JTC 1 SC22
Programming Languages, their Environments,
and System Software Interfaces

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Thank you for the opportunity to address you today.

I will be reporting to you on the matter of SC22 and its efforts of market relevance.

There are some eight slides of information for me to present. After that there will be a time period for questions.

Languages and Maturity

- Newer languages have features and functions that address specific programming and modeling requirements (e.g., C, C++).

- The vast installed base requires maintenance to remain compatible with the newer languages (e.g., COBOL, Fortran).

SC22 has 13 working groups, four additional editor projects, and one ad hoc group.

I will not be addressing any single one of them.

However, it is useful to characterize the work of SC22 as focusing either on newer languages or on the more mature languages.

This differentiation may help you to better understand SC22's program of work.

The newer languages offer the richest set of features and functions. Many of them are unique. These projects tend to focus on delivering the syntax and semantics to implement the new functionality.

The more mature languages support the huge installed base of programs. Their activities tend to focus on maintaining that installed base. They also tend to implement the features of the newer languages in order to maintain a level of compatibility.

By compatible I mean the ability to interchange data, and possibly processes, with reliable results.

Remember the Mature Languages

- The overwhelming majority of application programs are written in standardized languages.
  - Administration (payroll, accounting…)
  - Engineering (modeling, simulation…)
  - Manufacturing (process, discrete...)
  - Operations (distribution, retail…)

The programming language standards of JTC 1 support nearly the entirety of the programs running businesses, governments, and other institutions today.

It is difficult for a person in today's society to be untouched by JTC 1's highly successful programming languages work program.

Administration

- Implemented WG reporting to focus on user requirements
- Implemented rapid Technical Corrigenda process
- Flattened structure as appropriate
- Maintains extensive network of relationships with 'user groups'

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SC22 has undertaken some administrative changes in order to remain focused on the requirements of its user community.

Recently SC22 changed its review process for working group status. Where once SC22 focused on the status of specific projects, it now focuses on what the WG is actively doing to satisfy user requirements.

Some years ago SC22 implemented, following JTC 1's approval, an accelerated process for approving and publishing technical corrigenda. In practice, this process has been effective.

Sometimes a language falls into a relatively inactive phase. Such has been the case with four of SC22's languages. Rather than maintain a WG with its attendant overhead, SC22 has put the projects under a single project editor reporting directly at the SC level.

Finally, as JTC 1 has seen through the years, SC22 has a large number of liaison activities. Typically these liaisons have been with key user organizations. These relationships continue to form the basic conduits through which SC22 learns of user requirements.

Technical

- Facilitate data interchange among application programs
  - Software reuse via language-independent means (data types, arithmetic, …)
  - Culture-neutral methods
- Permit controlled differentiation
  - subsets
  - extensibility
- Proliferation of languages is evidence of market responsiveness.

SC22 has found that there are technical means for addressing user requirements.

For example, users require sufficient compatibility among languages so that data interchange among programs is simple and effective. Language-independent and culture-neutral tools accomplish a great deal of that compatibility.

In several cases, SC22's standards permit compliant subsets and extensions. This enables implementers to build products suitable to widely divergent environments.

As an aside, the number of languages is strong evidence of SC22's responsiveness to market and user requirements.

Activity Focus

- SC22 strives to improve
  - Productivity of software development
  - Portability of programs across environments
  - Compatibility of application programs

At a high degree of abstraction, SC22 works diligently to improve in three broad areas that it has derived from years of close work with user groups.

SC22's activities have made significant improvements in the effort required to write meaningful computer programs. Higher-level languages have contributed greatly.

Portability, the ability to move programs from one environment to another with minimal aggravation, arises from SC22's process requiring its work to be neutral with regards to hardware and software platforms.

SC22 has sought to improve the flow of data among programs written in different languages. This compatibility helps preserve investments in software.

Future Directions

- Java
  - ECMA TC41 is developing several high profile Java standards for likely submission to JTC 1 for fast-track approval
  - SC22 established an ad hoc group addressing
    - prepared for ballot comment resolution
    - liaison with development activities

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SC22 has poised itself to effectively address the single largest thing in its immediate future, Java.

In essence, Java provides for a platform-independent environment with functionality that addresses network-based applications. This network functionality differentiates it from the other languages SC22 has.

SC22 has formed an ad hoc group to coordinate with the development work taking place within ECMA.

We formed this ad hoc due, in large part, to the information we received through our network of liaisons.

Summary

- SC22 derives its fundamental requirements from the user groups with which it closely associates.
- SC22 has made administrative and technical improvements to remain relevant and timely.

In summary I would like you to be aware that SC22's liaisons are the means by which we remain relevant. We learn vast amounts about user requirements from them.

Finally, please be aware that SC22 has made significant administrative and technical improvements in order to develop standards that fulfill user expectations.

Thank you for your attention.