

Introduction to
Product Design and Innovation

September 24rd, 2014

Introduction to Product Design and Innovation

- 10 lectures, 90 minutes each, Wednesdays at 3:30PM–5PM

0. Introduction	Sept 17 th
1. Innovation Process Models	Sept 24 th
2. Idea & Concept Generation	Oct 15 th
3. Concept Evaluation & Development	Oct 22 nd
4. Prototyping and Testing	Oct 29 th
5. Internal & External Communication	Nov 5 th
6. System Level & Detail Design + Manufacturing	Nov 12 th
7. Market Research & Benchmarking	Nov 19 th
8. Customer & User Needs Assessment	Nov 26 th
9. Review	Dec 3 rd
10. (Exam)	Dec 10 th

- COURSE BOOK: Ulrich & Eppinger: *Product Design and Development*
- COMPLETION & EVALUATION: Weekly Assignments (or Exam)

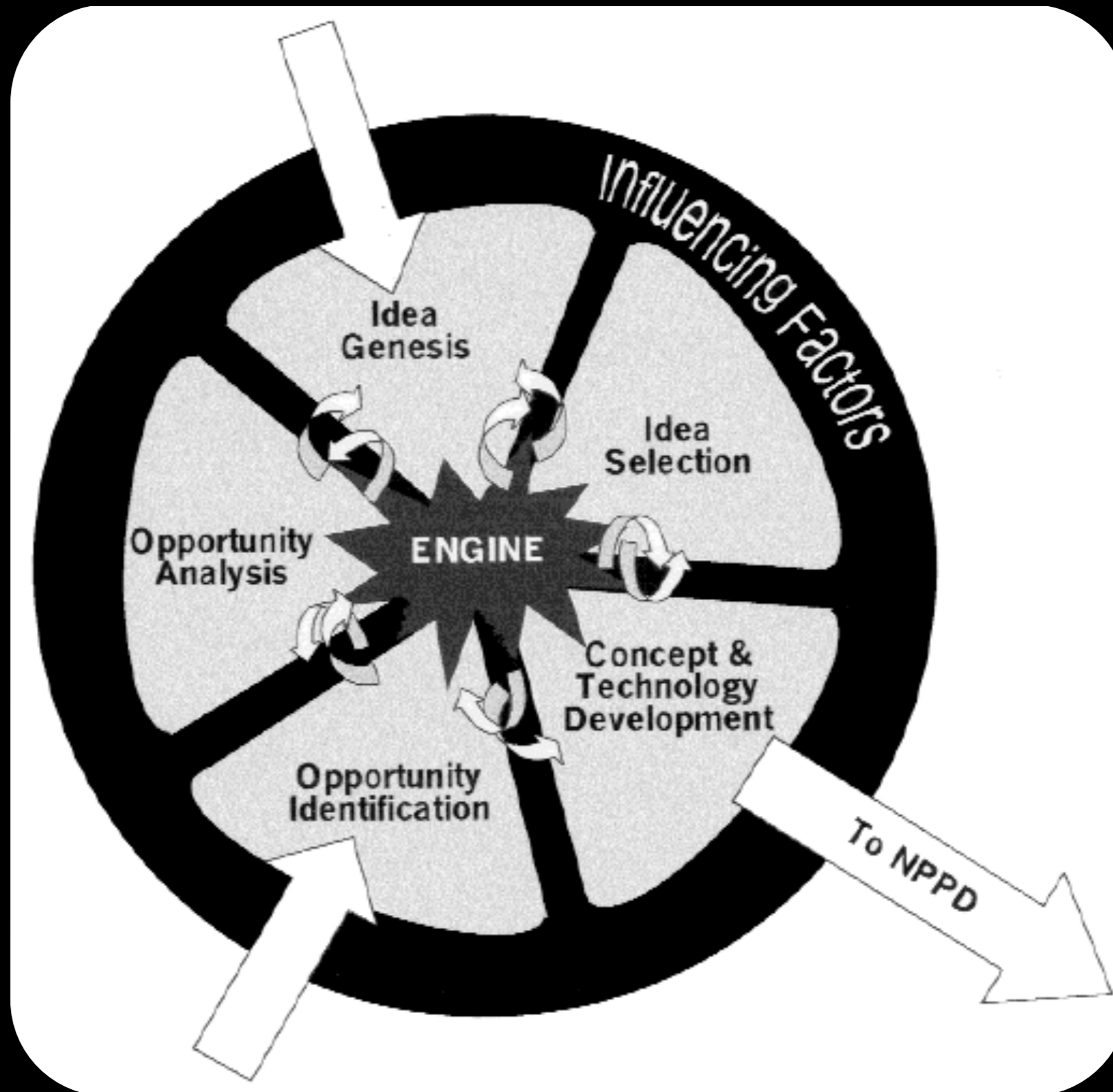
Innovation Process Models

General PDI Process



- Everything starts with Planning
 - Analysis, Mission Statement, Break Down, Gantt
 - Project Plan
- Not every project leads to a product

How the process really starts?



* Koen et al 2001

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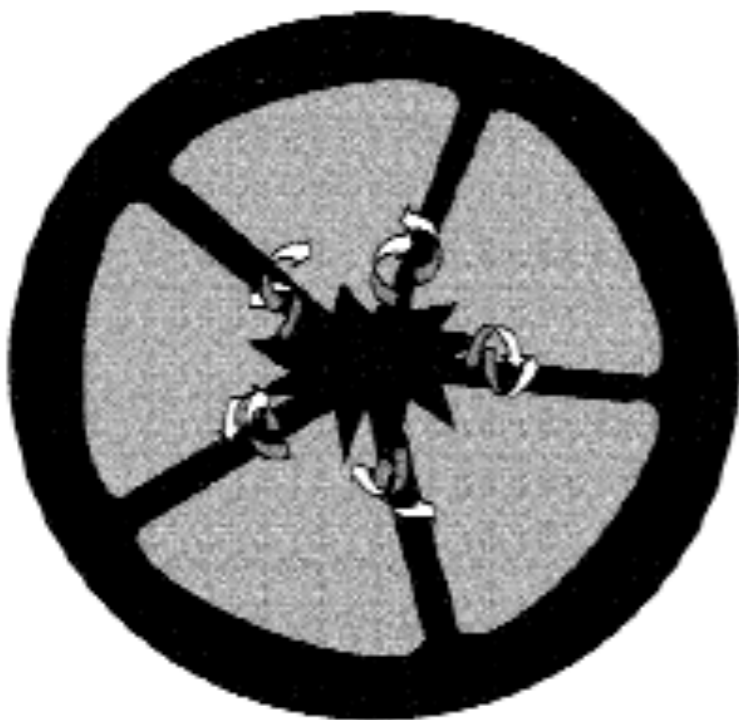
How the process really starts?

1.

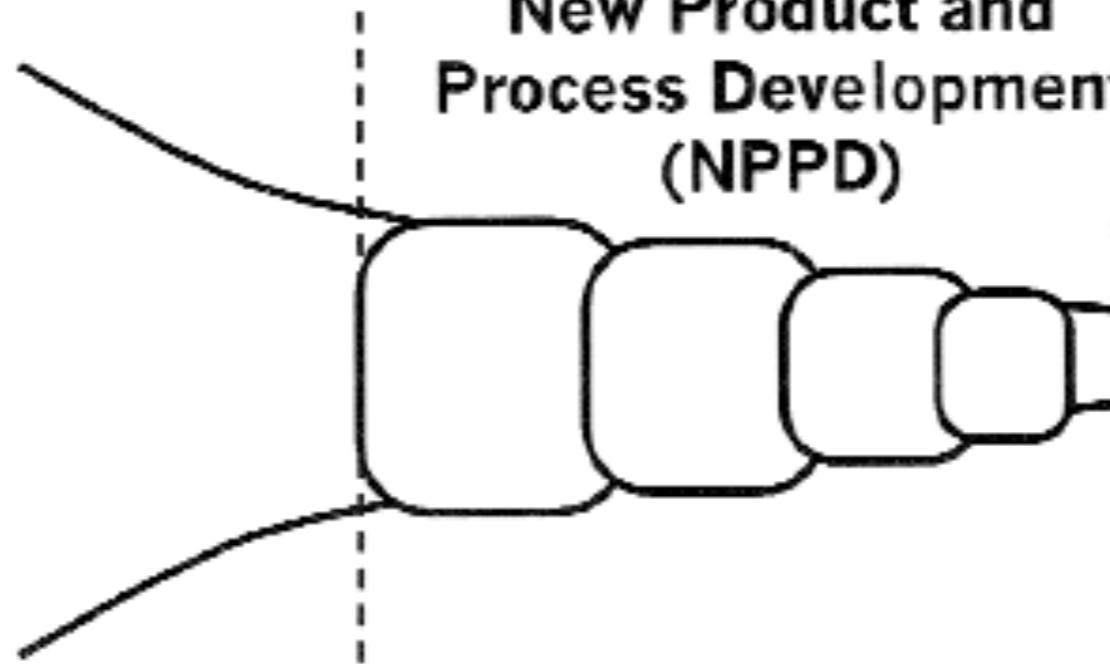
2.

3.

Front End of Innovation (FEI)

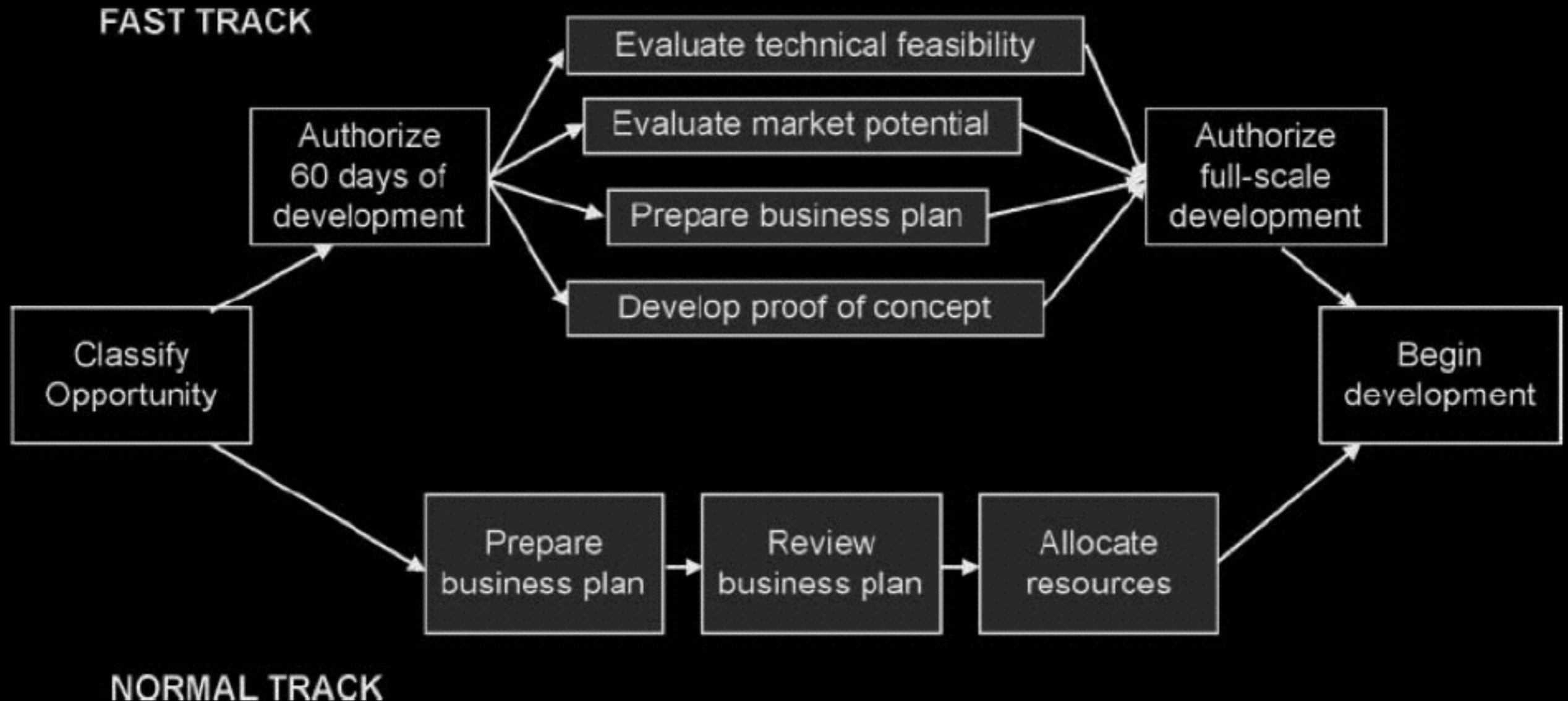


New Product and Process Development (NPPD)



Commercialization

Two-track Front End Process



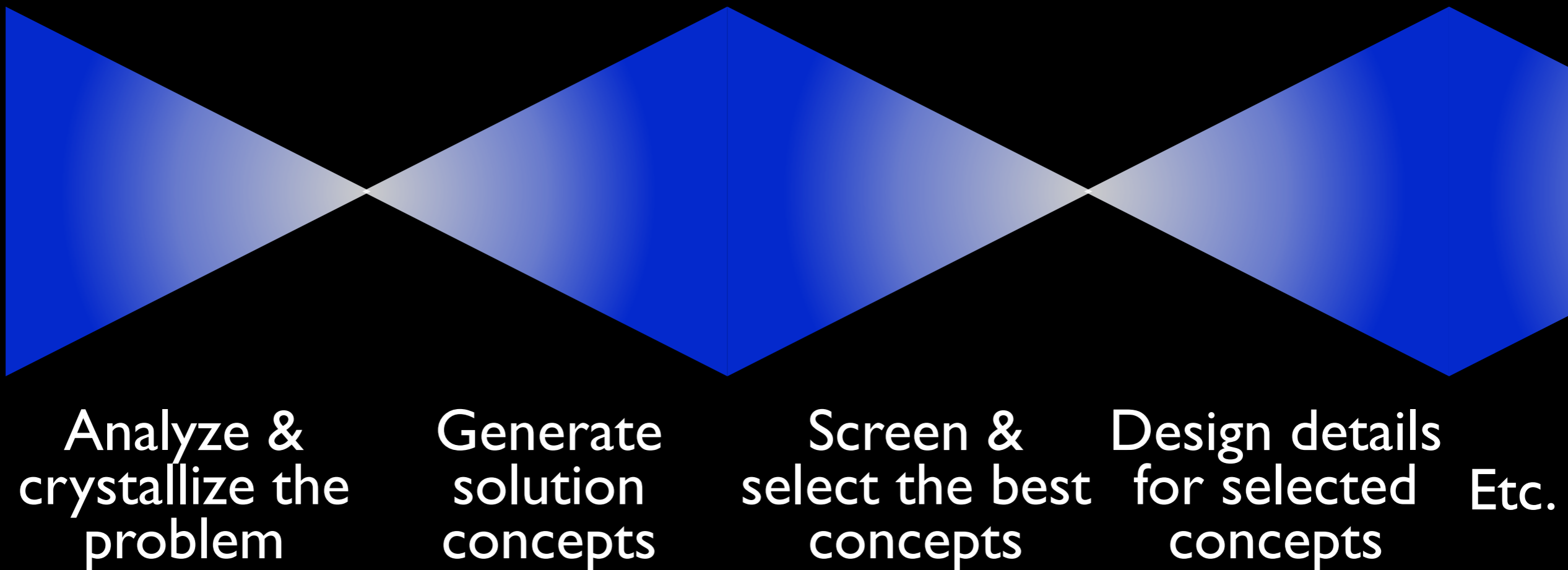
* Reinertsen, 1994

Reinertsen, DG. Streamlining the fuzzy Front End. World Class Design to Manufacture 1994;1(5):4-8.

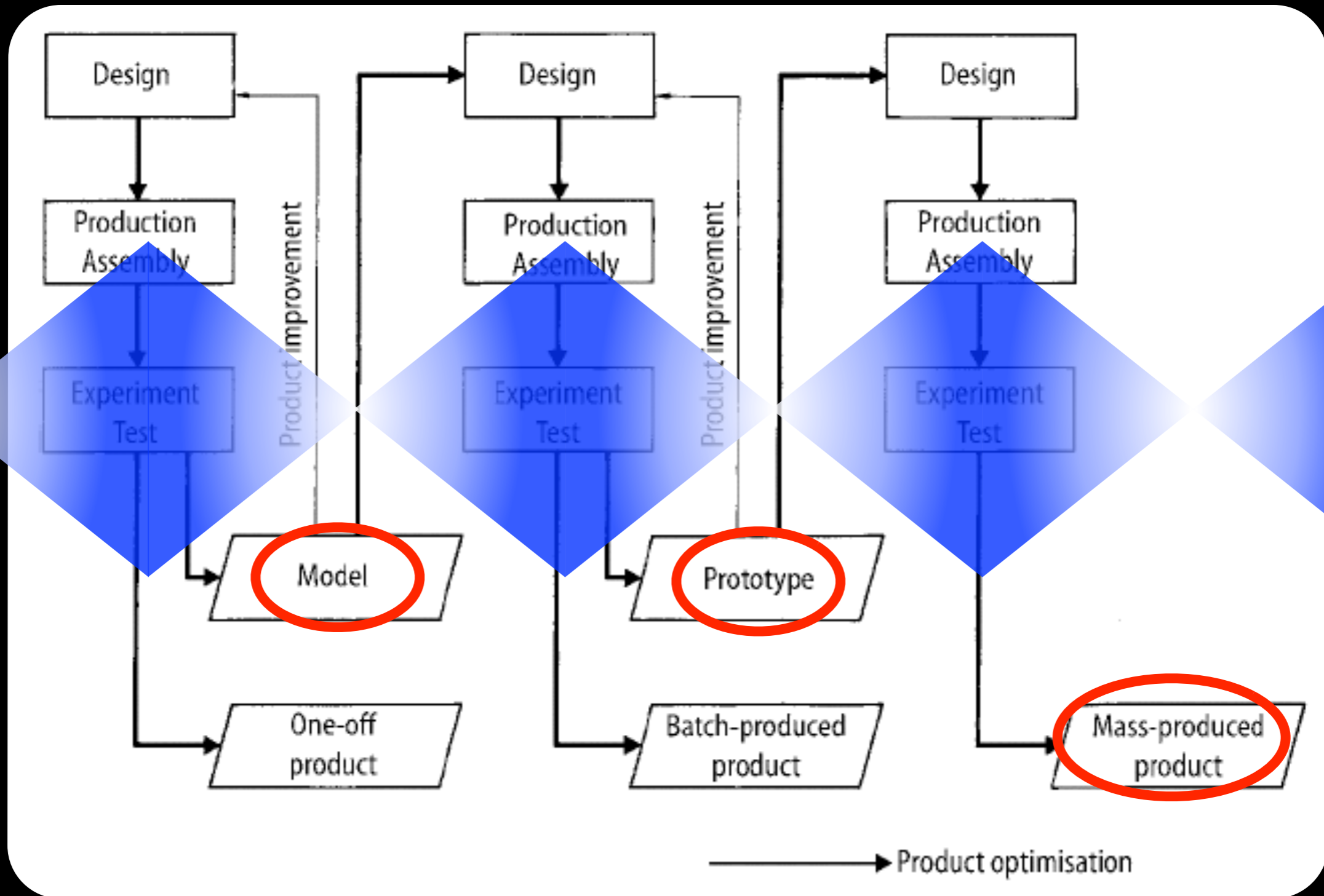
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Double X

- PDI Process is cyclic and iterative by nature
- Convergent $>$ (analytical) and Divergent $<$ (creative) phases require different tools and approaches



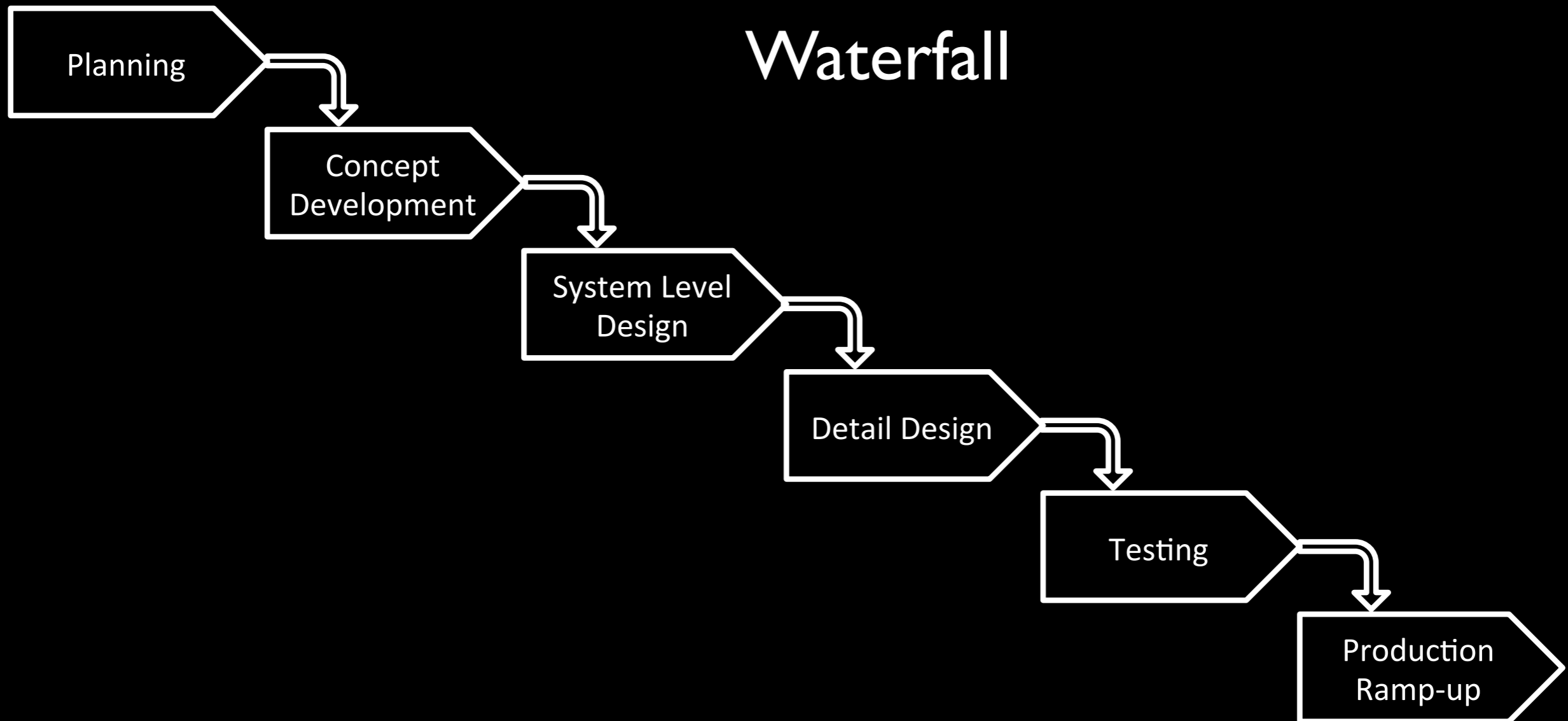
Steps of Product Development



* Pahl & Beitz, 1977

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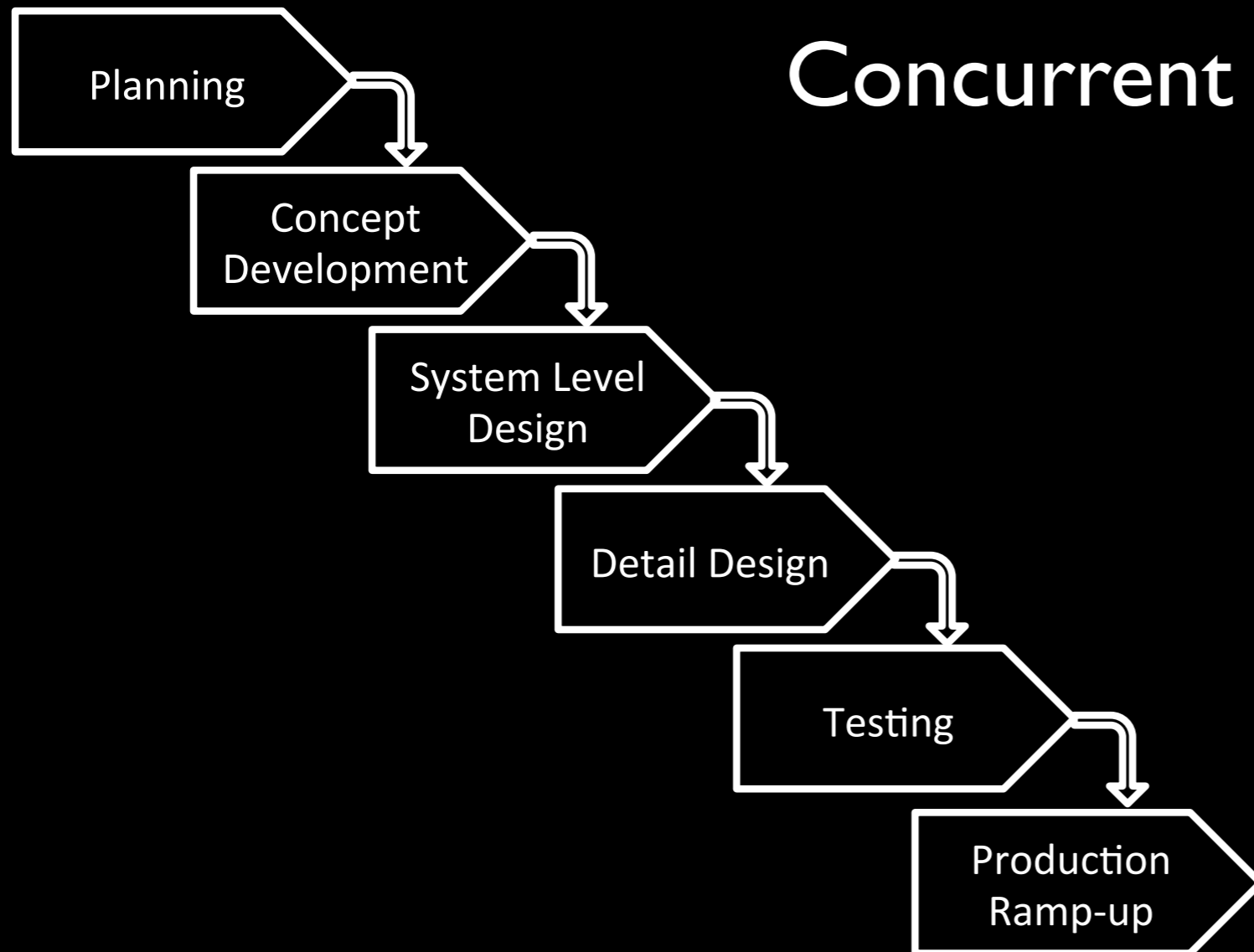
Process Alternatives



Process Alternatives



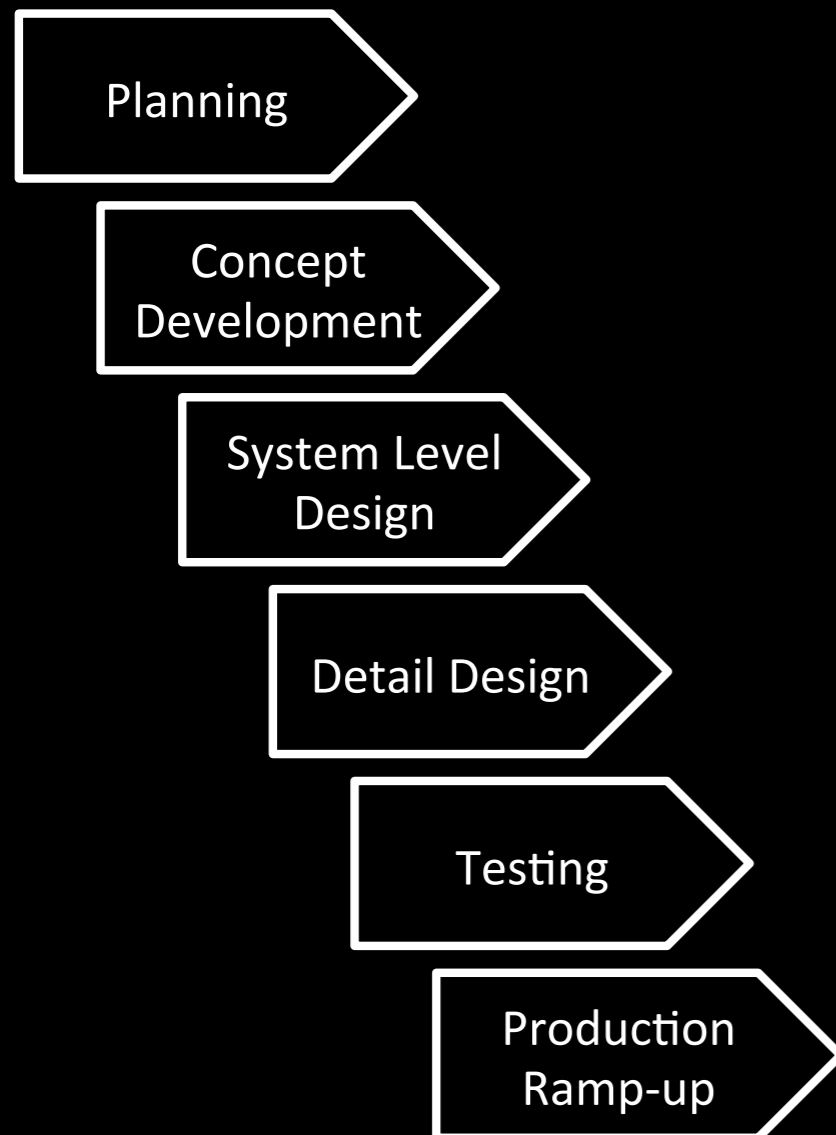
Concurrent Engineering



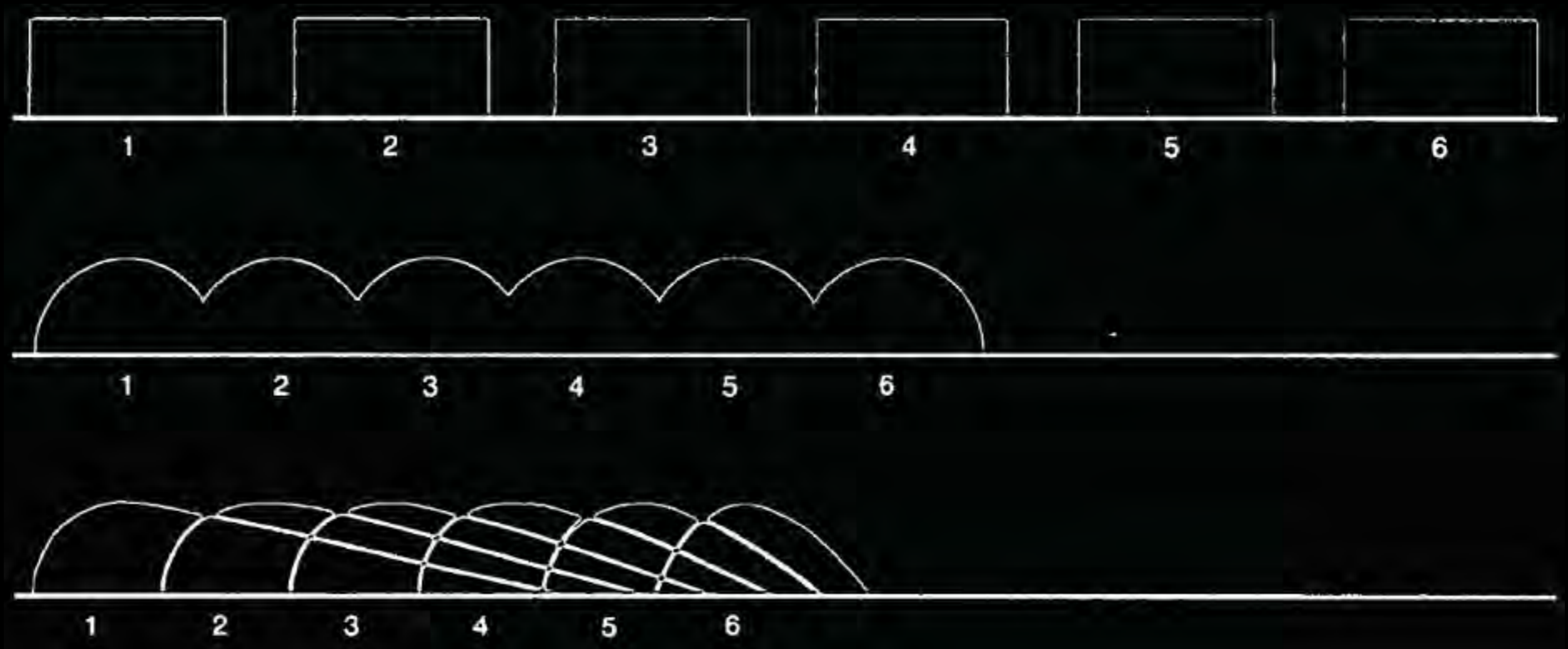
Process Alternatives



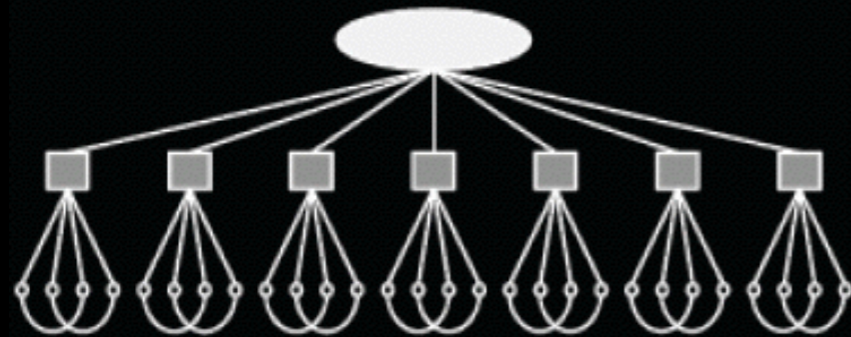
Integrated Product Design



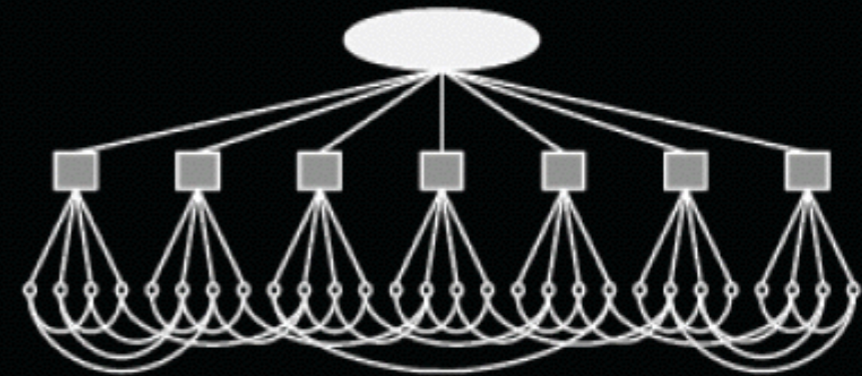
Process Alternatives



Simple vs. Complex?



Simple System



Complex System

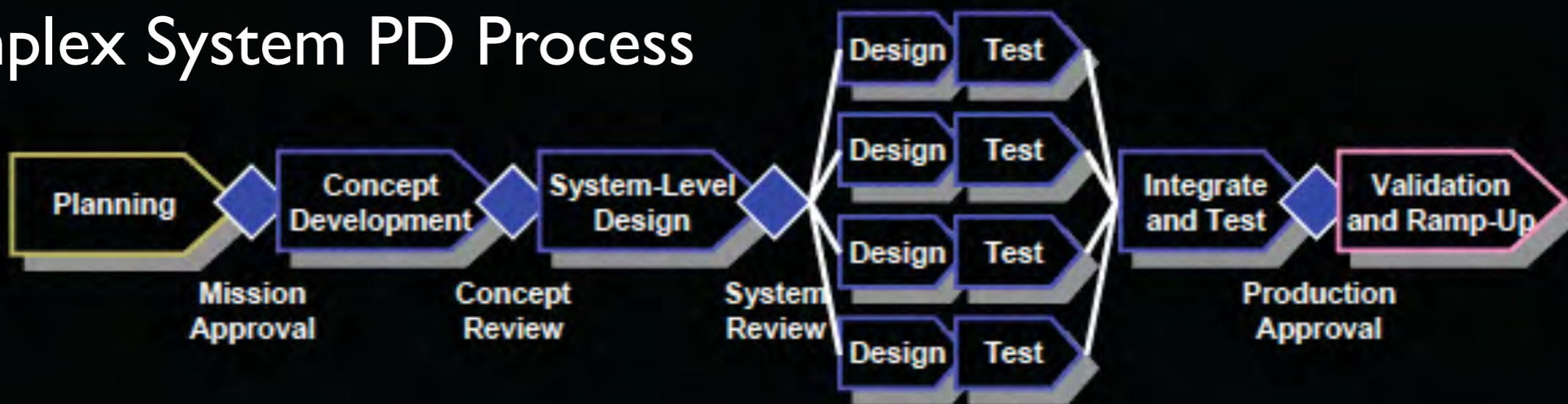


Simple vs. Complex?

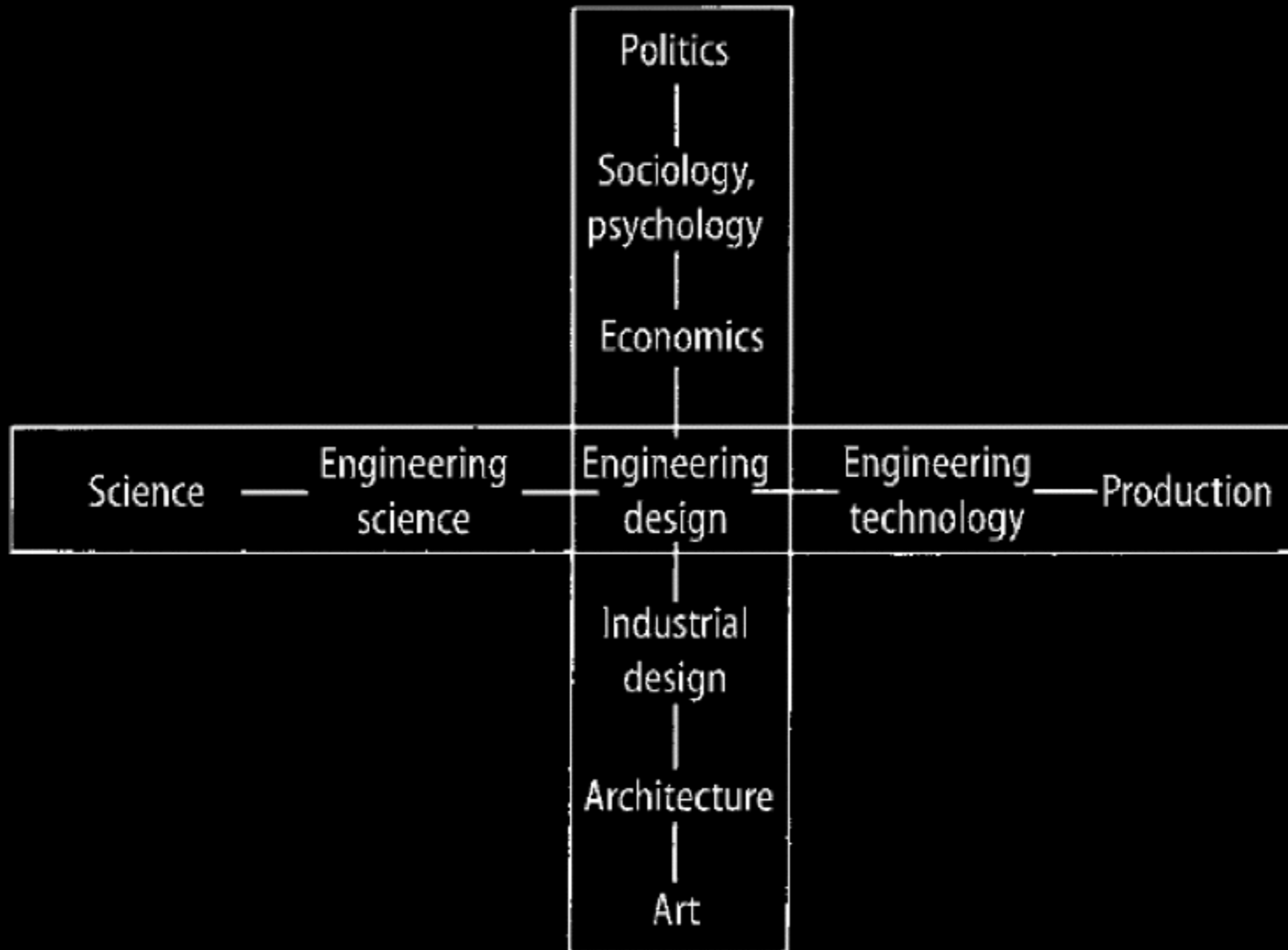
Simple PD Process



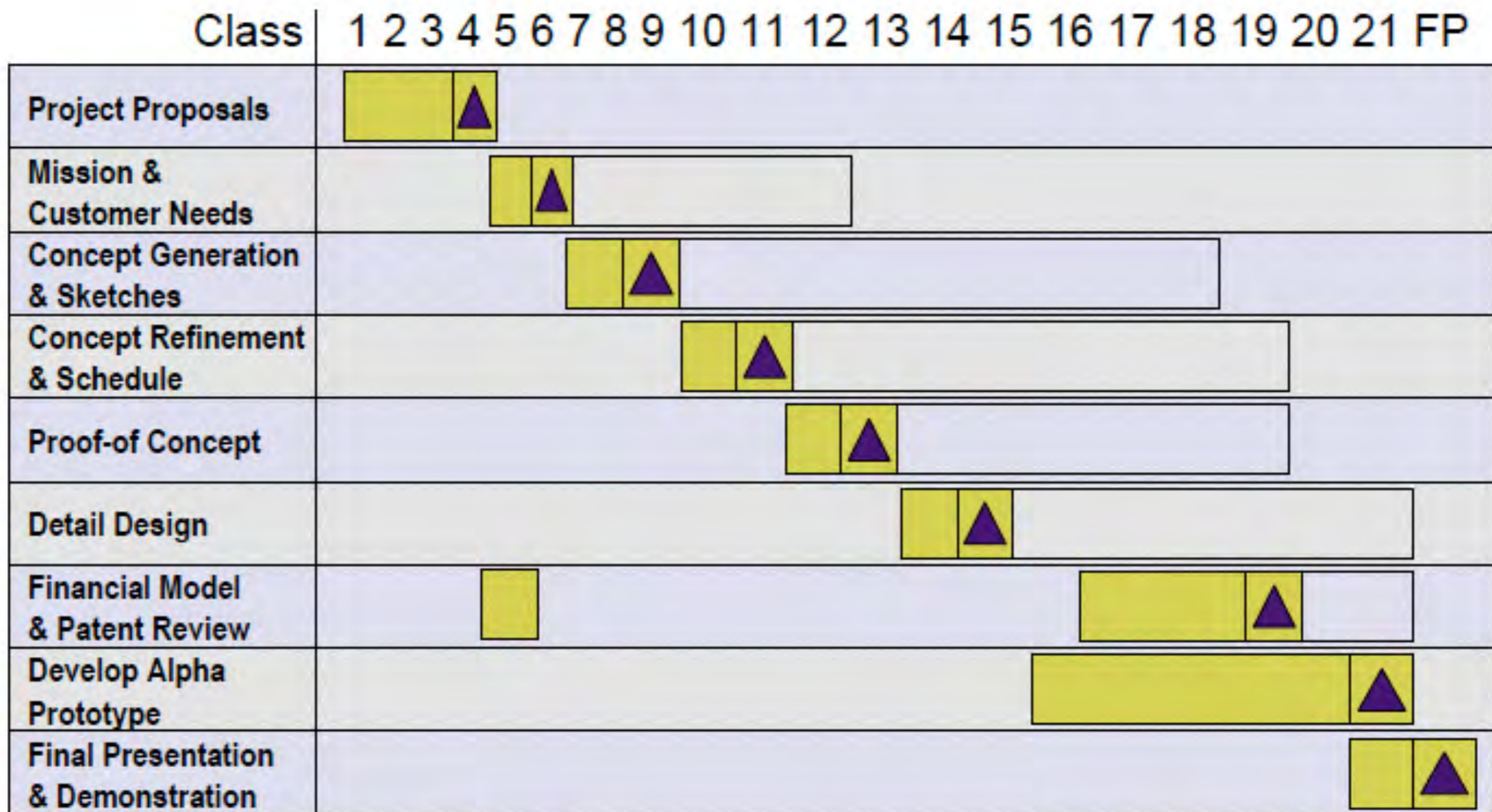
Complex System PD Process



Engineering Design



Gantt Chart

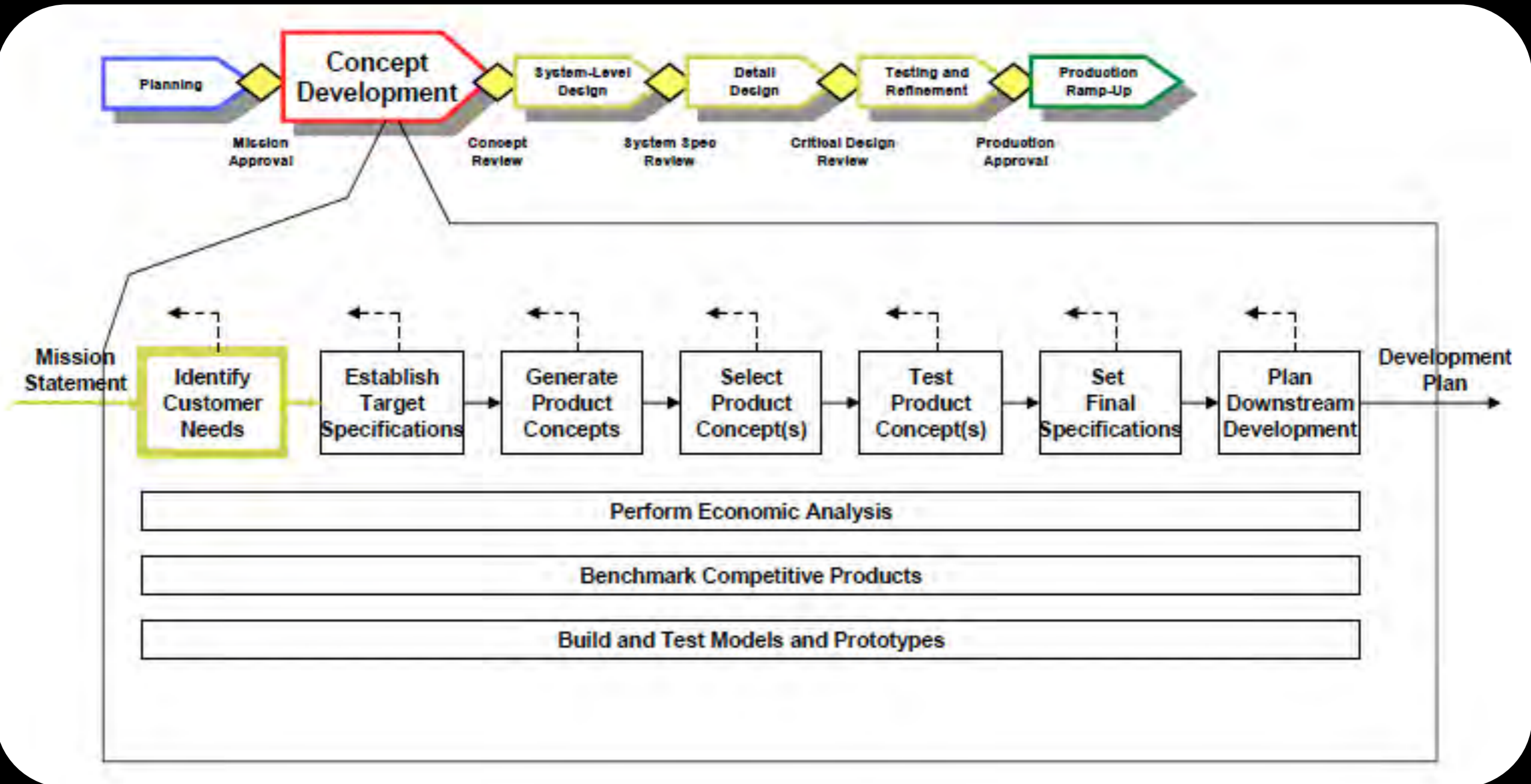


Assignment Work

Due

Refinement

Concept Development



Next time (Oct 15th):

Idea & Concept Generation

Registration & questions

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