Dual-Track Agile in Early-Stage Startups

Authored and presented by Elena Lape
The University of Edinburgh, School of Informatics
elena@tardis.ed.ac.uk

ICSEA 2021

The Sixteenth International Conference on Software Engineering Advances

October 3-7, 2021
Barcelona, Spain

Elena Lape

Author

Artificial Intelligence & Computer Science student @ The University of Edinburgh

Former Product Partnerships manager @ GitHub

Independent Consultant for Developer Relations, Software Engineering and Product Strategy

Full-stack and Open Source Engineer

Overview

1. What is Dual-Track Agile

2. Related work

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4. The study: unstructured interviews with startups

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6. Summary & Future work

1. What is Dual-Track Agile?

Continuous Discovery and Delivery (AKA *Dual-Track Agile*)

Goal: ensure that only validated ideas turn into products. Thus, create products that are better received by their users

Continuous Discovery proactively researches what users need & want

Continuous Delivery responds to Discovery by delivering software to meet users' needs

References

S. Trieflinger, J. Münch, B. Heisler, and D. Lang, "Essential approaches to dual-track agile: results from a grey literature review" in International Conference on Software Business, pp. 55-69, 2020.

Dual-Track Agile is a type of Agile that combines Product Discovery and Delivery activities in parallel
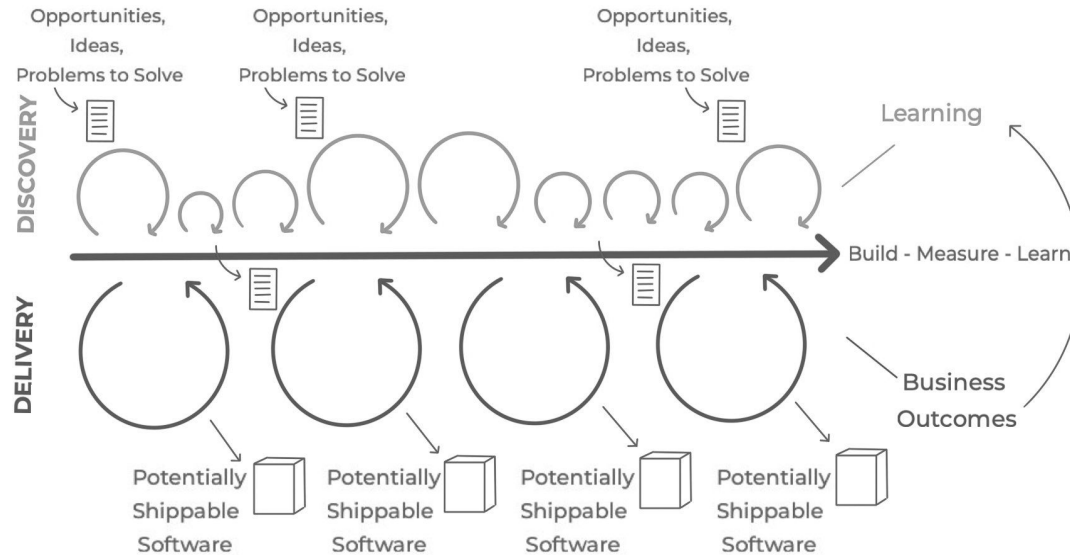
2. Related work

In Literature

- Competition means that companies need to develop and validate their Products quickly
- Product validation must be an integral part of the entire development process, otherwise 'Agile' becomes 'Waterfall'
- The Dual-Track Agile model offers a solution to this challenge
- Companies struggle finding an approach to implement the Dual-Track Agile model
- Some approaches are documented, but they are aimed at large Product Development teams
- **It remains unclear how (and whether) startup companies use Dual-Track Agile**

References

G. M. Porter and J. Heppelmann, "How smart, connected products are transforming competition," Harvard Business Review, no. 92, pp. 64-88, 2021.

T. Sedano, P. Ralph, and C. Peraire, "Dual-Track Development," IEEE Softw., vol. 37, no. 6, pp. 58–64, 2020.

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M. Cagan, "Inspired: How to create tech products customers love", 2nd ed. Nashville, TN: John Wiley & Sons, 2017.

D. Salah, R. F. Paige, and P. Cairns, "A systematic literature review for agile development processes and user centred design integration,", 18th International Conference on Evaluation and Assessment in Software Engineering (EASE '14), no 5, pp. 1-10, 2014.

3. Research questions

How do startups adopt Dual-Track Agile in practice?

➜ What are startups' **motivations** for using Dual-Track Agile, provided they do use it?

➜ What Dual-Track Agile **practices** do startups adopt, and how are they built into their **processes**?

➜ How does the **scale of the company** affect its Dual-Track Agile practices?

4. **The study: unstructured interviews with startups**

Selection criteria

Companies

- Self-identify as users of Dual-Track Agile processes
- Software Products and/or services
- 50< users
- $1M+ by investment valuation or EBIDTA
- <8 years since incorporation

Interviewees

- Self-identify as leaders of Dual-Track Agile processes
- C-suite (CEOs, CTOs), Software Engineers, Product Managers
- One of the first 20 employees

Research Participants

Company A

Virtual reality applications for showcasing 3D models of buildings' interiors and exteriors

Clients are typically property development firms

(Project-based)

Company B

Platform that software development teams use to plan, predict and optimise their software infrastructure costs

Customers are Cloud developers and enterprises

(Single-product)

Company C

App that allows users to manage the storage and insurance of their collectable assets

Customers are mostly luxury car collectors with busy jetset lifestyles

(Single-product)

Company D

Web scraping solutions delivered as applications and integrations

Customers are mostly financial institutions and government organisations

(Project-based)

Company E

Platform to manage multiple international university applications

Customers are prospective students and university admissions consultants

(Single-product)

Interview responses

Discovery & Delivery highlights

Company A

Conduct Discovery through a VR app where customers can request edits

Each request automatically creates a 'to-do' task in a Trello Kanban board

'To-do's are assigned to developers by Project Managers

Company B

Conduct Discovery via open-sourcing their platform on GitHub

Collect feedback using GitHub Issues and community Slack

Feedback => input for quarterly roadmap

Bi-weekly semi-automated releases

Company C

Gather customers' needs via phone calls to their network

Automate some feedback collection with FullStory

Communicate roadmaps and features verbally

Build software using microservices

Company D

Gather the majority of clients' requirements upfront

Organise internal bi-weekly demo days to showcase progress to a range of cross-functional teams within the organisation

Use robust CI/CD pipelines, sprints

Company E

Conduct Discovery via showing their MVP to potential customers at conferences

Using ProductBoard, user feedback becomes input for the feature roadmap

Delivery and feature prioritisation happens within the development team

5. Results

Key Observations I

Discovery & Delivery Practices

- No universal or common approach found amongst interviewed startups

- Processes are driven by specific tools rather than methodologies (FullStory, ProductBoard, Trello, Slack, GitHub Issues)

- Discovery practices are highly dependent on the Product's target market, and most startups seek to automate Discovery

- Delivery is generally more streamlined than Discovery (CI/CD pipelines), and highly automated

Key Observations II

Motivations to use DTA

- "Verify the market", "verify need", "build incrementally and test user behaviour", "not make too many irreversible assumptions", "test hypotheses"

- Build personal relationships with potential customers

DTA as startups scale

- At small scale, both Discovery and Delivery efforts are mostly ad-hod and subject to frequent changes

- As companies grow, more elements of organisation with defined timelines are introduced (e.g., weekly sprints, quarterly roadmaps)

Limitations

Only five startups examined

Retrospective interviews

Lack of a control group

Hawthorne Effect

References

S. R. G. Jones, "Was there a Hawthorne effect?," American Journal of Sociology, vol.98, no. 3, pp. 451–468, 1992.

6. Summary & Future work

Summary

Startups' motivation for using Dual-Track Agile is to not only verify the demand for their products or product features, but also to build close relationships with their users who can be useful in further development stages.

Where possible, early stage companies aim to automate their feedback collection and deployment processes to reduce the length of the feedback loop and speed up development time.

Very early-stage products rely on verbal communication and direct prototyping to plan, validate and test their ideas. As organisations grow in size, more concrete workflows and prioritisation processes, such as quarterly roadmaps or sprints, are introduced.
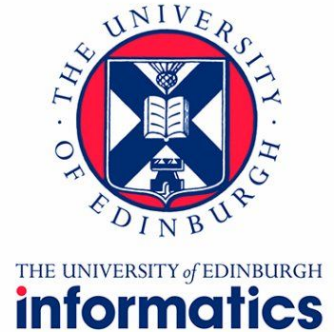
Future work

➔ **Longitudinal studies**
Year-long overt observations or recurring interviews to collect representative data

➔ **Larger sample size**
To identify trends and/or differences

➔ **Impact of using DTA**
How do startups' chosen processes affect their products' success?

➔ **DTA and tools: correlation or causation?**
Do the tools dictate processes, or do processes dictate tools?

Thank you

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