FRANKLIN TEMPLETON INVESTMENTS

**Topic Paper**

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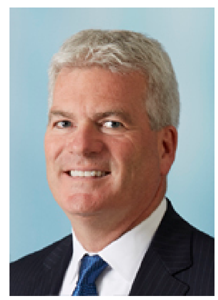
# Glide Path Optimization Avoids Slippery Slope of Extended Equity Risk

WHY WE BELIEVE A "TO" GLIDE PATH OFFERS THE BETTER SOLUTION

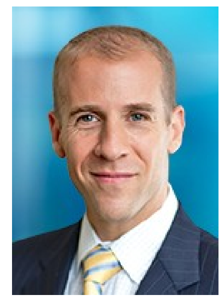

## SUMMARY

Ten years after the credit crisis, with equity markets having reached new highs, how much equity risk is appropriate in the final years leading to retirement? In this paper we will:

1. Remind readers of the market landscape that provided fuel for the debate
2. Discuss the current target date fund environment
3. Show the importance of a glide path
4. Make the case for a "to" glide path approach
5. Discuss the optimization of a glide path and how it was developed for the Franklin LifeSmart Portfolios


**Ian Riach, CFA**
Senior Vice President
Franklin Templeton Multi-Asset Solutions


**Michael Greenberg, CFA, CAIA**
Vice President
Franklin Templeton Multi-Asset Solutions


## Retirement Plans Knocked Off Track by the Great Recession

The bear market that resulted from the piercing of the technology bubble in 2000 was only a prelude to the stock market declines suffered during the 2008 financial crisis. Together, they rendered the 2000s a lost decade for equity investors and disrupted the plans of many new and near retirees. Those who had already entered a drawdown scenario by 2008 found themselves facing harsh choices, as market assumptions built into asset allocation plans did not live up to expectations, and retirement portfolios were put under severe stress.

### Canadians Recalibrate Retirement Expectations

According to the 2008 Benefits Canada survey of capital accumulation plan (CAP) members, the average respondent expected to retire at age 59.4 with assets of $1.3 million.[1] Since then, the average expected retirement age has risen and the amount of expected assets has declined. By the 2017 edition of that survey, the average plan member respondent expected to retire at age 62.8 with $804,499 in assets.[2]

The 2008 CAP Member survey also showed that 71% of respondents were either "very" or somewhat confident of having enough money to live comfortably through retirement. By 2017, despite experiencing a stock market that more than doubled in the nine years since bottoming out, only 50% felt financially prepared for retirement.

Similar worries are revealed in Franklin Templeton's annual Retirement Income Strategies and Expectations (RISE) survey. In 2014, 34% of RISE respondents ages 45-54 said that "running out of money" was their top concern for retirement.[3] But in the 2018 RISE survey that number had risen to 40%.[4] Clearly, perceived financial security has taken a blow. And as the era of defined benefit (DB) plans fades into employee funded (and directed) defined contribution (DC) plans, pre-retirees are bearing the additional burden of knowing they are now responsible for their investment decisions.

1 Source: Benefits Canada Survey of CAP Members, November 2008
2 Source: Benefits Canada Survey of CAP Members, December 2017
3 Source: Franklin Templeton RISE Survey January 2014
4 Source: Franklin Templeton RISE Survey January 2018

### Target-Date Funds in Canada

After a decade of success in the US, Target Date Funds (TDFs) launched in Canada in 2004 as a one-stop, diversified investment product designed to simplify investing for retirement while seeking good, long-term outcomes for plan sponsors and their plan members.

TDFs use a multi-asset approach that adjusts the asset mix according to the plan member's investment time horizon to retirement. The key difference is that the fund dynamically adjusts the asset mix over time—without any action from the member—with exposure to equity assets declining as retirement approaches.

Given the well documented behavioural characteristics of many CAP members (lack of investment knowledge and apathy towards making investment decisions), plan sponsors have welcomed TDFs into their plans as a responsible choice.

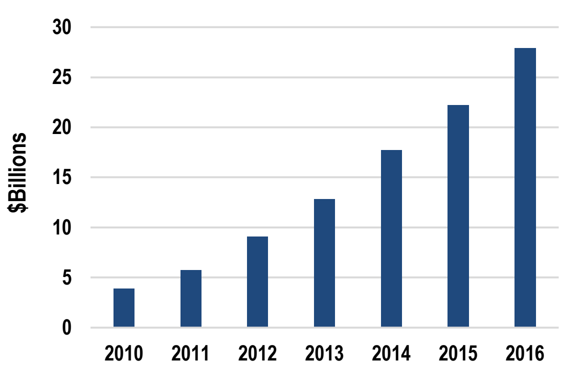
### A Rocky Start

The timing of TDF entry into the Canadian market has been described as a "perfect storm" because they launched just before 2008 and soon experienced significant market volatility and much lower interest rates. After the first few years, many were closed or forced to shift their asset allocation to fixed income[5]. After such a tough start, many analysts questioned whether TDFs perhaps oversimplified the investment decision.

Markets eventually recovered and new TDF products were launched. Toronto-based Investor Economics estimates the category hit $27.9 Billion by the end of 2016. Over the period 2013-2016, total net flows into TDFs were more than $10.8 billion.

**Target Date Fund Asset Growth in Canada[6]**

$ Billions




5 Source: "Target Date Funds Miss Their Mark"; Globe and Mail Tuesday, August 25, 2009

6 Source: Strategic Insight "Group Retirement and Savings and Pensions Report - Canada, 2017 Update"

7 Source: Morningstar Direct, May 31, 2018 The information contained herein: (1) is proprietary to Morningstar and/or its content providers; (2) may not be copied or distributed; and (3) is not warranted to be accurate, complete or timely. Neither Morningstar nor its content providers are responsible for any damages or losses arising from any use of this information. Past performance is no guarantee of future results.

Today, DC plans form the backbone of many members' retirement plans, and the growth of TDFs has accentuated the need for vigilance to ensure these investments perform in line with investor expectations. The severity of the 2008–2009 bear market was a wakeup call for the industry, so it is imperative that plan sponsors understand the four key differences among the TDF options available.

**1 | Glide path –** The asset allocation track, or glide path, through time is the most critical component because it indicates how the asset mix will evolve over the plan member's lifetime. The glide path should therefore be a significant focus for plan sponsors.

**2 | Asset mix –** The combination of asset classes and the constraints will have a big impact on the portfolio return—and volatility—as exposure to equities in bull markets can drive ultimate returns, but in bear markets can prove highly volatile.

**3 | Underlying funds –** Variations include active or passive management (and sometimes both), value and growth investing biases and market capitalization tilts.

4 **| Tactical asset allocation –** Does the portfolio manager have the flexibility to make short-term tactical allocations to capture opportunities and manage risks that deviate from the glide path?

## Glide Path Structure

While conventional wisdom dictates that asset mix is a key driver of successful investment outcomes, TDF providers do not readily agree on an appropriate asset mix for a given age. This can be illustrated by looking at the large range of equity allocations of funds at opposite ends along the target date spectrum, particularly those in their final accumulation years before retirement.

Funds designed for the younger cohort of plan members (30+ years to retirement) show a wide range of equity exposure while retirement TDFs can have equity weightings as low as 18% and as high as 34%.

**Equity Allocation of Popular Canadian Target Date Funds[7]**

| Target Date | Franklin LifeSmart | Complex B | Complex C | Complex D |
|---|---|---|---|---|
| 2050 | 86.2% | 93.6% | 77.7% | 67.8% |
| 2040 | 81.4% | 80.9% | 77.7% | 63.3% |
| 2030 | 70.2% | 62.9% | 59.6% | 46.4% |
| 2020 | 43.2% | 41.6% | 47.7% | 29.8% |
| Retirement | 34.3% | 34.0% | 18.4% | 27% |

The table above illustrates the variance in TDF portfolio management philosophy as to what is an appropriate asset mix at a single point in time, but glide paths also encompass the evolution of the asset mix through time.

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## Critical Importance of the Glide Path

While the goal of a TDF does not typically change—for example, most have a consistent objective across all target maturities— the distinctive characteristic is the evolution of asset allocation over time to reflect the age/proximity to retirement of the plan member. As a result, it is important to understand how the fund intends to be allocated at any point in time as it moves toward (and through) the target date.

The development and management of the glide path may be the central challenge for the TDF portfolio manager. How can the portfolio be optimized to maximize its potential value by the target date and provide sufficient growth during the drawdown phase to maximize longevity, while at the same time mitigating the potential disruption of a 2008-like event at, near, or during retirement when drawdowns will reduce the ability of the portfolio to recover and investor options for replenishing the account may be limited?

## The Franklin LifeSmart Approach

Franklin Templeton undertook an exhaustive glide path analysis for the Franklin LifeSmart Portfolios precisely because the performance of this class of funds has such important implications for investors being able to meet their retirement goals.

We wanted to make sure that the glide path:

**1 |** Reflects portfolio risk commensurate with the time to retirement.

**2 |** Provides growth via equity exposure throughout the glide path, but prioritizes a high equity allocation during earlier years.

**3 |** Strategically focuses on growing the long-term value of the portfolio to better withstand a 2008-type event in the years closer to retirement.

### To Begin With—Where Is the End?

In glide path development, the question of where the landing point—the final, most conservative allocation—should occur is fundamental.

Funds using a "through" approach reflect a belief that the TDF is a lifetime investment. Assets are managed as though the plan member will remain invested well past retirement. This approach maintains a higher equity position at the target date and only reaches the final landing point many years later.

Advocates of a "to" approach have a fundamentally different view. They believe that given all the potential life changes occurring around retirement, the landing point of minimum equity allocation should be reached at the target date. While there may be reasons to hold a higher equity position at this point, it shouldn't be the default. Rather, it is an appropriate time for investors to work closely with their financial advisors to confidently enter this new life stage.

### The Case for our "To" Approach

There are five key reasons why we believe that 'to' vs. 'through' is the better approach:

**1 | Life changes and peace of mind.** Retirement can be one of the most stressful events in a person's life. Shifting from accumulation to distribution and no longer earning predictable employment income can take an emotional toll, which is only exacerbated by market volatility at or near the point of retirement. Earlier in the retirement planning process, "Will I save enough?" is the biggest concern. At or near the point of retirement, the key question is more likely, "Are my retirement savings safe?" A portfolio with less equity exposure may well deliver fewer investor worries. Most investors were stressed by the market decline in 2008 and 2009, but those worries were amplified for near-retirees.

**2 | Portfolio recovery hampered during drawdown.** There is good reason for plan members to be concerned about market volatility close to retirement. Drawing down from a portfolio that has suffered losses early in retirement can have a substantial impact on the portfolio's longevity.

**3 | Expectations.** "Retirement Target Date" should have meaning. The stock market downturn in 2008 shocked many investors who participated in 2010 target date funds. With few exceptions, the group suffered losses of more than 10% to 15%[8], just two years before the anticipated retirement date. In financial terms, retirement means the end of employment income and the target date on their fund represents a clear, tangible event for many investors. So it is understandable why so many investors were startled by the performance their funds achieved. We believe the date in target-date should have relevance, especially when investor behaviour suggests that they have a distinct view of its meaning.

**4 | Investor behaviour.** Studies have shown that investor behaviour is not consistent with the view that individuals intend to maintain their pre-retirement investment plans long after reaching retirement. The Benefits Canada 2017 CAP Member Survey shows that while plan members expect that their total retirement income will come from several sources, including personal RRSPs (17.3%), personal savings (12.1%) and government pension plans (20.9%), they anticipate the biggest proportion (26.5%) will come from their employer-sponsored retirement savings plan[9]. Converting a TDF to a retirement-income-generating source at or near the date of retirement would imply that the asset allocation should be able to generate sufficient income without the potential volatility of equity risk.

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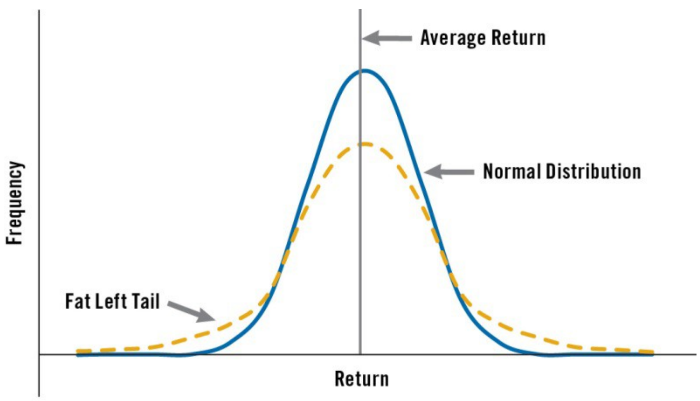
9 Source: Benefits Canada Survey of CAP Members, December 2017

While the goals of saving for retirement are relatively clear, individuals' circumstances—including longevity expectations, spending, and personal retirement plans— can vary greatly once in retirement. Trying to provide a post-retirement glide path is therefore somewhat presumptive or speculative.

**5 | "Fat tails" and other "non-normal" results.** Models are built on assumptions; they break down when those assumptions don't hold true. Many asset allocation models assume a "normal distribution" of returns, which predicts that the likelihood of a three-standard deviation event would happen three times in a thousand. However, extremely negative results have occurred more often than a normal distribution would imply—in other words, a distribution pattern with a fat left tail. We incorporated such factors into our testing. The results reinforced our conclusion that a glide path whose most conservative allocation occurs at the target date is the optimal choice.

**Fat Tails**

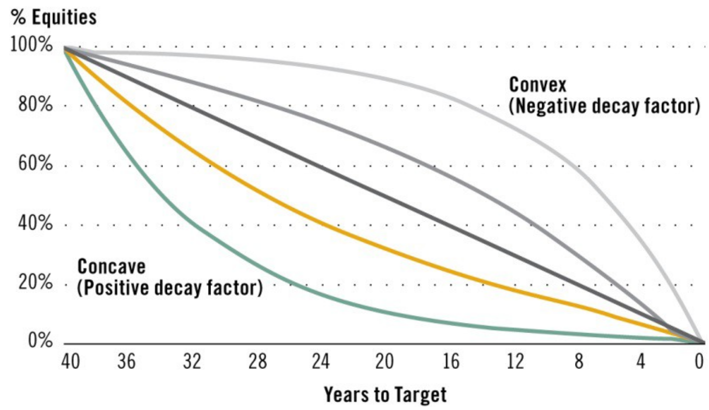



## Constructing our Optimal Glide Path

Choosing the landing point was just the beginning. It was based on philosophical views and subsequently confirmed by deep, rigorous analysis. Determining the starting and ending allocations to equities and fixed income, and the appropriate evolution of the asset mix over time – the glide path decay factor – required months of testing and refinement of models.

We tested a broad range of starting and ending equity and fixed income allocations. But there are innumerable paths to get from the higher initial equity allocation to the lower ending equity allocation. We tested a linear approach as well as numerous convex and concave decay patterns. With concave decay, the portfolio after its first year would have its most substantive shift from the original allocation and then more gradually glide into its final allocation. With convex decay, the original allocation will slowly shift from its allocation at the start and then more rapidly adjust nearer to the end date. In all, more than 10,000 different potential glide paths were tested and millions of simulations run.

**Potential Glide Paths for a 100% to 0% Equity Reallocation**




### Input Assumptions

In order to test, we had to develop input assumptions. Our testing assumptions were based on Statistics Canada data and other publicly available research and analysis on retirement age, life expectancy, compensation, wage growth rates, inflation, and post-retirement withdrawal rates, as well as historical asset class returns from which we developed our proprietary capital market expectations.

The following is a summary of the inputs we used in our base case scenario.

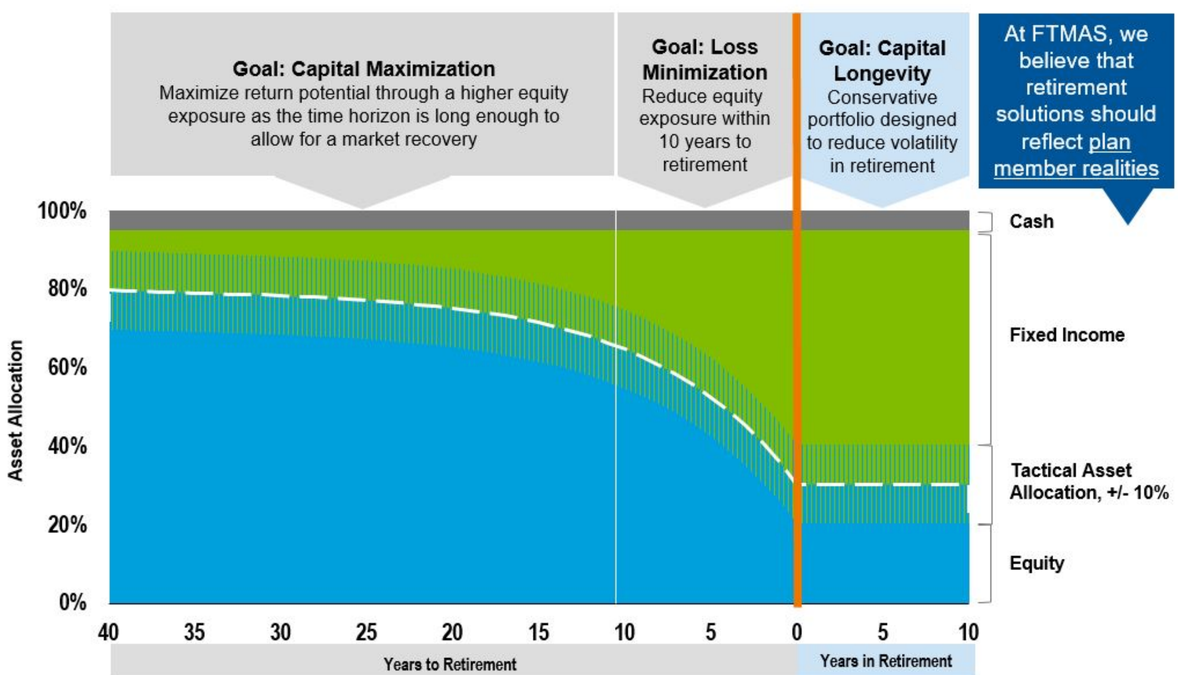
| Input | Base Case |
|---|---|
| Inflation Rate | 2% |
| Income Growth Rate | 3% |
| Contribution Level % of Salary | 5% |
| Withdrawal Rate % of Inflation-Adjusted Ending Salary | 40% |
| Initial Contribution Age | 25 |
| Initial Withdrawal Age | 65 |
| Capital Market Expectations | Proprietary |

### Factors Considered for Optimizing the Glide Path

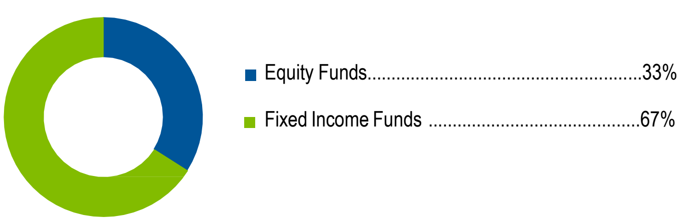
A successful glide path could be expected to achieve the following portfolio results: high value at retirement to counter retirement short-fall risks; high likelihood of having value remaining at age 85 to counter longevity risks; and low risk of sharp declines in any given year, especially right before retirement, to counter interim risks occurring during the investing period. In our process, we utilize a multi-objective function rather than a simple utility function of risk and return in our glide path testing. We do so because we see the desired outcomes for TDFs as being multi-dimensional, specifically helping plan members arrive at retirement safely, with a portfolio that is expected to endure throughout those retirement years.

We determined a mix of return seeking and risk mitigating factors that correspond to the desired TDF. The goal of our return seeking factors is to reach retirement with enough assets in the portfolio to endure through retirement years. These factors include maximizing median expected portfolio value at retirement and maximizing the probability that the portfolio value would be greater than $0 at 85 years old. Our risk seeking factors help balance the desire to achieve a high expected portfolio value with undue risks that could adversely impact the portfolio in the event of a market drawdown. These factors include minimizing the variability of portfolio values at retirement, value at risk (VaR) at retirement and at the start of savings, as well as maximizing the portfolio value at age 65 (point of retirement). Retirement dates can in many ways be thought of as the date on which plan participants have the most risk and uncertainty. As plan members transition from decades of accumulation to decumulation, portfolio values are at their highest but individual circumstances and retirement goals can vary dramatically. Accordingly, guarding against the risk of a large drawdown event at retirement is prudent. At the same time, as DC investors strive for their own personal retirement outcome, the penalty for an adverse retirement outcome of a low portfolio value outweighs the positive surprise of a higher than expected value at retirement. Incorporating the worst case scenario retirement portfolio outcomes into the modeling process helps to mitigate these outcomes. The iterative process and the optimization of results in light of the return and risk parameters led us to what we believe is an optimal glide path. The result is what we believe is a unique, convex glide path which seeks growth opportunities through high equity exposure during early years of retirement savings, with continued higher-than-industry-average equity exposure throughout the prime earning years of participants, culminating with a steep tapering off of equity exposures in the last few years immediately preceding retirement.

**FRANKLIN LIFESMART GLIDE PATH - OPTIMISED AND ACTIVELY MANAGED**




At Retirement Target Date, the approximate glide path asset allocation will be:




### LifeSmart Glide Path Characteristics

1. The lowest equity allocation begins at the retirement target date.
2. A final allocation of approximately 33% equity and 67% fixed income for the LifeSmart glide path.
3. Equity exposure decreases more quickly as the retirement target date approaches.
4. A favourable balance in addressing competing risk constraints.
5. A tactical component to allow for adjustments to capture market opportunities.

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### Importance of Short Term Flexibility in a Glide Path

We also believe that actively managing the glide path within tactical bounds is fundamental to managing risk and return potential of the portfolios. Tactical investing gives the portfolio managers another tool for seeking better long-term outcomes by taking advantage of near-term return enhancing or risk mitigating opportunities. Focusing on our tactical asset allocation capabilities also enables us to remain actively prepared to take advantage of market dislocations. For example, a seemingly uncorrelated portfolio in one given time period may look very different in a different time period. This was vividly illustrated during the great financial crisis of 2008. Many seemingly disparate and historically uncorrelated assets moved in lock-step in the days and months following the collapse of Lehman Brothers. The typical distinction between the performance behavior of US equities and global equities, for example, disappeared just when investors needed diversification the most. We therefore believe that tactical allocation is an important aspect of managing a TDF fund for navigating shorter term risk and return opportunities that may emerge across a multi-decade glide path.

### A Final Note on Diversification and Franklin Templeton

Under normal market conditions, the Franklin LifeSmart Portfolios' investment manager allocates each fund's assets among the broad asset classes of equity and fixed income investments by investing primarily in a combination of underlying funds, based on each underlying fund's predominant asset class, and exchange traded funds (ETFs). In addition, a small portion of the fund's assets may be invested in underlying funds that provide exposure to commodities. The underlying funds and ETFs invest in a variety of Canadian and foreign equity and fixed income securities.

In recent years, alternative asset classes have also started to gain traction within TDFs. Commercial real estate, commodities, private equity and mortgages are typical examples of alternative assets—all of which offer diversification benefits such as lower correlations to traditional asset classes. At present, some TDFs provide exposure to alternative assets through listed products (e.g., real estate investment trusts and listed infrastructure, which are traded on a stock exchange). But these listed products, while they do improve asset mix characteristics, do not fully capture the benefits of alternative assets due to their equity-like volatility. Going forward, the asset mix component of TDF design will likely evolve through the use of alternative assets, particularly direct alternatives - i.e., those not listed on an exchange.

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Franklin Templeton Multi-Asset Solutions (FTMAS)* is dedicated to helping investors achieve their financial goals in a variety of market conditions through multi-asset strategies that leverage Franklin Templeton's best thinking around the globe. The team includes a deep bench of 50+ investment professionals, specializing in strategic asset allocation and tactical positioning, fundamental and quantitative research, and active implementation and risk management. The team is embedded within Franklin Templeton Investments, a global organization combining access to the local insights and global perspective of over 650 investment professionals.

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FRANKLIN TEMPLETON INVESTMENTS

Franklin Templeton Investments Corp.
200 King Street West, Suite 1400 Toronto, ON M5H 3T4
Tel: (416) 957-6000
Fax: (416) 364-1320
franklintempleton.ca

(800) 897-7286

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