REMIT data and technology

REMIT Forum 2021 – Special session
ACER - Market Integrity and Transparency Department
Tuesday, 26 October 2021 / 14.00 - 16.30 CET
## Agenda for this session

**FIRST PART: INPUTS FROM ACER**

<table>
<thead>
<tr>
<th>Time</th>
<th>Content</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.00 – 14.15</td>
<td><strong>REMIT DATA COLLECTION</strong>&lt;br&gt;State of play of transaction reporting guidance evolution and upcoming challenges on data collection.</td>
<td>Eleonora Nagali, Market Integrity and transparency department, ACER</td>
</tr>
<tr>
<td>14.15 – 14.30</td>
<td><strong>RRMs AND DATA REPORTING</strong>&lt;br&gt;State of play of data collection, RRM compliance monitoring.</td>
<td>Marketa Stuchlikova, Market Integrity and transparency department, ACER</td>
</tr>
<tr>
<td>14.30 – 14.45</td>
<td><strong>REMIT DATA FEATURES</strong>&lt;br&gt;Features of collected data and information, including data quality, processes and lessons learnt.</td>
<td>Iztok Zlatar, Market Integrity and Transparency department, ACER</td>
</tr>
<tr>
<td>14.45 – 15.00</td>
<td><strong>INFORMATION MANAGEMENT AND TECHNOLOGY</strong>&lt;br&gt;Introduction to how data and information is managed under REMIT. Insight into technology applied at ACER, data flows, the analytical capabilities and challenges ahead.</td>
<td>Georgios Katsikogiannis, Market Integrity and Transparency department, ACER</td>
</tr>
</tbody>
</table>
## SECOND PART: DEBATE WITH STAKEHOLDERS

<table>
<thead>
<tr>
<th>Time</th>
<th>Content</th>
<th>Presenter</th>
</tr>
</thead>
</table>
| 15.00 – 16.00 | PANEL DISCUSSION: REMIT data collection so far, expectations in the future | **Moderator:** Volker Zuleger, Market Integrity and transparency department, ACER  
**Panellists:**  
Alexander McDonald, LEBA  
Christian Baer, Europex  
Karl-Peter Horstmann, EFET  
Rafael Gómez-Elvira González, All NEMO Committee  
Johannes Mayer, E-Control |
| 16.00 – 16.30 | Q&A                                                                   |                                                                           |
REMIT data collection

REMIT Forum 2021
Special session: "REMIT data and technology"
Eleonora Nagali
ACER - Market Integrity and Transparency Department
Tuesday, 26 October 2021 / 14.00 - 16.30 CET
Data reporting go-live 7 October 2015
Potential drivers

Automated trading

Increased liquidity of trading closer to delivery
ACER’s focus in 2021

• Ensure an efficient and reliable data collection
  • Improve the monitoring of RRM s activity
  • Carry out horizontal data quality analysis (across OMPs), consider all reporting Tables
  • Deal with ARIS operation, support and development

• Provide guidance in line with the latest market design development
  • Yearly update of the Transaction Reporting User Manual (TRUM) and its Annexes
    • Last edition published in April 2021 including references to market coupling
    • Upcoming consultation in November 2021 focused on Table 4 data
    • Next consultation potentially in mid-2022

• Ensure that collected data are suitable for market surveillance
  • Finalize the ongoing interactions with SIDC NEMOs on SIDC data reporting
Upcoming challenges

- Increased market design complexity, also driven by the evolution of EU Regulation
  - New products
  - New actors

- Market coupling expansion
  - Geographical
  - Market type (Intraday Auctions, Cross product matching)

- New ways of trading, new technologies

- Promote usage of REMIT data to increase the value of REMIT data
Published on a quarterly basis

Latest updates on:
- Data analysis/data quality
- Surveillance activity

Updates on:
- Latest REMIT documents publication
- Suspicious REMIT breach cases
- Registered reporting mechanisms activity

REMIT Quarterly – documents (acer-remit.eu)

Subscribe to the ACER Infoflash
Thank you!

More info?

REMIT Portal: www.acer-remit.eu
ACER website: www.acer.europa.eu
Diverse ways of trading and technology

- Exchanges
- Brokers
- ENTSO e TPs
- JAO’s trading platform
- Trading platforms
- Gas BPs
- ...and many more

Reporting Technology

- RRM1...
- RRM105

Contingency reporting

ARIS

MPs

14,935
Article 11(1) of Commission Implementing Regulation (EU) No 1348/2014 (REMIT Implementing Regulation) tasks ACER to register reporting parties who comply with the technical and organisational requirements for submitting data on the basis of ACER’s assessment whether reporting parties comply with the requirements to:

(a) ensure the security, confidentiality and completeness of information,

(b) enable the identification and correction of errors in data reports,

(c) enable the authentication of the source of information,

(d) ensure business continuity.

ACER registers reporting parties who comply with the requirements specified in ACER’s requirements for registered reporting mechanisms as Registered Reporting Mechanisms (RRMs). Since data submission is a continuous activity of RRM, ACER has to continuously monitor compliance of RRM.
RRM Compliance Monitoring

• Why?
  • To ensure security, availability and operational reliability of ARIS and maintain high quality of submitted data

• How?
  • Risk based approach

• Legal basis:
  • Article 11(1) of the REMIT Implementing Regulation: the Agency shall assess whether registered reporting parties comply with the technical and organisational requirements for submitting data, which are defined in the ACER’s RRM Requirements document
  • Articles 7(1) and 8 of REMIT: ACER shall collect the data for assessing and monitoring wholesale energy markets as provided for in Article 8 of REMIT.
  • Article 12(1) of REMIT: ACER is obliged to safeguard the operational reliability of ARIS and to ensure the confidentiality, integrity and protection of the information received pursuant to Article 8 of REMIT
RRM Compliance Monitoring metrics

- Actively reporting RRM and data types monitoring
- RRM file submissions, statuses and success rates
- Data submission channels used
- Ratio of errors to data
- Validation rules statistics
- Contingency statistics (events, updates, duration..)

**RRM Files Status**

<table>
<thead>
<tr>
<th>Date</th>
<th>Status</th>
<th>Status Description</th>
<th>Number of Files</th>
</tr>
</thead>
<tbody>
<tr>
<td>23/10/2021</td>
<td>Invalid Schema Validation Failure</td>
<td>Failure during the Schema Validation Phase</td>
<td>87</td>
</tr>
<tr>
<td></td>
<td>Naming</td>
<td>Tier 1: Naming Convention Validation Done</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Tier 2 Partial Success</td>
<td>Tier 2: Partial Success for Validation Rules</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>Tier 2 Phase 2</td>
<td>Tier 2: Collaboration Phase 2</td>
<td>898</td>
</tr>
<tr>
<td></td>
<td>Tier 2 Success</td>
<td>Tier 2: Data validated successfully</td>
<td>7,506</td>
</tr>
<tr>
<td></td>
<td>Tier 2 to DWH</td>
<td>Tier 2: Data moved to DWH for validation</td>
<td>1</td>
</tr>
</tbody>
</table>
| 23/10/2021 Total |                |                                             | 8,538           

**Total Records 2021 vs 2020**

- Total Records 2020
- Total Records 2021
- Moving Average

**Number of Exceptions triggered**

- Date: 27/09/2014
- Exception Type: Contract Errored
- Number of Exceptions triggered: 4,174

Analyze - Edit - Refresh - Print - Export
# Registered reporting entities

## RRM Applications

<table>
<thead>
<tr>
<th>Category</th>
<th>2021 Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of RRM Applications received in 2021</td>
<td>66</td>
</tr>
<tr>
<td>No. of RRMs registered in 2021</td>
<td>0 (5 technical re-registration due to Brexit)</td>
</tr>
<tr>
<td>Average no. of working days RRM applicants are in the 2nd ID stage (action pending on the RRM)</td>
<td>&gt; 3 months</td>
</tr>
<tr>
<td>No. of terminated RRMs in 2021:</td>
<td>17</td>
</tr>
<tr>
<td>RRM applicants in last stages of the registration</td>
<td>3</td>
</tr>
</tbody>
</table>

## Inside information platforms (IIPs)

<table>
<thead>
<tr>
<th>Category</th>
<th>2021 Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of IIP applications received in 2021</td>
<td>1</td>
</tr>
<tr>
<td>No. of IIP applications received during 2020-2021</td>
<td>27</td>
</tr>
<tr>
<td>No. of IIPs registered in 2021</td>
<td>8</td>
</tr>
<tr>
<td>No. of platforms registered</td>
<td>11 IIPs, 4 TPs for gas, 11 IIPs, 4 TPs for electricity</td>
</tr>
</tbody>
</table>
Market Coverage of Inside Information & Transparency Platforms

**ELECTRICITY**

**GAS**

Legend:

- Assessment Completed in Phase 1 Assessment
- In Phase 2 Assessment
- ENTSO-E – all EU-27
Thank you!

More info?

REMIT Portal: www.acer-remit.eu
ACER website: www.acer.europa.eu
REMIT data features

REMIT Forum 2021
Special session: “REMIT data and technology”
Iztok Zlatar
ACER - Market Integrity and Transparency Department
Tuesday, 26 October 2021 / 14.00 - 16.30 CET
# REMIT Data Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commodities</td>
<td>2</td>
</tr>
<tr>
<td>Remit Tables + Fundamental data</td>
<td>4</td>
</tr>
<tr>
<td>Delivery Points or Zones</td>
<td>&gt;500</td>
</tr>
<tr>
<td>Transactions reported per year</td>
<td>2.5bn</td>
</tr>
<tr>
<td>Listed OMPs</td>
<td>&gt;80+</td>
</tr>
<tr>
<td>Contract types</td>
<td>&gt;10+</td>
</tr>
<tr>
<td>Registered Market Participants</td>
<td>&gt;14k</td>
</tr>
<tr>
<td>Reporting entities (RRMs)</td>
<td>105</td>
</tr>
<tr>
<td>Pages of TRUM + 7 Annexes</td>
<td>174</td>
</tr>
<tr>
<td>XML schemas</td>
<td>11</td>
</tr>
<tr>
<td>Lists</td>
<td>5</td>
</tr>
<tr>
<td>NRAs</td>
<td>28</td>
</tr>
</tbody>
</table>
How REMIT data is used

- Highly automated surveillance at ACER and NRAs
- Analysis of STRs
- Data sharing on daily basis with NRAs
- Information sharing
  - on quarterly basis with NRAs
  - on ad hoc basis with NRAs
  - on ad hoc basis with other institutions
- If required, the data is made available to all ACER teams
- Research work with JRC
The most comprehensive dataset related to EU wholesale energy market

Data collected is well structured, however…”

Data quality is not perfect:

- Validity
- Completeness
- Timeliness
- Accuracy
- Consistency
REMIT data features

- The most comprehensive dataset related to EU wholesale energy market
- Data collected is well structured, however...
- Data quality is not perfect:
  - **Validity**
  - Completeness
  - Timeliness
  - Accuracy
  - Consistency

![Graph showing share of valid records of transaction collected (monthly)](chart)
REMIT data features

- The most comprehensive dataset related to EU wholesale energy market
- Data collected is well structured, however...
- Data quality is not perfect:
  - Validity
  - **Completeness**
  - Timeliness
  - Accuracy
  - Consistency

+ Out of 15k MPs registered 9,5k reported..
• The most comprehensive dataset related to EU wholesale energy market
• Data collected is well structured, however…
• Data quality is not perfect:
  • Validity
  • Completeness
  • **Timeliness**
  • Accuracy
  • Consistency
The most comprehensive dataset related to EU wholesale energy market

Data collected is well structured, however...

Data quality is not perfect:
- Validity
- Completeness
- Timeliness
- Accuracy
- Consistency
The most comprehensive dataset related to EU wholesale energy market

Data collected is well structured, however...

Data quality is not perfect:
  - Validity
  - Completeness
  - Timeliness
  - Accuracy
  - Consistency
• The most comprehensive dataset related to EU wholesale energy market

• Data collected is well structured, however…

• Data quality is not perfect:
  • Validity
  • Completeness
  • Timeliness
  • Accuracy
  • Consistency

Broker market segment – Table 1
Market coupling segment – Table 1
Gas transportation – Table 4

• Different understanding of required data quality
  • When is data good enough for a particular purpose?
  • With the responsibility with market participants, can the data ever be good enough?
Data quality assurance strategy
Does the reporting regime facilitate data quality?

The idea

The reality
Data quality lessons learned and issues

• Lessons learnt:
  • DQ assurance is a resource consuming exercise + incl. burden for stakeholders
  • Source-individual approach is time consuming
  • Validation rules are important but are complex to implement
  • Master data management is very important
  • Reporting guidance is key but never perfect

• Issues:
  • Fragmented reporting - large number of OMPs and RRM
  • Complex contracts, evolving landscape
  • Sensitive information
  • Correction cycles at reporting parties
Thank you!

More info?

REMIT portal: www.acer-remit.eu
ACER website: www.acer.europa.eu
Information Management and Technology

REMIT Forum 2021
Special session: “REMIT data and technology”
Georgios Katsikogiannis
ACER - Market Integrity and Transparency Department
Tuesday, 26 October 2021 / 14.00 - 16.30 CET
• Introduction to ARIS
• Evolution of REMIT Information Management Systems
• Sneak peek into ARIS data collection and data sharing solution
• Data collection management over the years
• Challenges ahead
**Introduction to ARIS**

- **REMIT Portal**: Central point of entry to ARIS and other REMIT applications. Central hub for REMIT information & documentation

- **RRM Registration**: Dedicated ARIS module to support the RRM Registration Process workflow

- **CEREMP**: Centralised European Register of Energy Market Participants

- **DCI**: Data collection and reporting systems with three options for provision of XML files (Web GUI, Web Services, SFTP) Annex I

- **IIP**: Market participants shall publicly disclose inside information

- **NP**: Reporting of suspicious transactions according to Articles 15 and 16. Notification of events according to Articles 3(4)(b) and 4(2) of REMIT

- **CMT**: Secure system for the cooperation and information exchange with NRAs on potential REMIT breach cases
Evolution of REMIT Information Management Systems

- ACER REMIT Information System ("ARIS") including all platforms and applications within REMIT Portal
- NRAs using CEREMP as national registration platform
- Stakeholders’ questions since the beginning of 2015
- Focus on development and deployment of IT systems for registration of market participants, data collection and data sharing, and for the effective monitoring of wholesale energy markets
- Involves the collection and screening of data to identify instances of possible market abuse and to notify such cases to NRAs who are responsible for investigation and enforcement; ACER will also be responsible for coordinating investigations
### Table 1, 2, 3, 4

<table>
<thead>
<tr>
<th>Reporting parties</th>
<th>Tier 1: File store and DB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transaction reporting</td>
<td>ARIS Main Database</td>
</tr>
<tr>
<td>Fundamental data</td>
<td>Tier 2 – Main DB</td>
</tr>
<tr>
<td>Other data and info.</td>
<td>Tier 2 – Stand-by DB</td>
</tr>
<tr>
<td>Financial derivatives</td>
<td>Tier 3 – Data analysis</td>
</tr>
<tr>
<td></td>
<td>Tier 4</td>
</tr>
</tbody>
</table>

#### Tier 1: File store and DB
- Standard contract trades and orders
- Non-Standard contracts
- Power and gas transportation contracts
- Fundamental data
- Inside information
- CEREMP
- List of OMPs
- List of Standard Contracts
- Financial derivatives

#### Tier 2 – Main DB
- ARIS Main Database

#### Tier 2 – Stand-by DB
- Tier 2 DB “Stand by”

#### Tier 3 – Data analysis
- Data Sharing
- Surveillance DB
- BI

#### Tier 4
- Web Service (b2b)
- Web Portal (user interactive)

---

**ARIS System**

- **ARIS Inputs**
- **ACER users**
- **NRA users**

---

**“Sneak peek” into ARIS**
Data collection management over the years

• Operations & support
  • ARIS system availability 24/7
  • ITIL-based service management; leverage support and operational best practices for incident, change and problem management
  • Proactive monitoring of the systems and applications; KPIs
  • Rapidly identify and resolve issues with various IT supportive tools and methods

• Development
  • Continually optimize mission-critical ARIS environments
  • Improving the operations, support and development with problem avoidance and closer coordination of all changes
  • Design for experience; respond to service needs for capacity, performance, availability, recoverability and security
  • PM2 Project Management Methodology developed by the European Commission
Challenges ahead

ARIS Next-Generation

REMIT data
- New data types
- Improve data quality
- Handling the increasing data growth (aggregate, manage, create value)
- Data security (smooth and secure data collection & sharing)

Business model evolution
- Data-driven predictive models
- Promote usage of REMIT data to increase the value of REMIT data, e.g. for transparency purposes
- Facilitate the reporting obligations for market participants

Technology innovations
- Technical debt
- Digital transformation, modernize applications and proper specialized tooling
- Cloud computing initiatives
- Keep up with constant technology evolution to ensure IT Service Continuity
Thank you!

More info?

REMIT Portal: www.acer-remit.eu
ACER website: www.acer.europa.eu