Security IC Group at NXP Reduces Cycle Time While Raising Confidence

In Brief…

The Challenge

To accurately estimate schedules and staffing requirements to prevent schedule slip within NXP's Security IC Group.

The Solution

Use Numetrics IC Project Planner ™ to create schedule estimates and staffing plans based on the chip's complexity.

The Impact

Found that NXP Smart Card projects were being consistently understaffed.

The Value

Now applying *Planner* to all projects to ensure proper staffing to achieve highly competitive cycle times.

Dr. Thomas Wille runs IC product development at the Identification business unit of NXP Semiconductor and is based in Hamburg, Germany. His group is responsible for the "smartcard" chips found in a variety of contactless and security products for the multi-billion dollar identification market. He had been managing chip development projects for well over a decade and his frustration with schedule slip was growing.

Schedule slip was an insidious problem threatening to drive customers to competitors. He needed to find a way to accurately estimate schedules and staffing requirements, as well as get a better handle on the complexity of the designs his group was about to undertake.

Dr. Thomas Wille recalled a recent conversation with Ton van de Kraats, NXP's business risk assurance manager. Mr. van de Kraats mentioned Numetrics Management Systems as a company providing software tools for improving schedule predictability and measuring schedule risk. When Dr. Wille inquired further, Mr. van de Kraats explained that a number of NXP's project managers had begun applying the Numetrics solution and were reporting very solid results. Upon further examination, Dr. Wille found that managers in other business lines were using the tools to do exactly what he wanted—calculate chip design complexity, quantify schedule risk, and estimate schedules and staffing requirements.

The Solution

A few weeks later Dr. Wille had a license to use Numetrics' IC Project Planner™ ("Planner"), which combines Numetrics' patented design complexity calculation engine with its project plan synthesis technology. The tool measures schedule risk and generates schedule and staffing estimates for chip development projects.

Planner measures schedule risk by calculating the design's complexity and then benchmarking the project plan's schedule and staffing assumptions against industry norms and past performance. It creates schedule estimates based on the chip's complexity and the manager's staffing plan. Conversely, it bases staffing estimates on chip complexity and schedule constraints the manager imposes, calculating required team size and corresponding productivity. In addition to generating estimates of cycle time and staffing, the tool enables users to rapidly perform tradeoffs among the critical constraints on the project: schedule vs. staffing-level vs. chip complexity. In this way, the tool supports "what if" project plan simulation.

Dr. Wille wanted to test the product's premise himself by running a test case. He used one of his almost-finished projects, which was chip

development project. In just a few hours he entered the chip's technical description and staffing information into the Numetrics software. The tool calculated the design's complexity and generated an estimate of the project's duration.

When the project finished, Dr. Wille compared the Numetrics result to what actually happened. He was amazed! Numetrics' Project Planner predicted almost exactly the actual schedule his team achieved .*"That was really something,"* said Dr. Wille. *"It was strong evidence that there was something to this tool."*

Dr Wille then turned to the Numetrics IC Industry Database, a compilation of over 1400 benchmarked IC projects, including a good sampling of smartcard devices. He wanted to determine what the industry norm development time would be for his smartcard projects.

Since the complexity calculation engine normalizes design complexity among projects, he was able to see exactly how quickly the industry could develop his devices. He was surprised about the industry's performance, but upon further examination of the Database, he found that he was understaffing his projects compared to industry norms. Dr Wille benchmarked other projects and began to see a clear trend. He was consistently understaffing their projects compared to the industry norm— sometimes by as much as 2X!

This revelation led to action—Dr. Wille decided to run Planner on nearly all of his upcoming projects, to compare the results to industry norms to ensure that he was staffing his projects to achieve highly competitive cycle times. *"We've made Numetrics a mandatory step for ensuring proper up-front planning,"* says Dr. Wille.