



## OCP Adoption

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### OCP and UC Berkeley's Department of EECS

Composing intellectual property (IP) blocks is an essential element of a design methodology based on reuse. The composition of these blocks is notoriously difficult, especially when the IPs have been developed by different groups inside the same company or by different companies. Several approaches have been proposed for specifying component interfaces that capture behavioral aspects, such as interaction protocols, and for verifying interface compatibility. Likewise, several approaches have been developed for synthesizing converters between incompatible protocols.

Based on discussions about some of their research with Roberto Passerone, a Ph.D. candidate at UC Berkeley, his group in the Department of EECS has introduced the notion of "adaptability" as the property that two interfaces have when they can be made compatible by communicating through a converter meeting specified requirements. This notion greatly extends the flexibility of reusing components in different contexts.

The group has developed techniques to automatically verify compatibility and synthesize protocol converters that adapt the interaction of otherwise incompatible IPs. In practice, IPs could be designed in terms of a generic, high-level, communication mechanism, thus effectively decoupling computation and communication. The appropriate adapter is synthesized at instantiation time. OCP is a standard protocol for the onchip communication of different components, and is therefore a natural target for the synthesis procedure. More complex architectures are also possible, and part of the research is devoted to automatically synthesizing the appropriate topology of the interconnection network given the communication constraints. The group is also studying de-synchronization techniques for a more efficient and reliable implementation of large networks.

With 500 graduate students and an annual enrollment of approximately 1,300 undergraduate students, the Electrical Engineering and Computer Sciences Department at UC Berkeley is consistently ranked among top combined EECS departments. For more information, visit [www.eecs.berkeley.edu](http://www.eecs.berkeley.edu).

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