

Ejemplos

Simulador Robótico

Archivo Trayectoria Vista Opciones Ayuda

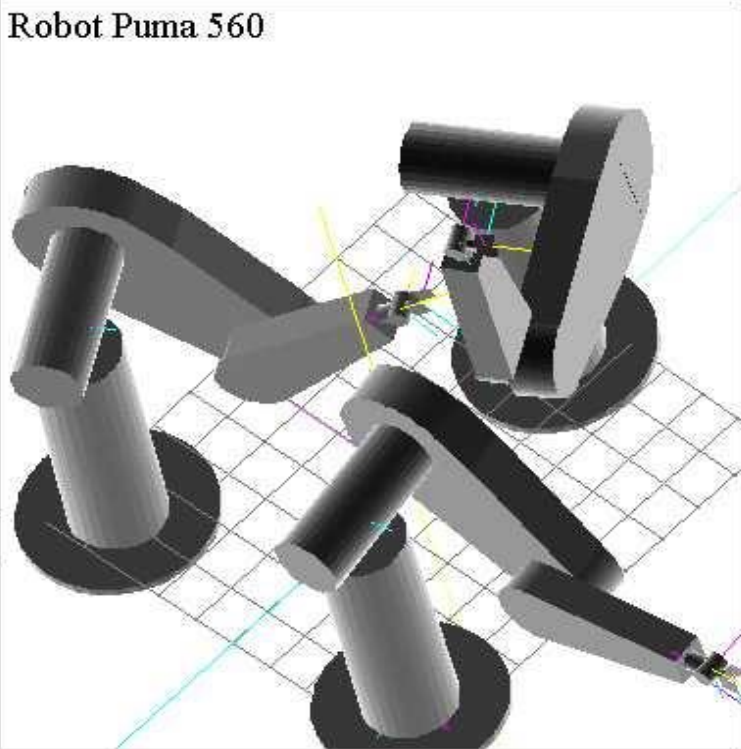
Puma1 Puma2 Puma3

C.DIRECTA

Articulación1: 120.0
Articulación2: 0.0
Articulación3: 7.0
Articulación4: 90.0
Articulación5: 90.0
Articulación6: 90.0

Actualizar

Robot Puma 560



Puma1 Puma2 Puma3

C.INVERSA

X: 250.91
Y: 394.65
Z: 384.99
R: 0.0
P: 90.0
Y: -90.0

Sol 1 Sol 2
Sol 3 Sol 4
Sol 5 Sol 6
Sol 7 Sol 8

Robot Puma 560

CÁMARA

Escena X: - +
Escena Y: - +
Cámara X: - +
Cámara Y: - +
Zoom: - +

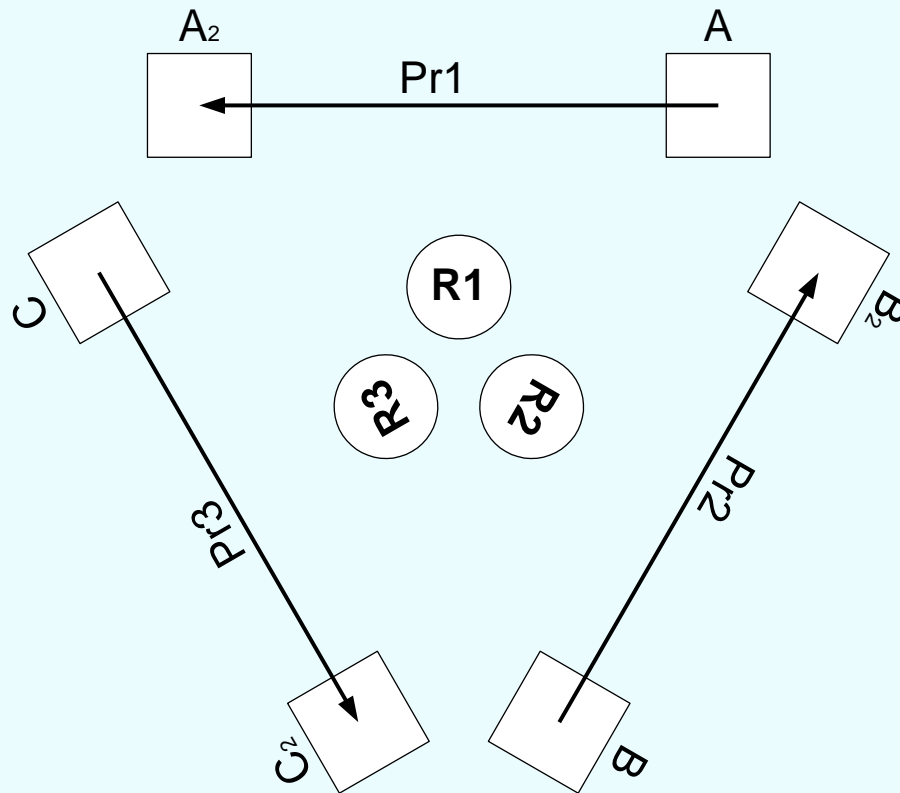
Puma1 Puma2 Puma3

POSICIÓN Y ORIENTACIÓN

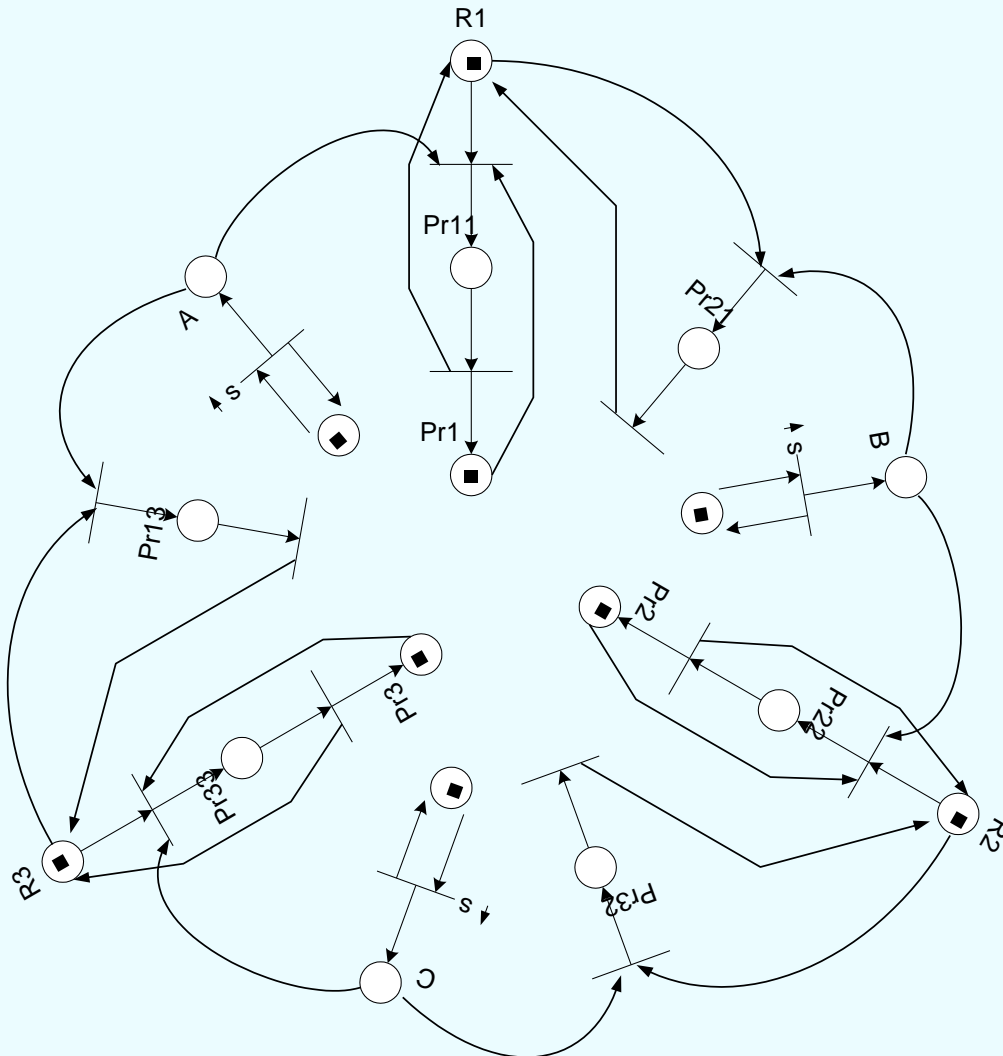
X,Y,Z:
(-76.37, 126.91, 661.98)

RPY:
(120.0, 55.0, 0.0)

Ejemplos



Ejemplos

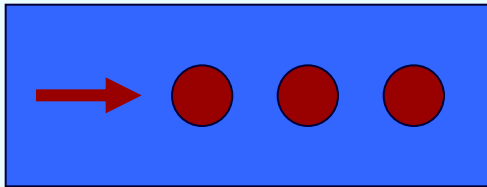


Simulación para toma de decisiones

- Conflicto
- Decisión
- Bloqueo
- Prestaciones
- Optimización

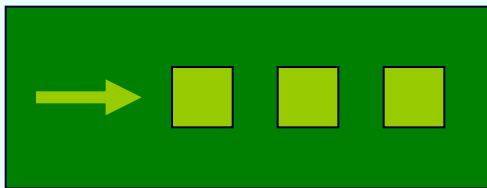
Ejemplo de sistema de fabricación

Cinta transportadora A

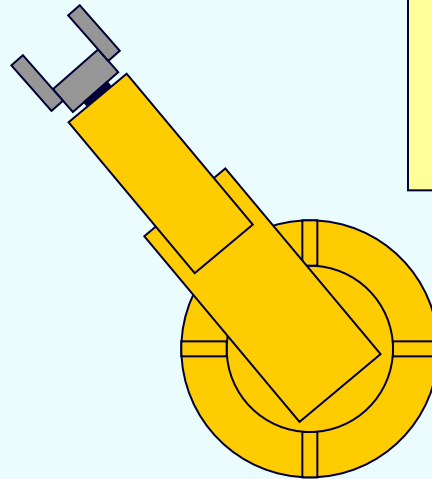


Piezas de tipo B

Cinta transportadora B

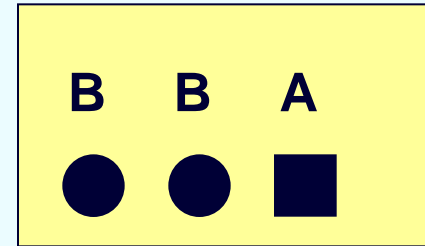


Piezas de tipo A

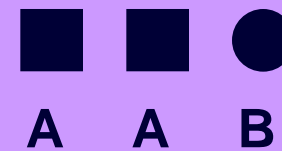


Manipulador

Máquina 1



Productos de tipo 1

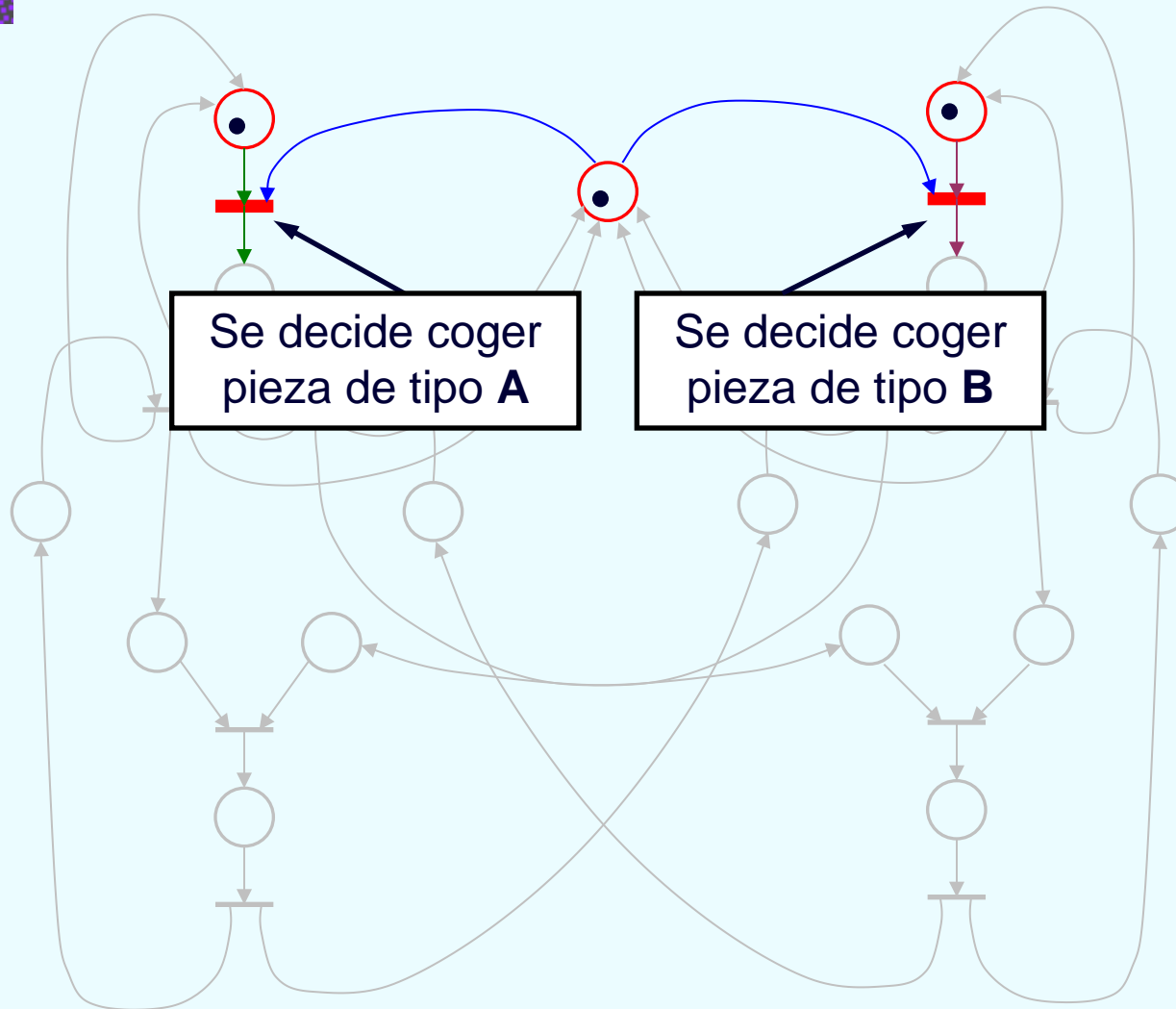


Maquina 2

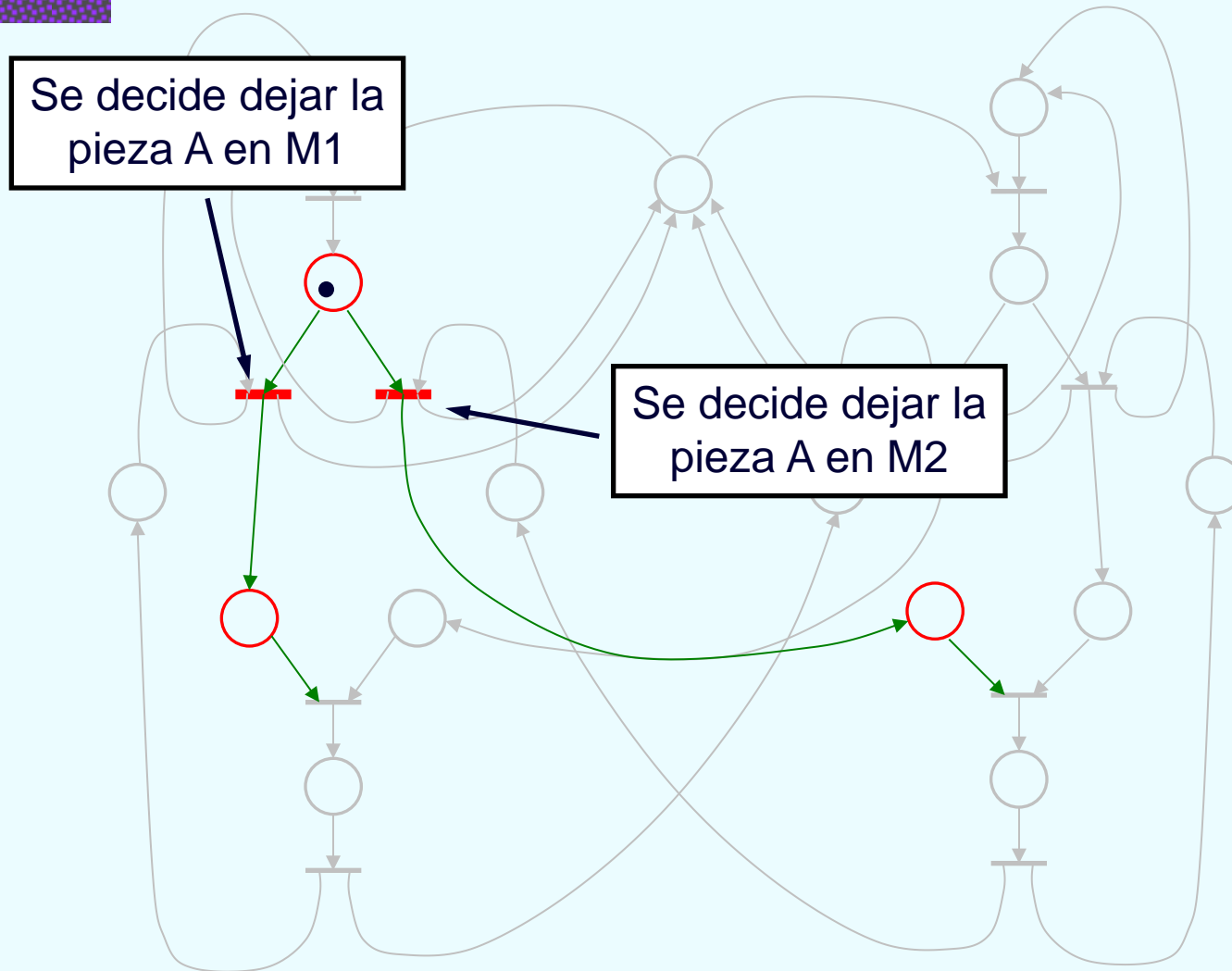
Productos de tipo 2



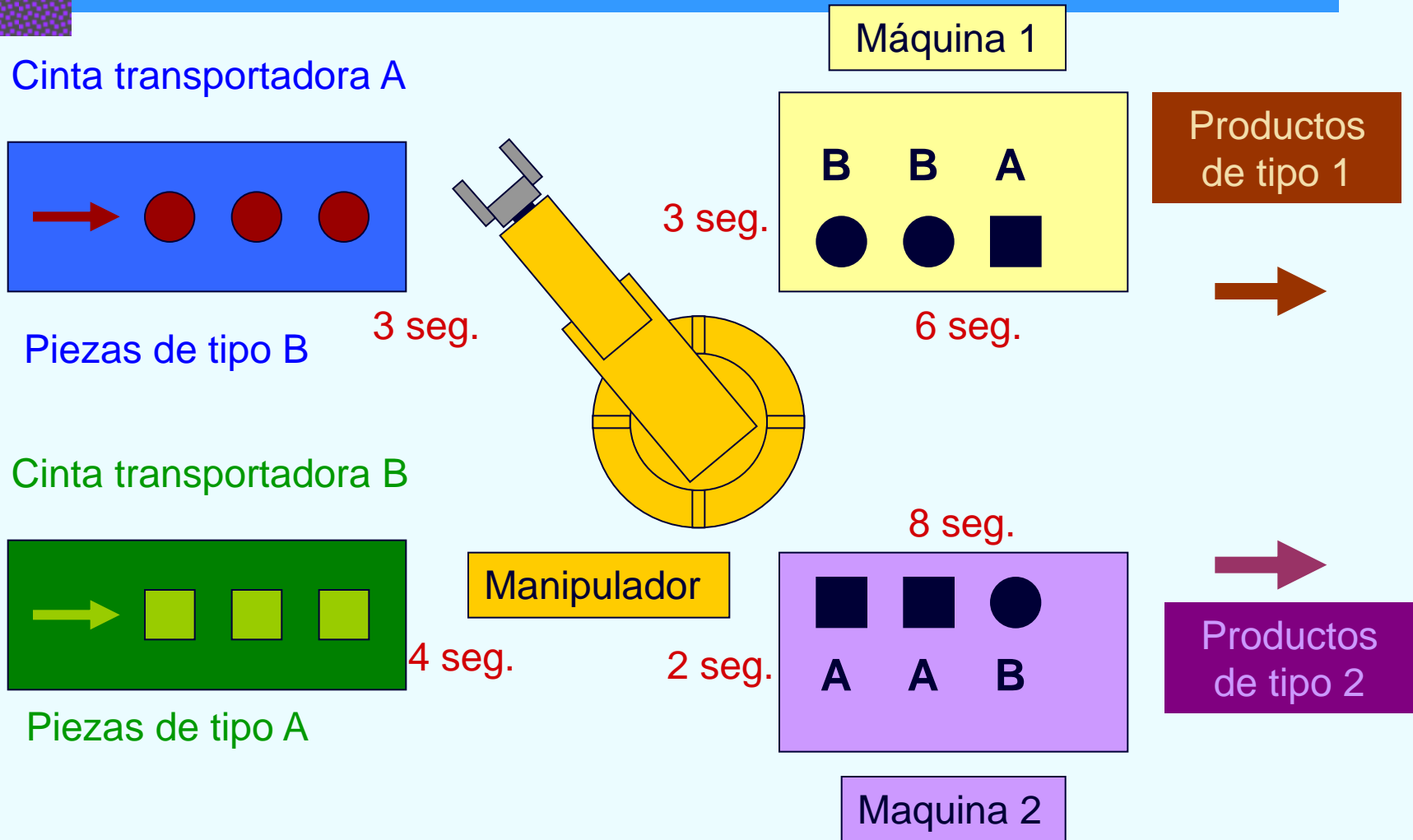
Decisión 1: coger pieza A o B



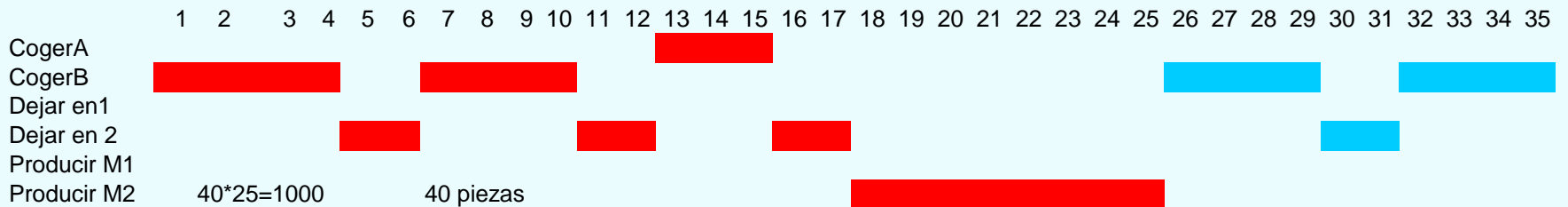
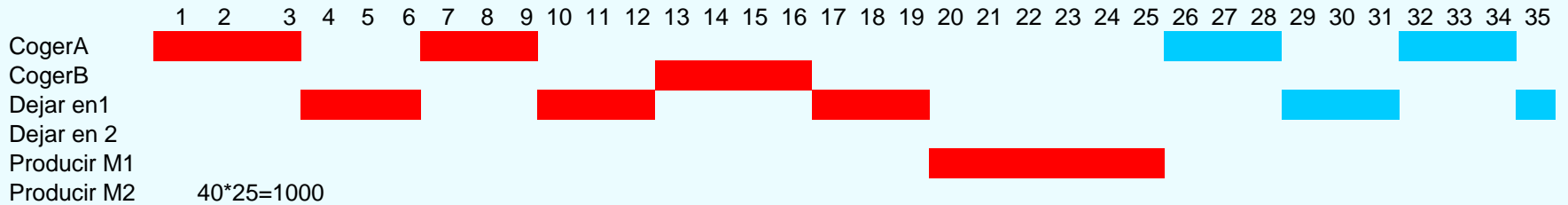
Decisión 2: dejar pieza en M1 o M2



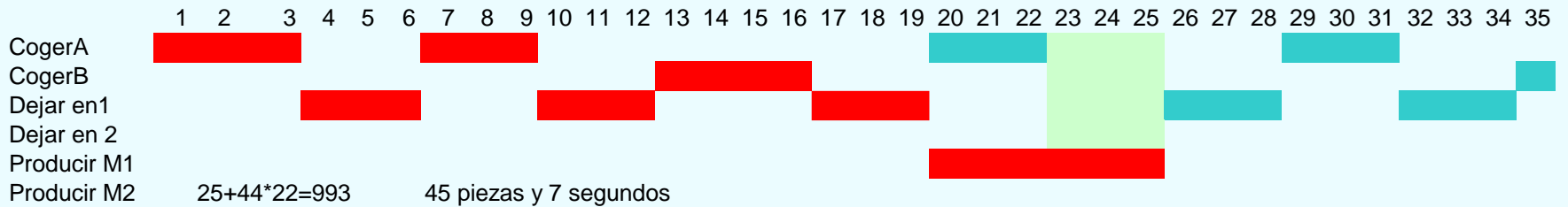
Ejemplo de sistema de fabricación



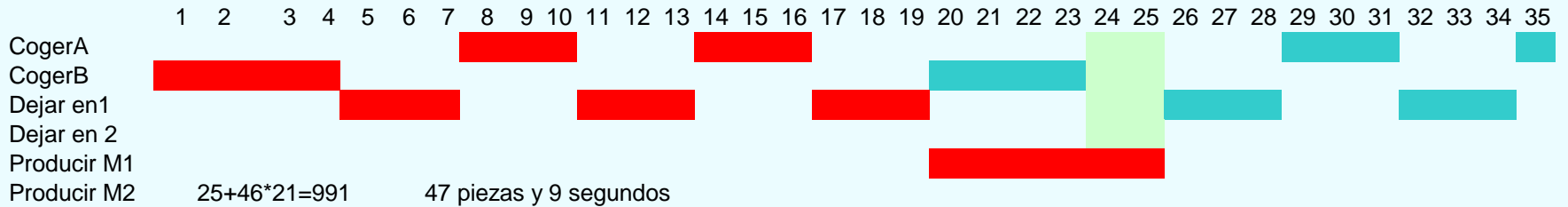
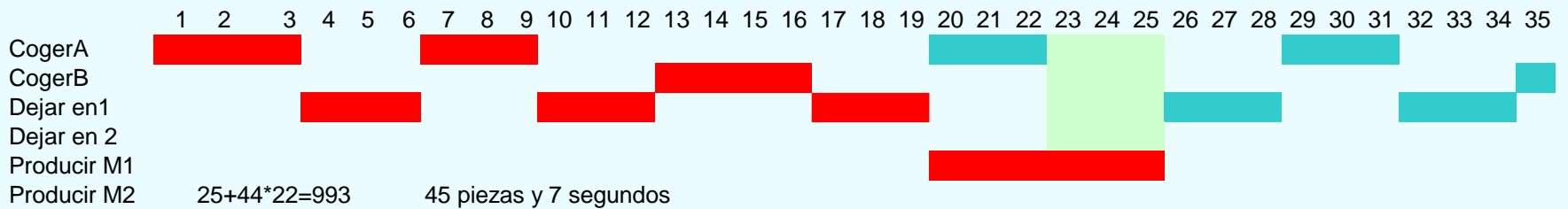
Ejemplo de sistema de fabricación



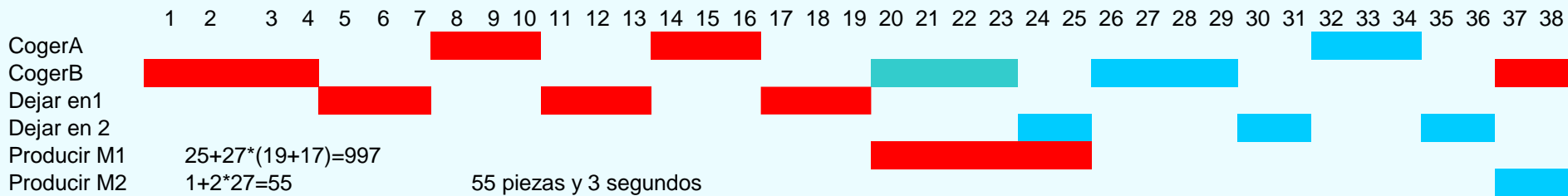
Ejemplo de sistema de fabricación



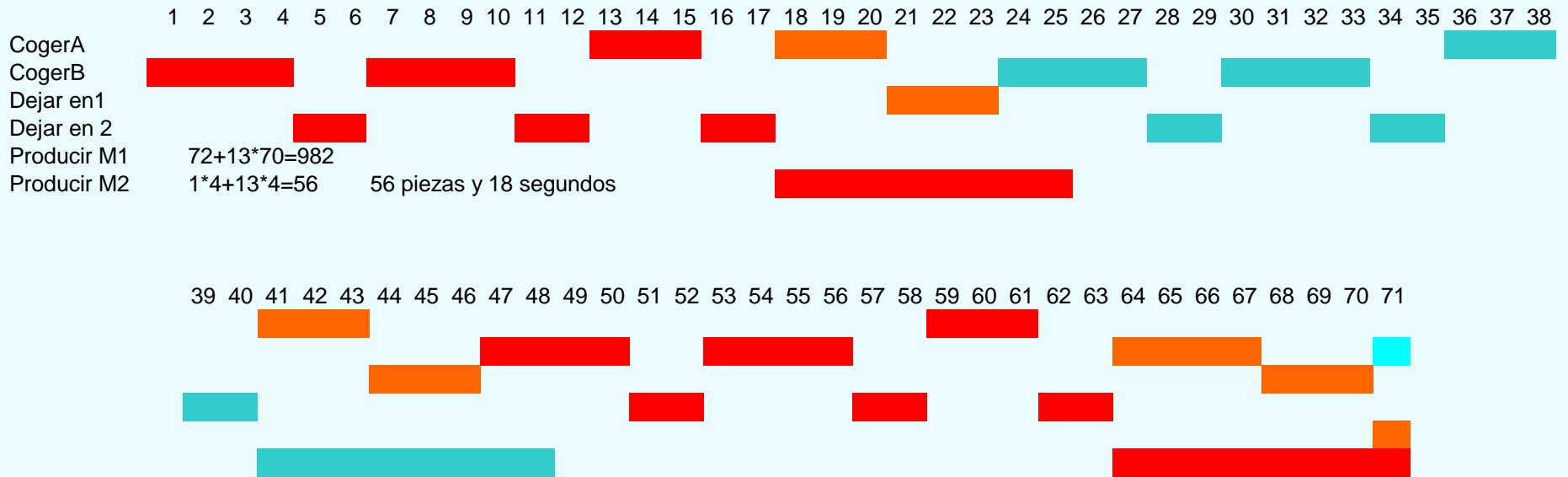
Ejemplo de sistema de fabricación



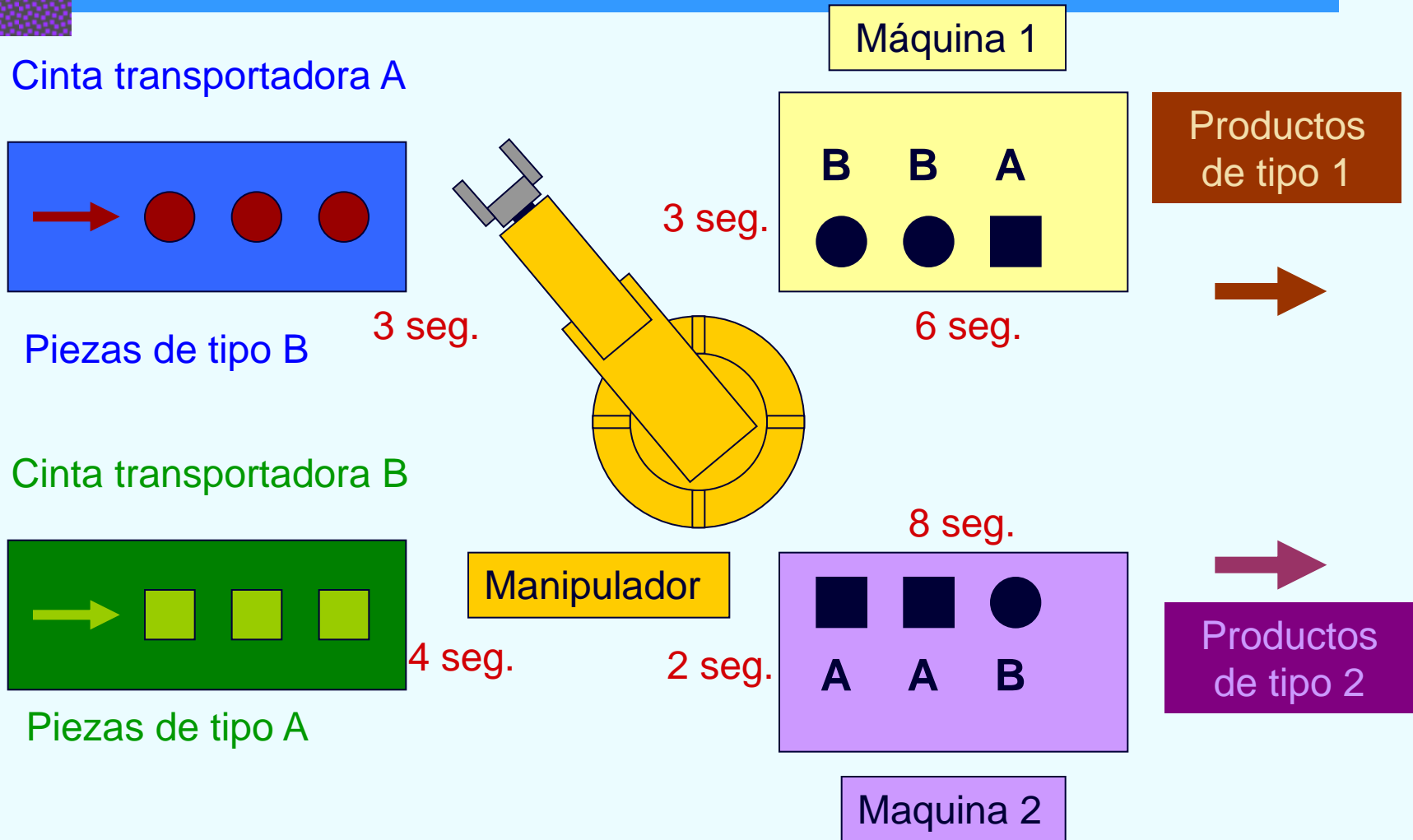
Ejemplo de sistema de fabricación



Ejemplo de sistema de fabricación

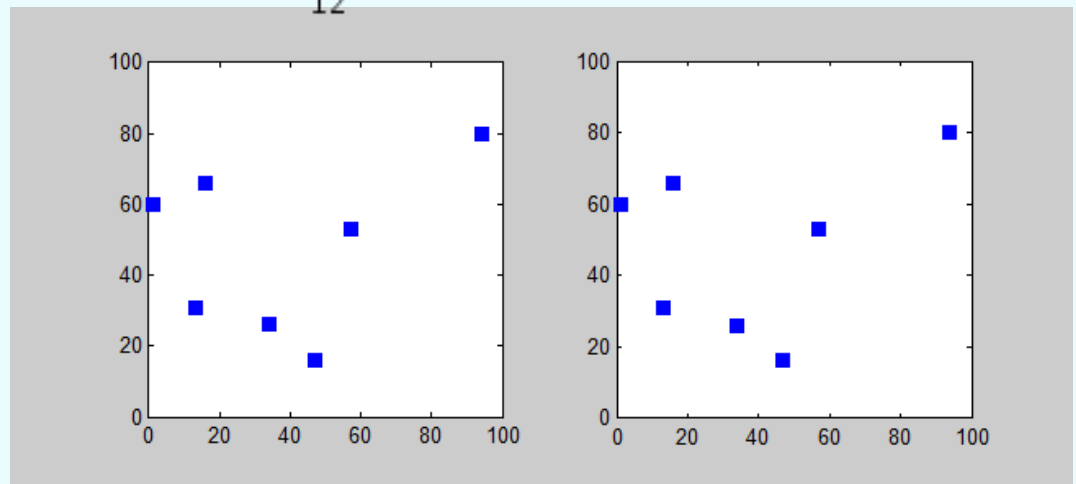
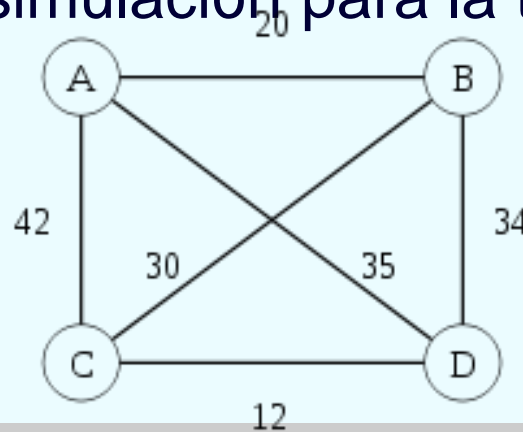
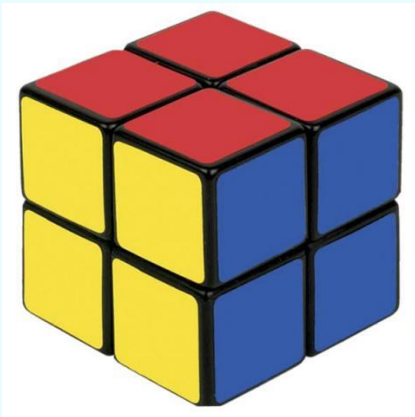


Ejemplo de sistema de fabricación

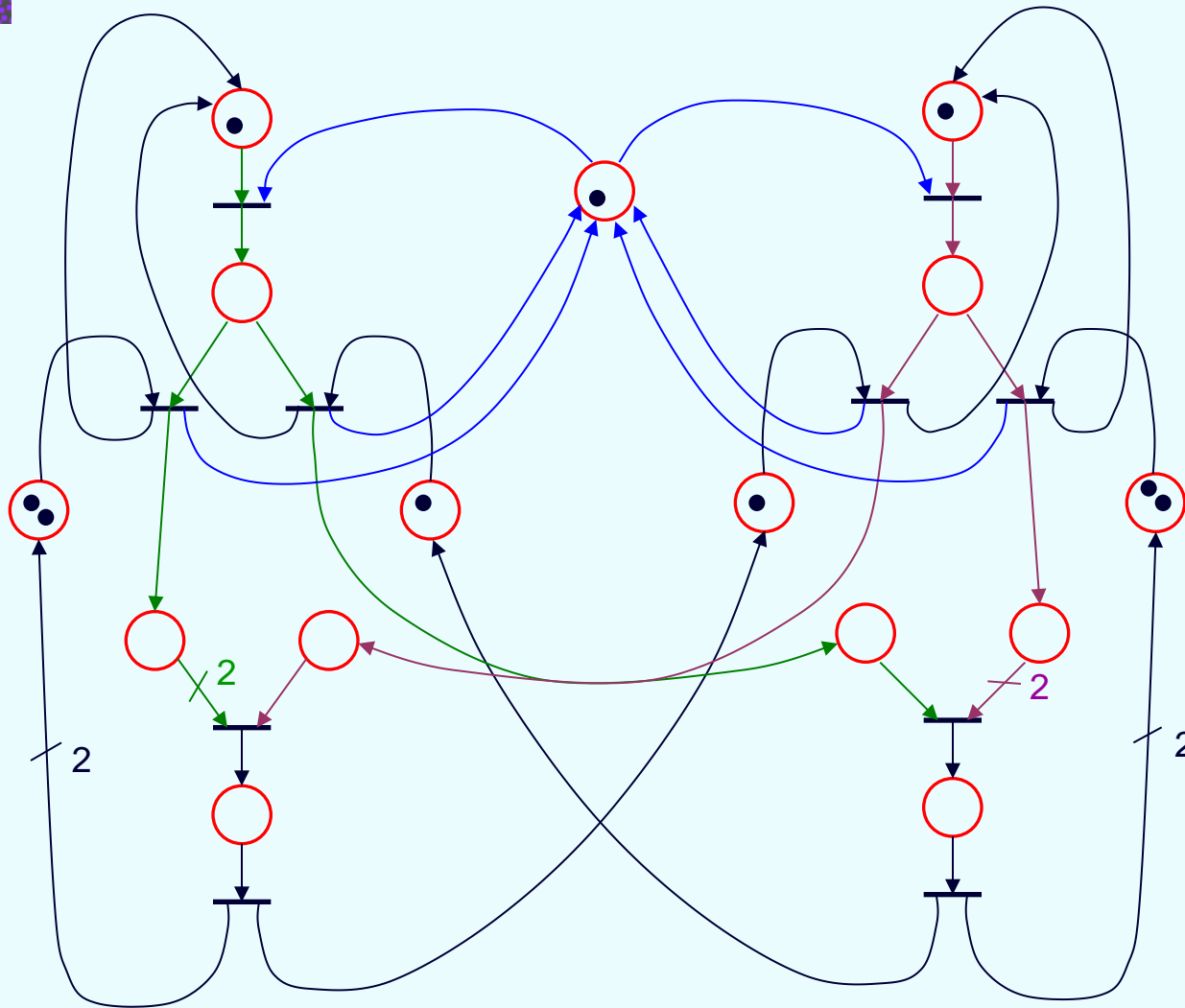


Simulación para toma de decisiones

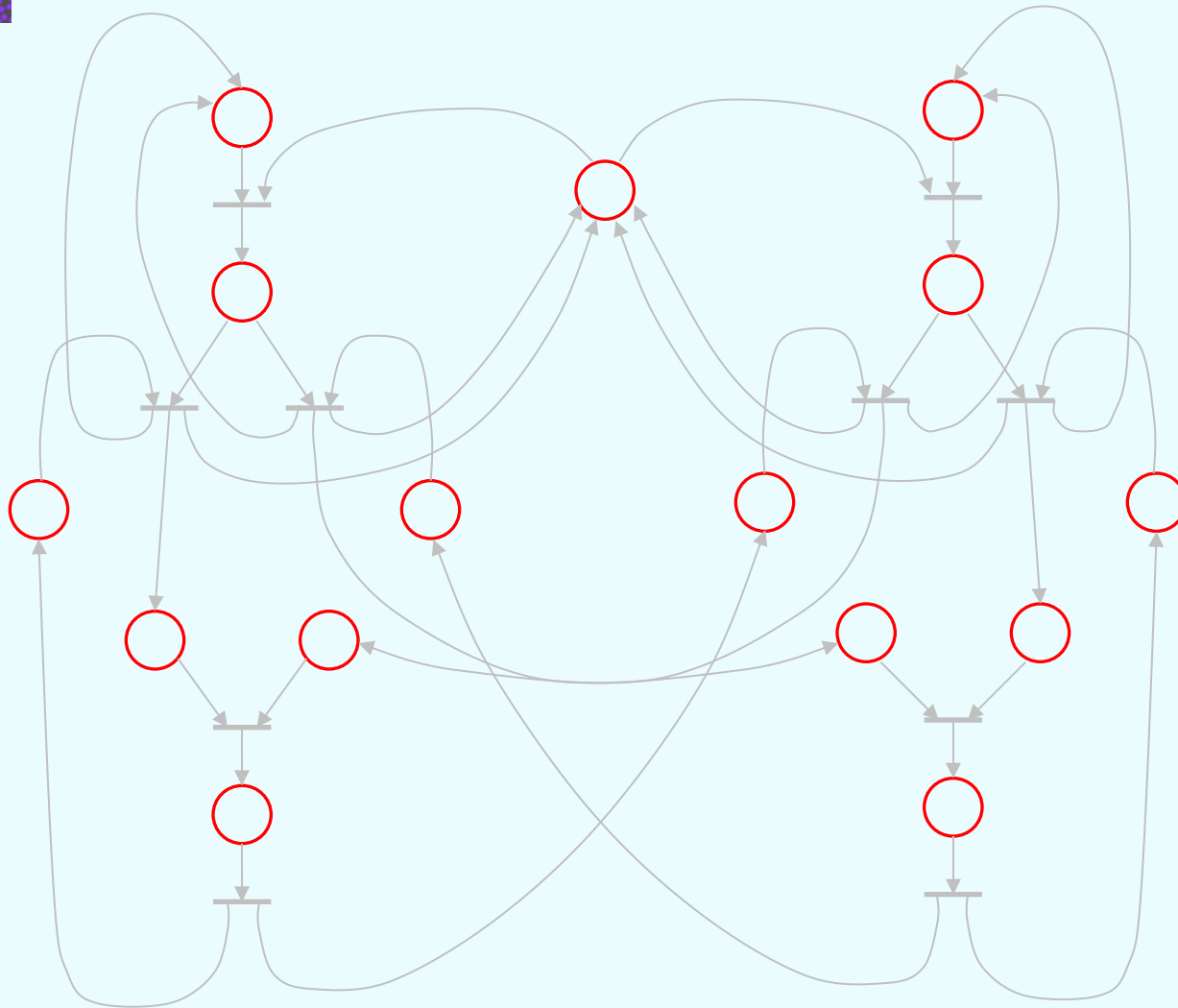
- ¿Es necesaria la simulación para la toma de decisiones?



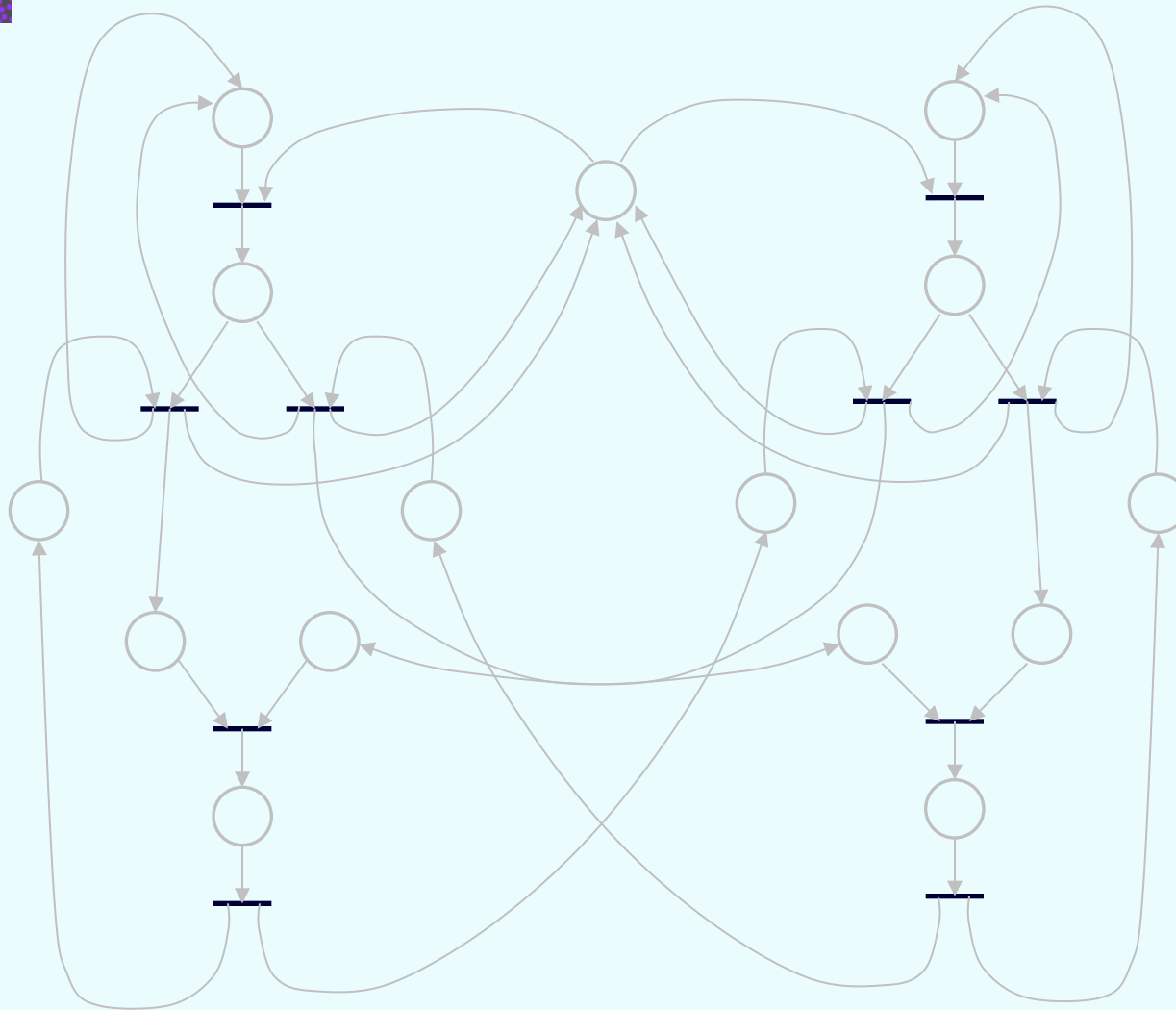
Ejemplo de RdP no temporizada



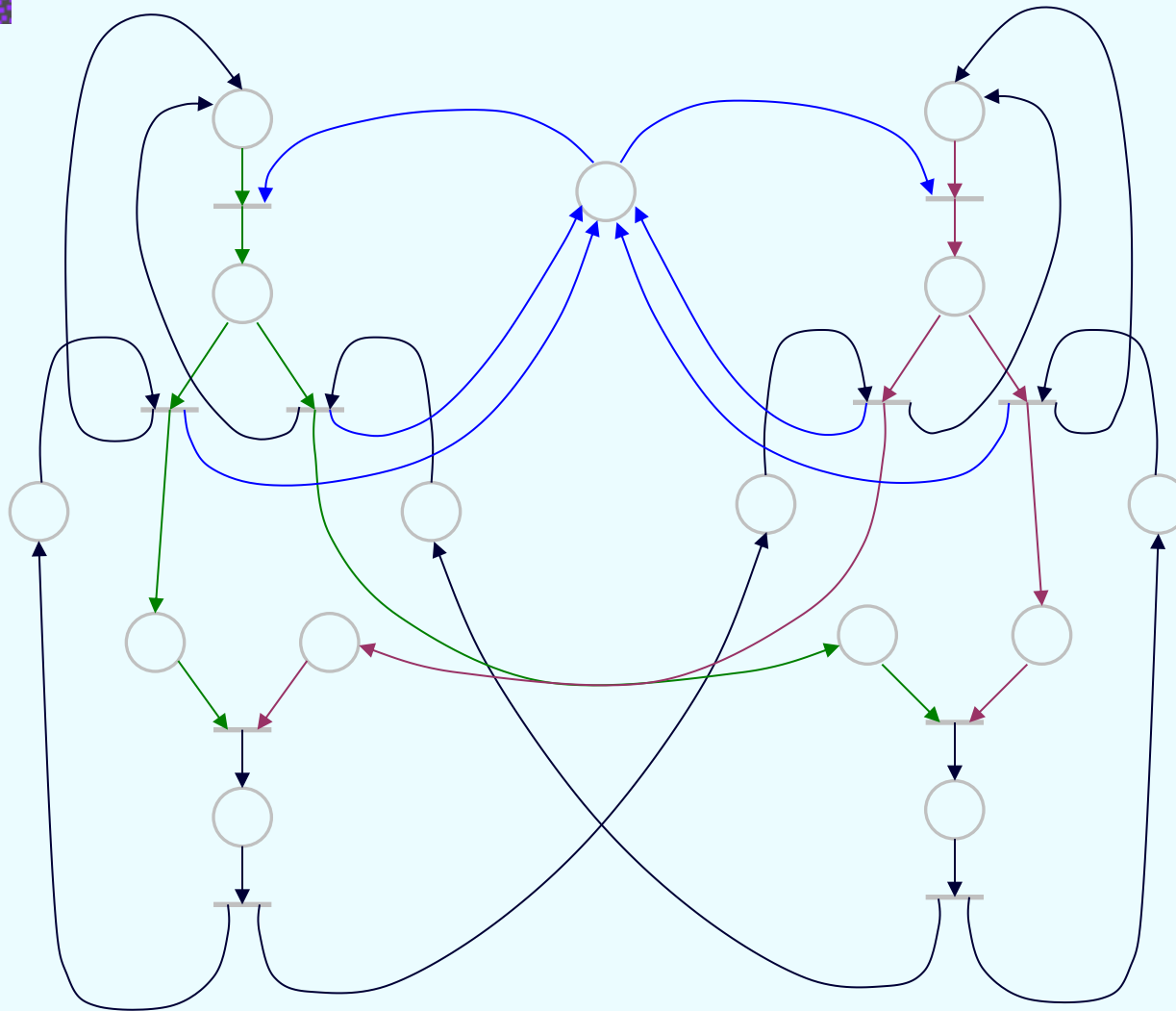
Lugares



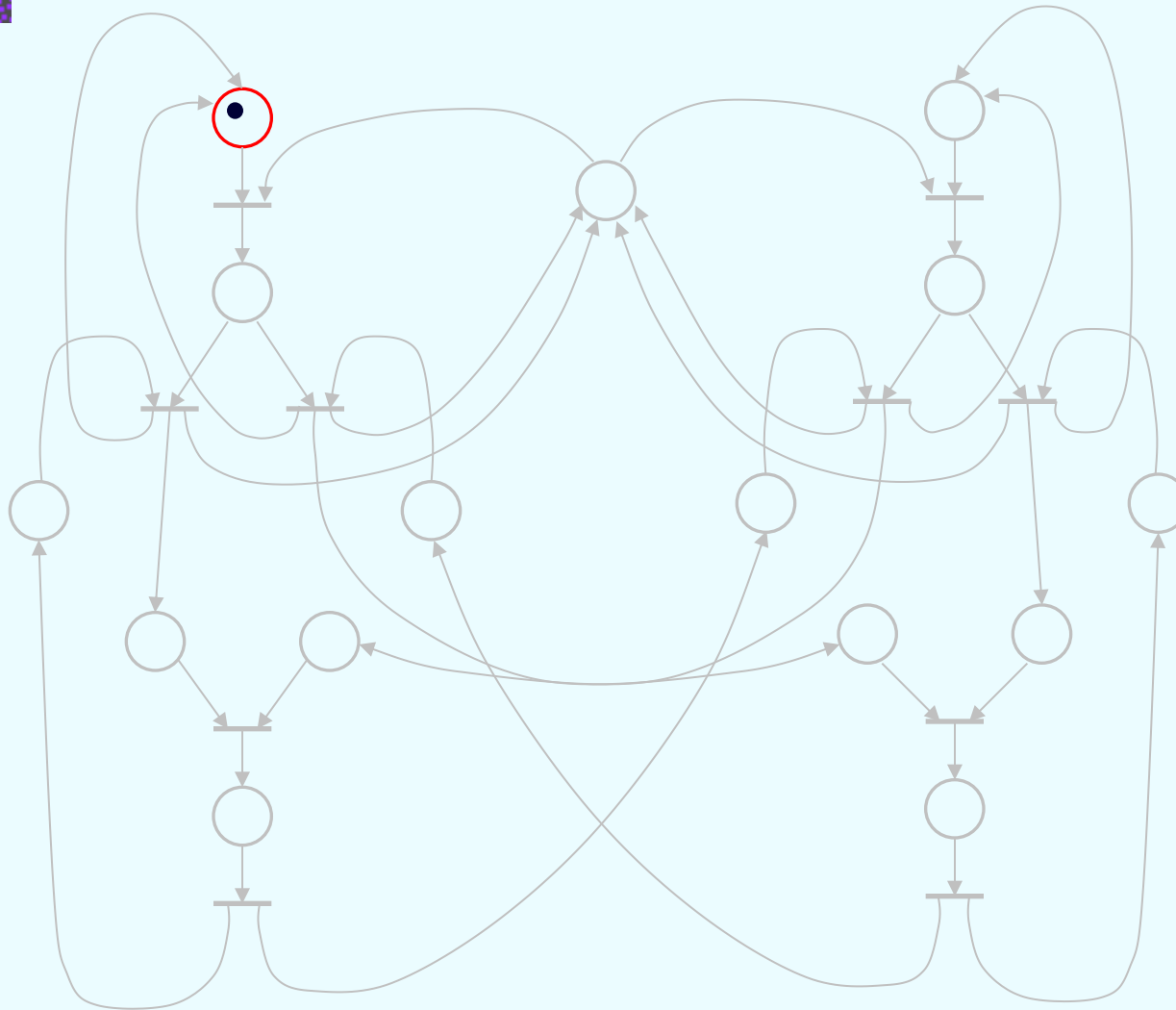
Transiciones



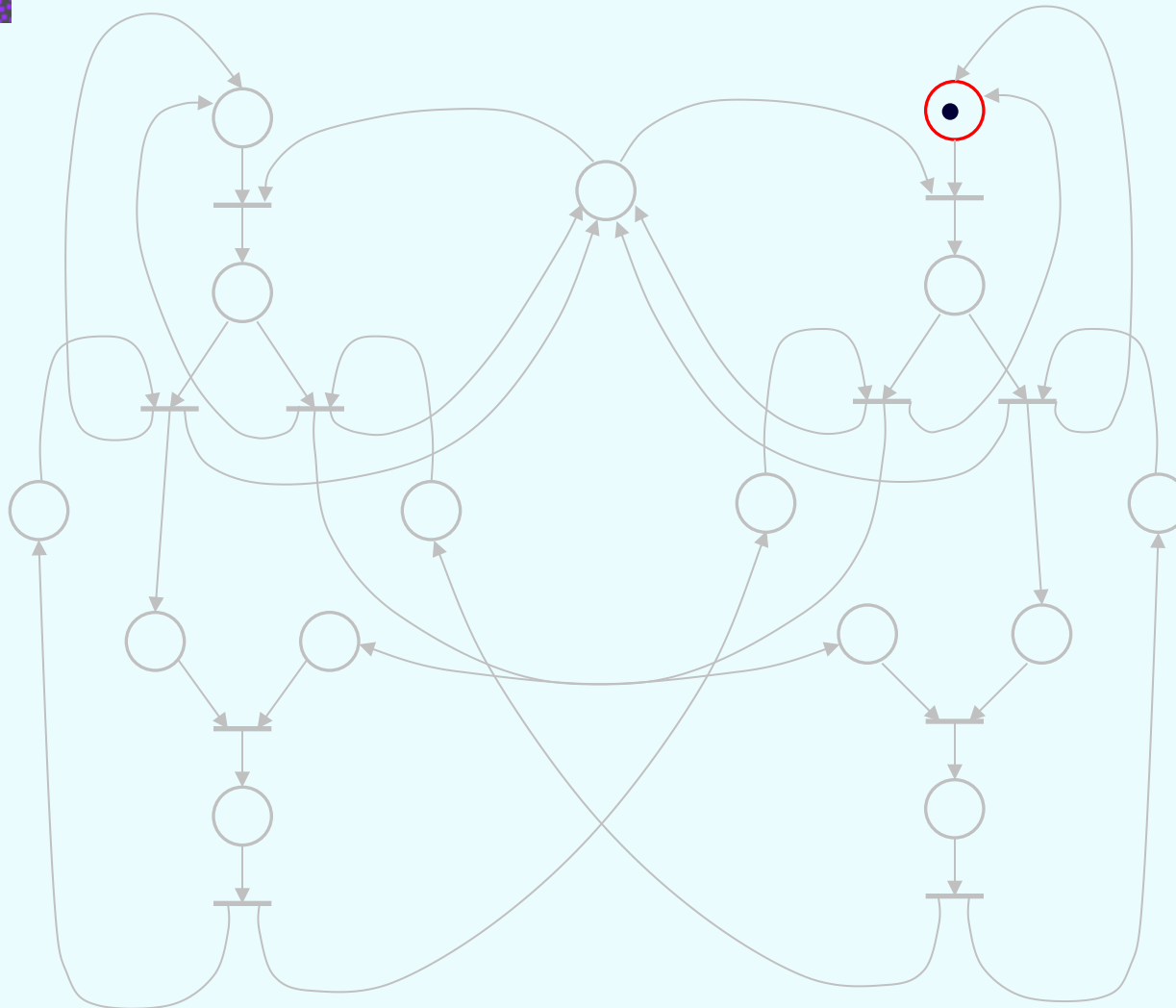
Arcos



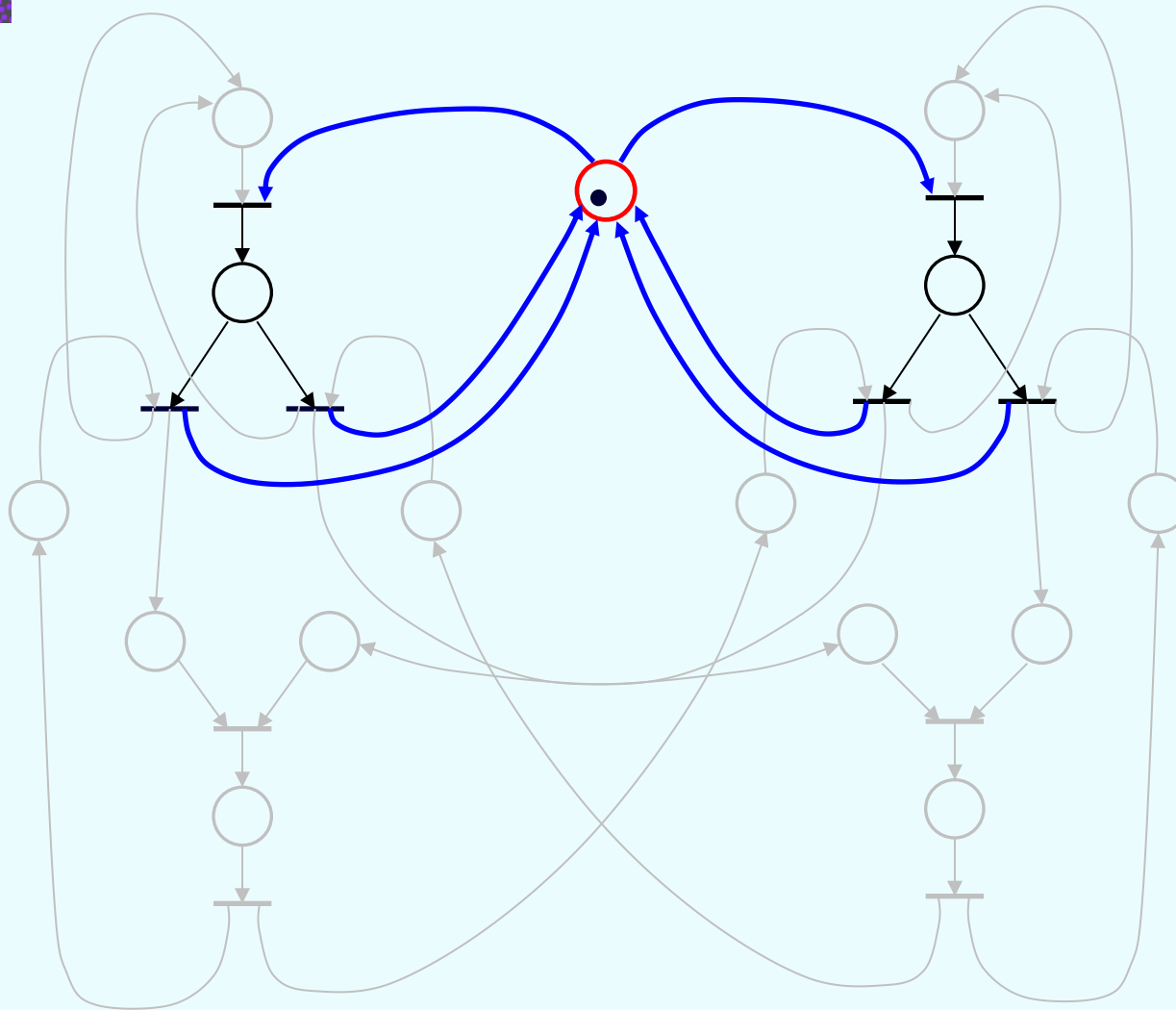
Cinta de piezas de tipo A



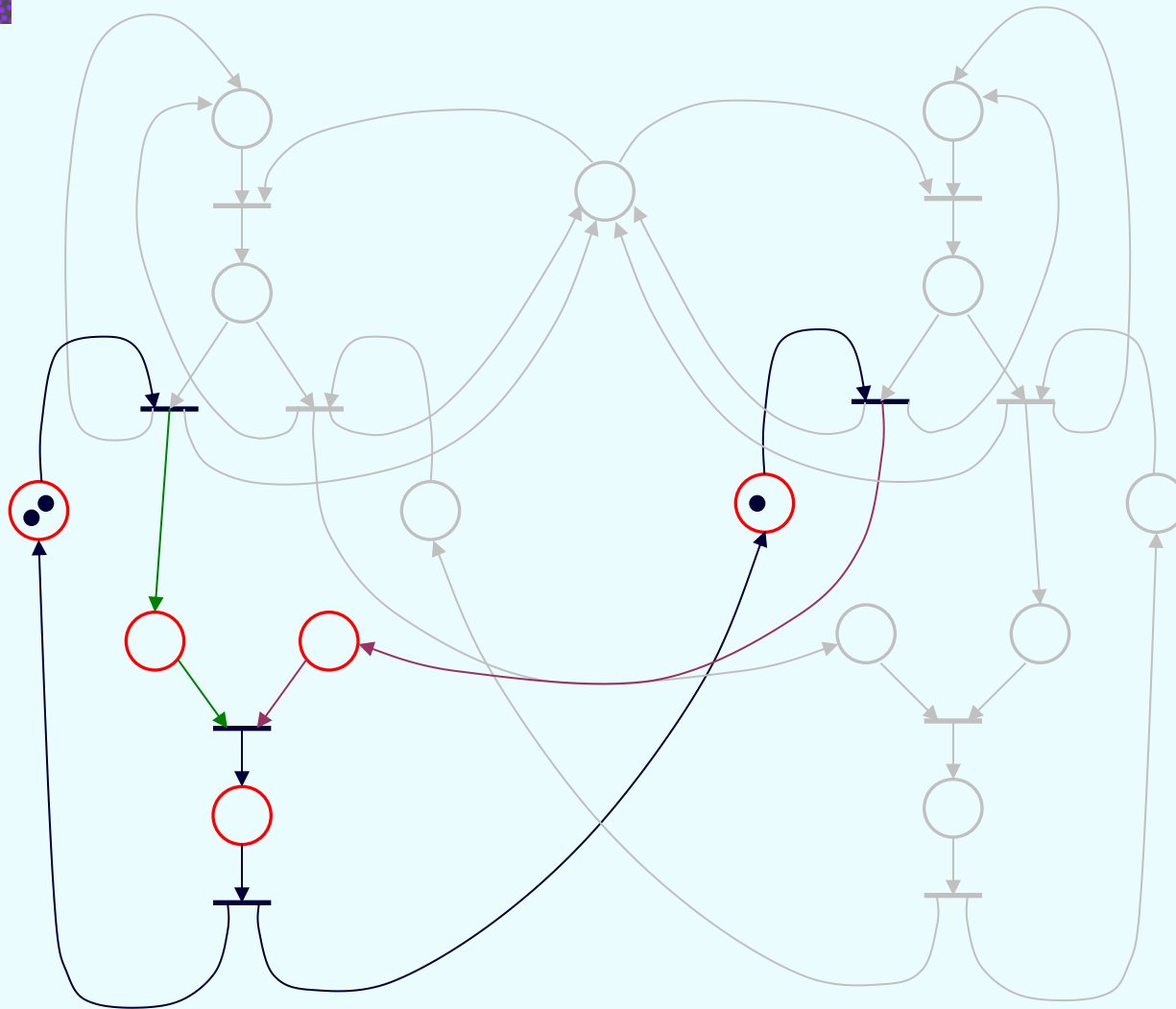
Cinta de piezas de tipo B



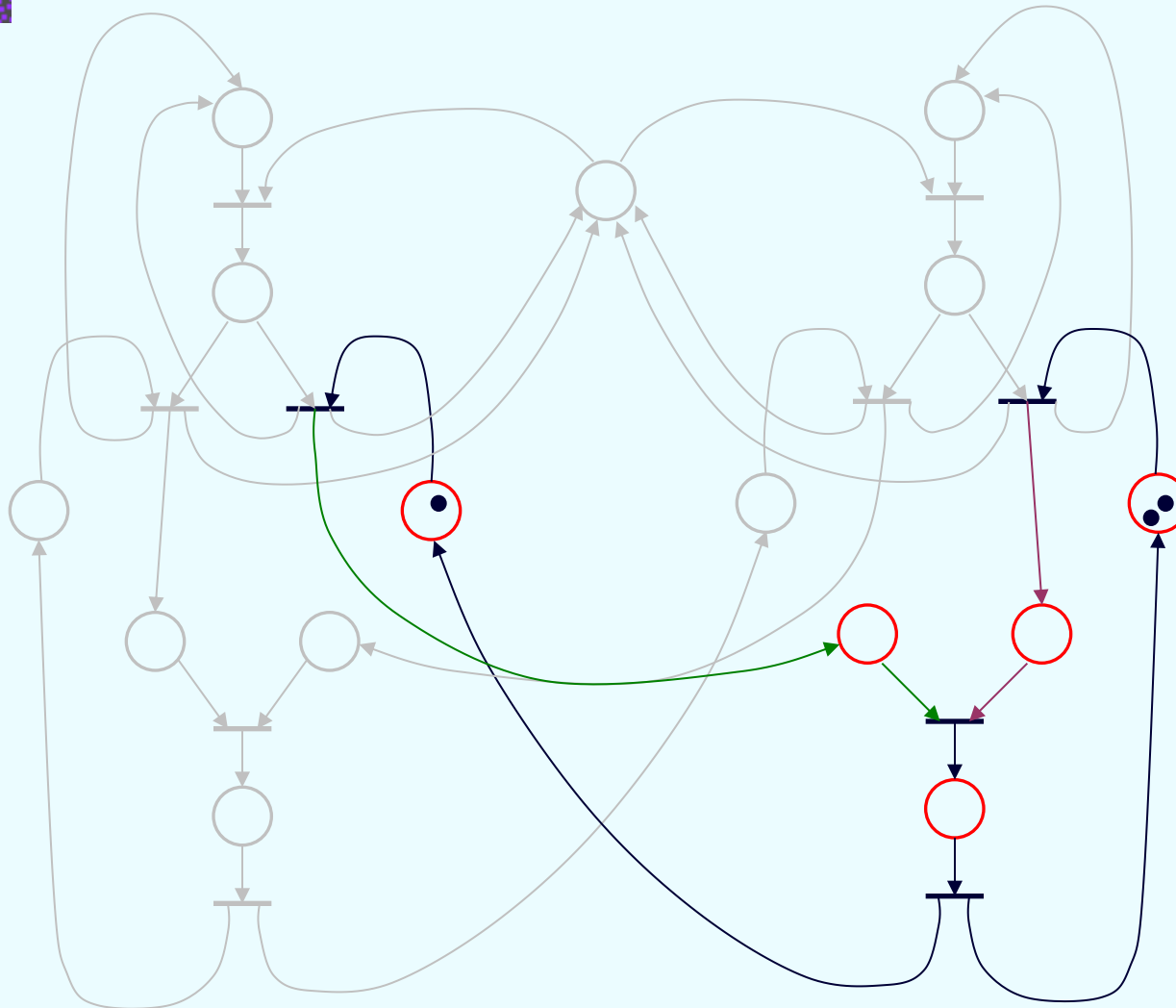
Manipulador



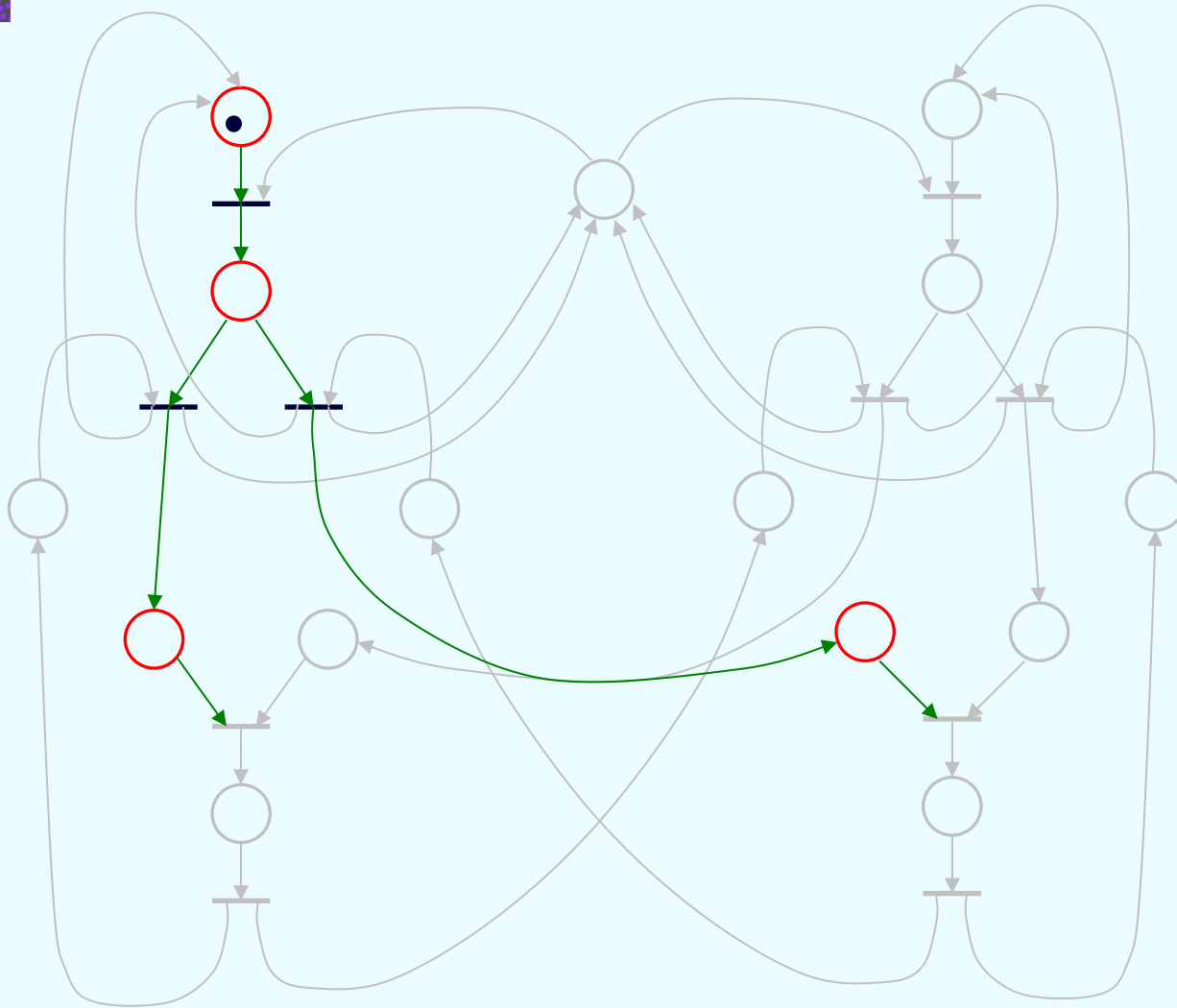
Máquina 1



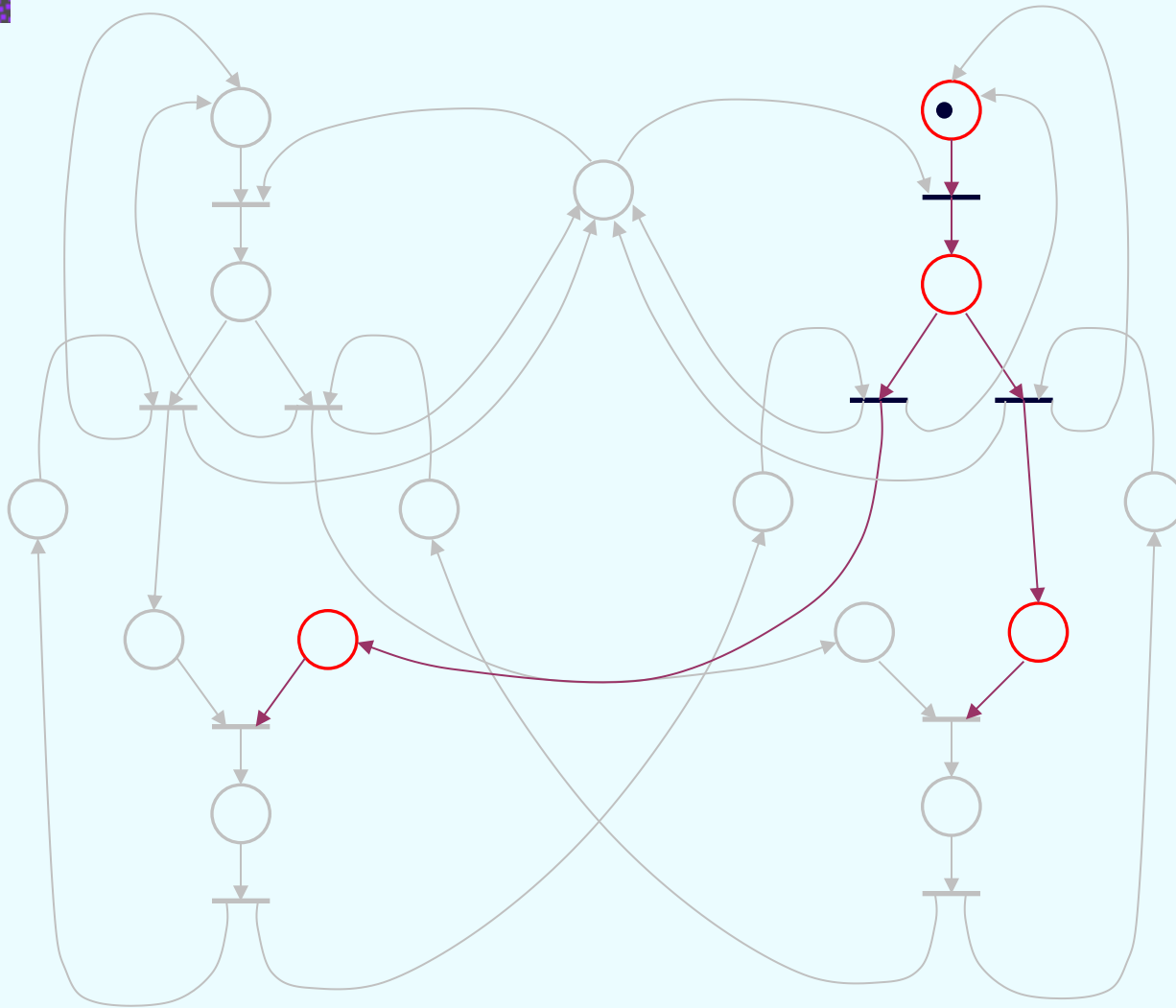
Máquina 2



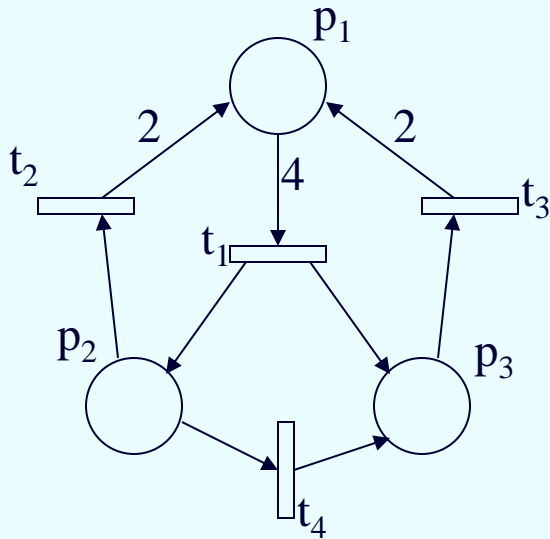
Piezas tipo A



Piezas tipo B



Análisis cuantitativo. Ejemplo 2



$$\text{Matriz de incidencia: } C = \begin{bmatrix} 2 & -4 & 2 & 0 \\ -1 & 1 & 0 & -1 \\ 0 & 1 & -1 & 0 \end{bmatrix}$$

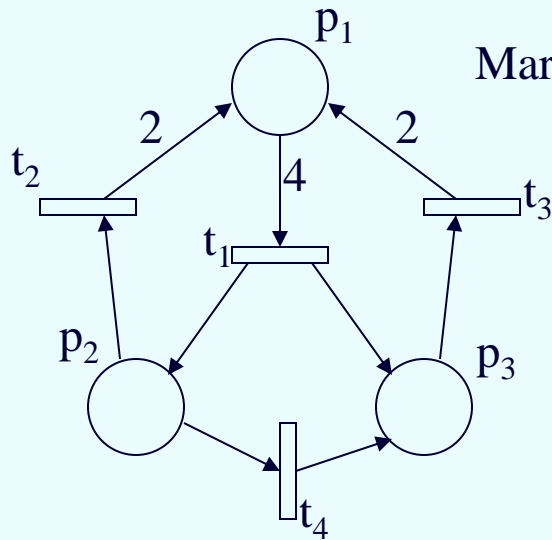
Base anuladores izquierdos $[1 \ 2 \ 2]$

$$\text{Base anuladores derechos} \begin{bmatrix} 1 \\ 0 \\ 2 \\ 1 \end{bmatrix} \begin{bmatrix} 1 \\ 1 \\ 1 \\ 0 \end{bmatrix}$$

PROPIEDADES ESTRUCTURALES:

- Conservativa
- Repetitiva
- Sin cerrojos ni trampas

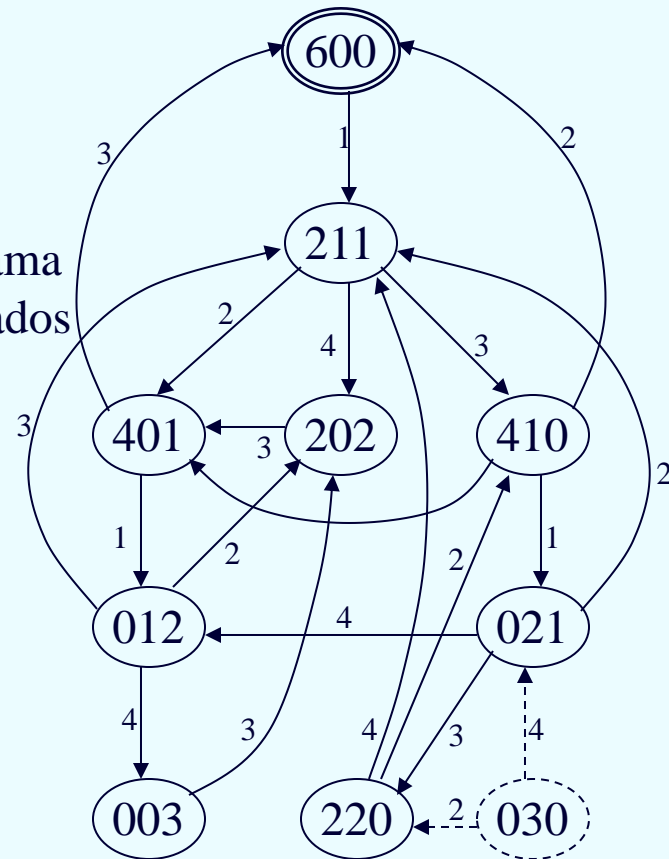
Análisis cuantitativo. Ejemplo 2



Marcado Inicial:

$$\begin{bmatrix} 6 \\ 0 \\ 0 \end{bmatrix}$$

Diagrama de estados



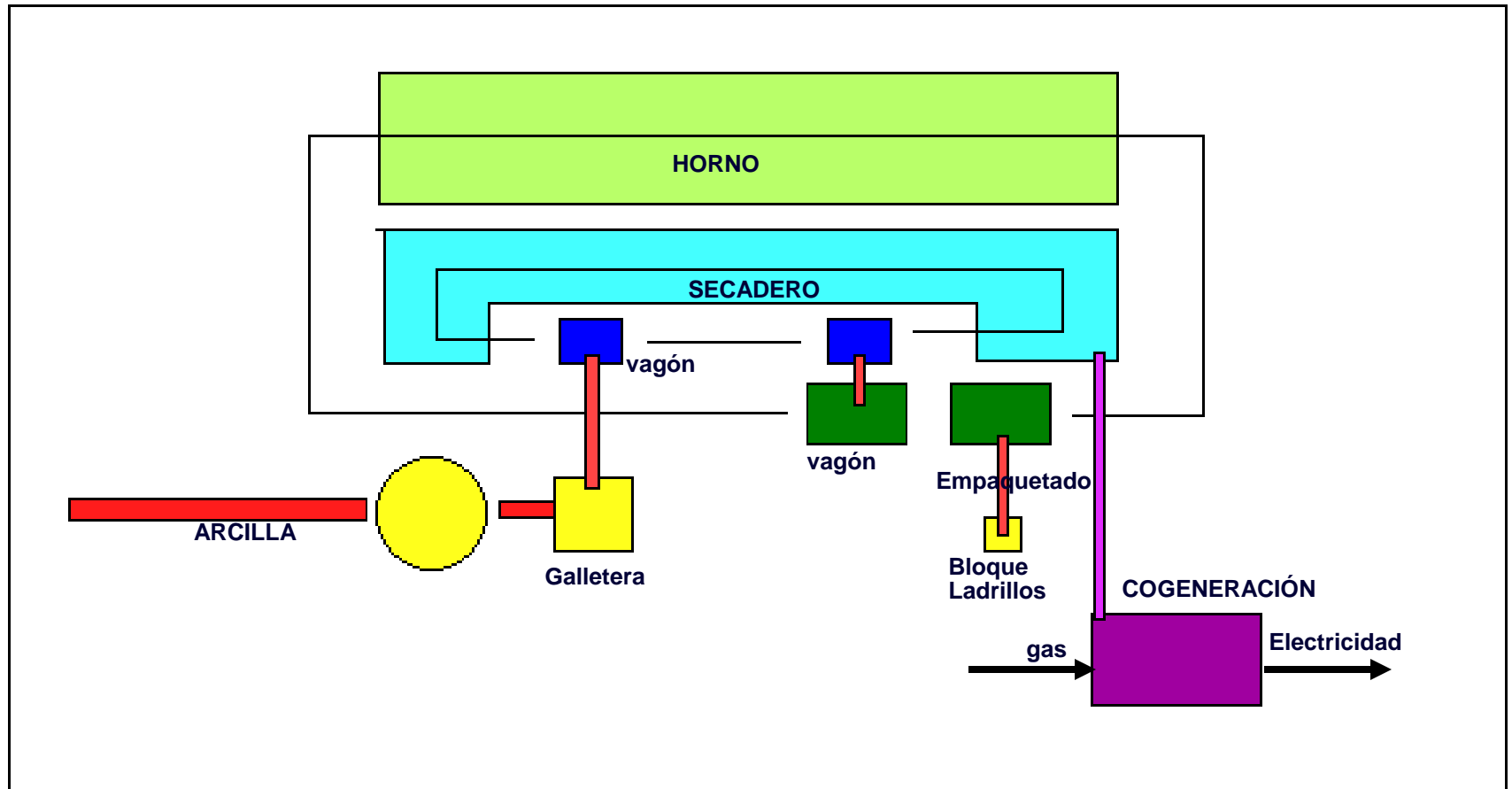
PROPIEDADES DINÁMICAS:

- Viva
- Cíclica
- Limitada (6 2 3)
- Con un estado espurio (0 3 0)

Nota: Si el marcado inicial fuese (0 3 0), el sistema sería vivo pero no sería cíclico

Aplicación en planta industrial ...

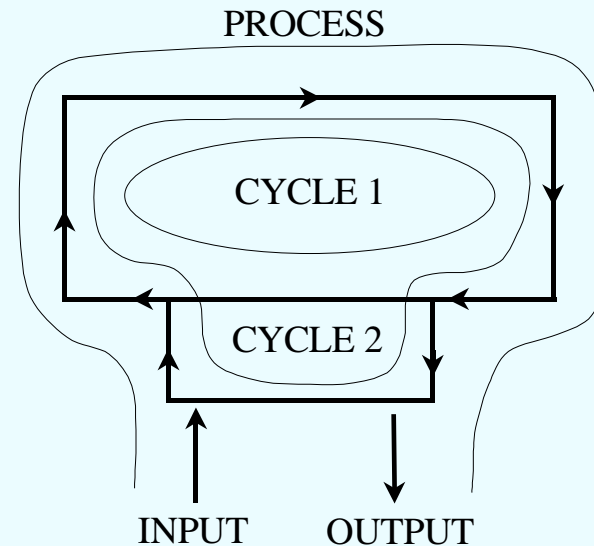
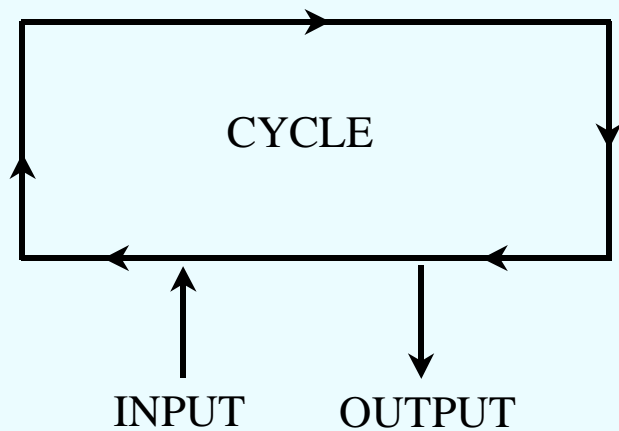
Proceso Industrial



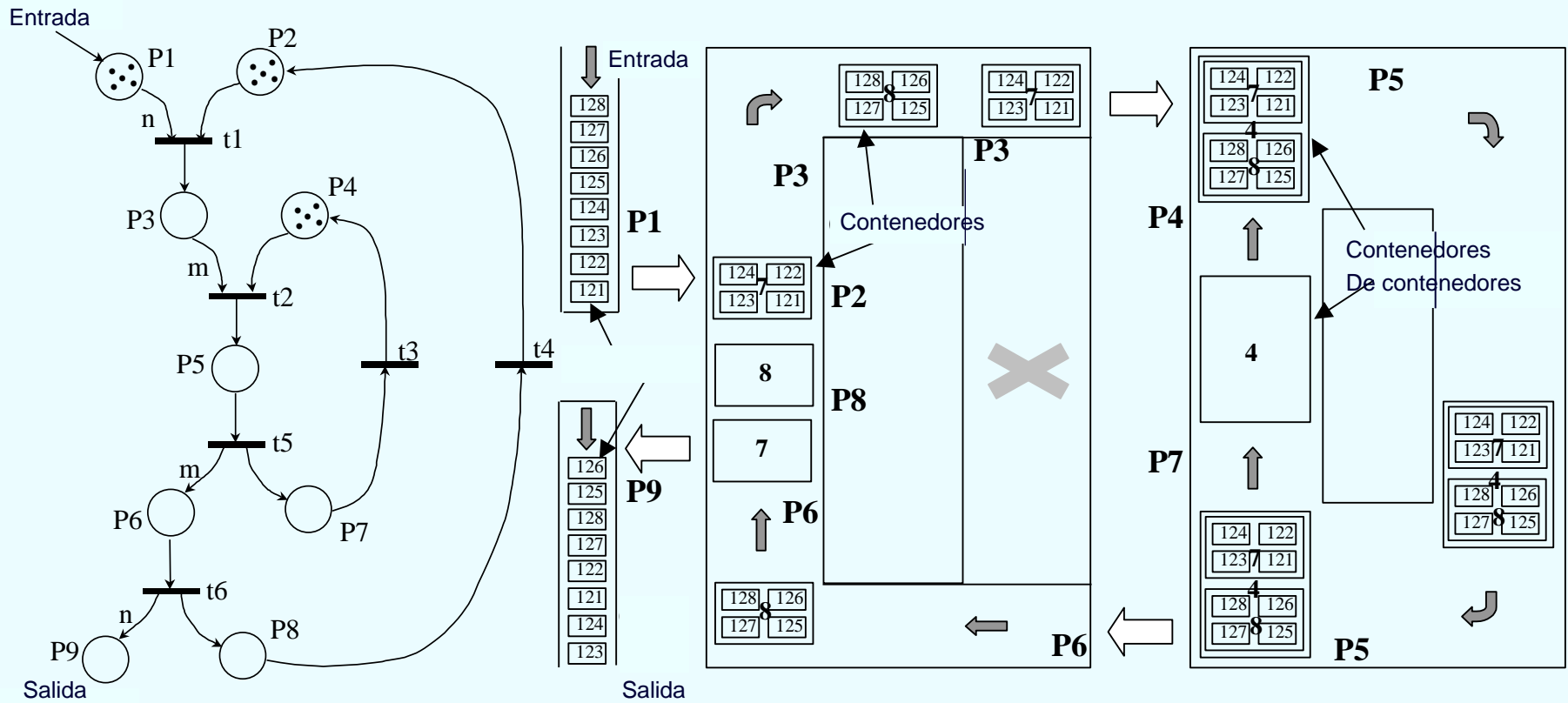
Aplicación en planta industrial ...

Procesos con subsistemas cíclicos

Subsistemas fuertemente interrelacionados:
Sincronización, inclusión, concurrencia, ...

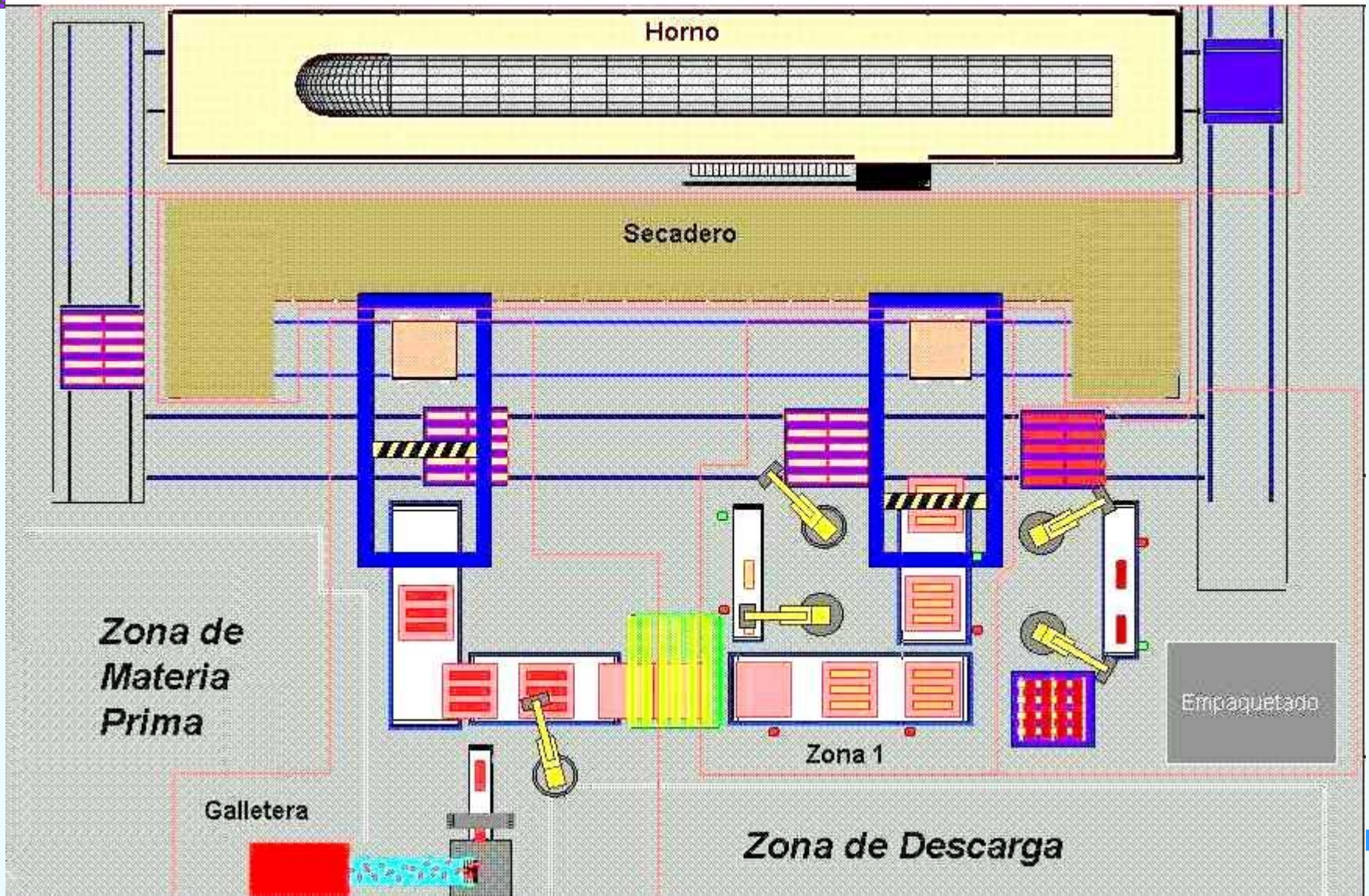


Ejemplos



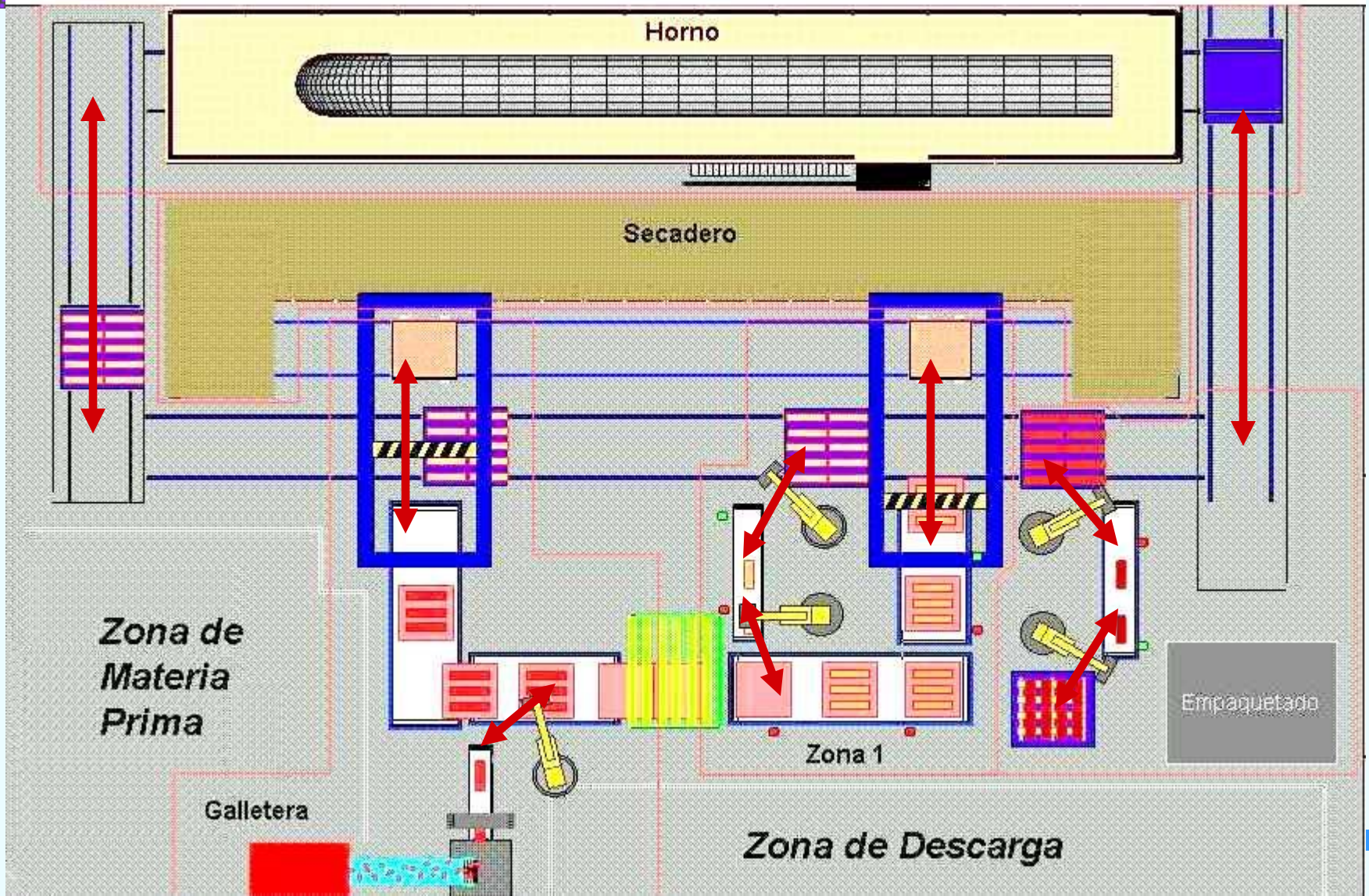
Aplicación en planta industrial ...

Proceso Industrial



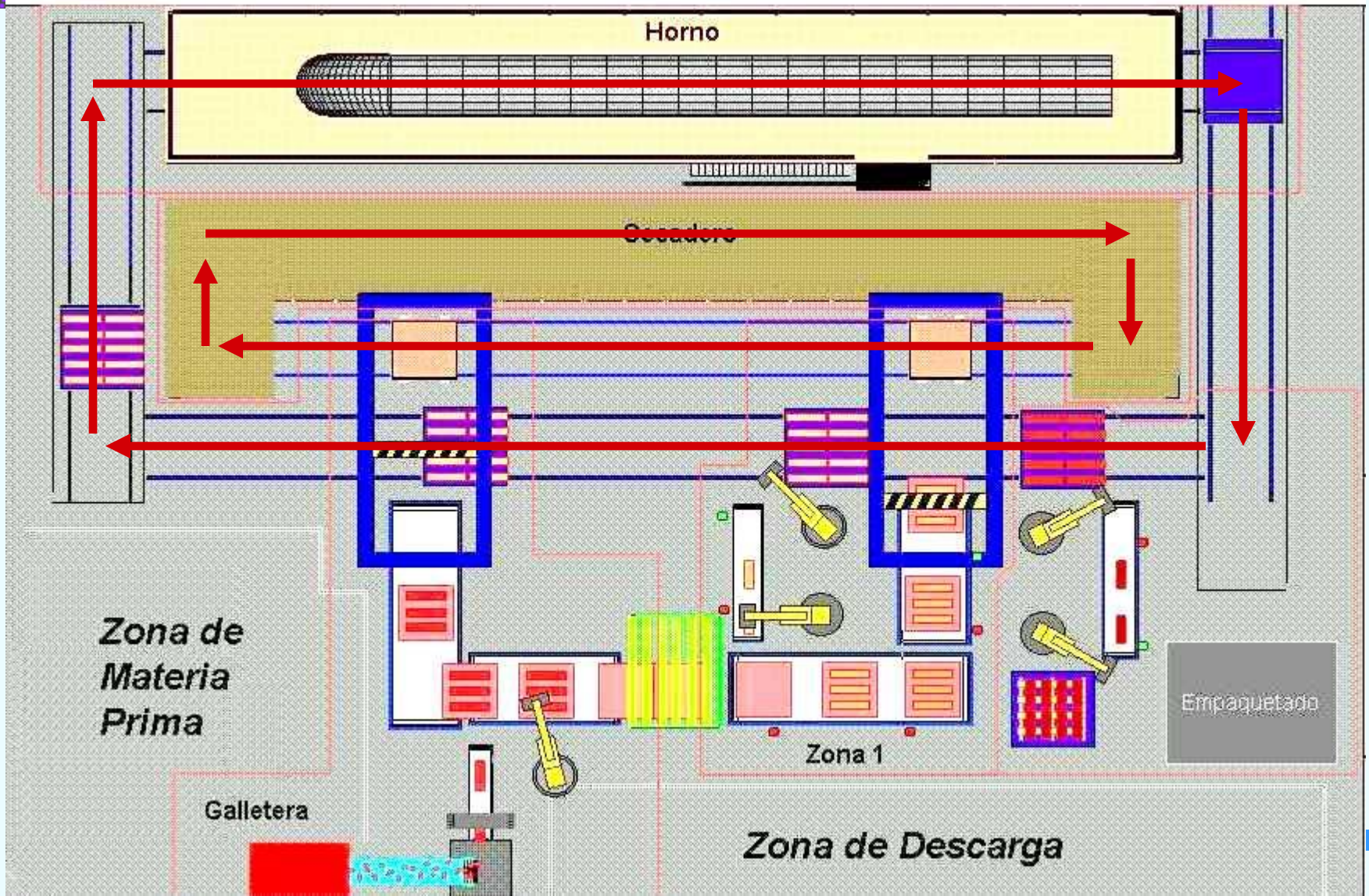
Aplicación en planta industrial ...

Ciclos simples



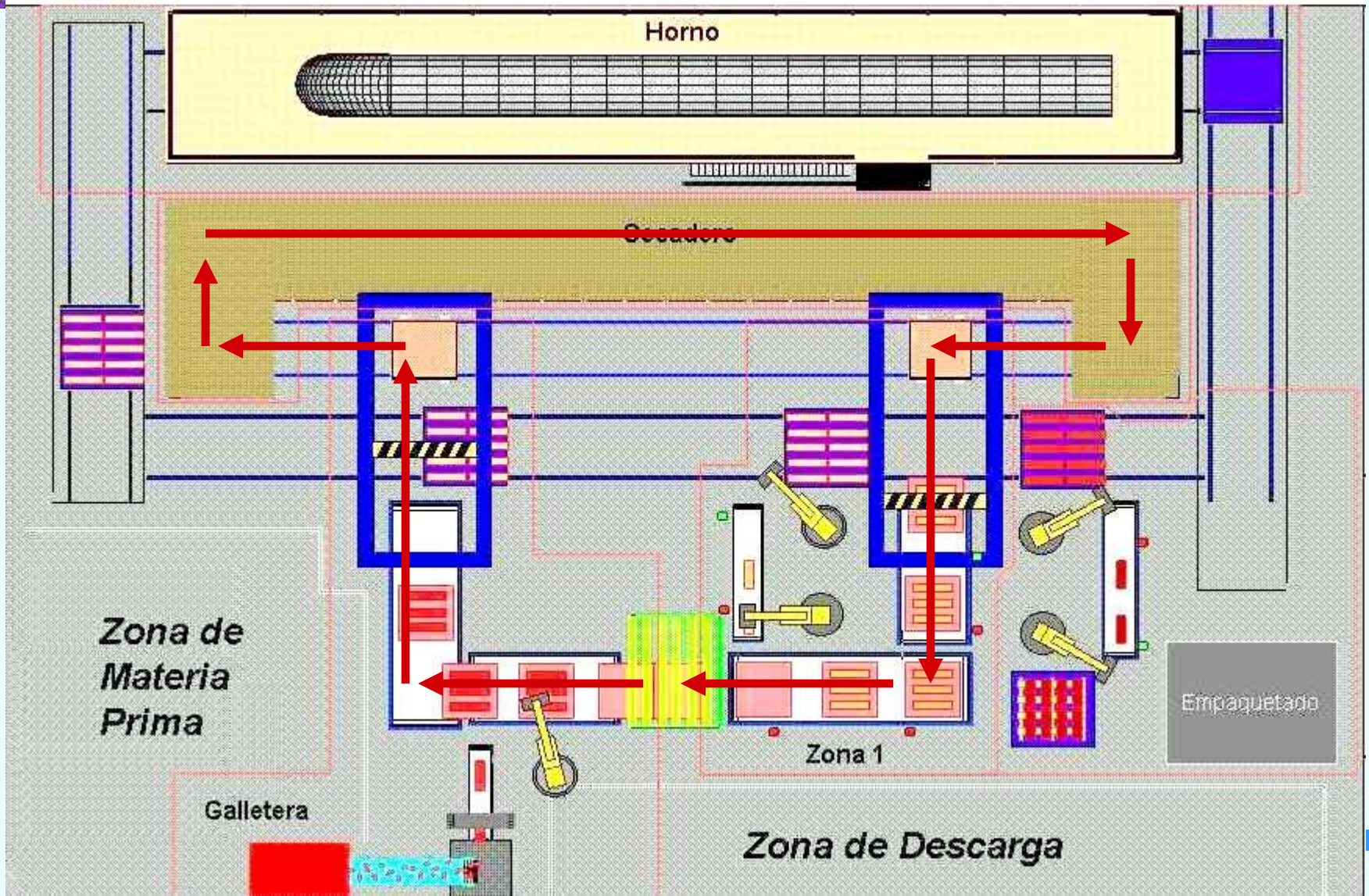
Aplicación en planta industrial ...

Ciclos vagones



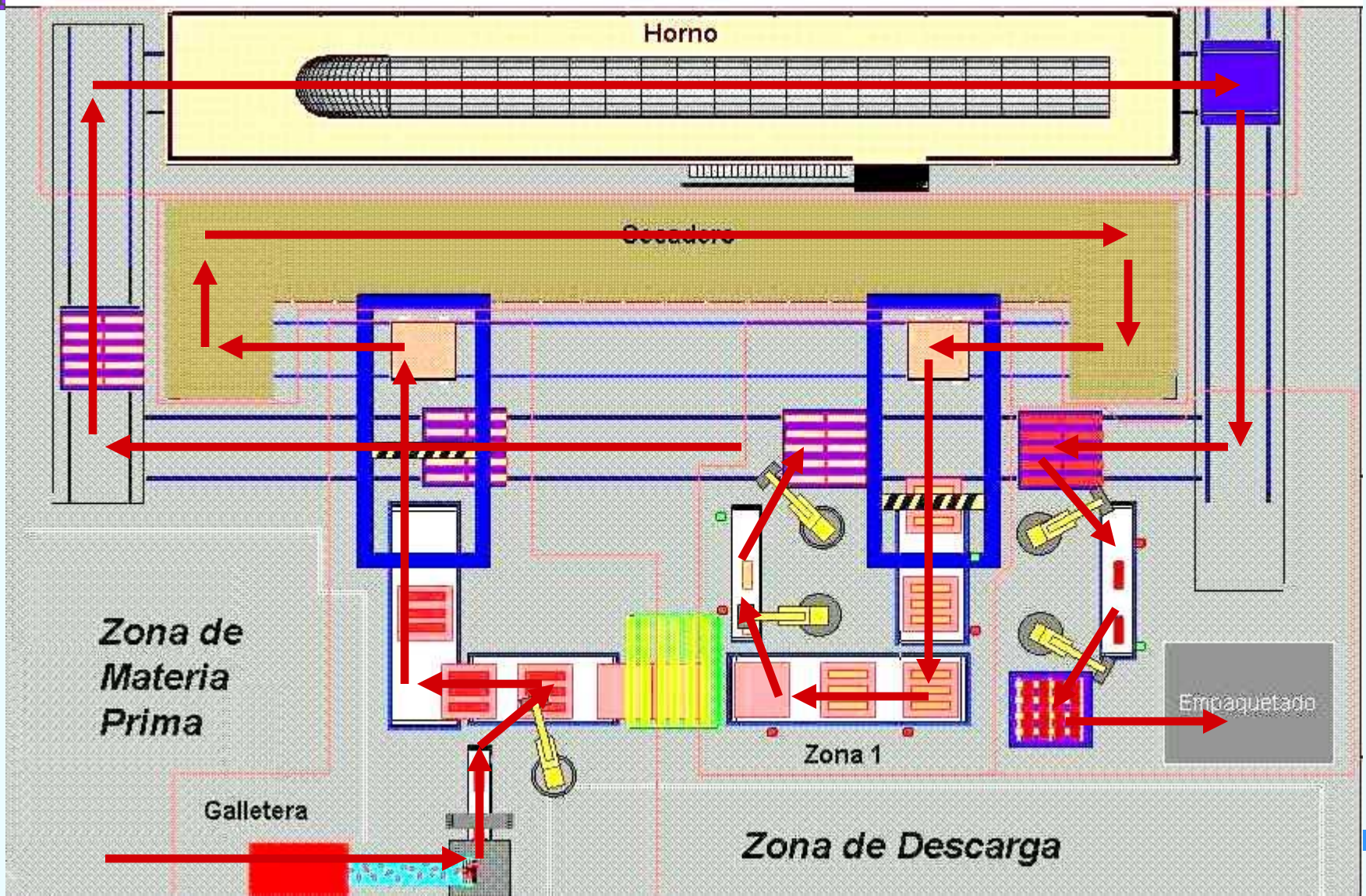
Aplicación en planta industrial ...

Ciclo bandejas

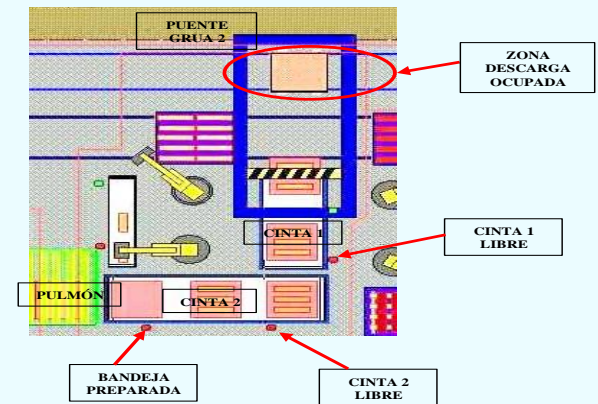
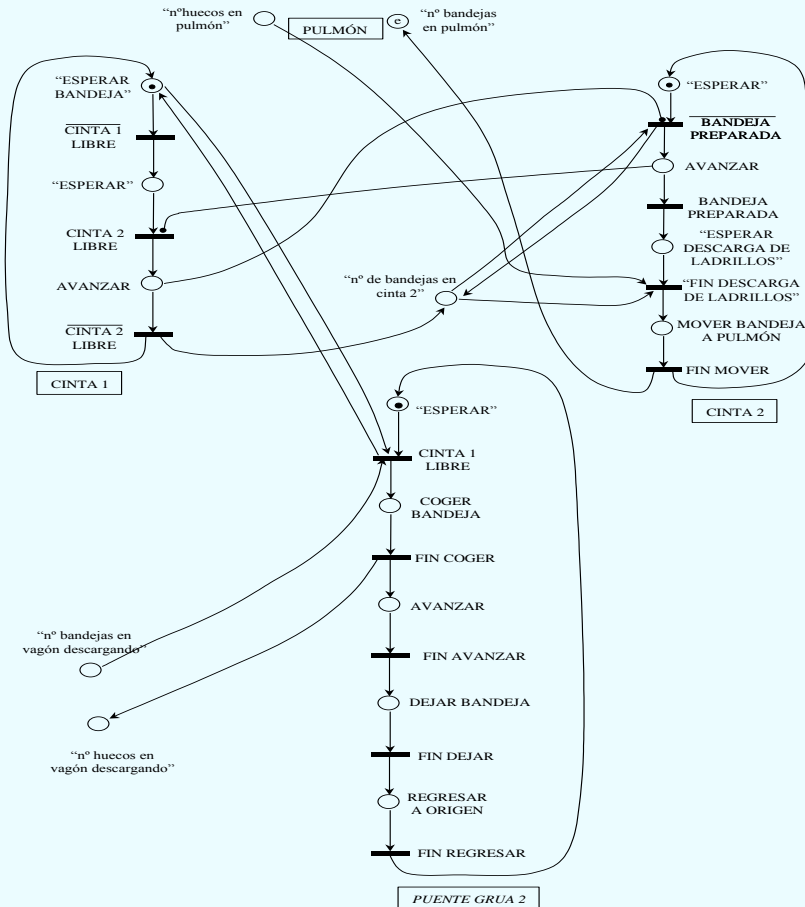


Aplicación en planta industrial ...

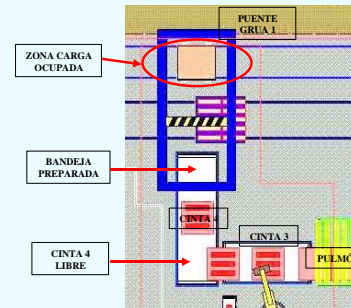
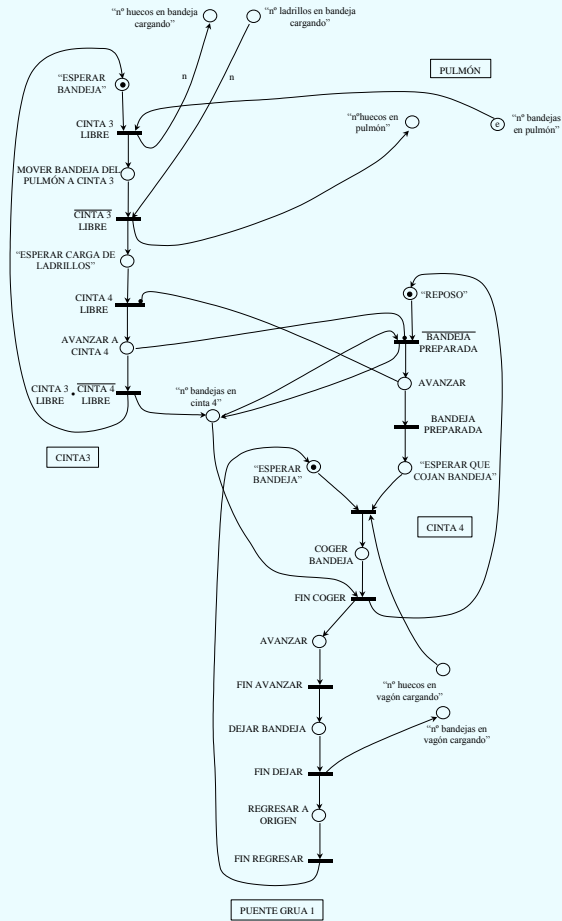
Ciclo elementos



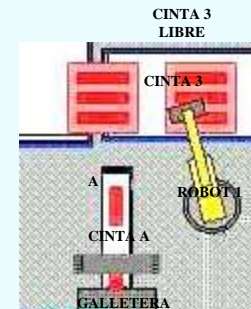
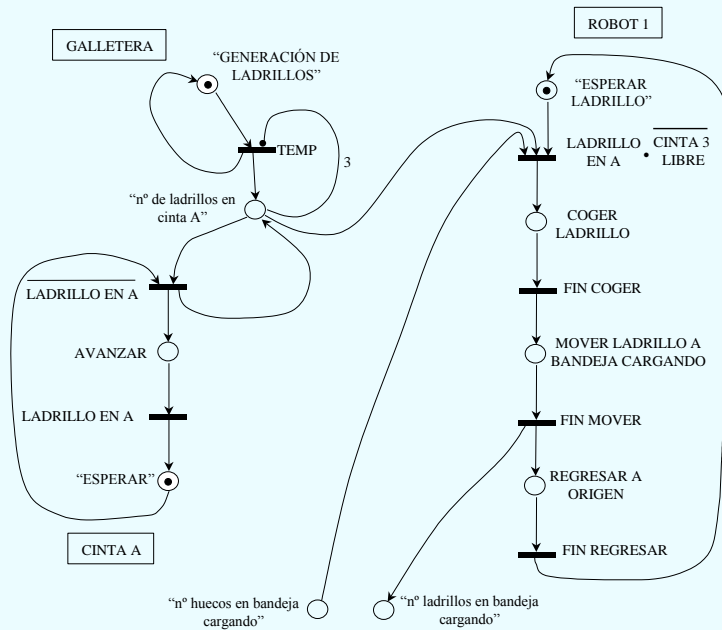
Procesos Individuales



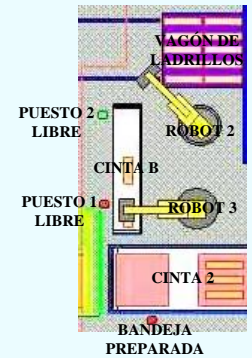
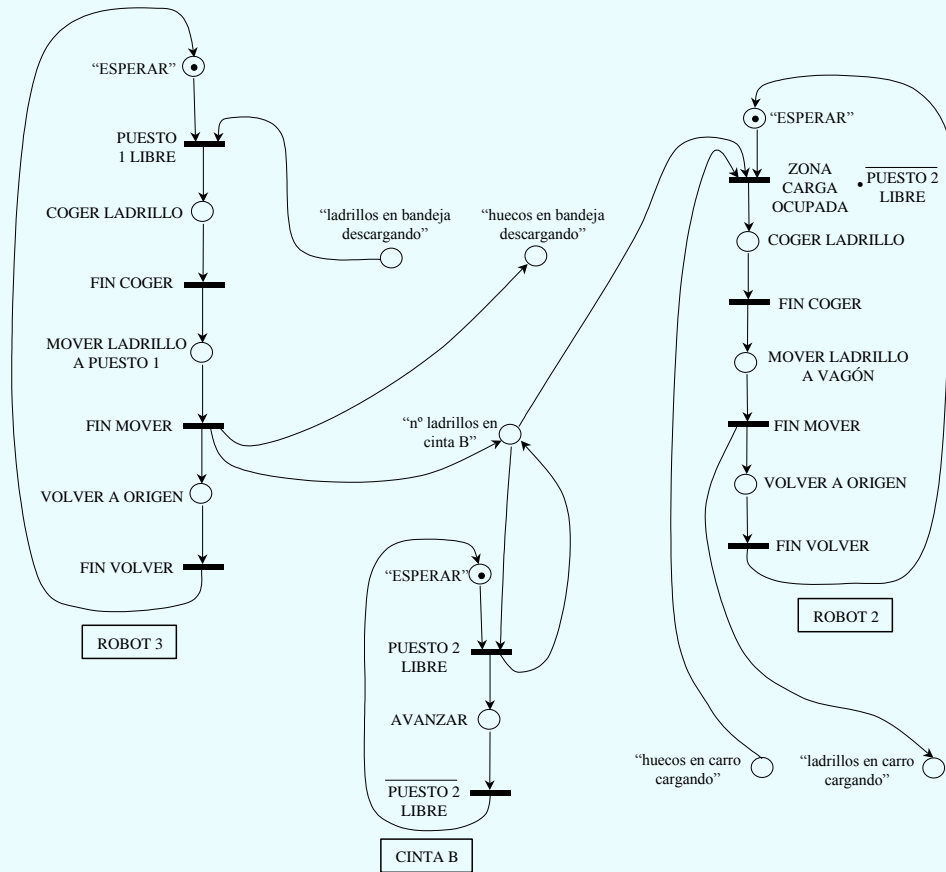
Procesos Individuales



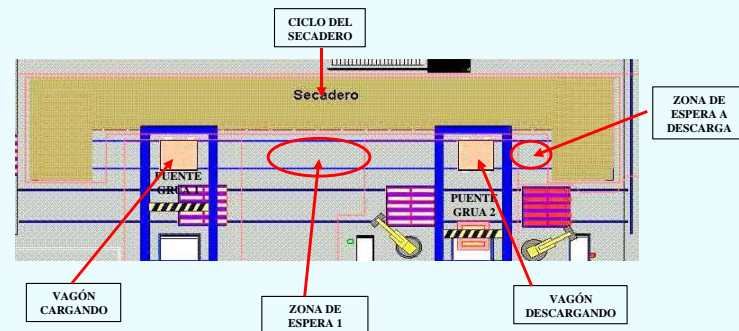
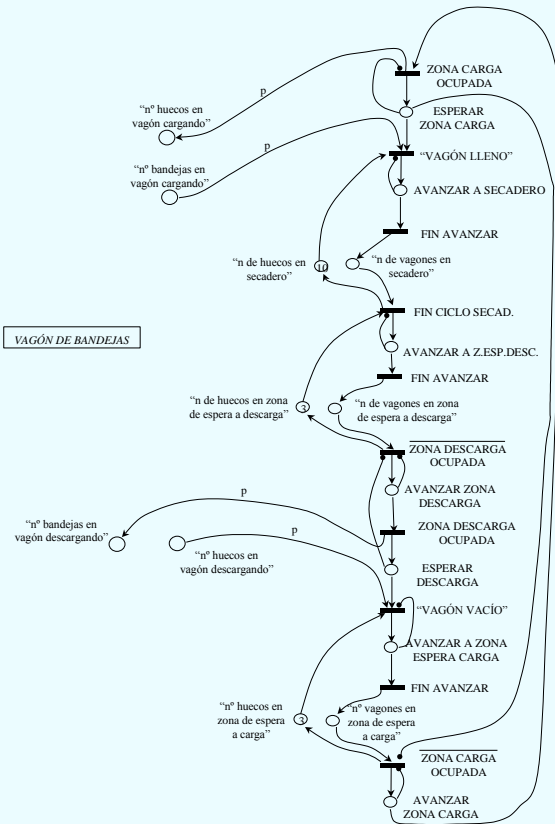
Procesos Individuales



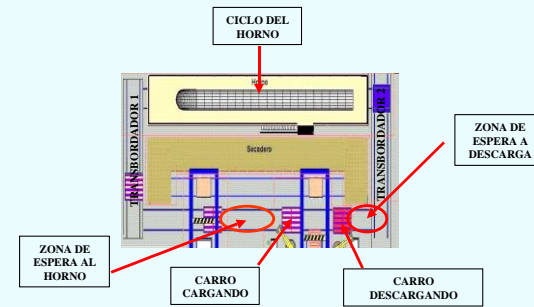
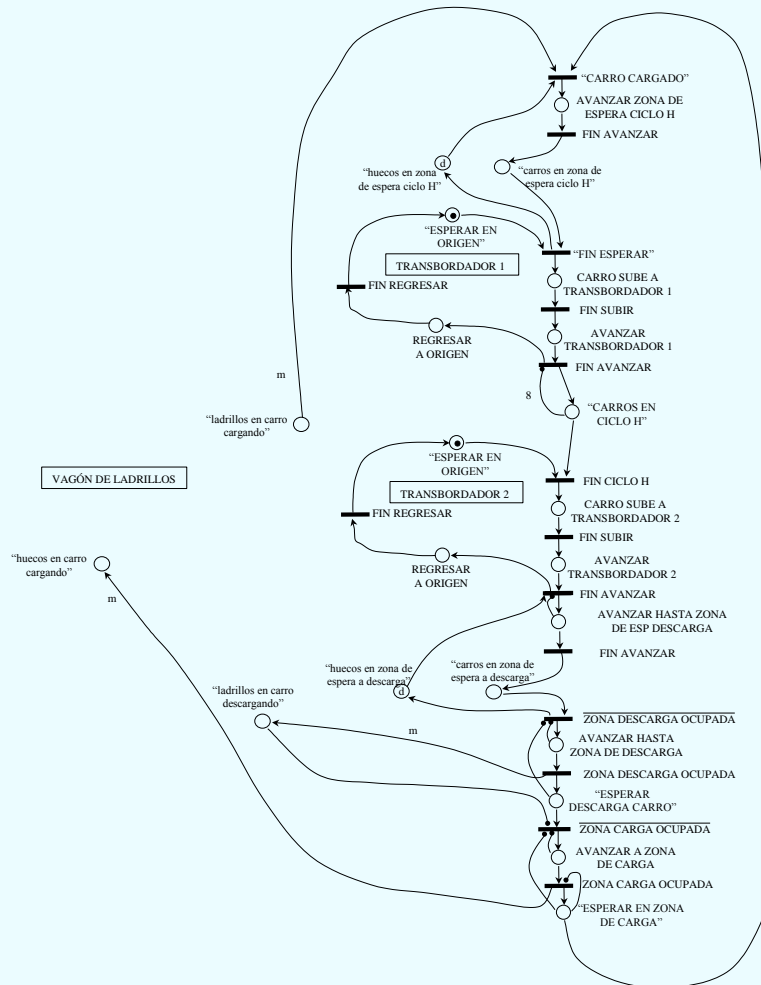
Procesos Individuales



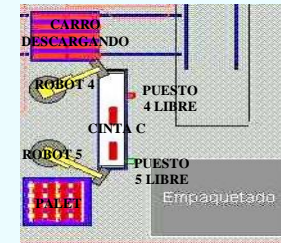
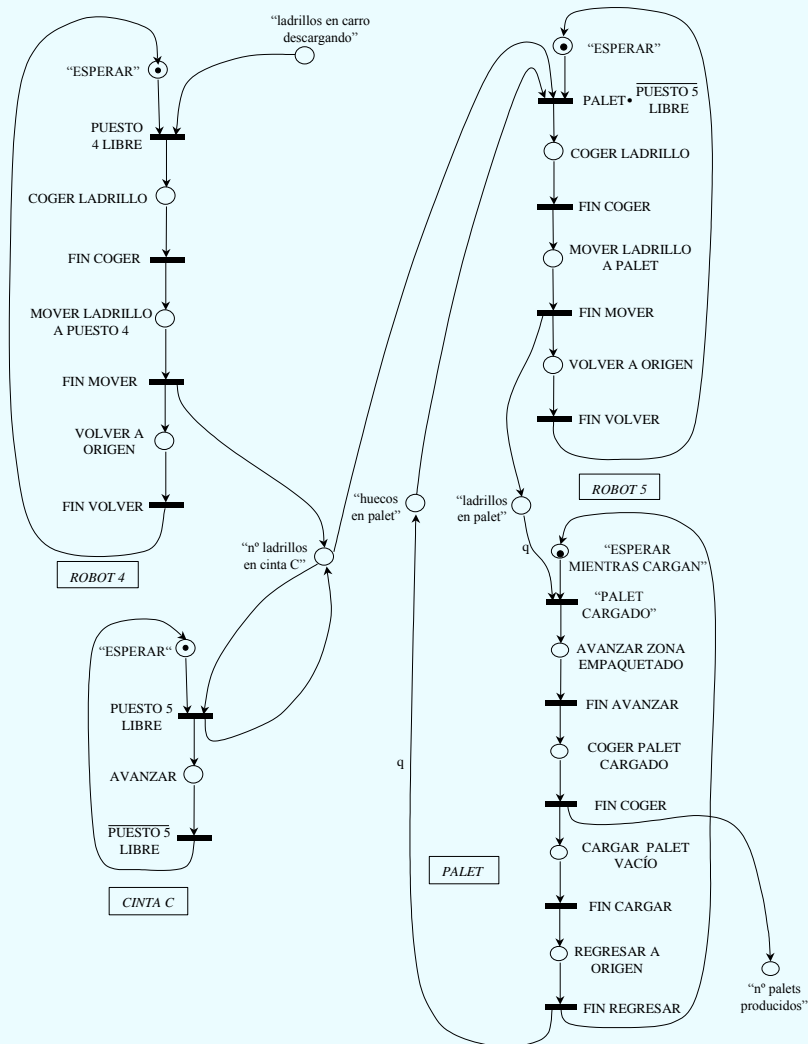
Procesos Individuales



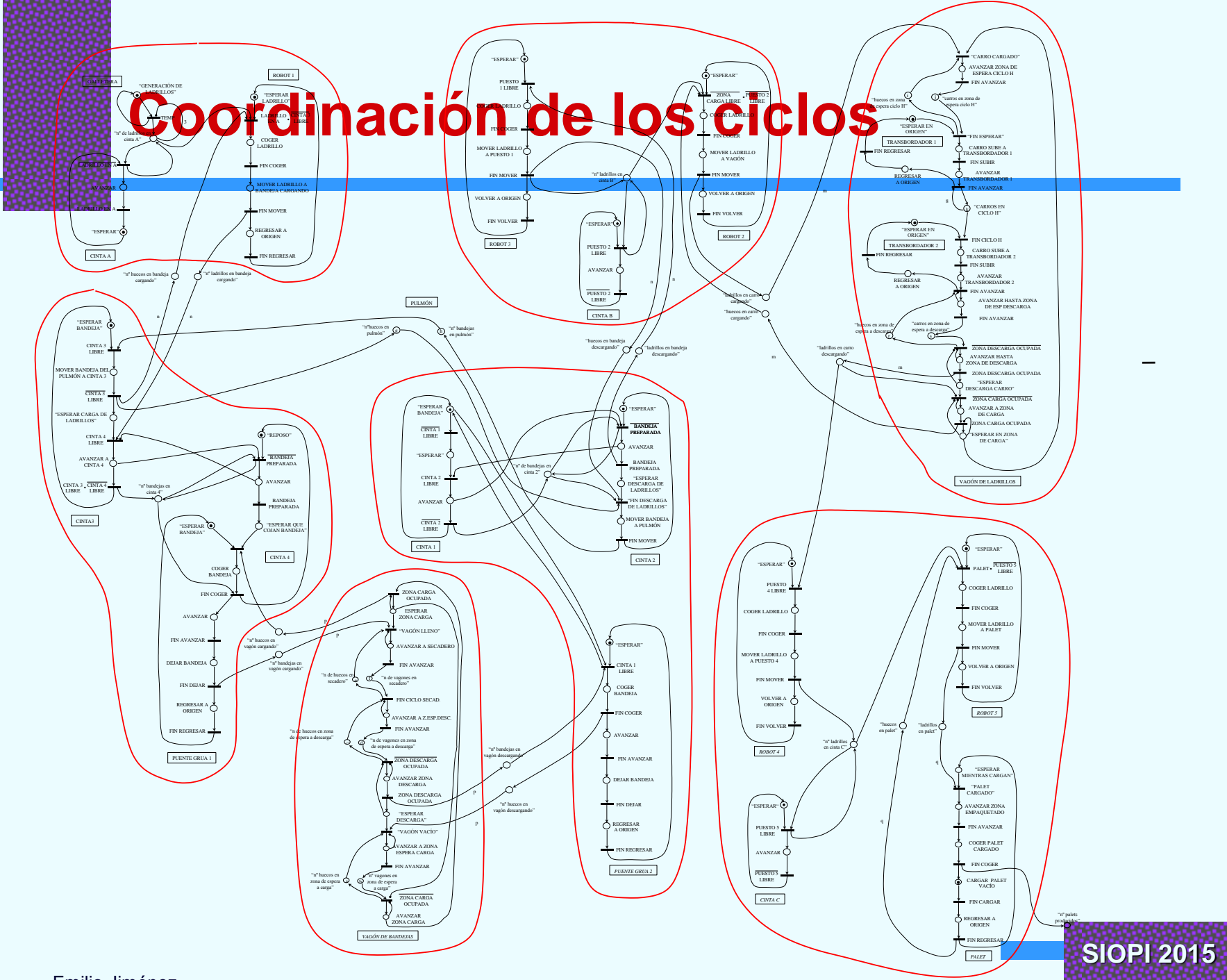
Procesos Individuales

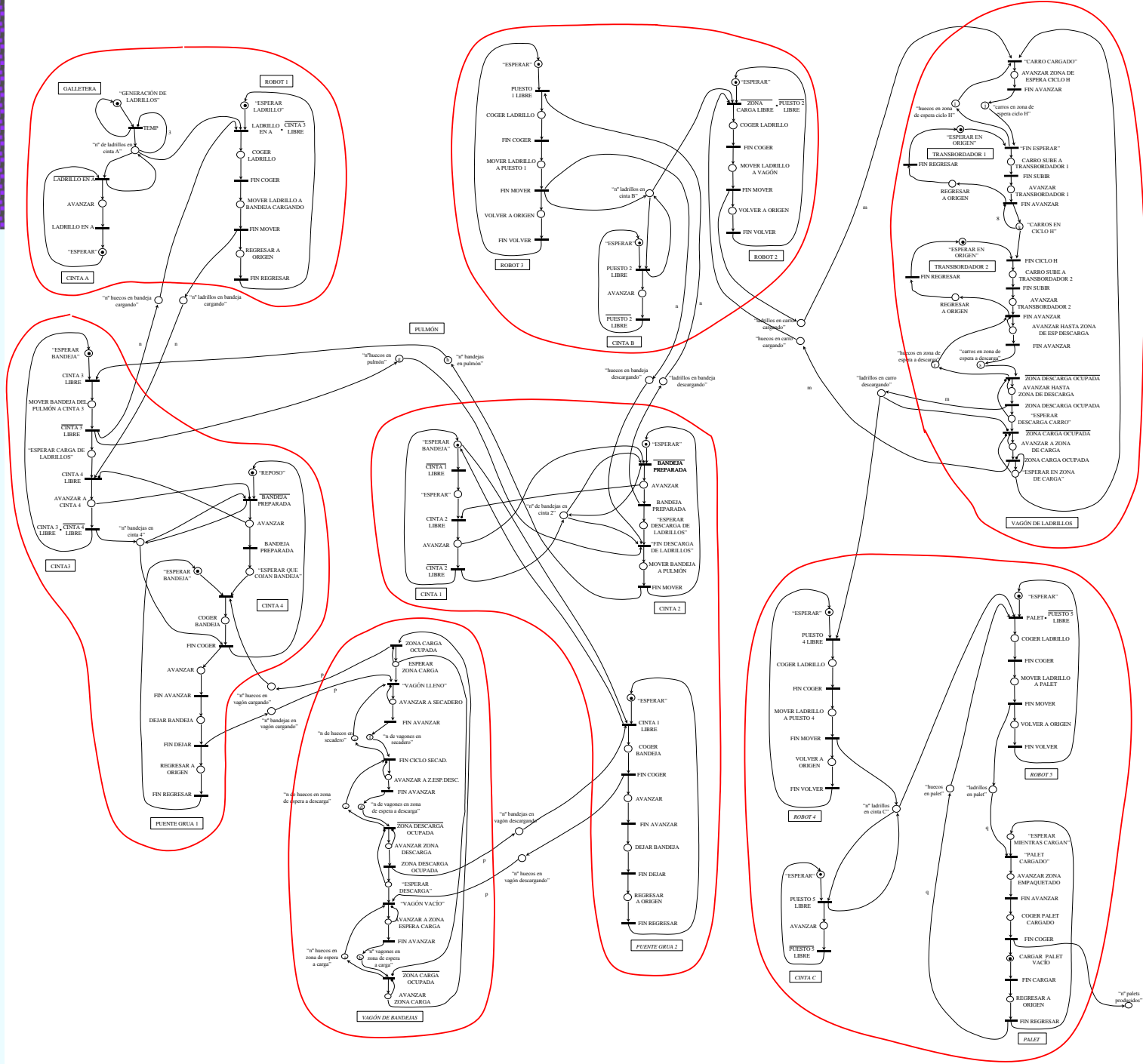


Procesos Individuales

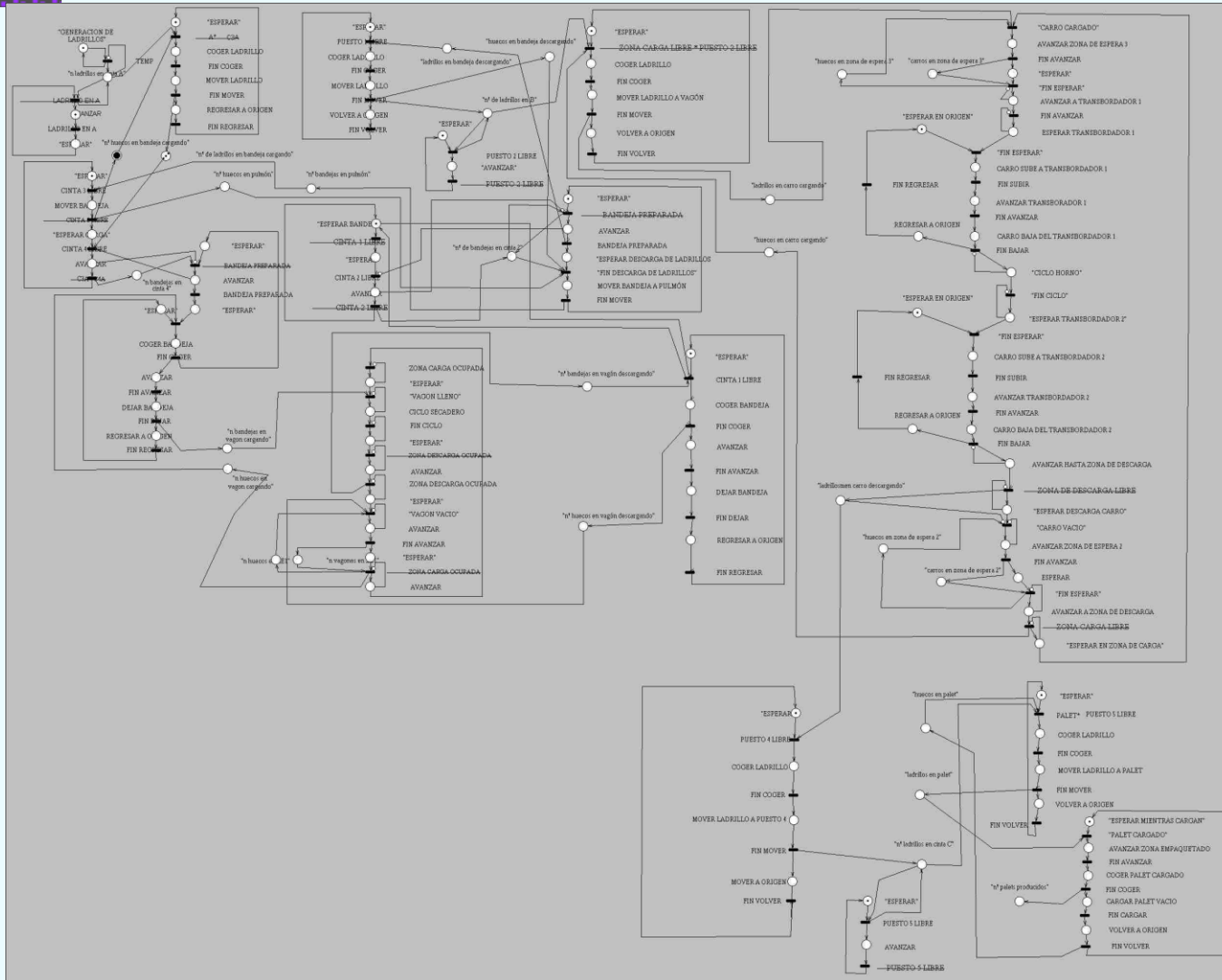


Coordinación de los Ciclos





Simulación de la producción



Simulación de la producción

Comunicación con autómeta CQM1

LEER AREA DATOS

LECTURA DE MODO

MODO PROGRAM

MODO MONITOR

MODO RUN

FIN

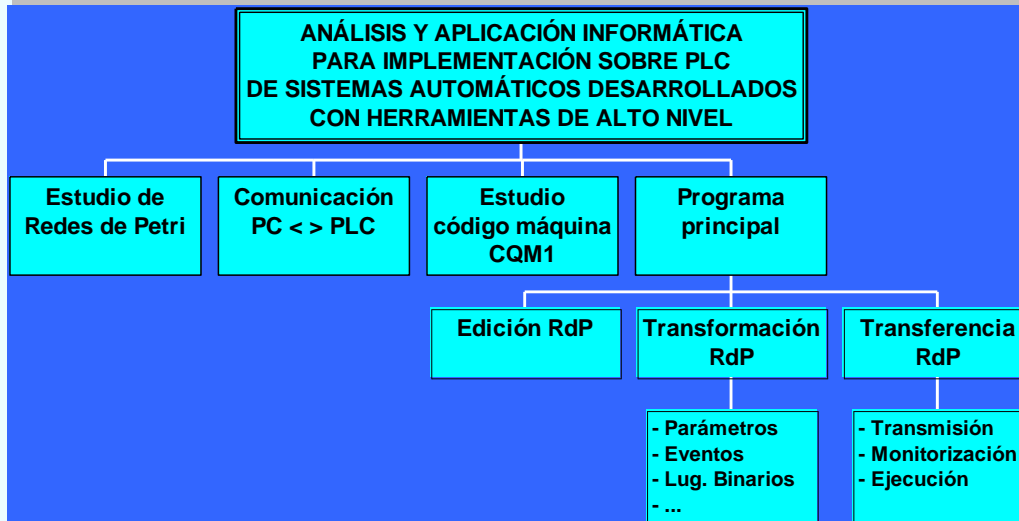
LECTURA DE PROGRAMA

ESCRIBIR DATO

AREA DE ESCRITURA
Area IR
Area DM

Canal Inicial

Dato





La Fábrica Virtual

La Fábrica Virtual

Aportaciones: La fábrica virtual

