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Title:	Environmental Data Flow Six Sigma Process Improvement Savings Overview
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Environmental Data Flow
Six Sigma Process Improvement
Savings Overview

Background

The Environmental Data Flow Six Sigma improvement project covers LANL's environmental data processing following receipt from the analytical laboratories. The Six Sigma project started in September 2009. The project grew out of a cost-benefit on data validation conducted in mid-2009. This first stage in the project will be referred to as Phase 1 in this document.

The process improvements from the Six Sigma Yellow Belt process improvement project were all implemented in February 2012. The costs savings associated with Phase I and the Yellow Belt Six Sigma improvements are reported together in this document.

Improvements

The Six Sigma project identified thirty-three process improvements, broken into seven subgroups: implementing cloud computing, restructuring the data stewards' jobs, eliminating redundant data reviews, implementing change control on the system, incorporating Google maps, implementing automatic electronic validation (autovalidation) of the analytical data, and mapping the data process. Six of the improvements were never implemented. Two of the seven improvement subgroups (restructuring the data stewards' jobs and mapping out the data process) did not lead to any cost savings but did lead to more accurate sample planning and increased transparency into the system. One subgroup (implementing change control) had savings which could not be quantifiably separated from the cloud computing subgroup savings, so all savings from that subgroup are rolled into the cloud computing savings. The remaining four subgroups of improvements resulted in the savings documented here.

Assumptions

Savings will be reported for the four improvement subgroups.

Savings from the Phase 1 improvement described above occurred during the time period of 10/1/09 to 2/1/12. After 2/1/12, any savings from the Phase 1 improvement were convolved with the improvement subgroup for autovalidation and accounted for in those savings totals.

Other than the Phase 1 savings, all savings reported cover the cumulative six year period of FY10 through the end of FY15.

The cost savings reported in this summary were validated through February 1, 2014. All savings reported beyond that point are projected estimates.

Non-monetary Improvements

The improvements led to a significant reduction in the length of time required to deliver data to clients. Prior to the improvements, the median time period to deliver data to clients was on the order of 50-60 days, depending upon the client, with an uncertainty of 15-30 days. The improvements reduced that time to 1 day with an uncertainty of 1 day. These time savings constitute non-monetary savings.

Phase 1 Savings

Phase 1 savings were calculated by evaluating the percentage of time saved by modifications to data validation. That percentage was then applied to an actual invoice for a known quantity of validated request numbers, giving a dollars saved per analytical request figure. That savings was applied to the actual number of analytical requests that flowed through the system from 10/1/09 when Phase 1 was implemented to 2/1/12 when autovalidation absorbed the process. The total savings over that time period was $1,000,000.

Autovalidation Savings

Savings derived from implementing autovalidation were calculated in a similar manner. A total cost of validation per analytical request was obtained from invoice data as well as additional labor costs. Dollars saved per analytical request were obtained and savings were calculated by applying that to the actual volume of analytical requests flowing through the system from 2/1/12 when autovalidation was implemented to 2/1/14, the date of this cost validation report. Savings for FY14 and FY15 were interpolated based on estimates of flow through the system. Total actual and interpolated savings are $2,500,000.

Cloud Computing Savings

Implementation of cloud-based computing was associated with sixteen individual improvements. Actual savings associated with cloud computing were calculated by determining the average annual cost of running our previous databases from 1/1/09 through 12/31/10. Initial costs to implement the cloud system and ongoing costs to maintain the cloud system were subtracted, giving total savings of $10,000,000.

Change Control Non-monetary Savings

The cost to run the database prior to implementation of cloud-based computing was reduced by the implementation of a Change Control Board. The Board authorized changes to the data base that benefitted many customers, were cost effective, and fit within the limited budget allowed for improvements. This improvement has allowed the database to continue to meet customer needs despite funding levels. There were no direct monetary savings.

Data Review and Map Production Savings

Savings from eliminating redundant data reviews and producing maps individually were calculated from the salaries of the staff performing these tasks. This led to total savings of $1,100,000.

Savings Summary

Overall, for the six year period from the beginning of FY10 through the end of FY15, the validated actual and interpolated savings from the seven process improvement groups of the Environmental Data Flow Process Improvement was $14.6 million.