



TALENT GARDEN INNOVATION REPORT

Discover the trends, discussions
and game-changing technologies
that are defining innovation in Europe



**Extensive data-driven analysis based
on European Twitter conversations in 2019**



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INTRODUCTION

In recent years innovation is perhaps the most used "buzzword" in the technology sector and the business world in general. It is one of those words that, because of its excessive and diverse use, it has largely lost its original meaning.

This extensive usage makes the word very interesting, especially while investigating the semantic contexts associated with its use. Twitter has always been the social media platform that, more than others, is able to capture discussion trends. Peaks of conversations on specific themes that at regional or on a global level identify the most relevant topics at any given time. In this report, we will look at the areas of discussion and topics associated with the word "innovation" and all its various translations. We discover how Twitter users define innovation and what are the game-changing technologies, trends and conversations that are occurring around Europe, and that will continue to evolve in 2020.

This is the fifth edition of the Talent Garden Innovation Report. An annual study of Twitter conversations at a European level, to comprehend the most commonly discussed issues that are related to the English word "innovation" or the different translations from all of the European Union languages during 2019.

EUROPE OVERVIEW

882,458 tweets about innovation were posted in the last year from 180,529 unique users (59% men and 41% women) featuring hundreds of hashtags. The word innovation, seen from the Twitter conversation observatory, is linked to themes surrounding emerging technologies that will impact our lives, especially advancements in AI and its capabilities in healthcare, finance and other sectors.

When tweeting about innovation, in Europe, the following hashtags are the most significant, and we also discovered the visual representation through the use of emojis.

Top hashtags and emojis surrounding innovation in Europe

HASHTAG	FREQUENCY	MOST POPULAR
#AI	402,393	
#STARTUP	184,957	
#IOT	166,820	
#BIGDATA	141,812	
#DIGITALTRANSFORMATION	91,608	
#FINTECH	88,553	
#INDUSTRY40	68,270	
#ROBOTICS	67,106	
#BLOCKCHAIN	59,765	
#CYBERSECURITY	32,777	

KEY FINDINGS

From this advanced analysis of the most discussed content, the key threads of discussion that have catalysed the conversations in Europe are:

Artificial Intelligence, robots and the future of work

Artificial Intelligence is a key driver of the Fourth Industrial Revolution. It is already driving cars, stocking warehouses and will soon be able to care for the young and elderly. Our workplaces are also changing – and not necessarily for the worse a million jobs may be lost to automation, but even more, additional new roles will be created. AI must complement and augment human intelligence, not replace it. So designers and computer scientists all need to understand the ethical and human-centred implications of how to create and use robots and AI. On 8 April 2019, the High-Level Expert Group on AI presented “Ethics Guidelines for Trustworthy Artificial Intelligence” containing ethical guidelines for the development of reliable Artificial Intelligence.

Healthtech

One key development that will have one of the most significant impacts in our lives is new technologies within the healthcare sector. AI’s ability to read both medical images and medical records at a hyper-fast rate that is impossible for humans, could save a vast amount of time that radiologists and cardiologists spend diagnosing disease. AI can now diagnose skin cancer more accurately than experts, it will be able to pick up the signs of depression and other mental disorders by analysing how people use their smartphones and enable faster development of life-saving drugs. Finally, AI has the potential to truly empower us to make better decisions regarding our health. For example, wearable technology, collecting and analysing everyday information (sleep pattern, heart rate etc.) could inform people at risk of certain diseases long before that risk becomes critical, saving lives and billions in costs.

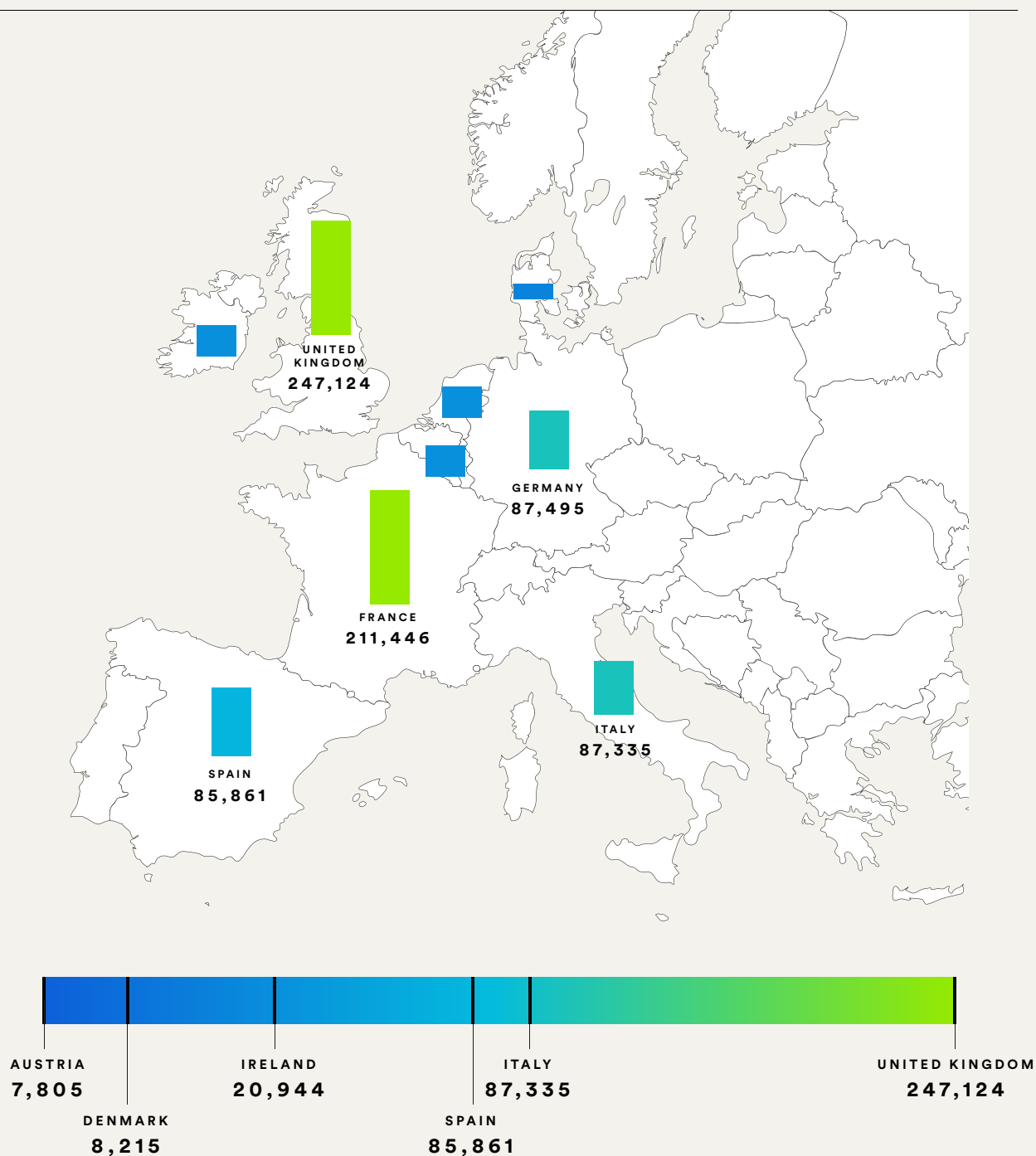
Fintech and the banking sector

The scale and speed of the development in regulations and customer behaviour are creating an important discontinuity in the banking sector. Hybrid Cloud, the combination of open platform banking and open APIs, Robotic Process Automation (RPA), Instant payments, Artificial Intelligence, Blockchain and Prescriptive Security are the most critical technologies capable of shaping the future of the banking ecosystem. Fintech in Europe is the largest investment category and proven to be more than a buzzword; banking and payments, insurance, real estate and enabling financial technologies are the most important verticals of financial technology.

DATA MAP

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EUROPE

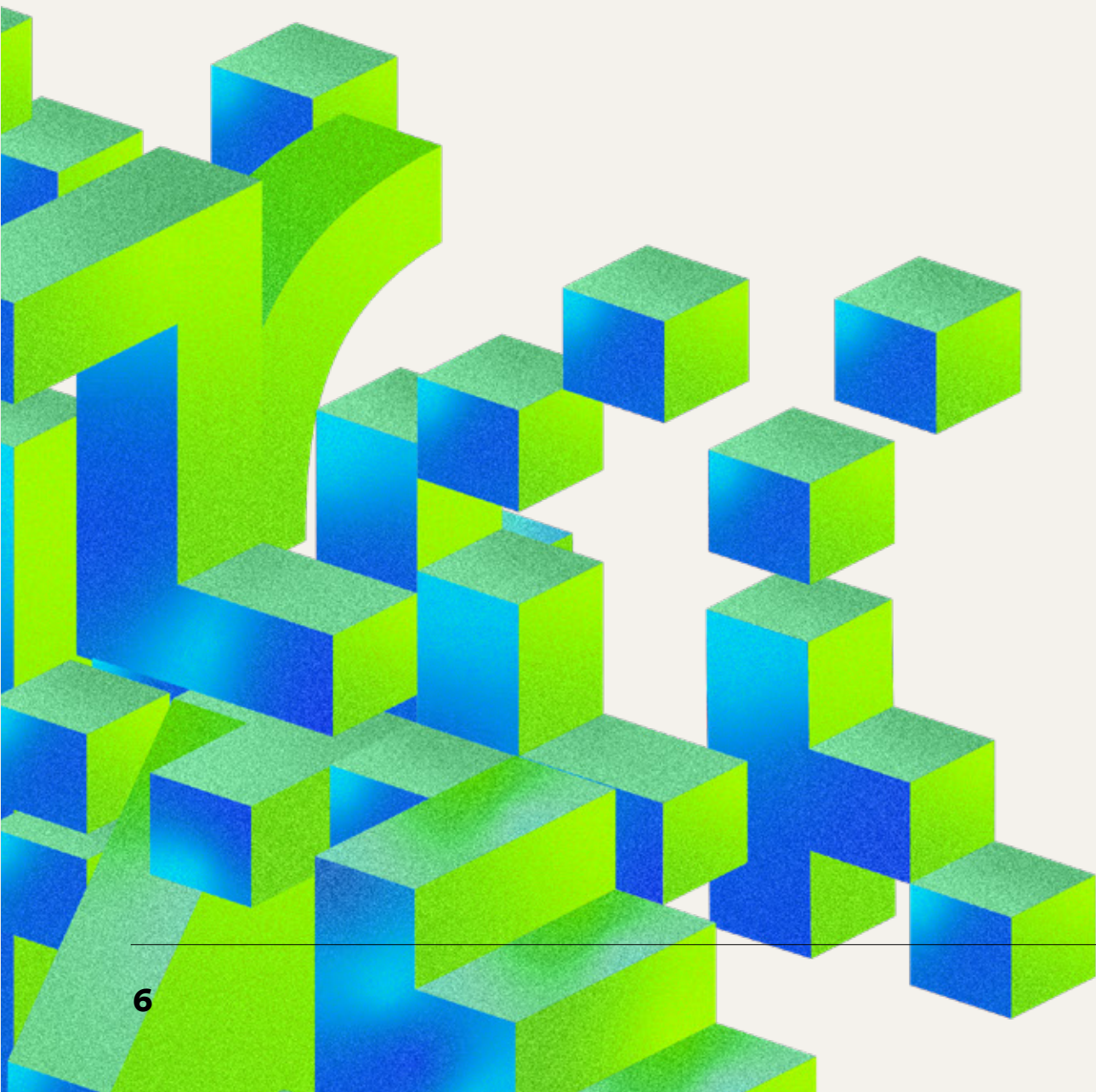
The United Kingdom dominated the conversation around innovation with 247,124 tweets. Amounting to almost one-third of all tweets surrounding innovation from Europe.



COUNTRY INSIGHTS

Here you will find a deep dive with the data from five countries where Talent Garden operates.

We have done an analysis on Italy, Spain, Austria, Ireland and Denmark following the order of the countries who tweeted the most.





INNOVATION IN ITALY

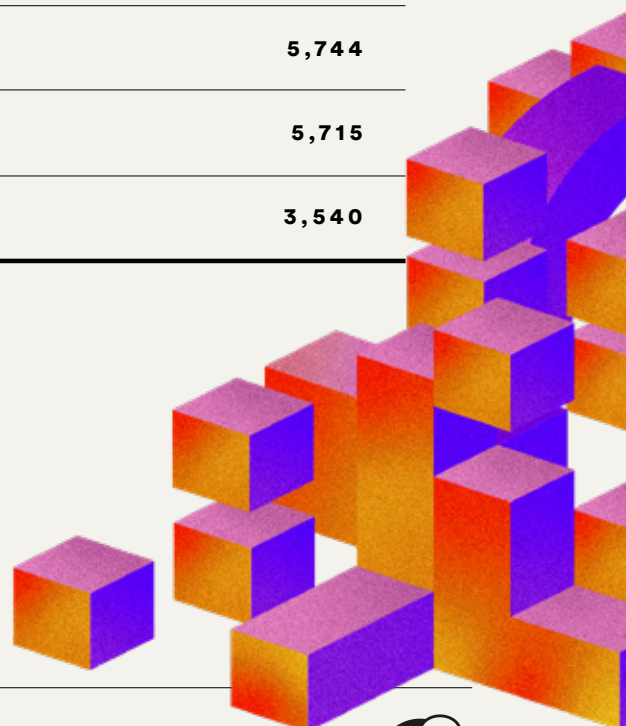
ITALY OVERVIEW

87,335 tweets about innovation were posted in the last year from 12,386 unique users (67% men and 33% women) featuring hundreds of hashtags.

When tweeting about innovation, in Italy, the following hashtags are the most significant, and the most popular emoji is 🚀.

Top hashtags surrounding innovation in Italy

HASHTAG	FREQUENCY
#AI	30,208
#STARTUP	29,300
#IOT	13,256
#FINTECH	8,537
#BIGDATA	8,395
#DIGITALTRANSFORMATION	7,440
#BLOCKCHAIN	6,758
#ROBOTICS	5,744
#INDUSTRY40	5,715
#5G	3,540



KEY FINDINGS

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ITALY

From this advanced analysis of the most discussed content, the key threads of discussion that have catalysed the conversations in Italy are:

National Innovation Fund, startups and innovative SMEs

The National Innovation Fund, established by the Minister of Economic Development, Welfare and Social Policies, has a starting budget of €1 billion. The operational tool used by the fund is the venture capital, meaning the investments, both direct and indirect, aiming at supporting startups, scaleups and innovative SMEs. The fund is only the latest in a series of pro-innovation measures by the government. Among these, there's a voucher for innovation managers: up to €75 million in 3 years to support the technological and digital transformation of SMEs and business networks.

Blockchain and Made in Italy

Italy, Sweden and the Czech Republic will share the next one-year presidency of the European Blockchain Partnership. The Ministry of Economic Development (MiSE) has launched a pilot project called "The Blockchain for the traceability of Made in Italy", with the support of IBM and the collaboration of some companies in the textile and clothing sector. This experimental project doesn't actually use a real blockchain, but a simple distributed register (distributed ledger technology) and is designed to grow and to be replicated in other industrial sectors.

5G and smart cities

In Italy, as in many other countries, we hear a lot about smart cities, but the fact is, they don't really exist yet. Nowadays, the advent of new technologies such as Artificial Intelligence, 5G networks, Cloud supports, and Massive Machine Type Communications, or MMTC are the next step in making this a reality. The result of machines communicating with one another on a large scale and allowing information gathered through sensors (IoT) to be transmitted in real-time to central monitoring locations would hold huge benefits. The Ministry of Economic Development (MiSE) in March launched a call dedicated to 5G infrastructure with a budget for experimental projects of €5 million for applied research and technology transfer related to it. According to many experts, 5G technology will be one of the building blocks of our future digital society and will transform the way businesses operate, from faster transactions in financial services to changing the way manufacturers create and distribute their products. This being said Milan is confirmed for the sixth consecutive year as the smartest city in Italy, followed by Florence and Bologna, according to ICity Rank 2019, the annual report of FPA.

COMPARING CONVERSATIONS

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ITALY

The conversation around innovation does not just change from country to country, but in some cases, also between male and female. Here you can find the top hashtags used by men and women.



#STARTUP	5,262
#AI	3,744
#IOT	2,609

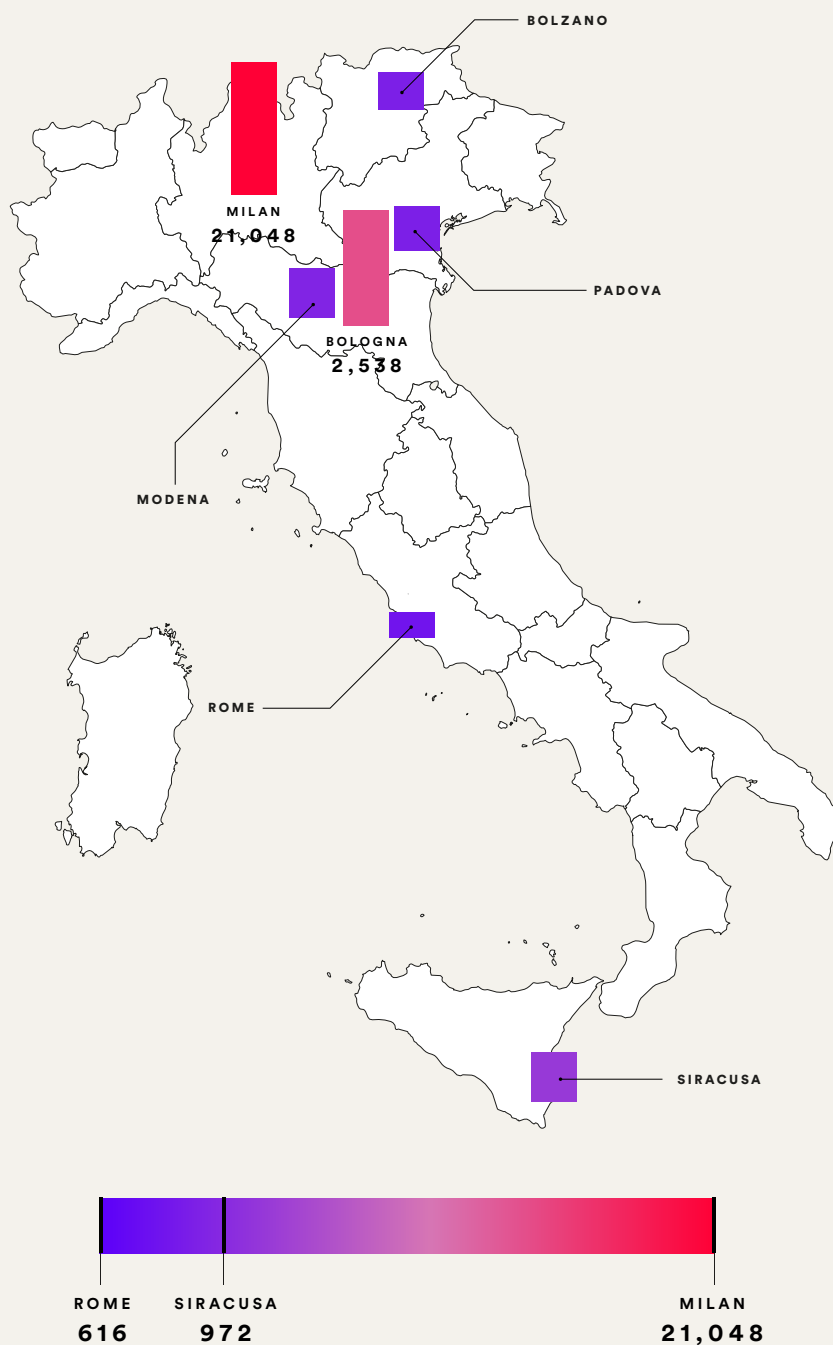
WOMAN

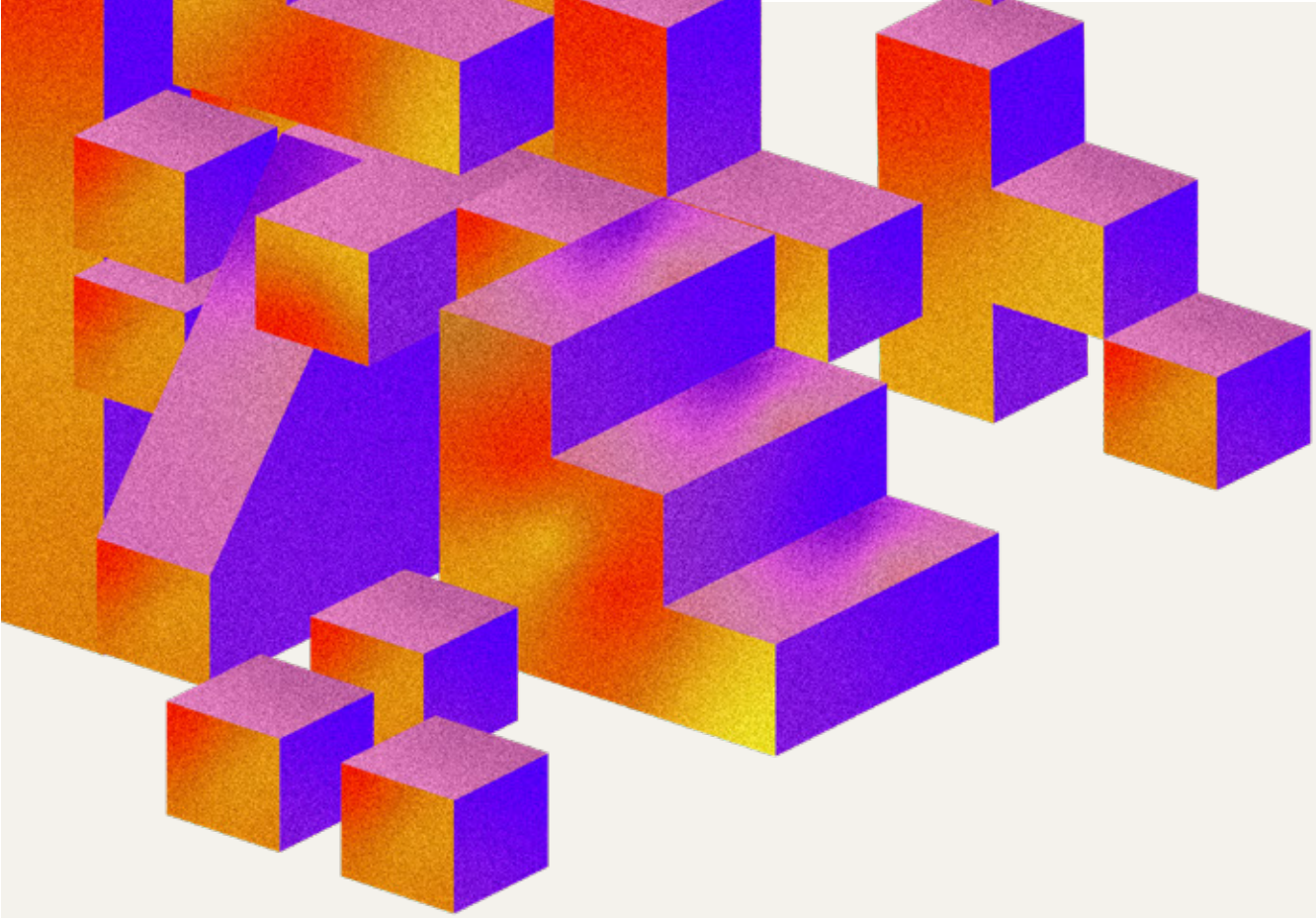
2,829	#STARTUP
1,875	#AI
1,164	#FINTECH

DATA MAP

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ITALY

Milan is the central hub for discussions on innovation, but the conversation is widespread, including smaller cities and the South of Italy.





INNOVATION IN SPAIN

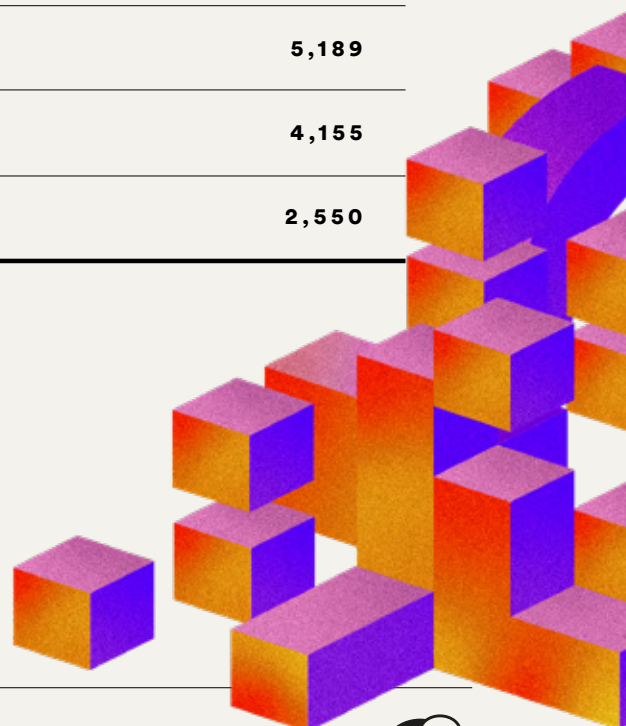


SPAIN OVERVIEW

85,861 tweets about innovation were posted in the last year from 24,458 unique users (55% men and 45% women) featuring hundreds of hashtags. When tweeting about innovation, in Spain, the following hashtags are the most significant, and the most popular emoji is 🚀.

Top hashtags surrounding innovation in Spain

HASHTAG	FREQUENCY
#AI	28,553
#STARTUP	14,539
#IOT	11,906
#BIGDATA	9,020
#INDUSTRIA40	8,435
#BLOCKCHAIN	7,452
#DIGITALTRANSFORMATION	5,790
#ROBOTICS	5,189
#FINTECH	4,155
#CLOUD	2,550



KEY FINDINGS

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SPAIN

From this advanced analysis of the most discussed content, the key threads of discussion that have catalysed the conversations in Spain are:

5G, Virtual Reality and sporting events

The iconic Nou Camp, home of FC Barcelona, is to become Europe's first stadium with dedicated 5G coverage. The 5G Stadium project developed by FC Barcelona and Telefónica will allow spectators to have an immersive experience wearing Virtual Reality glasses. Once this technology is fully operative, they will be able to watch and listen to the game as if they were on the field. And also thanks to 360-degree cameras connected to the 5G network fans watching at home will be able to view a live match as if they were in the stadium.

Call for Code

In October 2019 IBM announced that the Spanish startup Prometeo was the winner of the Call for Code 2019 Global Challenge. Prometeo had created a personal safety hardware-software solution that will help protect firefighters. Prometeo's team (a nurse, a fireman and three developers) developed a smartphone-sized device that straps onto the firefighter's arm to gauge things like temperature, smoke and humidity. The app monitors the cumulative effects of smoke and other toxic substances on firefighters' health. Temperature, humidity and smoke concentration are collected in real-time and are displayed on a dashboard at the fire command centre, recommending interventions when needed.

Mobile World Congress

Mobile World Congress (MWC) is the world's largest event for the mobile industry, hosted in Barcelona since 2006. Amina J. Mohammed, Deputy Secretary-General of the United Nations, in the course of one memorable speech, points out that technology and innovation are here to serve humanity. Investments and partnerships are required to ensure no one is left behind as we move into a 5G and AI world. In her opinion, if we want technology to enable an equitable, peaceful and just society, we have to find new ways to bring governments, industry and civil society together to boost the opportunities and better manage the unintended and negative consequences.

COMPARING CONVERSATIONS

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SPAIN

The conversation around innovation does not just change from country to country, but in some cases, also between male and female. Here you can find the top hashtags used by men and women.



#AI	1,600
#STARTUPS	1,386
#IOT	1,269

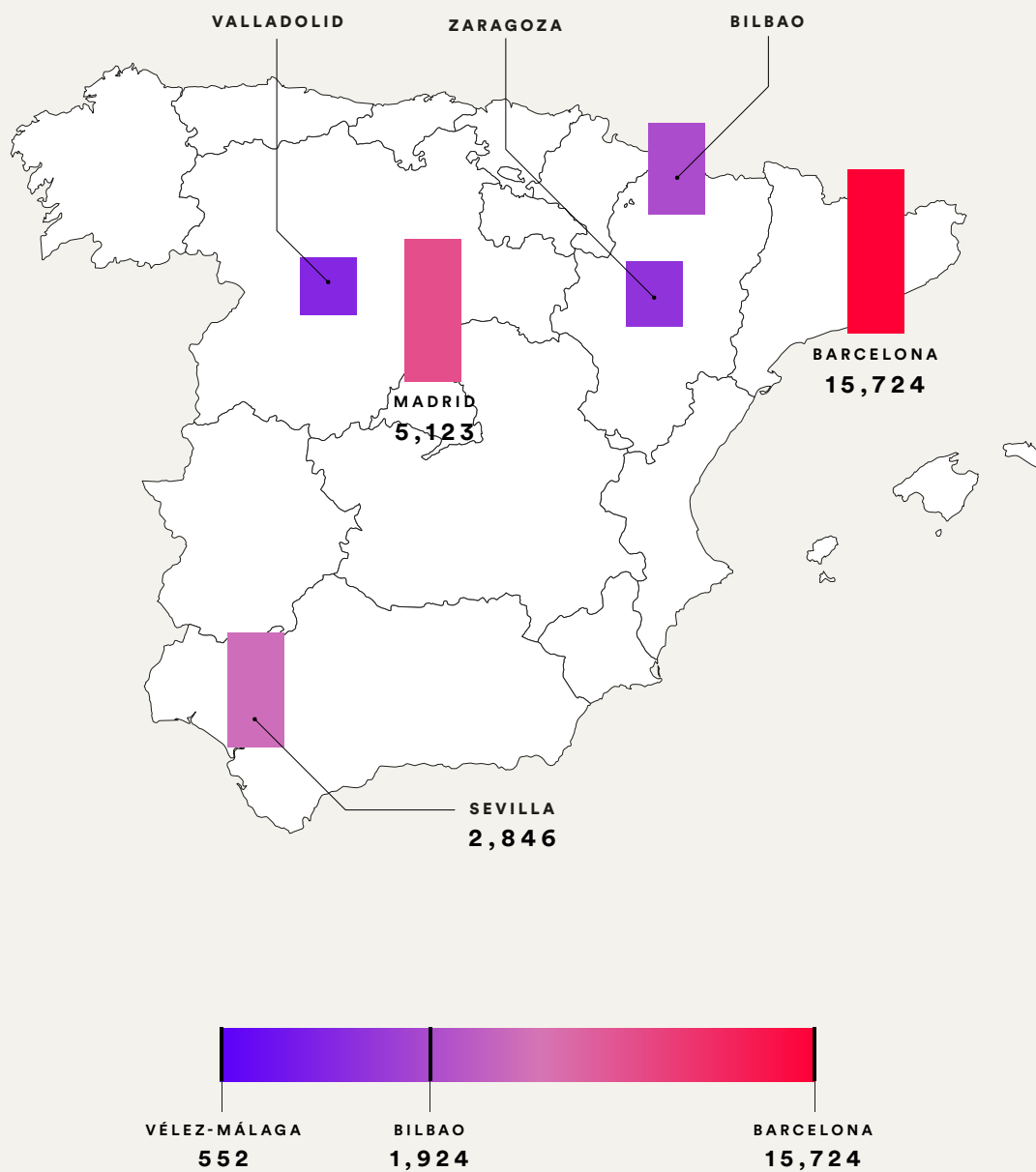


1,503	#AI
1,119	#IOT
1,035	#STARTUPS

DATA MAP

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SPAIN

The three cities that dominate the conversion in Spain on Twitter with almost 30% of all tweets are Barcelona, Madrid and Sevilla.





INNOVATION IN IRELAND

IRELAND OVERVIEW

20,944 tweets about innovation were posted in the last year from 5,309 unique users (59% men and 41% women) featuring hundreds of hashtags.

When tweeting about innovation in Ireland, the following hashtags are the most significant and the most popular emoji is 🏆.

Top hashtags surrounding innovation in Ireland

HASHTAG	FREQUENCY
#AI	7,861
#DIGITALTRANSFORMATION	4,813
#BIGDATA	3,189
#IOT	3,125
#STARTUP	2,714
#FINTECH	1,948
#INDUSTRY40	1,411
#BLOCKCHAIN	1,101
#FUTUREOFWORK	913
#ROBOTICS	885



KEY FINDINGS

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IRELAND

From this advanced analysis of the most discussed content, the key threads of discussion that have catalysed the conversations in Ireland are:

Finance & Fintech

Half of the world's top 50 banks are located in Dublin's International Financial Services Centre (IFSC), and Brexit uncertainty has prompted a further flourish in this area. In 2019, the government released "Ireland for Finance" - a new strategy with the ambition to grow the Fintech space in Ireland even further. A global survey of venture capital financing, published by KPMG, found that the Irish Fintech sector led the way in VC funding (€166 million) in the third quarter of the year.

Fintech in Ireland covers the whole spectrum of financial services and the technology industries. Success stories like Stripe, CurrencyFair, TransferMate, Realex Payments, Fenargo and FundRecs operate in Ireland alongside global financial services giants and major technology companies. According to 2019 FinTech Global, companies in Ireland have been responsible for 8.2% of the total investment in Europe between 2014 and H1 2019.

Medtech and SMEs

Ireland is home to 18 of the world's top 25 medical device manufacturers and is the second-largest country for exporting medical devices in Europe. In 2019, seven innovative Irish SMEs were granted European Innovation Council Accelerator funding (€1.5 to €2.5 million), along with another Irish company receiving EIC Pathfinder Pilot funding (up to €4 million). These Irish companies are developing potentially game-changing innovations such as revolutionary products to support breastfeeding, non-surgical treatments to restore heart valve function, and a project that uses Artificial Intelligence to manage patients at risk of diabetic foot ulcers.

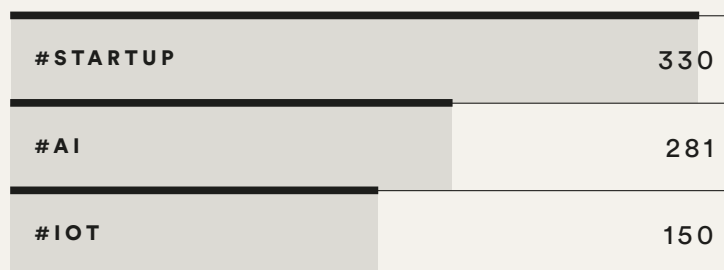
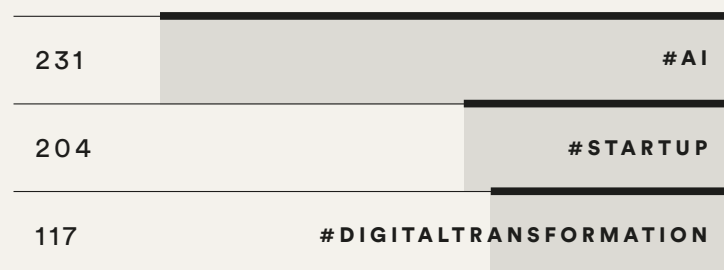
Future Jobs

Ireland is preparing for tomorrow's economy. In 2019, the Government launched a new economic pathway for Ireland based on embracing innovation and technological change, Artificial Intelligence, improving productivity, increasing labour force participation, and transitioning to a low carbon economy. Future Jobs Ireland 2019 was the first in a series of annual reports published that outlined the Government's ambition to enhance the resilience of the Irish economy and to ensure that future economic opportunities are taken.

COMPARING CONVERSATIONS

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IRELAND

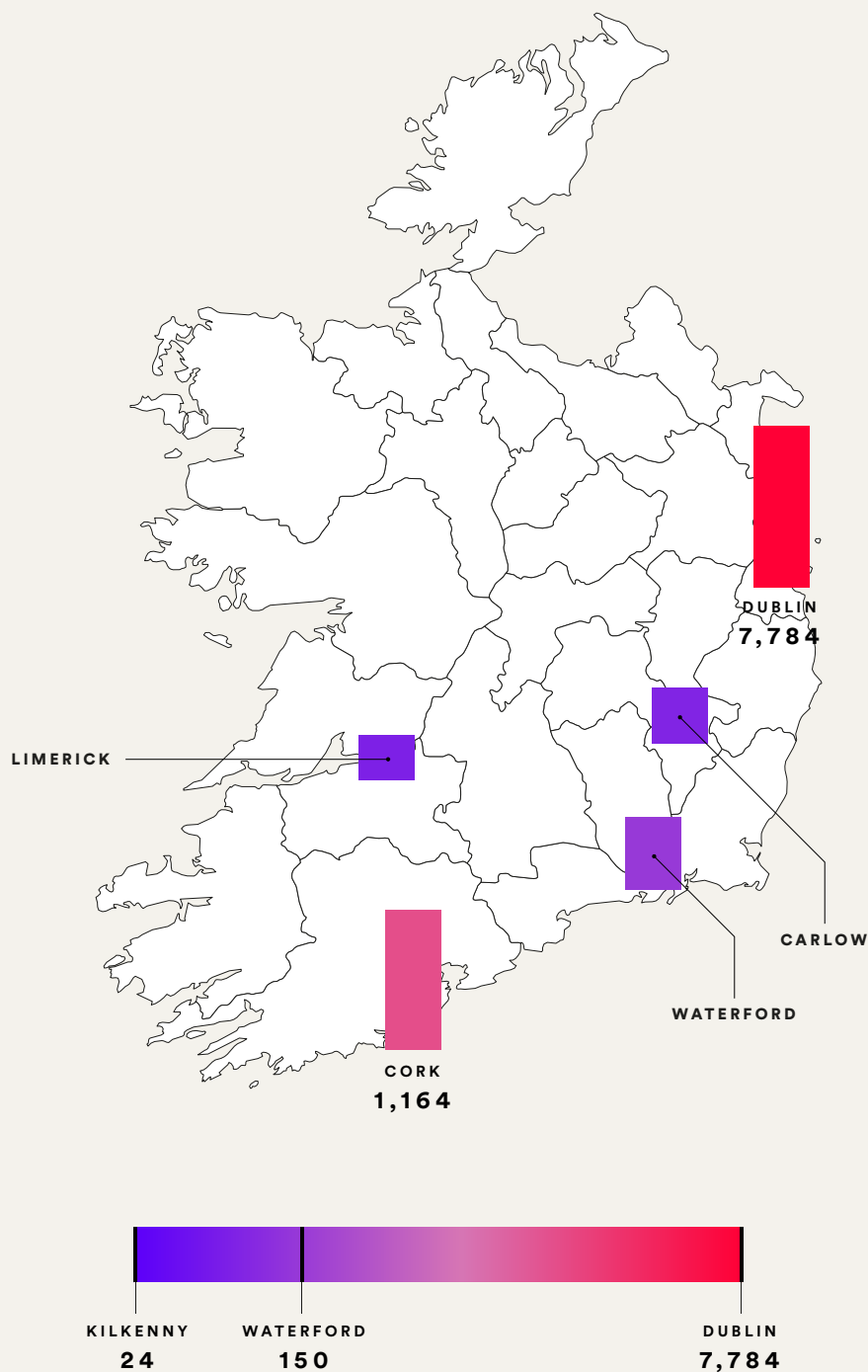
The conversation around innovation does not just change from country to country, but in some cases, also between male and female. Here you can find the top hashtags used by men and women.

**WOMAN**

DATA MAP

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IRELAND

Dublin is definitely a key city for the conversation around innovation in Ireland, but Cork is also growing, with an increase in tweets of 36% since 2018.





INNOVATION IN DENMARK

DENMARK OVERVIEW

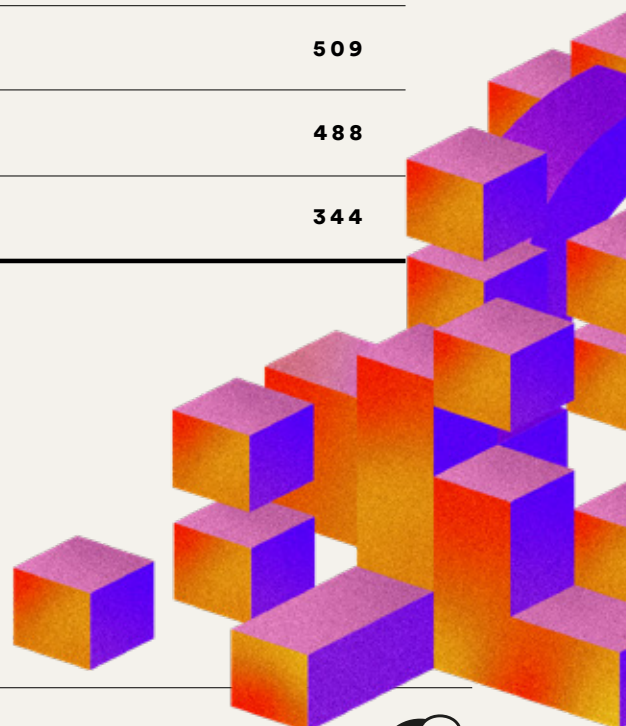
8,215 tweets about innovation were posted in the last year from 1,350 unique users (40% men and 60% women) featuring hundreds of hashtags.

When tweeting about innovation, in Denmark, the following hashtags are the most significant, and the most popular emoji is 🤖.

—

Top hashtags surrounding innovation in Denmark

HASHTAG	FREQUENCY
#STARTUP	5,624
#ENTREPRENEURSHIP	3,748
#BUSINESS	2,379
#DIGITALTRANSFORMATION	2,019
#AI	1,841
#CITY	1,101
#VENTURECAPITAL	993
#IOT	509
#FINTECH	488
#EUROPE	344



KEY FINDINGS

— DENMARK

From this advanced analysis of the most discussed content, the key threads of discussion that have catalysed the conversations in Denmark are:

European Innovation Scoreboard

Denmark is the third most innovative country in the EU, according to the 2019 Global Innovation Index (GII). The European innovation scoreboard provides a comparative analysis of innovation performance in EU countries. Denmark performs above the EU average in close to all dimensions. Most notably in attractive research systems, human resources, lifelong learning and innovation-friendly environment.

National Strategy for Artificial Intelligence

At Denmark's Digital Top Meeting 2019, the Danish government presented a new Danish National Strategy for AI. The strategy aims to ensure that Denmark will have a human-centric and common ethical foundation for AI. The government sets four objectives for how Denmark can be a front-runner in the responsible development and use of Artificial Intelligence. The focus areas are a responsible foundation for AI; access to more and better data; strong competences and new knowledge; increase investments.

Fintech

Tech, and especially Fintech, is booming in Denmark experiencing significant growth, facilitated by a highly educated and a digitally literate population, close cooperation between the public authorities, businesses and with the support of specific government policies. In particular, Copenhagen has evolved as an international Fintech hub, hosting working spaces and incubators. The largest group of Fintech businesses in Denmark operates within the sector of digital payment solutions with mobile payments currently at the forefront.

COMPARING CONVERSATIONS

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DENMARK

The conversation around innovation does not just change from country to country, but in some cases, also between male and female. Here you can find the top hashtags used by men and women.



#STARTUP	70
#AI	30
#MARITIME	29

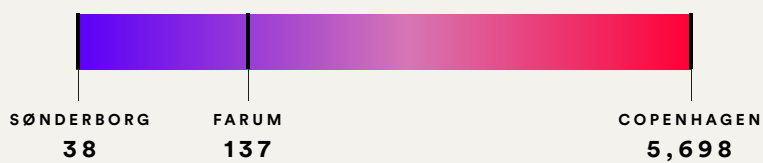
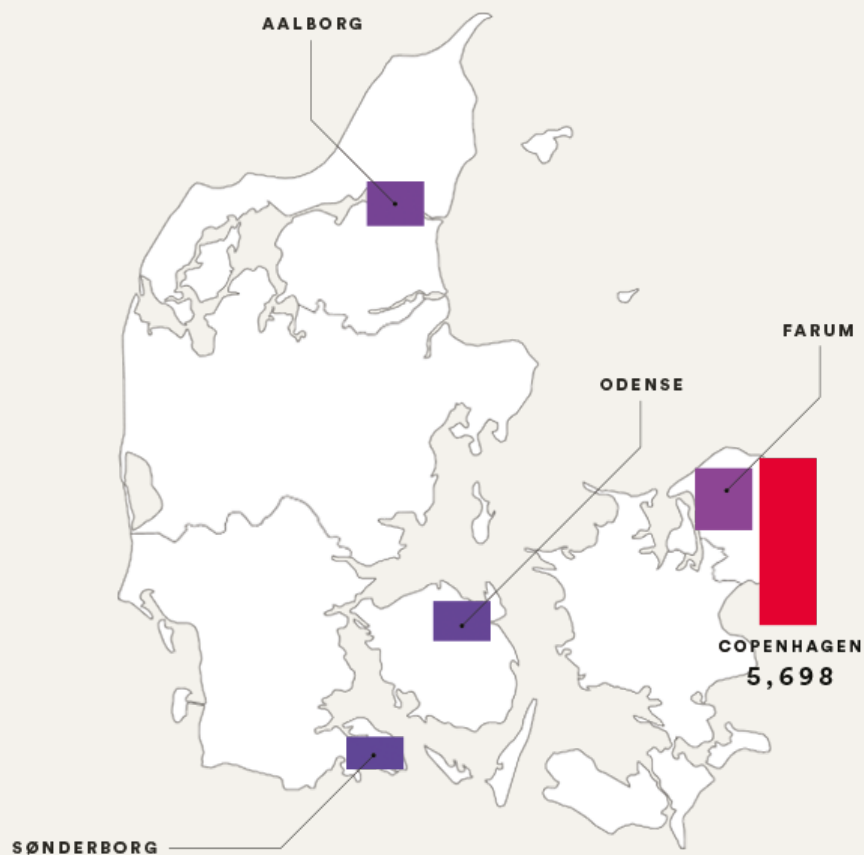
WOMAN

164	#AI
67	#IOT
56	#DIGITALTRANSFORMATION

DATA MAP

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DENMARK

Copenhagen is by far the most active city joining the innovation conversion in Denmark on Twitter with almost 70% of all tweets coming from this city.





INNOVATION IN AUSTRIA

AUSTRIA OVERVIEW

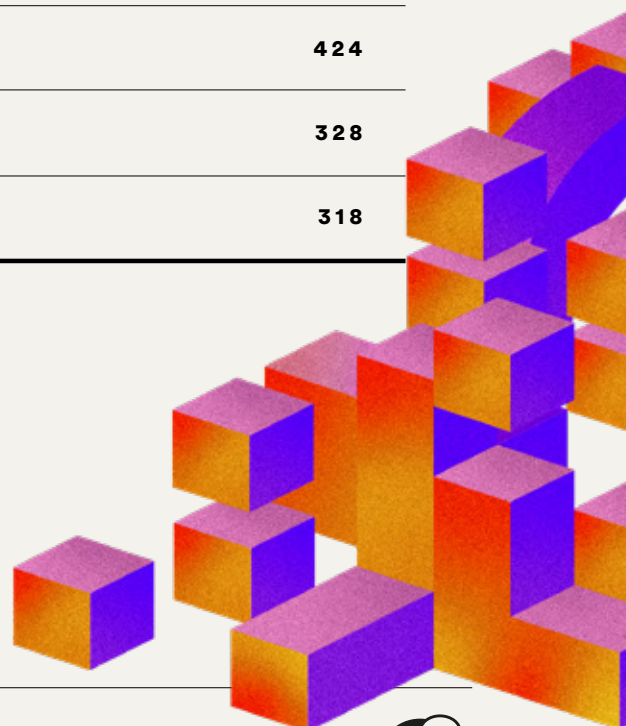
7,805 tweets about innovation were posted in the last year from 1,652 unique users (51% men and 49% women) featuring hundreds of hashtags.

When tweeting about innovation, in Austria, the following hashtags are the most significant, and the most popular emoji is 🏆.

—

Top hashtags surrounding innovation in Austria

HASHTAG	FREQUENCY
#AI	2,693
#FINTECH	2,429
#IOT	1,272
#DIGITALTRANSFORMATION	1,184
#STARTUP	1,107
#BIGDATA	816
#BLOCKCHAIN	619
#ROBOTICS	424
#INDUSTRY40	328
#FUTUREOFWORK	318



KEY FINDINGS

—
AUSTRIA

From this advanced analysis of the most discussed content, the key threads of discussion that have catalysed the conversations in Austria are:

Artificial Intelligence and law enforcement

The Organization for Security and Co-operation in Europe (OSCE) is the world's largest security-oriented intergovernmental organisation. The OSCE's Secretariat is located in Vienna and hosted the annual meeting to discuss potential implications of developments in AI for the work of law enforcement authorities and agencies. The conference focus was to discuss possible AI-related crime scenarios and primary legal, ethical, human rights and gender-related concerns of the use of AI in the work of law enforcement.

Fintech ecosystem

In recent years in Austria, we have seen an increasing number of new Fintech companies. The Fintech scene has evolved thanks to accelerator, startups and innovations hub. Fintech companies in Austria are active in various sectors such as lending platforms, robo-advice, insurtech, mobile payments, investment crowdfunding. They have also developed some innovative products, in cooperation with some established banks. Vienna FintechWeek is the most notable event in this area while "Fintech Austria" association has built a very active Austrian Fintech scene based on regular meetups.

Blockchain: stamps and smart cities

In June 2019, Österreichische Post started selling the world's first blockchain stamp developed by the Austrian blockchain company Capacity. The Crypto stamp is based on the Ethereum blockchain, which is why the unicorn was chosen as the animal to be represented on it. The use case is relatively novel compared to the types of things you can do with blockchain in the future. Ulrike Huemer, CIO of the City of Vienna, in a recent interview, stated that "Blockchain is the Key for Vienna's digital future" enabling technology will provide a better quality of life to all citizens.

COMPARING CONVERSATIONS

—
AUSTRIA

The conversation around innovation does not just change from country to country, but in some cases, also between male and female. Here you can find the top hashtags used by men and women.

 MAN

#FINTECH	101
#AI	98
#BANKING	97

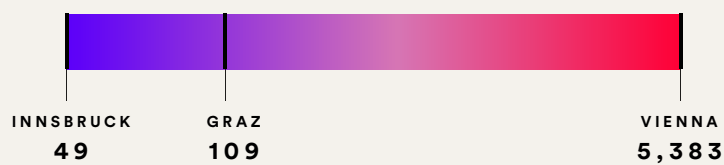
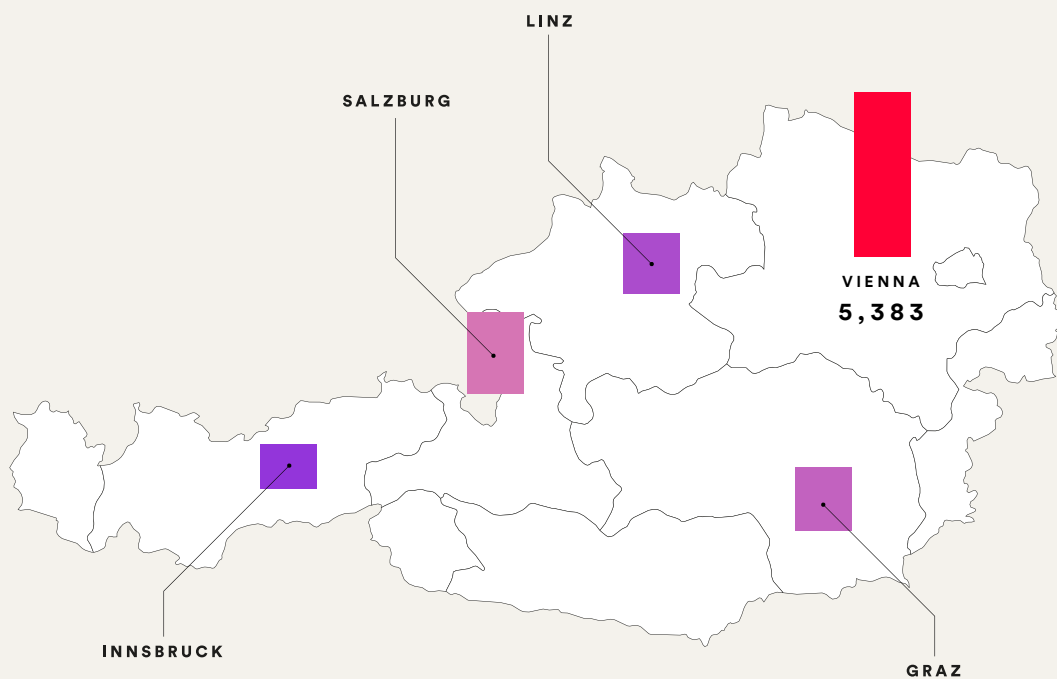
WOMAN 

293	#IOT
234	#AI
93	#DIGITALTRANSFORMATION

DATA MAP

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AUSTRIA

Vienna absolutely dominated the conversion in Austria on Twitter with over 65% of all tweets coming from this city.



APPENDIX

Analysis of Twitter conversations for the year 2019 (1 January - 15 December), on selected keywords. The keywords identified include the word “innovation” and its translations in the different EU languages. The perimeter of the survey is related to the 28 EU countries (data from the user's biography).

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Keywords

COUNTRY	LANGUAGE	KEYWORD
AUSTRIA	GERMAN	INNOVATION
BELGIUM	DUTCH, FRENCH AND GERMAN	INNOVATIE
BULGARIA	BULGARIAN	НОВОВЪВЕДЕНИЕ
CYPRUS	GREEK	KAINOTOMIA
CROATIA	CROATIAN	INOVAČIJA
DENMARK	DANISH	INNOVATION
ESTONIA	ESTONIA	INNOVATSIOON
FINLAND	FINNISH AND SWEDISH	INNOVAATIO
FRANCE	FRENCH	INNOVATION
GERMANY	GERMAN	INNOVATION
GREECE	GREEK	KAINOTOMIA
IRELAND	GAEILGE AND ENGLISH	NUÁLÁÍOCHT
ITALY	ITALIAN	INNOVAZIONE
LATVIA	LATVIAN	INOVĀCIJA
LUXEMBOURG	GERMAN AND FRENCH	INNOVATIONMAL-
TA	MALTESE AND ENGLISH	INNOVAZZJONI
NETHERLANDS	DUTCH	INNOVATIE
POLAND	POLISH	INNOWACJA
PORTUGAL	PORTUGUESE	INOVAÇÃO
UNITED KINGDOM	ENGLISH	INNOVATION
CZECH REPUBLIC	CZECH	INOVACE
ROMANIA	ROMANIAN	INOVAȚIE
SLOVAKIA	SLOVAK	INOVÁCIE
SLOVENIA	SLOVENIAN	INOVAČIJE
SPAIN	SPANISH	INNOVACIÓN
SWEDEN	SWEDISH	INNOVATION
HUNGARY	HUNGARIAN	INNOVÁCIÓ

APPENDIX

The body of tweet for this survey contained at least one of the keywords indicated in the table and is obtained from the Twitter Decahose Stream, which includes about 10% of the total tweets.

Top hashtags

The list of the most used hashtags is created by reporting the individual totals but also by combining similar hashtags (e.g. #startup and #startups, #ai and #artificialintelligence). In some cases similar hashtags are grouped (e.g. #ml and #dl are grouped to the more general hashtag #ai).

Key Findings

The most discussed and central topics in users conversations highlighted in the report can be based on a link to an article or in some cases even a single relevant tweet in terms of answers, comments, likes and retweets. Topics of interest may not correspond with the most used hashtags.

TALENT GARDEN

Talent Garden offers an unprecedented combination of creative coworking, an internal educational institution and industry-driven events to connect tech talents inside a network of campuses.

Founded in Italy in 2011, Talent Garden's mission is to create local, vibrant, globally connected campuses that empower digital and tech communities.



@talentgarden



@talentgardenen



@talentgarden



Talent Garden

