



## Case Study: Investigating *Innovation Leader's Technologies Worth Watching*

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# About Mergeflow

## What We Do

Our innovation analytics platform helps global technology leaders create and prevent strategic surprise.

Large technology organizations and investors worldwide use Mergeflow to discover products, research, patents, start-ups, and experts associated with emerging, innovative technologies.

Our customers operate in and across diverse industry sectors.

## Why Mergeflow

- Mergeflow enables automated, real-time, and continuous insight into innovations and technologies, across a range of different signals (patents, scientific publications, news, funding events, market news, etc.).
- Advanced analytics, machine learning algorithms, and visualizations let you focus on data interpretation rather than data collection and preparation.
- Mergeflow is a ready-to-use standard software product that can be extended to accommodate customer-specific use cases.
- We are independent. For instance, we do not charge finder's fees or other intermediary business models, and our software platform does not track what you do.

# Executive Summary

Recently, Innovation Leader ([www.innovationleader.com](http://www.innovationleader.com)) published the results of a field study, "[Collective intelligence: Trends and technologies worth watching](#)". The study asked fifteen executives which technologies they think will increase in importance over the next five years. Among the results of the study was a list of technologies the executives deemed worth watching.

We used our innovation analytics platform to analyze the topics in Innovation Leader's list. We compared the size and growth of each topic across a range of different signals, which Mergeflow automatically extracts from data on the web and other sources. The signals range from R&D to business to finance. We then used the Topic Matrix, a Mergeflow Analytics tool that automatically plots size against growth for each topic. This allowed us to group the topics into four classes: (1) *high growth*; (2) *emergent*; (3) *moderate*; (4) *stable*.

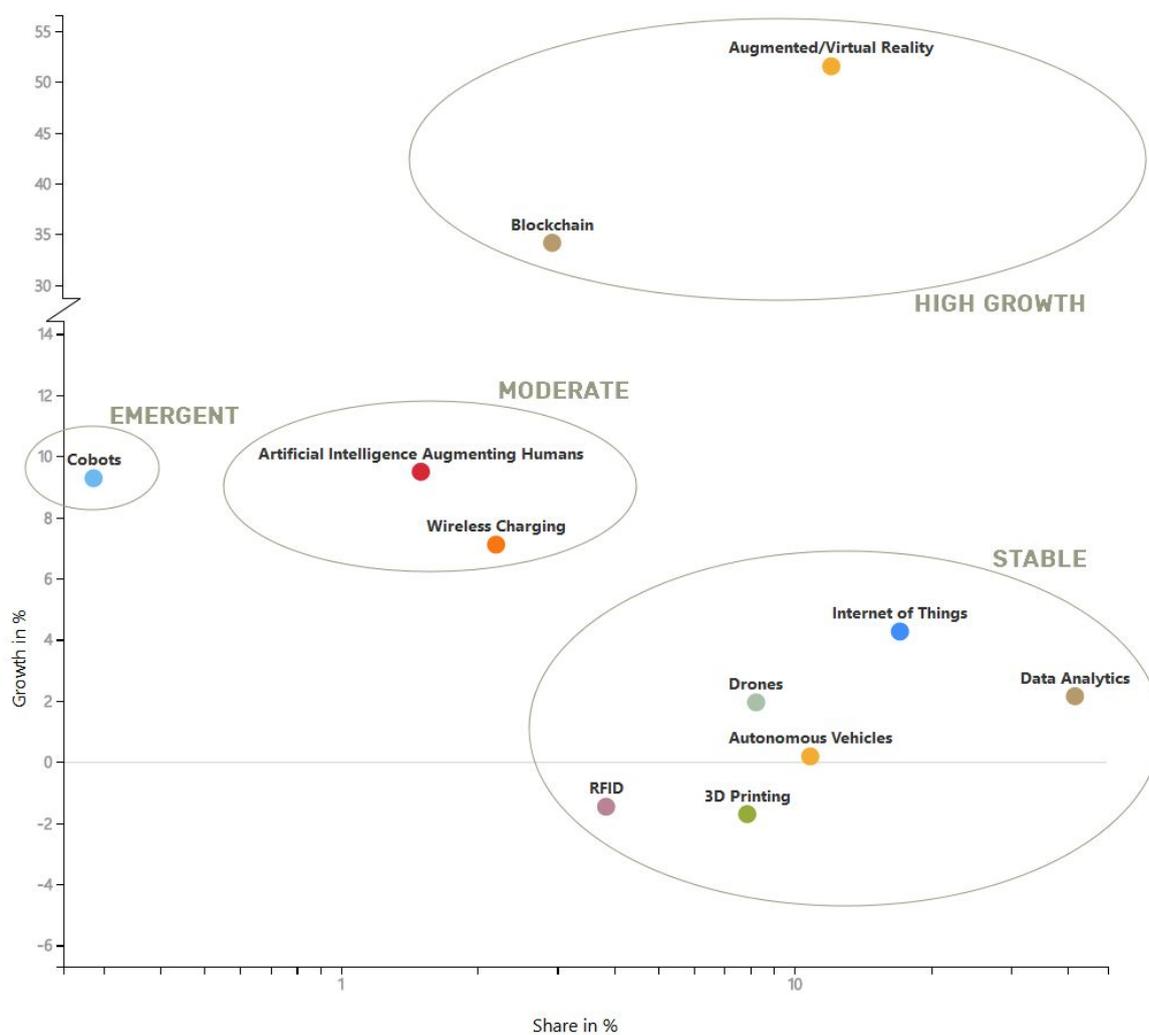
<p><b>HIGH GROWTH</b></p> <p>Augmented / Virtual Reality Blockchain</p>	<p><b>EMERGENT</b></p> <p>Cobots</p>
<p><b>MODERATE</b></p> <p>Artificial Intelligence Augmenting Humans Wireless Charging</p>	<p><b>STABLE</b></p> <p>Internet of Things Data Analysis Autonomous Vehicles Drones 3D Printing RFID</p>

Below we will describe, for each topic, what factors drive size and growth, and how each topic has evolved over the past years.

# Overview Across All Topics

The Topic Matrix is a tool in the Mergeflow Analytics Platform. For any user-defined topic, it calculates and plots the size (or share) of the topic against its growth. In order to calculate share and growth, the Topic Matrix uses innovation signals from R&D to business to finance; specifically, the matrix considers patenting activity, R&D activity, news and blogs volume, and the amounts of venture capital invested in a topic.

Here is the Topic Matrix for the Innovation Leader topics:

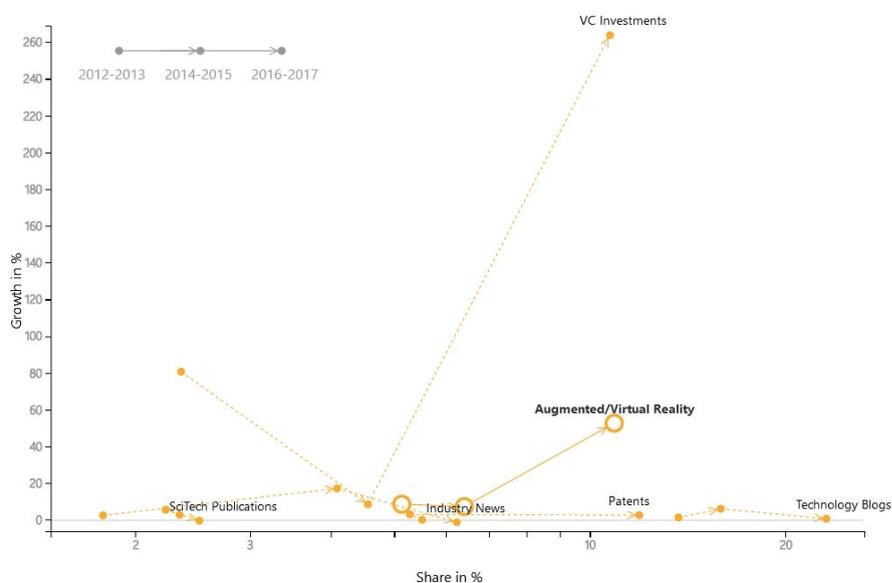


# Zooming In On Topics

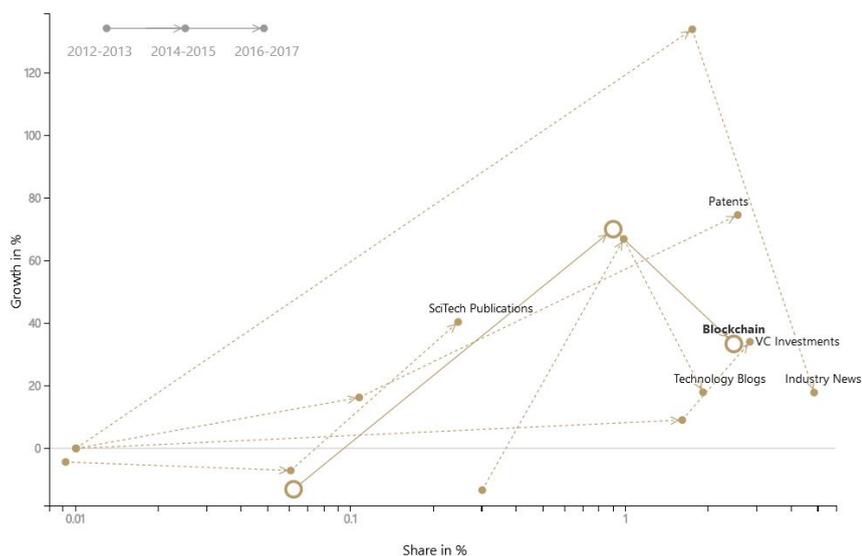
## HIGH GROWTH

**Augmented / Virtual Reality** received a tremendous amount of VC funding over the last few years.

Even after excluding "[Magic Leap](#)", the most prominent example of massive money inflow in this technology, the overall growth of this topic is nearly entirely driven by *VC Investments*. However, if we consider the last six years, across all categories/repositories, this technology acquired more share.



**Blockchain** saw its highest growth in 2014-2015, mainly driven by *Industry News* and *Technology Blogs* articles.

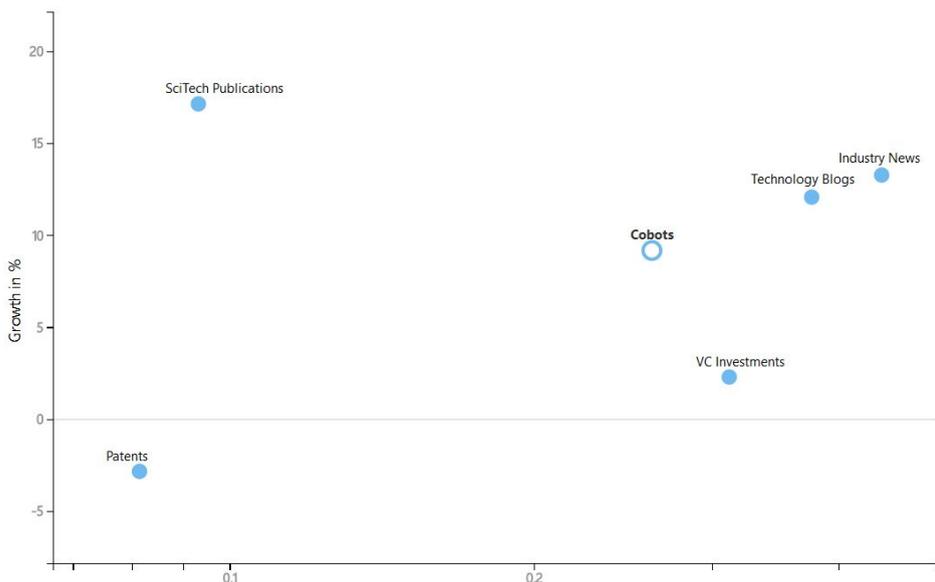


By contrast, in 2016 and 2017, the overall growth is mainly driven by *Patents*, *Scientific Publications* and *VC Investments*. Considering the different factors that influence the growth of blockchain over time, it seems that this technology made its way from the tech-enthusiasts ecosystem into the more mainstream business community.

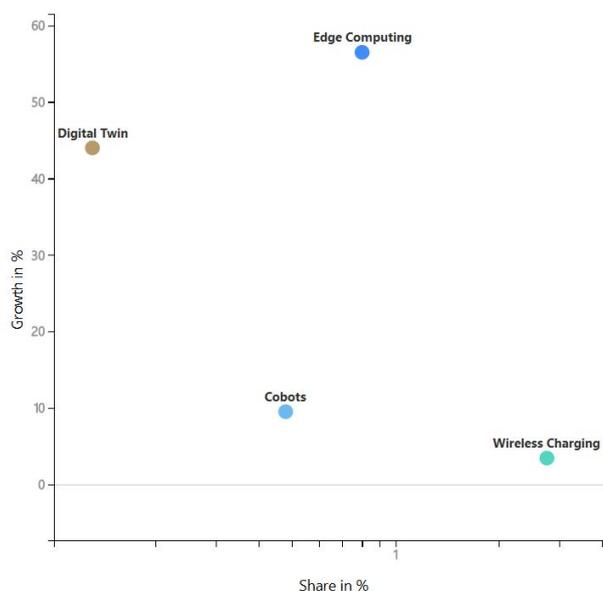
## EMERGENT

**Cobots** (collaborative robots) currently only have a small share of all Innovation Leader's topics. Nevertheless, the topic does show growth.

Even though the growth in *Scientific Publications* is quite large, its share is still relatively small. At the same time, we see that *Patents* have small share and small growth rate.



In order to put "Cobots" into context of other emerging technologies, we included two additional topics that were not contained in the original technologies watchlist of Innovation Leader, namely **Edge Computing** and **Digital Twin**.

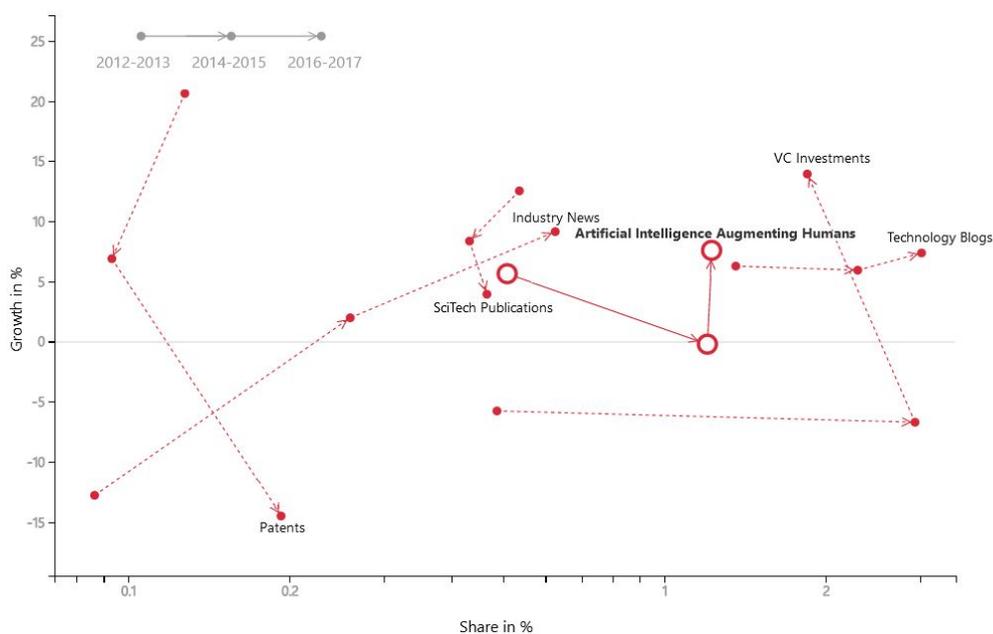


The matrix on the left shows that the growth rate of **Cobots** is small so far, compared to the growth rates of **Edge Computing** and **Digital Twin**.

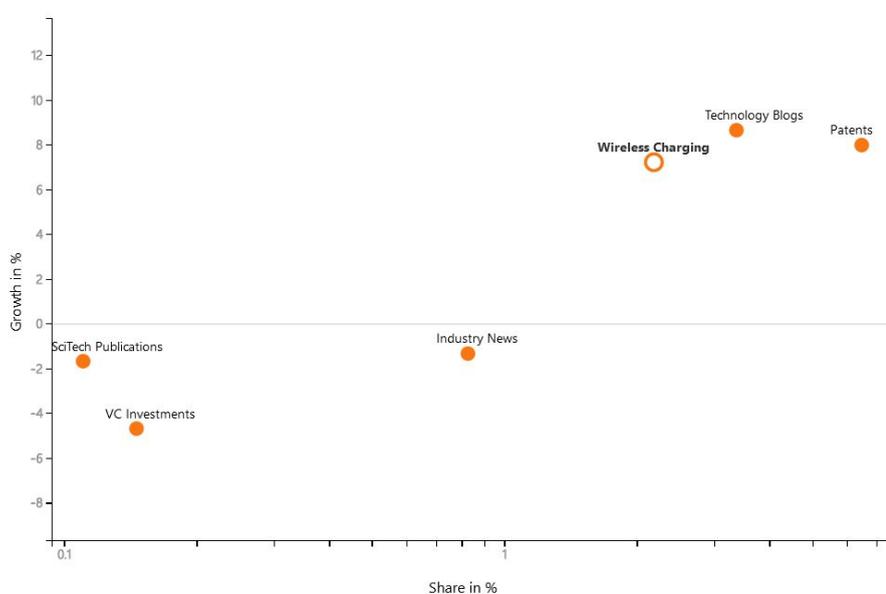
## MODERATE

Over the course of the last six years, we see a modest but continuous growth in **Artificial Intelligence being used for augmenting human intelligence**.

This growth is mainly driven by *Industry News, Technology Blogs* and *VC Investments*. By contrast, *Scientific Publications* show only a modest growth. This may indicate that innovation in this field happens outside academia.



For **Wireless Charging**, our data do not show a clear change in growth and share from 2012 until 2017. Therefore, the matrix below does not show temporal development.

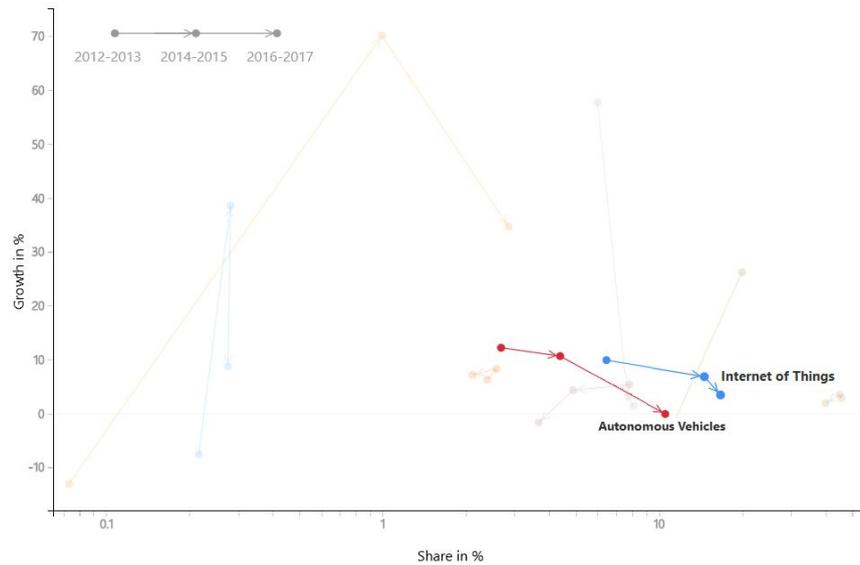


The data show that there is above-average patenting activity. At the same time, *Technology Blogs* show strong activity (probably because of the anticipated effect of Wireless Charging on many people's daily lives). Overall, compared to the other topics, **Wireless Charging** shows modest growth.

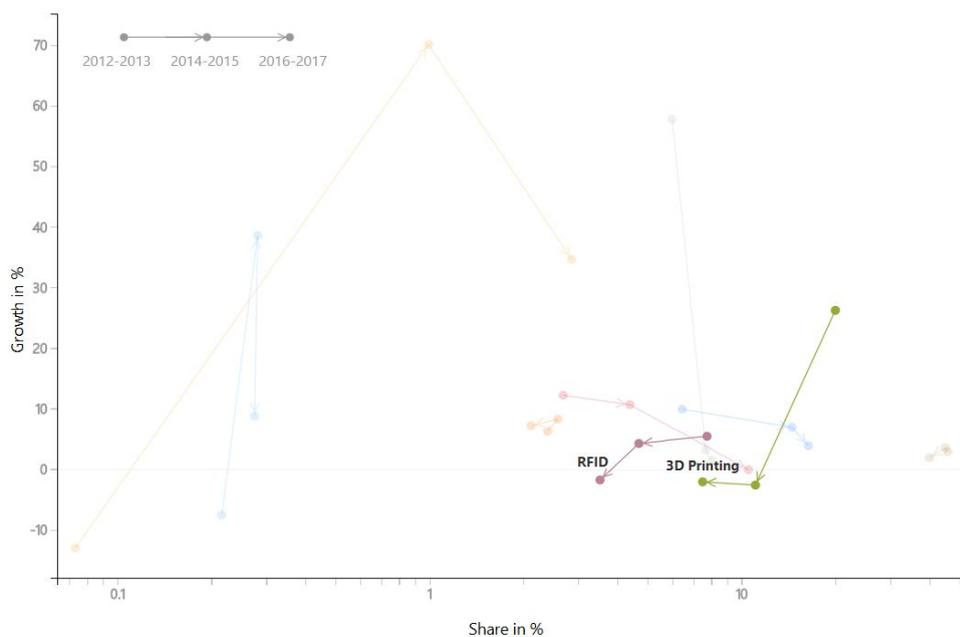
## STABLE

For **Internet of Things** as well as for **Autonomous Vehicles**, the topics matrix data shows a similar pattern over the last six years.

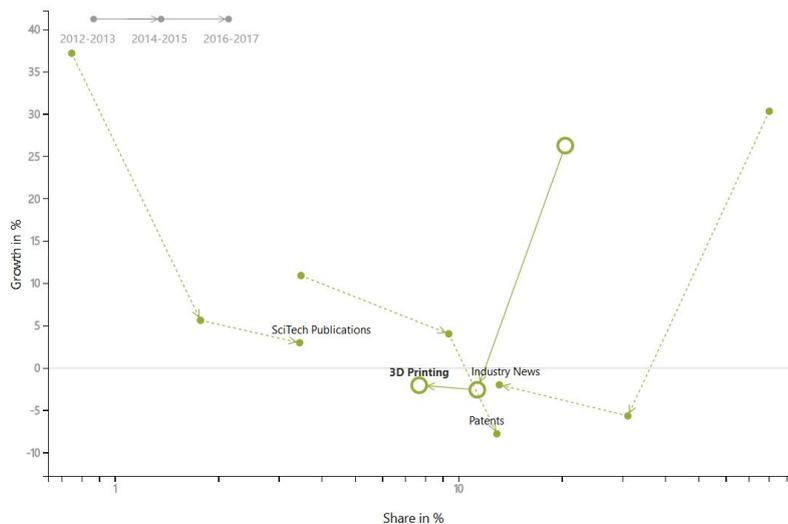
From being rather small but high growth, both topics developed into big but small or zero growth topics. For both topics, we only see a small fraction of *Scientific Publications*.



By contrast, we see **RFID** and **3D Printing** moving to the lower left over time. This indicates that they do not only grow less but even lost share from 2012 until 2017, compared to the other topics.

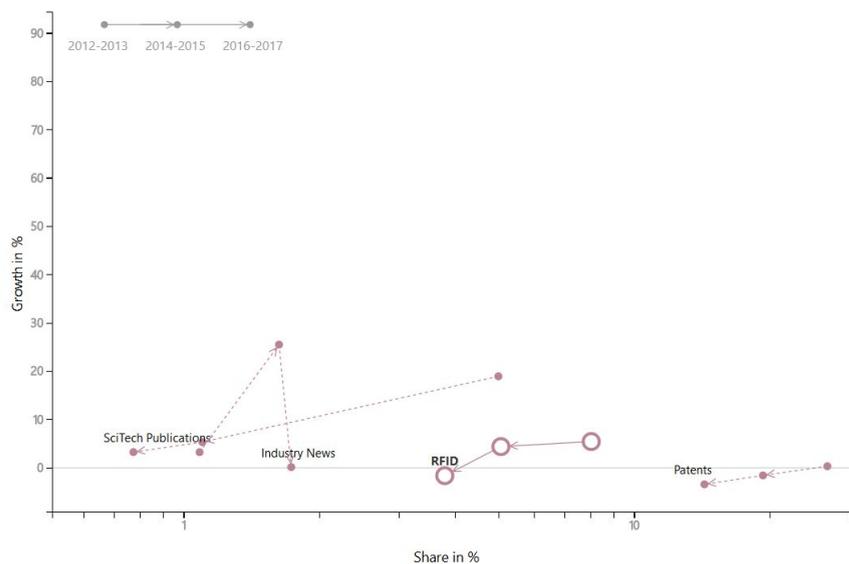


However, zooming in on the share and growth of Scientific Publications, Patents and Industry News reveals a difference between **RFID** and **3D Printing**.



The diminishing growth of **3D Printing** is evident across all repositories, especially in *Industry News* coverage. However, we still see *Scientific Publications* and *Patents* becoming bigger over time.

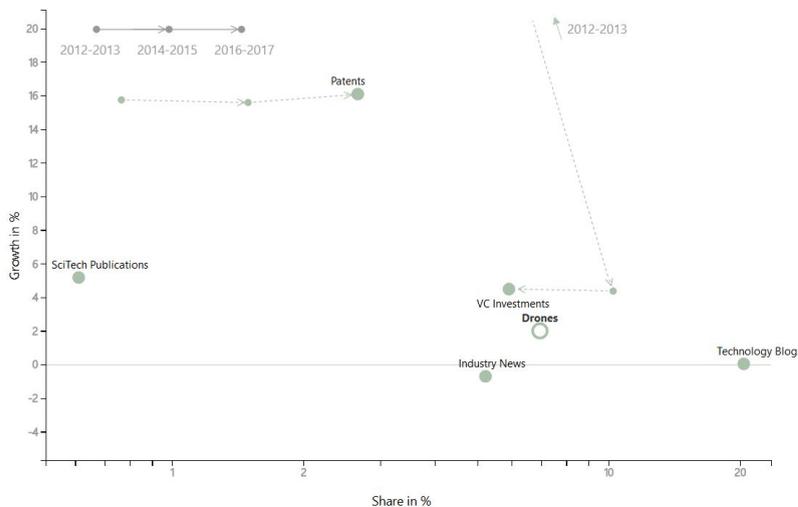
For **RFID**, we see the opposite development concerning the share of *Scientific Publications*, *Patents* and *Industry News*. Whereas the former two massively lose share, *Industry News* for **RFID** first increases and then stabilizes between 2013 and 2017.



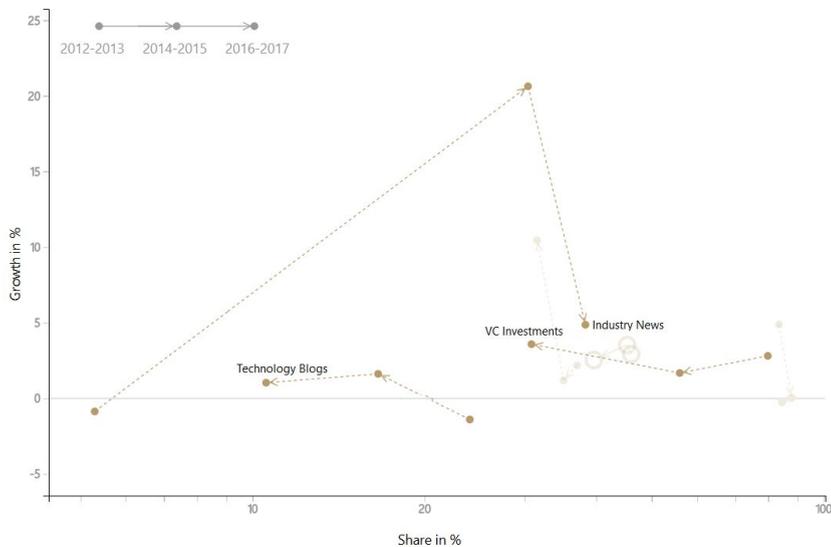
While **3D Printing** seems to gain a bit more “scientific grounding” without lots of news reporting about this, **RFID** shows a growing or at least stable coverage in the news without being in the focus of R&D.

**Drones** have seen a surge in *VC investment* at first (2012-2013), followed by a massive drop in terms of growth and recently also share.

By contrast, the number of *Patents* increased significantly over time, whereas the other information categories and the overall share and growth of **Drones** were rather stable.



Finally, for **Data Analytics**, we only find a slight negative trend in the aggregate. However, for particular information categories the data show more differentiated development.



On the one hand, we see an increase of the share of *Industry News*. On the other hand, a decrease of total *VC Investment* is accompanied by a declining share of *Technology Blogs*. Has the common use of **Data Analytics** finally reached industry but slightly went out of focus of Venture Capitalists and Technology Geeks?

# Conclusion

Using Mergeflow's Analytics Platform, we investigated technology topics that were listed in a recent survey by Innovation Leader ([www.innovationleader.com](http://www.innovationleader.com)). Based on the data we obtained through our analyses, we grouped the technologies into *emergent* (small size, high growth); *moderate* (moderate size and growth); *stable* (big size, small growth); and *high-growth* (big size, high growth).

Mergeflow's Topic Matrix calculates growth and size of a topic across different signals (R&D, patents, news, blogs, VC investments), across time. And we saw some surprising patterns there: Based on theories such as Schumpeter's<sup>1</sup>, many people expect technologies to grow in the following sequence:

Basic Research -> Applied Research -> Prototypes -> Full-Scale Commercialization

In other words, we should have seen:

Scientific Publications -> VC Investments

However, this pattern is not evident in the data. For instance, for Blockchain and 3D Printing, we even saw the opposite sequence in terms of growth:

VC Investments -> Scientific Publications

So far, we do not know the reason for this, but we plan to take a deeper look at this question in the future.

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<sup>1</sup> [https://en.wikipedia.org/wiki/Joseph\\_Schumpeter](https://en.wikipedia.org/wiki/Joseph_Schumpeter)

# Mergeflow Analytics Platform

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Our customers operate in and across diverse industry sectors.

Over the course of a typical week, Mergeflow collects and indexes the following updates:

- 30,000 scientific publications
- 18,000 patent publications from worldwide patent offices
- 15,000 industry news
- 12,000 financial and investor news
- 10,000 tech & science news
- 10,000+ updates for customer-specific data repositories
- 1,500 startup activity news
- 1,000 crowdfunding and open innovation updates
- 400 publicly funded research projects worldwide
- 250 technology licensing offers from worldwide R&D institutions

Mergeflow continuously adds these updates from various sources on the web and other databases, and adds them to its existing data repositories.

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