LEAN-AGILE PRODUCT MANAGEMENT PRINCIPLES & PRACTICES
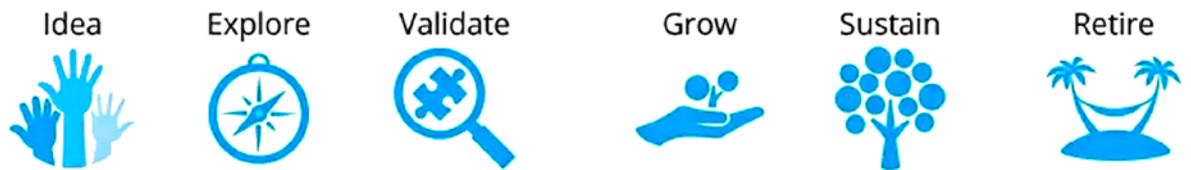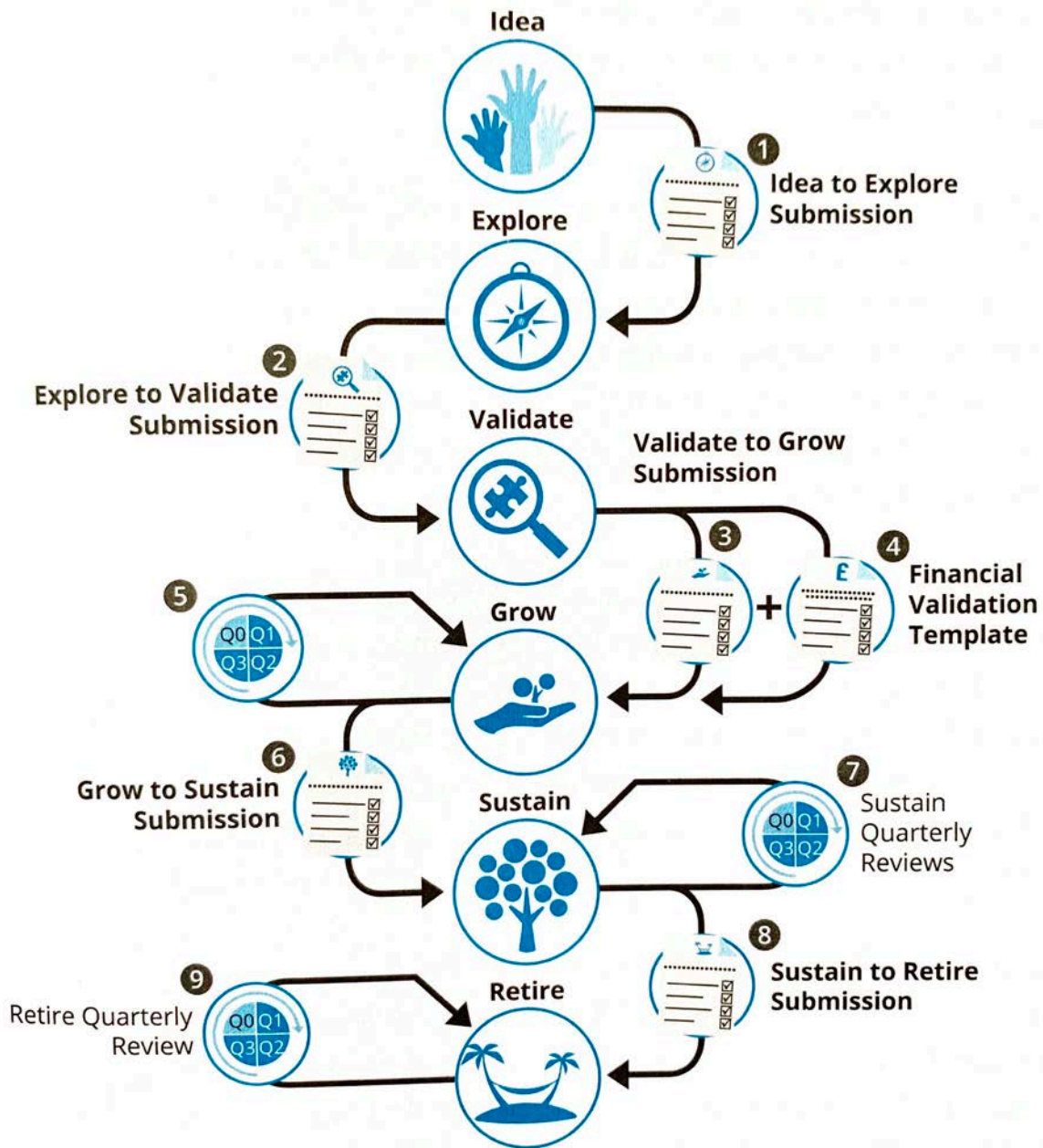
Abstract. *Lean-Agile Product Management is a powerful tool for successfully creating and scaling innovatively new products and services. Since innovation is a key element of business and operating models, lean-agile product management is also the key to growing public and private sector organizations as well. The problem is that there is no standard agreed upon approach or reference model of Lean-Agile Product Management. Worse yet, it is often confused or replaced by outdated models of project and product management, big up front user experience analysis, or anemic agile development initiatives. The solution to lies in dispelling with traditional project and product management, developing lightweight user experience models, applying rapid iterative development cycles, and scaling last not first when a viable product or service solution is identified. When lean-agile product management is applied as a continuous dual system or process of discovery and development, new products and services are quickly and inexpensively identified and the risk of scaling to successful feature rich solutions is greatly reduced. Therefore, the purpose of enumerating a few key lean-agile product management principles and practices is to illustrate how organizations of all shapes and sizes can successfully innovate, grow, and thrive.*

INTRODUCTION

Developing new products and services is as old as human civilization itself. Humans have always developed innovations to exploit at an individual, group, or societal level. This included hunting and gathering, agriculture, clothing, dyes for painting, jewelry and ornaments, advanced weaponry, and religion and spirituality. Sometimes, innovation was a highly individualistic practice, and sometimes it required small teams, and even larger groups of people if you can imagine making a pyramid that required thousands of people over decades. Innovation has always been a hit or miss proposition, targeted at individual needs, and rarely a repeatable process. During the industrial age of Western civilization, innovation manifested as long linear waterfall processes and schedules to define and build large volumes of requirements bearing little resemblance to a user's needs. The bigger they are, they harder they fall, and more requirements are more expensive leading to product and service failure. In recent times, we've learned to pay more attention to solving validated problems in smaller cycles.

- **Project Management**. A method of planning, executing, and tracking the development or improvement of new products and services. It relies on several key faulty assumptions. It assumes the total scope, requirements, solutions, timelines, budgets, risks, constraints, and technologies are static and predictable. In other words, it depends upon predicting the future. Predictions are manifested as integrated master schedules, big up-front requirements and designs, and fixed-scope budgets and durations. Most preplanned assumptions crumble like dominoes as the development of innovatively new products and services is highly unpredictable.

- **Product Management**. A method of planning, developing, launching, and managing new products or services. It involves the marketing, sales, pricing, and definition of the scale, scope, boundaries, and requirements of the product or service itself. It involves researching and defining requirements, and planning development strategies, roadmaps, and timelines for their development. Product management relies on predicting customer and market needs, product and service requirements, costs and benefits, etc. It also results in detailed integrated master schedules with cascading façades of high-risk brittle assumptions.

- **User Experience**. A method to define all aspects of the user's interaction with an organization, its services, and its products. It begins with identifying problems, pain points, and needs of users, customers, markets, or market segments. It focuses on creating or improving innovatively new products or services that are the source of business value and organizational growth. It assumes growth is an outcome of solving problems and creating value. It's a formal analysis method for defining detailed product and service requirements over a long period of time. And it often involves predicting market needs based on volumes of faulty assumptions.

- **Lean-Agile Development**. An inexpensive method to rapidly develop new products and services. Small batches of customer needs are captured, developed, and quickly illustrated to collect feedback in short cycles. Customer and market needs are refined after each cycle or iteration until risk and uncertainty are resolved, and a valuable solution has been converged upon. Often times, the inputs are merely requirements that are only a proxy for real user or market needs, development speed is optimized over problem solving, and it is hijacked by project and product managers to implement detailed integrated master schedules of faulty assumptions.

- **Lean User Experience**. A method that combines lightweight user experience and lean-agile development. It quickly focuses on understanding users, as well as defining what they need, what they value, their abilities, and their limitations. Mockups, models, or prototypes are quickly developed, and end-user data is captured to verify and validate product and service needs. Only a few user experience tools are applied and a new Lean UX cycle can quickly take place in as little as a week. The goal is to cycle through as many product and service ideas as possible and little attention is paid to final development and organizational or market scaling.

- **Lean-Agile Product Management**. A dual system of defining and developing innovatively new products and services. It combines elements of Lean UX and Lean-Agile Development. It consists of two broad phases (i.e., discovery and scaling). The first phase uses Lean UX techniques to cycle through one or more business experiments to rapidly identify a viable hypothesis for an innovatively new product or service. The second phase consists of expanding one or more smaller business experiments into larger scale products or services. This may also include expanding the organization itself from a small entrepreneurial team to a large-scale enterprise.

Lean-Agile Product Management Principles & Practices

	Idea	Explore	Validate		Grow	Sustain	Retire
Status	**SEARCHING & DISCOVERING**				**EXECUTING, IMPLEMENTING, & DELIVERING**		
Focus	Early Adopters				Early Majority, Late Majority, Laggards		
Duration	**HOURS**	**DAYS**	**WEEKS**		**MONTHS**	**QUARTERS**	**YEARS**
Metrics	Customer Discovery, Innovation Accounting, Lean Analytics, Pirate Metrics				Revenues, Profit-Margins, ROI, IRR, NPV		
Scale	**NO**				**YES**		

Viki, T., Strong, C., & Kresojevic, S. (2021). Lean product lifecycle: A playbook for making products people want. Harlow, UK: Pearson.

LEAN-AGILE PRODUCT MANAGEMENT PRINCIPLES & PRACTICES

I. LEAN-AGILE PRODUCT DISCOVERY

A. Lean-Agile Product Exploration

- Lean Startup
- Startup Way
- Design Sprints
- 5x5 X-Teams
- Innovation Labs
- Business Experiments
- Lean Product Lifecycle

B. Lean-Agile Product Ideation

- 5 Whys
- Affinitymapping
- Rolestorming
- Mindmapping
- Brainwriting
- Starbursting
- Storyboarding

C. Lean-Agile Product Prototyping

- Paper Prototypes
- Monochrome Wireframes
- Simple Landing Pages
- Fake Doors
- Digital Prototypes
- Wizard of Oz
- HTML Prototypes

D. Lean-Agile Product Experiments

- A/B Testing
- MVP Testing
- Cross-Section Testing
- Randomized Controlled Trials
- Quasi-Experiments
- Time-Series Analysis
- Controlled Experiments

E. Lean-Agile Product Scoping

- Minimum Viable Product (MVP)
- Minimum Marketable Feature (MMF)
- Minimum Marketable Release (MMR)
- Minimum Marketable Product (MMP)
- Minimum Saleable Product (MSP)
- Minimum Lovable Product (MLP)
- Minimum Awesome Product (MAP)

F. Lean-Agile Product Development

- Pair Programming
- Test Driven Development
- Extreme Programming
- Scrum
- Scrumban
- ScrumUX
- Dual Track Development

G. Lean-Agile Product Measurement

- APRRA
- AARRR
- AIDAR
- BASIC
- HEART
- RARRA
- CAEMI

II. LEAN-AGILE PRODUCT SCALING

A. Lean-Agile Product Scaling

- Scaled Agile Framework (SAFe)
- Scrum at Scale (S@S)
- Disciplined Agile Delivery (DaD)
- Recipes for Agile Governance (RAGe)
- Solutions for Agile Governance (SAGe)
- Scaled Professional Scrum (SPS)/Nexus
- Enterprise Scrum

B. Lean-Agile Product Strategy

- Problem Canvas
- Product Solution Fit Canvas
- Value Proposition Canvas
- Lean Canvas
- Business Model Canvas
- Portfolio Canvas
- Value Stream Canvas

C. Lean-Agile Product Mapping

- Journey Maps
- Experience Maps
- Mental Maps
- Ecosystem Maps
- Empathy Maps
- Service Maps
- Story Maps

D. Lean-Agile Product Featurizing

- Feature Storming
- Product Box
- Speed Boat
- Spider Web
- Start Your Day
- Give Them a Hot Tub
- Whole Product Thinking

E. Lean-Agile Product Prioritization

- 20/20 Vision
- Buy a Feature
- Prune the Product Tree
- SWOT Analysis
- Kano Model
- MoSCoW Method
- WSJF Method

F. Lean-Agile Product Roadmapping

- Theme
- Feature
- Now Next Later
- Goal Oriented
- Fuzzy Time
- Product
- OKR

G. Lean-Agile Product Valuation

- Costs
- Benefits
- Benefit/Cost Ratio (B/CR)
- Return on Investment (ROI)
- Net Present Value (NPV)
- Break Even Point (BEP)
- Real Options Analysis (ROA)

LEAN-AGILE PRODUCT MANAGEMENT PRINCIPLES & PRACTICES

I. LEAN-AGILE PRODUCT DISCOVERY

A. Lean-Agile Product Exploration

Simple frameworks for rapidly formulating, creating, and validating new product, service, and business ideas. They often involve small cross functional executive teams, short time boxed intervals, and small palettes of lean UX models. Simple prototypes are often shown to lead users, measurable feedback is gathered, and the process is rinsed and repeated until valid designs are formulated. The goal is to quickly and cost effectively validate ideas for low-risk revenue and profit growth.

- **Lean Startup**. A simple iterative framework for creating new businesses, products, and services. Consists of identifying and building a minimum viable product (MVP), rapidly deploying it to lead users, collecting measurable feedback, and rinsing and repeating until a viable business model is achieved. Key tools are business model canvases, business hypotheses, MVPs, and pivot or persevere decisions. Introduces innovation accounting metrics as leading vs. lagging metrics.

- **Startup Way**. A simple entrepreneurial thinking model for creating innovatively new products and services. Shows enterprises of all shapes and sizes, whether small startups or large legacy organizations, to think, act, and behave like entrepreneurs. Focuses on rapidly developing minimum viable products (MVPs) representing small business experiments in 90-day cycles as opposed to expensive long-term project and product cycles. Focus on leading vs. lagging metrics.

- **Design Sprints**. A weeklong process to quickly identify new products and services. Small entrepreneurial firms are advised to form small cross functional executive teams, brainstorm product alternatives, and form rapid lean UX prototypes. Lead users are asked to quickly evaluate lean UX prototypes to determine the viability of the new product and service ideas. This is meant as a substitute for long cost and labor-intensive new product and service development cycles to validate innovations.

- **5x5 X-Teams**. A framework to quickly formulate five $5,000 business experiments, test them, and iterate until a viable new product or service idea is identified. Five teams of five people are given one week to formulate a hypothesis, test it, and gather feedback. This is meant as an alternative to investing in cost and time intensive unproven product and service programs and projects. Little guidance is given on practices for formulating and testing business hypotheses.

- **Innovation Labs**. A five-day framework for rapidly testing a live operational business experiment. A small cross functional team of lean UX experts enters a live customer setting, identifies user problems, talks to customers, and formulates a possible solution. User story mapping, lean UX models, and live operational wireframes are created. Customers are engaged throughout the process to validate all assumptions. A validated design is created for further development.

- **Business Experiments**. A system of formulating live operational experiments to test business hypotheses. It works best as a system of A/B business experiments on a live cloud-based production fabric. That is, the ability to create small variations of externally and internally facing products and services to directly measure the impact of business activity by customers. For instance, simplifying a product or service ordering interface or improving system performance and user experience.

- **Lean Product Lifecycle**. A six-stage lean development lifecycle for rapidly creating new products and services from cradle-to-grave. The first three stages consist of creating, exploring, and validating new product and service ideas. This includes brainstorming, prototyping, and testing ideas. The last three stages consist of growing, sustaining, and retiring ideas. This includes planning, maintaining, and phasing out the ideas. Business models are applied after ideas are validated.

B. Lean-Agile Product Ideation

Simple techniques to rapidly identify innovatively new products and service ideas in small, facilitated group activities. These are short timeboxed activities, where everyone's ideas are solicited, analyzed, examined, and even collaboratively elaborated without criticism. The goal is to rapidly generate the broadest set of ideas, distill them down to their essence, and agree upon a small collection of new product and service ideas for further exploration, prototyping, and development.

- **5 Whys**. A simple technique for exploring the root cause of a problem by asking why it occurred five times. It's an iterative analysis of quickly identifying a solution to an underlying systemic cause instead of treating symptoms. Fishbone Diagrams or Ishikawa Analysis may be used to augment the 5 Whys technique to systematically uncover, identify, and address solutions to the underlying causes of problems for creating innovatively new products and services.

- **Affinitymapping**. A simple technique for sorting the results of collaboratively brainstorming many ideas into similar categories. Affinitymapping is also known as the KJ method for its creator. Once again, new product and service ideas may be solicited by small, medium, and large groups resulting in a seemingly large variety of unrelated ideas. The ideas may be simply grouped into similar ideas to uncover systematic patterns across a rather large collection of unrelated heterogeneous data.

- **Rolestorming**. A simple technique for depersonalizing brainstorming by examining how other people solve problems. Also known as figure storming or even personas, the goal is to identify a typical end user, customer, or problematic participant and examine a problem from their perspective. The goal is to identify key market participants with unique problems so that innovative new products and services may be designed to address these niche market gaps no one else does.

- **Mindmapping**. A simple technique for rapidly identifying a network of interrelated ideas from a central core theme. Usually a topic, problem, or idea is identified in the center. From there, brainstorming participants begin branching out to create a network of interrelated ideas. It works best as a group vs. and individual for maximum

creativity. Usually, the group only has to branch out about seven layers to fully flesh out a cohesive set of interrelated themes for further exploration.

- **Brainwriting**. A simple technique for collaboratively building off everyone's ideas in round robin fashion. A small group of brainstormers simultaneously writes down three ideas and pass it to the next person who augments the original idea. Each idea must make it completely around the group. From there, everyone's aggregate ideas are discussed to determine viable concepts for further exploration, development, and validation of innovatively new products and services.

- **Starbursting**. A simple process to explore new product and service ideas. Brainstormers answers questions such as who, what, when, why, where, and how about a possible new ideas. By answering these questions as a group, new product and service ideas are explored holistically to determine their viability for further exploration, development, prototyping, and testing. It is a question and answer-based technique. Each question is asked multiple times for maximum impact.

- **Storyboarding**. A simple technique for visualizing a sequence of scenes, activities, and steps an end-user or customer may use to solve a problem. Storyboarding was used as an early technique for film or movie making or design instead of just using narrative or long scripts. A similar technique may be used to illustrate the operation, use, and design of a new product or service. That is, how a customer or end-user operates an innovative idea to solve a problem in a unique way.

C. **Lean-Agile Product Prototyping**

Simple techniques to rapidly prototype innovatively new products and service ideas. They often involved small cross functional teams of designers applying highly structured timeboxed frameworks. The goal is to rapidly construct inexpensive product and service ideas for later end-user, customer, or market testing. The purpose is often to gather data on the viability of the new product and service. That is, verify and validate its assumptions and investment potential.

- **Paper Prototypes**. Simple hand drawn sketches of wireframes illustrating the user interface, controls, and functions of a new product or service. There is more than one sketch representing each layer or function of a user interface. They may be drawn to scale if it's a user interface for a mobile, tablet, or personal computer device. Actual users may be asked to simulate the process of clicking through the user interface while a lean UX designer switches out screen shots.

- **Monochrome Wireframes**. Simple computer-generated wireframes illustrating the user interface, interactions, and interrelationships with basic complementary coloring and shadowing. Monochrome Wireframes are the next step above simple paper prototypes to give Lean UX designers, end users, and customers a better sense of the overall layout and architecture of an innovatively new product or service. These are simple low fidelity wireframes much like paper prototypes.

- **Landing Pages**. Simple splash screens, webpages, and online advertising or sales pages with a provocative call-to-action. These are high fidelity in the sense that some

thought should go into the UI/UX design to make them sophisticated, professional, and minimally actionable. However, they're low-fidelity in the sense that they are a simple call-to-action without a sophisticated multi-layered underlying workflow or hierarchy of sub-pages with an ecosystem of finished products and services.

- **Fake Doors**. Simple splash screens, webpages, and online advertising or sales pages with multiple stubbed out product and service options. The goal of the stubs is to directly test end-user, customer, and market interest in a range of innovatively new products and services. That is, you may wish to sell multiple products and services or test the options end-users or customers wish to have in an innovatively new product or service. It's a good way to quickly gather quantitative market data.

- **Wizard of Oz**. Simple operational websites illustrating a range of innovatively new products and services. However, the products and services may be simulated by human beings behind the scenes. Wizard of Oz prototypes are good for products and services emulating computer generated human interactions with basic artificial intelligence capabilities. For example, chat bots, automated phone service, advisory or consulting services, or any other free form interaction systems.

- **Digital Prototypes**. Sophisticated computer-generated high-fidelity operational wireframes of innovatively new products and services. Digital Prototypes are generated by automatic high-fidelity wireframe prototyping tools. Much thought is given to UI/UX design by seasoned professionals to maximize end-user, customer, and market impact of innovative new products and services. These are not fully functional or final products or services for conducting business transactions.

- **HTML Prototypes**. Sophisticated hand-coded high-fidelity operational websites illustrating UI, UX, functions and features of an innovatively new product or service. The goal is to approach the final design without finishing the implementation. They provide a good sense of the actual product or service operation and provide Lean UX designers with the best possible data for measuring end-user, customer, and market impact. And they serve as an evolutionary working skeleton of the final solution.

D. **Lean-Agile Product Experiments**

Simple techniques to measure impact of innovatively new products and services. The products and services may be simple prototypes, minor variations, or entirely new market-ready versions. The goal is to expose end-users, customers, and markets to innovatively new product and service variations, measure the differences between old and new versions, and determine whether newer versions result in better market performance and further investment or product and service investigation.

- **A/B Testing**. A simple randomized controlled experiment to test minor variations of a new product or service. Oftentimes, a single variable will be changed, the product or service variations fielded to actual end-users and customers, and their performance measured. The variable can be externally or internally facing. The variations can be new UI/UX designs, new functions or features, or internal performance or reliability. The goal is to measure the direct market impact of the variations.

- **MVP Testing**. A simple experiment to test a variation of a new product or service. Perhaps, an entirely new product or service is created, it is temporarily fielded, and end-user, customer, or market impact is measured. The experiment may measure the impact of multiple simultaneous variables representing product or service redesign, simplification, or enhancement. The goal, of course, is to determine the viability of the innovatively new product or service variation for further development.

- **Cross-Section Testing**. A simple experiment to test variations of a new product or service. Oftentimes, enterprises will create multiple increasingly sophisticated variations to target unique market segments. Maybe they'll create a basic economy bronze version, medium-grade silver version with a few more functions or features, or a high-end gold version with many bells and whistles. The often the enables the optimal portfolio mix for maximum market competition.

- **Randomized Controlled Trials**. True randomized business experiments of innovatively new products and services. In this model, control groups are selected with a current version or placebo, and an experimental group to receive the innovatively new product or service. Then the end-user, customer, or market performance of the innovatively new product or service is measured. The goal is to isolate the measurable impacts of the product or service variation (Hawthorne Effect not withstanding).

- **Quasi-Experiments**. A non-randomized business experiment where Lean UX researchers consciously select an experimental group in which to expose the innovatively new product or service. The experimental group may be a specific demographic or cross-section of end-users, customers, or markets, or a simple convenience sample. The goal, of course, is to measure the business impact of the innovatively new product or service to determine its viability for further investment.

- **Time-Series Analysis**. A longitudinal experiment or analysis of an innovatively new product or service. Rather than perform a short-term cross-sectional experiment which may be biased by special causes, Time Series Analysis examines the performance of an innovatively new product or service over a longer period of time. This controls for seasonal or market variations, and life cycle variations such as aging and maturity. This is a very reliable and valid way to measure performance.

- **Controlled Experiments**. Similar to randomized controlled experiments, except that no placebo is used. In true randomized controlled experiments, both the control and experimental groups are offered an innovatively new product or service. However, only the experimental group gets the improved product or service. In Controlled Experiments, the control group is not offered a placebo and only the experimental group is offered the innovatively new product or service.

E. **Lean-Agile Product Scoping**

Simple techniques to constrain the scale, scope, size, complexity, cost, and time-to-market of innovatively new products or services. The primary goal is to rapidly deliver an early, simple, and inexpensive product or service to end users, customers, and markets to collect leading indicators of product or service investment. These may be qualitative or quantitative indicators, which are used to identify requirements, validate designs, and determine viability for further investment.

- **Minimum Viable Product (MVP)**. An early version or model of an innovatively new product or service. It is often an early, if not the first version of a product or service design. It is small, simple, inexpensive, and quickly designed. Its purpose is to collect the maximum amount of valid end-user, customer, or market data to determine the viability of a new product or service. It is often not the product or service itself, but rather a model, prototype, or mockup of a product or service.

- **Minimum Marketable Feature (MMF)**. An early version of an innovatively new product or service. It is a small, simple, and single purpose feature of a new product or service. Again, it is small, simple, inexpensive, and quickly designed. It is also designed to collect valid end-user, customer, or market data to determine the viability of the feature for further investment, enhancement, and expansion to a larger version. It is a functional feature versus a model, mockup, prototype, or simulation.

- **Minimum Marketable Release (MMR)**. An early version of an innovatively new product or service. It is a small, simple, and inexpensive product or service consisting of an incremental set of small features. It is a smaller subset of a larger minimum marketable product which may contain a bigger set of features or better developed features. For instance, a Lean UX team may decide to incrementally develop a few features to determine the viability of a product or service for further investment.

- **Minimum Marketable Product (MMP)**. An early version of an innovatively new product or service. It is a small, simple, and inexpensive product or service consisting of a few key features. That is, it is not a model, mockup, prototype, simulation, or single feature product or service. It is a simple version of a finished product or service. It is often the earliest if not the first version of a product or service that is freely distributed. Its purpose is to determine its viability for further investment.

- **Minimum Saleable Product (MSP)**. An early version of an innovatively new product or service. It is a small, simple, and inexpensive product or service consisting of a few key features. It is not a model, mockup, prototype, simulation, or single feature product or service. It is also used to collect early end-user, customer, or market data. However, the primary measure is revenue and sales. That is, will it generate revenue, sales, and profits with the goal of determining its viability for further investment.

- **Minimum Lovable Product (MLP)**. An early version of an innovatively new product or service. It is a small, simple, and inexpensive product or service consisting of a few key features. It is not a model, mockup, prototype, or simulation. It requires a greater investment in UI/UX design in order to create a loveable or adorably new product or service. It is not a bland, vanilla, stripped down, or black and white version of a product or service, but a unique one capable of attracting a following.

- **Minimum Awesome Product (MAP)**. An early version of an innovatively new product or service. It is small, simple, and inexpensive. It is not a model, mockup, prototype, or simulation. It not only requires a greater investment in UI/UX design, but engineering design as well. It not only has to look attractive on the outside but

offer significant value from a performance or functional ability. Its goal is to establish a truly innovative, unique, and one-of-kind offering for market differentiation.

F. **Lean-Agile Product Development**

Simple frameworks for rapidly developing, delivering, and measuring the performance of innovatively new products and services. They often contain simple backlogs of prioritized end-user, customer, and market needs. Small cross functional teams often solution needs one at a time in priority order. Tightly constrained work in process limits are formed to optimize delivery speed, quality, and system performance. Automation may be utilized to minimize manual handoffs.

– **Pair Programming**. A simple, fast, and inexpensive process for developing innovatively new products and services. It generally involves a pair of programmers, engineers, or innovators working together. It leverages, optimizes, and exploits complementary skills, abilities, and talents to rapidly develop mockups, models, prototypes, simulations, and early products and services. Two people can quickly and inexpensively create innovatively new products and services in hours.

– **Scrum**. A simple, fast, and inexpensive framework for organizing the work of small new product and service development teams. It consists of a simple, prioritized backlog of end-user, customer, or market needs assembled by a product owner. Scrum cross functional teams plan small releases to validate product and service assumptions, gather early feedback, and rinse-and-repeat until viable solutions have been identified.

– **Scrumban**. A simple, fast, and inexpensive framework for small new product and service development teams. It also consists of a simple, prioritized backlog or queue of end-user, customer, or market needs assembled by a product owner. However, small cross functional teams usually work in pairs to solution the needs one at a time in priority order. Work in process constraints are established to ensure development teams are not fully utilized to quickly deliver and measure final feedback.

– **ScrumUX**. A simple, fast, and inexpensive framework for small new product and service development teams. It consists of a simple, prioritized backlog or queue of end-user, customer, or market needs assembled by a product owner. Investment in UI/UX is made to ensure teams do not sacrifice user experience for functional requirements or technical performance reasons which constrains overall product and service complexity.

– **Dual Track Development**. A simple, fast, and inexpensive framework for small new product and service development teams. It consists of a simple, prioritized backlog end-user, customer, or market needs assembled by a product owner. UI/UX and development teams work in parallel to convert UI/UX requirements into operational or functional products and services. It's important to balance work in process to satisfy performance, delivery, and measurement needs.

– **Extreme Programming**. Simple, fast, and inexpensive framework to organize the work of small new product and service development teams. Customers and developers work together to identify end-user, customer, and market needs. User story maps are devised and divided into iterative releases. User stories are solutioned in priority order by small pair programming teams. Greater emphasis is placed on upfront testing and continuous integration to ensure system quality.

– **Development Operations (DevOps)**. A simple, fast, and inexpensive framework to organize the work of small new product and service development teams. Customers and developers work together to identify end-user, customer, and market needs. The needs are solutioned in priority order by small development teams. A system of deploying verified needs to end-users, customers, and markets is developed to minimize handoffs. The enables rapid delivery and measurement.

G. **Lean-Agile Product Measurement**

Simple frameworks for measuring the performance of innovatively new products and services. These are early-stage metrics to predict product and service performance before they become stable revenue and profit generating systems. They often focus on measuring market growth in terms of the increasing numbers of end-users and customers. Sometimes they focus on early revenues and sales. At other times, they focus on UI/UX and overall customer experience.

– **APRRA**. A metrics framework for measuring the performance of innovatively new products and services. APRRA means Adoption, Productivity, Recommendation, Reuse, and Attrition. APRRA consists of leading vs. lagging indicators. These are early-stage metrics to predict product and service performance before they become stable revenue and profit generating systems. APPRA focuses on internally facing enterprise products and service success.

– **AARRR**. A metrics framework for measuring the performance of innovatively new products and services. AARRR means Acquisition, Activation, Retention, Referral, and Revenue. AARRR consists of leading vs. lagging indicators. These are early-stage metrics to predict product and service performance before they become stable revenue and profit generating systems. AARRR focuses on incrementally measuring product and service adoption in terms of end-users.

– **AIDAR**. A metrics framework for measuring the performance of innovatively new products and services. AIDAR means Awareness, Interest, Desire, Purchase, and Retention. AIDAR consists of leading vs. lagging indicators. These are early-stage metrics to predict product and service performance before stable revenue and profit generating systems. AIDAR focuses on the stages of the purchasing funnel. It is not focused on number of users, but the number of paying customers.

– **BASIC**. A metrics framework for measuring the performance of innovatively new products and services. BASIC means Beauty, Accessibility, Simplicity, Intuitiveness, and Consistency. BASIC consists of leading vs. lagging indicators. These are early-stage metrics to predict product and service performance before stable revenue and profit generating systems. BASIC is focused on the UI/UX and overall user experience of an innovatively new product or service.

– **HEART**. A metrics framework for measuring the performance of innovatively new products and services.

HEART means Happiness, Engagement, Adoption, Retention, and Task Success. HEART consists of leading vs. lagging indicators. These are early-stage metrics to predict product and service performance before stable revenue and profit generating systems. HEART focuses on ensuring early products and services provide a superior overall user experience.

- **RARRA**. A metrics framework for measuring the performance of innovatively new products and services. RARRA means Retention, Activation, Referral, Revenue, and Acquisition. RARRA consists of leading vs. lagging indicators. RARRA focuses on the later stages of new product and service development. That is, it measures the performance of well-established products and services without focusing on lagging indicators. It monitors market share in terms of users.

- **CAEMI**. A metrics framework for measuring the performance of innovatively new products and services. CAEMI means Channels, Acquisition, Engagement, Monetization, and Insight. These are early-stage metrics to predict product and service performance before stable revenue and profit generating systems. CAEMI is a holistic framework to address marketing, acquisition of new users, elements of user experience, and revenue generation, as well as product and service performance.

II. LEAN-AGILE SCALING

A. Lean-Agile Product Scaling

General purpose frameworks for enterprises, portfolios, large solutions, programs, and products. It uses Scrum and Kanban as organizing frameworks. It is intended for innovatively new IT products and services. Portfolios exist to implement unified enterprise architectures. All lean and agile teams are integrated and aligned teams of teams pursuing a common mission, vision, and objectives. Some are lean, agile, and traditional hybrids, while others are Lean, Agile, and Lean UX focused.

- **Scaled Agile Framework (SAFe)**. A general framework for enterprise IT business agility. Consists of practices for business, portfolio, large solution, and product agility. Began as an agile framework for organizing and managing the work of multiple Scrum teams working towards a common objective. It is designed to develop large new IT products and services requiring the cooperation of multiple Scrum teams. SAFe includes light-weight lean-thinking and Lean UX practices.

- **Scrum at Scale (S@S)**. A general framework for enterprise IT agility. Designed as an agile framework for organizing and managing the work of multiple Scrum teams working towards a common objective. It is designed to develop large new IT products and services requiring the cooperation of multiple Scrum teams. S@S consists of a layered version of Scrum governance structures and scaling practices. Like Scrum, S@S is agnostic to specific IT practices, tools, and metrics.

- **Disciplined Agile Delivery (DaD)**. A general framework for enterprise IT business agility. DaD began as a cradle to grave agile life cycle for large new IT products and services not unlike military lifecycles from the 1970s. It evolved to an enterprise IT business model addressing portfolio management as well as many business and IT functions beyond system and software development. It

uses Scrum as an organizing construct for small cross functional teams with traditional development practices.

- **Recipes for Agile Governance (RAGe)**. A general framework for portfolio IT agility. Consists of practices for organizing, planning, executing, and tracking portfolio, program, and individual agile teams. Uses Scrum as an organizing framework. Recognizes specific areas of concerns. Portfolio teams are focused on budgeting and funding, programs are focused on large product teams, and individual teams may be focused on subsystems or individual product and service features.

- **Solutions for Agile Governance (SAGe)**. A general framework for portfolio IT agility. Consists of practices for organizing, planning, executing, and tracking portfolio, program, and individual agile teams. It uses Scrum and Kanban as general-purpose organizing framework. Portfolio teams are focused on budgeting and funding, programs are focused on large product teams, and individual teams may be focused on subsystems or individual product and service features.

- **Scaled Professional Scrum (SPS)/Nexus**. A general framework for building large IT products and services. It's designed to manage the work of three to nine Scrum teams. Scrum ceremonies apply to the aggregated Scrum teams. That is, there is one refinement, planning, standup, review, and retrospective for the aggregated Scrum teams. Once again, SPS and Nexus Scrum teams work as a team of teams toward a common objective to build a combined product or service.

- **Enterprise Scrum**. A general framework for enterprise-IT agility. It is an agile framework for organizing and managing the work of multiple, hierarchical Scrum teams who may be working towards common objectives. It can be used to realize enterprise architectures with a common vision, objective, and technical requirements. In this case, each layer uses Scrum for team management. It can also be used to apply Scrum to all enterprise teams to satisfy enterprise objectives.

B. Lean-Agile Product Strategy

Lightweight Lean UX tools to help product managers identify plans and strategies to realize and monetize innovatively new products and services. They often begin with analysis of end-user, customer, and market pain points and problems, identify possible solutions for addressing them, and then estimate the revenues and profits for solving them. Lean-Agile Product Strategies range from simple to elaborate business models to justify expenditures in new products and services.

- **Problem Canvas**. A lightweight Lean UX tool to help product managers identify end-user, customer, or market problems to be solved with innovatively new products or services. It shifts the focus from the solutions to the pain points and problems representing market gaps, underserved markets, or possible green fields. It focuses on context, customers, problems, impacts, alternatives, and constraints. This is a powerful tool for scaling up early phase products and services.

- **Product Solution Fit Canvas**. A lightweight Lean UX tool to help product managers identify possible solutions to end-user, customer, or market needs. It begins with an analysis of markets, segments, and their problems,

before identifying possible solutions. It focuses on segments, problems, triggers, emotions, solutions, limitations, behaviors, channels, causes, and finally solutions. This is a powerful tool for scaling up early phase products and services to larger market segments.

– **Value Proposition Canvas**. A lightweight Lean UX tool to help product managers align innovatively new products and services to end-user, customer, and market needs. It helps ensure, confirm, verify, and validate that products and services have market value by solving real customer pain points, problems, and needs. The Value Proposition Canvas is a powerful early step in scaling up an innovatively new product or service to a larger market or market segment.

– **Lean Canvas**. A lightweight Lean UX tool to help product managers identify business plans and strategies for realizing and monetizing innovatively new products and services. It is an early-stage business model canvas that aligns solutions to specific end-user, customer, and market problems. It focuses on problems, segments, value, solutions, channels, revenues, costs, metrics, and advantages. The Lean Canvas is a powerful tool for justifying early innovatively new products and services.

– **Business Model Canvas**. A lightweight Lean UX tool to help product managers identify business plans and strategies for realizing and monetizing innovatively new products and services. It is a holistic end-to-end view of customer segments, revenue streams, and delivery costs. It focuses on segments, value, channels, relationships, revenue, resources, activities, partners, and overall costs. The Business Model Canvas is a powerful tool for justifying new products and services.

– **Portfolio Canvas**. A lightweight Lean UX tool to help product managers identify portfolio plans and strategies to realize and monetize innovatively new products and services. It's an end-to-end view of operational value streams to revenues. It focuses on value streams, costs, resources, revenue, budgets, activities, solutions, channels, segments, relationships, partners, and KPIs. The Portfolio Canvas is a powerful tool for justifying investments in innovatively new products and services.

– **Value Stream Canvas**. A lightweight Lean UX tool to help product managers identify value stream plans and strategies to realize and monetize innovatively new products and services. It's a holistic view of value to economic decisions. It focuses on value propositions, solutions, context, resources, segments, channels, relationships, budgets, KPI, and economic decisions. The Value Stream Canvas is a powerful tool to justify investments in innovatively new products and services.

C. **Lean-Agile Product Mapping**

Lightweight Lean UX visual representations of end-to-end, cradle-to-grave, life cycle stages customers use to accomplish a goal. They can be simple or complex, but they are single-page or poster sized representations. They contain a sequence of major life cycle stages and activities. They also contain the underlying people, activities, and systems to fulfill the product or services capabilities. They are used to identify customer gaps, needs, pain points, and opportunities for improvement.

– **Journey Maps**. A visual high-level representation of all of the end-to-end, cradle-to-grave lifecycle steps customers go through to accomplish a goal. They can be as simple or as complex as you wish to make them. Oftentimes, customers make multiple steps during each stage of a lifecycle journey. Its purpose is to identify customer pain points along the journey that may be addressed with an innovatively new product or service (if not the entire journey), but not underlying services.

– **Experience Maps**. A visual high-level representation of the end-to-end, cradle-to-grave lifecycle steps so that customers may accomplish a goal. It also depicts the underlying people, resources, and systems from a high-level point of view but not too detailed. It also depicts customer pain points and problems along the journey as well. All of this high-level information may be used to identify opportunities for identifying, defining, creating, and justifying innovatively new products and services.

– **Mental Maps**. A visual high-level representation of the end-to-end, cradle-to-grave lifecycle steps so customers may accomplish a goal. It depicts the customer life cycle stages as well as underlying objectives and activities. Then, it depicts the underlying capabilities of a product or service that support the customer lifecycle stages, activities, and objectives. The goal is to capture what the end-user or customer believes about the process, product, or system to identify gaps and capabilities.

– **Ecosystem Maps**. A visual high-level representation of entities and actors customers encounter when pursuing a goal. This includes the overall end-to-end, cradle-to-grave lifecycle of the customer experience. It also includes the people, organizations, activities, products, and services encountered. It's meant to be lean and lightweight, yet holistic and comprehensive. It can be used to illustrate an enterprise level portfolio as well as strengths, opportunities, gaps, weaknesses, etc.

– **Empathy Maps**. A visual high-level representation of a customer's thoughts and feelings with regards to a product, service, or need. The goal is to do a deeper dive into specific issues, problems, and pain points encountered during an end-to-end, cradle-to-grave lifecycle customers use to accomplish a goal. It looks at areas like who and what; what they see, say, do, and hear; and examines pains and gains. The purpose is to identify innovatively new products and services.

– **Service Maps**. A visual representation of the internal or underlying system functions performed to provide an end-to-end service to users or customers. The first or top-level stage is to document the end-to-end or cradle-to-grave workflow necessary to render a service. Then, the internal system functions necessary to render the service are identified for each major stage in a workflow. Its purpose is to understand, define, develop, improve, or optimize an innovatively new product or service.

– **Story Maps**. A visual representation of the capabilities and functions of an innovatively new product or service. It consists of three layers (i.e., activities, steps, and details). Activities may be a customer journey, major subsystems, or top-level functions. Layers are mapped to product or service definition artifacts such as epics, features, and user stories. Story maps may be used to identify a minimum viable product (MVP), product or service roadmaps, or quarterly delivery releases.

D. Lean-Agile Product Featurizing

Simple brainstorming techniques to explore customer needs, customer pain points, and features for creating or enhancing innovatively new products or services. Again, they can be used to identify a basic feature set, examine competitive products, and do a gap analysis of existing products and services. They may be used to strengthen existing services or examine a range of new features from the basic to the most advanced ideas. Some are targeted towards out-of-the-box thinking.

– **Feature Storming**. A simple brainstorming technique to identify the possible new features for an innovatively new product or service. Feature Storming may encompass the entire range of features for an innovatively new product or service. Oftentimes, the focus of the brainstorming session is a single large epic minimum viable product (MVP) which requires more than one calendar quarter to complete. It's important to have a cross functional team participating in this event.

– **Product Box**. A simple brainstorming technique to identify the new features for an innovatively new product or service. The goal is to constrain the scale, scope, and size of the product to a minimum viable product (MVP). Small cross functional teams literally construct a box describing the major features, functions, and value of the possible new product or service. This activity is strictly timeboxed, and another major goal is devise a compelling product or service package.

– **Speed Boat**. A simple brainstorming technique to identify the strengths and weaknesses of a customer need, product or service, project, or team. That is, it's a simple visual technique to identify what is working well with respect to a product or service. Conversely, teams also identify what is holding the customer back from achieving his or her goals. Other elements may also be identified such as risks to achieving the goal of the new product and service team in order to improve it.

– **Spider Web**. A brainstorming technique to identify the strengths, weaknesses, and opportunities to create an innovatively new product or service. A customer need or existing system is placed at the center of the spider web, then other interrelated products or services are placed in the web as well. Solutions close to the center solve the customer need, while those further out are not as superior. The goal is to compare and contrast competitors to identify gaps and opportunities.

– **Start Your Day**. A brainstorming technique to identify the needs of customers over a short period of time. The brainstorming team uses a calendar and examines the customer needs and pain points on any given day, week, or month. It could be used to identify unfulfilled customer needs, customer pain points, or how and when customers use existing products and services. Participants should also identify product and service improvements by exploring aggravating pain points.

– **Give Them a Hot Tub**. A brainstorming technique to apply out-of-the-box thinking. It can be used to fulfill customer needs or solve problems when creating or improving innovatively new products or services. The goal is to be as creative as possible, draw outside of the lines, and brainstorm outrageous ideas. Participants are encouraged to think well beyond the boundaries of the existing product or service to identify delighters to differentiate a product or service and create value.

– **Whole Product Thinking.** A brainstorming technique to explore the entire range of features for a possible new product or service. It can also be used to extend an existing product or service. It generally consists of five product or service levels (i.e., core, generic, expected, augmented, and potential). Core is the most basic feature set, whereas potential is the most advanced. Core products are most often the target of a minimum viable product, but any new feature can be an MVP.

E. Lean-Agile Product Prioritization

Simple practices, methods, techniques, approaches, and tools to prioritize features to add, improve, or fix in new or existing products or services. In lean or agile systems, the number of features in any given timeframe is relatively small. Therefore, lean-agile prioritization techniques can be quickly applied by individuals or small groups to collaboratively prioritize small numbers of features. They utilize both qualitative and quantitative attributes, data, and judgement for prioritization.

– **20/20 Vision**. A small group technique to collaboratively prioritize a small number of features for new products or services. Features are clearly articulated along with their benefits. Then, the group ranks features with respect to the other features on a one-by-one basis. The end result is a simple priority order based on perceived benefits and customer or market value of each feature. It is a simple qualitative technique that can be used for rapidly prioritizing possible new features as quickly as possible.

– **Buy a Feature**. A group technique to collaboratively prioritize a small group of features for a new product or service. Features are clearly articulated along with their benefits and especially costs. It's also important to articulate other assumptions, constraints, dependencies, and risks because features have hidden downstream costs as well. Individual or group participants are given a budget to spend which is often less than the total set of features for the new product or service.

– **Prune the Product Tree**. A group technique for collaboratively agreeing on which features to add to new or existing products and services. A simple image of a tree is used. The leaves represent new features, branches represent main functions, trunk represents the core features, and roots represent the non-functional, infrastructure, technical debt, or support needs. The team examines the tree and discusses where the new ideas fit in the continuum and which to add to the tree.

– **SWOT Analysis**. A technique for determining the strengths, weaknesses, opportunities, and threats of organizations. Can also be used to analyze portfolios, product lines, and the features of individual products and services. In this case, the strengths, weaknesses, opportunities, and threats of each new product and service feature are analyzed individually or as a group. This may be used to identify the relative priority of a possible new feature for products and services.

– **Kano Model**. A simple technique for visually prioritizing new and existing features of a new or existing product or service. There are four basic categories of features (i.e., indifferent, threshold, performance, and delighters).

Threshold are basic expected features, performance are extra functions that add value, while delighters are marked innovative and unique differentiators. The goal is to place major new feature requests in one of these categories for incorporation into products and services.

– **MoSCoW Method**. A simple technique for prioritizing features to add to a new or existing product or service. It's a simple framework consisting of four broad categories (i.e., must have, should have, could have, and would have). Must haves are necessary, should haves are important, could haves are low priority, and would have are unimportant or unnecessary. Features are categorized individually or as a group. It's important to identify and discuss the characteristics of all features.

– **WSJF Method**. A simple method for rapidly prioritizing features to add to new or existing products or services. It is often referred to as a technique for quantifying the cost of delay or business value of a new product or service feature. In other words, how important is it to you. Cost of delay has three major components (i.e., business value, time criticality, and risk). Cost of delay is then divided by the feature duration, size, or cost. WSJF often favors important, but inexpensive features.

F. **Lean-Agile Product Roadmapping**

Simple high-level visual roadmaps and timelines to illustrate the improvement or creation of new products and services. They may be simple Gannt charts with goals, objectives, or features organized into weeks, months, quarters, and years. They may be goals or features organized into fuzzy timeframes like Kanbans. Or they may be composite but loosely structured maps containing goals, objectives, features, and other key managerial, financial, and economic indicators.

– **Theme**. A simple visual roadmap to illustrate the improvement or creation of products and services. It generally consists of high-level goals for enhancing or creating innovatively new products and services. It generally appears as a high-level Gantt chart. And it may be organized by product, service, functional area, portfolio, or business function. These are classical product and service roadmaps organized into weeks, months, quarters, and years with fuzzy boundaries.

– **Feature**. A simple visual roadmap to illustrate the improvement or creation of products and services. It generally consists of high-level features for enhancing or creating innovatively new products and services. It generally appears as a high-level Gantt chart. And it may be organized by product, service, functional area, portfolio, or business function. These are classical product and service roadmaps organized into weeks, months, quarters, and years with fuzzy boundaries.

– **Now Next Later**. A simple visual roadmap to illustrate the improvement or creation of new products and services. It consists of three major horizons (i.e., now, next, and later). What goes into these horizons, or their length is unspecified. Some teams place goals, objectives, themes, or OKRs into these horizons. Others insert epics, features, or stories. The horizons may be years, quarters, or months. Commitment is only made to the closest horizon, and it is not a traditional schedule.

– **Fuzzy Time**. A simple visual roadmap to illustrate the

improvement or creation of new products and services. One example is a simple three lane Kanban graph consisting of three states (i.e., backlog, in-progress, and complete). Because Kanban states are not timebound, there are no dates on the work items. They're simply finished when they're done. Other variations may have future or unvetted columns, approved or next up columns, in-progress, and completed columns.

– **Goal Oriented**. A simple visual roadmap to illustrate the improvement or creation of products and services. It contains goals, objectives, and features aligned with calendar quarters. It may organize information in two dimensions to illustrate multiple major new or existing products, services, or initiatives in the vertical dimension while showing goals, objectives, and features in the horizontal dimension. It's important to keep it simple, limit work in process, and commit to the nearer quarter.

– **Product**. A simple visual roadmap to illustrate the improvement or creation of products and services. It contains a little more information such as goals, objectives, features, stages, resources, dependencies, risks, capital assets, and financial targets. However, timeframes are extremely broad, commitment is made to the current time horizon, and the level of detail diminishes with subsequent time horizons. It's important to avoid overly detailed integrated master schedules.

– **OKR**. A simple visual roadmap to illustrate the improvement or creation of products and services. It generally consists of high-level OKRs for enhancing or creating innovatively new products and services. It generally appears as a high-level Gantt chart. And it may be organized by product, service, functional area, portfolio, or business function. These are classical product and service roadmaps organized into weeks, months, quarters, and years with fuzzy boundaries.

G. **Lean-Agile Product Valuation**

Simple parametric models for estimating the quantitative benefits of developing or improving innovatively new products and services. They focus on the direct cost reductions of applying Lean UX as well as the total lifecycle cost reductions. Lean UX metrics focus on leading metrics such as the number of people using early minimum viable products. However, valuation metrics are often lagging indicators of revenues, sales, profits, and lifecycle cost reductions.

– **Costs**. A sum of all of the costs to create or improve innovatively new products and services. This includes all of the lean-agile product management costs, training, and scaling minimum viable products and services. It's generally a sum of total lifecycle management costs, to include maintenance activities such as bug fixing, minor enhancements, major upgrades, and overall product and service evolution. This also includes business costs such as marketing, sales, advertising, etc.

– **Benefits**. A sum of all of the benefits to create or improve innovatively new products and services. This includes reductions in new product and service costs due to upfront Lean UX activities, incremental scaling, reduced operations and maintenance, and increased revenue or sales due to innovative products and services. This may also include risk reduction associated with delayed decision making, iterative and

incremental development, and shorter total lifecycles.

- **Benefit/Cost Ratio (B/CR)**. This is a simple ratio of benefits to costs for creating and improving innovatively new products and services. It is a quick measurement of the total lifecycle benefits achieved to the total estimated costs of developing or improving innovatively new products and services. It is often based on statistical modeling of total lifecycle costs and benefits. And it ignores other factors such as the time value of money and the disproportionate risk of using Lean UX thinking.

- **Return on Investment (ROI)**. This is a simple ratio of benefits to costs for creating and improving new products and services. It subtracts the costs from the benefits to render a slightly more accurate valuation of the benefits. It is a quick measurement of the total lifecycle benefits achieved to the total estimated costs of developing or improving new products and services. It ignores other factors such as the time value of money and the disproportionate risk of using Lean UX thinking.

- **Net Present Value (NPV)**. This is a simple ratio of benefits to costs for creating and improving new products and services. It subtracts the costs and time value of money from the benefits to render a realistic valuation of the benefits. It is a quick measurement of the total lifecycle benefits achieved to the total estimated costs of developing or improving new products and services. It ignores other factors such as the disproportionate risk of using Lean UX thinking.

- **Break Even Point (BEP)**. This is a simple ratio of the costs to the discounted benefits timeframe for developing innovatively new products and services. It estimates when the benefits exceed the costs of developing innovatively new products and services. It is a good tool to determine when the benefits of applying Lean UX thinking may apply, and revenues and profits may be expected. Little to no direct economic benefits may be achieved during the discovery phases.

- **Real Options Analysis (ROA)**. This is a more complex estimation of the total lifecycle benefits of developing innovatively new products and services. It considers the risk involved in developing complex products and services as well as the benefits of strategic delay. That is, when employing Lean-Agile thinking, significant risk reductions are possible due to the iterative and incremental nature of evolving innovatively new products and services which this model estimates.

SUMMARY

We've endeavored to illustrate a high-level skeletal reference model or framework for Lean-Agile Product Management. It consists of two broad phases of product and service discovery and scaling and detailed development. This reference model is only for conceptual illustrative purposes and is not a comprehensive step-by-step prescriptive process for Lean-Agile Product Management. It only focused on a handful of key Lean UX principles, practices, tools, and methods. It combines key elements of Lean UX and Lean-Agile Development. More importantly, it implicitly captures principles and practices of project and product management as well. Project and product management aren't all bad. They're just too much of a good thing (i.e., everything is best in moderation).

Lean-Agile Product Management undoes decades of damage done by traditional project and product management. These methods endeavored to predict the future with mountains of integrated master schedules, business requirements, architectures, designs, models, documents, processes, tools, metrics, glacial governance structures, etc. Once again, it was just too much of a good thing. It was like showering with a fire hose when a simple moisturizing wipe would have sufficed. Inexpensive or free anti-bacterial wipes are simply a delighter. Lean-Agile Product Management involves a little bit of planning, business experimentation, and development, and a lot of rinsing-and-repeating. The more times one can quickly and inexpensively cycle through the process, the better.

There have been a few attempts to merge the concepts of Lean UX and Lean-Agile Development into an integrative whole. Josh Seiden, Jeff Gothelf, Laura Klein, and Jake Knapp did a great job of illustrating the principles and practices of Lean UX. Knapp constrained the Lean UX cycle to only one week, which was amazing. Eric Ries did a great job of showing large manufacturing firms how to decompose decade long billion-dollar product and service initiatives into 90-day cycles or less. Desiree Sy and Jeff Patton pioneered the theory of Dual Track Development which continues to amaze. But, Paulo Caroli, Tendayi Viki, Craig Strong, and Sonja Kresojevic have the most mature Lean-Agile Product Management frameworks along with Dean Leffingwell's Scaled Agile Framework (SAFe).

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