



ROI for HDP User Group Cooperative Research

Membership in HDP User Group allows companies to leverage their research dollars, attaining quality research results for far less money. This is accomplished by partitioning the research tasks among the Member Companies who volunteer internal resources to accomplish the task. The research work is done by the volunteer companies using the resources of their companies, as available, and sharing the results among the membership. When member resources are not available, HDP will fund outside entities to provide that work. Examples of this type of work might be thermal cycling or board procurement or investigation of thermal-electromigration.

Below is an actual ROI (Return on Investment) example comparing expenditure by a single company participating in HDP Projects, to estimated single company costs to achieve the same results. The example shows actual expenditures and estimated value of resources contributed to HDP projects during the 2002 timeframe. This includes time/materials supplied by member companies and is compared to the estimated costs to the member companies to internally fund/drive similar projects.

"We've calculated the Return on Investment for HDP Membership at Sun Microsystems in order to justify our investment to Finance and our Management team. This calculation never falls below %800 per year, or an ROI of less than 2 months. This is on top of the intangible benefit of the informal atmosphere and willingness of the participants to discuss mutual problems and solutions"

~ Dave Love
Manager, Interconnect Technology and Materials
Sun Microsystems

A. Resources contributed by a typical Member Company to HDP Projects:

Board Design	\$0
Board Procurement	\$0
Thermal Cycling	\$0
Modeling	\$0
Failure Analysis	\$0
In Kind Contribution for above	\$30,000 (ave. est.)
Staffing Project (4 man mo.)	\$33,000
HDP User Group Dues (2 years)	\$30,000
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Total	\$93,000

B. Resources required by a non-HDP User Group Member Company to gain the results of the same HDP Projects by doing the work “in house”:

Board Design	\$23,000
Board Procurement	\$203,000
Thermal Cycling	\$186,000
Modeling	\$70,000
Failure Analysis	\$26,000
Staffing Project (14 man mo.)	\$110,000
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Total	\$628,000

Based on the above estimate, a member company realizes \$628,000 in benefits for an expenditure of \$93,000, a ratio of almost 7 to 1.

In order for a company to achieve the same results, almost 7 times the expenditures of manpower and expense would be required. Membership in HDPug, International allows member companies to multiply the resources allocated to a project as well as allowing access to the best practices of other companies. This represents a significant cost benefit.

“The High-Density Packaging User Group (HDPUG) has been at the forefront of evaluating environmentally-friendly technologies within the electronics industry. Member companies have the opportunity to share information and leverage resources to help enable technology transitions such as lead-free, halogen-free, etc to prepare for regulatory and/or market environmental trends. HDPUG is uniquely positioned to address member needs while producing meaningful results that benefit the overall industry.”

**~ Scott O’Connell
Environmental Program Manager – Environmental Affairs
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