**Functional Pipline**

1. **Thiết kế datapath:**

**Diagram

Description automatically generated**

**-Các khối cần dùng:**

+register (tái sử dụng)

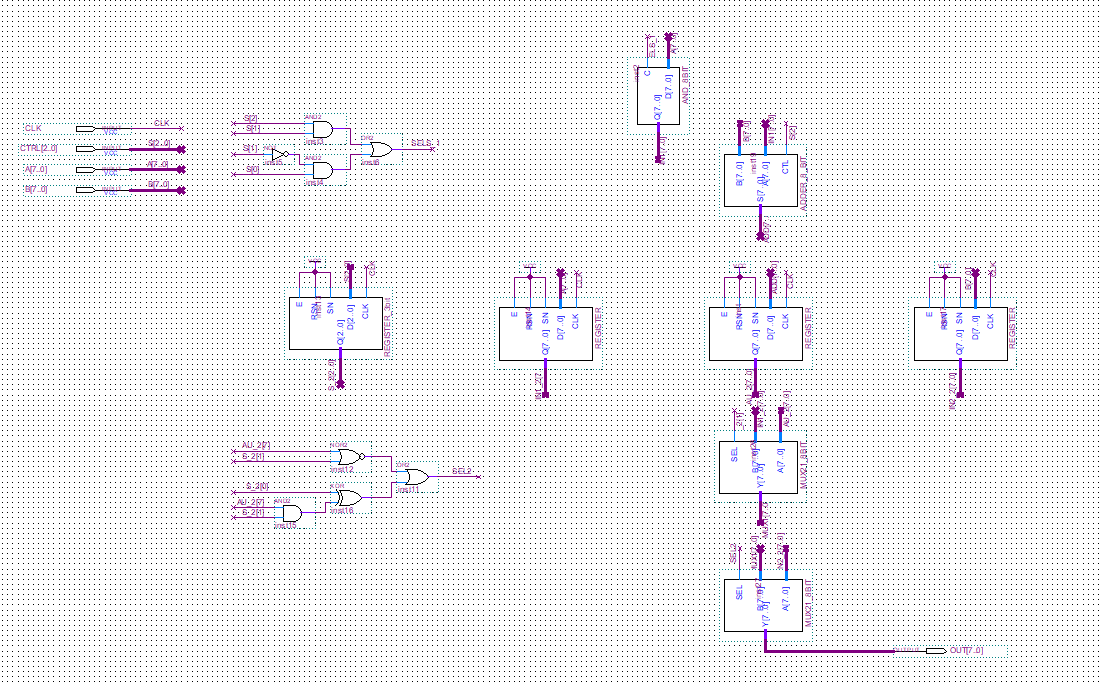
+Shifter 1, 3 (tái sử dụng)

+Tri-state (tái sử dụng)

+Piplined AU

\*Thiết kế piplined AU:

+schematic:



+đóng gói:

A picture containing graphical user interface

Description automatically generated

\*\* Lắp ráp datapath:

+schematic:

Diagram

Description automatically generated

+đóng gói:

Diagram

Description automatically generated

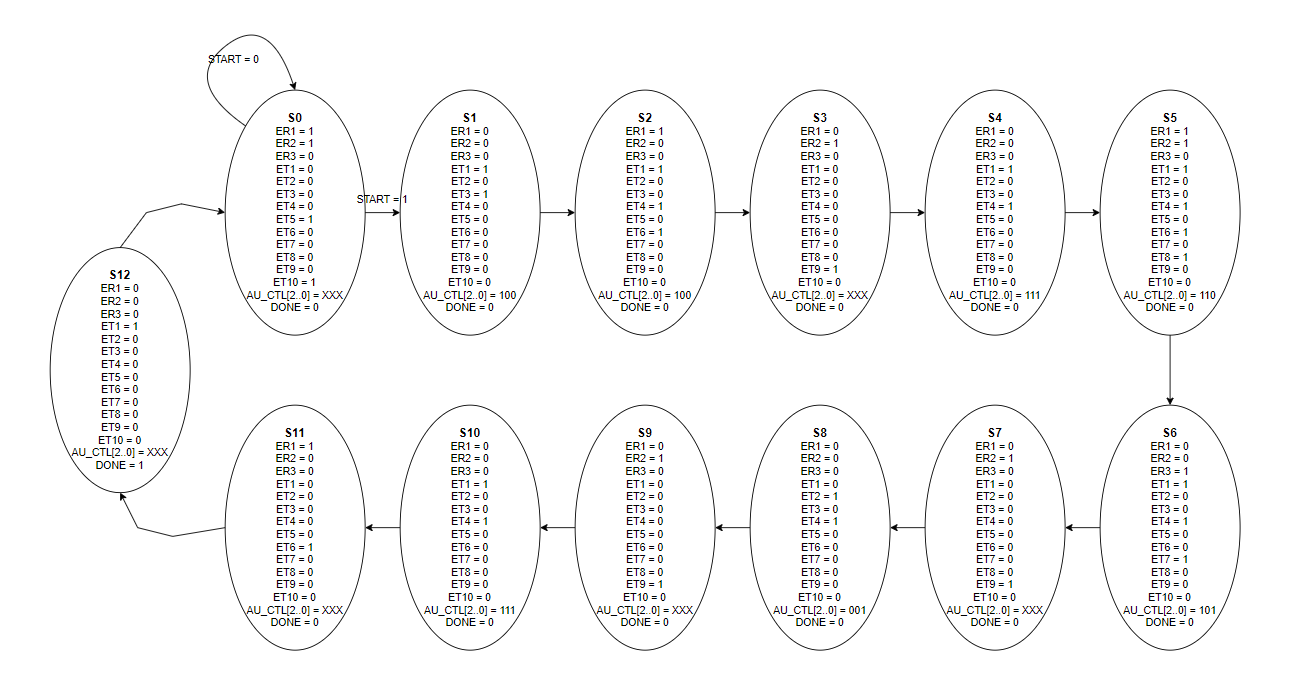
1. **Thiết kế khối controller**

\*SƠ ĐỒ KHỐI CÁC BƯỚC THỰC HIỆN THUẬT TOÁN

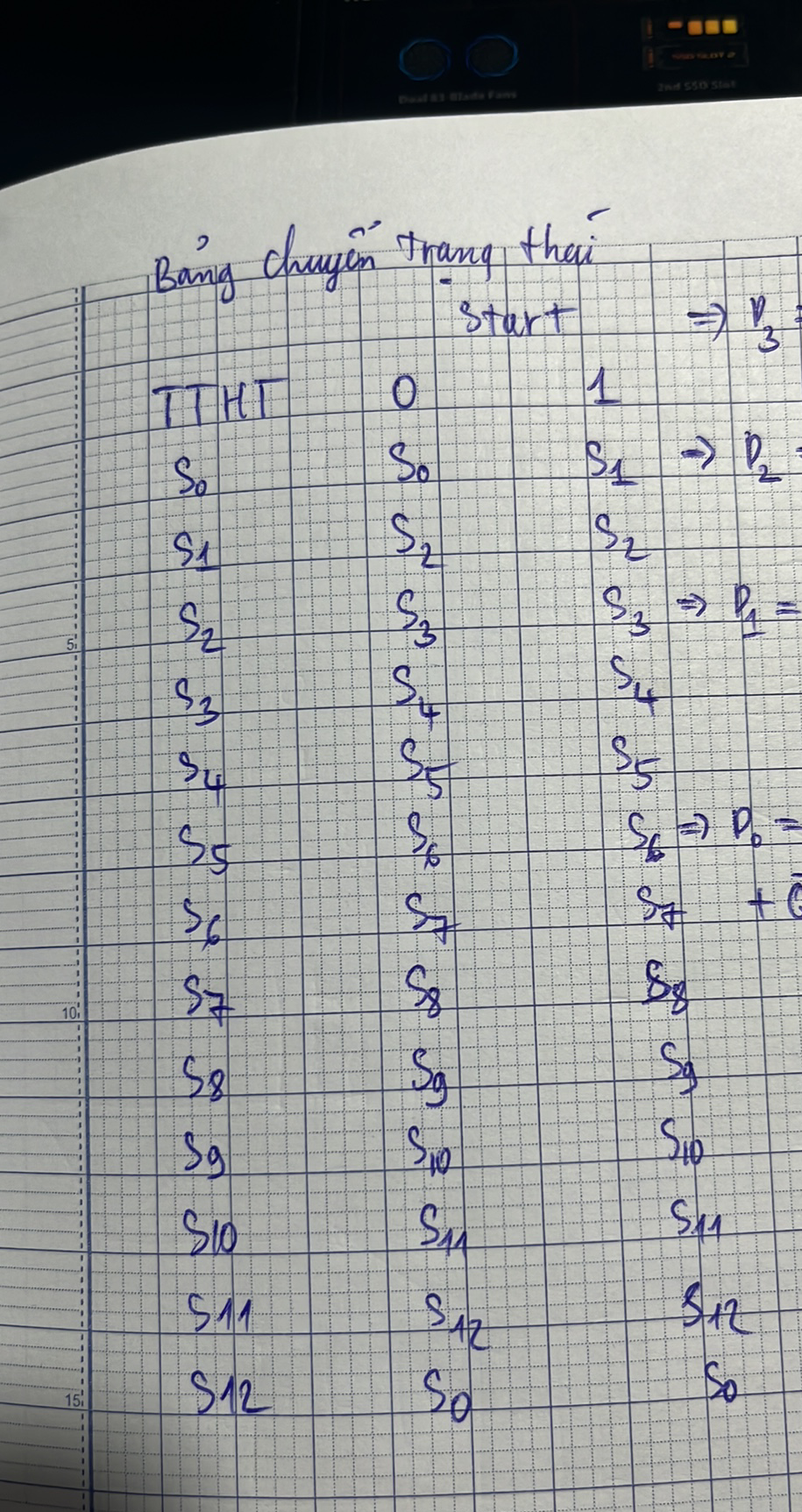
**Diagram

Description automatically generated**

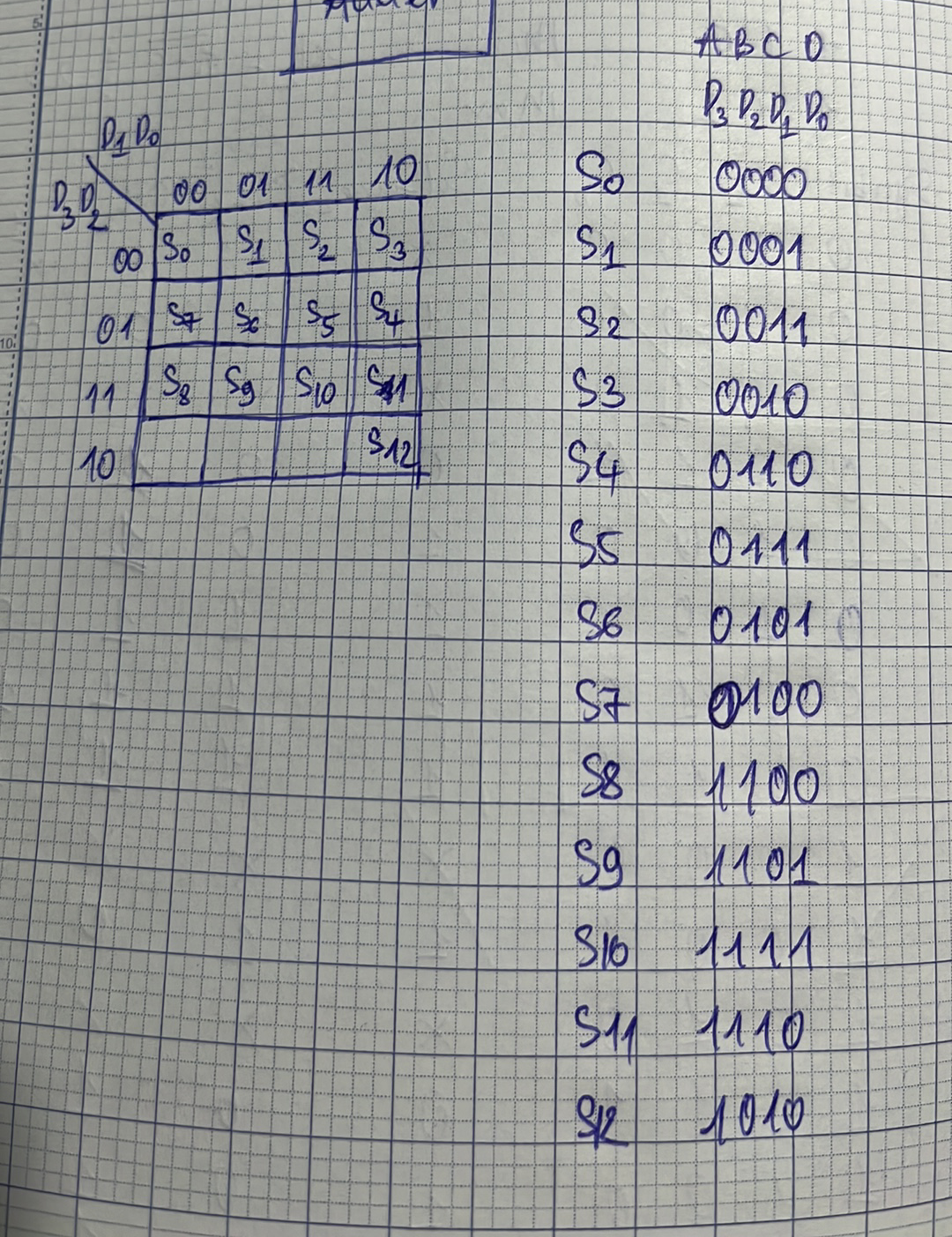
**\*\*Sơ đồ chuyển trạng thái**

****

**\* BẢNG CHUYỂN TRẠNG THÁI:**

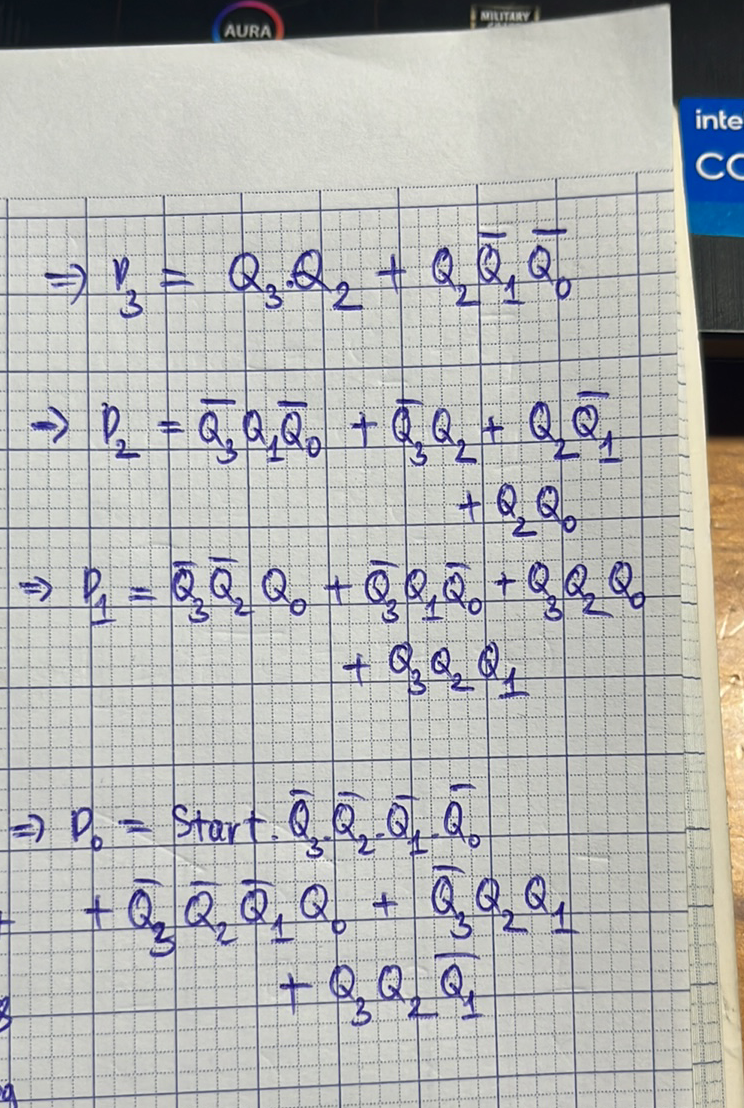


**\*\*MÃ HÓA TRẠNG THÁI:**

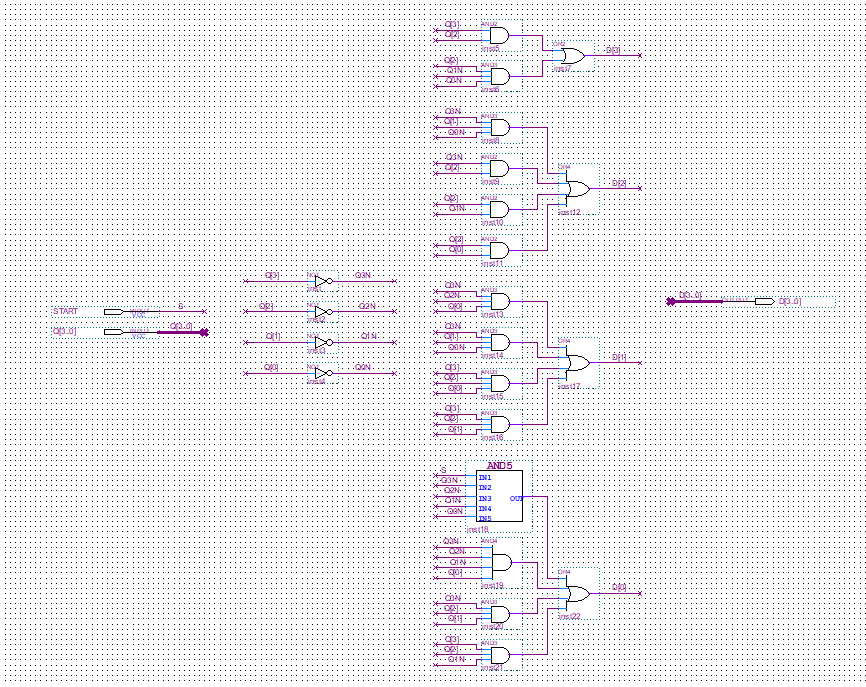


**\*\*\* THIẾT KẾ KHỐI TẠO TTKT**

+ NGÕ VÀO CÁC FF



+ SCHEMATIC



+ ĐÓNG GÓI

A picture containing diagram

Description automatically generated

**\*\*\*\* THIẾT KẾ KHỐI LƯU TRỮ TTHT**

-TA DÙNG DFF

+SCHEMATIC:

Diagram, schematic

Description automatically generated

+ĐÓNG GÓI:

A picture containing diagram

Description automatically generated

**\*\*\*\*\*THIẾT KẾ KHỐI TẠO OUTPUT**

+BẢNG SỰ THẬT CỦA CÁC NGÕ RA

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| TT | MH | ER1 | ER2 | ER3 | ET1 | ET2 | ET3 | ET4 | ET5 | ET6 | ET7 | ET8 | ET9 | ET10 | AU[2] | AU[1] | AU[0] | DONE |
| S0 | 0000 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | X | X | X | 0 |
| S1 | 0001 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| S2 | 0011 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| S3 | 0010 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | X | X | X | 0 |
| S4 | 0110 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 |
| S5 | 0111 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 |
| S6 | 0101 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| S7 | 0100 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | X | X | X | 0 |
| S8 | 1100 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| S9 | 1101 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | X | X | X | 0 |
| S10 | 1111 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 |
| S11 | 1110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | X | X | X | 0 |
| S12 | 1010 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | X | X | X | 1 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

+SCHEMATIC

Diagram, schematic

Description automatically generated

Diagram, table

Description automatically generated with medium confidence

Table

Description automatically generated

Diagram

Description automatically generated

+ĐÓNG GÓI

A picture containing chart

Description automatically generated

**\*\*\*\*\*\*TỔNG HỢP TẠO KHỐI CONTROLLER**

+SCHEMATIC

Diagram

Description automatically generated

+ĐÓNG GÓI

A picture containing chart

Description automatically generated

**TỔNG HỢP ASIC:**

+SCHEMATIC

A picture containing graphical user interface

Description automatically generated

+MÔ PHỎNG

**Diagram

Description automatically generated with medium confidence**

**Graphical user interface

Description automatically generated with medium confidence**

**Diagram

Description automatically generated with medium confidence**

**Diagram

Description automatically generated with medium confidence**