

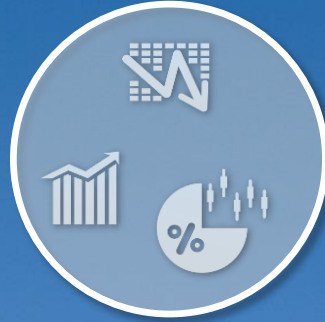
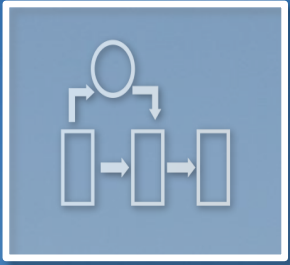
BECOMING A DIGITAL ENTERPRISE WITH THE POWER OF ANALYTICS

Barry Hodges and Nick Cater
SAP New Zealand Ltd



Agenda

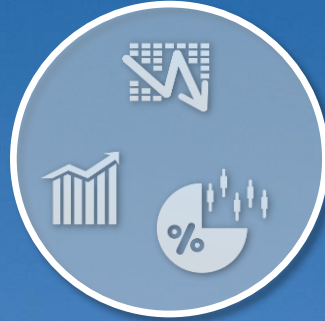
- The analytical conundrum
- Real-time operational reporting
- Extending analytics to include context
- From the shop floor to the top floor
- Just In time



what is happening?

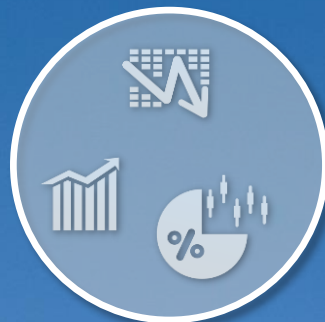
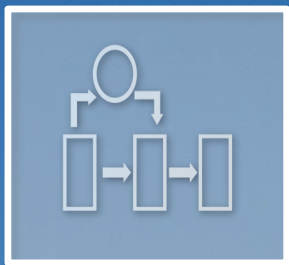
This information resides in your transactional systems recording important information like orders taken, invoices posted, requisitions placed, etc. When reporting on this information we term this “Operational Reporting”.





what happened?

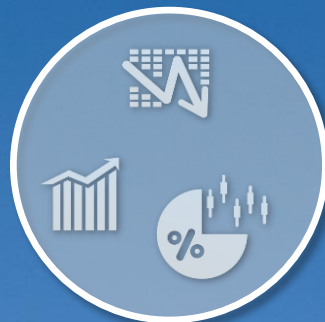
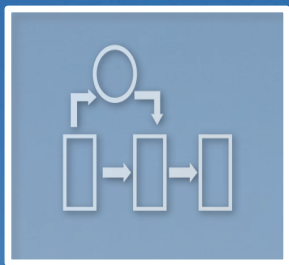
This information resides in your analytical systems and enables additional dimensions of analysis to be conducted. For example analysing who bought what product, in what market, over what time frame. Often this analysis requires the joining of data from more than one system. Subsequently the data is replicated to a dedicated reporting system such as a data mart or enterprise data warehouse.



why did it happen?

The first two dimensions tell us what we sold and to whom, but they don't usually tell us why. By combining context we can often fill in this missing piece. Context provides additional insight like sentiment, change in the weather, system failure, etc. This information is usually bound up in semi and unstructured data sources such as social media and sensor data.

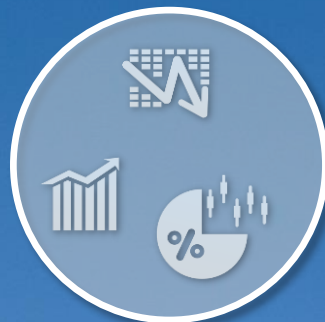
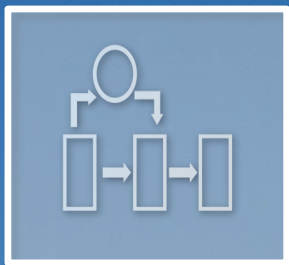




what will happen next?

“What Will Happen?” takes as an input all of the data from all three dimensions and uses this to predict and simulate what will happen next – essentially working with various predictive models to work out the next best action.

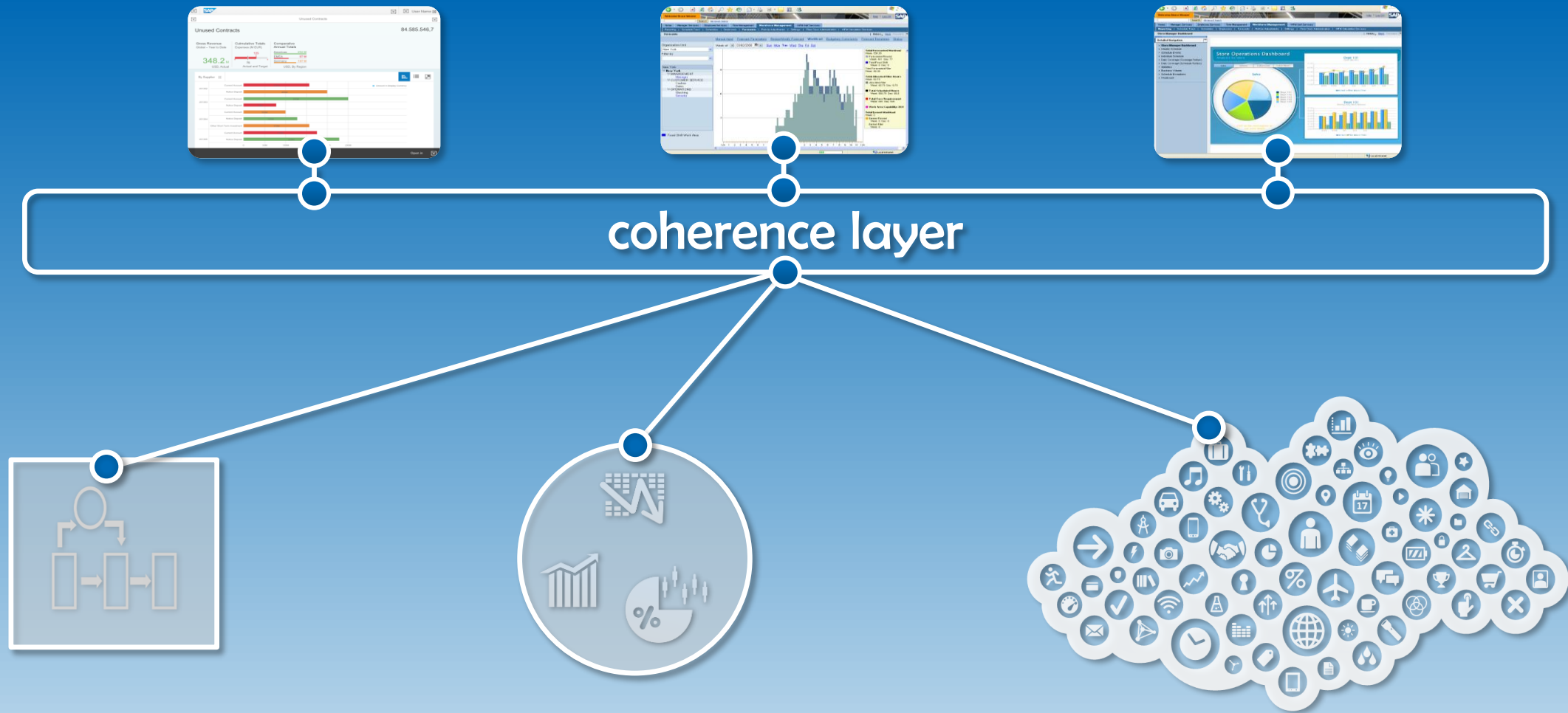




better yet, can I engineer conditions to create the best outcome?

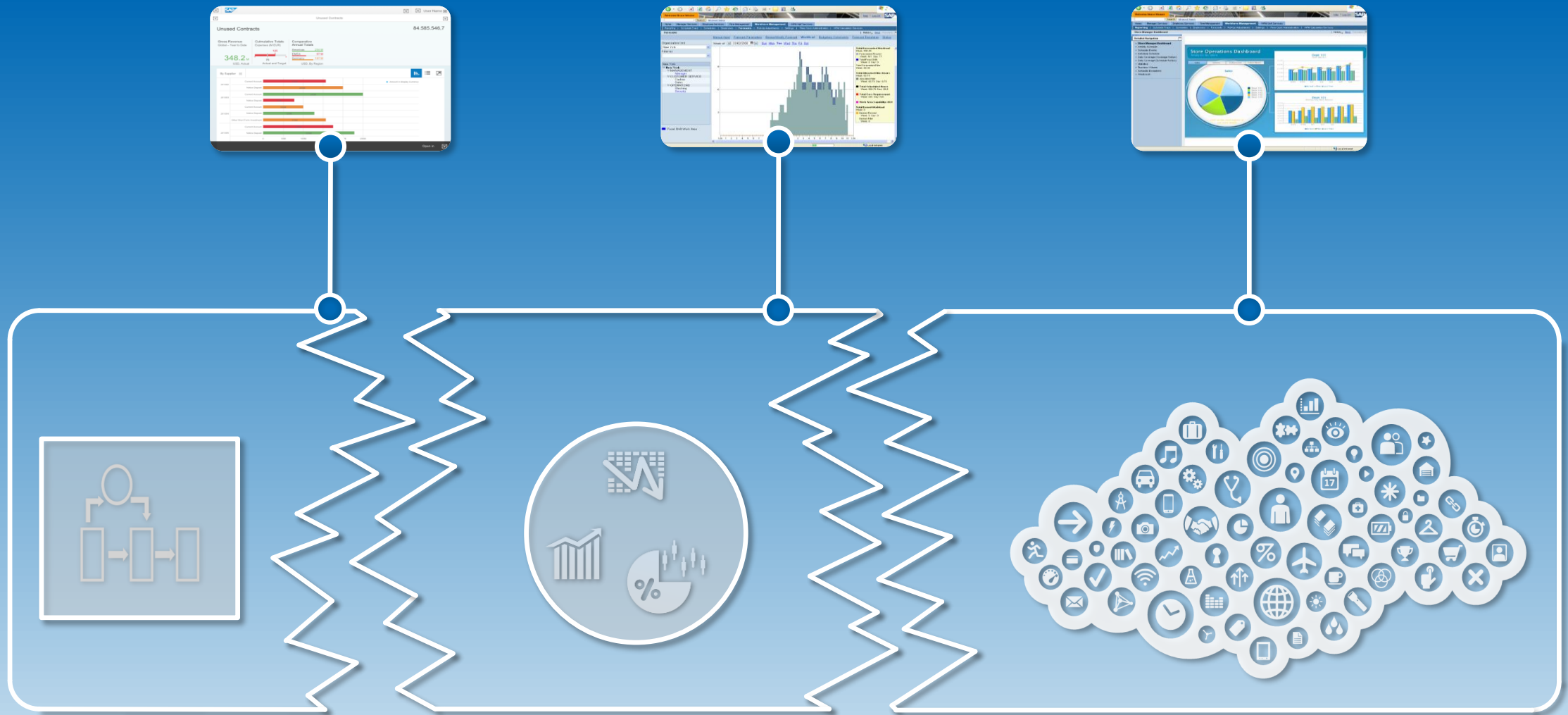
The nirvana state is to understand what levers and buttons need to be pushed to engineer the condition to create the best outcome – optimally through automation. This way you take control of your destiny, avoiding pitfalls and optimising opportunities.





the need for coherence

The Business Intelligence conundrum lies with the fact that these data sets are more often than not residing in loosely coupled silos. Subsequently it is very difficult to answer these questions in a timely and consistent manner, especially the last one – i.e. what will happen. Hence the need for a coherence layer – somewhere where analysts can go that integrates and harmonises data silos. The first option is to provide the coherence state in the BI tool – the downside however is not everyone accesses data via this layer.



the need for coherence

The other option is create the coherence layer as close to the data as is possible. This way, no matter how an analyst connects, they should get a consistent view with consistent answer. Once again however the siloed nature of these different data sets undermines the objective of having a 360° view. The rest of this presentation explores different ways these silos can be connected.

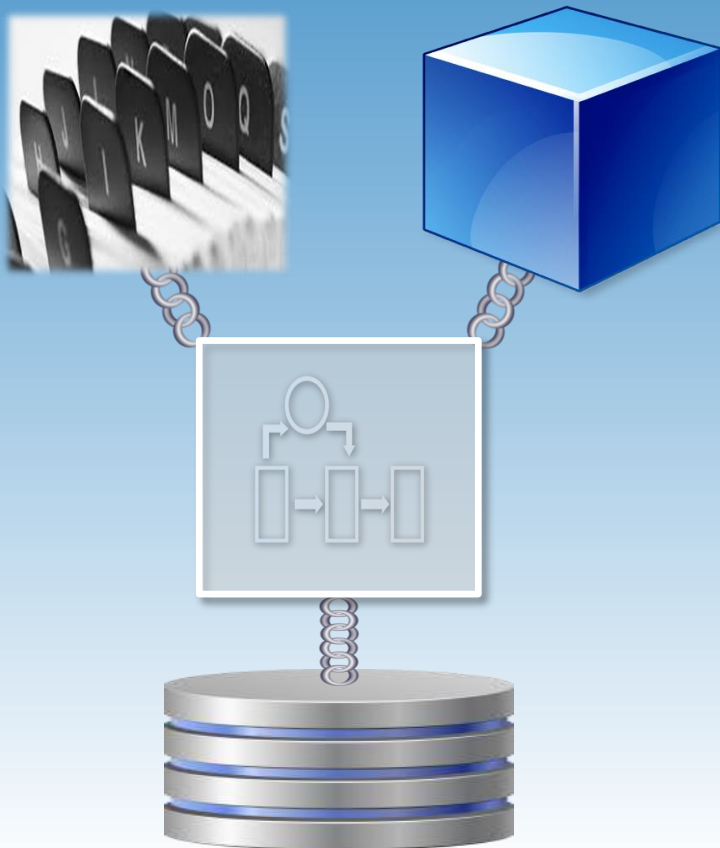
Driving Core Operations with Analytics



operational reporting

The challenge with operational reporting is ensuring business transactions are not negatively impacted when executing analytical queries. To mitigate the impact we build indexes and materialised aggregates. Trouble is they are not well suited to ad-hoc queries, and if not well designed – can cause damage. The solution – replicate data to a dedicated analytical platform where operational queries can be executed without impacting the source.

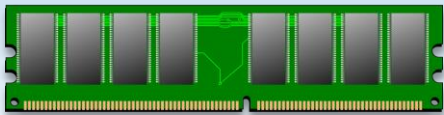
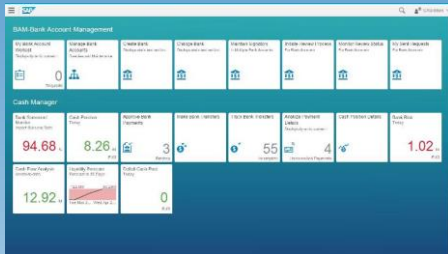
This approach however has the potential to create several problems. The first is latency – data needs to be copied and that more often than not is not real-time. As such operational reporting is compromised by the time delta. The second is unnecessary duplication. Operational data now exists in two locations. This increases complexity and cost.



operational reporting

With the advent of in-memory computing we can now return the operational reporting to its rightful home – the operational system. In-memory allows us to drop indexes and eliminate physical aggregates. In-memory also allows us to ask any query of the underlying data model without fear of upsetting the transactional workload. This means we have true ad-hoc analytical capabilities.

The realisation of this capability within the SAP context is seen in Suite on HANA and S/4HANA. Both of these solutions allow analytics to be embedded directly in the SAP core application via Fiori Smart Business Cockpits, Factsheets, Analytical Apps, HANA Live and Core Data Services.



operational reporting – material manager example



Material
Manager

Review Material Shortage

Enter Material Order

Analytics and Insights



Check Budget Overview



Check Average Supplier Delivery Performance

Date Operation	Date Operation Year Month	Amount
01/01	2020-01-01	1,518.00
01/02	2020-02-01	4,233.00
01/03	2020-03-01	1,518.00
01/04	2020-04-01	4,233.00
01/05	2020-05-01	1,518.00
01/06	2020-06-01	4,233.00
01/07	2020-07-01	1,518.00
01/08	2020-08-01	4,233.00
01/09	2020-09-01	1,518.00
01/10	2020-10-01	4,233.00
01/11	2020-11-01	1,518.00
01/12	2020-12-01	4,233.00
01/13	2021-01-01	1,518.00
01/14	2021-02-01	4,233.00
01/15	2021-03-01	1,518.00
01/16	2021-04-01	4,233.00
01/17	2021-05-01	1,518.00
01/18	2021-06-01	4,233.00
01/19	2021-07-01	1,518.00
01/20	2021-08-01	4,233.00
01/21	2021-09-01	1,518.00
01/22	2021-10-01	4,233.00
01/23	2021-11-01	1,518.00
01/24	2021-12-01	4,233.00
01/25	2022-01-01	1,518.00
01/26	2022-02-01	4,233.00
01/27	2022-03-01	1,518.00
01/28	2022-04-01	4,233.00
01/29	2022-05-01	1,518.00
01/30	2022-06-01	4,233.00
01/31	2022-07-01	1,518.00
01/32	2022-08-01	4,233.00
01/33	2022-09-01	1,518.00
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01/35	2022-11-01	1,518.00
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01/90	2027-06-01	4,233.00
01/91	2027-07-01	1,518.00
01/92	2027-08-01	4,233.00
01/93	2027-09-01	1,518.00
01/94	2027-10-01	4,233.00
01/95	2027-11-01	1,518.00
01/96	2027-12-01	4,233.00
01/97	2028-01-01	1,518.00
01/98	2028-02-01	4,233.00
01/99	2028-03-01	1,518.00
01/100	2028-04-01	4,233.00

Review Detail Report

Select Supplier

Choose best supplier and complete material order entry

All On One Screen



- ✓ Faster customer delivery
- ✓ Larger average deal size
- ✓ Fewer warehouse stock outs

https://www.youtube.com/watch?v=oC6Zs_u4Fys

Driving strategic insight with advanced analytics



**limited historical
reporting**



single domain

limited planning

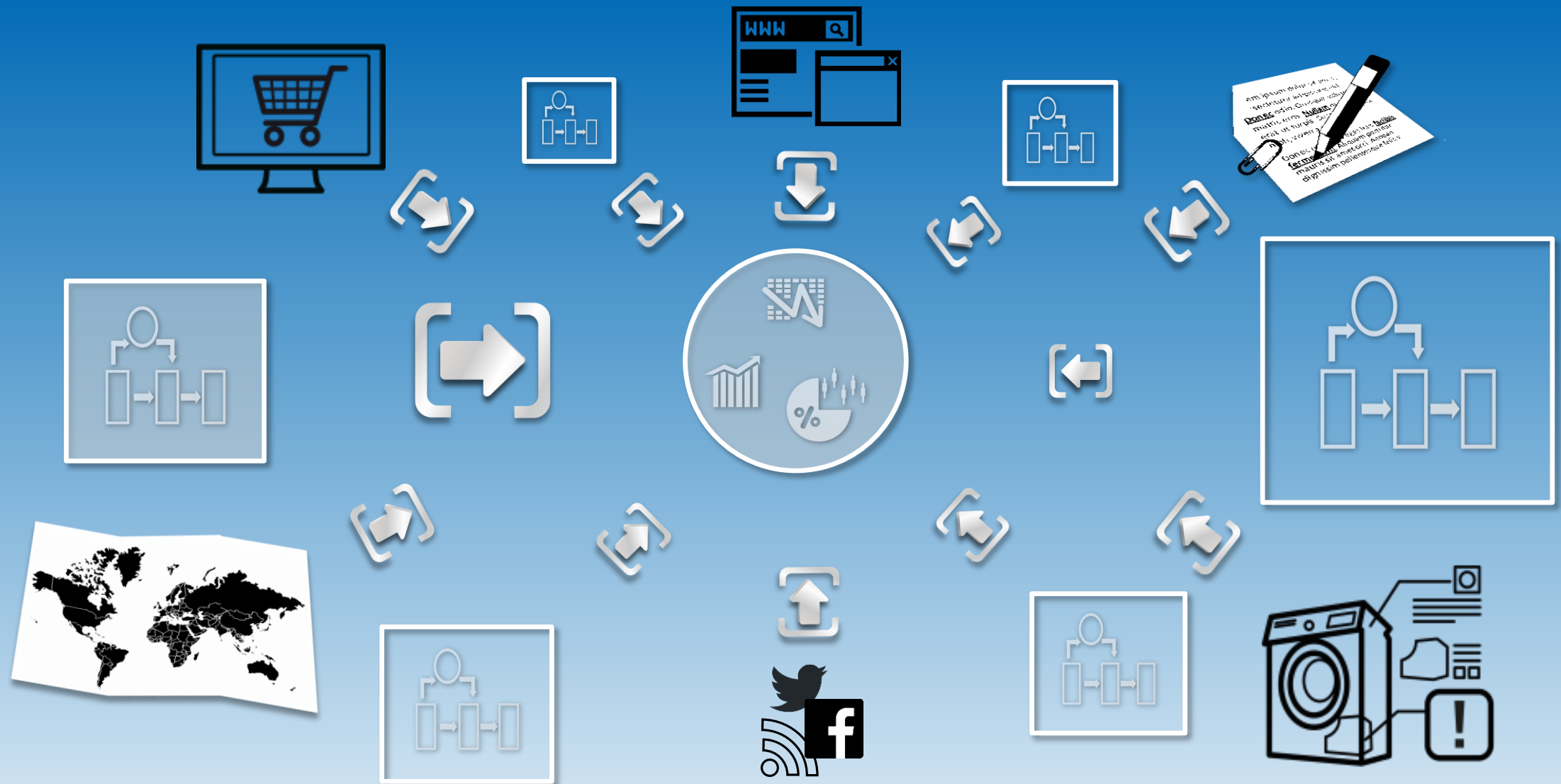
operational reporting

Operational reporting is great – but it does have its limitations.



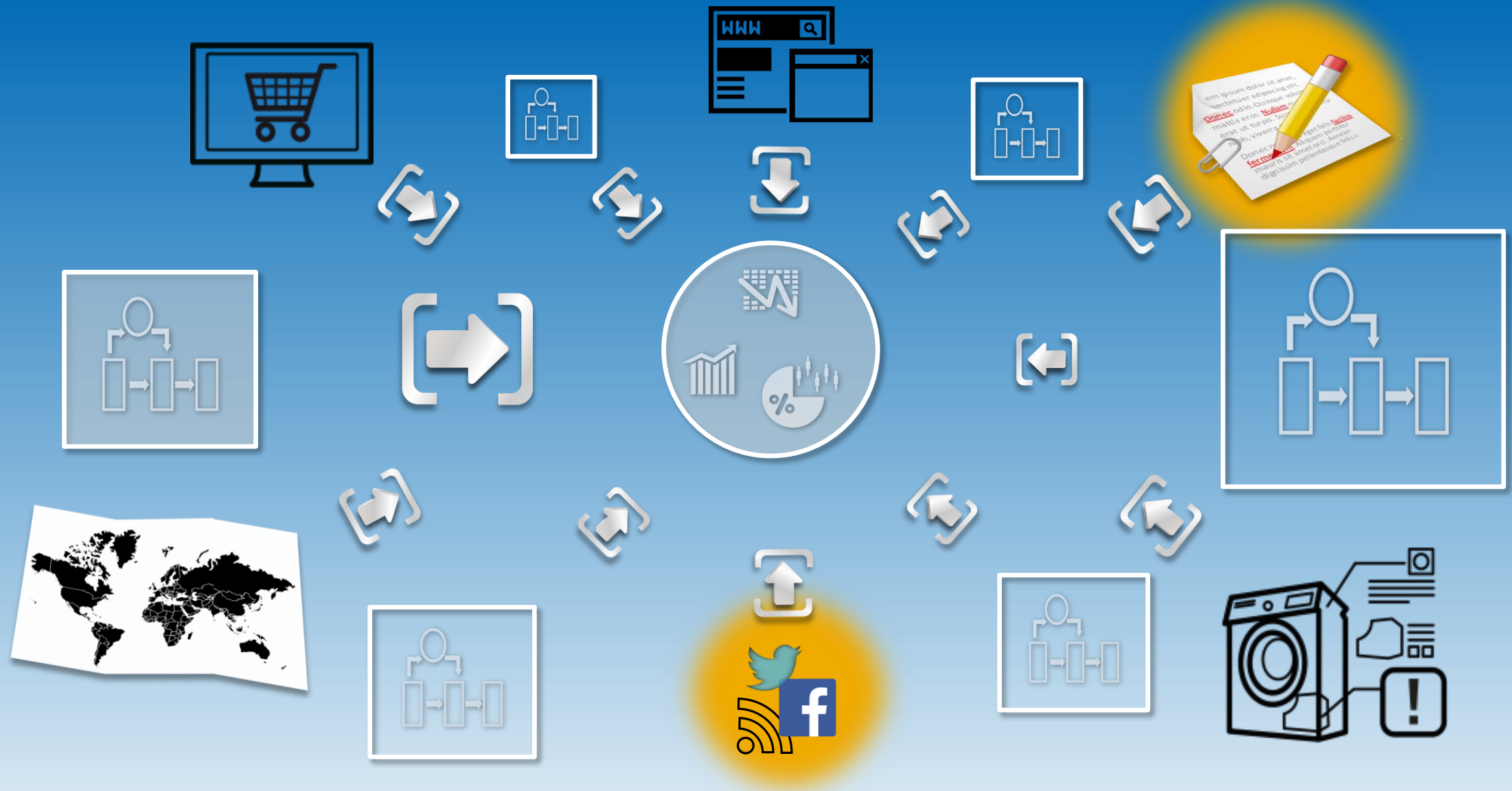
centralised reporting

The need (and the benefits) for the “Enterprise Data Warehouse is well understood.



centralised reporting

The key is to augment traditional structured business data with unstructured data – this is what gives us the complete picture.



centralised reporting

Lets consider an example that links sentiment and unstructured text.



original notes



digitise



PDF file



load



index



analyse

health care

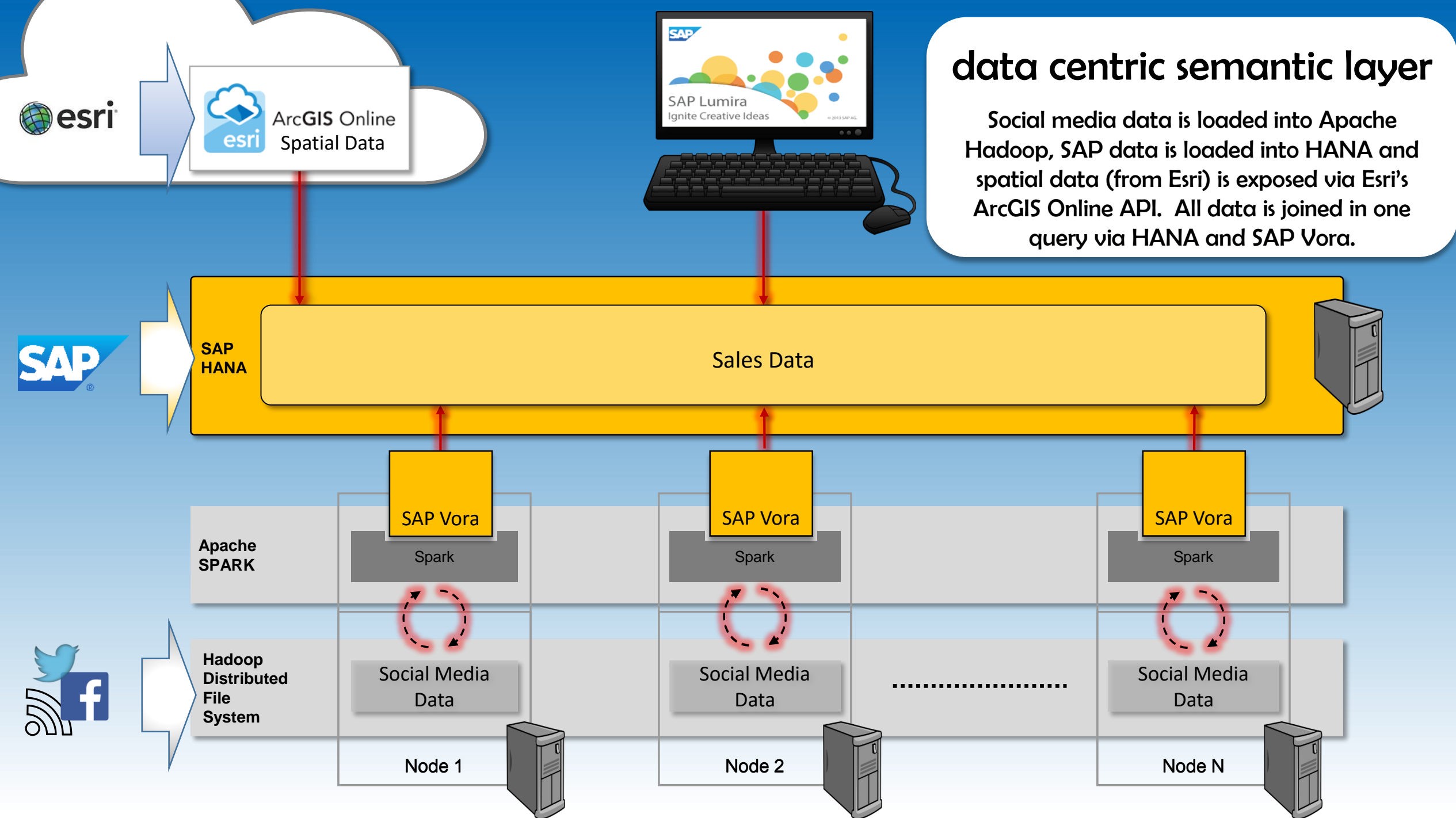
The first use case is to take in-patient and out-patient surveys and try and get a better idea as to what is working and what needs improvement. Patients rate the service as a whole and then provide comments describing why they gave the rating. The problem is the “topic” the rating relates to is buried in the comments. With HANA we can extract the topic through HANA’s text analysis engine. Now we can use the survey in a much more effective manner.

The second use case is similar to the first. When people come into the emergency department notes on their reason for coming in are written into a document. These documents are subsequently scanned and converted to machine readable text via OCR (Optical Character Recognition) software. The resulting files are loaded into HANA and then indexed using HANA’s text analysis engine. As with the first use case, intelligence is now available from unstructured data.



centralised reporting

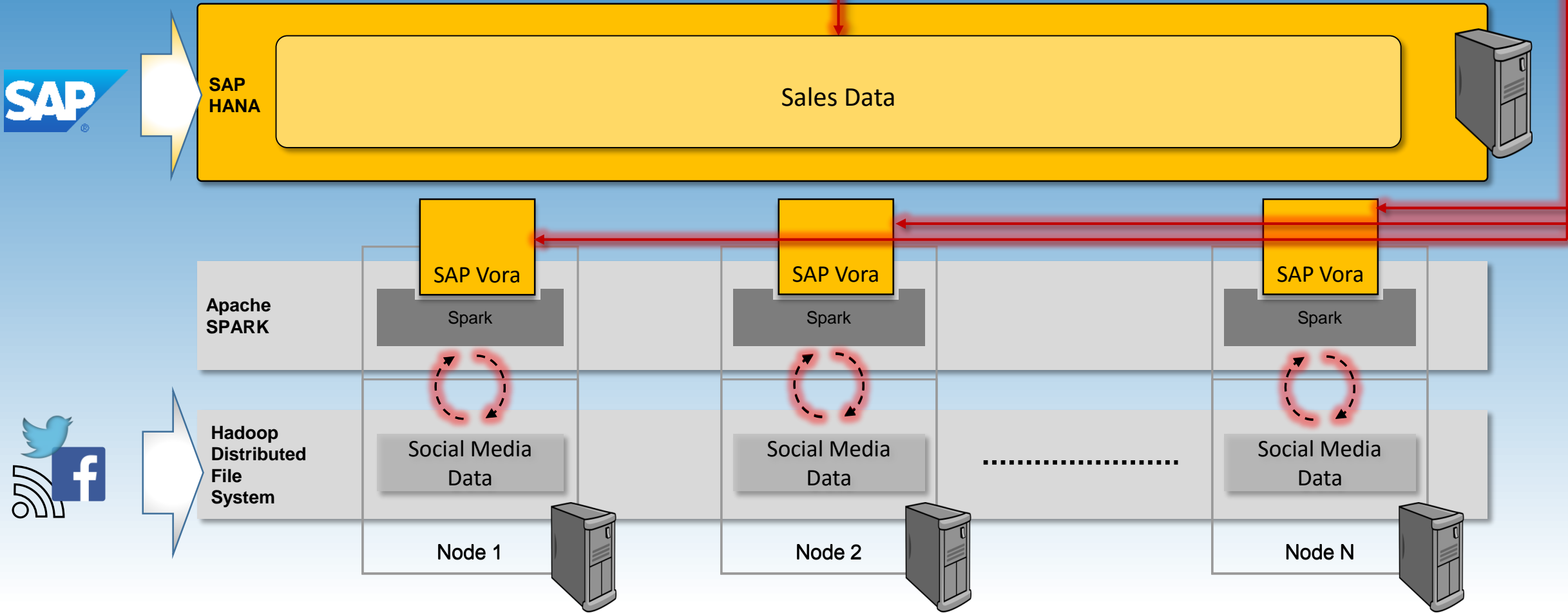
Lets consider a second example that links sentiment, spatial and structured product data.



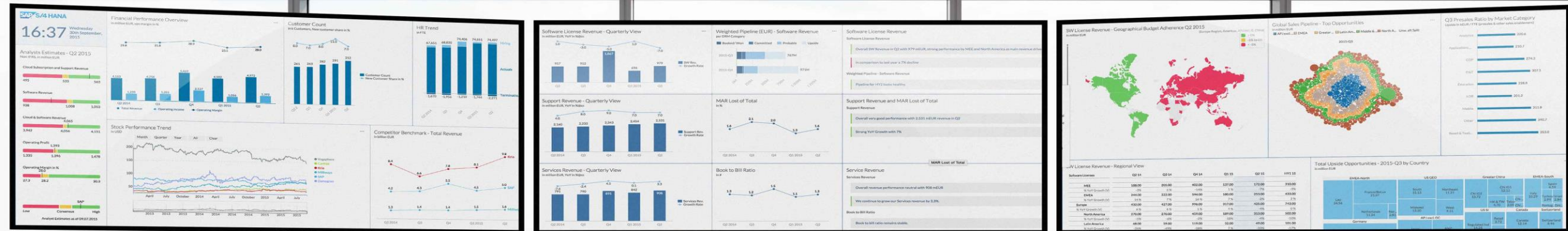


bi centric semantic layer

As with the previous example, data is located in different places. These discreet data sets in this case however are joined via the BI tool's semantic layer capability.



Driving the boardroom with advanced analytics



Executive level real time analytics

The best decisions are made when all the relevant data is at ones fingertips. This is the premise of the digital boardroom – a set of capabilities that lets top level executives discuss the current state of the business, drill down into individual areas and simulate next best action.



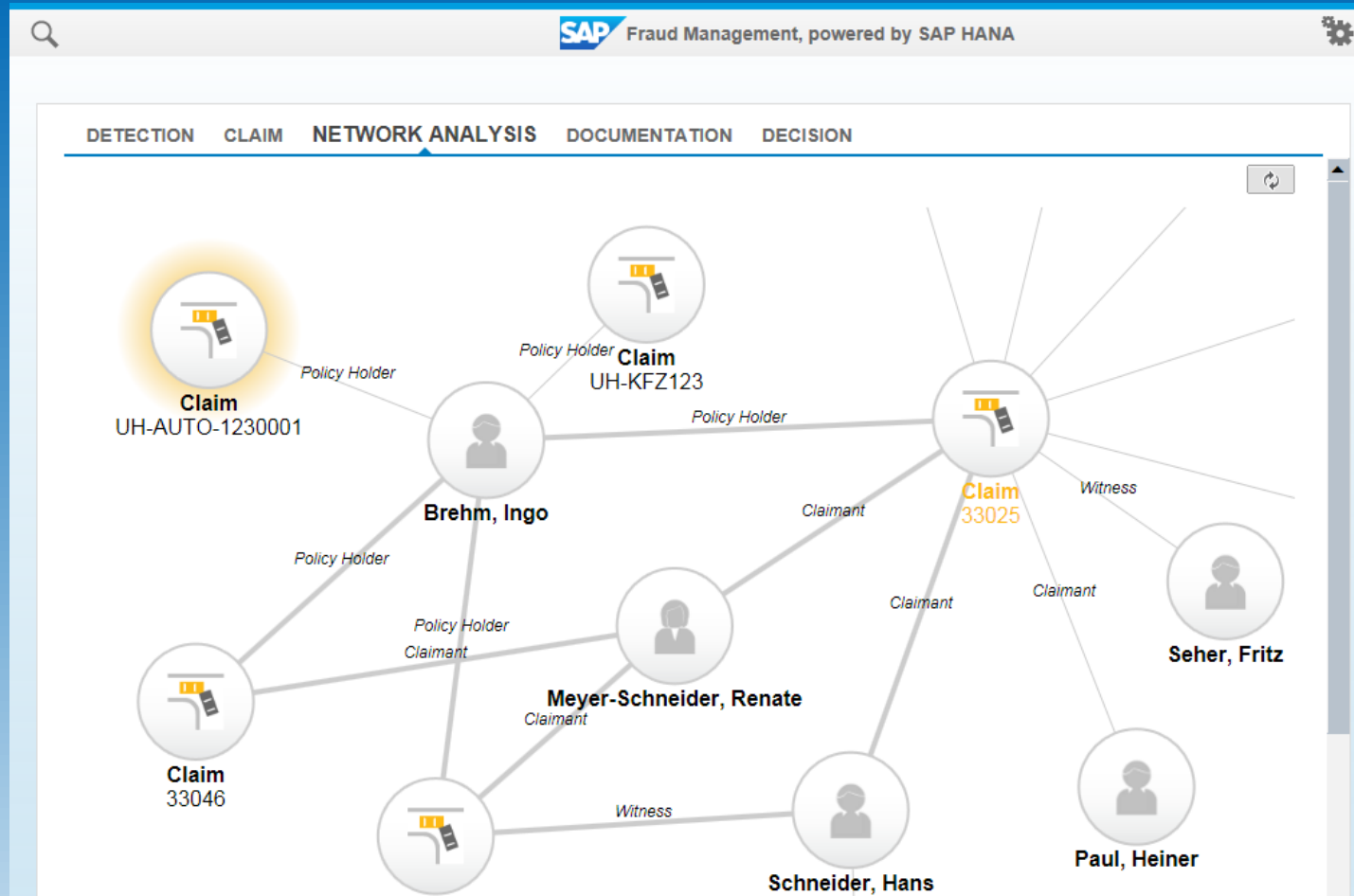
<https://youtu.be/LnTkjMqy1MM>

Automating the business with advanced analytics



The pinnacle of analytics

It is one thing to uncover an important insight, it is another to take action at the most optimum time. In a perfect world insight is uncovered via predictive models and action is automated as a result – no human involvement necessary. Consider the following examples.



fraud management

Every business is a target for fraud. Finding ways to detect fraud, preferably before it happens or maybe as it happens is much better than after it happens. SAP Fraud Management is designed to support all three scenarios – predict fraud ahead of time, spot fraud as it happens in real time and find fraud after the fact.

See <https://www.youtube.com/watch?v=k9zGgneDPFo>



real-time monitoring of the supply chain

Understanding (and proving) what your product is exposed to during its flow through the supply chain may be the difference between selling your product at a premium price or having to either discount it heavily or worse – dump it altogether. Real-time monitoring of sensors are key – what temperature, what speed, what orientation are just some attributes we can measure.

See <https://www.youtube.com/watch?v=xOEx1Wrosko>

KAESER
KOMPRESSOREN

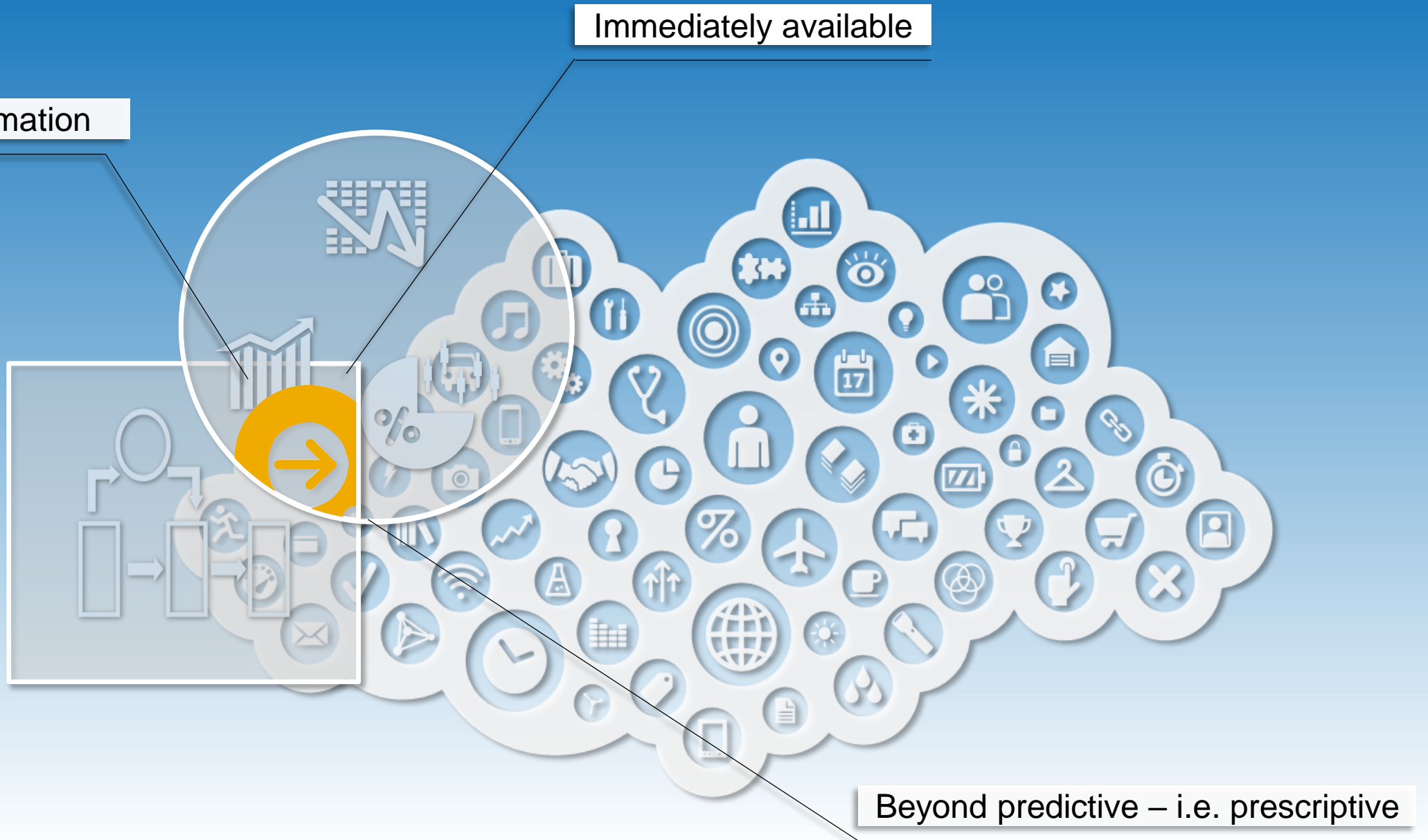


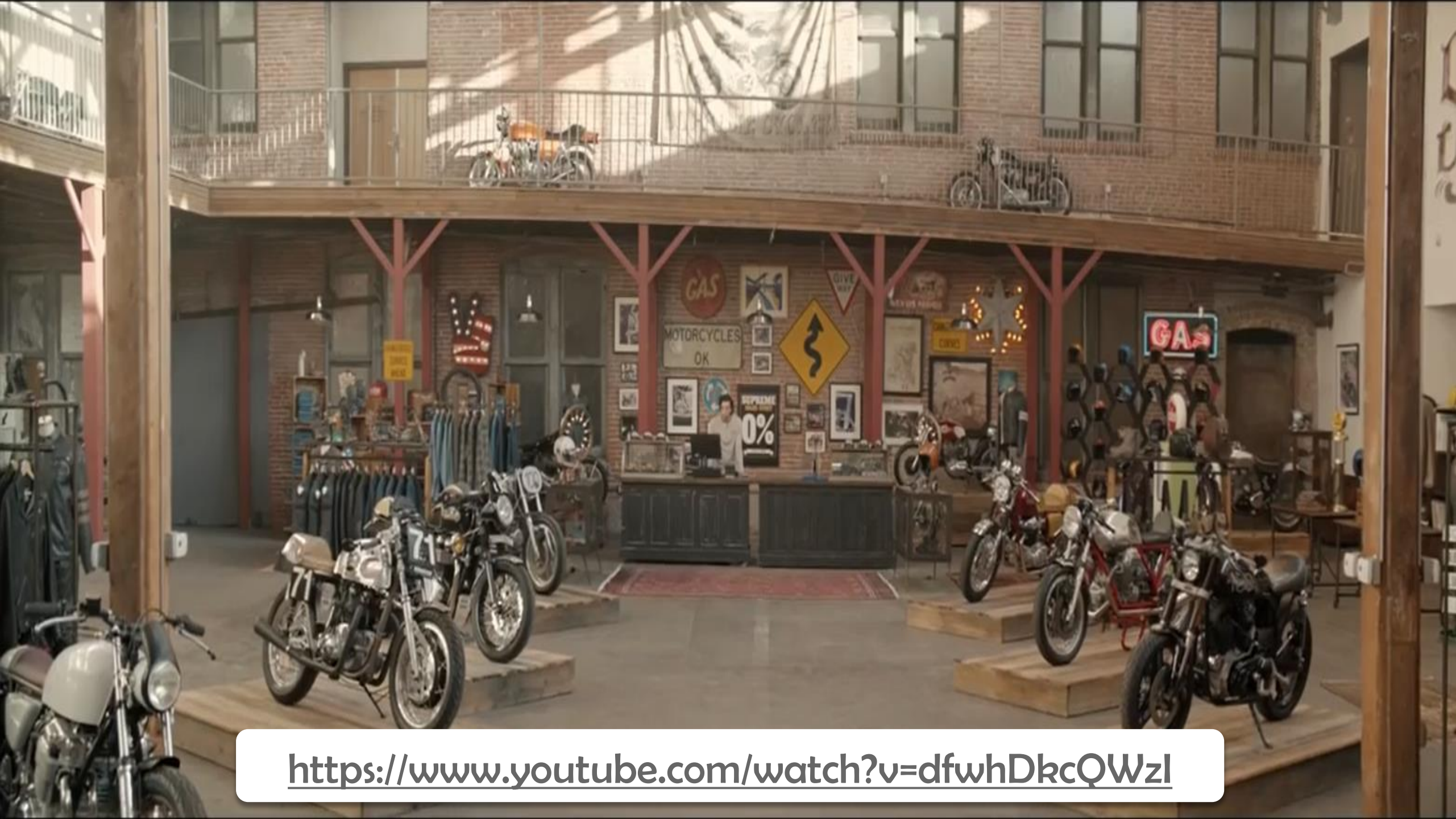
predictive maintenance

When your business sells services instead of “things” the heat goes on you to ensure that service is reliable. This is where predictive maintenance comes in. Using sensor data and advanced analytical modelling it is possible to predict in real time if a machine sold under a service based contract is likely to fail. When warnings are issued, maintenance teams can be proactively dispatched.

See <https://www.youtube.com/watch?v=9oylnxA5vQ8>

Summary





<https://www.youtube.com/watch?v=dfwhDkcQWzI>



Thank you

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