

ITU World Radiocommunication Seminar

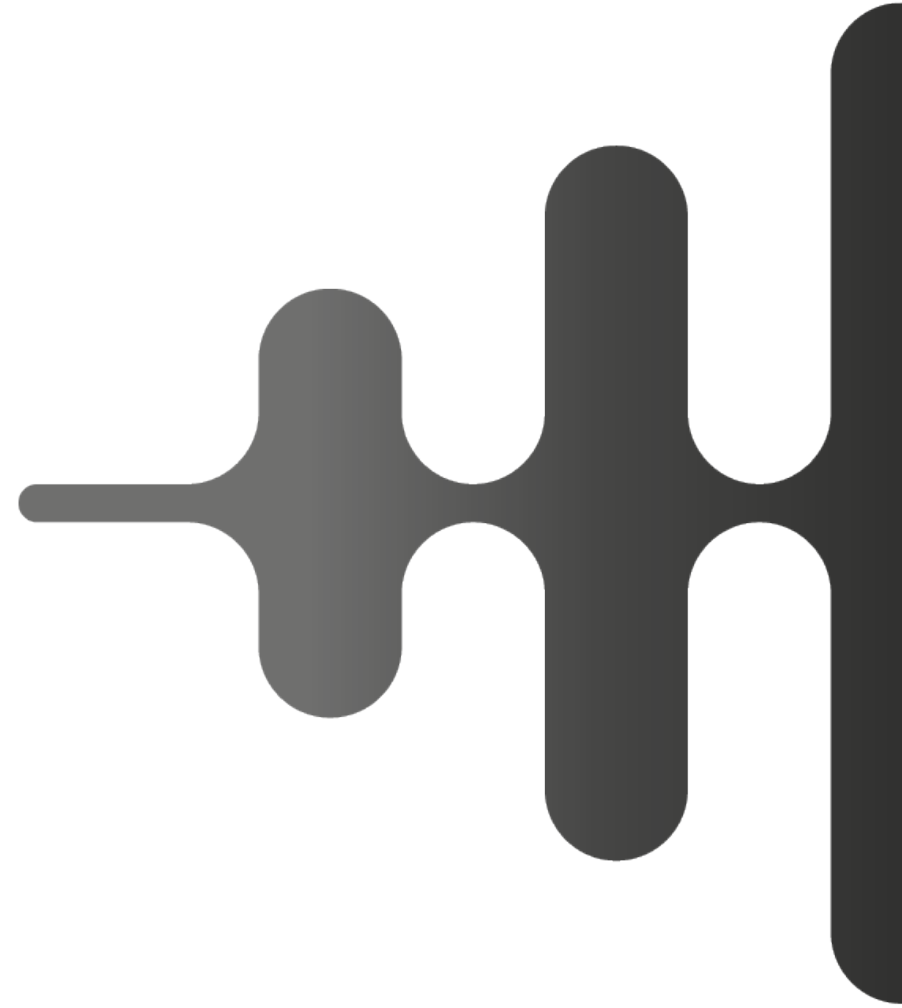
2-6 December 2024, Geneva, Switzerland

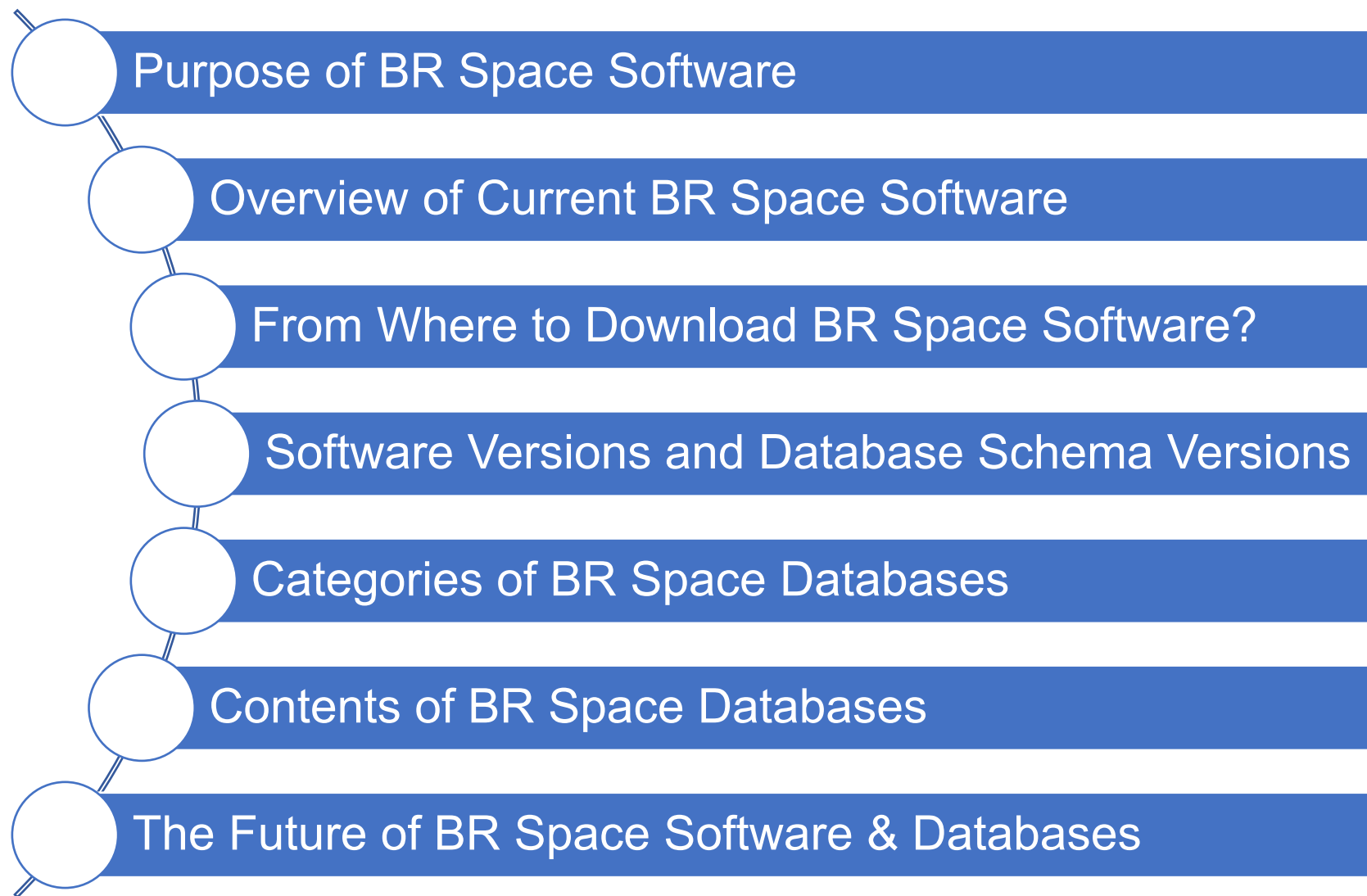
BR Space Software and Databases

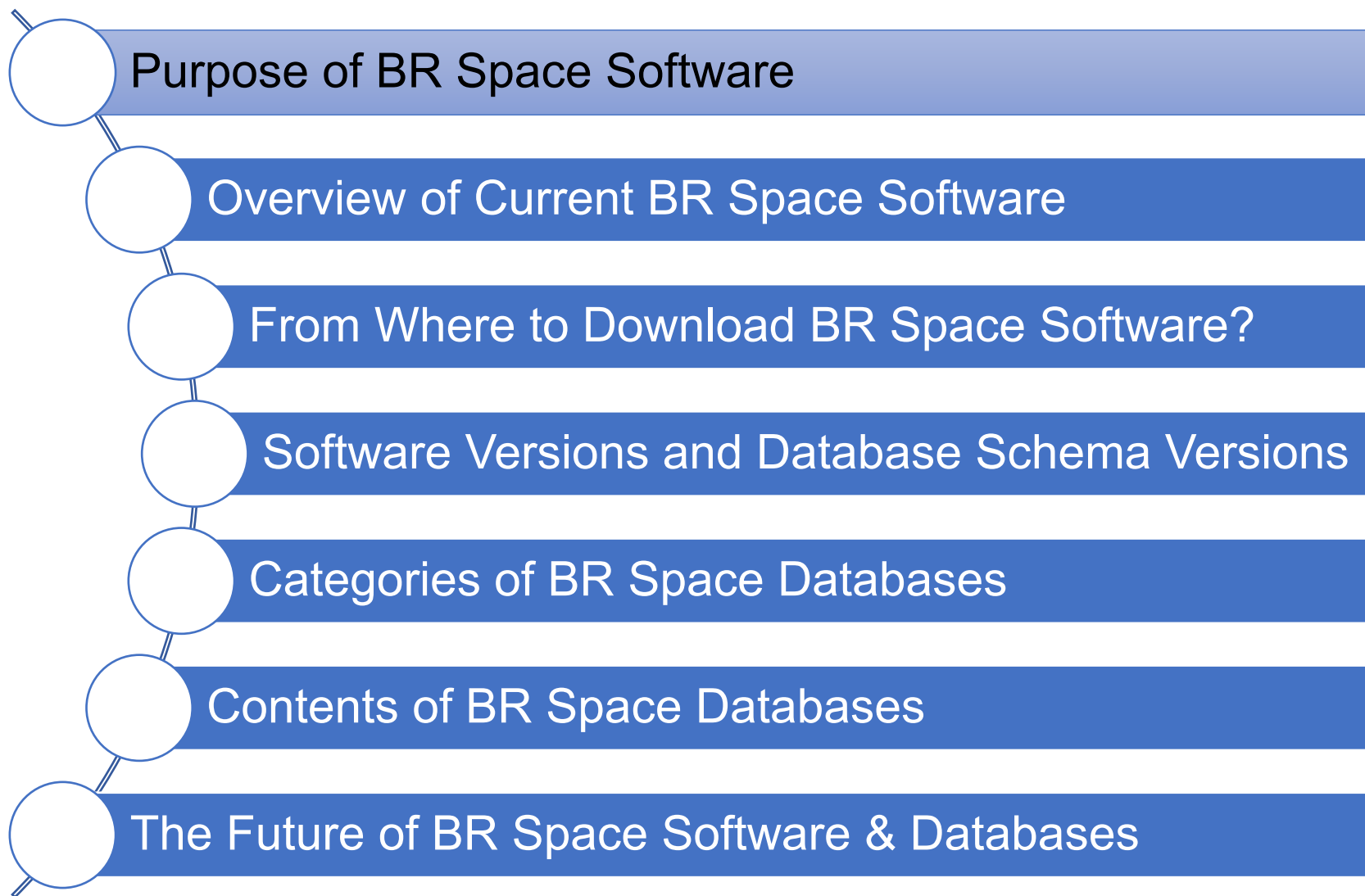
Miroslav Ćosić

Space Applications Software Division

Informatics, Administration and Publications Department



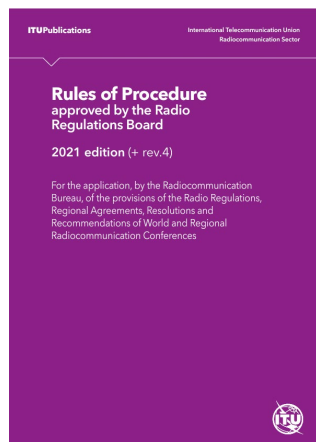




Purpose of BR Space Software

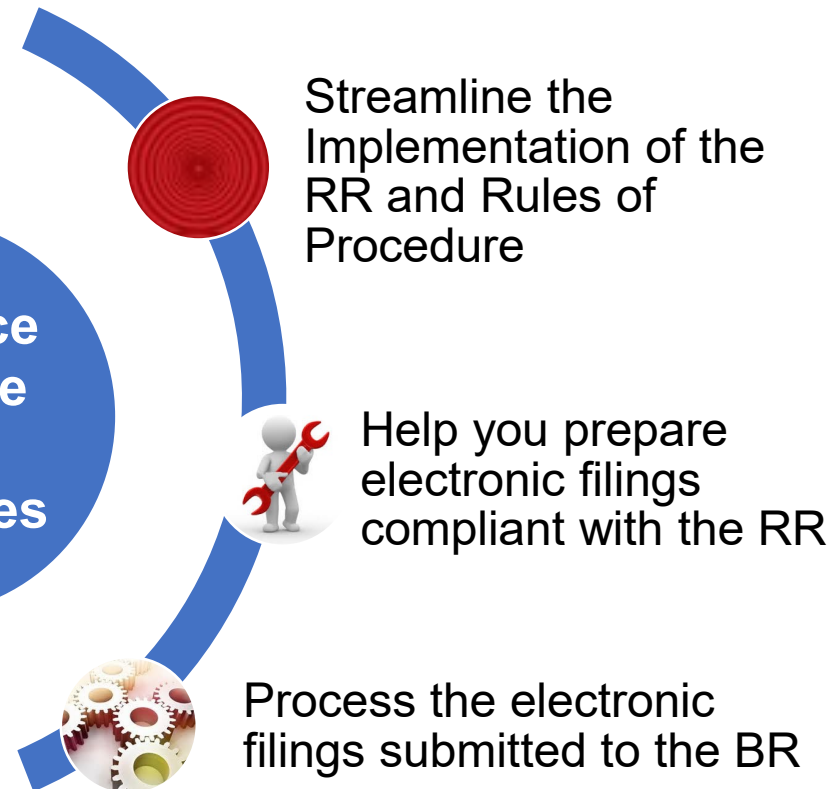
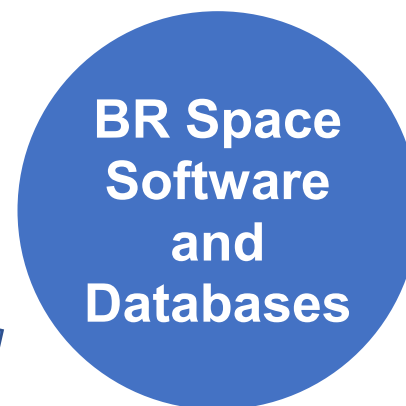
Radio Regulations (RR)

Incorporate the decisions of the World Radiocommunication Conference



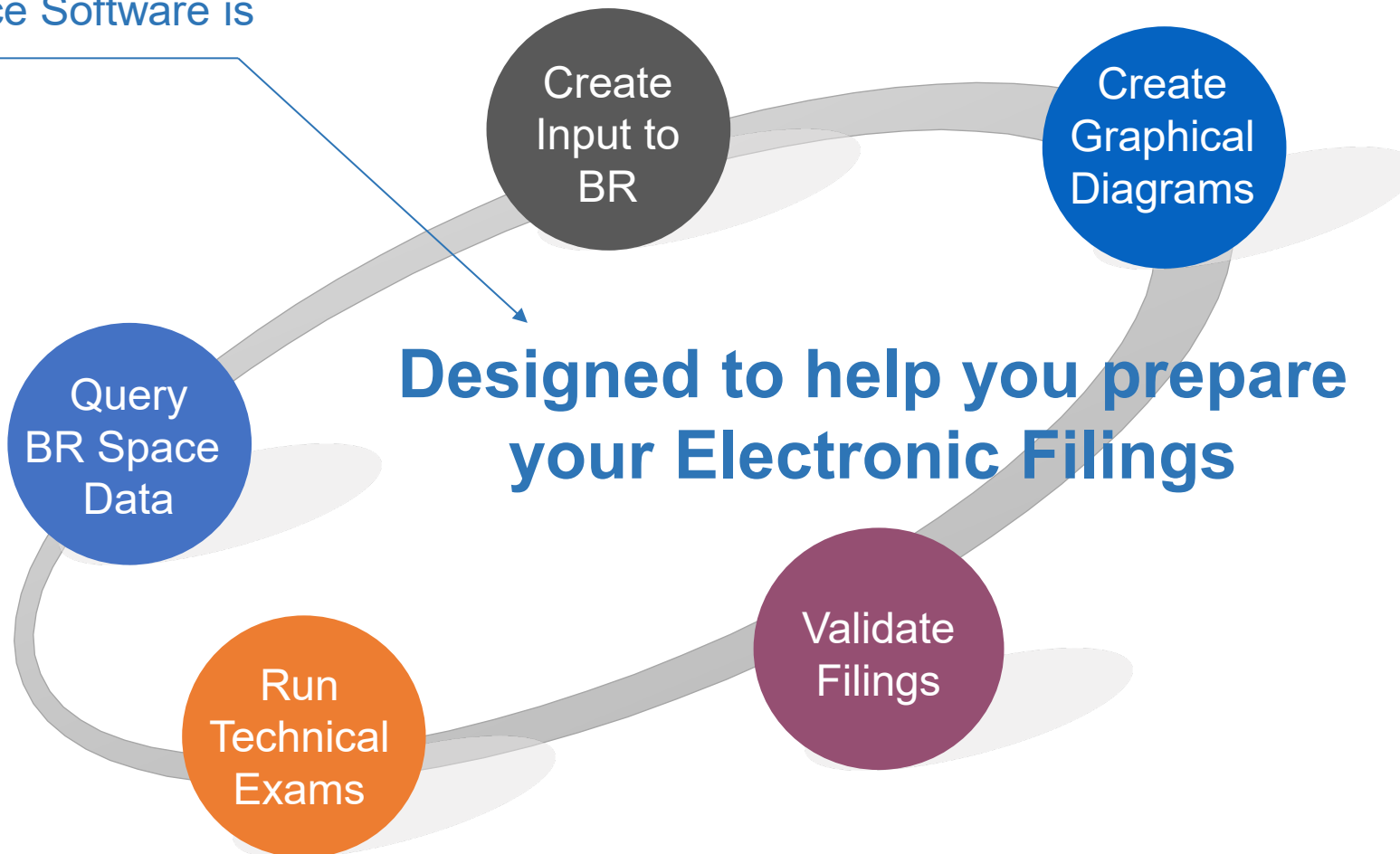
Rules of Procedure

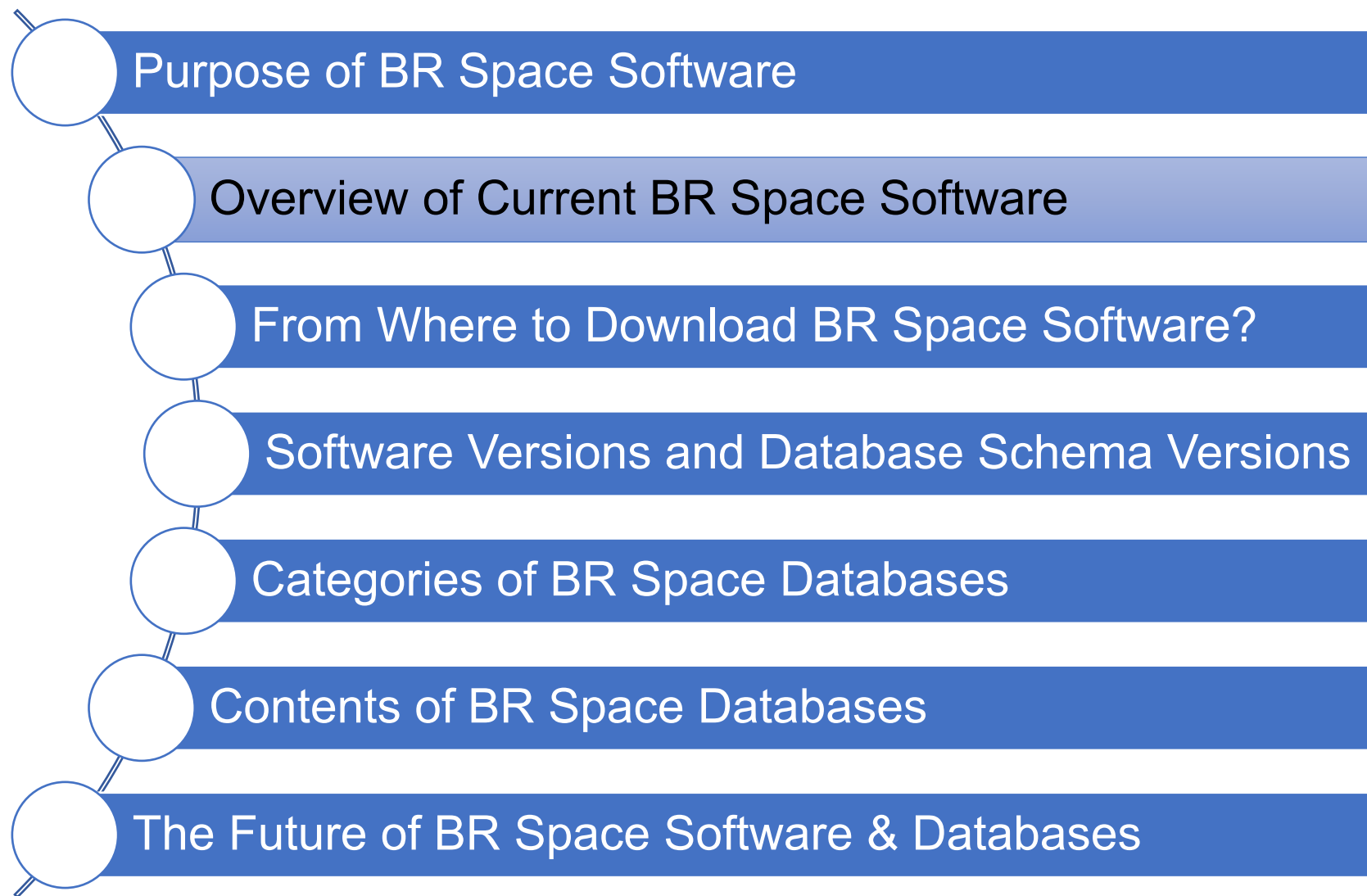
Complement the RR by providing clarification of the application of specific RR provisions and processes/exams



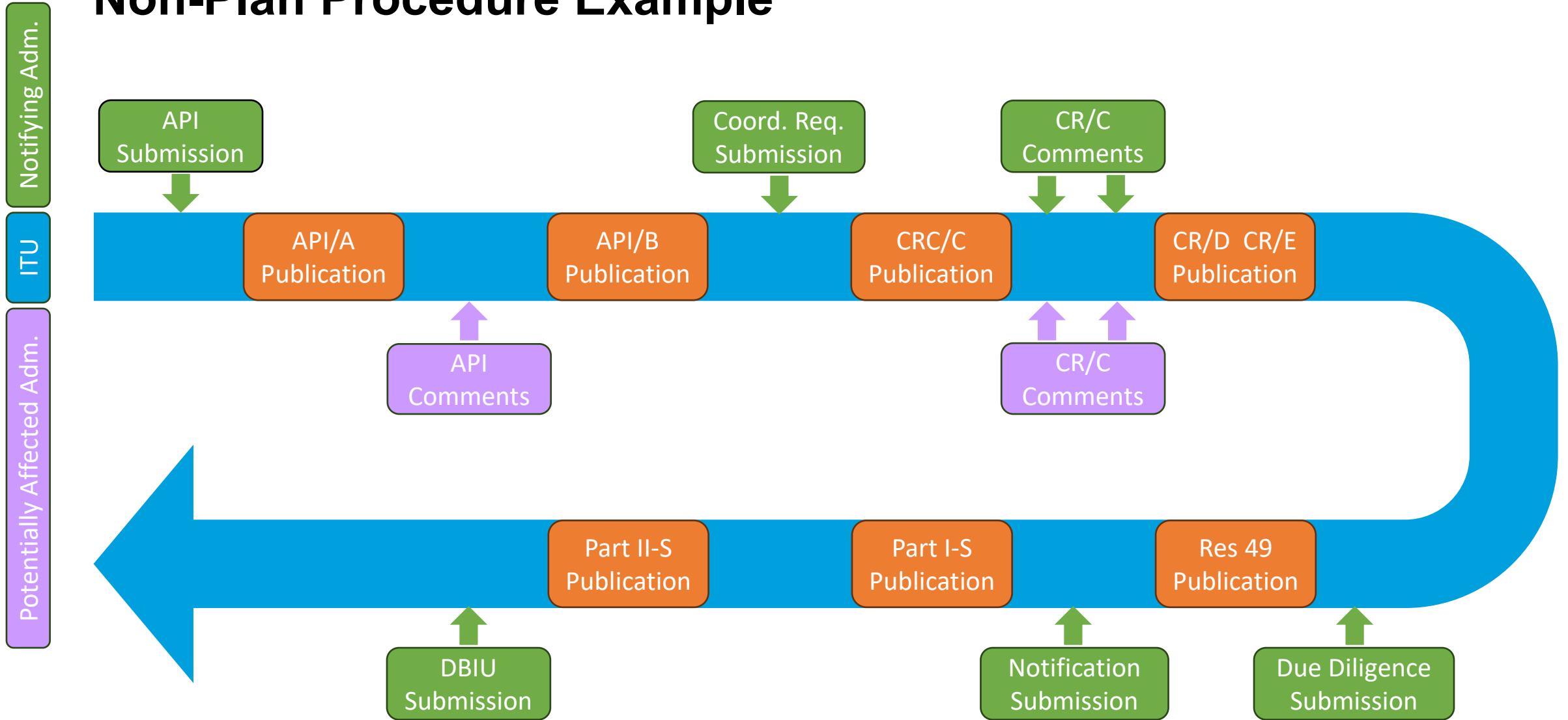
Purpose of BR Space Software

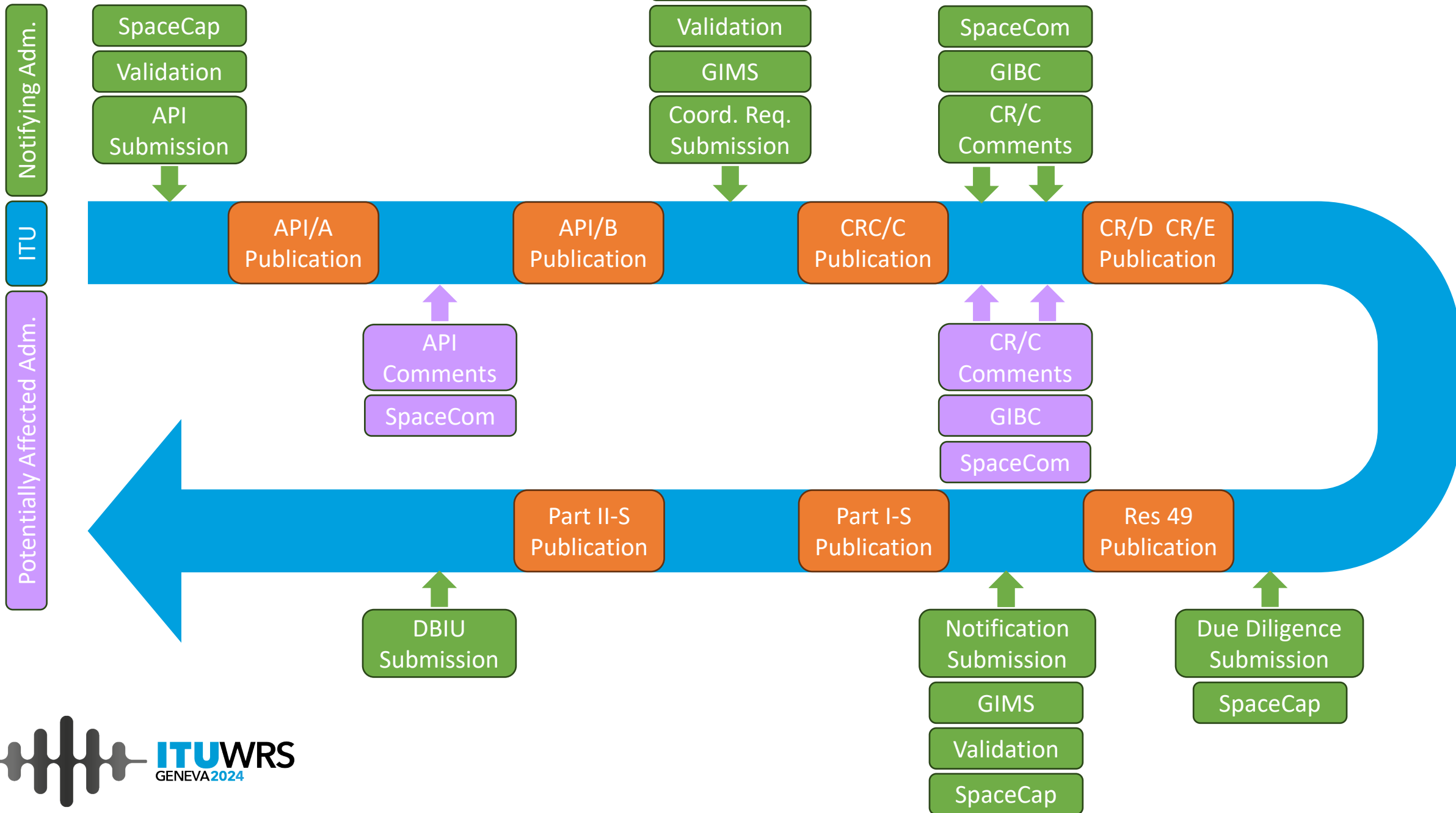
BR Space Software is





Non-Plan Procedure Example





Space Services Data Entry Software



ITU-R
RADIOCOMMUNICATION
SECTOR

SpaceCap

Capture

Res8/Res35

Capture

GIMS

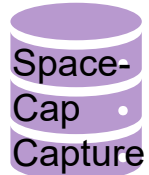
Graphics

BRSIS-
Validation

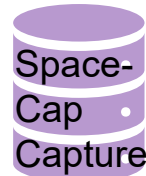
SpaceCom

Comments

Enter/Capture
AP4 data into
SNS formatted
database



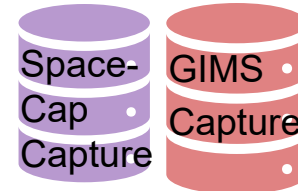
Enter/Capture
Res8 or Res35
data into SNS
formatted
database



Enter/Capture
AP4 graphical
data into GIMS
mdb



Validate AP4
data and
check for
presence of
required AP4
graphical data



Enter/Capture
requests for
coordination



Space Services Data Query Software



BRSIS-
SpaceQry

SpaceExplorer
Query & Extract

BRSIS-
Publication

GIMS
Graphics

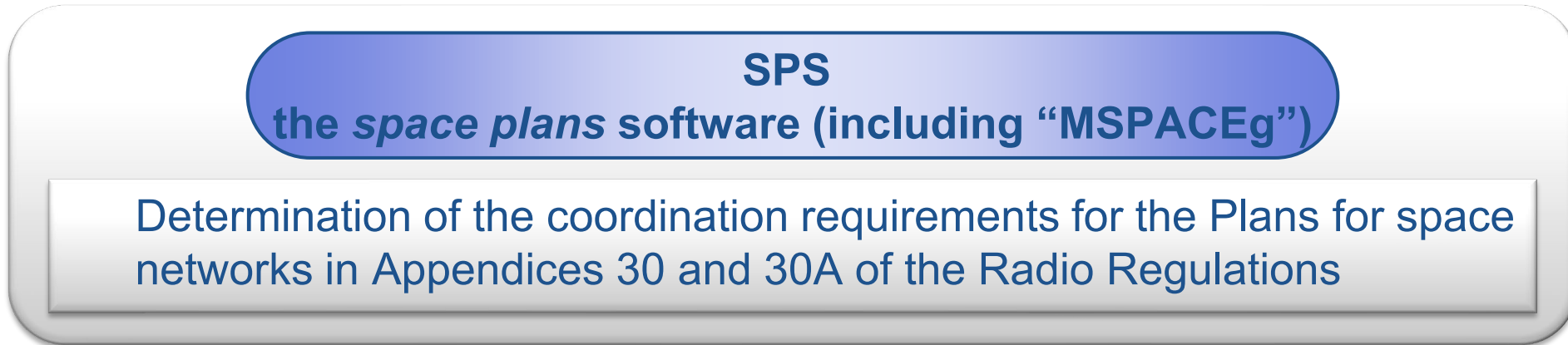
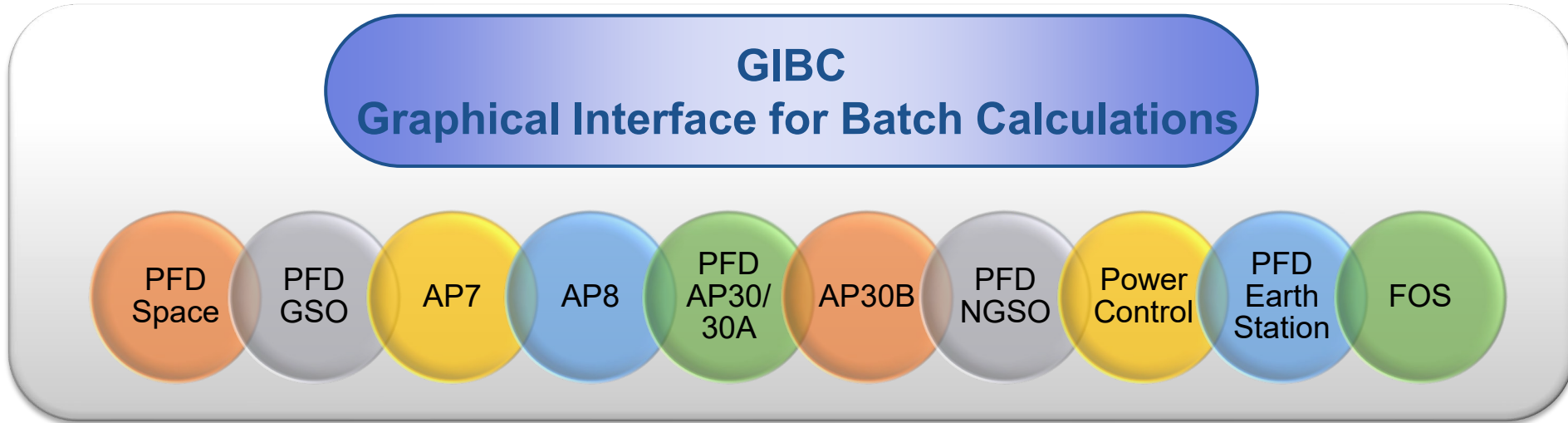
Query
satellite and
Earth stations
in the space
services from
SNS format MDB
containers

Query
satellite and
Earth stations
in the space
services from a
read-only copy of
the SNS master
database in ITU

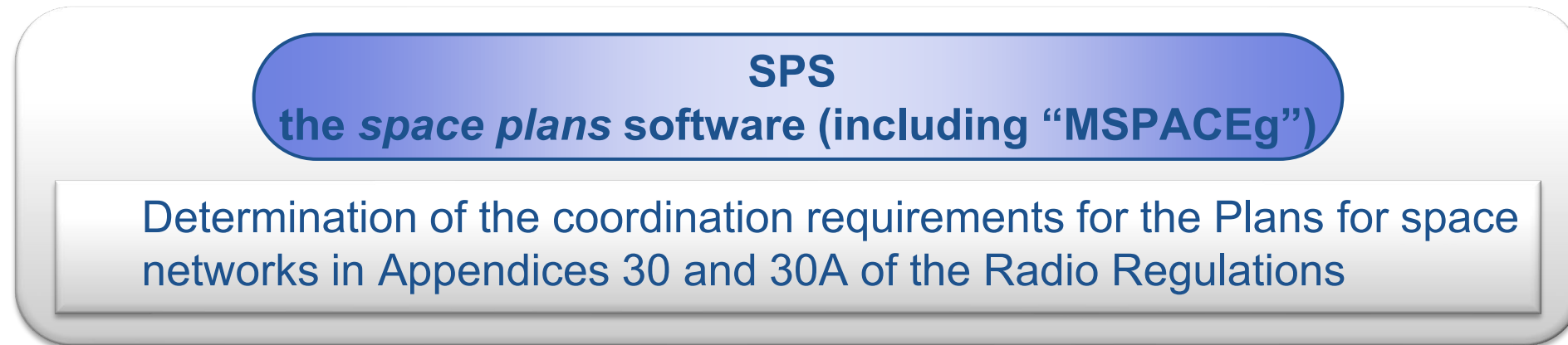
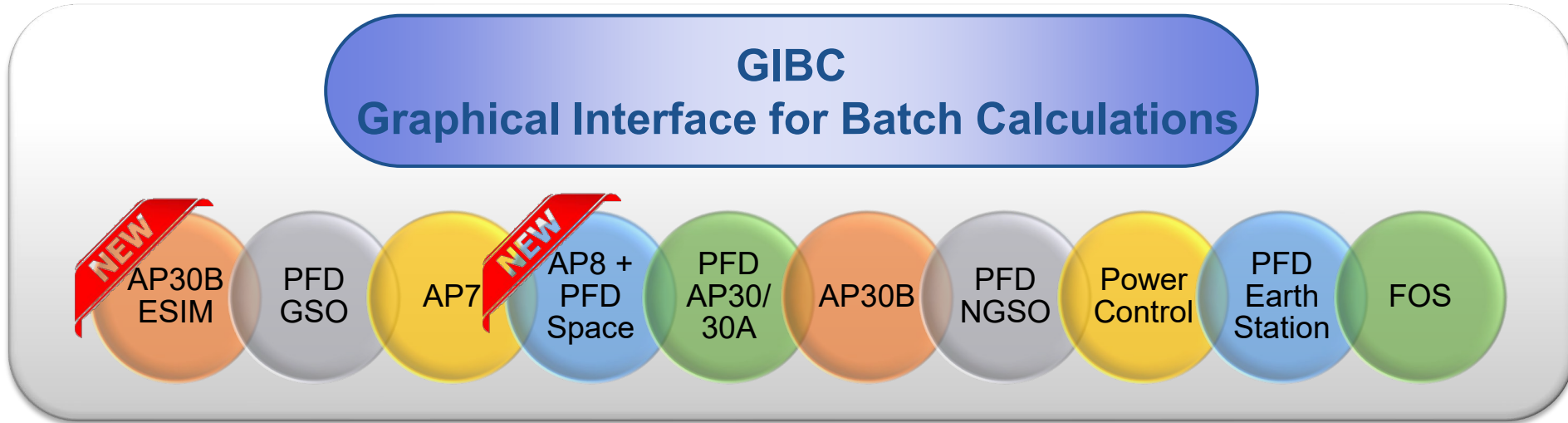
Print
satellite and
Earth stations
in the space
services from
SNS format MDB
containers

Query
graphical data in
the GIMS
database

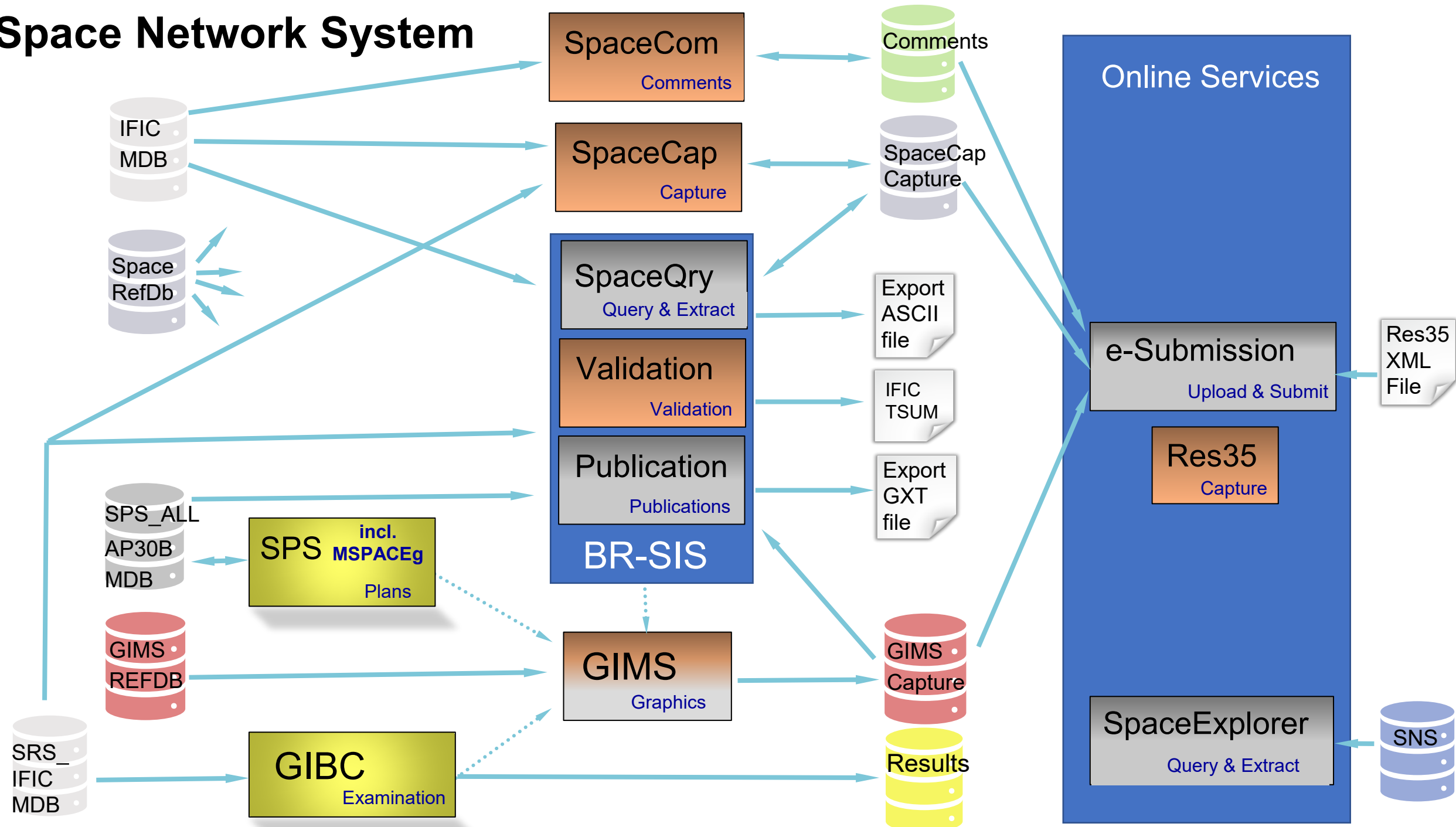
Space Services Technical Exams Software



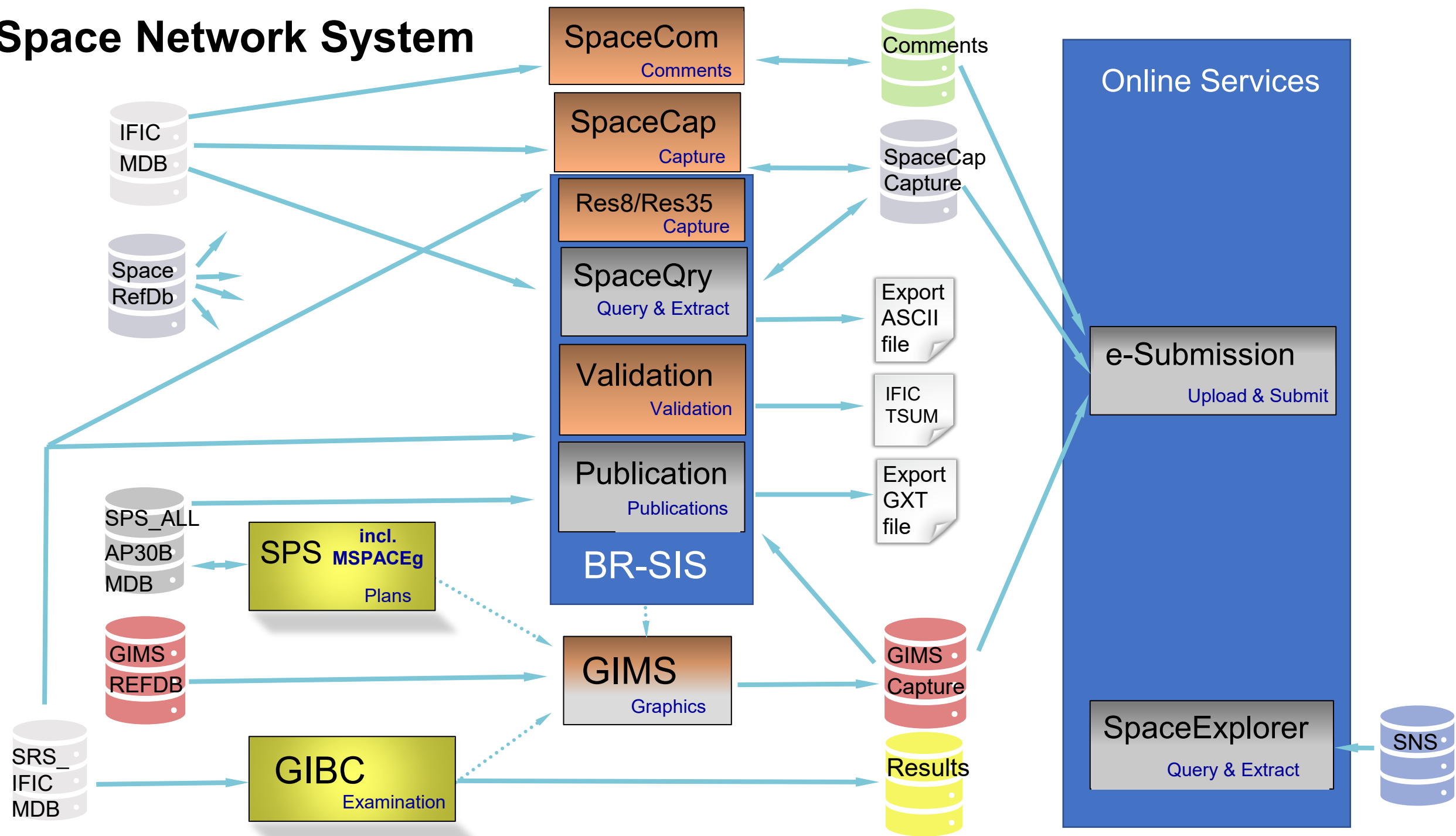
Space Services Technical Exams Software



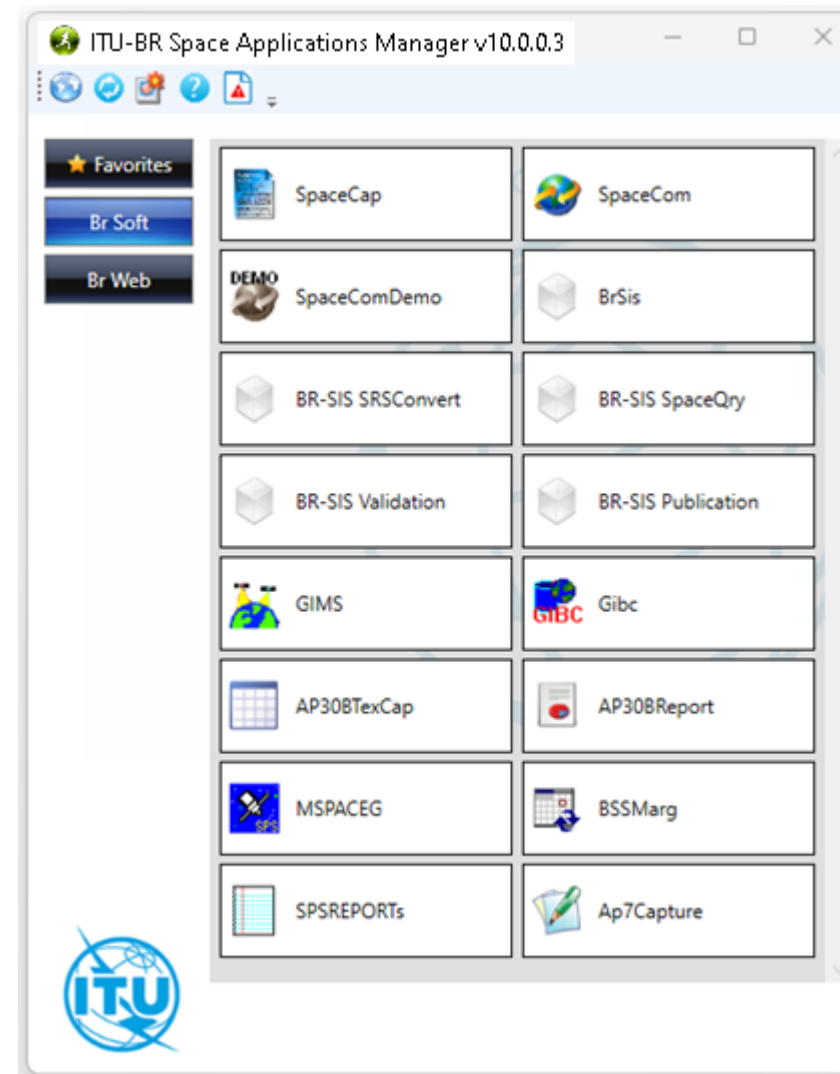
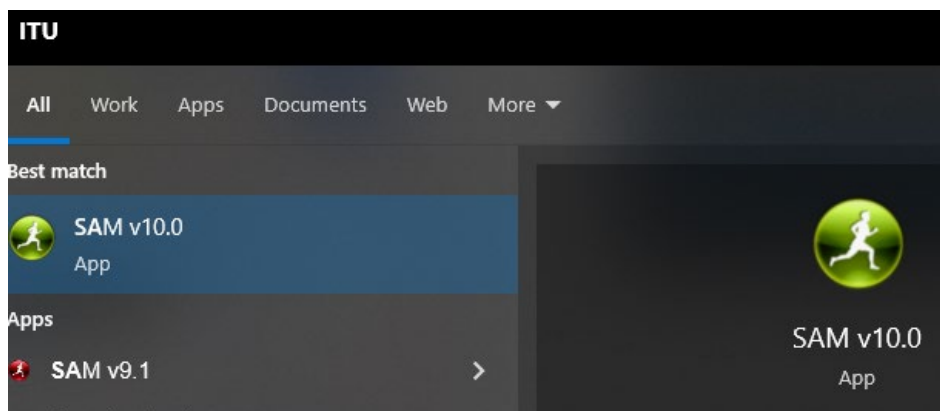
Space Network System

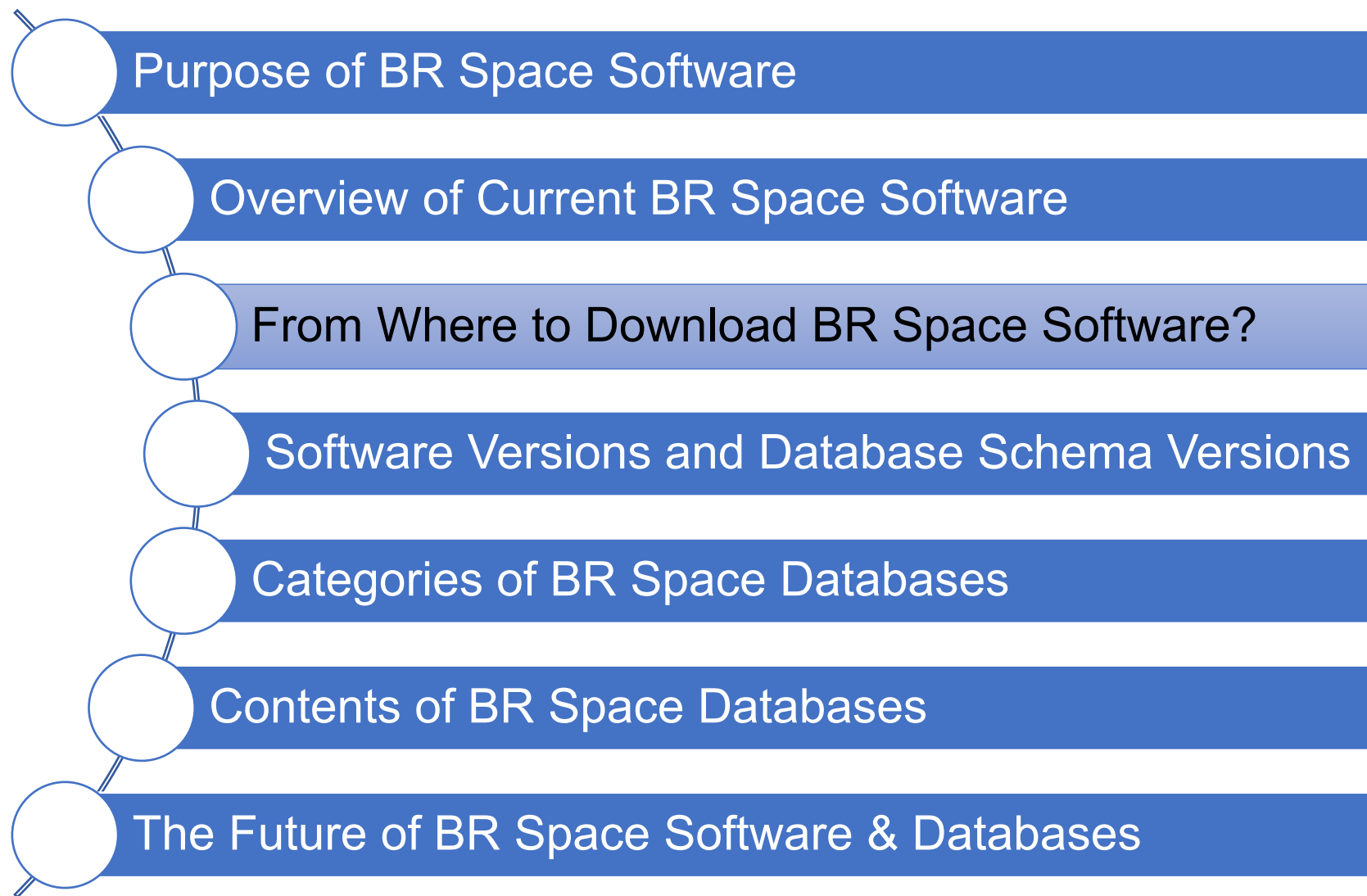


Space Network System



Space Application Manager





Latest BR Space Software Version



Download from the BR web site

<https://www.itu.int/ITU-R/go/space-software/en>

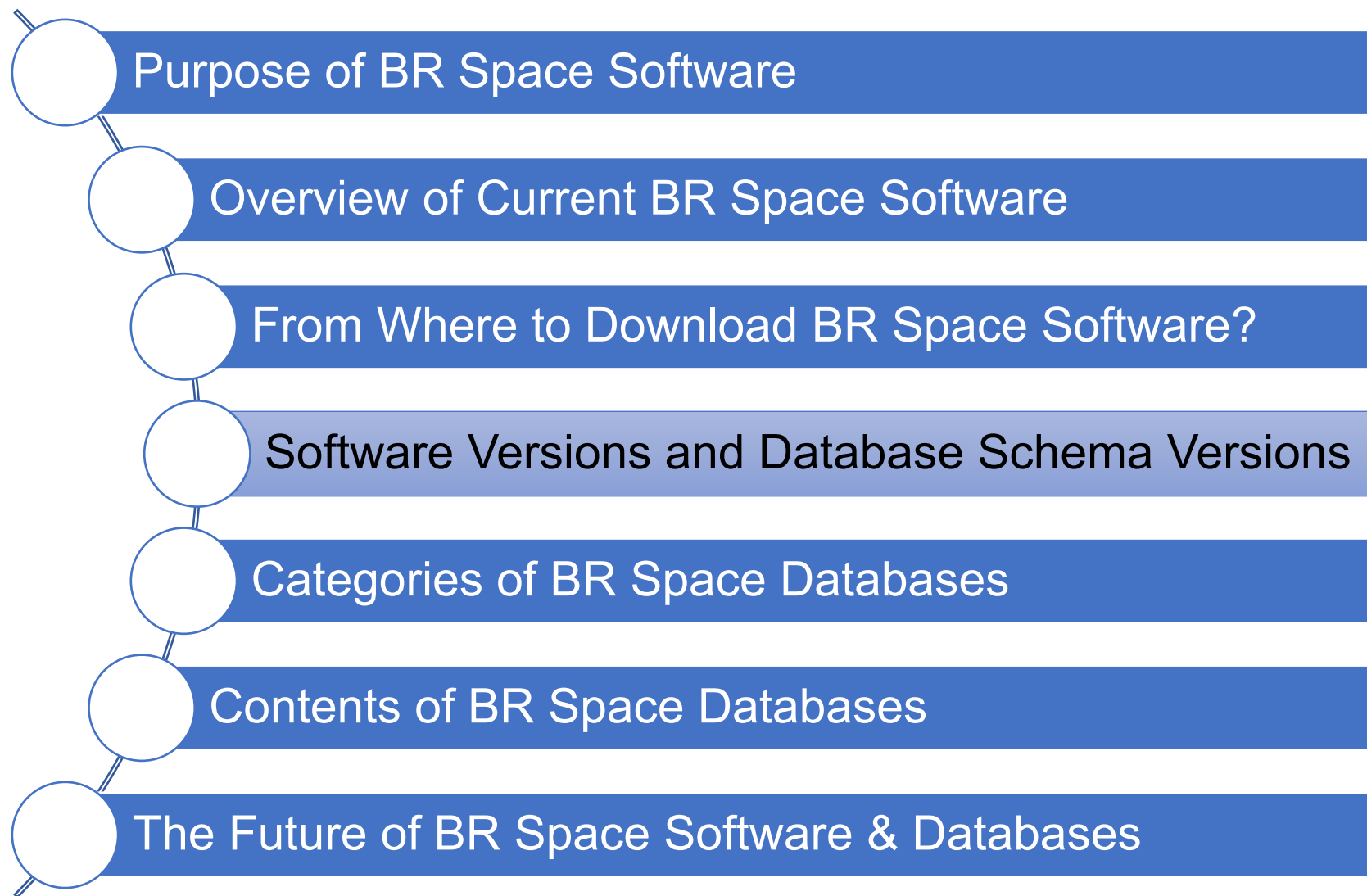
or



Install from DVD/ISO folder **BR_Soft**

- **Installation requires administrator privileges**
- **Your network administrator may need to whitelist some legacy software components**

More details: BR_Soft\Notes on installing ITU BR Space Applications.pdf



BR Space Software and DB Schema Version

- Each World Radio Communication Conference introduces new resolutions and changes to the Radio Regulations
 - **Decisions taken at WRC-19 (first phase of implementation and database schema change): v9 (IFIC 2926 - August 2020)** (e.g. support for NGSO constellations) - Impact on all desktop and web applications
 - **Work continued on implementing WRC-19 decisions** and adding new features to v9 software throughout the mid-2020 to mid-2022 period (RES35, coordination agreements capture, FOS, etc.)
 - **Second WRC-19-related database schema change: v9.1 (IFIC 2985 – November 2022)** – Multiple configurations identifiers for Non-GSO, excluding geographic areas from service area, etc.
- Transitions are announced in Circular Letters
 - **CR/464 for v9, CR/493 for v9.1, **CR/5XX** for v10**
- Where to find information on the SNS Format (DB schema)?
 - **Section III of the Space Preface:** Description of the SNS format
http://www.itu.int/en/ITU-R/space/Preface/preface_e.pdf

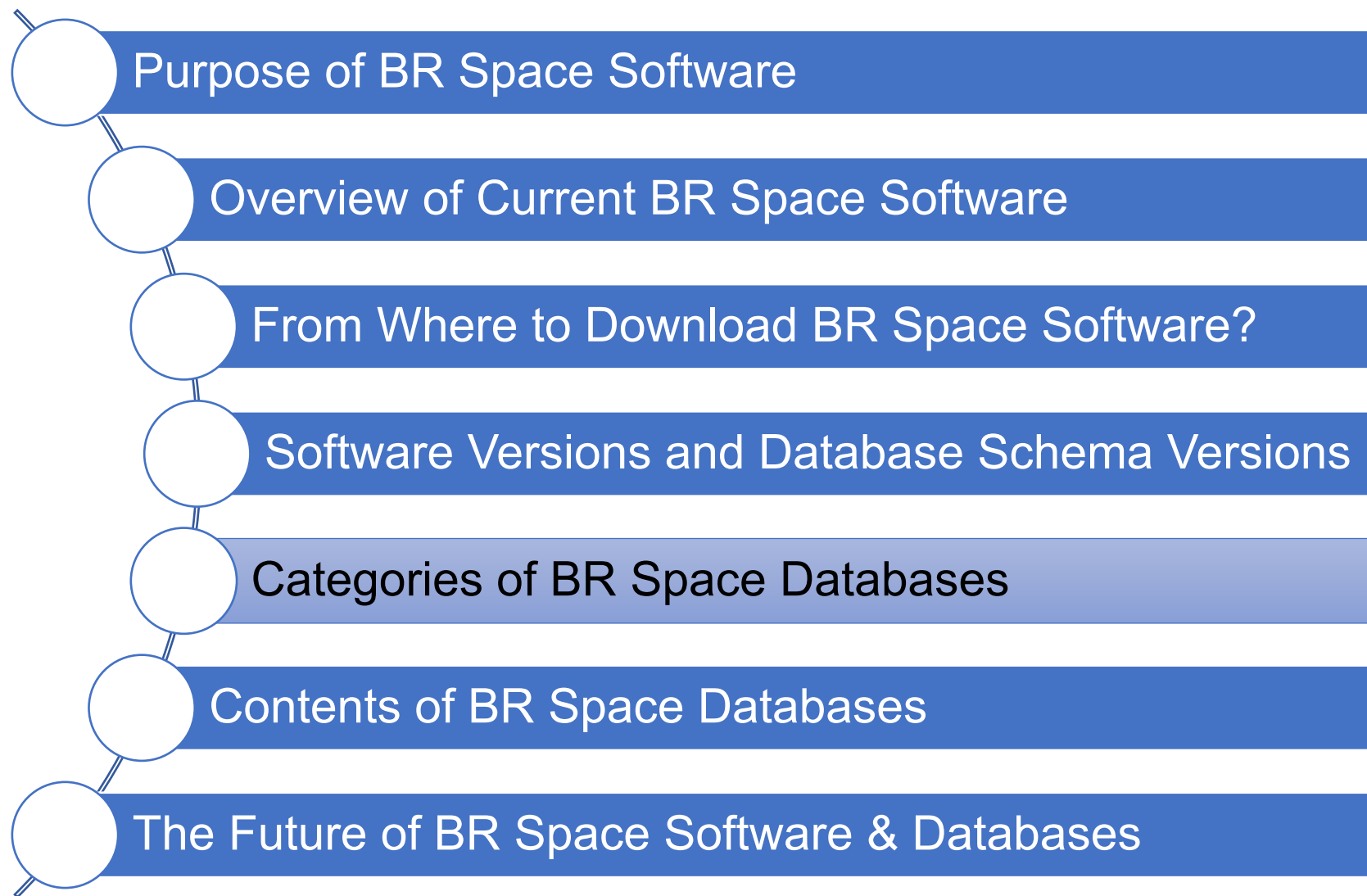
Database Schema for SNS v9.1

Files in the **Databases\SRS_Data** folder of IFIC DVD (or ISO image):

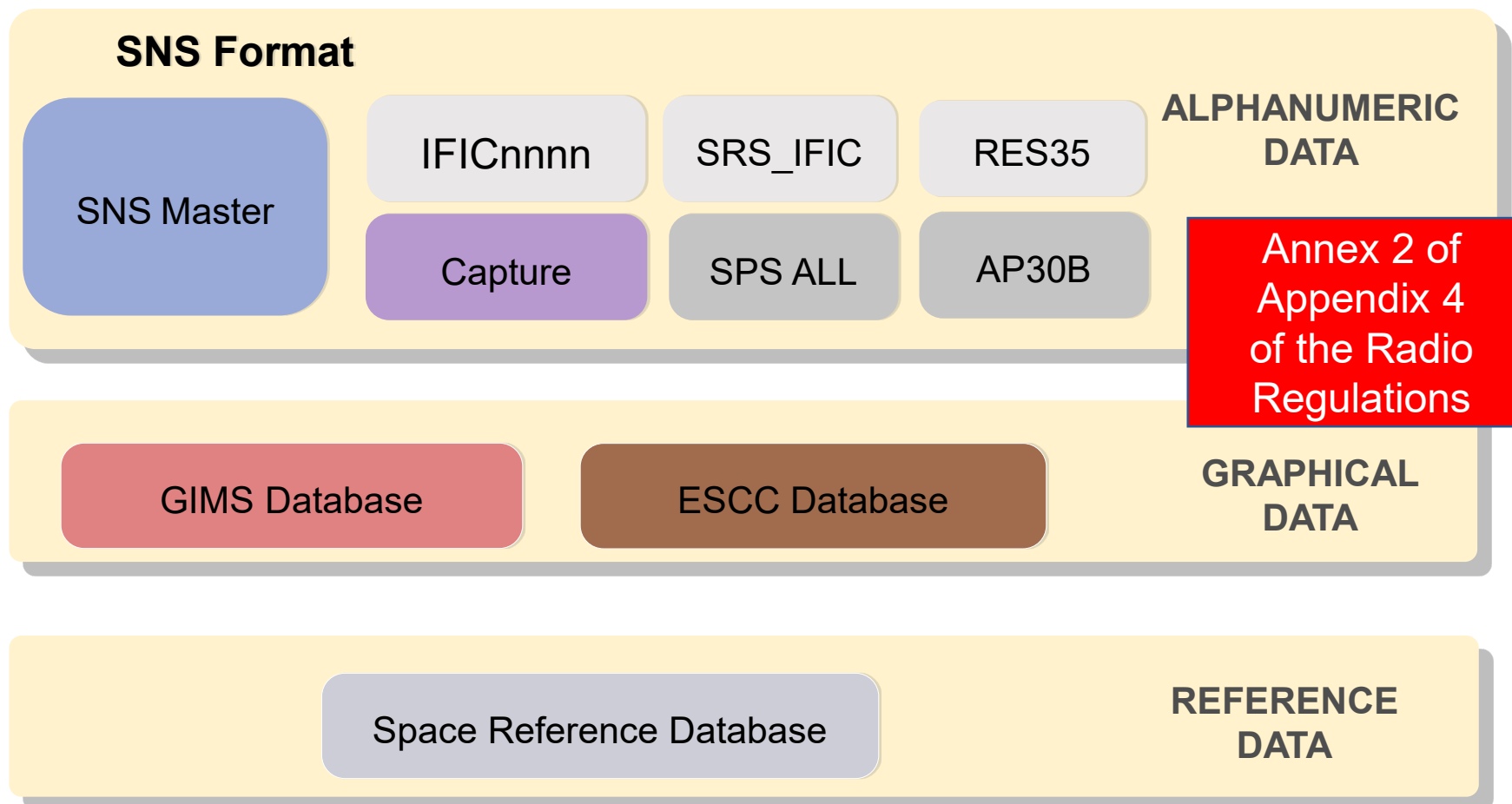
- **sns_dbv91.pdf**: Extract of the Preface to the BR IFIC
- **SNS_V9_1_Changes.pdf** : List of differences with respect to the v9 schema
- **SRS Diagram V9.1** : Database diagram

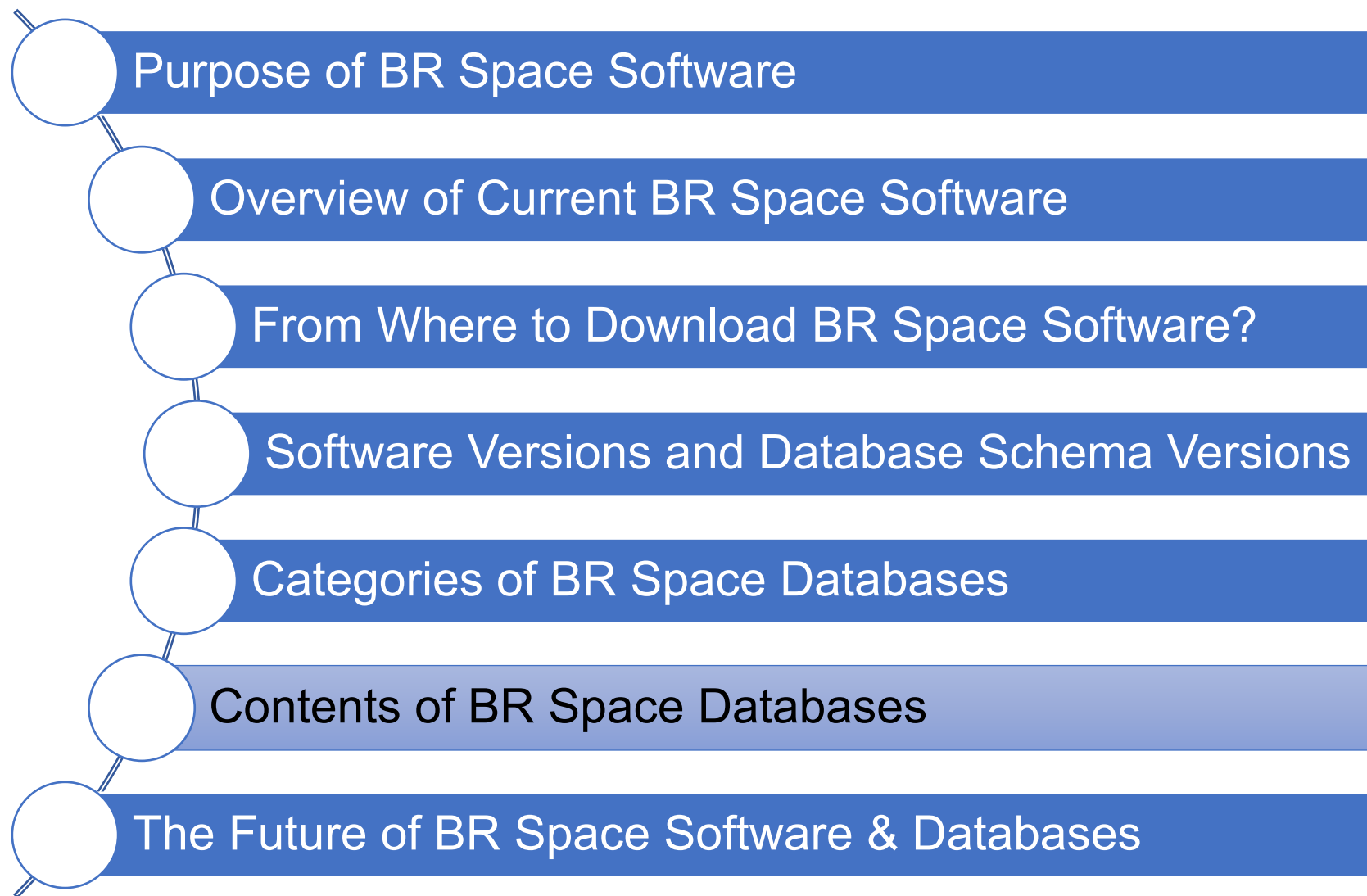
SNS v10: WRC-23 Implementation

- WRC-23 decisions introduced many changes in AP4:
 - Aeronautical and maritime ESIM (Resolutions 121, 123, 169)
 - Post-deployment orbital tolerances (Resolution 8)
 - Inter-satellite links (Resolution 679)
- As WRC decisions force changes to the database, the BR also takes the opportunity to improve the schema, as resources allow
- These changes will be implemented as SNS v10 database schema as of IFIC 3037 (January 7, 2025), and
- BR Space Software v10 will be available for download as of the date of publication of IFIC 3036 (December 10, 2024)

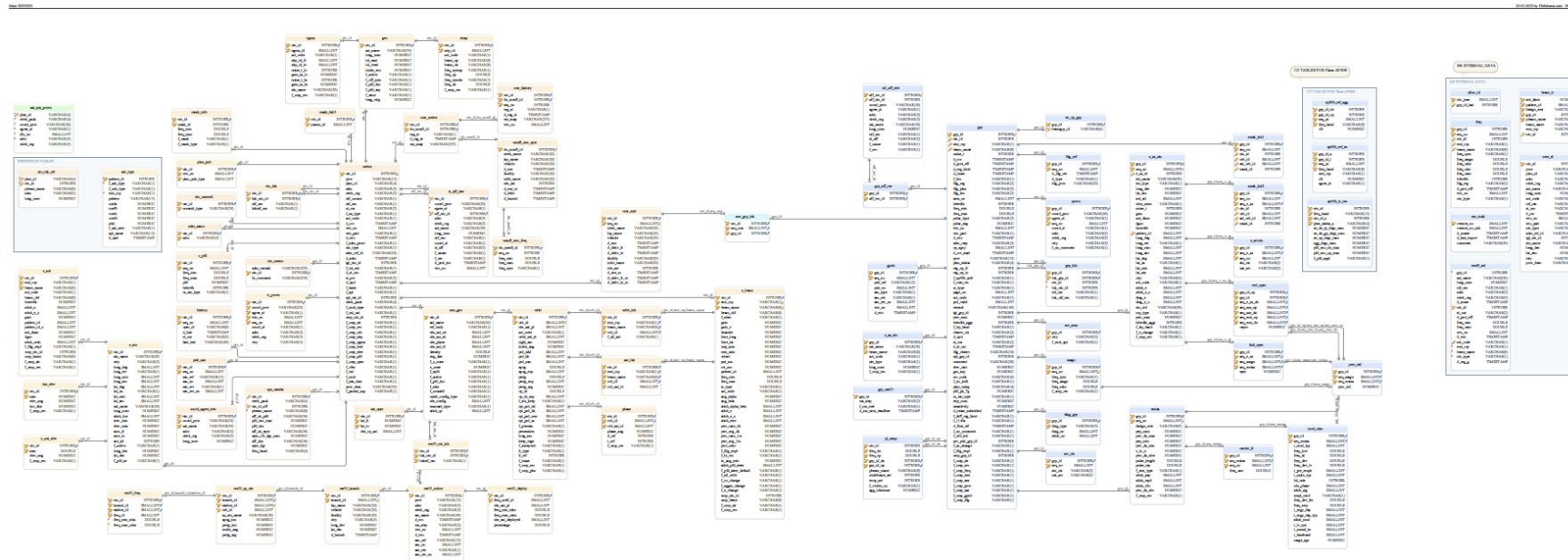


Categories of BR Space Databases





BR SNS Format Databases



SNS Format Database



SNS Master Database

SRS_IFICnnnn.mdb

IFICnnnn.mdb

srs_res35.mdb

SPS_ALL_IFICnnnn.mdb

AP30Bnnnn.mdb

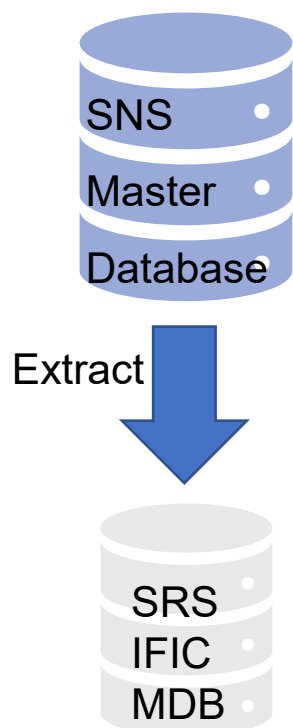
Capture.mdb

SNS Master Database



- **In the Master Register**
 - Coordination and Notification
 - Advance Publication of Information
 - Due Diligence (Resolution 49)
- **Electronic Filings received by the BR**
 - New assignments
 - Mod(ification) of existing
 - Delete (suppress) existing
- **Notifications in Technical Examination**

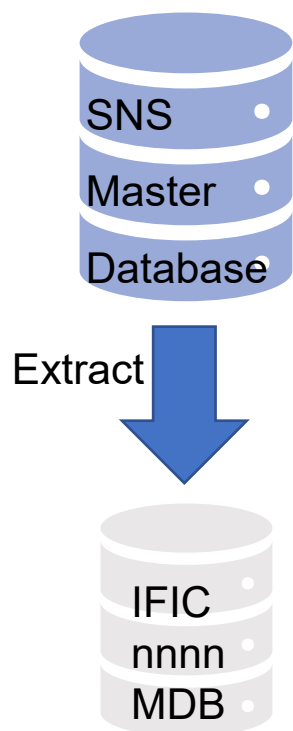
SRS_IFICnnnnn.mdb on the BR IFIC (Space) DVD/ISO Image



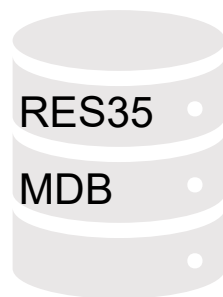
- Published every IFIC DVD (2 weeks)
- Snapshot of the SNS Master Database

- Coordination and Notification recorded in the **Master Register**
- in **Technical Examination**
- for **Advance Publication of Information**
- for **Due Diligence (Resolution 49)**

Space Radiocommunication Stations (SRS)



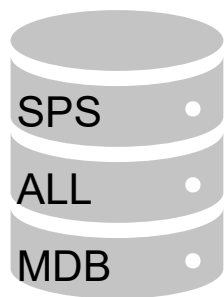
- **Published every IFIC DVD (2 weeks)**
 - **Part I-S** – New frequencies or modifications, cancellations of assignments in the Master Register received by the BR
 - **Part II-S** – Updates to the Master Register with Findings
 - **Part III-S** – Notifications returned to ADM with unfavourable findings
 - **Special Sections** – Submissions published: API/A, CR/C, CR/D, CR/E, CR/F



- **Published every IFIC DVD (2 weeks)**

- Satellite system information
- Launch information
- Space station characteristics
- Frequency characteristics
- Deployment summary

SPS_ALL_IFICnnnnn.mdb on the BR IFIC (Space) DVD/ISO Image



Space Plan System (SPS)

- **Published every IFIC DVD (2 weeks)**

Technical characteristics and reference situation for networks of the planned space services

- **Appendices 30/30A**

- Region 1 and 3 Plan, List and pending Article 4 networks
- RARC SAT-R2 Region 2 Plan
- Article 5 of Appendices 30 and 30A
- Pending Article 2A networks of Appendices 30 and 30A

- **Due Diligence (Resolution 49)**

Appendix 30B Database on the BR IFIC (Space) DVD/ISO Image

- Published every IFIC DVD (2 weeks)



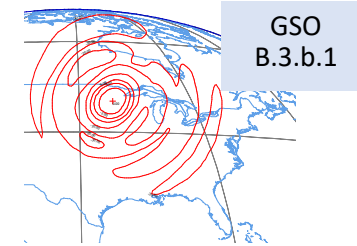
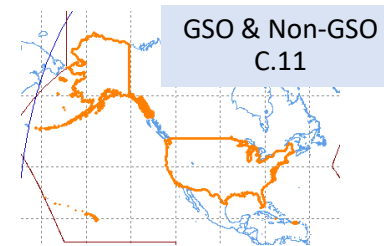
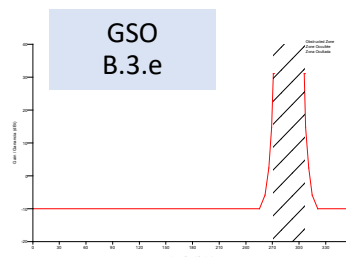
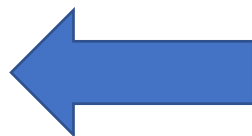
- **Appendix 30B**

- Plan, List and Pending Article 6 networks
- Article 8 of Appendix 30B

- **Due Diligence (Resolution 49)**

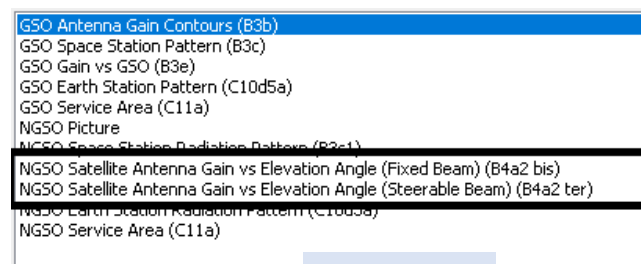
Graphical Data - GIMS Database on the BR IFIC (Space) DVD/ISO Image

- Published every IFIC DVD (2 weeks)

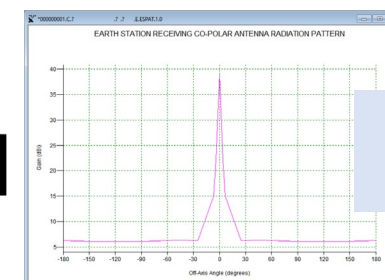


Graphical Data for GSO and Non-GSO Satellites

- used by Technical Examination software
- Available in GIMS_Data\grefdbnnnn.mdb and accessible via GIMS software (REFDB)

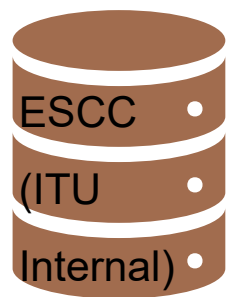


New
diagrams for
WRC-23



Graphical Data - ESCC Database

- Master Repository for Earth Station Coordination Contours



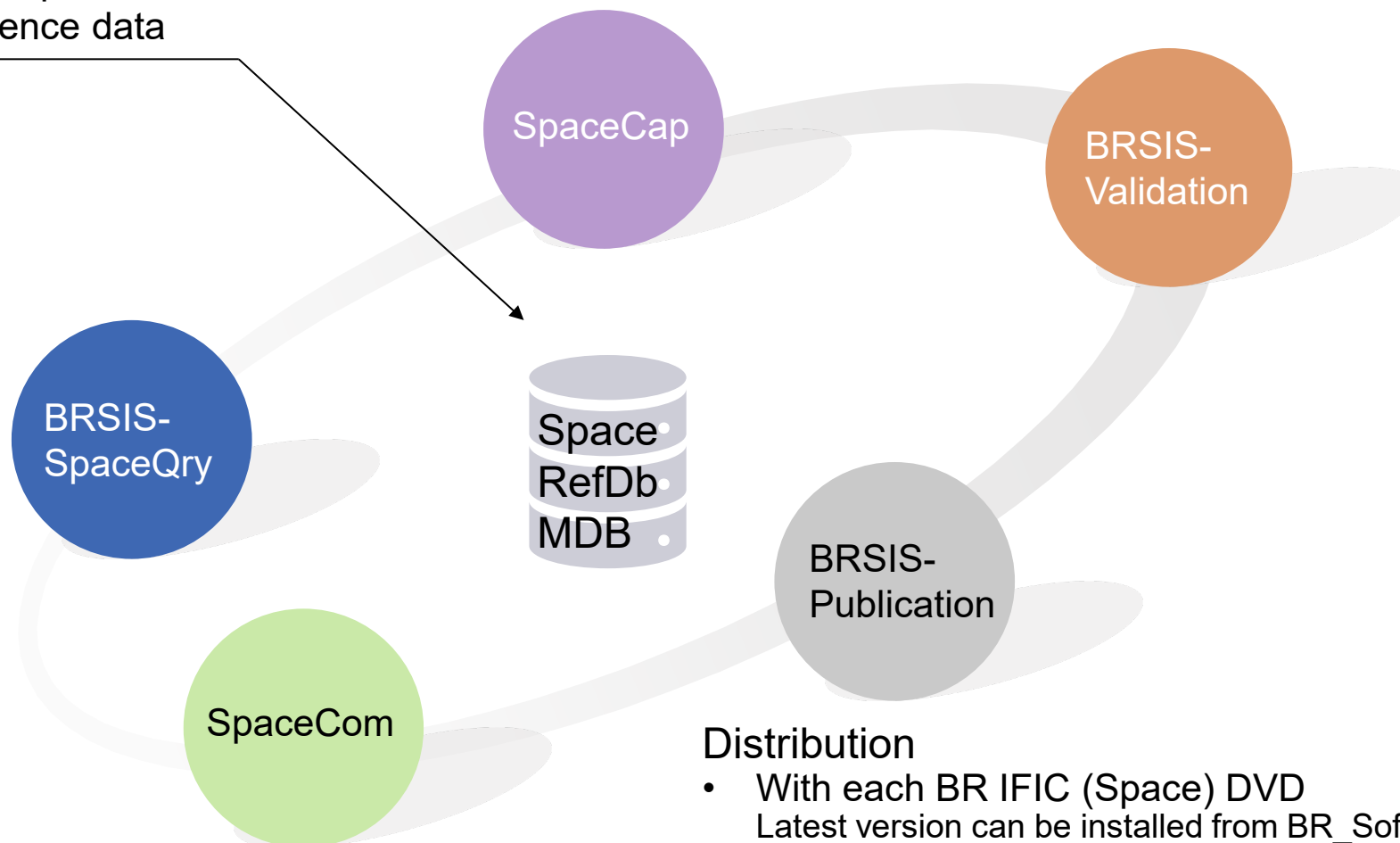
Generated by the Appendix 7 software

Graphical Data for **Earth Stations**

- used in-house
- used by Technical Examination software

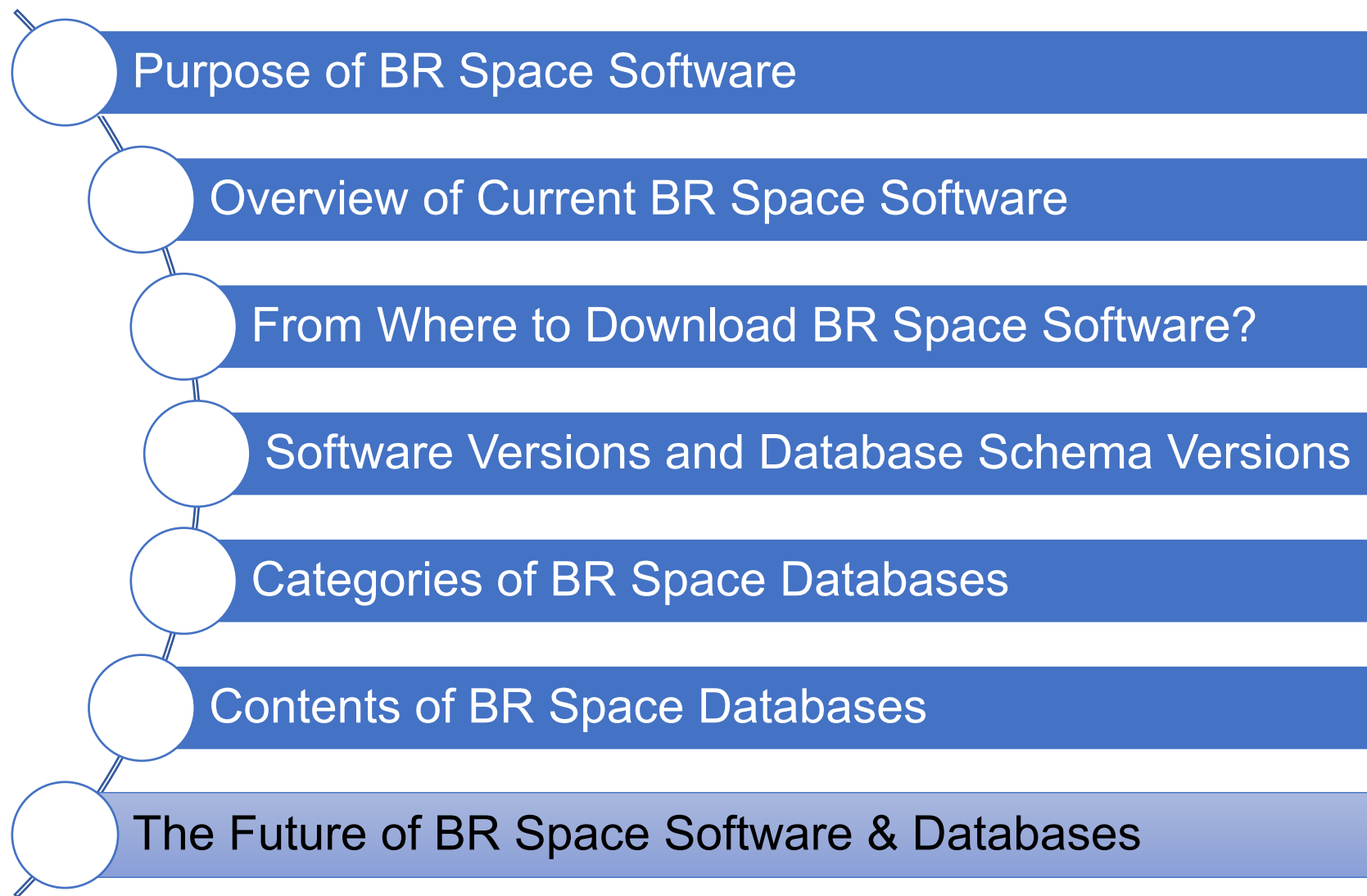
Space Reference Database

Ensures all BR Space Software use
the same reference data

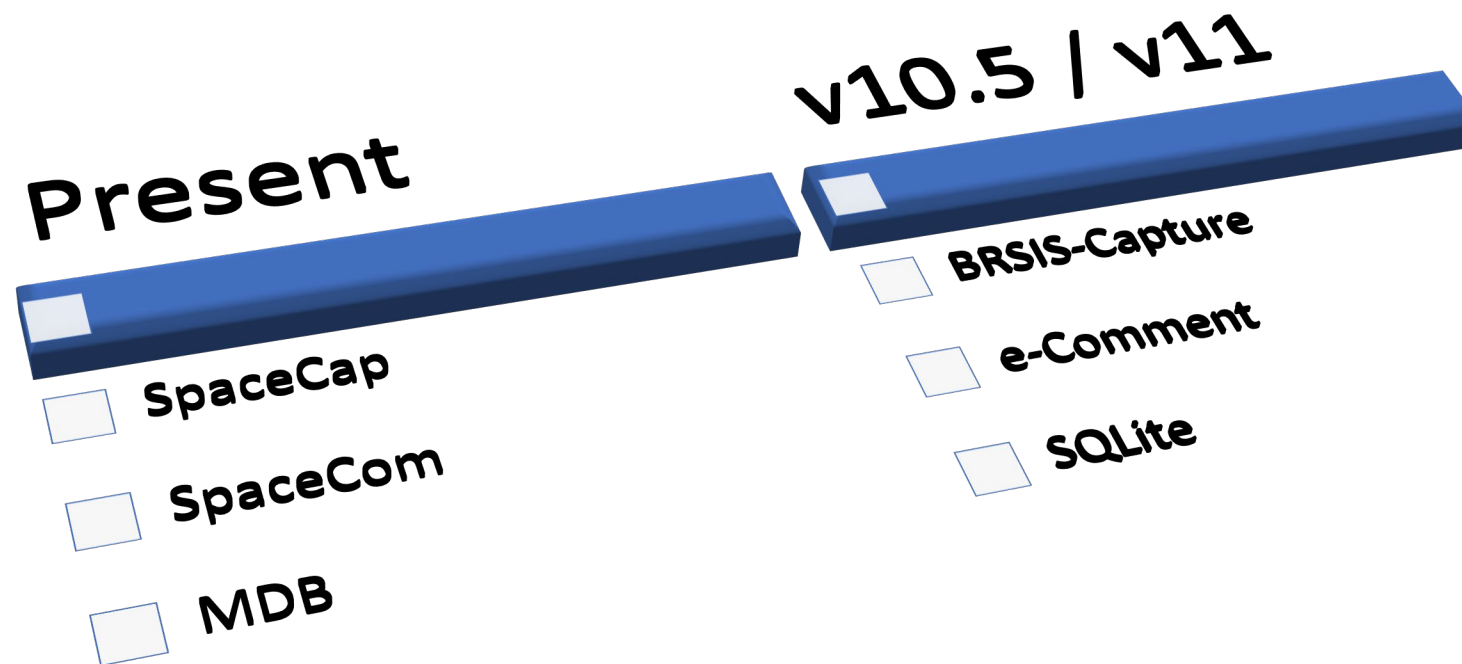


Distribution

- With each BR IFIC (Space) DVD
Latest version can be installed from BR_Soft\SpaceRefDB folder
- Downloadable from the ITU Web Site
<https://www.itu.int/en/ITU-R/software/Pages/spacerefdb.aspx>



Future of BR Space Software





Thank you!

ITU – Radiocommunication Bureau

Questions to brsas@itu.int