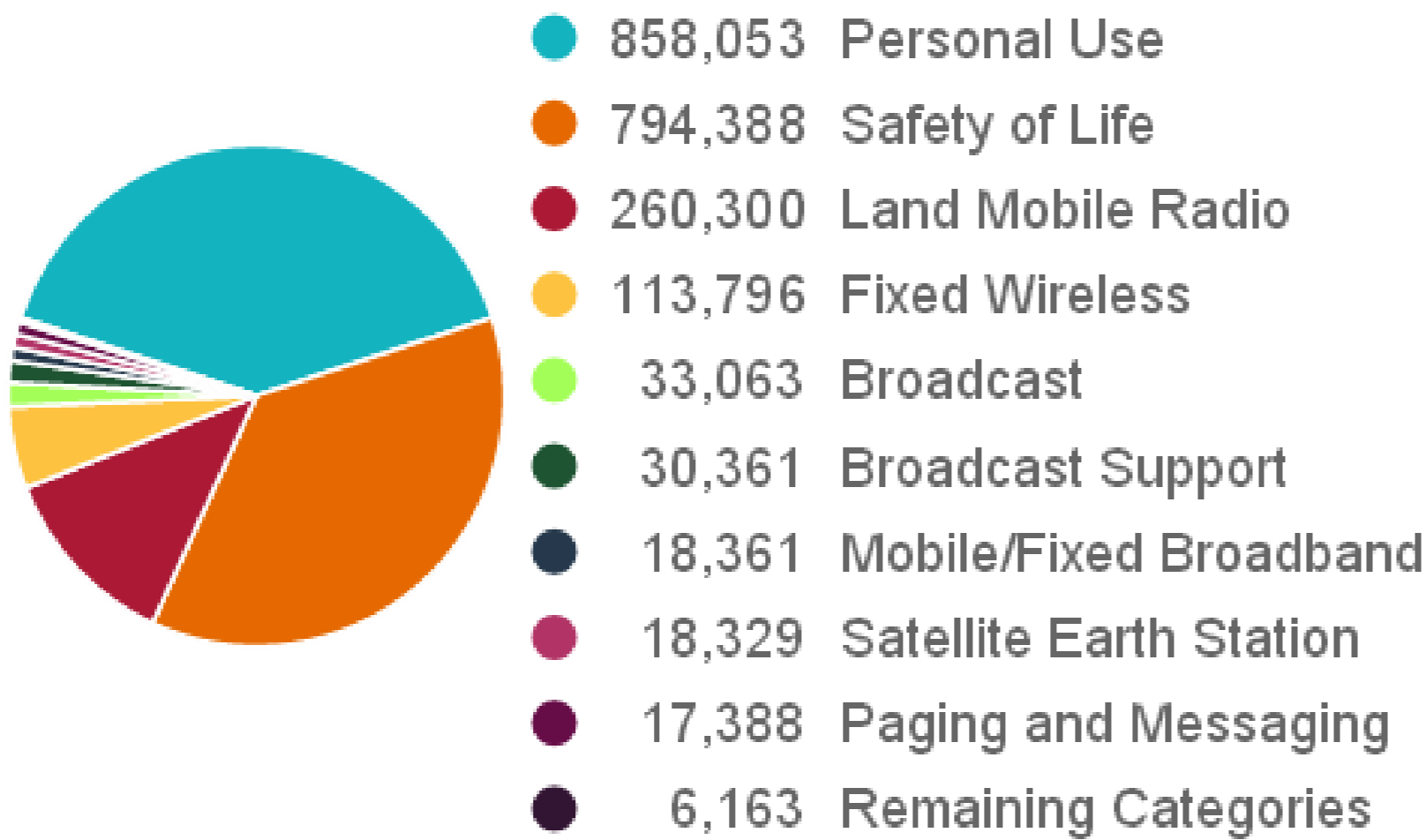
**Alerts**  
No Active Alerts  
[More Alerts](#)

**Downtime Schedule**  
No downtimes scheduled, with the exception of the Daily downtimes.  
[Daily:](#) 12 Midnight - 2 AM ET

FCC Home | Search | RSS | Updates | E-Filing | Initiatives | Consumers | Find People

# 2-1 U.S.A (3/6)

• Amount of stations.





2-1 U.S.A (4/6)

## NTIA hasn't published the radio station database. FCC has published a FCC License View for non federal government radio stations

- FCC Licensing Systems is composed of Universal Licensing System (ULS), Broadcast Radio and Television Electronic Filing System (CDBS), International Bureau Formally (IBFS), Experimental Licensing System (ELS), Cable Operations and Licensing System (COALS).
- FCC will publish the latest license database in the official website, as well as the additions and deletions. The users can download directly through the website.
- Licensing data has 85 fields, such as call sign, FCC Registration Number (FRN), license holder, contacts, Radio service, validity, authorization frequency, station location and technical parameters, such as 85 fields.



FCC License View : input and search for fields, such as call sign、 FRN or license holder

Spectrum Dashboard : input and search for keywords, such as frequency range, services, and purpose

2-1 U.S.A (5/6)

• Information in 775-793MHz, searched by Spectrum Dashboard

Services		Purposes	Frequency(M Hz)	FCC rules	Licensing status
1. 700MHz frequency band service		Broadband, fixed wireless, mobile cursor, telephone, TV	776-793	CFR47 Part27	
Introduction	Description				
	Usage				
	Spectrum	18MHz(5-11MHz channel bandwidth)		Licensing mechanism	Auction, etc.
	Pairing frequency band	none		License quantity	67
	Other frequency band	698-763, 805-806		License holders	7
2. Low power aids service		Fixed wireless, mobile cursor, broadcast, TV	775-793	CFR47 Part74	
3.Low power TV(LPTV) service,		TV	775-793	CFR47 Part27	

# 2-1 U.S.A (6/6)

## Maps

[About](#)

Find map...

All Current Featured Archive

Bureau/Office: All

Sort: Newest

[Clear all](#)

Showing: 72 maps

<p><b>100% Overlap 2017</b> WCB 08/11/2017 <a href="#">View details</a></p>	<p><b>FCC Enforcement Actions Again...</b> EB 08/10/2017 <a href="#">View details</a></p>	<p><b>Connect2HealthFCC</b> OGC 05/22/2017 <a href="#">View details</a></p>	<p><b>Residential Fixed Internet Acce...</b> WCB 05/18/2017 <a href="#">View details</a></p>
<p><b>Residential Fixed Internet Acce...</b> WCB 05/18/2017 <a href="#">View details</a></p>	<p><b>Fixed Broadband Deployment D...</b> WCB 05/11/2017 <a href="#">View details</a></p>	<p><b>Study Area Boundaries</b> WCB 05/08/2017 <a href="#">View details</a></p>	<p><b>Fixed Broadband Deployment D...</b> WCB 02/15/2017 <a href="#">View details</a></p>
<p><b>Number of Fixed Providers of R...</b> WCB 12/08/2016</p>	<p><b>Number of Fixed Providers of R...</b> WCB 12/08/2016</p>	<p><b>Residential Fixed Connections a...</b> WCB 12/08/2016</p>	<p><b>Residential Fixed Connections o...</b> WCB 12/08/2016</p>



2-2 U.K (1/3)

Groups of OFCOM

OFCOM

Content, International and Regulatory Development

Legal Group

Consumer Group

Strategy, Chief Economist and Technology Group

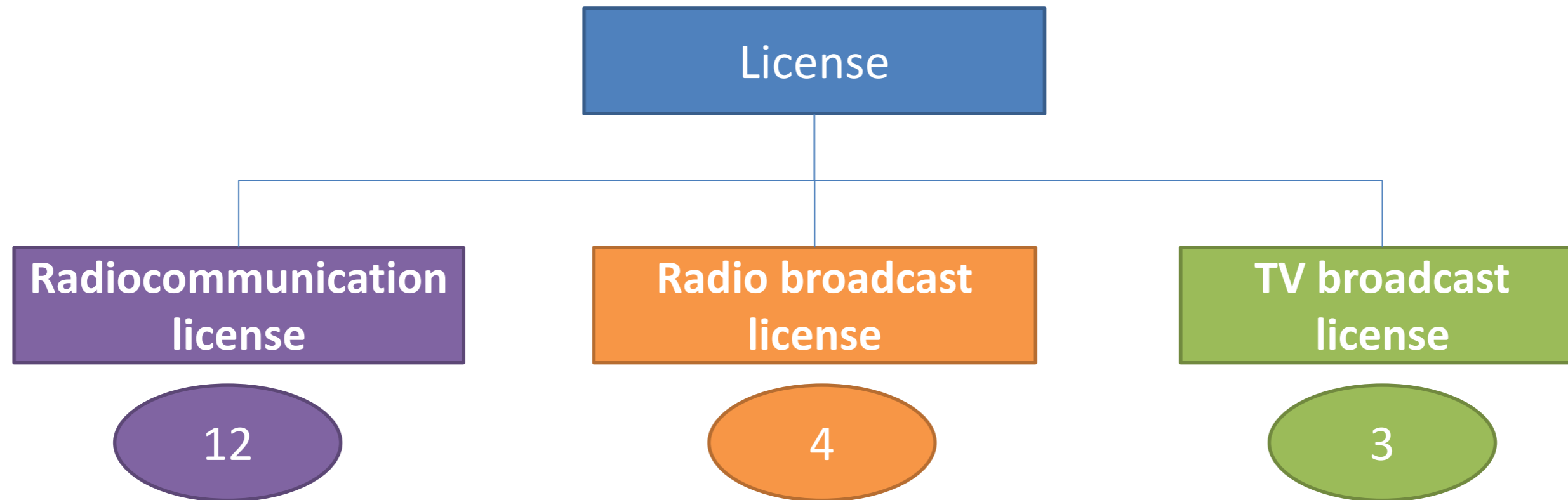
Competition Group

Spectrum Policy Group

Operations

2-2 U.K (1/3)

Office of Communications(OFCOM) is the communications regulator in the UK.



2-2 U.K (3/3)

Office of Communications(OFCOM) is the communications regulator in the UK.

Application and granted

Change of license

Return of license

Prohibit the transfer and sublet of licenses

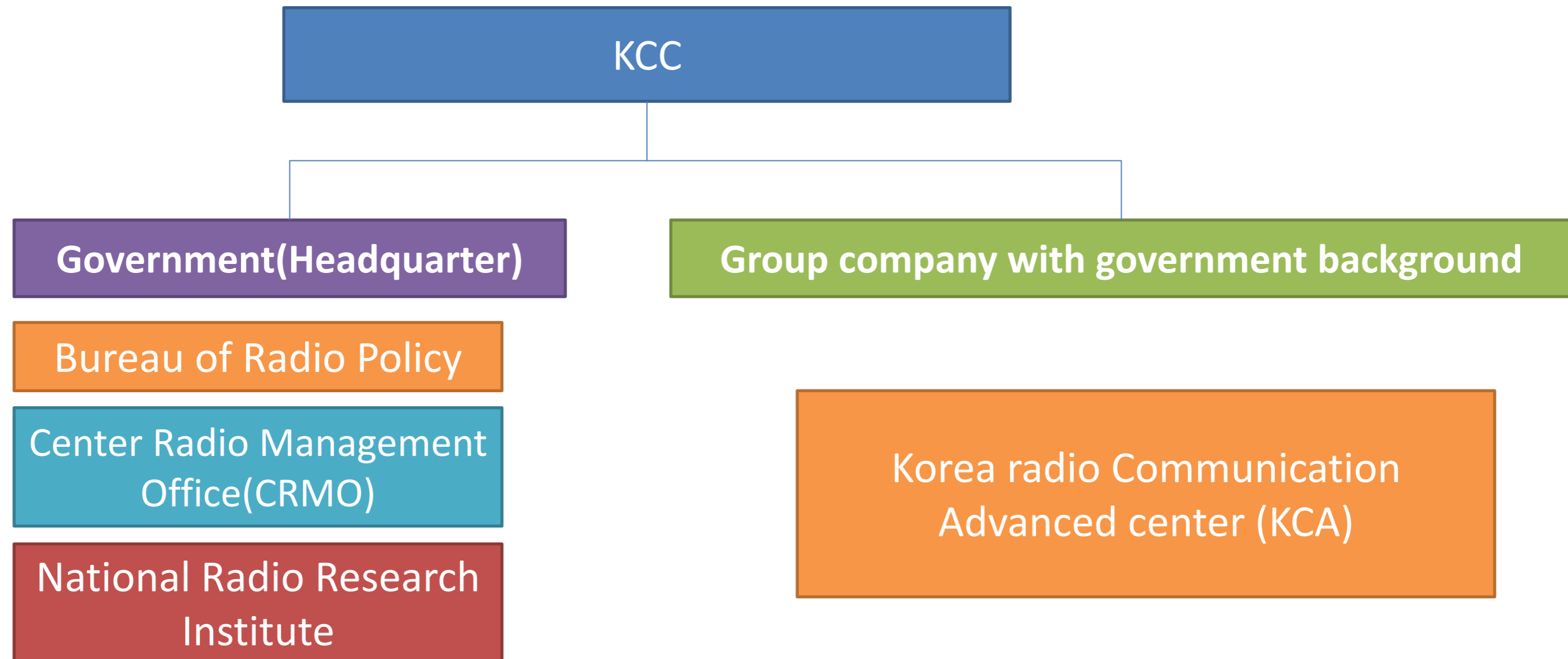
Online licensing

license exemption

- Licenses shall be granted by OFCOM
- Submit an application to OFCOM
- Return to OFCOM
- Without written approval from OFCOM
- Online licensing is available now
- A limitation of power and frequency

# 2-3 Korea (1/3)

## Korea Communications Commission(KCC)

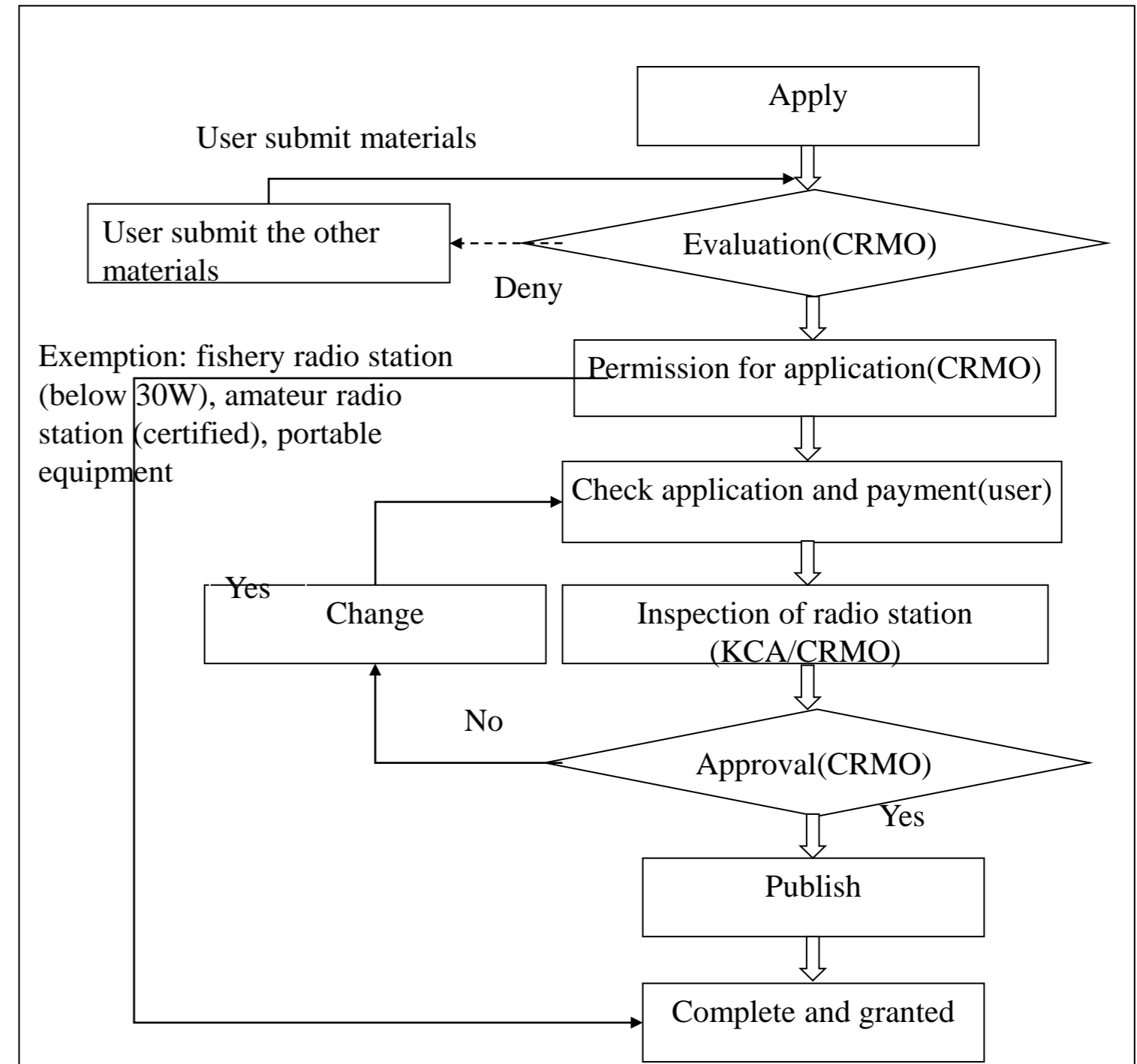


# 2-3 Korea (2/3)

In Korea, radio station is defined as all the radio devices (other than a broadcast receiving device) operated by person.

- License application

— As of Oct 2011, South Korea has 51 million civil radio stations in a total, of which about 49 million mobile communication terminal (mobile phone), 2 million other types of civil radio station, 20 thousand government departments in the radio (station) .





# 2-3 Korea (3/3)

In Korea, radio station is defined as all the radio devices (other than a broadcast receiving device) operated by person.

- Management of radio station

Modification of license

Validity of license

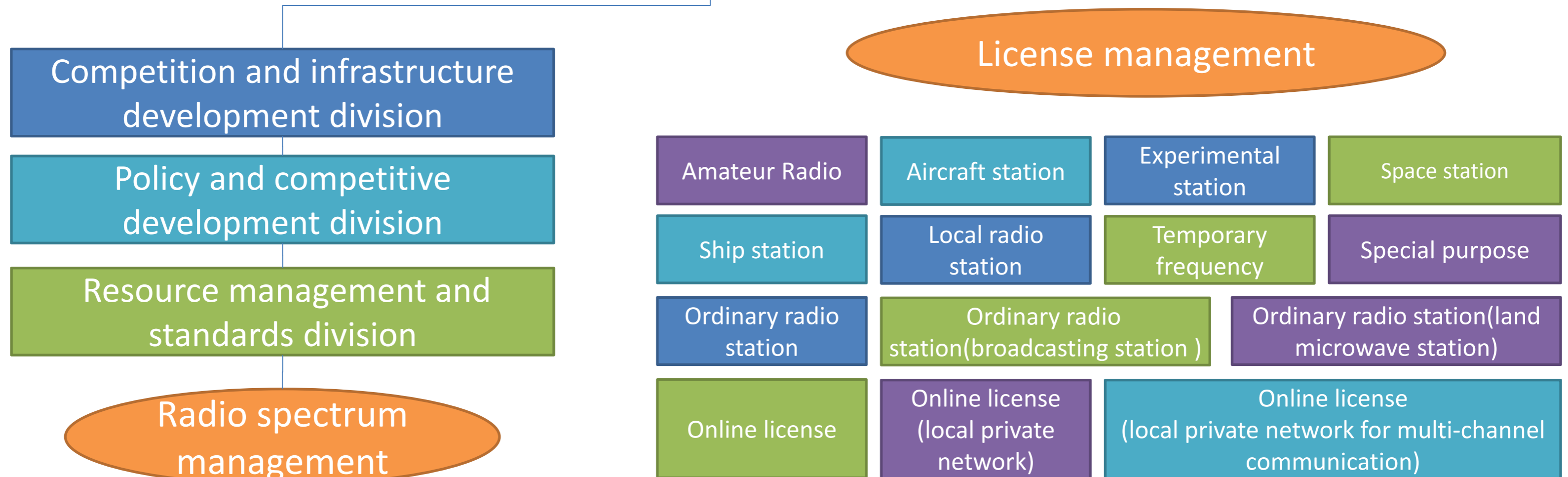
Payment of license

- File an application to authority, and review
- 41 types of licenses with validity of 1,2 or 5 year and forever
- Payment by Radio management authority and get a license

Type	Power(W)	Initial cost	Modification cost	Update cost
		(unit: Won/device, 1U.S. dollar equivalent to about 1100Won)		
Ship, aircraft	Below 50	12000	11000	11000
	Above 50	23000		
Fishery ship under 500tons	Below 50	4000	4000	4000
	Above 50	11000	6000	6000
High frequency heating equipment for industrial use	Below 50	5000	4000	Forever
	Above 50	10000	7000	free
Amateur and experimental stations	Below 50	5000	4000	4000
	51-100	11000		
	Below 100	16000		
Others (such as base station, satellite, broadcast radio station)	Below 50	15000	8000	8000
	51-100	22000		
	101-500	40000		
	Below 500	44000		

# 2-4 Singapore (1/3)

## Info-communications Development Authority of Singapore (IDA)

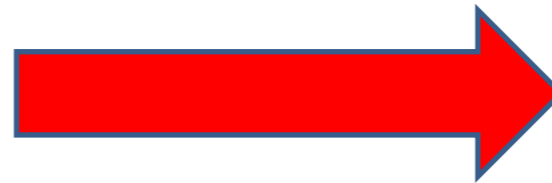


# 2-4 Singapore (2/3)

## Restructured

The Info-communications  
Development Authority of  
Singapore (IDA)

the Media Development  
Authority of Singapore (MDA)



the Government Technology Agency  
(GovTech)

Info-communications Media  
Development Authority of Singapore  
(IMDA)

# 2-4 Singapore (3/3)

## Type of Licences

The Provision of Arts Entertainment

the Provision of Broadcasting Services

The Distribution/Exhibition of Films

Newspaper and Printing Press

The Provision of Telecommunication Services

The Operation of Radio-communication  
Station Network

The Sale of Telecommunication Equipment

The Installation of Internal  
Telecommunication Wiring

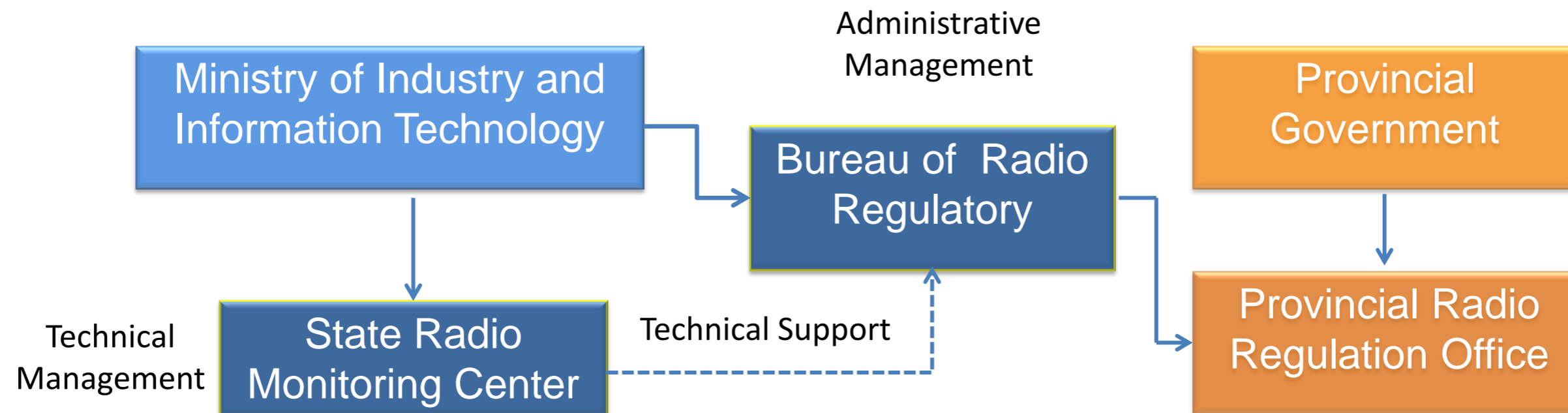
Provision of Service of Detecting  
Underground Telecommunication Cable

Provision of Postal Services

use of Satellite Orbital Slot

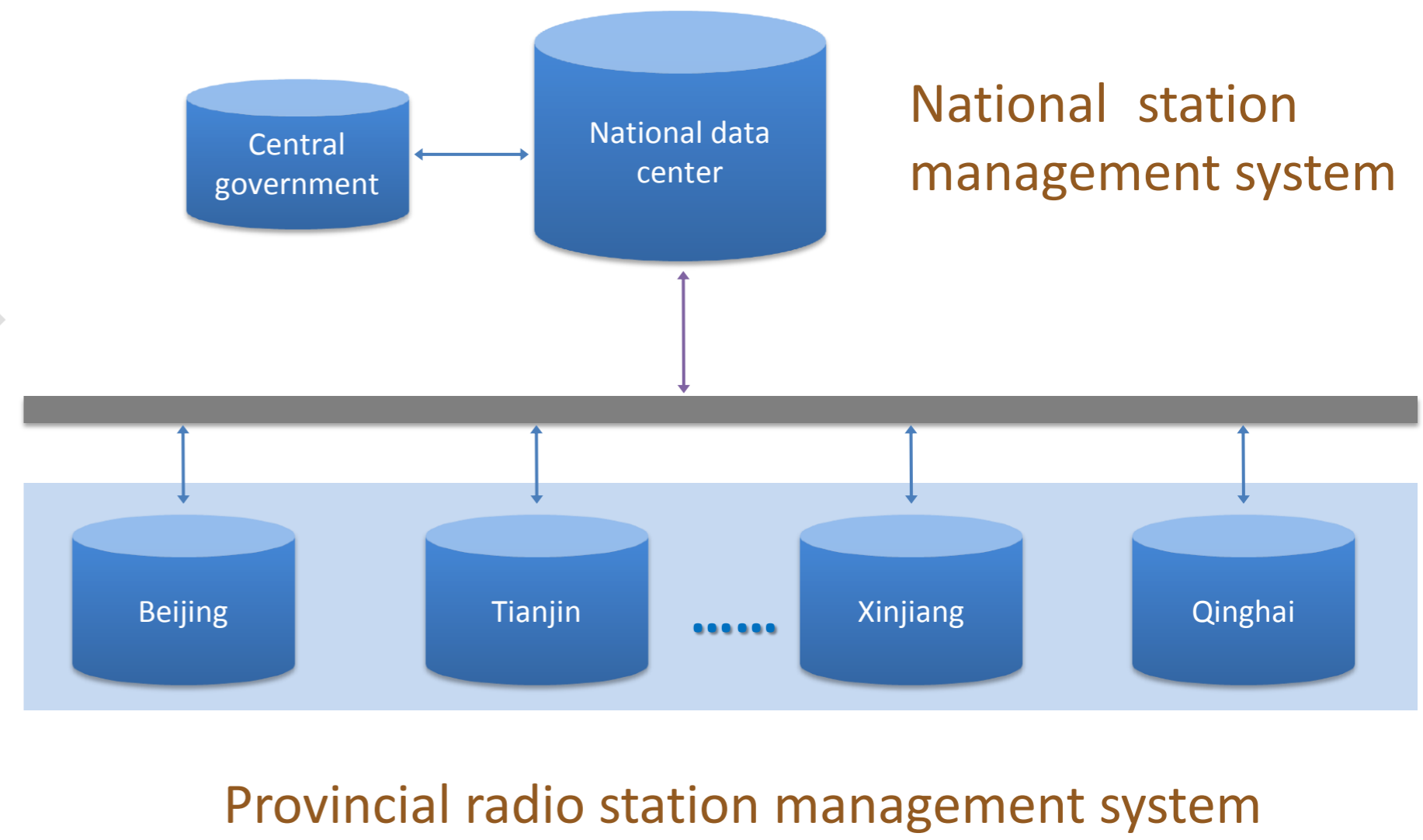
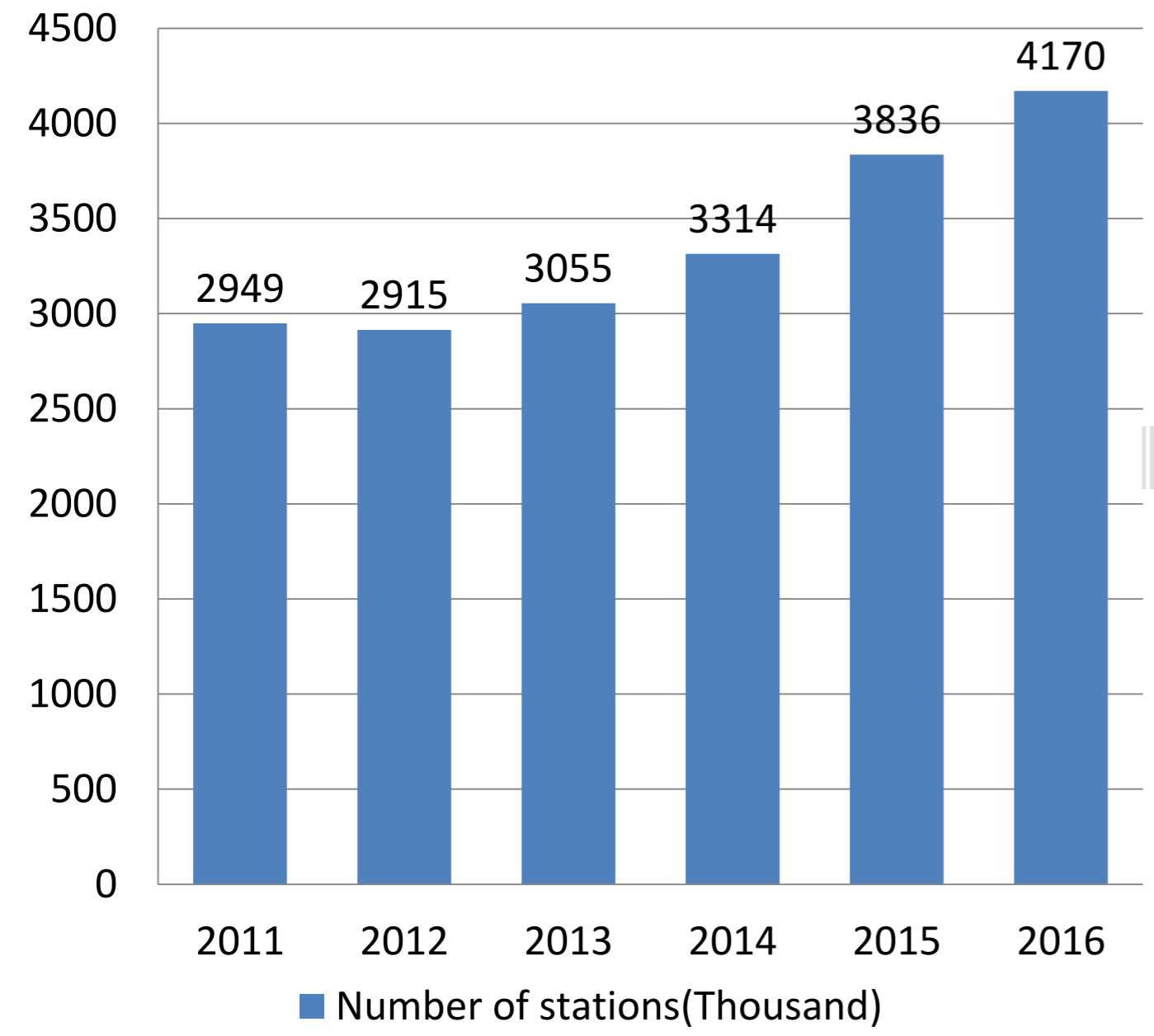
# 2-5 China (1/3)

- The Ministry of Industry and Information Technology(MIIT):Management of Radio stations which belong to government departments
- 31 Provincial radio regulation office: Management of Radio stations which not belong to government departments



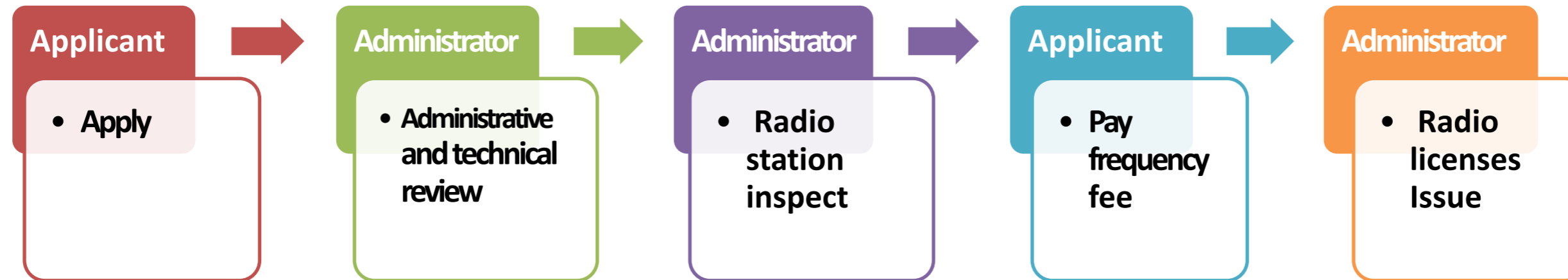
# 2-5 China (2/3)

Stations cannot be used without licenses, except for public mobile communication terminals, short distance micropower devices, and receiving-only stations.



## 2-5 China (3/3)

Station licenses are managed successfully with a whole lifecycle management.



- Licenses re-issue, when license content changed
- License extension, when station continually used after license expiration
- License cancellation, when stop using the station after license expiration
- License replacement, when license lost

## 2-6 Characteristic

**U.S. A:** Data visualization – 72 data maps 6 featured

**U.K :** OFCOM is not a Government sector  
The British government does not interfere with OFCOM regulation

**Korea :** Government(Headquarter)  
Group company with government background

**Singapore :** The Government Technology Agency of Singapore (GovTech)  
The Info-communications Media Development Authority (IMDA)



# 3. Notification of Frequency Assignments for MIFR

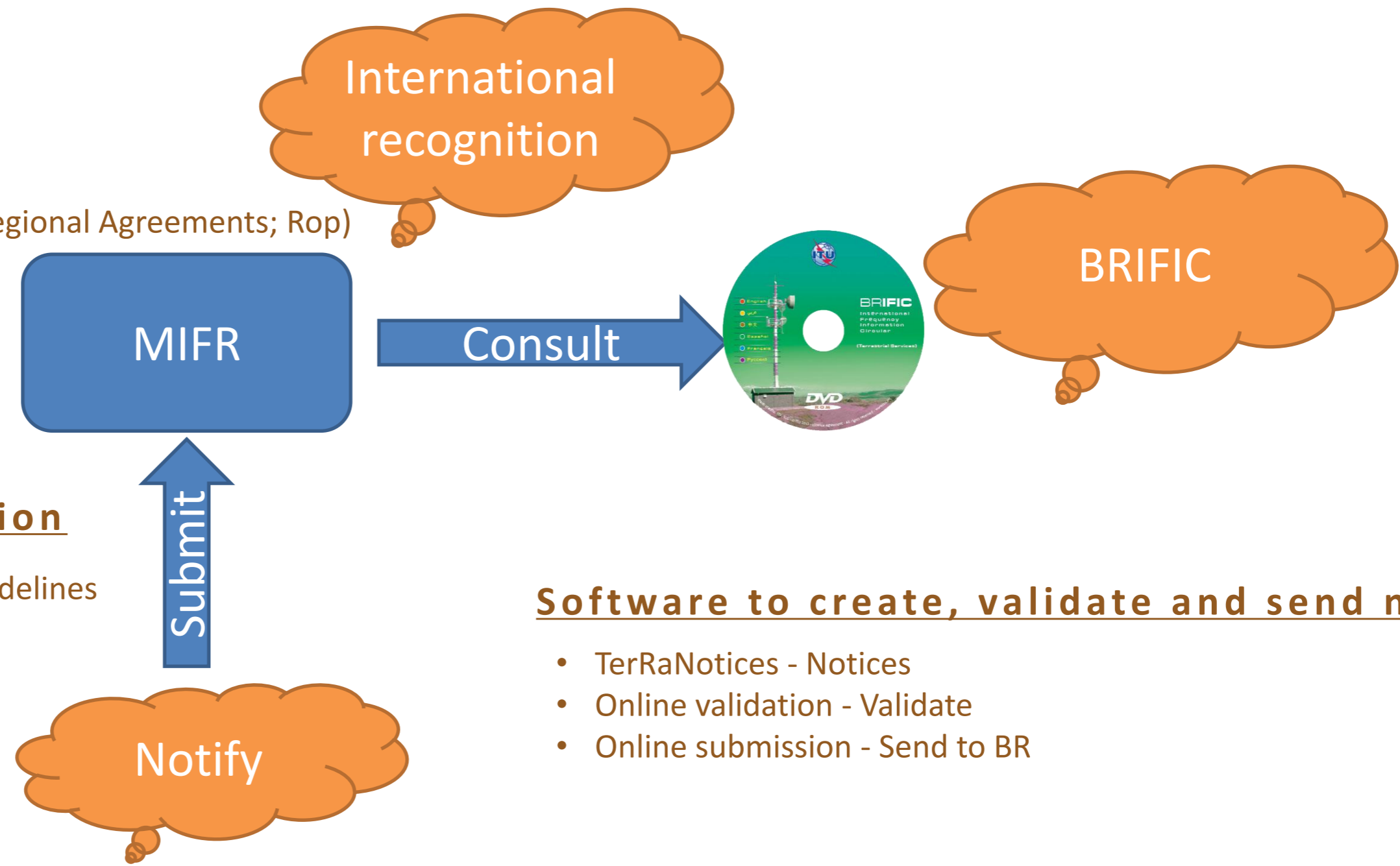
The international station management is mainly for the frequency assignments registered in MIFR.

## Regulatory information

- Radio Regulation (Art.11; Art.9; Ap.4; Regional Agreements; Rop)

## Practical information

- Preface to the BRIFIC Guidelines



## Software to create, validate and send notices

- TerRaNotices - Notices
- Online validation - Validate
- Online submission - Send to BR

## 3-1. International recognition (1/2)

### Why do you need international recognition?

- Other administration have to take into consideration your assignment when they are making their assignments in order to avoid any harmful interference;

### Which assignments can claim international recognition?

- Those assignments that are recorded in MIFR with favorable findings (in accordance with the Radio Regulations);

### How to enter the MIFR?

- Administration must notify their assignments to the Radiocommunication Bureau (BR)
- Administrations rights and obligation.

### All assignments should be notified?

- No, only those that comply with Nos.11.3-11.9

## 3-1. International recognition (2/2)

### What is the MIFR?

- The MIFR contains all frequencies used worldwide that have been notified to the ITU and are in conformity with the Radio Regulations.
- The Bureau keeps the MIFR up-to-date on the basis of the information received from administrations.
- The MIFR is also maintained on the basis of information published in Part IIB, relating to frequency assignments recorded in the MIFR for which the findings have been reviewed by the BR in accordance with Nos. 11.50 and/or 14.1 of the Radio Regulations.
- Cancellation of assignments recorded in the Master Register which are no longer used.

## 3-2. Assignments to notify (1/2)

### Frequency assignments that shall be notified to the Bureau(Nos.11.3-11.9)

- Those capable of causing harmful interference to any service of another administration;
- Used for international radiocommunication;
- Subject to world or regional frequency allotment or assignment plan which does not have its own notification procedure;
- Subject to the Art.9 coordination procedure;
- Request for international recognition;
- For information only;

## 3-2. Assignments to notify (2/2)

### Frequency assignments that shall not be notified to the Bureau (Nos. 11.13-11.14)

- Assignments to stations in the amateur service;
- Assignments to ship stations and to mobile stations of other services;
- Assignments involving specific frequencies which are prescribed by these Regulations for common use by terrestrial stations of a given service.

## 3-3. Notification to the Bureau (1/4)

### What to notify?

- For the recording of a frequency assignment in the Master Register:
  - Administrations shall provide the relevant characteristics listed in Appendix 4 to the RR (No. 11.15).
- For the modification of a given Plan:
  - Administrations shall provide the relevant characteristics listed in the Annexes of the relevant Agreement.
- Preface to the BR IFIC
  - Symbols and codes are defined for some data items, such as:  
Class of station, Nature of service, etc.

## 3-3. Notification to the Bureau (2/4)

### When to notify?

- For the recording in the Master Register (MIFR), the notices shall reach the Bureau:
  - Not earlier than three years before the assignment is brought into use, for terrestrial stations involved in coordination with a satellite network and for high altitude platform stations operating as a base station to provide IMT;
  - Not earlier than five years before the assignment is brought into use, for assignments to high altitude platform stations in the fixed service;
  - Not earlier than three months before the assignment is brought into use, for all other terrestrial stations;
  - Provision Nos. 11.24 –11.26A.

## 3-3. Notification to the Bureau (3/4)

### When to notify? ? (cont.)

- For the recording in the Master Register (MIFR) for assignments that fall within planned bands governed by World or Regional Agreements:
  - Only if there is a corresponding plan entry.
  - In case there is no corresponding plan entry:
    - Submit a Plan modification notice to the BR;
    - Wait for the Plan to be successfully modified;
    - Notify the frequency assignment to the BR under Article 11.

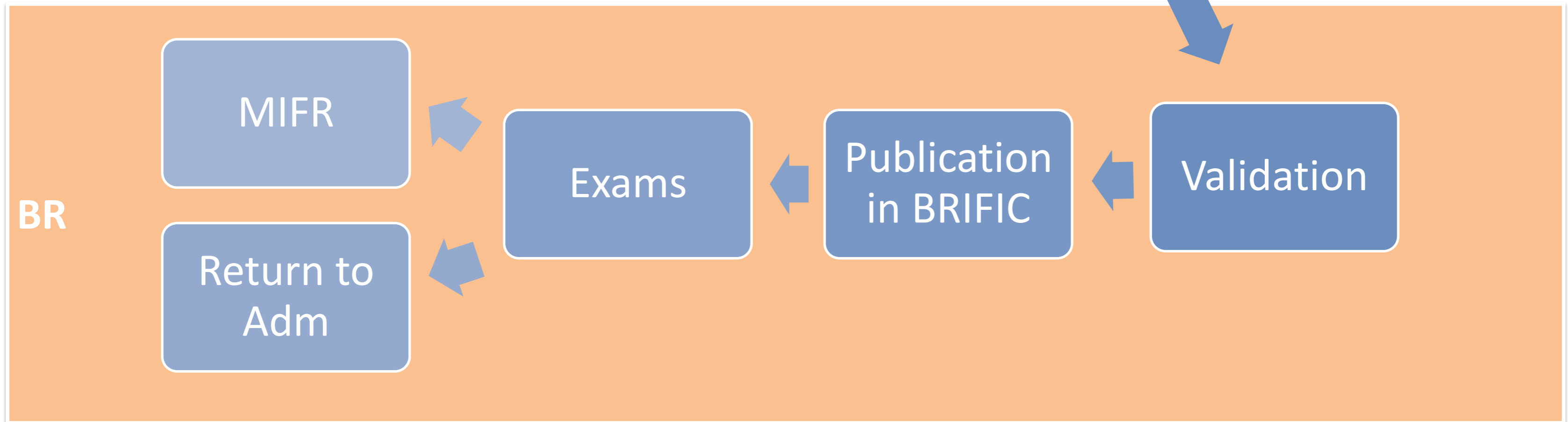
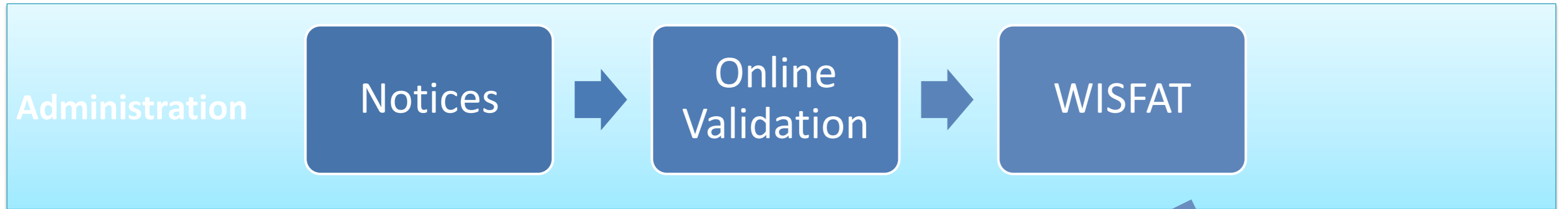


## 3-3. Notification to the Bureau (4/4)

### How to notify?

- A notice for each frequency and for each station.
- Except, if the same frequency is re-used with the same technical characteristics many times within a given area:
  - A single notice giving the typical characteristics of one station of the network (RR11.17);
  - Does not apply to all services or to all frequency bands (Nos. 11.18 –11.21B):
    - Station covered by Allotment Plans in Ap. 25, Ap.26 and Ap.27;
    - Broadcasting stations;
    - Terrestrial stations within the coordination area of an earth station, etc.

# 3-4. Overview of the Notices processing



## 3-5. Notice types and format

### Notice types are grouped into three categories

LF/MF

- Low and medium frequency bands for sound broadcasting
- T03 and T04

FM/TV

- VHF and UHF frequency bands for sound and television broadcasting
- T01,T02,G02,GS1,GT1,GS2,GT2,GB1

FXM

- Fixed, mobile and other terrestrial services
- T11-T17,G11-G14

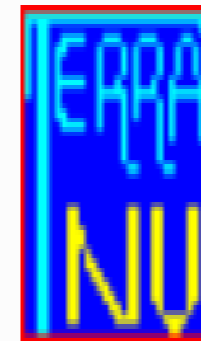
## 3-6. TerRaSys tools

### TerRaSys (Terrestrial Radiocommunication System) tools



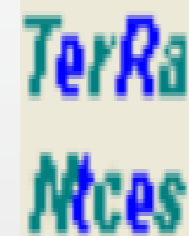
#### **TerRaQ**

- Software for querying the BR IFIC database



#### **TerRaNV**

- Software for checking the electronic notices



#### **TerRaNotices**

- Software for generating, editing, and validating terrestrial electronic notices.

## 3-7. Online validation

### Online validation tool

- Before submitting notices via WISFAT, administrations are strongly recommended to validate their submissions using the [Online Validation](#) tool.
- Incomplete notices will be returned to the notifying administration in accordance with provision No. 11.27 of the Radio Regulations.
- Deep validation such as checking the frequency band, geographical coordinates, potential duplicate notices, etc.
- Available for all TIES Users at:

<http://www.itu.int/ITU-R/terrestrial/OnlineValidation/Login.aspx>

## 3-8. Submission to the BR

### Secured web interface WISFAT

- Submission of frequency assignment/allotment notices for terrestrial services to the BR shall be made via the secured web interface WISFAT (Web Interface for Submission of Frequency Assignments/allotments for Terrestrial Services).
- As stipulated in [BR Circular-letter CR/297 dated 20 January 2009](#), only notices received via WISFAT, are considered as official submissions.
- Access to WISFAT:

<http://www.itu.int/en/ITU-R/terrestrial/tpr/Pages/Submission.aspx>

## 3-9. BRIFIC

### BRIFIC (BR International Frequency information Circular)

- The purpose of the BR International Frequency information Circular (BR IFIC) is to provide information on the frequency assignments/allotments submitted by administrations to the BR for updating the Master International Frequency Register and Plans.
- The BR IFIC contains also different software for preparing the notices and consulting the information published.
- The BR IFIC is published once every two weeks by the BR, pursuant to Article 20 of the Radio Regulations.
- One copy of the BR IFIC is distributed free of charge to every administration.
- The BR IFIC is issued in Arabic, Chinese, English, French, Russian and Spanish.



## 3-10. Licensing (1/4)

### Requirements of licensing- purposes

- to limit the technical and operational characteristics of a radio station with the benefit of conserving the limited assets of the radio spectrum in the national, public interest.
- to maintain a comprehensive frequency register as required to manage spectrum use, to avoid interference while improving spectral efficiency.



## 3-10. Licensing (2/4)

### Requirements of licensing- identify

- name and address
- the geographical location of the transmitting station or stations or the area within which they move (if mobile).
- technical parameters and operational conditions of the station(s)
- the purpose for which the frequency assignment(s) may be used
- the period of validity of the license

## 3-10. Licensing (3/4)

➤ A licensing system plays a major role in any well-structured spectrum management unit. It exercises control over the operation of stations and the use of frequencies by

- allowing examination of license applications and supporting documents
- granting either specific or blanket authorization
- assigning identifying call signs to individual stations.
- issuing license documents and collecting fees, as appropriate.
- renewing and cancelling licenses, as appropriate.
- conducting examinations of operator competence (i.e., amateurs) and issuing operator certificates.



## 3-10. Licensing (4/4)

### Licensing practices

Licensing non-commercial radio users

Licensing commercial radio users

Licensing fixed service for  
telecommunication service operators

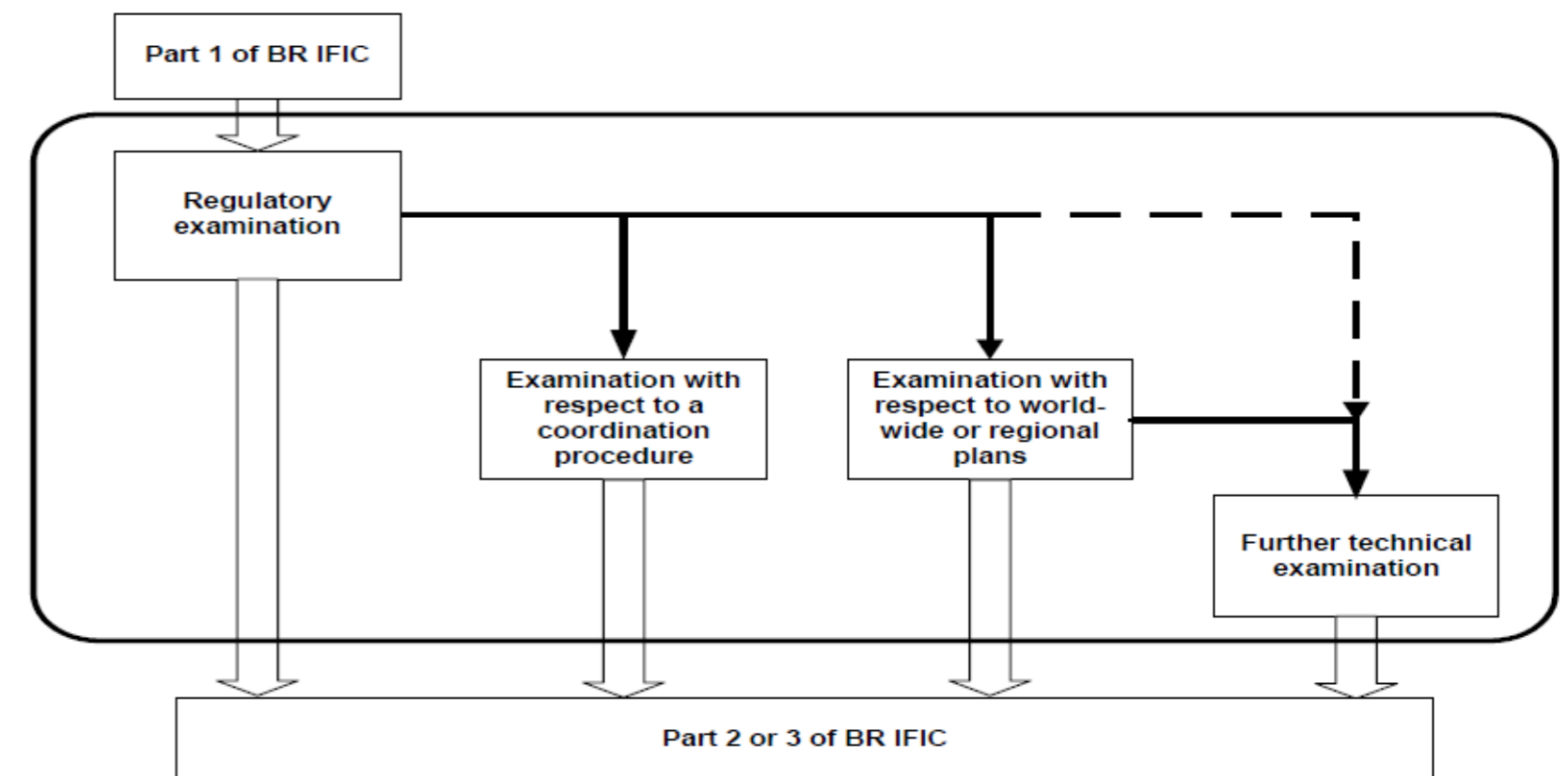
Licensing mobile services

Licensing broadcasting services

## 3-11. Examination

### Notice forms received under Article 11 of the Radio Regulations are published in the following parts of the Circular:

- **Part I:** Notices received for new frequency assignments, or modifications to or cancellations of recorded assignments. It serves as the acknowledgement of receipt of notices received by the Bureau.
- **Part II:** Frequency assignments that will be recorded in the Master Register.
- **Part III:** Notices that will be returned to administrations for reasons of unfavorable findings given by the Bureau.



A simplified structure of examination procedures

## 3-12. ITU-R RECOMMENDATION

### RECOMMENDATION ITU-R SM.1413-2 “Radiocommunication Data Dictionary” for notification and coordination purposes (Question ITU-R 65/1)

- Notification and coordination data were the most common items of information exchanged between administrations, and between administrations and the Radiocommunication Bureau (BR).
- Increasing congestion in the radio spectrum and the need for greater sharing will increase the volume of data to be exchanged. If data exchange in paper, it is important that the precise meaning of the data to be exchanged is understood by all parties involved in the process. If this data is to be exchanged electronically, then a precise understanding becomes essential.
- it was proposed that a dictionary of radiocommunication data used in the notification and coordination processes should be developed. It could be useful to administrations in their own internal frequency management processes, particularly where computer-based systems are being implemented which by necessity must cover a multitude of functions such as licensing, engineering tools and applications, staff training, etc.

## 3-12. ITU-R RECOMMENDATION

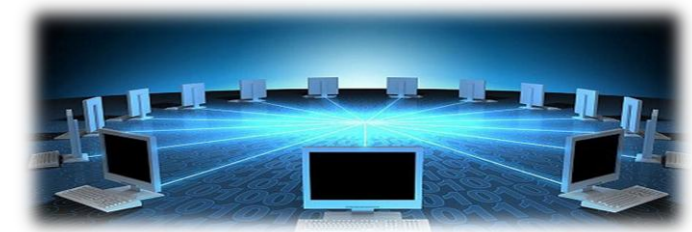
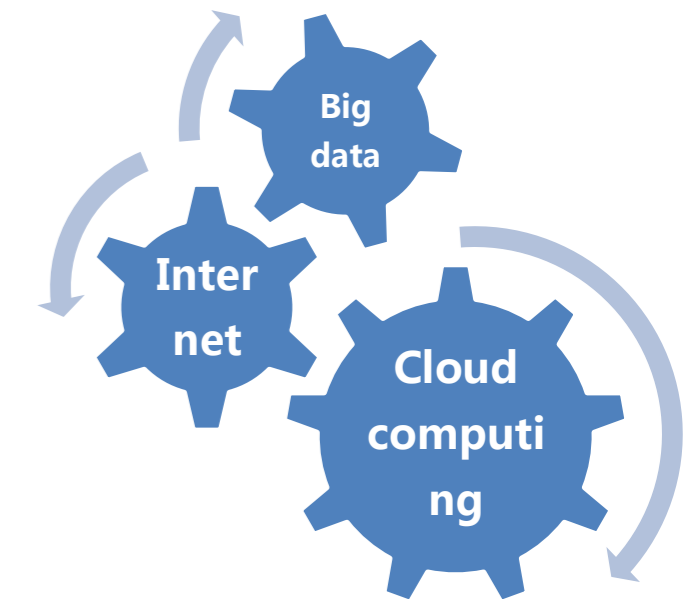
### RECOMMENDATION ITU-R SM.1413-2 “Radiocommunication Data Dictionary” for notification and coordination purposes (Question ITU-R 65/1)

- The RDD is intended to serve as an authoritative reference for information concerning data used in the notification and coordination processes.
- The RDD includes for each data element: an accurate, unambiguous description; data format information; and conditions of use. In addition, tables are provided for each type of radio service that outline the information required when coordinating or notifying stations in those radio services.
- The RDD have been modified by ITU Study Group 1 –Working Party 1B for 3 years, and the new version is RECOMMENDATION ITU-R SM.1413“Radiocommunication Data Dictionary” to seek adoption by ITU.

# 4. View of Future Radio Station Licensing

## Adopt network management to improve the quality and efficiency of station licensing.

- Form an integrated system
- Exercise online processing of station licensing
- Realize the electronic license



## 4. View of Future Radio Station Licensing

### • **Best Practices for National Spectrum Management:**

- Establishing and maintaining a national spectrum management organization
- Promoting transparent, fair, economically efficient, and effective spectrum management policies
- Making public, wherever practicable, national frequency allocation plans and frequency assignment data to encourage openness, and to facilitate development of new radio systems
- Maintaining a stable decision-making process
- Providing in the national process, in special cases where adequately justified, for exceptions or waivers to spectrum management decisions
- Having a process for reconsideration of spectrum management decisions



## 4. View of Future Radio Station Licensing

- Minimizing unnecessary regulations
- Encouraging radio-communication policies
- Assuring open and fair competition
- Harmonizing, as far as practicable, effective domestic and international spectrum policies
- Working in collaboration
- Removing any regulatory barriers
- Using internationally recommended data formats
- Using “milestone” management steps and phases to monitor and control lengthy radio-communication system implementation

## 4. View of Future Radio Station Licensing

- Adopting decisions that are technologically neutral and which allow for evolution to new radio applications
- Facilitating timely introduction of appropriate new applications and technology
- Considering effective policies to mitigate harm to users of existing services when reallocating spectrum
- promoting spectrum sharing using available techniques
- Using enforcement mechanisms, as appropriate
- Utilizing regional and international standards whenever possible, and where appropriate, reflecting them in national standards
- Relying to the extent possible on industry standards including those that are included in ITU Recommendations, in lieu of national regulations.

## 4. View of Future Radio Station Licensing

### **WORKING DOCUMENT TOWARDS A PRELIMINARY DRAFT NEW REPORT ITU-R SM.[REGULATORY TOOLS] “Regulatory tools to support enhanced shared use of the spectrum”**

- The report addresses possible regulatory solutions which may be implemented on a national basis in order to facilitate the share use of the spectrum and therefore, to encourage an efficient use of the spectrum by allowing applications of different and/or similar nature (for example, identical radio services/technologies) to coexist in an identified spectrum environment.
- Based on the experience from different countries, this report includes a collection of regulatory mechanisms which have been experimented and are recognized as best practices in terms of spectrum management solutions.
- The new report developed by ITU-R Study Group 1 Working Party 1B, and it will provide support for station licensing of spectrum management in the future.

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Thanks

