



Final deliverable Green Loans use case

Table of contents

1. Management summary

2. Use case description
3. Appendix
 - A. Customer journey in use case
 - B. Cross-domain data sharing agreements
 - C. Use case approach
 - D. Parties involved in use case

Management Summary

1. Use of external data, diversification of services and contributing to sustainability is increasingly relevant in mortgage domain
2. Access to data is critical in energy transition; smart meter data can be used in other sectors to contribute to energy transition
3. Financial Service Providers can use smart meter data to develop propositions that help customer to make their home energy-efficient
4. In use case, Distribution System Operator shares smart meter data on behalf of Consumer with Financial Service Provider
5. Presence of existing ecosystems and need for consumer authorisation requires seamless interaction between ecosystems
6. Agreements between HDN and EDSN (on behalf of DSOs) enable cross-domain data sharing for 4500+ organisations
7. These cross-domain agreements cover wide range of topics, with IAA requiring most extensive agreements
8. In September 2021, a pilot will be launched to show the value of this use case in a real-life setting
9. In the future, this use case can be scaled to new use cases in both mortgage and energy domain

Table of contents

1. Management summary
- 2. Use case description**
3. Appendix
 - A. Customer journey in use case
 - B. Cross-domain data sharing agreements
 - C. Use case approach
 - D. Parties involved in use case

Use of external data, diversification of services and contributing to sustainability is increasingly relevant in mortgage domain

Relevant developments in the mortgage domain

Use of external data sources

- Financial Service Providers require a lot of information (data) from consumers to assess risk of loan during application process
- Consumer information is mostly submitted manually, which requires a lot of effort and is prone to errors
- Use of structured data from external data sources in loan application processes is becoming increasingly common, as this improves both speed and reliability of loan application

Diversification of service portfolio

- Financial Service Providers (Intermediaries and Loan Providers) want to diversify their services portfolio to improve their relevancy and attract new customers
- Diversification of portfolio is done by taking a more proactive role in the (financial) life of their customers and offering personalised advice and financial services to their clients

Contribution to sustainability

- Organisations in mortgage domain acknowledge their responsibility in transition towards more sustainable society
- Policymakers place increased emphasis on the role of loan providers in reaching goals of climate agreements
- Dutch financial supervisor AFM published a vision on sustainability. Need for inclusion of sustainability in new business models is stressed in this vision

Access to data is critical in energy transition; smart meter data can be used in other sectors to contribute to energy transition

Relevant developments in the energy domain

Availability of data is critical in energy transition

- Market dynamics shift from a landscape where a few centralised parties produce energy for consumers towards a situation with actors who both consume and produce energy
- Decentralised energy supply is harder to control because energy is now weather dependent and produced by many actors
- Data applications are crucial to ensure that supply and demand of energy remain in balance

Increased availability of smart meter data

- Smart meters measure energy usage of consumers
- Availability of data on energy usage is increasing due to increased adoption of smart meters (>80% adoption in the Netherlands)

New applications based on smart meter data

- Distribution System Operators (DSOs) steward smart meter data and are looking to enable new applications of smart meter data to enable consumers to directly benefit from their data
- Smart meter data can be used in other sectors to provide personalised services based on the energy usage of a consumer (e.g. cheaper energy contracts or personalised advice on sustainability measures)

Financial Service Providers can use smart meter data to develop propositions that help customer to make home energy-efficient

Objective of Green Loans use case:

Enabling a house owner to share his/her smart meter data with a Financial Service Provider to get support with making his/her house more energy-efficient¹

Value of using smart meter data for Financial Service Providers



Propositions based on smart meter data create extra relevance for Financial Service Providers

- Financial Service Providers can use smart meter data for insights in energy usage of a house
- Because these new insights enable new risk models, they enable the development of new propositions around sustainability such as Green Loans
- Green Loans provide opportunities to increase relevance for customers by providing them with support in new aspect of their life

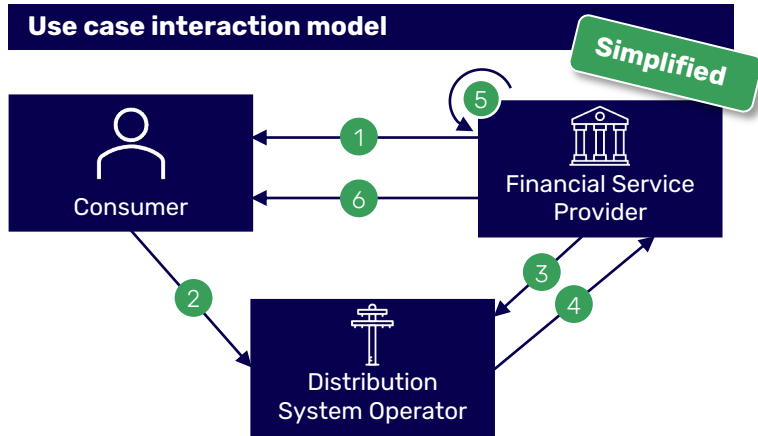


New propositions around sustainability support green ambitions of mortgage domain

- The development of propositions around sustainability contributes to societal goals of Financial Service Providers
- New propositions based on smart meter data are in line with vision of policymakers on role of Financial Service Providers in the energy transition

Note: Support is labelled as a “Green Loan” in the rest of this document for simplification purposes, but can concern other types of support than a loan as well (e.g. advice on what energy-saving measures to take)

In use case, Distribution System Operator shares smart meter data on behalf of Consumer with Financial Service Provider



Steps in interaction model¹

1. Financial Service Provider contacts Consumer to introduce Green Loans and request access to smart meter data
2. Consumer is directed to DSO, where he/she gives authorisation for sharing data with a Financial Service Provider
3. Financial Service Provider requests data from DSO
4. DSO verifies authorisation and shares data
5. Financial Service Provider analyses data to determine energy characteristics of house
6. Financial Service Provider provides Green Loans proposition to Consumer

Note: Step 2 does not necessarily instantly follow Step 1, as Consumer can choose when to initiate this step by clicking a link
8 Green loans, June 2021. Data Sharing Coalition. All rights reserved.

Actors in use case



Consumer

In this use case, a Consumer is an individual who owns a house. He/she is interested in improving the sustainability of the house and authorises DSO to share data with Financial Service Provider



Financial Service Provider

Is an Intermediary or Loan Provider who delivers services to a Consumer. The Financial Services Provider processes smart meter data to provide Green Loans proposition



Distribution System Operator (DSO)

The DSO provides Consumer with a smart meter and manages smart meter data. DSO provides smart meter data to Financial Services Provider based on explicit consent of the Consumer

Explanation of use case

To be able to deliver a Green Loan proposition to a Consumer, a Financial Service Provider needs to have data on Consumer's energy usage. The DSO can only provide this data to Financial Service Provider when Consumer gives consent for sharing. When the consent is given, the DSO shares monthly energy usage of the Consumer from the last 13 months with Loan provider (the maximum period for which smart meter stores data).

Presence of existing ecosystems and need for consumer authorisation requires seamless interaction between ecosystems

Key elements of data sharing context



Existing ecosystems

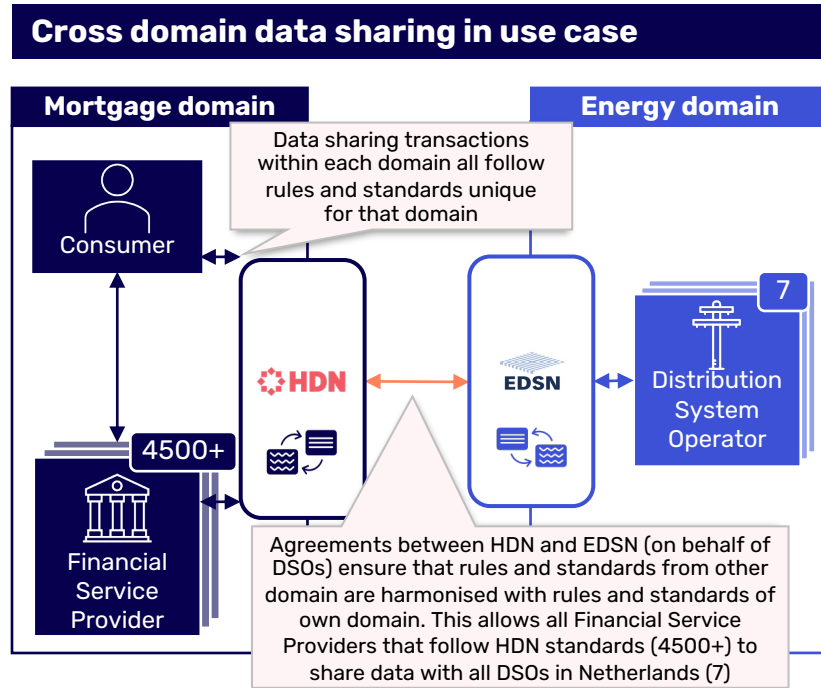
- Both energy domain and mortgages domain already have existing data sharing ecosystems in place with a neutral party that facilitates data exchange
- These ecosystems both have their own unique set of rules and standards for data exchange
- HDN provides a data standard, exchange infrastructure and governance structure for sharing loan application data for Loan providers¹
- EDSN² enables smart meter data sharing with parties within and outside sector on behalf of DSOs
- To facilitate data exchange between actors in these different ecosystems, the rules and standards need to be harmonised to a certain extent



Consumer authorisation

- In this use case, the DSO shares the energy data of a Consumer with a Financial Service Provider on behalf of Consumer
- Energy data is considered personal data by both GDPR and Dutch energy law. By law it is mandatory that a Consumer has provided authorisation before smart meter data can be shared
- Authorisation by Consumer needs to happen within energy ecosystem because DSO need to ensure legitimacy of authorisation, before sharing data. However, the transaction is initiated by Financial Service Provider in another ecosystem. Consumer needs to be seamlessly directed from one ecosystem to other to authorise data sharing transaction

Agreements between HDN and EDSN (on behalf of DSOs) enable cross-domain data sharing for 4500+ organisations



Description

- HDN and DSOs set data (sharing) rules and standards and facilitate data sharing within their own domain
- DSOs have tasked EDSN with operationalising these uniform rules and standards within and outside sector
- HDN and EDSN (on behalf of DSOs) made agreements on how they will harmonise the different rules and standards of each domain
- This means that all DSOs in energy domain can share data with all 4500+ Financial Service Providers in mortgage domain without implementing additional rules or standards
- In the Data Sharing Canvas, the role that HDN and EDSN fulfil in this use case is called a proxy

For more information on proxies, see section 4.3 of [Data Sharing Canvas](#).

These cross-domain agreements cover wide range of topics, with IAA requiring most extensive agreements

Subject which required most extensive agreements

IAA

- Consumers are directed to authorisation platform in energy domain to perform authorisation
- HDN and EDSN have agreed on architecture for cross-domain IAA flow

Operational agreements

- Operational agreements are based on best effort commitments and do not consist of strict Service Level Agreements

Business model

- DSOs do not require a fee for the data they provide as it is part of their mandated obligations
- Business model might change in future

Governance

- HDN and EDSN have made simple agreements on what operational governance will look like (e.g. use case owner from each organisation, change processes, etc.)

Metadata

- Because HDN and EDSN have agreed on data service specifications bilaterally, extensive metadata is not necessary

Exchange protocol

- EDSN provides a generic data service for sharing smart meter data, which HDN will access

Highlights

Legal agreements

- A lightweight contract between HDN and DSOs, together with existing contracts within domains, covers all legal safeguards that are needed in the use case

Security

- Impact assessment will be done by HDN and EDSN before case goes live to analyse risks and validate implemented security measures as required by GDPR

Data standards

- EDSN will use ecosystem specific data format, which will be translated by HDN into a format that Loan provider is familiar with

In depth description of design choices for all building blocks is available on page 17-28 in appendix

In September 2021, a pilot will be launched to show the value of this use case in a real-life setting

Pilot explanation

- In a pilot that will start in September 2021, a number of Financial Service Providers will develop a proposition for Consumers based on smart meter data and offer this proposition to their customers
- Actual data transactions will take place in pilot between DSO and Financial Service Provider. All transactions will be authorised by Consumers in environment of DSOs
- After the pilot, participants in the pilot will evaluate the pilot to determine what went well and what can be improved. They will also decide whether it is worthwhile to launch the use case to a production setting in which all Financial Service Providers connected to HDN can access smart meter data
- After launch, the use case can be scaled to incorporate more granular smart meter data, new data sources, new applications of the same data, etc.

Join pilot

- Pilot is open for any organisation from financial domain which is a Loan Provider or Intermediary
- Participants of pilot do not have to implement new ICT systems as data exchange with the DSOs is facilitated by HDN and EDSN
- If you are interested to join, please contact the DSC project team at info@datasharingcoalition.eu

Pilot timeline



In the future, this use case can be scaled to new use cases in both mortgage and energy domain

Use case scaling options



Expand current scope

Scope of use case could be expanded to support sharing more detailed data and/or longer time periods of data. Currently only monthly usage for past 13 months is shared. If this period is extended or when shared data would be more granular, it is possible to get better insights in energy use of Consumer. This would allow Financial Service Providers to provide better propositions



Use same data in other domains

Data about energy usage of a house could also be useful for other domains. For example the installation sector. They could provide better maintenance for devices such as solar panels and heat pumps based on insights in how these devices are used based on analysis of smart meter data



Share other types of data

This use case could be enriched when data from other data sources about a Consumer's home are shared too. For example the energy label of a house. This label provides additional insights on energy properties of a house such as isolation. Financial Service Providers could use this to get a more complete view of a house and improve their proposition

Reusing design for other use cases

- By adopting open, generic standards and interaction models as much as possible, design choices in this use case have been made as generic as possible. This means that the design for this use case could also support other use cases with minimal adjustments
- For example, the identification, authentication and authorisation flow that has been used for this use case can easily be reused for other cases. Only agreements around topics that relate directly to the data service (e.g. service level agreements) need to be adjusted

Table of contents

1. Management summary

2. Use case description

3. Appendix

A. Customer journey in use case

B. Cross-domain data sharing agreements

C. Use case approach

D. Parties involved in use case

Consumers are redirected to DSOs to give consent for sharing their smart meter data by authenticating via iDIN

Intended customer journey for a customer at a Financial Service Provider

Indicative

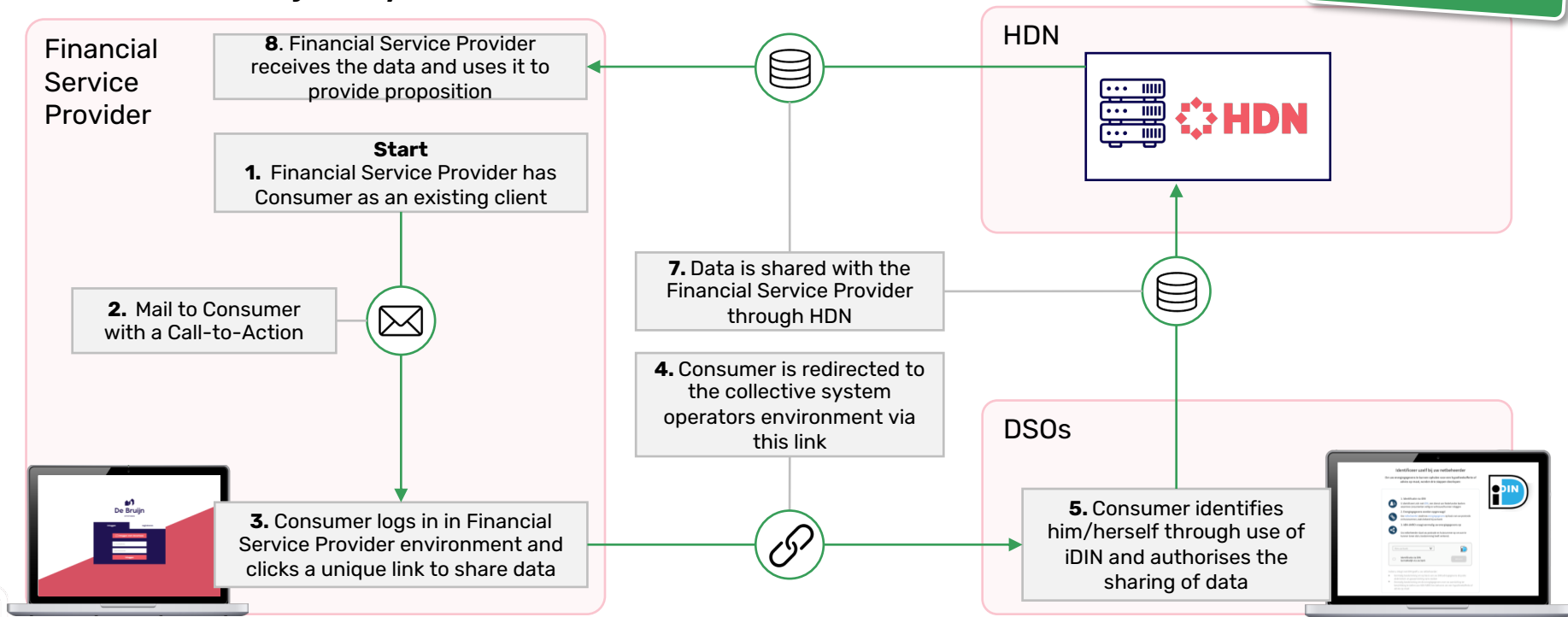


Table of contents

1. Management summary
2. Use case description
- 3. Appendix**
 - A. Customer journey in use case
 - B. Cross-domain data sharing agreements**
 - C. Use case approach
 - D. Parties involved in use case

Business Models: No compensation mechanism between parties (initially)

Description of topic in context of the use case

- Since it is the mandated obligation of the DSOs to provide smart meter data, they do not charge a fee for exposing the data and no compensation mechanism is needed between parties involved in data sharing. If transaction volumes increase significantly, charging a fee could be necessary

Rationale

- Implementation of the Green Loans use case contributes to the strategic goals of HDN and of collective DSOs
- Collective system operators must provide the generic data service as part of its statutory duty in opening up data to energy providers. The service can be reused in other contexts.
- HDN will provide this functionality towards its Financial Service Providers to provide as an additional service
- For now, implementing a compensation mechanism is not desired due to a likely limited volume of transactions and costs, and the efforts to set up a compensation mechanism
- There are limited costs for every transaction as every iDIN requests comes with a fee. System operators will cover these costs. If the transaction volume increases the need for a compensation mechanism will be revised

Governance: The use case has been designed in close collaboration between HDN and EDSN

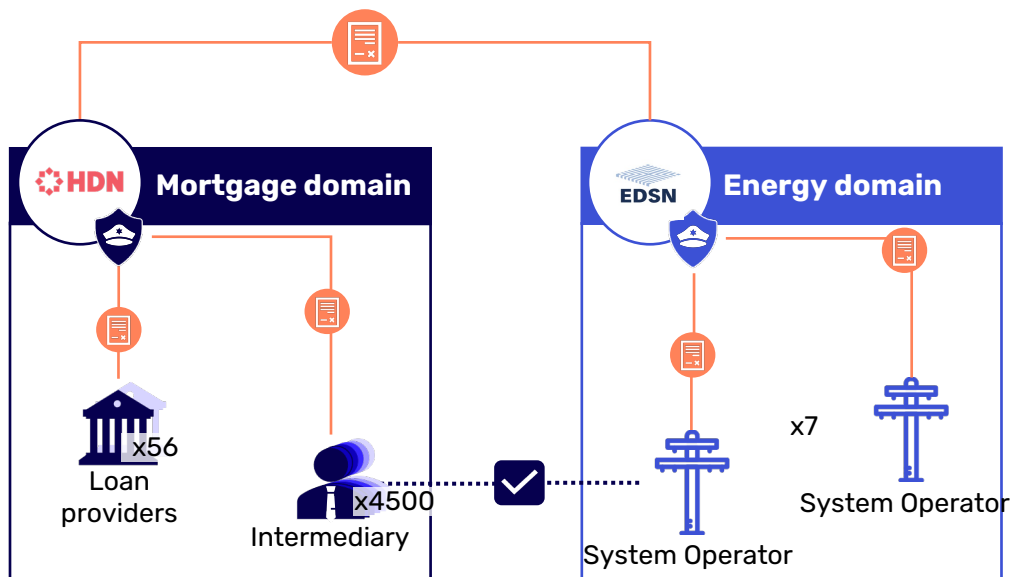
Description of topic in context of the use case

- The use case has been designed in close collaboration between HDN and EDSN (on behalf of DSOs)
- Governance of use case maintenance and updating has not been discussed

Rationale

- No formal governance structure was defined, but board level commitment given from both parties involved. => Given this close collaboration and direct communication between HDN and system operators no additional governance structure was needed
- HDN and the collective system operators trust each other and their ability to govern within their respective domains
- Maintenance and updating of the use case will be discussed when it becomes relevant
- For potential expansion of the use case with additional domains or actors, an overarching governance structure will help make the use case scalable

Legal Context: A single contract is signed between DSOs and HDN to enable data sharing between 4500+ parties



Explanation

- HDN and EDSN on behalf of the DSOs take the role of Domain Scheme and Domain Authority for their respective domains
- HDN and EDSN have existing contracts in place with each of their participants
- HDN's existing contracts already enable data consumption from external sources and hence do not need to be updated for use case
- EDSN existing contracts are designed to provide data to external sources and therefore, do not need to be updated for this usage

Legal Context: Short term solution implementation chosen because of ease of use at this point in time

Design choice	Reasoning	Impact of choice?
Reuse existing contracts within domains	Reduce impact on participants of HDN and EDSN, no need for individual contracts between the 4500+ parties potentially sharing data	Functionality required for this use case is available through existing contracts between domains and their participants. For additional functionalities, the existing contracts should be revised
No need for an external third party to facilitate contracts between domains	Simple solution used for short term single use case. At this point in time, there is no need for an overarching authority	Future scalability is hindered as bilateral contracts could be needed when expanding to additional domains

Operational Agreements: The use case is based on best effort commitments and does not require strict SLAs



Description of topic in context of the use case

- Very basic service level descriptions are used
- EDSN has given an indication of service levels (e.g. 97% of data requests are successfully answered within 24 hours) for data service Consumers. However, there is no formal agreement on these service levels
- No discussions have been held on how incidents or disputes will be managed.

Rationale

- HDN and EDSN have not indicated a desire for strict service levels. As the data service is not required for critical processes, the current indicative service levels provide sufficient assurances
- Strict SLAs and a dispute management process are not needed for this limited scope use case which is still positioned as a pilot
- These choices will be reassessed if the use case becomes a fully fledged service in production, the scale of the use case increases, the use case expands to different domains, or additional functionalities are added to the use case. For these cases, it may be necessary to be able to give service level guarantees

Metadata: No discussions were held regarding metadata standards to be used

	 Before the transaction	 At the moment of the transaction
Actor information	<ul style="list-style-type: none"> Domain information Data service provider information Role information 	<ul style="list-style-type: none"> Data service provider information Data service consumer information Role information
Data Service information	<ul style="list-style-type: none"> Terms and conditions Business model 	<ul style="list-style-type: none"> Negotiated Terms and conditions Business model
Data Service Transaction information	<ul style="list-style-type: none"> Security level requirements 	<ul style="list-style-type: none"> Transaction trails (for audit trails)
Data information	<ul style="list-style-type: none"> Data description Data standards Data quality 	<ul style="list-style-type: none"> Data standards Data quality

Bilateral agreements made on all topics well before transactions take place

Description of topic in context of the use case

- No discussions were held about metadata implementations
- There is no need for machine readable implementations of a wide variety of topics as these have been decided and agreed upon bilaterally before the transaction takes place
- For future scalability, a complete metadata implementation will be needed
- DSOs have a standard metadata implementation for their data sets. This existing implementation for data information at the moment of the transaction will be used.

Security: Implementation of security measures have been decided between actors for the use case

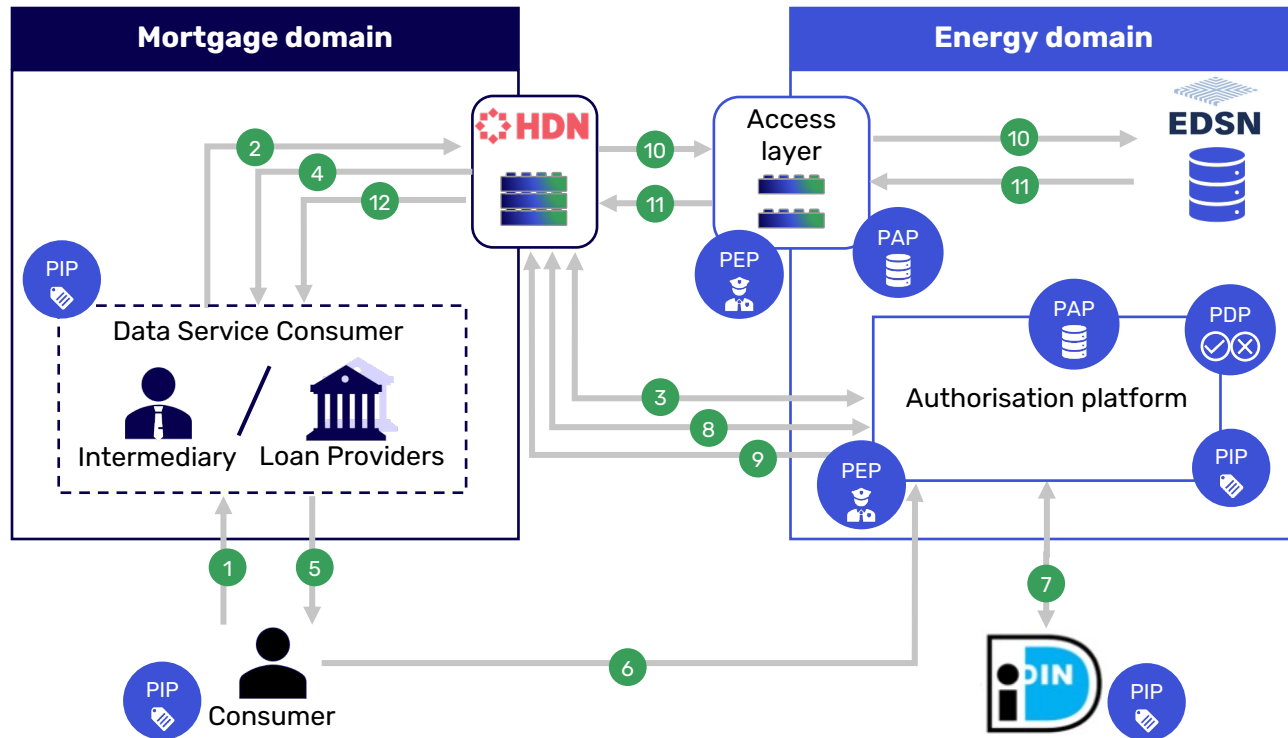
Description of topic in context of the use case

- Security implementation of the use case was determined collaboratively during use case design
- The security implementation (including TLS and mutual SSL between HDN and EDSN) has been agreed upon well before any transaction will take place
- As required under the GDPR, a Data Protection Impact Assessment will be done for both HDN and EDSN before the pilot use case goes live to analyse risks and validate implemented security measures

Rationale

- As there is agreement on the security implementation between parties, there is no need for automated communication about security implementations
- As there is a single use case and functionality and only two parties involved, there is no need for additional agreements about possible security implementations or security levels

Identification, Authentication and Authorisation: Detailed transaction flow for data sharing transaction using access tokens



Explanation	
1.	Request advice
2.	Request Dossiercode
3.	Receive Request token
4.	Generate QR code for navigation to energy domain containing Dossiercode, house number and request token
5.	Forwards QR code
6.	Navigate to Energy Domain
7.	Authenticate using iDIN
8.	Request additional information
9.	Send Access token
10.	Request data, include access token in request
11.	Receive data
12.	Translate and forward data

Identification, Authentication and Authorisation: Use case specific implementation

Design choice	Reasoning	Impact of choice?
Financial Service Provider must include the house number of the Consumer when generating the transaction request	The DSOs do not know what Consumer the smart meter data belongs to. Therefore the address of the identified Consumer must be linked to that of the smart meter. The address information received from iDIN is not always reliable, therefore the house number is used for additional checks	Every person with a bank account at the address or house number can get access to the data. The system operators accept this risk. The house number is self declared and validated against iDIN result. Limited impact for this use case as for the mortgage this information is further validated
The Consumer is redirected towards DSO to perform authorisation	DSO is mandated to share energy data, which requires consent from the Consumer. This is arranged within the Energy domain, and therefore the Consumer should be redirected	The complete end to end user experience should be considered and requires transaction context which needs to be included to ensure a recognisable user experience

Exchange Protocol: HDN makes use of a generic data service provided by EDSN

Description of topic in context of the use case

- EDSN provides a generic data service, which HDN (as the Data Service Consumer proxy) will access.
- The data service is generically described in a non-machine readable format
- The data service always generates 13 months of energy usage data, which is sent a single time. Therefore the exchange protocol is simple and does not need to support a variety of possibilities.

Rationale

- There is a standard format and amount of data that is shared in this use case. HDN has to accept this implementation
- There is no need for data service discovery in this phase of the use case, as this has been implemented manually after bilateral agreements
- A data service discovery mechanism will be required to enable future scalability of the use case
- If the data service changes, for example to regular readings of energy data, the exchange protocol requirements should be revised

Data Standards: Standards as defined by EDSN are used which HDN will translate for use on the finance domain

Description of topic in context of the use case

- The dataset has an XML structure as defined by EDSN which contains the requested data
- The data format will be translated by HDN into a suitable format for the Financial Service Provider

Design choice	Reasoning	Impact of choice?
HDN will translate the data format for the finance domain	The data will be sent from EDSN in their standard format, this needs to be made understandable for the mortgage domain	HDN as a proxy needs to implement the format translation
Smart meter data provided needs to be linked to a person via the address	The smart meter data provided does not contain personal identifiers. This needs to be linked to a Consumer, which can be achieved via mapping of a person to an address	HDN registers the mapping between identifiers before the transaction take place and performs mapping when data is received to ensure the data is understandable in mortgage domain

Table of contents

1. Management summary
2. Use case description
- 3. Appendix**
 - A. Customer journey in use case
 - B. Cross-domain data sharing agreements
 - C. Use case approach**
 - D. Parties involved in use case

This use case was initiated in March 2020 by HDN and Netbeheer NL

Use case actors

- This use case was initiated by HDN and Netbeheer Nederland, the industry association for Distribution System Operators in the Netherlands.
- EDSN is the IT service provider for the Dutch energy sector and was involved by Netbeheer Nederland to help in creating the cross-domain architecture design
- Several Financial Service Providers were involved to validate the feasibility of the use case



Timeline of the use case

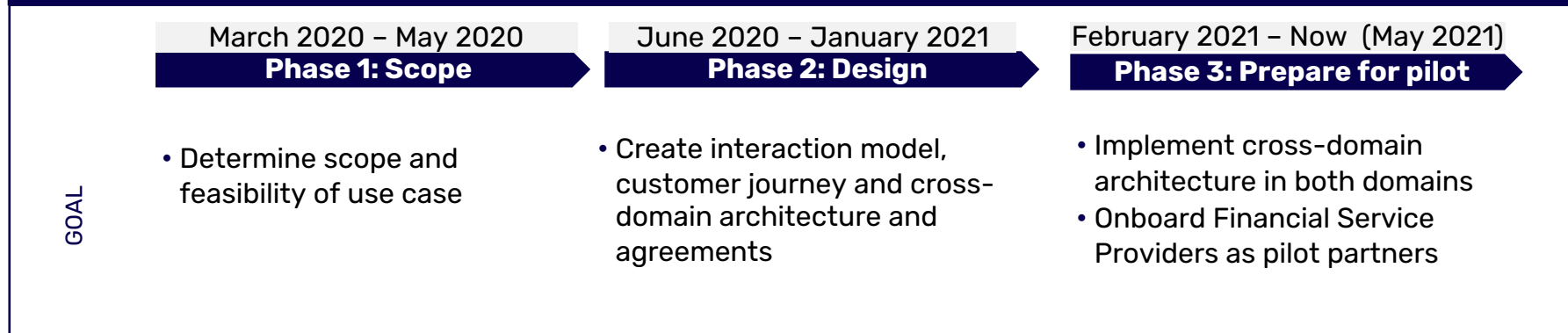


Table of contents

1. Management summary
2. Use case description
- 3. Appendix**
 - A. Customer journey in use case
 - B. Cross-domain data sharing agreements
 - C. Use case approach
 - D. Parties involved in use case**

In Dutch financial and energy sector, data sharing is facilitated by a neutral party: HDN in financial, EDSN in energy



Role of HDN in financial sector

- Hypotheken Data Netwerk (HDN) aims to improve efficiency for consumers, financial advisors and financial product providers during a loan application by improving data exchange between all parties
- HDN has a trusted and neutral role in the market as it is a cooperative association of market players
- HDN has 57 members and provides services to about 4500 financial advisors
- HDN provides an industry-wide data standard, exchange infrastructure and governance structure for sharing loan application data between intermediaries and loan providers



Role of EDSN in energy sector

- The Distribution System Operators (DSOs) in the Netherlands have tasked their IT service provider Energie Data Services Nederland (EDSN) to operate all common data facilities for all seven DSOs in the Dutch energy market
- The goal of EDSN is to facilitate the functioning of the energy market by providing data in accurate, transparent and uniform way
- EDSN enables sharing of smart meter data with parties within the sector and outside of the sector in a uniform way