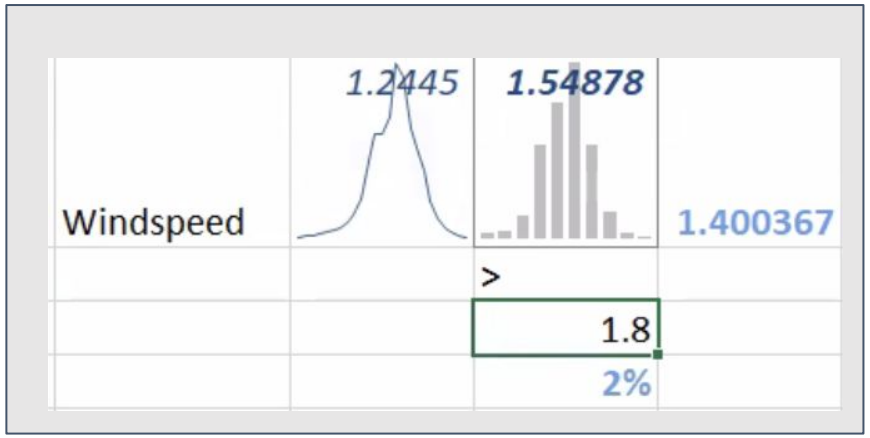
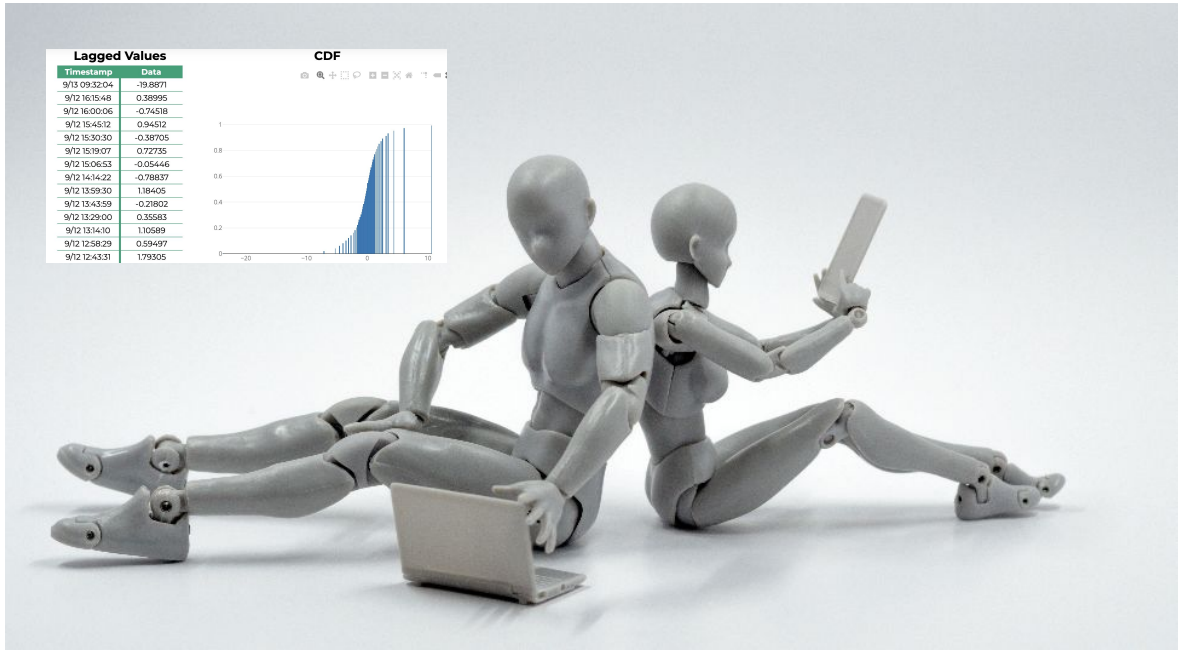
microprediction™

# If You Can Measure It, Consider it Predicted

# PRODUCT




**Anyone, anywhere** can source **live** repeated **short-term forecasts** of anything they measure.

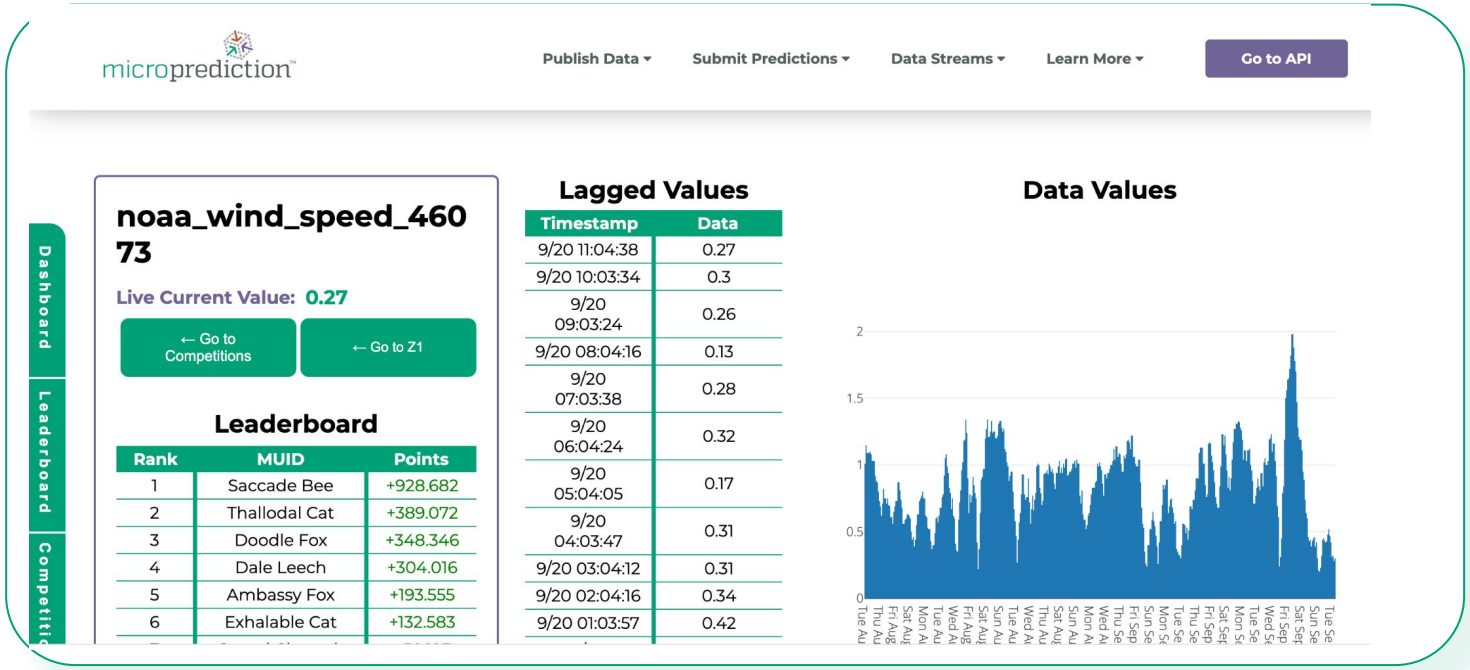


# HOW IT WORKS

1. You instrument *anything*

2. You publish numbers

3. We stage a **live, ongoing, open** contest



# ENERGY RISK & OPTIMIZATION

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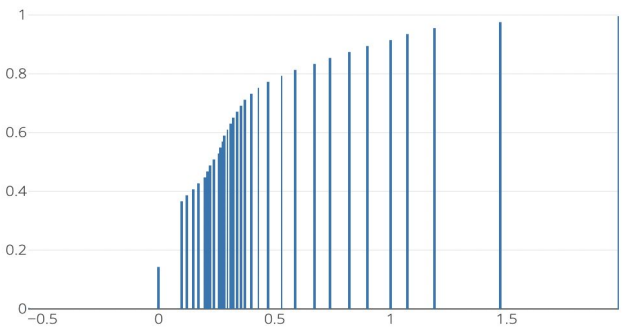
**Lagged Values**

| Timestamp | Data |
|---|---|
| 9/20 11:04:38 | 0.27 |
| 9/20 10:03:34 | 0.3 |
| 9/20 09:03:24 | 0.26 |
| 9/20 08:04:16 | 0.13 |
| 9/20 07:03:38 | 0.28 |
| 9/20 06:04:24 | 0.32 |
| 9/20 05:04:05 | 0.17 |
| 9/20 04:03:47 | 0.31 |
| 9/20 03:04:12 | 0.31 |
| 9/20 02:04:16 | 0.34 |
| 9/20 01:03:57 | 0.42 |

**CDF**




The only estimates of chance that **anyone can improve** at any time using the latest advances or **exogenous data**

# THE BEST ALGORITHMS COME TO YOU

## See our offline leaderboards too!

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More accurate ↑

| Name | Rating | Games | Active | Seconds | Dependencies |
|---|---|---|---|---|---|
| tsa_precision_combined_ensemble | 2100.0 | 27 | yes | 583.1 | statsmodels , timemachines |
| tsa_p2_d0_q1 | 2082.0 | 399 | yes | 172.9 | statsmodels , timemachines |
| orbit_lgt_24 | 2049.0 | 14 | yes | 51.7 | orbit-ml , timemachines |
| tsa_p1_d0_q1 | 2018.0 | 380 | yes | 107.0 | statsmodels , timemachines |
| bats_damped_arma | 2018.0 | 19 | yes | 1089.1 | tbats , timemachines |
| sk_ae_add_damped | 1990.0 | 1084 | yes | 11.4 | sktime , timemachines |
| tsa_precision_d0_ensemble | 1984.0 | 41 | yes | 282.1 | statsmodels , timemachines |
| sk_autoarima | 1974.0 | 72 | yes | 151.4 | sktime , timemachines |
| | | | | | |
| elo_fastest_univariate_balanced_ensemble | 1719.0 | 1470 | yes | 0.7 | timemachines |
| nprophet_p2_hypocratic | 1712.0 | 449 | yes | 36.7 | neuralprophet , timemachines |
| elo_fastest_residual_aggressive_ensemble | 1709.0 | 1806 | yes | 2.7 | timemachines |
| bats_arma | 1704.0 | 12 | yes | 252.7 | tbats , timemachines |
| tsa_aggressive_theta_ensemble | 1685.0 | 1180 | yes | 3.5 | statsmodels , timemachines |
| pycrt_median_8 | 1674.0 | 4 | yes | 2879.6 | pycaret , timemachines |
| | | | | | |
| fbprophet_univariate | 1598.0 | 238 | yes | 154.8 | prophet , timemachines |

Less accurate ↓

### Classic

- Ensembles of classical models or extensions like TBATS, re-fit and re-calibrated every data point at great computational cost, are the most reliable across diverse time series.

### Machine Learning

- Includes noble attempts to use neural networks such as neuralprophet (results).

### Popular

- Facebook Prophet has been downloaded twice as often as any other package. But see our article.

# MASSIVE OPPORTUNITY

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**Instrumentation**

… of business processes is cheap, and increasingly mandatory for modern commerce but …

**Cost**

… of bespoke quantitative modeling falls relatively slowly

**Collective**

… and largely autonomous prediction presents a radical, networked alternative.


**Artificial Intelligence as a Service**

AI-AAS **$92b** by 2030, CAGR of 39%
Precedence Research, 2021 (link)

**Automated Machine Learning**

AutoML **$15b** by 2030, CAGR of 45%
ResearchAndMarkets.com, Feb '22 (link)

# CLEAR DIFFERENTIATION

| | Microprediction | AWS Forecast AutoBox | Explorium PredictHQ | Causalens, DataRobot | BlueMix, Predix |
|---|---|---|---|---|---|
| Openly benchmarked | ✓ | | | | |
| Fast | ✓ | | | | |
| Accurate | ✓ | ? | ? | ? | ? |
| Exogenous data search | After MVP | | ✓ | | |
| Small | ✓ | | | | |
| Stateless | ✓ | | | | |
| Configuration free | ✓ | | | | |
| Scalable | ✓ | ? | | ? | |

# PROGRESS

## Stable platform

… at www.microprediction.org has operated smoothly for over a year, handled a billion predictions in aggregate

## Benchmarking

… of dozens of popular open-source packages and Elo ratings

## Insight

Intech investments discovered novel covariance estimation techniques

## Performance

The two users of precise are 2nd, 19th out of 186 teams in a worldwide contest

## Mindshare

- Rapid ascent to top tier DS commentator
- 20,000+ LI 2,000 new in Sep '22
- ~1,000 in slack

# ABOUT PETER COTTON

## Entrepreneur

- Founded Julius Finance in 2007, raising 1M seed capital.
- Renamed "Benchmark Solutions" with 25M Series A in 2009.
- Invented and wrote a scalable system for autonomous, real-time, curved-based pricing of bonds and credit default swaps en masse.
- Sold FIX data feeds to buy and sell side credit market participants.
- Received $86M verbal to buy company from IDC.
- Technology sold to Bloomberg and integrated into the terminal as BBG:BMRK.

## Leader, inventor and builder

- Lead Morgan Stanley's quantitative credit analytics effort 2002-2006, having identified shortcomings in existing risk analytics for CDOs, and convinced the firm to address them.
- Responsible for numerous new approaches to trading adopted by J.P. Morgan: the use of control theory, data science platforms, microstructure inference and privacy preserving computation.
- Author of Python packages for time-series, optimization, online estimation, structure learning in keras. Approximately 500,000 downloads (GitHub/microprediction).
- Diverse theoretical contributions in partial differential equations, time-series analysis, sports analytics, quantitative finance, epidemiology, statistics and so forth (GitHub/microprediction/home). Author of 8 US Patents.
- Creator and maintainer of a live exchange at microprediction.org that has processed approximately one billion predictions.

PhD, Mathematics, Stanford University - Australian Junior Chess Champion - Medalist in International Physics and Australian Mathematics Olympiads.

# INFLUENCE

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## Recommended as the #1 content provider … above **Yann LeCun!**


Blog | 12 min

Is Facebook's "Prophet" the Time-Series Messiah, or Just a Very Naughty Boy?

Published on February 3, 2021

**Richad Nieves-Becker** • 1st

Data science leader helping new DS leaders lead with joy & impact | Sr. …

1w •

There are only 4 data science people on LI that I drop everything for to read their content.

Why? They blow my mind and help me solve my problems.

Follow them:

1. **Peter Cotton .Pdf**

The creator of Microprediction. The Prometheus of forecasting. Reminds me how much I don't know.

His hot takes are too clever for the plebs. I love it.

His takedown of Facebook Prophet is legendary. Reminds me of the raptor in Jurassic Park. "Clever girl..."

Oh yeah - he wrote a book you should buy on open prediction networks.

2. **Yann LeCun**

One of the creators of the convolutional net and Chief AI Scientist at Meta.

At least half his content blows my mind. One of the best at framing problems on the frontiers of machine learning.

Reminds me that deep learning isn't just blind empiricism and expensive compute.

The best researchers are philosophers first and ask the right questions.

3. **Cassie Kozyrkov**

# STEPS TO MVP

1. **Prize-money increases, marketing**
   - Also technology scaling of www.microprediction.org to support growth

2. **Deep learning warehouse**
   - Surrogate production factory (c.f. "sklearned" )

3. **Paid product deployment**
   - MVP prediction AAS endpoints
   - Enhanced financial data
   - Enhanced measurement data

# ASKS

- $500k prize-money matching Kaggle
- $200k redis and other services
- Full stack developer
- Marketing & site improvements

- $100k deep learning computational resources
- $100k third party services and software
- Two ML / DS / quant dev

- Senior full stack developer
- Full stack developer
- Financial services engineer (feeds)
- Customer engineer / DS
- Product lead
- Bus dev, OEM lead

# GO TO MARKET STRATEGY

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## Enterprise Data, API Aggregators

- CloudQuant (agreed), Snowflake marketplace, Open FACTSET, Thomson Reuters marketplace, RapidAPI, Quandl, Dawex, Bloomberg, Refinitiv, Informatica, IBM, Oracle, Azure ML service, IDC

## Prediction-AAS OEM Partnerships

- Amazon TS
- Google AI
- Azure ML studio
- IBM

## Early adopters

- Energy
- Finance (Intech, Market-makers, Fraud detection)
- Industrial applications and IoT
- Cyber
- Ad Tech

**See also:**

https://alternativedata.org/data-providers/

# LONGER TERM INFLECTION POINTS

## CLEAR PATH TO SCALE

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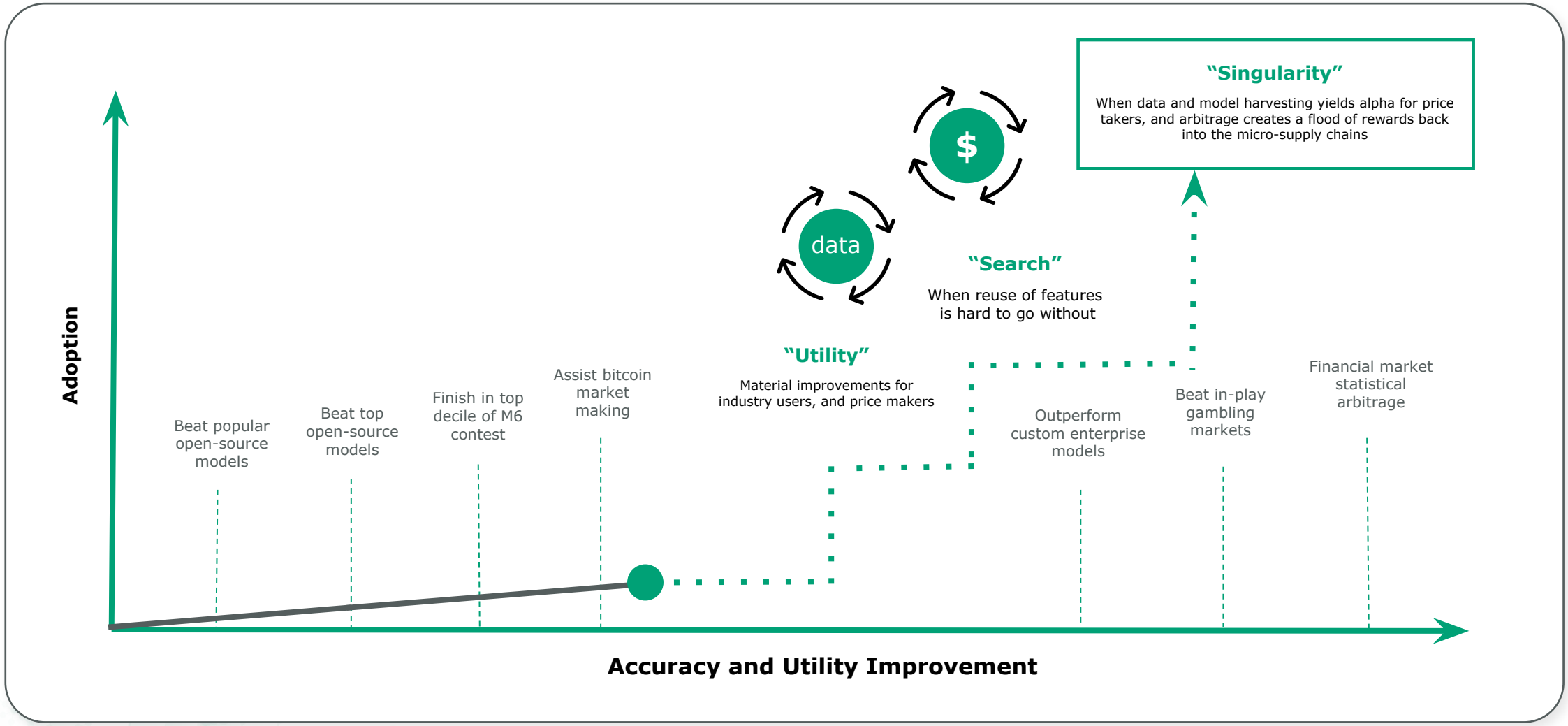

# SUMMARY

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## 1 Raising $5m

- Generic prediction API and clients.
- Providing autonomous prediction of rapidly changing instrumented processes, and data feed enhancements.
- Anticipated burn $2-3m.  7 technical, 2 non-tech ramping; prize-money, hardware, services, rent, overhead.
- Less than one year to MVP using data from the existing contest platform.

## 2 Risk:

- A finicky task to learn extremely accurate surrogates (see also moats).
- But modest risk, given the possibility of near-infinite training data generation.

## 3 Scale: 3rd party estimates USD:

- AutoML addressable market $15b by 2030, 45% CAGR (source) with 60% adopting (source)
- AI-AAS $92 Bn by 2030, at a CAGR of 39%. (source)
- Global Alt-data $143b 2030, CAGR 54% (source)
- IoT $2.5T., CAGR 26% (source)

## 4 Moats:

- Unique, high quality overfitting-free training data *(acquired by operating open, leakage-free, streaming competitions)*.
- Niche expertise in surrogate generation.
- Platform effects due to community growth, data and model sharing, and recursive use.

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# THANK YOU!