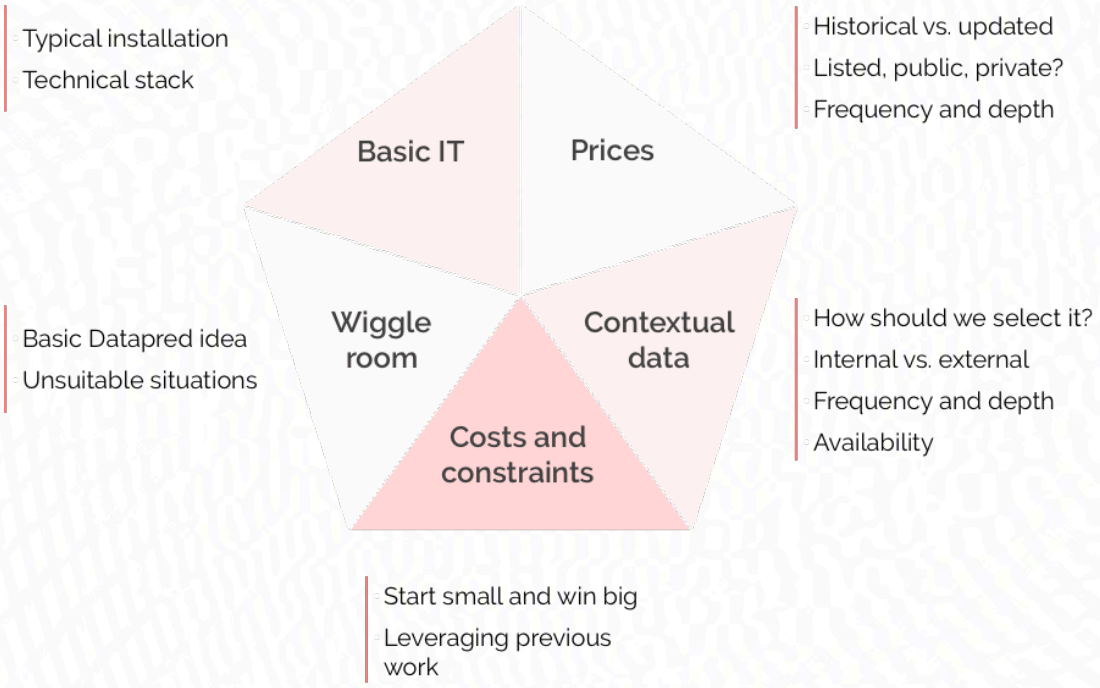
DATAPRED

Direct material procurement optimization
What's required?

The path to 10x results



1. Prices

The prices of the selected raw material or energy are obviously **a critical element of the procurement optimization challenge**.

We call such prices Datapred's « target », since a lot depends on our ability to anticipate their trends.

Historical vs. updated prices

We want:

- Historical prices to train and test our algorithms

- Automated price updates once in production

Listed, public, private?

Let's distinguish…

- **Listed prices**: reflecting the most recent transaction on an open stock exchange.
- **Public prices**: reference prices published by a professional information provider, and often constructed by surveying the main market players.
- **Private prices**: the prices effectively paid by a given market player.

Datapred can work with listed, public or private prices — **we are not limited to listed commodities**.

When a commodity is listed, private prices should not differ from listed prices. But public prices are indicative only, and private prices will often differ from them — more or less, depending on a market player's bargaining power.

Datapred will then **include that bargaining power in the computation of predictions and recommendations**.

Frequency and depth

For prices, **data frequency should align with your decision process**. If you make one buying decision per week, weekly prices will suffice[1].

A few guidelines regarding depth:

- For seasonal prices, you want at least two seasons in your data set. For example, two years of data if the seasonality is annual.
- If that market experiences large unexpected shocks from time to time, make sure to include one or two such moments in your data set.
- Apart from that, 18-24 months will usually be OK for daily data, and 4-5 years for weekly data.

2. Contextual data

Contextual data is **any data other than historical prices and price updates for the selected raw material or energy**.

Contextual data can…

- Improve our ability to anticipate target trends.

[1] Machine learning works better when the frequency of inputs and outputs is aligned.

- Improve our understanding of target movements (by identifying risk factors).

How should we select it?

Based on your knowledge of that raw material's or energy's market, and our experience of Datapred implementations.

Practically, we will brainstorm about data streams that could be economically related to the target *and that we could automate in production*.

We will then feed everything to Datapred, and the software will tell us which data is useful and which isn't.

Internal vs. external

For contextual data, people often think of external data streams: weather information, pollution levels, the prices of related raw materials or energies…

That's good, but in our experience, **internal contextual data can also be useful**: historical production and inventory levels, historical sales…

Remembering to test the usefulness of internal contextual data is important:

- We have seen instances where internal contextual data contributed over 20% of the software's efficiency.
- That data is private, giving you a nice competitive advantage when its contribution is positive.
- Internal data streams are usually easy to access and automate.

Frequency and depth

While the alignement of target frequency on your decision process is imperative (see « Prices » above), the requirement is not that strong for contextual data.

- The frequency of your contextual data should generally match the frequency of the target…
- …but it's OK if the frequency of some contextual data streams is lower — especially if there is a real-life reason for that[2].

Availability

It's good to be creative with contextual data (no downside, only upside, since Datapred will tell you when it doesn't contribute), but always remembering

[2] For example, we use the calendar of Party meetings for steel price procurement optimization in China. Obviously the Party doesn't meet every day, but Party decisions often affect steel prices.

that our goal is continuous intelligence, and that **a data stream is useless if we can't automate it in production**.

3. Costs and constraints

Procurement teams don't work in a vacuum. They must **take into account their company's operational, financial and regulatory costs and constraints**: production schedule, inventory capacity, delivery times, working capital, compliance rules…

The number of trade-offs increases exponentially with the number of costs and constraints, very soon exceeding the processing capacity of the human brain.

Start small and win big

We often tell clients that, with regard to costs and constraints integration, we can go as far as their analytical accounting will let us.

BUT you don't need extreme sophistication in that area to benefit from Datapred's combination of prediction and optimization.

Our experience is that **integrating a basic set of costs and constraints will already deliver significant savings**. A typical example would be:

- Production schedules
- Inventory capacity ans cost
- Min and max purchase order volume
- Min and max purchase order value
- Lead time

Our strong recommendation is thus to **start small, and add sophistication bit by bit**.

Leveraging previous analyses

Enterprises regularly conduct cost and constraint analysis/optimization campaigns, often with the help of outside consultants.

We love to build on top of such work. Datapred will **take the costs, constraints and business rules that you have already formalized, and integrate them in real time with price trend predictions** to deliver optimal purchase order recommendations.

4. Wiggle room

You can't optimize if you have no room for optimization.

The basic Datapred idea

Datapred for Procurement rests on the basic idea that **improving the timing of your purchase orders will reduce your raw material or energy spend**.

For this, you need price trend predictions, but also **the ability to wait for a price drop, or anticipate a price hike**.

Unsuitable situations

Some companies can't do this: they never have more that two or three days of inventory, they only build — and purchase — to order, their compliance rules effectively mandate rigid long-term procurement contracts…

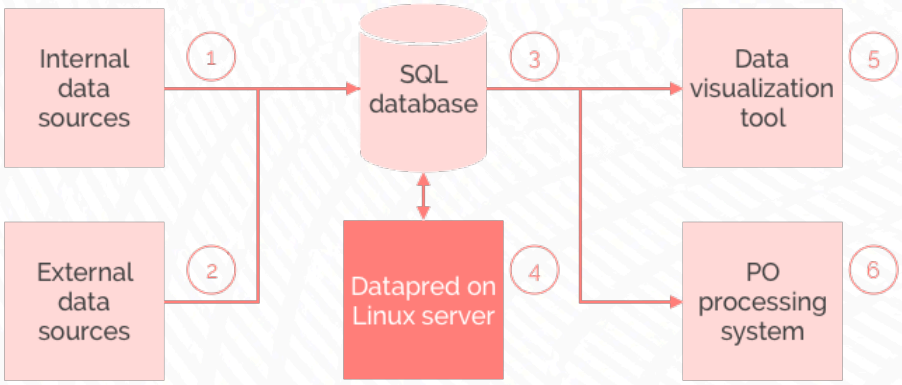
It doesn't take a lot to create optimization opportunities[3], but **we absolutely need some wiggle room**.

5. Basic IT

Using Datapred is not an IT issue — the technological stack required is super standard.

Typical installation

A typical installation looks like this:



[3] We have recently generated nice savings for a steel company, just playing with price trend predictions and the ability to store between three and seven days of raw material consumption.

Technical stack

So to use Datapred for Procurement, you need:

1. The ability to automate data flows from your internal systems.
2. The ability to automate selected external data flows (the target being the most critical — see « Prices » and « Contextual data » above).
3. The ability to provision a standard database, either in your datacenter or in a private cloud.
4. The ability to provision a standard Linux server, either in your datacenter or in a private cloud.
5. A data visualization tool where we will push our standard dashboards.
6. Potentially, the ability to automate data flows between Datapred and your purchase order processing system.

About Datapred

*Datapred is a **digital twin for industrial buyers of energy and raw materials**.*

*Datapred helps buyers make better decisions, by providing **a safe, connected space where they can test and monitor raw material and energy buying and hedging strategies**.*

*Our digital twin offers buyers **360° visibility on market dynamics and price trends, their own buying performance, and the interplay between procurement and operations**.*

*It also helps raw material buyers **integrate non-financial goals into the buying strategy**: emission reduction, asset maximization, product quality...*

Datapred is a Gartner Cool Vendor, a SpendMatters Top 50 Company to Watch, a ProcureTech & Kearney Top 100 Innovator, a Laureate of the Swiss Foundation for Technological Innovation (FIT), and won Airbus's worldwide machine learning challenge in 2019.

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