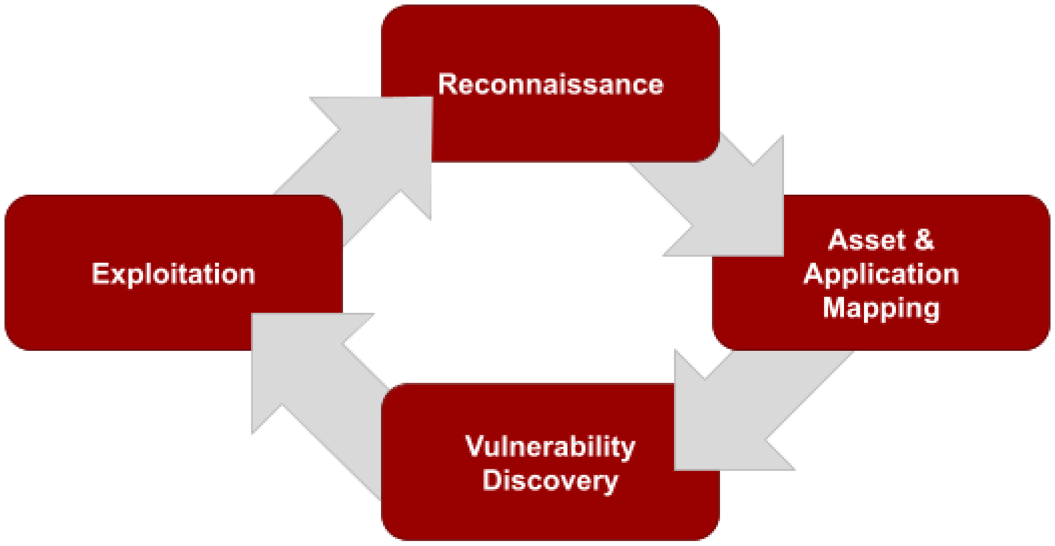
Secure Ideas follows an industry standard methodology for testing the security of networks, web applications, and API's. This methodology is a four-step process as follows:



Note that the methodology is cyclical in nature. Successful exploitation may lead to additional iterations through the methodology.

Reconnaissance:
During reconnaissance, Secure Ideas staff will search public sources for information regarding the target organization and any of the target applications and assets. Examples of information that is gathered during reconnaissance include:

- Lists of users, for potential use in account harvesting and takeover attacks as well as social engineering if it is in scope
- Host configuration information
- Code, keys, and notes found on public repositories such as github
- Vulnerabilities that have been publicly disclosed in the past

Secure Ideas will include information discovered as part of the final report if it is relevant to any of the exploitable findings found during the penetration testing.

Application Mapping:
The next step in the methodology is mapping, which is where Secure Ideas will study the behavior and data in the target network and application assets. Examples of items that are covered during mapping include:

- Understanding the network and application architecture (e.g. traditional vs. single-page app or flat vs. strictly segmented)
- Services exposed to the Internet and/or internal network

- Fingerprinting operating systems and applications used on the target network
- Analysis of services and applications mapped
- All fields/forms where information is sent to the server
- Analysis of all HTTP request and response headers used by the application
- Evaluate client-side technologies used in the application, including any third-party Javascript libraries
- Use of web services such as REST or SOAP APIs
- Identify sensitive data within the network or any inputs to the application

Note the above list is not exhaustive. If Secure Ideas encounters network or application behavior that falls outside of the usual, it will be treated as an area of interest and scrutinized accordingly.

Discovery:
During the discovery stage of the penetration test, Secure Ideas will use the information gathered in the previous two steps to assist our staff in finding the vulnerabilities within the target applications. Using this information, combined with both automated tools and manual testing, Secure Ideas will provide thorough coverage for all common vulnerabilities and will also seek out less common vulnerabilities depending on the application architecture and features. Testing may be divided into the following categories:

Category	Testing
Authentication, Authorization, and Session Management Testing	Most of this category must be tested manually, as automated scanners have difficulty understanding context within the application: ● Testing of all authentication features such as login, registration, and forgot password ● Testing of authorization across sensitive functionality and data ● Seek out horizontal and vertical privilege escalation opportunities ● Validate security of session management ● Validate existence and effectiveness of Single-Sign On controls and systems ● Assess the Active Directory (AD) infrastructure
Encryption and Configuration	Scan the organization for flaws related to encryption and configuration. This includes: ● The use of components (both server and client side) with known vulnerabilities ● Use and configuration of SSL ● Evaluating encryption at-rest systems discovered during mapping
Server and Services	Using a combination of automated and manual techniques, test

Testing	servers and services exposed on the target network. This testing includes items such as: ● Discovering known vulnerabilities based on service identification ● Assessing services for misconfigurations that can be exploited ● Evaluating shared datastores or applications for access to sensitive data ● Explore services for potential pivoting capabilities and flaws
Server-side Input Testing	Using a combination of automated and manual techniques, test server-side inputs. This testing includes items such as: ● Where appropriate, test inputs for injection flaws such as SQLi, LDAP injection, Command Injection, etc. ● Fuzz inputs to determine if application behavior can be influenced
Client-side Input Testing	Using a combination of automated and manual techniques, test inputs on the client-side. This testing includes items such as: ● Testing for Cross-Site Scripting (XSS) flaws ● Testing for DOM manipulation ● JSON-based manipulation ● CORS policy testing ● Content Security Policy (CSP) testing
Other Testing	Test for other common flaws that fall outside of the OWASP Top-10, such as: ● Segmentation issues and flaws ● Authorization token capture via MitM or poisoning attacks ● Social Engineering possibilities due to internal system exposures ● Data exposure within services and applications ● Logic flaws ● Insecure use of HTML5 features such as local storage ● Insecure use of legacy HTML features ● Testing of any other features not otherwise mentioned

Exploitation:
Exploitation is the final step of the penetration test. By exploiting the vulnerabilities, Secure Ideas is able to provide a realistic understanding of the business exposure from the target. Depending on the flaws discovered, exploitation exercises are often limited to the minimum required to build a proof of concept so that developers, IT, and security staff may reproduce the issue. If discovered vulnerabilities allow access to the underlying system, Secure Ideas will begin to reiterate through the methodology by performing reconnaissance on the server and/or network. Secure Ideas will

not conduct exploitation of Denial of Service flaws or other vulnerabilities where a reasonable risk of disruption of business or data loss is perceived without written prior permission.