Data puts active portfolio management on a firm footing

Continuing our series of articles on portfolio management in the Lloyd's and London Market, we look at the symbiosis between active portfolio management and granular data

Lloyd's disclaimer

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Foreword

Lloyd's foreword

Earlier this year, we announced that Lloyd's would launch a series of reports, presentations and workshops throughout 2020 to focus on the latest portfolio management trends in the insurance industry, including analysis of behaviour in underwriting, pricing, and portfolio and data management.

In the first report of this "Portfolio Management" series, we conducted ground-breaking research to establish the attributes of top-performing underwriters. As part of this, Lloyd's identified a direct link between specific underwriting behaviours and the likelihood of an underwriter delivering sustainable profits over time.

In the second article in the series, we partnered with the consultancy division of Willis Towers Watson to identify the main features of good portfolio management and the competencies, tools and corporate culture needed manage an insurance portfolio successfully. As part of this, we discussed how data management sits at the heart of every stage of the portfolio management cycle.

Building on this, in this third deliverable, we expand on the relationship between market-leading portfolio management and granular, agile and forward-looking data management. We highlight trends and good practice around data collection, granularity, diversity and discuss the future of data management in the London Market and the insurance industry.

We believe that this report, together with all the reports and activities that we have been conducting throughout the year, will benefit Lloyd's market participants in by describing more fully the elements of strong portfolio management and its relationship with first-class underwriting performance.

Kirsten Mitchell-Wallace
Head of Portfolio Risk Management

Willis Towers Watson's foreword

From our perspective, we can see the wave of excitement driven by the new developments that are being brought to market here in London. They all have one thing in common: they have found ways to harness their data assets, giving them new ways to optimise the construction of their portfolio and ensuring that the management is dynamic. And they are using the granularity they have created to explore new trading models and greater agility of response.

It reinforces our conviction that this 'innovation vanguard' will use portfolio management not just for its own sake, but also as a gateway capability as they take their businesses to an increasingly digital operating level.

In our last article we profiled the nature of outperformance, and in this one we look at the data considerations that serves as the foundations that put portfolio management onto a firm footing.

Richard Clarkson
Head of London Market Consulting

If you try to build any structure without the right foundations, the chances are it won't be too sturdy or last too long.
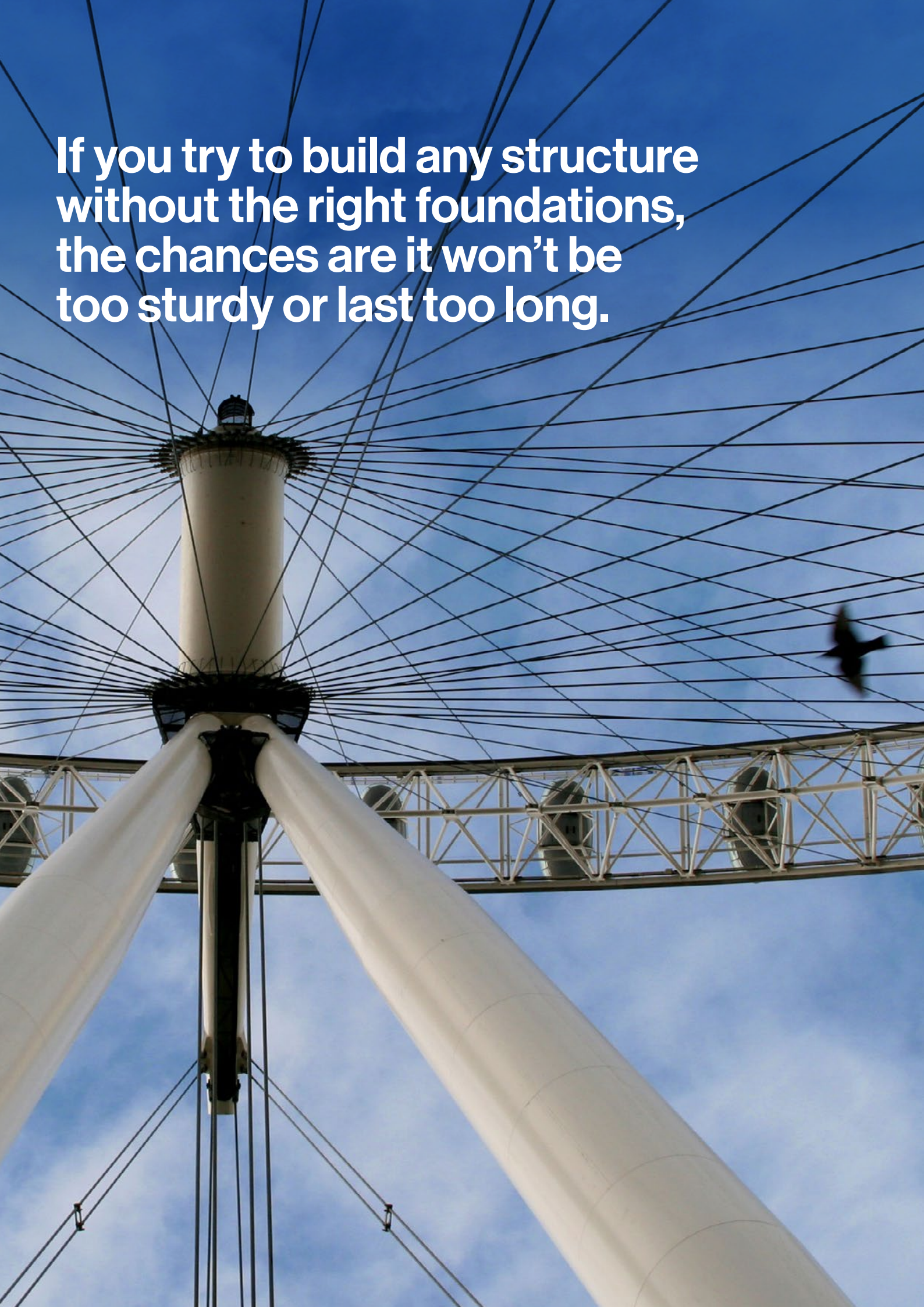
Introduction – data from the ground up

If you try to build any structure without the right foundations, the chances are it won't be too sturdy or last too long.

The same applies to portfolio management – although in this case, the foundations are not steel bars and cement, but data.

The breadth, reliability and granularity of data sources used in portfolio management determine the parameters for success. Or rather, accepting limits on the breadth, granularity and reliability of the data may limit the extent to which success can be achieved.

Good quality and quantity data are essential foundations for successful portfolio management capabilities, as we established in our article "Portfolio Management in the London Market: What separates the best from the rest?" published in February 2020.[1]

In "Learning from the best: Behaviours that drive top underwriting performance" we also saw that top performers exhibited a better understanding of their portfolios, with faster reaction times, and demonstrated a "growth mindset" which included a belief that technology is liberating.

Likewise, in our benchmarking research of 2019, we established a framework for portfolio management consisting of 72 attributes, which underpin three broader dimensions; Granularity, Agility and Coherence. Of these, Granularity had the largest gap in capability between outperformers and emerging performers. Within this dimension, the key drivers of the capability gap were not just the granularity of the data, but also the organisation's ability to use data and technology to help better manage its portfolio. Our research demonstrates that the case for data as a foundation for portfolio management and top performance is strong and recognised.

Figure 1. Grouping the attributes of portfolio management

Portfolio management

Granularity

Granularity	Segmentation by class, peril, channel, etc. Full range of mix indices. Well defined, appropriate target business mix.
Data and technology	Access to tools at point of sale/renewal. Single source underwriting data. Data science solutions for unstructured data.
Spreadsheets	An over reliance on spreadsheets can hinder effective pricing, planning and monitoring.
Pricing models	Used to steer portfolio strategy, support underwriting decisions, and enable operational efficiency, predictive pricing and MI reporting.

Agility

Speed	Fast identification of portfolio issues, analysis of issues/deviations, and implementation and visible impact of plans.
People skills	Skills to set/analyse portfolio strategy, and promote balance between data and judgment. These are at the point of sale.
Monitoring business mix	Monitor target business mix adherence and appoint an individual responsible to regularly track mix.
Discipline	Good grip on price adequacy and portfolio. Balanced rates and retention, a robust set of indicators, and appropriate rate change requirements.

Coherence

Plan testing	Plans tested against market realities, set for macroeconomic factors, and tested for contradictions/assumptions. Good understanding in setting expenses and acquisition for new business.
Alignment	Coherence between plan and models, alignment between portfolio strategy and risk alignment, well cascaded target business mix, effective planning process, aligned product development, and effectively allocated RI.
Consistency	Accurate outcome forecasting, consistent ULR use across portfolio, and consistent approach on attritional, large and cat claims.
Importance	Confidence in portfolio strategy and investment in portfolio management. Recognition that portfolio management is important for competitiveness.

Of course, data alone is not enough: how an insurer integrates these insights into its decision-making processes is also fundamental and we will explore these themes in more depth later in our series of articles on portfolio management.

As data forms the foundation of portfolio management, so in turn portfolio management is proving to be a gateway to the development of new solutions and products. Perhaps the best example is how portfolio analytics is driving the parallel development of different underwriting models: case-level augmented underwriting and portfolio-level algorithmic underwriting. These models can develop in tandem as the same development in portfolio analytics can manifest either as a significantly more sophisticated underwriting dashboard to better inform case-level underwriting, or in the development of an algorithm that can be deployed at portfolio level.

Each of these approaches can improve underwriting performance for an insurer. The better result is not limited to loss ratio improvement driven by improved risk selection, pricing and deal structures, but also can include cost reductions, both in terms of reduced administration expenses and potentially reduced acquisition costs.

A reduction in acquisition costs may be assisted by the rise of "portfolio broking" which could very well meet the rise of "portfolio underwriting". Here, insurers might look to trade at least some of their book only at a portfolio level via algorithms rather than underwriting all risks at case level.

This portfolio-traded business could contribute to the significant savings set out in Blueprint Two. However, the growth of a portfolio-traded market requires a portfolio management capability, which in this scenario is not solely limited to insurers, but right across the value chain. For example, some brokers will seek to help their own clients access portfolio-traded capacity as well as match the cost savings afforded by this model.

We believe that the role of the underwriter is becoming ever more sophisticated, whether that is case-level augmented underwriting or portfolio-traded algorithmic underwriting. There are many challenges facing underwriters as they embark on building their portfolio management capabilities, and it starts with an appreciation of their data assets. Furthermore, it is not just underwriters on this journey – but brokers, coverholders, claims professionals, reinsurers, other capital providers and investors. In order to gain the biggest advantage the portfolio underwriter needs to find like-minded individuals on either side of the value chain.

Finding a place to start

Nevertheless, each journey starts with the first step and this journey starts with an assessment of the data requirements to deliver an effective portfolio management strategy. The obvious questions start with: How much is enough? What type of data is most beneficial? And where does it come from?

After all, there is a huge choice of data sources that can, or could, be included today. Insurers have often found it challenging to bring together the various sources of internal data, focusing mostly on quotes, policies and claims. Internal data sources are far richer than these – consider, for example, operational data and routing identifiers, as well as client or market data.

Many organisations struggle to create a single data repository that brings all these internal sources together. However, having all of an insurer's risk selection and risk assessment decisions in a single reference framework is an excellent place to start.

The potential data universe can be expanded further with Application Programming Interfaces (API's) which can provide interfaces to multiple software and data sets. There are huge amounts of additional data available, such as flood areas and other weather data, distance from emergency services, crime statistics, movement data, as well as access to indices.

The variety of data sources is not the only factor to consider. An example is how far an insurer's data record goes back, which can help to provide robust and relevant historical perspectives. For example, World Trade Center data from 2001 and the subsequent few years, could help an insurer understand the possible market reaction follows a similarly large economic event. Likewise, harnessing data from previous natural catastrophes can help an insurer in a number of ways, particularly in seeing which classes were impacted by certain types of event, and the extent to which these classes were affected.

It is critical therefore, that an organisation effectively prioritises what is most important. A worked example of the decisions that an organisation may have to make, and a potential roadmap they may choose to help them navigate through these decisions, can be found in the final section of this article.

In the future, we believe the quality of the calculation and decision engines, the format of the data and how this data is processed, will set organisations apart.

The need to fine tune the data machine

Making data decisions can feel difficult. It is therefore useful to classify such choices, to help organisations make sense of data, and prepare for the future.

As we saw in the benchmarking research we carried out at the end of 2019, those organisations that achieved high levels of granularity in their portfolios went on to become outperformers. In fact, every single organisation that outperformed overall, also outperformed in the Granularity category. Clearly, if an insurer is able to get an appropriate grip on the granularity of their data asset, then this will facilitate outperformance in other areas.

So what is the level of granularity that could be achieved in an insurance organisation, and how can it be used to support decision-making? To help answer this, we set out four classification decisions, which can be summarised as:

1. How an insurer can break down the risk and pricing into component parts

2. How to extend the data asset via other internal data, third party data or the Internet of Things (IoT)

3. How easy it is to absorb unstructured data

4. What type of calculation or decision engine can help to create new insights

The first question is how far an insurer can break its book into individual component areas, which itself has two aspects. The first aspect is the extent to which it can break down the asset register of an insured, such as by type of risk each asset is exposed to or by the processes which each asset is subject to when evaluating a risk. The second aspect is how far the pricing can be broken down into individual constituents of the price, so each part of the risk transfer is not only identified but also allows underwriters to make the technical adjustments they consider necessary. Commercial adjustments should be distinct from adjustments to the technical price. Indeed, pricing best practice also underpins portfolio management and will be the subject of further articles in the series. The greater the granularity in understanding the risk as well as the pricing, the greater the potential insights.

Secondly, how far can the data asset be extended, either via internal data, third party external data or by taking advantage of how the insured assets are connected to the Internet of Things (IoT), so that data on the location, performance and usage of an asset can be collected? This latter area is particularly useful when it comes to dynamic risk coverage, and indeed dynamic changes to the underlying risk within the portfolio. Internal data can also include "novel" data sources, which we explain further later in this article.

Thirdly, data of course also comes in different formats, structured or unstructured. Tapping into unstructured data is becoming increasingly easy to achieve, with a range of tools now available that can cope with various formats and quickly render them into structured forms. There is a wide range of unstructured data sources available to insurers, two principal examples being risk survey reports and loss adjuster reports. Techniques such as topic modelling can be deployed to create structured data assets, which can then subsequently be used as factors in models.

Finally, this takes us to the fourth consideration – how to harness computing power, which is where decision and calculation engines come in.

Making sense of data and providing it to portfolio managers, underwriters and others in a form that helps them do their jobs requires calculation and decision engines. These are powerful analytical tools that use complex mathematics to process data through models, where those models are trained against the datasets to provide insights, identify outliers and make recommendations.

In much the same way that today it is commercial underwriters' expertise which is recognised as a market differentiator, we would suggest it will be how underwriters interact with the calculation or decision engine, as well as the quality of these engines, that will set organisations apart in years

Topic modelling is an unsupervised machine learning technique that can be used to analyse qualitative data sources. It aims to find groups of words or phrases ("topics") in order to capture a hidden thematic structure from a large set of data points, and recognises the importance of the context within which words are being used. It is often used in conjunction with text mining techniques.

to come. Within this application an insurer can bring together the data assets referenced above, and create relationships between grouped sets of risks with shared characteristics. These platforms will be central to the development and deployment of algorithms, which can be used both to provide suggestions to the case-level augmented underwriter as well as inform the portfolio-traded algorithmic underwriting.

Referencing again "Learning from the best: Behaviours that drive top underwriting performance", a good underwriter is someone who blends the ability to be data-driven, entrepreneurial and technology proficient, and use these skills to build relationships and construct deals. The ability of the underwriter to outperform will increasingly depend on how they are able to blend together the data assets into an appropriate algorithm, and utilise the insights gleaned from this.

Understand exposures and claims, and join them together

So, there is a lot to think about when contemplating a data approach for active portfolio management.

It is useful to understand how far an organisation can analyse its exposures – to what level of detail – and assess the loss history for similar exposure types across the portfolio. This ties in with what we identified in our paper "Portfolio Management in the London Market: What separates the best from the rest?" as the first pillar of active portfolio management – Granularity. The extent to which this can be achieved flows from the four considerations listed in the section above.

As observed in the benchmarking exercise highlighted above, having a grip on the granularity of the portfolio was a strong indicator of outperformance. How an organisation can slice and dice its portfolio to be able to view it from several different vantage points and, where relevant, allowing the same risk to notionally exist in several different portfolios, was a critical performance capability.

From the benchmarking exercise, we found that the ability of an organisation to understand how its portfolios can be segmented (into geography, line of business, new business/renewal etc), was very different between outperformers in the study and emerging performers. In fact, this attribute had the fifth largest skill gap (out of 72 attributes) between the two performance categories mentioned. In addition to this, the attribute which measured whether the respondent felt that their organisation undertook portfolio management to an appropriate level of granularity had the third largest skill gap between outperformers and emerging performers. These two statistics suggest that the granularity of the data being appropriate for the business and well understood can enhance performance across a wide range of portfolio management capabilities. On the other hand, failure to achieve the appropriate level of granularity can significantly hinder the wider portfolio management skillset.

It is perhaps surprising the extent to which the exposure data and claims data are not effectively combined and matched. It is striking how often, for example, cause codes are not collected to a sufficiently granular or consistent level in order to be able to gain the most benefit from this asset. Another example is when a claim cannot be easily linked to a single exposure on a programme/schedule of assets e.g. which building, wind farm, or office.

Furthermore, closing the "feedback loop" between underwriting and claims, and how the claims team works with reserving and underwriting to help set the underwriting strategy, is an area of performance advantage. Often these processes work well at a superficially high level, but a persistent feature of the emerging performer category is how often these communities were not aligned below that very high level.

Strong high-level alignment, but little depth

In the **benchmarking study**, we asked to what extent respondents agreed that there was a high level of coherence across a range of functional areas. This suggested strong high-level alignment as 92% of respondents agreed or strongly agreed that their organisations exhibited coherence as described. However, when asked questions designed to assess the depth of coherence between the functional areas, there was far less agreement – in particular, only 50% of respondents agreed or strongly agreed that the target business mix had been well cascaded throughout the business. Perhaps more tellingly, the spread of responses increased too; outperformers scored largely the same score overall for alignment as they did for the high-level question, whereas emerging performers scored significantly worse on the more detailed questions. Of the 72 attributes assessed in the study, the question around high level alignment showed the second smallest spread between the average score of outperformers and emerging performers, whereas the question on how well cascaded the target business mix was had the largest spread of all 72 attributes.

Whilst we have highlighted exposure and claims data, outperformers in our benchmarking survey refined their portfolio optimisation by rigorously including reserving data and pricing data as well as quote (including those not taken up) data as a means to improve risk selection.

By making available a credible, single data source for all functional areas to interrogate and use, outperformers are able to create a coherent portfolio management process, whilst maintaining a level of granularity which is appropriate for all users.

Having a grip on
the granularity of
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Reset and expand understanding of exposures

All this may also depend on a rethink of how to define exposures. Too often, the insurance industry uses the term "exposure" to refer to the main unit of exposure used as a basis for rating, as a proxy for risk. Prime examples include wage roll, sum insured, and turnover. However, when thinking about data strategy, it can be any metric that tracks risk level.

In reality, there are lots of data points that can explain the exposure to risk. These might include the length of time a business has been operating or years of license held, the manufacturing method employed, or fire safety measures in place. In most cases these data points are not collected, or if they are, they are not analysed nor sufficiently digitised and integrated with other tools.

Consequently, while a lot of organisations will say they have a poor grip on their 'core exposure' measure, they set a strategy to improve that without looking at 'wider' exposure measures. Rating structures are often complicit in glossing over these wider factors and focusing on 'core' exposure. As an example, very few insurers will collect manufacturing process information for two companies in the same industry, even though the manufacturing process used could significantly impact the respective risks.

Semantically, the term "exposure" is used differently by different industry professionals. For example, actuaries tend to say "exposure" to mean the combination of rating factors or risk proxies, whereas underwriters may consider it to refer to a single indicator of risk size, such as wage roll, sum insured and turnover.

Moreover, in the fast-paced world in which we currently find ourselves, factors which indicate the level of risk are not immutable over time. Exposure measures become relatively more or less important because of the underlying risk itself, changing societal trends, or the influence of regulators and lawmakers.

Consider for example that in personal lines, gender used to be a common rating factor for motor insurers. Since the European Court of Justice Gender Directive came into force insurers can no longer use gender to price motor insurance. Another example, this time from the commercial lines world, is how cyber risks are now a consideration for almost all businesses in a wide range of industries, and could potentially impact many different insurance classes. Therefore, rating factors relating to digital security have become important for many insurance products.

Examples like these illustrate how an organisation must be agile and versatile enough to be able to adapt to the changing rating environment as the relative market importance of certain rating factors shifts. This agility could lead to an insurer being able to capitalise on their more advanced understanding of the market, be it in carving out new opportunities by recognising the changing needs of their insureds, or through being able to price the business more accurately to the underlying risk. Naturally, their advantage stems from having invested in their data strategy in the first place.

The myth of the diminishing role of the underwriter

Amid all this talk of data and models, we recognise that a common refrain in the London market is that technology will reduce the role of the underwriter. We take the opposite view.
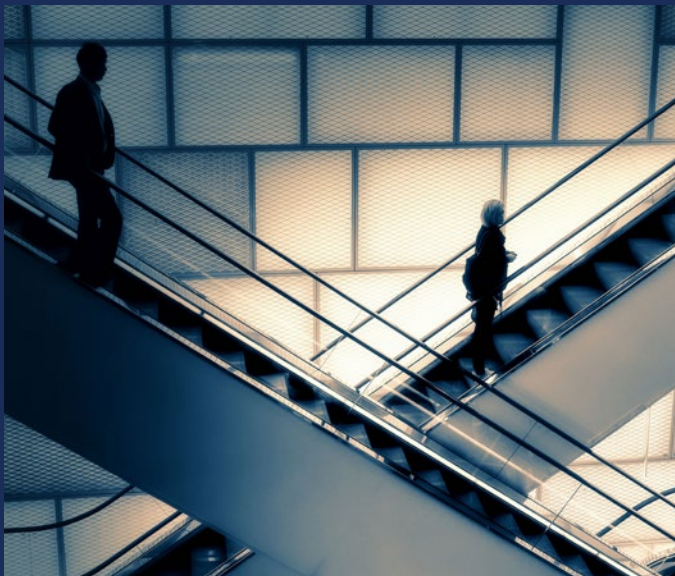
We see underwriters remaining core, but their role becoming more sophisticated as they will have to take account of a wider set of inputs and interpret them, challenge them and integrate them. And central to that role will be an increasing quantity of high-quality data points to inform the underwriting decision-making process. Returning once again to "Learning from the best: Behaviours that drive top underwriting performance", the best underwriters are quick to react to pricing changes in the market. Having good data models is crucial, both to aid with detecting the change quickly, as well as calibrating a response.

Indeed, this was also a finding from the benchmarking study we summarised in "Portfolio Management in the London Market: What separates the best from the rest?", where we observed that outperformers could react to an issue or opportunity inside a two-week window, and begin to see the impact of such a response within a month. The speed at which an organisation could see the impact of a response showed a broad range of results, as shown in Figure 2, overleaf.

The importance of high-quality data applies both at the point of writing where the risk is bound, and to the different levels of portfolio management, from traditional vertical functional hierarchies (where portfolios are made up of a series of progressively smaller portfolios) to horizontal cross-functional groupings (for example, peril, segment, and channel).

Within these portfolio layers, algorithms (including the product of machine learning and artificial intelligence) will increasingly be able to suggest outcomes at different points in the underwriting process – be that risk selection or risk appetite; price suggestions; programme structures; underwriting rules, including terms and conditions; or operational routing.

Critically, the collection of high-quality data throughout the organisation, improves the ability to trace the underwriting decision through its stages, particularly the stages at which prices/terms were adjusted. This will either improve competitiveness or present opportunities for learning.
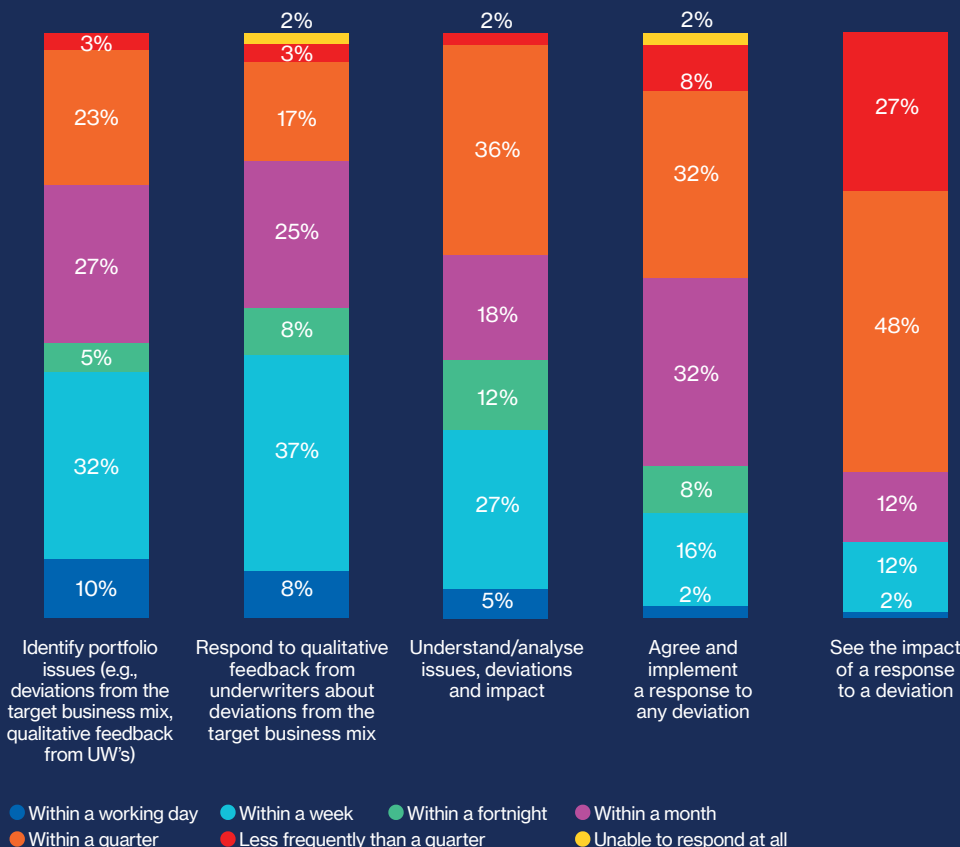
It will also allow the development of algorithms, which we expect will follow broadly two distinct parallel paths:

• The case-level centric approach where underwriting decision data is collected against a componentised risk and pricing structure, and as deviations are understood then relationships can be generated then predicted. Initially these can be surfaced to the underwriter as suggestions at key stages in the underwriting journey, and then as rules as confidence in the model builds.

• The portfolio-centric approach where based on an analysis of the available data, organisations develop a hypothecated model which is refined via simulations. This model will be iteratively refined through actual experience, and to begin with the algorithm will be constrained to ensure no large adverse position can be allowed to build up.

Which path is selected will vary between class and distribution channel, and depend on the level of homogeneity, policy volumes, loss experience and data assets available. We have discussed in this article previously that the internal data asset is the most obvious place to start, and augmented later with additional data assets. To make best use of the internal data means first that there is a common approach to how the data is structured, and in this next section we look at some of the common challenges faced by insurers.

Figure 2. **Question:** How quickly can your organisation complete the following?

	Identify portfolio issues (e.g., deviations from the target business mix, qualitative feedback from UW's)	Respond to qualitative feedback from underwriters about deviations from the target business mix	Understand/analyse issues, deviations and impact	Agree and implement a response to any deviation	See the impact of a response to a deviation
Unable to respond at all		2%	2%	2%	
Less frequently than a quarter	3%	3%		8%	27%
Within a quarter	23%	17%	36%	32%	48%
Within a month	27%	25%	18%	32%	12%
Within a fortnight	5%	8%	12%	8%	
Within a week	32%	37%	27%	16%	12%
Within a working day	10%	8%	5%	2%	2%

● Within a working day ● Within a week ● Within a fortnight ● Within a month
● Within a quarter ● Less frequently than a quarter ● Unable to respond at all

46.7%
of respondents' organisations can identify portfolio issues within a fortnight

26.7%
of respondents' organisations can agree and implement responses to deviations within a fortnight

13.3%
of respondents' organisations can see the impact of responses within a fortnight

Data structure

So far we've looked at the importance of the depth and application of data. Another crucial part of a data approach for active portfolio management is to recognise requirements for different user groups, and therefore how to structure that data.

There are often fundamental differences between how different user groups will use data, which, if resolved, can unlock potential within portfolios.

A key consideration in getting to grips with the data assets that support portfolio management is to understand the extent to which the data asset has been developed to suit the requirements across the whole portfolio, and by extension the whole organisation. This requires common agreement across the different expert functions in an insurer, for example:

- Underwriting
- Actuarial
- Claims
- Exposure Management
- Finance
- Operations

A frequent issue is that one or two of these groups have driven the development of the data structures inside an organisation, and the result is that it is then skewed to the needs of that group. The logical reaction is that the other functions subsequently develop their own additional requirements which then do not align to the other functions, and result in several disjointed datasets.

It is therefore far more useful to develop a shared data structure that meets all the needs of the different groups, and works to a common data lexicon, in order to have a cohesive data foundation in support of portfolio management. This is easy to say but typically hard to execute, and is exactly the challenge that Blueprint Two is seeking to address with a common data spine and digital gateways to enforce data quality.

To illustrate how the challenge of disjointed data assets can arise, these are some common examples (although unfortunately this list is not exhaustive):

When Actuarial and Underwriting don't align

For example, pricing actuaries will capture, store and analyse data at the level required for their function. They deem a technical pricing exercise to be successful if they have minimised a goodness of fit measure. They will typically use complex methods to produce a model.

However, underwriters may assess success by which course of action is more 'reasonable' and rational, and produce a technical price that makes sense relative to market pricing and prevailing external conditions.

Generally, this means organisations either store data for underwriters, who then cannot produce a good pricing model, or store data for actuaries that is not realistically interpretable.

When an organisation is Finance-centric

A Finance-centric approach to data can often cause issues for several other user groups, including actuaries, underwriters, claims, as it is more focused on meeting requirements for accounting standards (such as GAAP). Therefore this approach tends to prioritise the needs of a finance team, as well as the board of directors, over the operational teams within an insurer.

On occasion, some Finance teams can be more concerned with earned results, and pay more attention to cashflows of paid claims and premiums, than other teams may do. For example, taking premiums, a finance-centric organisation will be focused on earned premium, whereas an underwriting team will look more closely at written premium. It is not that using accounting metrics presents an issue, but looking through a purely finance-centric lens, does not allow the flexibility for active portfolio management, but instead produces a rigid framework which in effect treats all risks as equal and homogeneous.

## The importance of Claims being connected to the rest of the business

Claims teams are unsurprisingly 'first on the scene' for most claims. They should therefore be perfectly placed to help actuaries or underwriters get early sight of certain claims trends. In reality, this does not seem to happen as much as one might expect; not because the data is not there, but largely because the teams are not sufficiently connected. By enabling swift communication channels between Claims and Underwriting, underwriters would be able to react far more quickly by introducing new terms and conditions to help manage risk, as well as be able to exercise more reliable risk selection.

Claims team data is often unstructured, with several free text fields, as this does not restrict the information which a claims handler can write about the claim. It does, however, make the data less useful for other teams, most notably for actuaries. This is because the unstructured nature of the data makes it difficult for actuaries to incorporate it into their models without significant text-mining or topic modelling (techniques which are seldom used in the commercial lines market). By including more structured data fields in addition to the unstructured ones, or by employing the techniques mentioned, an insurer can very quickly harness the claims data more effectively.

In some cases, well-intentioned organisations try to appease several user groups, but either do not have a sufficiently robust data strategy and framework, or struggle to capture data at a level of granularity that achieves the objective. The result is a hybrid dataset which meets some of the needs of some users but fails to fully meet the needs of all groups.

A more beneficial approach is to capture and store data that allows an insurer to produce predictive models, but also allows them to deliver results to underwriters (perhaps at peril level or where one peril shows up on multiple accounts or classes) which are interpretable and flexible. This helps increase the level of confidence users have in the both the data, and the analyses and outputs from other functions, resulting in an organisation which should be far more aligned and coherent.

Diversity of requirements determines granularity of data collection
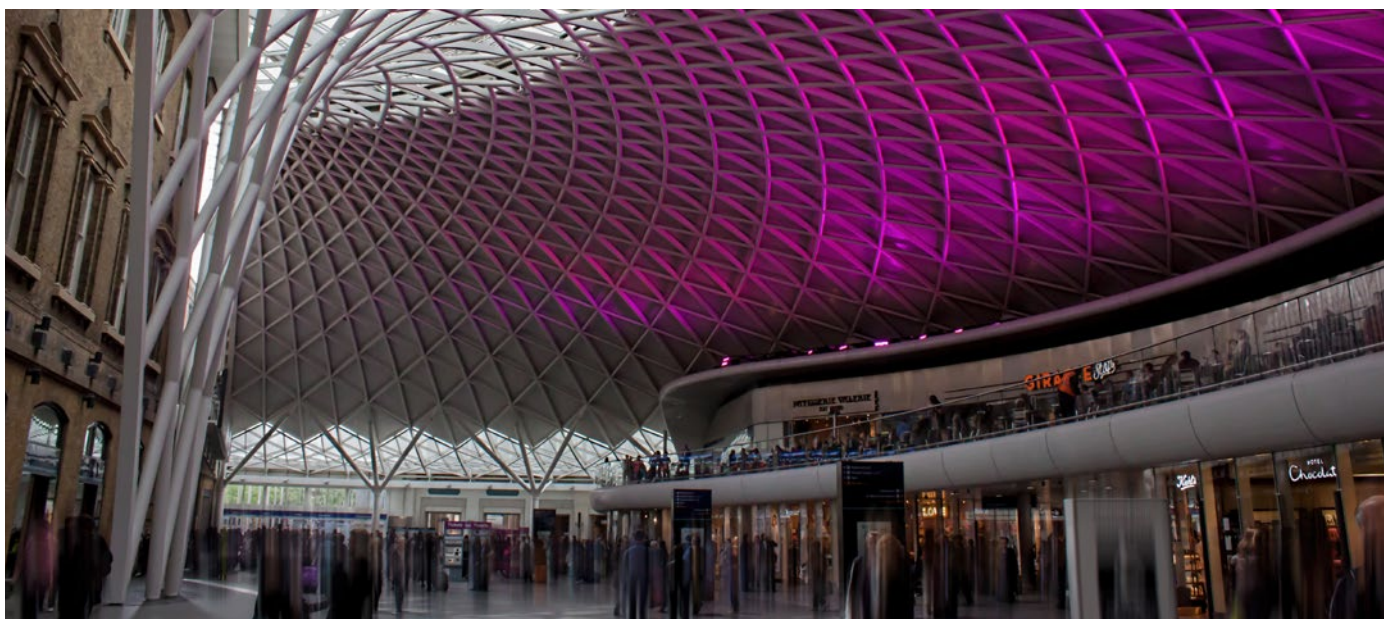
So where to start? We recommend that any organisation should adhere to the four ground rules below. This will set them on a path to create a data asset that puts a portfolio management approach on to a firm footing, and enables outperformance potential:

1. Ensure an approach that is equally useful for all the functions that make up your business

2. Pull in all the elements of exposure that describe the risk with a componentised approach to pricing, rather than the traditional risk proxies

3. Collect claims, pricing, exposure management, reserving and quote data

4. Track the decision making of any given underwriting decision, and how the price (making clear distinction between risk adjustments and commercial adjustments) and terms are altered at any point

Blueprint Two

The Future at Lloyd's is our strategy to be the world's most technologically advanced insurance marketplace.

Blueprint Two, which we launched in November 2020, outlines the two-year programme that will deliver profound change for the market as part this strategy. We will establish new ways of doing business, underpinned by digital channels that enable much advanced data collection and management.

We will be creating a more intuitive, straight-through process for placing and binding of risk which will enable growth through global reach and easier access to new products and services. The key that unlocks these benefits is right first time data at the point of transaction enabling far greater integration and efficiencies across processes such as placement, renewal and claims. To achieve this Lloyd's will work with the market and third-party placing platforms to put in place a series of standards, processes and support services to deliver this. A key part of this will be the Core Data Record which will be the single source of data that connects all subsequent processes, including accounting, payment, reporting and following endorsements and claims.

The future of data

The good news is that the collection of data, and the analysis of that data, is becoming easier, quicker, and available at a lower cost. It is also becoming more valuable as our understanding of the data-rich world, and the tools available to infiltrate and unlock it, becomes more advanced.

Moreover, new metrics can be developed by looking at existing data from a new angle (which we refer to as novel data). For example, insurers could use internal operational data and metrics, such as a count on number of emails to broker A vs broker B in a typical renewal process, that could help followers streamline the process. Indeed, the adoption of novel data is a feature of many market outperformers – for example, using a scoring system to assess the 'friction' in conversations where high levels of rate might be required, or to create a lead indicator on rate and retention outcomes, particularly in evaluating the initial impact of remediation activity.

Novel or otherwise, an enlightened view on data will be the bedrock for insurers in achieving actionable and active portfolio management.

Whilst our focus in this article is mastering data for portfolio management, there is of course also a symbiosis between portfolio management and pricing, where the granularity of how each operates will drive potential in the other. Furthermore, achieving granularity at the pricing stage and translating that through to other business processes is often the key enabler.

Our next article: how we expect these data assets to be harnessed

Going forward, complex data will be captured, analysed and used, more quickly than ever before.

This data will be used to feed the development of algorithms – which in themselves are a series of calculations using rules and predictive models to make recommendations. The wave of innovation we are experiencing in the London Market is predicated on the operation of the algorithms – regardless of whether that is via Delegated Authority or in the Open Market.

The next article in the series ("Advanced Analytics") will focus both on the common approaches to how data is harnessed as well as potential applications. These applications form part of a portfolio management strategy and can include:

- Thematic analysis across the portfolio
- Diversification benefit analysis
- Optimising business mix
- Scenario testing to arrive at the optimum portfolio plan aligned to strategy
- Next-generation London Market rating models
- Incorporation of unstructured data, including topic modelling
- Development of trading algorithms, including speed of adoption and calibration
- Using analytics at the point of writing to integrate the case underwriting with the portfolio strategy – where the goal is to have practical, trusted, integrated pricing that operates pre-bind.

The wave of innovation in the London Market will be led by algorithms.

Worked example:

Consider an insurer writing five classes totalling £250m: Property Open Market, Property Binders, Trade Credit, Directors & Officers, and Midstream Energy. This insurer writes £50m of business in each class, and only writes primary layers.

Each of these classes typically will have different profiles and therefore present different challenges. When looking at this portfolio through a data lens, a useful way to assess the challenges within each is to consider two separate aspects for each one. The first of these being homogeneity of data, and the second an assessment of data scarcity and latency.

As can be seen from the chart below, we expect Property Open Market to have homogeneous, abundant data that is received promptly, whereas Midstream Energy data is expected to have heterogeneous, scarce data with high latency. The other classes fall somewhere between these two on both axes.

In the chart, we say 'data' to refer to a holistic view of multiple data sources including, but not limited to claims and exposure data. For example, whilst we have placed Property Binders and Midstream Energy in a broadly similar position on the vertical axis, their placement is for different reasons; Property Binders would tend to see poorer quality exposure data, but higher volume and frequency of claims data, whereas midstream energy would tend to get significantly better exposure data, but perhaps more limited claims data.

Figure 3. An insurance portfolio viewed through a data lens
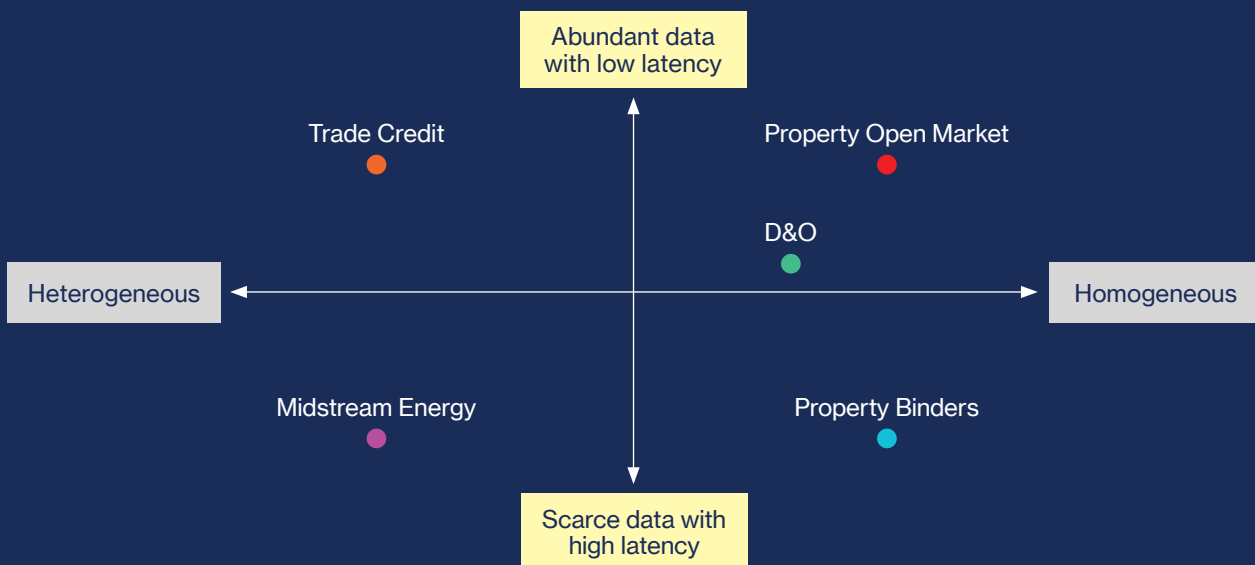
The techniques we outline in this report can be applied to any class, but depending on where they are on the grid above, they present different challenges. Perhaps unsurprisingly, the top-right quadrant, showing classes with homogeneous and abundant data, is the easiest place to start to construct a complete, robust data asset. However, no matter where on the grid a class falls, there are certainly actions which can be taken to improve upon the current state.

An example of a roadmap for a class which is placed in the bottom left quartile, and therefore typically would see heterogeneous data in small quantities and with relatively long delays to receive this, is as follows:

1. Enhance the dataset by collecting primary data about the insureds. This includes, but is not limited to:
   a. size, measured by revenue, or market capitalisation;
   b. profitability, either by margin or in absolute terms;
   c. credit scores, as provided by Experian, AM Best, Moody's etc;
   d. global reach, perhaps number of countries they have customers or premises.

2. Augment the dataset in other ways which are appropriate to the risk or its risk factors. This could be through external data sources. For example, for Property insurance, crime statistics by postcode or area code could be used.

3. Use benchmark data on how class performs or behaves. This could be from market bodies such as the LMA or Lloyd's.

4. Consider any other unstructured risk proxy information collected, and use data mining or topic modelling techniques to produce a usable, structured data source. Loss adjuster reports or risk surveys could be the unstructured starting point.

5. An insurer can benefit from being a learning organisation; that is, one which can collect and store data and routinely feed this back into system to improve future decisions. This could be as simple as keeping track of all underwriter adjustments made at point of writing, or it could be more resource-intensive and involve keeping a record of all risks quoted on to bolster the number of data points to draw upon. By keeping a more complete data resource and learning from it, organisations could analyse their book in a multitude of different ways, for example systematic tracking of clauses and coverage.

6. It is crucial to be able to connect data sources in a timely and meaningful way. Connecting claims data (e.g. the capture of cause of loss, head of damage) back to key exposure data such as policy, asset, location, makes the data resource far more informative and can help an organisation spot issues and opportunities much earlier, or in some cases can enable an organisation to see trends that they otherwise would have been blind to.

7. In many cases, perils may affect multiple classes. It is possible for an insurer to recognise where this occurs, and harness data from different classes. An example of where this may be seen would be that property risks are covered across a wide range of classes (namely, Marine, Energy, Aviation, as well as Property itself), or the emergence of Cyber risks across a wide range of classes.

8. Implement portfolio analysis, perhaps by looking at related 'risks-like-these' to see what can be extrapolated from how risks are similar or different to each other. This may manifest by way of loss experience or by identifying risk clusters and outliers. By making the data visible, accessible and deeply embedded in decision making, portfolio analysis can be executed throughout an organisation in a meaningful way.

It is worth noting that this roadmap will be applicable in all quadrants, with each point applying to a greater or lesser extent to a given class within a given organisation, depending on the current state that the data asset is in. In our example above, Midstream Energy may need to start with Action 1 from the roadmap, whereas Property Open Market may not. For Property Open Market, the data may be effectively augmented by internal and external data sources, however it may be the case that some organisations are not learning organisations, and therefore action 5 onwards will still be highly relevant.