CLAIMS

1.- A development method (100, 200, 300, 400) for developing a railway signalization computer program able to be executed by a processor of an information processing unit, comprising the following steps:

- providing (110, 210, 310, 410) at least one computer operator (20) able to be executed by the processor of the information processing unit so as to process at least one incoming datum, the datum relating to at least one piece of equipment of a railway signalling system,
- providing (120, 220, 320, 420) a visual environment (40) for building a visual representation (42) of the railway signalization computer program, said visual representation (42) including at least one functional graphic element (44) representing the at least one computer operator (20), said at least one functional graphic element (44) comprising at least one input (47) for supplying the at least one computer operator (20) with an incoming datum, and
- implementing (140, 240, 340, 440) the computer program,

characterized in that the visual representation (42) also includes:

- at least one graphic stream element (50, 51, 52) each representing at least one respective datum intended to be processed by the at least one computer operator (20), and
- at least one instancing graphic element (58) connected to an input (47) of the at least one functional graphic element (44) and to the graphic stream element (50, 51, 52) or to each of the graphic stream elements (50, 51, 52),

and in that, during the implementation step (140, 240, 340, 440), the at least one computer operator (20) is instantiated a number of times equal to the number of data represented by the graphic stream element (50, 51, 52) or by the graphic stream elements (50, 51, 52), each instance of the at least one computer operator (20) having, as incoming data, a respective datum from the data represented by the graphic stream element (50, 51, 52) or by the graphic stream elements (50, 51, 52).

~~2.- The development method (100, 200) according to claim 1~~, wherein the graphic stream elements (50, 51, 52) are a plurality and each represent a single specific datum intended to be processed by the at least one computer operator (20), and the at least one computer operator (20) is instantiated, during the implementation step (140, 240, 340, 440) a number of times equal to the number of graphic stream elements (50, 51, 52).

~~3.- The development method (300, 400) according to claim 1, wherein the graphic stream element (50, 51, 52) is single and the visual representation (42) also includes at least one other functional graphic element (49) representing a data source (24) able to produce source data intended to be processed by the computer operator (20), said other functional graphic element (49) comprising an output (48) for the supply, by the data source (24), of each source datum, the instancing graphic element (58) being connected to the output (48) of the other functional graphic element (49) via the graphic stream element (50, 51, 52), the computer operator (20) being instantiated, during the implementation step (340, 440), a number of times equal to the number of source data, each instance of the computer operator (20) having, as incoming data, a respective datum from said source data.~~

4~~2~~.- The development method according to claim 1, wherein ~~the graphic stream elements (50, 51, 52) are a plurality and~~ the visual representation (42) also includes at least one other functional graphic element (49) representing a data source (24) able to produce source data intended to be processed by the at least one computer operator (20), said other functional graphic element (49) comprising an output (48) for the supply, by the data source (24), of each source datum, the instancing graphic element (58) being connected to the output (48) of the other functional graphic element (49) via one of the graphic stream elements (50, 51, 52), the at least one computer operator (20) being instantiated, during the implementation step (340, 440), a number of times that is a function of the number of graphic stream elements (50, 51, 52) and of the number of source data.

5~~3~~.- The development method (300, 400) according to claim ~~3 or~~ 2~~4~~, wherein the data source (24) is able to produce a plurality of source data, the quantity of source data produced at a given moment being variable.

6~~4~~.- The development method (100, 200, 300, 400) according to any one of the preceding claims, wherein the visual environment (40) allows building of the visual representation (42) by a human user.

~~7.- The development method (100, 200, 300, 400) according to any one of the preceding claims, wherein the computer program is a railway signalization program.~~

8~~5~~.- The development method (100, 200, 300, 400) according to any one of the preceding claims, wherein the visual representation (42) includes a single functional graphic element (44) representing the at least one computer operator (20).

6~~9~~.- A computer program (34) comprising software instructions which, when executed by a computer, carry out a development method (100, 200, 300, 400) according to any one of the preceding claims.

7~~10~~.- A computer-readable medium (32) comprising a computer program (34) according to claim 6~~9~~.

8~~11~~.- A development device (2, 4, 6, 8) for developing a computer program able to be executed by a processor of an information processing unit, comprising:

- a memory (12) in which at least one computer operator (20) is stored able to be executed by the processor of the information processing unit so as to process at least one incoming datum,
- a man-machine interface (14) including a visual environment (40) configured to present a visual representation (42) of the computer program, said visual representation (42) including at least one functional graphic element (44) representing the at least one computer operator (20), said at least one functional graphic element (44) comprising at least one input (47) for supplying the at least one computer operator (20~~48~~) with an incoming datum, and
- an implementation module (38) for implementing the computer program, configured to implement the computer program based on the visual representation (42) presented by the visual environment (40),

characterized in that the visual representation (42) includes:

- at least one graphic stream element (50, 51, 52) representing at least one respective datum intended to be processed by the at least one computer operator (20), and
- at least one instancing graphic element (58) connected to an input (47) of the at least one functional graphic element (44) and to the graphic stream element (50, 51, 52) or to each of the graphic stream elements (50, 51, 52),

and in that the implementation module (38) for implementing the computer program is configured to instantiate the at least one computer operator (20) within the computer program a number of times equal to the number of data represented by the graphic stream element (50, 51, 52) or by the graphic stream elements (50, 51, 52), each instance of the at least one computer operator (20) having, as incoming data, a respective datum from the data represented by the graphic stream element (50, 51, 52) or by the graphic stream elements (50, 51, 52).

~~12.- The development device (2, 4) according to claim 11,~~ wherein the graphic stream elements (50, 51, 52) are a plurality and each represent a single specific datum intended to be processed by the at least one computer operator (20), and the implementation module (38) for implementing the computer program is configured to

instantiate the at least one computer operator (20) within the computer program a number of times equal to the number of graphic stream elements (50, 51, 52).

~~13.- The development device (6, 8) according to claim 11, wherein the graphic stream element (50, 51, 52) is single and the visual representation (42) includes at least one other functional graphic element (49) representing a data source (24) able to produce source data intended to be processed by the computer operator (20), said other functional graphic element (49) comprising an output (48) for the supply, by the data source (24), of each source datum, the instancing graphic element (58) being connected to the output (48) of the other functional graphic element (49) via the graphic stream element (50, 51, 52), the implementation module (38) for implementing the computer program being configured to instantiate the computer operator (20) within the computer program a number of times equal to the number of source data, each instance of the computer operator (20) having, as incoming datum, a respective datum from said source data.~~

9~~14~~.- The development device according to claim 8~~11~~, wherein ~~the graphic stream elements (50, 51, 52) are a plurality and~~ the visual representation (42) includes at least one other functional graphic element (49) representing a data source (24) able to produce source data intended to be processed by the at least one computer operator (20), said other functional graphic element (49) comprising an output (48) for the supply, by the data source (24), of each source datum, the instancing graphic element (58) being connected to the output (48) of the other functional graphic element (49) via one of the graphic stream elements (50, 51, 52), the implementation module (38) for implementing the computer program being configured to instantiate the at least one computer operator (20) within the computer program a number of times that is a function of the number of graphic stream elements (50, 51, 52) and of the number of source data.

1~~0~~5.- The development device (6, 8) according to claim ~~13 or~~ 9~~14~~, wherein the source data (24) is able to produce a plurality of source data, the quantity of source data produced at a given moment being variable.

1~~1~~6.- The development device (2, 4, 6, 8) according to any one of claims 8~~11~~ to 1~~0~~5, wherein the visual environment (40) allows building of the visual representation (42) by a human user.

1~~2~~7.- The development device (2, 4, 6, 8) according to any one of claims 8~~11~~ to 1~~1~~6, wherein the computer program is a railway signalization program.

1~~3~~8.- The development device (2, 4, 6, 8) according to any one of claims 8~~11~~ to 1~~2~~7, wherein the visual representation (42) includes a single functional graphic element (44) representing the at least one computer operator (20).