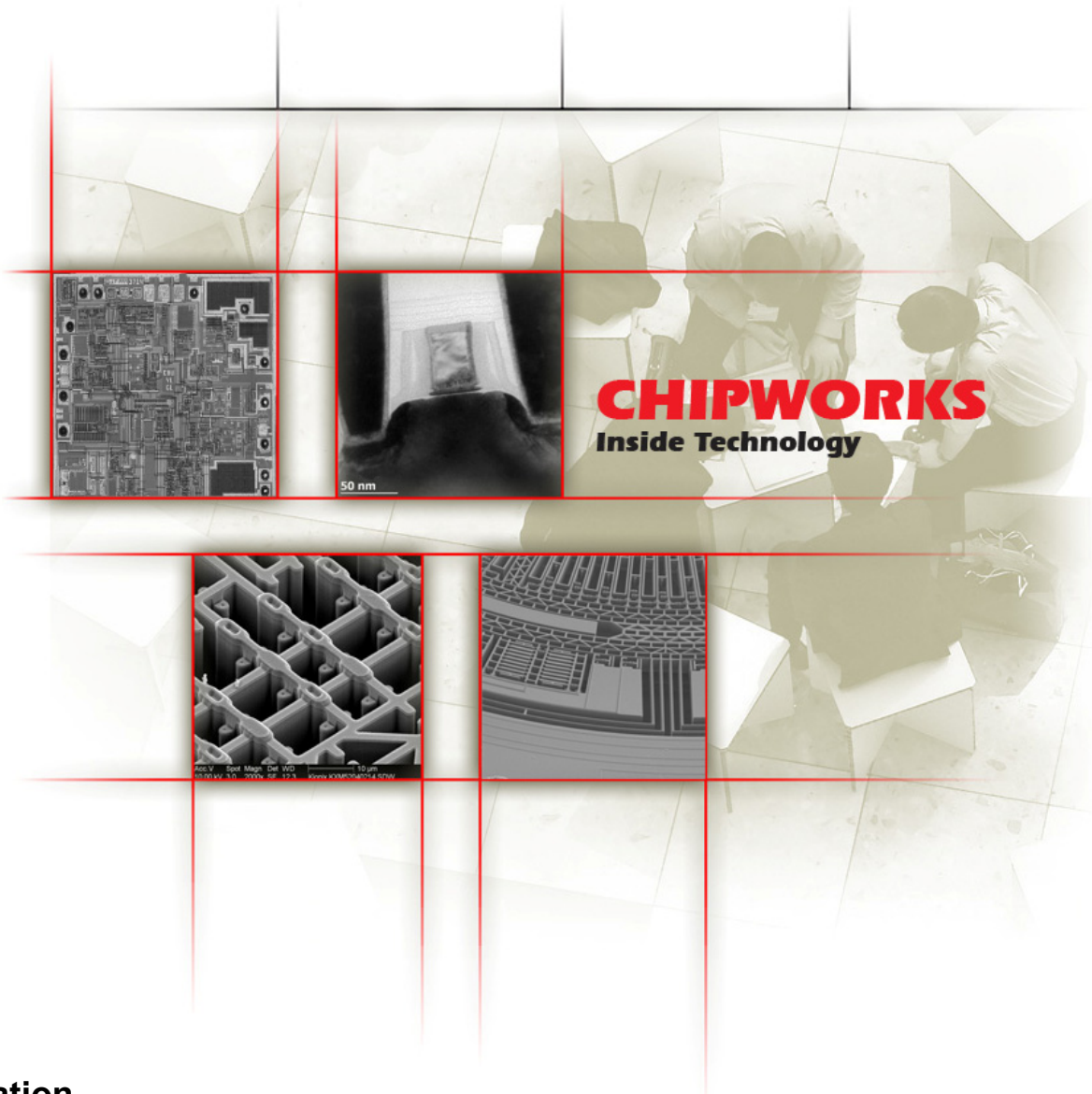


# Global Leader Cuts Design Time by Two Months & De-Risks \$200M Investment



## Situation

A semiconductor company, known for its high performance telephone handset components, enjoyed annual revenue in the tens of billions of dollars. It was intrigued by a Chipworks blog, revealing that one of the world’s largest semiconductor companies, rumored to be using a superior but difficult technology, was actually outsourcing its manufacturing.

Undecided on its technology direction, the company knew it had to quickly make a decision to retain its place as a market leader.

*“This was a decision that would determine the course of our business well into the future; we needed insurance that we wouldn’t make the wrong design choices,”* said the company’s Engineering Manager, Process Development.

### Competitive Technical Intelligence

Leapfrog  
the competition



Cut design costs



Speed time to market



Assess ability to win  
in new markets



De-risk product  
development

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## Approach

The company had spent 24 weeks debating the need to leverage transistor strain engineering in its 65 nm process. To date, the debates had drawn upon information from its own reverse engineering initiatives, but it was inconclusive. The company was inclined to continue to use its existing process – to avoid potential manufacturing disasters and rapidly introduce new devices.

Unresolved, the Process Design Team turned to Chipworks for proof that the world leader had perfected the debated doping technique, and for reference documents it might use to accelerate its own designs.

## Solution

Using reverse engineering, Chipworks examined a cross section of a PMOS transistor and an NMOS transistor, analyzed their composition, and prepared a structural analysis report. With its transmission electron microscope, Chipworks completed chemical and materials analyses that identified the conductivity technique, the materials used in the transistors, their size, their shape, and the manufacturing process employed. The report, completed in six weeks, proved that the market leader indeed used the new technique, and provided a benchmark for future processes.

Armed with the report, the company held a Kaizen meeting, including executives and board members, to review its future technology direction.

## Results

The company decided to adopt the new technique. The Chipworks report helped end the internal debate, and cut two months off the process development effort. The cost savings in R&D alone paid for the investment in Chipworks 25 times over.

The investment in Chipworks also de-risked the entire new process development effort. At risk was a \$200 million decision to invest in a new product, which eventually became a \$2 billion infrastructure investment, across dozens of future product lines. By allocating a tiny fraction of one percent of the new process development budget to competitive intelligence, the company de-risked the launch and laid the groundwork for success.

*“The Chipworks report settled the internal issues, and allowed us to go to market faster than if we had tried to do the work ourselves,”* said the Engineering Manager.

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