Slide 1 — The Aerospace & Defense Forum — Santa Clarita Valley Chapter Meeting, March 21, 2023. "How Accelerated Product Development can lead to cost-effective Innovation and move a company forward" — Agustin Garcia, Sr Manager Business Development, Motivo Engineering, 7:15 – 9:00 AM

Slide 2 — Who We Are…

Slide 3 — Santa Clarita Valley Economic Development Corporation, Santa Clarita Valley Chapter, Host and Sponsor — SCVEDC (scvedc.org) — Holly Schroeder, President & CEO, SCVEDC

Slide 4 — "How Accelerated Product Development can lead to cost-effective Innovation and move a company forward" — Agustin Garcia, Sr Manager Business Development, Motivo Engineering

Slide 5 — Accelerated Development Fosters Cost-Effective Innovation — motivo

Slide 6 — The Onion Project — motivo

Asking ChatGPT About "Innovation"

"Innovation is the driving force behind progress, pushing us to explore new possibilities and solutions to the challenges we face in our ever-changing world."

"In today's fast-paced and competitive market, the ability to innovate is essential for companies to stay ahead of the curve and meet the ever-evolving needs of their customers."

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Picture from Stanley Kubrick's 2001: A Space Odyssey

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Innovation Defined

Innovation refers to the…

process of introducing new ideas, products, services, or processes that bring about positive change and value creation.

It involves taking creative approaches to problem-solving and implementing new solutions to…

address unmet needs or to improve existing products, services, or processes.

Innovation can occur in any field or industry and is often…

driven by advances in technology, changes in consumer preferences, and evolving market trends.

It is a critical driver of economic growth, competitiveness, and sustainability, and it requires a combination of imagination, curiosity, and entrepreneurial spirit to succeed.
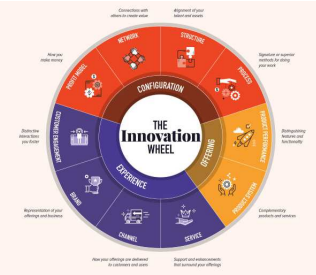
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Innovation | The Art of Discovery

How Breakthrough Products are Realized

According to Deloitte, most big breakthroughs in history comprise some combination of the 10 types of innovation

New products are invented from scratch all the time, but this is only one way to innovate. Here is a breakdown of the "spokes" that comprise the Innovation Wheel:

CONFIGURATION
- Profit Model, Network, Structure and Process

EXPERIENCE
- Customer engagement, brand, channel and service

OFFERING
- Product System and Product Performance

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Innovation Conundrum | Why We Don't Take the Leap

There are many reasons why companies refrain from pursuing new innovations

MAIN REASONS FOR STIFLING INNOVATION INCLUDE:

- Lack of resources
- Fear of failure
- Bureaucracy
- Resistance to change
- Lack of incentives
- Short-term thinking
- Intellectual property issues
- Regulation

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Innovation Conundrum | Culture

Inc.

Praveen Seshadri

JOINED GOOGLE IN EARLY 2020
COMPANY ACQUIRED BY GOOGLE
LEFT THE COMPANY AFTER THREE-YEAR MANDATORY RETENTION PERIOD

This Ex-Googler's Scathing Takedown of the Company Is Basically a Blueprint for Killing Innovation An ex-employee offers a peek inside the Googleplex and reveals the cultural problems that are smothering innovation.

BY JESSICA STILLMAN, CONTRIBUTOR, INC.COM @ENTRYLEVELREBEL

CAUTION COMFORT ZONE

The Googleplex in Mountain View, California. Photo: Getty Images

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Getting Past the Excuses | It's Time to Innovate
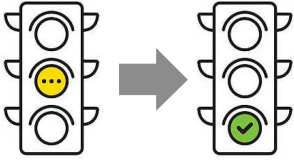
We are done holding off executing that great idea

FIND THE HONEST BROKERS WHO WILL HELP ONE REALIZE A VISION

Factors that PREVENT Companies from Contracting External Sources:
- Intellectual Property Concerns
- Lack of Control
- Cost

Who SHOULD be Contracting External Product Development Organizations?
- Startups
- Large Companies
- Companies in Competitive Industries

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Slide 13

Accelerated Product Development | As a Service

Accelerated product development refers to the process of quickly bringing a new product to market. By shortening the development timeline, companies can realize several benefits, including cost-effective innovation.

BENEFITS OF ACCELERATED PRODUCT DEVELOPMENT:

- Faster Time-to-Market
- Reduced Development Costs
- Better Product Quality

| Ideation | System Architecture | Proof of Concept | Validation | Design Prototype | Realization |

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Slide 14

Accelerated Product Development | Stage-Gate Process

Concept Ideation — ID Technology Trends — Product Roadmap — UI/UX & Design — Engineering & Prototyping — Low Volume Production

Scoping — Build a Business Case — Development — Testing & Validation — Launch

1st Stage-Gate	2nd Stage-Gate	3rd Stage-Gate	4th Stage-Gate	5th Stage-Gate
• Viability of product analyzed • Demand for product • Competitor assessment • SWOT • Market & Economic Conditions	• Product Definition and analysis • Development of business case and Project Plan • Feasibility Review • Generally last phase for concept development	• Initial design and development • Testing • Prototyping	• Product evaluation • Customer acceptance • Alpha/Beta testing	• Product launched • Volume estimation • Product demand validation • Resolution of customer complaints

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Slide 15

Accelerated Product Development | The 1:10:100 Rule

Number of possible design alternatives

Cost of change

Forrester estimates that for every **$1** to fix a problem during DESIGN the same problem would cost **$10** to fix during DEVELOPMENT and would cost as the equivalent of **$100** to fix after the product's LAUNCH.

DESIGN → DEVELOPMENT → LAUNCH

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Slide 16

Product Development | Three Innovation Success Stories

How Airbus Dreamed Up the Wild Design for Its Flying Car
For once, function follows form.

20. Monarch Tractor

Founders: Praveen Penmetsa (CEO), Mark Schwager, Zachary Omohundro, Carlo Mondavi
Launched: 2018
Headquarters: Livermore, California
Funding: $91 million (PitchBook)
Valuation: $280 million (PitchBook)
Key technologies: Artificial intelligence, autonomous vehicles, cloud computing, deep neural networks/deep learning, Internet of Things, machine learning, robotics
Industry: Agriculture
Previous appearances on Disruptor 50 List: 0

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Slide 17

Self-Piloted Electric Flying Vehicle

Urban Mobility transport: a sustainable complement to existing transport systems

- Novel electric variable pitch actuator mechanism that allows vertical take-off as well as horizontal flight
- Quick swapping battery mechanism, including ground support equipment
- Compact canopy kinematic mechanism design; multibody dynamic simulation, force and weight optimization
- High voltage distribution

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Slide 18

Development of First Autonomous-eV Tractor

AGRICULTURE POWER PLATFORM – MOBILITY, POWER AND MECHANIZATION

- Leverage technology developed during NextEnergy TARDEC microgrid project
- Developed energy solution that will improve the sustainability and productivity of agricultural communities worldwide
- Power platform with ultra flexible input/output capabilities
- Product has been spun-off as Monarch Tractor
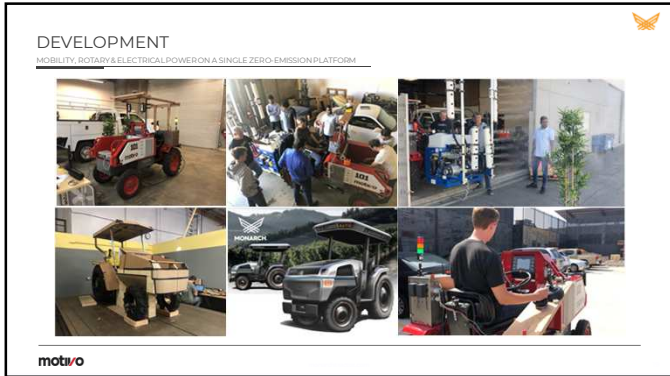
DRIVER OPTIONAL — FULLY ELECTRIC

Electric — Zero tailpipe emissions resulting in an annual CO_2 abatement of ~14 road cars

Automated — Reduced skilled labor and data collection costs while increasing farm safety

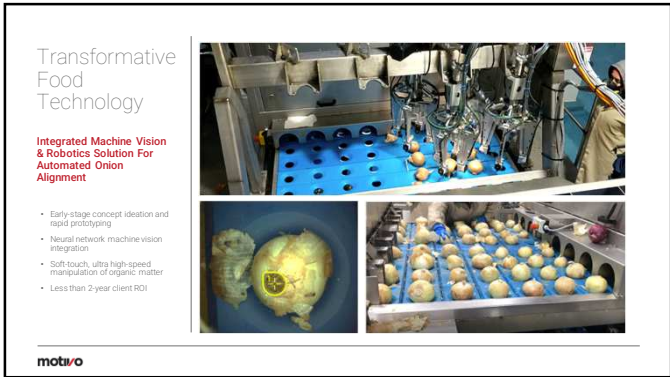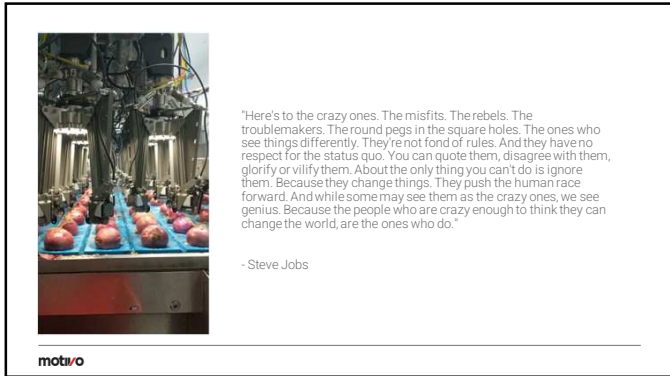**Smart** — Precision operations and marketplace apps will improve farm economics
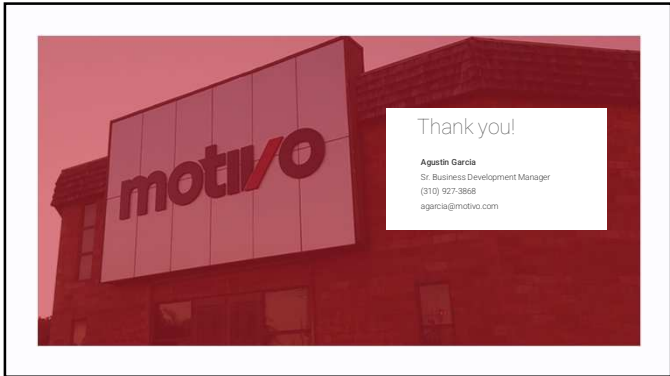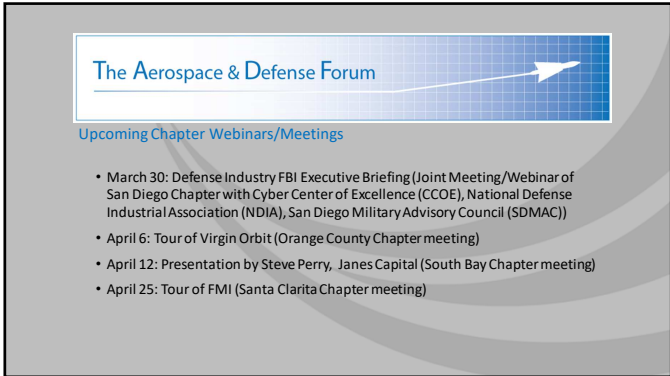
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Q&A

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Upcoming Chapter Webinars/Meetings

- March 30: Defense Industry FBI Executive Briefing (Joint Meeting/Webinar of San Diego Chapter with Cyber Center of Excellence (CCOE), National Defense Industrial Association (NDIA), San Diego Military Advisory Council (SDMAC))
- April 6: Tour of Virgin Orbit (Orange County Chapter meeting)
- April 12: Presentation by Steve Perry, Janes Capital (South Bay Chapter meeting)
- April 25: Tour of FMI (Santa Clarita Chapter meeting)

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The Aerospace & Defense Forum

- Individual Membership is $350/year and provides free attendance at all A&D Forum meetings and webinars. Membership is free for those not located near one of the nine operating chapters.
- Recordings of over 250 chapter and webinar presentations are available for download by A&D Forum members.
- You can join the mailing list of any chapter for free, which will also provide you the monthly A&D Forum Newsletter.
- Opportunities to sponsor chapters or webinars are available.
- Our practice is to make copies of the business cards and provide them to the attendees. If you wish to do so, please place your cards in the basket

For more info: https://aerospacedefenseforum.org/

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Thank You

Agustin Garcia, Motivo and the SCVEDC

"How Accelerated Product Development can lead to cost-effective Innovation and move a company forward"

March 21, 2023

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