Within the product cycle of a System on Chip (SoC) there
are various opportunities to outsource some of the tasks.
Since many years the manufacturing process is subject to
be separated from the product development.

We identify the integrated device manufacturers (IDM)
who develop and manufacture new chips. On the other
side there are companies focusing on product design only
and their partners the silicon foundries who do the wafer
fabrication. This arrangement fits quite well to an well-
organized ASIC design methodology. Products are
designed using cell libraries qualified by the foundry. This
is a kind of standard.

Where do we find the outsourcing in the test arena?
Almost everywhere! No IDM does everything regarding
test in the own organization. Furthermore the term
outsourcing is somewhat fuzzy. There is an established
supplier industry serving us with:

- Automatic Test Equipment
- Probe cards
- Design / DFT Tools
- ... and much more

Taking these products and services for integration into
internal processes is a typical situation for IDMs. If there
is no legacy in the company, there must enough pressure
to discuss above topics with respect to a make or buy
decision.

Another aspect is contract testing. For IDMs it is a
valuable alternative to manage production capacity and
handling specialties. Here a fraction of the manufacturing
test capacity is located outside the IDM. This is maybe the
most popular view of outsourcing in test. It relies on the
production standard, which is often represented by the test
program. With some exceptions the test program and
therefore the critical factor test coverage is provided by
the IDM.

From the mentioned situations it is obvious that buy-in or
outsourcing is based on agreed standards for the specific
elements of the entire test flow. And these de-facto
standards exist. It gets much more complicated if external
partners should cover the entire test flow including the
DFT part.

The task of test program development or transfer of a
given test sequence from one platform to another can be
delegated to a service provider as long as the test
conditions and limits are well defined.

If test development may interact with product design,
which is typical for all DFT based test solutions, things
are rather complicated. Even within a single company it is
a challenge to bring all test disciplines together in a way
that the result is convincing. In the ASIC environment
with a well-adjusted set of design and test rules
specialized service providers can execute test engineering
and DFT implementation. The key issue is the golden test
methodology as reference provided by the IDM.

For high volume products or special features of the
product, which are not state of the art, new solutions have
to be found. It is quite open where the new solution is
based on. It might be advanced DFT or special test
equipment or an intelligent mixture of both. The task is to
find new methodologies, which are solid enough for mass
production. A test solution provider with overall test
competence is necessary because he has to act without
given standards. The task looks like: make it better but do
not lower our quality standard. All major methodology
enhancements need correlation between technologies. As
long as manufacturing technology is proprietary to some
extent a very close relation between solution provider and
customer seem necessary. If such partnership is part of the
outsource phrase many things are possible. Where can I
order a new test solution for my new product offering
10dpm level at half the cost?

For given test standards and solution methodology
involvement of external partners is a reasonable business
alternative.