

The background of the slide features a close-up, shallow depth-of-field photograph of a robotic hand with multiple articulated joints and grippers. The hand is positioned over a computer keyboard, with its fingers poised to type. The lighting is soft, highlighting the metallic textures of the robot and the keys of the keyboard.

# Introduction to CGI and “Quality Engineering”

# CGI at a glance

Founded in 1976

**44 years of excellence**

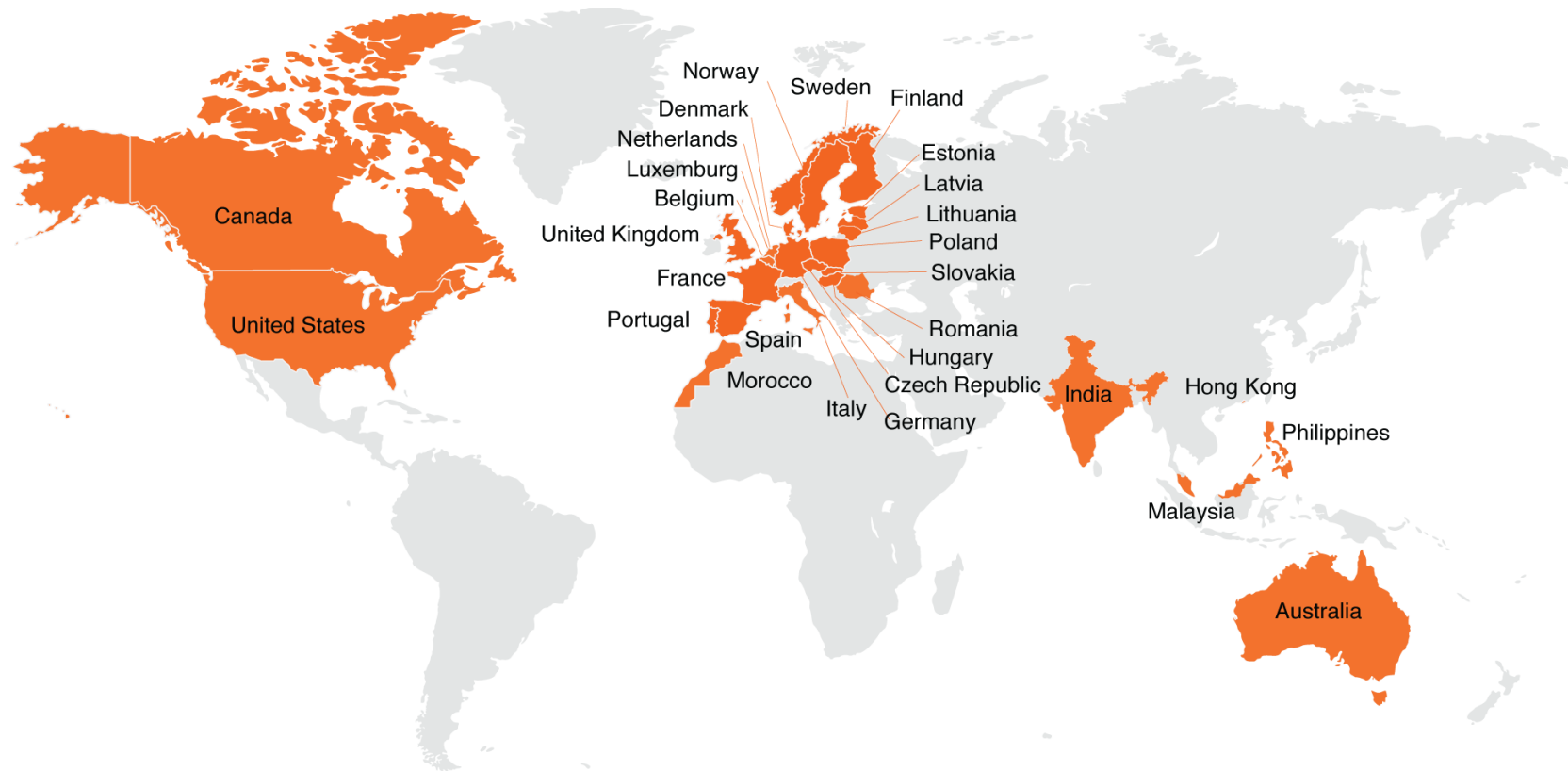
**CA\$12.1 billion** revenue

**76,000** consultants

**400** locations in **40** countries

**5,500** clients benefiting from end-to-end services across **10 focused industries**

**170+** IP-based solutions serving **50,000** clients



# What drives us?

## Our dream

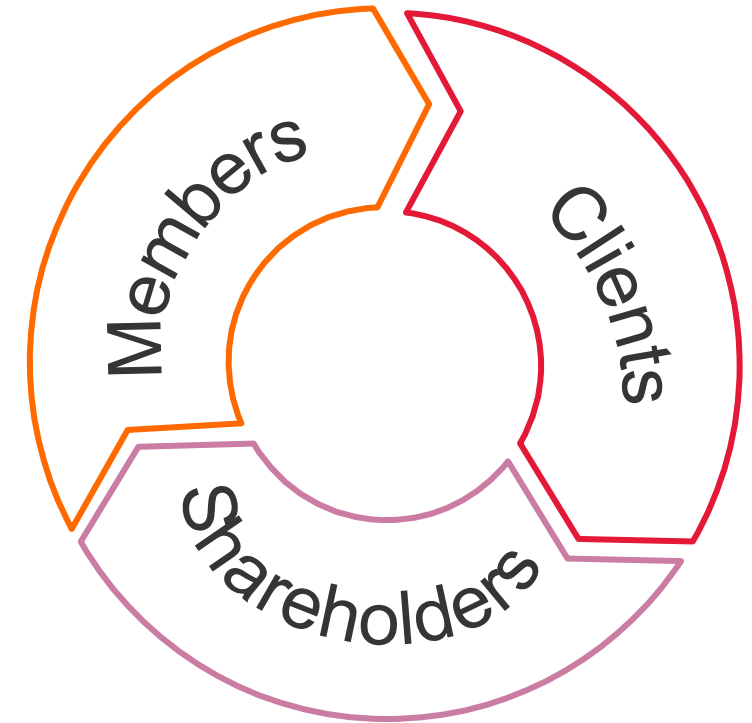
To create an environment in which we enjoy working together and, as owners, contribute to building a company we can be proud of.

## Our mission

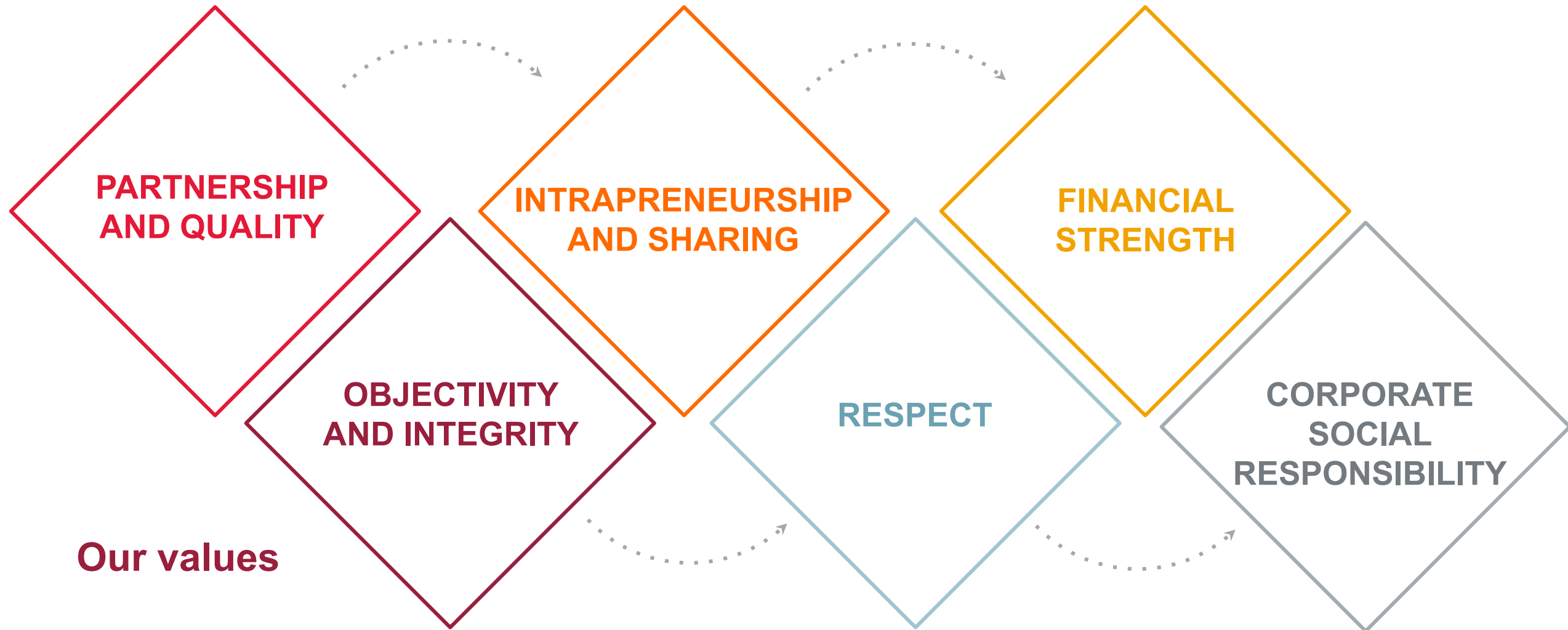
To help our clients succeed through outstanding quality, competence and objectivity, providing thought leadership and delivering the best services and solutions to fully satisfy client objectives in information technology, business processes and management. In all we do, we are guided by our Dream, living our Values to foster trusted relationships and meet our commitments now and in the future.

## Our vision

To be a global world class end-to-end IT and business consulting services leader helping our clients succeed.



# What guides us?



# A few of our clients

## Financial Services



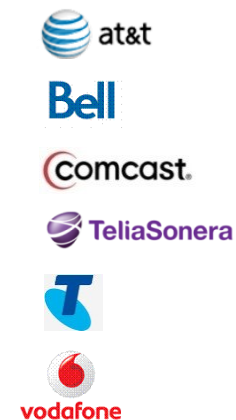
## Health



## Government



## Communications



## Utilities



## Oil & Gas



## Manufacturing



## Transportation



## Post & Logistics



## Retail & Consumer Services



Over **5,500** commercial and government organizations worldwide

# College Recruiting Overview





# Early Careers at CGI

Our programs will give you the fundamentals to ease & accelerate your assimilation into CGI.

CGI's intern program offers students real-world technical & business consulting experience



Top Workplace in (Washington, D.C. metro, Baltimore, MD, Pittsburgh, PA, Cleveland, OH, Atlanta, GA, Charlotte, NC)  
Collegegrad.com Top 100 Entry Level Employer  
Collegegrad.com Top 100 Intern Employer  
Best and Brightest in Wellness  
America's Best Employer for Diversity &  
America's Best Employer for Women—  
by a leading publication



# Full Time Roles

## Business Analyst

- Business analysis
- Requirements gathering
- Direct user support and analysis
- Tracking software and documentation defects
- Onsite consulting and training
- System testing
- Decision analysis

## Programmer/Analyst

- Testing and implementation of new technology
- Software installation and configuration
- Investigate and debug errors, troubleshoot issues
- Develop and build code applications
- Write technical documents
- User Support

## Software Developer

- System design
- Systems and application development
- Data design
- Database administration
- Defining and maintaining data security and integrity



# Intern Roles

## Business Analyst Intern

- Client requirements gathering and analysis
- Tracking testing and document of defects
- Onsite client consulting and support
- Writing program and system user manuals and/or training materials

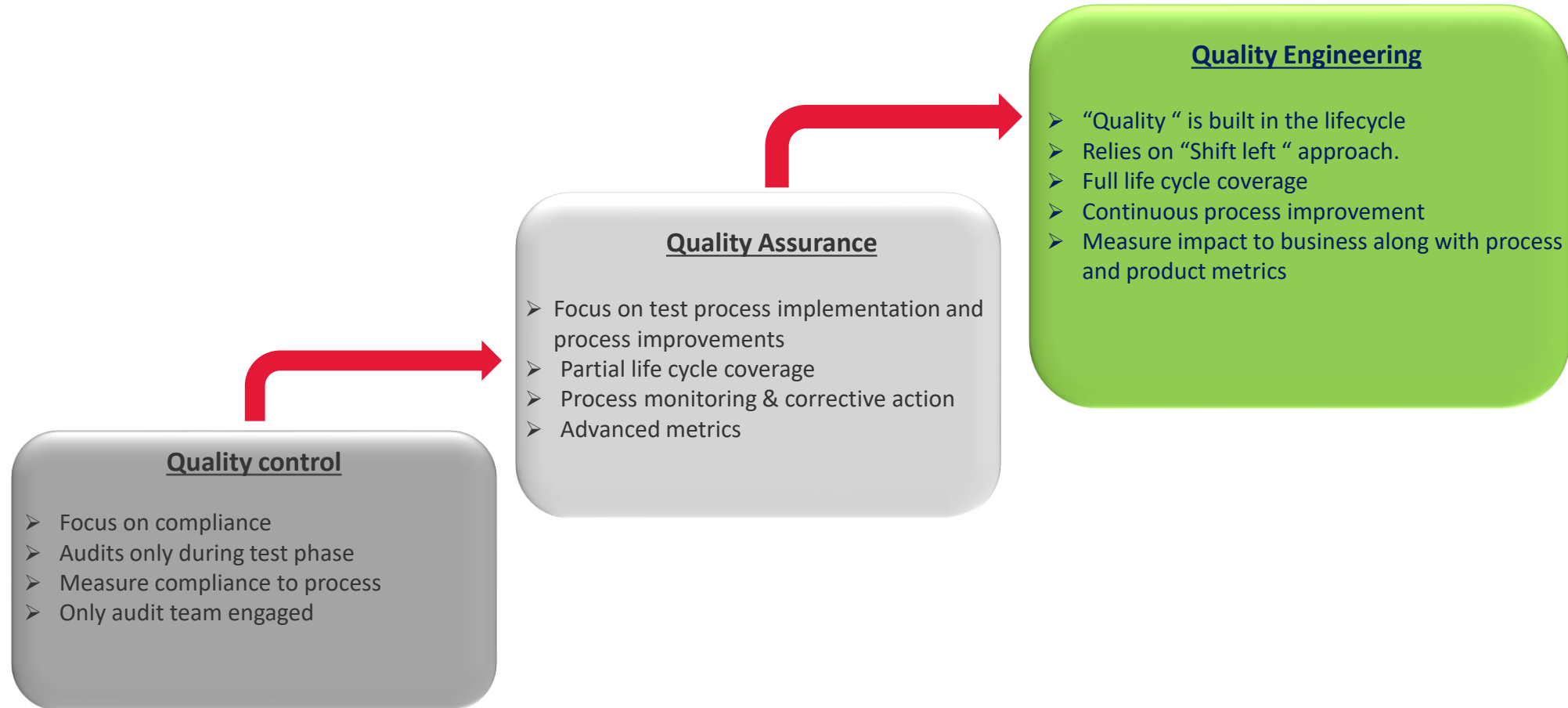
## Development/Engineering Inter

- Create systems design utilizing client requirements
- Applications development and computer programming
- Database maintenance and configuration management
- Software installs, technical testing and reporting

# Quality Engineering



# Quality Engineering evolution



# Key driving factors – for “Quality Engineering”

- Speed to market, alignment with agile principles
- Everyone is accountable for software quality
- Automation is a key enabler to increase “Velocity” of time to market
- Devops CI/CD is the new paradigm
- Focus on technical debt reduction

# Quality Engineering Toolset

JUnit	Selenium	TestNG	JMeter
<ul style="list-style-type: none"><li>• Open-source unit testing framework for Java programming language</li><li>• Provides annotations to attach with Java methods</li><li>• Provides assertions to test the Java methods</li><li>• Improves code quality as the code is tested at the unit level early during the development</li></ul>	<ul style="list-style-type: none"><li>• Open-source automation tool</li><li>• Used to automate web applications running in the web browser</li><li>• Supports all the modern browsers i.e. Chrome, Firefox, Edge, Safari</li><li>• Supports all the operating systems</li><li>• Supports Java, Python, JavaScript, C#, Perl, Ruby to write the automation code</li><li>• Integrates with Cucumber BDD testing framework to achieve end to end automation in Agile projects</li></ul>	<ul style="list-style-type: none"><li>• Open-source unit testing framework with additional testing support</li><li>• Enables running test suites consisting of multiple test cases</li><li>• Provides enhanced reporting for the test suite runs</li></ul>	<ul style="list-style-type: none"><li>• Open-source performance testing tool</li><li>• Used for Load/Stress testing</li><li>• Supports HTTP, HTTPS, FTP, SMTP, TCP and various other protocols</li><li>• Supports various reports for performance analysis/tuning</li></ul>



# JMeter Topics

- JMeter Test plan – for script development
- Thread Group – for managing users
- Samplers – for making request
- Config Elements – configuration

- Time – to add delay
- Listener – for Reporting, logging and debugging
- Assertions – for error checking

- Pre-processors – for modifying a request
- Post-processors – for parsing a response
- Logic Controller – to add logic via looping and if
- Workbench – temporary working space

## JMeter Session Summary:

### 1. JMeter Setup guide:

- [https://jmeter.apache.org/download\\_jmeter.cgi](https://jmeter.apache.org/download_jmeter.cgi)
- Download [apache-jmeter-5.4.1.zip](#)
- Unzip the file
- Run “jmeter.bat” in the bin folder

### 2. How does JMeter work?

- JMeter sends request,
- JMeter parse response upon server response

### 3. JMeter recording?

- How to use JMeter to create performance test scripts

### 4. JMeter API performance testing?

- JMeter API – GET/POST/PUT/DELETE

### 5. JMeter DevOps enablement Demo

- Configure JMX file and run via Jenkins job

# JMeter Concepts and Examples

- **Stability and Response**
- **Throughput**
- **Transactions/sec**

- **Load Testing** : [ App is designed to support 1000 users concurrently, then Load testing will make sure up to 1000 users are supported ]
- **Stress Testing** : [ Stress testing will measure the response time meets SLA beyond 1000 concurrent users up to 1400 users ]
- **Scalability Testing** : [ go beyond 1000 users and test till the breaking point ]
- **Endurance Testing** : [ longer duration testing ]
- **Volume Testing** : [ larger data set load and measure how DB is resolving situation ]

- **Real world use case** : [ Amazon/Google search/cart concepts]
- **API Load testing example** : [Open API example available from internet ]

# REST API Basics

## Definition

- “Representational State Transfer”
- Allows interaction between a server and client (webpage, mobile application, etc.)
- Uses JSON to transfer data

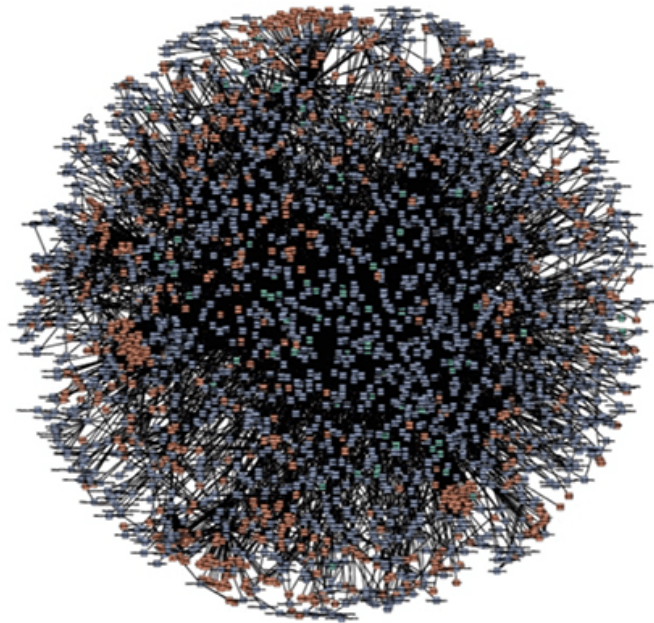
## Components

- Request
  - URL
  - HTTP Request Method
  - Request Headers
  - Request Body
- Response
  - HTTP Status Code
  - Response Headers
  - Response Body

## Methods

- GET – Retrieve data
- POST – Create new data
- PUT – Replace data
- PATCH – Update data
- DELETE – Delete data

# REST API Use Case: Microservices



amazon.com



# Karate Setup

1. <https://www.youtube.com/watch?v=W-af7Cd8cMc> – This will get you setup with IntelliJ Community Edition (free)

OR (If you don't want to use IntelliJ)

1. Download and install the Java JDK
  - <https://www.oracle.com/java/technologies/javase-jdk15-downloads.html>
  - Download “Windows x64 Installer” or “macOS Installer”
2. Download and install Maven
  - <https://maven.apache.org/download.cgi>
  - Download “Binary zip archive”
  - Extract the files
  - Add the bin folder to your PATH
3. Paste and run these commands in Command Prompt (Windows) or Terminal (Mac) to generate the sample project
  - `mvn archetype:generate -DarchetypeGroupId=com.intuit.karate -DarchetypeArtifactId=karate-archetype -DarchetypeVersion=1.0.1 -DgroupId=com.example -DartifactId=karateSampleProject`
  - `cd karateSampleProject`
  - `mvn test`
4. Open the project in your preferred IDE
  - You may want to install some Cucumber plugins to format the files



# Karate Example

**Scenario:** create and retrieve a cat

**Given** url 'http://myhost.com/v1/cats'

**And** request { name: 'Billie' }

**When** method post

**Then** status 201

**And** match response == { id: '#notnull', name: 'Billie' }

**Given** path response.id

**When** method get

**Then** status 200

JSON is 'native'  
to the syntax

Intuitive DSL  
for HTTP

Payload  
assertion in  
one line

Second HTTP  
call using  
response data



# Questions?



# Wishing all of you great success in your career!

Please reach out to us for any questions

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