

IBM PLM FBC ROI

*The financial business case for product lifecycle
management information technology decision-making.*

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Contents

2	<i>Background</i>
3	<i>Research</i>
4	<i>Rationale</i>
6	<i>Methodology</i>
8	<i>Calculating the ROI</i>
9	<i>Presenting the case</i>
11	<i>Executive summary</i>
11	<i>Interested in pursuing an IBM PLM FBC ROI?</i>
11	<i>Learning points</i>
12	<i>Author biography</i>

The current economic climate continues to drive companies to compete more efficiently and effectively to improve profits. Marc Halpern suggests, “Product development teams need to be more agile to react to product trends and client demands. To improve processes, organisations need a design infrastructure that synchronises information and engineering resources, and effectively promotes global design collaboration. To increase productivity and improve product quality, it is essential for engineering-intensive organisations to effectively analyse, visualise, share and manage corporate and technical data. Yet, most enterprises have fragmented, ad hoc approaches to managing their technical data assets.¹”

To enhance business performance, companies are reviewing product lifecycle management (PLM) initiatives as they seriously question the need for investments in engineering design system and/or product data management systems.

Background

Years of experience working with PLM clients around the world indicate that most IT projects require a credible financial justification before selecting a vendor. As a result, the costs and benefits of a proposed PLM solution should be carefully considered before committing to a specific technology investment decision. Increasingly, PLM investment decision-makers are reverting to standard financial business case (FBC) criteria, such as return on investment (ROI), net present value, and total cost of ownership (TCO), as part of the solution selection evaluation process to help them do this.

When company representatives ask solution providers financial questions, or when a project leader has to make a business case for a PLM proposal in their own organisation, a methodology is required to effectively prepare a response.

¹ “PLM in a global perspective” World Class PLM Summit 2005, Chief Analyst, Marc Halpern.

To address this need, IBM has developed an FBC justification methodology to assist its clients in evaluating the value offered by the IBM/Dassault Systèmes PLM product suite. The methodology and tool suite is derived from efforts by IBM Watson Research, partnering with Solution Matrix Ltd, and client engagements IBM and Dassault Systèmes have conducted during the past few years. This methodology is being copyrighted as the IBM PLM FBC ROI[®] and is available as part of the IBM selling process.

Research

The reality is that today’s company managers are driven to meet business objectives, yet the economy has made the majority of these managers averse to risk.

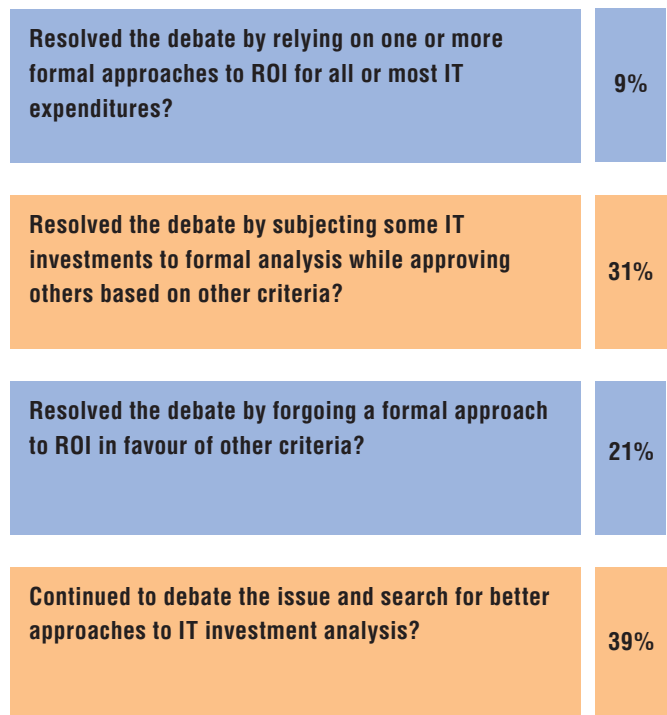
Recent IBM and IBM Business Partner research indicates that:

- *More than 70% of major information technology (IT) actions must be justified by an ROI analysis or other form of business case*
- *There is a new emphasis on accountability*
- *IT decisions are no longer made by IT managers alone*
- *IT managers are driven to justify projects based on “impact on the business” rather than “hardware and/or software functionality”*
- *The economy is challenging and company management is typically cautious to invest.*

However, the need for a structured ROI approach has been an issue for some time and remains an issue.

The “One way, or another?” survey conducted by CFO IT², a leading financial IT publication, highlighted how Chief Financial Officers (CFOs) agree on the value of IT but disagree on how to measure and manage it. The results of the survey revealed that just 9% of those companies surveyed use a formal approach to ROI analysis for the majority of their IT investment decisions.

The ability of ROI analysis to help justify IT expenditure has long been a point of contention. Would you say your company has:



² The CFO IT survey interviewed 241 senior finance executives in September 2004. Approximately 37% were CFOs, 14% were Vice Presidents/Senior Vice Presidents/Executive Vice Presidents of finance, 14% were Directors of finance, 15% were controllers, 3% were managers of finance, 17% other titles. One third surveyed worked for companies with \$1 billion or more in annual revenues, one third worked at companies with less than \$50 million in revenues, and the balance fell in the middle.

Rationale

How do we know when is it necessary to calculate an ROI?

PLM IT investments are clearly business decisions to be justified from an operational and financial point of view. However, there is one function that can, at almost any point in time, block any other function – and that is finance. Therefore, it is typically a good idea to use a structured FBC methodology in the following situations:

- *Management is asking financial questions because the functions and features of the IT solution alone do not justify themselves*
- *The solution extends far beyond the engineering discipline, as a major part of the ROI may be derived from outside engineering (i.e. upstream/downstream impacts)*
- *The complete implementation will require budget for services, as well as for hardware and software (at a ratio of 3:1 or 2:1)*
- *An acceptable solution can be provided by competing solution alternatives and an ROI calculation can identify the most suitable solution associated with a company's specific PLM value proposition*
- *Business performance is being closely managed due either to poor business performance and constrained budgets, or good business performance and competition for funding (in either case, a compelling ROI can reinvigorate management attentiveness).*

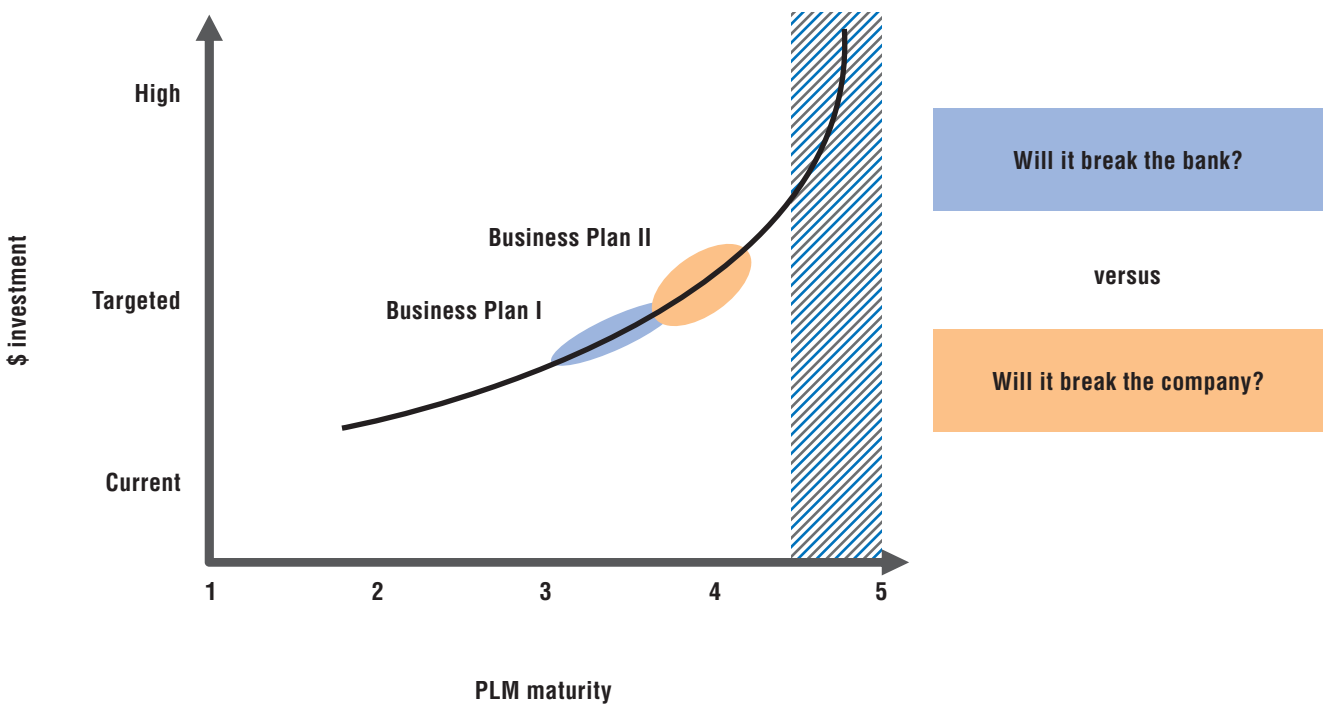
To resolve the challenge of financial decision-making, it is essential that the financial business case become an integral component of the value proposition. When presenting the value proposition to the senior management team, a structured business case provides the means of keeping the team informed throughout the evolution of the solution. In today's economy, pushing a decision through the budget process at the last minute to obtain commitment of funds should be avoided.

The FBC should be used to define a project, and return on investment calculations should be used to identify the key metrics associated with evaluating whether a project's value proposition will meet the company's business objectives. Frequently, the data gathering process associated with developing an ROI calculation provides the mechanism to reveal the importance of a PLM solution to the entire business rather than just the organisation's engineering disciplines.

Since PLM projects can have broad implications on the strategic capabilities and operational performance of a business, PLM projects need to be ranked against a company's portfolio of investment opportunities. Each company must determine its own trade-off position relative to PLM capability maturity versus the company's investment "sweet spot".

The trade-off process can be thought of in terms of two alternative business plans (as depicted in the figure below): Business Plan I provides a moderate level of PLM capability maturity below targeted budget funding; and Business Plan II provides a slightly higher level of PLM capability maturity at, or slightly above, targeted budget funding.

The trade-off occurs in evaluating whether Plan II will be perceived as "breaking the bank" or Plan I will be perceived as "breaking the company" by providing insufficient PLM capability to meet future client expectations or company performance objectives. Furthermore (as illustrated by the shaded area between the 4.5 and 5.0 PLM maturity levels), striving for an over-zealous level of capability too early in a company's PLM journey can break the bank as well. Therefore, having a methodology to evaluate the trade-offs between a company's PLM maturity intentions and its investment propensity is beneficial from a strategic and tactical perspective.



Methodology

The FBC methodology is designed to assess a company’s readiness to implement a PLM solution based on the solution’s impact relative to its organisational characteristics, business processes and technology aptitude as well as the solution’s financial worthiness.

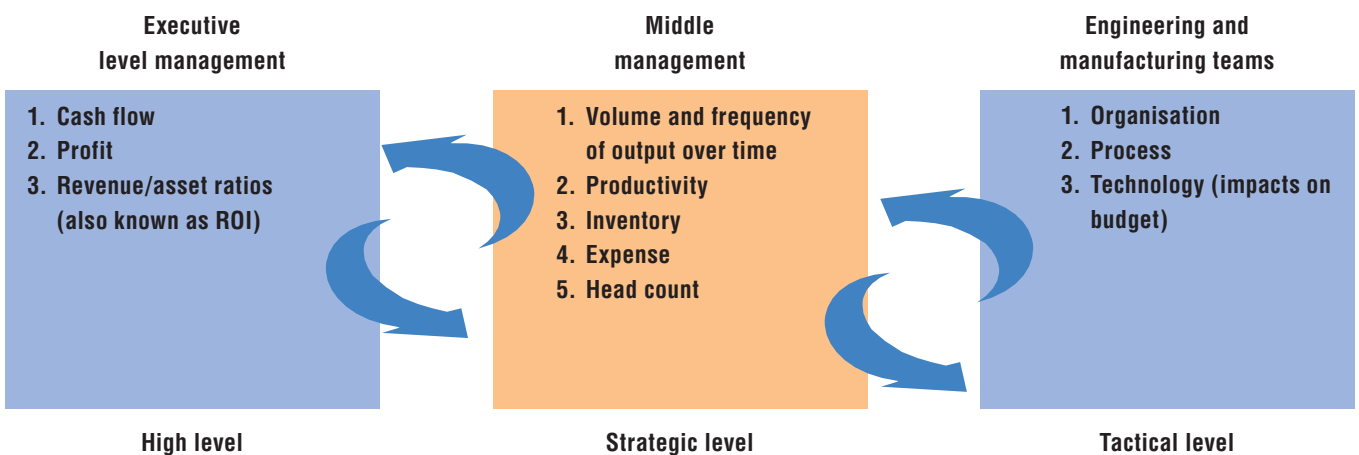
The IBM PLM FBC ROI methodology is constructed to provide a graduating level of granularity at each stage in the justification process. The three-stage process consists of a high-level estimate, a strategic estimate and a tactical estimate. The method is adaptable so that it can be deployed to illuminate the benefits of an enterprise-wide PLM implementation or a specific PLM solution domain. The spreadsheet-based tool which augments the methodology utilises traditional ROI net present value discounted cash flow principles. The tool provides guidance for rationalising the cost and benefits to justify a CATIA™, SMARTEAM and/or ENOVIA implementation. The tool simplifies the financial analysis process by performing the financial calculations, updating and illustrating the ROI analysis graphics automatically.

There are multiple audiences to be solicited throughout the financial business case justification process. Communicating the link between the measurement system and success criteria of a project at each level of the organisation is essential to achieving the appropriate level of commitment to a project. As such, the project leader or the financial justification team lead is responsible for ensuring that each target audience is provided with the appropriate level of financial details to facilitate good decision-making.

By involving senior executives, middle management and the primary user community within the context of their interest, the level of effort required to develop a business case is dramatically reduced. For example, at the onset of the project, middle management needs to be able to articulate the advantages of the project to senior management from a top-down viewpoint. Likewise, to deploy the project, middle management needs to be sufficiently aware of the cost and benefit factors of the business case to successfully manage the implementation of the project.

There are three levels (or phases) of the IBM PLM FBC ROI that should be deployed iteratively to gain buy-in from the “top-down” and the “bottom-up”.

IBM has determined that three levels of financial justification serve to validate the credibility of a PLM IT investment decision



First level/phase

This provides an overview of the business issues being addressed and a high-level business case estimation of the financial leverage enabled by resolution of these business issues.

Target audience	C-level or executive management of the company.
Intent	To explore and qualify the business issues that can be addressed by the impending PLM solution and to gauge the potential benefits and costs.
Complexity	The tool complexity used to model the opportunity at this phase in the solution evaluation process should be simple.
Duration	One to two days; frequently this level of estimation is referred to as the “napkin” or “back of the envelope” calculation. Although equivalent in granularity, the IBM methodology uses a high-level estimator tool to perform this activity.

Second level/phase

This provides a ***strategic business case estimation***.

Target audience	Senior or middle management, as well as recognised subject matter experts in the company.
Intent	To assess and evaluate the potential solution alternatives for their viability to address the business issues at hand.
Complexity	The tool complexity used to model the solution alternatives at this stage frequently depends on the specifics of the project and the organisational structure of the company.
Duration	One to two weeks, depending on the access to the business case participants and the availability of financial data to support the ROI analysis activity.

Third level/phase

This provides a ***tactical business case estimation***.

Target audience	Functional managers and the end-user solution community.
Intent	To perform a detailed business case analysis based on solution-specific proof points as a result of process mapping evaluation and/or use case analysis.
Complexity	The tool complexity at this stage is typically extremely granular based on the volume of data collected and spreadsheet mechanics required to evaluate the solution alternatives.
Duration	This often depends on an organisation’s financial savvy and willingness to share operational data across functional organisations and/or with the vendor performing the analysis. Typical duration is between two and six weeks depending on the availability of financial data to support the ROI analysis activity and access to the end-user group to validate the data which impacts their respective activities.

A standardised FBC methodology is strongly recommended.

Developing an FBC is a key enabler in mobilising an organisation to proceed with a PLM project. It should be aligned with business objectives to achieve critical project initiatives which accelerate cycle time, reduce cost, improve quality, enhance innovation, and reduce operational risk.

However, many companies today are struggling to assess their PLM capabilities and create plans to address their future business needs. The IBM PLM FBC ROI is the culmination of several cost/benefit analysis techniques from the IBM Product Lifecycle Management Global Technology business solutions development organisation. This organisation provides a variety of methods to assess and calculate ROI via an expedient yet structured approach to exploring PLM opportunities and resolving current business issues that align with an overall PLM client roadmap.

The IBM PLM FBC ROI is structured around the following components:

- *Concept (understand the objective and scope of the project initiative)*
- *Baseline summary (document the starting point)*
- *Proposal summary (create a vision of the end game)*
- *Metrics (define the criteria for a successful project implementation)*
- *Assumptions (identify...)*
- *Constraints and dependencies (enumerate known...)*
- *Cost/benefit analysis (conduct...)*
- *Owner (assign primary gatekeeper)*
- *Priority (agree on... compared to other project activities)*
- *Payback period (calculate...)*
- *ROI (calculate...)*
- *Recommendation (determine... to support, hold, or terminate)*
- *Action plan (develop... to anticipate implementation milestones).*

Calculating the ROI

Performing the calculation of the ROI is just one of many components in building a complete business case. Since the realism of the figures is extremely important to the integrity of the case, a configurable financial business justification model is used to calculate the ROI estimate. The model includes suggested ranges of the costs and benefits for the most significant estimating factors.

It is important to remember that each stage of the FBC methodology represents an estimate. Although the formal business case remains an estimate, it is preferable to use a methodology rather than attempt to quantify data without a repeatable estimating process. Using a standardised FBC methodology enables the iterative refinement of estimates until the organisation agrees that the business case realistically estimates the anticipated costs and benefits of a PLM project.

To initiate a business case, an evaluation of how PLM technology can help decrease product design and manufacturing cycle time, reduce production costs, achieve higher levels of product quality and reliability, and deliver products to market faster is recommended. PLM technology is designed to support a distributed design environment through an integrated technology infrastructure that allows organisations to access, execute and reuse design tools and processes throughout the business rather than just within the design environment. Design teams may work in the

collaborative environment within their organisation or be part of an enterprise environment that is geographically dispersed among a network of Business Partners or suppliers. Therefore, the benefits of a well-executed PLM project vary depending on a company's organisational structure, business process practices and technology infrastructure.

Typically, benefits from PLM projects can be classified into categories that are derived from improvement initiatives sourced from product development. IBM efforts over the past few years have revealed the following activities worth investigating for their contribution to the benefits:

- *Reduction of product development costs and design cycle time through design automation*
- *Avoidance of cost overruns by quantitatively estimating costs during the design process using trade-off analysis programs or sophisticated cost models*
- *Improvement in product design by using state-of-the-art optimisation technology to evaluate many more design alternatives*
- *Integration of workflow processes that can be executed more rapidly by reducing or eliminating manual work and/or increasing engineering productivity*
- *Elimination of internal and external organisation communication bottlenecks to enable and accelerate design collaboration among the design and lifecycle enterprise constituents*
- *Documentation and reuse of business process workflows and best practices to accelerate and enhance the quality of the education and training of new designers, or to support a technology upgrade deployment*

- *Reduction of hardware investments through more efficient workload distribution, effective use of legacy systems or implementation of more efficient technology*
- *Improvement in product quality by applying quality engineering (for example, Six Sigma Design and software maturity capability methods) throughout the entire design process – from conceptual and preliminary design all the way to final detailed design*
- *Introduction of manufacturing requirements early in the design process to ensure that high quality standards meet productivity criteria*
- *Reduction of warranty costs by applying “design for quality” methods to ensure more reliable and robust products are delivered to the market.*

Presenting the case

No one disputes the need for good business case analysis before committing to a major systems acquisition, but the fundamental issue is credibility.

The importance of ROI and the business case is clear. However, surprisingly few people know what these terms mean. What makes the difference between a “strong” business case and a “weak” business case is all too often the ability to articulate a well-constructed summary of the key messages. Consultants and publishing analysts have for the most part raised the general awareness of business case techniques, but executives are not particularly interested in predicted return on investment.

Clients are naturally cautious and ask questions such as:

- *How can we trust any business case or ROI figure from a vendor?*
- *How do we know if we'll see the projected returns and business results?*
- *How do we really know we're making the right business decision?*

Competing vendors often disagree completely on predicted business outcomes for each other's solutions, so executives are becoming increasingly more interested in presentations that include company-sourced financial data. One compromise is for vendors to provide a framework and for clients to populate the business case with company-specific data. Working together to produce a business case to rationalise a buy decision for an IT solution requires a proposal that scores high in credibility and practical value for all parties impacted by the solution implementation.

Presenting the FBC within a framework that is simple to understand is an important step in justifying a PLM investment. Decisions to make operational investments frequently involve general management and capital review committees, as well as engineering and IT managers. To gain approval to proceed with a project that has a positive ROI, management must perceive the business case as a realistic estimate in order to override their adversity to risk.

There is an increasing emphasis on accountability across private industry and government. Those who request investment funding have to justify that a decision to buy will meet both short-term and long-term business objectives. PLM investment opportunities need to demonstrate the ability to provide a variety of expedient solutions to resolve current business issues as well as to align with an overall PLM deployment roadmap. Individuals who make proposals have to speak the language of business and be familiar with the terminology of the business case as funding requests without a business case to support them stand less chance of succeeding.

It is important to focus on the key attributes of the business case to fend off unnecessary inquiries or challenges by the sceptics. Recommendations include:

- *Enumerate the significant assumptions relative to constraints or dependencies*
- *Demonstrate, or illustrate, a storyboard for proof of concept (PoC)*
- *Identify use case scenarios to articulate the project initiatives*
- *Illustrate impacts by mapping the benefits to a business process – highlight the critical processes and associated value proposition (cost savings or revenue uplift) based on process improvements*
- *Enumerate the most significant costs and benefits*
- *Present the ROI calculation (in terms of the net present value of discounted cash flows) and payback period analysis*
- *Recommend an investment decision.*

Executive summary

To build a financial business case necessitates a company/client commitment. The probability of successfully developing a business case is frequently contingent upon the capability of a company/client team tailoring the case to the company-specific environment and project situation. A project leader's capacity to steer a company's senior management and guide a company's subject matter experts through the financial business case methodology will determine the success of the effort. The team must work together to iteratively refine the business case. All too often, a vendor will propose developing the business case and present the findings to a company's senior management on the project leader's behalf without the buy-in of the user group. This approach has the potential shortcoming of detracting from the credibility of the business case. The project leader should challenge a solution vendor to provide a financial business case template or an ROI spreadsheet tool to accelerate the business case development, while not relinquishing ownership of the business case. The financial business case methodology should be used to gain consensus on the value proposition, to accelerate the data gathering of benefit and cost estimates, and to provide a means to formulate a well-articulated business valuation of a specific PLM solution.

The financial business case methodology presented herein has been the foundation of a variety of IBM/Dassault Systèmes business cases which have been customised for clients. We have shared the essence of the IBM PLM FBC ROI methodology in this white paper by describing:

- *The background that drove the development of this methodology*
- *The foundational research on which it was established*
- *The rationalisation that necessitates its use*
- *A high-level review of the IBM PLM FBC ROI methodology*
- *The calculation techniques used to support the methodology*
- *The value of a well-articulated business case.*

In summary, a financial business case must score high in credibility, accuracy, and practical value. Reaching those objectives begins by understanding that numbers alone do not make the business case. How you design, develop, and present the business case is as important as the ROI calculation and other estimated figures. It is essential to demonstrate stronger business value over competing financial alternatives to gain approval from the decision-makers to proceed with a project in today's competitive business environment.³

Learning points

1. *The business case should be aligned with the business' operating objectives (including a validation process) to ensure business objectives are met*
2. *The business case should include more than the mathematics of an ROI calculation*
3. *The business case should evolve in complexity with the level of detail required to obtain commitment as the project proceeds.*

Interested in pursuing an IBM PLM FBC ROI?

If you want to conduct an IBM PLM FBC ROI business case, please contact your local IBM sales representative, or the author of this white paper for more information.

³ Source: Extracted with permission from Marty J Schmidt, "The Business Case Guide", (2nd edition) Copyright © 2002 Solution Matrix Ltd.



Author biography

Brad Cabibi is the Methods and Diagnostic Team Lead for the IBM PLM Global Technology Team which provides a cross-industry competency perspective to the business. In this role, Brad focuses on developing reusable solution assets that IBM, Dassault Systèmes and their Business Partners can deploy in the field with their clients. He is currently focused on developing a set of simplified ROI assets.

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