Jovial.

MINISTERIE VAN DEFENSIE
MARINE

Hoofdafdeling materieel
Torenstraat 172, tel. no. 81 42 61
Corr.adres: Kon. Marialaan 17
Telegramadres: Marine, Den Haag

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    Hierbij doe ik U ter aanhouding toe-
komen een memorandum van LTZSD3KMR ir. D.W. Okker
"A Comparison of JOVIAL and JOVIAL J-S" in de
verwachting dat het een uitgangspunt voor een
diskussie over deze materie met Uw industrie kan
zijn.

              HET HOOFD VAN HET BUREAU
              TOEGEPASTE ELEKTRONENTECHNIEK

C.J.W. Rottwijk
KLTZE

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Vervolgblad

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A Comparison of JOVIAL (see Technical Memo TM-555/003/000)
and JOVIAL J-S (see Technical Memo TM-168/003/000)

by LTZSD3KMR Ir. D.W. Okker

JOVIAL J-S, which is called CORE by STC, is a subset of JOVIAL. It
contains the essential properties of this language without any loss in
programming capabilities. The features of JOVIAL that are omitted in CORE
serve only to ease programming in JOVIAL. Such features often are a
source of trouble to the compiler and therefore lead to less efficient
object programs. Though programming in CORE will be more difficult than
in JOVIAL, the CORE-compiler will be somewhat simpler and especially the
object programs more efficient. CORE is preferable to JOVIAL and to auto-
and machinecodes and in my opinion is the best available language to-day
for programming command and control systems.

The following facilities of JOVIAL are omitted in CORE.

1. Functional modifiers

CHAR)   These symbol manipulating functional modifiers determine the
MANT)   exponent and the mantissa of a floating-point numeric value. They
        are of no use to the naval problems.

EXCHANGE This modifier changes the values of two variables. The same
         result can be attained, possibly even more efficient, without
         this modifier, but by adding some instructions.

ALL   Is used in table manipulation. It occurs in a FOR-statement to
         indicate that the whole table has to be searched without speci-
         fying the three increment factors.

ENTRY   This modifier has been replaced by ENT with the same properties.

ODD   This modifier determines whether a number is even or odd and
         has a boolean value.

IFEITH) The effect of these modifiers can be attained more efficiently
ORIF)   with the IF-statement.

2. Declarations

ARRAY   Variables declared as an array are hard in compilation because
         each index may consist of a full JOVIAL-expression. There is
         no necessity to have this facility at one's disposal in pro-
         gramming operational problems. Variables with one index have
         to be considered as elements of a table

MODE)   These words are used in the declarations of variables and tables
LIKE)   respectively. They only save much writing to the programmer in
         declaring many variables or tables of the same type.

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Hoofdafdeling Materieel

Bureau toegepaste elektronentechniek

		101112/94288
Nummer	:	2
Aantal bladen	:	
Blad no.		

STRING   The string-declaration occurs in table-declarations. A string-element is a concatenation of a number of elements, in such a way that each of these elements has the structure as specified in the string-declaration. Though the string-element occurs in each entry of the table, the number of elements in the string needs not be the same for each entry. The entries of the table can have a variable and different length. In my opinion the string-declaration is of no use to the programming problems of command and control systems. The entries of a table will always have the same structure and the same length. In addition all the elements of a table will have a name to call them individually.

FIXED   The fixed-point declaration is omitted in CORE, because in many computers this facility leads to non-optimal object programs. The use of fixed-point numbers can be attained by using scaling-factors. Though programming will become more difficult, the object program will be more efficient.

DUAL   A variable which has been declared as a dual variable, consists of two quantities of the same type. This declaration serves to facilitate calculations involving two dimensional coordinate systems or complex numbers. One can attain the same results without this facility and with the same efficiency.

In the U.S.A. several military real-time systems have been programmed in CORE.

When in future computerdesign and compilerdesign will be matched one can expect that facilities like those mentioned will lead to efficient programs. There are examples already (Electrologica) that a computer designed to handle ALGOL-programmes can attain a high efficiency be it at the expense of an efficient use of other languages on this computer.