

## Allowance for risk in MCEV and interaction with other accounting measures

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On the 4th June 2008, the European Insurance CFO Forum published the Market Consistent Embedded Value (MCEV) Principles<sup>®</sup> and associated Basis for Conclusions. This will represent the only CFO Forum endorsed method of embedded value reporting from 31st December 2009. The MCEV Principles represent a significant step forward in achieving more consistent embedded value reporting. However, there are a number of areas where companies will have key decisions to make if they are to properly reflect how they view and value their business. One such area is the allowance for risk. Following the publication of our briefing note on the 'CFO Forum MCEV Principles' in June, this technical briefing note outlines the challenges faced in developing methodologies within this evolving area and considers comparison to Solvency II and IFRS Phase II.

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### Introduction

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### Historic embedded value allowance for risk

Under Traditional and many forms of European Embedded Value (EEV) reporting, risk is implicitly allowed for by the use of an aggregated risk discount rate. When calculating the present value of future profits (PVFP), this single rate is used to discount all cash flows. While this method has the advantage of being both simple to calculate and explain, it is not without its shortcomings.

The use of a single rate ignores the duration and potential variability of the cash flows and therefore, while in aggregate the allowance may be appropriate, individual portfolios or policies may not have sufficient risk allowance. In addition, with the risk discount rate set at an aggregate level to cover a variety of risks, it can be difficult for users to unravel the relative components of the risk margin.

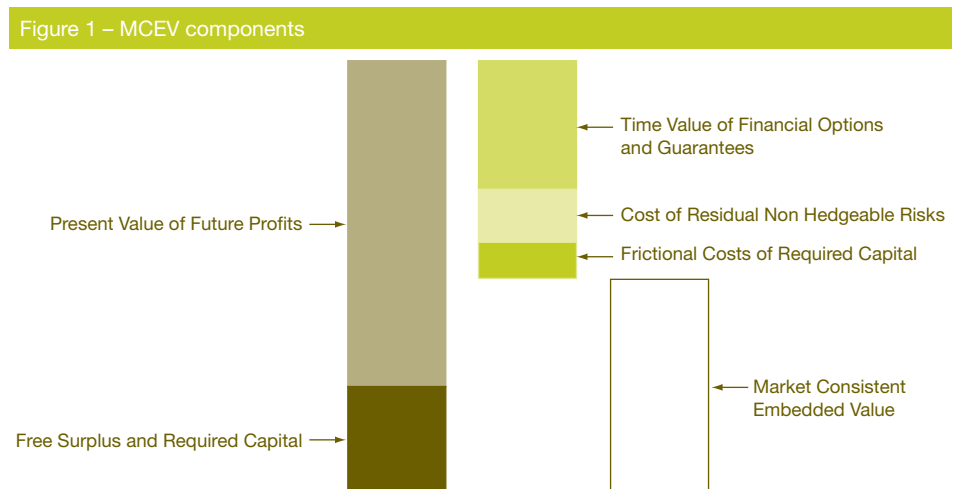
### Risk allowance within the framework of the MCEV Principles

The MCEV Principles set out a framework, rather than a prescribed method of allowing for risk. For example, while there is a requirement to disclose a single equivalent charge (to represent the cost of residual non hedgeable risk (CRNHR) on a cost of capital method), the methodology

for calculation of the cost of non hedgeable risk itself is not prescribed.

However, it is clear that under MCEV, the allowance for risk should be made at a more granular level and focused on the shareholders’ interest in the business. This risk allowance can arise in a number of different places in the valuation, depending on the risk type.

Figure 1 shows the build-up of the MCEV calculation, which starts from a net asset position (free surplus and required capital), based on a valuation of assets and liabilities. The PVFP is then calculated, ensuring that the liabilities projected are consistent with those used in the valuation of the net assets. From this, the time value of financial options and guarantees (TVFOG), the CRNHR and Frictional Costs of Required Capital are deducted to arrive at the MCEV result.



Source: PricewaterhouseCoopers

## By adopting a market consistent approach, the market provides an objective and independent measure of the value for such risks.

Risks can be subdivided into two types: hedgeable and non hedgeable. Hedgeable risks are those where it is possible to reduce an exposure by purchasing a hedging instrument or transferring the exposure to a counterparty in an arms' length transaction under normal business conditions. Non-hedgeable risks are risks that cannot be hedged or easily transferred to a third party, due to the lack of a deep and liquid market. This is the risk subdivision the proposed Solvency II framework uses. Risks can also be subdivided into those that are financial and those that are non financial in nature.

Hedgeable financial risks, such as performance of assets traded in a deep and liquid market, should be allowed for explicitly in the PVFP and in the TVFOG. By adopting a market consistent approach, the market provides an objective and independent measure of the value for such risks.

Hedgeable non financial risks are currently rare. In the longer term, as markets develop, examples could include actively traded securitisation of insurance cash flows or mortality bonds. However, in the short to medium term, it is unlikely that there will be a sufficiently deep and liquid market to allow such risks to be dealt with by marking to market. In addition, the risk inherent within an entity's own basket of mortality risks is unlikely to be represented by a traded mortality bond.

Under the MCEV Principles, non hedgeable non financial risks may be allowed for within the PVFP and TVFOG components or in the CRNHR (set out in Principle 9).

For example, expense assumptions used in the PVFP may be based on historic experience that allows for the realisation of a certain level of operational risk occurrences and the projection therefore implicitly assumes that this level continues. Some companies may also model the impact of dynamic policyholder actions within the TVFOG calculation. This allowance recognises that policyholders may be more likely to surrender their policy when a future guarantee has no value, while they may be less likely to surrender when the future guarantee has value. As this is highly correlated with investment scenarios, this is sometimes modelled in the TVFOG and therefore an element of persistency risk allowance is included here.

An explicit allowance is also required for financial risks that are non hedgeable in

nature (set out in Principle 9). These may arise, for example, in countries where deep and liquid markets do not exist to hedge such risks. Even in developed markets, care needs to be taken when considering such measures as property implied volatilities, as derivatives are not readily available. Furthermore, some developed markets require extrapolation of yield curves or equity volatility surfaces beyond available and reliable market data. In these cases consideration should be given to how reliable the inferred yields and volatilities are and whether an additional allowance for uncertainty is appropriate.

Any non hedgeable risks that are not included within the PVFP or TVFOG should be allowed for explicitly within the CRNHR component of the MCEV (set out in Principle 9).

Table 1 – Provisions for risk under MCEV

	Financial	Non financial
Hedgeable	<p>Allowed for at current market price</p> <ul style="list-style-type: none"> <li>No credit for investment spreads</li> <li>Present Value of Future Profits and Time Value of Options &amp; Guarantees reflects market price of hedging risks</li> </ul>	<p>To the extent they exist should be allowed for at current market price</p>
Non hedgeable	<p>Allowed for in Cost of Residual Non Hedgeable Risks (to the extent not allowed for already in PVFP and TVFOG)</p>	<p>Allowed for in</p> <ul style="list-style-type: none"> <li>Present Value of Future Profits</li> <li>Time Value of Options and Guarantees</li> <li>Cost of Residual Non Hedgeable Risks</li> </ul>

Source: PricewaterhouesCoopers

What is important for the cost of residual non hedgeable risk adjustment required by Guidance 9.1 is not whether the underlying risk variable itself is asymmetric or symmetric, but whether the distribution of shareholder outcomes is skewed relative to the distribution of the risk variable.

### Cost of residual non hedgeable risk

The cost of residual non hedgeable risk is designed to capture the allowance for risk that is not explicitly made in the PVFP or TVFOG and ensures that the MCEV is focused on the mean value of the shareholder interest in the distributable earnings. Guidance 9.1 to 9.3 discusses the three categories to be considered:

- Asymmetric shareholder impacts
- Charge for uncertainty
- Risks not allowed for elsewhere

We consider the three categories in detail below.

### Asymmetric shareholder impact

The expected value of the PVFP and TVFOG will usually reflect the mean outcome of the risk variable. For example, in setting a mortality assumption, this will usually be set to reflect the mean of the claim rate. However, as MCEV represents the mean shareholder outcome, it requires consideration of the financial outcome from a shareholder's point of view rather than from the view of the insurance entity. In Figure 2, the mean shareholder impact may be different from the mean claim outcome due to, for example, non-proportionate reinsurance. To the extent that these two financial outcomes are not aligned, Guidance 9.1 requires an additional allowance in the CRNHR component.

If the projection of mortality risk is performed deterministically, the mean claim outcome does not produce the mean of the shareholder outcome in this example. If, however, probability weighted scenarios or stochastic mortality projections were used, such an adjustment may not be required.

Another example of asymmetries in the impact of the risks on shareholder value arises in a participating fund. In these funds, the shareholder may be called upon to support the fund when the minimum capital is eroded, but will only share in a proportion of any profits.

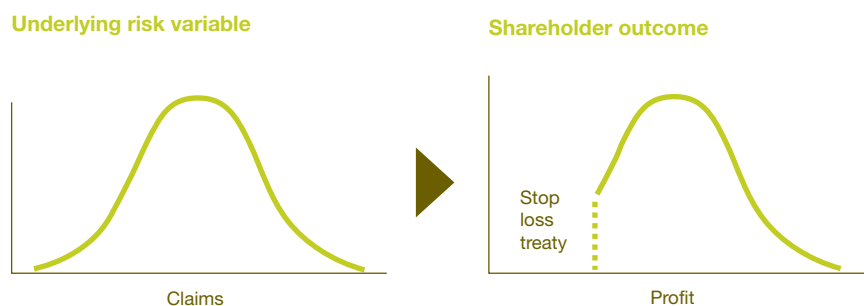
What is important for the CRNHR adjustment required by Guidance 9.1 is not whether the underlying risk variable itself is asymmetric or symmetric, but whether the distribution of shareholder outcomes is skewed relative to the distribution of the risk variable. If, for example, the claim distribution is asymmetric, but the mean claim outcome is reflected and that mean

claim outcome also represents the mean of the shareholder outcome, no further adjustment would be required. However, if the mean of the distribution of shareholder outcomes is different from the underlying risk variable, an adjustment would be required.

Allowance can be made by performing stress tests on the PVFP and TVFOG, to understand how the mean of the claim outcome and the shareholder outcome differ and then making an adjustment within the CRNHR to ensure the MCEV represents the mean of the shareholder outcome.

While Guidance 9.1 requires that any additional cost to reflect the mean shareholder outcome is included within the CRNHR, the adjustment does not include an allowance for the uncertainty in the best estimate or any inherent variability in the resulting cash flows. Such an adjustment would be considered under the charge for uncertainty.

Figure 2 – Mortality: asymmetric shareholder impact



Source: PricewaterhouseCoopers

While the Principles require an adjustment in the CRNHR where the mean of the shareholder outcome is not the same as the mean of the risk variable, Guidance 9.2 only requires that a charge for uncertainty should be considered.

## Charge for uncertainty

Guidance 9.2 states that:

‘An allowance for uncertainty in the best estimate of shareholder cash flows as a result of the non hedgeable risks (both symmetric and asymmetric risks) should be considered.’

While the Principles require an adjustment in the CRNHR where the mean of the shareholder outcome is not the same as the mean of the risk variable, Guidance 9.2 only requires that a charge for uncertainty should be considered.

The Principles make it clear that an allowance for uncertainty requires consideration for both symmetric and asymmetric risks. A symmetric risk is a risk where an equal and opposite movement upwards or downwards results in financial outcomes for shareholders that are of equal magnitude. For asymmetric risks however, an equal and opposite movement upwards or downwards results in financial outcomes for shareholders which are different.

For example, some expense risks could be regarded as symmetric; as expenses increase or decrease, the impact on shareholder return may be equal and opposite. Persistency risk, however, could be an example of an asymmetric risk with a long tail distribution, due to the low but finite probability of a high proportion of the business surrendering in any period.

In assessing whether an allowance is appropriate or not, there are three potential theories that market participants subscribe to:

- Utility theory
- Diversification theory
- Economic theory

**Utility theory:** This theory is based on the view that investors will prefer certainty and that they will place a lower value on an investment with uncertainty, compared to certain payouts. For example, consider two possible investments:

- £50 certain or
- £0 or £100 with 50:50 probability of each outcome.

The mean payout from both investments is the same at £50; however, the investor may be risk-averse and so would not value all outcomes in line with their financial values. In this example, the investor may be ‘neutral’ to a £50 certain outcome; however he may be ‘more unhappy’ with a £0 outcome than he is ‘happy’ with a £100 outcome. Although the up- and downside risks are the same, the investor does not have a symmetric utility curve and will therefore value this investment less than the £50 certain to allow for the risk of a poor payout.

**Diversification theory:** Diversification theory holds that an investor can reduce the risk within a portfolio of assets, simply by holding instruments that are not perfectly correlated. Investors can therefore reduce their exposure to individual asset risk by holding a diversified portfolio of assets. This could be used to argue that if a large enough portfolio of risks, which are not perfectly correlated is held, then the impact of non hedgeable risks in the insurance company on the investors return is small enough as not to require an allowance for uncertainty.

**Economic theory:** Economic theory states that in a deep and liquid market, each market price has an inbuilt allowance for the current market view of the risk, due to the uncertainty. It is based on the premise that an individual should invest in an asset to earn the highest possible return on it. This means that all investors in the asset should yield an equal rate of return after allowing for their view of the risk, otherwise reallocation would result. Consequently, the asset value will stabilise at a value that represents the markets view of the risk. This can be observed in the relative cost of equity versus debt financing. Under this view, a market consistent valuation should therefore include a charge for risk.

We believe that shareholders will prefer certainty to uncertainty; they will not have symmetric utility curves and therefore they will expect a charge for uncertainty to be included in the MCEV. We believe that although diversification can be used to reduce the portfolio risk, the non hedgeable risks being considered are unlikely to be negatively correlated with other risks within the portfolio. This reduces the efficiency of the diversification and requires a larger portfolio size to reduce the impact to a level that could be ignored. The average shareholder is unlikely to hold a portfolio of investments that is large enough to fully diversify away all of the non hedgeable risks and therefore some charge for variability would be appropriate. Although the PVFP reflects the best estimate of the likely outcome of the non hedgeable risks, this doesn’t reflect the variability that is inherent within the cash flows as a result of the risks. As described above, under economic theory, the market value of an asset will reflect the market’s view of the risk, due to the uncertainty in the cash

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flows that may be derived from the investment (whether there is an equal likelihood of upside or downside risk or not). Therefore, a market consistent valuation should include a charge for that risk. As described later, IFRS Phase II and Solvency II both potentially include an allowance for uncertainty and furthermore, pricing in the current market for insurance-linked securitisations and transfers of liabilities suggests the levying of a charge is reflected in these market transactions.

However, there is no readily visible market in such risks and therefore determining an appropriate allowance will require significant judgement. This is still an area where methodologies remain under development. However, potential approaches could involve consideration of

relevant market data such as the excess return on index-linked mortality bonds or approaches based on pricing techniques.

### Risks not allowed for elsewhere

The final category exists to ensure completeness and aims to capture the mean shareholder impact of any risks that are not considered within the PVFP or TVFOG components. This could be viewed as a subcategory of the asymmetric shareholder impact. A typical approach to determining the allowance would be to identify those risks not included in PVFP and TVFOG and make allowance, based on internal economic capital modelling. Potential examples of such risks may include: operational, reinsurers default, epidemic and group risks.

### Disclosure of cost of capital charge

Guidance 9.4 requires that the allowance for the CRNHR be presented as a single average charge such that the present value of this charge, levied on the projected residual non hedgeable risk capital, equates to the CRNHR.

In determining this single average charge, the Principles set out that the residual non hedgeable risk capital should be:

- Determined using an internal economic model calibrated to provide a 99.5% confidence level of covering the risk over a one year time horizon (set out in Guidance 9.5).
- Projected appropriately using, for example, key capital drivers (set out in Guidance 9.6).
- Determined with allowance for diversification benefits between non hedgeable risks in the covered business, but with no allowance for diversification with hedgeable risks or non-covered business permitted (set out in Guidance 9.7).

In addition to the single average charge, the definition, amount and method of determining the associated capital is required to be disclosed (set out in Guidance 9.8). This is designed to enable an element of transparency and comparability between companies in the allowance for non hedgeable risks. It is likely that these disclosures will be important in understanding the allowance for risk incorporated within the MCEV result.

Table 2 – The categories of non hedgeable risk defined by the Principles

Categories of non hedgeable risk	Examples of the types of risks that may be allowed for
Asymmetric shareholder impact	Differences between the best estimate of the mortality claim amount and the best estimate of the shareholder distribution of claim costs on a one-year group life contract with stop loss reinsurance used to mitigate mortality risk.
Charge for uncertainty	<b>Asymmetric risks</b> The impact on shareholder value of the variability of claim payouts due to persistency risk. The claim variable may have an asymmetric risk profile, however, if the mean shareholder outcome is reflected then any additional charge will represent a charge for variability.
	<b>Symmetric risks</b> The impact on shareholder value of the variability of claim payouts due to expense risk. The claim variable may have a symmetric risk profile; however, if the mean shareholder outcome is reflected then any additional charge will represent a charge for variability.
Risks not allowed for elsewhere	Any risk not considered in the PVFP or TVFOG and valued at the mean shareholder outcome (e.g. operational risk). This could be viewed as a subcategory of the asymmetric shareholder impact category.

Source: PricewaterhouseCoopers

IFRS Phase II and Solvency II both potentially include an allowance for uncertainty.

## As the MCEV Principles provide a framework rather than a prescribed method, managing the communication and level of disclosure will be key to a successful MCEV implementation.

There will be a number of considerations in interpreting these disclosures:

- The charge represents the residual cost for non hedgeable risk. Companies may have included part of their risk allowance within either their PVFP or TVFOG components, which is therefore not included in the disclosed charge required by the Principles.
- The variety of methods possible in determining the initial residual non hedgeable risk capital and various potential projection methods can result in different risk allowances, which may be difficult to appreciate from qualitative disclosure.

Where this is the case, clarity and transparency around disclosures will be required to ensure users correctly interpret the risk allowances.

### Managing messages

As the MCEV Principles provide a framework rather than a prescribed method, managing the communication and level of disclosure will be key to a successful MCEV implementation. Guidance 9.8 requires that the method and basis for risk allowance within the CRNHR be disclosed and the Basis for Conclusions states that the interaction of the CRNHR with the TVFOG and PVFP should be explained to enable users to better understand the risk allowances.

However, as the MCEV Principles only require disclosure of the risk-based capital and cost of capital charge for the CRNHR, we believe it will be essential to properly explain the elements of non hedgeable risk that are allowed for in the PVFP and TVFOG. The level of allowance within the different elements is likely to vary by company and if not well explained, may lead investment analysts to adjust the non hedgeable risk charge unnecessarily.

Effectively explaining the CRNHR will also be crucial. To help convey these messages in a tangible way it may be appropriate to relate this to a hypothetical scenario, for example a scenario such as lapsing of the existing portfolio. The disclosure could relate the allowance for non hedgeable risk to being equivalent to the cost of lapses increasing by x%. This will allow users to perceive the CRNHR allowance, relative to the amount required for the hypothetical scenario. Disclosure of the implied discount rate (IDR) may also help in communicating the total risk allowance within the MCEV, although this introduces the need for subjective investment return assumptions and therefore reduces comparability between companies.

### Interaction with other accounting measures

There is a clear trend in current financial reporting developments towards a market consistent basis of valuation. The MCEV Principles will have influenced the debate and certainly with CFO Forum companies having to comply by 2009 year-end, MCEV

will be the first measure under which the practical issues of a published market consistent valuation will be faced globally. Solvency II and IFRS Phase II are not expected to be effective until 2012 at the earliest; however, given the clear desire to harmonise supervisory and accounting developments, where possible, it is useful to consider potential similarities and differences in the allowance for risk between MCEV and these developing models.

### Risks covered

As discussed earlier in this paper, the MCEV focuses on the shareholder interest in the distributable earnings and in particular, requires only consideration of a charge for uncertainty. Both IFRS Phase II and Solvency II focus on the liability rather than the shareholder interest and as currently proposed, require a charge for the inherent variability in the cash flows. Under IFRS Phase II, the discussion paper requires that the risk margin be a reward for bearing risk and therefore is necessary, no matter what the distribution of the insurance cash flows. Under Solvency II Quantitative Impact Study 4, the required 6% charge on a cost-of-capital basis is a proxy for the risk margin that the market would require to take over a block of liabilities and would also include an allowance for uncertainty much greater than typically allowed for under MCEV to date. Other differences arise in the business covered by the different reporting bases, the allowance for credit risk (included in IFRS Phase II but not in Solvency II and MCEV) and the appropriate level of diversification.

The MCEV Principles will have influenced the debate and certainly with CFO Forum companies having to comply by 2009 year-end, MCEV will be the first measure under which the practical issues of a published market consistent valuation will be faced globally.



Although the MCEV Principles only require that an allowance for uncertainty in the best estimate of shareholder cash flows is considered, we believe that some level of charge is appropriate to properly reflect the way that companies run their business and that investors require a return for taking on risk.

### Economic sheet-presentation

Some companies may prepare an economic balance-sheet presentation of their MCEV results to compare to the traditional distributable earnings approach highlighted so far in this paper. Under this approach, the market value of the assets and an economic view of the liabilities are calculated, allowing for the best estimate cash flows. This is then presented in a balance-sheet format. This should allow an easier comparison to potential Solvency II and IFRS Phase II results, due

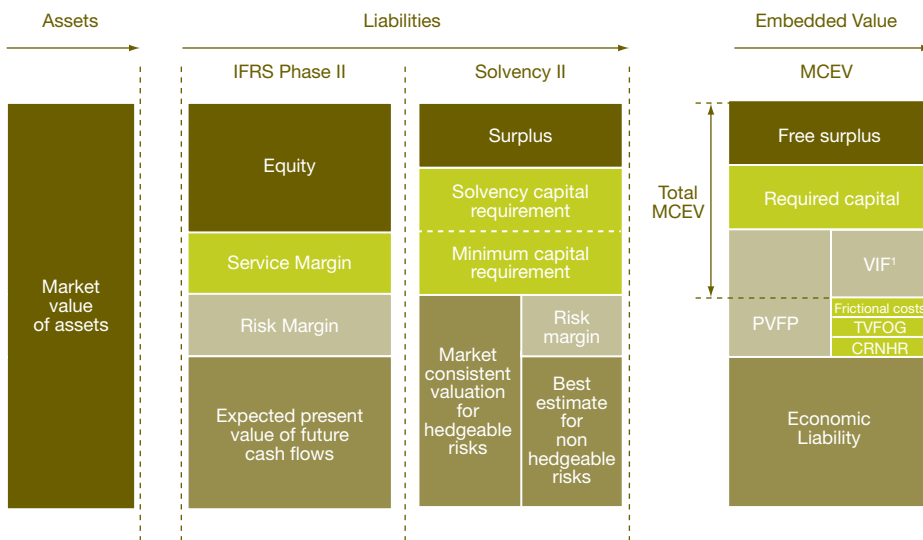
to its similar presentation style. The practical difficulties of implementing this presentation of MCEV, however, should not be underestimated.

Under this approach, reporters still have to adjust the economic liability by the frictional costs, TVFOG and the CRNHR to maintain compliance with the MCEV Principles. Further, the main MCEV analysis and Group MCEV analysis still have to be shown in the format prescribed by the MCEV Principles and the balance-sheet view would be shown as additional disclosure.

### Conclusion

Relative to historic embedded value calculations, the allowance for risk under MCEV is arguably more transparent, given the granular approach to calculation. The derivation of the cost of residual non hedgeable risk component is the area where there remains a variety of possible approaches. Although the MCEV Principles only require that an allowance for uncertainty in the best estimate of shareholder cash flows is considered, we believe that some level of charge is appropriate to properly reflect the way that companies run their business and that investors require a return for taking on risk.

Figure 3 – Illustrative similarities and differences



<sup>1</sup>Value of in force = PVFP – TVFOG – CRNHR – Frictional costs

Source: PricewaterhouseCoopers

The components of the diagram are sourced as follows:

- IFRS Phase II – ‘Preliminary Views on Insurance Contracts’, published May 2007.
- Solvency II – European Commission draft framework Directive for the rationalisation, harmonisation and modernisation of insurance regulation in the European Union, published July 2007.
- MCEV – European Insurance CFO MCEV Principles, published June 2008.

The diagram is intended to demonstrate the components of the different valuation bases and is not intended to represent the likely relative levels of the constituent elements across bases.

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