



THE RIGHT DATA REPORTING STRATEGY

[solutions@inforhino.co.uk](mailto:solutions@inforhino.co.uk)

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WHY DO I NEED A DATA REPORTING STRATEGY (DRS)?

Any organisation must interact with other parties to provide services and products. Public Sector organisations still refers to these parties as customers, and private sector companies puts their customers as their top focus. Many organisations can have both internal customers and external customers.

Whichever way a company is functioning and interacting, consistent ways of measuring efficacy and utility are vital.

Here are some examples of why a DRS is vital for your organisation;

- It is important to understand the potential of new products and services.
- Find weak areas of your business.
- Understand your customer better.
- Ensure you are delivering on quality and timeliness.
- Spot trends which may not be as obvious. Your sales volume may be quite high, but perhaps the customers aren't using the products as much.
- Consider macro effects on your operations – your business may be affected by big events which could boost or increase your revenue.
- Help support staff to be more effective.
- Use DRS to automate informing customers about your operations.

HOW VITAL IS A DATA REPORTING STRATEGY WITHIN MY ORGANISATION?

It really is down to you. Even though we are a supplier of reporting solutions, it must be recognised that DRS can only solve a certain percentage of the challenges your organisation may face.

Here are some examples of where we think DRS is and is not so important;

Functionality	Required
Transactional Reporting	Yes
E-Commerce, billing and purchasing	Yes
Trends analysis	Maybe
Machine Learning	Maybe
Small scale, single site businesses	Maybe
Large enterprises	Yes
Strategic Planning	Maybe

We may question, why would trend analysis not be essential for DRS? The answer is simple, an analyst can extract some information, plot a chart to decide on the spot. It is the choice of the company, as to how vital an item is.

Whilst many businesses could not exist without DRS, many businesses can thrive without them. We can see how DRS can really help even small businesses, but every business is unique.

DATA ARCHITECTURE AND ENTERPRISE ARCHITECTURE METHODOLOGIES





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We want to try and frame DRS within more traditional approaches to Enterprise Resource Planning (ERP). ERP is outside the scope of this document but we wanted to put a small piece in here so readers can do their research if they desire.

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### (PREFIX) ARCHITECTURE

Technology Architecture is broken into sub-categories. We are concerned with the following;

- Solutions Architecture.
- Data Architecture.

As with any other architecture, it is concerned with thinking about the overall way in which systems and solutions are constructed. The main reason for architecture is to apply standards and consistency in the design.

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### ARCHITECTURAL METHODOLOGIES

The only methodology Info Rhino considers is the Zachman Framework. You may care to look at The Open Group Architecture Framework (TOGAF). We can't publish a picture of the Zachman matrix here, but the idea is to consider systems in terms of their locality versus the audience (customer).

Solutions providers such as Info Rhino devise their own methodologies too.

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### PROJECT MANAGEMENT METHODOLOGIES

One of the biggest challenges to organisations is deciding how a system or solution should be implemented to cost. Again – beyond the scope of this document, but we feel no formal methodology truly helps a company to build an effective DRS. Iterative Development is closest. These are our opinions but if you would like to discuss, contact us [here](#).

Methodology	Suitable for DRS?	Reason
Agile Scrum	No	Too restrictive – despite being touted as a highly flexible way to build solutions, highly prescriptive. Leads to unstable inconsistent solutions.
Waterfall	Maybe	Focuses on delivering solutions to budget, so can be good to keep to projected costs.
Lean	Maybe	Prescriptive, but does permit a certain degree of autonomy on how the solution is implemented with focus on consistency.
Agile Kanban	No	Can be useful to manage a pipeline of one or more streams of work, but limited.
Iterative	Yes	Allows for more feedback and layering on of functionality. Not so budget focused, but the best way to keep finding the right solution.

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### ARE METHODOLOGIES BAD?

Ironically, an agile mindset is what is needed to deliver a DRS. Most formal methodologies of agile is not agile.





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### INFO RHINO'S APPROACH TO CREATING AN EFFECTIVE DATA REPORTING STRATEGY

The first part to this white paper may not have shed that much light on why you need a DRS, what a DRS is, and not how to implement one.

We don't intend to give a blueprint on how to do it, because there isn't one. This WP just gives you a lot more food for thought and how we have helped organisations and ourselves manage data.

#### KEY CONCEPTS WHEN CREATING A DRS

- Most methodologies don't work. Methodologies are points of reference rather than a manual.
- Upstream decisions and approaches have big impacts on downstream costs (Steve McConnell).
- Sometimes, the outcomes aren't precise. It is okay to have a set of ideas and to then create a system to capture data without certainty of use case.
- Often, it is essential to have a clear set of objectives.
- Data may tell you a story, but it could be incorrect. The archetypal example, umbrellas don't cause rain.

#### DRS FOR WHO?

Earlier, we described Agile Scrum to be a poor methodology for implementing DRS. Many people will say this is wrong, as agile is a flexible way to build systems. We say Agile Scrum is bad because it focuses on the users too much. People suffer confirmation bias, and whilst intuition and gut feel are strong reasons for letting users take control – often there may be gaps in their thinking process.

For this reason, we say, be very careful about centring your DRS around a group of users. Examples will be covered later in this WP, an immediate example is here;

A set of sales agents wants a system to provide more information about the product they are selling when they meet clients. It could be, that changing market conditions identifies these sales agents would be better deployed working with suppliers. Any DRS may be better deployed to help understand e-commerce.

#### THE TOP TEN APPROACH TO REPORTING

When building a reporting solution, we always ask clients to give us their top ten list of information objectives they want this reporting solution to achieve.

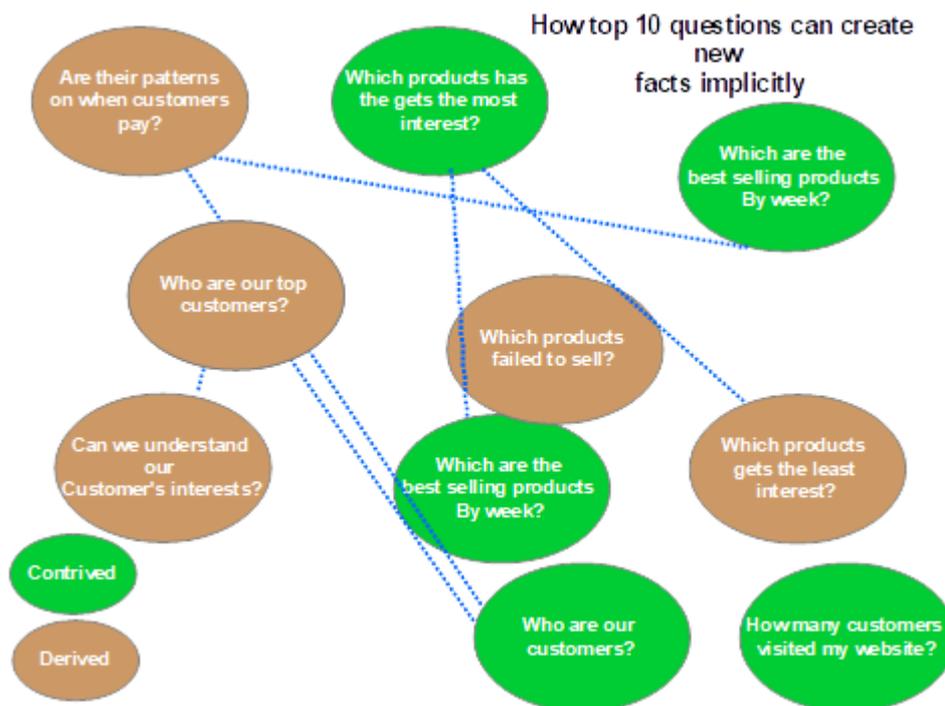
This is such a powerful approach is because, once a system is built to solve 3 or 4 of those 10 requirements, the system is already capable of delivering a lot more.





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Again, an Agile approach would develop each report in isolation. This is no good, because we want to create a set of information sources which can themselves be linked to other information sources to show new insights.

WHY TOP TEN QUESTIONS IS A POWERFUL TECHNIQUE

- Answering a few questions means many more can be answered.
- Doesn't make any assumptions about technology.
- Doesn't detail instructions on how the answers should be delivered.
- Helps identify high level objectives.
- Fits into strategic planning.
- Works at different levels within the organisation. C Level reporting and operational reporting top ten questions, once both developed fosters the opportunity of more answers.
- Can be passed to solution and data architects who can start to think about specific patterns/methodologies technology to implement top ten solutions.

ARE WE TALKING ABOUT BEAM OR DATA WAREHOUSING?

*Feel free to skip this piece - sorry to the non-technical people, but it is important to clear up any confusion;*

- *Business Event Analysis and Modelling is an agile methodology focused around Events, Details, and Details of Details.*
- *Data Hubs are a mechanism of trying to defer decision making on reporting and leaving data in a series of Hubs, Satellites and links.*





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*A key challenge with the above two techniques is there is too much non-business critical set up within the data domain. It leads to people spending more time focusing on understanding the implementation than the business.*

*Data Warehousing is closer aligned to the top ten approach and the idea of facts.*

### AVOIDING PITFALLS – COMMON FALLACIES FOUND WHEN IMPLEMENTING DRS

Unfortunately, one of the biggest mistakes reporting does, is to assume that users should need to keep viewing the data for some purpose. It is completely natural to assume that technology exists to do the following;

- Make our lives easier.
- Increase the case load humans can manage.
- Empower decision makes through easily accessible reports.
- Know the right time when to press a button.
- Identify problems and failures in processes.

Indeed, it is essential to ensure users are better empowered through the delivery from an effective DRS.

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#### THE TOO MUCH INFORMATION (TMI) FALLACY

Call centres, helpdesks, case analysts, product managers benefit by having access to reporting dashboards. These dashboards can have charts on them, tables of information, links to systems to allow operators to perform actions, empowering decision makers to act.

When people end up dealing with individual line items, the system is constrained by the number of people. It can mean, that, if the line volume increases substantially – people are no longer able to use this information effectively.

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#### THE SCALABILITY FALLACY

Call centres, helpdesks, case analysts, product managers benefit by having access to reporting. Traders can access systems giving them all kinds of information on a screen.

Imagine we are building a chart to display call centres for our company, seems logical. We have ten call centres, and it is useful to understand how each is performing. Imagine if our company merged with another company and we now had 300 call centres. That same report no longer has the same impact. This may sound the same as the TMI fallacy, but it isn't. In the scalability fallacy, users are no longer able to use systems designed because the scalability has changed. These systems may no longer be viable.

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#### AUTOMATING, REMOVING BOTTLENECKS, LETTING HUMANS BE HUMAN

We proposed fallacies in the last section. The key challenge, when building systems is we tend to focus on building them for users. Most time, people want to spend less time looking at screens and more time doing work, being creative. The worst way to enslave humans is to simply create another system for humans to operate.





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It is essential we do think about real people, real solutions and ensuring users have an ability to interact with data. At the same time, we must identify opportunities where repetitive tasks are removed from many functions.

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### EXAMPLE - REBUILDING A PROPERTY PLATFORM FOR USERS, EXAMPLE OF [HTTP://WWW.FINDIGL.COM](http://www.findigl.com)

We identified a gap in the market, where certain users want to have access to better information on the property market. This better information lets them create strategies to save them time and find the right opportunities in the market.

We identified the following points;

- Not all actors within the property market want to take advantage of better information.
- A subset of actors will benefit from using our new approach to understanding the property market.
- It is probable, that most people would like a magic system. The magic system intuitively just finds the optimum opportunities in the market for them.
- Some people, even with a magical system, will still prefer to read newspapers and directory listings of properties, doing their own research.

Possible options to designing a solution

- Don't try.
- Decide whether the existing model has room for another provider in an oversubscribed system.
- Build a better property information source > Then maybe build the magical system.
- Go straight to the magical system.

Based upon our analysis, we are working on the "Better information source" solution.

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### RECOGNISE EVERY DRS HAS LIMITATIONS

Having decided upon a DRS, openly embrace weaknesses. We made our decision, so let's stay positive and get it done. Even if there is a better world out there. If it becomes clear it is the wrong solution – don't be afraid to stop.

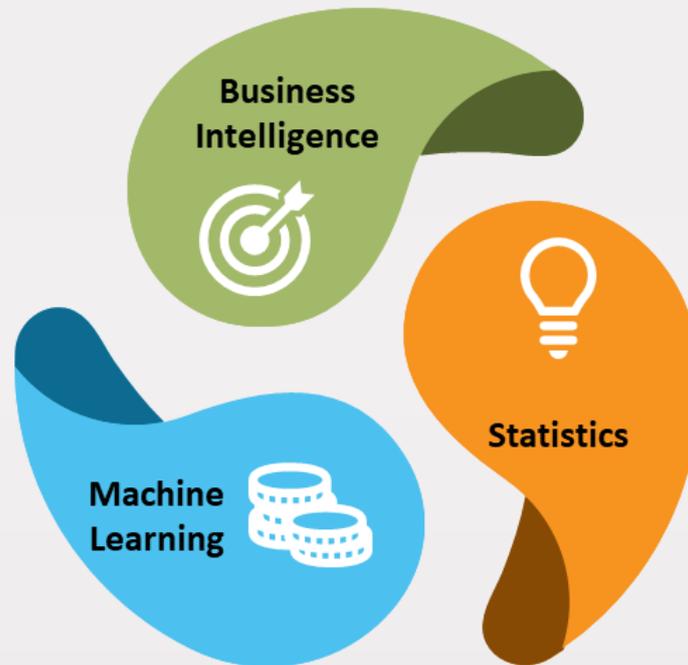
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### UNDERSTAND THE THREE PARADIGMS TO KNOWLEDGE





## The three paradigms to knowledge



The three paradigms to knowledge show the three components needed, to have real knowledge within a DRS, we need to use all three approaches to have a coherent understanding. It is perfectly okay to just have business intelligence or use statistics to understand key areas of behaviour within our business. Neither does it mean that all three are needed, but typically, each facet reinforces the other to create confidence in the DRS.

Info Rhino Limited builds Business Intelligence solutions. BI solutions are a special form of database called a data warehouse. Typically, reporting applications take this data for users to view. Sometimes this information is passed onto other systems in an automated fashion. Here are some typical uses of data held within data warehouses;

- Decision Support systems.
- Data Visualisation – Reporting dashboards.
- Machine Learning Models.
- End User Computing (not ideal).
- Self-Service Business Intelligence – interactive user driven reports.
- Data sources for upstream systems.
- Publications – automated emailing, report generation.
- Sources for Customer Relationship System data.





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### HOW TO THINK OF THE THREE PARADIGMS TO KNOWLEDGE

- Business Intelligence is bean counting, verification of gutfeel and humanly understandable.
- Machine Learning uses data from both data warehousing, files, and statistical modelling to find patterns in information which can also support decision support systems.
- Statistics can be used to statistically verify or disprove both machine learning and Business Intelligence.

### DON'T TRY TO IMPLEMENT A ONE SYSTEM FITS ALL STRATEGY

It is best practice to have as few as possible applications, to ensure fewer staff are needed to support them. When a need arises to add a separate system, embrace it rather than reject this requirement.

### DIFFERENTIATING BETWEEN APPLICATIONS AND DECISION SUPPORT SYSTEMS

When building a solution, ensure it is understood exactly what function a system or component is performing.

It is acceptable to have multiple uses (dependencies) for systems, although software design principles tend to forbid it.

### ENSURING THE ORGANISATION IS ALIGNED

If a department, a team, a person doesn't understand what the organisation is for and the reason it exists, how can they think strategically to help the organisation push forwards? DRS can be used to publish information about the company to keep people aware of the business, how it is doing.

### DATA TESTING STRATEGY

At Info Rhino, we are passionate about data. When DRS implementations occur, it is vital people have a common medium of information exchange. At Info Rhino, we have found this often to be SQL or other Query Languages. We use a product called NBI to permit testing of data.

Not all projects demand NBI, but it helps keep different members of a team aligned. Any person within the team can run the tests and examine the test cases.

### CONNECTING YOUR AUDIENCE WITH YOUR GOALS

DRS will often be targeted to internal company users or customers. Ultimately, everything you do should have a measurable outcome.

When creating information for customers, be regular with your updates and consistent.





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CLOSING THOUGHTS ON DATA REPORTING STRATEGY

We hope you enjoyed this document. We appreciate some elements may be a little technical for some and not technical enough for others.

Our intention was to try and offer some insights into how we think when implementing data solutions for clients and ourselves.

Always seek the value in whatever is being done, unless you are experimenting. Don't just follow the narrative of cloud-based BI, Data Lakes, Big Data just though everybody else is doing.

If you have any thoughts or questions on this document, please get in touch with [solutions@inforhino.co.uk](mailto:solutions@inforhino.co.uk)





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