Module 13 – Importance of an Accelerator Curriculum

Global Greenchem
Innovation & Network Program

UNIDO

Green Chemistry Toolkit

gef

Center for Green Chemistry &
Green Engineering at Yale

Introduction to the Curriculum

- **Entrepreneurship:** Concepts and skills for starting and growing a venture
- **Market Dynamics:** Navigating the complex market forces shaping industries
- **Team Dynamics:** Building and managing effective startup teams
- **Strategic Partnerships:** Identifying and securing partnerships for mutual value creation

Introduction to the Curriculum

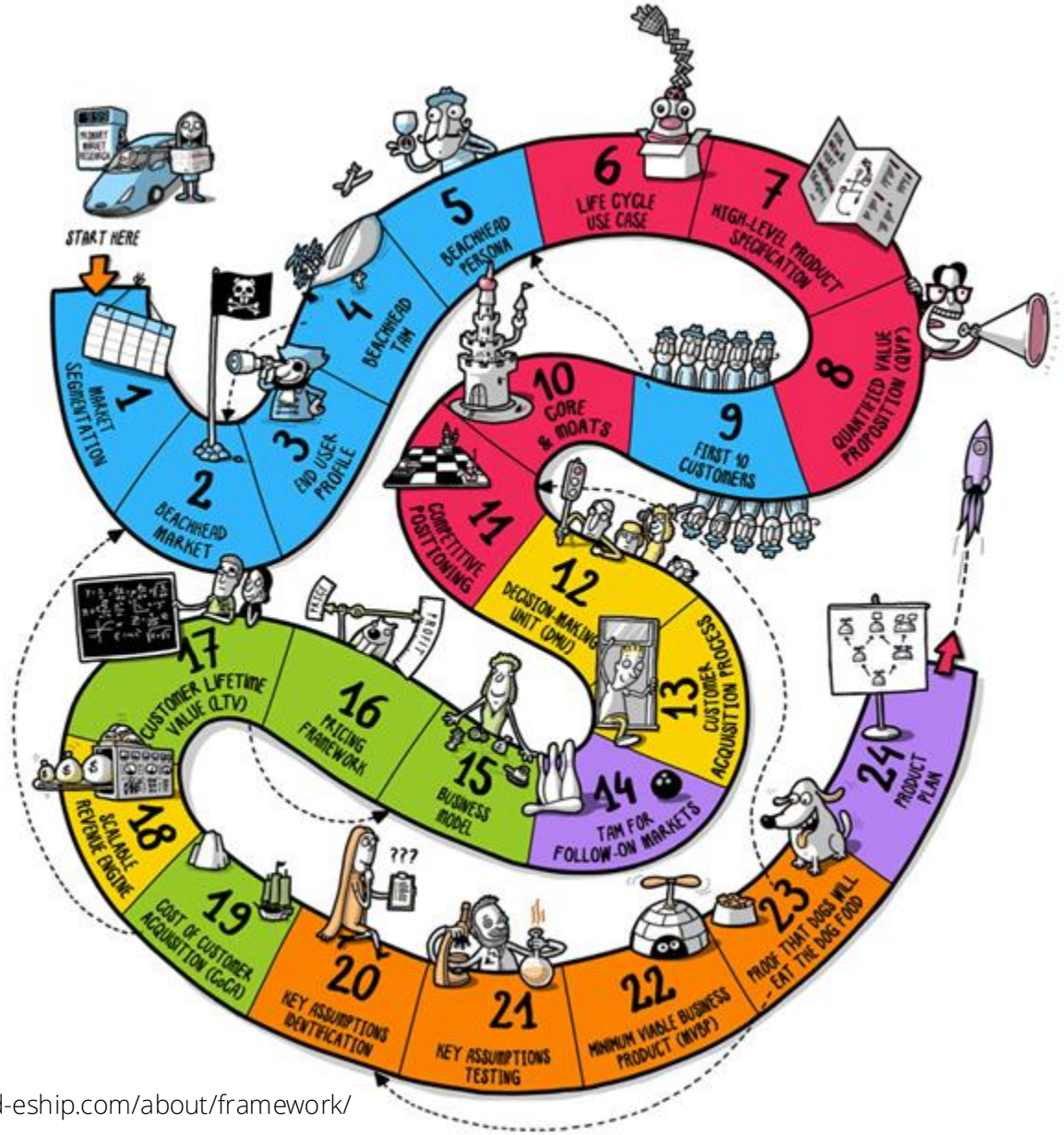
- **Financial Modeling:** Developing financial plans and projections for startups
- **Pilots:** Pilots to validate technology, business models, and market fit
- **Intellectual Property:** Protecting intellectual property
- **Legal Contracting:** Navigating and negotiating legal agreements
- **Investor Engagement:** Building relationships and securing funding

Entrepreneurship Fundamentals

- Creating and **managing a business to solve a problem** or meet a market need
- Requires identifying opportunities and **taking calculated risks to create value**
- Entrepreneurs need passion, creativity, and perseverance to turn their ideas into successful enterprises, **often in the face of uncertainty and limited resources**
- Requires adaptability, resilience, and **a willingness to learn from failures**

Disciplined Entrepreunership (Bill Aulet, MIT)

1. Market segmentation
2. Select a beachhead market
3. Build an end user profile
4. Calculate the total addressable market size for the beachhead market
5. Profile the persona for the beachhead market
6. Full life cycle use case
7. High-level product specification
8. Quantify the value proposition
9. Identify your next 10 customers
10. Define your core
11. Chart your competitive position
12. Determine the customer's decision-making unit (DMU)
13. Map the process to acquire a paying customer
14. Calculate the total addressable market size for follow-on markets
15. Design a business model
16. Set your pricing framework
17. Calculate the lifetime value (LTV) of an acquired customer
18. Map the sales process to acquire a customer
19. Calculate the cost of customer acquisition (COCA)
20. Identify key assumptions
21. Test key assumptions
22. Define the minimum viable business product (MVBP)

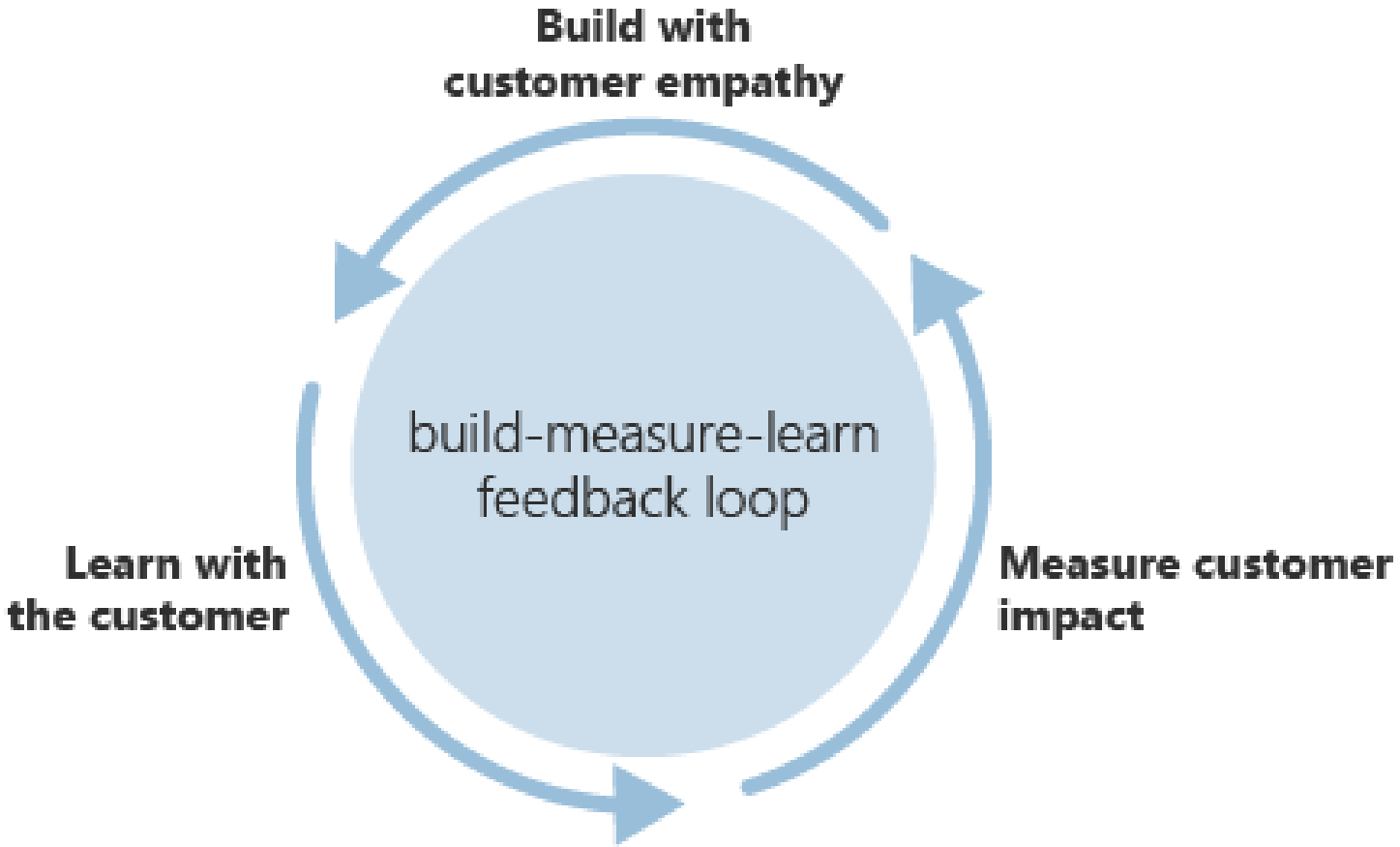


https://www.d-eship.com/about/framework/

Lean Startup Methodology (Eric Ries)

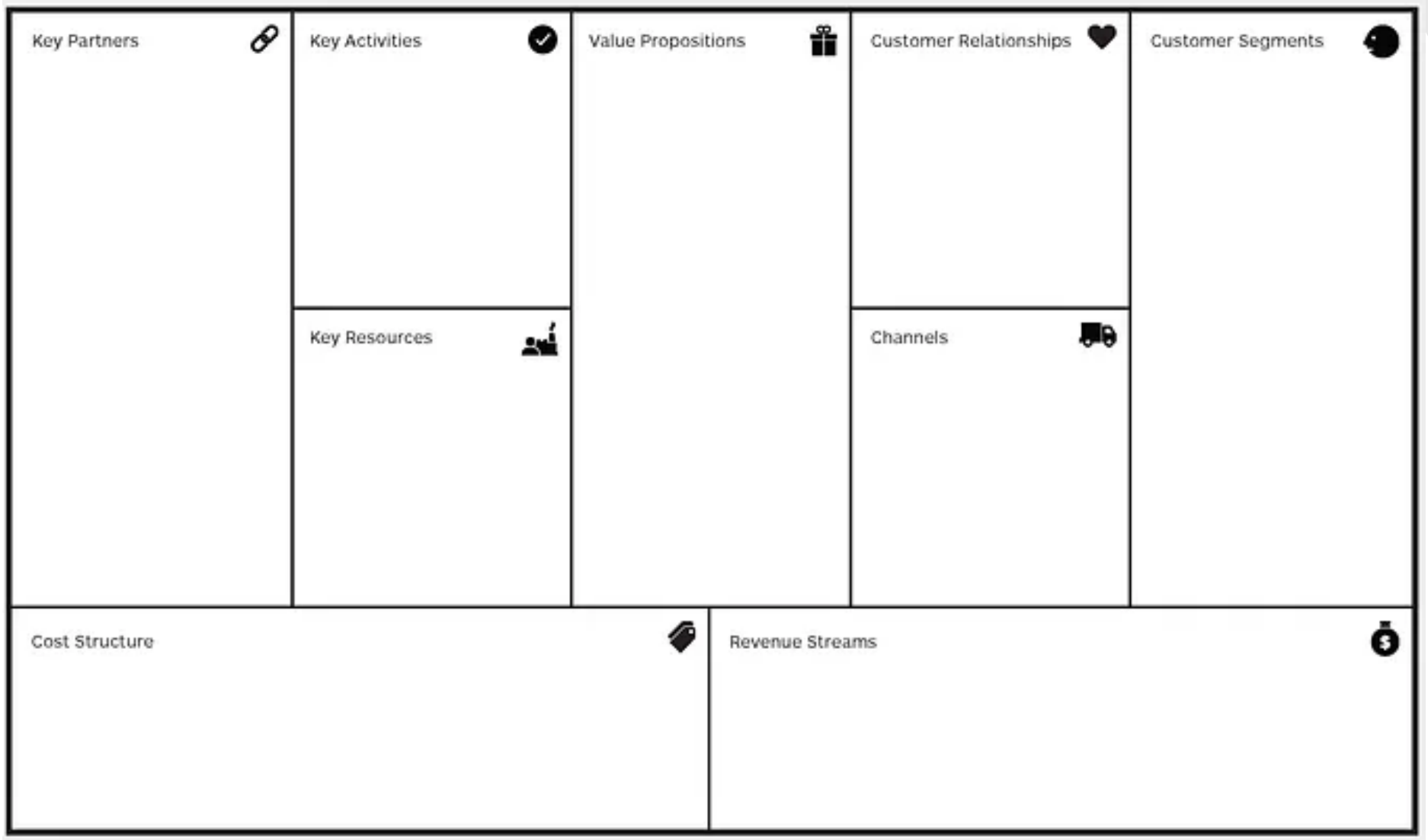
- **Minimum Viable Product (MVP):**
  - Product with **just enough** to be usable by early customers for feedback & development
  - Allows hypothesis testing and gaining of insights with minimal time and resources
  - Useful for Green Chemistry startups to assess technical feasibility and market receptivity
- **Pivoting vs Persevering:**
  - Pivot: A course correction to test a new hypothesis about the product, strategy, and engine of growth
  - Persevere: Continuing on the current path and iterating based on feedback

Lean Startup Methodology (Eric Ries)



https://medium.com/@moonpig.group.product/demystifying-the-product-design-process-d41f98f24049

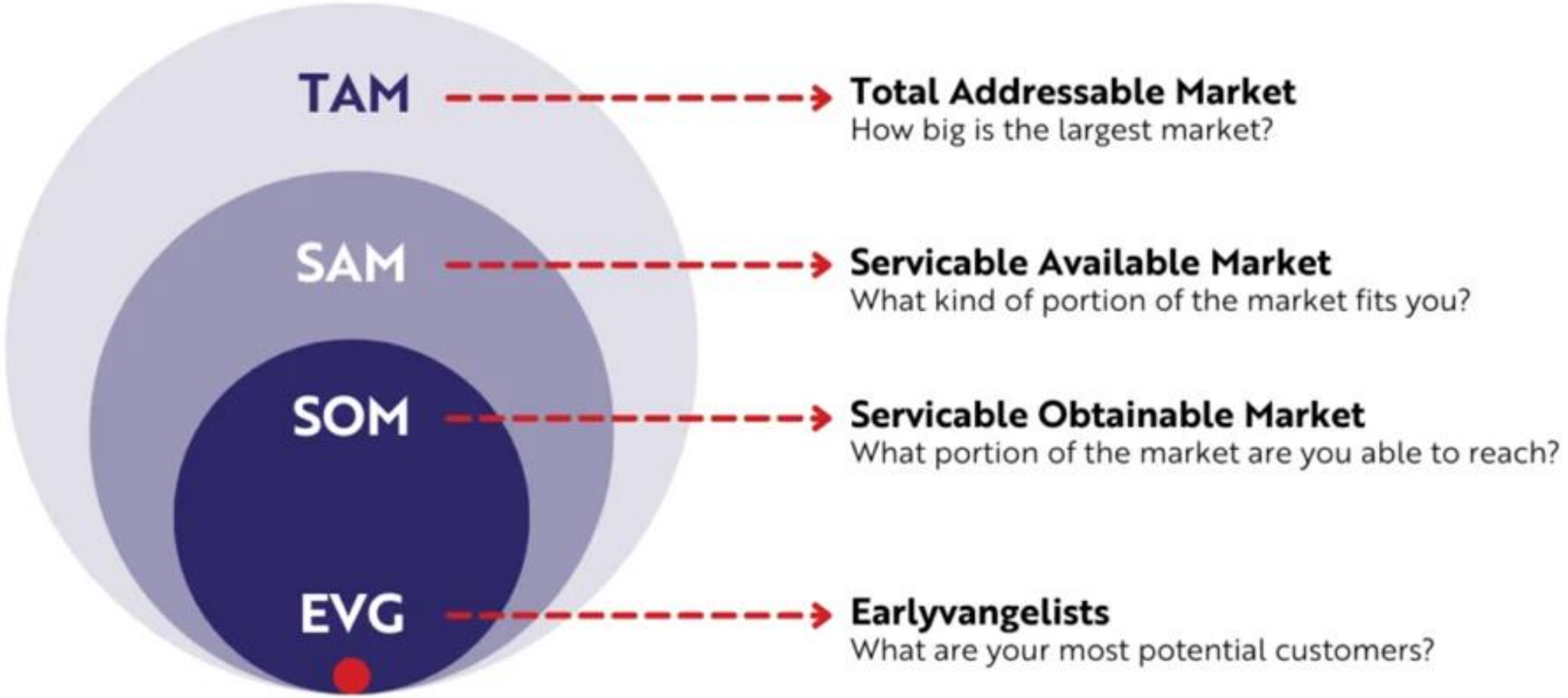
Business Model Canvas



Market Segmentation & Target Customers

- Identifying serviceable and obtainable market segments for Green Chemistry innovations
- Developing customer personas and value propositions for each segment
- Understanding customer jobs, pains, and gains
- Analyzing key players, value chains, and power dynamics in target industry sector
- Assessing competitive intensity using Porter's Five Forces framework
- Identifying opportunities for disruption and differentiation through green chemistry

Total Addressable Market



Tools for Strategy Design

Porter's Five Forces

https://blog.crud.lk/porters-5-forces-framework-and-how-to-use/

SWOT Analysis

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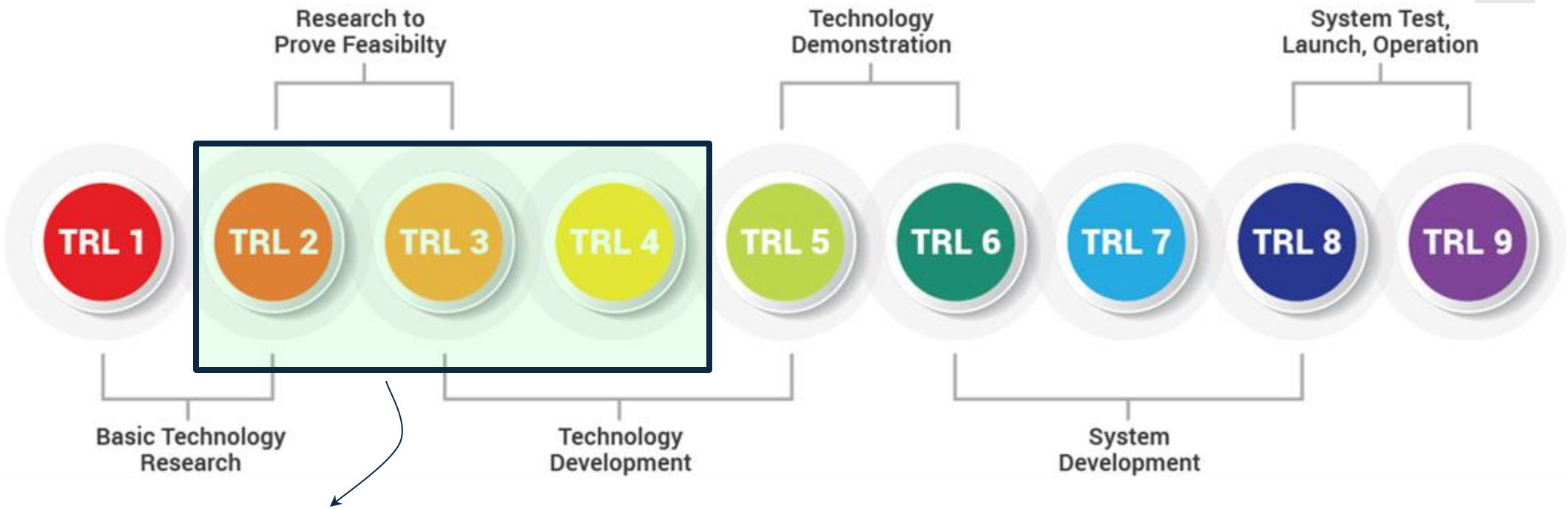
Technical Readiness Level



- Early-Stage Accelerator's target reach is TRL 2-4
- Advancing "Research" to "Demonstration"

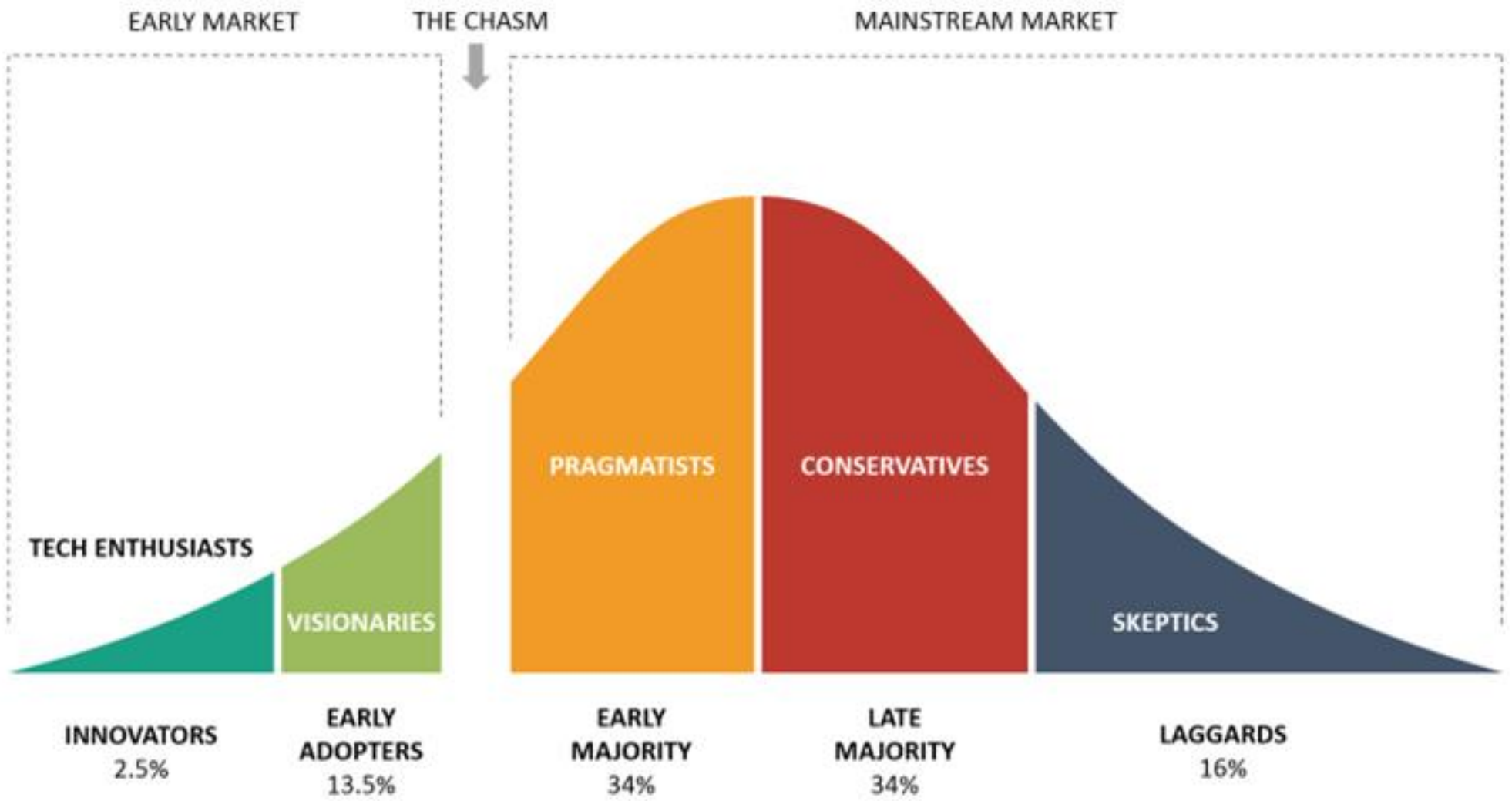
https://zenith.finos.org/docs/roadmap/roadmap-trl/

Technology Adoption and Diffusion

- Overcoming barriers to adoption
  - Switching costs
  - Performance uncertainties,
  - Organizational inertia

- Crossing the chasm from early adopters to mainstream customers

Technology Adoption and Diffusion



https://emandisrinu.medium.com/technology-adoption-life-cycle-565698d10dfd

Regulatory and Policy Landscape

- **US Sustainable Chemistry in National Defense Authorization Act (NDAA, 2021)**
  - New Interagency entity to coordinate sustainable chemistry strategic plan
  - Create partnerships to promote sustainable chemistry activities
  - White House Report (2023)

- **Relevant Tools and Databases**
  - OECD Substitution and Alternatives Assessment Toolbox
  - EPA Safer Chemical Ingredients List
  - ECHA Registered Substances Database
  - NIH Green Chemistry Databases

Building Effective Startup Teams

- **Founder Roles and Responsibilities**
  - Typical startup roles: CEO, CTO, CSO, COO, CMO, etc
  - Matching roles to founder skills, experience, and passions
  - Establishing clear decision rights, accountability, and communication practices

- **Hiring and Onboarding**
  - Defining job requirements and ideal candidate profiles
  - Leveraging networks and creative sourcing channels to attract top talent
  - Designing onboarding processes to align them with company mission and values

Fostering a Strong Teamwork and Culture

- Encouraging psychological safety, trust, and healthy conflict
- Celebrating diversity and inclusion as a source of strength and innovation
- Implementing team rituals and feedback mechanisms
- Clear Goals with SMART:
  - Specific, measurable, attainable, realistic, and timely

Setting Smart Goals

https://www.jiitak.com/blog/risk-management

Managing Team Dynamics and Performance

- **Conflict Resolution and Decision-Making**
  - Conflict in startups
    - Role ambiguity, resource scarcity, personality difference
  - Design for constructive conflict management
  - Establish clear decision-making processes
    - Consensus, consultative, command
- **Performance Management and Feedback:**
  - Conducting regular 1:1s and performance reviews
  - Delivering effective feedback CORN (Context, Observation, Results, Next steps)
  - Recognizing and rewarding high performance

Managing Team Dynamics and Performance

Context

What was the specific situation?

Where and when?

Observation

What was said or done?

No interpretation. Be specific.

Result

What was the most meaningful **consequence** to you?

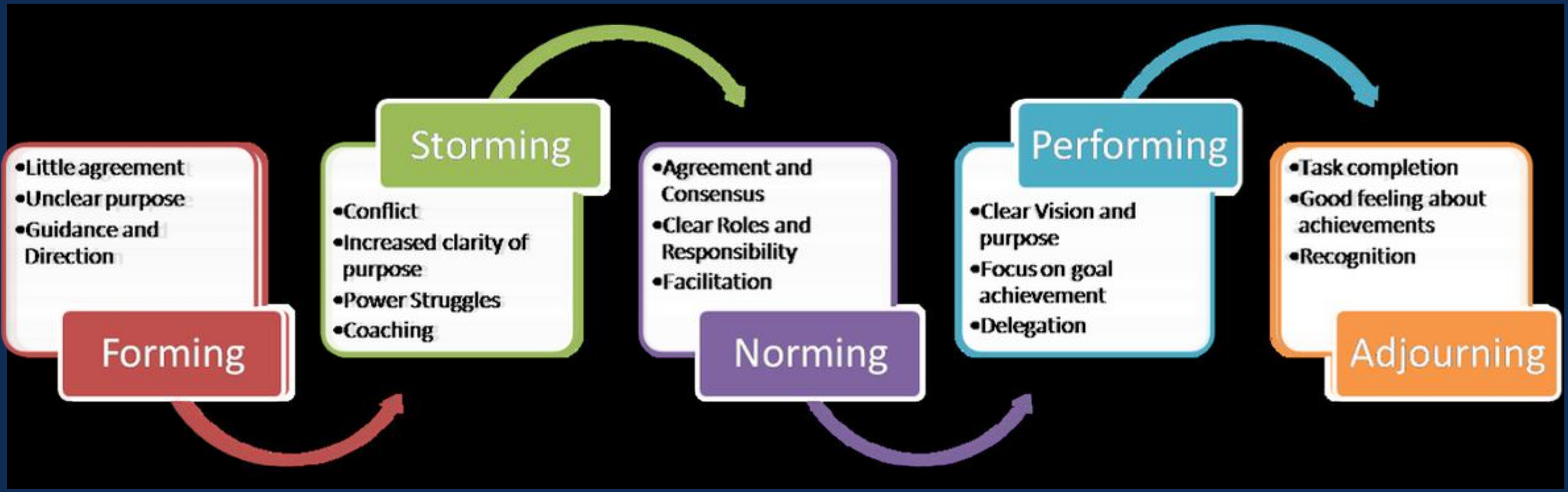
Can be an *interpretation* (feeling/thought) or a *consequence (or both).*

Next Step

What are the expected next steps?

Can be a question or a request

Tuckman's Model of Group Development



https://custom-essay.org/free-essays/the-theory-behind-the-coca-cola-companys-business-analysis/

Value of Partnerships for Green Chemistry Startups

- Enhancing credibility and influence for customers, investors, and policymakers
- Proving it works derisks solution and increase funding chance
- Sharing cost of Green Chemistry technology development/commercialization
- Accelerating learning and innovation with knowledge exchange & co-creation

Types of Strategic Partnerships

- **R&D partnerships:** universities, national labs, and research institutes
- **Supply chain:** with material providers, manufacturers, and distributors
- **Channel:** with customers, retailers, and logistics providers
- **Horizontal:** industry peers and complementary solution providers
- **Impact:** NGOs, foundations, social movements, and sustainability groups

Partnership Opportunity Assessment

- **Strategic Fit & Complementarity**
  - Alignment with startup's mission, values, and goals
  - Compatibility of organizational cultures and operating models
  - Uniqueness and criticality of partner's capabilities

- **Feasibility and Risks**
  - Technical, operational, and legal feasibility
  - Potential risks and unintended consequences
  - Mitigation strategies and contingency plans

Partner Selection, Due Diligence, and Management

- Defining partnership goals, scope, and criteria
- Identifying and prioritizing partners based on capabilities, reputation, and fit
- Defining clear roles, responsibilities, and performance metrics
- Establishing governance: roles, responsibilities and metrics
- Assigning dedicated alliance managers or liaisons
- Addressing intellectual property, confidentiality, and termination clauses
- Conducting regular partnership health checks and performance reviews

Ecosystem Engagement and Collaboration

- **Engaging in Multi-Stakeholder Initiatives and Consortia**
  - Participating in pre-competitive research and development platforms
  - Joining industry associations and sustainability working groups
  - Contributing to the development of Green Chemistry standards and certifications

- **Open Innovation and Co-Creation**
  - Leveraging crowdsourcing and challenges for Green Chemistry ideas
  - Collaborate with customers, suppliers, and users to co-design sustainable solutions
  - Engaging in sustainability hackathons and meetups to build cross-sector innovation

Entrepreneurship Prompting from Large Language Models (Chatgpt4o, Claude, Gemini)

- **Use AI:** multiple iterative prompts, ask it for best prompts, use delimiters, edit, edit,
- **Lean Startup Methodology:** "How can I craft the most effective prompt to apply the Lean Startup Methodology for quickly testing and validating a business idea or product?"
- **Value Proposition Canvas:** "Help me design the optimal prompt for creating a Value Proposition Canvas that will best understand and meet customer needs for a specific product or service"
- **SMART Goals:** "Guide me in developing the most effective prompt for setting up Smart Goals with OKRs that align team goals and drive performance for a business or project"
- **Five Forces**: “How can I create the best prompt for conducting a Force Forces analysis that identifies external factors affecting a specific industry?"
- **Customer Journey Mapping:** "Guide me in forming the most effective prompt for creating a customer journey map that improves user experience and satisfaction for a product or service"
- **Business Model Canvas:** "How can I write the best prompt to guide me through filling out a Business Model Canvas to clarify and refine a business model?"

Importance of Financial Modeling

A critical tool for planning, decisions, and investor communication to quantify and validate business model:

- **Income Statement (Profit and Loss)**
  - Revenue, COGS, Gross Margin, Operating Expenses, EBITDA, Net Income
- **Balance Sheet:**
  - Assets, Liabilities, Equity, Working Capital
- **Cash Flow Statement:**
  - Operations, Investing, Financing Cash Flows, Cash Balance
- **Revenue Forecasting**
  - Market size, adoption rate, pricing strategy
- **Expense Forecasting**
  - Fixed vs variable costs, R&D, SG&A, CapEx
- **Scenario Analysis:**
  - Best case, worst case, and base case scenarios

Developing Financial Models for Green Chemistry Startups

- **Revenue Models**
  - Product Sales: Direct sales, licensing, subscriptions
  - Service Revenue: Consulting, technical support, training
  - Hybrid Models: Combination of product and service revenue streams
- **Financial Metrics and KPIs**
  - Internal Rate of Return (IRR), Multiple on Invested Capital (MOIC)
  - Customer Acquisition Cost (CAC), Lifetime Value (LTV), Payback Period
  - Cash Burn Rate, Runway, Net Present Value (NPV)
- **Building a Financial Model**
  - Hire an excel expert or use financial modeling software (eg LivePlan, PlanGuru)
  - Validating assumptions with market data, benchmarks, and expert input

Pilots and Proof of Concept (PoC)

- **Purpose of Pilots:**
  - Validate technical feasibility, business model, and market demand
  - De-risk the startup by demonstrating proof of concept
  - Build credibility and attract customers, partners, and investors

- **Designing a Pilot:**
  - Define clear objectives, scope, and success criteria
  - Engage key stakeholders (eg customers, partners, investors) early
  - Plan for data collection, analysis, and reporting

Executing and Scaling Pilots

- **Executing a Pilot**
  - Set up a project management plan with milestones, timelines, and responsibilities
  - Collect and analyze data to assess pilot performance
  - Prepare a detailed report with findings, insights, and next steps

- **Scaling from Pilot to Commercialization**
  - Use pilot results to refine the product, business model, and go-to-market strategy
  - Engage early adopters and industry champions for feedback and testimonials

Intellectual Property (IP) Strategy

- **Importance of IP Protection:**
  - Safeguards innovations, creates competitive advantage, and adds value
  - Attracts investors by securing the startup's intangible assets
  - Supports strategic partnerships through licensing and collaboration agreements

- **Types of IP Protection**
  - Patents: Protect inventions and processes; typically 20 years of exclusive rights
  - Trademarks: Protect brand names, logos, and symbols; renewable indefinitely
  - Copyrights: Protect original works of authorship; typically 70 years after the author's death
  - Trade Secrets: Protect confidential business information (eg formulas, processes)

Intellectual Property (IP) Strategy

- **Developing an IP Strategy:**
  - Identify and prioritize key innovations and assets for protection
  - File for patents and trademarks in relevant markets
  - Use non-disclosure agreements (NDAs) but be careful it won't sink progress

- **IP Considerations for Green Chemistry Startups**
  - Balancing innovation with IP protection (eg sharing research data vs patenting inventions)
  - Navigating complex regulatory environments that may impact IP rights
  - Managing IP in collaborative R&D and joint ventures
  - Freedom-to-operate (FTO) analysis to avoid infringing on existing patents

Key Legal Agreements

- **Founders' Agreement:** Defines roles, responsibilities, equity ownership, and decision-making
- **Employment Contracts:** Outlines terms of employment, compensation, and IP ownership
- **Non-Disclosure Agreements (NDAs):** Protects confidential information shared with third parties
- **Supplier & Distribution Agreements:** Specifies terms for sourcing materials and selling products
- **Licensing Agreements:** Grants rights to use, manufacture, or sell the startup's technology
- **Contract Negotiation Strategies**
  - Prepare thoroughly by understanding the key terms and implications
  - Seek win-win outcomes that align the interests of both parties
  - Be clear and specific in drafting to avoid ambiguity and disputes

Legal Contracting Essentials

- **Managing Legal Risks**
  - Engage legal counsel early and often to review and draft agreements
  - Regularly update contracts to reflect changes in the business environment
  - Monitor compliance with contract terms and take proactive steps to address potential breaches

- **Special Considerations for Green Chemistry Startups:**
  - Navigating environmental regulations and sustainability standards in contracts
  - Structure contracts to address liabilities related to chemical safety and environmental impact
  - Aligning contract terms with the startup's sustainability goals and commitments

(Some) Types of Investors

- **Angel Investors**: High-net-worth individuals investing in early-stage startups
- **Corporate Venture Arms**: Investments from established companies seeking strategic synergies
- **Impact Investors**: Investors focused on generating social and environmental returns alongside financial returns
- **Venture Capital (VC) Firms**: Institutional investors providing capital for growth and expansion
- **Philanthropy**: High Net Worth Individuals or Foundations that offer grants

Fundraising Strategies

- Determine the amount and type of capital needed (e.g. equity, convertible debt, SAFE notes)
- Set realistic valuation expectations based on market data and comparable deals
- Plan for multiple funding rounds and create a roadmap for achieving key milestones
- Identify and research potential investors who align with the startup's mission and stage
- Build relationships with investors early and maintain regular communication
- Develop a compelling pitch deck that highlights the startup's value proposition, market opportunity, and team
- Prepare detailed financial projections, product roadmap, and go-to-market strategy

Data Rooms

Short Data Room Version

- **Pitch deck**
  A concise overview of your problem-solving approach, product, competitors, and fundraising details
- **Product Demo**
  Showcase how your product works
- **Financials**
  P&L / Income Statement, Balance Sheet, Cashflow Statement, Financial Projections 1-3 years in the future
- **Team & Roles**
  CVs or patents of the founders (something that validates your expertise).
- **Cap Table**
  Provide an overview of equity ownership among stakeholders.

Extended Data Room Version

- **Corporate records**
  Certify your company's good standing with legal documents: Certificate of incorporation, Articles of Association (by-laws); Shareholder Agreement; any agreements granting rights to acquire securities of the Company, etc.
- **Customer & Partner Contracts**
  Include agreements that significantly impact your business.
- **Usage data**
  This data will vary based on the type of company.
- **Full Cap Table Documents**
  Details of previous fundraising rounds or liquidity events, shareholder certificates, vesting schedules, ESOP details.
- **Intellectual Property documents**
  List of all trademarks, trade names or service marks; list and copies of all patents and patents applications held by the Company, etc.
- **Disputes and litigation**
  Any past, current, pending or threatened dispute or investigation related to labor agreements or unions, trademarks, etc.
- **Employees and benefits**
  List of employees with salary, contract type, commission structure, country of residence, etc.
- **Tax Filings**

leta.vc

To Do's for Investor Materials

- **Nested materials:** One sentence, one paragraph, one page, 30 second deck, 5 minute pitch deck, 20 min reading deck
- Create an executive summary that captures the essence of the pitch deck
- Develop a detailed investor memorandum with in-depth analysis and data
- Tailor materials to different investor types (eg angels, VCs, corporates)

Structuring a Compelling Demo Day Presentation

- Start with a powerful opening that grabs attention
- Clearly articulate the problem, solution, and market opportunity
- Use visuals and storytelling to engage the audience and convey key points
- Practice the presentation to ensure smooth delivery and timing
- d

Preparing for Demo Day

- **Rehearsing with Mentors and Peers**
  - Conduct multiple practice sessions with feedback from mentors and peers
  - Focus on clarity, confidence, and conciseness in delivery - more why, then how
  - Prepare for potential questions and objections from the audience

- **Managing Nerves and Building Confidence**
  - Develop strategies to manage anxiety and stay focused during the presentation
  - Visualize success and build confidence through positive affirmations
  - Remember to breathe, stay calm, and connect with the audience

Strategies for Post-Accelerator Growth

- **Planning for Scaling and Expansion**
  - Develop a scale-up plan with clear milestones and resources needed
  - Explore opportunities for next customer segment or geography

- **Building and Leveraging Strategic Partnerships**
  - Nurture relationships and seek out new partnerships with key stakeholders
  - Develop joint marketing and sales strategies with partners

- **Securing Follow-On Funding**
  - Leverage Demo Day success to attract interest from new investors
  - Develop a fundraising strategy that aligns with growth plans

Exit Strategies and Long-term Vision

- **Understanding Different Exit Options to bring to Investor Meetings**
  - IPO, acquisition, merger, strategic partnership, or remaining private
  - Develop a timeline and criteria for evaluating exit opportunities
  - Build a strong financial and operational foundation to attract corporate buyers

- **Defining a Long-Term Vision for Impact**
  - Articulate a vision for the startup's legacy and impact on the Green Chemistry industry
  - Inspire the team and stakeholders to stay committed to the startup's mission and values

Resources

Fundraising

- Startup Pitch Deck GPT, https://chatgpt.com/g/g-8Bup8KxbJ-startup-pitch-deck - JME
- Data Room template, https://blog.creandum.com/seed-data-room-template-by-creandum-389e82f3058c - Creandum
- Story Branding, https://www.harpercollinsleadership.com/9780718033323/building-a-storybrand/ - Donald Miller
- The Idea Maze, https://theideamaze.buzzsprout.com/ - Balajis Srinivasan
- Fundraising guides by Y Combinator, https://www.ycombinator.com/library/4A-a-guide-to-seed-fundraising
- Fundraising wisdom by Firstround, https://review.firstround.com/the-fundraising-wisdom-that-helped-our-founders-raise-18b-in-follow-on-capital/
- Deck Template by Creandum, https://blog.creandum.com/creandum-series-a-deck-template-21a6df9c1ac4
- Business Plan by Sequoia, https://articles.sequoiacap.com/writing-a-business-plan
- Front Series A Deck, https://collinmathilde.medium.com/front-series-a-deck-f2e2775a419b
- SaaS Fundraising Playbook by IVP, https://www.ivp.com/content/saas-fundraising-playbook/

Metrics

- Operational efficiency metrics Iconiq, https://www.iconiqcapital.com/growth/series/growth-efficiency
- B2B benchmark metrics - a16z, https://a16z.com/growth/guide-growth-metrics/
- What is good retention – Lenny Rachitsky, https://www.lennysnewsletter.com/p/what-is-good-retention-issue-29
- Top 5 SaaS metrics VCs look at - Jon Ma, https://blog.publiccomps.com/top-5-saas-metrics/
- Cohort analysis template SaaS - Point9, https://medium.com/point-nine-news/the-p9-guide-to-cohort-analysis-in-saas-v0-9-63ce366ab427

Equity & Compensation

- Equity grants per round - Balderton, https://www.balderton.com/wp-content/uploads/2021/02/Equity-Guide-Balderton-Capital-January-2020.pdf
- Founder's compensation - Creandum, https://foundercomp.creandum.com/
- Option Plan Tool - Index, https://www.indexventures.com/optionplan/#expected_funding_rounds_pre_exit=series-b-and-c&employee_country=us&mode=seed

Board Management

- Lessons from Keith Rabois, https://delian.io/lessons.html
- The Art of Board Membership, https://www.amazon.com/Art-Board-Membership-Roy-Sorenson/dp/B002ASTJ52
- How to run a board - Samuel Gil, https://growth.eladgil.com/book/cofounders/

Practical Tips

These tips might be useful:

- Apply framework from "Disciplined Entrepreneurship" to green chemistry
- Conduct market analysis using tools like SWOT and Porter's Five Forces
- Facilitate team-building workshops focusing on leadership and communication
- Use NCPC relationships to map potential partnerships for strategic fit and benefits
- Provide access to regulatory experts for navigating compliance issues

Practical Tips

These tips might be useful:

- Offer financial modeling workshops tailored to green chemistry challenges
- Help startups define clear objectives and success criteria for pilots
- Provide IP strategy sessions focused on patent filing and trade secrets
- Offer legal clinics to guide startups in drafting key contracts
- Facilitate investor readiness programs with mock pitch sessions

Discussion Questions

To finalize this session, these discussion questions are useful to reflect on the concepts you have seen.

- How can disciplined entrepreneurship principles be applied to green chemistry startups?
- What are the key market dynamics for green chemistry startups?
- How can accelerators support effective team building?
- What role do strategic partnerships play in green chemistry startup success?
- How can startups navigate different regulatory landscapes?

Discussion Questions

To finalize this session, these discussion questions are useful to reflect on the concepts you have seen.

- What financial challenges are unique to green chemistry startups?
- How should startups design pilot projects to validate their innovations?
- What are the key considerations for managing intellectual property in green chemistry?
- What are the critical legal contracting issues for green chemistry startups?
- How can green chemistry startups effectively engage with investors?

Yale School of the Environment

Center for Green Chemistry & Green Engineering at Yale

- Advance Science
- Catalyze Implementation
- Prepare the next generation
- Raise Awareness

Thank You!

For questions, please reach out:

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