FaStGO – Facilitating Standards for Guarantees of Origin

Task 3.2 – Data Protocol for Multi-energy Carrier and Multi-purpose Certificates - Results

Task 3.3 – High Level System Requirements - Initiation
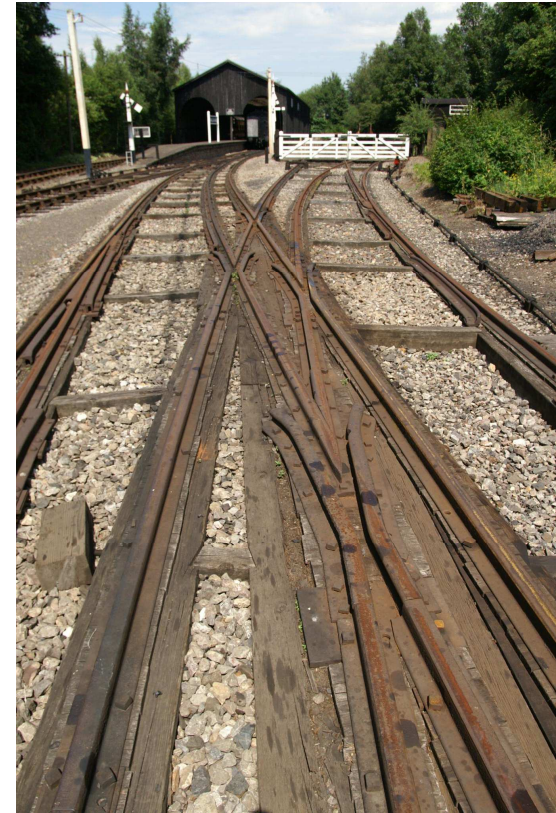
Marko Lehtovaara, Grexel Systems Oy, CEO

Why Data Protocol is Key. Now.

- To meet the Summer 2021 deadline, information system design work must start now

- Certificate data content and structure is a very fundamental

- Common data structure is the very basis of a common market

- Discussion on data structure teases the devils out from the details

- Post-implementation changes to data structure are very expensive

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Challenges and Strategies Chosen
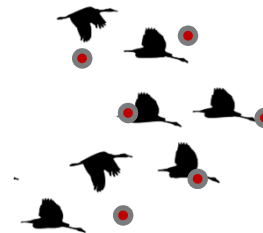
1. Moving target
   - Enough lead

2. Multiple targets
   - Shotgun

3. Versatile interest groups
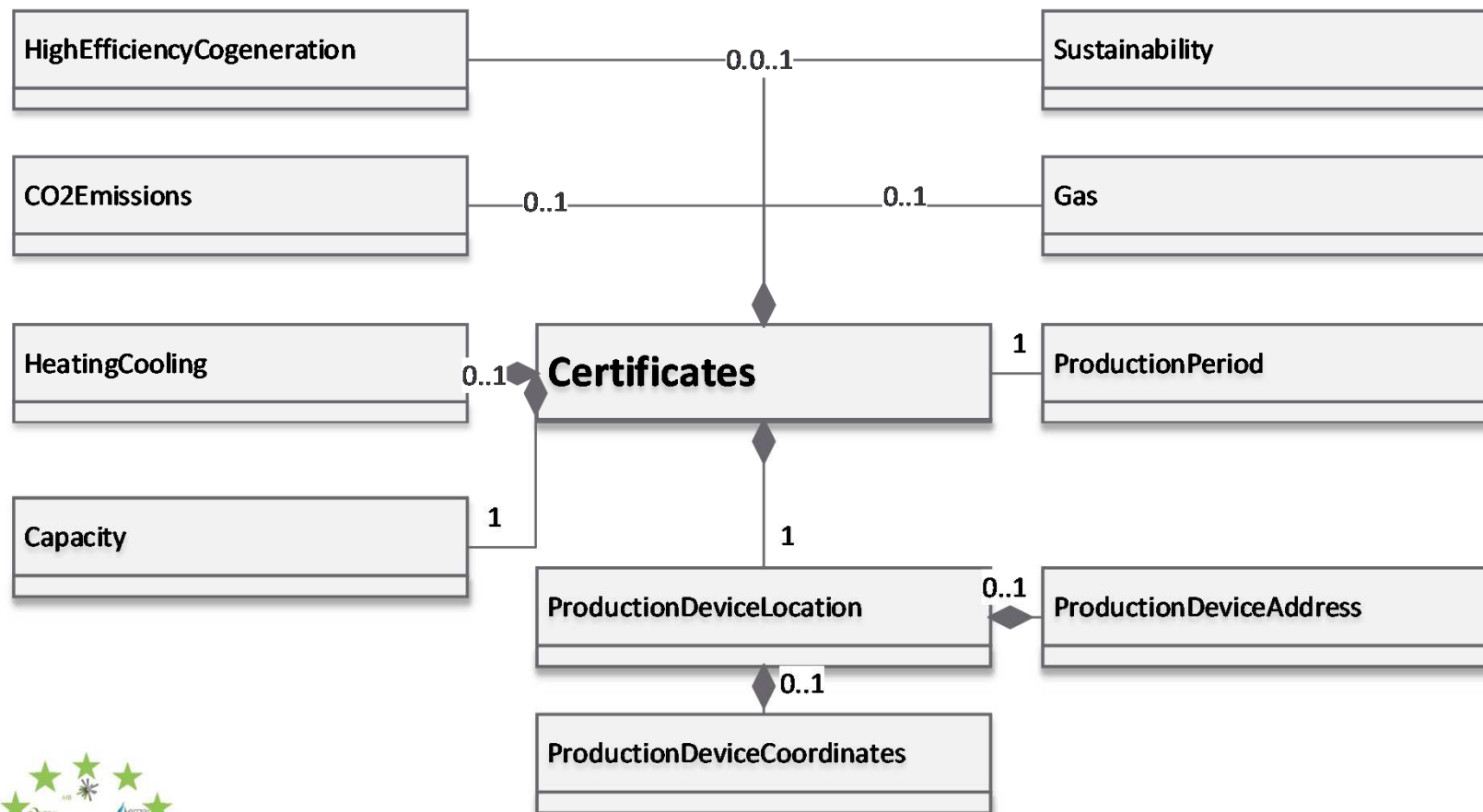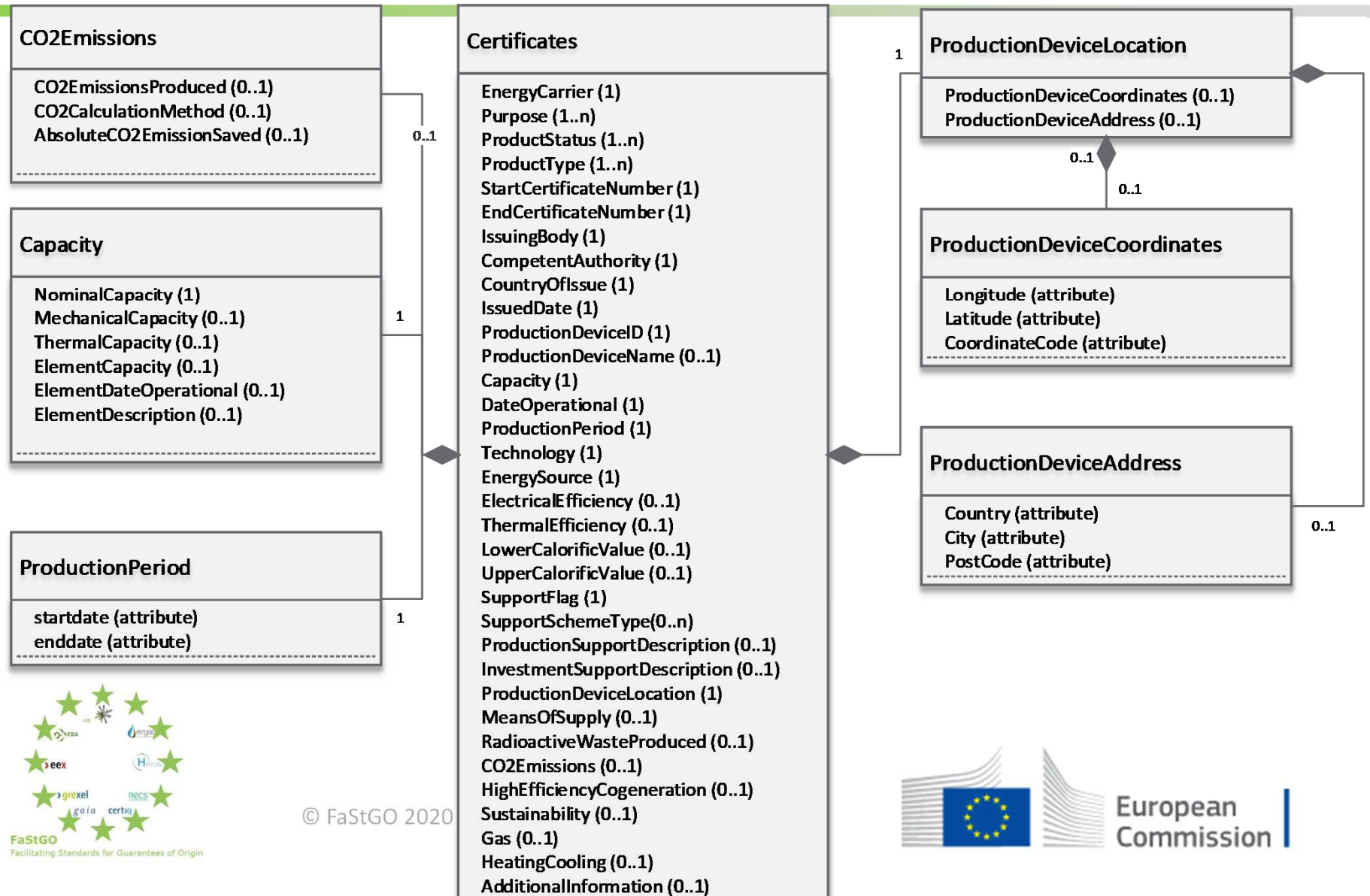   - Frequent drafts and continuous dialogue

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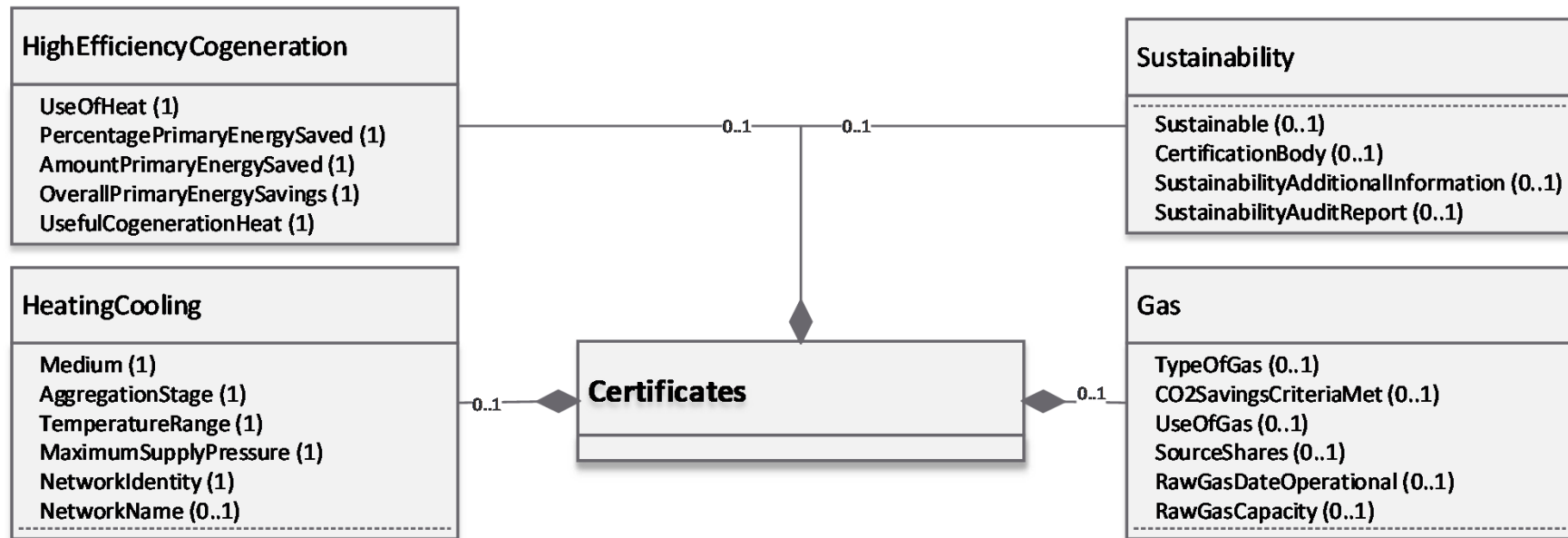
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Main Certificate Data Structure

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Certificate Data Fields, Common to All

CO2Emissions

CO2EmissionsProduced (0..1)
CO2CalculationMethod (0..1)
AbsoluteCO2EmissionSaved (0..1)

Capacity

NominalCapacity (1)
MechanicalCapacity (0..1)
ThermalCapacity (0..1)
ElementCapacity (0..1)
ElementDateOperational (0..1)
ElementDescription (0..1)

ProductionPeriod

startdate (attribute)
enddate (attribute)

Certificates

EnergyCarrier (1)
Purpose (1..n)
ProductStatus (1..n)
ProductType (1..n)
StartCertificateNumber (1)
EndCertificateNumber (1)
IssuingBody (1)
CompetentAuthority (1)
CountryOfIssue (1)
IssuedDate (1)
ProductionDeviceID (1)
ProductionDeviceName (0..1)
Capacity (1)
DateOperational (1)
ProductionPeriod (1)
Technology (1)
EnergySource (1)
ElectricalEfficiency (0..1)
ThermalEfficiency (0..1)
LowerCalorificValue (0..1)
UpperCalorificValue (0..1)
SupportFlag (1)
SupportSchemeType(0..n)
ProductionSupportDescription (0..1)
InvestmentSupportDescription (0..1)
ProductionDeviceLocation (1)
MeansOfSupply (0..1)
RadioactiveWasteProduced (0..1)
CO2Emissions (0..1)
HighEfficiencyCogeneration (0..1)
Sustainability (0..1)
Gas (0..1)
HeatingCooling (0..1)
AdditionalInformation (0..1)

ProductionDeviceLocation

ProductionDeviceCoordinates (0..1)
ProductionDeviceAddress (0..1)

ProductionDeviceCoordinates

Longitude (attribute)
Latitude (attribute)
CoordinateCode (attribute)

ProductionDeviceAddress

Country (attribute)
City (attribute)
PostCode (attribute)

0..1

1

1

1

1

0..1

0..1

0..1

0..1

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Certificate Data Fields, Specific Certificate Types

HighEfficiencyCogeneration

UseOfHeat (1)
PercentagePrimaryEnergySaved (1)
AmountPrimaryEnergySaved (1)
OverallPrimaryEnergySavings (1)
UsefulCogenerationHeat (1)

Sustainability

Sustainable (0..1)
CertificationBody (0..1)
SustainabilityAdditionalInformation (0..1)
SustainabilityAuditReport (0..1)

HeatingCooling

Medium (1)
AggregationStage (1)
TemperatureRange (1)
MaximumSupplyPressure (1)
NetworkIdentity (1)
NetworkName (0..1)

Gas

TypeOfGas (0..1)
CO2SavingsCriteriaMet (0..1)
UseOfGas (0..1)
SourceShares (0..1)
RawGasDateOperational (0..1)
RawGasCapacity (0..1)

Certificates

0..1   0..1

0..1

0..1

Message and Transport Related Fields

Header

MessageTransmissionTime (1)

MessageID (1)
FromRegistry (1)
ToRegistry (1)
Context (1)

Env

Header (1)
Body (1)

Body

SendingAccountID (1)
ReceivingAccountID (1)
NumberOfCertificates (1)
Certificates (1...n)

1   1

1   1

Certificates

1...n

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What About JSON, AMQP, ...?

Why XML over JSON?

- XML is more controlled and secure
- XML support name spaces and schemas
- JSON is more efficient, easier to read and it supports arrays

What about transport layer?

- Currently SOAP/Web service is widely supported and understood
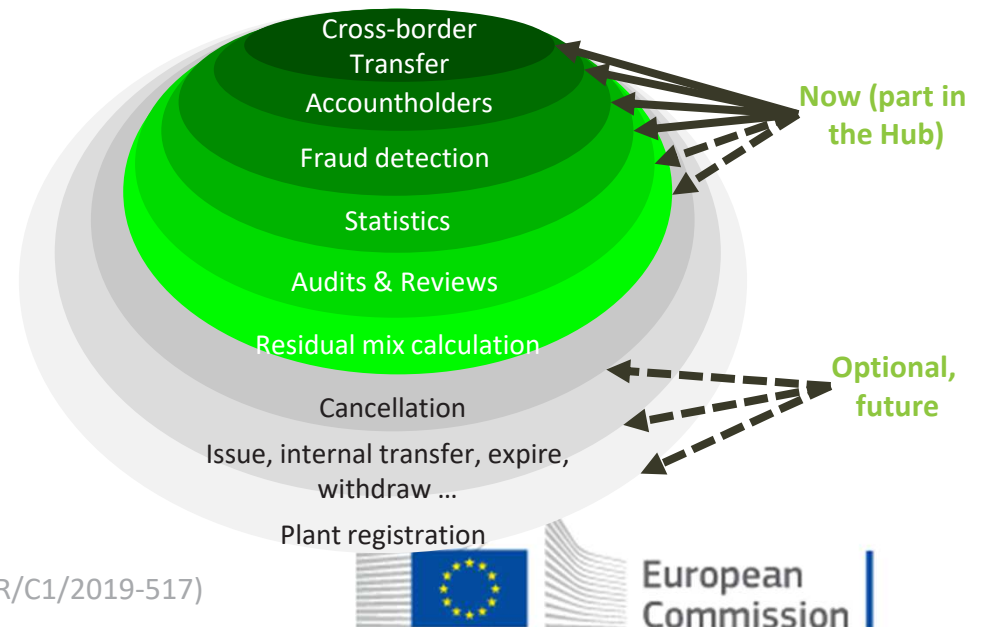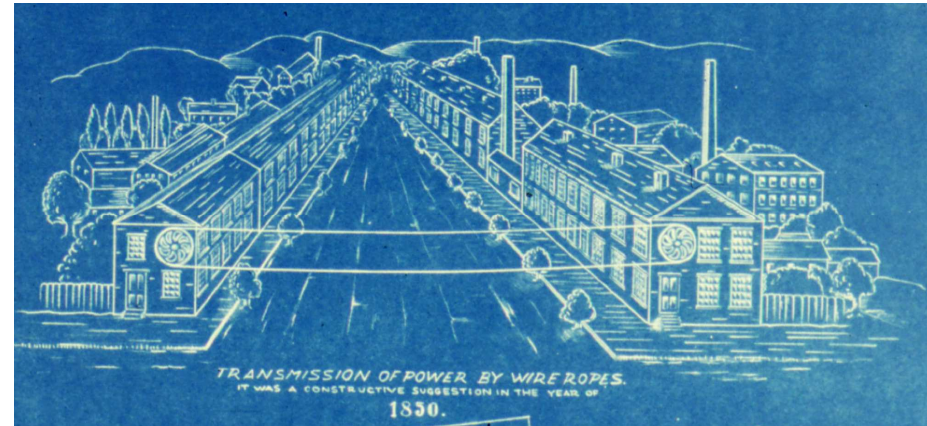- Future might belong to APIs or message queues

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Task 3.3 – High Level System Specification

Based on vision developed as part of task 3.1

- Extension of a hub centric model

    1. Adding „missing layers"
        - Residual mix
        - Centralised cancellation

    2. Technical concept for a multi-domain registry
        - Adding accounts and transactions

TRANSMISSION OF POWER BY WIRE ROPES.
IT WAS A CONSTRUCTIVE SUGGESTION IN THE YEAR OF 1850.

Cross-border Transfer
Accountholders
Fraud detection
Statistics
Audits & Reviews
Residual mix calculation
Cancellation
Issue, internal transfer, expire, withdraw …
Plant registration

Now (part in the Hub)

Optional, future

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