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Peter Wolcott

*University of Nebraska at Omaha*, pwolcott@unomaha.edu

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by Peter Wolcott
Department of MIS
University of Arizona
Tucson, AZ 85721
(602) 626-8682

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[abstract] Over the last decade and a half, the Ada programming language has aroused more financial, technical, political, and emotional forces than any other programming language. Because the language is a product of more than just technical factors, its progress is heavily influenced by the surrounding social, economic, and political environment. Judging by the technical characteristics of the language and the goals for its use, one would expect that Ada would be the subject of intense development by the USSR, as well as by the USA. In practice, the Ada experiences in these countries differ considerably. We examine the state of Ada in the Soviet Union from four perspectives: the development of Ada technologies, training and educational efforts, technology transfer within the Soviet Union and from the West, and the levels of interest and support among practitioners, managers, users, and policy makers.

Following the 19/9 publication of the Ada Language Requirements Manual, Ada attracted considerable attention in the Soviet Union. A Russian language version was published in 1980, and a high-level Ada working group under the State Committee on Science and Technology was established in 1982 with a mandate to examine the capabilities of Ada, coordinate Ada developments, and determine the need for the language in the Soviet context. By 1987 several tens of Soviet groups were working on implementations. As in the West, the early practitioners serious underestimated the difficulty of implementing the language. There are today only three to five strong Ada groups and a few dozen less serious projects.

Few organizations have developed full compilers. In the absence of policies mandating uniform implementations and a controlling body analogous to the AJPO, subsets proliferate. The leading work has been done at the Computer Center of Leningrad State University, the Novosibirsk Subsidiary of the Institute of Precision Mechanics and Computer Technology, and the Scientific Research Center for Electronic Computer Technology in Moscow in cooperations with a group of Hungarian organizations. The environments for their compilers typically provide basic sets of tools such as debuggers, linkers, some code management support tools, and testing and diagnostics utilities.

The growth of Ada training facilities corresponds to the growth in activity in compiler development. By 1987, thirty high-education institutions were offering courses in Ada.

Formal and informal transfer of know-how between practitioners has played an important role in the development of the language in the West. While such interaction between Soviet practitioners takes place, it appears to be at a more moderate level than in the West. The Soviet Ada community has had very little direct contact with the West. Although the reforms in the Soviet

Union have made it easier for Soviets to attend western conferences, a lack of necessary hard-currency has proved a major obstacle. Western journals do reach the Soviets, but irregularly, and usually with great delay. The New York University Ada interpreter, and a copy of a DEC Ada compiler have been installed at a number of locations. A few validation suites, from 1984 and 1986 or 1987, have also appeared in the Soviet Union.

A basic characteristic of the Ada experience in the Soviet Union is that, in strong contrast to the US experience, relatively more of the initiative has come from the bottom up. This initiative has not been accompanied by corresponding funding of development, however. A dominant reason is the software development culture of policy makers and managers which places much greater emphasis on efficiency of execution rather than efficiency of development and maintenance. Alternative sources of funding such as venture capital are virtually non-existent.

For a strong Soviet Ada community to develop, there must be strong indigenous demand for, and support of the language, economic incentives which reward developers, adequate tools, and exchange of technology, know-how, and experience within the Ada community and with the West, and a solid educational base. The perestroika-related reforms have created the potential for each of these components to improve. The reforms are requiring that organizations pay much greater attention to life-cycle costs, and new organizational forms such as cooperatives, joint ventures, and small enterprises now allow much higher levels of compensation for work performed. As the borders of the Soviet Union open, it is likely that contacts between the eastern and western Ada communities will increase.