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Scale-Up Toolkits

CUSTOMER ACQUISITION
STRATEGY
DELIVERY
TALENT
EXECUTION
PLANNING
APPLIED ANALYSIS
ORGANISATION
RESILIENCE
VALUE
SUSTAINABILITY
FUNDING

Technical
Due Diligence

This toolkit includes:

- How Frog conducts Tech DD
- Reviewing the technical roadmap
- Interviewing the team

- Risk identification and management
- What is covered in Tech DD
- Dataroom checklist

www.frogcapital.com/scale-up-methodology

01 Introduction

Any company with software at its heart should always be conducting its own due diligence and be prepared for investors to carry out their process.

Technical due diligence is one of the essential streams of analysis that we undertake at Frog during an investment process.

Not every technical diligence is the same and the approach very much depends on the investment round that a company is in. At Frog it is the opportunity for us to understand how technology has enabled a company's success to date and to evaluate how well equipped a tech organisation is to scale up.

More specifically, we are looking to gain a good comfort level in the following:

|		
Is the technology proposition substantiated? 01	**Does the technical team have the right mix of competence and experience?** 02	**Is the technical roadmap realistic, feasible and appropriate?** 03
Can the team deliver on the roadmap? 04	**Has the company identified what the risks are to their strategy?** 05	**How are these risks being managed?** 06

About the author

Andrew Betteley, Frog Operating Partner

Following an Electronic Engineering degree, Andrew's career in software development began at a startup in the automotive industry. Andrew has worked in companies throughout their lifecycle from startup through investment, private equity and onto exit. It was during this time, he developed an understanding of the opportunities and challenges that scale-ups face as they grow and mature. In 2011 Andrew completed his MBA, after which he undertook a number of technology turnaround assignments. He began advising Frog in 2019 as Technology Specialist, before joining as an Operating Partner in 2021.

02
Technical due diligence
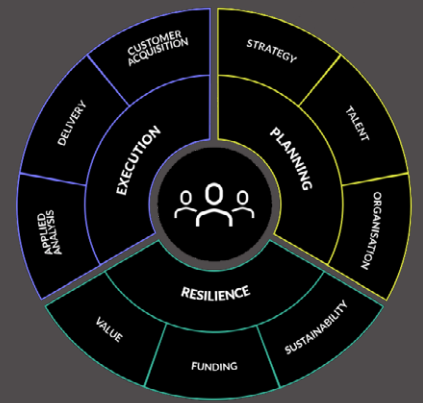
How do we conduct a Tech DD?

At Frog due diligence begins as part of deal origination, so we get to know the companies early in the investment process.

Having early knowledge of the company, its products and team enables a smoother flow into DD and with that a more efficient process. Depending on

the type of business, we may engage outside experts to help us better understand specific domains.

A typical DD project at Frog tends to follow the following sequence:

1 Deal Organisation

Early on, before term sheets have been agreed we will have had several meetings with all the members of the leadership team including the CEO, CTO or CIO. By understanding the product or platform through the eyes of the customer together with hearing the company's growth strategy it enables us to fine tune the diligence investigation. It is also a good time for both sides to get comfortable with each other's styles and to start forming what we hope turns into a long-term relationship.

Demonstration, Documentation and Data Room

3
If a demonstration environment or test account for the product is available, it is always useful for the diligence team to have access to that as early as possible. Before formal interviews begin, we review all documentation that the company provides. Building a comprehensive data room in advance of the diligence to include architecture, processes, organisational structure, disaster recovery, monitoring services, roadmap all helps our team build up a clear picture of how the organisation performs.

Interviews

The formal diligence interviews can take between 1 and 2 days and involve people across the entire Product and Technical teams. It is usual to have several interviewers on our side so that we can be time efficient and introduce a wider diversity of thought and a greater challenge to our own evaluation.
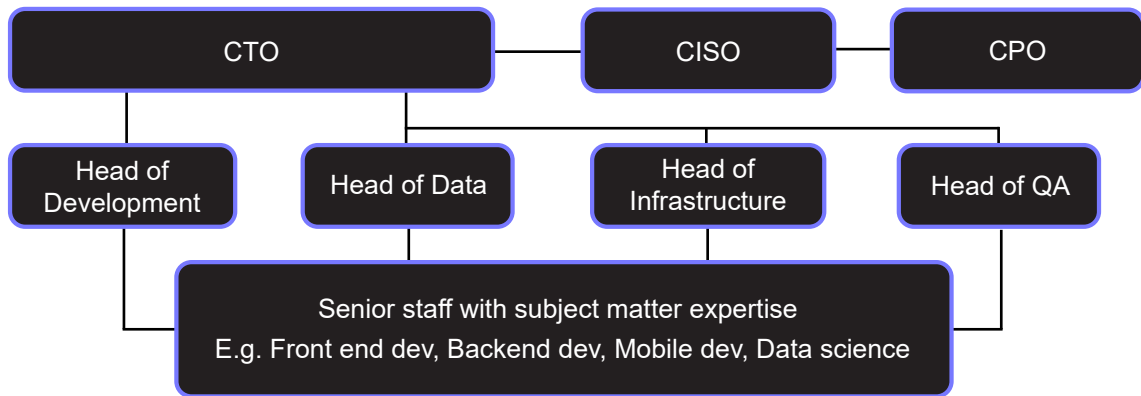
2

CTO Kick off call

4
The purpose of the CTO kick-off call is to set our preferred agenda, together with a list of people or subject experts that we wish to interview and to agree the final schedule for the interviews.

The list of people and roles we speak to differs from company to company but will typically include:

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┌─────────────────────────┐   ┌──────────────┐   ┌──────────────┐
│           CTO           │───│     CISO     │   │     CPO      │
└─────────────────────────┘   └──────────────┘   └──────────────┘
```

| Head of Development | Head of Data | Head of Infrastructure | Head of QA |

Senior staff with subject matter expertise
E.g. Front end dev, Backend dev, Mobile dev, Data science

The prospect of a DD can be very daunting; after all, you are being interviewed and challenged on the state of your product, development, processes, and team. However, it is important to understand that the exercise is not designed to trip anyone up or to hold individuals to account for their role. We will have spent considerable time on product demonstrations and will have digested all available written material. The people that we interview are the experts in their field within the company that we are looking to invest in – your team will know the answers to the questions that we want to ask, and we want to hear first-hand, the raw, unfiltered, real-time responses from them.

Our evaluation really wants to deeply understand:

How you got to where you are with the resources you have

Where you want to go

What it will take to get there

Andrew Betteley, Operating Partner

"I'm often asked if there is a prescribed questionnaire that can be completed in advance or pre-work for teams to prepare for DD. The honest answer is a very deliberate "No"."

03

Follow Up

After the formal interviews are complete, we debrief our findings and thoughts internally. It is not unusual for this debrief to create more questions or uncover areas or subjects that we would like further clarification on. A series of short, sharp 15 to 30 minutes calls coordinated on the company side by the CTO are usually sufficient to close these off.

What is covered?

Over the course of desk research and the formal interviews we start to form views on the technology and the business. Thinking about the current state, we will look to evaluate the following areas:

Culture and Organisation

1

Who are the key people in the tech organisation?
What are their roles?
What is their experience before and since joining the company?
What does the organisational structure look like?
How resilient is the organisation to losing key people?
What is the staff attrition rate?

Scaling

2

Load testing at scale.
Cost optimisation of services at scale.
Continuous optimisation of quality and performance.
Load balancing including cross-region balancing.

Functional Overview

How does the technology deliver on the organisation's value proposition?
Graphically, what does the tech stack look like?
How are services integrated?
How does the backend interact with the frontend?

3

How are the databases configured and structured?
How comprehensive is the API coverage and documentation?
What hosting choices have been made?
Infrastructure overhead costs?
Who are the key 3rd party suppliers and how is their performance measured?

Intellectual Property

4

Proof of IP ownership.
Patent protection.
Trademark registrations.

Code development

5

What languages, frameworks, IDEs are deployed in development?
Is all the source code proprietary?
Use of open-source code?
Code coverage and code quality

Release

6

How is code released into production?
What are the release cycles?
When did the last roll back of a software deployment occur?

QA and Testing

7

Evaluation Code Reviews.
Size and approach to Technical Debt.
How many known bugs or defects are there?
How have they been classified and actioned?
Application of Unit testing, Integration testing,
Regression testing and Acceptance testing.
Use of application performance analytics.

Business Continuity

8

Disaster and fallback recovery processes.
Platform monitoring, automation of alerts and alarms.
Platform Uptime / Last unplanned downtime.
Information Security Management.
Data Governance, compliance, and privacy.

Planning

10

Appropriate development processes and
methodology. Future staffing plans.
Product Roadmap and Technical Roadmap
feasibility and alignment.
Scaling thresholds and development plan.

Documentation

9

Repository for documentation.
Processes for maintaining
consistency and quality.
Track record of using documentation
to onboard new staff.

Read more in our article,
**Technical Debt or
New Features?**

**Click the here to
read the article**

Risks, Recommendations and Planning

The diligence concludes with a report summarising all the areas previously described. Most importantly though, a diligence report will include an overview of the risks that the company faces together with a longer list of actionable recommendations.

The risk identification will appear more qualitative in nature. For example it may include a narrative concerning the basis of competitive differentiation against emerging technology trends.

In contrast, the list of recommendations is quantitative and will include actions that are specific, actionable and measurable, for example it may suggest the introduction of specific development tools such as linters.

The recommendations always vary in priority and scope – some of course, are actionable immediately whilst others may require planning and a change program to make them effective. Nevertheless, the risks and

recommendations will form the basis for planning post investment, whether that's part of a 100-day plan or part of much longer strategic program.

Checklist

Preparation checklist for dataroom content:

Information Security Policy Document

Incidence Response Plan Document

Technology Roadmap

Brief outline of the planned next 12 months development.

Suppliers

Include a list of IT partner agreements, Software licenses and agreements

Software Development Process and Deployment plan

Detail the SDLC process, focussing on process, change and delivery. Include the toolsets that facilitate the process together with any task automation. Code Management, QA, Release strategies.

Product Overview

Slide deck highlighting the product mix, features, benefits, and examples seen through the eyes of the user.

External Reports – External Pentest, External

Security audit, previous diligence reports.

Intellectual Property

Patents in application or awarded, Domain name registrations, ISO certifications, Trademark registrations.

Security Overview – Topics may include

Hosting partners
Data policy, encryption at rest, in transit
Digital Security – for example,
Key management
Penetration Testing approached
Identity Management and User
Access control
Authorised Data Access
Employee Data Access
Production Access review

Architecture Overview to include

Logical Architecture Diagram
Description of tech stack frameworks, languages, and development environments.
Description of how scaling is managed and achieved.
Data Lifecycle description
Data Science – Frameworks, models, approach for improvement, applications.
Description of APIs, documentation, and 3rd party integrations.
Monitoring Overview – for example, Datadog etc

Organisational Chart

From the CEO, showing immediate reports and then cascade
down from the CTO.
Show how many staff are in each role group and make it explicitly clear how many are currently in position and how many are open or vacant positions. If the tech organisation is cross functional across domains, then ensure that this is illustrated.

Organisational engagement in software teams

Click here to read the article

See more at **www.frogcapital.com/scale-up-methodology**

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