In Pursuit of Interoperability

Scott Moseley, Farbum Scotus, USA
Steve Randall, PQM Consultants, UK
Anthony Wiles, ETSI PTCC, France

ABSTRACT

Traditionally, conformance testing has been the domain of the telecommunications industry, while interoperability testing has mainly been limited to the Internet world. Many see these as either/or solutions, ignoring the fact that recent experience shows that both approaches have their strengths when used wisely. This paper discusses the merits and shortcomings of each approach and shows how they can usefully be combined to maximise the effectiveness of the testing process. This is especially relevant where testing is being treated as a potential branding issue by various fora. This paper is based on many years of practical experience of writing test specifications at the European Telecommunications Standards Institute (ETSI). It presents ETSI standardisation activities on testing, including the development of a generic interoperability testing methodology and the work being done by the Technical Committee Methods for Testing and Specification (MTS), the ETSI Protocol and Testing Competence Centre (PTCC), and the ETSI Plugtests™ service.

Keywords: conformance; ETSI; interoperability; testing.

INTRODUCTION

The telecommunications industry requires different kinds of base specifications and standards to ensure that its products function, interoperate with each other, are safe, and comply with regulatory requirements. Any effective standardisation activity requires test specifications to support these base requirements. Without such test specifications, a product fatally risks being dysfunctional, not working with other products, being unsafe, and incurring legal liabilities. The only way to ensure that standards are met is to test products in an effective way using the test specification.

Responsible engineering mandates appropriate and thorough testing. There are not many people willing to cross a bridge at the risk of their lives if they are not certain that it has not been proven to be safe. For this purpose, a bridge is tested before, during, and after its construction in various manners. Similarly, proving that a telecommunications system works correctly requires testing before, during, and after its development.
In the development and maintenance of its products and services, the telecommunications industry uses many kinds of testing such as integration, performance, stress, load, electro-magnetic emissions, electrical safety, mechanical resistance, conformance, and interoperability. In general, protocol conformance testing is appreciated in the telecommunications world, whereas it appears that the IP world, at best, avoids it and, at worst, tolerates it only if imposed by “force majeure.”

Here at ETSI, protocol conformance testing specifications have dominated our testing activities and will continue to do so in the future. However, we are seeing new and significant interest in interoperability testing for a variety of reasons, some of which are valid and others, arguably, less so. The increasing success of ETSI’s Plugtests™ Service is proof that the concept of interoperability testing is appreciated by our members and the industry. Current thinking includes the view that interoperability testing effectively replaces conformance testing with significantly less cost and time.

In order to discuss this position and develop others, definitions and understandings of conformance and interoperability testing are necessary. There is indeed much confusion on what conformance testing is, what it does, and how much it costs. There is just as much confusion concerning the definition of interoperability testing. An informal survey recently asked seven manufacturers, network operators, and application providers their definition of interoperability. Each of the seven answers bore no relation to the other!

This paper discusses the industry’s view of interoperability testing, provides ETSI’s definitions and methodologies for both types of testing, and explores their advantages and disadvantages. It shows that interoperability testing produces results that are indeed different from those obtained in conformance testing. This, then, precludes the possibility of interoperability testing replacing conformance testing in toto. In this paper we hope to show clearly that the results of either kind taken separately do not guarantee interoperability, and that good engineering practice requires both kinds of testing to ensure the interoperability intended by the base standards. We go further by daring to assert that conformance testing is necessary in accomplishing effective and rigorous interoperability testing.

**THE CURRENT APPROACH OF INTEROPERABILITY TESTING IN THE INDUSTRY**

There is actually no commonly agreed definition of interoperability, let alone a common view of interoperability testing. However, interoperability testing has, until recently, been viewed generally as the rather informal interconnection of prototype equipment for the combined purposes of product debugging and technology development. Interop Events, Plug Fests, and bake-offs all fall into this category.
Controlling Informational Society: A Google Error Analysis!
www.igi-global.com/chapter/controlling-informational-society/43515?camid=4v1a