Commercial Real Estate reporting

Information session – April 10, 2018

DeNederlandscheBank

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Outline of the presentation

1. Background and content
2. Architecture and the data delivery agreement
3. Logical data model
4. Organisation and planning

Background

Rob Nijskens

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A little history…

- **2013** • Asset Quality Review CRE
- **2014** • ECB Comprehensive Assessment
- **2015** • DNB OFS: ad hoc request → not granular
- **2016** • First wave of loan level CRE data survey (using AnaCredit structure) – still continuing
- **2016** • ESRB Recommendation 2016/14 "Closing real estate data gaps"
- **2018** • Introduction regular reporting based on LDM and DDA (comparable to AnaCredit and RRE)

The legal basis: what and why?

- Bankwet 1998 Article 9d: DNB is empowered to collect data from financial institutions to further the stability of the financial system; a legal task of DNB as a central bank.
- ESRB Recommendation 2016/14 "Closing Real Estate Data Gaps"
- Reporting agents have been informed of this legal basis in 2016 in the note accompanying the first ad hoc CRE LLD survey
- Why this legal basis?
  - Data needs are broader than only supervision: financial stability, statistics
  - AnaCredit does not contain enough CRE information

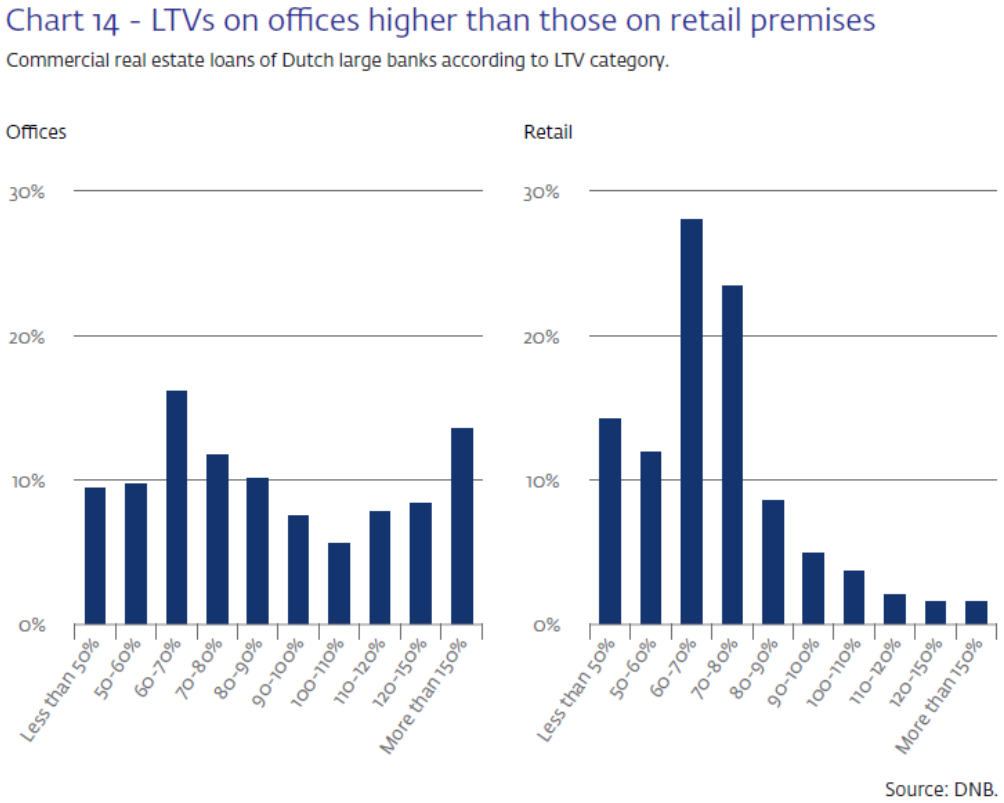
Why now?

- Data needs from users, especially now the market is picking up again
- Increasing international pressure for analysis and monitoring of CRE issues from the European Central Bank, European Systemic Risk Board and the IMF
- The approach is in line with recent initiatives on granular data such as RRE and AnaCredit; CRE is using the same framework, creating synergies

The usage of the CRE data

- Filling data gaps regarding commercial real estate lending
- New and improved analysis on the vulnerabilities of:
  - the commercial real estate market
  - banks lending to commercial real estate investors
- Calibrating new macro-prudential instruments
- These goals are in line with the recommendations of the European Central Bank, European Systemic Risk Board and the IMF regarding the Dutch CRE market

Example: vulnerability analysis for Financial Stability Report 2015



Content

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Introductory remarks

- In general, and to the extent possible, the same concepts, attributes and definitions as in AnaCredit and RRE.

- Special mention: the keys should be the same between AnaCredit, RRE and CRE in order to connect both datasets if possible. No encryption of keys.
  → This should lead to maximum consistency in data models.

- At the moment, Manual Part I (on the general methodology) is a 0.5 version; changes can and will be made before the final version. Part II will follow shortly.

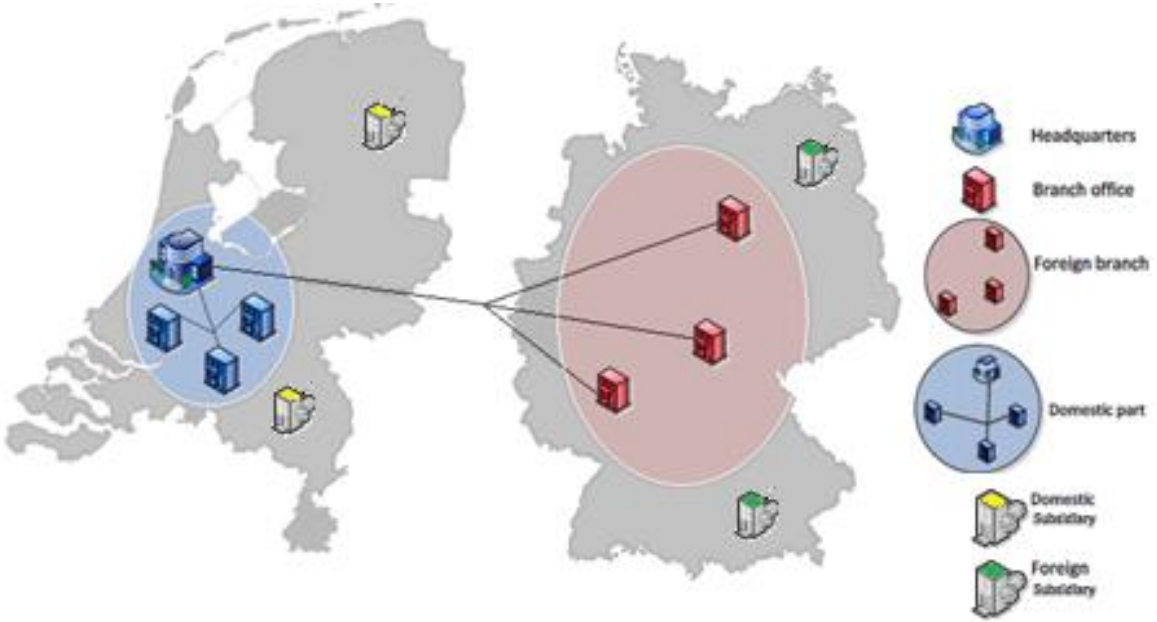
- Note: the ESRB Recommendation requires quarterly monitoring, so the frequency of the new CRE reporting will also be quarterly (as opposed to semi-annually).

Reporting and observed agents

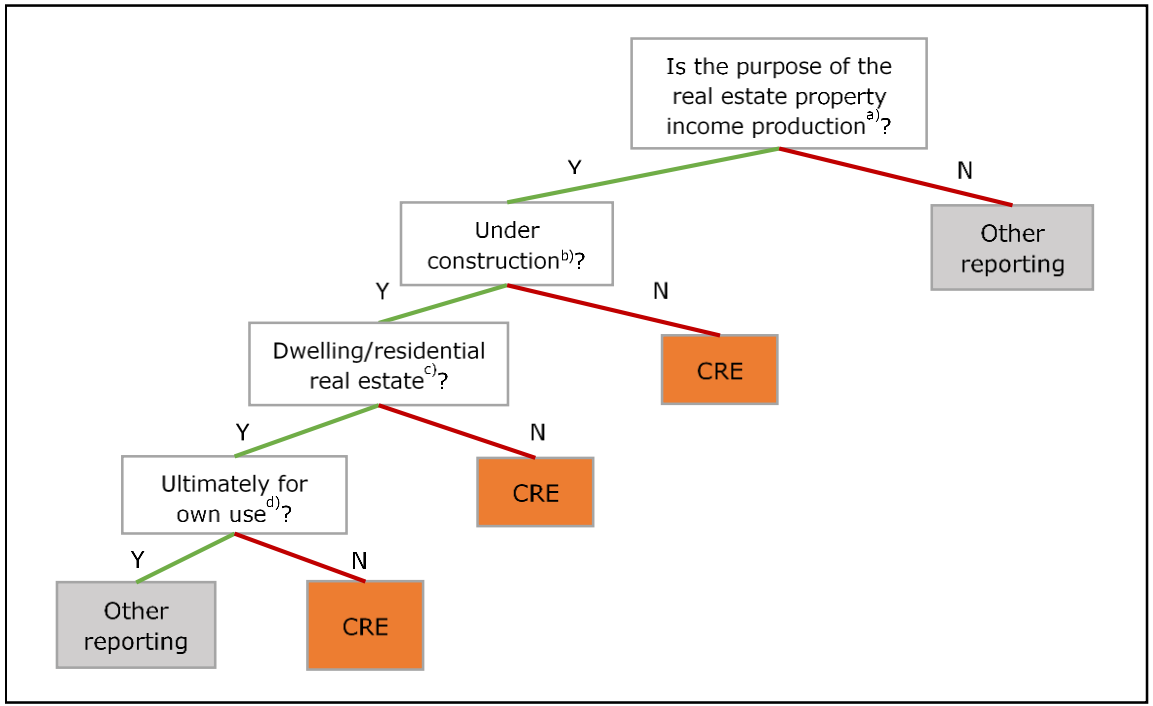
1. Reporting agents
   - Resident credit institutions
   - Domestic and foreign subsidiaries (credit institutions)
   - Other institutions e.g. insurance corporations, investment funds and pension funds are out of scope for the moment

2. Observed agents
   - The domestic part of the reporting agent
   - Any foreign branch controlled by the reporting agent, regardless of whether or not the foreign branch is resident in an euro area member State.

Observed agents: an illustration



What is CRE?



Questions:

→ How to classify buy to let?

→ Treatment of social housing?

→ Loans with CRE collateral but a different purpose?

Debtors

- All institutional sectors

→ In contrast to RRE, which includes only households and partnerships, CRE also contains legal entities

→ In contrast to AnaCredit, which excludes households and partnerships, CRE also includes households and partnerships

Instruments (1/3)

- Instruments used for the purpose of investing in commercial real estate. In the abovementioned context, ‘investing’ means purchasing, building or refurbishing of commercial real estate. Commercial real estate has been defined in section 1.4.

- Instrument used for all other purposes, not included in I (see also earlier discussion).

Instruments (2/3)

- Note that this includes both instruments with and without protection received (so-called unsecured instruments).

- Although in the ESRB Recommendation on closing real estate data gaps (ESRB/2016/14) the protection received relating to the instrument is the overriding principle, unsecured loans relating to the investment in commercial real estate should also be reported.

Instruments (3/3)

In addition, the CRE instruments…

...give rise to credit risk for the observed agent, or

...are an assets of the observed agent, or

...are recognised under the relevant accounting standard used by the observed agent's legal entity and gave rise to credit risk for the observed agent in the past, or

...are serviced by the observed agent and are held by a legal entity which is not a credit institution resident in the Netherlands.

There is no reporting threshold

Data attributes (1/2)

- In total 117 data attributes, of which 6 keys and 111 other data attributes.

- Attributes overlap:

In current CRE LLD	In AnaCredit	In RRE	In OSBE	Other
78	**78**	**64**	**46**	**8**

Data attributes (2/2)

- In the manual (Part II), elaborate definitions will be presented. (For now, see the attribute and business terms lists.)

- In principle, no changes in definitions of concepts, data attributes and domain values which originate from existing frameworks (AnaCredit, OSBE, current CRE LLD).

- This is currently indeed the case. However, in some (future) cases this might be needed; the Manual will contain the up to date information on these cases.

National identifiers

- CRE reporting contains three types of entities:

1) Legal entities with KvK-number (or a foreign identifier) as the national identifier
2) Non-legal entities with a KvK-number, e.g. partnerships (v.o.f., C.V.) or sole proprietorships
3) Non-legal entities without a KvK-number, e.g. private persons

- For now, only KvK-numbers for 1 should be reported.
- Due to privacy reasons, currently no KvK-number (nor other national identifiers such as BSN) need to be reported for 2 and 3.

Architecture and DDA

Ronald Damhof

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Contents

1. Data exchange; a formal language and a Data Delivery Agreement
2. Managed data collection, validation & feedback

A formal language and a Data Delivery Agreement

Elementary data quality

- Reliable, relevant, consistent and timely CRE data
- The quality of CRE data starts at the granular level
- CRE is part of a trend towards micro level of data
- Because it is granular, the data contains many possible perspectives
- Because it is granular, there are huge opportunities for integration

It is vital for concepts and relationships between concepts to be described precise and non-ambiguous

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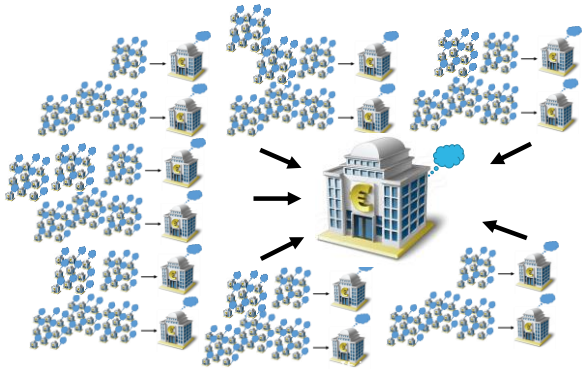
A formal language and a Data Delivery Agreement

A supply chain process



- CRE data passes through a supply chain process
  - ‘born’ at financial institutions
  - Processed and passed through to NCB’s
  - (T.b.d.) Processed and passed through to ECB
- The risk of interpretation/ambiguity will grow exponentially with N
- The risk of worthless data at the end of the chain is high

It is vital that all parties involved in the supply chain process of CRE are talking the same language

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A formal language and a Data Delivery Agreement

AnaCredit, RRE & CRE; the need for a precise 'data language'

- It communicates with business and transforms to technology, it is the 'middle man'
- A language needs: formal theory, notation/specification, methodology
  - Formal theory: (E. Codd – Relational Data Model ~1970) Grounded in 40+ years Mathematics & Computer Science (Set theory & First-order logic)
  - Methodology: Based on E.Codd, supplemented by Nijssen (~1980)
  - Notation/specification: Entity Relationship Diagramming (Chen ~1976), Business Glossary, 'formal data & constraint Language'
- Addresses concerns on the business/domainlevel, never on the technical level
- Is developed and maintained in professional datamodelingsoftware
- Is communicated and shared with all parties involved in the supply chain process

A formal logical data model is necessary for data to be precise & transparent

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A formal language and a Data Delivery Agreement

Logical Data Model as a precise 'data language'

- A non-ambiguous representation of regulation & related documents
- A mathematical transformation of these documents (text)
- An integrated perspective on AnaCredit, RRE and CRE
  - No double reporting
  - Re-using anchors (86% AnaCredit)
- Entails the structure, consistency and integrity of the data
- Functions as linking-pin to regulation & reporting manuals
- Leading in how the (technical) delivery is designed
- Leading with regards to the validation strategy
- Agnostic with regards to technical implementations of RA's (e.g. API)
- Is a pre-requisite for a data supply chain to be automated
- Is a pre-requisite for data to be integrated with other data domains

A formal language and a Data Delivery Agreement

Data Delivery Agreement (DDA)

Three objectives:

- Governance instrument
- Design instrument
- Processing instrument

- Two files delivered periodically:
  1 metadata file (XML)
  1 zipfile containing 1 csv for every entity in the logical data model
- Reporting agents deliver every quarter
  1 reporting agent, 1 model, 1 delivery per quarter
- Keep it simple Stupid (KISS); NO delta's, NO differentiation between static & dynamic data, NO differentiation in type of data, NO variety in data deliveries

Content of the CRE DDA:

- Leading document in how CRE data is to be delivered to DNB
- Responsibilities of parties involved
- References to regulation and additional information
- Formal Logical Data Model + business glossary
- Supply chain process, data quality strategy, validations (feedback) & plausibility
- Detailed technical specifications & delivery schema
- Aspects of the supply chain process: a.o. channel, messages, security, periodicity

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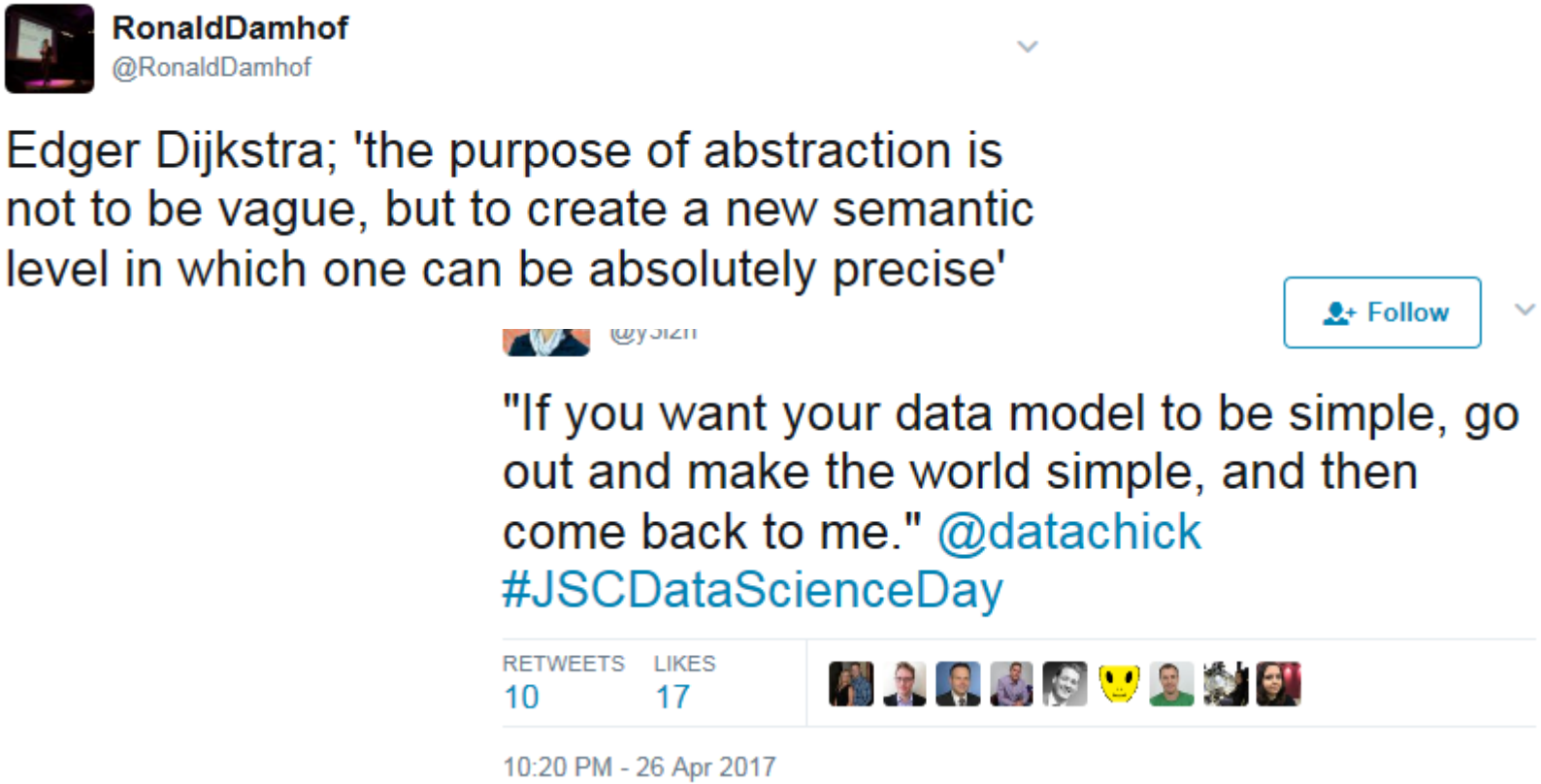
RonaldDamhof
@RonaldDamhof
Edger Dijkstra; 'the purpose of abstraction is not to be vague, but to create a new semantic level in which one can be absolutely precise'
Follow
"If you want your data model to be simple, go out and make the world simple, and then come back to me." @datachick #JSCDataScienceDay
RETWEETS
10
LIKES
17
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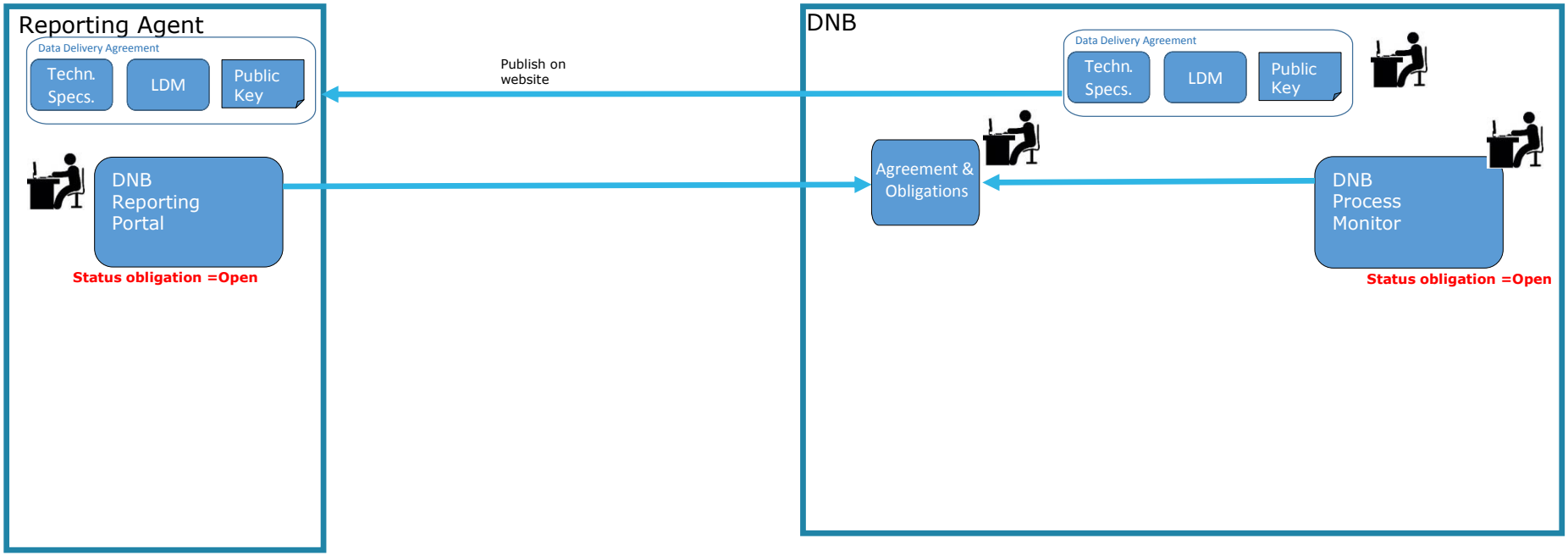
Managed data collection, validation & feedback

A production line in the DNB Data Factory for any data delivery



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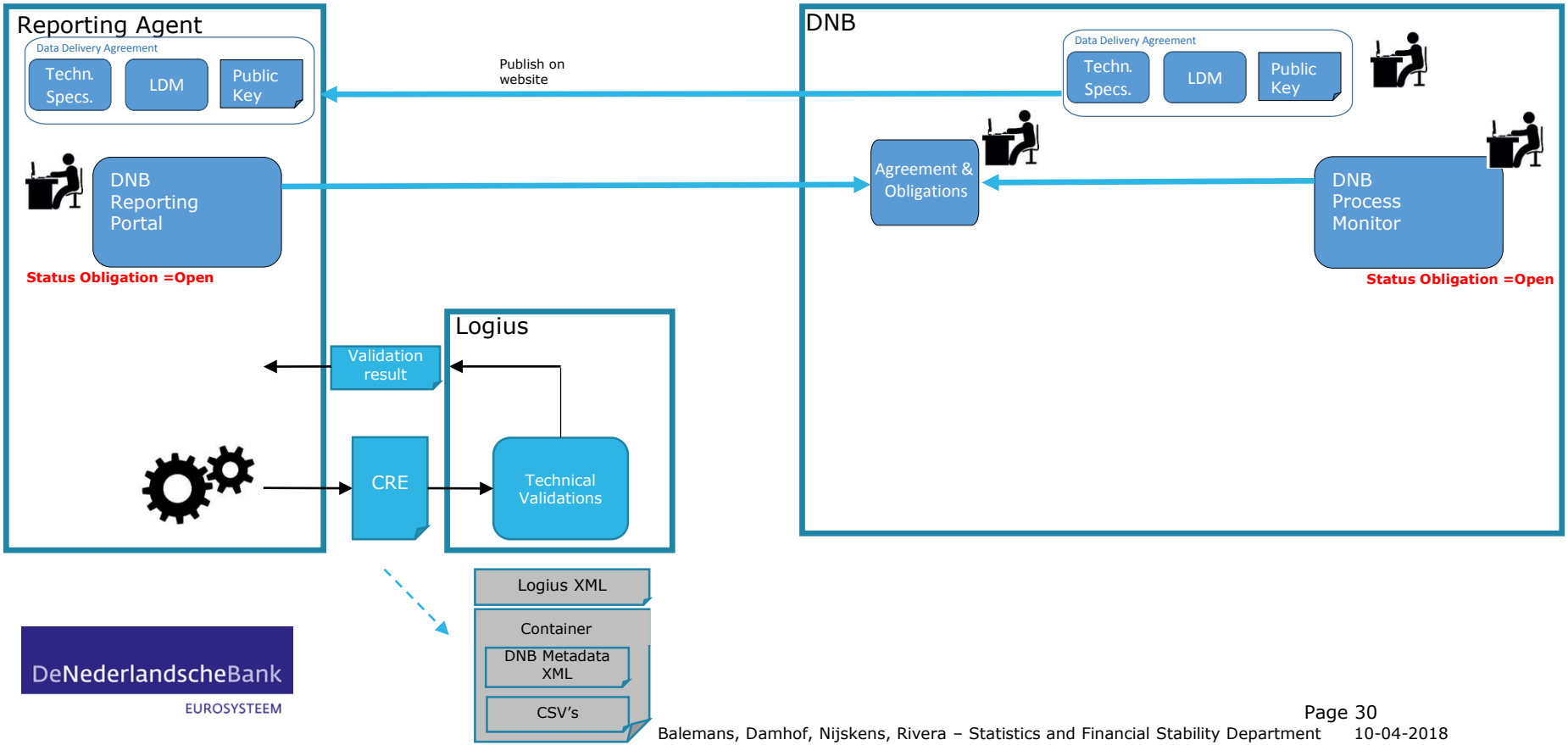

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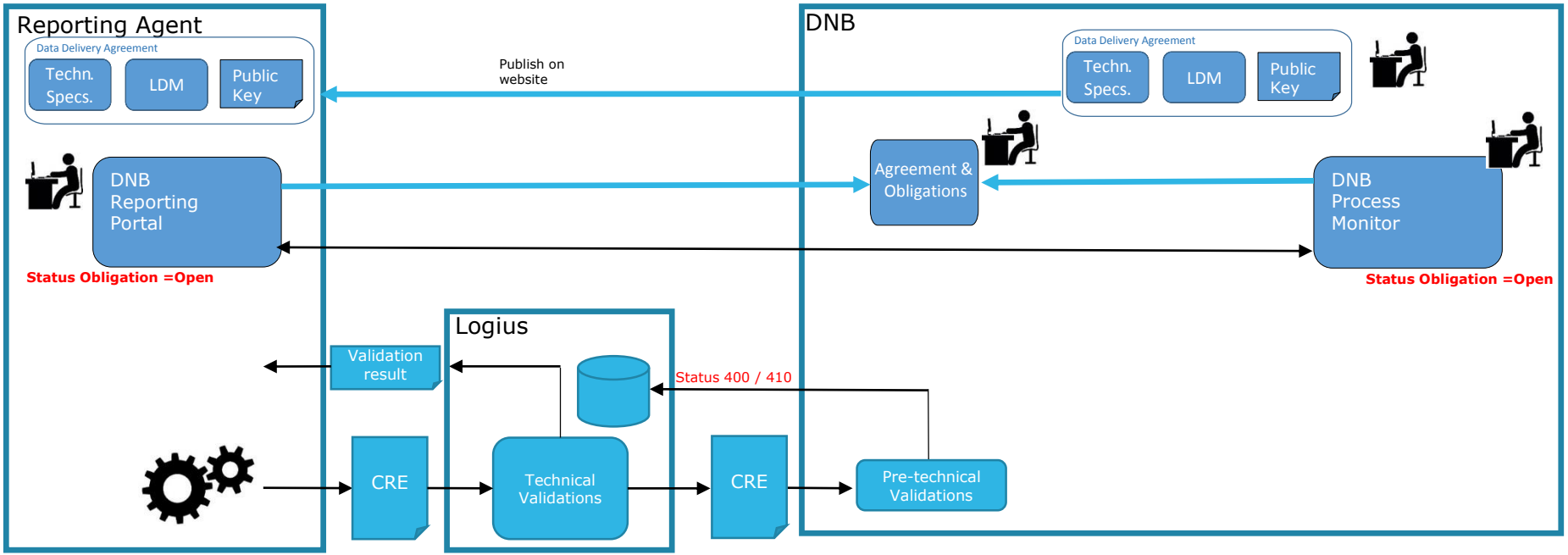

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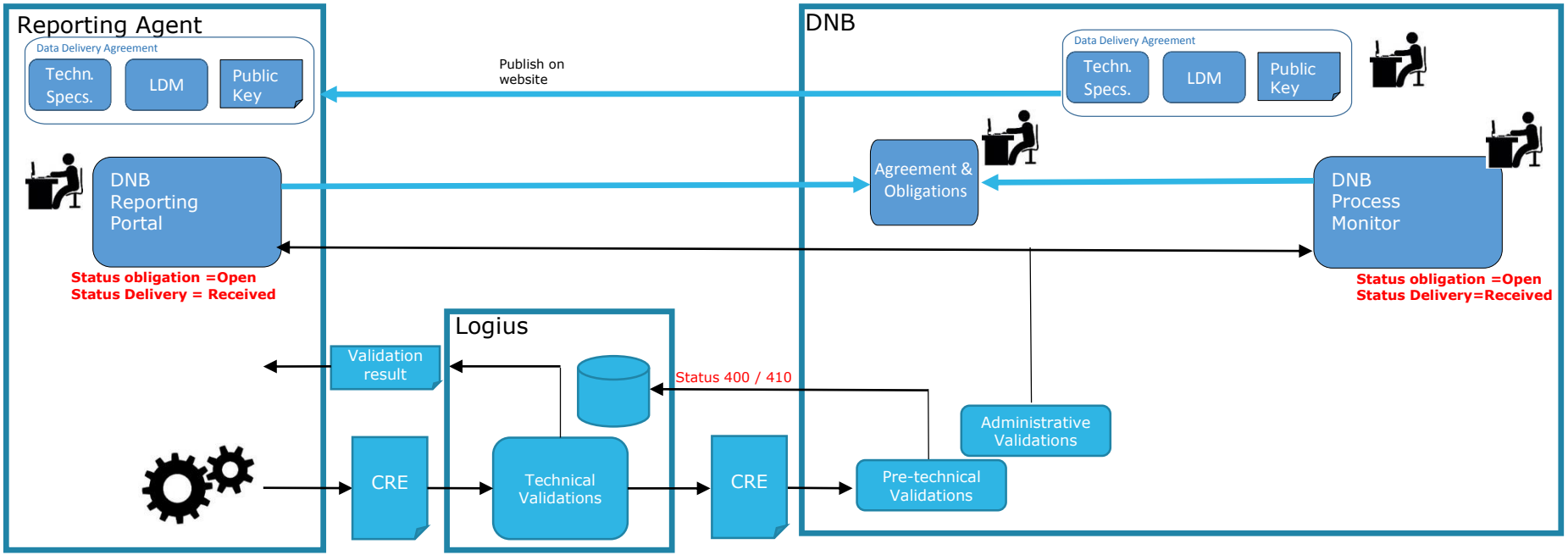

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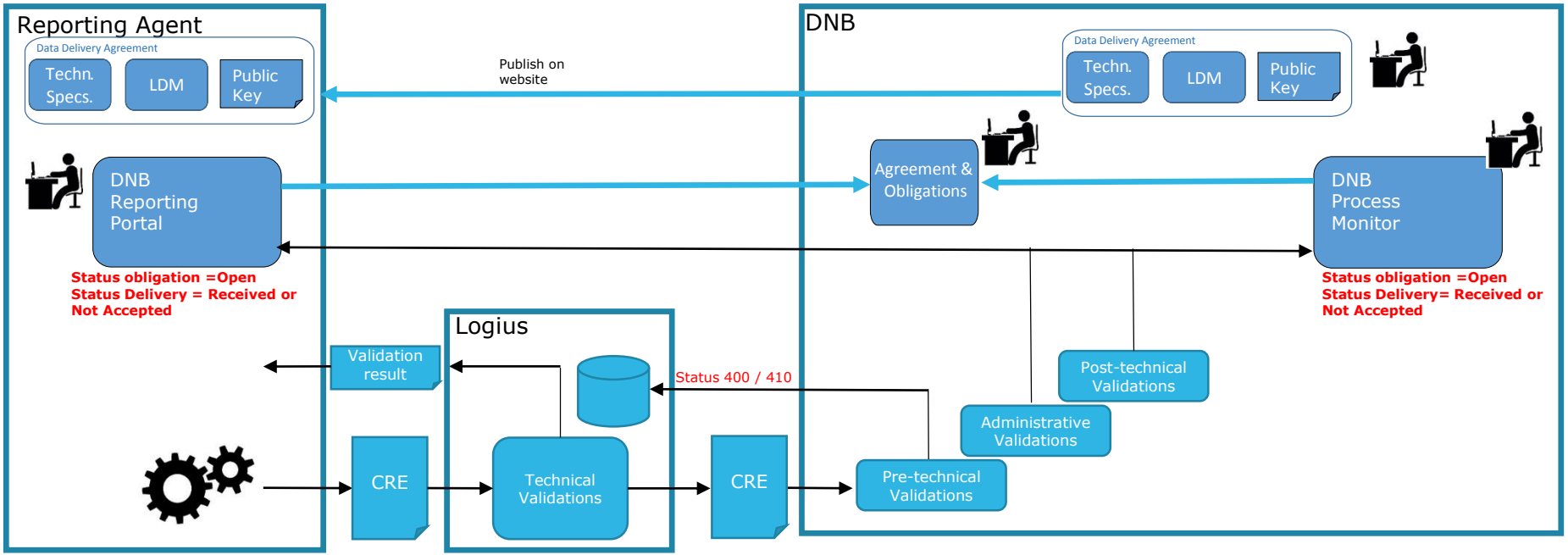

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Managed data collection, validation & feedback

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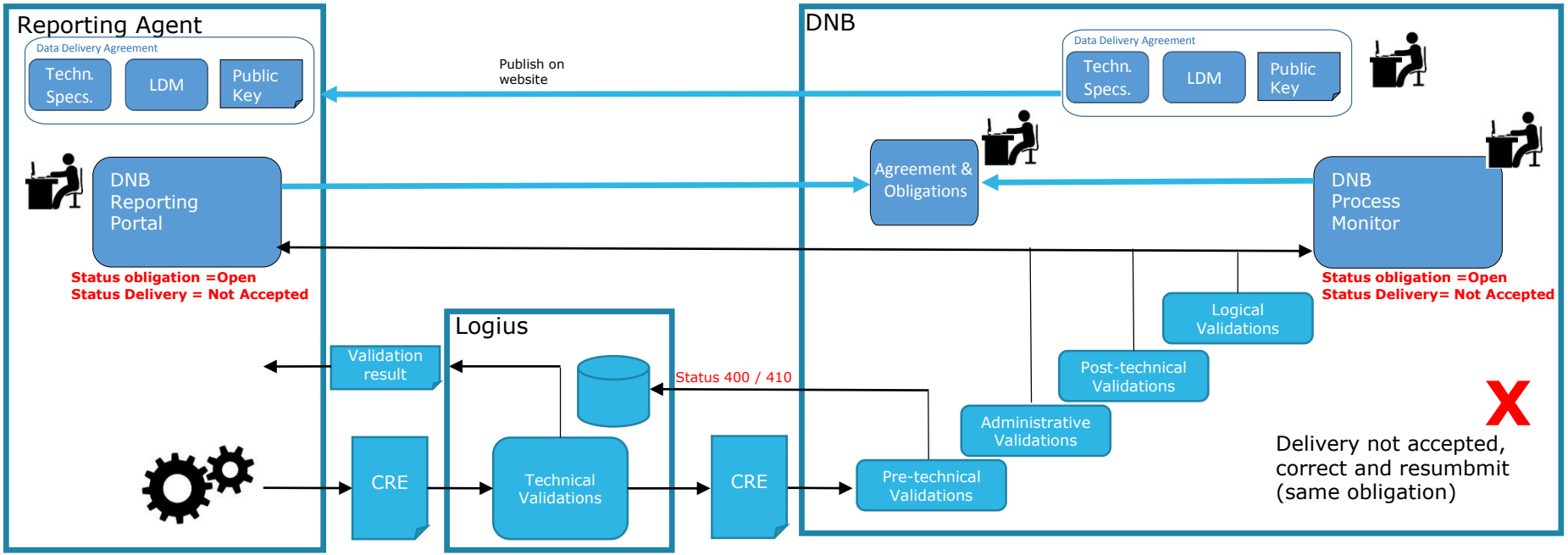

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Managed data collection, validation & feedback

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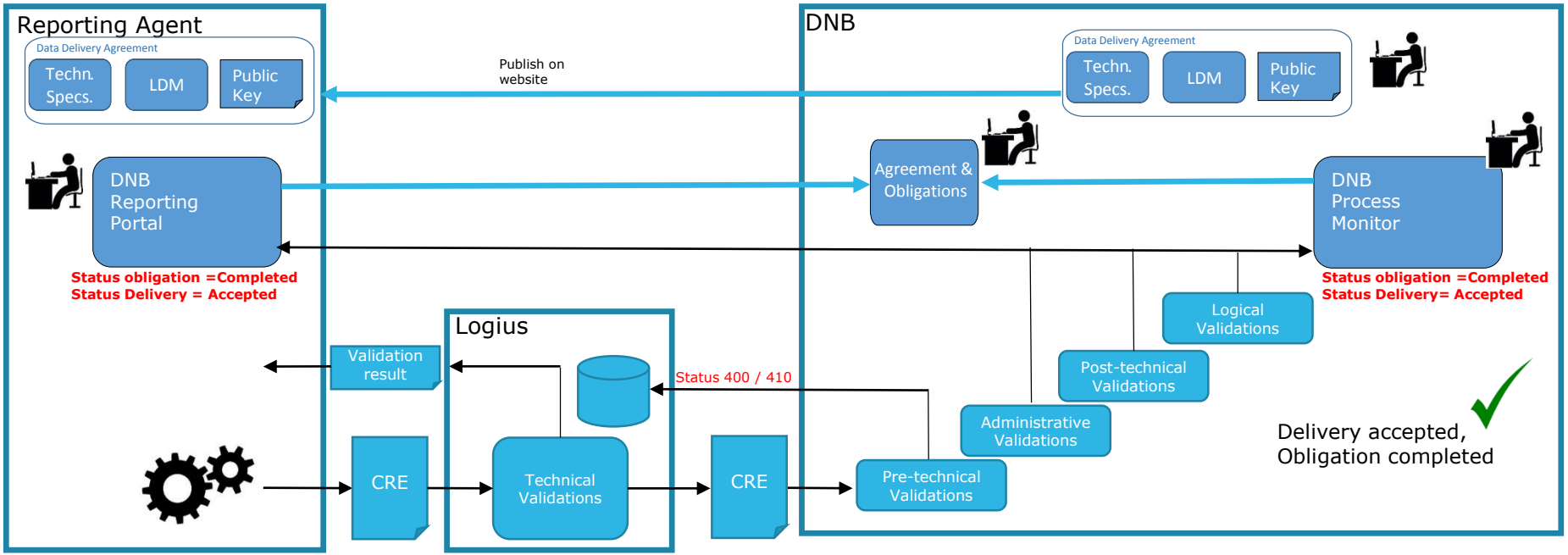

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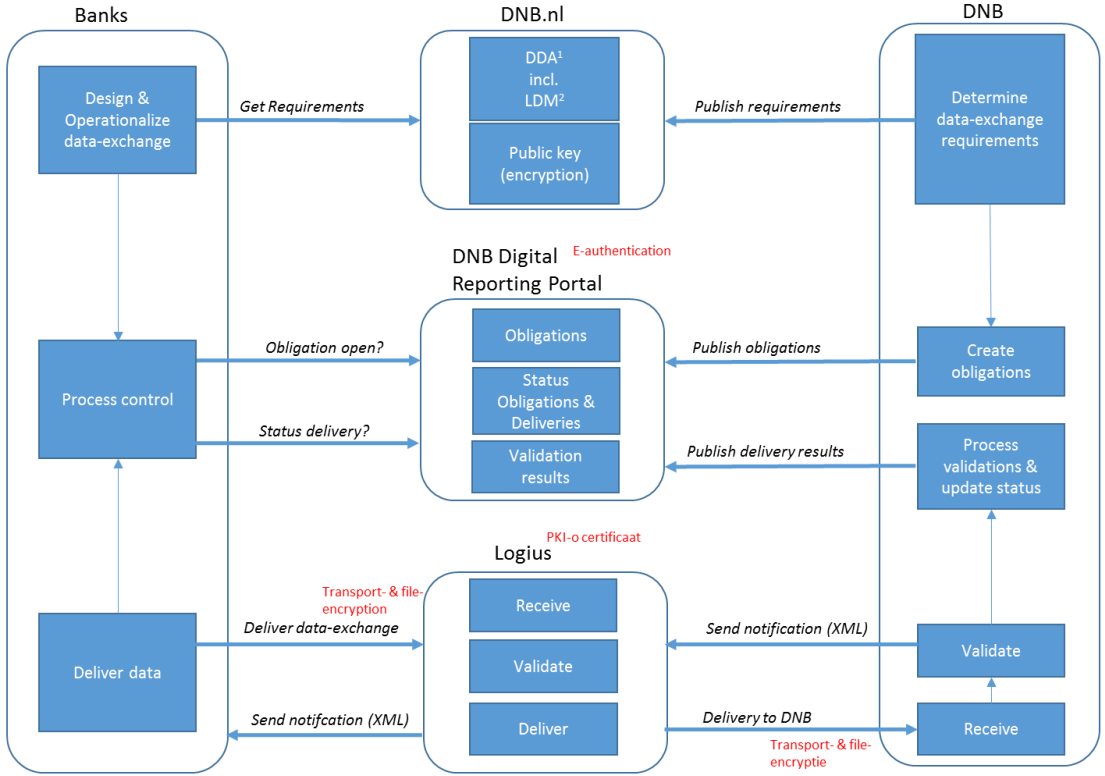
Overview

Global description of the process:

1. DNB determines the CRE data-exchange specifications (Data Delivery Agreement, Logical Data Model);
2. DNB publishes these specifications, including the public key for encryption on the website of DNB;
3. Banks use this information to operationalize the RRE data exchange;
4. DNB publishes the CRE data-exchange obligations in the DNB Digital Reporting Portal;
5. Banks have secure access to the DNB Digital Reporting Portal where they can view the obligation;
6. Banks deliver the CRE data exchange files to Logius, transport as well as files are encrypted;
7. Logius receives the data, performs a number of technical checks and send a delivery notification back to the bank. Subsequently Logius is pushing the to DNB;
8. DNB received the data, performs a number of technical and logical validations, updates the status of the obligation and publishes the outcome of these validations to the DNB Digital Reporting Portal;
9. Designated (by the bank) employees will receive a notification;
10. Banks can view these outcomes (and status) in the DNB Digital Reporting Portal.



[1] Gegevensleveringovereenkomst
[2] Logisch Data Model

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Logical data model

Iris Balemans

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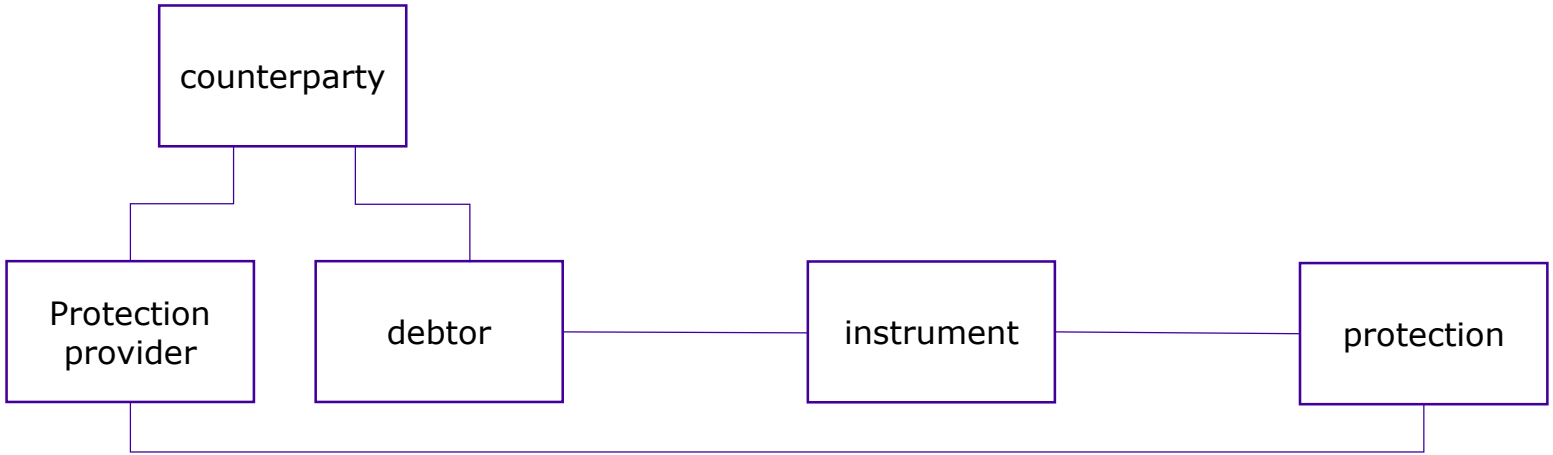
A Logical data model reflects the structure of data concepts



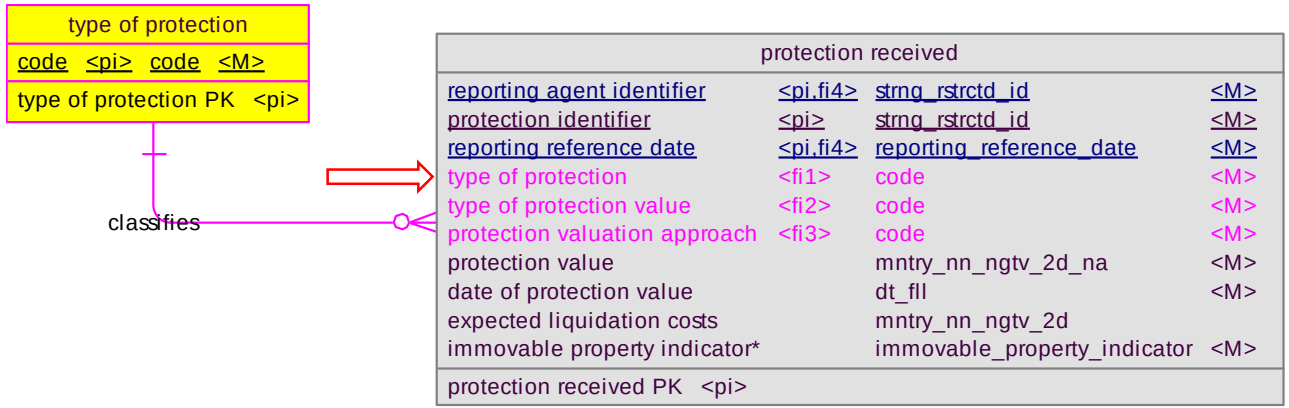
- Main concepts for CRE are named in terms of the AnaCredit regulation
- Additional concepts complete the data model (natural person, LGD-model instrument, non-immovable property…)

Data modeling is all about language

- Concepts are taken from the definition of the required attributes
- Attributes are concepts as well
- The structure between concepts stems from the meaning of the definition
- These links in the meaning translate to attributes of entities and relationships between entities.

Translating attributes to main concepts

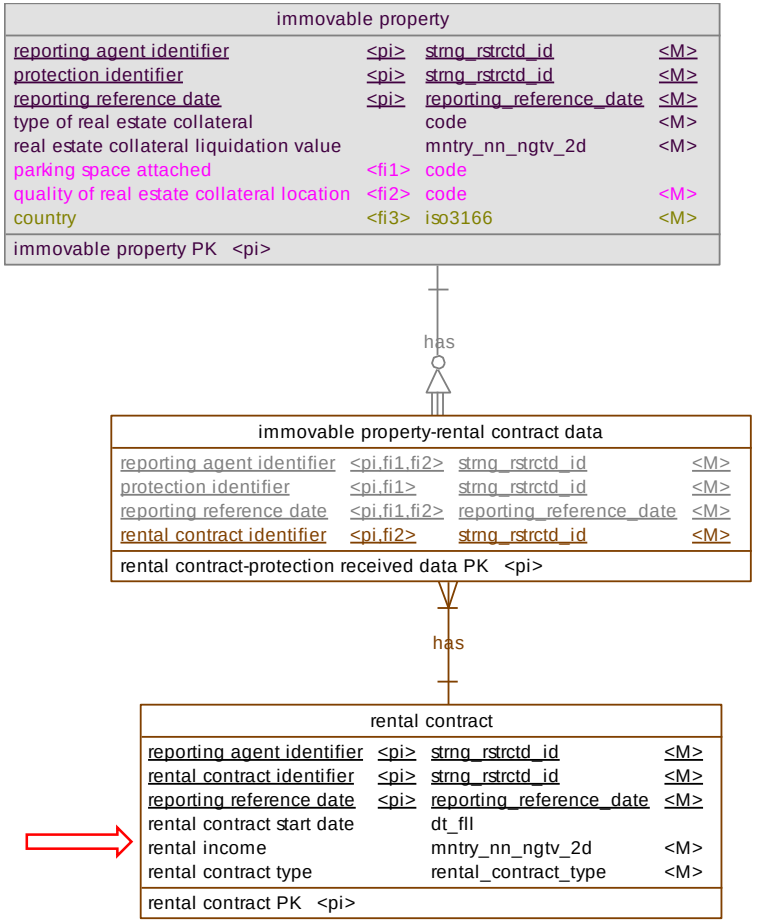
Example:
Type of protection received, irrespective of its eligibility for credit risk mitigation.



Relationships are the glue between concepts

Relationships determine how concepts relate to each other.

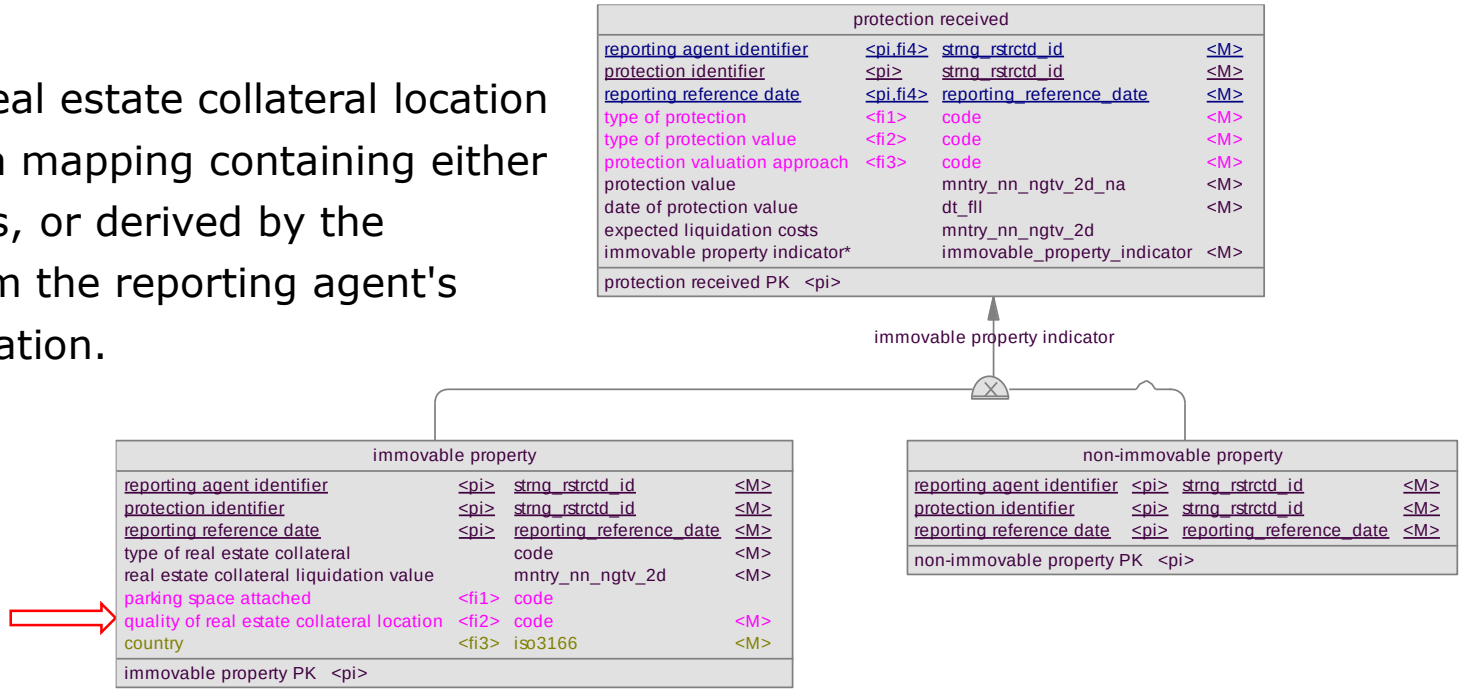
Example:
Rental income per month for the rental contract



Subtypes partition the applicable attributes (1)

Example:

The quality of the real estate collateral location classified by using a mapping containing either A/B/C classifications, or derived by the reporting agent from the reporting agent's proprietary classification.



Subtypes partition the applicable attributes (2)

- Split the data according to reporting needs
- Reduce the number of optional attributes or non-applicables
- This reduction reduces reporting omissions and errors thus increasing data quality

Indicators split the data according to reporting needs

- Attributes referring to a reference table, or an indicator created especially for this purpose
- Indicators reflect validations:
  - Less querying of business rules (e.g. reference rate maturity value is only needed when interest rate type <> “fixed”)
  - Ensures that the model is correct
  - Ensures data is delivered properly

LDM – test question 1

Where does the following attribute sit in the data model?

Loan to value at inception: *The loan to value of the instrument at inception calculated by the originator of the loan. This should be calculated by dividing the total exposure belonging to a counterparty or joint liability entity by the total amount of protection value allocated to that counterparty or joint liability entity. Only protections of the type "Immovable property" can be used in this calculation.*

LDM – answer to test question 1

Where does the following attribute sit in the data model?

Loan to value at inception

Several concepts in the definition: ‘loan to value’, ‘originator’, ‘counterparty’, ‘joint liability’, instrument’, ‘immovable property’.

- ‘loan to value at inception’ should be linked to one of those, but which one?

LDM – answer to test question 1

Where does the following attribute sit in the data model?

Loan to value at inception

Several concepts in the definition: ‘loan to value’, ‘originator’, ‘counterparty’, ‘joint liability’, instrument’, ‘immovable property’.

- ‘loan to value at inception’ should be linked to one of those, but which one?
- Correct answer is ‘debtor-instrument data’ because it deals with the combination of debtor and instrument.

LDM is basis for data delivery agreement

- LDM is integral part of the DDA
- HTML report of the LDM is provided separately

LDM is the source for these parts of the DDA:

- List of .csv files to report
- Lay-out of the .csv files
- Mapping of the .csv files to the LDM
- List of validations
- List of entity types, attributes and primary keys

LDM is basis for content-based validations

- Referential integrity is build in. Validations on correct relationships are done automatically. This also includes reference data ‘pick-lists’.
- As much of the integrity checks as possible are build into the model
- Subtypes are deployed for specific sub-sets of data where extra attributes are applicable.
- Business rules describe validations on the element where they are applicable.

CRE closely follows AnaCredit

- There are 106 entity types in the LDM of CRE
- Those provide structural integrity
- Results in 43 files to report
- Of which 37 overlap with AnaCredit
- And 6 are specific for CRE

Organisation and planning

Jairo Rivera

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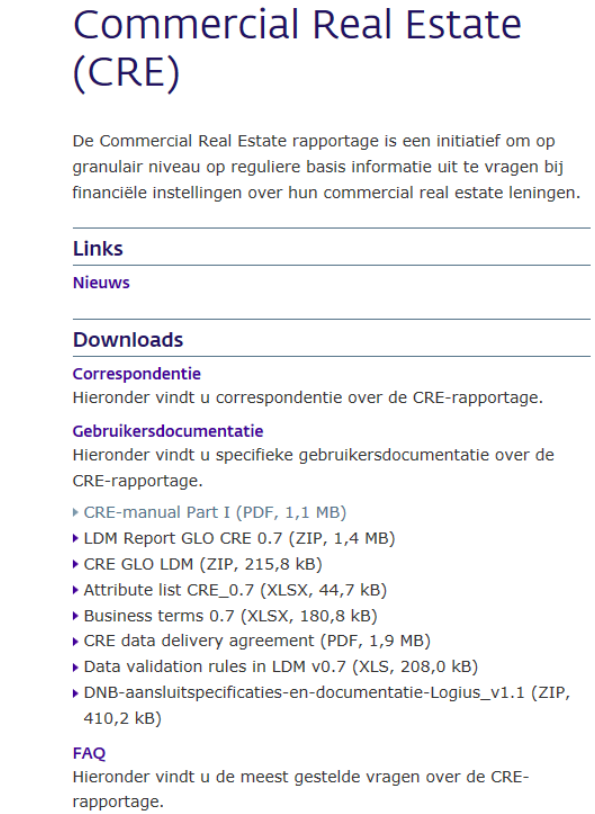
Communication (1/2)

- Communication via mailbox (cre@dnb.nl). New documents will be posted on the dedicated CRE website (https://www.dnb.nl/statistiek/digitaal-loket-rapportages/statistische-rapportages/banken/commercial-real-estate-rre/index.jsp).

- Plenary meetings and bilateral meetings if necessary

- Documentation available on the website.

Communication (2/2)



Commercial Real Estate (CRE)

De Commercial Real Estate rapportage is een initiatief om op granulair niveau op reguliere basis informatie uit te vragen bij financiële instellingen over hun commercial real estate leningen.

Links

Nieuws

Downloads

Correspondentie
Hieronder vindt u correspondentie over de CRE-rapportage.

Gebruikersdocumentatie
Hieronder vindt u specifieke gebruikersdocumentatie over de CRE-rapportage.

- CRE-manual Part I (PDF, 1,1 MB)
- LDM Report GLO CRE 0.7 (ZIP, 1,4 MB)
- CRE GLO LDM (ZIP, 215,8 kB)
- Attribute list CRE_0.7 (XLSX, 44,7 kB)
- Business terms 0.7 (XLSX, 180,8 kB)
- CRE data delivery agreement (PDF, 1,9 MB)
- Data validation rules in LDM v0.7 (XLS, 208,0 kB)
- DNB-aansluitspecificaties-en-documentatie-Logius_v1.1 (ZIP, 410,2 kB)

FAQ
Hieronder vindt u de meest gestelde vragen over de CRE-rapportage.

CRE planning (1/2)

- End-May 2018: Manual Part II v0.7
- End-June 2018: Manual (Part I and II), LDM and DDA v1.0

CRE planning (2/2)

To be informed shortly.

Thank you for your attention. Questions??

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