Open Data Business Models

Colm Hayden
Chief Technology Officer

anaeko

OpenDataNI
SonraíOscailteTÉ

OPEN DATA & FAIR DATA

Open Data is a human right

Open Data fosters economic growth through innovative services built on public data

Open Data promotes transparency and accountability

80% of analysis cost is finding and integrating data

FAIR Data is an enabler of Scientific Research

FAIR Data reduces the cost of conducting research

Open Data Definition

Open data can be freely used, modified, and shared by anyone for any purpose *1

Eight Principles of Government Open Data *2

1. **Complete** – all public data is made available (consider privacy and security)
2. **Primary** – raw data, unaggregated, as collected from source
3. **Timely** – data is made available as soon as possible
4. **Accessible** – on public Internet using common standards and protocols
5. **Machine Processable** – reasonably structured, encoded in common formats
6. **Non-Discriminatory** – enable anonymous access, no registration restrictions
7. **Non-Proprietary** – using open standards not requiring proprietary software
8. **License Free** – not subject to copyright, patent, trademark or trade secret

*1 Open Definition: 2005
*2 Sebastopol, 2007

FAIR Data Definition (1 of 2)

Scientific data should be Findable, Accessible, Interoperable and Reusable *1

Findable

1. **Globally Unique ID** – assign persistent GUIDs (registries & dictionaries)
2. **Rich Metadata** – data described by rich metadata (intrinsic & contextual)
3. **Explicit Link Metadata** – metadata must clearly state data it pertains to
4. **Searchable** – index data and metadata in searchable resources

Accessible

1. **Standard Retrieval** – data and metadata retrievable using GUIDs
    1. **Open Protocol** –open and non-proprietary (HTTP, FTP, SMTP)
    2. **Authenticated and Authorised** – not necessarily open data
2. **Perpetual Metadata** – when costly data degrades, maintain metadata

*1 FAIR Guiding Principles for scientific data management and stewardship https://www.nature.com/articles/sdata201618 (2016)

FAIR Data Definition (2 of 2)

Scientific data should be Findable, Accessible, Interoperable and Reusable *1

Interoperable

1. **Common Language** – broadly accepted representation (e.g. RDF, JSON)
2. **Common Dictionaries –** standardised vocabulary (e.g. SNOMED for health)
3. **Qualified References** – descriptive links between data and metadata

Reusable

1. **Richly Described** – many attributes to help find *and* understand context
    1. **Clear License –** legal right to use data (e.g. MIT or Creative Commons)
    2. **Clear Provenance** – where the data came from, acknowledgements
    3. **Domain Relevant** – meet industry and domain standards (e.g. FHIR)

*1 FAIR Guiding Principles for scientific data management and stewardship https://www.nature.com/articles/sdata201618 (2016)

Comparing Open and FAIR Data

Not all Government Data should be Open Data

Personal Identifiable Information

- Permission-based privacy
- The right to be forgotten

Sensitive Health & Financial Information

- De-anonymisation could re-identify individuals by correlating data sets

State Security and Defence Information

- Requires strictest protection and control

Open Data should aim for FAIR Principles

FAIR Data should not necessarily be open

OPEN DATA BUSINESS MODELS

Pure Content Providers
- Combine and enrich Open Data for a consumer fee

Data-Enabled Consumer Services
- Sell services to consumers attracted by Open Data

Apps using Open Data
- Sell customised applications that leverage Open Data

Infomediation
- Aggregate Open Data and sell enriched data access

Analytical Services
- Provide specialist analytics as a professional service

Advertising & Promotion
- Sell insights to advertisers and service providers

Pure Content Providers

Content may be king, but convenience is queen

- **Open Data can be freely used and shared, so why will consumers pay?**
  - **Convenience** – 44% of people pay for premium content because of convenience *[1]
  - **Cost Effective** - compared with getting information yourself or from other sources
  - **Sunk Cost Fallacy** – people who pay for content are more likely to use it
  - **Personalisation** – select Open Data relevant to location, preferences, context
  - **Enrichment** – combining Open Data with other licensed or proprietary data
  - **Prediction** – monitor historical Open Data trends to predict future behaviour

- **Example: Zillow Online Real Estate Database**
  - Provides a “Zestimate" for a home based using Open Data and comparative sales
  - Provides estimated rent prices for 90 million homes
  - Users check estimates against actuals to improve algorithms
  - 2019 Revenue: USD $2.7 billion

Data-Enabled Consumer Services

People value a service more than the data it is built on

- **Target services with a high loyalty and retention**
  - **Understand Unit Economics** LTV >= 3xCAC to scale
  - **At best 55% of users remain** after 90 days
  - **Optimise Retention** before big marketing spend
  - **Minimise Cost Per Install** - £2 per mobile app

- **Example: Trainline Ticket Service**
  - Transport booking app that capitalised on the shift to on-line booking and e-tickets
  - Captured Open Data from Rail and Coach operators across 44 countries
  - Repaired, Cleansed, and Standardised data then made this available as Open Data
  - Valued at £2 billion

Apps using Open Data

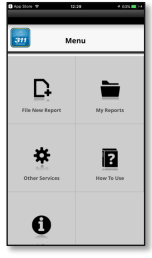
Turning Open Data standards into a Open Data Service

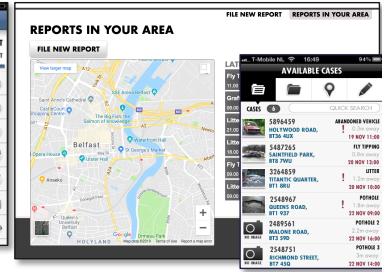
Develop a free-to-use consumer App licensed to public or private sector

- Leverage Open Data sets relevant to a particular industry and location

Example: Open 311 White-label Apps

- Open311 was defined in 2009 to help citizens report issues
- Platform vendors implemented the standard to enable Open Data
- The standard spread from US to Europe, Asia and Australia
- A competitive ecosystem was built around apps





Boston City Worker

North Ayreshire Report It

Citizen Mobile App

Employee Mobile App

Videos from when the apps were first released in 2010

ANAEKO.COM

Infomediation

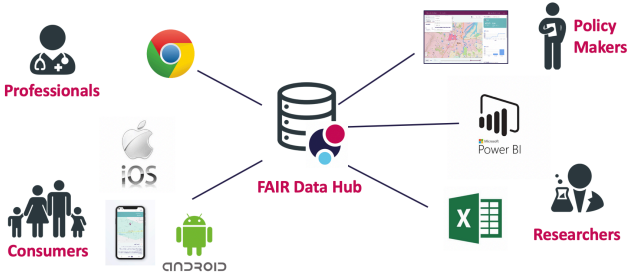
Data Brokers to simplify the Exchange of Data using a Data Hub

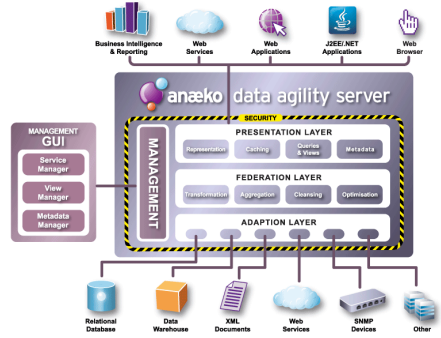
Data-as-a-Service business model within the API Economy

- Provide federated access to hybrid cloud and multi-cloud data
- Charge transaction fees or service subscription for secure accesses through

Example: Anaeko FAIR Data Hub

- Manage access to regional (smart city) and industry (health, utilities) data sources
- Geospatial and temporal normalization to enrich data
- Dedicated deployment and multi-tenanted





Analytical Services

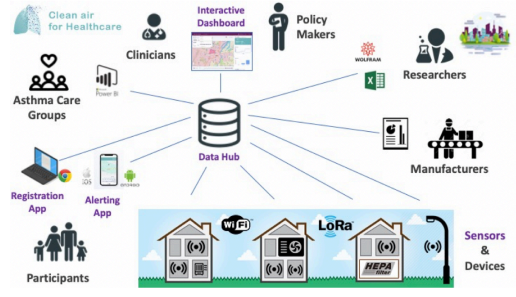
Data Analytics Market will grow at a CAGR of 30.08% from 2020 to 2023

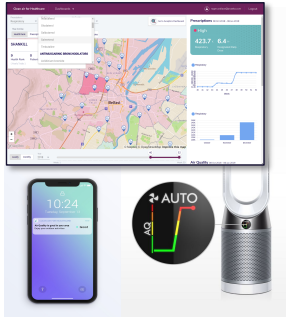
Analytical Dashboards and specialist Analytics Services using Open Data

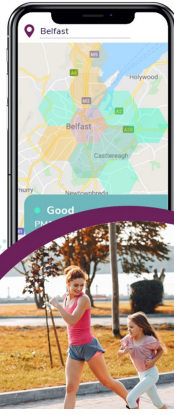
- Project-based professional services to support expert users
- Licensed access to specialist dashboards

Example: Clean Air for Healthcare and RELAX

- Identify the impact of Air Pollution on respiratory conditions including Asthma
- Inform ultra-local social and community care to vulnerable groups



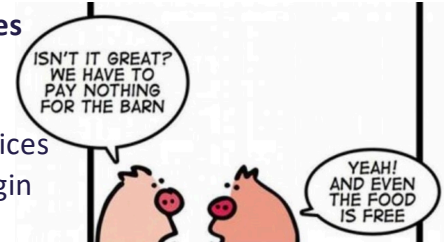




Advertising Business Models

If you are not paying for it, you are the product

- **Advertising models depend on building rich target profiles**
  - Open Data rarely identifies individuals
    … but ..
  - Open Data can attract consumers to convenient services
  - Users readily opt-in to share data via social media login



- **Example: Tripadvisor**
  - Travel company using Open Data and user-generated reviews to attract users
  - Sell paid advertising for hotel, restaurant and experience reservations
  - Now offer Open APIs https://developer-tripadvisor.com/content-api/
  - 463 million average unique monthly visitors in 2019
  - 2019 Revenue: $1.5 billion

SUMMARY

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The Business Model Canvas

Designed for:

Designed by:

Date:

Version:

Key Partners

Who are our Key Partners?
Who are our key suppliers?
Which Key Resources are we acquiring from partners?
Which Key Activities do partners perform?

MOTIVATIONS FOR PARTNERSHIPS:
Optimization and economy
Reduction of risk and uncertainty
Acquisition of particular resources and activities

Public Sector

Private Sector

Accademia

Key Activities

What Key Activities do our Value Propositions require?
Our Distribution Channels?
Customer Relationships?
Revenue streams?

CATEGORIES:
Production
Problem Solving
Platform/Network

Analyse
Standardise
Predict

Key Resources

What Key Resources do our Value Propositions require?
Our Distribution Channels? Customer Relationships?
Revenue Streams?

TYPES OF RESOURCES:
Physical
Intellectual (brand patents, copyrights, data)
Human
Financial

OpenDataNI
Data.Gov.UK
Data.Gov.ie

Value Propositions

What value do we deliver to the customer?
Which one of our customer's problems are we helping to solve?
What bundles of products and services are we offering to each Customer Segment?
Which customer needs are we satisfying?

CHARACTERISTICS:
Newness
Performance
"Getting the job done"
Customization
Design
Brand/Status
Price
Cost Reduction
Risk Reduction
Accessibility
Convenience/Usability

Convenient

Personalised

Enriched

Customer Relationships

What type of relationship does each of our Customer Segments expect us to establish and maintain with them?
Which ones have we established?
How are they integrated with the rest of our business model?
How costly are they?

EXAMPLES:
Personal assistance
Dedicated Personal assistance
Self-service
Automated Services
Communities
Co-creation

Personal

Community

Channels

Through which Channels do our Customer Segments want to be reached?
How are we reaching them now?

B2C

B2B

B2B2C

Customer Segments

For whom are we creating value?
Who are our most important customers?

Mass Market
Niche Market
Segmented
Diversified
Multi-sided Platform

Tourism

Wellbeing

Retail

Entertainment

Cost Structure

What are the most important costs inherent in our business model?
Which Key Resources are most expensive?
Which Key Activities are most expensive?

IS YOUR BUSINESS MORE:
Cost Driven (leanest cost structure, low price value proposition, maximum automation, extensive outsourcing)
Value Driven (focused on value creation, premium value proposition)

SAMPLE CHARACTERISTICS:
Fixed Costs (salaries, rents, utilities)
Variable costs
Economies of scale
Economies of scope

Labour Costs

Unit Economics

Infrastructure

Revenue Streams

For what value are our customers really willing to pay?
For what do they currently pay?
How are they currently paying?
How would they prefer to pay?
How much does each Revenue Stream contribute to overall revenues?

TYPES:
Asset sale
Usage fee
Subscription Fees
Lending/Renting/Leasing
Licensing
Brokerage fees
Advertising

FIXED PRICING:
List Price
Product feature dependent
Customer segment dependent
Volume dependent

DYNAMIC PRICING:
Negotiation (bargaining)
Yield Management
Real-time-Market

Services

Convenience

Advertising

Strategyzer
strategyzer.com

sales@anaeko.com www.anaeko.com

Colm.Hayden@Anaeko.com