Software Engineer, Tools and Infrastructure:

The Software Engineer, Tools and Infrastructure role is unique to Google. We are software engineers that focus on building tools and infrastructure to enable other software engineers at Google (and elsewhere via open-source) to ship high quality code more quickly. Thousands of Google engineers and billions of users are directly impacted by our work. Engineers use our tooling, infrastructure, and automation test frameworks to build software quickly without sacrificing stability, quality, velocity, or code health. End users benefit from higher quality software/services and frequent new features.

SETIs are embedded in engineering teams and partner with tech leads and managers/directors. Communication, influence, leadership, as well as of course technical ability are essential as SETIs play several important roles on the team and are the champions for code health, testability, maintainability, and best practices for development and testing. SETIs are in high demand so they only work on the most critical projects.

On a day to day basis, SETI's have many job responsibilities, including:

- Design, implement, and refactor code (typically Java, C/C++, Python, or Go)
- Lead design discussions focused on testability, code health, velocity
- Influence and communicate issues related to pain points in the development, test, and release process
- Work with other SETI and SWE leads to jointly develop best practices and tooling
- Work on tools to understand, model, and replicate production traffic patterns in pre-production environments, including in some cases statistical modeling and machine learning techniques.

Role Highlights

- SETI is a software engineering role focused on the issues of scalable, healthy, testable software development
- The career path and expectations for SETI are the same as SWE
- You will grow your technical skills by working with world class engineers as well as build communication, leadership/influence, and negotiation skills
- You will have the opportunity to work with many senior engineers and tech leads where you will learn best (and worst) practices for a healthy engineering process through hands on evaluation of pain points of the engineering process
- You'll share best practices across the company and even the industry through open-source, publications, and other venues
- You'll typically work on generic tooling and perhaps open source it to the benefit of the industry
- You'll have freedom and autonomy to solve challenging problems with software development of complex systems

- SETI is a great role to move into (from SWE or another role) because you will
    - have opportunities to work on projects that impact the entire business or company
    - take your influence and leadership skills to the next level as you interact with senior engineers as well as leadership in order to...
    - solve fundamental challenges with the engineering process itself by using advanced techniques (machine learning, data processing, computer vision, etc) as well as creative human-based solutions
        - take these solutions, generalize them, and potentially open source them to impact the industry
    - come and help advance best practices in healthy sustainable engineering
    - have tremendous green-field opportunities and autonomy to innovate
    - be able to take advantage of all that Google offers engineers (20% time, etc), significant formal training opportunities, tech talks, etc.

SETI and SWE

- What is the difference between SETI and SWE?
    - Both are software engineering roles - the primary difference is the focus of the roles.
    - SETIs are software engineers that primarily focus on building tools and infrastructure focused on the engineering process itself. If we are successful, the outcome is a highly testable, maintainable codebase that allows engineers to rapidly develop new features for end users.
    - SWEs are software engineers that primarily focus on building features, bug fixes, and platforms/services that enable Google to serve our users.
- Why would I pick SETI over SWE?
    - It depends on the type of work that is interesting to you. If you are passionate about well written and well designed software, code health, automating everything, testability, and ensuring that things are done the right way, then SETI could be a great fit. We operate in many of the same domains: scalable software, machine learning, big data, resilient services, computer vision, etc.
- What would indicate that the SETI role is a great fit for me?
    - If 3-5 of these things (certainly not all!) are true of you, you are probably a great fit for the SETI role
        - You are an amazing engineer and you love coding
        - You're annoyed by repetitive tasks when writing / testing code
        - You are passionate about high quality software
        - You want to automate everything
        - You love developing tools that help others - be it command line tools, web services, etc
        - You are really interested in analysis of systems to determine weak points, etc.

        - You consistently try and find more and more ways to optimize your life and make the most of your time and energy
        - You love sleuthing and root causing problems
        - You're great at debugging
        - Inefficiency (at the organization, team, or software level) drives you crazy
        - Your development workflow has been meticulously thought out
        - You approach testing as a risk management approach
        - You love test driven development
        - You're interested in scalable design and implementations of software
        - You're not happy about shortcuts or hacks in code
        - You believe that unless you can quantify or measure something, you probably can't improve it
        - You really enjoy working with data, statistics, and analysis

Frequently asked questions

- I've heard that Google used to have the SET role, how does that role relate to SETI?
    - The SETI role is the new name for the deprecated SET role. We feel that the new name more accurately reflects what this role is about. It's not about testing, it's about building tools and infrastructure focused on the development, testing, and release process.
- What are qualities that successful SETIs possess?
    - You don't need all of these to make a great SETI, but you'll have an opportunity to develop these skills
        - Amazing grasp of computer science topics and ability to code
        - Ability to execute and deliver on challenging projects
        - Great analytical skills and a sense for overall system design to identify flaws
        - Great communication skills
        - Ability to influence / lead
        - Passionate, innovative, and undaunted by large challenges
        - Constantly be aware of innovative solutions to problems
        - Focused on eliminating manual repetitive steps from development/testing
- What are some innovative / open source projects that SETIs work on?
    - WebDriver / Selenium
    - Espresso for Android testing
    - Martian Proxy - an http(s) proxy built in Go
- Is my career limited if I pick SETI or will I be pigeonholed?
    - As with any engineering role, your career at Google is what you make of it. As an SETI there are generally no restrictions on what you can work on, especially with opportunities such as 20% time (with manager approval). Many SETIs work on features for end users and many choose to just focus on tools and infrastructure.
- Is the hiring bar the same?

    - The general hiring bar for any software engineering role (SETI included) is the same. You'll be expected to know your algorithms, data structures as well as any other Software Engineer. We'll also expect you to code and design on the same level. The additional questions we'll ask will be related to testing and the development process.
- Are all tools and infrastructure at Google developed by SETI?
    - No, a significant portion of internal infrastructure that Google is known for (mapreduce, bigtable, borg) is developed by SWEs. SETIs primarily focus on tooling and infrastructure that is intended to optimize the development, testing, and release processes. SETIs work on many of these projects to help those teams develop high quality software as fast as possible.