NYC Geoclient API

The Lost Manual

Agenda

- Who
- Why
- What
- Where
- How

Who did it (Who can I blame)?

City Planning

Rudy Lopez - Geosupport manager

Steve Oliver - Geosupport developer

Dept. of Info. Tech. & Telecomm - DoITT

Matt Lipper - Geoclient developer

Andrew Nicklin - Developer Platform PM

Colin Reilly - Project Manager

Greg Soto - 3scale integration

Oleg Suslov - AWS configuration

Why was it done?

- Provide public access to NYC government's geocoding system of record (Geosupport)

- Access to key identifiers used throughout City government (BIN, BBL)

- Help the community engage the City

- Why not?

What is it?

- "REST-ish" web service to Geosupport
- Simplified and expanded requests
- Longitude/latitude

Geosupport

- Geocoding system of record for NYC Govt.
- Specific to and customized for NYC
- Developed in the early 80's by City Planning
- Mainframe, desktop and web versions
- Access through function calls
  - Address/Place (function 1, 1A, 1E, 1B)
  - Intersection (function 2)
  - On Street & Two Cross Streets (function 3)

http://www.nyc.gov/html/dcp/html/bytes/applbyte.shtml#geocoding_application

Where can I access?

- Sign-up for an access key: https://developer.cityofnewyork.us/

- Geoclient API documentation: https://api.cityofnewyork.us/geoclient/v1/doc

- Geoclient API: https://api.cityofnewyork.us/geoclient/v1

https://developer.cityofnewyork.us

Login   Register

NYC Developer Portal

| Home | App Showcase | API Showcase | Site Feedback |

Search

NYC OpenData **1100+** Datasets Available

Subway use surrounding mega storms

Check out
NYC Open Data
To Explore
Datasets

http://nyc

For existing
Visualizations
Visualize the Portal (beta)

Business   City Government   Education

Housing & Development   Public Safety   Recreation

NYC Open Data Plan

The inaugural edition of the NYC Open Data Plan includes approximately 440 city agency public data sets, the release date, and update frequency for each set. Created following the guidelines set forth in Local Law 11 of

Upcoming Tech Events

10/02/2013
▸ betaNYC HackNight

10/02/2013
▸ betaNYC HackNight
▸ betaNYC HackNight

10/07/2013
▸ Geo NYC: Networked Place

Get Started With Our APIs

| Collaborate with us on Github | Got ideas for an API? | Got a concept for an APP? |

NYC Developer Portal Is…

Your destination for New York City-specific APIs and data sets. We've already opened up hundreds of City data sets through NYC OpenData; now, we're also supplying APIs to make it even easier to access New York City services.

This website is a work in progress – please look around and give us your feedback so we can make it better.

Contact Us | FAQs | Privacy Policy | Terms of Use
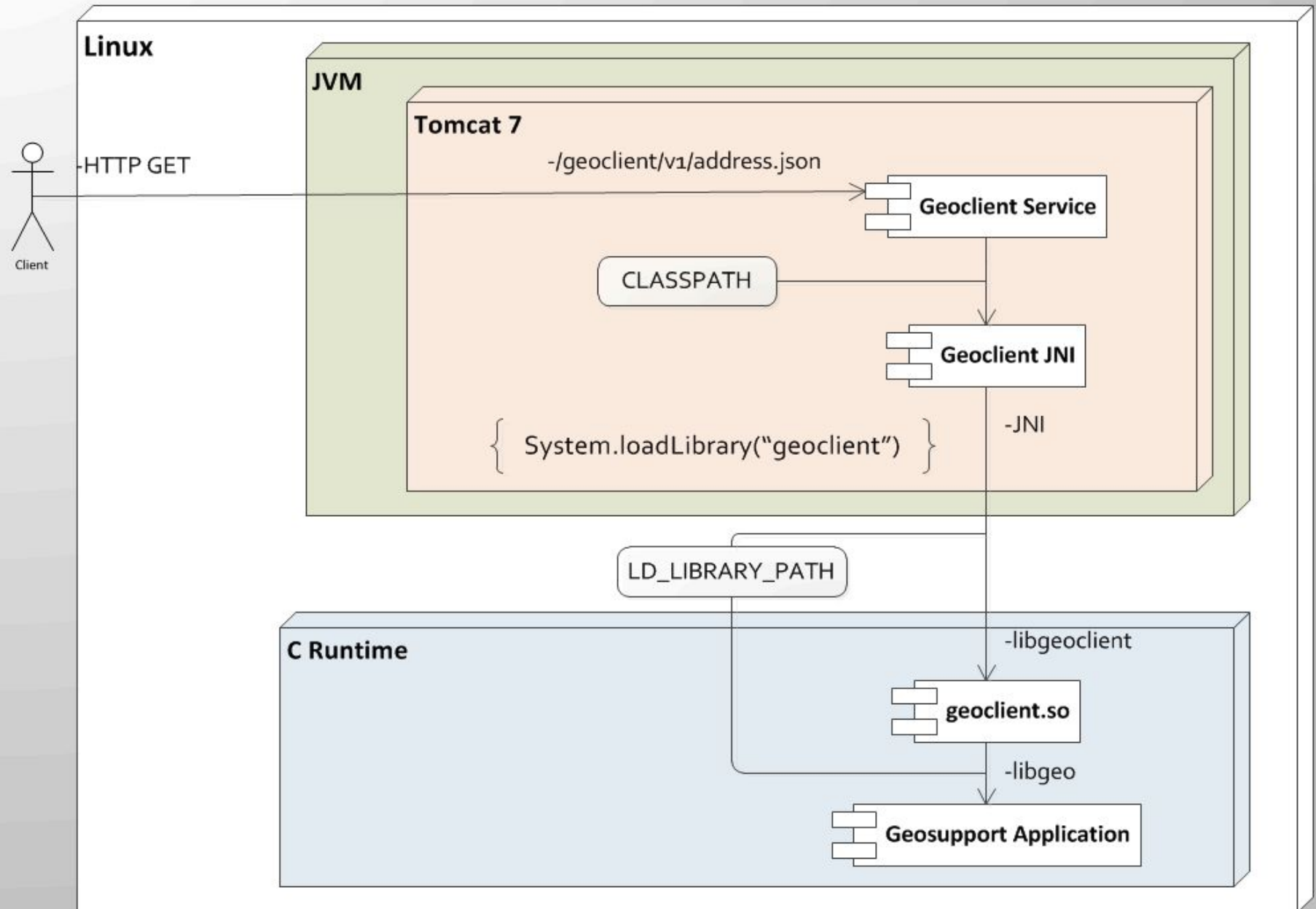
Usage

- Released on 9/20 'Beta'
- Approximately 1.6 million hits to date
- 20 API keys distributed
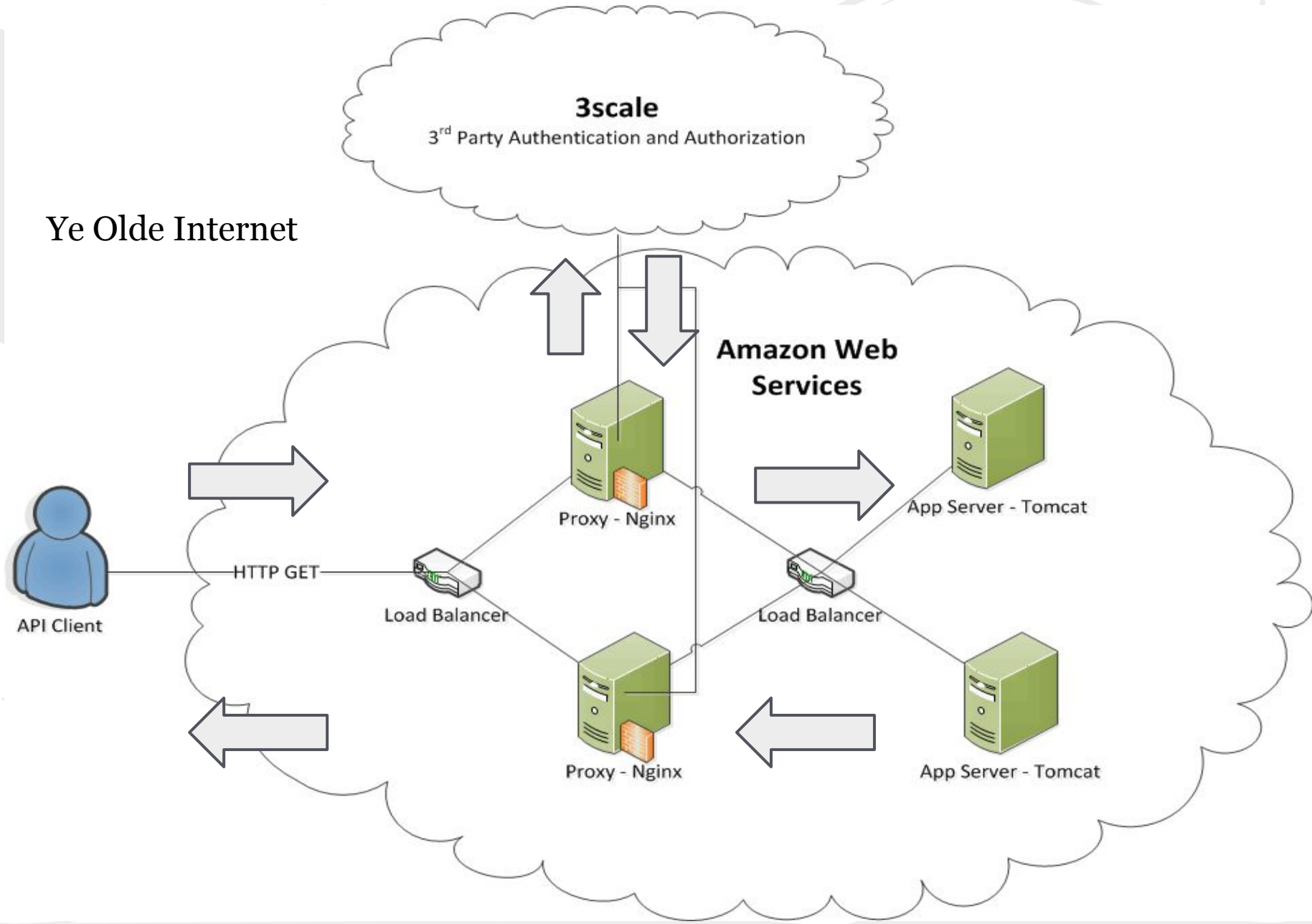- www.nycvotes.org
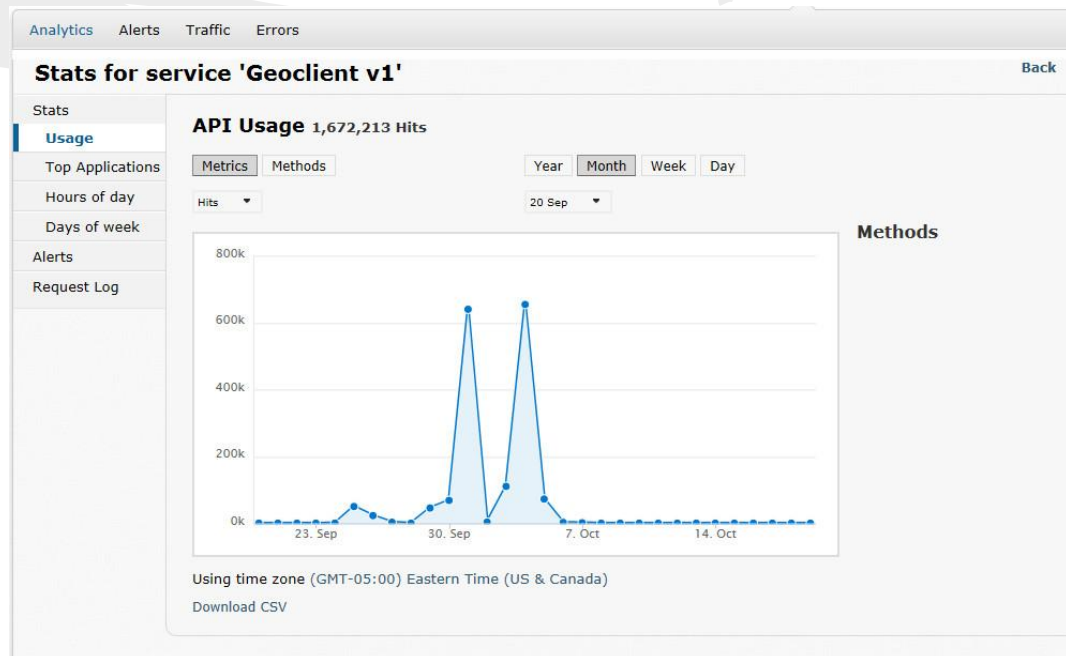
Design Goals

- Simple to

    1. call

    2. use

    3. understand

- Access key functionality w/out in-depth knowledge of the Geosupport API

- Provide the DCP data "as-is"

How it works

Authentication and Authorization

Ye Olde Internet

3scale
3rd Party Authentication and Authorization

Amazon Web Services

Proxy - Nginx

App Server - Tomcat

HTTP GET

Load Balancer

Load Balancer

API Client

Proxy - Nginx

App Server - Tomcat

Geoclient Requests

- HTTP **GET**

- Format:

http://<host>/geoclient/v1/<location type>.<media type>?param1=foo

- location type =

  (address|bbl|bin|blockface|intersection|place)

- media type = (json|xml)

Media Types

- JSON
  - application/json
  - Almost flat: `{"address": { p1: "a", p2: "b" … }}`
  - Everything is a String except for Lat/Long

- XML
  - application/xml
  - Almost flat:
    `<geosupportResponse><address><p1>a</p1><p2>b</p2>...`
  - Schema-less

Location Types

- Address

- BBL

- BIN

- Blockface

- Intersection

- Place

Parameter Types

- House Number

- Street

- Borough

- Building Identification Number

- Block

- Lot

- Compass Direction

Required Auth Parameters

Every request must include:

- app_id=<your app_id>

- app_key=<your app_key>

Else: `HTTP/1.1 403 Forbidden`

Address

- Input
  - **houseNumber**
  - **street**
  - **borough**

- Output
  - Function **1B**
  - Block-level data from Function **1E**
  - Property-level data from Function **1A**

Intersection

- Input
  - **crossStreetOne**
  - **crossStreetTwo**
  - **borough**
  - **boroughCrossStreetTwo** (optional)
  - **compassDirection** (optional)
- Output
  - Function **2**
  - Geographic information related to the intersection

Blockface

- Input
  - **onStreet**
  - **crossStreetOne**
  - **crossStreetTwo**
  - **borough**
  - **boroughCrossStreetOne** (optional)
  - **boroughCrossStreetTwo** (optional)
  - **compassDirection** (optional)
- Output
  - Function **3**
  - Block-level data

BBL - borough, block, lot

- Input

  - **borough**

  - **block**

  - **lot**

- Output

  - Function **BL**

  - Building and property-specific data

  - Address range information

BIN - building identification number

- Input
  - **bin** (building identfication number)
- Output
  - Function **BN**
  - Building and property-specific data about a single building
  - Address range information which applies to the building

Place

- Input

  - **name**

  - **borough**

- Output (same as Address)

  - Function **1B**

  - Block-level data from Function **1E**

  - Property-level data from Function **1A**

Address (Function 1B)

Example: 59 Maiden Lane, Manhattan

JSON:

`/geoclient/v1/address.json?`
`houseNumber=59&street=Maiden+Lane&borough=Manhattan`

XML:

`/geoclient/v1/address.xml?`
`houseNumber=59&street=Maiden+Lane&borough=Manhattan`

Address Response (JSON)

```
{
 "address": {
  "assemblyDistrict": "65",
  "bbl": "1000670001",
  "bblBoroughCode": "1",
  "bblTaxBlock": "00067",
  "bblTaxLot": "0001",
  "boardOfElectionsPreferredLgc": "1",
  "boePreferredStreetName": "MAIDEN LANE",
  "boePreferredstreetCode": "12563001",
  "boroughCode1In": "1",
  "buildingIdentificationNumber": "1079043",
  "businessImprovementDistrict": "113140",
  "censusBlock2000": "2008",
  "censusBlock2010": "1006",
  "censusTract1990": "   1502",
  "censusTract2000": "   1502",
  "censusTract2010": "   1502",
  "giBoroughCode4": "1",
  "giBuildingIdentificationNumber1": "1079043",
etc...
```

Address Response (XML)

```xml
<geosupportResponse>
    <address>
        <assemblyDistrict>65</assemblyDistrict>
        <bbl>1000670001</bbl>
        <bblBoroughCode>1</bblBoroughCode>
        <bblTaxBlock>00067</bblTaxBlock>
        <bblTaxLot>0001</bblTaxLot>
        <boardOfElectionsPreferredLgc>1</boardOfElectionsPreferredLgc>
        <boePreferredStreetName>MAIDEN LANE</boePreferredStreetName>
        <boePreferredstreetCode>12563001</boePreferredstreetCode>
        <boroughCode1In>1</boroughCode1In>
        <buildingIdentificationNumber>1079043</buildingIdentificationNumber>
        <businessImprovementDistrict>113140</businessImprovementDistrict>
        <censusBlock2000>2008</censusBlock2000>
        <censusBlock2010>1006</censusBlock2010>
etc...
```

```json
{
 "address": {
  "assemblyDistrict": "65",
  "bbl": "1000670001",
  "bblBoroughCode": "1",
  "bblTaxBlock": "00067",
  "bblTaxLot": "0001",
  "boardOfElectionsPreferredLgc": "1",
  "boePreferredStreetName": "MAIDEN LANE",
  "boePreferredstreetCode": "12563001",
  "boroughCode1In": "1",
  "buildingIdentificationNumber": "1079043",
  "businessImprovementDistrict": "113140",
  "censusBlock2000": "2008",
  "censusBlock2010": "1006",
  "censusTract1990": "  1502",
  "censusTract2000": "  1502",
  "censusTract2010": "  1502",
  "cityCouncilDistrict": "01",
  "civilCourtDistrict": "01",
  "coincidentSegmentCount": "1",
  "communityDistrict": "101",
  "communityDistrictBoroughCode": "1",
  "communityDistrictNumber": "01",
  "communitySchoolDistrict": "02",
  "condominiumBillingBbl": "0000000000",
  "congressionalDistrict": "10",
  "cooperativeIdNumber": "0000",
  "cornerCode": "CR",
  "crossStreetNamesFlagIn": "E",
  "dcpCommercialStudyArea": "11004",
  "dcpPreferredLgc": "01",
  "dotStreetLightContractorArea": "1",
  "dynamicBlock": "206",
  "electionDistrict": "010",
  "fireBattalion": "01",
  "fireCompanyNumber": "004",
```

```
"fireCompanyType": "E",
"fireDivision": "01",
"firstBoroughName": "MANHATTAN",
"firstStreetCode": "12563001010",
"firstStreetNameNormalized": "MAIDEN LANE",
"fromLionNodeId": "0015262",
"fromPreferredLgcsFirstSetOf5": "01",
"genericId": "0000631",
"geosupportFunctionCode": "1B",
"geosupportReturnCode": "00",
"geosupportReturnCode2": "00",
"gi5DigitStreetCode1": "25630",
"gi5DigitStreetCode2": "45440",
"gi5DigitStreetCode3": "45440",
"gi5DigitStreetCode4": "24050",
"giBoroughCode1": "1",
"giBoroughCode2": "1",
"giBoroughCode3": "1",
"giBoroughCode4": "1",
"giBuildingIdentificationNumber1": "1079043",
"giBuildingIdentificationNumber2": "1079043",
"giBuildingIdentificationNumber3": "1079043",
"giBuildingIdentificationNumber4": "1079043",
"giDcpPreferredLgc1": "01",
"giDcpPreferredLgc2": "01",
"giDcpPreferredLgc3": "01",
"giDcpPreferredLgc4": "01",
"giHighHouseNumber1": "65",
"giHighHouseNumber2": "99",
"giHighHouseNumber3": "105",
"giHighHouseNumber4": "68",
"giLowHouseNumber1": "41",
"giLowHouseNumber2": "85",
"giLowHouseNumber3": "101",
"giLowHouseNumber4": "50",
"giSideOfStreetIndicator1": "L",
"giSideOfStreetIndicator2": "L",
```

    "giSideOfStreetIndicator3": "L",
    "giSideOfStreetIndicator4": "R",
    "giStreetCode1": "12563001",
    "giStreetCode2": "14544001",
    "giStreetCode3": "14544001",
    "giStreetCode4": "12405001",
    "giStreetName1": "MAIDEN LANE",
    "giStreetName2": "WILLIAM STREET",
    "giStreetName3": "WILLIAM STREET",
    "giStreetName4": "JOHN STREET",
    "healthArea": "7700",
    "healthCenterDistrict": "15",
    "highBblOfThisBuildingsCondominiumUnits": "1000670001",
    "highCrossStreetB5SC1": "145440",
    "highCrossStreetCode1": "14544001",
    "highCrossStreetName1": "WILLIAM STREET",
    "highHouseNumberOfBlockfaceSortFormat": "000065000AA",
    "houseNumber": "59",
    "houseNumberIn": "59",
    "houseNumberSortFormat": "000059000AA",
    "interimAssistanceEligibilityIndicator": "I",
    "internalLabelXCoordinate": "0982039",
    "internalLabelYCoordinate": "0197441",
    "latitude": -74.0082309440472,
    "latitudeInternalLabel": -74.00797489492153,
    "legacySegmentId": "0023213",
    "lionBoroughCode": "1",
    "lionBoroughCodeForVanityAddress": "1",
    "lionFaceCode": "3140",
    "lionFaceCodeForVanityAddress": "3140",
    "lionKey": "1314000030",
    "lionKeyForVanityAddress": "1314000030",
    "lionSequenceNumber": "00030",
    "lionSequenceNumberForVanityAddress": "00030",
    "listOf4Lgcs": "01",
    "longitude": 40.708266006244315,

  "longitudeInternalLabel": 40.708606374921956,
  "lowBblOfThisBuildingsCondominiumUnits": "1000670001",
  "lowCrossStreetB5SC1": "127100",
  "lowCrossStreetCode1": "12710001",
  "lowCrossStreetName1": "NASSAU STREET",
  "lowHouseNumberOfBlockfaceSortFormat": "000029000AA",
  "lowHouseNumberOfDefiningAddressRange": "000041000AA",
  "nta": "MN25",
  "ntaName": "Battery Park City-Lower Manhattan",
  "numberOfCrossStreetB5SCsHighAddressEnd": "1",
  "numberOfCrossStreetB5SCsLowAddressEnd": "1",
  "numberOfCrossStreetsHighAddressEnd": "1",
  "numberOfCrossStreetsLowAddressEnd": "1",
  "numberOfEntriesInListOfGeographicIdentifiers": "0004",
  "numberOfExistingStructuresOnLot": "0001",
  "numberOfStreetFrontagesOfLot": "03",
  "physicalId": "0000753",
  "policePatrolBoroughCommand": "1",
  "policePrecinct": "001",
  "returnCode1a": "00",
  "returnCode1e": "00",
  "roadwayType": "1",
  "rpadBuildingClassificationCode": "O3",
  "rpadSelfCheckCodeForBbl": "7",
  "sanbornBoroughCode": "1",
  "sanbornPageNumber": "011",
  "sanbornVolumeNumber": "01",
  "sanbornVolumeNumberSuffix": "S",
  "sanitationDistrict": "101",
  "sanitationSnowPriorityCode": "P",
  "segmentAzimuth": "302",
  "segmentIdentifier": "0023213",
  "segmentLengthInFeet": "00460",
  "segmentOrientation": "4",
  "segmentTypeCode": "U",
  "sideOfStreetIndicator": "L",
  "sideOfStreetOfVanityAddress": "L",

```
  "splitLowHouseNumber": "000029000AA",
  "stateSenatorialDistrict": "26",
  "streetName1In": "MAIDEN LANE",
  "streetStatus": "2",
  "taxMapNumberSectionAndVolume": "10102",
  "toLionNodeId": "0015337",
  "toPreferredLgcsFirstSetOf5": "01",
  "trafficDirection": "A",
  "underlyingStreetCode": "12563001",
  "workAreaFormatIndicatorIn": "C",
  "xCoordinate": "0981968",
  "xCoordinateHighAddressEnd": "0982031",
  "xCoordinateLowAddressEnd": "0981785",
  "xCoordinateOfCenterofCurvature": "0000000",
  "yCoordinate": "0197317",
  "yCoordinateHighAddressEnd": "0197212",
  "yCoordinateLowAddressEnd": "0197601",
  "yCoordinateOfCenterofCurvature": "0000000",
  "zipCode": "10038"
 }
}
```

Ingredients (Geoclient)

Java	**C**	**Ruby**	**Python**
Eclipse	AWK	Minitest	PyUnit
GeoTools	Bash	PdfReader	VIM
Gluegen	GCC	Treetop	
Jackson	GNU Make	VIM	
JDK 1.7**	MinGW		
JUnit	Sed		
Maven	VIM		
Mockito			
Spring Framework			
Tymeleaf			
Tomcat			
XStream			

** Not quite open....but slightly ajar

Geoclient API - Core

Field

-id
-start
-length

+read(in value, in buffer : ByteBuffer) : String
+write(in buffer : ByteBuffer)

ByteBuffer

Workarea

-id

+createBuffer(in params : Map) : ByteBuffer
+parseResults(in result : ByteBuffer) : Map

«datatype»
Map

Function

-id

+call(in arguments : Map) : Map

Geoclient

+callgeo(inout workAreaOne : ByteBuffer, inout workAreaTwo : ByteBuffer)
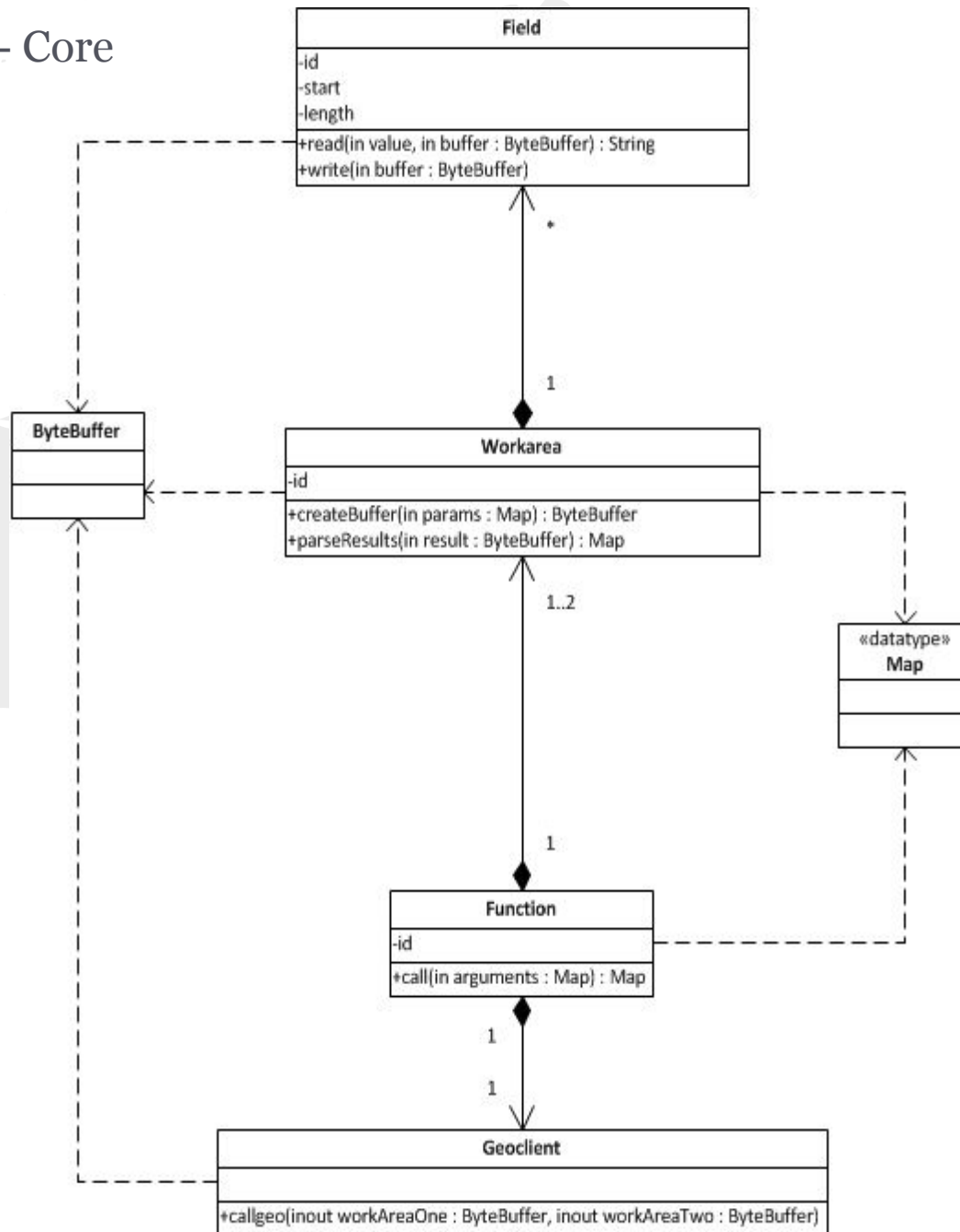
Example Call Sequence
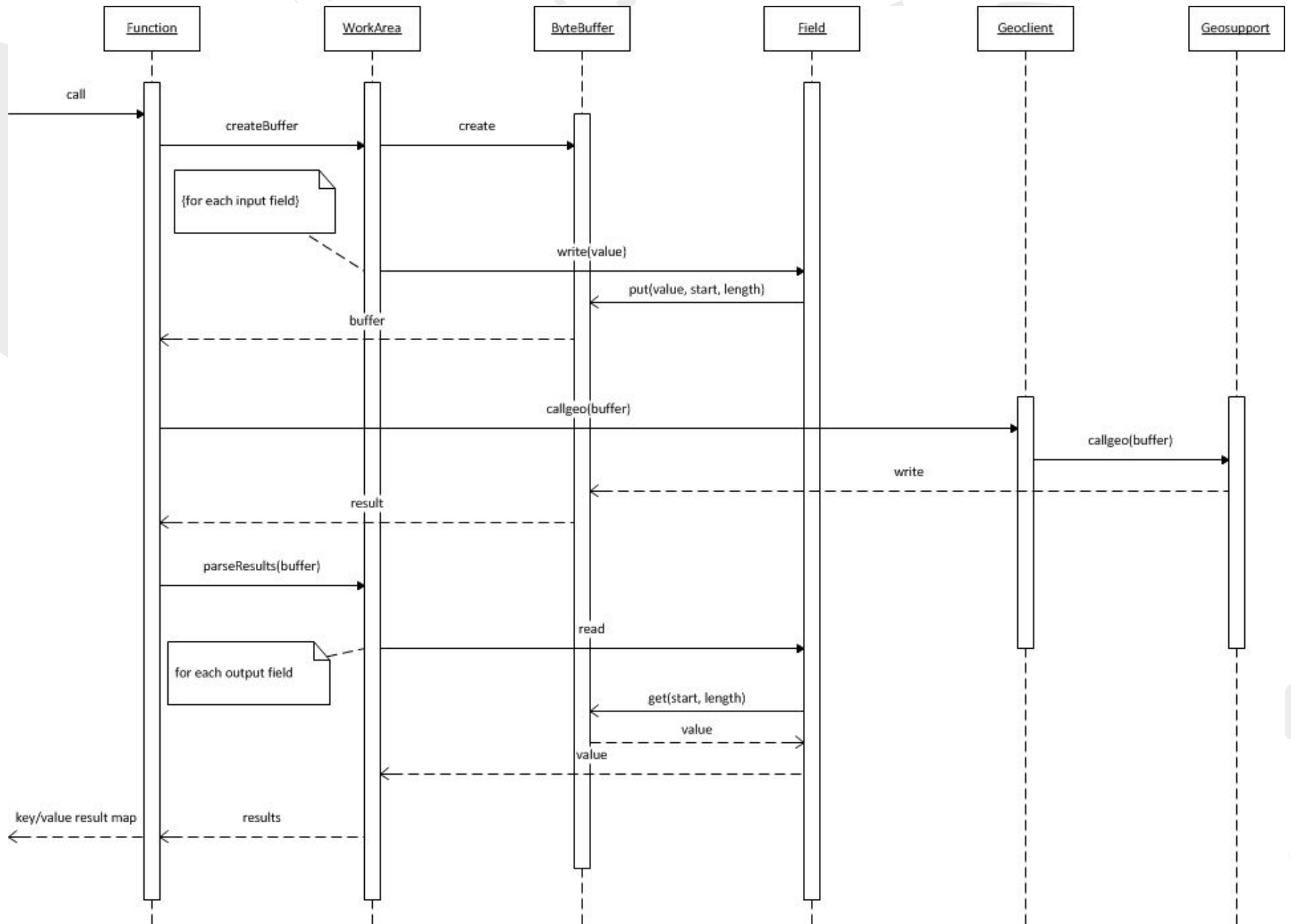
Developer Issues

Questions, issues, or feature requests relating to the **Geoclient API**:

- Matthew Lipper - mlipper@doitt.nyc.gov

Questions about **Geosupport** behavior, functionality, or the data:

- GSS_FEEDBACK@PLANNING.NYC.GOV

Feedback and suggestions:
- Colin Reilly - creilly@doitt.nyc.gov / @ColinReillyNY

Questions?