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**Digital transformation
hits core banking**

Understanding a bank's
choices for modernization

Lending and deposits are the bread and butter of retail and commercial banking. These core activities continue to be run off legacy platforms, hampering the ability of banks to innovate rapidly and respond to customer demand for increasingly digital and tailored experiences. Banks also remain under significant pressure to create greater transparency into and maximize efficiency of their operations, requiring real-time information to be available to operational and regulatory stakeholders. Imparting even greater urgency to the situation: A growing number of fintech players are realizing market success and threatening to disrupt traditional banking business models.

The good news? Banks have shifted their focus back to growth after spending the last decade responding to regulatory mandates. This growth has to be delivered by the lines of business that, in turn, must deliver new, innovative products and pricing schemes with greater agility and flexibility than ever before. And while much of the focus of digital transformation to date has addressed front-office and customer channels, offering next-generation products and services requires digital transformation of banks' core banking platforms.

As banks move to digitize their core banking platform, they need to consider how quickly they want to bring about change and understand the implications of their modernization journey. In addition to technology, they need to consider how core modernization will impact their workforce—moving from vendor-based servicing models and relying on increasingly scarce skill sets to support legacy, custom-built applications, and moving toward more configuration and API-driven, cloud-based solutions. Finally, banks need to maintain daily operations and service levels while undergoing a digital transformation.

The legacy dilemma

With few exceptions, most of the top US banks run their core banking operations on aging platforms that were deployed in the 1980s and 1990s.¹ These platforms are either homegrown or so heavily customized that they no longer resemble the original vendor product purchased, adding to complexity in maintenance.

Institutions are aware that these systems require some level of modernization, but until recently they have found themselves looking at massive investments of time, effort, and money. Historically, replacing core banking systems was an expensive undertaking that often could not demonstrate a return on investment in the short term. A full replacement could be a multiyear effort and a significant resource commitment. There is also considerable operational risk involved due to the transformation complexity and the potential disruption of day-to-day operations. Another historical drawback to modernization: Most legacy platforms may still be *sufficient* to run core operations. So, it's perhaps not surprising that the vast majority of banks have chosen to retain their legacy core systems, instead of building stand-alone applications or implementing manual processes to address gaps, while resigning themselves to the constraints of their core platforms.²

Most large banks have recovered from the burden of complying with the slew of regulations and reporting requirements imposed on them following global events in the early 2000s and the financial crisis of 2008.³ Responding to regulatory mandates required banks to direct a large portion of their budget and resources toward compliance for more than a decade. But as banks achieve regulatory compliance, they have more funds to focus on growth-centered transformation to enhance their digital capabilities.

Leaving core platforms alone has also become untenable. Today, many banks are faced with expiring maintenance and support contracts, a patchwork of poorly documented customizations and integrations that are cumbersome to unravel, and increasingly scarce—and therefore expensive—resources that have knowledge of older technologies such as COBOL and mainframe systems. Ultimately, given the heavy customization of most legacy platforms, upgrading may be nearly the equivalent of implementing an entirely new platform.

This convergence of factors for change, availability of discretionary funds, advancements in modernization offerings, and a less clear proposition to maintain the status quo—make core modernization an imperative that banks must act on.

You no longer have to bet the bank

The central positioning of core banking systems makes them one of the most critical components in the overall banking architecture. Any change in these core systems will have an impact throughout channels and operations. Historically completely replacing the core was the only upgrade option, making a core banking platform upgrade a “bet-the-bank” decision.

Fortunately, deciding to modernize a bank’s core is no longer a binary choice (do nothing or total replacement), thanks to massive advances in core banking technology that supports a variety of solutions. Emerging vendors are now starting to offer next-generation, cloud-based, and configuration-driven solutions that can provide an alternate and less disruptive path for banks. These next-generation platforms allow banks to innovate and address their most pressing needs while continuing to leverage their legacy platform for the majority of core banking functionality. Legacy vendors are also innovating, providing banks with additional options to augment existing platforms with select next-generation features.

Core banking platforms fall into three broad categories:

- **Legacy platforms:** These are “one-stop-shop” solutions that run on a proprietary or closed platform, often a mainframe system. They tend to be complex to implement and usually have a multiyear license-based model.
- **Service-oriented platforms:** These platforms offer service-oriented architecture (SOA)-based designs and enable real-time processing. Typically offered as hosted software-as-a-service (SaaS) solutions, these platforms generally utilize a license- and subscription-based model.
- **Cloud-native platforms:** These are platforms that leverage microservices-based architecture with application programming interfaces (APIs) providing

access to and from other internal and external services. They support real-time processing and, by nature of being cloud native, typically have a pay-per-use subscription model.

With this greater array of technology solutions available to them, banks now have a spectrum of options to transform their core capabilities. To determine which option is best for them, banks need to establish their modernization profile based on the sustainability of their existing platform, their appetite for risk, the need to innovate their product and service offering, their urgency to transform, and the complexity of their data strategy (which encompasses potential impact to existing data strategy around security, privacy, controls, business continuity and risk management, infrastructure, ability to monetize data, etc.).

It is important to underscore the importance of a robust data management strategy across the bank, which will ensure that a one-time data migration as well as future ongoing data integrations take place smoothly, in light of any discussion around core modernization or digital transformation—particularly when multiple lines of businesses, channels, and products exist with significant overlap and varying levels of data quality. Irrespective of the preferred modernization option, banks must understand their current state and roadmap for how they envision their data assets to flow within their enterprise. Managing data effectively is not only necessary from the perspective of operational efficiency and accuracy, but also presents an opportunity in terms of richer customer experiences, better cross-selling opportunities, and other external monetization revenue streams that banks must consider as they aspire to achieve a maximum bang for the proverbial buck. Additionally, adopting a concrete data strategy will equip banks to add advanced analytics capabilities to their existing IT environment and enable them to gain real-time insights to drive optimal decision

making. We look at five main options for banks to consider, listed below and summarized in figure 1:

- **Wait & See (Do Nothing):** Retain existing system with current functionality in the short term, while following market leaders to determine the next upgrade step. This option can work for banks with a sustainable platform who may not have the risk profile or business case for a core transformation.
- **Re-Platform:** Migrate code with minor upgrades to the existing platform (e.g., version upgrade), with minimal change to application functionality or technologies. This option provides minimal disruption and provides a path to more impactful changes in the future, but does not in itself address market and business demand.
- **Re-factor:** Modernize the core banking platform codebase to current technologies—from COBOL to Java for example—without changing baseline behavior. This improves readability, maintainability, extensibility, and potentially enables cloud-readiness of the existing core platform.
- **Augment:** Implement a parallel core that meets advanced needs not offered by the legacy core. The new core can run for a differentiated set of offerings, and/or be a target for migrating from the legacy core. This option offers innovative solutions for banks looking to transform quickly while maintaining existing products and services.
- **Replace:** Replace the existing core platform with new, modern solutions. This option accelerates the launch of new products for banks willing to pay a higher initial investment and able to justify the risk of replacement.

Figure 1. New options allow banks to select their journey depending on their profile

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Options for banks to consider					
	WAIT & SEE (Do Nothing)	RE-PLATFORM	RE-FACTOR*	AUGMENT	REPLACE
	<ul style="list-style-type: none"> Retain existing system with current functionality 	<ul style="list-style-type: none"> Migrates code with minor upgrades to a upgraded platform (e.g. version upgrade) that does not change application functionality or require significant new skillsets 	<ul style="list-style-type: none"> Updates the codebase without changing baseline behavior Improves readability, maintainability, extensibility, and potentially enables cloud-readiness 	<ul style="list-style-type: none"> Implement a parallel core that meets advanced needs not offered by legacy core New core can run for a differentiated business, and/or be a target for migrating from legacy core 	<ul style="list-style-type: none"> Replace existing core platform with new/ modern solutions Accelerates launch of new products for banks willing to pay a higher initial investment
Bank profile					
Suitability of existing platform	↑	↑	↑	→	↓
Risk averseness	↑	↑	→	→	↓
Innovation/ growth objectives	↓	↓	→	↑	↑
Transformation urgency	↓	→	→	↑	↓
Complexity of data strategy	↓	→	↑	↑	↑
Cases/typical indicators	<ul style="list-style-type: none"> Nothing is 'broken' Looks to market before choosing path 	<ul style="list-style-type: none"> Nothing is 'broken', but may be reaching support expiration on existing version Investment limited to database or version upgrades and minor enhancements 	<ul style="list-style-type: none"> Bank has vision for modernization but not willing to switch Two step journey: <ul style="list-style-type: none"> Refactor from legacy to modern code base (e.g., COBOL to Java) Enhance platform once modernized 	<ul style="list-style-type: none"> Has unique business purpose for a new core: <ul style="list-style-type: none"> Digital-only bank/ brand Deposit-only platform Once platform is stable and proven, migrate more legacy to new core 	<ul style="list-style-type: none"> Legacy core unable to meet financial, operational, and/or business needs Contracts coming due Replacement as a last resort

* Code re-factor is a process of restructuring existing code without changing external behavior to improve non-functional, technical performance.

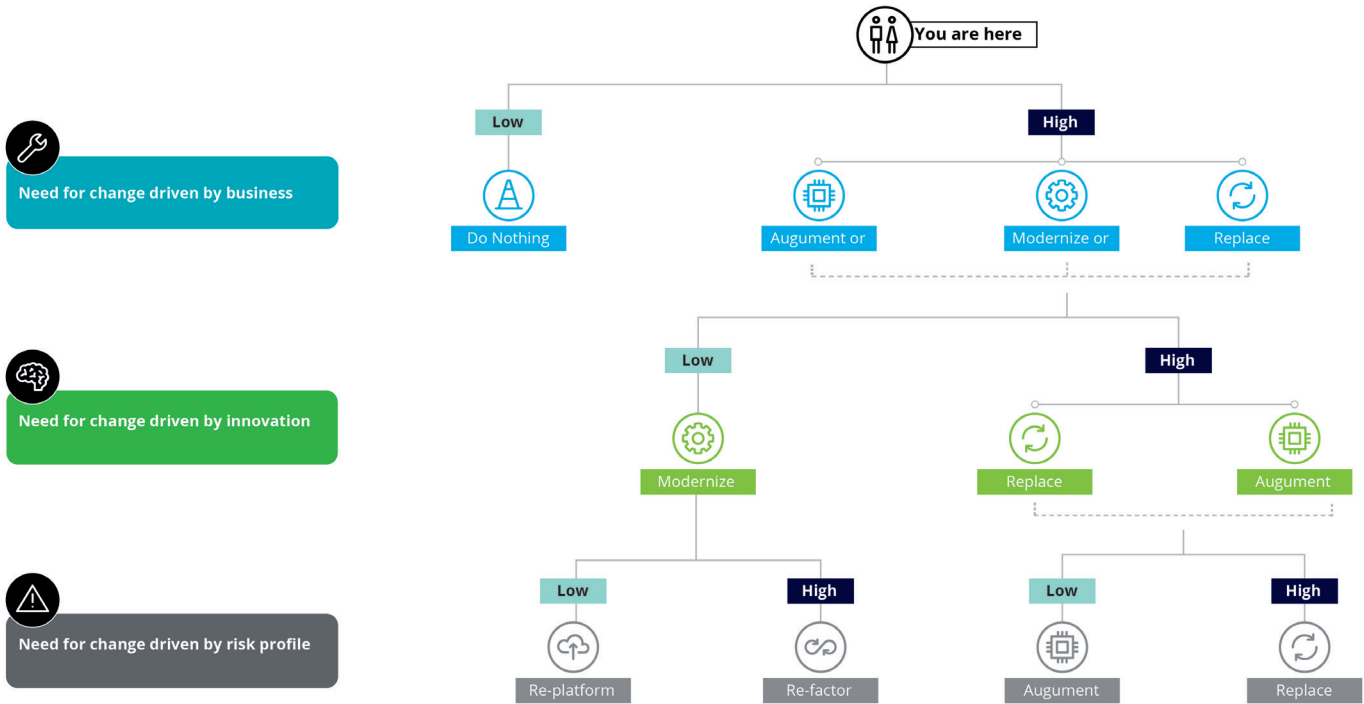
Having greater control over how they approach core modernization is certainly an advantage to banks. At the same time, determining which path makes the most sense can be complex. It will depend on existing vendor relationships and platform capabilities, as well as banks' overall business strategy, appetite for risk, and the specific drivers of change.

Which path is right for your bank?

The decision of whether to replace, augment, re-factor, or re-platform the core is complex. Because every bank is different, a one-size-fits-all approach is ill-advised. Rather, an in-depth analysis of current infrastructure, market dynamics, customer needs, and organizational capabilities is required.

Our approach involves working through a set of key decision points that lead to an informed decision (see figure 2). Responses to these decision points will help a bank understand which option may work best for it by balancing risk, business drivers, and current capabilities.

Figure 2. Selecting an upgrade option is based on a series of decisions



The case for retaining the legacy core (Do Nothing—Wait & See)

Our first step is to examine business needs and determine whether the legacy platform supports processing requirements, product capabilities, and regulatory compliance. If the bank's platform is performing at an acceptable level, the bank may decide to do nothing in the short term. On the other hand, if the legacy platform is failing operational tasks, then some form of modernization is required.

While doing nothing has a negative connotation, it may be advisable for a more risk-averse institution that does not have the experience or business case yet. Rather, a bank may look for competitors to take the first step and only make a move after some success stories emerge in the market. This wait-and-see approach can, in fact, be advantageous as long as the bank actively monitors market dynamics and starts positioning itself for upcoming change—i.e., identify and implement operational efficiencies, begin upskilling and recruiting new staff, refresh its business strategy and develop product and service roadmaps accordingly, and establish relationships with existing and new vendors to understand future options. In such a scenario, the bank will have a relatively straightforward data strategy, assuming that the current approach is fulfilling the data needs.



CASE STUDY:

Regional bank undertakes assessment, but decides not to modernize core

Regional bank conducts assessment to upgrade to technologically driven core, but chooses not to go forward due to capability, cost, and change management concerns.

The regional bank's existing core platform was outdated and had an upcoming contract end date, so the bank assessed its concerns and the need to modernize. The concerns with the existing core platform were:

- Ability to scale in the event of expanded product offering and services.
- High cost of contract with the current provider.

'Wait & See' as a solution

The bank ultimately decided not to modernize for the following reasons:

- The current platform maintains the functionality required for daily operations.
- The bank was already involved in several other ongoing projects that were costly and causing resource constraints.
- The bank was developing their own data warehouses and wanted to ensure seamless integration with the new core platform which was proving difficult.
- Change management of a core modernization would be highly onerous to the bank.

Conflicting priorities and resource constraints outweighed the bank's need for immediate core platform modernization.

The case for re-platforming or re-factoring the core

Once a business case to make some kind of change has been established, banks must consider the need to innovate beyond their existing offerings and capabilities. Are market forces pushing the bank to develop digital offerings? Are the bank's competitors pulling ahead with new products and services? If innovation is not an urgent need, the bank can choose to modernize its platform either through re-platforming or re-factoring, depending on the scale of other required changes. These two options are detailed below:

- **Re-platform:** This is the less aggressive of the two options. It involves relatively minor adjustments that don't change core functionality or require significantly new skill sets to implement. Examples of re-platforming include version upgrades or database updates. The data strategy in this case will be of low complexity.
- **Re-factor:** This option involves updating the codebase without changing baseline behavior. The result is improved readability, easier maintenance, greater extensibility, and potential cloud-readiness with potentially more complex data needs.

For both options, while modernizing moves the bank from legacy to current-generation technology, it doesn't in and of itself change business capabilities. Banks with a high need to enhance their capabilities—for example, developing new account or customer structures, building innovative products, or applying advanced pricing schemes—need to look at either augmenting or replacing their core platform.



CASE STUDY:

Swiss bank modernizes its core application via a code re-factor

Swiss bank uses core re-factor strategy to modernize business-critical investment system in six-month timeframe.

A private Swiss bank needed to upgrade a business-critical investment system from legacy software to modern code. The legacy language was not only challenging and costly to maintain, but also difficult to integrate with modern technologies. The bank was looking to modernize the legacy platform with minimum disruption to ongoing operations.

Re-factoring legacy code as a solution

Solution:

- The bank implemented a six-month solution of re-factoring all legacy code and migrated the system to a newer cross-functional and portable language provided by an American multinational tech provider.
- All of the legacy code was re-factored to the new language and all legacy software was decommissioned with a straightforward data strategy.

Benefits:

- The re-factored application allowed the bank to achieve significant efficiencies and cost savings including the ability to meet high availability standards and no additional user training costs because all system functionality was preserved.
- Further with a modernized platform, the bank can more easily integrate with future technologies.

Re-factoring the aging core platform to a modern language allowed the bank to achieve significant efficiencies and cost savings.

The case for augmenting the legacy core

Consider a bank that wants to launch new business models that are in some way decoupled from the existing business—a new line of business or a digital-only brand, for example. In situations like this, where there's a high need for innovation and opportunity to take on more transformative initiatives without risking the legacy business, banks can look beyond simply modernizing their core platform. Choosing between an augmentation or replacement path raises the questions of risk and time.

While technological improvements have made replacements less risky than a decade ago, overhauling the entire legacy platform is still very complex, with potential disruption to business operations while the change is underway. A bank's ability and willingness to understand, adjust, and risk this disruption to its core business functions for several years will heavily influence whether it chooses to augment its core or undertake a replacement.

Banks with a low appetite for risk, especially given the time horizon and investment required, may see value in augmenting their existing core with a new, next-generation core. In this model, the new core is purpose-built to offer new capabilities that the legacy core cannot provide and is typically based on cloud-native applications that are open, scalable, and extensible. In many cases, the bank will also have to evaluate their data strategy, which will be of a more complex nature. As discussed earlier, augmentation offers multiple future options. The new core can be used to stand up a separate line of business or new banking institution altogether. Or, it can be used as a test-bed to launch new products and services, with a goal to migrate the legacy business over time once the new core platform is deemed stable.



CASE STUDY:

American investment bank adopts next-gen platform for new digital arm

Multinational American investment bank augments its existing platform with a digital-only bank allowing the bank to enter into the retail banking market.

Augmenting with a cloud-native offering as a solution

Solution:

- The bank decided to leverage a preconfigured, fully cloud-based universal banking solution developed by an Indian corporation for their new venture.
- The solution ensures straight through processing on digital channels and ensures self-service capabilities across them.

Benefits:

- The platform catered to the need for high levels of product flexibility and personalization—for example, the ability to choose lending terms for repayment and tenor when storing and processing contracts.
- The solution accounted for tight timelines. The out-of-the-box preconfigured platform is built to be compliant with state and federal banking regulations, allowing the entire program to be completed in only eight months.

Bank opts for out-of-the-box solution that provides speed of implementation, regulatory compliance, and ease of personalization to augment current platform.

The case for a full core replacement

The final option brings us back to the legacy dilemma. A bank that does not see a viable upgrade path to realize its business objectives may still choose to replace its entire legacy platform. This “all in” approach, while fraught with risk, may still be attractive if living with the current platform is untenable. Additionally, the bank will have to factor in complex data considerations such as their strategy for moving data from the legacy system to the new system of choice. It requires a focused, long-term view that could provide an advantage over competitors that take a slower, less risky approach.



CASE STUDY:

Israeli bank replaces aging core platform with digital banking solution

Israel-based global bank replaces core banking with a next-generation enabling real-time customer interaction and enhanced financial capabilities.

Based on strategic priorities, the bank wished to enter into the digital banking product offerings in order to meet client and market needs. Built on multiple, outdated complex systems, the bank’s existing core lacked the ability to adapt to offer digital banking products and services and was becoming increasingly cumbersome and expensive to maintain in order to meet daily operational needs.

Replacing the core as a solution

Solution:

- The bank decided to replace its core with an end-to-end digital banking solution from a next-generation vendor that was cloud-based native and allowed for real-time processing.
- The vendor solution was flexible and offered a competitive implementation timeline and cost structure.

Benefits:

- Ability to offer innovative product options such as 24/7 digital banking, authentication using mobile features, and optical character recognition (OCR) technology.
- Millions of dollars in IT maintenance cost savings per year.
- Allowed the bank to offer digital products in competition with fintech players encroaching on their market share.

Leading Israeli bank transitions into digital banking by replacing outdated core banking system with a flexible, cost-effective digital banking solution.

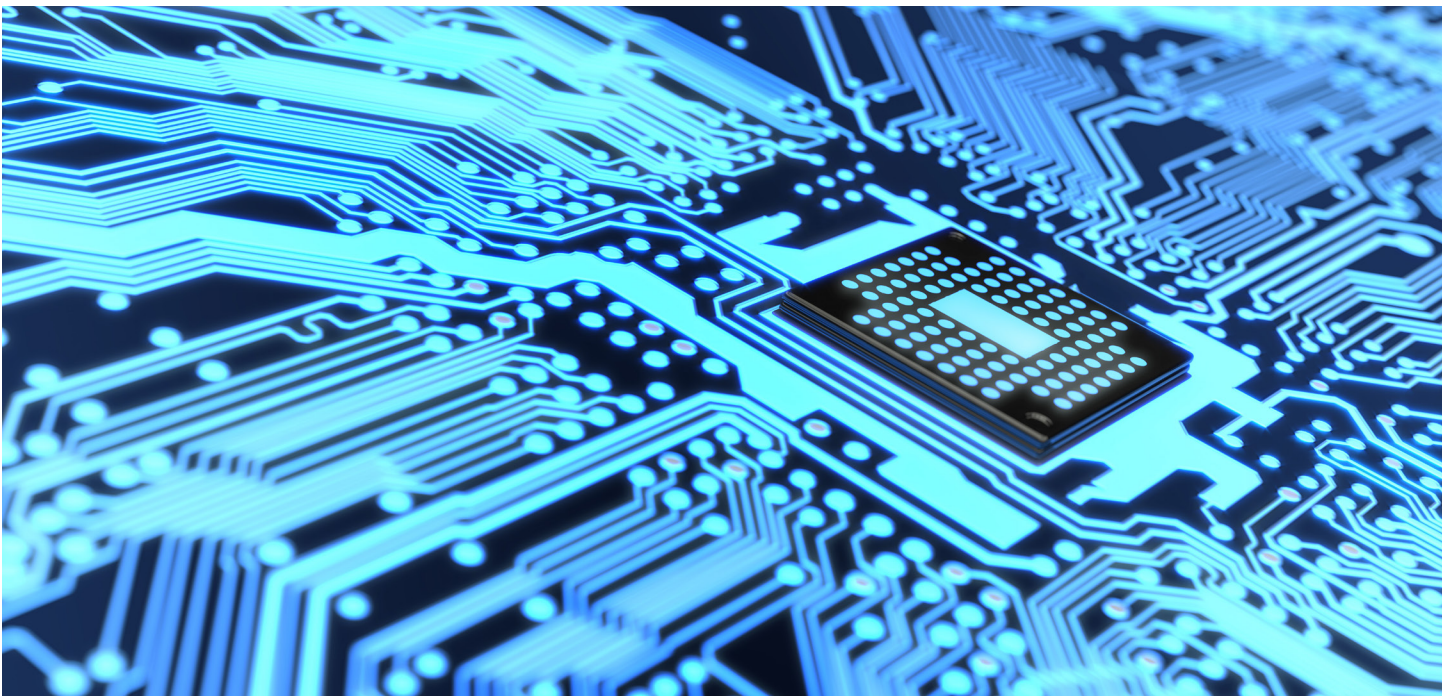
Your next step

Selecting the best approach to core modernization is a complex strategic decision that requires banks to assess current capabilities, customer needs, market trends, and operational risk. This uncertainty can be challenging, and we can help to determine the approach that supports your digital transformation objectives.

As the world's largest professional service organization, Deloitte offers a full range of

disciplines that our clients draw on to realize their digital journey. Our track record of defining and driving end-to-end digital and core transformation programs for banks means that we understand the options available to you, while also recognizing that transformation is not a one-size-fits-all journey that can be overly prescribed. Our approach is a mutual journey: We engage in conversation and listening, and together

we reach a decision that makes the most sense for you given the many decision points that influence your business and technology strategy. We have the capabilities, experience, and tools to not only help banks determine a modernization path but to establish a transformation roadmap, select and design effective solutions, and then implement them across all aspects of large transformational programs.



Endnotes

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³ John Corston, Irena Gecas-McCarthy, Corey Goldblum, Marlo Karp, Satish Lalchand, Ken Lamar, and Gregory Norwood, *2019 Banking Regulatory Outlook 2019: Leading in times of change*, US Deloitte, January 3, 2019, <https://www2.deloitte.com/us/en/pages/regulatory/articles/banking-regulatory-outlook.html>.

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