



# THE VISUAL REPORT ON BIG DATA INFORMATION DESIGN

**14 inspiring examples  
of Big Data Storytelling  
and Visualisation**



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# 01 INTRODUCTION

## WELCOME TO “THE VISUAL REPORT ON BIG DATA INFORMATION DESIGN”

The aim of “The Visual Report on Big Data Design” is to offer **work-based learning material** through inspirational and outstanding examples of Big Data Information Design to learners and those who teach them. Special attention has been paid to practices that embody the EU Big Data Strategy values.

As a key output of the ERASMUS+ [DATAVISUAL \(bigdatavisual.eu\)](http://bigdatavisual.eu) project, we have created this written and visual account focused on three themes

- The public sector
- Not for profit
- and Private sector

Through their examples, we highlight the potential of information design for big data storytelling and visualization that offers VET Trainees and Trainers concrete examples of to-do practices.



### IN SUMMARY

## THE VISUAL REPORT ON BIG DATA INFORMATION DESIGN:

1. Creates specific Learning Materials for VET providers;
2. Contributes to introducing new and innovative skills in VET courses and training;
3. Offers learning material based on best practices from the real world.

### WHO WILL BENEFIT FROM THIS RESOURCE?

- ✓ Graphic Designers in employment and those seeking employment
- ✓ VET trainers and graphic design students

# 02 PUBLIC SECTOR (OPEN DATA)

Public Sector organisations serve the public directly and are funded through taxation. While collecting and storing information has always have been part of their work, this does not necessarily mean presenting it in an accessible way. We now live in a time of transparency and increasing accountability. The Public Sector across the world is part of this process of change and development. In this section, we present compelling case studies from Ireland, Malta, New Zealand and Italy.

- CSO STATISTICAL YEARBOOK OF IRELAND
- HEALTH INFORMATION AND QUALITY AUTHORITY
- TOURISM IRELAND – DATAVISUALS FOR A COMPETITIVE INDUSTRY
- ELECTRICITY AUTHORITY, NEW ZEALAND
- OPEN CUP, ITALY
- NSO – REGIONAL STATISTICS, MALTA
- MAPPE PROTEZIONE CIVILE, ITALY
- NSO – RESIDENTIAL BUILDING PERMITS, MALTA



# CSO STATISTICAL YEARBOOK OF IRELAND

IRELAND



IMAGE: CSO



PRIVATE SECTOR



PUBLIC SECTOR (OPEN DATA) ✓



NOT FOR PROFIT SECTOR

## OVERVIEW

The Central Statistics Office (CSO) is Ireland's national statistical office. The purpose of the CSO is to impartially collect, analyse and make available statistics about Ireland's people, society and economy. Since the year 2000, the CSO has published a statistical yearbook.

\*\*Special focus on Big Data for Social Change

## THE CHALLENGE FOR DATA VISUALISATION

The Statistical Yearbook of Ireland by the Central Statistics Office (CSO) is designed to present a comprehensive picture of Ireland each year. It provides detailed information, tables and graphs across a wide range of topics. These include the population, labour force, education, crime, the economy, agriculture, industry, services, prices, housing, knowledge economy and the environment.

The yearbook has wide use and influence across Irish life and business. Inspection of some of the earliest publications ([see chapter 1 from 2002](#)) shows very basic visuals and complicated numerical charts that require intensive reading. Although an outdated means of communicating data, it is still very commonplace today.



## INTERVENTION

DATA STORYTELLING  
EVOLUTION

Given that the yearbooks are open source and published online, the evolution of the CSO data storytelling approach with regard to the yearbooks is easy to chart and study from 2002 up to 2021 ([see link](#)). 2014 was the first year that the Yearbook was made available in electronic format only. The CSO hoped that the format would be more flexibly provided and lead to a more interactive experience for users. The new format of the Yearbook saw the publication divided into six sections, each containing several related chapters. To coincide with this new digital format [an infographic](#) was used to summarise some of the key findings. Back in 2014, the CSO made known their intention to further develop this yearbook as a digital product and openly asked for feedback on how they could make it better.

DATA VISUALISATION  
SOLUTION

- **2002 - 2013:** text heavy report with 13 chapters, basic charts and graphics
- **2014 - 2020:** switch to digital only format, introduction of infographics, replacement of old chapter system by 6 overarching sections
- **2021:** further revision of the yearbook format, 6 sections replaced by 3 main parts, each part is summarized by an infographic - [Part 1 infographic](#), [Part 2 infographic](#), [Part 3 infographic](#). Introduction of PxStat interactive tables across the publication which allow to access more detailed data and up to date information

## OUTCOME

ENHANCING THE COMMUNICATION OF THE BIG  
DATA STORY

In the space of ten years the CSO statistical yearbook has been transformed from a text and data heavy publication into a predominantly visually interactive depiction of life in Ireland at a glance.

The quality of the infographic visuals from 2014 - 2021 has improved so much that key players in the Irish media e.g. [The Irish Times](#) have started using them directly in their publications.

The use of PxStat\* interactive tables make it easy for users to customise and personalise their interaction with the CSO data. In terms of the Pasta EU Big Data Strategy, the CSO have placed data at the disposal of their users which aligning to the pillar of "Empowering individuals".

\* PxStat is a Data Dissemination Management System for publishing Statistics in Open Data formats. It's especially designed for National Statistical Institutes

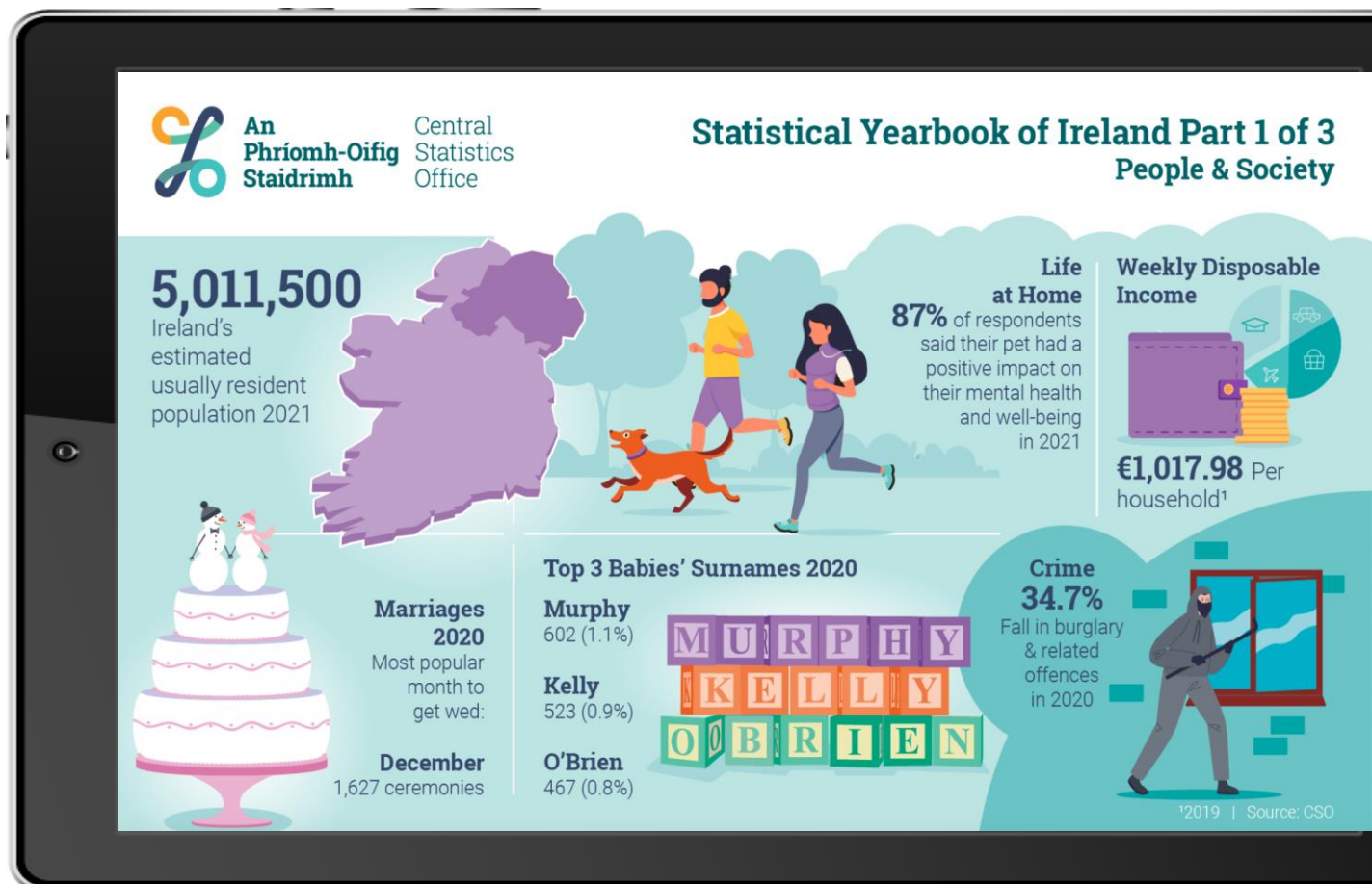
# KEY COMPETENCES

The Statistical Yearbook of Ireland can be regarded as best practice in communicating detailed data through visualization as well as use of compelling and accessible infographics. A benchmark has been set for other public service organisations to follow.

The key competences and contributions that have been used in this data visualization solution include:

- Data Set preparation
- Best practices of Information Design
- Best practices of Big Data Storytelling
- Tools and Digital Platforms for Big Data Visualisation
- Contribution to the EU Strategy on Big Data

## CSO: THE DATA VISUALS





An Phríomh-Oifig Staidrimh

Central Statistics Office

## Statistical Yearbook of Ireland Part 2 of 3 Business & Economy

Amount owed by Households to Irish Banks<sup>1</sup>

2020  
**€87 billion**  
2019  
**€92 billion**



Prices

**59.6%** The price increase of a 20 pack of cigarettes between 2010 and 2020



**21.2%**

The rise in the average price for a pint of stout in a bar from €3.96 in 2010 to €4.80 in 2020



Enterprises

**51%** purchased at least one type of Cloud Computing in 2020

New Dwelling Completions 2020

**79.4%** almost four-fifths of new dwelling completions were urban



Residential Property Prices

**€260,000** Median price of dwellings sold nationally in 2020



Source: CSO | <sup>1</sup>Central Bank of Ireland



An Phríomh-Oifig Staidrimh

Central Statistics Office

## Statistical Yearbook of Ireland Part 3 of 3 Travel, Agriculture, Environment & COVID-19

Tourism

**8.3 Million**

Passengers passed through Ireland's main airports in 2020, a **78% decrease** on 2019



CANCELLED CANCELLED  
CANCELLED CANCELLED  
CANCELLED CANCELLED  
CANCELLED ON TIME  
CANCELLED ON TIME

Production of Potatoes

**21.5% down** between 2019 and 2020



Environment

**97%** of dwellings built 2015–2021 have an "A" rating



New Private Cars Licensed

Diesel

2019  
**47.0%**  
2020  
**42.9%**



Electric/hybrid

2020  
**19.7%**  
2019  
**12.7%**



Livestock 2020

Sheep **5.5m** up 7.5%<sup>1</sup>  
Cattle **7.3m** up 1.5%<sup>1</sup>  
Pigs **1.6m** up 1%<sup>1</sup>



COVID-19 Retail Sales<sup>2</sup>

**-37.3%** largest monthly decrease April 2020



**+36.6%** highest monthly increase June 2020

<sup>1</sup>compared to 2019 | <sup>2</sup>seasonally adjusted | Source: CSO





# HEALTH INFORMATION AND QUALITY AUTHORITY

IRELAND



PRIVATE SECTOR



PUBLIC SECTOR (OPEN DATA) ✓



NOT FOR PROFIT SECTOR

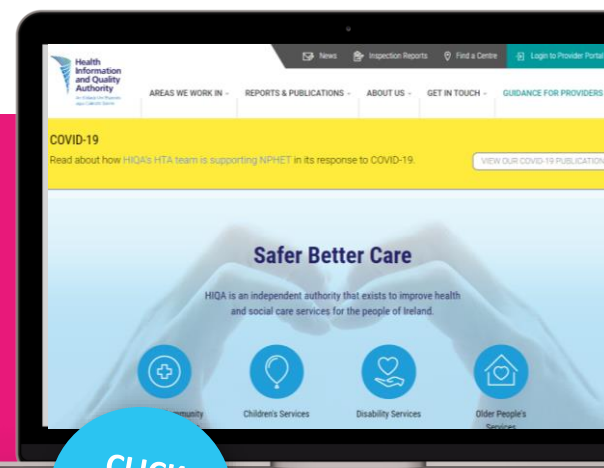
## OVERVIEW

The Health Information and Quality Authority is Ireland's independent statutory authority established to promote safety and quality in the provision of health and social care services for the benefit of the health and welfare of the public.

## THE CHALLENGE FOR DATA VISUALISATION

Among its functions, HIQA promotes improvement in the quality and safety of health and social care services, assesses health technologies and advises on the use of health information. The needs of stakeholders were thoroughly reviewed in the development of its Corporate Plan 2016–2018 and a number of key themes relating to stakeholder engagement emerged.

A central message from the consultation was that work needed to be done to create a greater understanding of the role of HIQA. The raison d'etre of HIQA is to inform. Thus, HIQA must ensure that the information it provides is balanced, objective, accurate and presented in an accessible manner to raise awareness of HIQA's activities and achievements.



CLICK TO VIEW

## DATA STORYTELLING EVOLUTION

### DATA STORYTELLING SOLUTION

Actively seeking engagement and relevant involvement from the public and interested parties have always been central to HIQA's work. It is using data storytelling to obtain views on the experience of people using health and social care services to gain wider community support, gather useful information, increase understanding and awareness of what HIQA does and to provide for more sustainable, informed decision making.

#### KEY ACTORS

HIQA is committed to constructively communicating and working with its stakeholders, and as such relies on many individuals, groups and organisations to deliver on its overarching mission to improve health and social care services for the people of Ireland.

## DATA VISUALISATION SOLUTION

One of the key communication and stakeholder objectives of HIQA is to inform, meaning HIQA ensures that the information it provides is balanced, objective, accurate and presented in an accessible manner to raise awareness of what HIQA does and what it has achieved. With regard to being accessible, in practice this means:

- understanding who HIQA's stakeholders are.
- adapting methods of communication appropriately.
- to ensure that HIQA's message is understood.
- using plain English where feasible.
- adopting a wide range of channels, tools and methods to reach as many stakeholders as possible.

With respect to implementation, it is important that HIQA shares information on its work in a timely, transparent fashion and complies with its statutory duties.

## ENHANCING THE COMMUNICATION OF THE BIG DATA STORY

HIQA is cognisant of the various barriers to effective stakeholder engagement, such as resources, ambiguity of messaging, the differing needs, capacity and capabilities of stakeholders, time and organisational culture.

Written text is often full of complicated, descriptions of data. While written reports are a key part of HIQA's business, often dealing with very sensitive subjects, they are using data visualization to clearly communicate important information. An image, chart or diagram does more than simply represent numbers and facts. Emotion can be conveyed through colours, font

choice and layout. This can help to draw the attention of the audience to the presentation of certain facts or encourage them to act.

Examples of data visualization used by HIQA include hand-drawn process flow, simple charts and expertly designed infographics. HIQA is visualizing data, facts, processes and interdependencies to increase shared understanding. A visual representation often provides the starting point for discussions and increasing knowledge, sharing a call to action and highlighting important issues quickly and clearly.



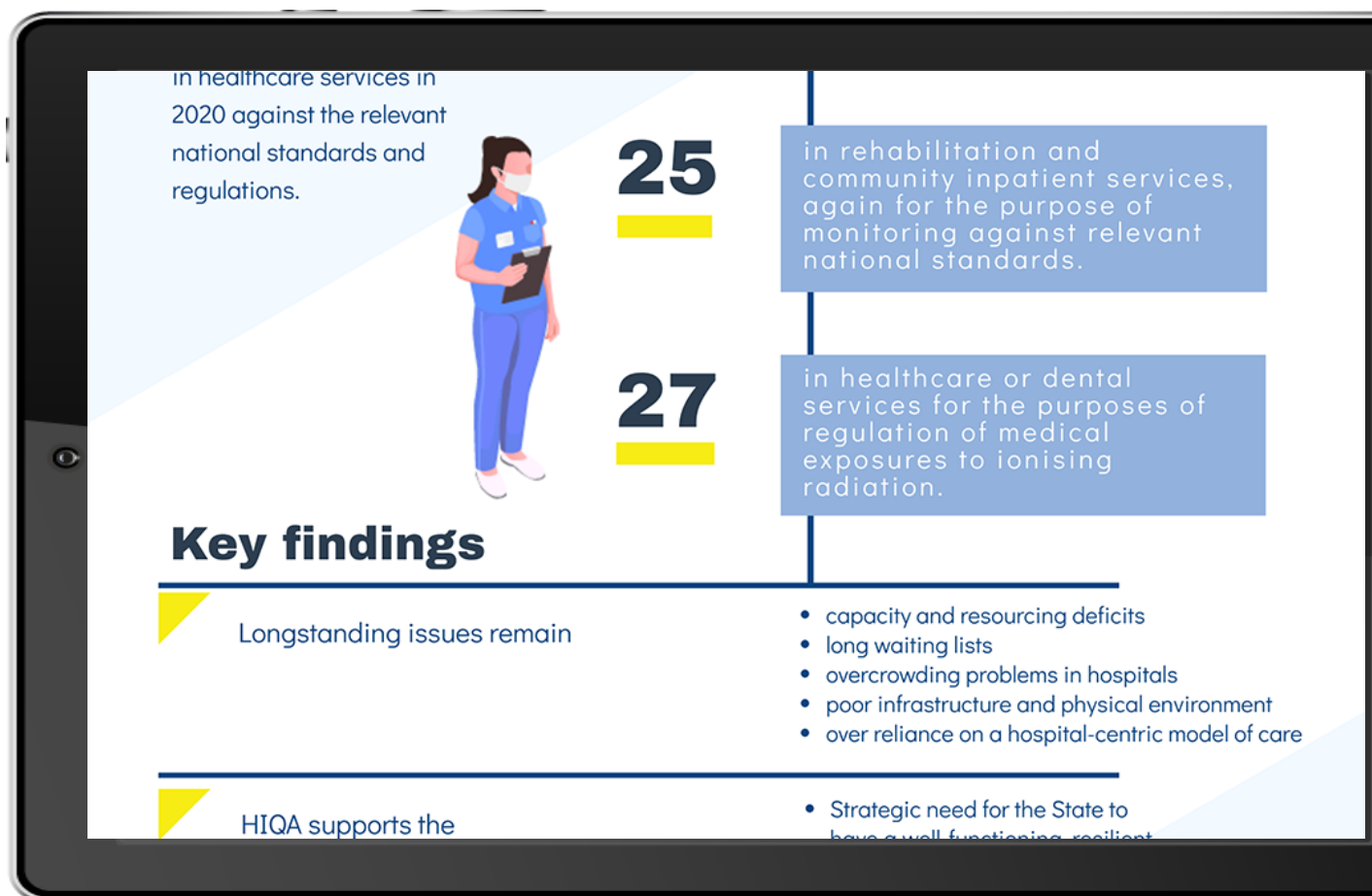
# KEY COMPETENCES

HIQA has a [communication and stakeholder engagement strategy](#) that guides its communication approaches. The most recent strategy was published in 2017. It provides details on how their communications approach reflects their core values of being fair, open and transparent. HIQA do not use data visuals extensively but where they do, they are used to great effect.

The key competences and contributions that have been used in this data visualization solution focus on

- Best practices of Information Design
- Best practices of Big Data Storytelling
- Tools and Digital Platforms for Big Data Visualisation
- Contribution to the EU Strategy on Big Data

## HIQA: THE DATA VISUALS



## 1,671 IONISING RADIATION SERVICES REGULATED BY HIQA



^ A facility is a medical radiological installation which provides medical and dental radiological services.

° Service users include patients, asymptomatic individuals, carers and comforters and volunteers in medical or

## AREAS OF GOOD PRACTICE



## Quality and Safety of Care

Generally, levels of compliance against the national standards monitored were high.

All maternity services regularly monitored the care they provided.



# TOURISM IRELAND-

datavisuals for a competitive tourism industry

IRELAND



IMAGE: TOURISM IRELAND



PRIVATE SECTOR



PUBLIC SECTOR (OPEN DATA) ✓



NOT FOR PROFIT SECTOR

## OVERVIEW

Tourism Ireland is the organisation responsible for marketing the island of Ireland overseas as a tourist destination. In addition to this role Tourism Ireland also undertakes regional/product marketing and promotional activities on behalf of Fáilte Ireland and Tourism Northern Ireland through its overseas market offices.

## THE CHALLENGE FOR DATA VISUALISATION

The industry of tourism thrives on information. Big data can deliver up-to-date and immensely informed inferences regarding behaviour, that enhances the tourism industry. Data has the potential to give businesses in the travel and tourism industry the foundations to make innovative decisions.

Representing one of Ireland's most important economic sectors, communicating performance and impact is a high profile and often complex undertaking for Tourism Ireland. As a flavour of some of the data it needs to communicate, in 2019, Ireland welcomed 11.3 million overseas visitors to the island, delivering revenue of over €5.9 billion. All of this helped to sustain 325,000 vital jobs in communities across the island in 2019, helping to make tourism one of the island's largest indigenous industries.



# INTERVENTION

## DATA STORYTELLING EVOLUTION

Tourism is one of the largest indigenous and sustainable industries on the island of Ireland, involving a wide range of stakeholders and is integrated throughout the whole economy.

Data analysis, design, and publication are key facets of the multitude of research documents Tourism Ireland produces. These include visitor facts and figures, seasonal updates, and industry insights. Data visualization is used very effectively by Tourism Ireland to visualize large volumes of data. The present a solution for the human brain to process information available on charts or graphs at a faster rate compared to extract insights in spreadsheets and reports. This facilitates quick and reliable decisions.

## DATA VISUALISATION SOLUTION

**Spotlight on Overseas Markets Infographic Reports:** Tourism Ireland present their overseas market research analysis via a series of infographic reports. Infographic reports are typically a fusion of infographics, magazine-like layouts and long-form typography.

Tourism Ireland are very effective in using infographics to break down complex concepts into accessible ones by using icons, symbols, and colouring to categorize and represent complicated reporting data.

By using infographics and some basic principles of design, Tourism Ireland is able to make its research data more easily accessible to a larger audience of tourism stakeholders.

# OUTCOME

## ENHANCING THE COMMUNICATION OF THE BIG DATA STORY

As tourism restarts across the world after an incredibly challenging few years, Ireland is seeing growing confidence and comfort in taking holidays and short breaks.

This recovery is happening amidst a challenging environment. Issues such as the conflict in Ukraine, continued issues related to COVID-19 and the rising cost of living, each of which has the potential to dampen holidaymaker sentiment.

However, despite the challenges, signs are pointing to a solid recovery for the tourism sector.

By presenting their research and data in an accessible format, Tourism Ireland ensures that their wide variety of tourism industry partners across the island are poised to reap rewards from new markets and opportunities.



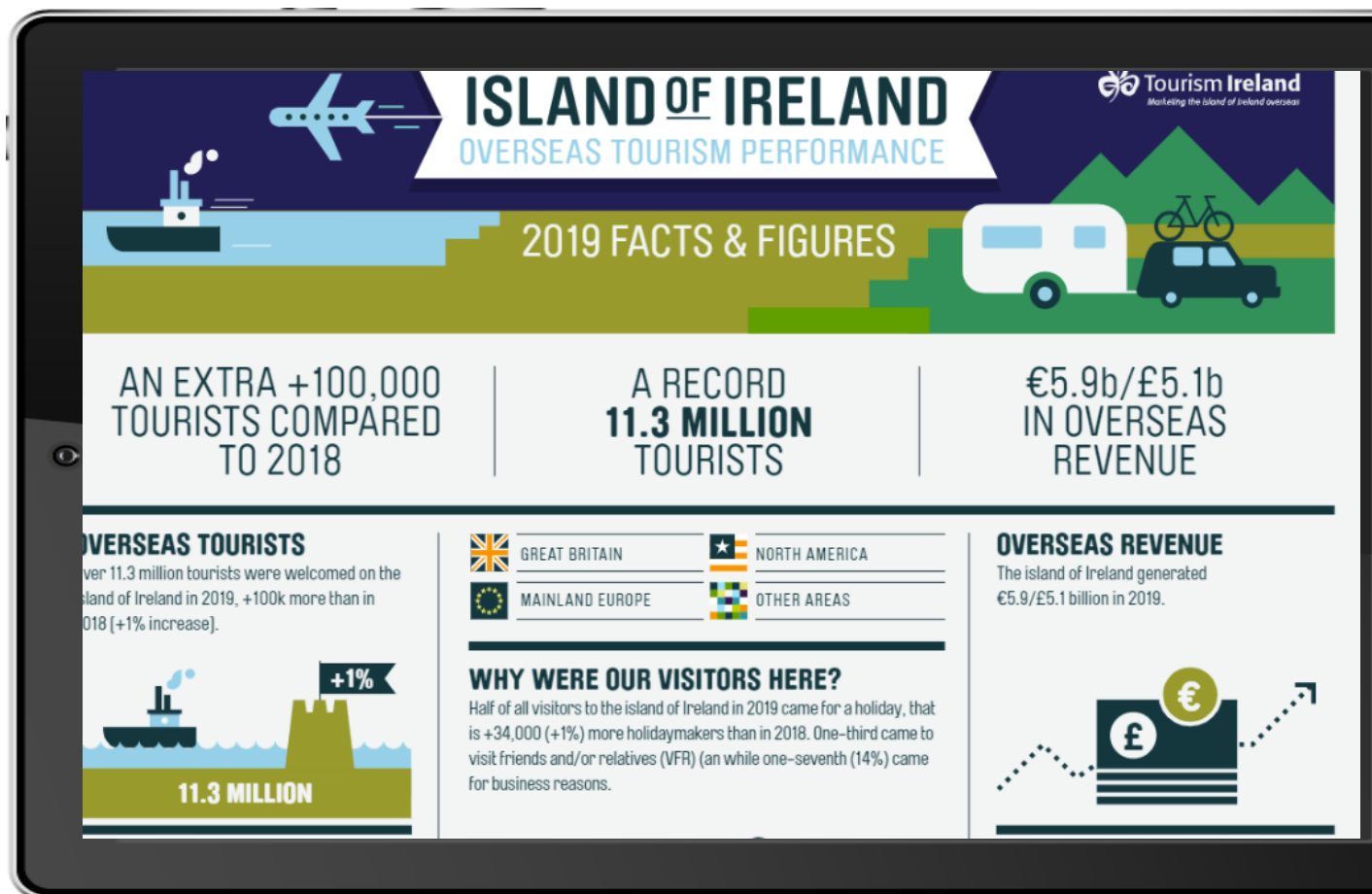
# KEY COMPETENCES

Tourism Ireland can be regarded as best practice in communicating detailed data through visualization, use of compelling and very accessible infographics and compilation of these into an information and educational ezine format. They have set a benchmark for other public service organisations to follow.

The key competences and contributions that have been used in this data visualization solution include:

- Data Set preparation
- Best practices of Information Design
- Best practices of Big Data Storytelling
- Tools and Digital Platforms for Big Data Visualisation
- Contribution to the EU Strategy on Big Data

## TOURISM IRELAND: THE DATA VISUAL





# ELECTRICITY AUTHORITY

INTERACTIVE DASHBOARDS,  
New Zealand



IMAGE: [Electricity Authority](#)



PRIVATE SECTOR



PUBLIC SECTOR (OPEN DATA) ✓



NOT FOR PROFIT SECTOR

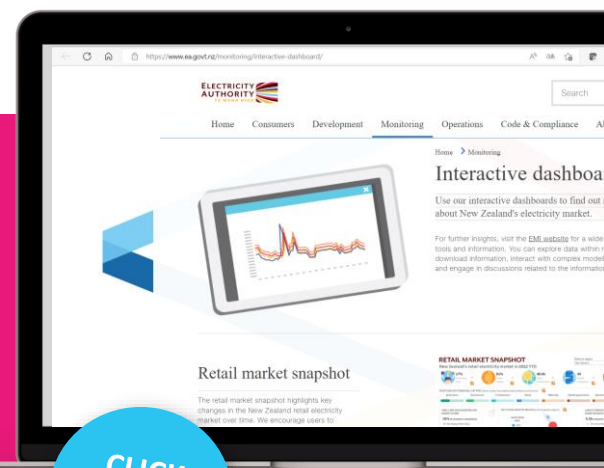
## OVERVIEW

The Electricity Authority promotes competitive, reliable supply and efficient operation in the New Zealand electricity industry for the long-term benefit of consumers.

## THE CHALLENGE FOR DATA VISUALISATION

The New Zealand Electricity Authority is responsible for the efficient operation of the country's electricity market. This involves designing and administering market rules to promote competition and ensure a reliable supply of electricity to consumers.

To ensure the effectiveness of these rules, the regulator has a dedicated market analytics team that monitors compliance with existing regulations and models the impact of future ones. In the past, most of this analysis was carried out using programming tools or complicated spreadsheet formulas. However, as the regulator came to rely more on data, it needed a different approach which made the analysis more accessible.



CLICK  
TO VIEW



## DATA STORYTELLING EVOLUTION

Using Tableau\* has given the market analytics team powerful visualization capabilities while also meeting the data needs of finance and other areas of the organization.

For the market analytics team, one of the most significant advantages of using Tableau has been the ability to analyze large datasets and visualize details more easily, since some of their datasets go back to the 1990s. It would have been easy enough for the team to write an SQL query and put the results up on a dashboard, but the organization wanted also to be able to access all of that data in the background. Thanks to Tableau it is easier to conduct a deeper analysis.

The team also relies on Tableau to monitor what's happening in the current market. One recent example is a visualization created for COVID-19.

## DATA VISUALISATION SOLUTION

Through the Tableau tool, The New Zealand Electricity Authority, in collaboration with Montage, was able to create an interactive platform, serving the needs of the citizen. In fact, the different interactive dashboards not only allow users to highlight the main statistical data, but the user can also select the parameters and areas concerned. All this was created to inform its public in an intuitive and easy-to-use way, creating a standard in the world of analytics.

### STEPS:

- Collection/Analysis of statistical and scientific data
- Stakeholder analysis
- Identification of the most meaningful/indicative data
- Development of story telling and accompanying text
- Brainstorming on the type of outcomes to be produced
- Search for useful tools to analyze data in a user-friendly way
- Revision of the drafts of the Project

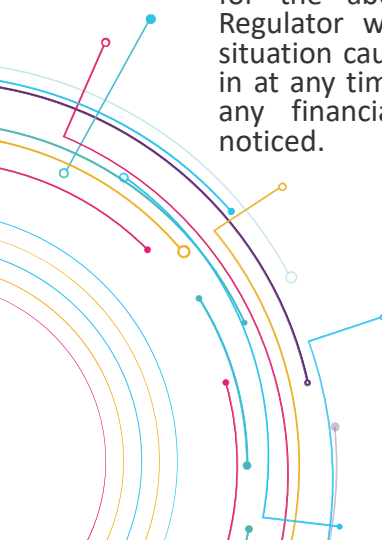
## ENHANCING THE COMMUNICATION OF THE BIG DATA STORY

By making the analytics tool available to the whole industry, the Electricity Authority aims at increasing awareness about the concept of "decision making on the basis of data".

Tableau\* makes it possible to include a number of data points. This was very helpful for the abovementioned Case Study. The Regulator was able to closely monitor the situation caused by the Pandemic and to step in at any time when excess disconnections or any financial impacts on suppliers were noticed.

Thus, the use of Tableau and therefore the accessibility of data has a positive impact on decision making since decisions can be made based on data.

\* Tableau Software is an American interactive data visualization software company focused on business intelligence. It was founded in 2003 and in 2019 the company was acquired by Salesforce for \$15.7 billion



# KEY COMPETENCES

The New Zealand Electricity Authority focused on making its data analysis more accessible to its public by combining market rules with impactful design. This has made it possible to create a new standard of presentation of statistical data, once usable only through complicated spreadsheets. The search for a different approach to data visualization was necessary as the data had to be understood outside the team of experts. The solution adopted by The New Zealand Electricity Authority has become a best practice to be adopted in similar cases.

**The key competences and contributions that have been used in this data visualization solution include:**

## 1. Literacy in data analytics

- foundation of mathematical and statistical concept
- summarization and aggregation to synthesize and interpret data
- techniques to test data
- understanding different data structures and storage methods and how to create robust data sets using concepts like primary keys, one-to-many relationships, dimensions and facts.

## 2. Querying data with ANSI SQL

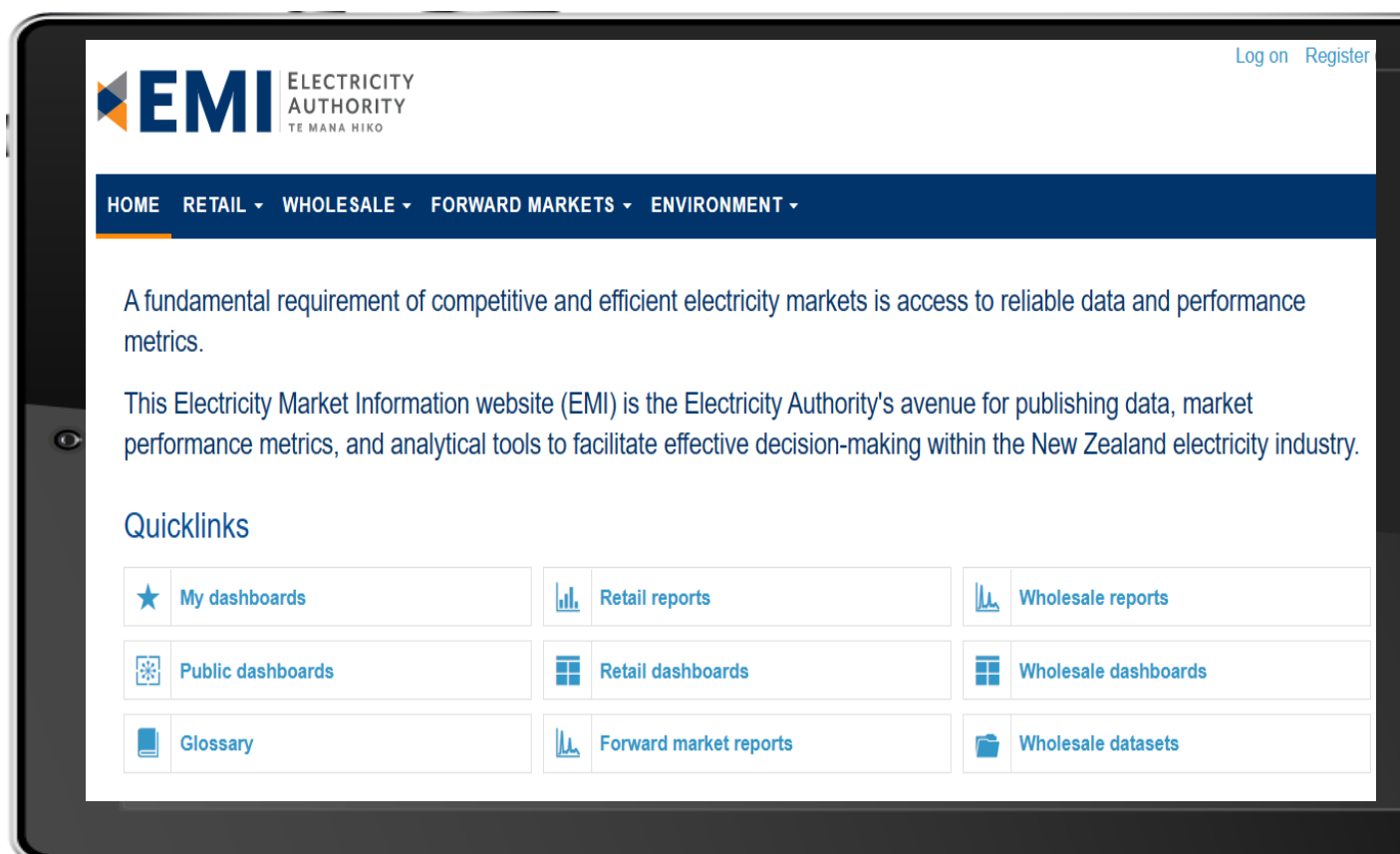
- strong grasp of Structured Query Language
- familiarity with how to retrieve data, create joins, develop stored procedures, create aggregations and work with data
- ability to effectively offload intensive computations and customize structure at data model level

## 3. Tableau Desktop

- know how to effectively create different views or visualizations and how to maximize Tableau Desktop's built-in features.
- to be comfortable in performing manipulations on top of views by using table calculations and adept at fine-tuning data granularity by using level of detail expressions.

## 4. Literacy in data visualization

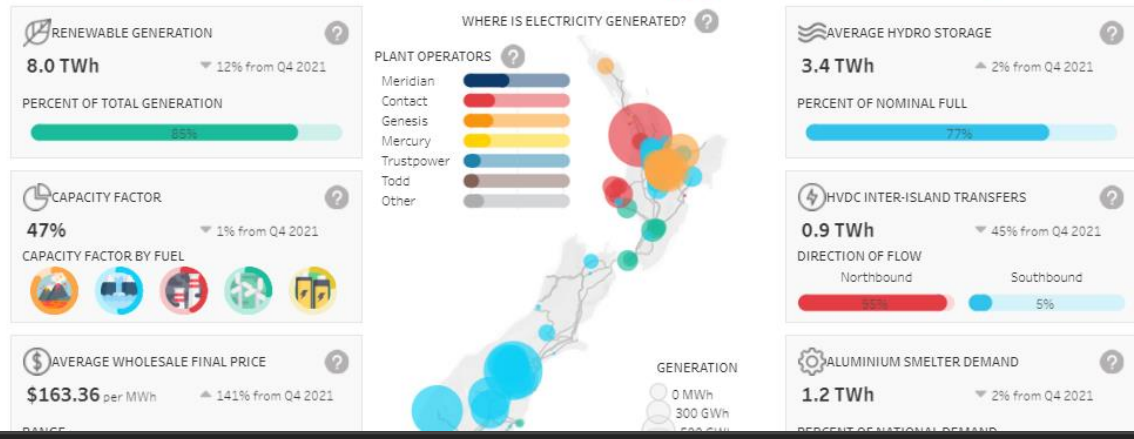
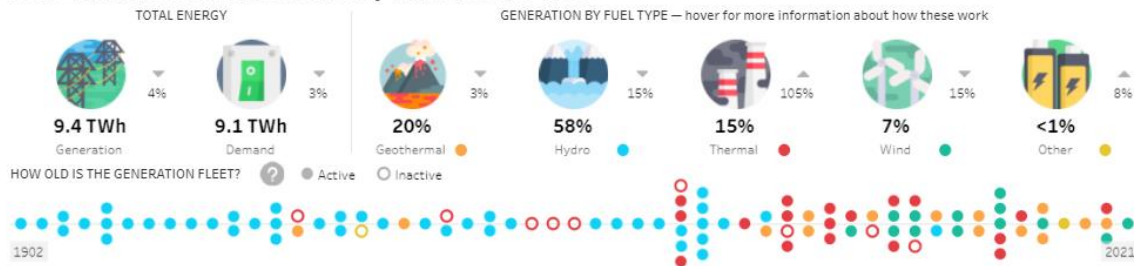
- Effective usage of chart types based on the analysis
- Understanding pre-attentive attributes like size and position
- Simplifying solutions that maximize cognition and understanding.



# INTERACTIVE DASHBOARDS: THE DATA VISUALS

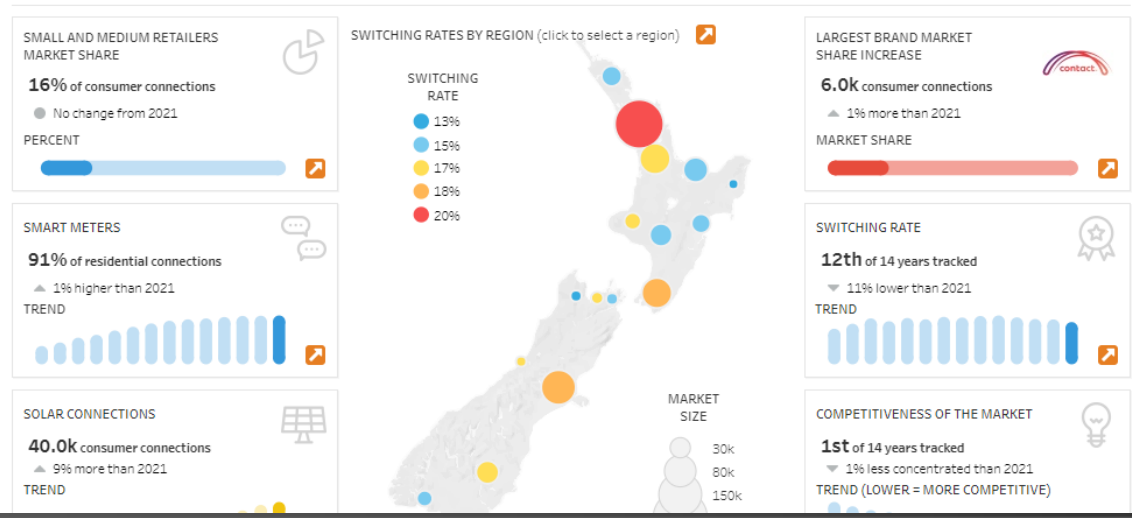
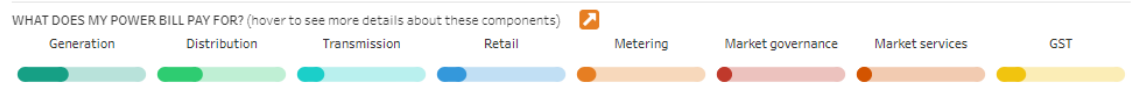
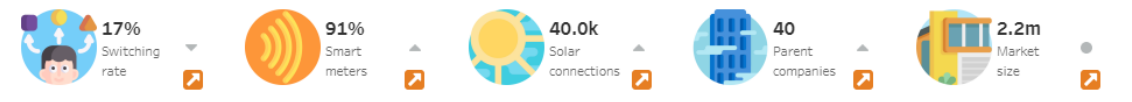
## WHOLESALE MARKET SNAPSHOT

New Zealand's wholesale electricity market in Q1 2022



## RETAIL MARKET SNAPSHOT

New Zealand's retail electricity market in 2022 YTD



## HOW MUCH DID OUR VISITORS SPEND?

	Island of Ireland				Republic of Ireland				Northern Ireland			
	2019 €m	2019 £m	vs. 2018	Share	2019 €m	2019 £m	vs. 2018	Share	2019 €m	2019 £m	vs. 2018	Share
<b>Total</b>	<b>5,851</b>	<b>5,090</b>	<b>-0%</b>		<b>5,174</b>	<b>4,501</b>	<b>-1%</b>		<b>677</b>	<b>589</b>	<b>+5%</b>	
	1,446	1,258	+3%	25%	1,022	889	0%	20%	424	369	+13%	63%
	1,950	1,697	0%	33%	1,854	1,613	0%	36%	96	84	+2%	14%
	1,769	1,563	-3%	31%	1,706	1,484	-2%	33%	90	79	-14%	13%
	658	753	-1%	11%	593	522	-1%	11%	66	57	-3%	10%

## HOW DOES PURPOSE OF VISIT CONTRIBUTE TO SPEND?

Almost three-fifths (58%) of all overseas revenue on the island of Ireland in 2019 is generated from those who came for a holiday. This varies by market with holidaymakers accounting for 75% of revenue North America, 60% of revenue from Mainland Europe, 45% from Other Areas and 41% of revenue from GB.

	VFR* – Visiting friends and relatives			
	Holiday	VFR*	Business	Other
<b>Total</b>	<b>58%</b>	<b>20%</b>	<b>15%</b>	<b>7%</b>
	41%	34%	23%	2%
	60%	14%	16%	11%
	75%	12%	7%	6%
	45%	31%	15%	9%

## HOW DID THEY SPEND THEIR MONEY?

The overseas revenue generated on the island of Ireland reached record levels €5.9/£5.1 billion, solidifying 2018 record levels. Food and drink continues to be the most expensive element of a visit to the island of Ireland, followed by bed and board. This is true for all market areas.

	SS/Ents* – Sightseeing & Entertainment					
	Bed & Board	Food & Drink	SS/Ents*	Internal Transport	Shopping	Misc
<b>Total</b>	<b>29%</b>	<b>37%</b>	<b>6%</b>	<b>13%</b>	<b>13%</b>	<b>3%</b>
	26%	38%	6%	11%	11%	8%
	28%	36%	6%	15%	14%	1%
	32%	36%	6%	13%	11%	1%
	27%	35%	7%	12%	17%	3%



## HOLIDAYMAKER PROFILES

### WHAT SOCIO ECONOMIC GROUP DO OUR HOLIDAYMAKERS BELONG TO?

The island of Ireland continues to attract a high proportion of white collar/managerial/professional (ABC1) holidaymakers (89%).

	AB Managerial Professional	C1 White Collar	C2 Skilled Worker	DE Unskilled Worker
<b>Total</b>	<b>24%</b>	<b>65%</b>	<b>8%</b>	<b>2%</b>
	23%	56%	16%	5%
	23%	68%	7%	2%
	26%	67%	6%	2%
	38%	61%	3%	2%

**WHITE  
COLLAR  
65%**



### HOW LONG DID OUR HOLIDAYMAKERS STAY?

The marginal decline in average length of stay observed in recent years has continued in 2019. The average stay was 7.1 nights in 2011, 6.6 nights in 2015 and it fell to 6.2 nights in 2019. This long term trend is observed across all market areas and in 2019 in all except GB.

	1-3 nights	4-5 nights	6-8 nights	9-14 nights	15+ nights
<b>Total</b>	<b>31%</b>	<b>21%</b>	<b>26%</b>	<b>16%</b>	<b>5%</b>
	54%	16%	16%	9%	5%
	28%	24%	25%	17%	6%
	19%	22%	33%	21%	4%
	34%	19%	26%	13%	8%



PRIVATE SECTOR



PUBLIC SECTOR (OPEN DATA) ✓



NOT FOR PROFIT SECTOR

## OVERVIEW

Open CUP is the Italian National Registry of Public Investment Projects, the web platform that makes data on projects carried out in Italy and abroad, identified through the CUP - Codice Unico di Progetto, accessible in open format. The data are managed by the Department for Planning and Coordination of Economic Policy (DIPE) of the Presidency of the Council of Ministers.

## THE CHALLENGE FOR DATA VISUALISATION

Citizens and civil society organisations sometimes complain about the lack of open and usable data sources to monitor public spending in a comprehensive manner. Data shared by public administrations are often published in the form of indicators, in aggregated form or following particular schemes that replicate collection formats or derive from the particular needs of the collecting administration: it is sometimes difficult to link data from different administrations, to compare them with open or commercial sources or with those from other countries. The problem is made worse by the low digital literacy framework existing in our country, which prevents full use of public data sources even when they exist and are available and more generally does not favour the inclusion of civil society in analysis and monitoring processes. Overcoming this problem is an enabling factor for inclusive digital innovation.



CLICK TO VIEW

## DATA STORYTELLING EVOLUTION

The Italian government has been developing national plans for open government for a number of years and with this tool it is trying to fulfil its commitment to inclusiveness and participation of civil society in the monitoring of public expenditure. The project of the Department for Planning and Coordination of Economic Policy makes available open data on public investment decisions financed with national, community or regional public funds or with private resources registered with the Codice Unico di Progetto (CUP).

The 5th National Action Plan for Open Government 2022-2023 (5NAP) is the result of a co-creation process involving all public and private stakeholders interested in open government policies. It involved an average of 70 participants between civil society organisations (CSOs) and public administrations (PAs) and led to a shared definition of problems and consequent priorities for action to improve the implementation of open government principles in the national context.

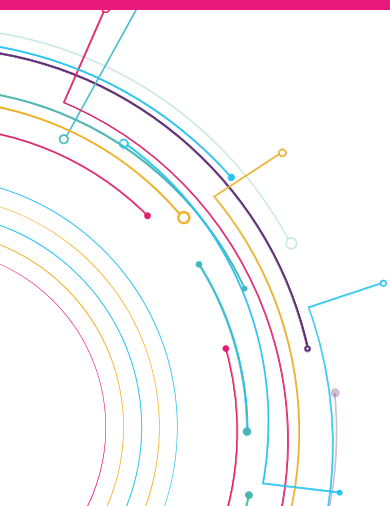
The National Anticorruption Authority (ANAC) is committed to improving the usability by civil society and stakeholders of the data collected in the National Public Contracts Database, recognised by the Digital Administration Code (CAD) as a database of national interest. This is achieved by making available, through an open-access portal, dashboards for self-service navigation and analysis of the published data, datasets in the open RDF (Resource Description Framework) format, and in the adoption of the OCDS (Open Contracting Data Standard). The data in the database are communicated to the Authority by the Single Procedure Managers (RUP) of the Contracting Stations and are published in their original form.

## DATA VISUALISATION SOLUTION

The source of the data is the Register of Projects of the CUP System fed directly by the project owners and the data are updated on the portal on a monthly basis.

The project, which began in the 2007-2013 programming cycle with the publication of data on investment decisions relating to public works projects, almost 800,000 projects, in this second phase aims to

- publish the entire CUP information asset recorded by the Department for Planning and Coordination of Economic Policy DIPE, which counts more than 4 million interventions in 2017;
- achieve full interoperability with other data, published in open format, from other public institutions in order to develop forms of institutional cooperation in line with the objectives of the 2014-2020 programming.



## ENHANCING THE COMMUNICATION OF THE BIG DATA STORY

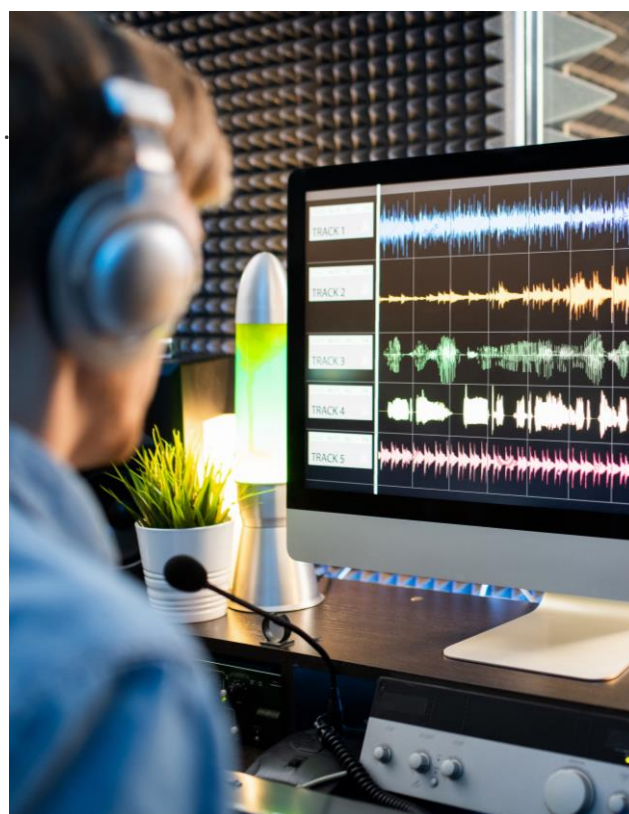
The European Union promotes investments in digital technologies, infrastructures and processes of the Member States, in order to increase European competitiveness on a global scale. In this context, Italy's priority is to recover its deep digital and cultural divide, as evidenced by the country's fourth-last place in the EU on the DESI index (Index of Digitisation of Economy and Society), and last place on digital skills.

According to the DESI - Digital Economy & Social Index 2019 report, Italy has significantly improved its position on open data. However, there are still a number of difficulties that slow down the possibilities of reusing this wealth of information. One of the main ones is the lack of matching between demand and supply, which is expressed in the inadequate knowledge of the Open Data phenomenon and of the potential underlying the reuse of data.

Added to this is the lack of compliance with standard data representation models that make them effectively integrated and comparable. In this scenario, in addition to the need to continue promoting the culture of data re-use, shared rules should be defined, and Open Datasets of high value should be published, both for their potential contribution in terms of transparency and re-use for services and new business activities.

The adoption of standard formats and common rules for the publication of procurement data, both at national and European level, favours the involvement of civil society in the monitoring of public expenditure and the comparison with what happens in other countries. The use of shared standards will favour the analysis of the initiatives included in the National Recovery and Resilience Plan (NRP).

A twofold level of solution to the problem outlined in the previous section can therefore be envisaged: the standardisation process favours interoperability and the possibility of linking different data sources; the adoption of a mature and internationally widespread standard creates the conditions for monitoring and comparison with other countries; and the simplification resulting from the adoption of a single and well-documented format such as OCDS should reduce the barriers to entry for participatory governance processes, thus favouring the development of skills by citizens and businesses and inclusive digital innovation.



## KEY COMPETENCES

The commitment appears to be consistent with the National Recovery and Resilience Plan (NRP), with particular reference to Mission 1 (Digitisation, Innovation, Competitiveness and Culture), area of intervention 'Digitisation PA - Components: Digitisation, Innovation and Security in Public Administration, Investment and Reform, Data and Interoperability

With OpenCUP it is possible to interrogate and download data to find out the sectors and areas to which public and private resources have been allocated for the realisation of public works and in perspective for all types of projects. The portal provides information on the planning of works of public interest: from construction to maintenance for seismic upgrading of neighbourhood schools, from road maintenance to the opening of new stretches of motorway, from contributions for research to those for post-natural disaster reconstruction. With OpenCUP, administrations have at their disposal a working tool that enables them to analyse their own interventions, to evaluate in an aggregate way the distribution of projects, the planning of works according to a specific sector and/or territory, and the financial commitment on specific issues. It is possible to know the distribution of public expenditure for the development of the country. It is also possible to monitor and assess the financial progress of projects through the traceability of the investment ensured by the mandatory inclusion of the CUP within payment mandates.

On 19 May 2022, OpenCUP published the open dataset on public investment projects registered in the CUP database and classified with the new

PNRR thematic information. The dataset will be updated periodically (probably monthly) and in its first release contains data for about 72,000 CUPs, for all Italian provinces and for many municipalities. Compared to what is available today on the PNRR theme, this is an excellent information advancement, because people will be able to have much more knowledge of the projects that have an impact on their territory and correlate it with other information in other databases and/or websites.

At [opencup.gov.it](https://opencup.gov.it) you can find out all the updates on the project and the topics of open data, transparency, interoperability and collaborations for the digital transformation of PA. The interoperability of data between open, public and private portals, such as OpenCantieri, OpenCoesione, ItaliaSicura, the National Register of State Aid, etc., is a significant opportunity to have at one's disposal a complete wealth of information on development interventions. The portal makes it possible to download data, search and visualise information on the sector, cost and territory of planned interventions in a simple way, with the help of maps and infographics, making it available to everyone:

- Analytics Scorecard and dashboards for browsing
- Open DATA downloading of data in xls, csv, xml formats
- Multidimensional analysis customised navigation by field of intervention, location, classification and subject.

“ *The skill of data storytelling is removing the noise and focusing people's attention on the key insights* ”

### What are the key competences that have been/could have been used in the data visualization solution?

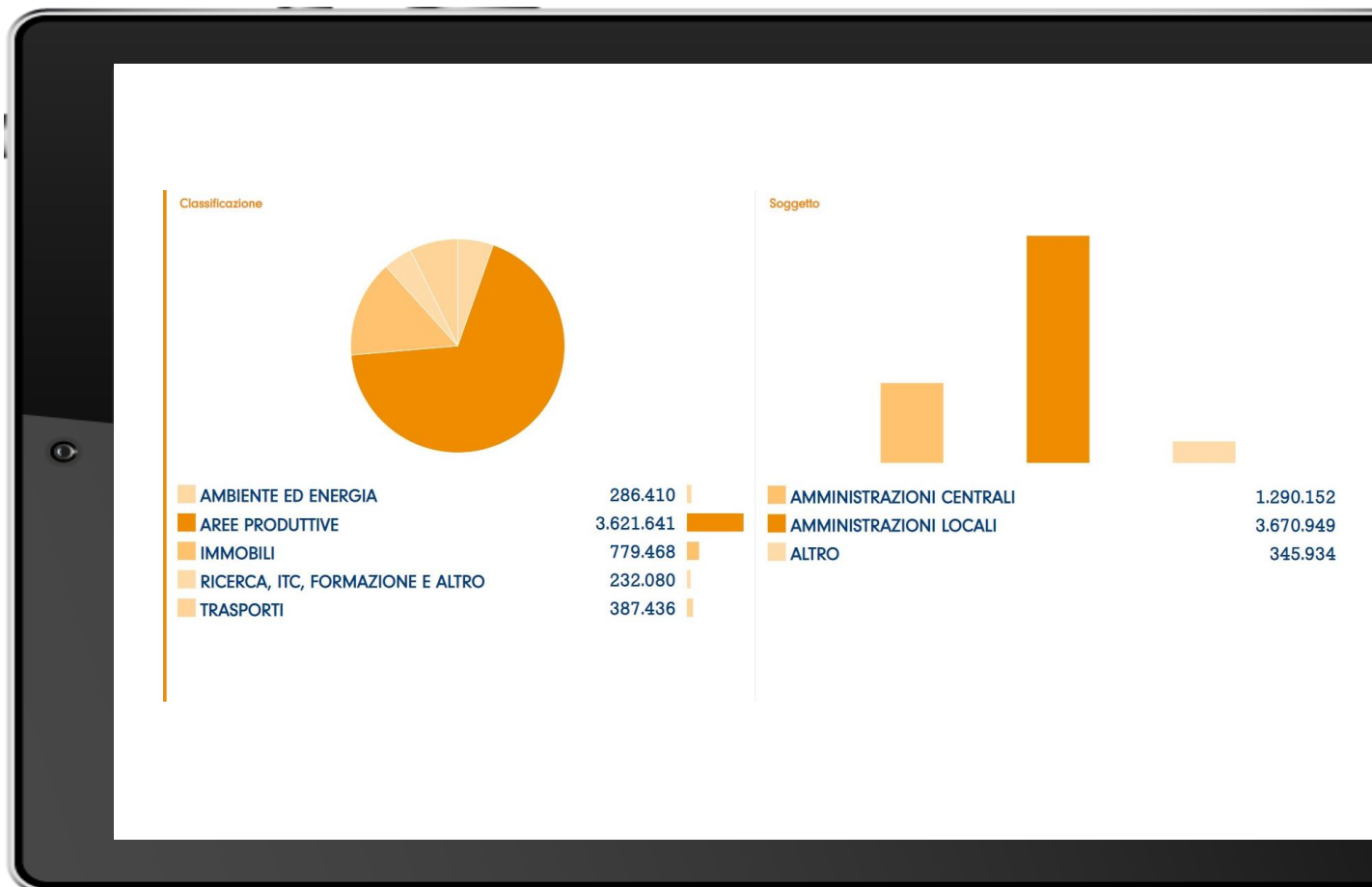
The skills required for an adequate and clear representation of data are manifold.

Indeed, it is necessary to focus not only on the content to be transmitted but on the how. It is evident that the data in OpenCUP are already difficult for the public to access and making them so clear makes this a very good job. By putting themselves on the end user's side, they were able to represent a complex message through simple diagrams and maps.

The ability to select individual cases (hence the interactivity of the content) is another useful feature. One can go back to one's own municipality, one's own company and visualise it within the national whole.



# OPEN CUP: THE DATA VISUALS








# NSO – REGIONAL STATISTICS

Malta




-  PRIVATE SECTOR

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-  PUBLIC SECTOR (OPEN DATA) 

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-  NOT FOR PROFIT SECTOR

## OVERVIEW

The purpose of the Maltese National Statistics Office (NSO) is to release official, high-quality statistics regarding demographic, social, environmental, economic and general activities and conditions of Malta with the aim of aiding better decision making.

## THE CHALLENGE FOR DATA VISUALISATION

The NSO provides a document outlining the regional statistics of Malta each year, focusing on demography, education, the labour market, economy, transport, tourism, agriculture, fisheries and resources (such as waste, water and renewable energy harvesting). Often, data can be quite intimidating, therefore the NSO issues infographics and infobytes in order to present a user-friendly, comprehensible visualization of information to the public.



# INTERVENTION

## DATA STORYTELLING EVOLUTION

The NSO's objective was to broaden perspectives on regional characteristics and to help people from varying positions in society to improve understanding, analysis and decision on the elements that constitute Malta. The NSO gathered the socio-economic and environmental aspects of Malta & Gozo in a user-friendly manner and can be read both physically and digitally.

Data was collected through various methods depending on topic; Demographic data was sourced through the Department of Social Security (DSS), educational data was collected from administrative records obtained from the Ministry for Education and Employment (MEDE) via the School Information System (SIS).

Data throughout the publication was then illustrated through charts and maps to further help viewers understand.

Data was also presented using an infographic to further simplify these means.

## DATA VISUALISATION SOLUTION

The infographic was produced by the NSO to depict comprehensive results of data which were initially published in the 2019 edition of the Regional Statistics of Malta.

- The NSO's aim was to simplify complicated data and in order to do this one must first gather information and know their audience.
- The NSO stuck to a general aesthetic and colour scheme for the 2019 statistics, ensuring that certain aspects remained the same ex. Dark red hue for Gozo.
- The infographic takes complex graphs and tables and simply lists large figures or percentages.
- The use of digital tools were involved to create clear graphics.

# OUTCOME

## ENHANCING THE COMMUNICATION OF THE BIG DATA STORY

The infographic successfully spans a number of topics in a concise way, balancing between imagery, text and colour. Thus, allowing the NSO to communicate data, from both Malta and Gozo, more easily by visualising information succinctly; focusing on the results of population including percentages, density and ageing demographics.

Also outlining school graduates at levels 5-8, Regional to National GDP per capita, transport use, inbound tourists, cultivated land and a highlight of the increased public and commercial installation of PVs in Gozo and Comino.



# KEY COMPETENCES

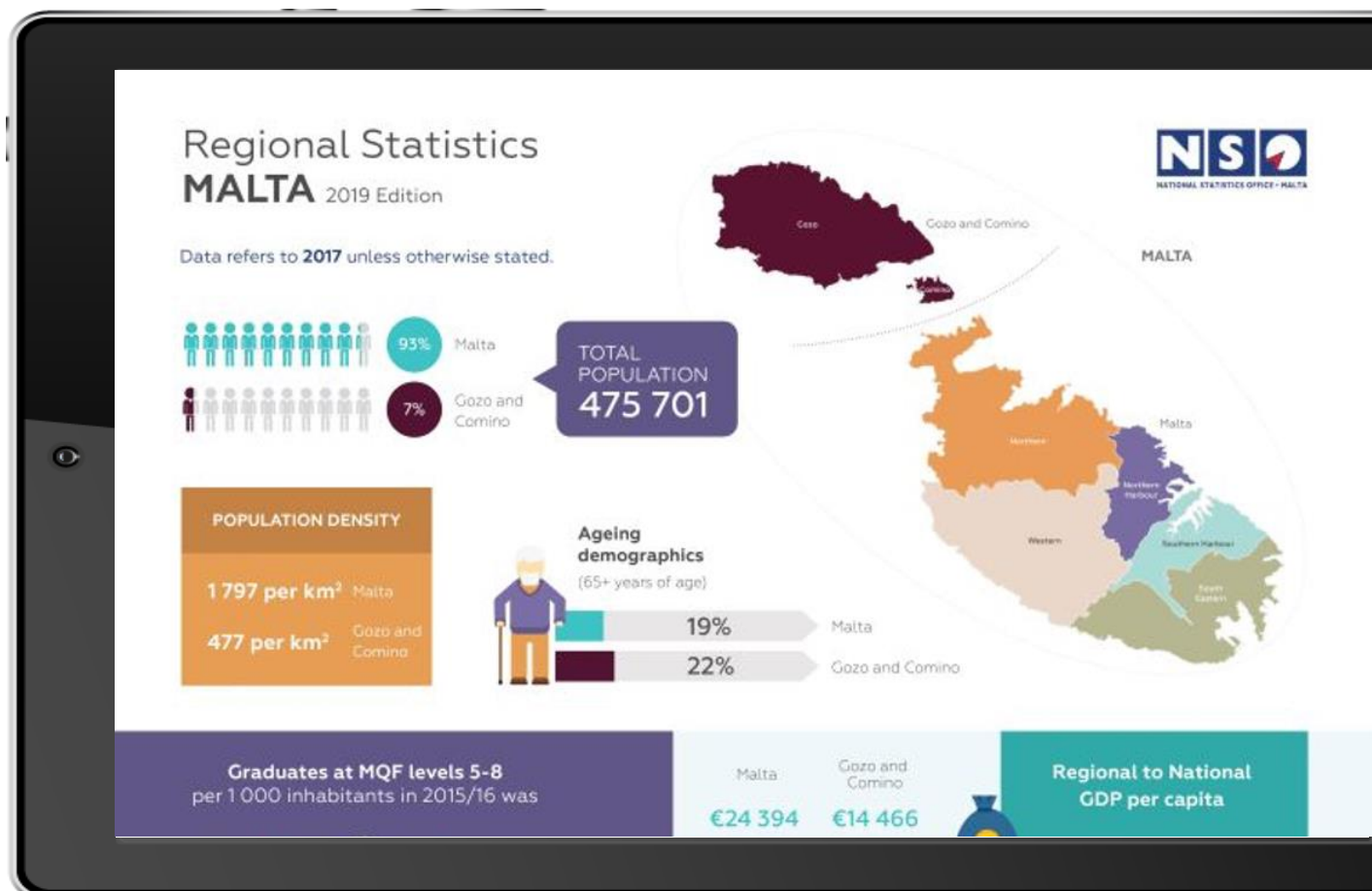
## What makes this case study best practice?

- Attractive vector illustrations that depict a story
- Harmonious colour schemes that stick to the initial document
- Varying fonts/font sizes that attract the eye
- Neatly formulated layout

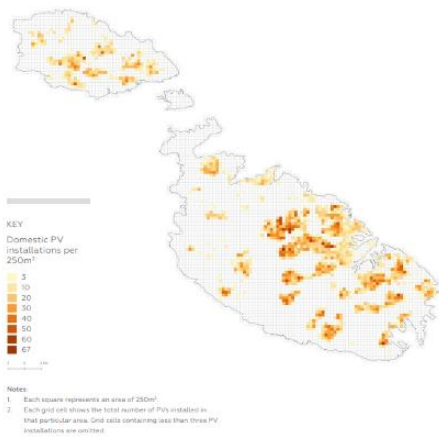
## The key competences and contributions that have been used in this data visualization solution include:

- Data preparation
- Use of digital software such as Illustrator for creation of vector art
- Knowledge of visual information and psychology/elements of design
- Knowledge of data storytelling

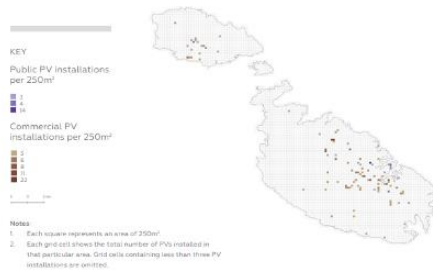
# NSO REGIONAL: THE DATA VISUALS



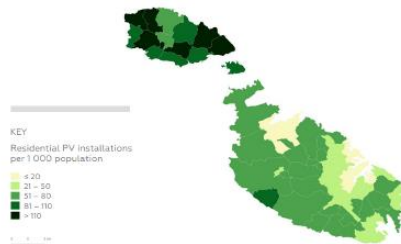
MAP 8.3.2 – Domestic PV installations using 250m<sup>2</sup> grid cells: 2017



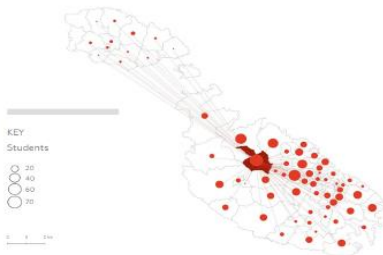
MAP 8.3.3 – Public and commercial PV installations using 250m<sup>2</sup> grid cells: 2017



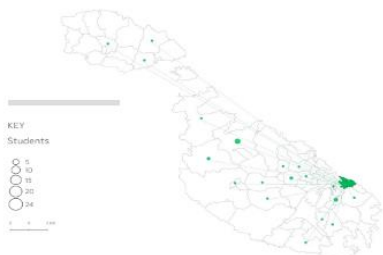
MAP 8.3.4 – Total PVs installed in the domestic sector per 1000 residents: 2017 (LAU 2)



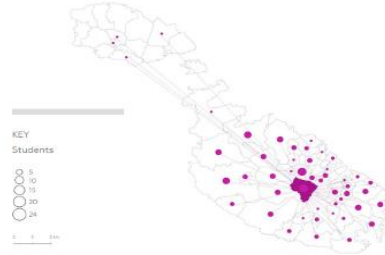
MAP 2.7.3 – MCAST Mosta Campus



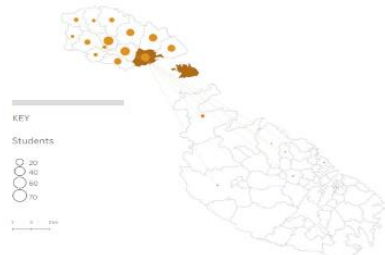
MAP 2.7.4 – MCAST Kalkara Campus



MAP 2.7.5 – MCAST Qormi Campus



MAP 2.7.6 – MCAST Għajnsielem Campus





# MAPPE PROTEZIONE CIVILE

Italy



## OVERVIEW

The National Protection Service is the system that performs the civil protection function consisting of all the skills and activities aimed at protecting life, physical integrity, property, settlements, animals and the environment. The entire State organisation, central and peripheral, including the entire system of local authorities and also private individuals, through voluntary organisations, are involved in its organisation and operation. This ensures a level of central coordination combined with strong operational flexibility on the ground.



PRIVATE SECTOR



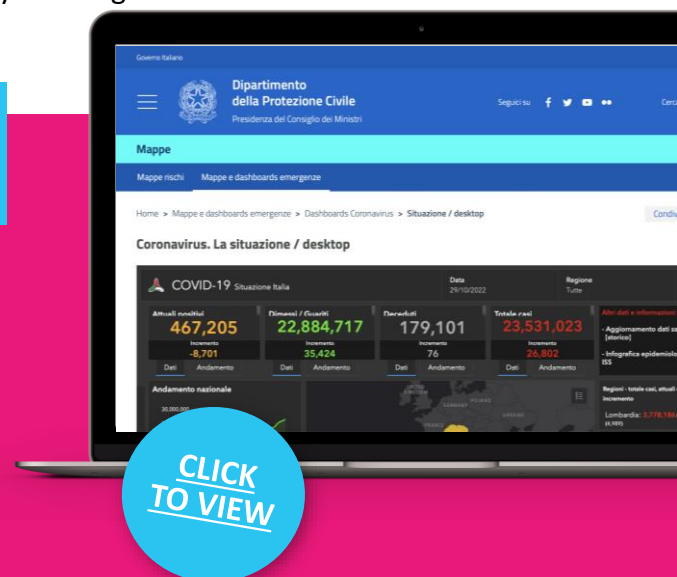
PUBLIC SECTOR (OPEN DATA) ✓



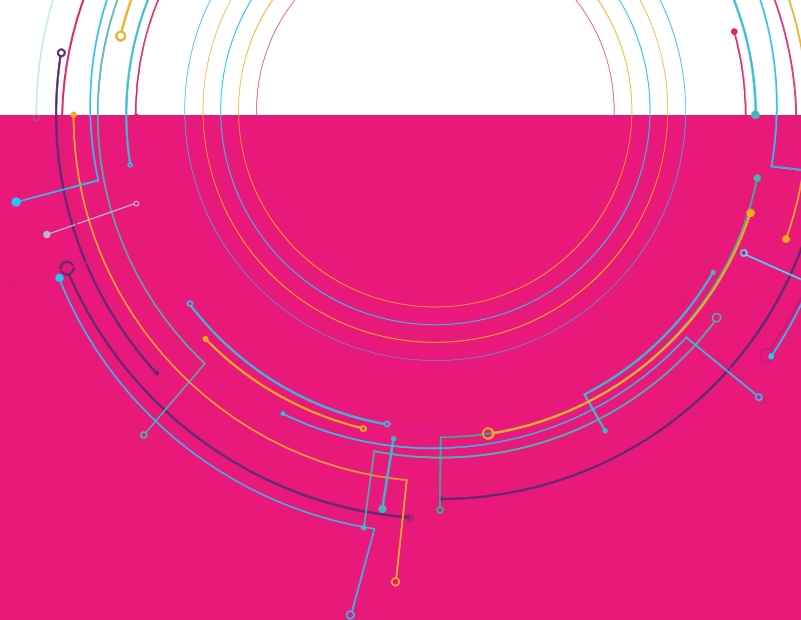
NOT FOR PROFIT SECTOR

## THE CHALLENGE FOR DATA VISUALISATION

The Italian Civil Protection Department has drawn up various maps relating to emergencies. Here we will consider those relating to the spread of Coronavirus. The data represented, in some cases provided by other bodies and institutions or collected in cooperation with other actors of the National Service, are made available to insiders, information workers and citizens.



- With the representation of data on the Covid epidemic, the Civil Protection has clearly met the Italian population's need to understand the pandemic phenomenon, its spread and its incidence. The representation also supported the public administration in managing governmental choices regarding vaccination campaigns and their necessity. Data were presented both at national and regional level, but also at provincial and municipal level.
- The interactive situation dashboard shows the total number of registered cases and currently positive persons, the number of cured and deceased persons. Two graphs show the national trend and the number of new positives for the previous days. Users can download the data, provided by the Ministry of Health, in open format, with a CC-BY licence and metadata, in accordance with the Digital Administration Code.
- In addition to the representation of the Coronavirus infection, there are also:
  - dashboards on distributed materials (by region, by sector and by user)
  - dashboards and open data on the contracts activated by the Civil Protection within the framework of the Coronavirus emergency to acquire individual protection, medical and aid devices.



## INTERVENTION

### DATA STORYTELLING EVOLUTION

The data is represented both on the map (Italy, Regions, Provinces) and through graphs (e.g. histograms, line graphs, etc.). The presentation of the data redistributed by regions, provinces and municipalities allowed a clear reading of the events.

The singularity of the pandemic made the population despondent and helpless; having a tool that could read what was happening in a numerical and clear manner was certainly fundamental. The Italian Civil Protection, in addition to the daily communication of data, provided a valid and effective tool.

### DATA VISUALISATION SOLUTION

On 31 January 2020, the Council of Ministers declared a state of emergency, for the duration of six months, as a consequence of the health risk related to the Coronavirus infection.

The main actions coordinated by the Head of the Department aimed at rescuing and assisting the population affected by the contagion, strengthening controls in airport and port areas, in continuity with the urgent measures already taken by the Ministry of Health, had a valid communication tool at their disposal.

The maps clearly only originated at the same time as the pandemic developed, so they are recent. However, a widespread dimension of the pandemic was provided from the outset. The dashboards relating to the materials distributed by the Civil Protection Department and those relating to contracts clearly post-date the first emergency phase.

## ENHANCING THE COMMUNICATION OF THE BIG DATA STORY

In order to inform citizens and make the collected data available, which are useful for communication and information purposes only, the Civil Protection Department makes the following information available with a Creative Commons C-BY-4.0 license and metadata, in accordance with the provisions of the Digital Administration Code:

- **Currently positive:** total people currently positive both hospitalized and in home isolation.
- **Cured:** total persons clinically cured.
- **Deceased:** persons deceased
- **Total positives:** total persons tested positive.
- **Total positive and current by Region:** total persons who tested positive and current positive by Region.
- **Total positive by Province:** total persons tested positive by Province.

• **Map situation by Region:** shows the total number of people who tested positive and where it is possible to view other data and information through the 'levels' icon inside the map. The centroid is set on the regional capital.

- **Map situation by Province:** shows the total number of people who tested positive. The centroid is fixed on the provincial capital.

• **National trend:** graph showing the national trend of currently positive, cured and deceased persons. Daily increase in current positives: graph showing the national trend in new positives.

- **Data download:** link from which COVID-19 data in Italy can be downloaded in various formats.

The dashboard of distributed materials, on the other hand, provides details, both quantitative and qualitative, of the devices distributed every day to Regions and Autonomous Provinces to deal with the emergency. The system was created by the Offices of the Extraordinary Commissioner for the implementation and coordination of measures to contain and combat the epidemiological emergency.

For open transparency, the dashboard includes open data on the purchase contracts activated by the Department within the emergency to acquire personal protective, medical and assistive devices.



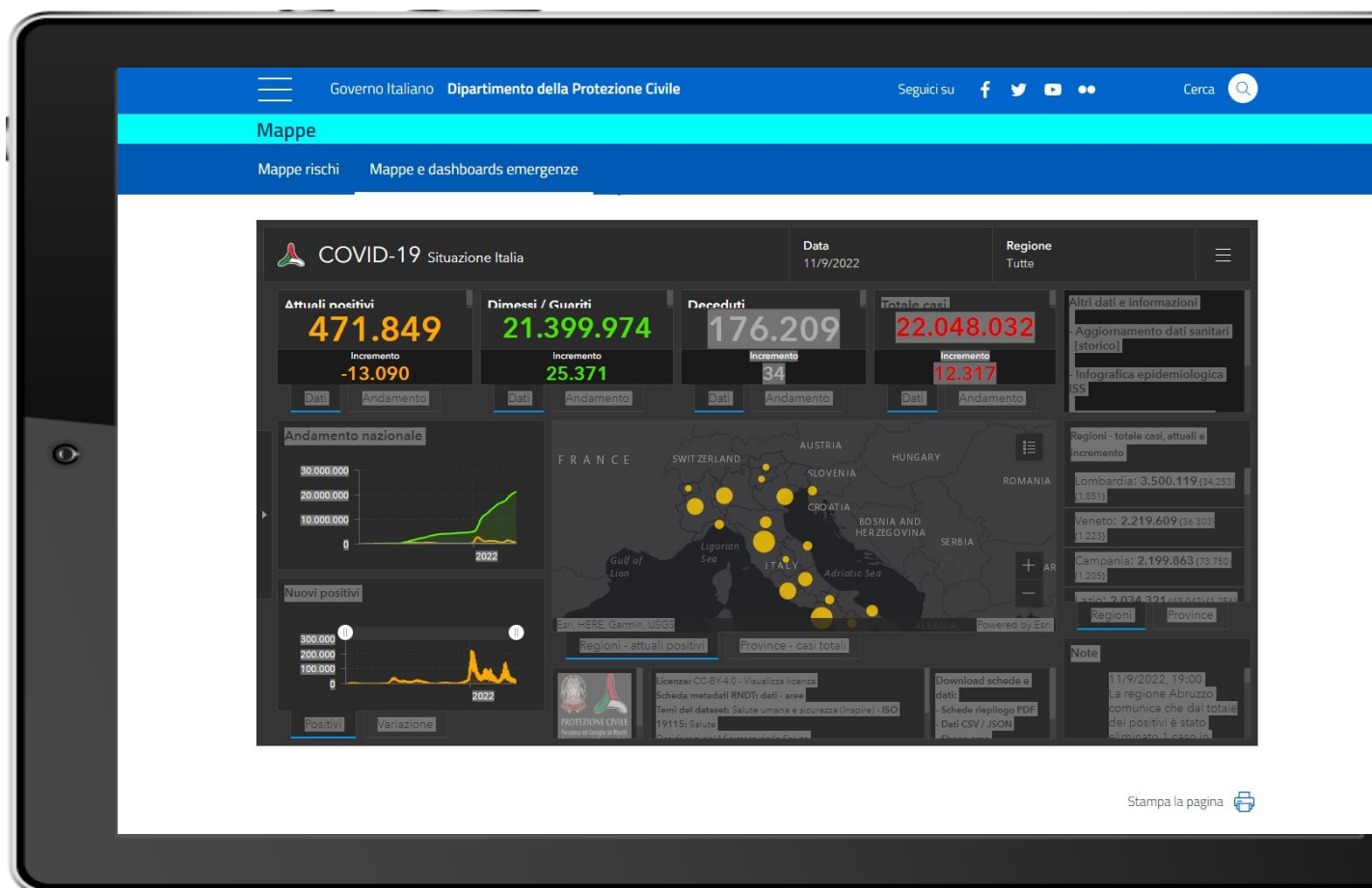
# KEY COMPETENCES

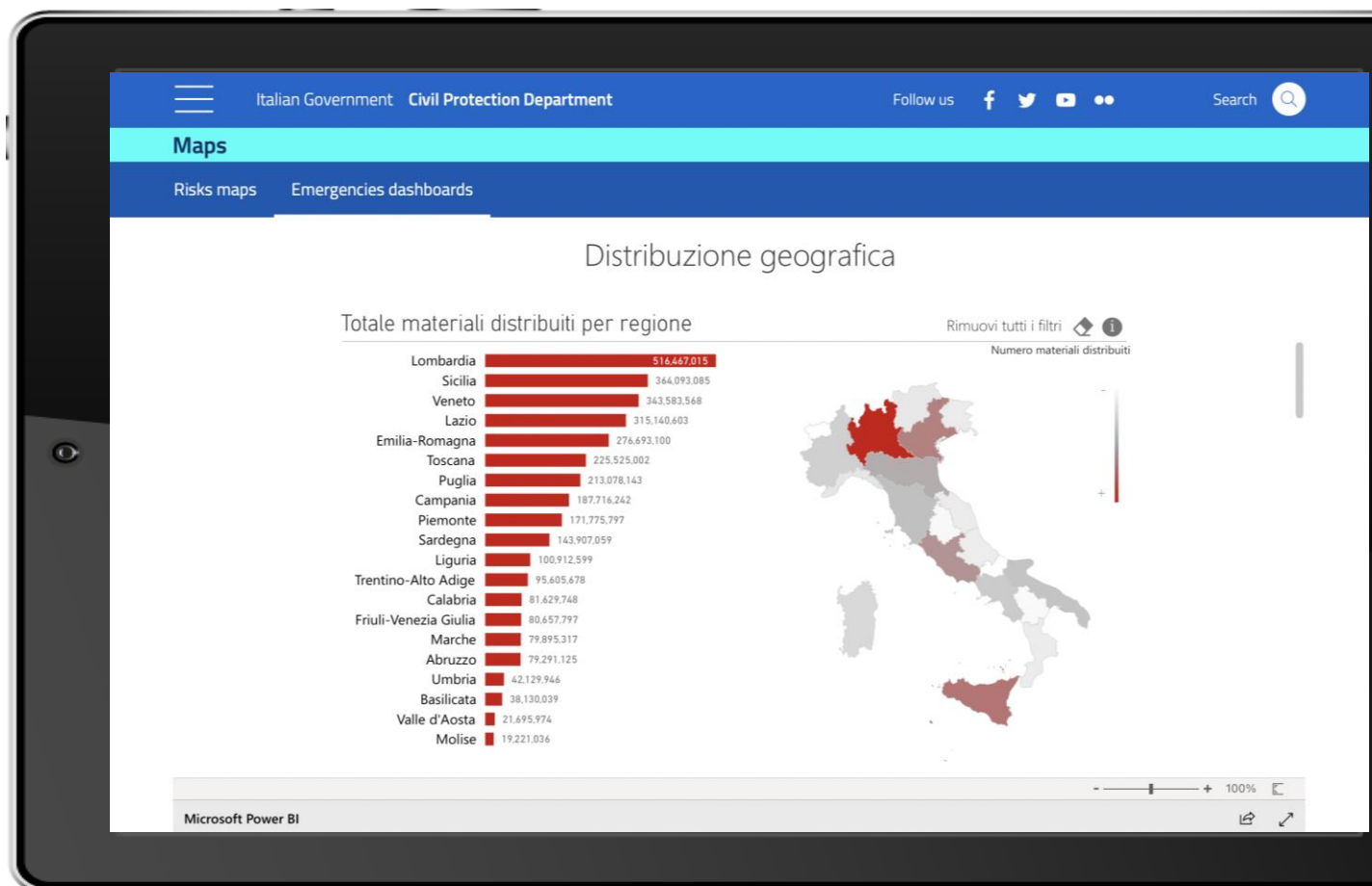
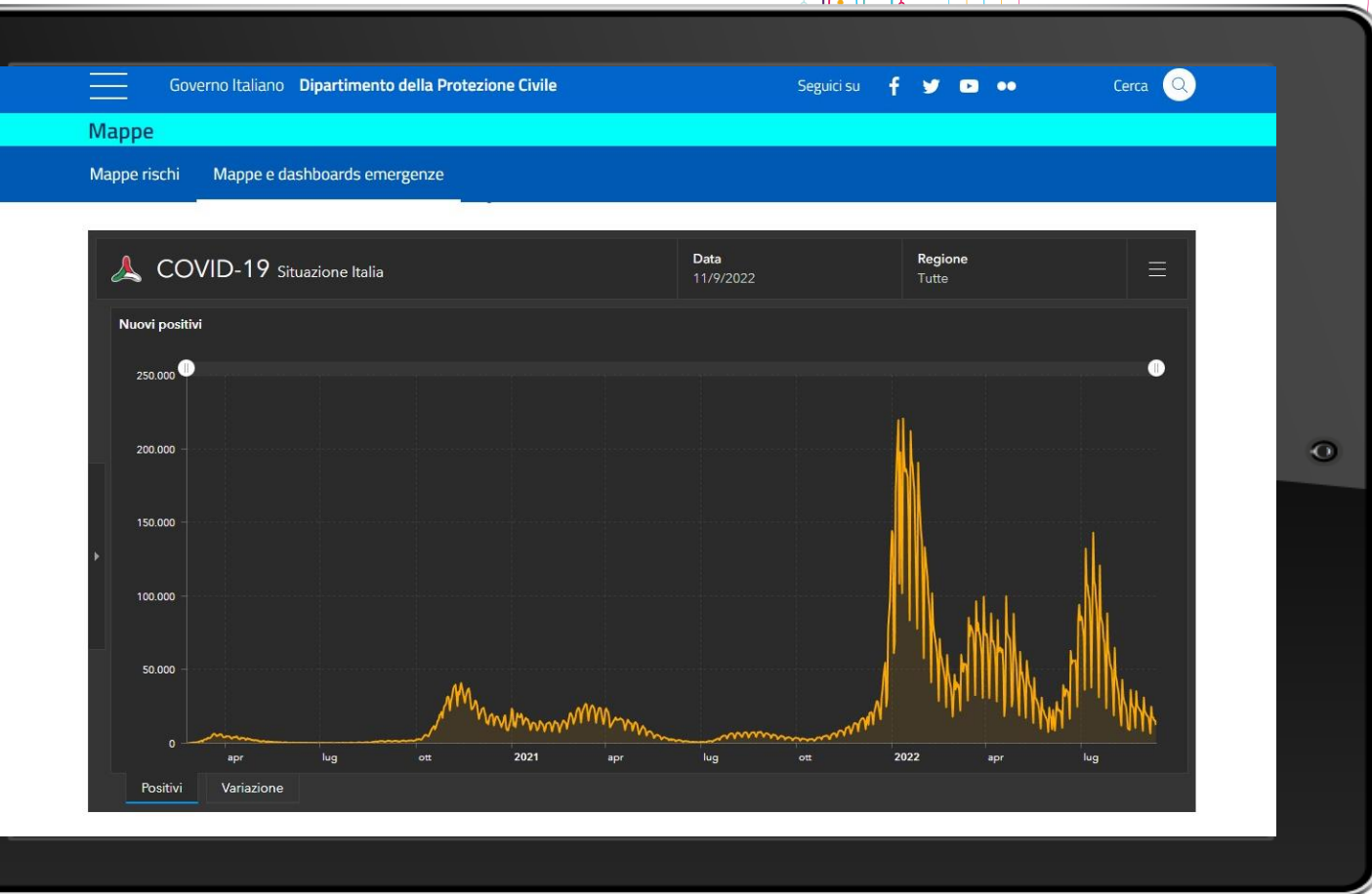
It is a best practice because, given the social relevance of the topic, its importance for the health and safety of citizens, data visualisation in this case met a real social need.

**The key competences and contributions that have been used in this data visualization solution include:**

- The answer to a social need was through a simple and broad tool.
- Simple because it was easy to interpret through the interactive map and linear graphical representations (which gave a clear and immediate reading of the epidemic growth curve).
- Extensive because it was possible at all times to go back to regional and provincial data and have an adequate measure of the incidence of the epidemic.
- The simplicity of reading and the possibility of delving into the contents are important characteristics for an adequate representation of a phenomenon.

## Civil Protection Department : THE DATA VISUALS







PRIVATE SECTOR



PUBLIC SECTOR (OPEN DATA)



NOT FOR PROFIT SECTOR

## OVERVIEW

The National Statistics Office Malta's Short-term Business Statistics Unit compiled data on residential building permits with the aim of demonstrating the future development of construction in Malta.

## THE CHALLENGE FOR DATA VISUALISATION

Like the various documents the NSO releases, their aim was to collect big data, produce maps, tables, charts and the like. Ultimately providing more attractive, simplified infographics/infobytes to present the public with a general understanding of said topics.



# INTERVENTION

## DATA STORYTELLING EVOLUTION

The NSO sourced data for a News Release from the Maltese Planning Authority to present information on the construction of approved homes and change of use from non-residential buildings to residential areas.

Information was defined through short points and paragraphs, accompanied by maps, charts and lists.

The NSO then proceeded to simplify this information into a visually aided piece.

## DATA VISUALISATION SOLUTION

- Data was gathered and then compiled into maps and charts.
- General and meaningful data was then identified for the implementation of the infographic.
- Digital tools were then used to create a collection of graphics and numerical figures.

## OUTCOME

### ENHANCING THE COMMUNICATION OF THE BIG DATA STORY

The visualization of this data communicates the number of issued permits, average numbers of dwellings and types approved new buildings in a straight to the point, visual manner.



# KEY COMPETENCES

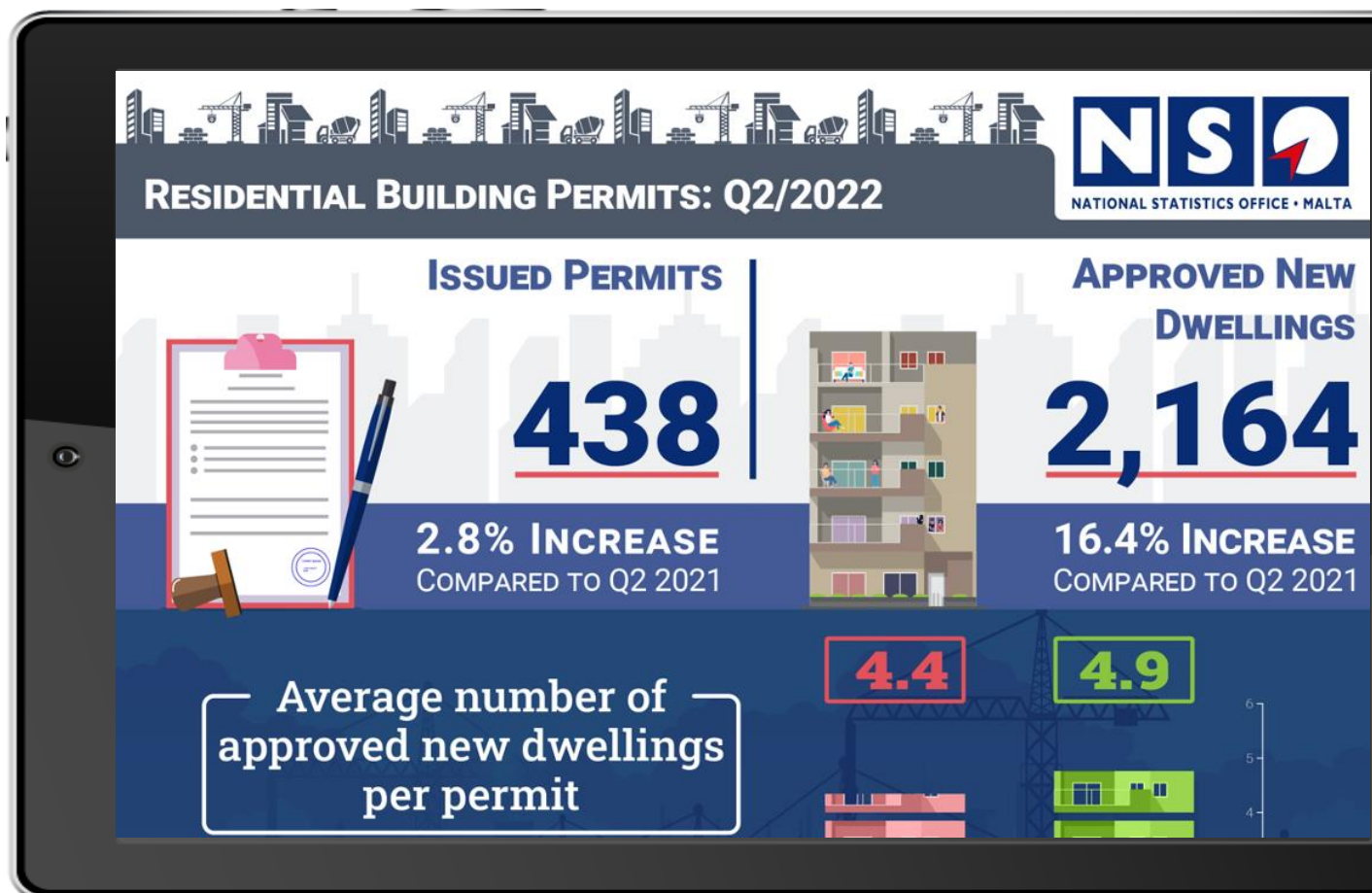
## What makes this case study best practice?

- Involvement of vector illustrations that conceptualise different building types and tell a story, even in the background.
- Bright colour schemes devoted to each group.
- Neatly formulated layout.
- Large fonts to catch the eye.

## The key competences and contributions that have been used in this data visualization solution include:

- Data preparation.
- Use of digital software such as Illustrator for creation of vector art.
- Knowledge of visual information and psychology/elements of design.
- Knowledge of data storytelling.

# NSO BUSINESS: THE DATA VISUALS



# APPROVED NEW DWELLINGS BY TYPE

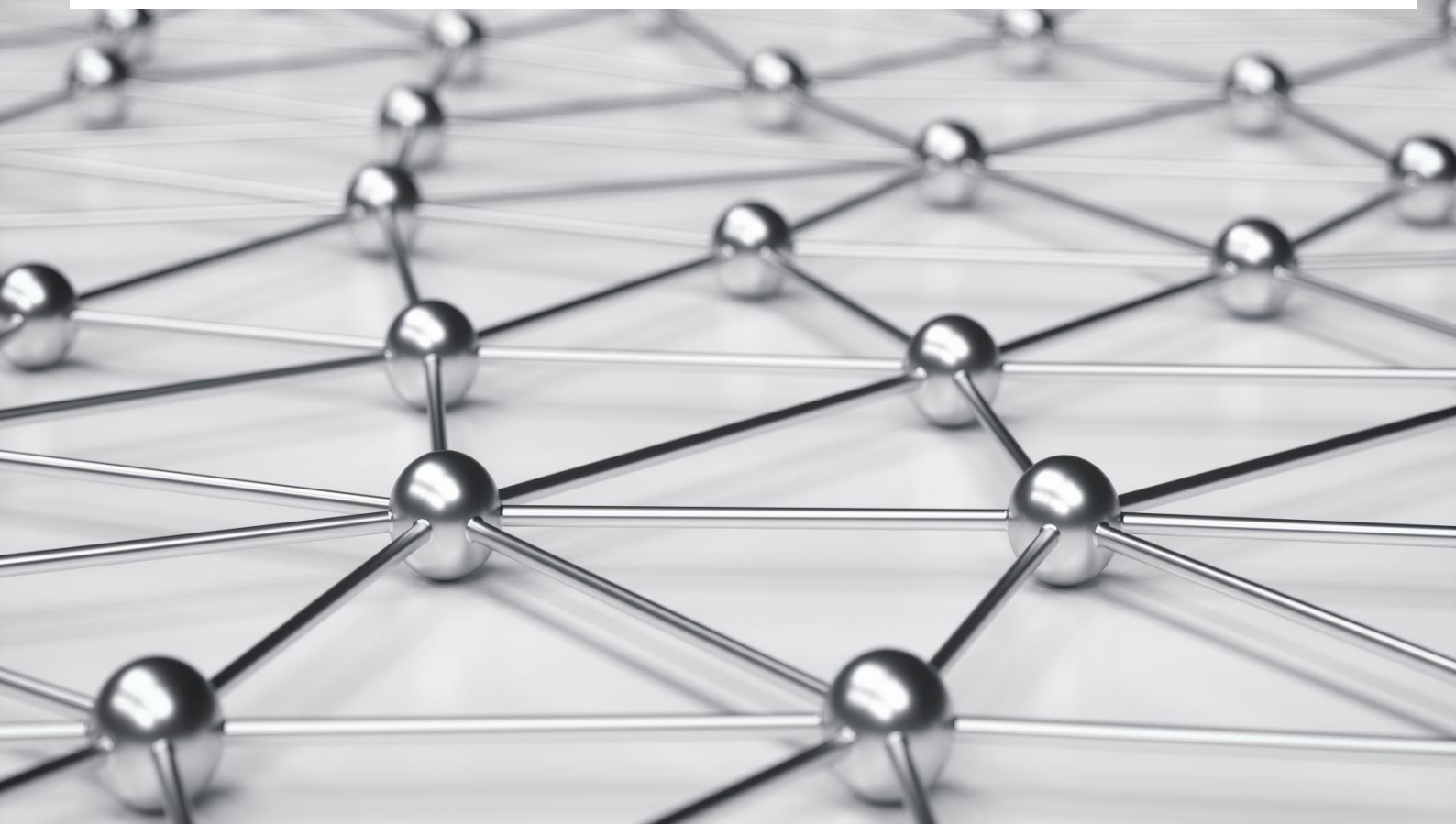


**Note:** \*Other residential units include bungalows, farmhouses and villas.

# 02 NOT-FOR-PROFIT SECTOR

Promoting their mission of social good, the Not-for-Profit Sector relies on communicating its message to ensure survival and success. In the past this may have involved “push” focused marketing campaigns. Now, data presented in an interesting and interactive way can actually promote the cause of an organisation. In this section, we present compelling case studies from Ireland, the UK, and Australia.

- SIMON COMMUNITIES OF IRELAND
- HCF, AUSTRALIA
- WARMING STRIPES, UK





# SIMON COMMUNITIES OF IRELAND

## IRELAND



PRIVATE SECTOR



PUBLIC SECTOR (OPEN DATA)



NOT FOR PROFIT SECTOR



\*\*special focus on Big Data for Social Change

## OVERVIEW

The Simon Communities of Ireland are a network of independent communities across the country that provide homeless, housing and treatment services to people facing the trauma and stress of homelessness. With a history of over 50 years responding to local needs, the Simon Communities of Ireland works to end long-term homelessness in Ireland, and ensure that homelessness where it does occur is rare, short-term and non-recurring.

## THE CHALLENGE FOR DATA VISUALISATION

For a charity such as the Simon Communities of Ireland, the challenge is to attract attention and to illicit action – be that a donation, a commitment to volunteer or to change policy to end homelessness.

The Simon Communities of Ireland engages in evidence-based policy work to put forward solutions to the homelessness crisis and improve public policy in the area. They also seek to influence government and other key decision makers in welfare, homeless and housing policy as well as addiction and mental health policy. They want to educate people without overwhelming them, combining key facts, anecdotes, and carefully chosen imagery.





## DATA STORYTELLING EVOLUTION

The Simon Communities of Ireland use data visualization tools including infographics to start conversations, both online and off. When people are bombarded with more information than ever, charities are looking for ways to visualize data to explain complex issues succinctly, spur advocacy, support their fundraising and show donors where their money is going.

Good visualizations can also help charities better understand their own data and use those insights to improve their programme responses.

## DATA VISUALISATION SOLUTION

Used primarily, and very effectively, in their Annual Reports, ([Annual Reports - Simon Communities in Ireland](#)) infographics are the primary data visual tools used. These follow the organisation's style guidelines on fonts, colour schemes and tone to maintain the group's brand.

Their strength is in simple but powerful messaging. They convey the message quickly and clearly. They balance aesthetics and substance in that an infographic needs to be useful as well as visually appealing.

## ENHANCING THE COMMUNICATION OF THE BIG DATA STORY

The Simon Communities of Ireland use graphic design techniques and icons to illustrate and emphasize key statistics in their infographics. Icons are simple vector visuals that convey concepts. They're perfect for illustrating and reinforcing statistics on an infographic.

Another powerful tool used by Simon Communities of Ireland is their breakdown of statistical infographic into sections using coloured blocks that help the information to pop – see next page for example.

Combining text and icons, as well as numbers in a bold font help express to readers why the

statistic is important. This approach is very appropriate to Simon Communities of Ireland in that it helps convey the seriousness of the situation to readers instantly.



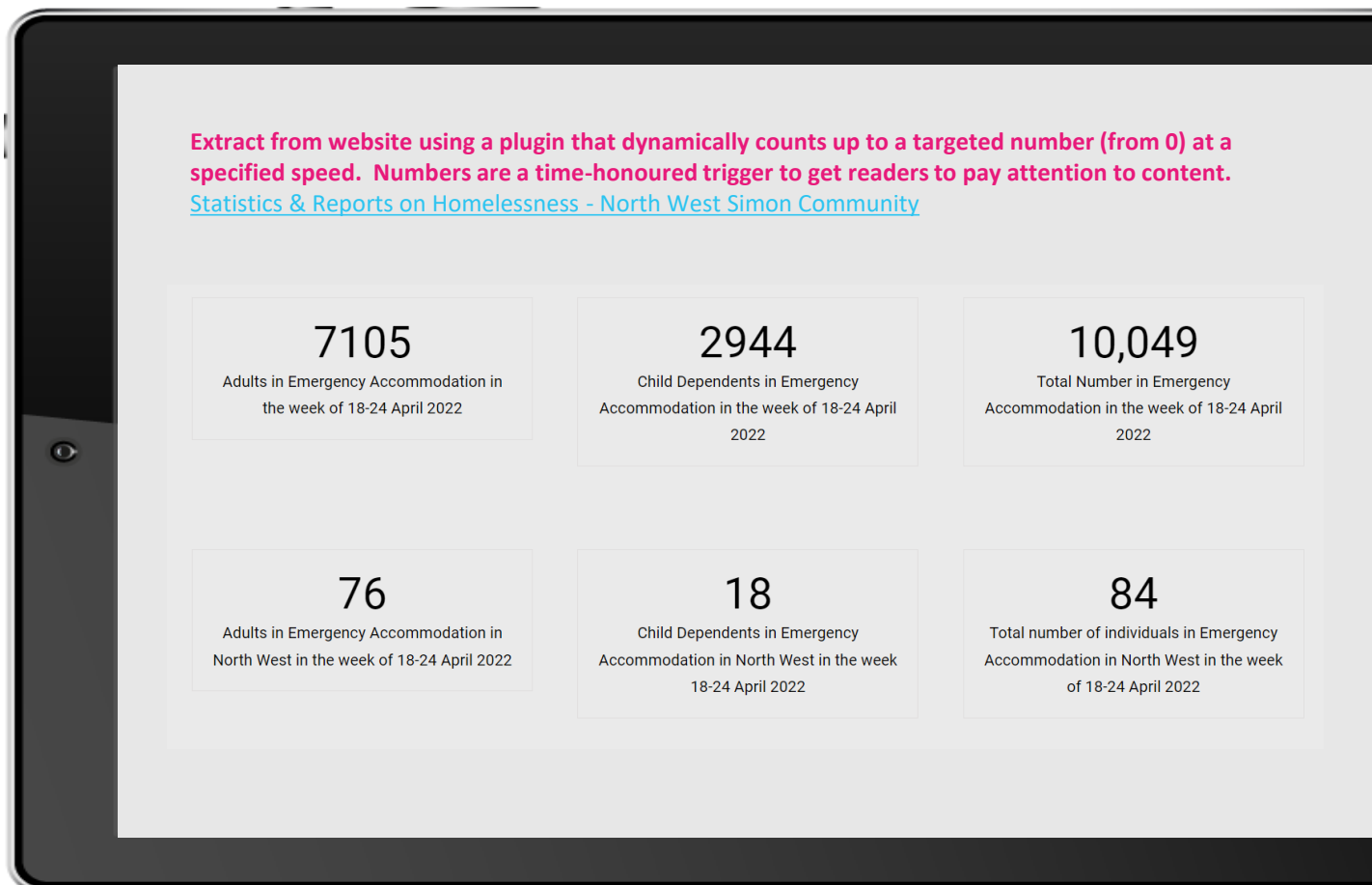
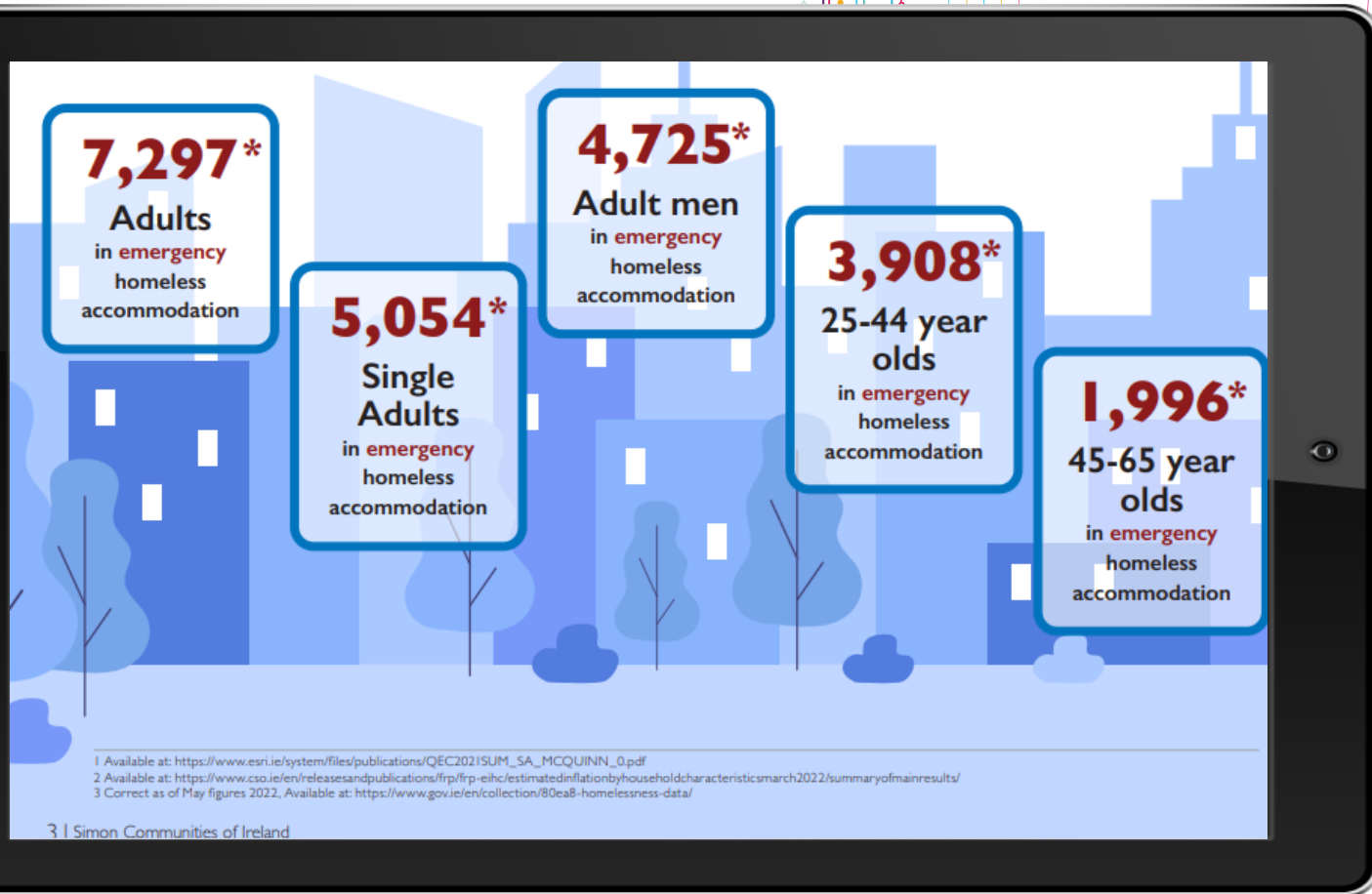
## KEY COMPETENCES

The key competences and contributions that have been used in this data visualization solution include:

- Data Set preparation
- Best practices of Information Design
- Best practices of Big Data Storytelling
- Tools and Digital Platforms for Big Data Visualisation
- Contribution to the EU Strategy on Big Data

## SIMON COMMUNITIES: THE DATA VISUALS







# HEALTH INSURANCE

IMAGE: [HCF](#)



PRIVATE SECTOR



PUBLIC SECTOR (OPEN DATA)



NOT FOR PROFIT SECTOR



## OVERVIEW

HCF is Australia’s largest not-for-profit health insurer. It is different from most health funds since it is not driven by profit but by improving and safeguarding the health of its members. They help our members make informed choices by providing easy-to-understand products and insights into the healthcare system, and seek to champion transparency and accountability in their business.



## THE CHALLENGE FOR DATA VISUALISATION

For HCF it was important to showcase, in a document “A Year in Review”, a presentation of the achievements of the financial year ending 30 June 2021.

More than an annual report, the company wanted to demonstrate its commitment to putting health first by consistently making decisions to benefit its members rather than shareholders.



# INTERVENTION

## DATA STORYTELLING EVOLUTION

In order to renew HCF's Annual Report, their data was used to tell their story. Data was used as much as possible to tell the story within an illustrative design aesthetic that softened the data and numbers. This Annual Report was created by The Datalabs Agency which is a data visualization agency, specializing in data visualization, workshops, style guides, and strategic design services.

## DATA VISUALISATION SOLUTION

### 1. Figuring out the narrative

The data collection and analysis process to filter out data is important to fish out only those that matter.

### 2. Identifying the audience

The purpose of a dashboard is to motivate its audience to take a certain action. To do this, one has to know what sort of audience they are presenting the data to.

### 3. Presenting the important elements and themes

By knowing the audience, dashboards can be tailor-made to present the elements and themes that are important to them. This will avoid overwhelming the dashboard with unnecessary information.

### 4. Honing in on the details

Give insights and seasoning on the most important parts of the data to keep the audience's interest.

### 5. Creating flow and cohesiveness

There should be a logical flow from one graphics to the next, offering analytical examinations that follow up on one another.

## OUTCOME

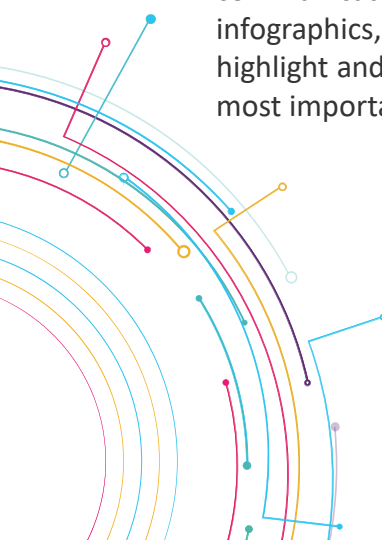
## ENHANCING THE COMMUNICATION OF THE BIG DATA STORY

[Planning and content production](#) were used to create an annual report in which the infographic style was used to create something appealing and attractive. The report is light and engages visually by using various information design methods to keep the reader engaged.

HCF's annual report uses a type of communication which is based on infographics, bright colours and illustrations to highlight and make the readers understand the most important data in a practical way.

The icons, graphics, different fonts and the use of colors allow the user to focus on the most important data and on what the institution is interested to communicate.

The use of many different graphic solutions allows HCF to present a document, otherwise difficult and boring, in a modern and fun way, thus giving greater importance to their work progress and achievements



# KEY COMPETENCES

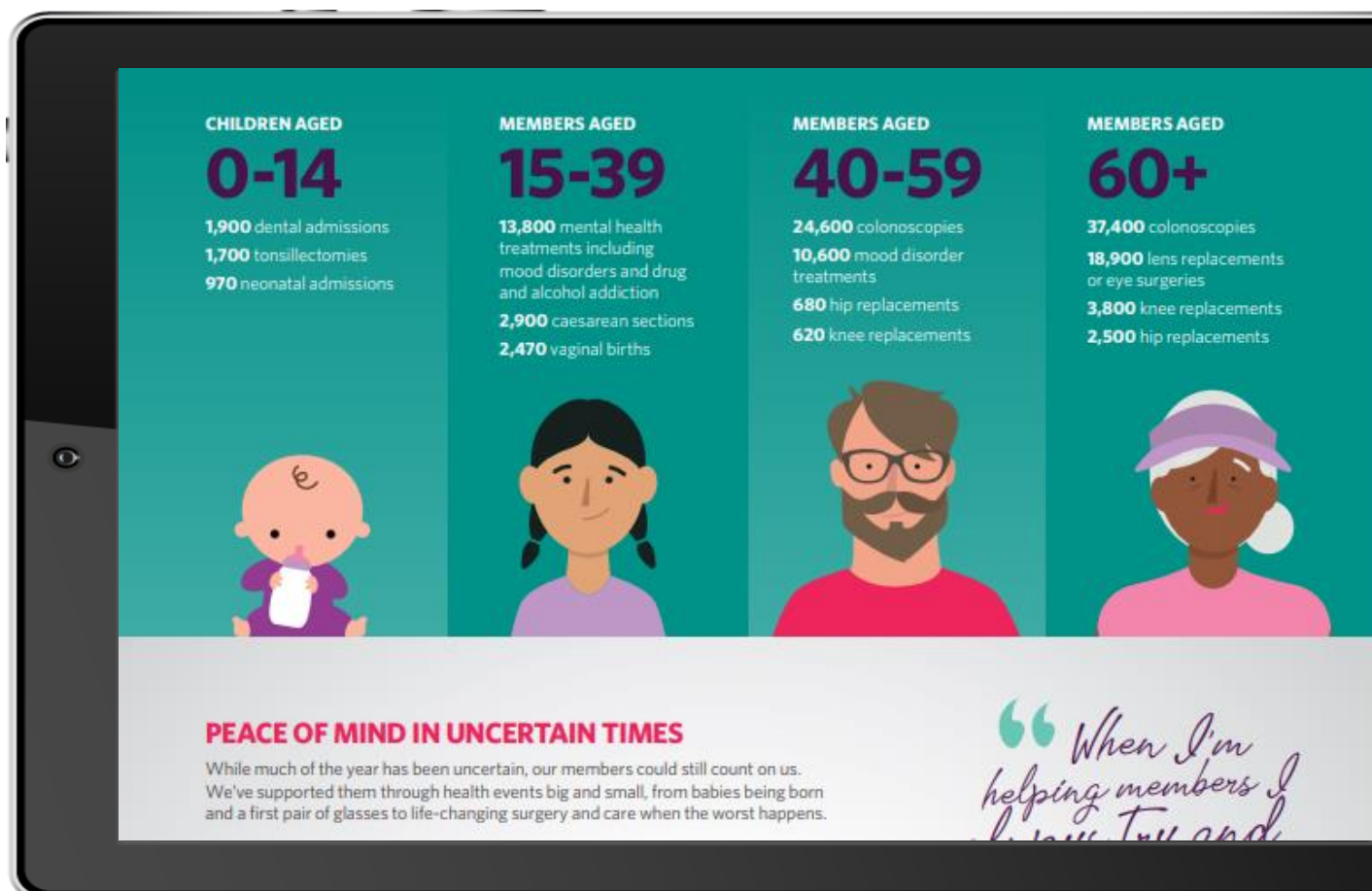
The use of the following techniques can be seen as characteristics of this best practice:

- **Illustration:** Custom illustration that were based on the brand style and characters in order to help give a sense of story and make the report visually engaging.
- **Custom Charts:** They used some custom charts as well as more traditional ones like bar charts. This softens the data and helps the reader get a better sense of the information.

Other key competences:

- Data Set preparation
- Information Design
- Storytelling
- Use Tools and Digital Platforms for Big Data Visualisation
- Use of Illustrator for the creation of the infographics
- Use of different fonts and bright colors to attract attention and make the document more interesting

## HCF: THE DATA VISUALS



## PEACE OF MIND IN UNCERTAIN TIMES

While much of the year has been uncertain, our members could still count on us. We've supported them through health events big and small, from babies being born and a first pair of glasses to life-changing surgery and care when the worst happens.



**633,300**  
HOSPITAL ADMISSIONS COVERED



**5.4m**  
MEDICAL SERVICES COVERED



**652,800**  
HOSPITAL SERVICES COVERED



**\$1.5b**  
PAID FOR MEMBERS' HOSPITAL SERVICES



**10m**  
EXTRAS SERVICES COVERED



**\$595m**  
PAID FOR MEMBERS' EXTRAS SERVICES



*“When I'm helping members I always try and walk in their shoes. We're empowered to take the time to listen, without judgement, so we can really understand someone's situation and find a solution that works for them.”*

**Rita**  
Projects & Administration Manager -  
Call Centre Operations

YEAR IN REVIEW | FINANCIAL YEAR 2020-21

9

### 1. THINKING ABOUT SWITCHING HEALTH FUNDS

Sarah's impressed by HCF's broad range of protection options and fills in a short profile questionnaire. She's confident the recommended hospital and extras package means her family will be covered for exactly what they need.

Sarah joins HCF with a quick and simple online application.

### 2. PLANNING BABY NUMBER TWO

Sarah visits the HCF website and gets a chat pop-up offering a quick cover check with Isha, through an HCF virtual branch.

After the consult, Sarah decides to change her extras cover to meet her family's changing needs - it's all updated straight away\*.

\* Waiting periods may apply.

### 3. PREPARING FOR BIRTH

Throughout Sarah's pregnancy journey, HCF keeps in touch with regular proactive and personalised comms, connecting her with a wide range of programs and services to support through bump, baby and beyond.

\* Depends on your cover, annual limits and waiting period.

## Delivering affordable HEALTHCARE

We know seeing value in private health insurance is vital for our members. The cost of health cover as low as possible.

### PEOPLE BEFORE PROFIT

As Australia's largest not-for-profit health fund, our member-driven approach helps us keep premiums affordable, reward members for their loyalty and make quality care more accessible to more people.

**\$2.8b**  
PAID FOR MEMBERS' HOSPITAL AND EXTRAS SERVICES

**99%**  
OF MEDICAL SERVICES WE COVERED IN HOSPITAL HAD NO OR KNOWN-GAP

### KEEPING TREATMENT COSTS DOWN

We partner with hospitals around Australia to help members access lower or no-gap treatment for services included in their cover. In 99% of medical services in hospital, our members paid nothing or a maximum of \$500 per specialist for their in-hospital medical services, like surgeon's fees.

**53,000**  
MEDICAL SPECIALISTS IN OUR NETWORK



### WE'RE CLOSING THE GAP

We want to help members keep money in their pockets and avoid unexpected costs after hospital or when they use their extras. Our industry-leading Dr Gap tool finds specialists who have agreed to charge HCF members either no or known-gap when they go to hospital so our members can make informed choices about their healthcare and know what they can expect to pay.

**269,600**  
MEMBERS USED A NO OR KNOWN-GAP PROVIDER

**86,700**  
USES OF THE DR GAP TOOL

**209**  
PROCEDURES INCLUDE COST INFORMATION THROUGH THE DR GAP TOOL



IMAGE: [Jersey Development Company](#)



**PRIVATE SECTOR**



**PUBLIC SECTOR (OPEN DATA)**



**NOT FOR PROFIT SECTOR**



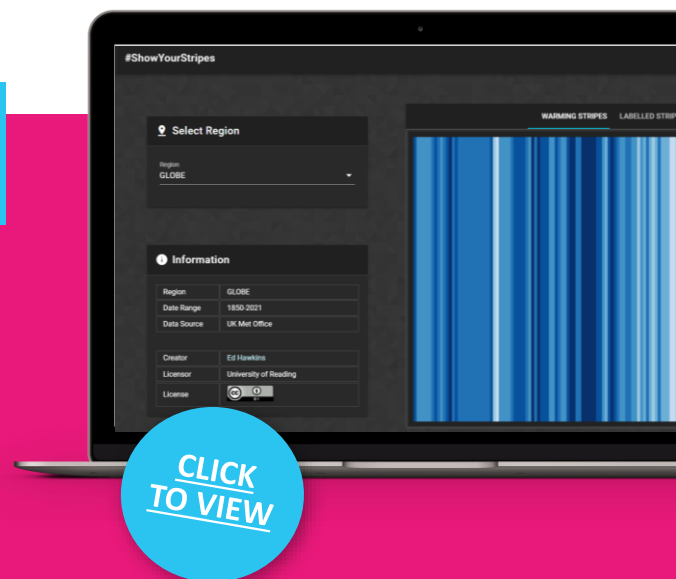
## OVERVIEW

This case study refers to the environmental sector. Edward Hawkin, a climate scientist in the National Centre for Atmospheric Science (NCAS) at the University of Reading developed a data visualization to demonstrate best practice.

\*\*special focus on Big Data for Social Change

## THE CHALLENGE FOR DATA VISUALISATION

The visualization problem which was addressed in this case study was an environmental one. There is a great need to create awareness about the climate change, but since climate change is a complex global issue, simple communication about its effects at the local scale is required.





## DATA STORYTELLING EVOLUTION

The author of the Warming Stripes is Ed Hawkins, a climatologist at the University of Reading in Great Britain, has found a way to explain the climate emergency through an image that can speak for itself. The stripes represent the increase in the world's average temperature in each year since the mid-19th century. The warming stripes were published on Hawkins's [blog](#) in 2018, but they became internationally popular over the summer in 2019. Many have enthusiastically answered the call to [#ShowYourStripes!](#)

The stripes are a minimalistic design. The "warming stripes" (literally "heating bands") are graphical representations of the temperature variations measured in different countries of the world in the last 100 years. Each stripe represents country's average annual temperature. For most countries, the data represented starts with the year 1901 and ends in 2021. The colour scale represents the change in global temperatures: each change in intensity signals 1.35 °C.

There is an official website of the ["stripes"](#) which shows both the global situation but also the one of each nation/region.

## DATA VISUALISATION SOLUTION

The strong impact that this study has had on public opinion is given by the fact that E. Hawkins managed with only two simple colours (red and blue) to make people understand the clear change in the climate of our world. The two colours have always been recognized as diametrically opposed: blue the colour of cold, calm and serenity, against the red of heat, passion and impulsiveness.

### Steps

- Collection/analysis of statistical and scientific data
- Identification of the most meaningful/indicative data
- Development of story telling and accompanying text
- Brainstorming on the type of outcomes to be produced
- Search for useful tools to analyze data in a user friendly way
- Revision of the drafts of the project

### Tools:

- Suite Adobe (illustrator e indesign)
- Web design (WordPress, HTML, Plot.ly, Python)
- Ui / UX design
- Google data studio - Google charts
- Infogram

## ENHANCING THE COMMUNICATION OF THE BIG DATA STORY

The data visual result of WARMING STRIPES is a striking series of coloured stripes, varying from a deep blue to a dark red, which represent a universal problem. The stripes describe global warming as a masterpiece of data visualization understandable to all.

This set of visualizations highlight how temperatures were witnessed change across the globe over the past century or more. The colour of each stripe represents

the earliest available data at each location to now. In a bold approach, all other superfluous information is removed so that the changes in temperature are seen simply and undeniably.

Importantly, the visualisation tells people exactly what it wants them to think and feel. It takes a stance, but it's not misleading in terms of urgency or severity. There is no need to read a more detailed graph or to assess the gravity of the situation based on the numbers. This is a graph that relies on the trust and prior knowledge.

Hawkins released the image on Creative Commons (CC) license which allows everyone to share, copy, remix, transform, and build upon the stripes for any purpose.

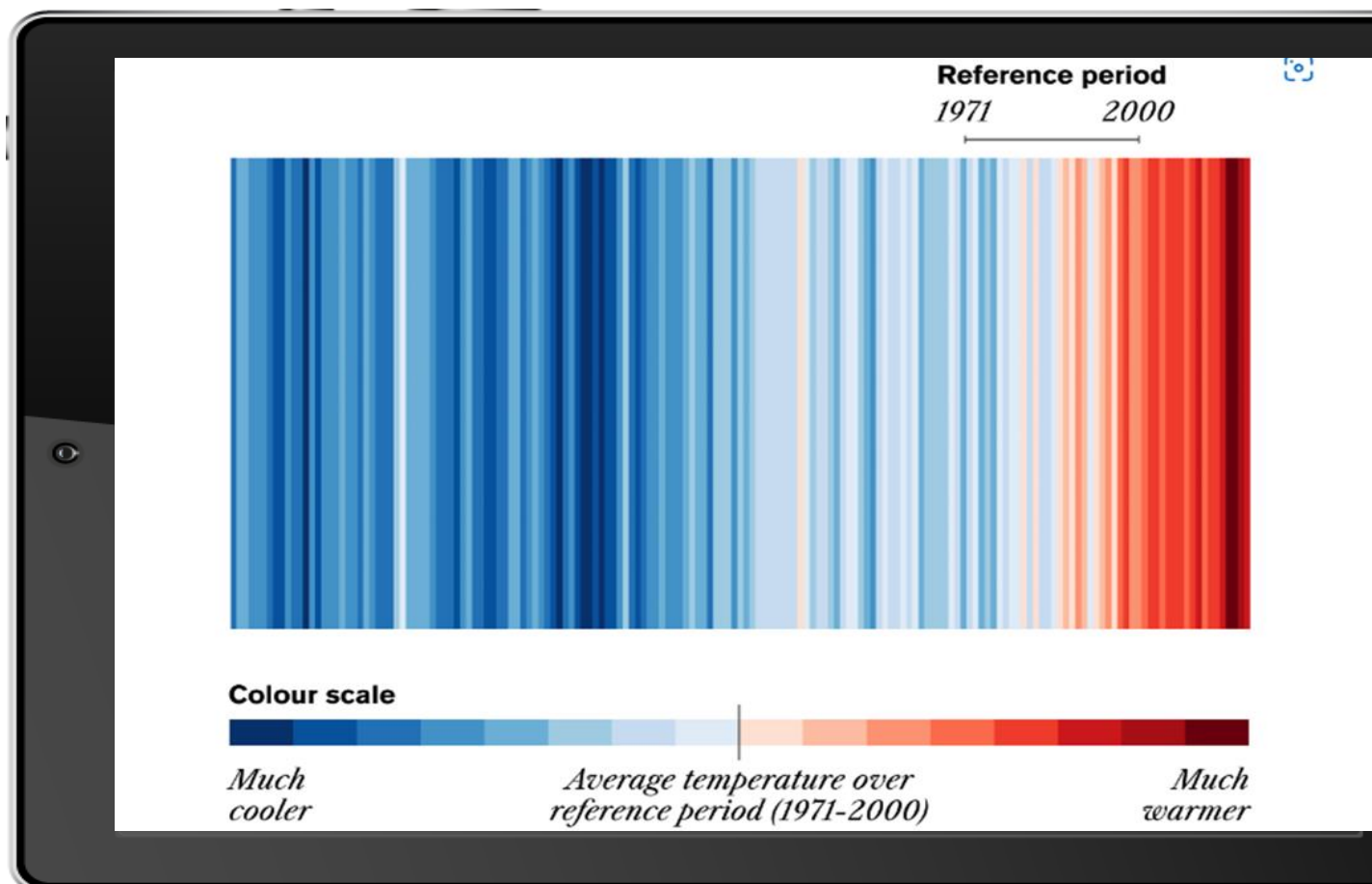
## KEY COMPETENCES

This case study is best practice because the graph allows an immediate and understandable view to everyone. The stripes were used in magazines and online sites but also on city walls, on the signs of demonstrators who took to the streets against climate change and even on trams. Hawkins launched the #ShowYourStripes initiative, inviting users to share photos and campaigns related to the chart. In 2018 Hawkins was honored by the Royal Society for "Significant Contributions to Understanding Climate Change for a Wide Public".

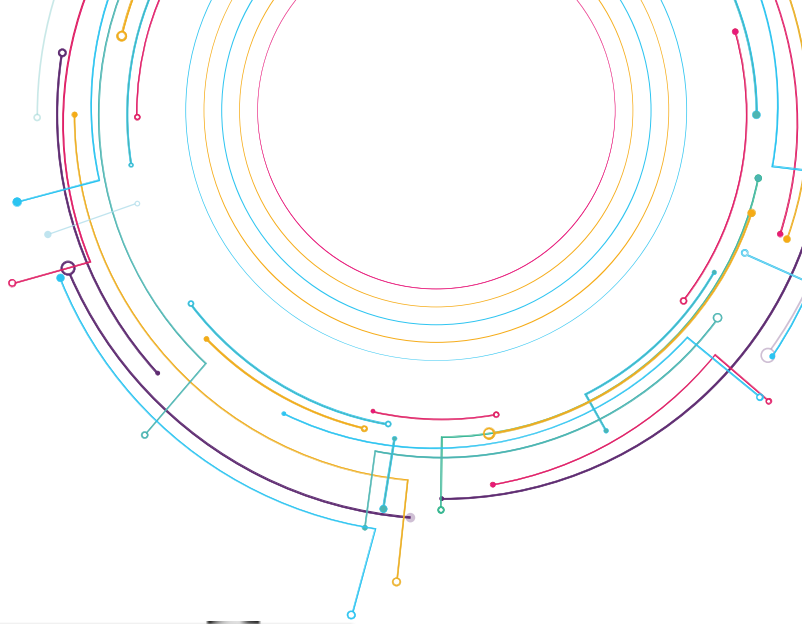
**The key competences and contributions that have been used in this data visualization solution include:**

- Data collection skills of global and national data or of the region in particular, so as to have a more precise and detailed result
- Competences in programs such as WordPress or the HTML language for the creation of the website, where the climatic difference of each place can be presented and updated over the years (last update 2021)
- Competences in the use of Adobe programs such as Illustrator or InDesign for the creation of the coloured band.
- Custom illustration skills based on the brand's style and characters to help make sense of the story and make the report visually appealing.

## WARMING STRIPES: THE DATA VISUALS



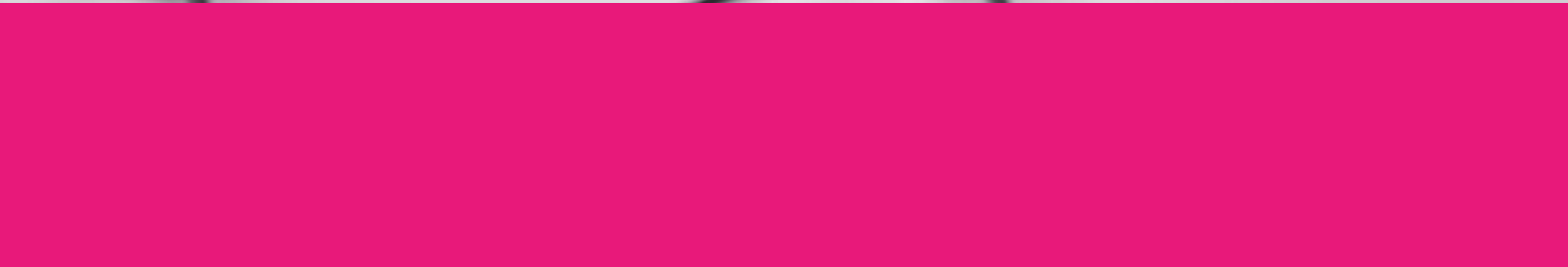
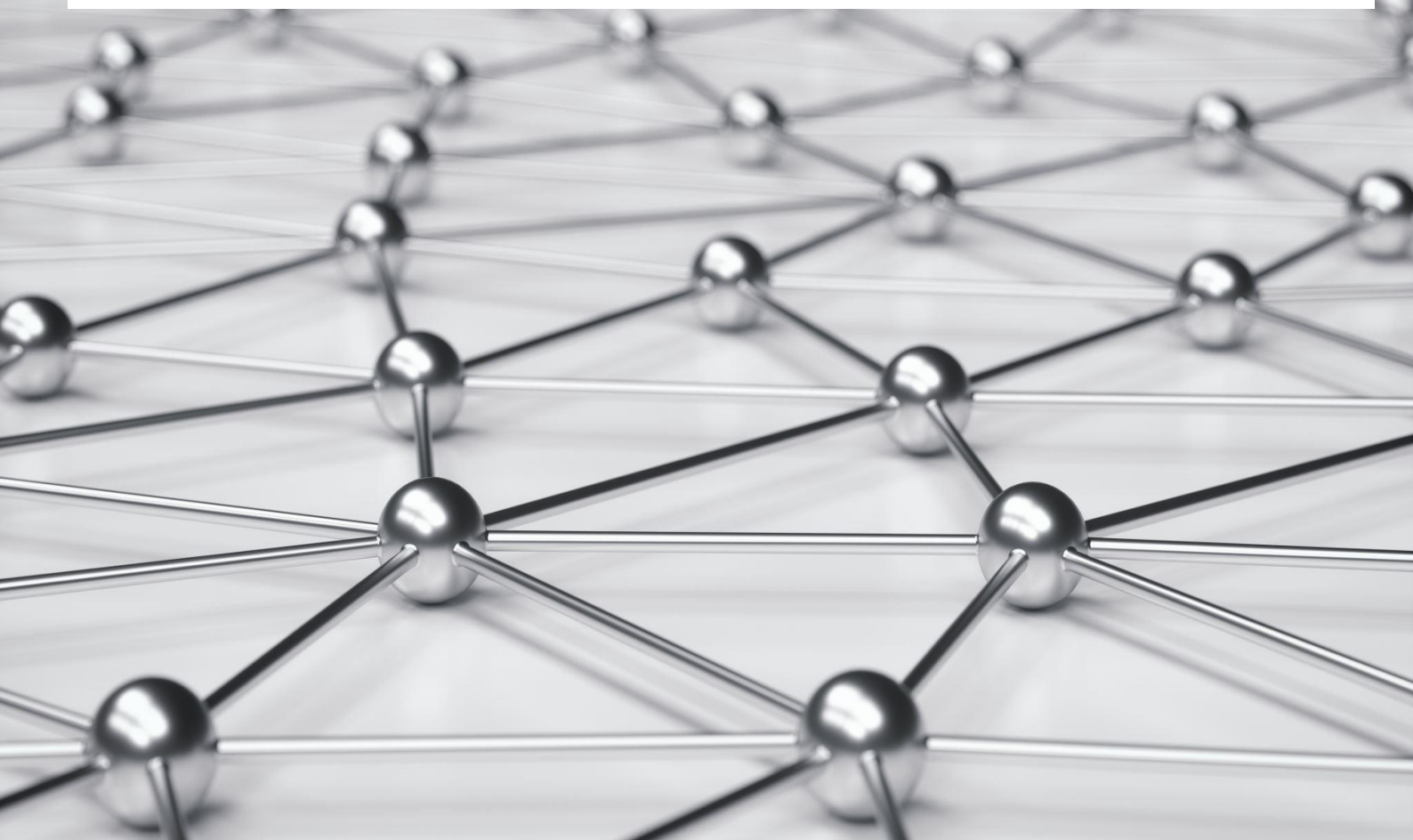




## 04 PRIVATE SECTOR

Innovation has always been at the heart of successful business. The pace of change means that while companies may retain their core models, creating additional unexpected benefits for end users can make a difference.

Data visualisation can enhance a brand profile in exciting and interesting ways. Here we present inspiring global case studies from Visual Capitalist, Google and The National Geographic.





# VISUALIZING THE PROLIFIC PLASTIC PROBLEM IN OUR OCEANS

Canada

1.2 MILLION PLASTIC SAMPLES

IMAGE: [Visual Capitalist](#)



PRIVATE SECTOR



PUBLIC SECTOR (OPEN DATA)



NOT FOR PROFIT SECTOR

## OVERVIEW

Visual Capitalist is one of the fastest growing online publishers globally, focused on topics including markets, technology, energy and the global economy.

\*\*special focus on Big Data for Social Change

## THE CHALLENGE FOR DATA VISUALISATION

Every day a staggering 2.5 exabytes of data is generated making our world increasingly difficult to understand. In this case study it was important to explain the problem of the plastic pollution in oceans.

In February of 2018, a dead sperm whale [washed up](#) along the picturesque shoreline of Cabo de Palos in Spain. Officials noted that the whale was unusually thin, and a necropsy confirmed that the whale died from an acute abdominal infection. Put simply, the whale ingested so much plastic debris – 67 lbs. worth – that its digestive system ruptured.



# INTERVENTION

## DATA STORYTELLING EVOLUTION

The Visual Capitalist aims at highlighting the bigger picture through data-driven visuals, with the goal to help cut through the clutter and simplify a complex world. In order to explain “The Plastic Problem” visually it uses a, infographic which was created by [Custom Made](#). Even though it was created in 2015 it helps put the growing marine debris problem in perspective.

## DATA VISUALISATION SOLUTION IMPLEMENTATION

The infographic created by Custom Made helps to focus on the exponential growth linked to the presence of plastic in our seas. The expedient of the data visual and the use of bright colors, highlights precisely the data relating to the theme. The graphs demonstrate the evolution of the situation from 1950 to 2008 clearly by highlighting the problem and the seriousness of the situation.

- Collection/analysis of statistical/scientific data
- Stakeholder analysis
- Identification of the most meaningful/indicative data
- Development of story telling and accompanying text
- Brainstorming on the type of outcomes to be produced
- Search for useful tools to analyze data in a user friendly way
- Revision of the drafts of the project

### TOOLS:

- Use of graphic programs such as Illustrator and Indesign
- Use of spreadsheets for statistical data

## OUTCOME

## ENHANCING THE COMMUNICATION OF THE BIG DATA STORY

The situation of the presence of plastic in the ocean has worsened year after year until becoming critical. The amount of plastic and sea creatures that have died from it is growing exponentially. Custom made highlights this problem in a clear and exhaustive way by efficiently presenting the impact that people have on marine life



## KEY COMPETENCES

Custom Made uses a type of communication based on infographics and illustrations in order to highlight and make readers understand the most important data in a practical way. The icons, graphics and the use of colours allow the user to focus on the important data and on what the institution is interested in communicating. Custom Made can be regarded as best practice in communicating detailed data through visualization, use of compelling and very accessible infographics.

Competences in the following areas are needed:

- Data Set preparation
- Information Design
- Storytelling
- Use Tools and Digital Platforms for Big Data Visualisation
- Use of Illustrator for the creation of the infographics

## VISUAL CAPITALIST: THE DATA VISUALS





# Spiraling Out of Control

MAY 18, 2015 by CustomMade



Shoppers worldwide use approximately **500,000,000,000** single-use plastic bags annually

That's about **1 million bags every minute** across the globe or **150 bags every year** for every person on earth



If you joined them end to end, the bags would circumnavigate the globe **4,200 times**



It takes just **4 family shopping trips** to accumulate **60 shopping bags**



A plastic bag has an average working life of **15 minutes**



Only **1 in 5** plastic water bottles are recycled



Americans throw away **35 billion** plastic water bottles every year

## Plastics Under Sea Level

Plastic has been found in all of the major oceans, not just areas of human habitation

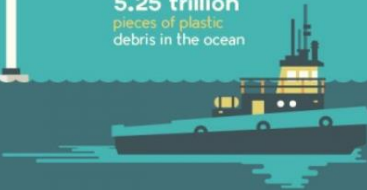
Every year, **64 million** tons of plastic are dumped into the ocean



This is the same as **1,988 miles** of trucks loaded with plastic

There are an estimated **5.25 trillion** pieces of plastic debris in the ocean

Of that, **269,000** tons float on the surface



And around **4,000,000,000** plastic microfibers per square kilometer cover the deep sea

100,000 marine creatures die every year from plastic entanglement



x10,000

Entanglement rates of up to 7.9% have been discovered in some species of seal and sea lions



31 species of marine mammals are known to have ingested plastic



Roughly **1,000,000** sea birds also die from plastic consumption or entanglement



At least  $\frac{2}{3}$  of the world's fish stocks are suffering from plastic ingestion

A plastic bag can kill fish and animals because it does not biodegrade



When the animal dies, the plastic bag is released into the environment again



Another animal could fall victim to the same fate



Plastic breaks down into smaller and smaller pieces (though never fully degrades)



Those smaller pieces enter the food chain and release chemicals into the fish that eat them



# Google, Year in Search

Global



PRIVATE SECTOR



PUBLIC SECTOR (OPEN DATA)



NOT FOR PROFIT SECTOR

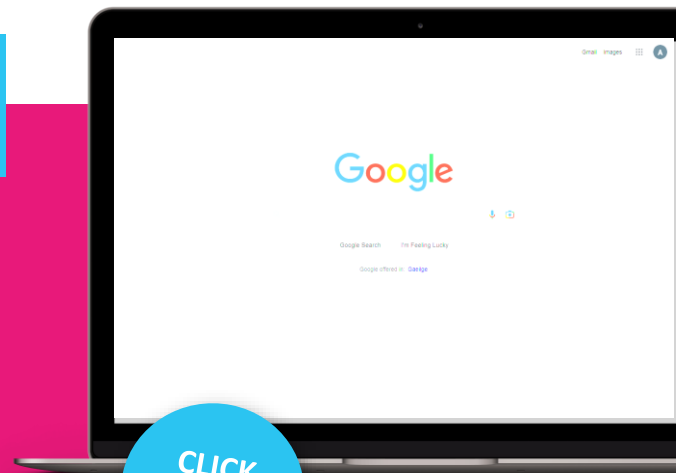
## OVERVIEW

Google is a multinational technology company focusing on search engine technology, online advertising, cloud computing, computer software, quantum computing, e-commerce, artificial intelligence, and consumer electronics. It has been referred to as one of the world's most valuable brands due to its market dominance, data collection, and technological advantages in the area of artificial intelligence.

## THE CHALLENGE FOR DATA VISUALISATION

Google is very well known as a search engine. While very useful for the individual user in terms finding what they need, the search enquiries themselves would seem to be unconnected.

What could people possibly learn from the millions of Google searches which take place each day? inclusive digital innovation.



CLICK TO VIEW

# INTERVENTION

## DATA STORYTELLING EVOLUTION

From 2002 to 2011, Google published an annual review of what people were searching for called 'Google Zeitgeist'. Since 2013, this annual review has been given the title 'Year in Search'.

Google Zeitgeist was a snapshot of the searches that people from around the world made on Google. Google provided an annual report of the topics that had most interested and moved web users for nine years, based on the searches that had been made, and these statistics were broken down by country and subject matter.

## DATA VISUALISATION SOLUTION

Since 2013, this concept has continued under a new name – **Year In Search**. You can either watch the annual review in a short video or take a look at the top 100 search queries. While this generally refers to one's own country, a global perspective on the search landscape is also available. We've linked the global views below.

Year in Search can also be accessed via the Google Trends service, as the Trends data provide the basis for the 'Year in Search' articles.



## ENHANCING THE COMMUNICATION OF THE BIG DATA STORY

Each year, Google launches its 'Year in Search' overview, which provides a snapshot of the key interests and trends throughout the year, based on Google Search activity.

It provides a quick dose of recent nostalgia. The Google summary of 2022 reads:

"Wordle was the top trending search globally, as guessing five-letter words every day became a way of life. We also saw pop culture continue to leave its mark as we searched for "how to become a fighter pilot" thanks to "Top Gun: Maverick," and how to learn new languages, specifically Minion, High Valyrian and Klingon. Most of us also couldn't seem to get songs from hit TV shows out of our head, with Ali Sethi's "Pasoori" becoming the top global Hum to Search song."

Google's Year in Search mini-site provides a full overview of the top search terms by topic category, each of which can be expanded out to the top 10, while any trend can be tapped to get more information, based on Google Trends data. Categories include:

- People
- Movies
- Musicians and Brands
- Recipes
- How to pronounce...

Apart from being an interesting overview of the past year (as well as earlier years), it also offers a wealth of insight for market research and the topics that drive the most interest,

which could help to guide companies' promotional strategies for the coming year. Listings can also be filtered by region, giving more specific, localised insights.

The Local Hub provides an overview of the top trends and searches in each region, while you can also scan through local trends via a map.

It is a good overview of the year, which could provide insight for planning. This data can be supplemented with more specific, niche and industry insights from Google Trends. A business can conduct a search of these in Trends and can build a custom industry trends list, based on Google Search, for the year.



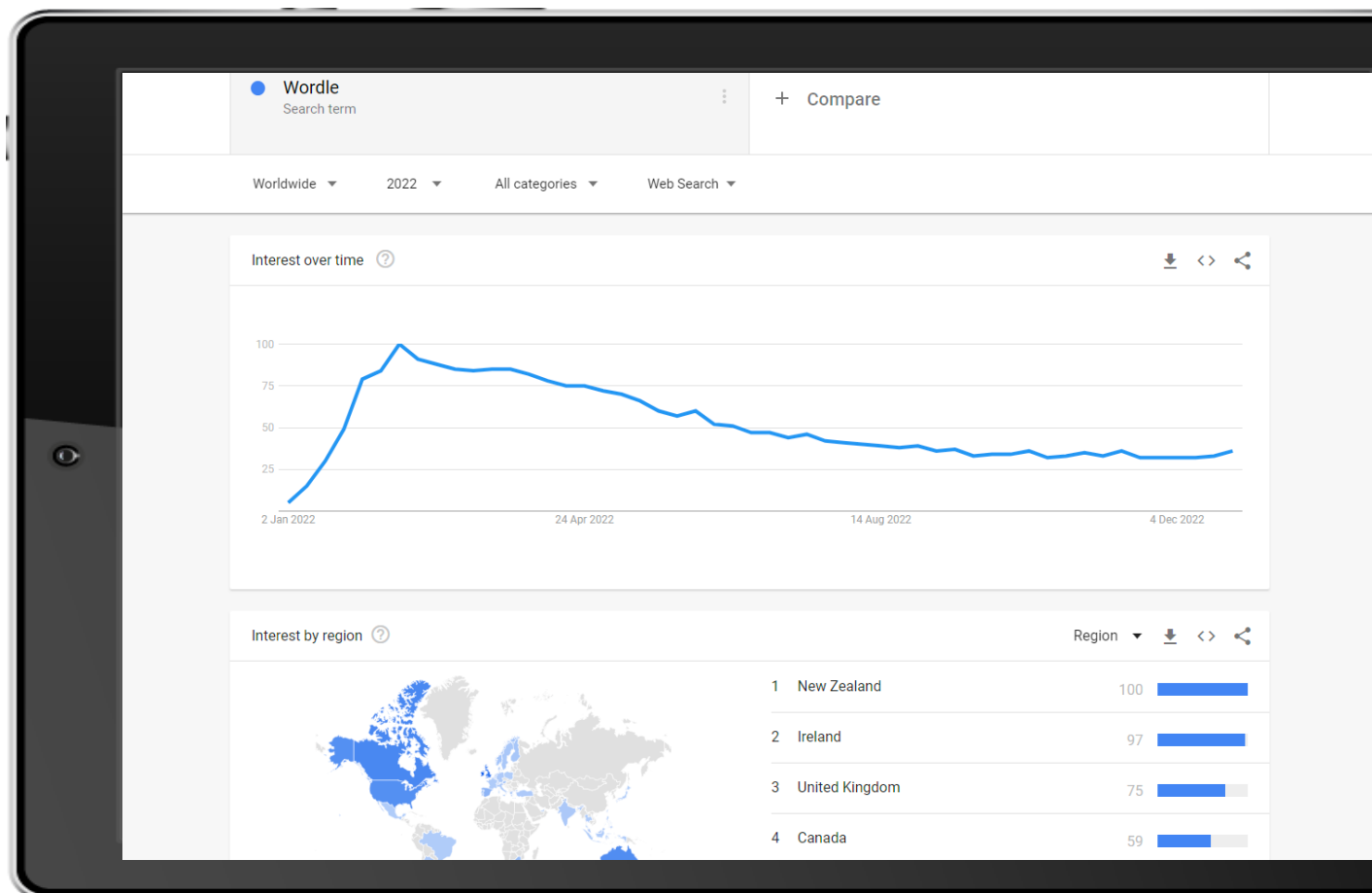
# KEY COMPETENCES

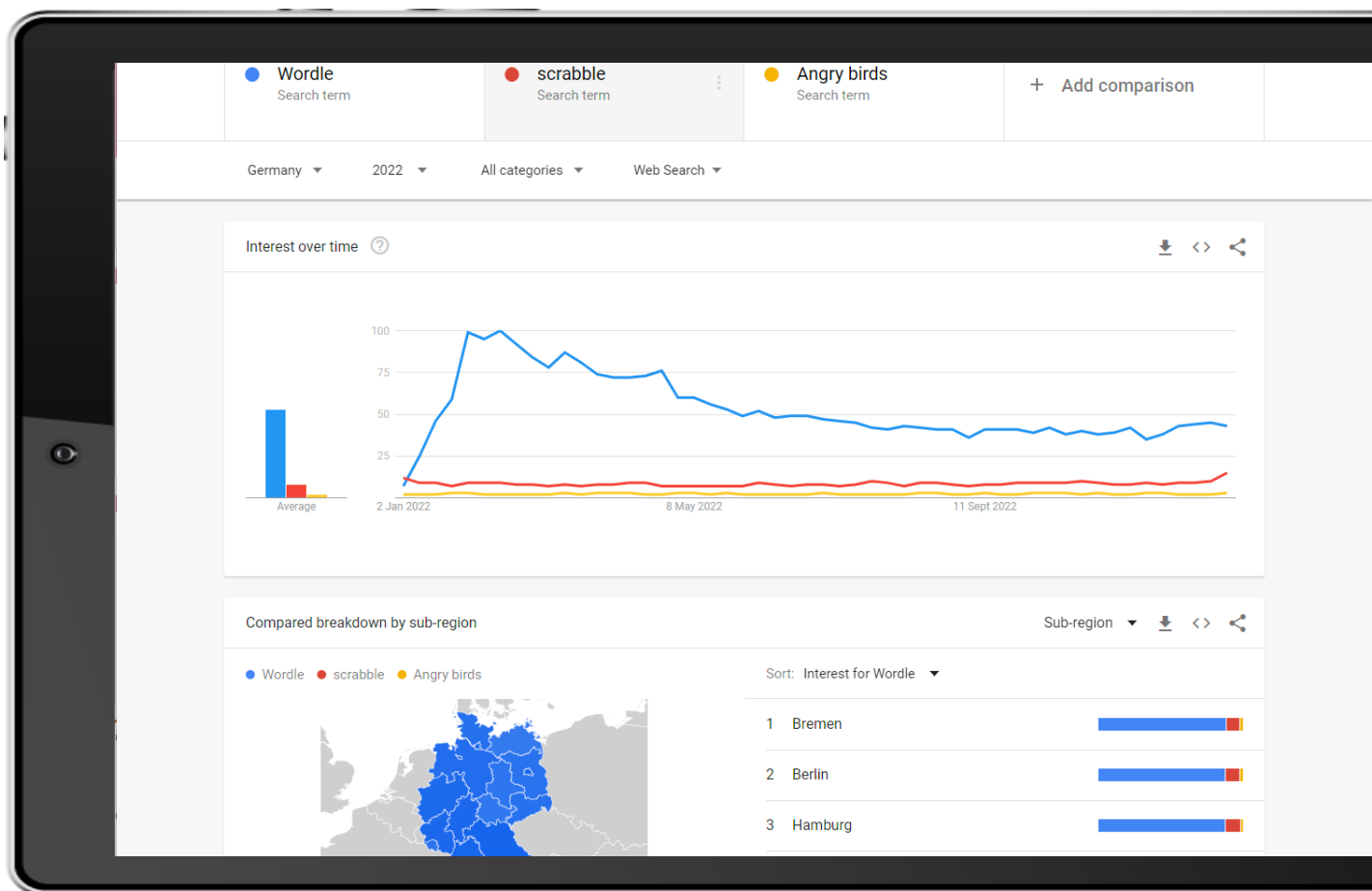
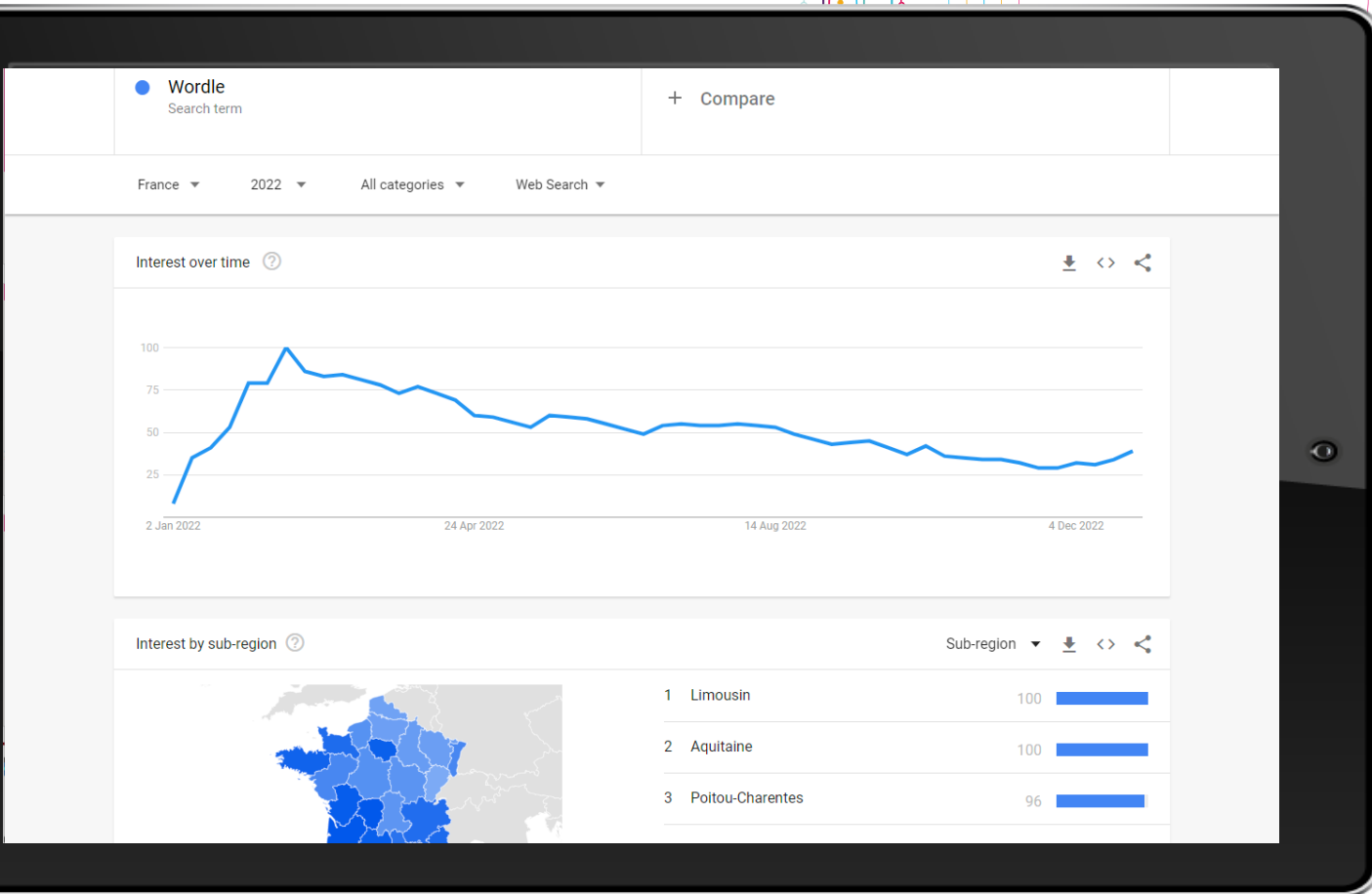
Google, A Year in Search is best practice because it identifies patterns of cultural and social significance and translates an incredible quantity of information into easily accessible and understandable data.

**The key competences and contributions that have been used in this data visualization solution include:**

- The answer to a social need was through a simple and broad tool.
- It is simple because it is easy to interpret through key words and lists which open out into more detailed and visualised information.
- It is extensive because it is possible at all times to go back to regional and even provincial data.
- The simplicity of reading and the possibility of delving into the contents are important characteristics for an adequate representation of a phenomenon.

## Google: THE DATA VISUALS







# The Atlas of Moons

National Geographic  
Global

## OVERVIEW

National Geographic is a popular global monthly magazine. Known for its photojournalism, it is one of the most widely read magazines of all time. The magazine was founded in 1888 as a scholarly journal, nine months after the establishment of the society, but is now a popular magazine. In 1905, it began including pictures, a style for which it became well-known. Its first colour photos appeared in the 1910s. The magazine is well known for its distinctive appearance.



PRIVATE SECTOR



PUBLIC SECTOR (OPEN DATA)



NOT FOR PROFIT SECTOR

## THE CHALLENGE FOR DATA VISUALISATION

National Geographic has always presented its information in a magazine format. Its use of visual imagery to accompany stories is well known. However, with a project such as the moons of the Solar System, the visual images required to cover the moons that we know, let alone the data for each one, could fill several volumes of a book. How could this information be presented in an interesting, informative and dynamic way?



CLICK  
TO VIEW



## DATA STORYTELLING EVOLUTION

It was decided to dedicate a significant section of the National Geographic website. The site was timed to align with the 50th anniversary of the Apollo landing. “The Atlas of Moons” was to celebrate our moon alongside all of the moons in our solar system. While our moon was seen as a marvel, many moons throughout the solar system are exotic objects in their own right. Nearly 200 moon orbits were to be simulated, and major moons were to be mapped as interactive 3-D globes. It would also serve as a reference to what is scientifically interesting about moons throughout the solar system, a crosslinked interactive database of sorts. It was designed to be readily navigable and comprehensible for a public audience but also to dive deeper for those who want to go the distance.

For a majority of the moons, geographic feature names had already been compiled on flat maps within the National Geographic book Space Atlas by Matthew W. Chwastyk. However, these feature names would need to be adapted for 3-D globes and done so in a way that adhered to our map-style conventions. A system had to be created that leveraged traditional mapmaking tools while being able to render them interactively in a 3-D web environment. Cartography for each moon would be explored as fully as possible.

## DATA VISUALISATION SOLUTION

The site is a WebGL-based, front-end interactive, coded with JavaScript and using GSAP, React and three.js. Python scripts were used for image and data pre-processing.

Much about the dynamics and science of moons throughout the process. The scale of moons across space and time varies dramatically: some moons closer to their planets complete their orbits within hours, and some that are millions of miles away from theirs take the course of a year. Figuring out how to visualize disparate time and distance scales within the same interactive was a learning experience in itself.

Any celestial body in the atlas that looks like a sphere is actually a cube. It's a 3-D graphics technique to avoid distortion at the north and south poles. Global image mosaics are first split into six images with specialized map projections and applied to each face of a cube. The cube is then inflated into a sphere.



## ENHANCING THE COMMUNICATION OF THE BIG DATA STORY

Our solar system collectively hosts over 200 known moons, some of which are vibrant worlds in their own right. A tour could now be taken of the major moons in our celestial menagerie, including those that are among the most mystifying—or scientifically intriguing—places in our local neighbourhood.

The Atlas of Moons is National Geographic's interactive guide to every single moon in the solar system (except for a few moons of dwarf planets and asteroids that we know next to nothing about). The big ones get interactive globes and additional description (as do Mars's moons Phobos and Deimos, because we have imagery for them). This is an extremely resource-intensive page that will use gigabytes of RAM if you let it.

The idea was to create something that is readily scrollable and skimmable without the use of a menu, but also selectively navigable for those who want direct access to specific systems and moons. Scrolling, its a linear experience that keeps navigation simple, but the site can also be navigated non-linearly to explore moons that share similar scientific interests. For those who want to go deeper,

clickable tags reveal additional content.

Big data visual design is handled in quite a unique way here. The moons themselves, presented in three dimensions with major features and points of interest, are a form of data visualisation. These data are presented almost as objects to be handled and understood. At the same time, the location of the moons and their orbits are presented interactively and dynamically, in motion, so that one gains a real sense of where they are and how they relate to each other.

Engaging with the website is an exciting and memorable experience. It is very easy to recommend to other people. With strong visual and interactive features it is open to being played with by people of all ages, while providing a lot of in-depth information for those who want it immediately or those who will discover it over time.

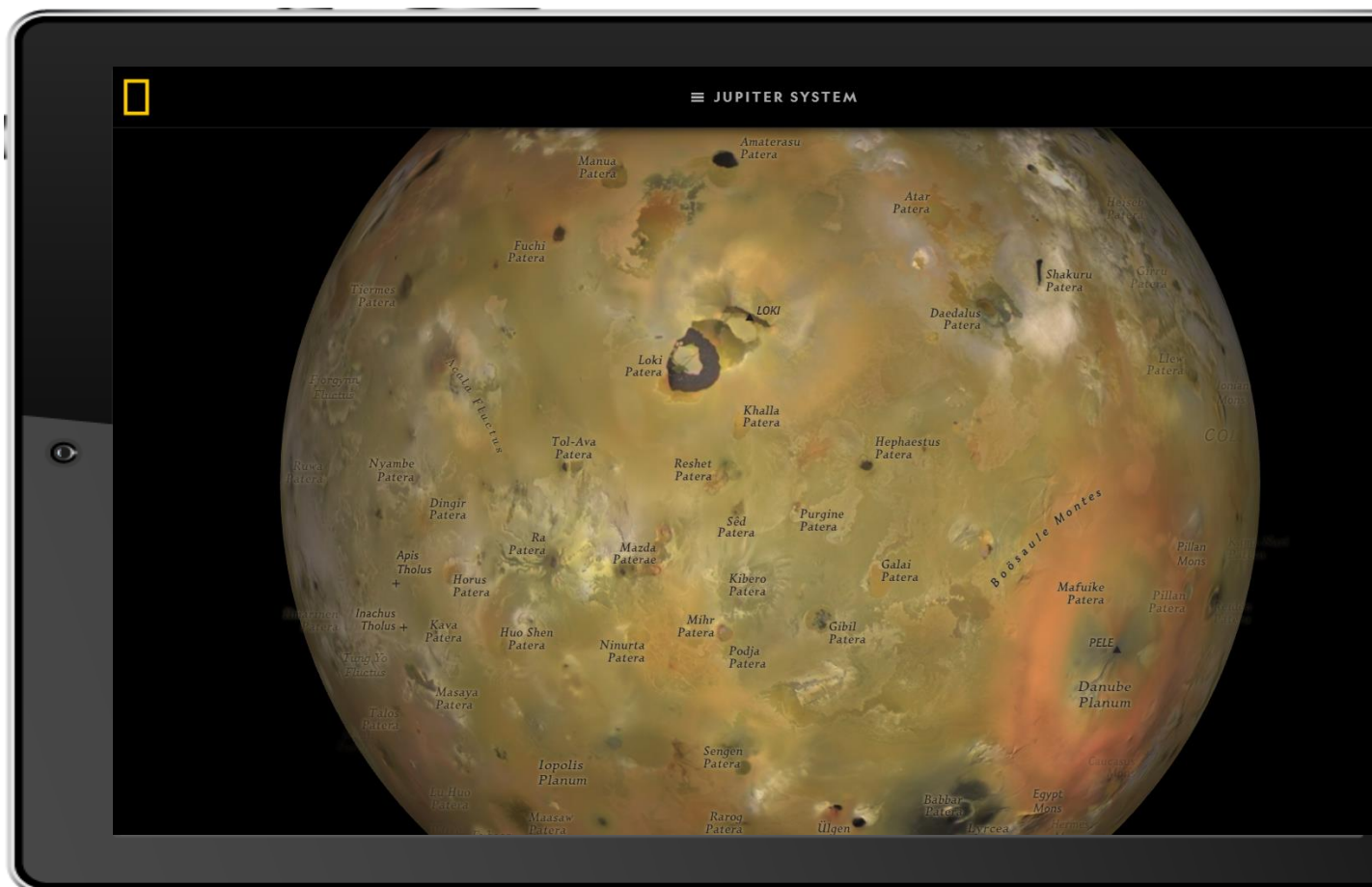
## KEY COMPETENCES

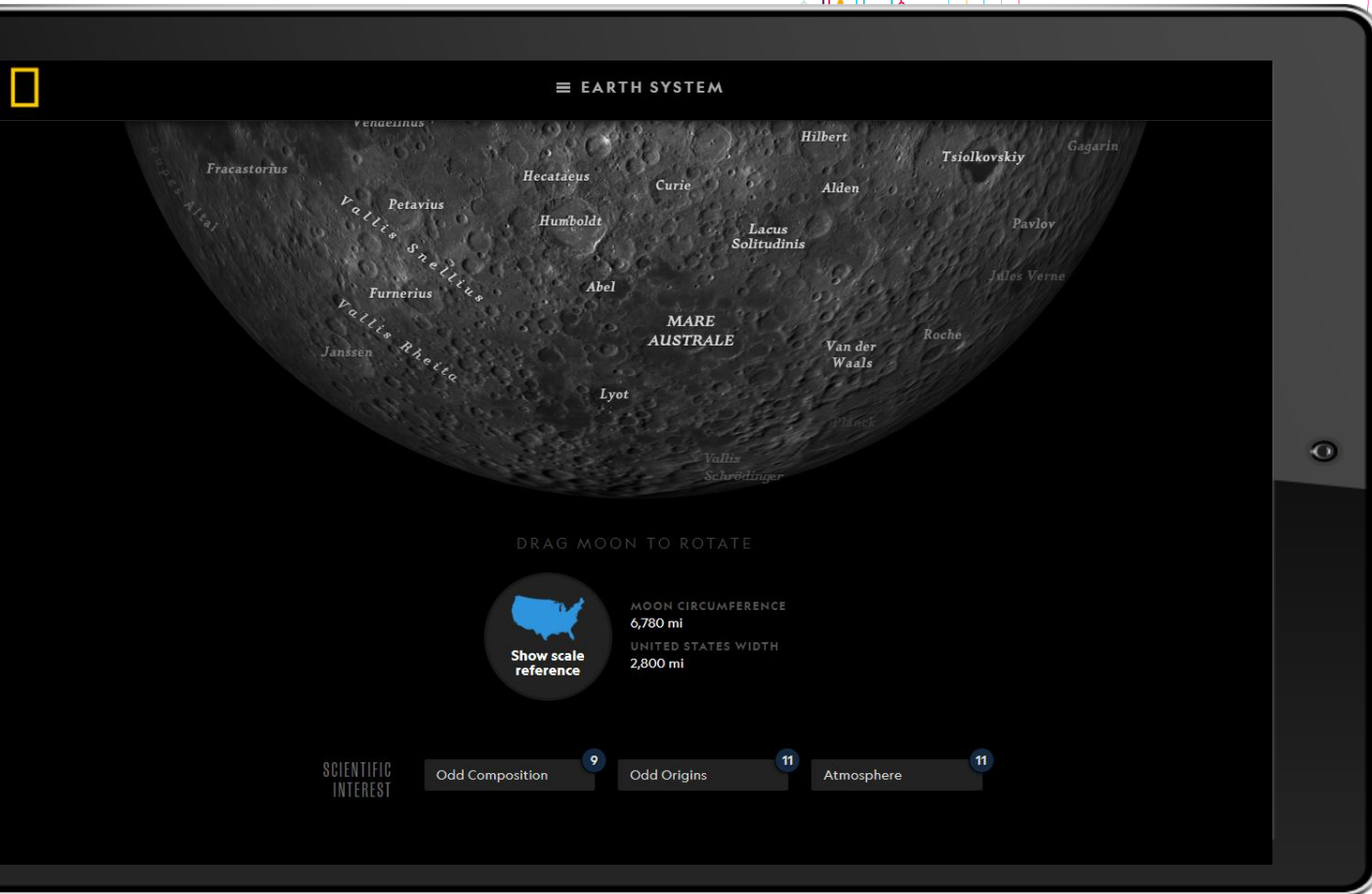
The Atlas of Moons is best practice because it takes what could be difficult and unattractive information and turns it into an exhilarating voyage of discovery.

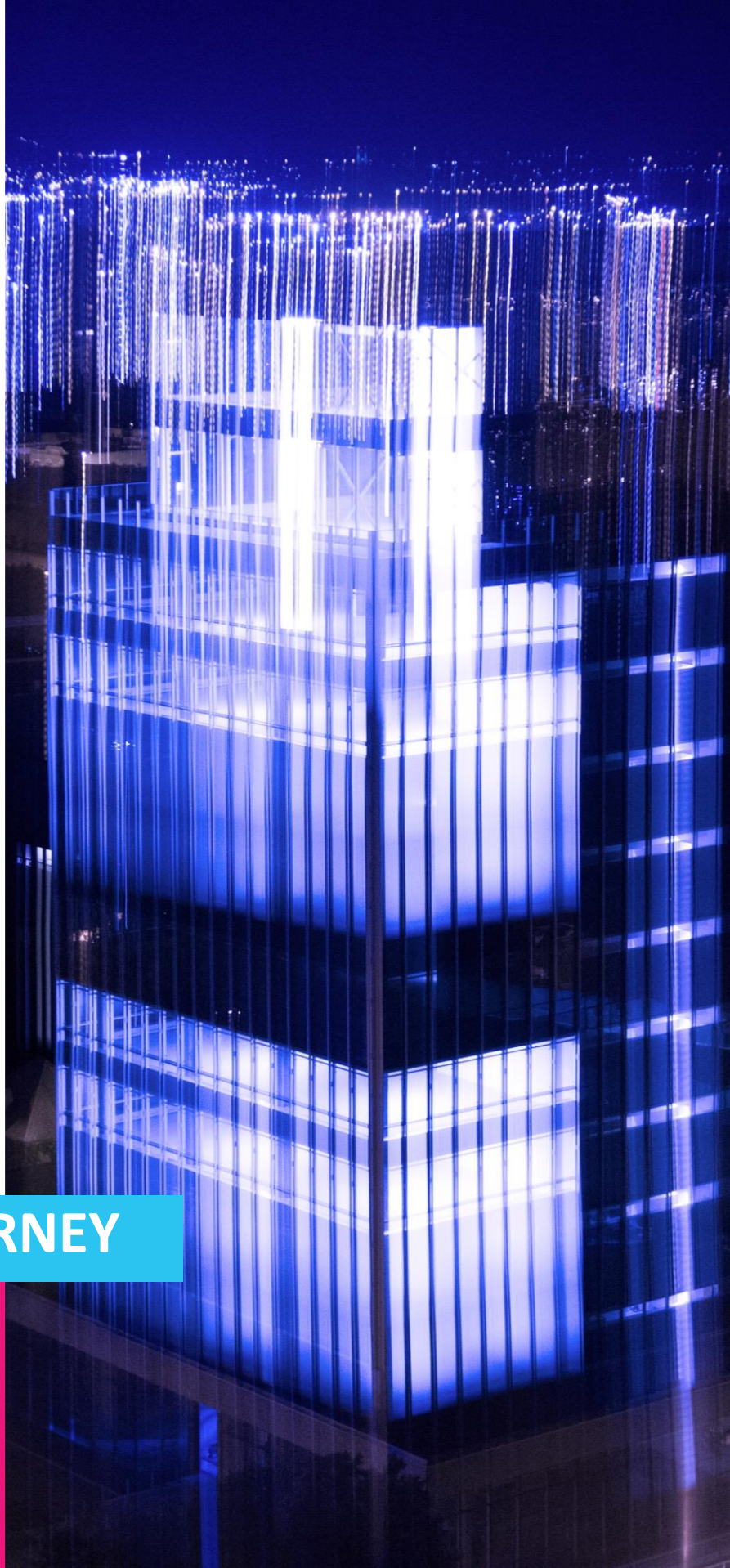
**The key competences and contributions that have been used in this data visualization solution include:**

- Software was used to present data in an innovative and dynamic way.
- It is simple because people can scroll and click on all the visuals to gain access to further detailed and visualised information.
- It is extensive because it contains as much information as possible about the known moons of the Solar System.

## The Atlas of Moons: THE DATA VISUALS







**FOLLOW OUR JOURNEY**

[www.bigdatavisual.eu](http://www.bigdatavisual.eu)

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