I recently returned from my second trip to India this year. Some amazing results are being reported by the Indian software community – the number of level 4 and 5 software organizations in India is growing dramatically.

The first well-known Indian software organization from a process maturity perspective was Motorola India Electronics Lab (MIEL). Barely two years from its founding, MIEL was assessed at level 5 in 1993. Special circumstances abounded. MIEL was established by a company that is famous for its world-class quality. It was founded with an explicit goal of achieving software process maturity quickly. Its first manager was also one of the first Motorola employees trained to do software process assessments. Starting with a quality and process oriented culture and the resources of Motorola behind it, it is hardly surprising that MIEL achieved high maturity quickly or that it continues to improve its process capability, as reported at the first Indian Software Engineering Process Group (SEPG) Conference, held in Bangalore in February of this year.

Other Indian software organizations, however, have also reported dramatic process improvement. Is the Indian software culture unique in some sense? In a few cases, concerns have been expressed that the business results do not reflect the capability of a true high maturity organization. While one factor in this phenomenon may be that the Capability Maturity Model® for Software (CMM®) is being “loosely interpreted” by some organizations, there are other factors that support the reality of the phenomenon. My insight into the Indian software industry is limited, but I have observed four characteristics that I think common to high-maturity Indian organizations:

- the educational system
- induction training for new hires
- an emphasis on process maturity for credibility
- an emphasis on quality for customer satisfaction

The Indian educational system is quite different from the U.S. In essence, it seems to funnel many of the brightest students into the software field, where the opportunities for advancement are great. Software is a comparatively low overhead industry to enter, and it provides major opportunities for both companies and individuals to prosper. My perception is that the Indian educational system is turning out talented and well-educated software people with a strong desire to succeed – and they are comparatively inexpensive labor, even when well-paid by Indian standards.

The high-maturity software organizations emphasize the importance of induction training for new hires, which typically runs from 6-8 weeks. Formal mentoring programs and on-
the-job training, where new employees re-solve already solved problems and compare their solutions to the official one, enhance skills further. Extensive induction training acculturates new employees into the process and quality culture of the organization.

A great deal of the Indian software business is based on outsourcing, an environment that encourages documentation and process formality. Companies that are interested in outsourcing typically want to minimize their risk, and a high maturity rating is considered a good indicator of a desirable outsourcing partner. The desire to achieve a high level rating can lead to dysfunctional behavior, but while high maturity may get a foot in the door, further work after the initial contact depends on performance excellence. The high maturity Indian software organizations appear to be growing at a rate of 50% or more per year, with 70-80% of their business being repeat business. While cost is certainly a major factor in the rapid growth of the Indian software industry, when the outsourced work is for business-critical systems, quality is crucial for an ongoing relationship.

As a result, many Indian organizations appear to be using the Software CMM in the most effective manner – to drive process improvement that addresses business goals. Without process discipline, it would be very difficult to maintain a good customer-supplier relationship while sustaining such high growth rates. A high degree of process automation also helps with process consistency.

It is likely that some organizations in both India and the U.S. have taken an overly liberal interpretation of levels 4 and 5 in the Software CMM. At the same time, there are Indian software organizations that have taken full advantage of their cultural opportunities and who are exemplars of high maturity that we all can learn from. In the former case, I feel the root cause is a lack of understanding of the fundamental principles of levels 4 and 5, which are not as clearly articulated in version 1.1 as we might wish. The SEI is taking steps via papers, training, and other mechanisms to address this problem, but the journey of continual improvement has no end.