This product is a comprehensive materials management suit that manages everything from the cost of the material to the different physical, chemical and environmental attributes of any metal / alloy. The software seamlessly integrates with windows domain, to provide 'n' levels of access control, right from the records a user can view / edit down to the attributes of any record.

The software has capabilities to plot graphs, compare different attributes of different materials, import bulk data, export data in different industry approved formats. Being a web based user interface makes it platform independent and thin client compliant.

The Challenge: Material Management being a highly specialized domain, the domain knowledge is extremely important to understand and guarantee the Quality of the software. The software deals with not only the physical properties of a particular alloy, but also with the thermodynamic / chemical properties. To assure the quality of the product, the test engineers would not only need to be well versed in software testing methodology but also would need to understand the physical, chemical behaviors, terminology used in the industry.

Solution: Dogra Technologies streamlined and implemented QA processes for the customer. Through schedules, on time deliveries and continues reporting, Dogra put the controls of the off shore team in the hands of the client to the point where the Offshore QA team became a logical extension of the client's development team.

Localization was a major concern for the customer. Based on our expertise in creating multi boot servers, we were able to diagnose any such localization issues instantly, by booting the same server in English and redoing the test to drill down the issue to a particular locale.

Dogra Technologies was involved in end-to-end testing of the product, on multiple Operating System and different browsers. We created test cases from smoke testing to regression testing. We helped the customer setup QA processes like smoke test notification mailers, creation of test plans, test case templates, test case reviews, testing cycle schedules and milestone reviews.

Dogra Technologies realized the client's needs for variable length QA cycles and created 3 versions of test cases.

• Basic Smoke Test

• Complete Smoke Test

• Full Functional Test

Using a combination of these tests Dogra Technologies was able to provide the client with a comprehensive solution for any time dependent deliveries that the client would need. The client was able to prioritize the testing effort according to the needof-the-hour. Using its knowledge and experiences learnt during prior product testing, Dogra Technologies was able to implement a sound QA process of Build acceptance, build verification and end to end testing.

We created and enhanced test cases for the new features being developed. Dogra Technologies gave customer a comprehensive effort estimate for each Test cycle, thereby providing the client a clear time frame for the new feature development / integration and bug fixes.

The types of testing done were – Smoke testing, functional testing, regression testing, stress testing, load testing, system testing, localization testing, and automation testing.

The deliverable from each of the QA cycles were – Smoke test results, functional test results, comprehensive test cycle summary, defect summary, QA confidence matrix.

Tools Used: On-time Bug Tracking Tool, Microsoft's Web Application Stress Tool, Load Runner, Quick Test Professional, PerfMon, NetMon, CPU Stress Tool, and Memory Grabber.

Further Contributions:

Localisation Testing: The product is an engineering product which sells in many different countries, and hence the localisation is very important concern to the customer. Dogra Technologies was able to meet customer's expectations by testing the applications on both French and Japanese Locale in addition to testing it on English Locale.

Performance Testing: Dogra Technologies did performance testing of the product, namely Stress testing and Load testing.

Stress Testing: Stress testing was done using Microsoft's Web Stress Application Tool to simulate multiple user hits on the web server. CPU stress tool was used to stress the CPU, along with memory grabber utility to reduce the memory that the application could use. Using the Web stress Tool, we generated 700 concurrent users. With CPU stress and Memory grabber tool we were able to simulate a Varity of conditions and tweak them according to various scenarios envisioned by the QA team and from valuable inputs from Granta. Being a web application with search, browse, plot and many more capabilities, we were able to simulate a real life scenario where not all users would use the same functionality and therefore wouldn't hit the same page. The results of these were plotted using Microsoft's Performance monitor, and shipped to the customer. These results gave insight into the different memory leak issues which the development team used to identify the culprit components and fix; thereby improving on the scalability and stability of the Product.

Volume Testing: Volume testing for this project involved testing the stability of a given system being subjected to large volumes of data. Using Load runner, we managed to create 1000 concurrent users, who logged in and used the same functions like search and browser, thereby overwhelming the application. The results were recorded using Network monitor. These test results helped the customer firm up the Product and make it more robust.

Network Load Balancing: Being a web based product the software is generally deployed in a Web Farm scenario. We suggested customer to use the Network load balancing for their Multi web server deployments and further tested the product in a multi server environment.

Automation Testing: We explained the customer benefits of automation testing by doing a detailed study of the test cases, and a sample pilot. Majority of the test cases were automated, which reduced the test cycles significantly. The tool used for Automation was Quick Test Professional.

Contributions to the Clients Knowledge base: Dogra Technologies was able to contribute to customer's Knowledge base by using its philosophy that every incident in the support database should result in a test case and an update in the Knowledge Base. The QA team took up the most frequently recurring support incidences and translated them into test cases at the same time providing workarounds and updates in the Knowledge base.

Usability Analysis: Our usability engineers did a thorough analysis on the product and have suggested improvements to the User interface to make it more comprehensive and user friendly.

Man-month Efforts: 16 man-months of testing efforts already put into the product.

Team Size: 4

Team Composition: Project Manager (1), Lead Test Engineer (1), QA (2)