



# SFA Modernization Program

## **Data Warehouse Proof-of-Concept Plan**

Task Order 21, Deliverable 21.1.6

December 15, 2000



# Contents

- Introduction
- Background: NSLDS Architecture
- Background: Current Costs
- NSLDS Modernization High-level Plan
- NSLDS Proof-of-Concept Plan



# Introduction

## ***What is this deliverable?***

This is a Proof-of-concept plan, the last of several planning and analysis deliverables from Task Order 21, which focuses on NSLDS (National Student Loans Data System) re-platforming.

NSLDS was identified as a good starting point for beginning work on the enterprise data warehouse, since NSLDS:

- ◆ has a large student aid data repository
- ◆ is expensive to maintain and has quality issues
- ◆ can be significantly improved through better design and technology.



# Introduction

## ***What is this deliverable? (continued)***

The purpose of the proof-of-concept is to prove that NSLDS can do more for less. The proof-of-concept phase will allow more accurate planning of the implementation phase and mitigate risks related to schedule, costs, scope, technology, and user impact.



# Introduction

## ***A business case summary for modernizing NSLDS***

The business case for modernizing NSLDS is primarily based on NSLDS' annual maintenance cost of over \$20 million, and on the cost of creating new reports and queries, many of which are over \$100,000. We believe that if NSLDS is re-platformed and redesigned, the annual costs would drop by 25% to 40%, and the report/query creation would drop by as much as 90%.

The key factors that would enabling cost savings are:

- ◆ use of less expensive mid-range platform, as compared with the mainframe
- ◆ use of high-performance specialty tools, as compared with custom code
- ◆ use of proven data warehouse design principles, as compared with OLTP design for a “very large databases” (VLDB).



# Introduction

## ***What is the vision for a modernized NSLDS?***

- The modernized NSLDS could serve as a repository of data, driven by business area needs. It could consolidate and/or directly pull data from functionally distinct systems (e.g.. COD, Servicing, FMS) to present SFA with an enterprise view of customer, financial, program metrics, etc.
- The modernized NSLDS would leverage a flexible and open data warehouse architecture to deliver information with greater ease and speed. With a modernized design, it would allow users with little technical knowledge to create their own views, reports and queries.
- It would run on a more flexible architecture, utilizing COTS tools, and open and more manageable technologies.



# Introduction

## ***What is the scope of this deliverable?***

Since this is the final deliverable of Task Order 21, we wanted to make this a standalone presentation, representing our key findings and thinking related to NSLDS modernization. Therefore, along with the Proof-of-Concept plan, we discuss the business case, the technical architecture, and the cost components of NSLDS.

There is also a high-level implementation plan for modernizing NSLDS, which is followed by a top-down plan for implementing the Proof-of-Concept phase.

More details on cost/benefit can be found in the business case that was recently developed for the SFA Investment Review Board.



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# Background: NSLDS Architecture

## ***What are some of the key functions of NSLDS?***

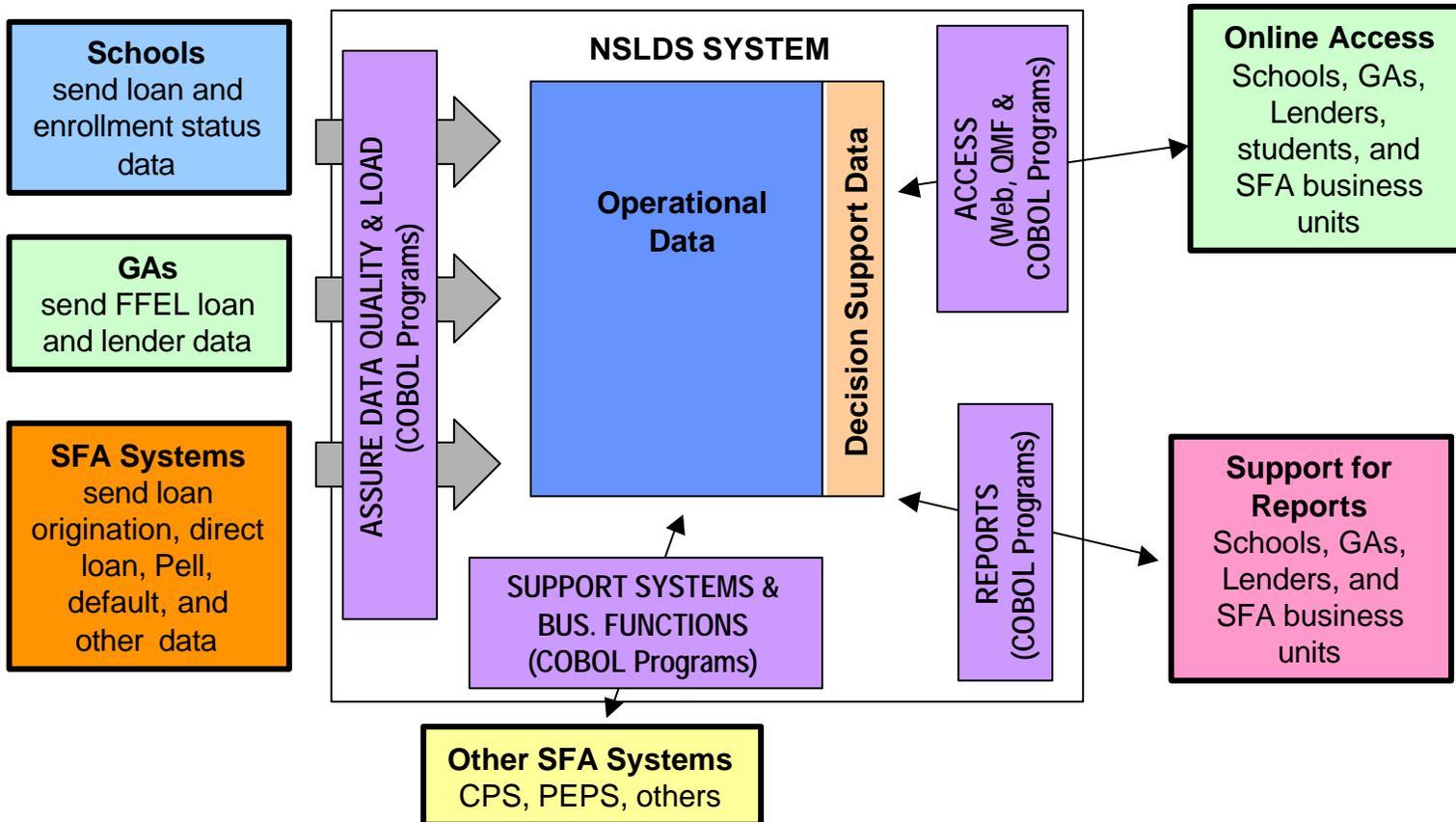
NSLDS provides the following functionality mostly by querying its database:

- Check student eligibility - pre-screening / post-screening
- Calculate default rates for schools, guarantors and lenders
- Calculate reasonability of payments to guarantors and lenders
- Capture and distribute student enrollment status
- Provide data to policy, research and other groups
- Other key functions.....



# Background: NSLDS Architecture

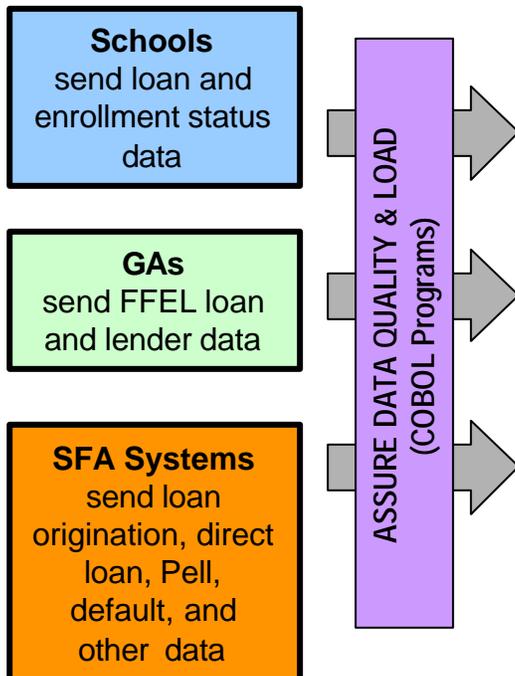
*How does the current NSLDS provide its functionality?*





# Background: NSLDS Architecture

***There are opportunities to improve the data population architecture.***



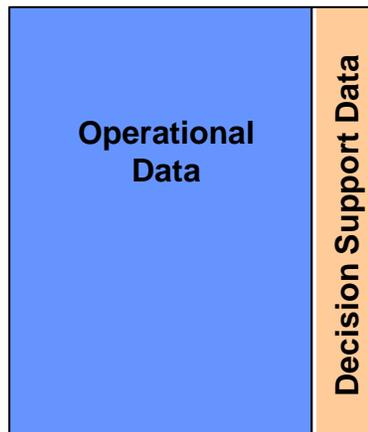
## Reengineering Opportunities

- In the longer term, import data from additional sources
- Work w/ data providers to get data more frequently
- De-couple the data structures from business logic
- Simplify data population schedule
- Use COTS tool (Informatica) instead of custom code



# Background: NSLDS Architecture

***There are opportunities to improve the database architecture.***



## Reengineering Opportunities

NSLDS' functions are provided through queries. So optimize the database for queries.

- Redesign database for fast queries and reports
- Separate operational data from decision support data
- Archive data
- Use flexible design to incorporate additional sources

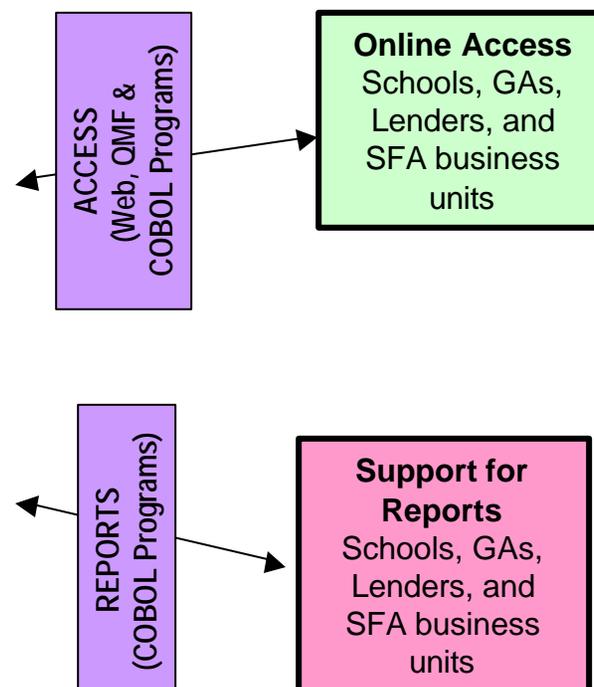


# Background: NSLDS Architecture

***There are opportunities to improve online access, querying and reporting.***

## Reengineering Opportunities

- Provide analytics for “slicing and dicing” of data
- Provide data mining capability
- Provide web access and web-based reports distribution
- Provide fast access and self-service query/report design
- Provide alerts when thresholds are crossed
- Pre-define frequently used queries and reports
- Use query and reporting tools (MicroStrategy, others) instead of code or difficult query tools





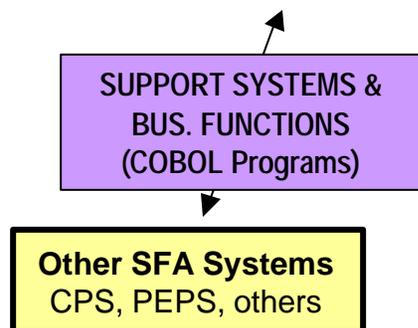
# Background: NSLDS Architecture

***There are opportunities to improve and expand interfaces to other systems.***

## Reengineering Opportunities

Today just a few systems request information from NSLDS. In the future, CRM, FMS, COD and other internal and external systems could request information from NSLDS.

- Intelligently separate operational data and decision support data to efficiently support all query types
- Pre-perform queries when possible for faster delivery of information
- Potentially use EAI to move data in near-real time from one system to another





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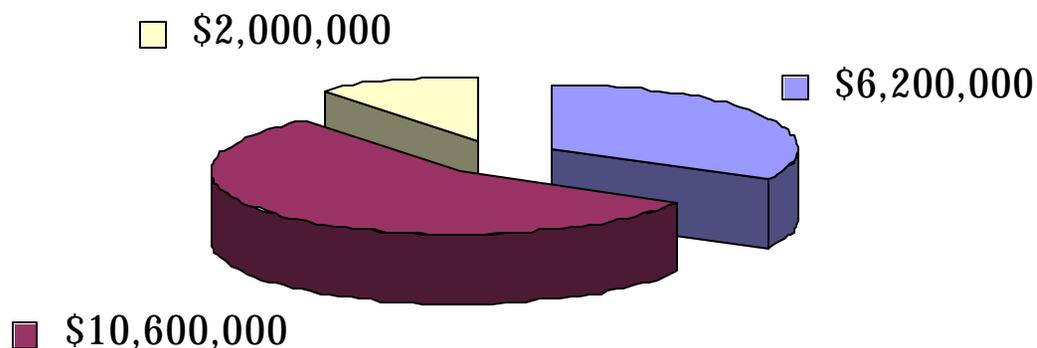
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# Background: Current Costs

***NSLDS' 1999 costs were about \$19 million, without enhancements.***

## NSLDS Operations & Maintenance (1999)

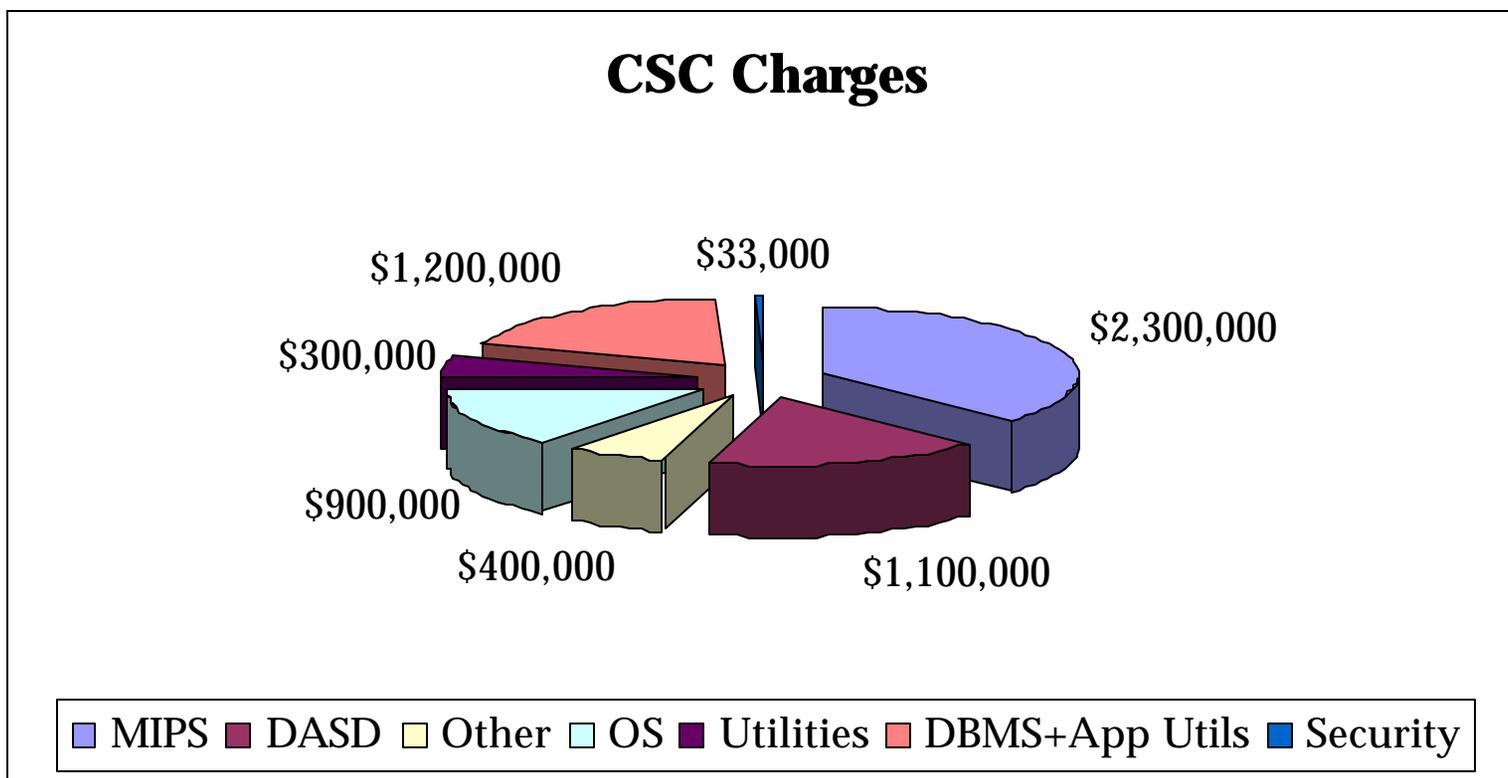


■ CSC Charges ■ Raytheon Charges ■ Other SFA Spending



# Background: Current Costs

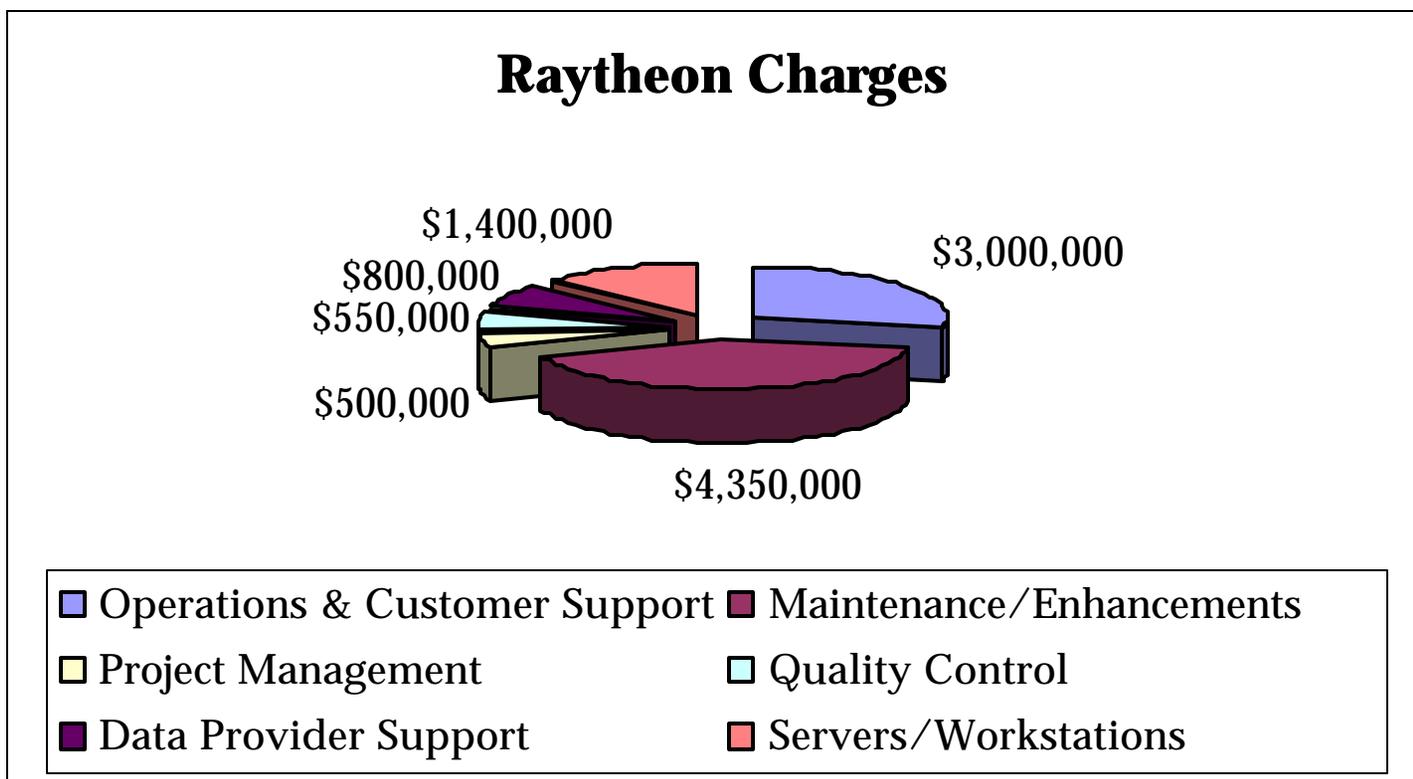
*CSC's hardware/software arrangement is based on estimated use of NSLDS.*





# Background: Current Costs

*Raytheon arrangement is based on estimated application maintenance costs.*





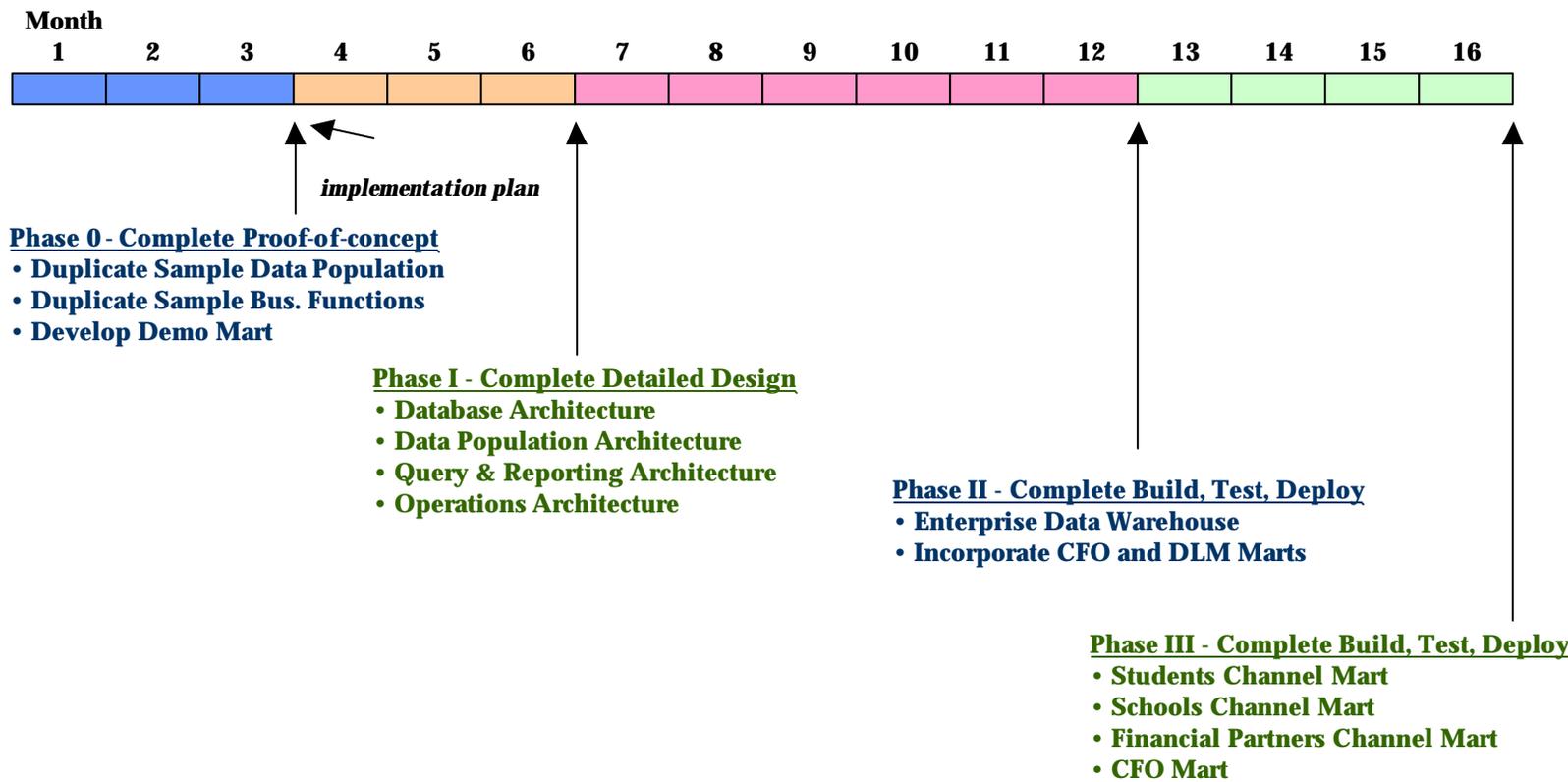
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# NSLDS Modernization High-level Plan

*How long will modernizing NSLDS take?*





# NSLDS Modernization High-level Plan

## ***What is approach for modernizing NSLDS?***

- After finding a business sponsor, Phases 1 to 3 will employ the Integrated Product Team (IPT) approach. The IPT will consist of stakeholders, system engineers, and advisors from both SFA's business units and external users (schools, guaranty agencies, lenders, researchers, etc).
- The Proof-of-Concept phase, however, will not use the IPT approach, since this phase will not result in a deployable system. This phase will focus intensely on making NSLDS do more for less. At the end of this phase, there will be a checkpoint to review the feasibility of moving forward, the cost/benefit, the approach, and the plan. This phase will also yield a preview demo of the new NSLDS that can be shown to internal and external groups.
- Phase III expects that SFA's Channels will want their own data marts. In this phase, the data warehouse team will be in position to rapidly deliver marts, leveraging the established architecture, tools, techniques, and knowledge of the data from previous phases.



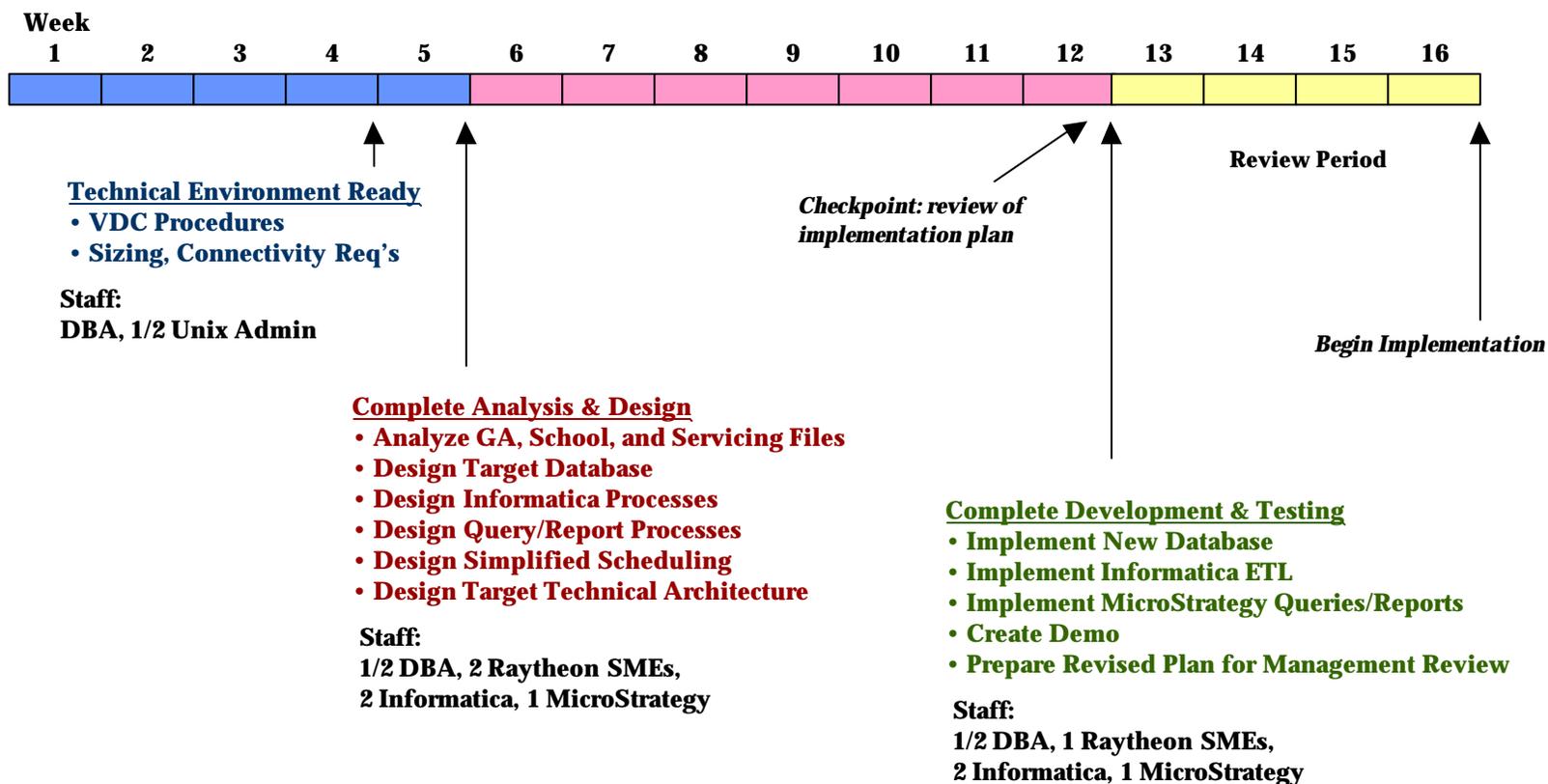
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# NSLDS Proof-of-Concept Plan

*What is the approach and staffing for this proof-of-concept phase?*





# NSLDS Proof-of-Concept Plan

## *What is the cost estimate for the proof-of-concept phase?*

The cost estimate for completing the proof-of-concept phase is \$606,000, which assumes professional services only, as shown below:

Technical Environment Ready			
Resource	Hours	Avg Rate	Cost
DBA	160	\$ 125	\$ 20,000
1/2 System Admin	80	\$ 125	\$ 10,000
<b>Subtotal</b>			<b>\$ 30,000</b>

Complete Analysis & Design			
Resource	Hours	Avg Rate	Cost
1/2 DBA	20	\$ 125	\$ 2,500
2 Raytheon SMEs	400	\$ 200	\$ 80,000
2 Informatica Specialists	400	\$ 225	\$ 90,000
1 MicroStrategy Specialists	200	\$ 225	\$ 45,000
1 Project Manager	200	\$ 200	\$ 40,000
<b>Subtotal</b>			<b>\$ 257,500</b>

Complete Development & Testing			
Resource	Hours	Avg Rate	Cost
1/2 DBA	140	\$ 125	\$ 17,500
1 Raytheon SMEs	280	\$ 200	\$ 56,000
2 Informatica Specialist	560	\$ 225	\$ 126,000
1 MicroStrategy Specialist	280	\$ 225	\$ 63,000
1 Project Manager	280	\$ 200	\$ 56,000
<b>Subtotal</b>			<b>\$ 318,500</b>

<b>Total Proof-of-Concept</b>			<b>\$ 606,000</b>
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