

Enabling AI in market data IaaS: paradigm shifts and building blocks

Stepan Bolshakov, dxFeed

AI is shaking entire industries

There's still a lot to be done in the AI area

- Credibility and stability
- Fine tuning
- Security
- Hardware optimization
- Third party integration



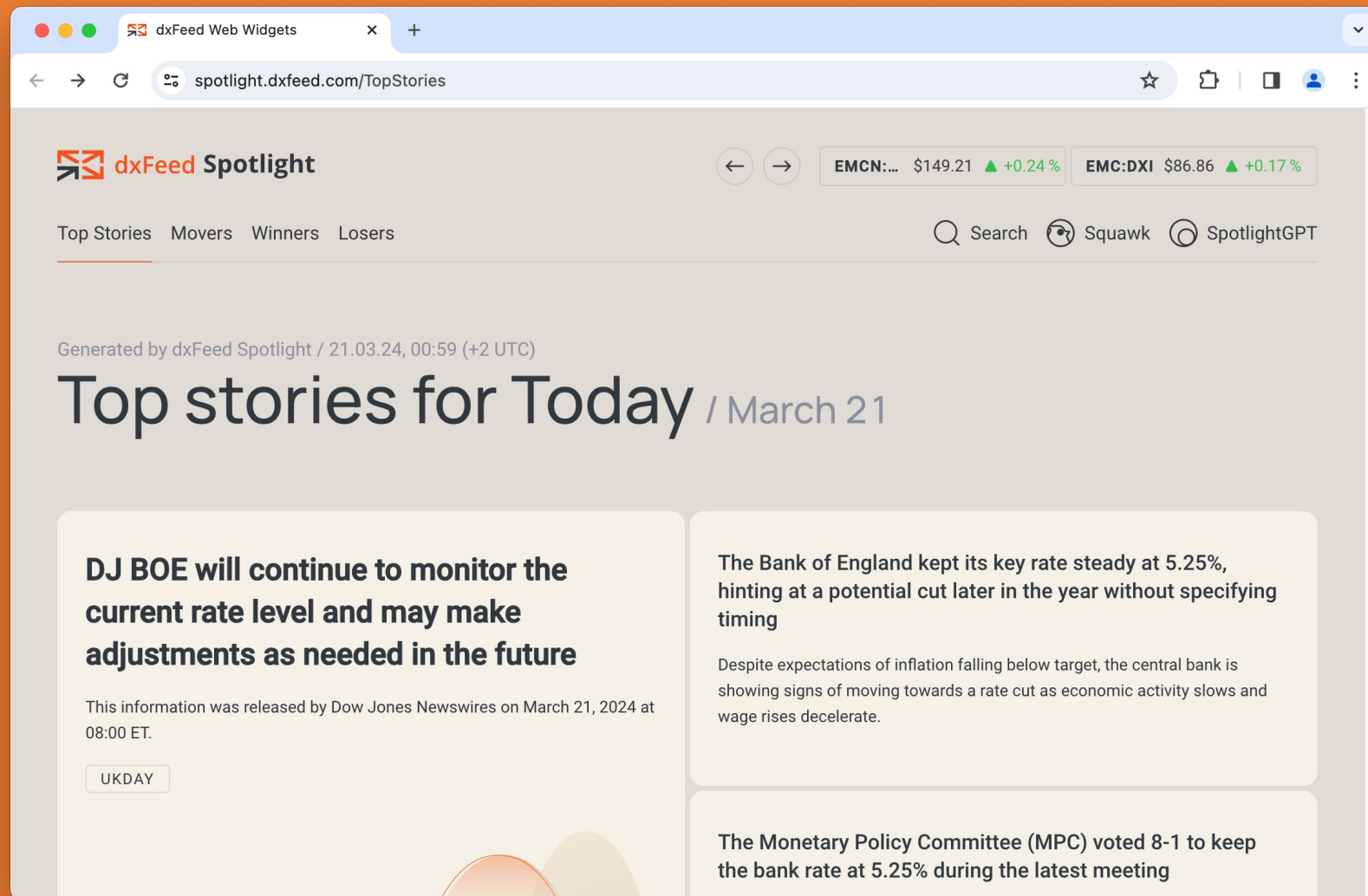
Augmented API

AI is not a replacement for an API, but it can augment APIs!

- Freeform queries → Structured data queries
- Response templates → Human-friendly replies
- Data summaries and suggestions



Applying AI to augment news



The screenshot shows a web browser window with the URL `spotlight.dxfed.com/TopStories`. The page features the dxFeed Spotlight logo and navigation links for Top Stories, Movers, Winners, and Losers. It includes a search bar and utility icons for Squawk and SpotlightGPT. The main content area displays the text "Generated by dxFeed Spotlight / 21.03.24, 00:59 (+2 UTC)" and the title "Top stories for Today / March 21". Three news snippets are visible: one about the DJ BOE's future rate adjustments, one about the Bank of England's 5.25% rate, and one about the MPC's 8-1 vote to keep the rate at 5.25%.

dxFeed Spotlight

EMCN:... \$149.21 ▲ +0.24% EMC:DXI \$86.86 ▲ +0.17%

Top Stories Movers Winners Losers

Search Squawk SpotlightGPT

Generated by dxFeed Spotlight / 21.03.24, 00:59 (+2 UTC)

Top stories for Today / March 21

DJ BOE will continue to monitor the current rate level and may make adjustments as needed in the future

This information was released by Dow Jones Newswires on March 21, 2024 at 08:00 ET.

UKDAY

The Bank of England kept its key rate steady at 5.25%, hinting at a potential cut later in the year without specifying timing

Despite expectations of inflation falling below target, the central bank is showing signs of moving towards a rate cut as economic activity slows and wage rises decelerate.

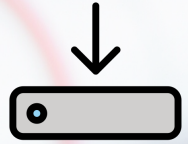
The Monetary Policy Committee (MPC) voted 8-1 to keep the bank rate at 5.25% during the latest meeting





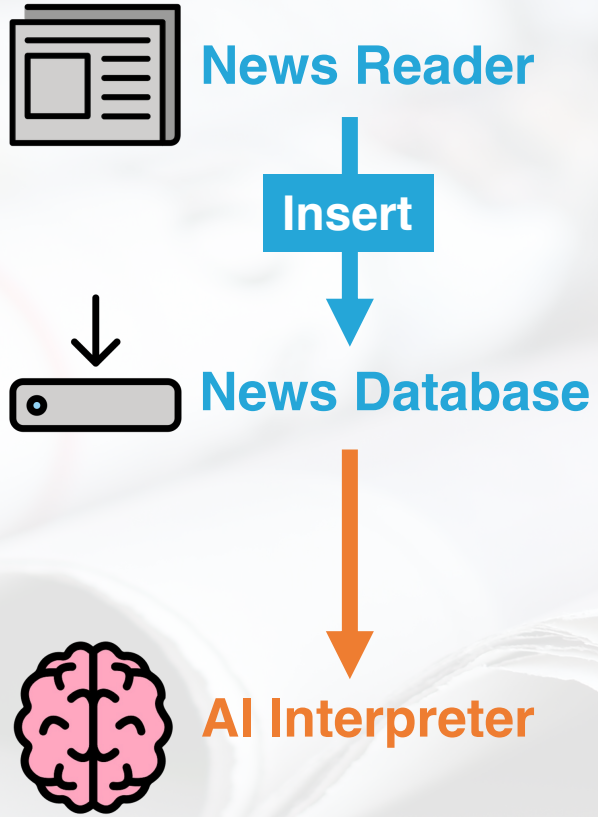
News Reader

Insert



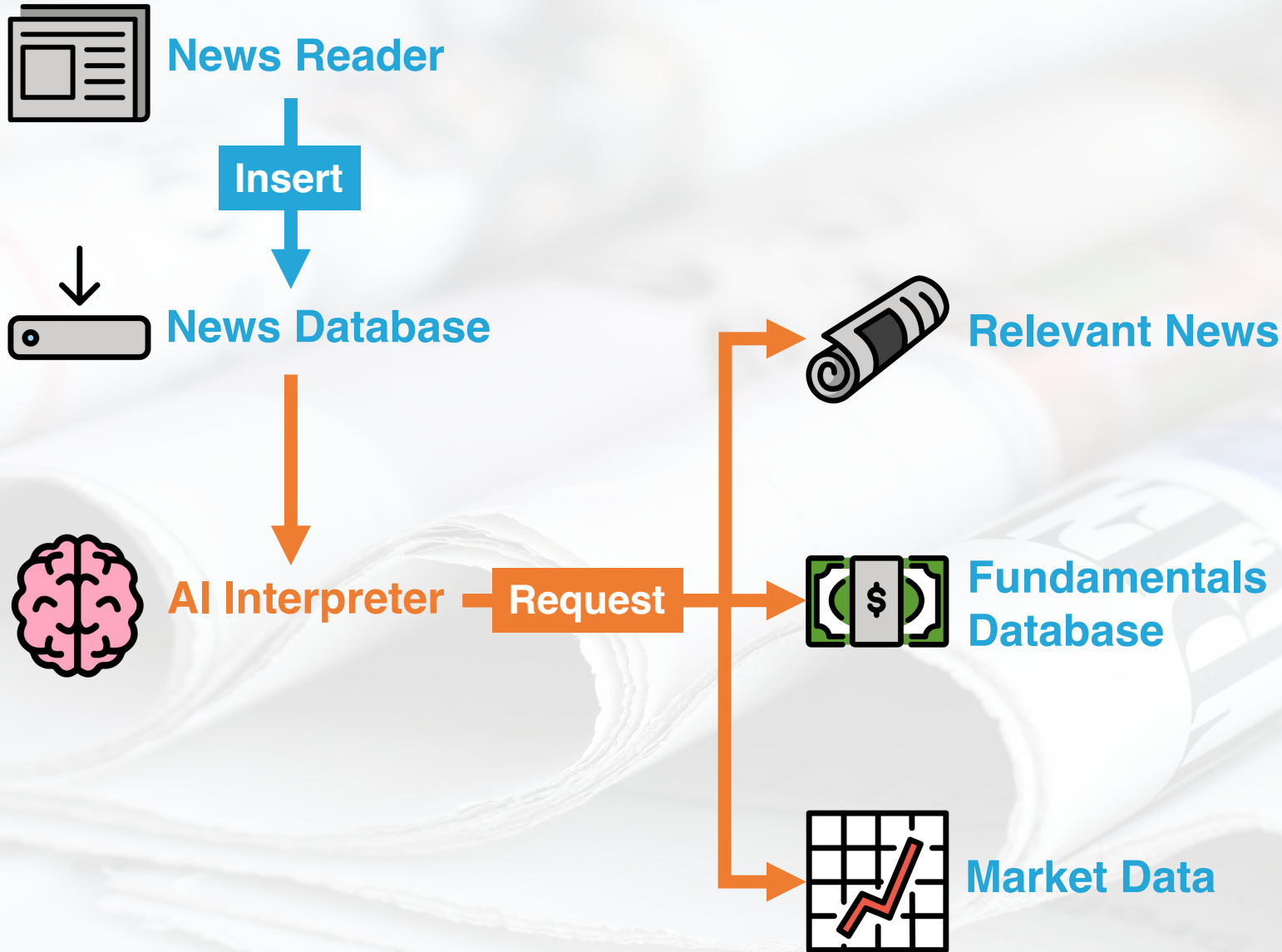
News Database

Normally, news articles are added to a time series database

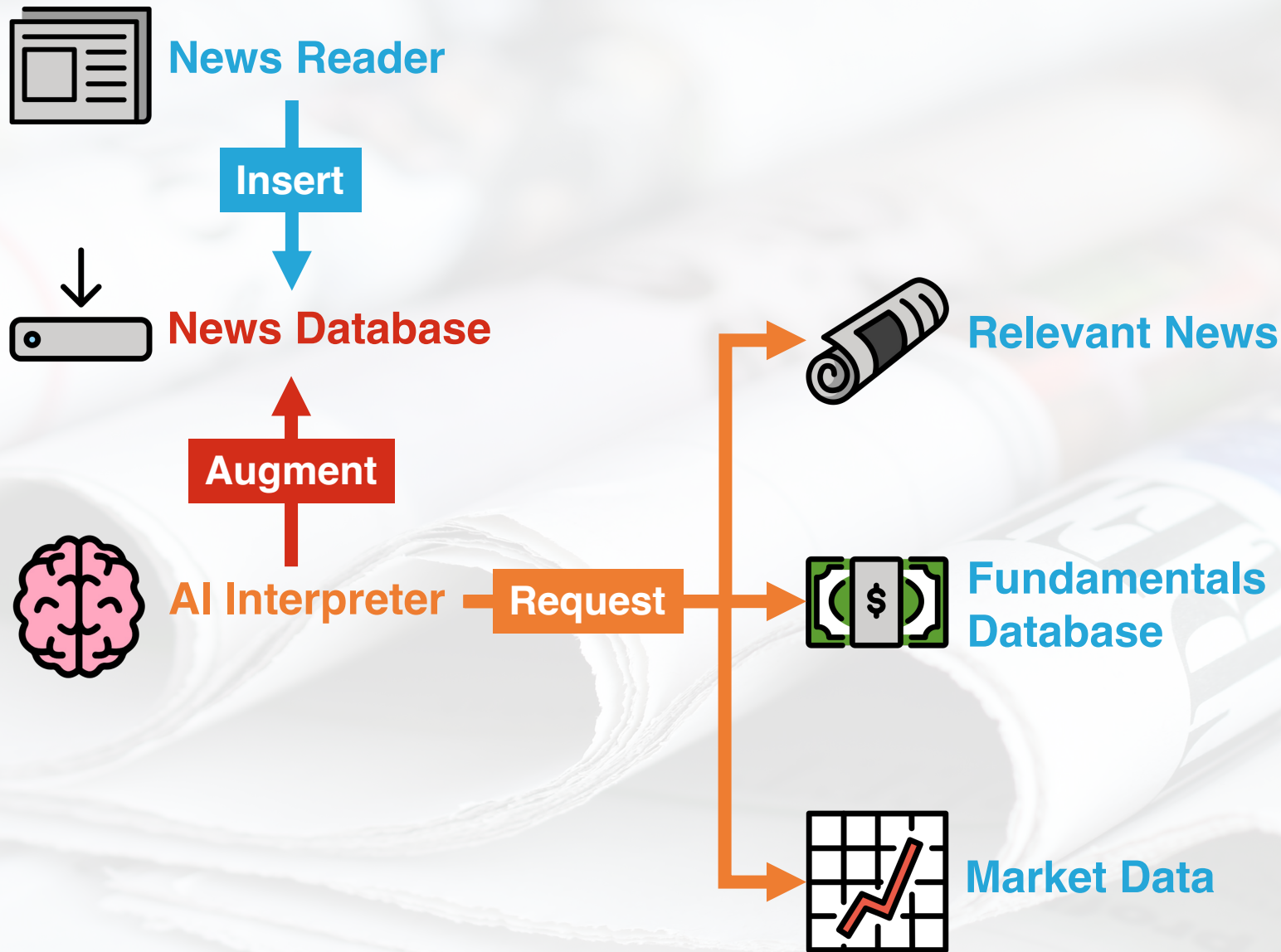


What we added to the system is an AI-based text interpreter.

It extracts information from an article and supplements it with relevant data



The interpreter collects all the relevant data



**Next,
the original article
in the database
is enriched
with new context**

08:37, 21:03:2024, DJDN

*DJ Lufax Declares Special Dividend of \$1.21 Per Ordinary Share ›LU

(MORE TO FOLLOW) Dow Jones Newswires

March 21, 2024 04:37 ET (08:37 GMT)

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08:37, 21:03:2024, DJDN

*DJ Lufax Declares Special Dividend of \$1.21 Per Ordinary Share ›LU

Lufax Holding (LU) has recently surged by 40% following a special dividend recommendation. This news has contributed to the positive trend in the financial sector, with Lufax Holding showing resilience despite reporting lower revenue.

Despite reporting lower revenue, the company's stock price rose, potentially due to favorable market conditions and investor confidence.

Making a chatbot

The screenshot shows a web browser window with the URL `spotlight.dxfeed.com/SpotlightGPT`. The page features the **dxFeed Spotlight** logo and navigation links for `Top Stories`, `Movers`, `Winners`, and `Losers`. On the right, there are search and navigation icons for `Search`, `Squawk`, and `SpotlightGPT`. Two market data widgets are visible: `EMCN:...` at `$147.19` with a `-1.12%` change, and `EMC:DXI` at `$86.23` with a `-0.56%` change. The main content area contains a large graphic of overlapping circles and the text `Write, receive, enjoy`. At the bottom, a chatbot interface is shown with a text input field containing `What to buy, leaders of the day, market overview or something` and a `Spotlight GPT` button.



Making a chatbot

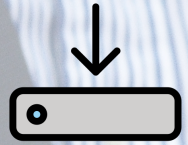


dxFeed



News Reader

Insert



News Database



SpotlightChat

We want the chatbot to be able to retrieve information from the database to provide reports, summaries, and rich freeform search

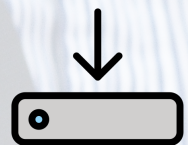


dxFeed



News Reader

Insert

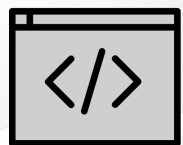


News Database



SpotlightChat

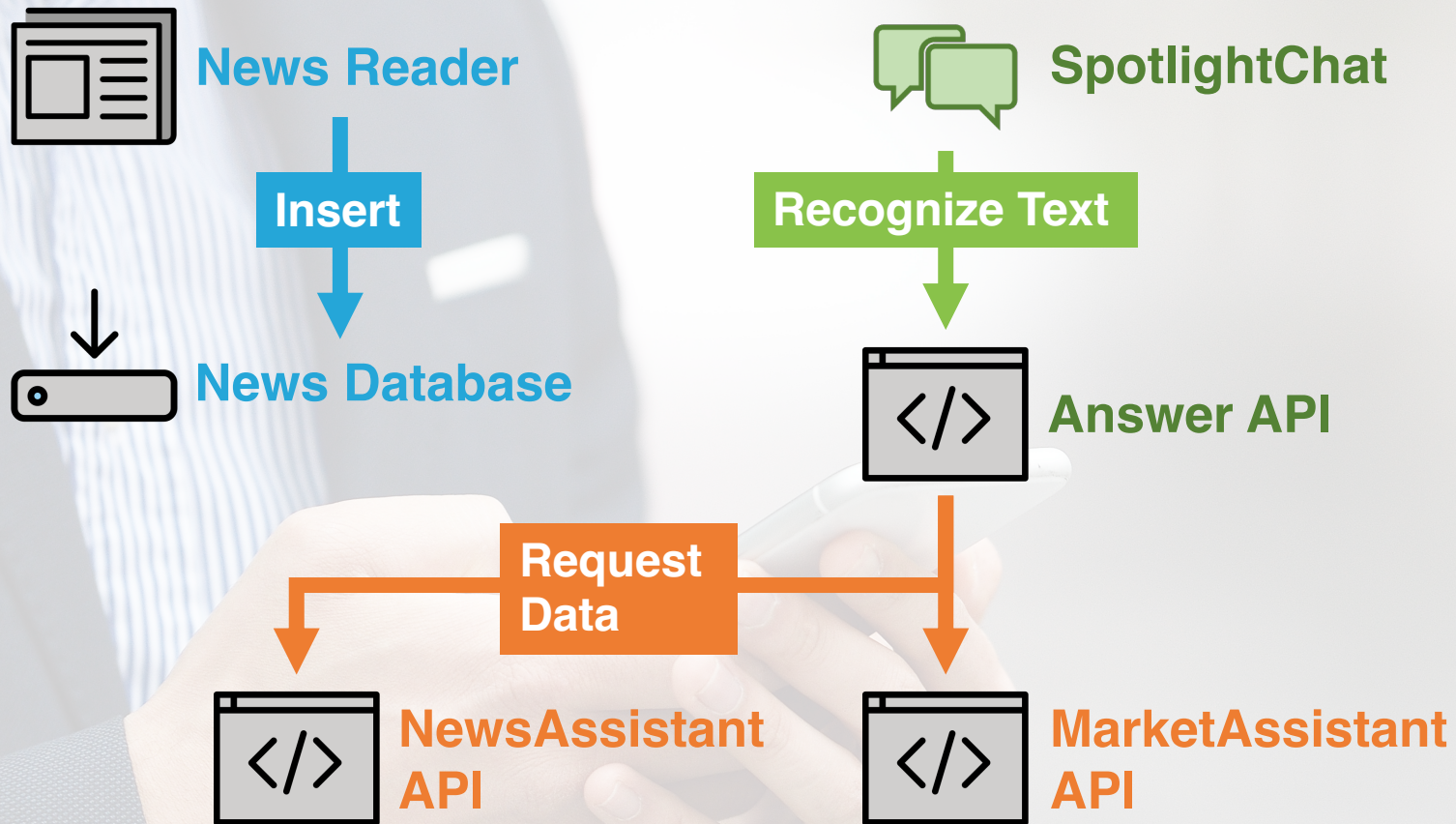
Recognize Text



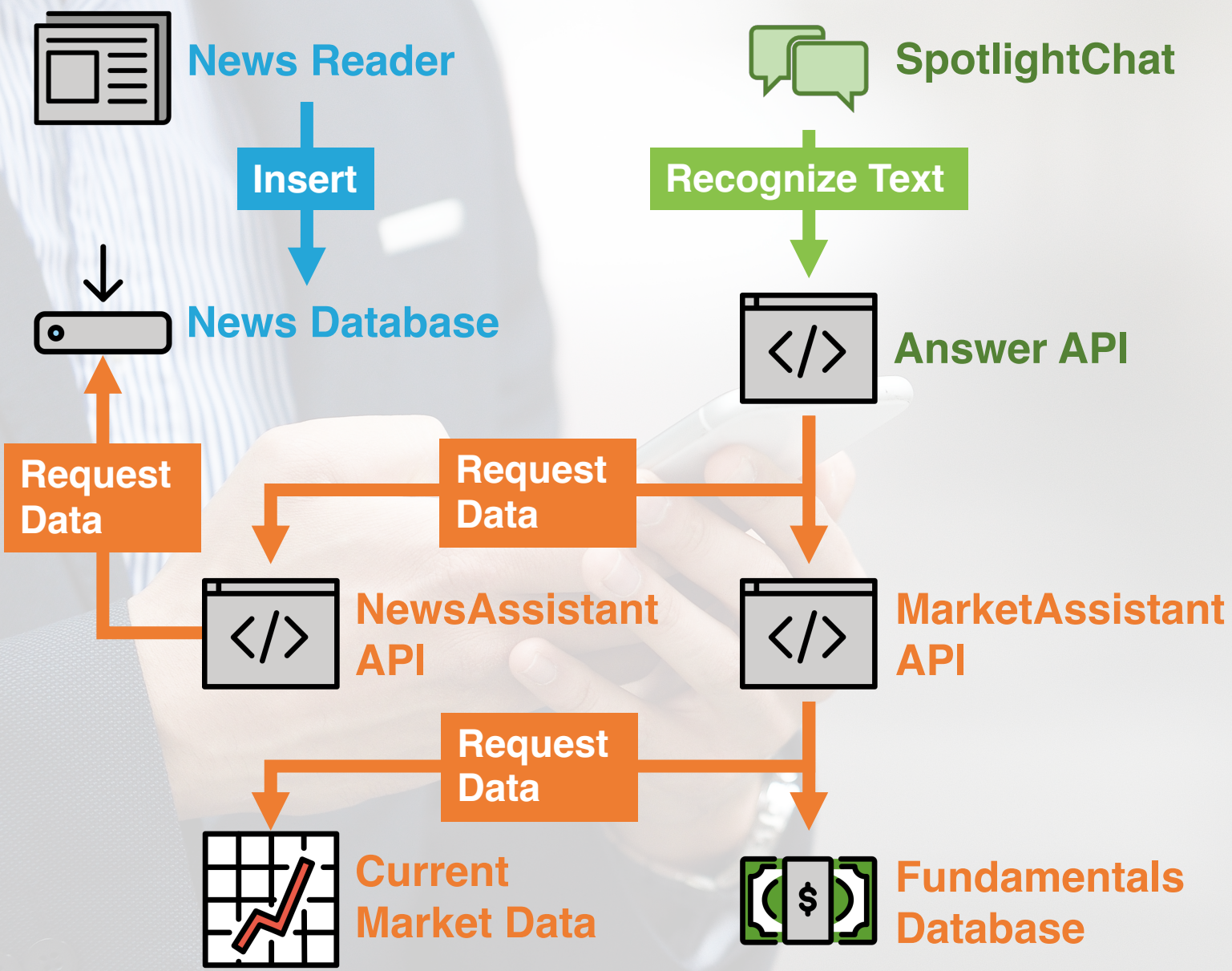
Answer API

First, we use an LLM to recognize the input and extract entities:

- Stocks
- Instruments
- Time frames
- Persons, etc.



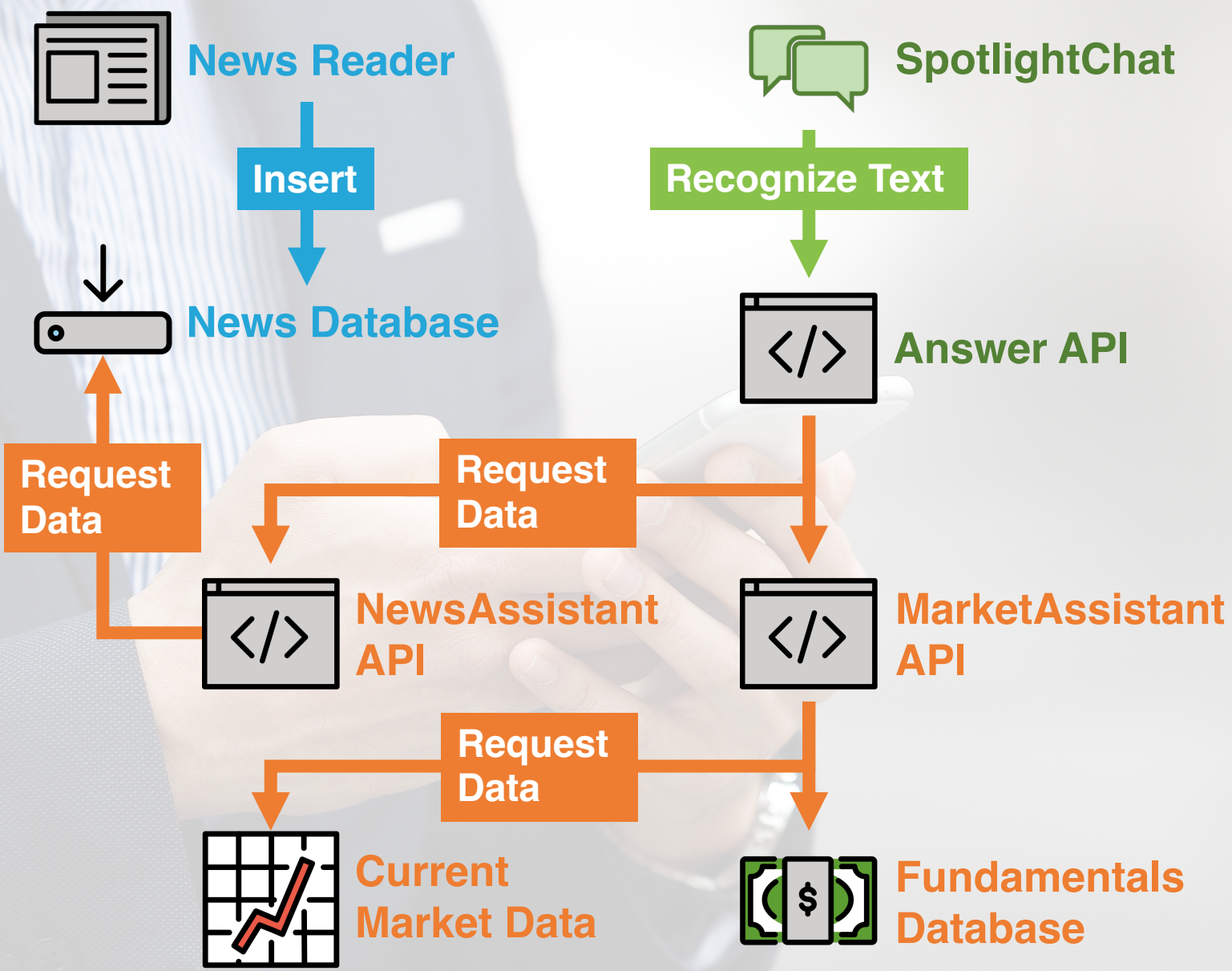
With the entity data, we query news and market APIs and collect relevant pieces of information from both



The information collected:

- Relevant news
- Fundamentals
- Trading data

then reported back to the question answering API



The enhanced system provides:

- text summarization
- sentiment analysis
- entity tagging
- industry and country matching

All in concise human-readable statements

Using AI to generate general news pages

The same process is applied to generate "Top Stories" news page

Additional module converts the AI output into a rendered html page or PDF

dxFeed Spotlight

EMCN:... \$145.94 ▼ -1.96% EMC:DXI \$85.41 ▼ -1.50% EVTN:... \$101.23 ▼ -1.96% EVT:DXI \$105.22 ▼ -1.23%

Top Stories Movers Winners Losers Search Squawk SpotlightGPT

Generated by dxFeed Spotlight / 21.03.24, 00:59 (+2 UTC)

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Despite expectations of inflation falling below target, the central bank is showing signs of moving towards a rate cut as economic activity slows and wage rises decelerate.

The Monetary Policy Committee (MPC) voted 8-1 to keep the bank rate at 5.25% during the latest meeting

This decision was announced in the DJ BOE Mar Minutes, with more details likely to be released in the future.

UKDAY

DJ BOE believes that

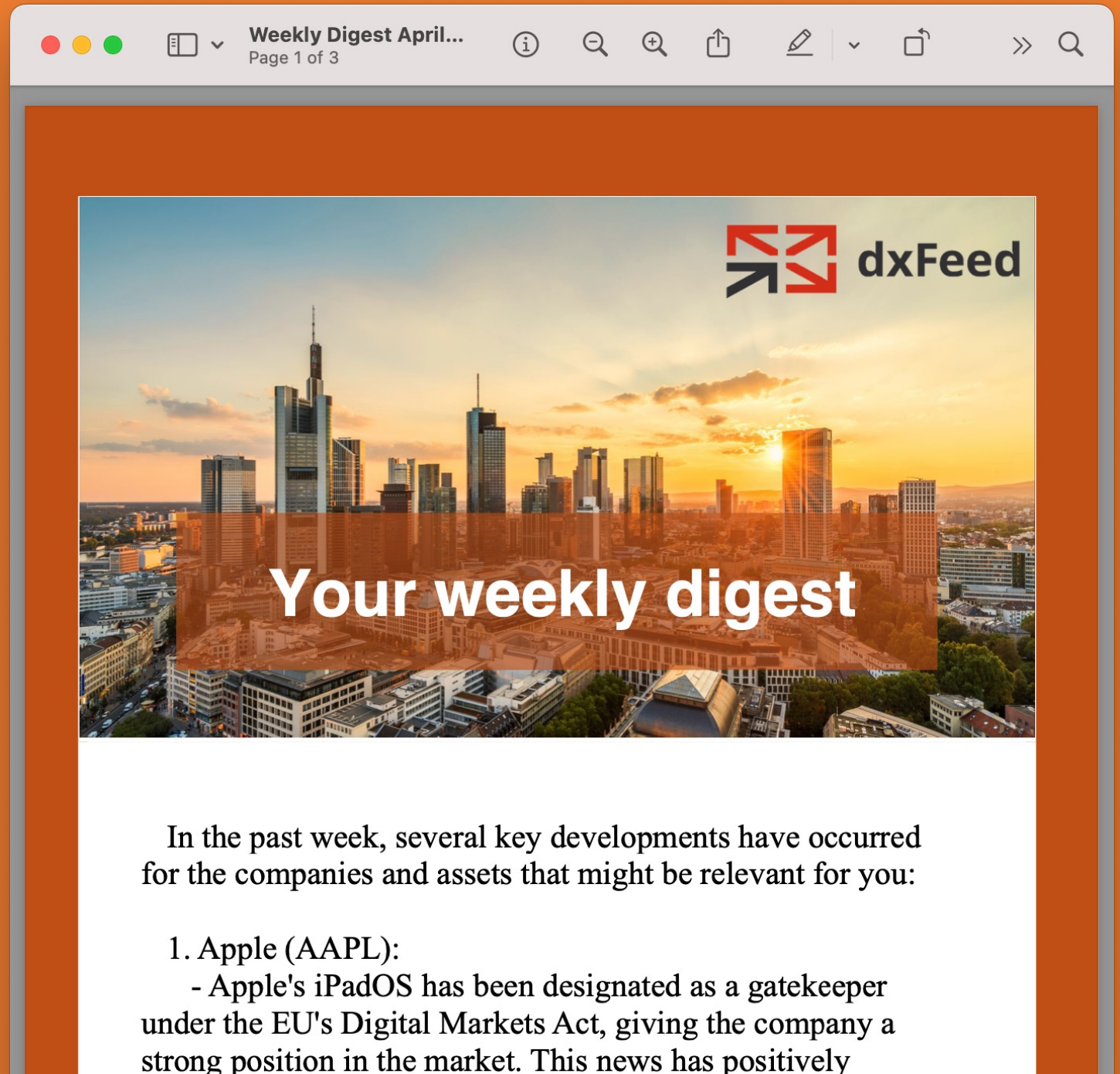
DJ BOE's Bailey stated that

The weekly jobless claims for the US were revised to 212,000 for the week ending March 9

dxFeed

AI-Generated Personalised Digests

- Created based on portfolio or watchlists
- Customizable
- Can be delivered to the end users in B2C or B2B2C models
- Regularly or on-demand
- No human involvement



AI-Generated Index Performance Reports

- Custom-built Performance Calculator
- Pre-trained LLM
- Can be delivered to the end users in B2C or B2B2C models
- Regularly or on-demand
- No human involvement

April 01, 2024 [BXY:DXI](#)

BXY:DXI April 2024 Performance Report

The dxFeed Bixie Index (BXY:DXI) is a financial instrument that measures the value of Bitcoin relative to a selected basket of cryptocurrencies. This report will provide a detailed analysis of the performance and risk metrics of BXY:DXI over the past 3 months, as of April 1, 2024.

In terms of performance, the index has demonstrated a robust annualised return of 63.11% over the last 3 months. In absolute terms, the return for the same period was 13.67%. These figures indicate that the index has experienced significant growth, making it a potentially profitable investment for those involved in the cryptocurrency market.

When assessing the risk associated with this index, we observe an annualised volatility of 29.15% over the past 3 months. This high volatility is not uncommon in the cryptocurrency market and is reflective of the significant price fluctuations that can occur in this sector. The Maximum Drawdown, which measures the largest single drop from peak to bottom in the value of a portfolio, was 12.99% during this period. This suggests that while the returns have been high, they have come at a substantial level of risk.

The Sharpe Ratio, a measure used to understand the return of an investment compared to its risk, stands at 0.84 for the last 3 months on an annualised basis. This indicates that the investment has provided reasonable returns when considering the level of risk involved.

In terms of potential future risk, the Value at Risk (VaR) and Expected Shortfall (ES) provide insights. The VaR, which measures the level of financial risk over a specific time period, was calculated to be 2.82% under a normal distribution and slightly lower at 2.78% under an empirical distribution, both at a 95% confidence level. This suggests that there is a 5% chance that the index will decline by more than these values over a day.

The ES, which provides an expectation of the loss given that the VaR threshold is exceeded, was calculated to be 3.59% under a normal distribution and 4.03% under an empirical distribution. This indicates that if the worst 5% of returns occur, the losses could be expected to exceed the VaR, with the empirical distribution suggesting slightly larger potential losses.

AI-Generated Reports

- Enhanced with dynamic UI

AAPL

Apple Inc. - Common Stock



Price 173.03

Change ▲ 3.7300

Change, % ▲ 2.20 %

MSFT

Microsoft Corporation - Common Stock



Price 397.84

Change ▲ 2.9000

Change, % ▲ 0.73 %

GOOG

Alphabet Inc. - Class C Capital Stock



Price 168.46

Change ▲ 2.8900

Change, % ▲ 1.74 %

META

Meta Platforms, Inc. - Class A Common Sto...



Price 441.68

Change ▲ 2.4900

Change, % ▲ 0.56 %

NVDA

NVIDIA Corporation - Common Stock



Price 858.17

Change ▲ 27.7600

Change, % ▲ 3.34 %

TSLA

Tesla, Inc. - Common Stock



Price 180.01

Change ▲ 0.020000

Change, % ▲ 0.01 %

MRNA

Moderna, Inc. - Common Stock



Price 125.59

Change ▲ 14.1300

Change, % ▲ 12.67 %

AMZN

Amazon.com, Inc. - Common Stock



Price 184.72

Change ▲ 5.7200

Change, % ▲ 3.19 %

AI-Generated Reports

- Enhanced with dynamic UI
- Relevant charts are included to illustrate key points of the reports

NVIDIA Corporation -
Common Stock
Currency in USD

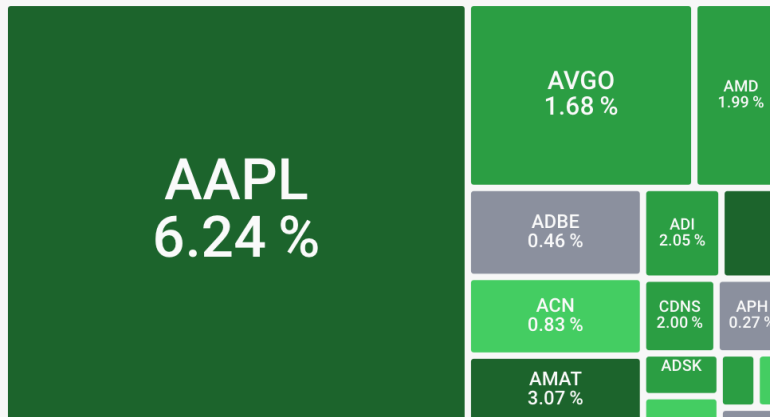
876.93
2.18 %



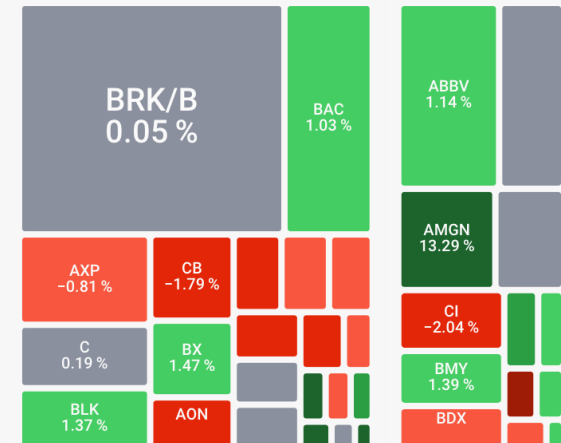
Market Cap	2,145B	Shares Outstanding	2,500M
Enterprise Value	2,130B	Shares Float	2,401M
Trailing P/E	71.93	Held by Insiders, %	0.45 %
Forward P/E	35.46	Held by Institutions, %	46.13 %

Earnings Date	22-May 24	Beta (5Y)	1.75
Diluted EPS (ttm)	11.93	Payout Ratio	1.34 %
PEG Ratio	1.48	Last Split Factor	4:1
Quarterly Revenue Growth (yoy)	—	Last Split Date	20-Jul 21

Technology

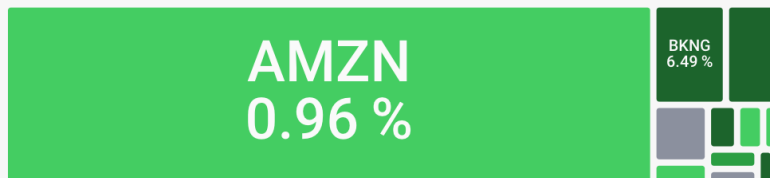


Financial Services

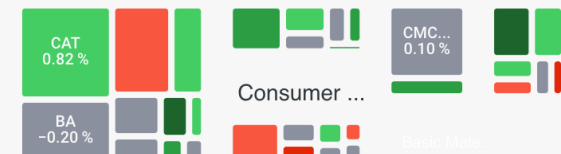


Healthcare

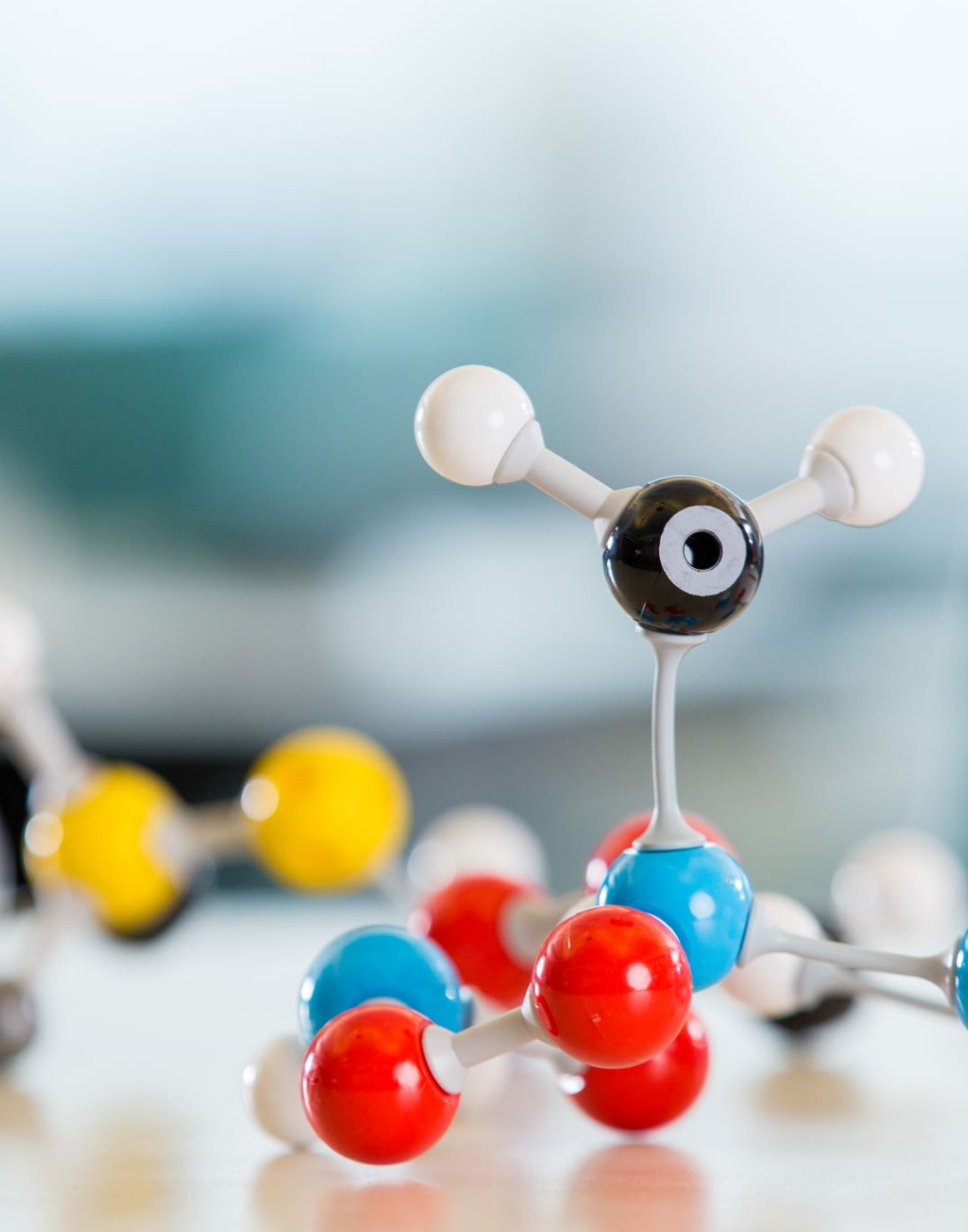
Consumer Cyclical



Industrials



Cloud architecture behind the scenes



Building blocks: Amazon Bedrock

- A managed service that offers a choice of foundation models from Amazon, Meta, and other providers, via a single API
- Handy for LLM experiments and model evaluation



Building blocks: ChatGPT Functions

- The API to GPT and ChatGPT
- Implements embedded ChatGPT interfaces

Ticker Panel

AAPL

Apple Inc. - Common Stock



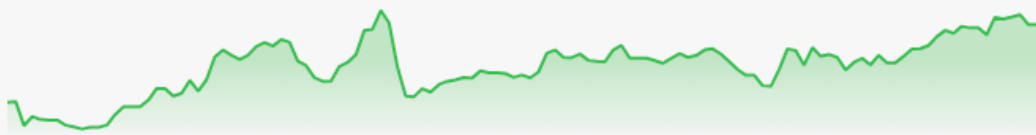
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Change ▲ 2.8900

Change, % ▲ 1.74 %

Building blocks: dxFeed Widgets

- Ready to use UI components
- Flexible UI settings, with night mode available
- Built-in analytics and reporting
- Easy integration

An aerial photograph of turquoise water with two birds flying over it. The water is a vibrant teal color with white foam from waves. The birds are dark with white underparts, flying in a V-shape.

Building blocks: dxLink CDN

- Real time widget data distribution
- Low latency in data delivery
- Scalability and security



Climbing the future of technology

- **Market data processing, analysis and distribution is becoming increasingly complex**
- **Cloud services are convenient building blocks**
- **We can help (as much or as little as you need)**



dxFeed



Thank you for listening!

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