Product Development Fundamentals

Summary:
Product development can be seen as a **funnel** that **narrows many ideas into a launched product,** moving through **four** main **phases**: **requirements, concept, design, and testing**. Each project falls somewhere between simple support tasks and incremental derivative projects (which require a **Sequential-Waterfall** approach) or next-gen platforms and radical breakthroughs (which require an **Agile** approach). The **leader's role is to align the right team type** (functional, lightweight, heavyweight, or autonomous) and **process** (Stage-Gate, Waterfall, CPM, or Agile) with the project's **level of complexity** and uncertainty. Product Development Metrics like time-to-market, capacity, and productivity help track how well the process is working.

Key Learning:
To be strong **engineering leaders**, we must **know** how to **match the project's complexity** with the right **structure** and **process**, giving our team the **best chance to succeed** and build an impactful product.

System Readiness Level

Summary:
While TRL helps us measure the maturity level of a piece of technology, it can't capture the challenges of integrating many technologies into one working system. This paper shows us how **combining TRLs with IRL** -- which allows us to see the **level of interaction, compatibility**, and communication between different tech involved -- we can get a more **complete view of the system's maturity**. Together they form SRL, which measures how ready an entire system is to function as one. The **SRL spans 5 levels**, mirroring the product development funnel stages from **concept** to launch/**operations**.

Key Learning:
As engineering leaders, we need to remember that the **readiness of a product is**n't measured only by the maturity of its technologies, but by **how well** those **technologies** integrate and **function together**. The SRL framework helps us with a factual and structured model to make better informed decisions and align our teams around the readiness/maturity of a product, ensuring that risks are addressed and the product is successful.

I4 Framework Video Summary

Summary:
Prof Steve shares a real example of how two different and **mature technologies** were not able to function together as one. Before the drill into a client's well, each tool was successfully tested separately, having a TRL of 6, however, when tested together they failed. The **interface was at a low level of maturity,** IRL 2, bringing the total **SRL at level 2**. This **helped** the **team** clearly **identify what they had to work on** (increase TRLs by 1 level and IRL by 5). The SRL framework helped identify the main issue, which is that **integration and communication (especially in this case) are critical to ensure product success.**

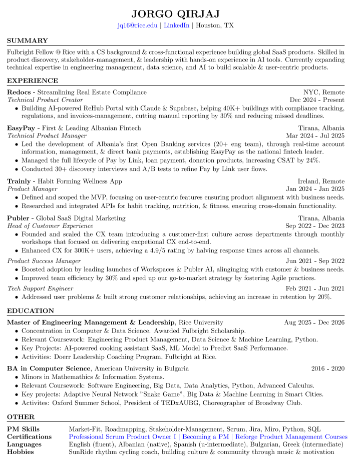
Favorite moment:
Minute **6:47** after the prof has explained how the SRL framework can help us identify the gaps between our "current" and "ideal" product. In this case, due to missing **communication** (unclear requirements) there was an issue with integrating the two technologies.

Boeing Case Study

Summary:
Rereading the Boeing 737 Max case after reading this week's papers helped me see the importance of **technical decisions made** especially while **keeping in mind the total SRL** of a product, and the failure that can happen once SRL is ignored. Boeing **rushed the Max through the funnel**, relying on an amended certification to avoid costly pilot retraining. Instead of **slowing down at key gates (like design and testing)**, leadership cut corners, treating a **complex project like a simple** derivative **one**. While the subsystems were mature on their own (high TRL), the **interfaces lacked proper integration** between them (low IRL). The weak links should have informed the leaders about the total **SRL** (which was **less than 2.5**), which is below the needed SRL for product maturity/readiness. **The rush through the stages meant integration kept getting overlooked, which led to the systemic failure.**

Key learning:
Successful product development is **dependent** on **data/factual informed decisions**. A product/**system** is **mature** when it's **tech can work together**, because a simple issue with 1 interface link can cause major failure. As **engineering managers**, we have to be able to **look at the big picture (through facts, data, and SRL system)**, **align** our **teams** accordingly, and finally avoid risk as a result.

Connection Visual Analysis



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SUMMARY

Fulbright Fellow @ Rice with a CS background & cross-functional experience building global SaaS products. Skilled in product discovery, stakeholder-management, & leadership with hands-on experience in AI tools. Currently expanding technical expertise in engineering management, data science, and AI to build scalable & user-centric products.

EXPERIENCE

Redocs - Streamlining Real Estate Compliance — NYC, Remote
Technical Product Creator — Dec 2024 - Present
- Building AI-powered ReHub Portal with Claude & Supabase, helping 40K+ buildings with compliance tracking, regulations, and invoices-management, cutting manual reporting by 30% and reducing missed deadlines.

EasyPay - First & Leading Albanian Fintech — Tirana, Albania
Technical Product Manager — Mar 2024 - Jul 2025
- Led the development of Albania's first Open Banking services (20+ eng team), through real-time account information, management, & direct bank payments, establishing EasyPay as the national fintech leader.
- Managed the full lifecycle of Pay by Link, loan payment, donation products, increasing CSAT by 24%.
- Conducted 30+ discovery interviews and A/B tests to refine Pay by Link user flows.

Trainly - Habit Forming Wellness App — Ireland, Remote
Product Manager — Jan 2024 - Jan 2025
- Defined and scoped the MVP, focusing on user-centric features ensuring product alignment with business needs.
- Researched and integrated APIs for habit tracking, nutrition, & fitness, ensuring cross-domain functionality.

Publer - Global SaaS Digital Marketing — Tirana, Albania
Head of Customer Experience — Sep 2022 - Dec 2023
- Founded and scaled the CX team introducing a customer-first culture across departments through monthly workshops that focused on delivering excpetional CX end-to-end.
- Enhanced CX for 300K+ users, achieving a 4.9/5 rating by halving response times across all channels.

Product Success Manager — Jun 2021 - Sep 2022
- Boosted adoption by leading launches of Workspaces & Publer AI, alinginging with customer & business needs.
- Improved team efficiency by 30% and sped up our go-to-market strategy by fostering Agile practices.

Tech Support Engineer — Feb 2021 - Jun 2021
- Addressed user problems & built strong customer relationships, achieving an increase in retention by 20%.

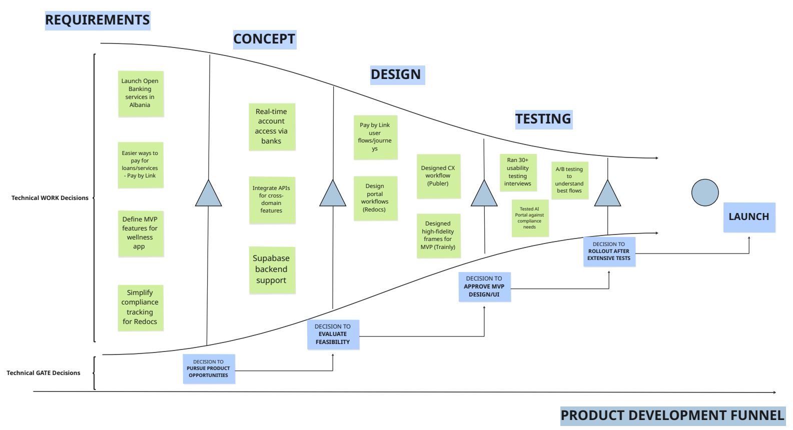
EDUCATION

Master of Engineering Management & Leadership, Rice University — Aug 2025 - Dec 2026
- Concentration in Computer & Data Science. Awarded Fulbright Scholarship.
- Relevant Coursework: Engineering Product Management, Data Science & Machine Learning, Python.
- Key Projects: AI-powered cooking assistant SaaS, ML Model to Predict SaaS Performance.
- Activities: Doerr Leadership Coaching Program, Fulbright at Rice.

BA in Computer Science, American University in Bulgaria — 2016 - 2020
- Minors in Mathemathics & Information Systems.
- Relevant Coursework: Software Engineering, Big Data, Data Analytics, Python, Advanced Calculus.
- Key projects: Adaptive Neural Network "Snake Game", Big Data & Machine Learning in Smart Cities.
- Activites: Oxford Summer School, President of TEDxAUBG, Choreographer of Broadway Club.

OTHER

PM Skills Market-Fit, Roadmapping, Stakeholder-Management, Scrum, Jira, Miro, Python, SQL
Certifications Professional Scrum Product Owner I | Becoming a PM | Reforge Product Management Courses
Languages English (fluent), Albanian (native), Spanish (u-intermediate), Bulgarian, Greek (intermediate)
Hobbies SunRide rhythm cycling coach, building culture & community through music & motivation

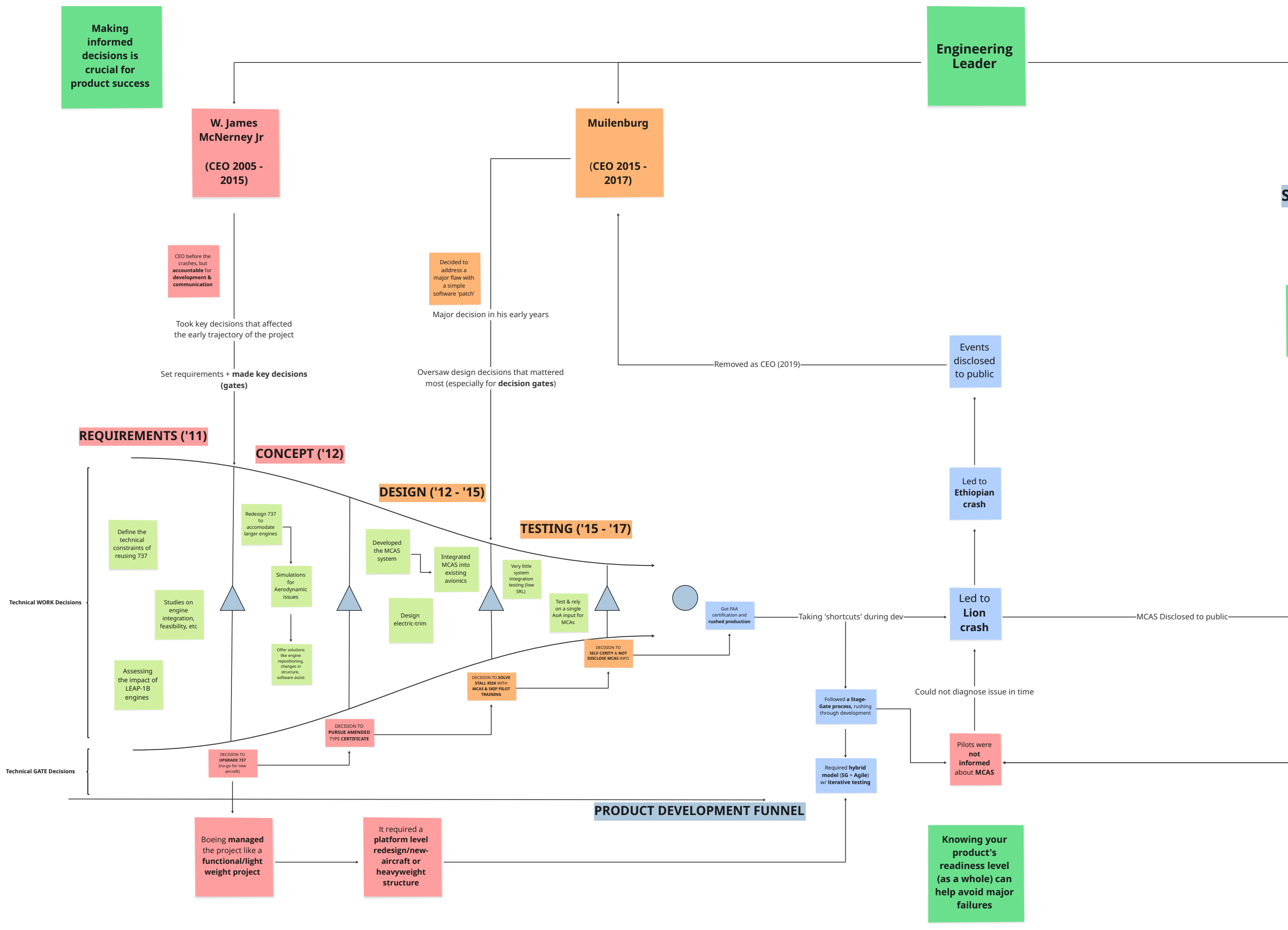


REQUIREMENTS
CONCEPT
DESIGN
TESTING
Technical WORK Decisions
Launch Open Banking services in Albania
Easier ways to pay for loans/services - Pay by Link
Define MVP features for wellness app
Simplify compliance tracking for Redocs
Real-time account access via banks
Integrate APIs for cross-domain features
Supabase backend support
Pay by Link user flows/journeys
Design portal workflows (Redocs)
Designed CX workflow (Publer)
Designed high-fidelity frames for MVP (Trainly)
Ran 30+ usability testing interviews
A/B testing to understand best flows
Tested AI Portal against compliance needs
LAUNCH
Technical GATE Decisions
DECISION TO PURSUE PRODUCT OPPORTUNITIES
DECISION TO EVALUATE FEASIBILITY
DECISION TO APPROVE MVP DESIGN/UI
DECISION TO ROLLOUT AFTER EXTENSIVE TESTS
PRODUCT DEVELOPMENT FUNNEL

OPEN BANKING SERVICES SRL

		SRL 2.4		SRL 4.8	
		TRL # 5-6		TRL # 8-9	
	Interfaces	Bank APIs	FE Team	BE Team	Compliance
	Bank APIs	■	⬜	🟥	🟥
TRL # 8-9	FE Team	⬜	■	🟥 7	🟥
TRL # 8-9	BE Team	🟥 3	🟥	■	🟥
	Compliance	⬜	⬜	⬜	■

Boeing Case Study



Making informed decisions is crucial for product success
Engineering Leader
W. James McNerney Jr (CEO 2005 - 2015)
Muilenburg (CEO 2015 - 2017)
CEO before the crashes, but accountable for development & communication
Took key decisions that affected the early trajectory of the project
Set requirements + made key decisions (gates)
Decided to address a major flaw with a simple software 'patch'
Major decision in his early years
Oversaw design decisions that mattered most (especially for decision gates)
Removed as CEO (2019)
Events disclosed to public
Led to Ethiopian crash
REQUIREMENTS ('11)
CONCEPT ('12)
DESIGN ('12 - '15)
TESTING ('15 - '17)
Technical WORK Decisions
Define the technical constraints of reusing 737
Studies on engine integration, feasibility, etc
Assessing the impact of LEAP-1B engines
Redesign 737 to accomodate larger engines
Simulations for Aerodynamic issues
Offer solutions like engine repositioning, changes in structure, software assist
Developed the MCAS system
Integrated MCAS into existing avionics
Design electric-trim
Very little system integration testing (low SRL)
Test & rely on a single AoA input for MCAs
Technical GATE Decisions
DECISION TO UPGRADE 737 (no-go for new aircraft)
DECISION TO PURSUE AMENDED TYPE CERTIFICATE
DECISION TO SOLVE STALL RISK WITH MCAS & SKIP PILOT TRAINING
DECISION TO SELF-CERITY & NOT DISCLOSE MCAS INFO
Got FAA certification and rushed production
Taking 'shortcuts' during dev
Led to Lion crash
Could not diagnose issue in time
Followed a Stage-Gate process, rushing through development
Required hybrid model (SG + Agile) w/ iterative testing
Pilots were not informed about MCAS
MCAS Disclosed to public
PRODUCT DEVELOPMENT FUNNEL
Boeing managed the project like a functional/light weight project
It required a platform level redesign/new-aircraft or heavyweight structure
Knowing your product's readiness level (as a whole) can help avoid major failures

A leader **ensures alignment** across the teams

Understands TRLs, IRLs, and the full picture -- **SRL**

SYSTEM READINESS LEVEL ~2.5

737 MAX Subsystems were mature (TRL 6-9), but had low IRL. That brought the total **SRL to less than 2.5**

			SRL 2.5		SRL 0	
		SRL 2.9	SRL 0	SRL 2.8	SRL 4.8	SRL 2.5
		TRL # 8-9	TRL # 5-6	TRL 6-7	TRL # 8-9	TRL # 9
	Interfaces	Structure	Anti-Stall (MCAS)	Software	Pilot	Sensors (AoA)
TRL # 8-9	Structure	■	🟥	⬜	🟥 7	⬜
TRL # 5-6	Anti-Stall (MCAS)	🟥 6	■	🟥 6	🟥 **0**	🟥 3
TRL # 6-7	Software	⬜	⬜	■	🟥	⬜
TRL # 8-9	Pilot	⬜	🟥 **0**	⬜	■	⬜
TRL # 9	Sensors (AoA)	⬜	🟥 3	🟥	🟥	■