



# New Technical Development Implementation Process

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## **GROUP 4**

Christian Karkada 500626467

Dylan Ramuite 500585502

Awais Durrani 500442744

Juned Chhiboo 500597173

Mohammad Ahmed 500620717

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## Executive Summary

This project is scheduled to last two semesters (eight months) and its purpose is to find an information technology (IT) based solution which supports GlaxoSmithKline's (GSK) current "New Technical Development Implementation Process" (NTDI process) within the eForms department.

The eForms business unit service is focused on creating electronic forms to increase efficiency and reduce administrative tasks for other business units within GSK. In today's society, there is an industry-wide inclination toward electronic forms as it is an effective way to gather and process information. It is also a more environmentally friendly option as many businesses are attempting to go paperless, in order to save forests and animal habitats from being destroyed. The electronic forms business is a multi-billion dollar industry and is estimated to see a consistent growth of around 14% annually. It is a very competitive industry, where processes need to be efficient in order to save costs and time.

The eForms business unit is currently managed by a team of highly skilled IT professionals. However, after analysis, it is evident that eForms' NTDI process can be made more efficient and more effective. During this study, the potential areas of development that were identified are:

1. A new system designed for other business units to submit a "New Request" for a technical development, improving their current manual new request process.
2. Saving cost and time by proposing new potential development vendors.
3. Improving the payment process by ensuring that the delivery requirements align with the business requirements and by collecting an additional payment.

Currently, it takes GSK approximately 154 days to complete a request whereas other competitors benchmark approximately 90 days. The main cause for the delay occurs when a request is rejected, which loops the process back to the start. This redundancy wastes time and valuable resources.

The proposed solutions would involve:

- Clearly defining requirements early in the process, preferably when a new electronic form is requested.
- Calculating cost estimates based on requirements and resources.
- Assigning a request to a specific business unit/owner.
- Ensuring delivery requirements align with business requirements.
- Defining and confirming additional requirements
- Calculating additional costs for any changes requested

After implementing the stated solutions, the eForms service will have a significant cost savings and additional time to explore new opportunities.



## Introduction

ITM 90A/B is an 8-month course project that is devised to help business IT students utilize and apply the skills learned over their university career to successfully analyze and implement an IT based solution within an organization. The expected result is to find feasible solutions for implementing new, more efficient, IT business processes. This report will analyze the “New Technical Development Implementation Process” (NTDI process) within GlaxoSmithKline’s (GSK) eForms department. GSK uses this process to fulfill internal “new technical development” requests from different business units within the company. GSK’s eForms service is a globally integrated service within the organization. It has many complex internal processes that have the potential to be enhanced in order to increase performance and efficiency. The first phase of this study takes place from September 2017 to December 2017 and the three components that are analyzed during this phase are:

- Company Analysis
- Existing eForms Process Analysis
- Proposed Solutions for eForms NTDI Process

The first component is to analyze the company’s existing business. This includes an assessment of how they currently handle and fulfill various internal requests. In addition to outlining their current processes, this study also evaluates and assesses the performance of the current service processes in the form of a heat map analysis. After the assessment is completed, the study continues on to the proposed solutions phase of the project, in which the current processes are redesigned into a projected “to be” process. The proposed ‘to-be’ process will have several new and modified key processes which will better enhance the efficiency of the organization’s main business objectives.

Once the projected “to be” process solution is proposed, a Gap analysis is presented and will function as a comprehensive tool to evaluate the changes that we have proposed and illustrate the gaps in the existing processes that have been filled. The gap analysis outlines the explicit gaps that are filled by implementing the new proposed business process solutions strategy, pinpointing specific business units that our strategy will enhance. This study concludes by providing a list of key performance indicators or criteria that assess the performance of the eForms service with the proposed solutions fully implemented within the business unit.

This study is being completed by Ryerson University students Christian Karkada, Dylan Ramuite, Juned Chhiboo, Awais Durrani and Mohammad Ahmed as part of the ITM90A/B Capstone project. The project supporters within GSK are Cheryl Pereira, Project Manager of the eForms service, and Reynold Karkada, Director of the eForms service.

# I. Existing Process Analysis

## A. Company Profile

GSK is a globally integrated, business-to-business commercial pharmaceutical organization. GSK exclusively researches and develops products in the following three categories: pharmaceuticals, vaccines, and consumer healthcare. GSK develops and produces drugs that treat both chronic and acute diseases, with leading industry positions in respiratory diseases and HIV drugs. As one of the largest vaccine producers in the world, GSK has an in-house development, production, and distribution team that serves over 1.9 million vaccines per day worldwide. As a leading worldwide healthcare provider, GSK also has portfolios with household brands such as, Aquafresh, TUMS and Sensodyne (GlaxoSmithKline, 2017).

GSK began operations in December 2000 after a merger between Glaxo Wellcome and SmithKline Beecham. 17 years later, GSK is the 7th largest pharmaceutical company in the world, based on market cap and total revenues. GSK's main headquarters is located in Brentford, London, United Kingdom, but it also has many other headquarter locations around the world, in countries such as Canada, Australia, Brazil, China, Croatia, Italy, and Japan (GlaxoSmithKline, 2017).

GSK's current CEO is Emma Walmsley, is the first female CEO of the company. Walmsley has been a part of GSK since 2010, becoming the CEO in April of 2017, with credentials such as a Master's Degree from Oxford University, and various management positions in large corporations, including 17 years with L'Oréal Paris. Walmsley has been able to guide GSK in a positive direction since becoming CEO, and proposes to introduce a brand-new mission statement in 2018 (GlaxoSmithKline, 2017).

GSK has an extremely large consumer base serving billions of customers, while employing over 99,300 employees worldwide. With such a large number of customers and employees, GSK has grown its revenues to over \$47.19 billion in 2016 alone, allowing them to trade their stocks on the London Stock Exchange. Their revenues are diversified by their pharmaceutical sector, vaccine developments and consumer healthcare. Sixty percent (\$28.3 billion) of revenues come from the pharmaceutical industry, 15% (\$7.1 billion) of revenues come from their vaccine developments, and 25% (\$11.8 billion) come from consumer healthcare (GlaxoSmithKline, 2017).

GSK has a clear and concise mission, "We want to help people do more, feel better, and live longer". GSK is using their pharmaceutical market cap to fulfill their patients' needs. Furthermore, GSK is fulfilling their mission everyday by offering new innovations to the pharmaceutical industry. Some key achievements being: elimination of two tropical diseases

in 1999 by donating over 7 billion tablets, delivering over 833 million vaccines in 2016 and providing the world's first breakthrough in the treatment for HIV/AIDs with the introduction of a drug called AZT (GlaxoSmithKline, 2017).

There are many services that GSK uses internally, within the organization, which integrate information technology. One of the main internal services that contribute to their operations is the eForms service. The eForms service designs and builds workflow solutions (through electronic forms) with the intention of minimizing administrative efforts, simplifying approval processes, and improving employee productivity. eForms is used globally in 80 countries and functions on a multi-lingual platform, allowing users worldwide to easily read and understand the electronic forms created. Currently, the eForms service has a 93% user satisfaction rate. This eForms service will be analyzed in detail in subsection B of the interim report.

## B. Existing Process

### Strategic Business Model

The strategic business process map is a high-level model of the existing business process. It is used to outline the basic processes that are involved in the eForms service. *Figure 1* in the index of the interim report contains the strategic model for the current NTDI process within the eForms service. The strategic model of the NTDI process begins with a business unit request for a new technical development. This involves another business unit or service requesting eForms to develop an electronic form for use. Following the request, it moves on to the decision stage, where an eForms delivery manager accepts or rejects the request. The eForms delivery manager may deny the request if they are unable to meet the requirements for the business. If rejected, the eForms delivery manager provides the alternatives to the business unit and the reason why the request was rejected. However, If the request is approved, the business unit would be required to submit the 'request for new development' document, outlining their specific requirements needed for their electronic form.

After the 'request for new development' is completed, evaluation of cost and schedule must be performed by the eForms delivery manager (eDM). They need to calculate how much it would cost to deliver the request and how long it would take to develop. Based on the cost and schedule, the business unit would have to make a decision to approve or deny the cost and schedule. If the cost and schedule are not feasible for the business unit, the business process would revert to the initiation stage. If the market approves the cost and project schedule, the next step is to start developing the new technical development.

The developers that are located off shore start to begin to develop the electronic form based on the business unit's requirements. After they have completed their development process, they would then send it to the quality assurance (QA) team for testing purposes. User

Acceptance Test (UAT) can only be performed after the quality assurance review has been completed. UAT is performed for the business unit and eDM to test. If the business unit or the eDM do not accept the electronic form that has been created, UAT sign-off decision will not be made. If the UAT sign-off is rejected, the development goes back to the developer and QA team to test, before entering the UAT process again. Additionally, all issues that the business unit or eDM had experienced will be directed to the developer and quality assurance. Finally, when the UAT sign off decision is made, it would lead to the market readiness process the training process. During these processes, the business unit is trained on how to use these electronic forms, and how to manage them. The final step would be for the eDM to execute the 'market rollout' and make it live for use by the organization. With this step, the business process successfully ends.

## Functional Business Model

The functional business model is a more detailed model of the NTDI process that outlines specific processes and sub-processes within the NTDI process. The functional business model is located in the Index portion of this report as *Figure 2*. The functional model starts with initiating a request for new implementation from the business unit. It then moves onto the decision stage to approve market to submit New Form request. If the market request is rejected, the eDM needs to justify the reason of rejection and provide alternatives outside eForms that needs be included in the resubmission of the request. However, if the market request is approved, there is a 'New Form Request' sent by the business unit that is submitted.

The request process continues to a decision gate, in which the changes must be approved or rejected by the eDM and business unit or business unit owner. If rejected, the process reverts to rejected process, but if approved the request flows to the evaluation process where the requested changes or implementation request is evaluated (in terms of schedule and technical) and the project manager is notified. It moves onto the 'approval of cost and schedule decision gate', which is then approved or rejected by the business unit. If the cost and schedule are rejected it loops back to the initiation process stage to request a new submission. However, if they approve, it is communicated as a "GO" for the project.

Before the project begins, a Pre-Engagement Workshop is held to discuss the system overview, process walk-through, market requirements, dashboard and implementation requirements. Some activities that are involved during this process are as follows:

1. Quality Plan (QP) Review and Sign off
2. Commence data collection exercise after stage 2 of the process
3. Project manager issues weekly dashboard

4. ePM (eForms Project Manager) and business unit to use RAID (Risks, Action, Issues, Decision) log. If urgent, email eBPO (eForms Business Process Owner) and eDM (eForms Delivery Manager) for critical items
5. Weekly project update meetings with market PM, eBPO, eDM, Team Lead and eDirector (eForms Director)
6. Market team to initiate in-market project activities plan

After the Pre-Engagement Workshop is completed, the project begins. The new technical development is to be created by the development team. After the new technical development is created, it is sent to the QA team for testing and review purposes. The process then continues to the UAT process. This process consists of: communicating system readiness for UAT, informal UAT, formal UAT, and checkpoint meetings to track progress and resolving issues. If the UAT is not successful, the process reverts back to the development and QA process, where the issues are escalated to a developer and ePM's are notified. The developer then fixes the issues and sends it to the QA team to review. If UAT is successful, there will be a market roll out and communication plan, and then training for the electronic form and the users. Additionally, a checkpoint meeting for the market readiness for the electronic form will take place. The request of deployment is then approved, and support handover to the business unit is complete. The eForms Project Manager (ePM) will then deploy the new implementation to the business unit and the three months warranty phase will commence. The business unit has three months of warranty for any issues that arise when using the electronic forms. Finally, the eDM will execute the rollout and communication of the new technical development implementation to make it live for the organization, specifically the business unit, to use.

Based on the balanced scorecard completed in *Figure 5* it is evident, from a learning and growth perspective, that having a skilled workforce with a good management team will lead to the eForms service becoming more efficient. This in turn, would lead to satisfied and returning customers which can in turn, increases business and revenue for the eForms service team. By improving the NTDI process for the eForms service, it can potentially save costs, increase efficiency, and generate revenue.

## C. Performance Assessment

GlaxoSmithKline is a large multi-billion dollar corporation with processes and employees spanning over international borders. This organization, therefore, has thousands of processes and procedures. Because this is an eight-month study, it was narrowed down on a specific process within the organization. After coordinating with the information technology department within GSK, this study focuses on the NTDI process within the eForms team.

Issues that were discovered within the NTDI process are as follows:

1. Once a project is outlined and specified and the funding is provided, upon completion of the project, additional changes and requirements are requested. The requested changes may require additional capital which the business unit may not be willing to pay, causing problems and further delays with the project.
2. Current method for initiating a new request for an electronic form is a lengthy and daunting task. There are various overlapping processes, which if restructured may potentially make the process of initiating a new request more efficient.
3. The current vendor for the development team is costly and has been unable to meet deadlines. This causes delays for the project, leading to additional resources being wasted

Currently, creating a web-based electronic form or application with basic features takes approximately 90 days which includes specifying details and requirements for the project to collecting the funds and implementing the changes. GSK's eForms team however, takes approximately 154 days, almost twice as long. This issue is caused by the new request process and the extensive development time. The eForms service spends approximately £500,000 on the development process within the NTDI process. This cost exceeds the value that the development team is adding to the business process.

Once a project gets underway, the customer only sees the final version after it has been developed. Changes can only be requested when the development is complete in the current process. A change that may seem small to a business unit may take extensive work to implement into the final development, once it has already been developed. Changes are requested through the 'change request' process, which is to be approved by the eDM. They then communicate the changes to the technical development and quality assurance team, causing further delays for the project.

GSK's global eForms service, when broken down can be characterized as using the waterfall methodology, which can be slow and inefficient. Once a process has been completed it does not go back to the business unit for review. Many IT competitors worldwide, are switching over to the agile methodology, which allows the business unit to see the progress of the project as it is being developed.

## D. Description and Assessment of Supporting Information Technologies

The existing NTDI process is supported by multiple different system components. Some of these systems that include Financial system, Workday system, and Middleware system software. All of these systems currently support the eForms service by processing

transactions and exchanging data. However, there are certain processes, for instance: approval requests, submission of requests, change requests, and payments, that are completed manually. Therefore, the eForms service uses both manual processes and automated processes for their NTDI process.

The financial system within the eForms service mainly covers the financial transactions between the business unit and the eForms team. Their financial system also keeps track the financial activities within the eForms service. eForms team members handle all the financial transactions that take place through the financial system. This system handles the payment and keeps track of the record for each transaction. The financial system, also stores payment data, purchase order numbers, and cross-charges between business units. The system facilitates cross charges by creating internal invoices and entries to transfer funds from one business unit to another.

Workday is the another supporting technology that is being used within the eForms team. Workday provides an enterprise-level software solution for the human resource portion within the service. This software stores GSK's employee information, employment status, and payroll information. When an electronic form needs to collect employee information, or when the eForms team member need to collect employee information they utilize the workday system to gather the relevant information.

The final software that the eForms service uses is called Middleware. Middleware connects different business units to share and manage data within the system. The stored information on Workday can be retrieved by only the two business units that are authorized within the specific middleware folder. The Middleware software is similar to a cloud based platform as it is used to retrieve certain documents or other information from different business units. For instance, to provide a requested document to the eForms department from the vaccine business unit, the vaccine department would need to upload documents on the Middleware software system, from where the required data can be retrieved by the eForms service team.

Using a heat map analysis, one can identify the processes and systems that take the most amount of time to complete. The defining requirements process may take days for a business unit to complete, as the eDM and business unit owner discuss various requirements that are attainable and unattainable within the development. The financial transaction that takes place also consumes the most amount of time, as it may take multiple days for the financial transaction to process, which may further delay the project.

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## II. Process Design

### A. Process Design

GSK is facing a crucial project change and project budget assessment issues with their existing NTDI process. The company is renowned for its pharmaceutical projects and implementations. However, their internal project acceptance and requirements can be improved to increase efficiency within the eForms service team. The proposed strategic and functional model of the solution can be found in the Index portion of this report labeled *Figure 3* and *Figure 4*.

Different business units within GSK, typically require custom design and build requests, so every project is unique. In the proposed strategic and functional NTDI process, analyzing the request initiated by the business unit is similar to the current process. However, the proposed solution includes a system, in which the business units fill out a request to initiate a new technical development. This system will store the current requirements for the business unit and outline them to the eForms service team.

The request is then analyzed by the eDM, which then goes to the approval process. If the new request is rejected, the individuals have to provide reasoning and alternatives outside of eForms. If the request is approved, the eDM and the business unit owner will confirm the defined current requirements from the 'business requirements document' within the system and it will be saved in the data store. These technical requirements will then be sent back to the business unit for revision. If the business unit owner is satisfied with revised requirements the request will be submitted and move onto Stage 1 (SG1).

Under SG1, the project will be assigned a market team, developers, and an eForms Project Manager. After the positions are assigned the project will be evaluated by these individuals and they will collectively calculate the cost estimation based on the requirements and resources. This cost schedule will be communicated to the specific business owner/unit. Upon receiving the cost and schedule for the technical development, the business unit will decide whether to approve or reject the projected cost schedule. Another proposed solution to the NTDI process includes an initial portion of the cost to be paid by the business unit. This process ensures that the project is funded and can continue to be developed.

The project then goes through the strategic and architecture planning where a series of data collection, weekly dashboards and project update meetings take place, after the project has been reviewed by the business unit owner, ePM and eDM.

Once the strategic and architecture planning process of the project has been completed, it goes into the development process. The proposed developers will need to work quickly and



effectively, ensuring that the electronic form aligns with the business units requirements. A system demo will be developed and reviewed, following a code review and quality assurance check. These processes will be completed under the deployment and quality assurance teams. The system demo will be sent to the business unit owner to ensure delivery requirements are aligned with business requirements before the final development is completed. If approved, the development will be sent to the UAT stage. If rejected, and the business unit requests a change, then they have to define additional requirements through the initial development system, which will form a change request. The eDM and ePM have to approve and recalculate additional cost and schedule impacts. Then, if an additional payment is required, it has to be paid in order to proceed with the change request. If additional payment is not required then the change request is sent back to the development and quality assurance change for changes to be completed. The RAID document is also to be updated outlining new risks, actions, issues and decisions with new change request. After the new development aligns with the business unit's requirements, it follows the current implementation and roll-out process within the NTDI process

## B. GAP Analysis

GSK's biggest strength is pharmaceutical consulting and implementation of medical equipment and systems. Internally, GSK's eForms service for handling internal requests is a crucial process in need of enhancement. It is necessary for the eForms service department to be efficient in terms of project efficiency, project budgeting and requirements gathering.

GSK's current eForms NTDI process has redundancies in the approval processes and requirements gathering processes. The NTDI process lacks the ability to estimate an accurate budget for a given project. Initiating a new technical request with the eForms team can also be a complex and cumbersome task. The proposed solution aims to overcome these ambiguities, through the new proposed processes added.

To accurately estimate project cost and resources, the system has to define current market requirements, which will ensure and clarify the objective of the project. In addition, the process will consider any alterations or change for the project at the point of the system demo. An overview of the working development will be presented to the business unit to illustrate the current technical development. If any change is requested at this point, requirements and cost will be reassessed to accommodate any extra resources used for the change within the project.

By adding these processes, the proposed solution will address the three main issues of project creep through change requests, inaccurate budgeting and costly development processes, and project inefficiency for GSK's eForms NTDI process.

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	AS-IS Process	TO-BE Process	Differences Explained
Value Added Activities	<ol style="list-style-type: none"> <li>1. Initiate new project request.</li> <li>2. Request sent for approval.</li> <li>3. Submit new form request with business consultation.</li> <li>4. No initial payment required.</li> </ol>	<ol style="list-style-type: none"> <li>1. Initiate new project request with business requirements.</li> <li>2. Approval based upon review of project requirements.</li> <li>3. Upon approval define current requirements.</li> <li>4. Store business requirements</li> <li>5. Initial payment required in order to commence project.</li> </ol>	<ol style="list-style-type: none"> <li>1. While initiating a request for project with business requirements will give an overview of the criteria the market is requesting.</li> <li>2. Approval will only be based upon review of requirements to clearly state the acceptance of capacity of the project.</li> <li>3. Defining current requirements by business consultation.</li> <li>4. Once business requirements are defined it will be stored.</li> <li>5. Ensures no delays in commencing the project.</li> </ol>
No. of Non-Value Added Activities	3	2	In the AS-IS value is not added up until project request, business consultation, and evaluation of project.
Steps Taken Before value Added Activities Provided	4	2	Value is added in TO-BE right after the new project request has been approved, then the defining requirements takes place which is a value-added activity.
No. of Repeated Activities	Approval Change (3) Quality Assurance (1)	Approval Change (2) Quality Assurance (2)	Approving changes does take a while as it is at discretion of the person making the decision. Where is in IT project QA is key for a successful project delivery.

## C. Key Performance Indicators

The eForms services strategic goal is to provide quality developments for new electronic forms at a fair cost in a timely manner. The proposed solution and re-engineered NTDI process aims to increase efficiency while saving costs and increasing customer satisfaction rates. This study will use the following Key Performance Indicators (KPI's) to assess the new proposed business process solution:

1. Cost – is the project within budget and is the business unit funding the entire project
2. Schedule – is the project on track and completed according to the predefined schedule
3. Scope – is the scope of the project being captured and delivered to the business unit
4. Quality – is the quality of the development being accepted by the business unit.  
(level of satisfaction, QA team bug findings, UAT report)

## D. Change Management

Utilizing Leavitt's change management diamond in *Figure 6*, it is evident that the organizational structure, tasks, technology and people are marginally affected by the proposed solution. Although the entire GlaxoSmithKline organization will not be affected, the eForms service team will be affected within certain areas.

In terms of people, the development team will need a transition plan in order to be phased out for the proposed new, more efficient and cost-effective development team. All the other members of the eForms team will be unaffected in their day to day procedures. The new request system being implemented, may allow for eForms team members on more important tasks, rather than constantly contacting business unit owners and replying to new request emails. In terms of organizational structure, the organization as a whole is unaffected. Through the proposed solution however, the eForms team will have new requests going through the system set in place, and initial payment will be taken from the business unit when they approve of the project cost and schedule. For the technological component of the change management, the only new system being introduced is the 'initiate new request' system. This system allows business units to formally request a new technical development and will store their requirements as needed. Finally, the eForms team members will have the same day to day tasks, with some team members tasks being eased through the use of the new proposed system and processes.

A detailed change requirement plan is not a requirement for the proposed changes as the proposed solutions remain within the scope of the eForms service.

## Index

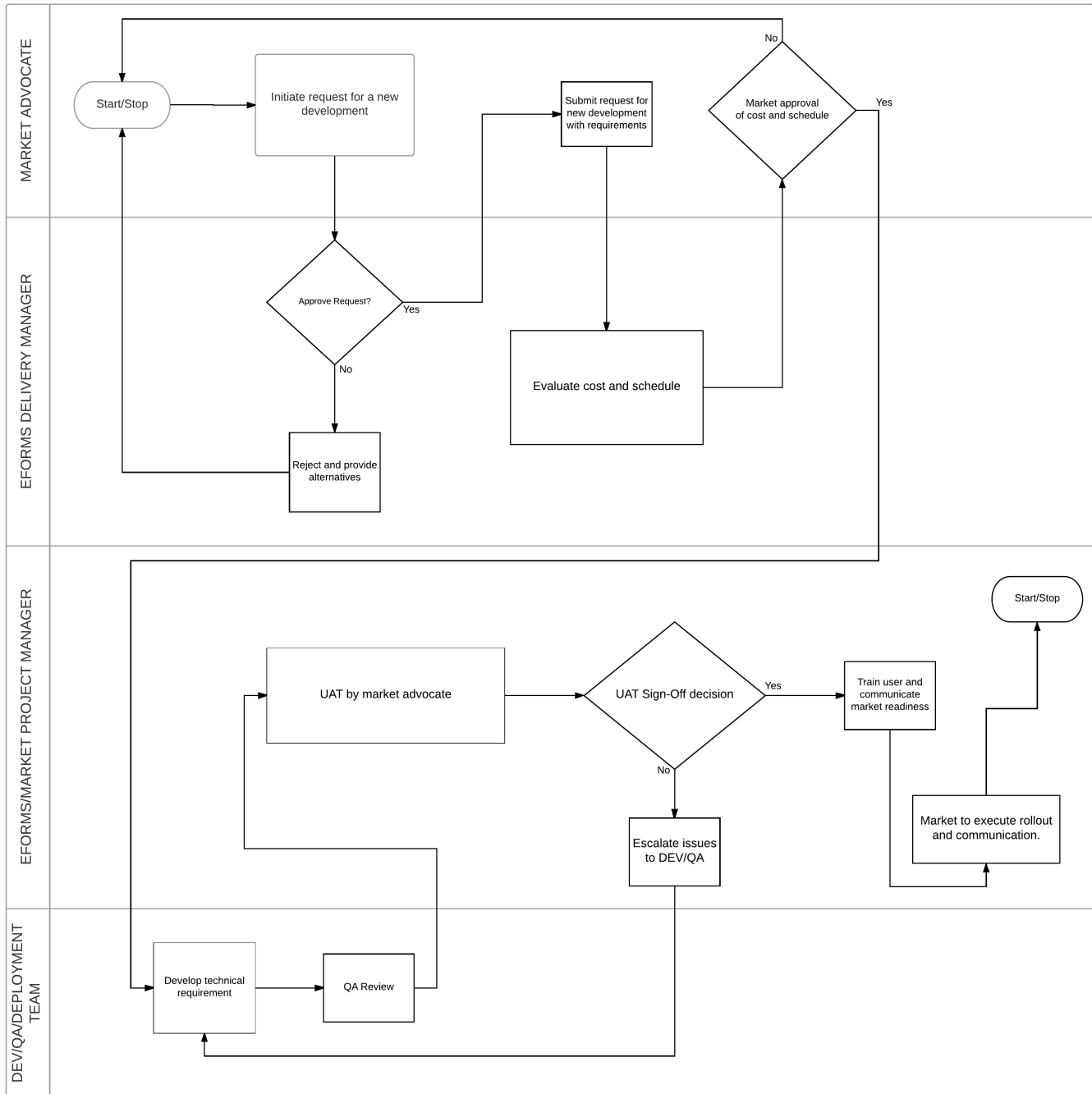


Figure 1 - AS-IS Strategic Model

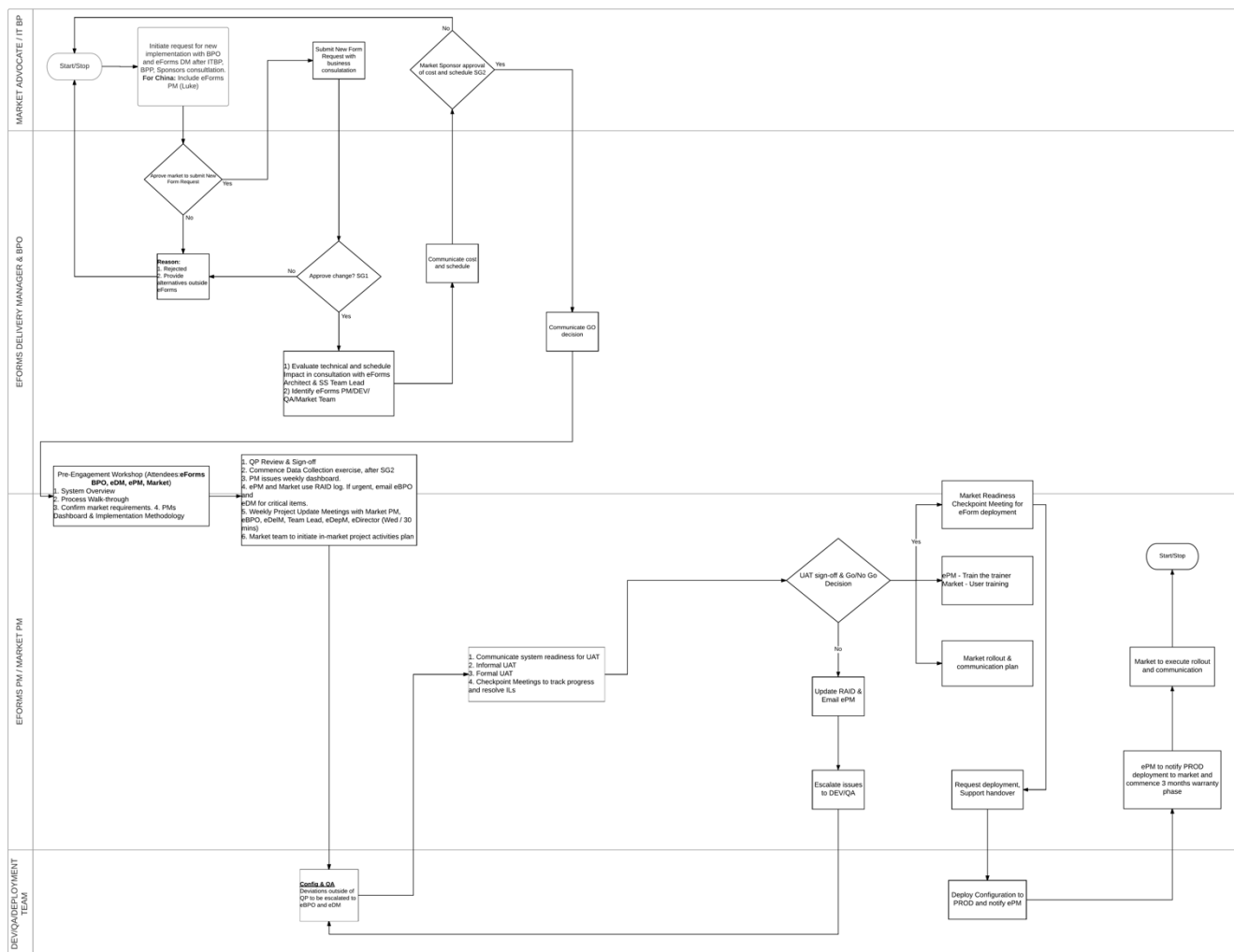


Figure 2 - AS-IS Functional Model

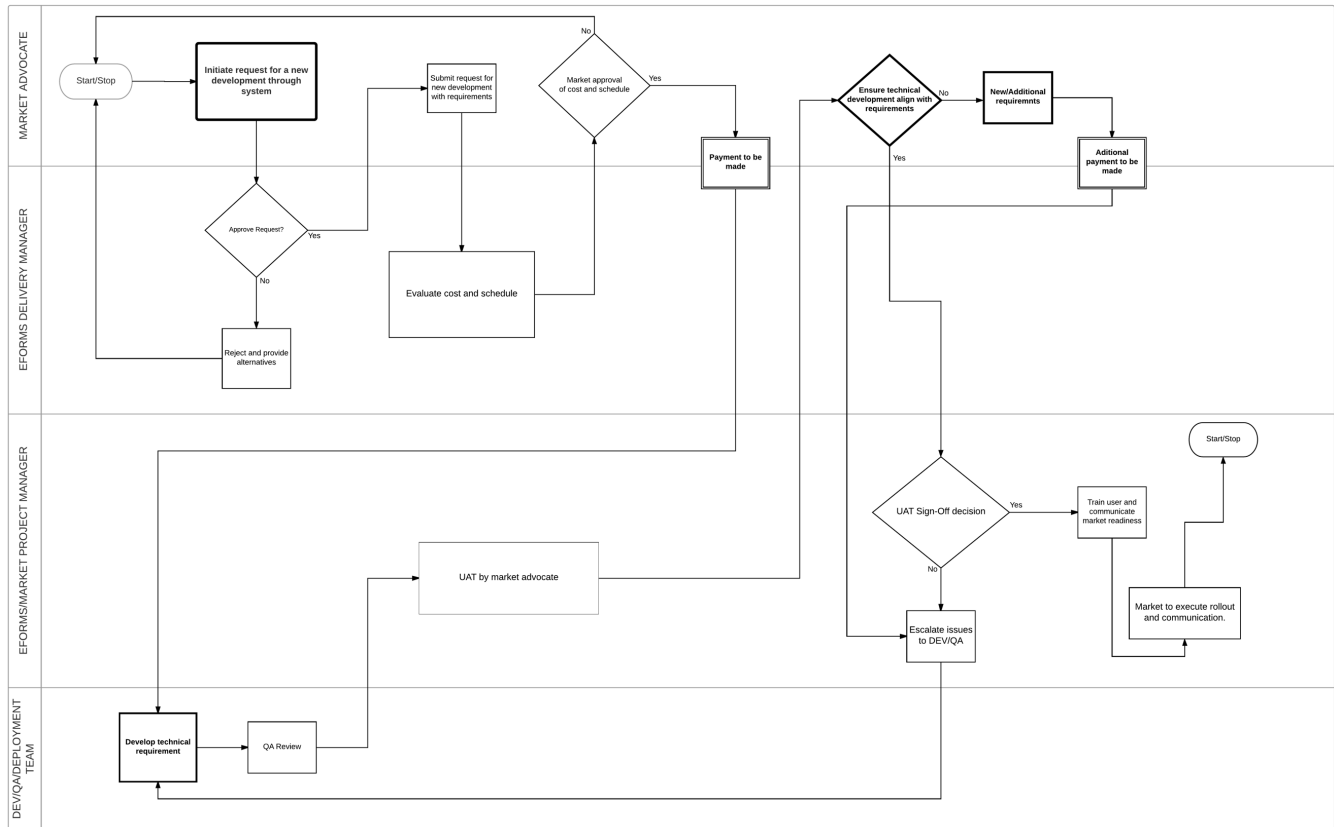


Figure 3 - TO-BE Strategic Model

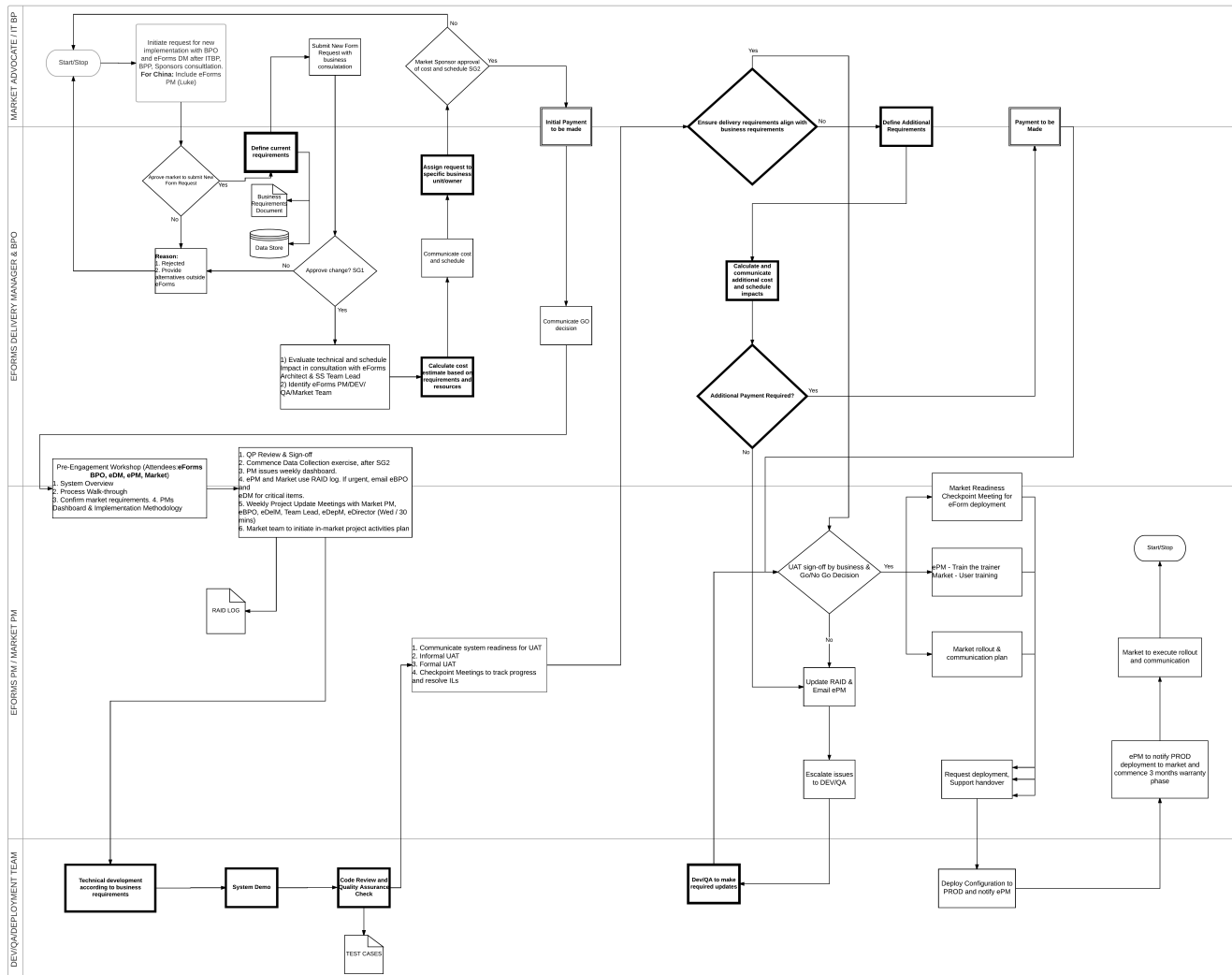


Figure 4 - TO-BE Functional Model

## BALANCED SCORECARD

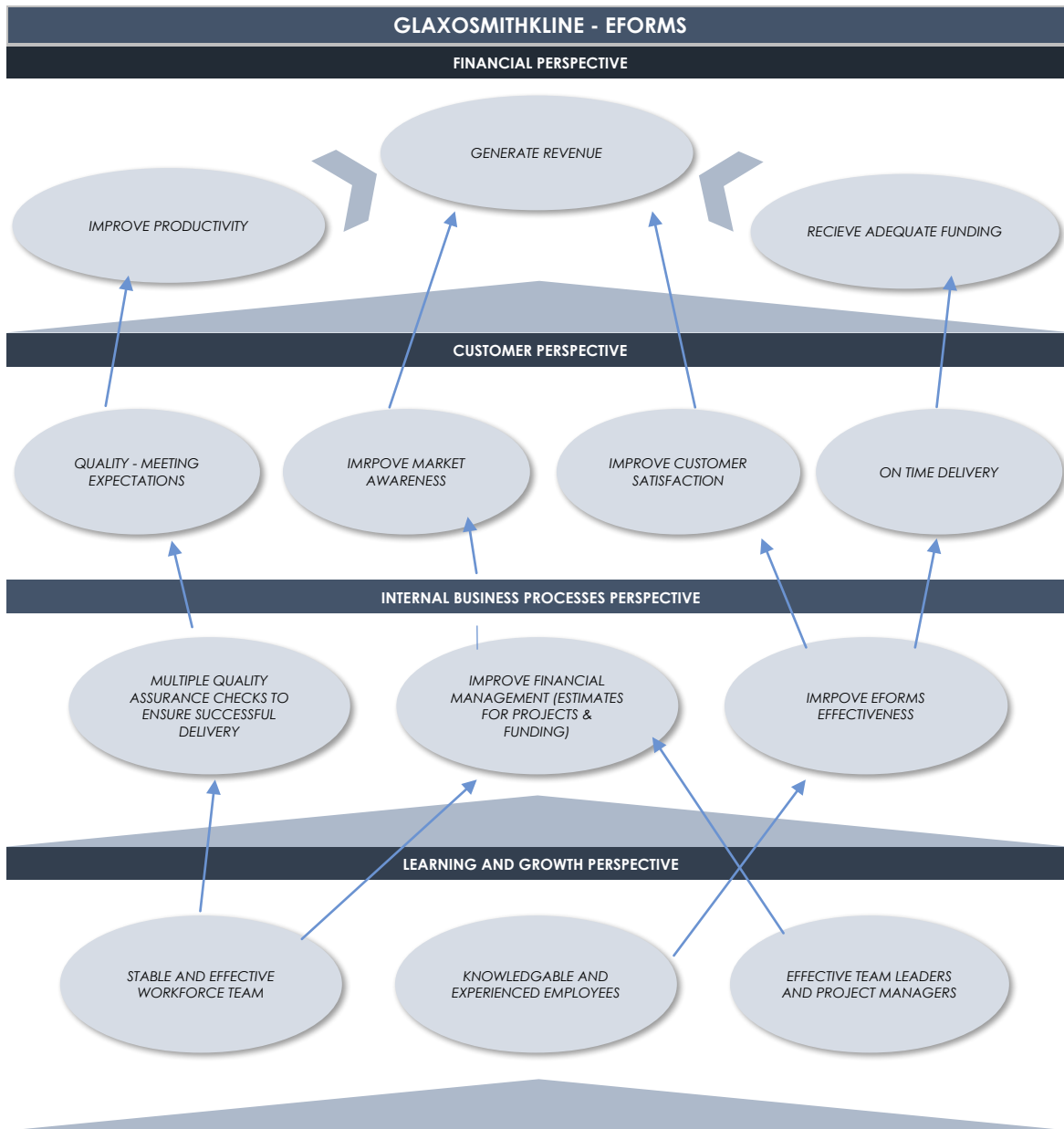


Figure 5 - Balanced Scorecard



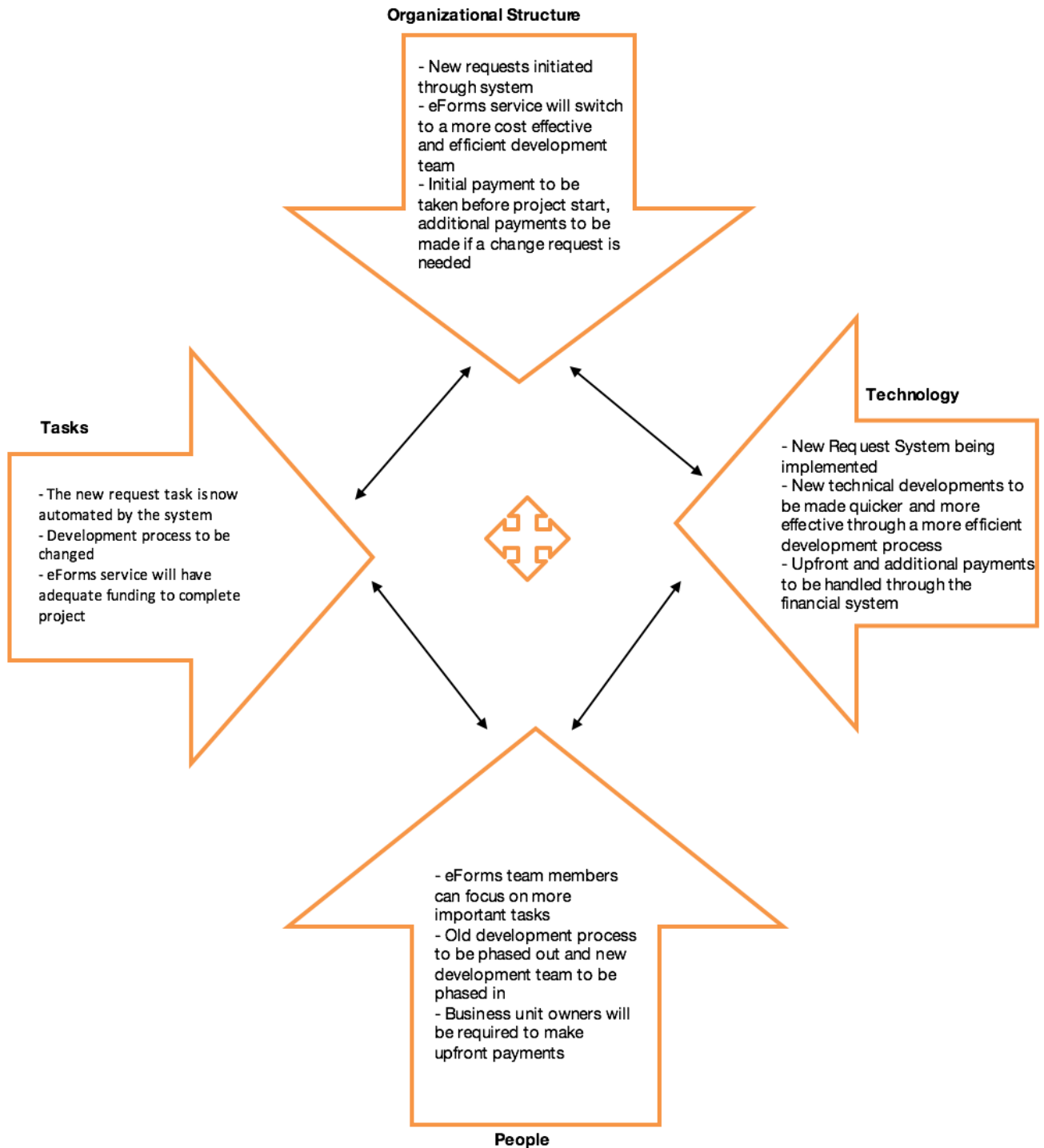


Figure 6 - Leavitt's Change Management Diamond

## References

*GlaxoSmithKline*. (2017). About us. Retrieved from: <https://www.gsk.com/en-gb/about-us/>