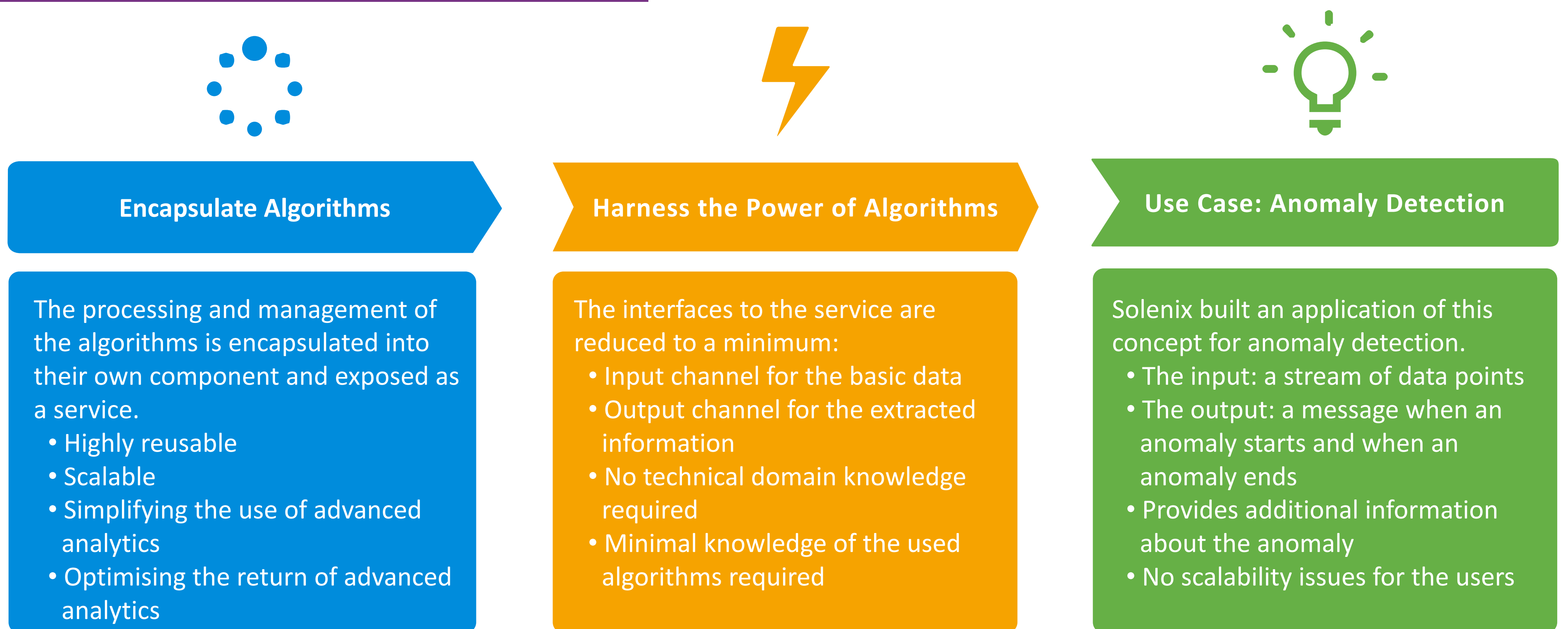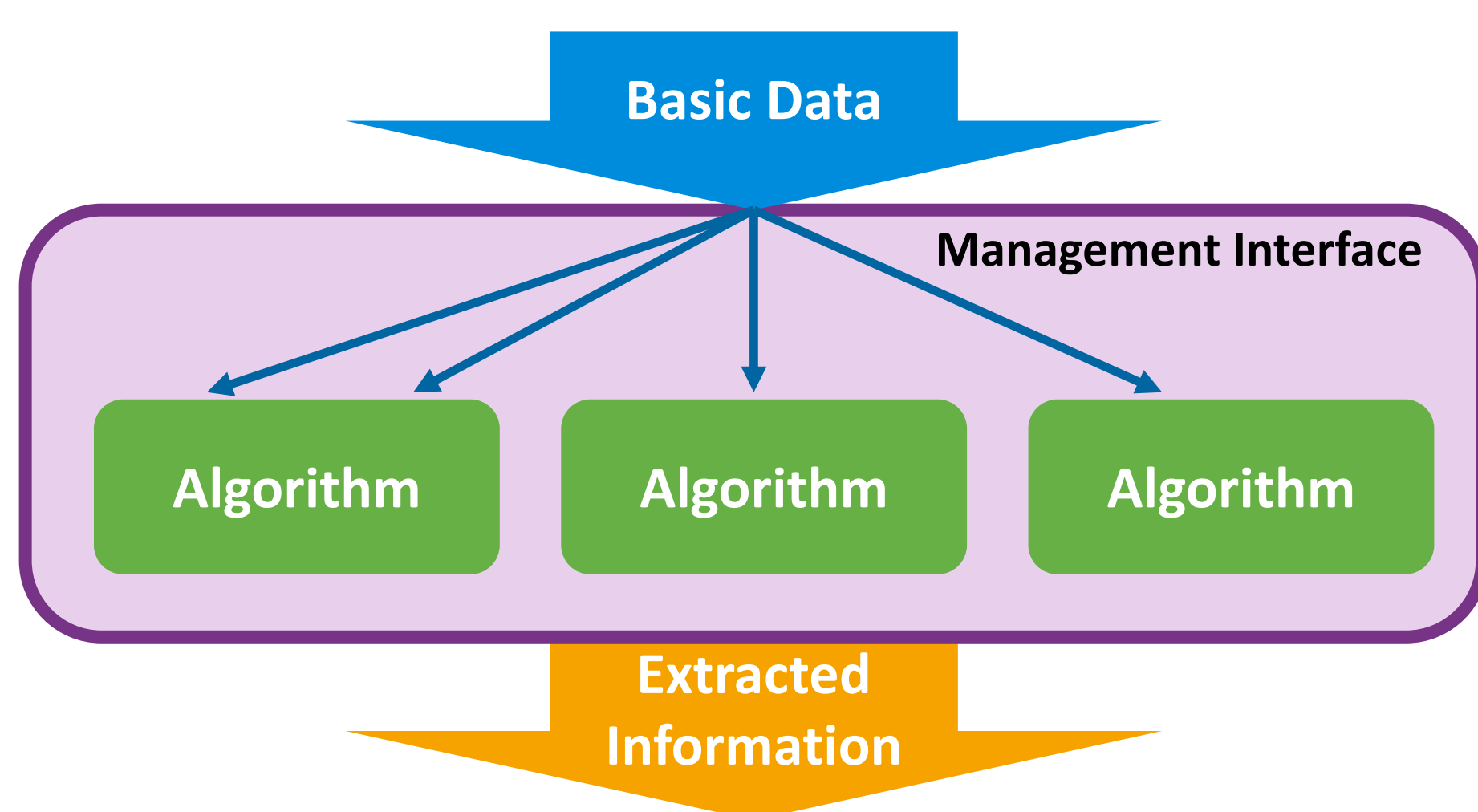# Algorithms as a Service

SOLENIX

In response to the ever-increasing amount of data produced by satellites and ground systems, satellite operators have started leveraging the power of advanced analytics technologies to gather insights on their systems. Infrastructure is built around big data technologies for collecting and processing data. This requires not only a significant investment, but also a very diverse set of competences.

Indifferent how complex the technological aspects are, the need of satellite operators is simple: it is to extract relevant information from the basic data. We propose to expose algorithms as encapsulated services that can be easily used to extract the required information.

The Idea

Encapsulate Algorithms

The processing and management of the algorithms is encapsulated into their own component and exposed as a service.
- Highly reusable
- Scalable
- Simplifying the use of advanced analytics
- Optimising the return of advanced analytics

Harness the Power of Algorithms

The interfaces to the service are reduced to a minimum:
- Input channel for the basic data
- Output channel for the extracted information
- No technical domain knowledge required
- Minimal knowledge of the used algorithms required

Use Case: Anomaly Detection

Solenix built an application of this concept for anomaly detection.
- The input: a stream of data points
- The output: a message when an anomaly starts and when an anomaly ends
- Provides additional information about the anomaly
- No scalability issues for the users

Unfolding its Full Potential: Combination with a Management Interface

- A management interface can
  - redirect and duplicate incoming streams
  - use various algorithms
  - use the same algorithm with different parameters, e.g. thresholds
- Allows the users to very easily compare results for different approaches
- Reduces the gap between research on algorithms and processes leading to actionable insights

Our Vision: The Self-Adapting Black Box

We envisage Algorithms as a Service as a self-adapting black box. Other applications will use Algorithms as a Service to get information out of data, but, at the same time, these applications will provide feedback on the adequacy of the outputs. The objective is to create a service that dynamically adapts to the needs of the users.