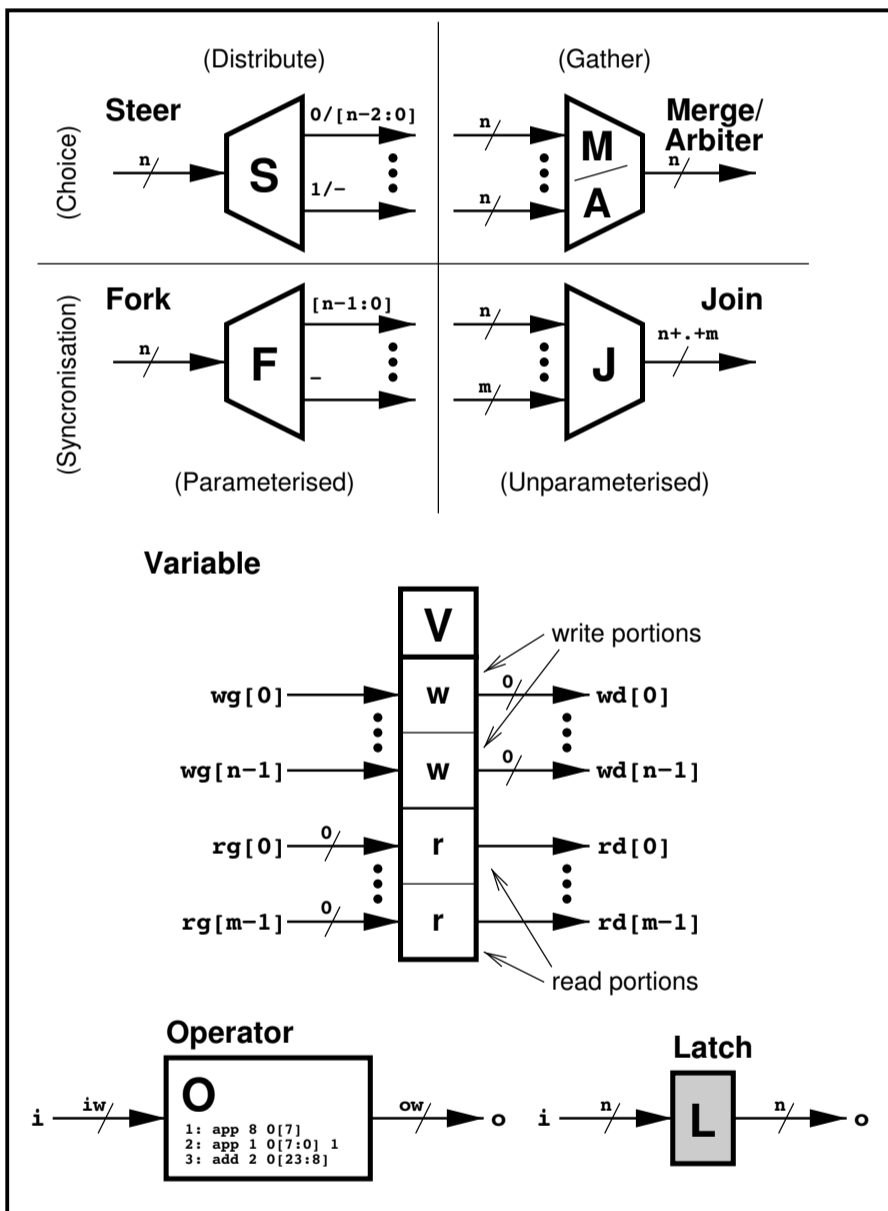# Teak components and networks

There are only a small number of templates for Teak components. The component set was chosen to keep each control feature to a single component.

For example, to add two numbers together, an Operator (O) must have its inputs Join-ed (J) together as it doesn't perform that control function itself, only the Join (J) component does.


```
procedure add (
    input i1, i2 : 8 bits;
    output o : 9 bits
) is
begin
    loop
        i1, i2 -> then
            o <- i1 + i2
        end
    end
end
```


Teak-generated networks are elastic networks. The specifications for Teak components make few assumptions about channel interleaving or decoupling.

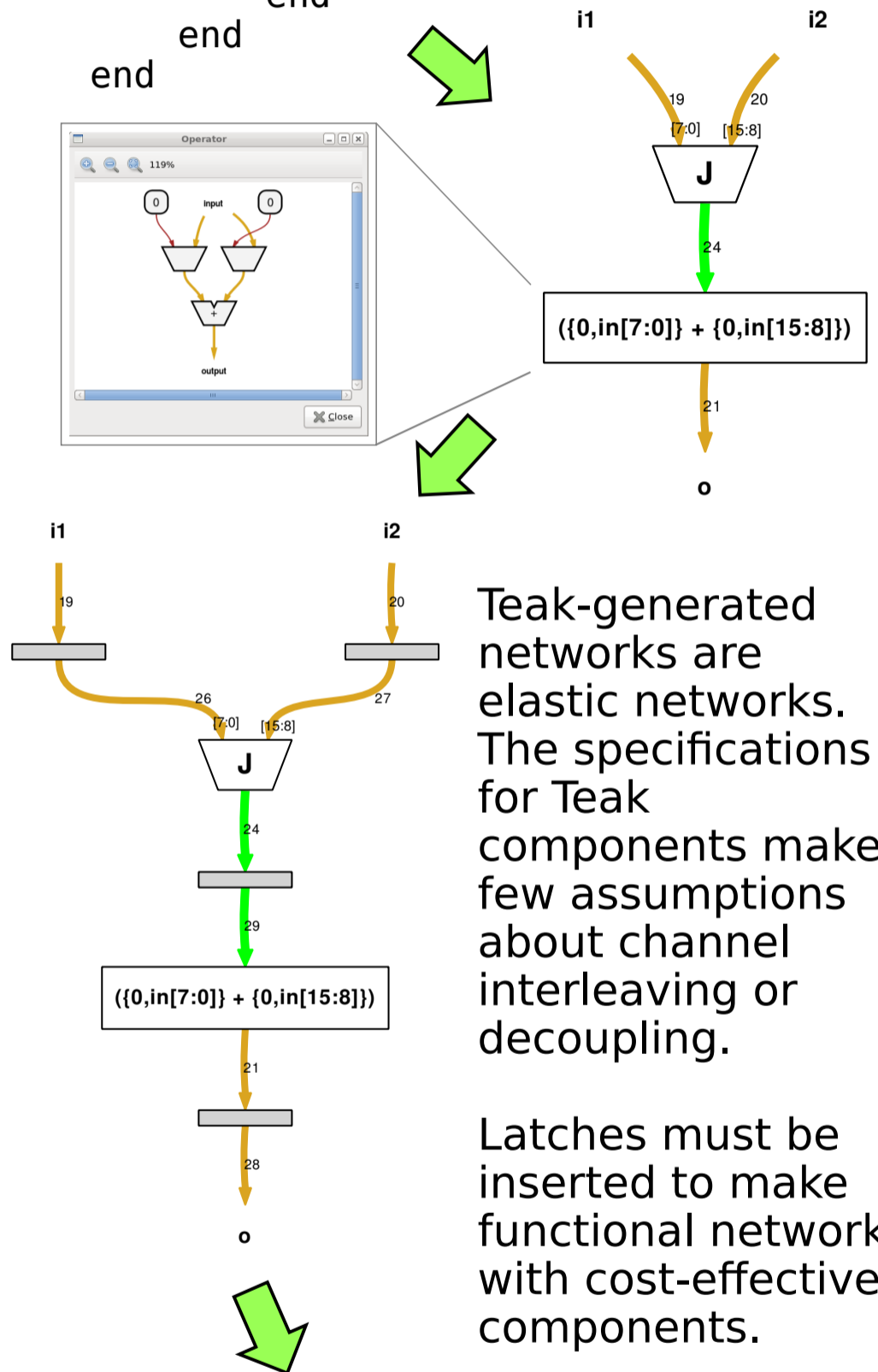Latches must be inserted to make functional networks with cost-effective components.

The Teak tool can currently generate gate-level Verilog implementations of Teak networks.

The Teak component set was chosen to allow Teak networks to be easier to implement than Handshake Circuits in other, more pipeline-oriented, asynchronous technologies.

```
module teak_add (i1_0r0, i1_0r1, i1_0a, i2_0r0, i2_0r1,
i2_0a, o_0r0, o_0r1, o_0a, reset);
  input [7:0] i1_0r0;  input [7:0] i1_0r1;  output i1_0a;
  input [7:0] i2_0r0;  input [7:0] i2_0r1;  output i2_0a;
  output [8:0] o_0r0;  output [8:0] o_0r1;  input o_0a;
  input reset;
  ...
  tkj16m8_8 I0 (L26_0r0[7:0], L26_0r1[7:0], L26_0a,
L27_0r0[7:0], L27_0r1[7:0], L27_0a, L24_0r0[15:0],
L24_0r1[15:0], L24_0a, reset);

tko16m9_1nm1b0_2api0w8bt1o0w1b_3nm1b0_4api8w8bt3o0w1b_5ad
dt2o0w9bt4o0w9b I1 (L29_0r0[15:0], L29_0r1[15:0], L29_0a,
L21_0r0[8:0], L21_0r1[8:0], L21_0a, reset);
  tkb8x1 I2 (i1_0r0[7:0], i1_0r1[7:0], i1_0a, L26_0r0
[7:0], L26_0r1[7:0], L26_0a, reset);
  tkb8x1 I3 (i2_0r0[7:0], i2_0r1[7:0], i2_0a, L27_0r0
[7:0], L27_0r1[7:0], L27_0a, reset);
  tkb9x1 I4 (L21_0r0[8:0], L21_0r1[8:0], L21_0a, o_0r0
[8:0], o_0r1[8:0], o_0a, reset);
  tkb16x1 I5 (L24_0r0[15:0], L24_0r1[15:0], L24_0a,
L29_0r0[15:0], L29_0r1[15:0], L29_0a, reset);
endmodule
```