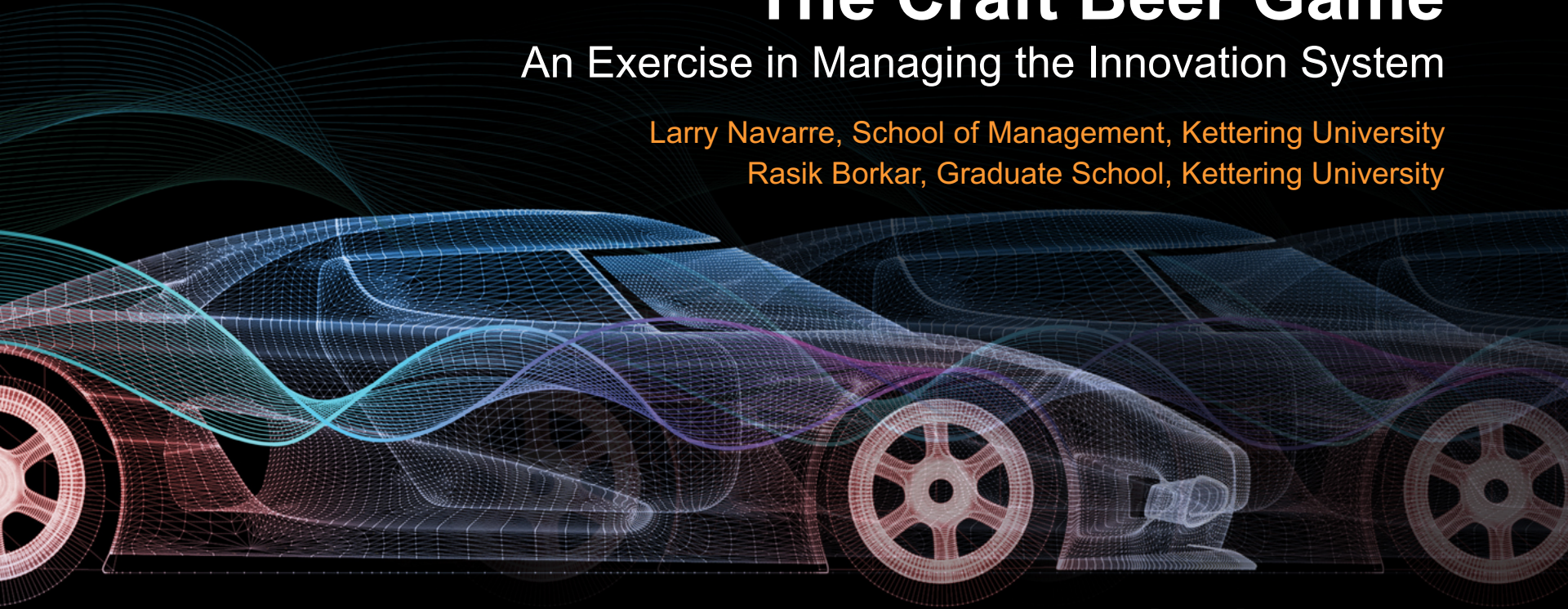


The Craft Beer Game

An Exercise in Managing the Innovation System

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Designing the Future Summit 2018

lppd  Lean Product &
Process Development

Craft Beer Game

Welcome to BrauHaus Frankfort

- A craft beer brewery in Northern Michigan
- Started by young entrepreneurs with a passion for home brewing
- Typical small brewpub, except that it became large
- Now exceeds \$40 million in annual sales
- High quality beers, clever product marketing
- Now 200 employees, a large brewery, and a bottling and distribution center



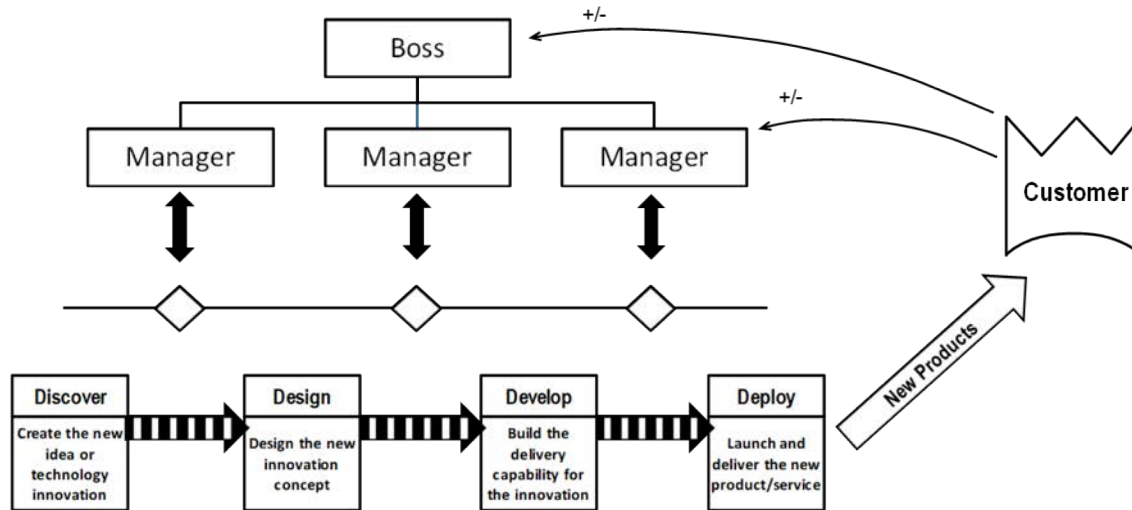
Photo credit: Brauhaus Willinger www.willinger-brauhaus.de



Craft Beer Game

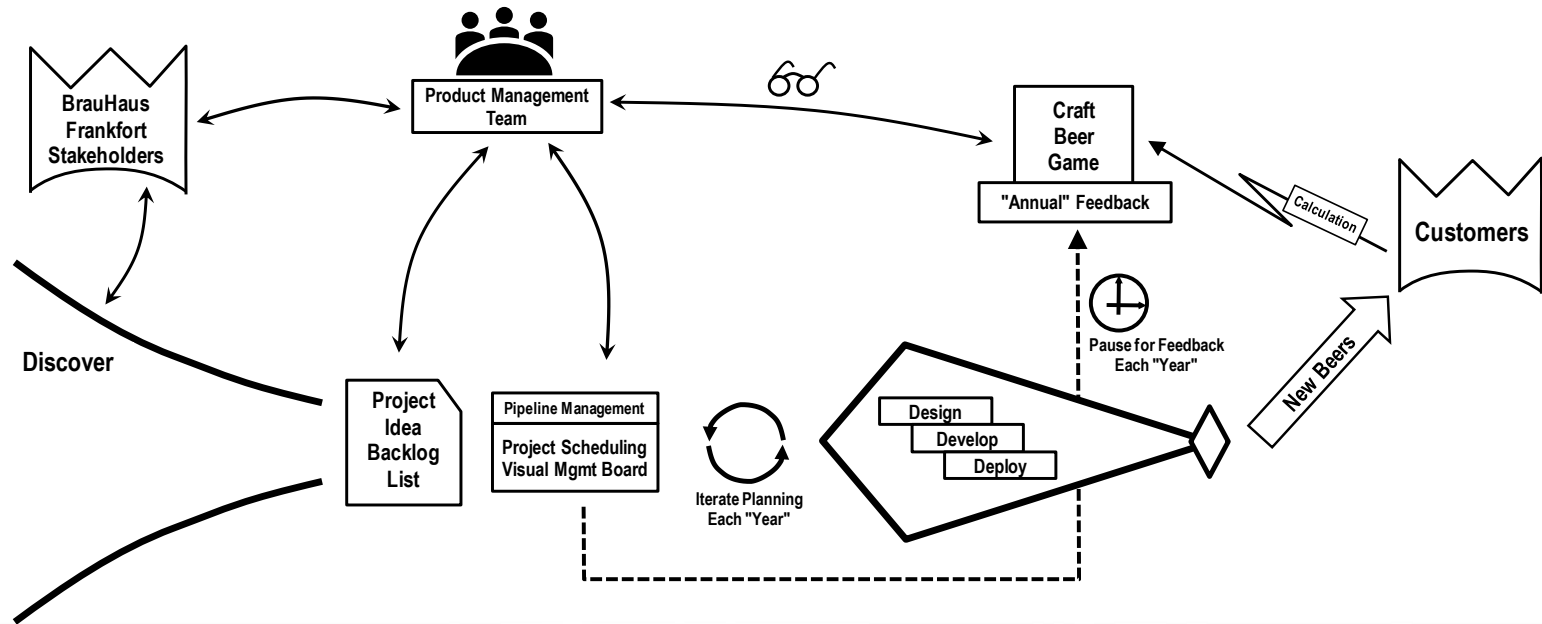
BrauHaus Frankfort has a typical development process

- Management determines which projects to introduce
- Customers provide feedback to guide management



Craft Beer Game Process Flow

You are the Product Management Team



Craft Beer Game

Development Project Backlog List

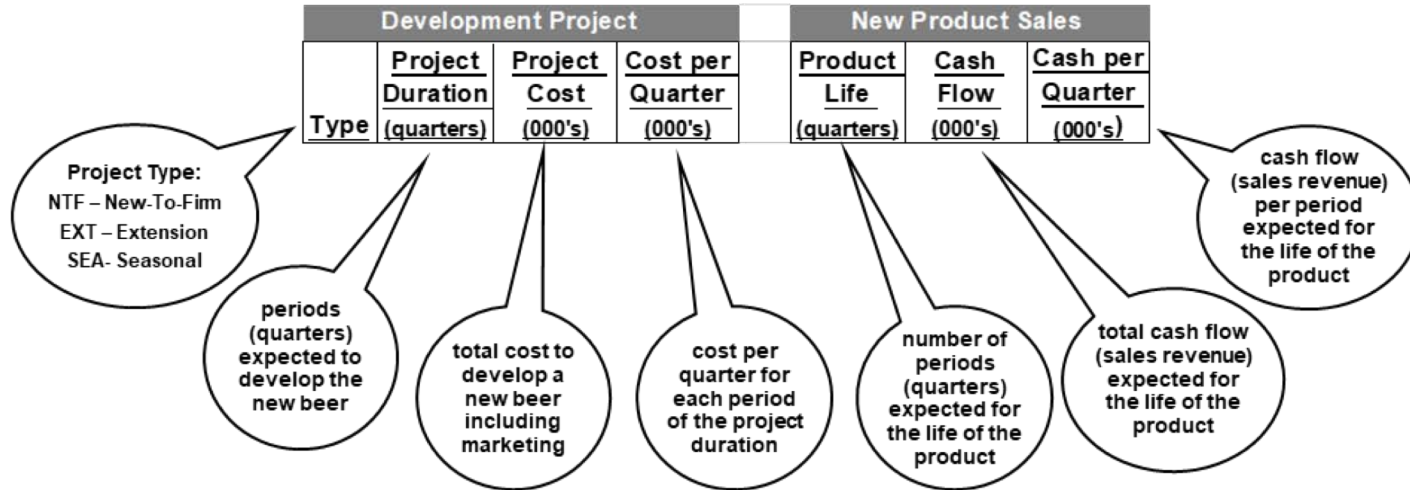
- The Product Management Team collects new beer ideas
- Each year a new set of ideas is considered for development
- There are three types of projects at BrauHaus Frankfurt
 - New-To-Firm – Something the Brewmaster has never done, takes more time
 - Extension – New beers that are simple recipe modifications, plus marketing
 - Seasonal – Provide variety to customers, but short lived



Craft Beer Game

Development Project Backlog List

- Select development projects according to your innovation strategy
- Manage the development pipeline within the available budget
- New project ideas will be provided each year



Craft Beer Game

Development Process Guidelines

- The Goal is to maximize value of new beer introductions
- Once scheduled, no changes – the projects can't be rescheduled later
- You can use any of the projects on the Backlog at any time in the future
- You can't do the same project twice! Except seasonal projects.
- The same Seasonal project cannot be re-introduced in the same year
- Budgeting is allocated each quarter
- If you don't spend the budget, it does not carry over to the next quarter
- The budget corresponds to development capacity
- Poor capacity management will result in overloading inefficiencies



Craft Beer Game

Preparation and Demonstration of Year 1

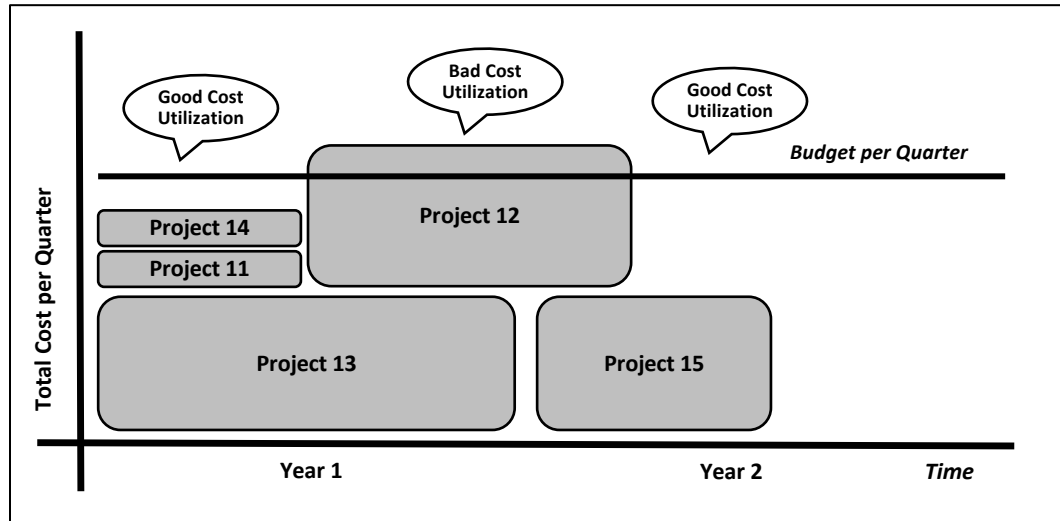
- Green papers represent Cash from new beers
 - Projects have been completed last year, schedule the Cash that will be received in Year 1
- Other papers represent Cost needed to develop new beers, experiment with scheduling Cost
 - Red = New-To-Firm, Orange = Extension, Blue = Seasonal



Craft Beer Game

How to manage your budget of \$130,000 per quarter

- Overloading will result in lower development efficiency



Craft Beer Game

Guidance from the owner of BrauHaus Frankfurt

- The budget is flexible
- Going a little over budget is OK, especially if it means getting out another new beer, or two



Go forth and create new beers!

Schedule Year 1, pause for feedback

Your team will have 20 minutes to plan the year



Exercise Huddle Question:

What is the best mix of project types?



What is an Innovation?

Classification of Innovation Project Types

New-to-the-World

a product that is completely new to the industry

New-to-the-Firm

a new offering for the organization developing it

Extension

an addition to an existing product with more choices

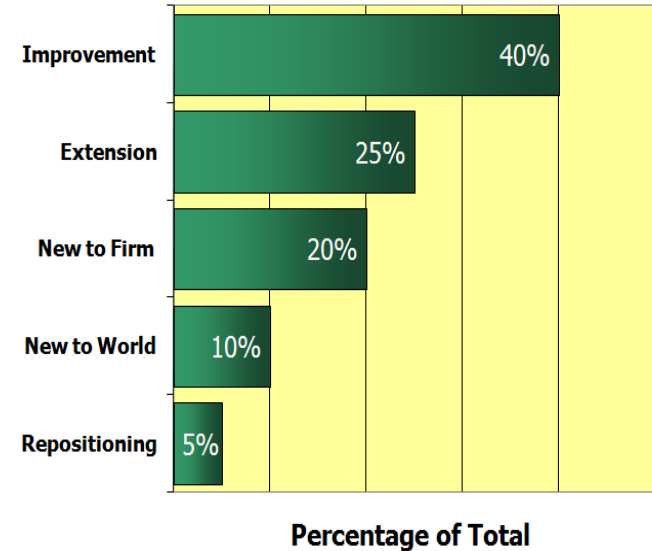
Improvement

a revision of an existing product

Repositioning

changing the marketing mix of an existing product

PDMA Survey Project Type Mix



Source: Product Development and Management Association

Takeaway Point

Project Portfolio Management

- It is wise to have a balanced portfolio of development projects
 - Having projects that are less than innovative is not a bad thing at all
 - This principle is like a balanced investment portfolio
 - Balance risk, reward, and time to introduce a steady stream of new innovations



Create more beers!

Schedule one year at a time, pause for feedback

Your team will have 10 minutes to plan each year



Exercise Huddle Question:

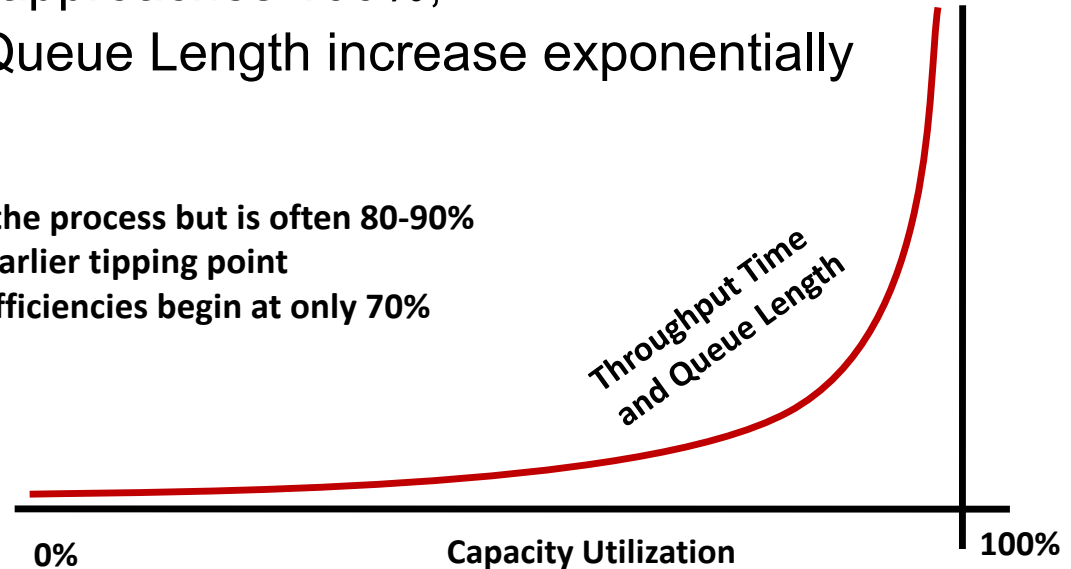
What is the capacity utilization trade-off curve?



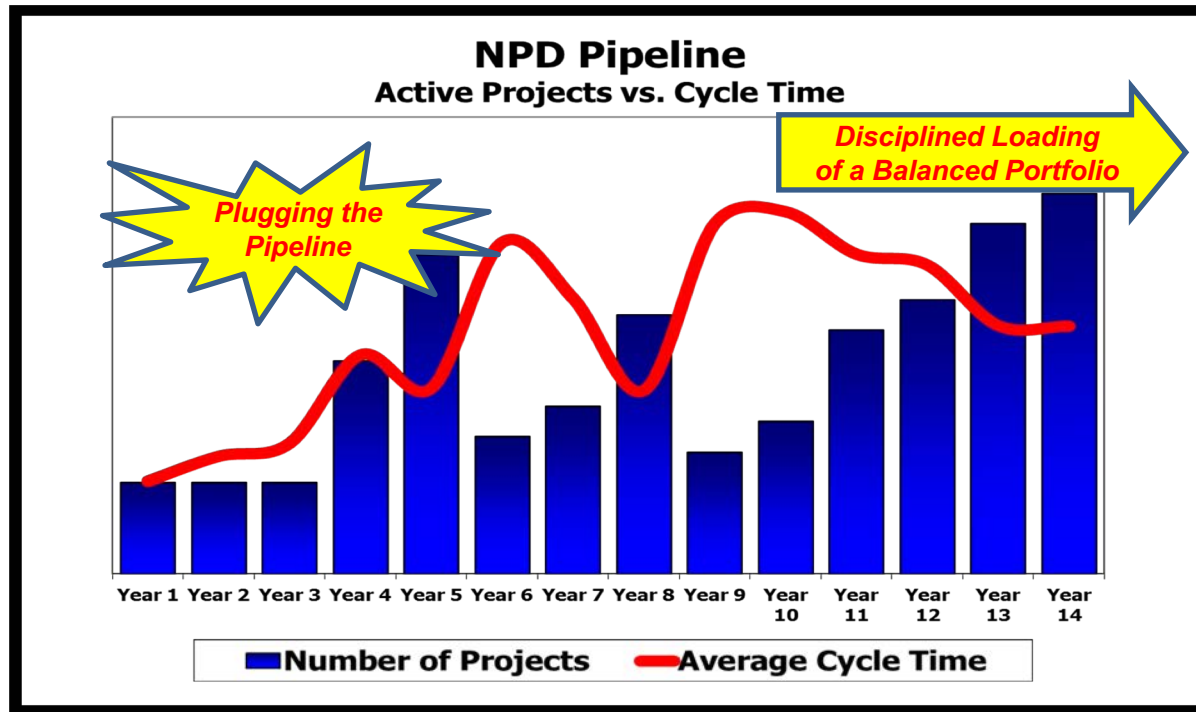
Innovation and Systems

Development is a Queueing System

- As Capacity Utilization approaches 100%,
Throughput Time and Queue Length increase exponentially
- The “tipping point” depends on the process but is often 80-90%
- Greater variability results in an earlier tipping point
- Some estimate development inefficiencies begin at only 70%



Pipeline Management



Navarre, L. (ed), Innovation Development Excellence, 2018



Takeaway Point

Optimal Flow

- Balance is difficult to achieve but managing the process to complete fewer projects more quickly produces the best throughput results
- Disciplined assessment of resources *before projects are started* will avoid plugging the pipeline



Create more beers!

Schedule one year at a time, pause for feedback

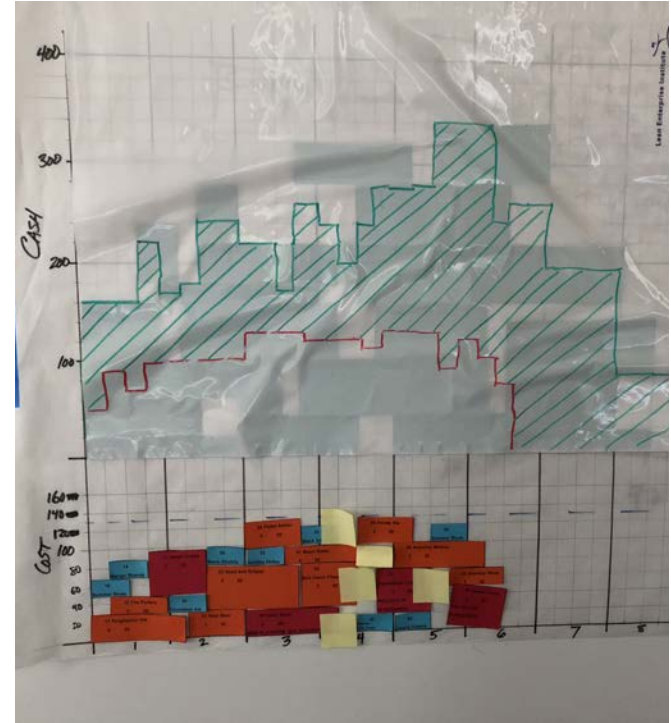
Your team will have 10 minutes to plan each year



Calculate the Value of your development

Value = Cash – Cost

- Using the SmartSheet, overlay the Cost schedule and outline the area (with a dry erase marker), interpolate as required
- Move the SmartSheet to overlay your Cash schedule and outline the area (using a different marker color), interpolate as required
- The difference in area is the Net Value, highlight the Value area



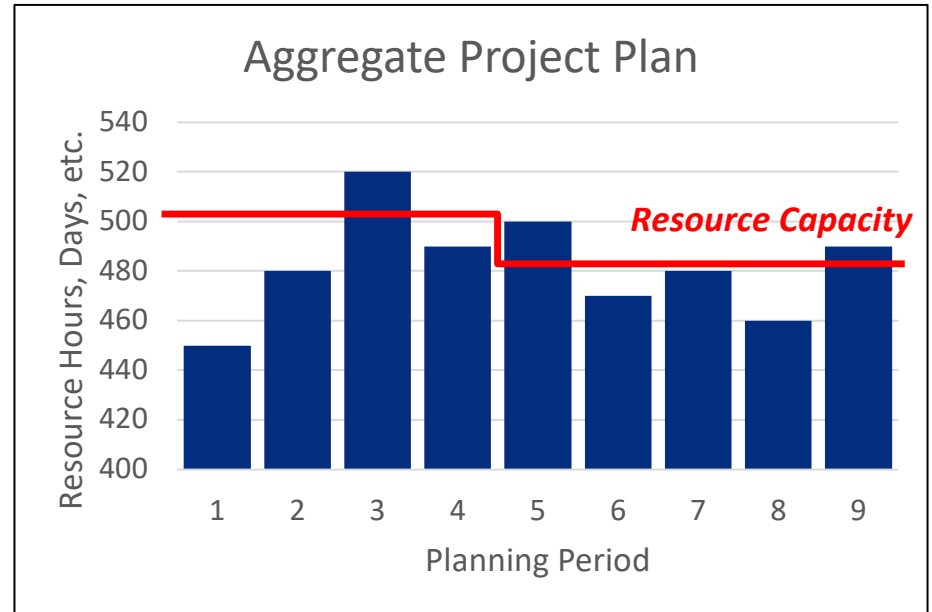
Wrap up and Takeaway Points



Capacity and Discipline

Aggregate Project Plan

- Determining project scheduling load given resource capacity constraints



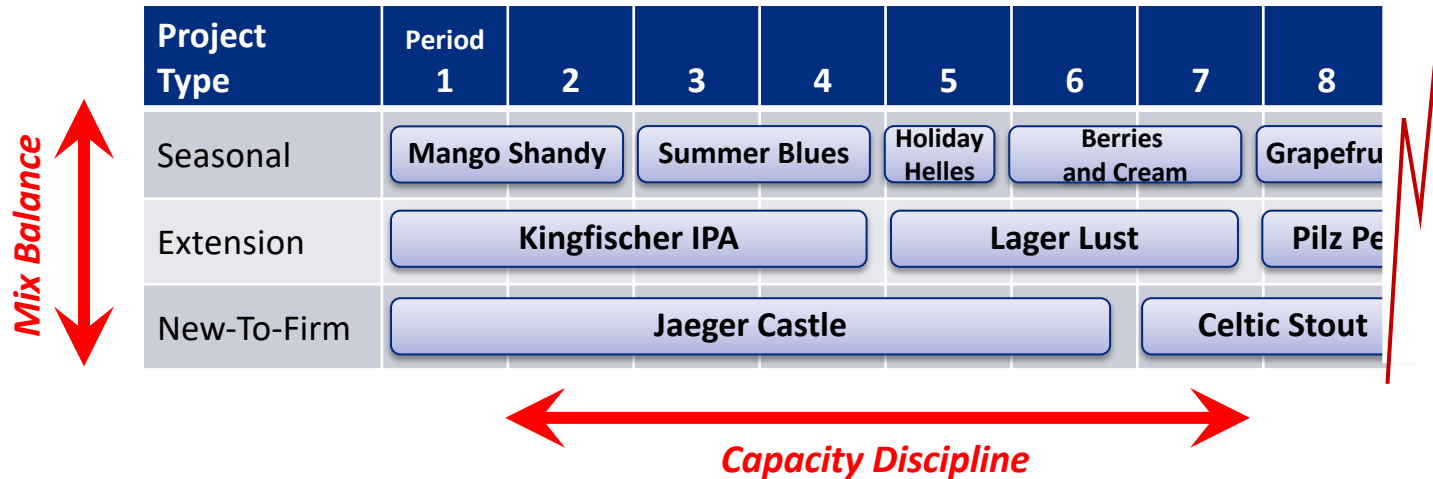
Wheelwright, Clark; *Creating Project Plans to Focus Product Development*, HBR, Mar-Apr, 1992



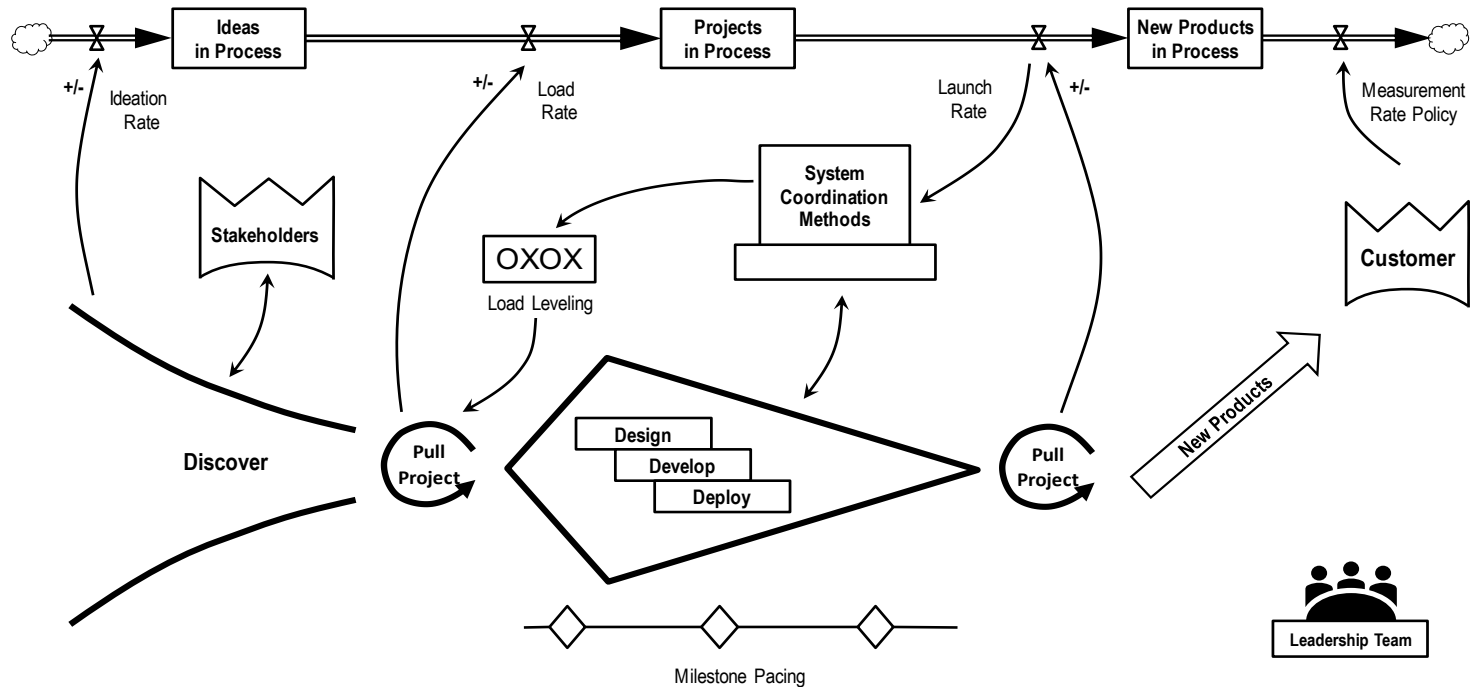
Balance and Discipline

Load Leveling Example

- Balanced mix of work given the capacity available by time period
- Simple, effective balance and load



Systems Thinking and Development



Navarre, L. (ed), Innovation Development Excellence, 2018

Takeaway Points

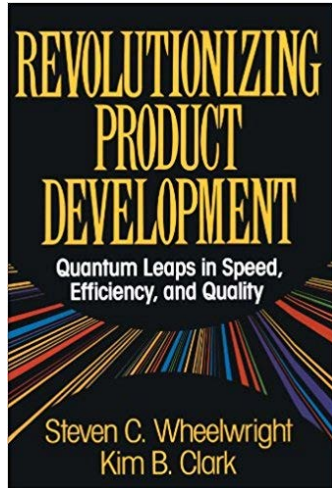
Innovation and Systems Thinking

- Development is a dynamic queueing system
 - Overloading results in severe delays
- System Dynamics can be countered
 - Determining resource capacity and load is essential
 - Use simple, visual tools such as Load Leveling

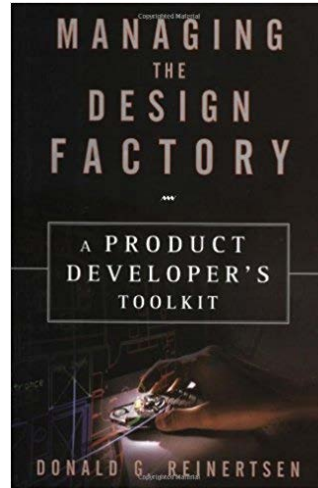


Innovation and Systems

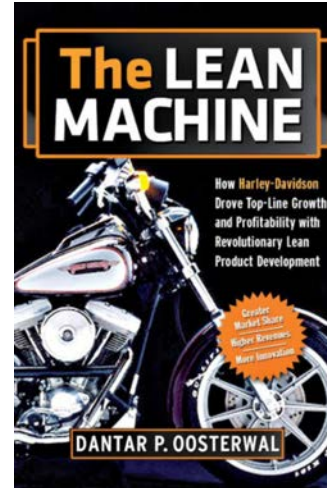
Systems Thinking in development is documented, but now well known



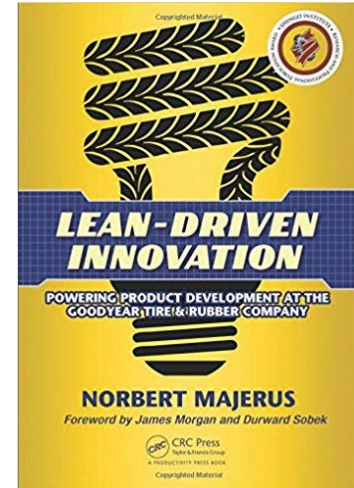
Wheelwright/Clark is the classic explanation of aggregate project planning



Reinertsen explains development as a queueing system



Oosterwal explains system dynamics of development and the "bin mix" method at H-D



Majerus explains the transformation to capacity planning at Goodyear



Thank You!

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