IP Logic Report Summary For TAP

While in the case of many reports the addition of an on-line, or other type of survey, adds very little value, in the case of Intellectual Property (IP), a survey can add as much value as the report itself. In the case of the embedded logic intellectual property report, the input of design and product engineers can enhance the value of the data and discussions presented by an immeasurable amount, as well as give the reader an additional perspective of what is going on in the market from their peers in the industry. In-Stat/MDR, through its' Primary Research Group, conducted an on-line survey, targeted at engineers and management, so as to obtain their feedback to a series of questions related specifically to the licensing of intellectual property. Key, but not all, survey questions included;

- Which of the following types of semiconductor intellectual property does your company license (logic, memory and/or analog)? (Please select all that apply)
- Which, if any, of the following logic intellectual property cores does your company license? (Please select all that apply)
- Which of the following licensing methodologies does your company use (one-time fee, annual-fee, royalty, etc.)? (Please select all that apply)
- Using a 1 to 5 scale, how important is each of the following IP product characteristics to your company: Core size, core performance, ease of integration, engineering support, design for test, software tools, configuration options, licensing payment options, and pre-qualification on your target foundry.
- Using a 1 to 5 scale, how important is each of the following IP product characteristics to your company in deciding whether to design yourself or select external IP: Price, IP complexity, IP outside my organization's core expertise, risk reduction of design, and time-to-market.

Other survey questions that were included addressed from which companies the intellectual property was licensed, whose EDA tools were used, the importance of which foundry the intellectual property was qualified, along with what will be the biggest challenge/issues facing the intellectual property licensee in the future, as well as the semiconductor industry, in general?

Relative to the first survey question listed above, logic intellectual property represented the largest segment, accounting for 40.3% of all responses. Please bear in mind that was a multiple response questions, with a total of 147 respondents. Of these 147 respondents, there were a total of 360 responses. Not surprisingly, in second place was memory intellectual property, with 99 positive responses, which accounted for 27.5% of all responses. The remaining two intellectual property segments in this question were analog and RF, with responses of 68 (18.9%) and RF with 48 (13.3%) responses. The two intellectual property categories expected to grow the most (or fastest) in the future, based on one-on-one discussions, will be memory followed by analog. The major reason for the growth in analog relates to its improved performance versus logic, at and below the 90-nanometer design rule node.

When it comes to the licensing of logic intellectual property, as defined by the second questions listed above, the two most commonly licensed intellectual property cores

were the MPU, with a total of 133 responses (15.8%), and the DSP core with 83 responses (9.9%). No really any surprise here, as these are the two most common functions found in any design, be it ASIC or ASSP. The remaining other major embedded intellectual property functions, soft-core and hard-core combined, which accounted for at least 5.0% of total responses, include; PCI (6.3%), USB 2.0 (6.3%), PLLs (6.2%), I/Os (7.8%), Ethernet (6.2%), and FPGA (5.1%). Of all these responses the most interesting is the FPGA, which as In-Stat/MDR has addressed in other reports, will be one of the most highly sort embedded functions in future designs.

Relative to licensing methodologies, the most common involved the payment of royalty, with most also including a one-time or annual-fee. Those companies whose licensing methodology included the payment of annual fees, also referred to by many as maintenance fees, are companies who envision the need for evolutions of the core initially licensed, which is the case far more often than not. Of the licensing methodologies that involved royalties, with or without annual-/one-time fees, this approach accounted for 126 responses, or 56.3% of the total. Depending upon economic conditions, coupled with the relationship between the intellectual property provider and the licensee, the licensing methodology can shift from one extreme to the other.

Relative to the other two major questions listed on the previous page, with the first being; how important are each of the following IP product characteristics to your company. For this question, the most important characteristic was pre-qualification at your foundry, with an 11.9% market share. If we combine importance levels 1, 2 and 3, then configuration options take first place, with a total of 69, or 50.4%, positive responses. This is not surprising, as the cost of future technology continues to escalate nearly exponentially, configuration options, or better put functional reconfigurability, becomes far more important so as to meet cost and time-to-market goals.

For additional information on the total survey, and overall responses, along with a detailed analysis of the independent logic intellectual property provider market, which encompasses licensing methodologies, hard-core versus soft-core approach, along with targeted end-use applications and geographic consumption, refer to In-Stat/MDR Digital Engines Service report number IN0401398DE, entitled “Independent IP Logic Market: The Designers Foundation, And User Survey,” published in August 2004.

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