fortiss

Modular machines implemented in 4DIAC

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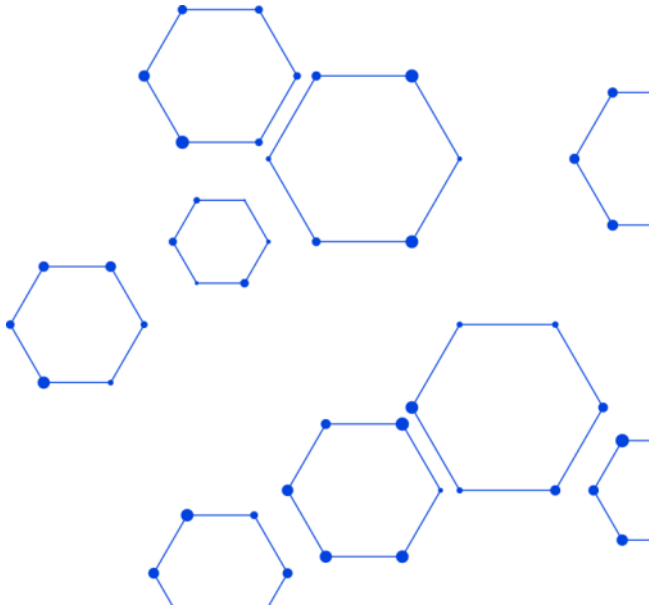


Structuring Principles

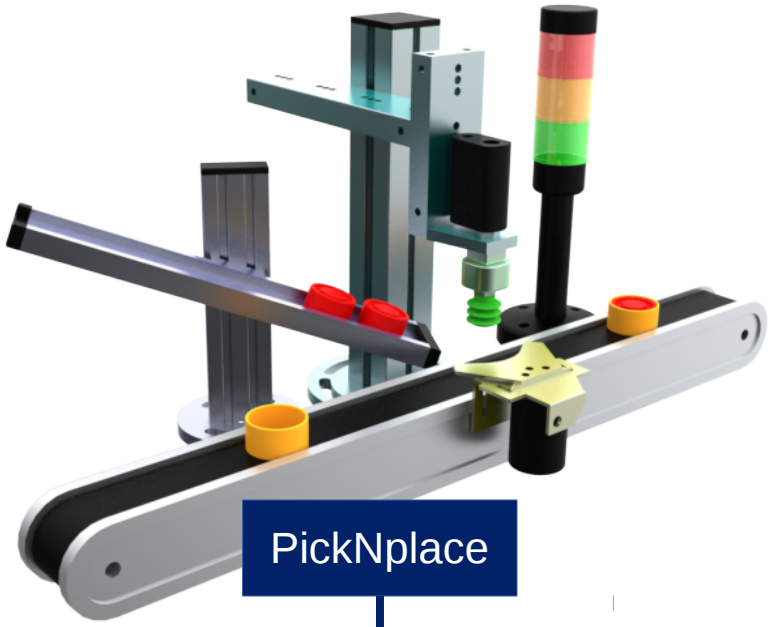
Layered Structure

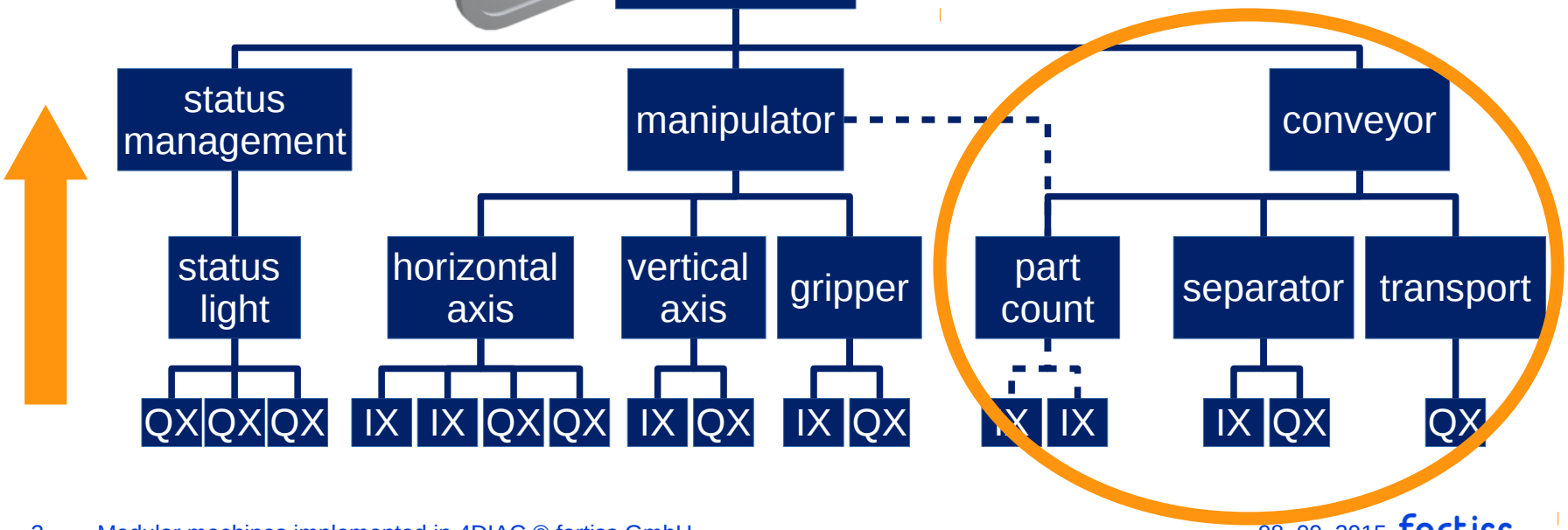
- **Layer 0**
  - hardware access
  - continuous control loops
- **Layer 1**
  - coordinate layer 0 components
  - Report errors to layer 2
- **Layer 2**
  - Coordinate subcomponents
  - Synchronize parallel activities
  - Error handling
- **Layer n**
  overall process control

IEC 61499 Structures

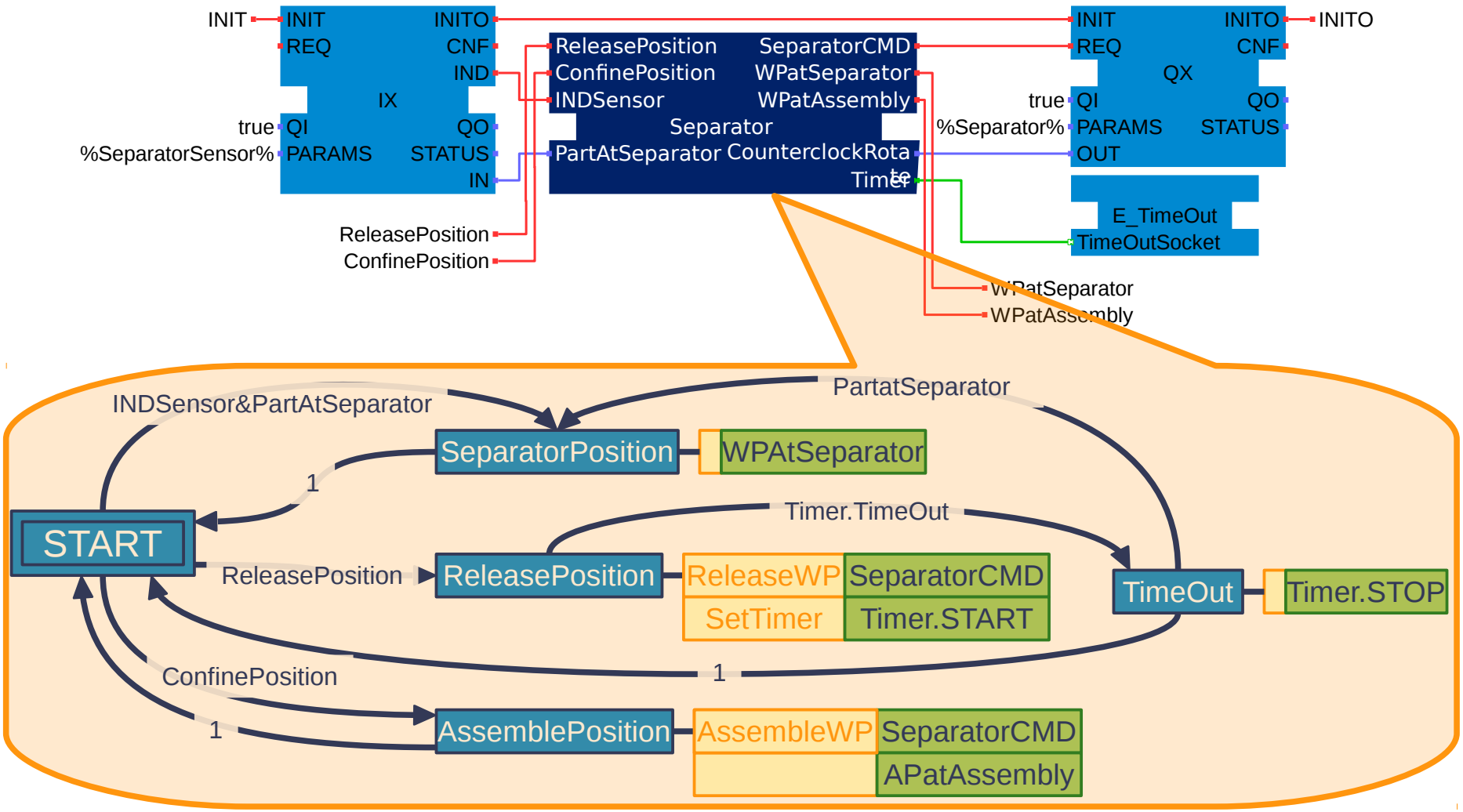
- **BFBs**
  - low level control
  - extract common transitions to own BFBs
- **Subapplications**
  - group FBs of one level
  - build hierarchy
- **Adapters**
  group interface elements between layers

Pick & Place Station





Layer 1 – Control Application



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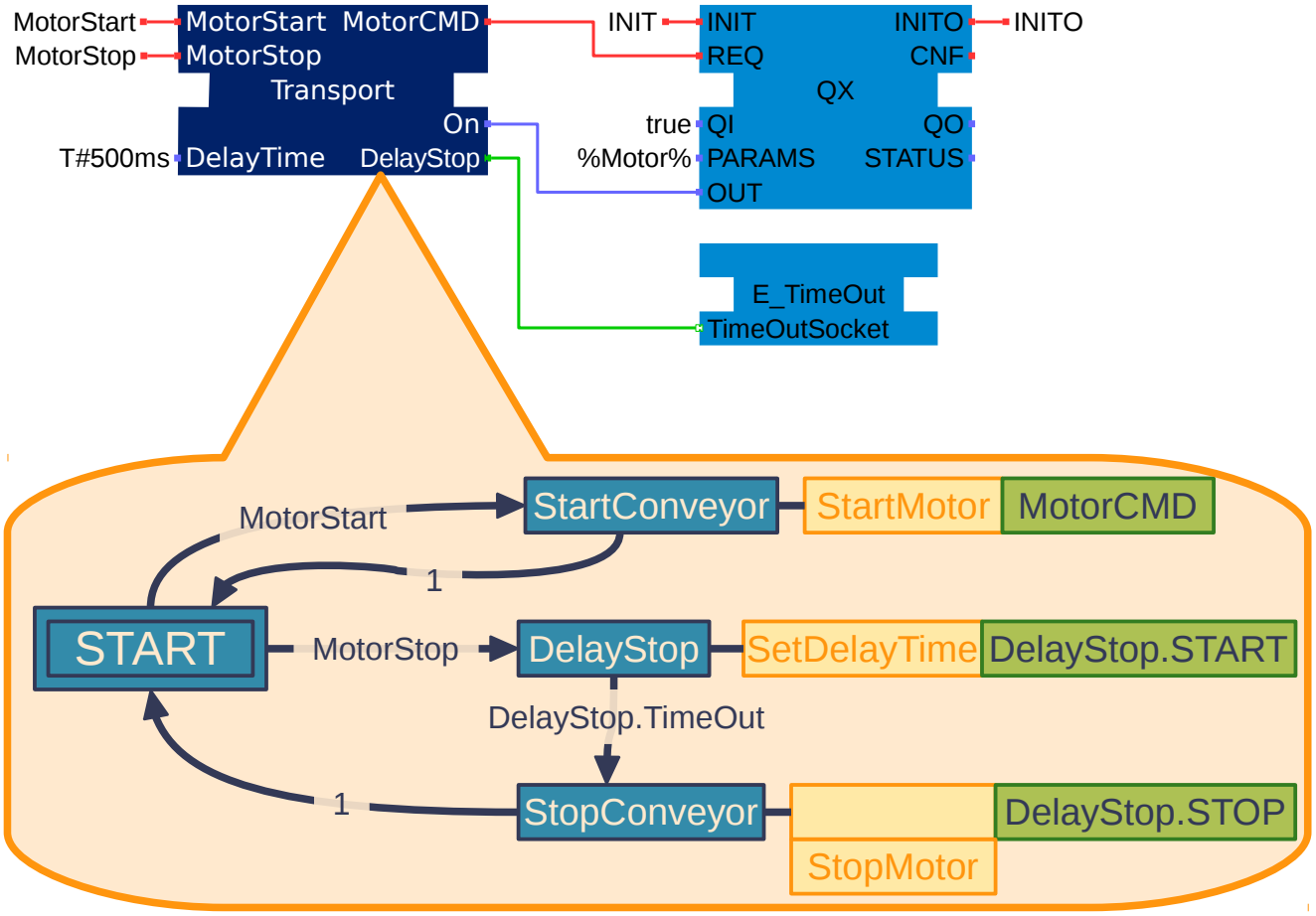

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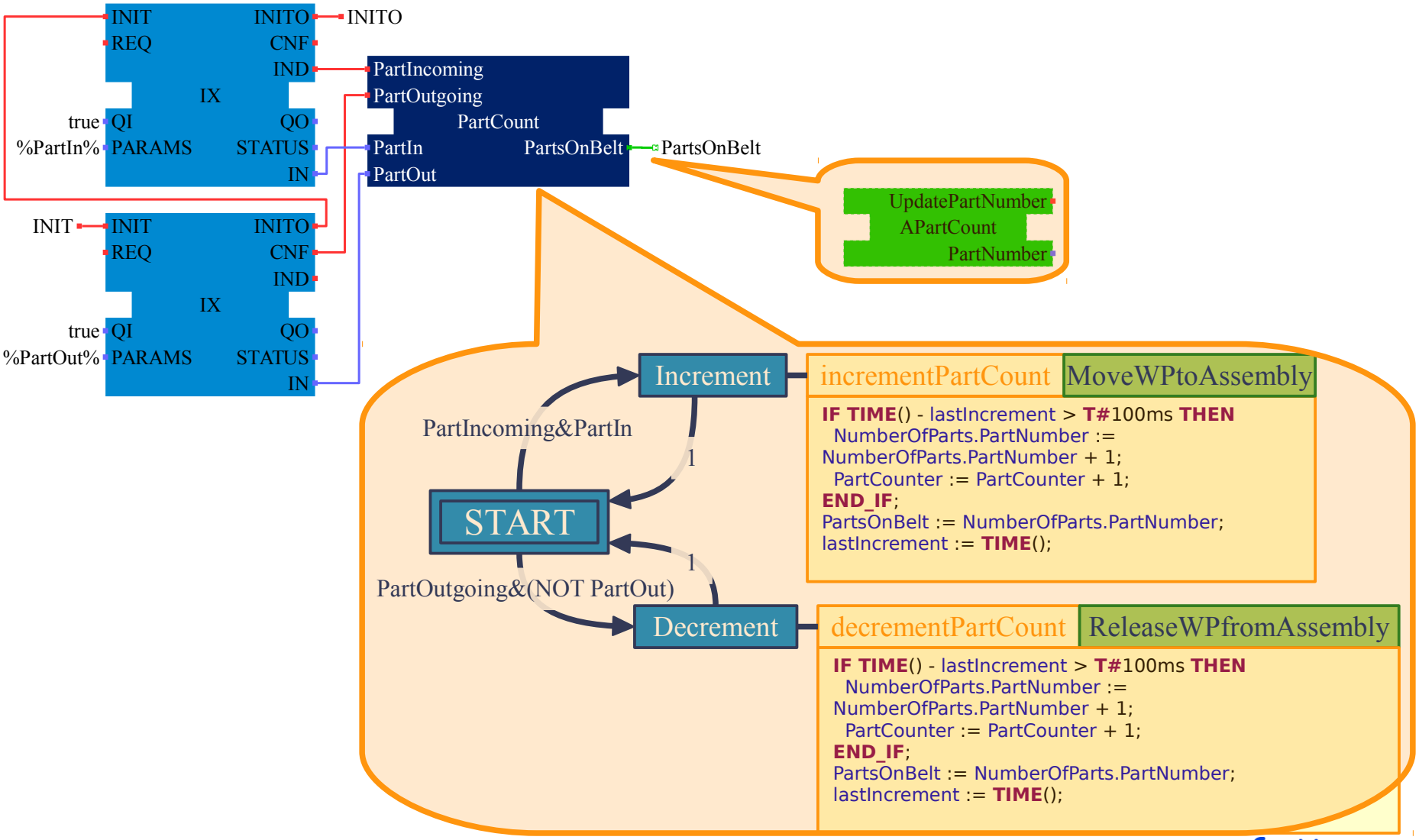
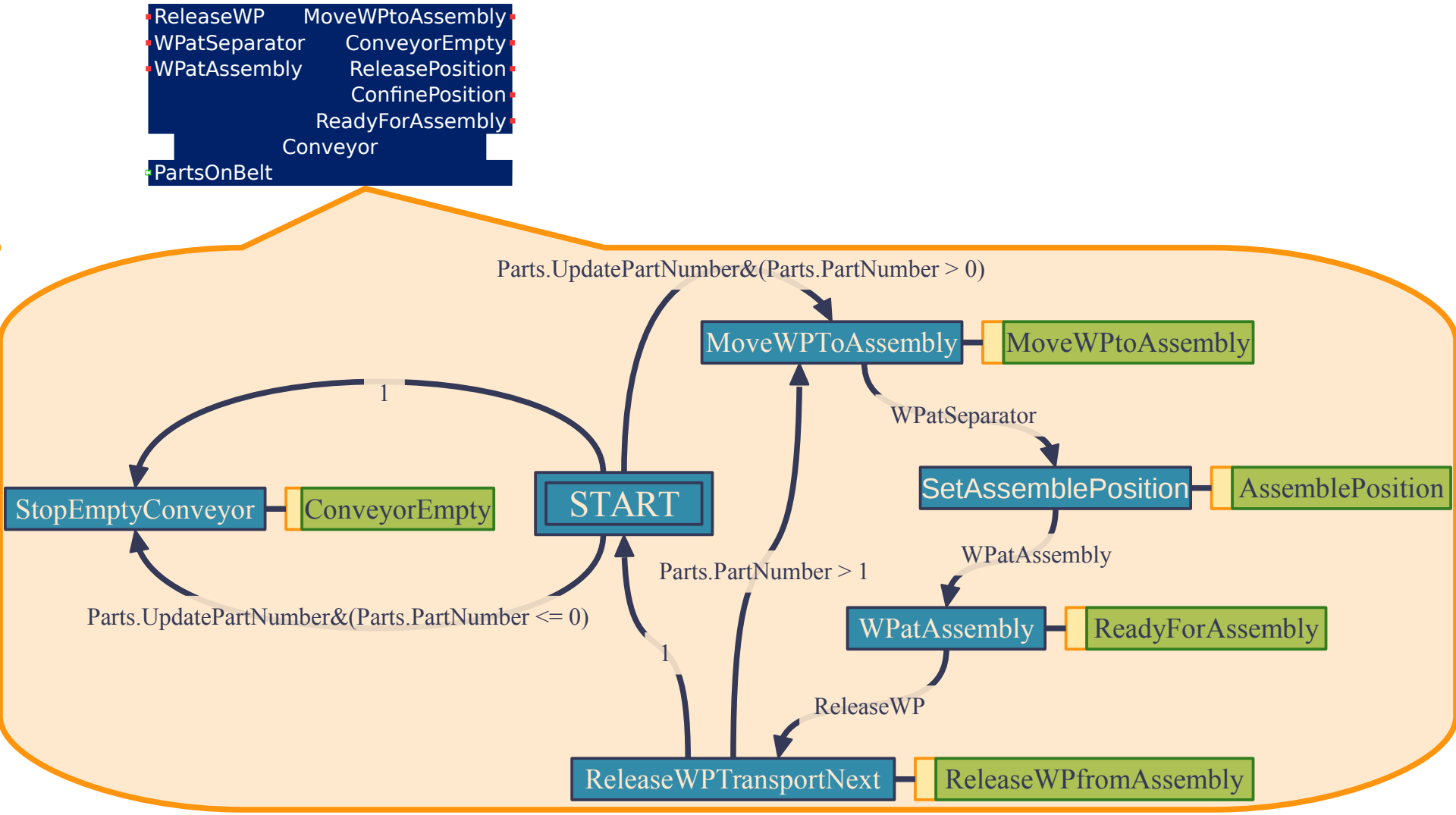


Layer 2 – Application Control



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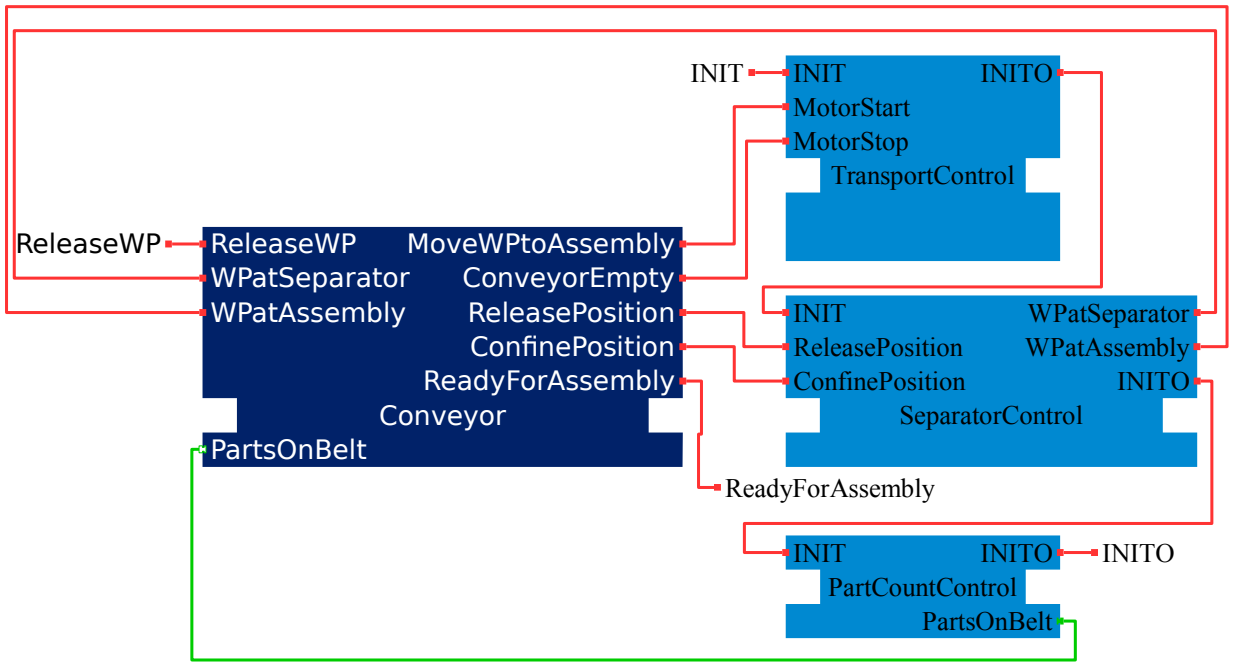

Conclusion

- Layered Architecture
- Represents mechatronical structure of machine
- Allows the engineer to focus on the part to implement
- Fosters decoupling and reuse
- Adapters can help to
  - Formalize interaction of components
  - Define variation points