



How to Address Environmental Concerns with Predictive Analytics

Polyolefins – Business Unit

June 2018

Bazan Group



6B
Revenue



1800
Employees



8M Tons
Refining capacity



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CARMEL OLEFINS LTD

Polyolefins

CARMEL OLEFINS

165 kTA

Low Density Polyethylene (LDPE)

Trade name Ipethene®

450 kTA

Polypropylene (PP)

Trade name Capilene®

No Flare Policy



Flare Event – September 1st, 18:45



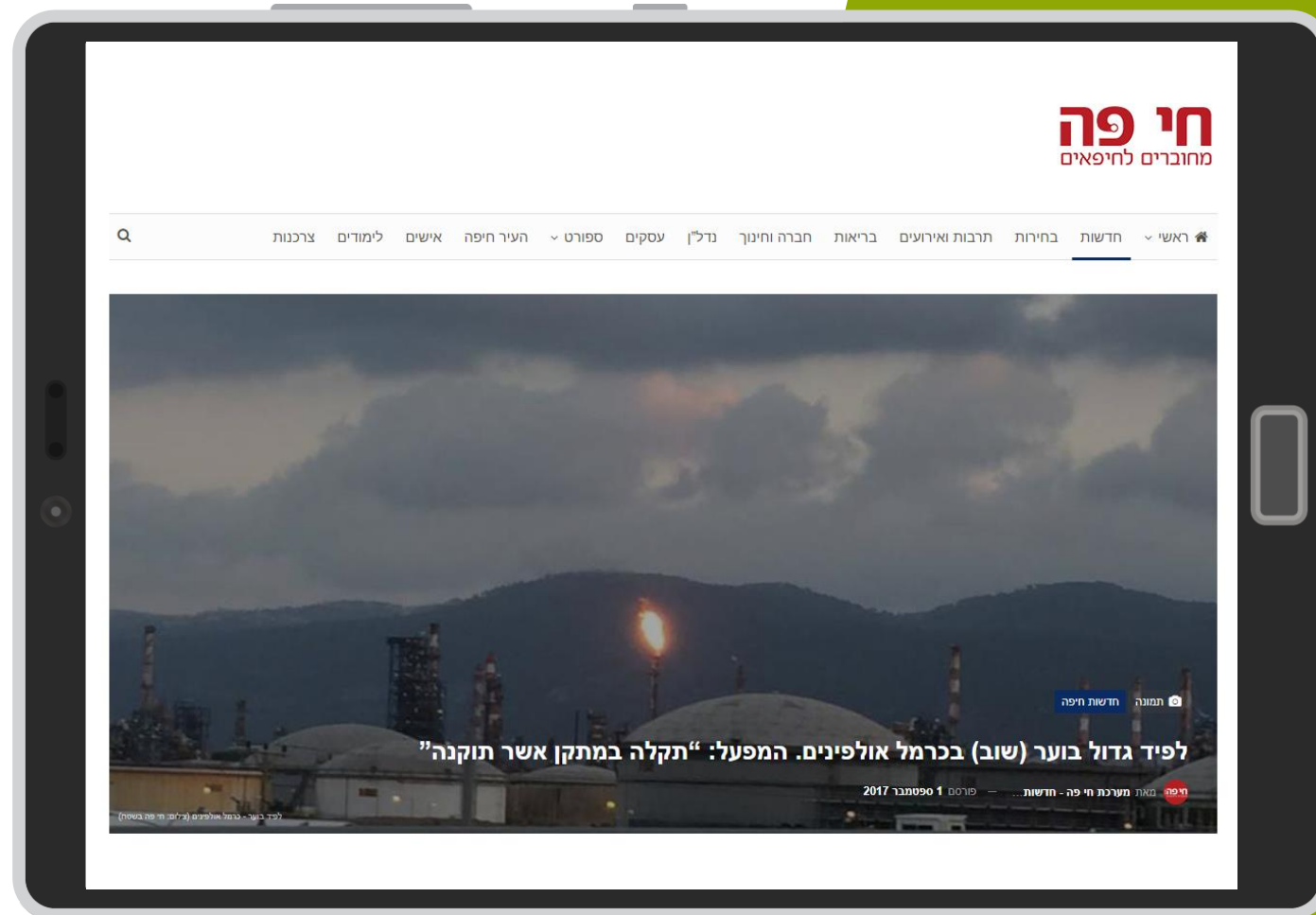
Flare is burning
Indicators show burn rate
of 40 tons / hour



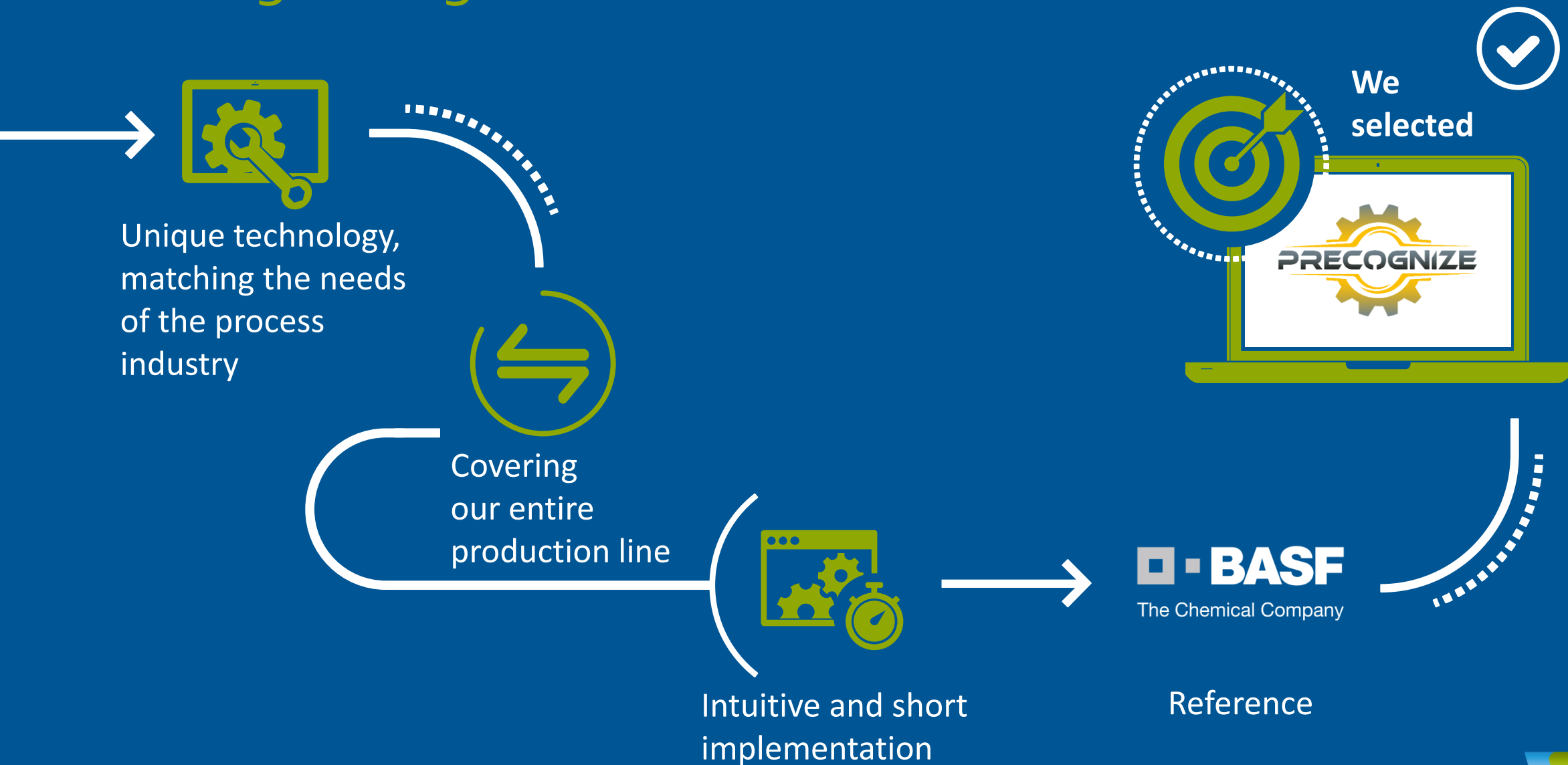
Within 5 minutes –
we were on the news



½ hour later
Problem identified –
valve FCV4402 Failed

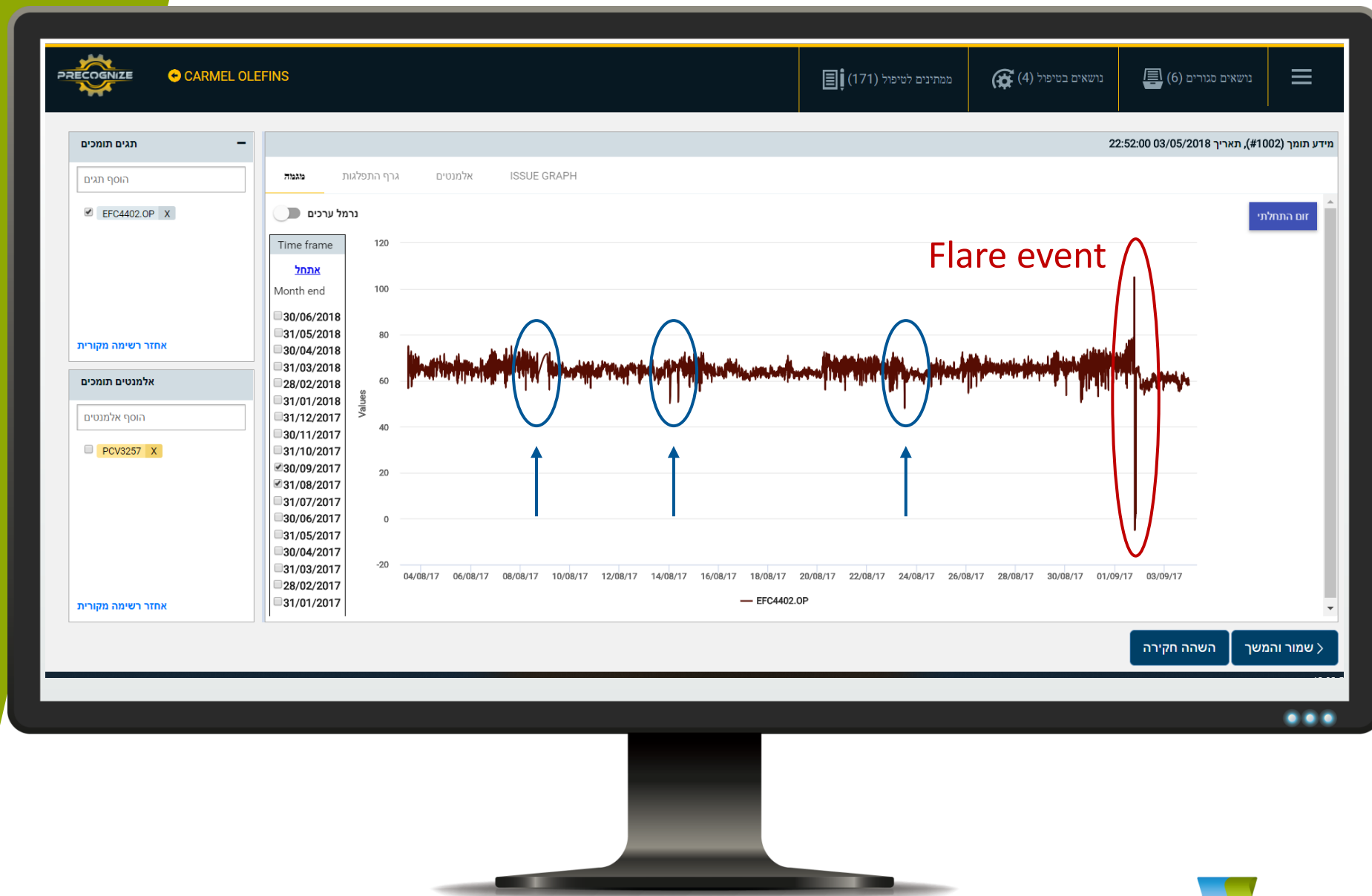


Choosing the Right Solution



How Does Precognize Handle a Flare Event

Precognize detected the problem **3 weeks** before it happened!



How Does Precognize Handle a Flare Event

Day of
Failure -
Event
Behavior





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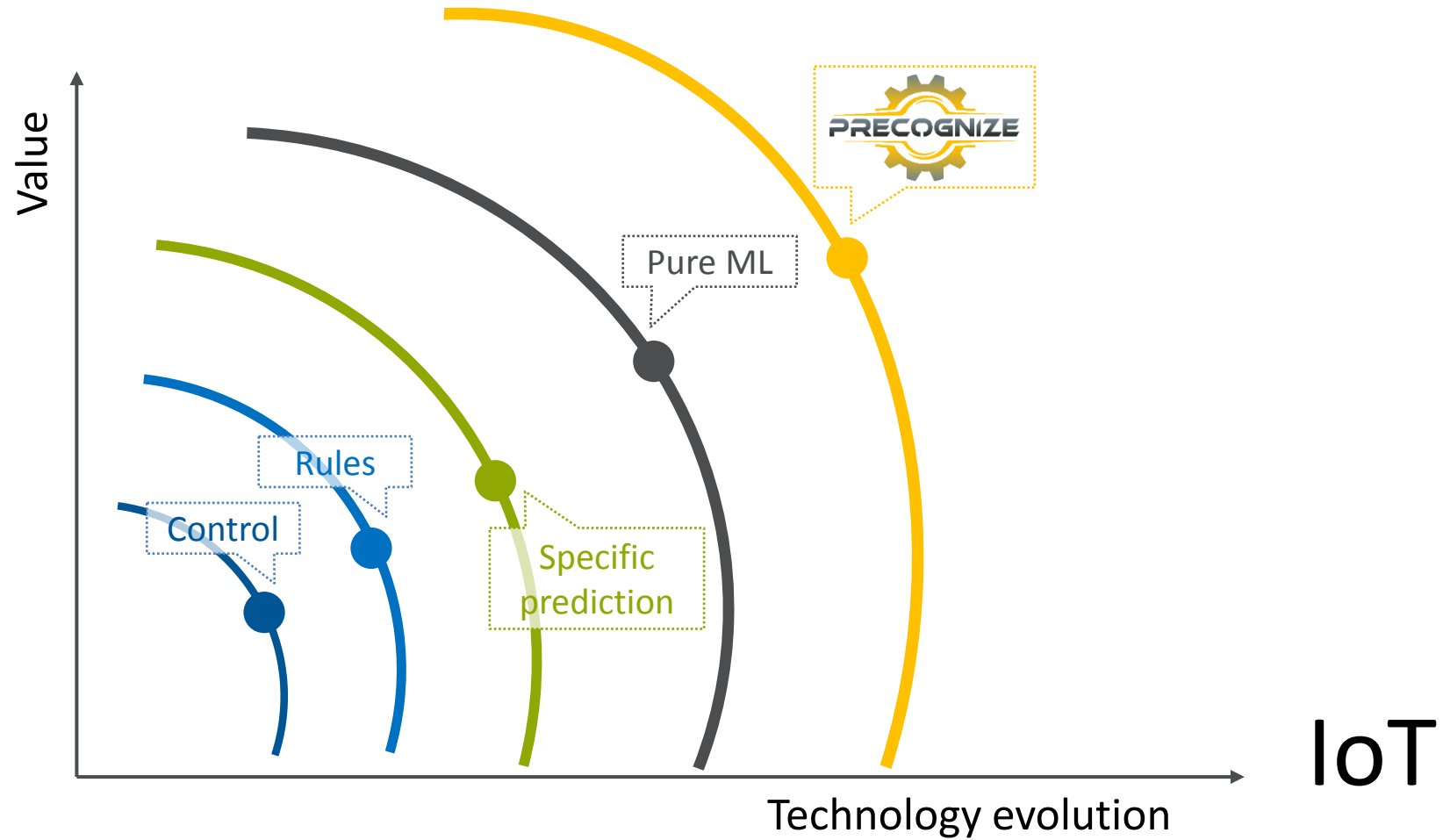
The Technology at a Glance

Aviel First

Precognize VP Sales

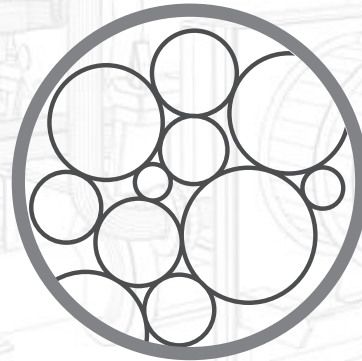


Current solutions detect only **2% of the failures**



The main problem of current solutions is **too many false alarms** (“noise”)

Data



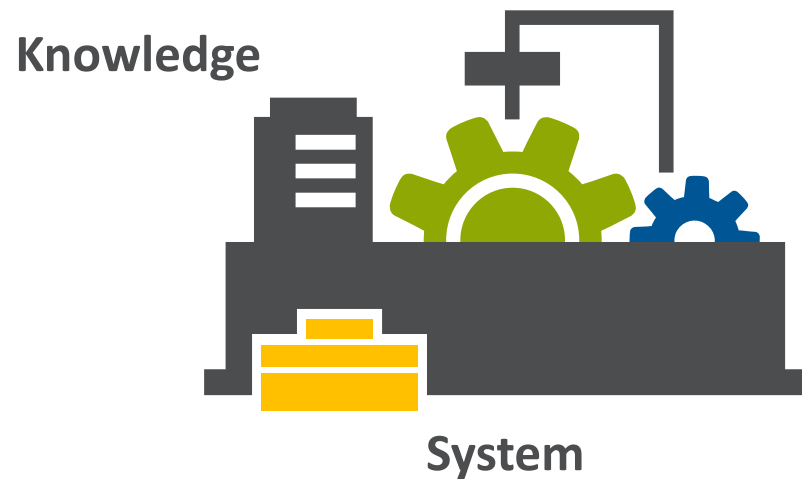
Machine Learning



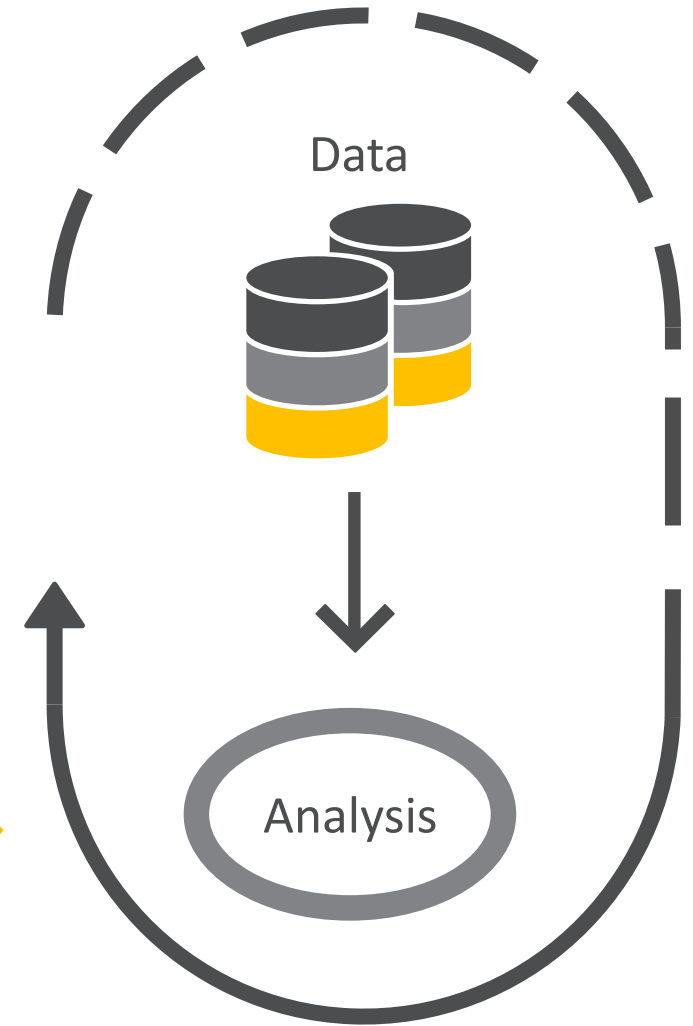
Precognize Technological Differentiator

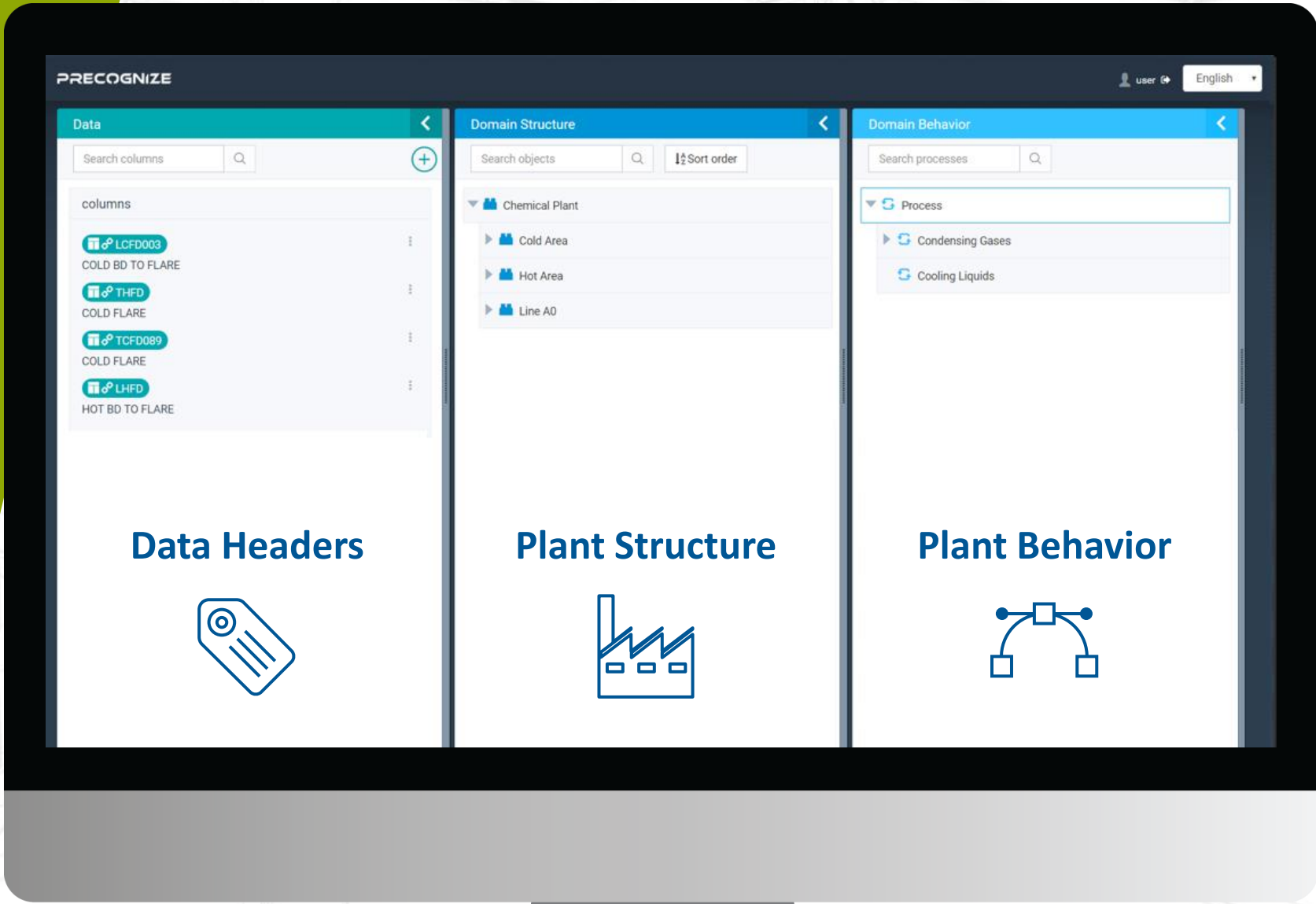
The best machine learning cannot avoid too many anomalies.

Data analysis is not enough.



There is a gap between the anomalies in the data and problems in the plant





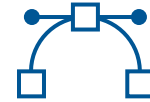
Data Headers

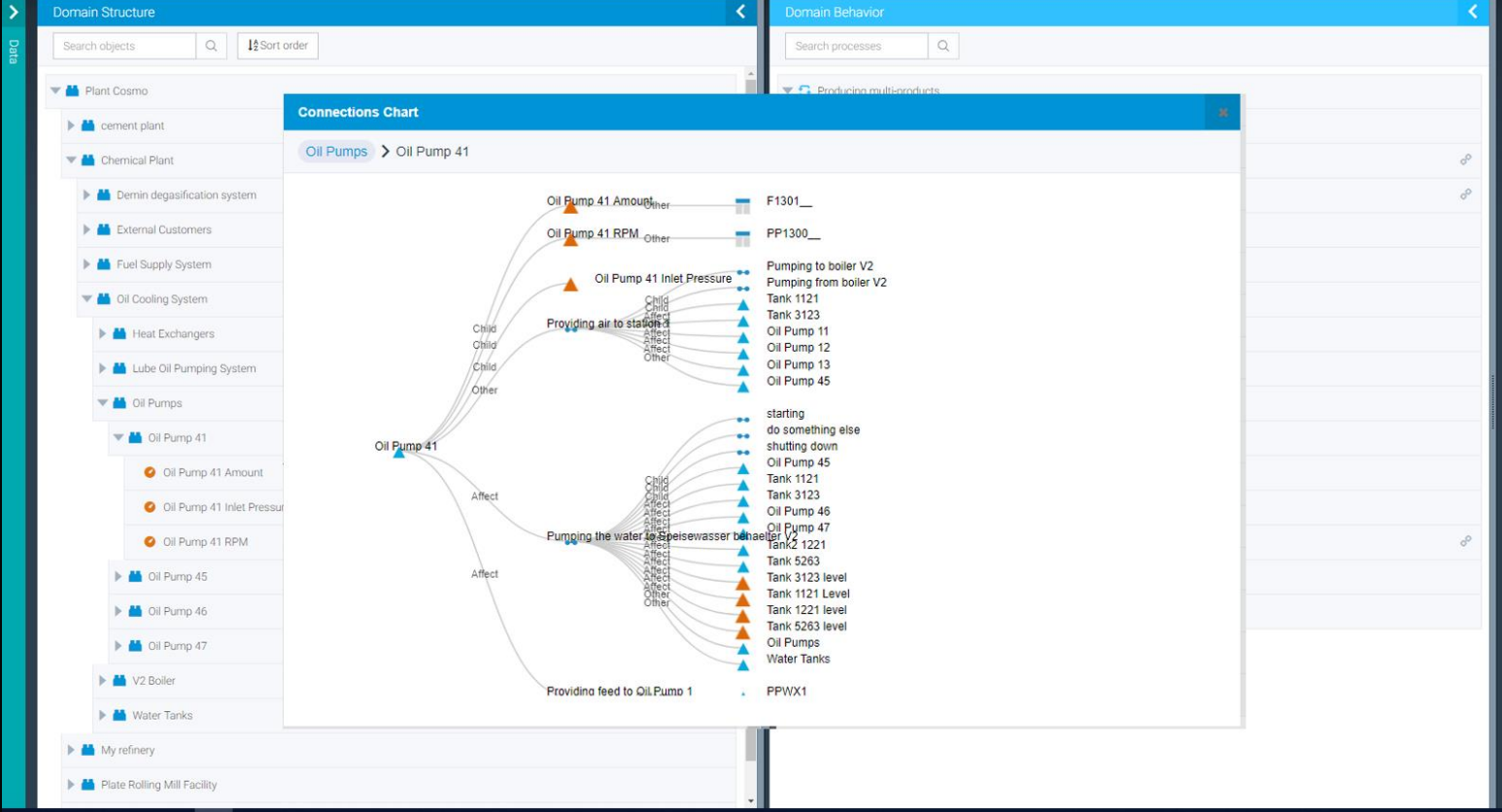


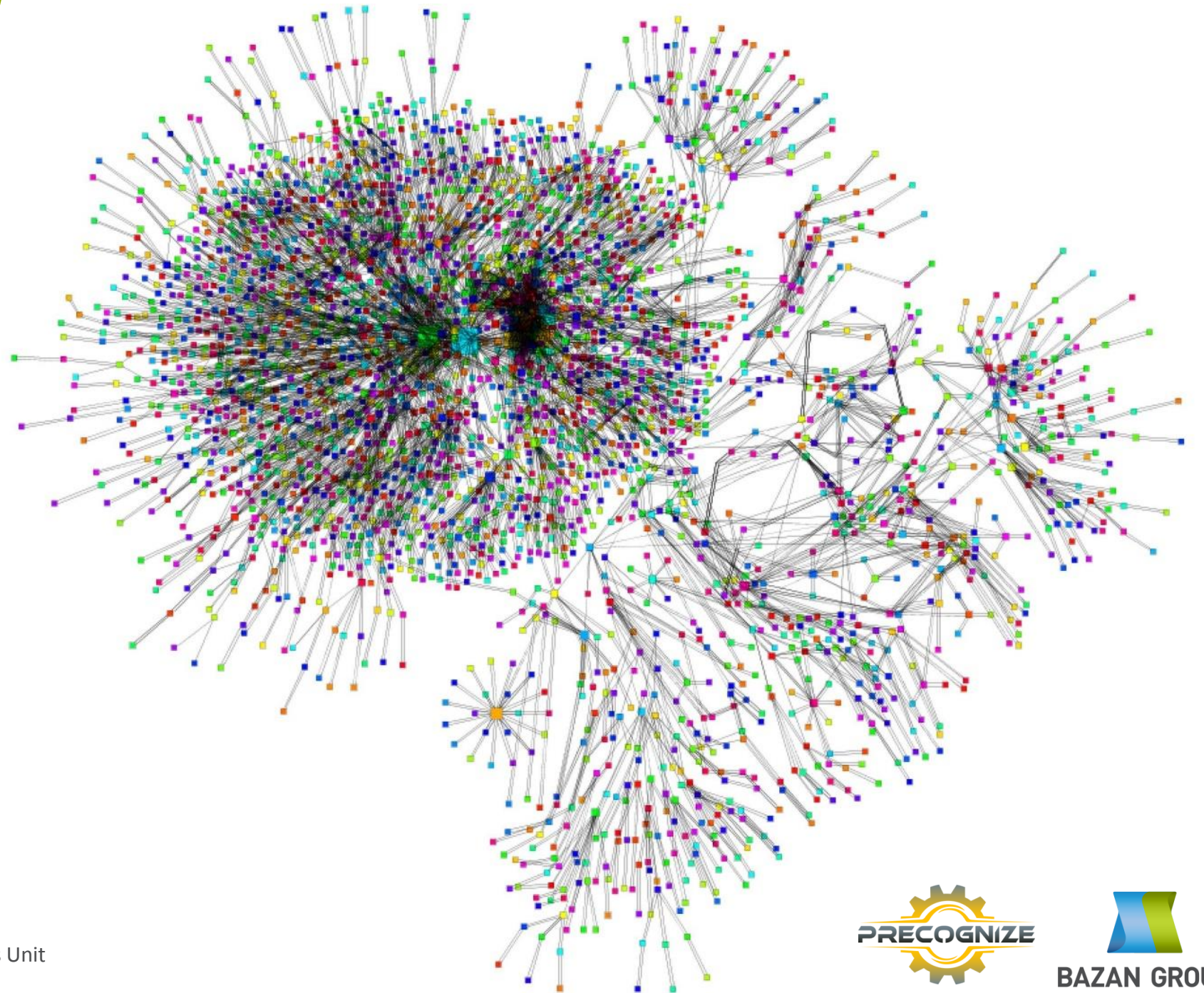
Plant Structure



Plant Behavior

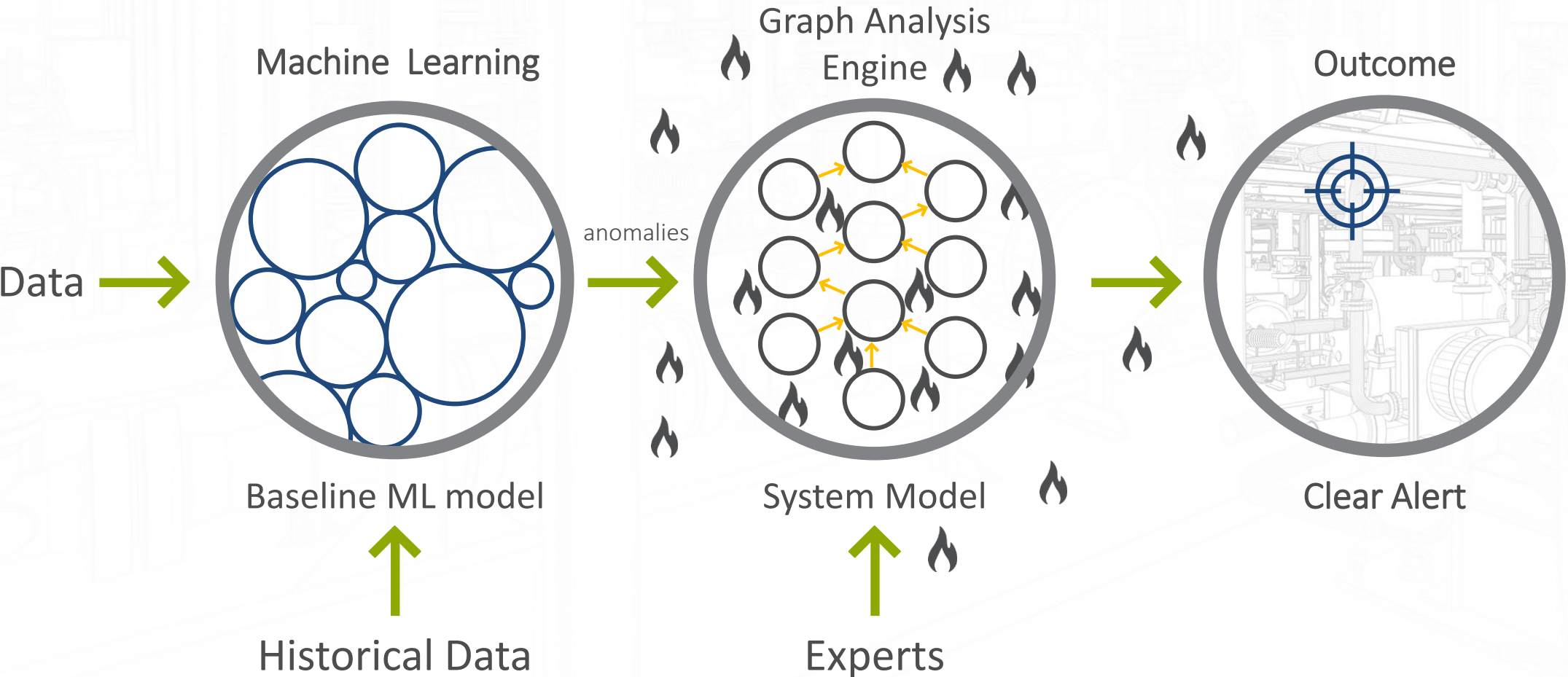






The Machine Learning part is listening to small changes in the machine operation

The Graph Analysis Engine aggregates these anomalies into a problem



Why We Chose Precognize



Benefits for Bazan



Change of paradigm:
Predicting failures,
NOT reacting to ones
that already happened



Innovation and Cooperation

Industrial corporation adopting Industry 4.0

Innovative Israeli start-up with a designated solution for the process industry

Desire to cooperate to maximize solution's benefits

- Weekly meetings for project review, feedback, and new ideas
- Short development cycles of new ideas and testing in live implementation

Israeli cooperation between corporation and startup enhances Industry 4.0 solutions and the Israeli ecosystem



Thank You

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