

Course Flow

| | day 1 | day 2 | day 3 | day 4 |
|-------|---|--|---|--|
| 9:00 | course intro | early validation | project management | elective |
| 10:00 | systems integration intro | make system, SW, and HW block diagrams (parts, interfaces, connections) | re-assess risks of KPP | identify tensions and transform sequence into a (PERT) plan |
| 11:00 | case discussion | dynamic behavior | determine an incremental integration sequence to measure the KPP ASAP | elective |
| 12:00 | systems integration context | model dynamic behavior resulting in the KPP | readiness levels, systems of systems, elective | reflection and discussion |
| | determine KPPs and their quantified specification | | reflection and discussion | |
| 13:00 | lunch | lunch | lunch | lunch |
| 14:00 | reflection and discussion | reflection and discussion | | elective |
| 15:00 | assess risk of KPPs caused by volatility, uncertainty, complexity and ambiguity | integration strategy environments and configurations | assess integration configurations and testware, supplier and logistics status, technology readiness , and development and resource status | assess robustness of plan |
| 16:00 | describe typical use (including circumstances in the context) related to KPP | map dynamic behavior on block diagrams and budget : quantify contributions to KPP | | make and give presentation to management |
| 17:00 | reflection and discussion | elective | elective | reflection and discussion |
| | | reflection and discussion | reflection and discussion | |

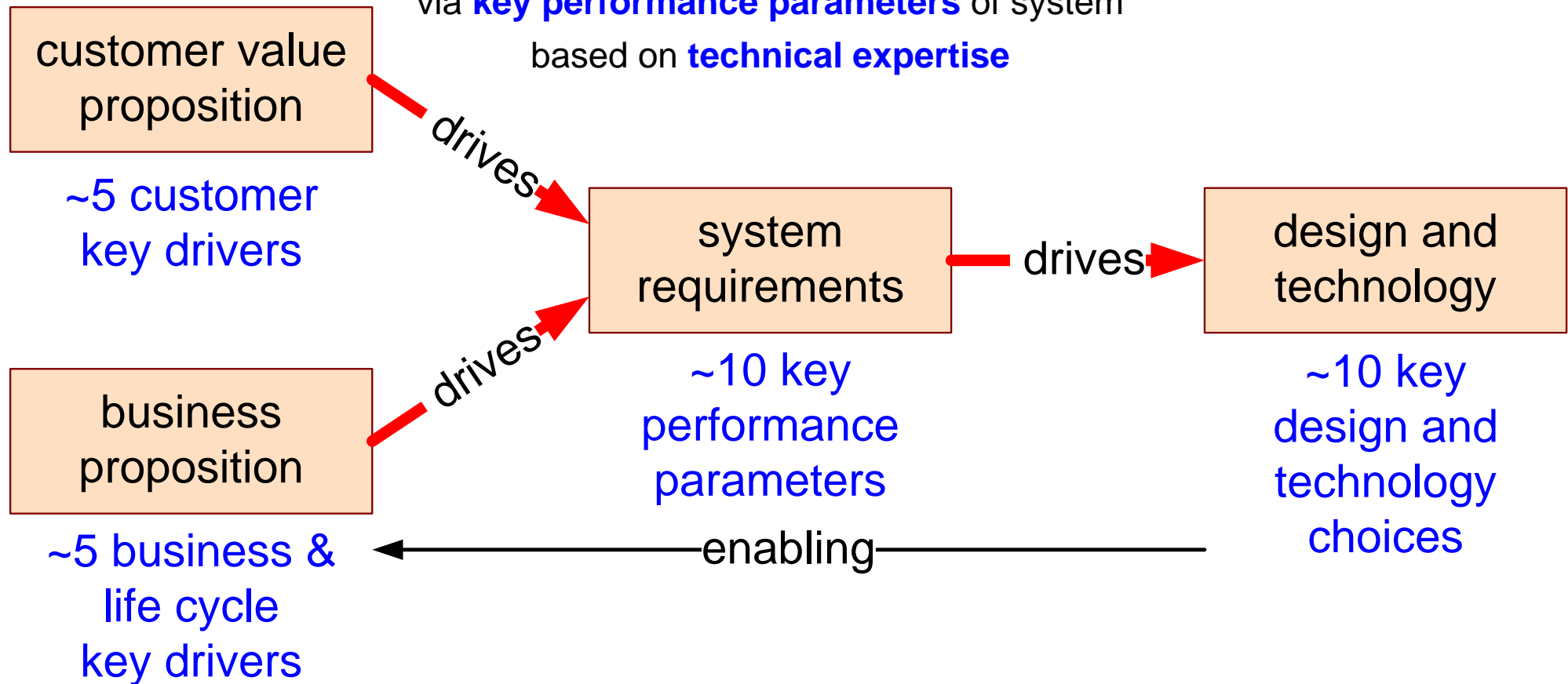
| | | |
|---|---|--|
| <i>people, process, and organization</i> <ul style="list-style-type: none"> human aspects process and integration organization | <i>technical</i> <ul style="list-style-type: none"> budgeting testing systems of systems | <ul style="list-style-type: none"> architecting for integration impact of change software and integration product families, platforms |
|---|---|--|

electives

Architecture Top View

Systems Engineering: *Fitness-For-Purpose*

Achieving **customer** and **business key drivers**
via **key performance parameters** of system
based on **technical expertise**



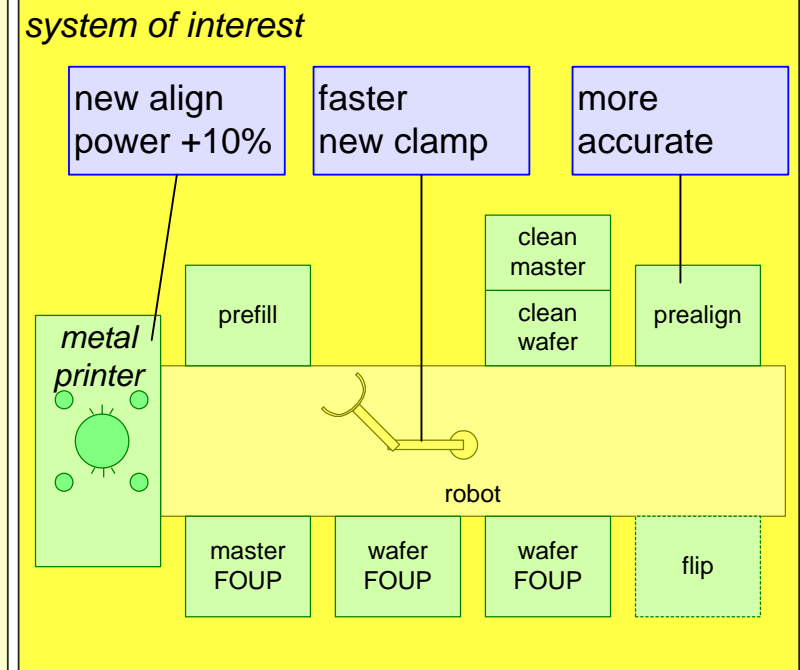
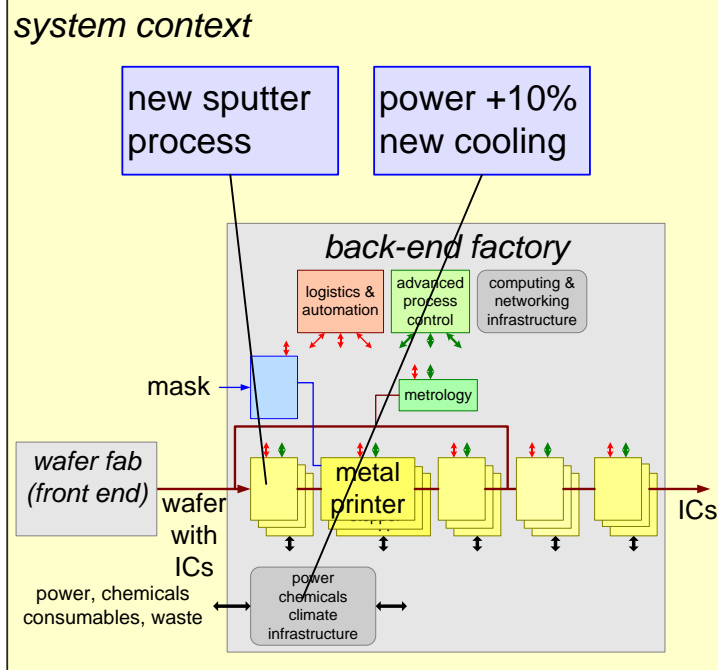
Example Project Overview

Project overview Metal Printer R2

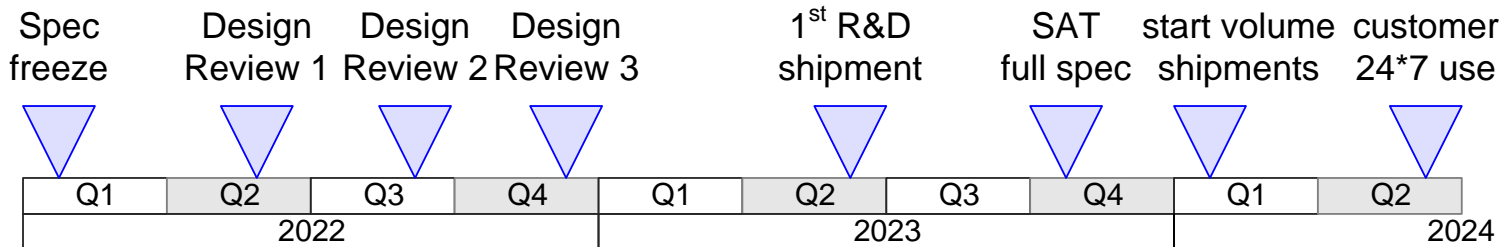
version 2.0. January 22, 2023
author: Gerrit Muller

Project Goals
 support production of node 1C
 process development Q2 2022
 volume production Q2 2023
 productivity 30,000 W/m
 yield 95%

Key Performance Parameters
 min. line width 100 nm
 overlay 30 nm
 throughput 100 WPH
 MTBF 2000 hr
 wafer size 300 mm
 power 5 kW
 clean room class C
 floor vibration class D

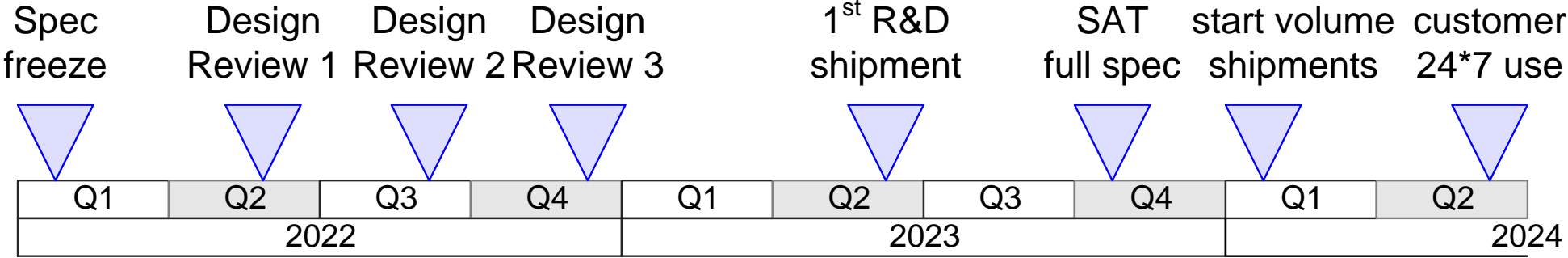


project master plan



changing enabling systems
 conditioned transport
 calibration wafers
 calibration metrology

Example Project Master Plan



Example Risk Analysis Matrix

