above
beyond

4wrd

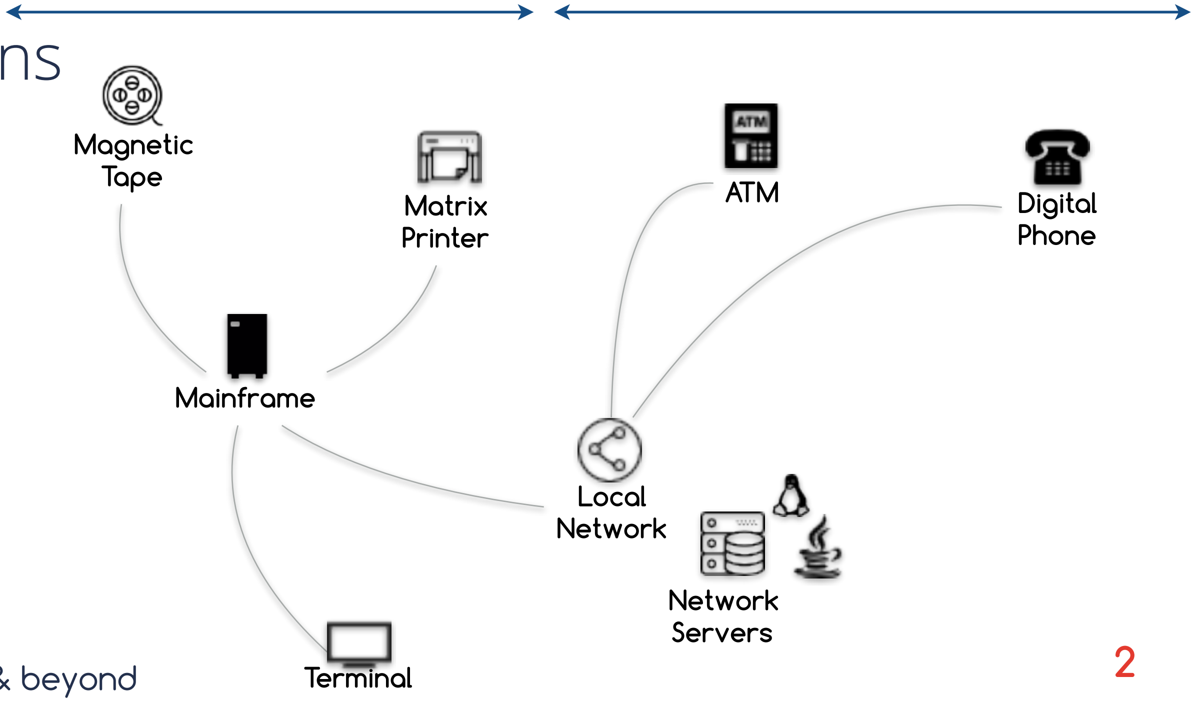
# Introduction

# Problem Statement

- Legacy Data and Systems
  - Driven by early limited storage capacity
  - Carried constraints from early scope definition
    - Govern > Enterprise > Department > Personal > Style
    - Scientific > Business > Product > Transaction
- Complex Topology
  - Standalone and internal usage origin
  - Lack of strategic design in early integrations
  - Failed to benefit from 3-tier architecture
  - Fragmented and competing architecture
  - Composed by tactical implementations

Proprietary Technology
Standalone Solutions
Single Purpose Programs
Batch Interfaces

Open Technology
Local Network
Specialized Systems
Online Interfaces



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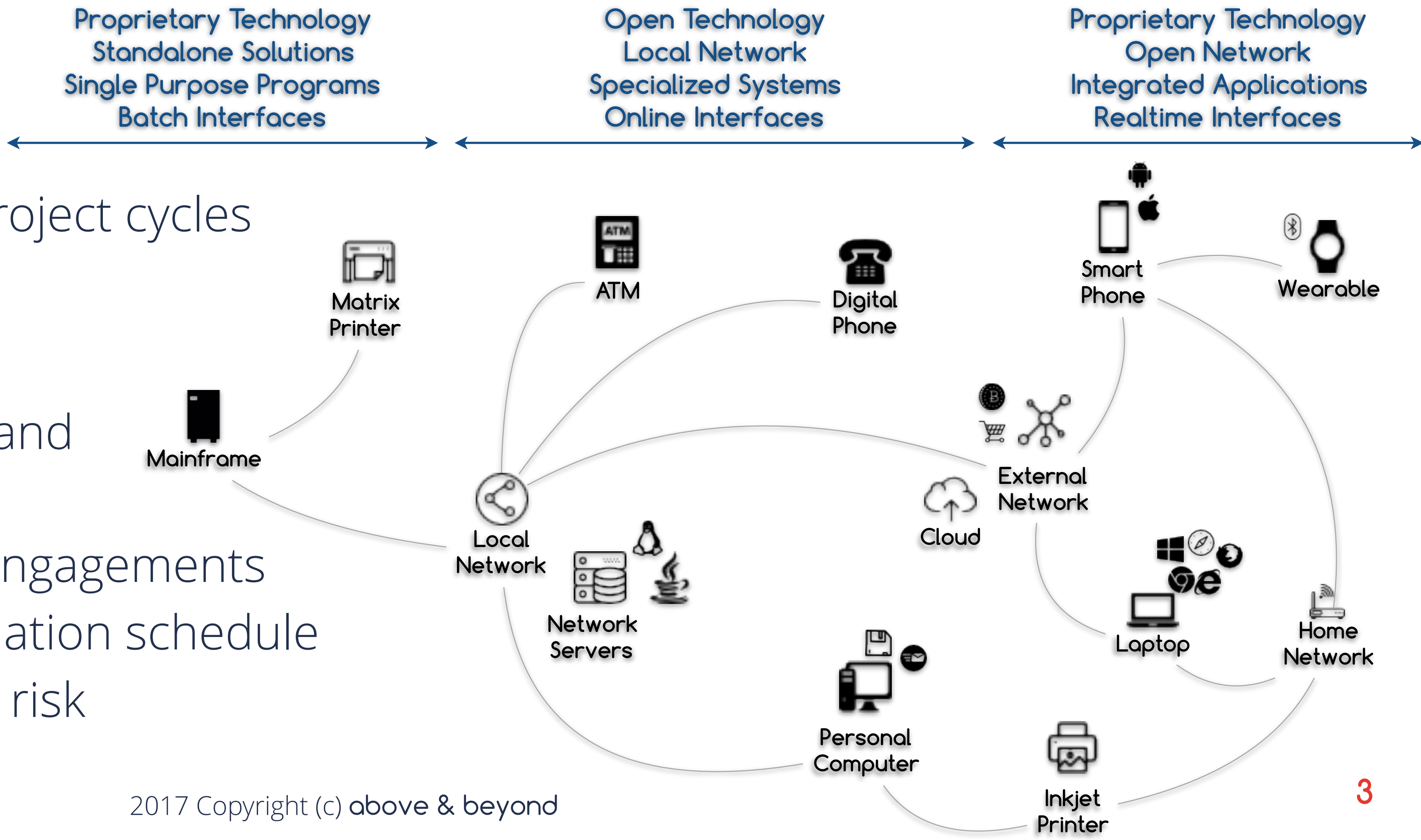
# Problem Statement (cont.)

- Support, Maintenance, and Development
  - Internally hosted, operated, and supported
  - Competition between break-fix, regulatory, and deployment of new features
  - Bureaucratic and slow project cycles
- Investment and Depreciation
  - Experienced, expensive and untrained staff
  - Time & Material driven engagements
  - Long book-value depreciation schedule
  - High customer adoption risk



Proprietary Technology
Standalone Solutions
Single Purpose Programs
Batch Interfaces

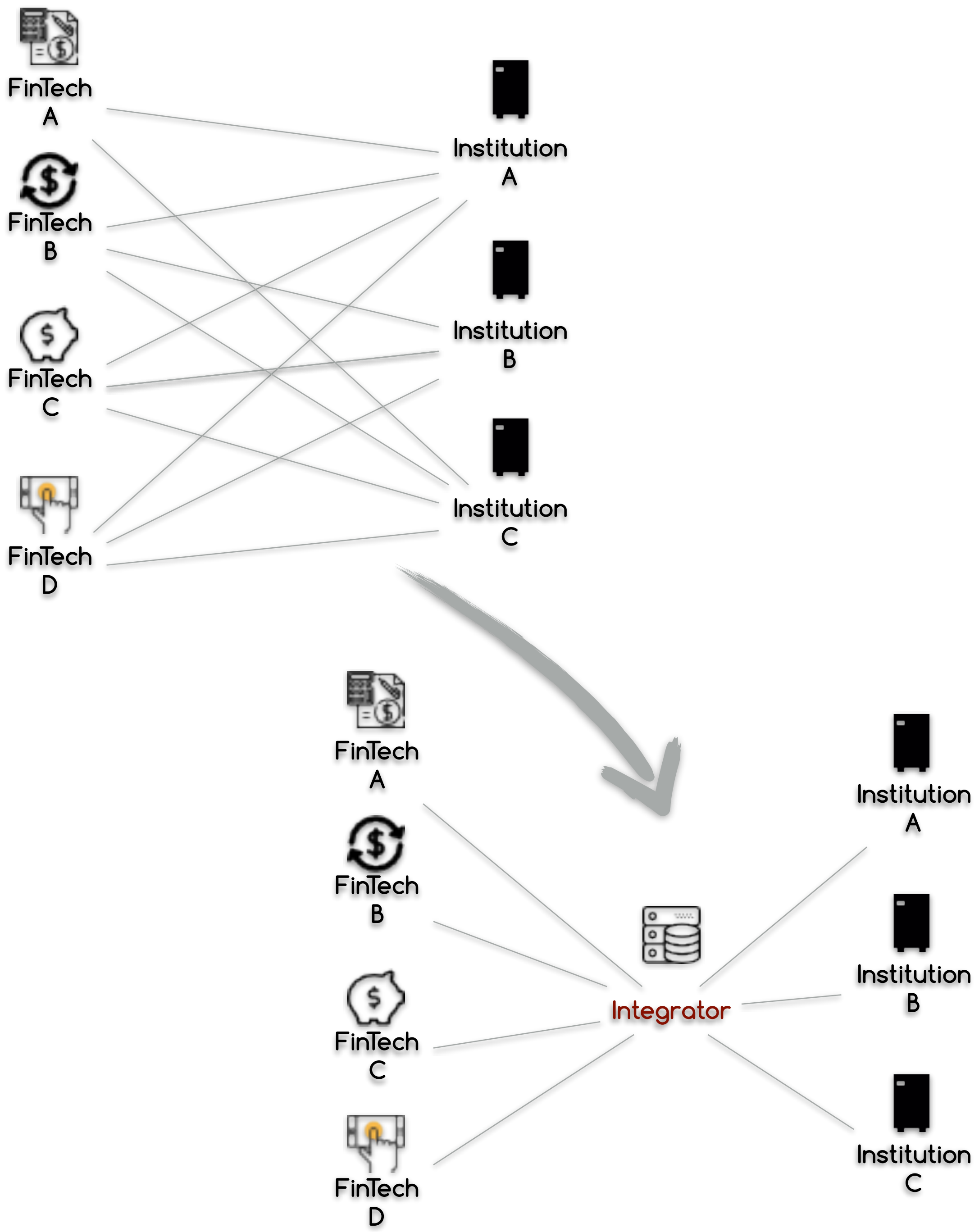
Open Technology
Local Network
Specialized Systems
Online Interfaces

Proprietary Technology
Open Network
Integrated Applications
Realtime Interfaces

# What is 4wrd ?

- The best solution to integrate, and sustain relations among disparate systems with different development roadmaps

  - Independent does not belong to an institution
  - Agnostic not coupled to an institution
  - Normalized single interface protocol
  - Simplified consolidated set of services
  - Scalable both infrastructure and businesses



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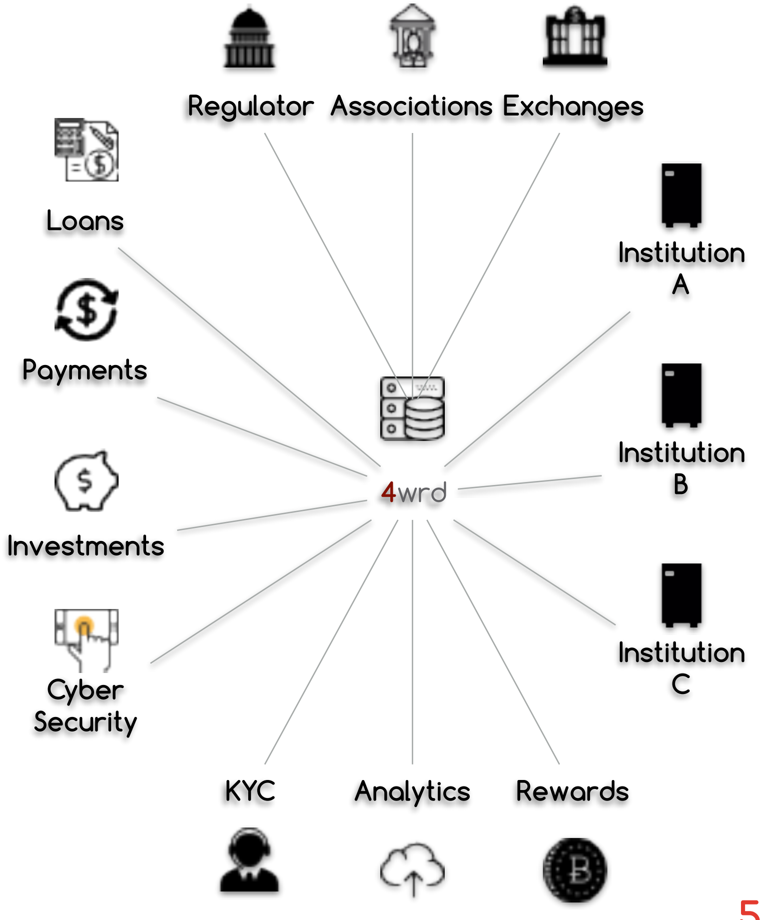
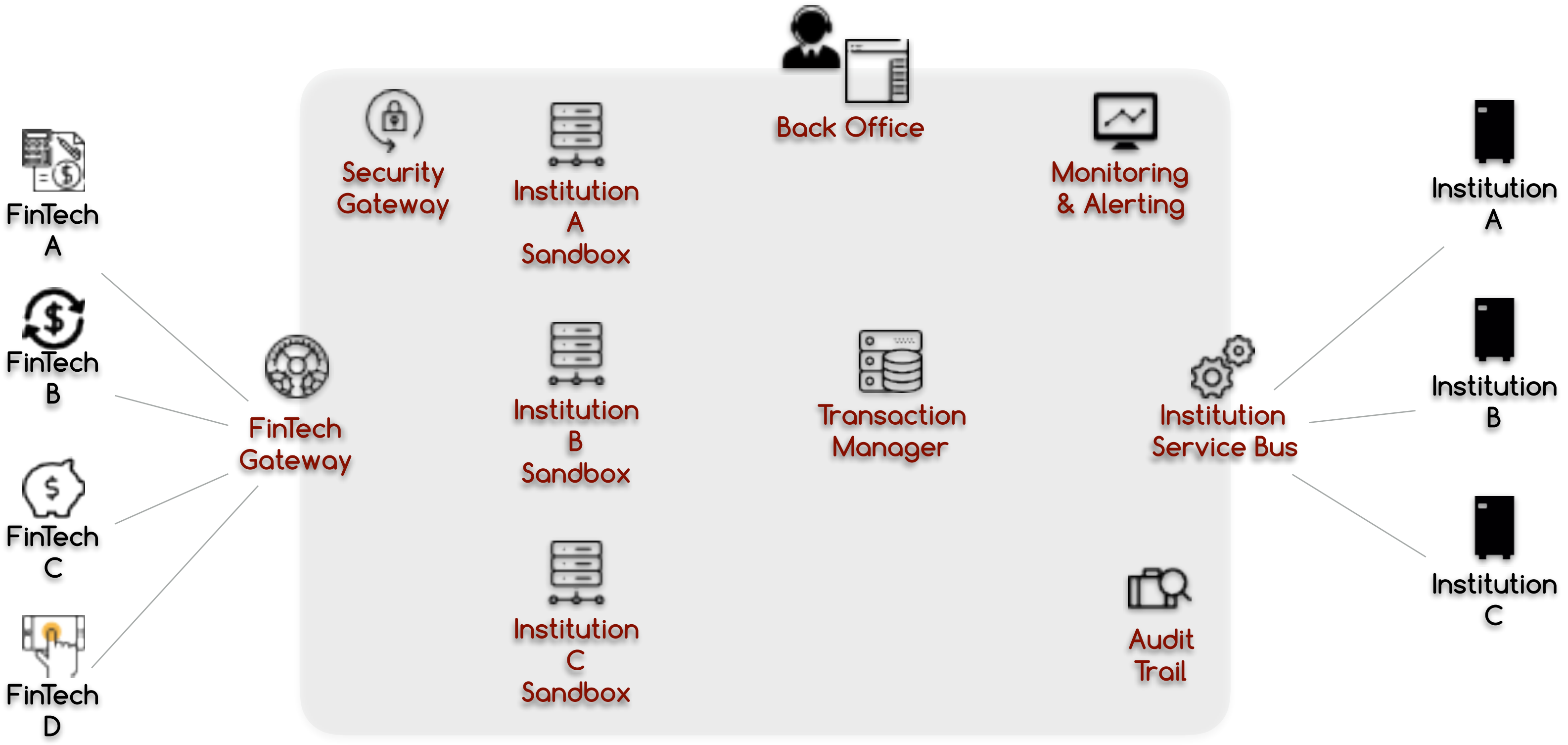
# What is 4wrd ?

- A stateless platform that creates an open eco-system providing established institutions and creative software developers (aka FinTechs) with a simple, secure, scalable, business agnostic, and industry-compliant infrastructure ready for delivering mission-critical digital solutions.
- Built to enable service integration beyond the financial industry through multi-dimensional relationships
- Marketplace for both software developers and institutions to find each other, connect their products, and experiment with new services that can enhance their customer’s digital experience



# Solution Blueprint

- FinTech Gateway
- Security Gateway
- Transaction Manager
- Institution Service Bus
- Institution Sandbox
- Back Office
  - Audit Trail
  - Monitoring & Alerting



# Platform Certifications

- Certifications and Attestations

| | |
|---|---|
| ISO 9001 | Global Quality Standard |
| ISO 27001 | Security Management Standard |
| ISO 27017 | Cloud Specific Controls |
| ISO 27018 | Personal Data Protection |
| SOC 3 | General Controls Report |
| PCI DSS Level 1 | Payment Card Standard |

- Laws, Regulations, and Privacy

| | |
|---|---|
| CISPE | Data Protection Coalition |
| Gramm-Leach-Bliley | Financial Data Security |
| PSD2 | Revised Payment Service Directive (in progress) |

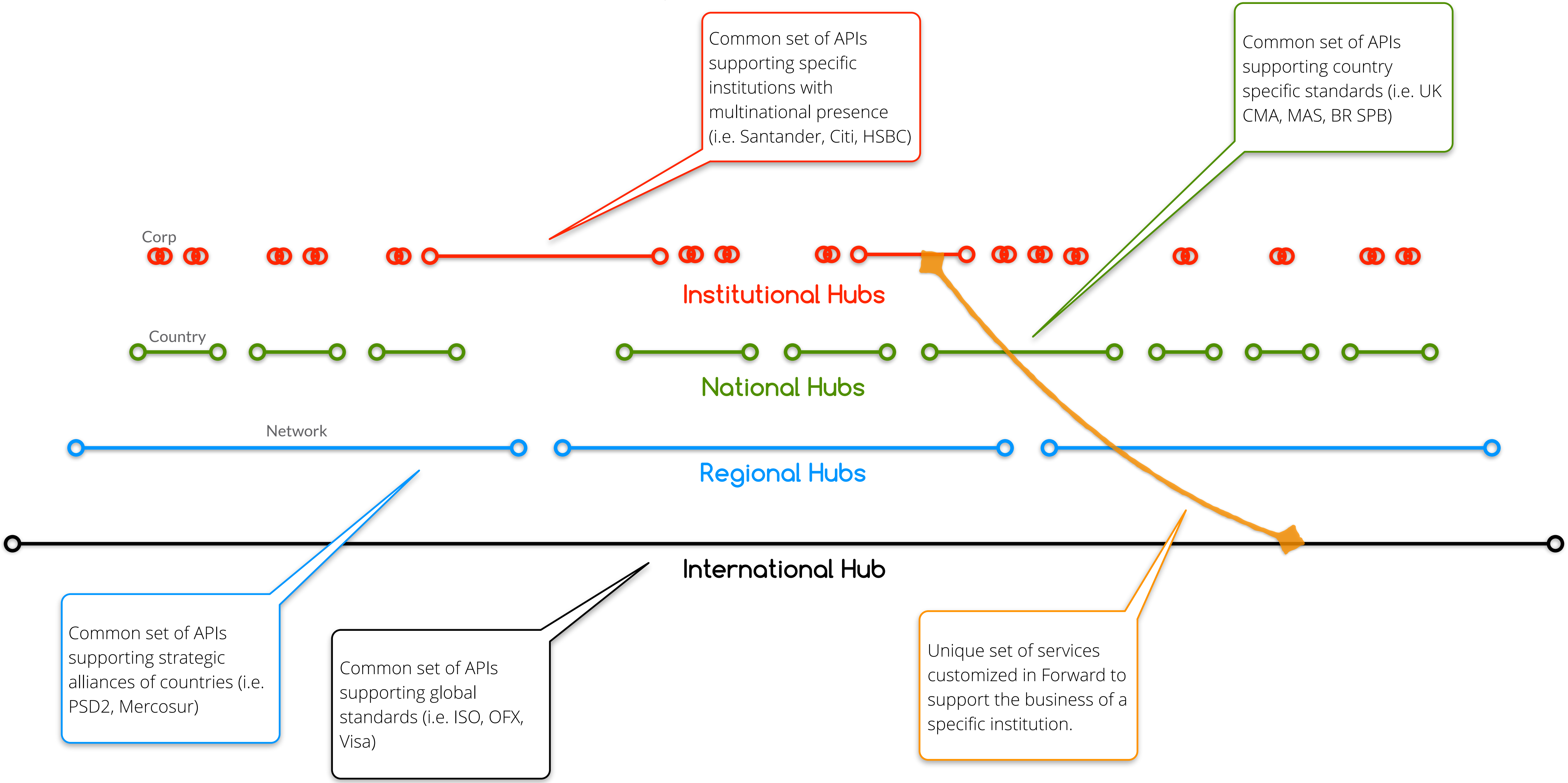
MGMT. SYS.
RvA C 466

MEMBER OF MULTILATERAL
IAF
RECOGNITION ARRANGEMENT

Amazon Web Services, Inc.

CERTIFY
EY
POINT

# Multi-tier Landscape



Common set of APIs supporting specific institutions with multinational presence (i.e. Santander, Citi, HSBC)

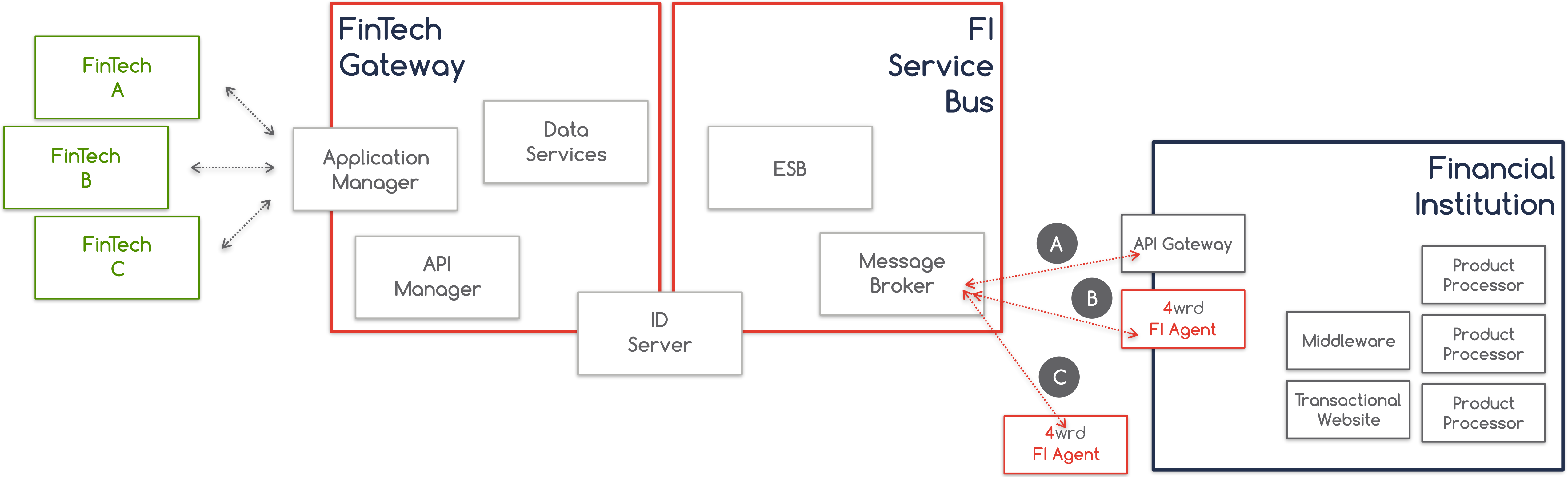
Common set of APIs supporting country specific standards (i.e. UK CMA, MAS, BR SPB)

Common set of APIs supporting strategic alliances of countries (i.e. PSD2, Mercosur)

Common set of APIs supporting global standards (i.e. ISO, OFX, Visa)

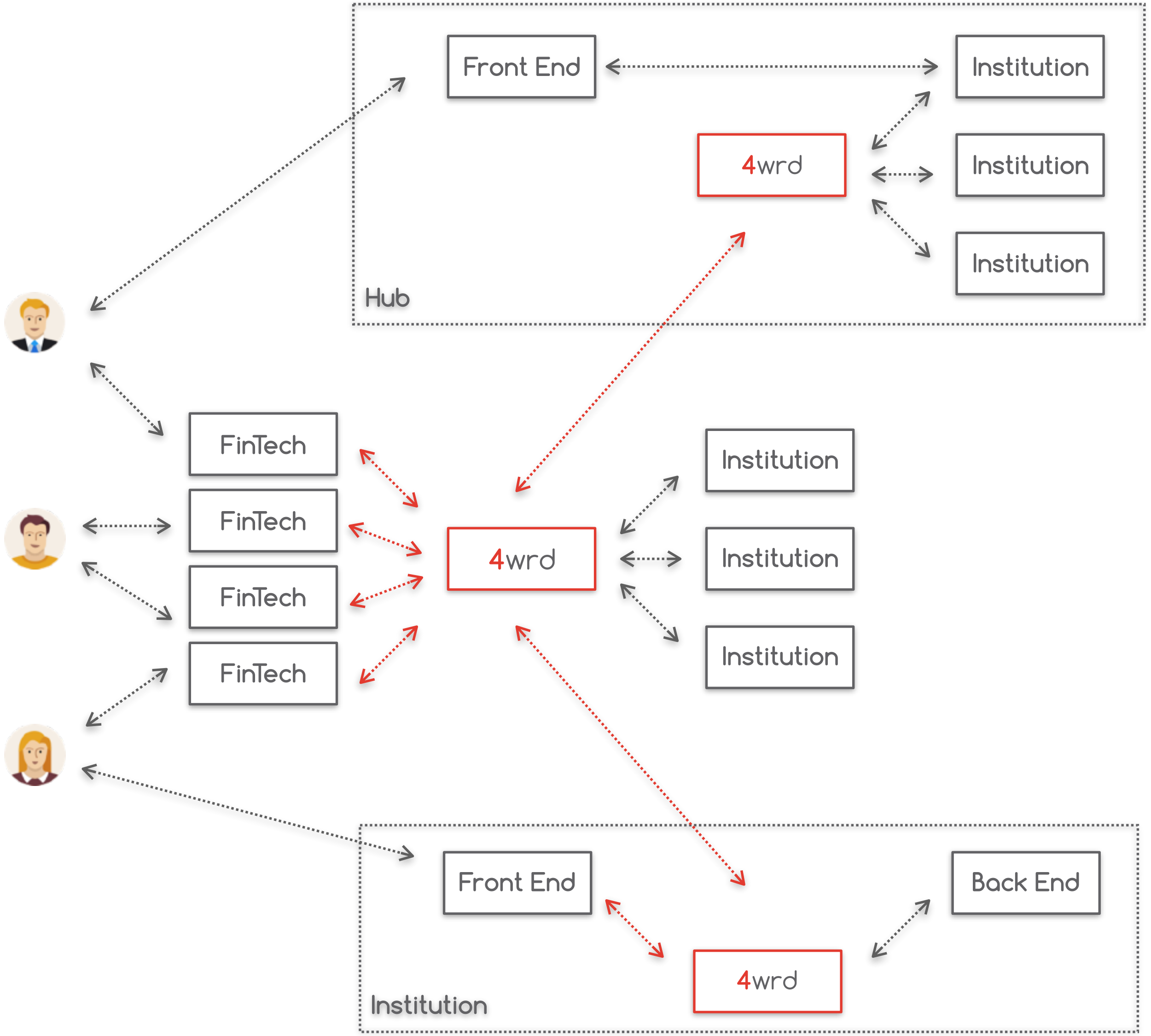
Unique set of services customized in Forward to support the business of a specific institution.

# Institution Integration Options



A. Connect directly to FI's API Gateway
B. Deploy FI Specific Forward Agent within FI infrastructure
C. Deploy FI Specific Forward Agent within Forward's infrastructure

# Topology Overview

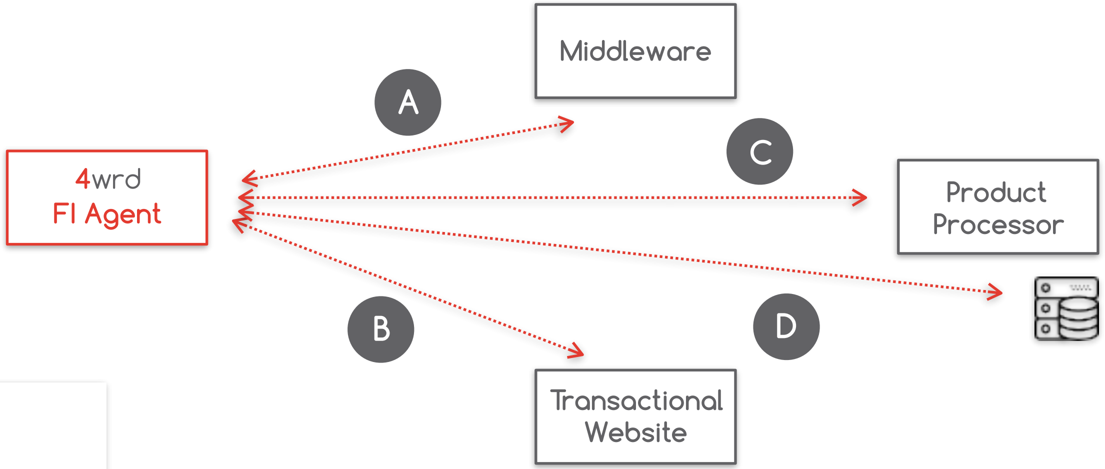


FORWARD as Institution **Hub** Integrator

FORWARD as **FinTech** Integrator

FORWARD as **Internal** Enterprise Integrator

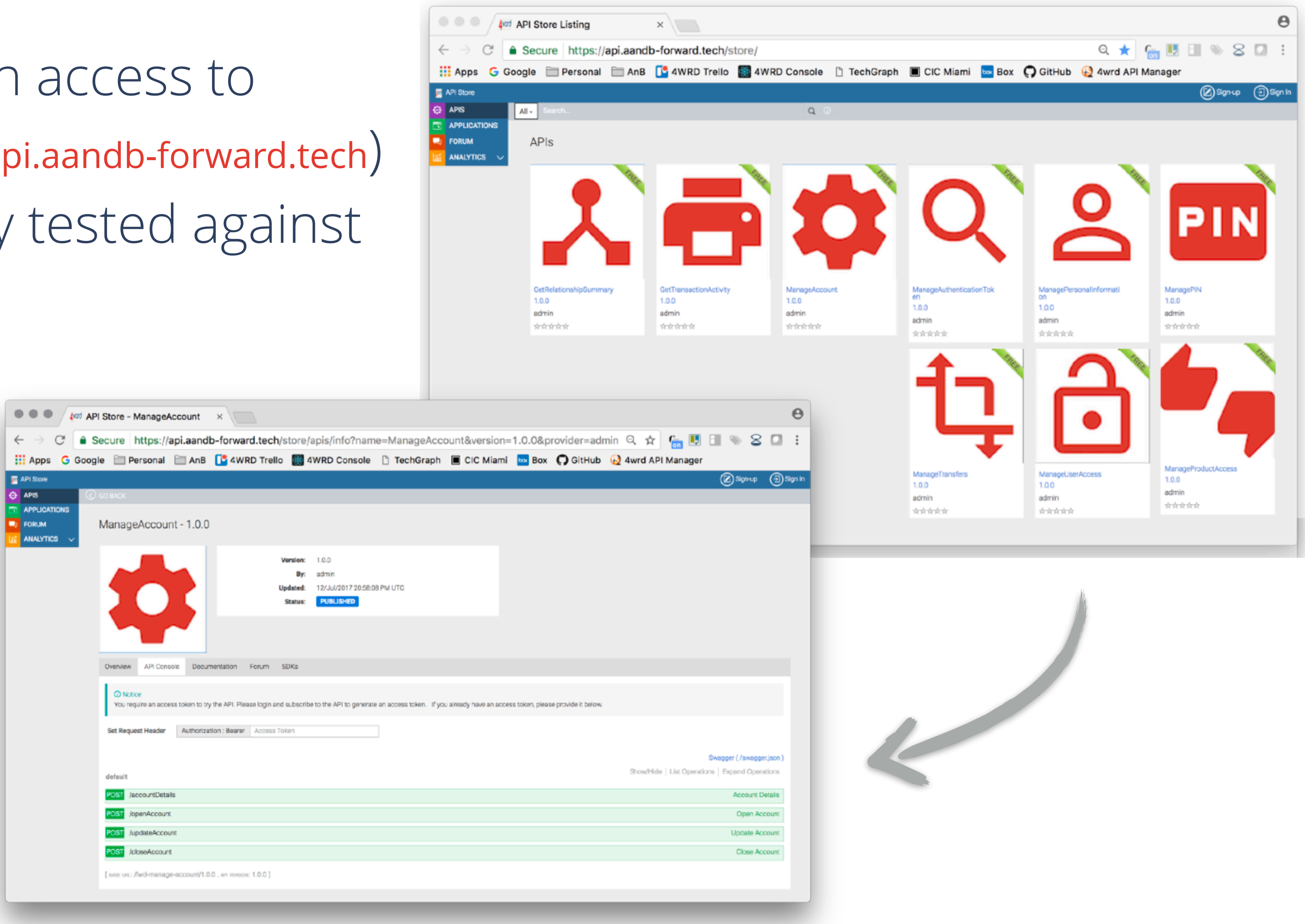
# Interface Approaches



A. Leverage existing middleware solution
B. Parse existing web-based internet/intranet sites
C. Use available MQ services
D. Connect directly to database with JDBC interface

# Access to API Manager

- Each team will be given access to 4wrd's API Store (https://api.aandb-forward.tech)
- Services can be initially tested against 4wrd's BankBot utility


API Store Listing
Secure https://api.aandb-forward.tech/store/
Apps Google Personal AnB 4WRD Trello 4WRD Console TechGraph CIC Miami Box GitHub 4wrd API Manager
API Store
Sign-up
Sign In
APIS
APPLICATIONS
FORUM
ANALYTICS
All
Search
APIs
GetRelationshipSummary 1.0.0 admin
GetTransactionActivity 1.0.0 admin
ManageAccount 1.0.0 admin
ManageAuthenticationToken 1.0.0 admin
ManagePersonalInformation 1.0.0 admin
ManagePIN 1.0.0 admin
ManageTransfers 1.0.0 admin
ManageUserAccess 1.0.0 admin
ManageProductAccess 1.0.0 admin
FREE
PIN
API Store - ManageAccount
Secure https://api.aandb-forward.tech/store/apis/info?name=ManageAccount&version=1.0.0&provider=admin
GO BACK
Overview
API Console
Documentation
Forum
SDKs
Swagger ( /swagger.json )
Show/Hide | List Operations | Expand Operations

ManageAccount - 1.0.0

Version: 1.0.0
By: admin
Updated: 12/Jul/2017 20:58:08 PM UTC
Status: PUBLISHED

Notice
You require an access token to try the API. Please login and subscribe to the API to generate an access token. If you already have an access token, please provide it below.

Set Request Header: Authorization : Bearer Access Token

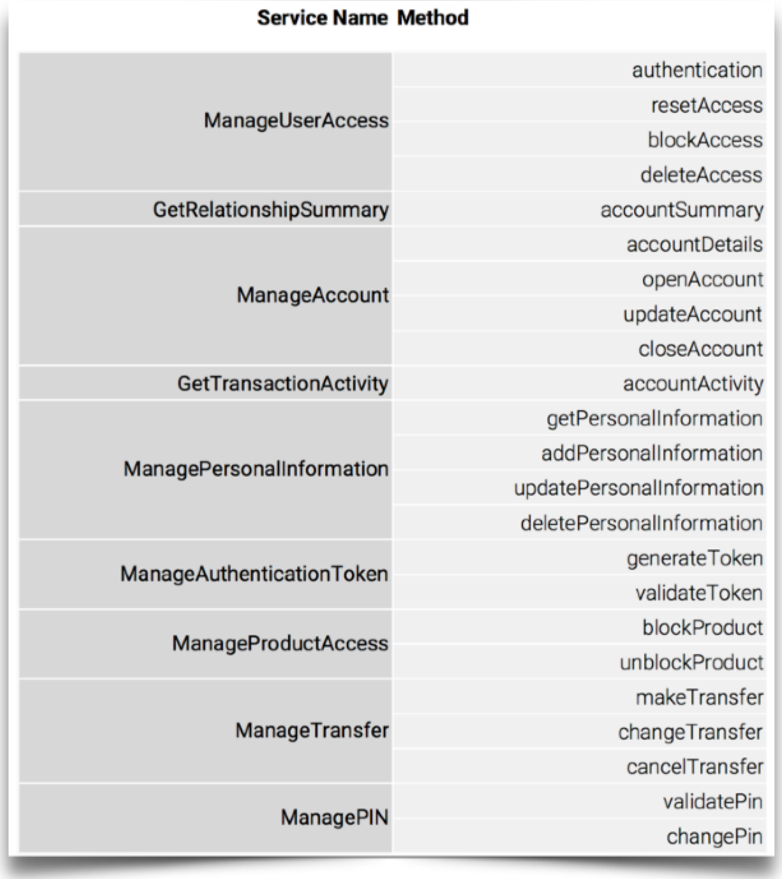
default

POST /accountDetails Account Details
POST /openAccount Open Account
POST /updateAccount Update Account
POST /closeAccount Close Account

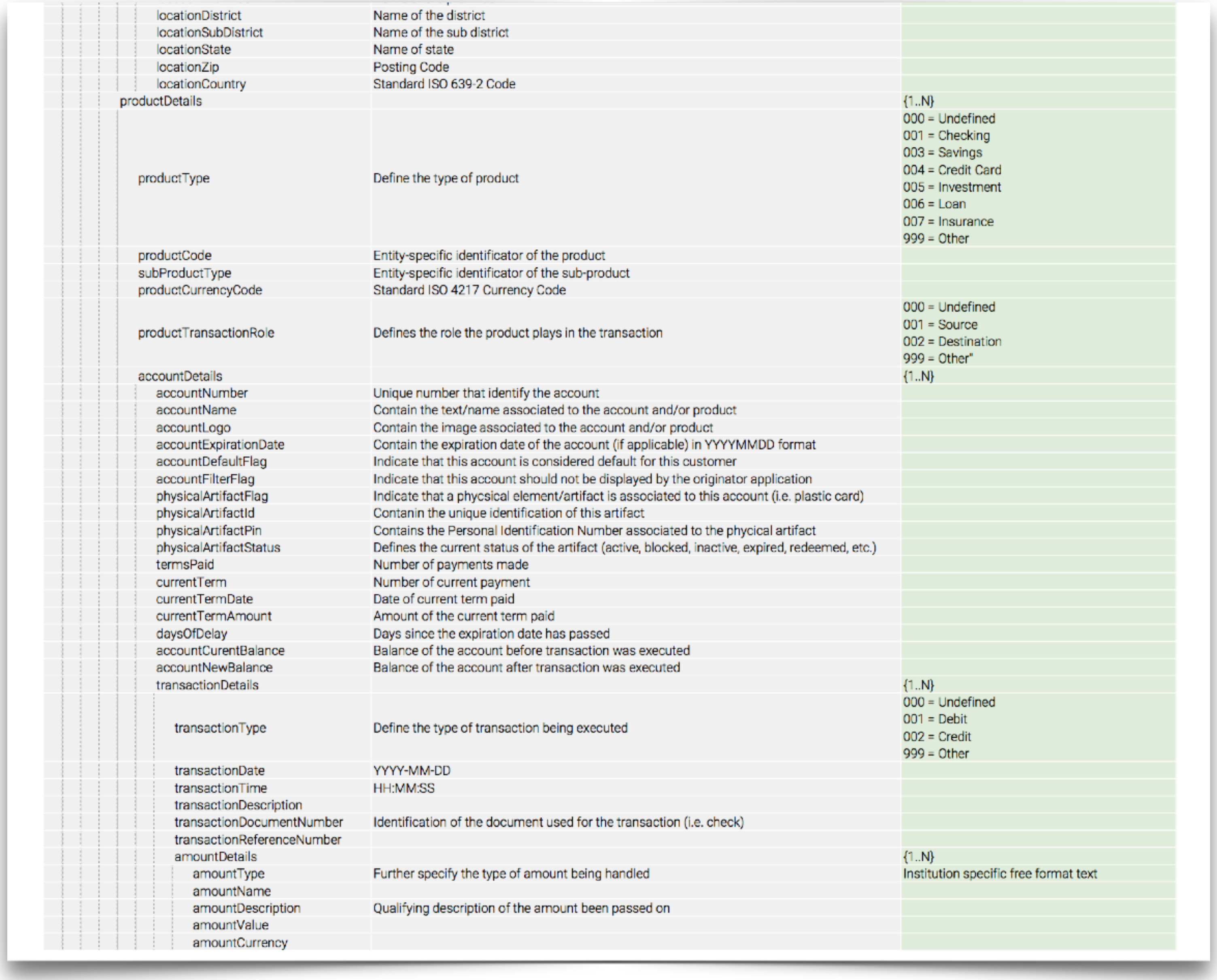
[ BASE URL: /fwd-manage-account/1.0.0 , API VERSION: 1.0.0 ]

# Master Dictionary

- The 4WRD Master Mapping.pdf file contains a list of services along with all elements currently supported by 4wrd



| Service Name | Method |
|---|---|
| ManageUserAccess | authentication<br>resetAccess<br>blockAccess<br>deleteAccess |
| GetRelationshipSummary | accountSummary |
| ManageAccount | accountDetails<br>openAccount<br>updateAccount<br>closeAccount |
| GetTransactionActivity | accountActivity |
| ManagePersonalInformation | getPersonalInformation<br>addPersonalInformation<br>updatePersonalInformation<br>deletePersonalInformation |
| ManageAuthenticationToken | generateToken<br>validateToken |
| ManageProductAccess | blockProduct<br>unblockProduct |
| ManageTransfer | makeTransfer<br>changeTransfer<br>cancelTransfer |
| ManagePIN | validatePin<br>changePin |



| | | |
|---|---|---|
| locationDistrict | Name of the district | |
| locationSubDistrict | Name of the sub district | |
| locationState | Name of state | |
| locationZip | Posting Code | |
| locationCountry | Standard ISO 639-2 Code | |
| productDetails | | {1..N} |
| productType | Define the type of product | 000 = Undefined<br>001 = Checking<br>003 = Savings<br>004 = Credit Card<br>005 = Investment<br>006 = Loan<br>007 = Insurance<br>999 = Other |
| productCode | Entity-specific identificator of the product | |
| subProductType | Entity-specific identificator of the sub-product | |
| productCurrencyCode | Standard ISO 4217 Currency Code | |
| productTransactionRole | Defines the role the product plays in the transaction | 000 = Undefined<br>001 = Source<br>002 = Destination<br>999 = Other" |
| accountDetails | | {1..N} |
| accountNumber | Unique number that identify the account | |
| accountName | Contain the text/name associated to the account and/or product | |
| accountLogo | Contain the image associated to the account and/or product | |
| accountExpirationDate | Contain the expiration date of the account (if applicable) in YYYYMMDD format | |
| accountDefaultFlag | Indicate that this account is considered default for this customer | |
| accountFilterFlag | Indicate that this account should not be displayed by the originator application | |
| physicalArtifactFlag | Indicate that a phycsical element/artifact is associated to this account (i.e. plastic card) | |
| physicalArtifactId | Contanin the unique identification of this artifact | |
| physicalArtifactPin | Contains the Personal Identification Number associated to the phycical artifact | |
| physicalArtifactStatus | Defines the current status of the artifact (active, blocked, inactive, expired, redeemed, etc.) | |
| termsPaid | Number of payments made | |
| currentTerm | Number of current payment | |
| currentTermDate | Date of current term paid | |
| currentTermAmount | Amount of the current term paid | |
| daysOfDelay | Days since the expiration date has passed | |
| accountCurentBalance | Balance of the account before transaction was executed | |
| accountNewBalance | Balance of the account after transaction was executed | |
| transactionDetails | | {1..N} |
| transactionType | Define the type of transaction being executed | 000 = Undefined<br>001 = Debit<br>002 = Credit<br>999 = Other |
| transactionDate | YYYY-MM-DD | |
| transactionTime | HH:MM:SS | |
| transactionDescription | | |
| transactionDocumentNumber | Identification of the document used for the transaction (i.e. check) | |
| transactionReferenceNumber | | |
| amountDetails | | {1..N} |
| amountType | Further specify the type of amount being handled | Institution specific free format text |
| amountName | | |
| amountDescription | Qualifying description of the amount been passed on | |
| amountValue | | |
| amountCurrency | | |