Systems Integration Course

by *Gerrit Muller* USN-SE
e-mail: gaudisite@gmail.com
www.gaudisite.nl

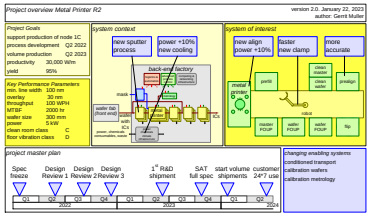
Abstract

This course combines the Architecture and Design insights with the conventional Project Management Views to create a Robust Project Plan including the early verification and validation that Systems Integration strives for.

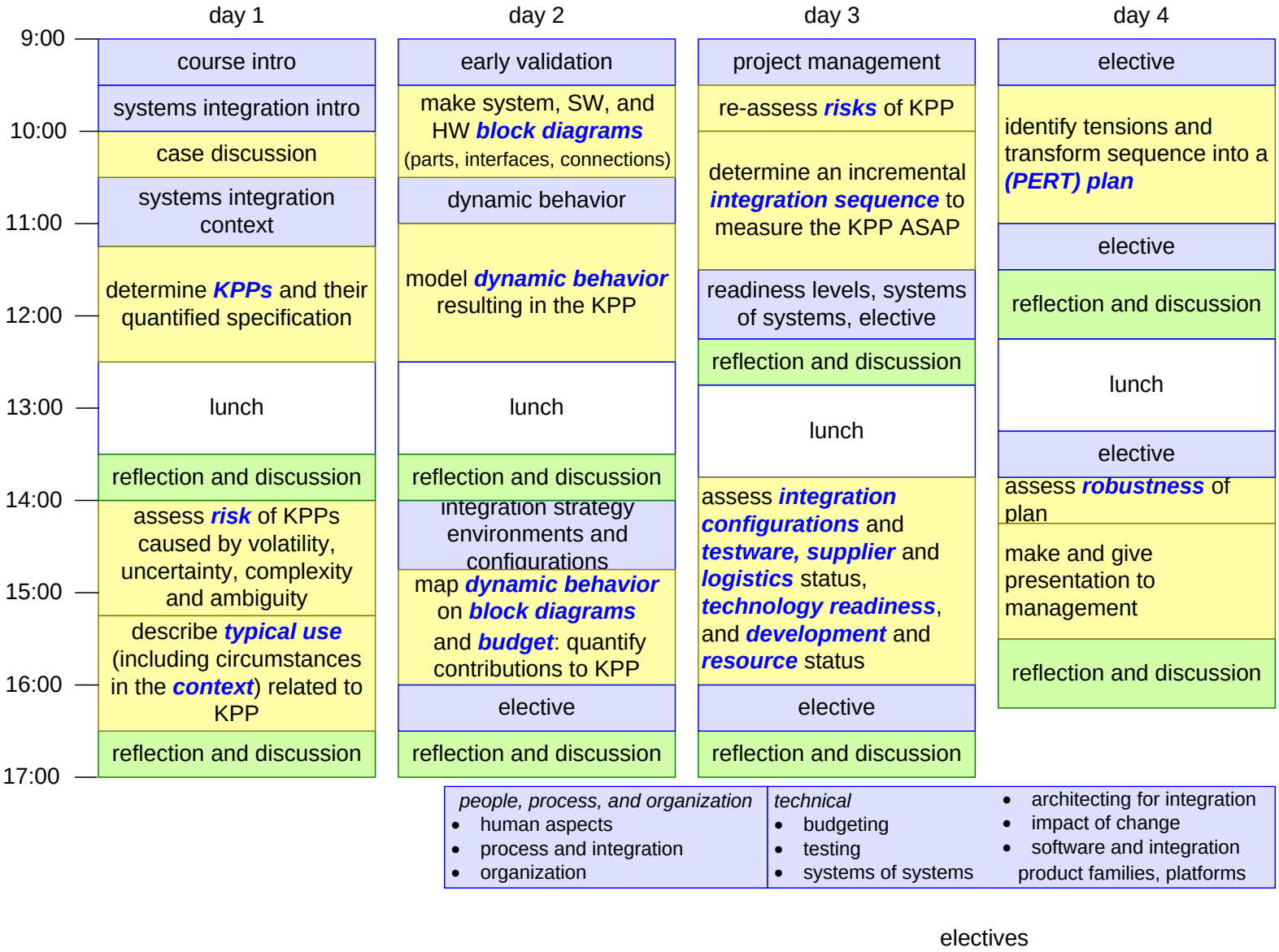
Distribution

This article or presentation is written as part of the Gaudí project. The Gaudí project philosophy is to improve by obtaining frequent feedback. Frequent feedback is pursued by an open creation process. This document is published as intermediate or nearly mature version to get feedback. Further distribution is allowed as long as the document remains complete and unchanged.

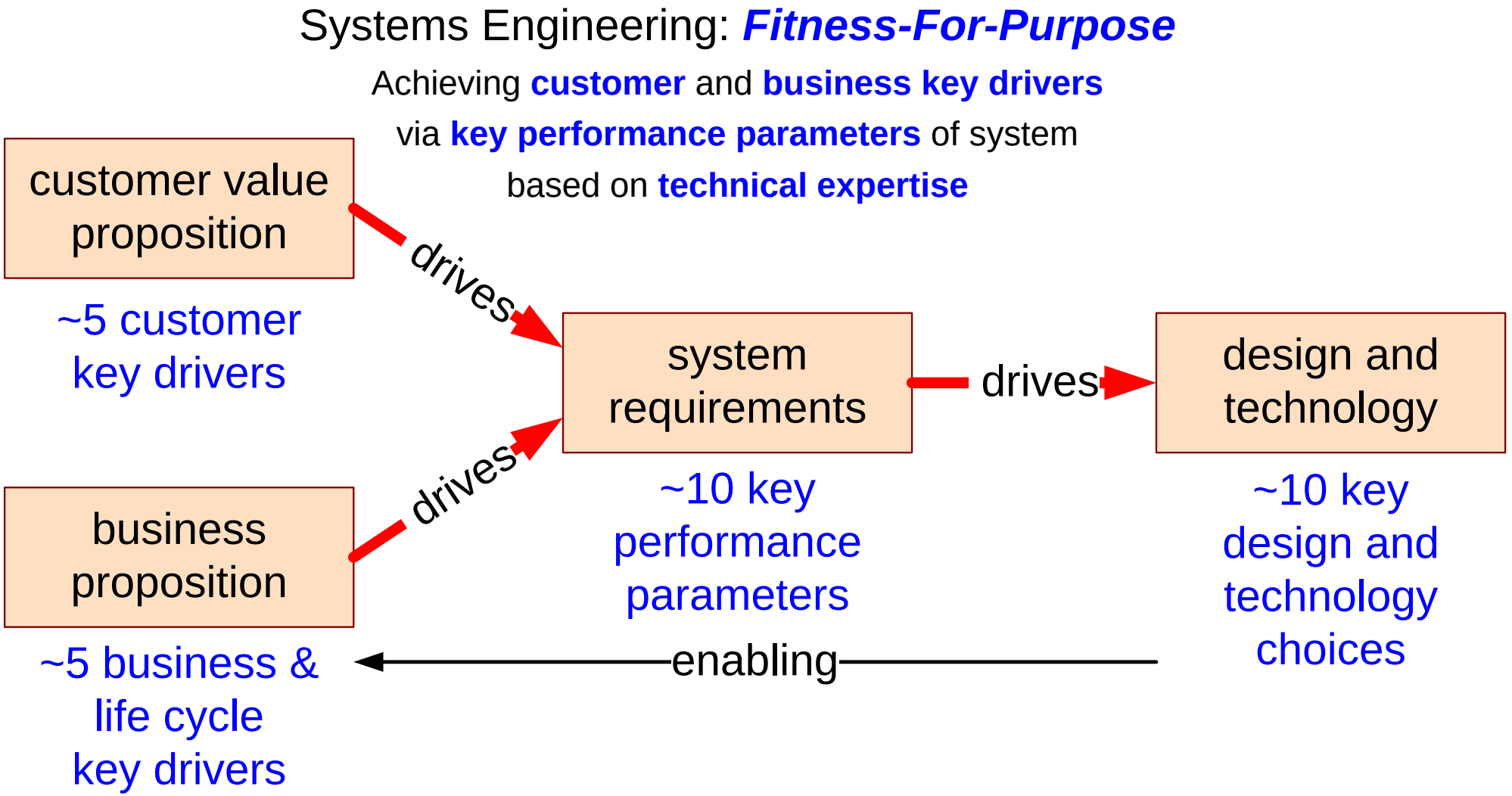
January 22, 2023
status: preliminary draft
version: 0



Course Flow


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

Architecture Top View



Example Project Overview

Project overview Metal Printer R2

version 2.0. January 22, 2023
author: Gerrit Muller

Project Goals

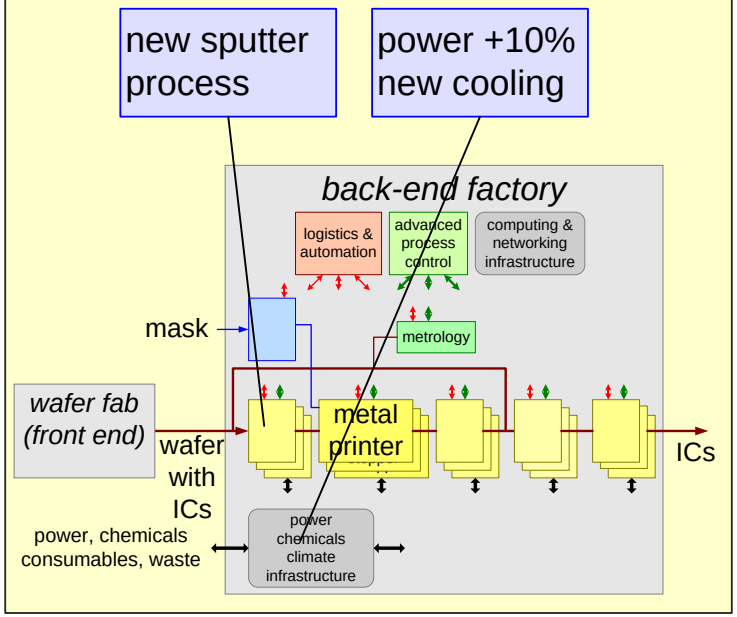
support production of node 1C

process development	Q2 2022
volume production	Q2 2023
productivity	30,000 W/m
yield	95%

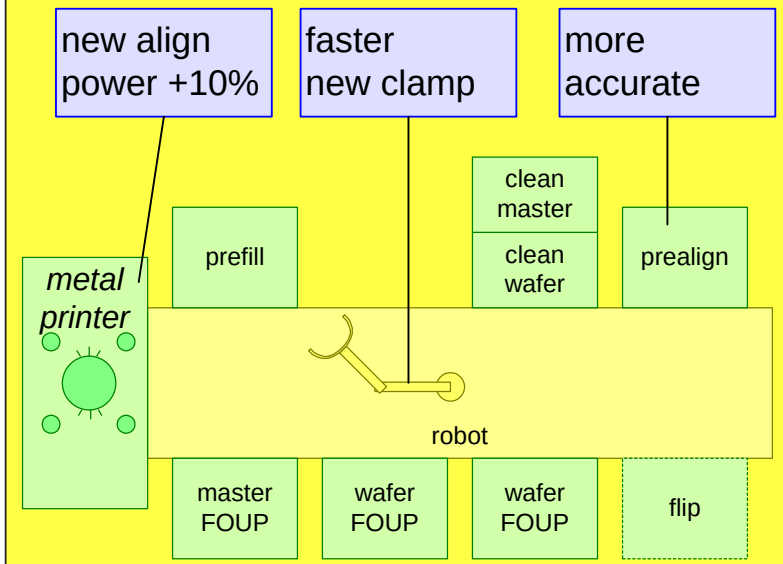
Key Performance Parameters

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

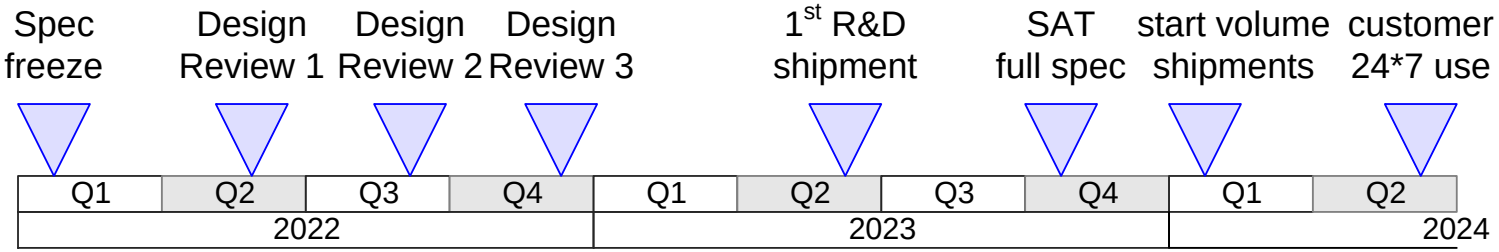
system context



system of interest



project master plan



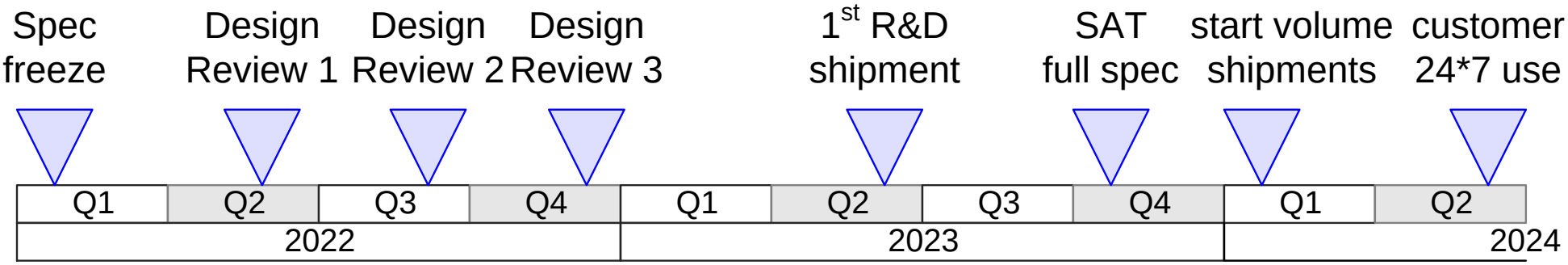
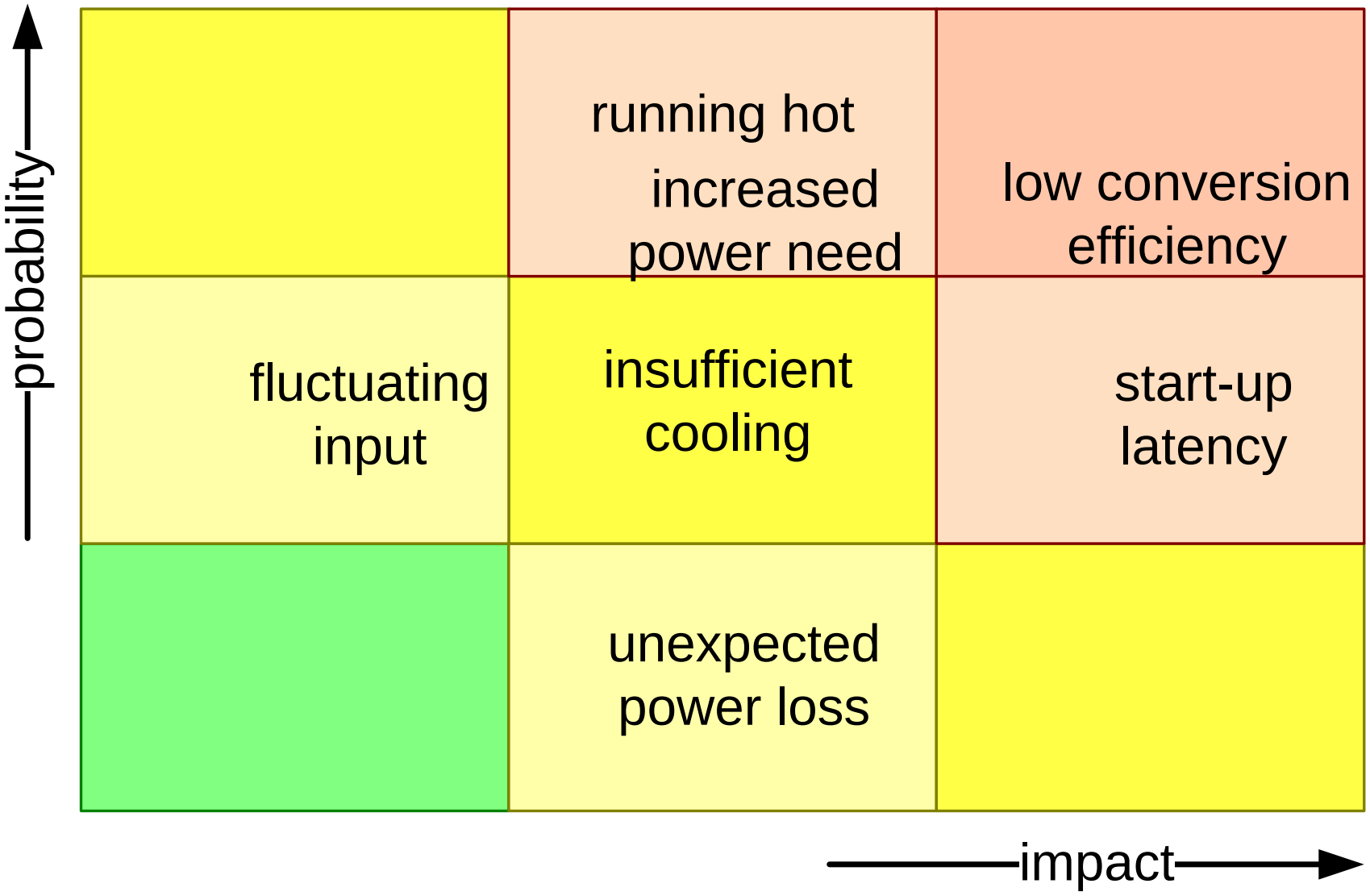
changing enabling systems

conditioned transport

calibration wafers

calibration metrology

Example Project Master Plan



Example Risk Analysis Matrix