



Workbook 2

Preparing and Collaborating
with Your Supply Chain

PCYSC-1.1. Current Status of Your Development

(1) Checklists before Seeking Contractor Proposals

Which of these Build Stages have you completed and what is your next need?

- Appearance Model: Rendering, Mockups to explore concept
- Proof of concept prototype: key parts and assemblies
- Engineering Prototype: full subsystems
- Engineering Validation Test: looks-like, works-like prototype, materials and manufacturing processes
- Design Validation Test: first run/nearly final, ready for user testing, minor design/process changes
- Production Validation Test: ready for pilot run (10-15% of total production)

What types of manufacturing services in addition to build to print are you hoping can be addressed by the supplier?

- Locating, negotiating off-the-shelf components
- Engineering and product development
- Design for manufacturing
- Cost Reduction
- Assembly
- Logistics/Warehousing
- Other _____
- _____
- _____

(2) Outline your Production Need

What is the target condition needed and what will you do with it?

I need <part assembly>
in a <quality level>
to use <activity achieved>

What is the target condition needed and what will you do with it?

Currently <key shortcoming to overcome>
and need
<description of final/quality form>

What is the actual service(s) I need in order to overcome which shortcoming?

1. I need the supplier to <service(s) needed>
To achieve <what result that overcomes shortcoming>

2. I need the supplier to <service(s) needed>
To achieve <what result that overcomes shortcoming>

3. I need the supplier to <service(s) needed>
To achieve <what result that overcomes shortcoming>

PCYSC-1.2. Current Status of Your Development

(3) Prioritize Elements of Product Performance

What are the top 5 physical characteristics and reason or importance (be sure they are part of your customer requirements).

	Must-have Characteristic	Performance Rationale
1	<hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/>
2	<hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/>
3	<hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/>
4	<hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/>
5	<hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/>

(3) Prioritize Elements of Product Performance

What are the top 5 physical characteristics and reason or importance (be sure they are part of your customer requirements).

SEE BUILD STAGE CHEAT SHEET in APPENDIX I

	BUILD STAGES			
	Proof of Concept	Beta Prototype	Pilot Build	Production Build
Est. Date of Order				
Quality Needed				
Manufacturing Process				
Material				
Top Three Requirements				

(2) Clearly Communicate your Product Needs.

What data do you have to offer your supplier, and have you confirmed what they need?

I have
<what materials>
to give our supplier and
<have or have not>
confirmed this is what they need

(3) Minimizing Unnecessary Cost during Production Journey

Project overages and accidents increase with unnecessary handling. Check which steps you are taking to reduce journey complexity.

- Consider part/material preparation to go to supplier
- Supplier to complete sub-assembly when cost effective
- Supplier with continuous process to reduce re-palletizing between operations
Maximize part treatment and packaging as it leaves supplier
- Clear documentation of previous inspection
- Other _____

PCYSC-3.1. Production Guidelines & CM Rating

How big is the gap for each factor in your current operation?

Fill out your specific needs in the notes section next to each factor.

Score Min. Needed
 1: Not at all
 2: Slightly
 3: Moderately
 4: Very
 5: Extremely

		Min. Needed	CM#1	CM#2	CM#3
Design for X:	Notes: _____ _____ _____	___	___	___	___
Design Documentation: <i>Assistance with Schematics, CAD, File Prep etc.</i>	Notes: _____ _____ _____	___	___	___	___
Material Selection: <i>Identifying Options & Alternatives, Sourcing, Testing, Eect on Scale etc.</i>	Notes: _____ _____ _____	___	___	___	___
Part or Material Management: <i>Inventory Raw & WIP, Transition (i.e. chip changes @ maker)</i>	Notes: _____ _____ _____	___	___	___	___
Production Process: <i>Broad Knowledge of Options, Scale Impact etc.</i>	Notes: _____ _____ _____	___	___	___	___
Assemblies: <i>Manage Broader Assemblies Beyond Internal Part Production</i>	Notes: _____ _____ _____	___	___	___	___
Tracking and QC/QA: <i>Help Develop Standards, Test, Data Collection etc.</i>	Notes: _____ _____ _____	___	___	___	___

PCYSC-3.2. Production Guidelines & CM Rating

How big is the gap for each factor in your current operation?

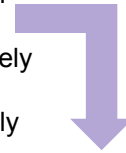


Fill out your specific needs in the notes section next to each factor.



Score Min. Needed

- 1: Not at all
- 2: Slightly
- 3: Moderately
- 4: Very
- 5: Extremely



		Min. Needed	CM#1	CM#2	CM#3
Compliance: <i>Industry Standards, Certifications etc.</i>	Notes: _____ _____ _____	—	—	—	—
Inventory and Shipping: <i>Holding Raw, WIP, Finished, Shipping to Customer etc.</i>	Notes: _____ _____ _____	—	—	—	—
Equipment/ Process: <i>Based on Improving Current Method and When Scaling</i>	Notes: _____ _____ _____	—	—	—	—
Project Management: <i>Software Match, Philosophy Match (i.e., MVP vs. perfection)</i>	Notes: _____ _____ _____	—	—	—	—
Cultural: <i>Preferred Communication Method, Employee Engagement, Envir., etc.</i>	Notes: _____ _____ _____	—	—	—	—
Owner/GM/Top Management: <i>Style, Beliefs etc.</i>	Notes: _____ _____ _____	—	—	—	—

Build Phase Reference Sheet

Build Phases Typically Referred to With Suppliers

- **Proof of Concept (works like):** Key parts and assemblies complete and able to be tested using models/simulations.
- **Beta Engineering Validation:** Multi-unit production with “production type” tooling.
- **Pilot Production:** 90%+ use of production materials, processes, and assemblies.
- **Production Start:** Production design frozen.

Build Phases Typically Referred to Internally in Your Company

1. **Appearance Model:** Target customer with specific problem identified. Rendered images and mockups for exploration & verification of specific market, customer requirements and translation to technical specs & manufacturing processes.
2. **Proof of Concept (works like):** Key parts and assemblies complete and able to be tested using models/simulations. May not look like a product. Demonstrate feasibility and explore risks.
3. **Engineering Prototype:** Full subsystems built independently as a proof-of-concept. Not yet totally integrated into the final product package.
4. **Alpha Prototype ("looks like/works like"):** Designed to test, early in the design process. Test and evaluate basic processes for flaws. Customer requirements validated.
5. **Beta Engineering Validation:** Multi-unit production with “production type” tooling. Complete engineering test and meet quality and other product specifications.
6. **Beta Design Validation:** Looks-like, works-like final saleable product using scale production quality tooling, materials, and processes. Ready for verification and validation that the product meets all requirements including quality in customer tests and regulatory and/or certification tests.
7. **Pilot Production:** 90%+ use of production materials, processes, and assemblies. Meets all the requirements for a saleable product. Packaging & Shipping in place for soft launch.
8. **Production Start:** Production design frozen. Manufacturing processes and tooling qualified (ie. confirmed to operate up to standard during sustained manufacturing). First production completed at 5-10% of full run. Meets all specifications for sale.
9. **Production Low-Rate:** Low-rate production complete. Manufacturing process review and efficiencies explored. Lean manufacturing improvements set in place.
10. **Manufacturing Full:** All processes in place for commercial growth.