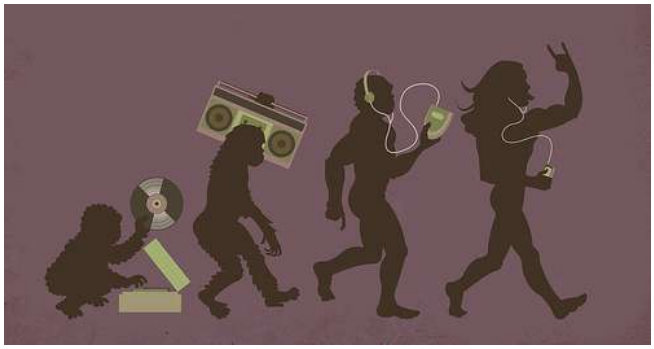
Driving Efficiencies at Selex

A Joint IntraStage and Selex Galileo Whitepaper

"The information visibility that a typical Information Worker has is extremely low. Their ability to dive into the business data is not there…they don't have it. The world of business intelligence has not delivered on that. XML finally addresses the ability to make this information really available."

-Bill Gates, MIT Lecture, 2004



Although the iPOD is now synonymous with a whole new paradigm of finding and playing music, it can be argued that the real revolution in music occurred when the MP3 format started to become adopted as the standard for playing music files at the start of this century. Before MP3, the evolution in these music formats has progressed from vinyl records to 8-tracks to cassettes to CDs. All these formats allowed people to play music in a standard way, but the MP3 took that evolution to a whole new level by driving the reproduction cost of music to zero (records/cassettes/CDs were all physical medium which had a cost while MP3 is a digital format) allowing rapid adoption by people around the world while allowing any computing device to play it.

Similar to what happened with MP3 is the revolution that is happening now with XML (EXtensible Markup Language). XML 1.0 was first adopted in 1998 as a standard way to describe and encode documents so that different software applications could understand the format in a readable form. Microsoft has adopted this standard for all its productivity applications, including Word, Excel and Powerpoint. The hope is that this will allow "data" inter-operability across not only Microsoft applications, but spur the development of other software that can read these documents without the complexity of writing software code.

In this whitepaper we will explore a Case Study with Selex Galileo Systems, a well-respected and established company based in Europe which designs and manufacturers complex aerospace electronics. We will look at their initial successes with implementing a Data Collection system around aggregating Test Data from over 20 years of legacy systems and their initiative to improve upon that through adoption of standards like XML or ATML (Automatic Test Markup Language).

"Within two months, we improved from our DPU (Defects Per Unit) rate"

The Selex Electro-Optics Group based in Edinburgh, Scotland has been developing complex electronics for the Aerospace and Defense industry for over 20 years. With over a dozen engineers in the Test Solutions Team, the focus on delivery quality product is of high importance. "10 years ago, every Project Team had their own way to generate and analyze the quality test data from a product. We generated a lot of test data and the manual effort to collect it, aggregate it and analyze it through ad-hoc software solutions was very time consuming" says Alisdair Smith, Senior Test Engineer at Selex Systems in Edinburgh. "Test data analysis was done when needed and on a sampling basis which got us to an appropriate level of quality".

In 2007, Selex Systems UK (comprising multiple sites) decided that it was time to bring in a software solution that could help them solve this problem across all product lines. IntraStage was chosen as the solution to bring together a database and web enabled solution that would get them right level of level of analytics on their test data.

"Within two months of implementation of IntraStage, we improved our DPU (Defects Per Unit) rate" says Alisdair. A DPU is an aggregate measure of yield as the product is assembled and tested. Armed with this early success and return-on-investment which included engineering productivity increases and bottom line results, the software solution was rolled out to multiple legacy products.

Scaling to the Future

As Selex started to bring on-line various legacy products into IntraStage, the challenge started to shift away from getting productivity and yield improvements to how to ensure that new products were being introduced efficiently without engineers re-inventing new test data formats. "10 years ago every new product team spent engineering time coming up with new test formats" says Donald Blythe, Test Engineering Manager at Selex. This impacted the company in a number of different ways:

- Caused engineering efficiencies for every new program to re-invent a test data format which does not leverage previous generations of best practices
- Non-uniform way to look at the data from R&D, manufacturing and field areas. Cannot get a unified view of how the product performed over the product life cycle.
- Fractured view of performance comparisons against different products. Management does not have a good view on what was good, excellent or needs improvement to get better or deploy the right resources to fix problems.

With this problem firmly in view, the Selex team started to look at some best-in-class ways to solve the problem.

XML as a solution

Just as XML is being used by Microsoft to standardize on ways to share data across different documents, it is now evolved into a core standard for a wide number of industries to share data. One such industry that has adopted XML is the ATE (Automatic Test Equipment) industry, which has introduced ATML (Automatic Test Markup Language). ATML is a collection of XML based schemas that represent test programs, test asset interoperability and test data.

"We believe that standardizing on a test format throughout Selex will get us a lot of efficiency gains and the ATML specification around test data is part of that solution along with the existing IntraStage XML schema," Alisdair said. The advantages of ATML include

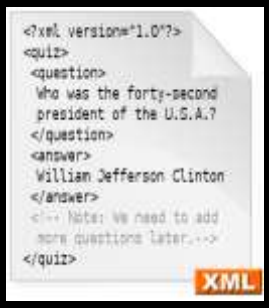
- Common industry language around Test Data
- Driven and adopted by the IEEE
- Companies can use it as a "selling differentiation" when providing quality data to their customers

By adopting a standard like this across the entire organization, Selex is also able to enhance their data set to include more information like instrument calibration status, Software versions, Operators etc. The more data tags that can be added, the richer the set of ways to find and root cause problems.

Conclusions

In this whitepaper we have explored how Selex Galileo systems in the UK have improved their operations through an automated way to collect, aggregate and analyze their product quality test data. By getting early successes on legacy products through improved yields and productivity, the problem shifted to scaling the system to the future and allowing a more robust way to analyze data. ATML is a potential standard that is being considered for adoption and deployment.

WHAT IS XML?



XML (Extensible Markup Language) is a markup language which allows you to separate the information content from details.

The most common markup language today is HTML, which is a way to describe web page formatting. For example to bold something in an HTML document you would describe it as <bold> ME </bold>. This tells the web browser to bold "**ME**" in the browser. The power of a markup language is the separation of information content from details such as formatting.

The same concept applies to ATML, where test data is described by "markup" tags.

About IntraStage

IntraStage is a Quality Management Software provider for companies who design and manufacture electronic products. We provide SPC, Yield, CP, CPK, and test data analytical tools by automating the retrieval, storage, mining and reporting of R&D, Manufacturing, Supplier and Field test data. Our clients choose us because we seamlessly integrate test data from different sources, lower their product design, manufacture and return costs by finding quality trends more quickly and accurately. Fortune 1000 companies rely on our business intelligence to keep them competitive when product quality and customer satisfaction are key differentiators.

About Selex Galileo

SELEX Galileo, a Finmeccanica company, is a leading player in defence electronics. The Company employs over 7000 people and operates mainly in three domestic markets: UK, Italy and the US through dedicated legal entities. With a distinctive strength in airborne mission critical systems, and a wide range of capabilities for the battlefield and for homeland security applications, SELEX Galileo is always offering the best solution to its customers. Further details can be obtained from our website: http://www.selexgalileo.com

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