Big data analytics: Pursuing multi-million dollar opportunities

Five people. Six months. $10 million in ROI.

Those were the parameters and goals of Intel IT's initial big data projects, which started in earnest three years ago.

"We wanted to prove that big data analytics are achievable and valuable," says Itay Yogev, Advanced Analytics Director for Intel IT. "And we wanted to realize a significant payback in a short timeframe with only a small team."

If current activities are any indication, those initial projects were wildly successful. According to Yogev, Intel IT has completed more than a dozen big data initiatives within the original parameters. Now the organization is pursuing much higher value opportunities.

"We are taking big data initiatives to the next level," Yogev says, "we are now working on programs that can deliver $100 million or more in ROI."

Identifying those opportunities is a matter of understanding Intel priorities, he explains. Some of the programs are based on current initiatives, such as accelerating the design and development of System-on-Chip (SoC) products. Others are ongoing business imperatives, such as reducing costs and increasing revenue. In all cases, the company is tapping the collective wisdom of Intel IT as well as an advanced analytics team that is distributed among and entrenched within different Intel business groups.

"We cannot identify the best big data use cases in a vacuum," claims Yogev. "We must utilize our close relationships with the business to truly understand their challenges and opportunities."
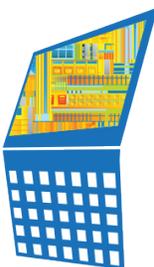
Once project possibilities are identified, the advanced analytics team works to quantify them. Through a comprehensive value assessment, the potential return of each project is calculated, including the probability of success and the estimated timeframe for achieving it. The projects that can deliver the desired ROI in a reasonable amount of time with a minimal amount of risk are formally pursued, while all others are placed on hold for future consideration.

Four projects with big potential

The advanced analytics team within Intel IT is currently pursuing a number of big data projects, several of which represent extremely high-value opportunities.

5 people

6 months

$10 million in ROI

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Advanced Analytics Director for Intel IT

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The team is working with the design organization, for example, to improve post-silicon debugging and validation. The goal is to speed up the validation of prototype chips, without compromising quality. Doing so can help identify and prevent mistakes before the chips go into mass production, potentially saving the company many millions or even billions of dollars.

"We are using historical data to create smart algorithms and a decision support system that enhance the validation process," Yogev explains. "The algorithms are helping us increase our coverage of the transistors on the chip, refine the root cause analysis of bugs, and improve the integration testing of components."

While the final results of these efforts are not yet known, the initial simulations are very promising. The team expects to attain the same transistor coverage with 36 percent less effort. The root cause of bugs and other issues can be predicted with an estimated 90 percent accuracy. And the effectiveness of integration testing is projected to increase by 400 percent. All of these improvements represent significant time—and therefore cost—savings.

Unit personalization is another area where big data analytics are being applied. The cost of testing is a significant cost component. Intel has historically used the same types of tests for all units. By personalizing and tuning the tests for each unit, manufacturing groups can greatly reduce the cost of testing while also improving the quality of the final product.

Big data opportunities are not only reserved for design and manufacturing groups. The advanced analytics team is also working with IT groups to better protect Intel from security breaches. Sophisticated malware and advanced persistent threats—which may sit quietly in any given system and slowly send out information and intellectual property—are becoming more common and are extremely difficult to detect.

By processing huge amounts of real-time network data, Intel IT groups are able to uncover anomalous behavior, pinpoint threats with small footprints, and fortify their defenses against a specific threat.

"We are processing and analyzing a half terabyte of data every hour," says Yogev. "And, we've successfully identified and eradicated sophisticated malware that we may not have been able to detect in the past."

The advanced analytics team is also working with Intel's channel organization to identify and prioritize high-volume sales opportunities. Using a predictive analytics engine to learn more about how resellers engage with Intel, the sales team can discover new revenue opportunities and better support these key partners.

The analyses help determine when an account should be contacted and what products and assistance to offer.

"We have already identified more than $13 million in new sales opportunities," Yogev says, "and we expect to realize more than $30 million annually by the time we scale these analytics globally."

400% increase in effectiveness

same transistor coverage **36% less effort**
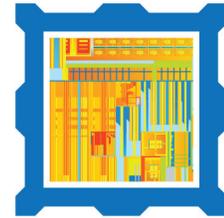
bugs & issues predicted **~90% accuracy**

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While these big data projects already represent significant financial opportunities, the ROI is expected to increase over time. As more data is acquired and analyzed, and as algorithms and predictive capabilities are refined, the size and value of each opportunity becomes greater.

"Using advanced analytics," says Yogev, "we are helping Intel be more optimized and data-driven organization."

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$30M in revenue