Lyras Shipping - CIO Forum

Data Relationships at the Core of Making Big Data Work

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Lyras Shipping and Big or not so Big BUT very important Data?

* Why is Lyras Shipping Interested in Data Relationships?
* First built PMS systems in 1984
* One of the first shipping companies to pass a paperless ISM audit in June 1998
* Ships managed by 3rd parties
* Each manager has their own system
* How can we track data from the system without forcing them to use our software
* How can this data feed into the management activities that is needed for us to make decisions without investing massively in integrating what can't be integrated.
* Its all about how data relationships are built and how they affect our management activities

What is Big Data in the marine industry?

- **What is Big Data?**

A catchword promoted by vendors of large data storage and management systems. The concept is data mining; finding new truths in the data we collect.

- **What is the scope of Data?**

In Retail enterprises, it is customer decision criteria, sought and found in trends understood by scrutinising large volumes of data.

Whereas Oil exploration relies on streaming data to understand changes in the geology indicating problems and opportunities.

- **And what is the scope in the Marine Industry?**

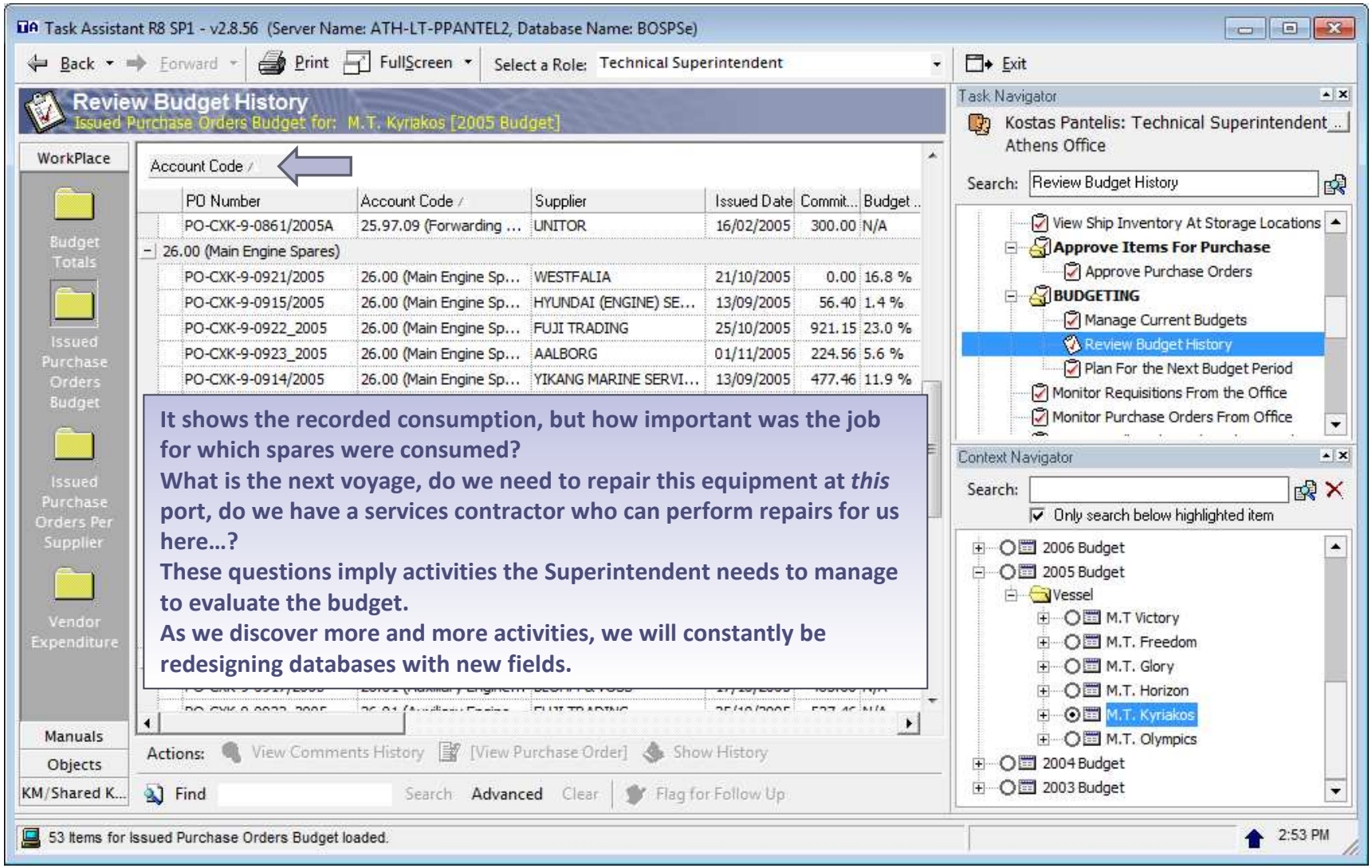
We certainly have data management challenges. It is not so much a question of identifying trends in streaming data and immediately making decisions from this data; the challenge mostly consists of knowing how suitable the collected data is and whether it assists decision making.

Is all data we collect good?

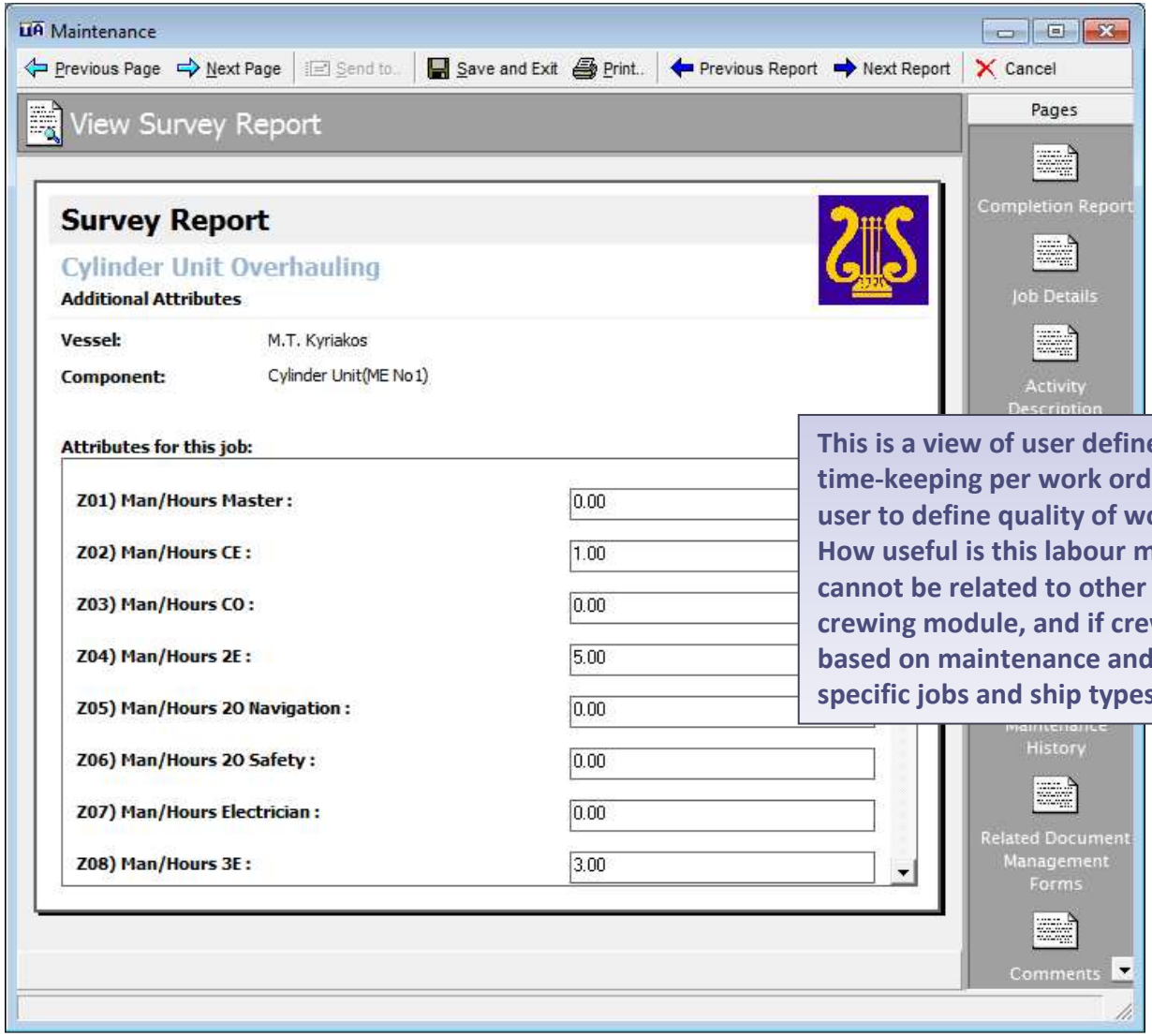
One often hears about good data and bad data.

* For example we can track repair costs but can we track which repair cost is assigned to which machinery condition criterion?
* Maybe we compare wage scales when we source our crews but do we collect information about the quality of the work produced by the crew? Can we track who has performed a repair, who has been on watch, and what the corresponding quality of work has been?
* we may see trends for adherence to budgets but are we getting corresponding price trends on what we are buying and is this matched by the context under which the purchase was made?

The view shows the account code but does it show for which equipment?



Another example of missing activities



This is a view of user defined fields for recording time-keeping per work order, but nowhere for the user to define quality of work.
How useful is this labour measurement if it cannot be related to other activities, possibly in a crewing module, and if crew selection cannot be based on maintenance and quality of work in specific jobs and ship types?

We need to increase the richness of data relationships in parallel to the enterprise developing and changing

Data relationships start at the design stage of software applications. They must be able to change as quickly as possible,

So however famous the vendor and successful worldwide

- a purchasing application that retains **fixed associations** between line items and their relationships to each other cannot satisfy every industry

- Especially when entire industry sectors are dedicated to how components are assembled and sold, in order, for example, to supply machinery onboard ships.

A one-all-fits-all approach does not address problems industry experts struggle with every day

Addressing problems industry experts struggle with every day

Shipping is a mature industry undergoing a phase of refinement. We therefore know a lot about what causes what. Can't we address problems industry experts struggle with every day by finding

- What is common to two subcomponents of two parent components?
- Which vendors supply the common component?
- How do vendors identify the part?
- Which vendors identify the parts differently?
- Which change made by the original manufacturer will cause specification changes of common components?

All these questions are "data relationships", or so we call them.

- But they are more than that: the data is only the indicator
- Data does not explain the workings that create it
- For the workings, we need a view of what is going on in the real world

So there is no reason to have data relationships that reflect only a fraction of what we know.

Do you have different part numbers for what seems to be the same spare?

All data is about something you need to do, something in the enterprise, so data is all about activities. By linking the data to the activity model it is easy to make sense of why you have the different part numbers for what seems to be the same spare.

- With the memory capacity of today we can have hundreds of descriptions for the same thing, with only subtle differences, with minimal disruption.
- Have you heard of any data management problems relating to ball bearings? Why are there so many different ID's for ball bearings?
- Today you can rebuild databases with relationships so easily you can change them while the software is running.
- You no longer group data by entities but by activity.

Is there a better way?

When we next examine our benchmarking and want to know what has caused us to exceed a budget or why our budget is higher than that of a peer company, we may need our data to be much more richly related to 'know how'

The primary problem with data in shipping can be described as follows

- The system knows less than the experts about what causes what, because the experts have not had a means to understand data schemas and code
- Applications have not been sufficiently adaptable to change
- Their designers often are not sufficiently aware of the user's domain to understand how processes are affected and therefore how to relate data

The answer to missing relationships is not

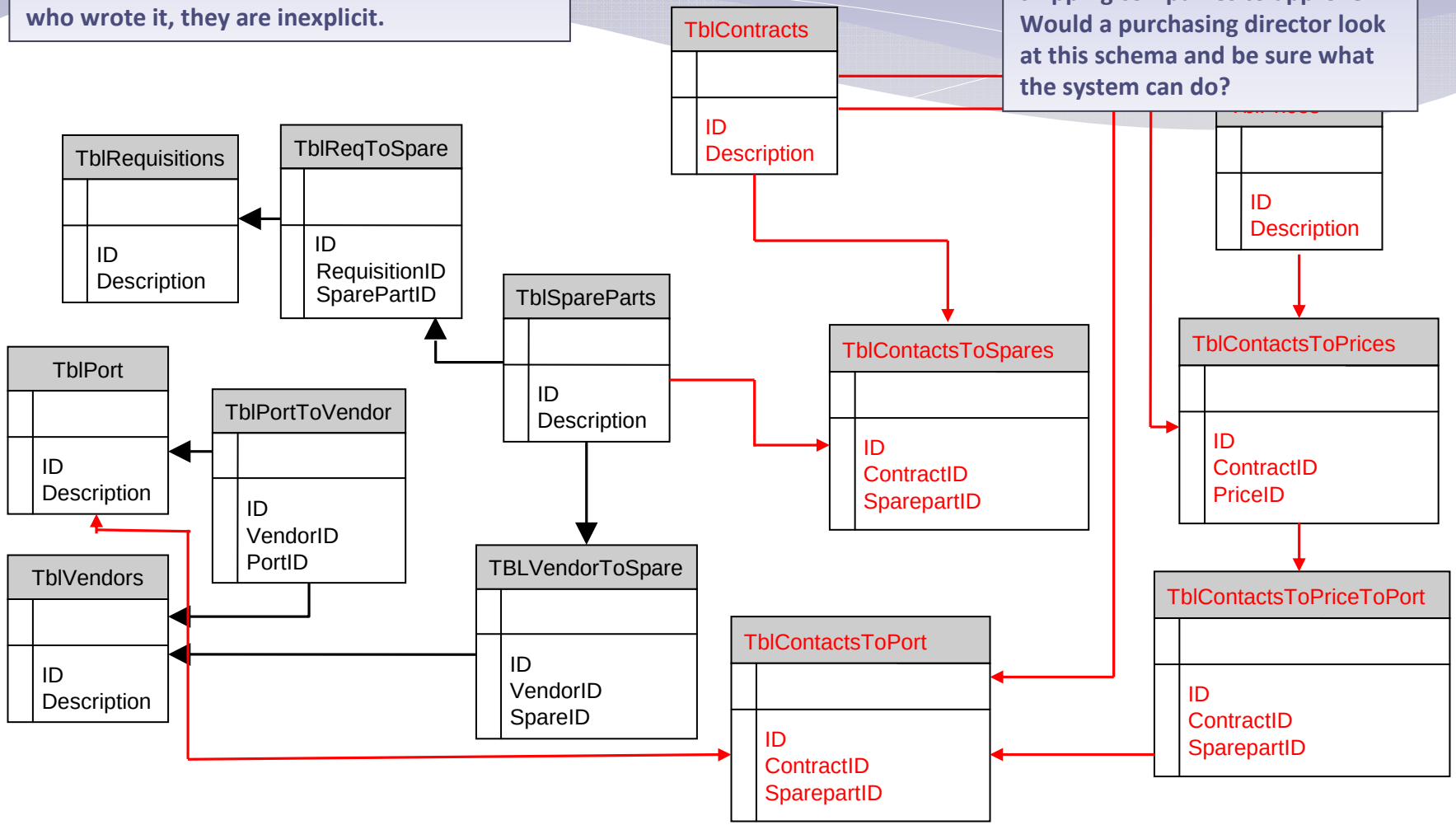
- a frozen business entity that has not been extended for years
- Neither are hot fixes, i.e. ad hoc client data changes the answer because they come with a corresponding inability to make product-wide improvements and upgrades.

How many of you find upgrading software across our fleets easy?

How do we improve data relationships?

The data schemas like this are incoherent to a domain expert. Furthermore without the code, which is incoherent to anyone other than those who wrote it, they are inexplicit.

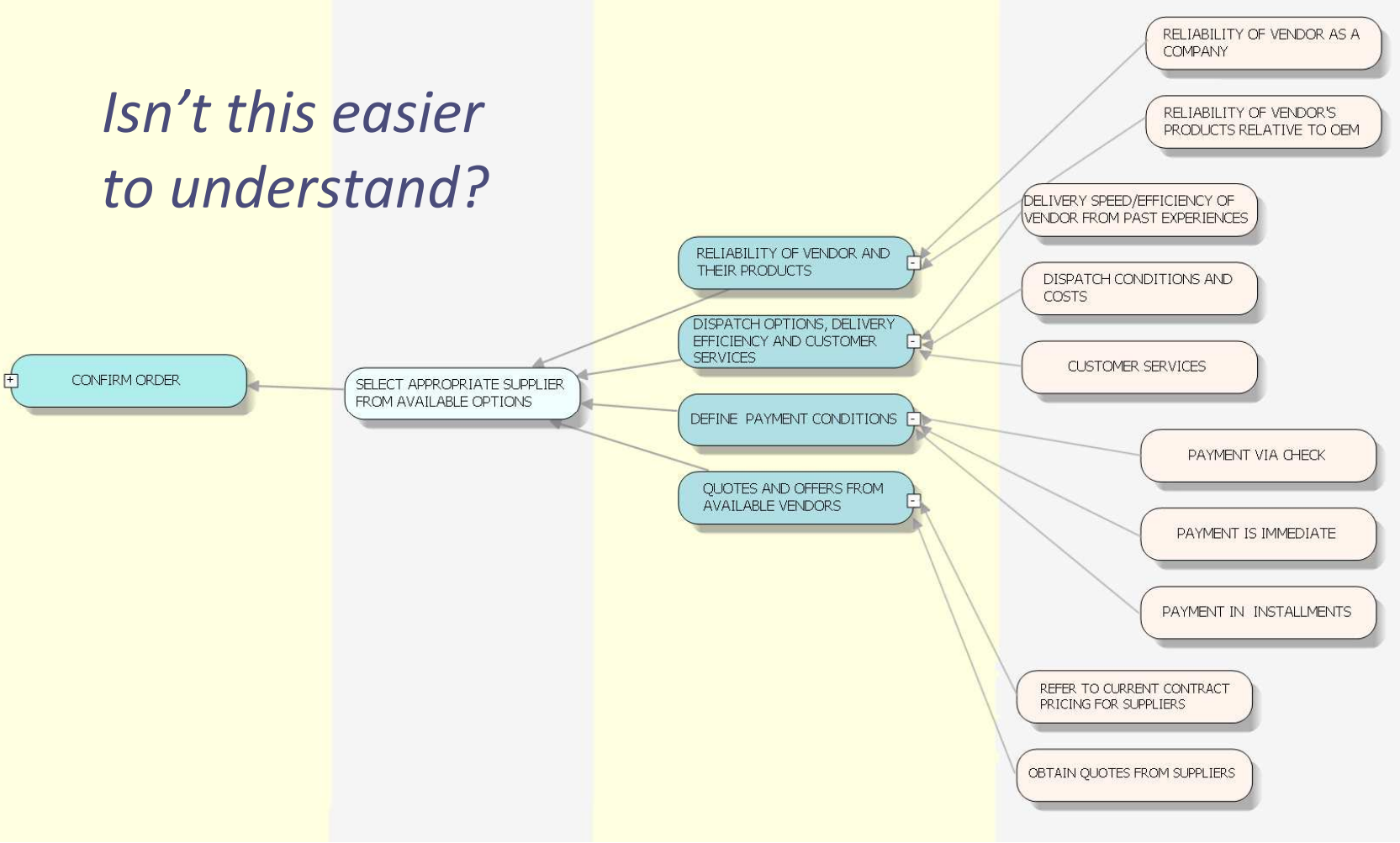
This is typical of what is given to shipping companies to approve. Would a purchasing director look at this schema and be sure what the system can do?



Technologies and Architecture (1/2)

AV4

Isn't this easier to understand?



Slide 12

AV4 Do you need this 1/2

Anastasia Vrakas, 5/27/2015

Activities: Areas of Use

* Develop faster Data and Process Integrations between existing Enterprise Applications
* Develop a Risk Assessment Tool very quickly
* Use it to Build a Decision Tool of Enterprise Alerts rapidly
* Manage the data from all your enterprise applications
* Develop new Business Applications OR
* The platform also works as a Middle Tier to accomplish processes that can’t be covered by existing Enterprise Applications

What has been the challenge up to now?

* Collecting data, analysing it and notifying stakeholders in order to trigger the decision-making process of a change
* Observed trends anticipate an ever increasing scale of incoming data
* The need to respond to this change of scale by redesigning database schemas capable of managing big data
* Normalisation and de-normalisation of data
* BI and drawing the right comparisons

So what does shipping have to do with big data?

Shipping is a mature industry undergoing a phase of refinement. We therefore know a lot about what causes what.

There is no reason to have data relationships that reflect only a fraction of what we know.

As companies improve their processes, they seek information on how to decide a process change. The need to increase the richness of data relationships runs parallel to the enterprise developing and changing.

The added challenge now is to redesign database schemas in response to the increase in data processing capacity while making use of our legacy systems.

Thank You

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