

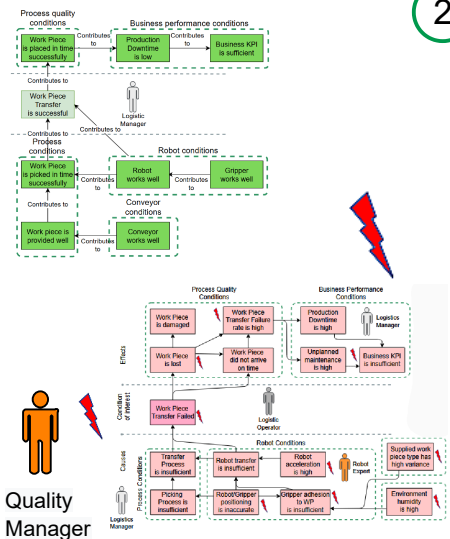
(1) Scope of work, value Undesired outcome



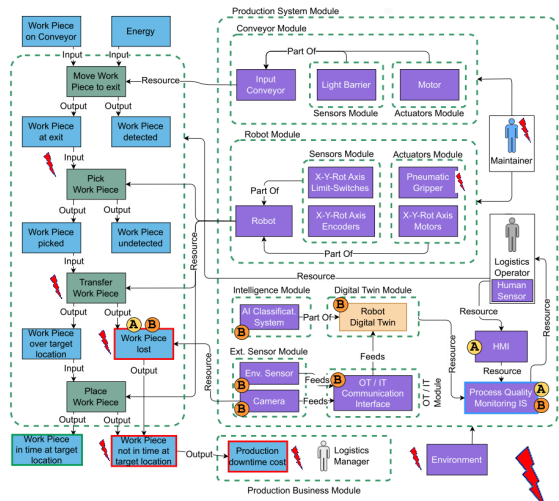
Process outcome:
Why is *Work Piece Transfer failure rate high*?

Work Piece Transfer failed

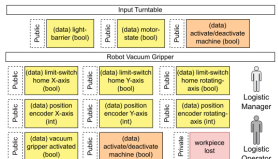
(2) Production conditions (DIN 60812) Cause+Effect Network (CEN)



(3) Product, Process, Resource Asset Network (PAN) for a Cyber-Physical Production System (VDI 3682)



(4) Production Data Space (PDS, VDI 2206)



(5) Behavior-Driven Dev. Scenarios

Gherkin Scenarios

Scenario: Transfer of the Work-Piece in undesired conditions
Given "Robot-Vacuum-Gripper" gripper positioning is "inaccurate"
Given "Robot-Vacuum-Gripper" has picked "the Work-Piece"
When "Robot-Vacuum-Gripper" transfers "the Work-Piece" to "destination"
Then "Robot-Vacuum-Gripper" "adhesion" is "insufficient"
Then "Work-Piece Transfer" "failed" # Undesired outcome



Production Knowledge/Database

Scenario: OK10 -- Good
MATCH pts=(n)
WHERE (n:cause=true or n:effect=true)
AND NOT (n:ppr_conn=(b))
FOREACH (t IN NODES (pts))
SET t.marker="Diamond.Red"
MATCH pts=(a:ppr)-[]-(b)
WHERE (a:[]:ppr_conn=(b))
AND NOT (a:[]:pds_conn=(b))
FOREACH (t IN NODES (pts))
SET t.marker="Diamond.Yellow")

IS Business Logics/Queries

Answers to stakeholder questions



IS User Interface