



General Approaches

Do the right thing in the right way

Tests Maintenance

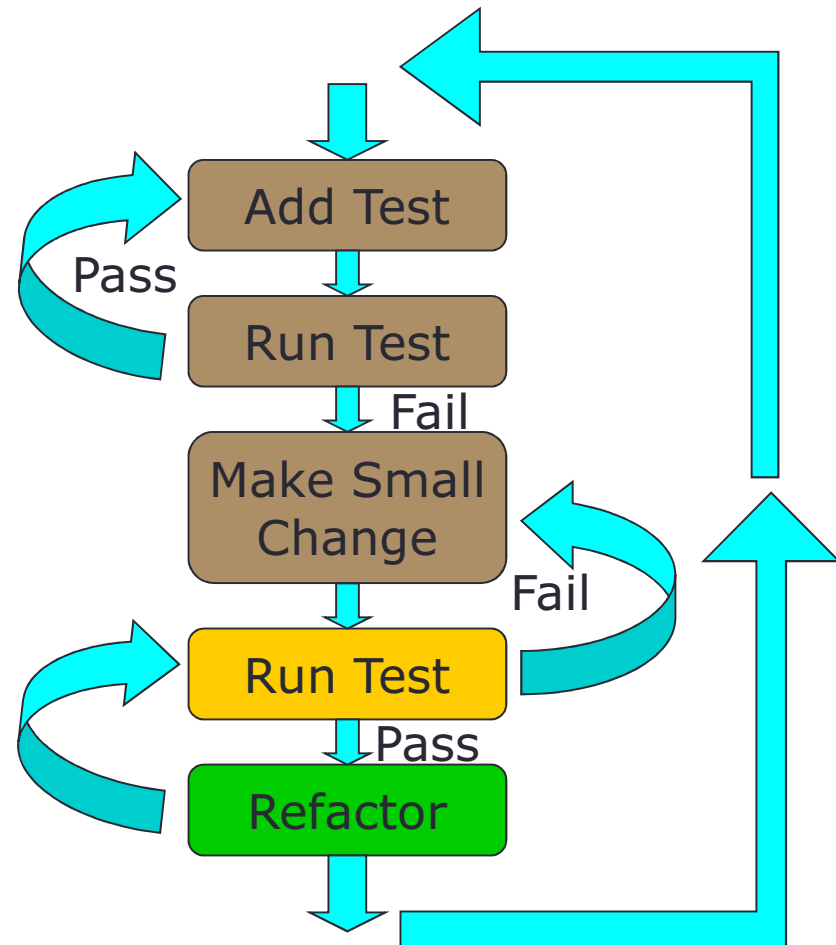
- Separate test cases from technical details
- Use DSL framework
- Create and support well structured test suites
- Create library of reusable components

Selenium in Agile Team

- All team members write tests
- Balance test creation activity between QA and developers
- Include web tests creation in task estimation
- Include web tests in DONE criteria
- Review code of web tests during code review
- Web tests are always verified by QA
- Use TDD approach to avoid delays
- Create technical items with developers
- Always refactor web tests
- Use automation tests running on CI server ASAP
- Improve performance of web tests ASAP
- Discuss web tests during iteration planning
- Cover 100% of functionality

TDD approach

- Adopt TDD rhythm
 - Test->Code->Refactor
- Share testing roles
- Use team conventions
 - Selector usage
 - Test structure
 - Page structure
- Make prototypes
 - Using HTML/JavaScript
 - Design images
 - Design mockups
- Tests drive page structure



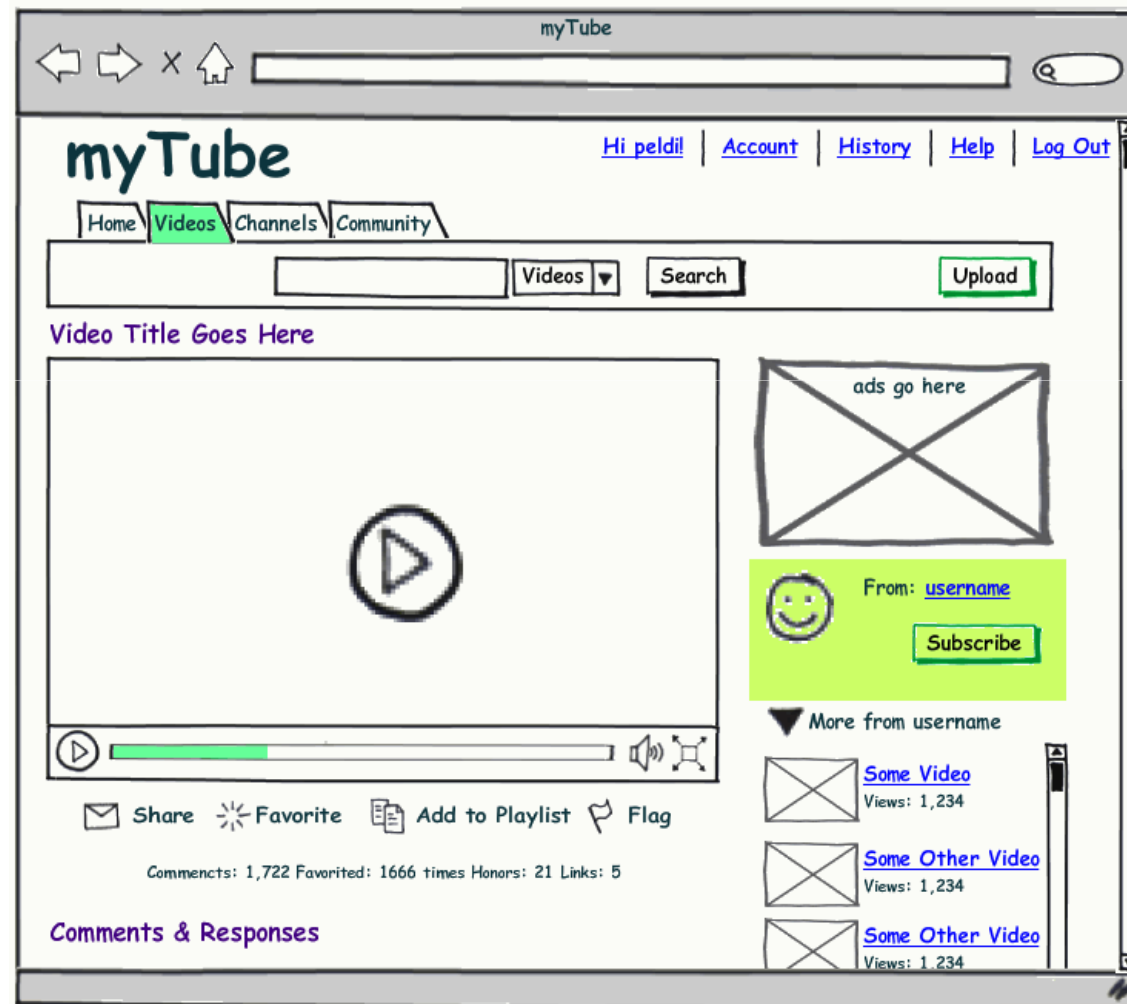
Team Conventions

- Selector usage
 - Links by text
 - Form elements by name
 - Flow controls by ID
 - Structured elements by classes
- Page structure
 - All form elements should have ID and label
 - Semantic HTML

Prototypes Usage

- Designer creates page design image before testing is started
- Developers start with HTML mockup
- Special mockup tools are used to create and discuss page design
- Before testing is started page structure is discussed in details

Prototypes: Balsamiq Mockups



Prototypes: Balsamiq Mockups

- Web base tool
- Hand-drawn UI elements
- Large set of UI elements
- Import/export mockups in XML format
- Great communication tool
- Desktop version
- JIRA plug-in
- Confluence plug-in
- XWiki plug-in

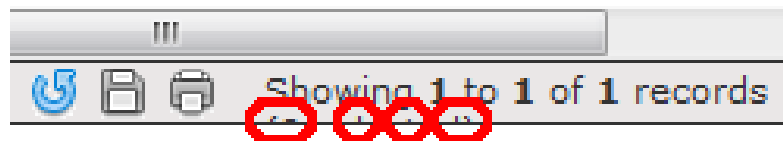
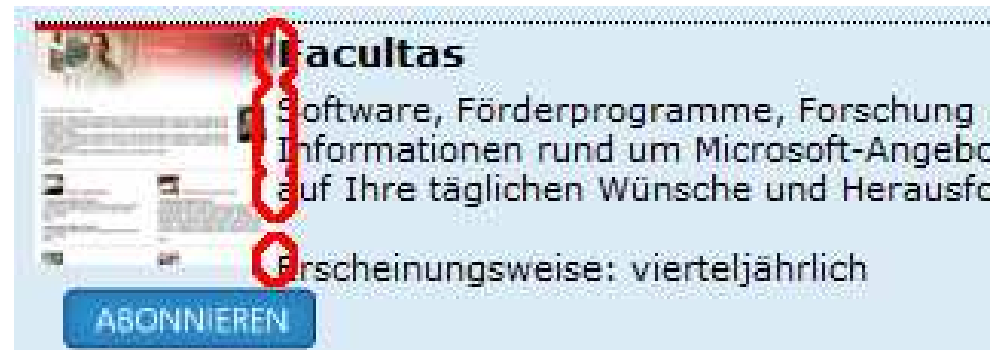
Regression Screen Testing

- Prepare environment template
- Create navigation tests that make screenshots of all pages
- Create screenshots of application pages first time
- Check and tune them manually
- Create comparison logic for screenshots
 - Full image comparison
 - Panels comparison
- Use it to run regression tests for page changes
- If new pages are added or some of them are changed change screenshots

More Types of UI Testing

- Validation of HTML with Selenium using W3C validator
- CSS validation by file parsing (exclude CSS with browser hacks)
- Use fighting-layout-bugs Java library
 - Validate layout bugs using jQuery, coloring and screenshots comparison
 - Analyze text and elements edges to find text layout bugs
 - Show results directly on screen to visualize issue

Fighting Layout Bugs



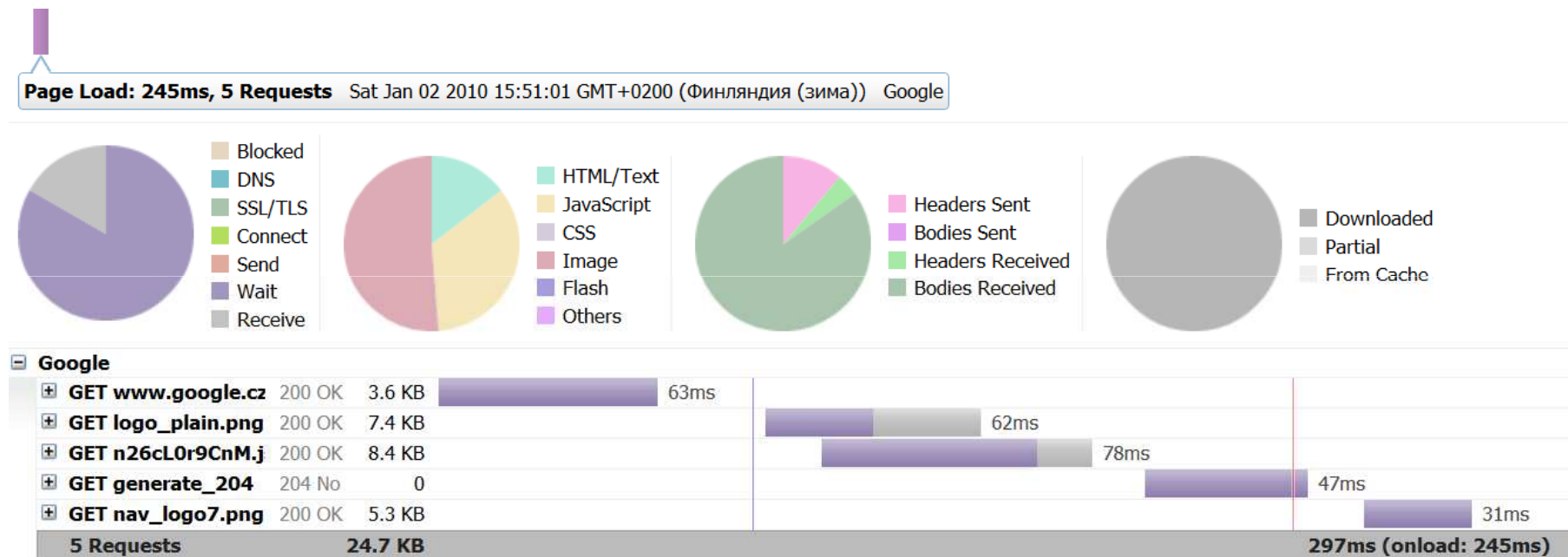
A screenshot of a newsletter subscription form. The form has a light green background. At the top, there is a button with the text "Newsletter abonnieren". Below the button, there is a text input field with the placeholder text "E-Mail-Adresse". A red bracket is drawn around the "Newsletter abonnieren" button.

A screenshot of a search form. The form has a light gray background. At the top, there is a label "Leute suchen". Below the label, there is a text input field with the placeholder text "Namen oder Mail-Adresse eingeben". To the right of the input field, there is a yellow button with the text "Suche". A red circle is drawn around the "Suche" button.

Page Load Performance Testing

- Firebug net panel for statistics gathering
- Net export Firefox plugin to export results
- WebDriver with Firefox to load pages
- HAR online viewer for results parsing
(<http://www.softwareishard.com/har/viewer/>)

Page Load Performance Testing



Full solution is here:

<http://www.softwareishard.com/blog/firebug/automate-page-load-performance-testing-with-firebug-and-selenium/>

Web Accessibility Testing

- Web Driver for navigation and native keyboard events
- web-accessibility-testing library for reporting and accessibility rules (<http://code.google.com/p/web-accessibility-testing>)



<http://www.google.co.in>



<http://adsense.google.com>



<http://www.sqe.com/starwest/...>

AdSense Search Certification (includes Lead) (Sun - Tues) AND Conference (Wed - Thurs) [includes \$250 exam fee]	\$2,040
Using Visual Studio 2010 Ultimate To Improve Software Quality (Sun - Tues) AND Conference (Wed - Thurs)	\$2,690
Enterprise Search Lead (Sun - Tues) AND Conference (Wed - Thurs)	\$2,690

Mock External Dependencies

- Email server
 - Start mock SMTP server to quickly access messages
 - Configure real SMTP server to work in local mode
- Database communication
 - Create separate database helper with DSL interface
 - Hide all database details in it
 - Use code from application
- Captcha generation
 - Create mock generator
- Application thresholds and limitations
 - Make them configurable
 - Start application under test in separate environment

Locators: Best Practices

- Use semantic HTML (classes and IDs)
- Don't use complex XPath expressions
- Reuse CSS from page design
- Avoid text matching (use important keywords only)

Locators: XPath Checker

[Selenium web application testing system](#)

Selenium IDE is a Firefox add-on that records clicks, typing, and other actions to make a test, which you can play back in the browser.

[seleniumhq.org/](#) - 13k - [Cached](#) - [Similar pages](#)

[Selenium Remote-Control](#)

Selenium Remote Control (RC) is a test application UI tests in any programming

[seleniumhq.org/projects/remote-control](#)

[More results from seleniumhq.org »](#)

[Selenium - Wikipedia, the free encyclopedia](#)

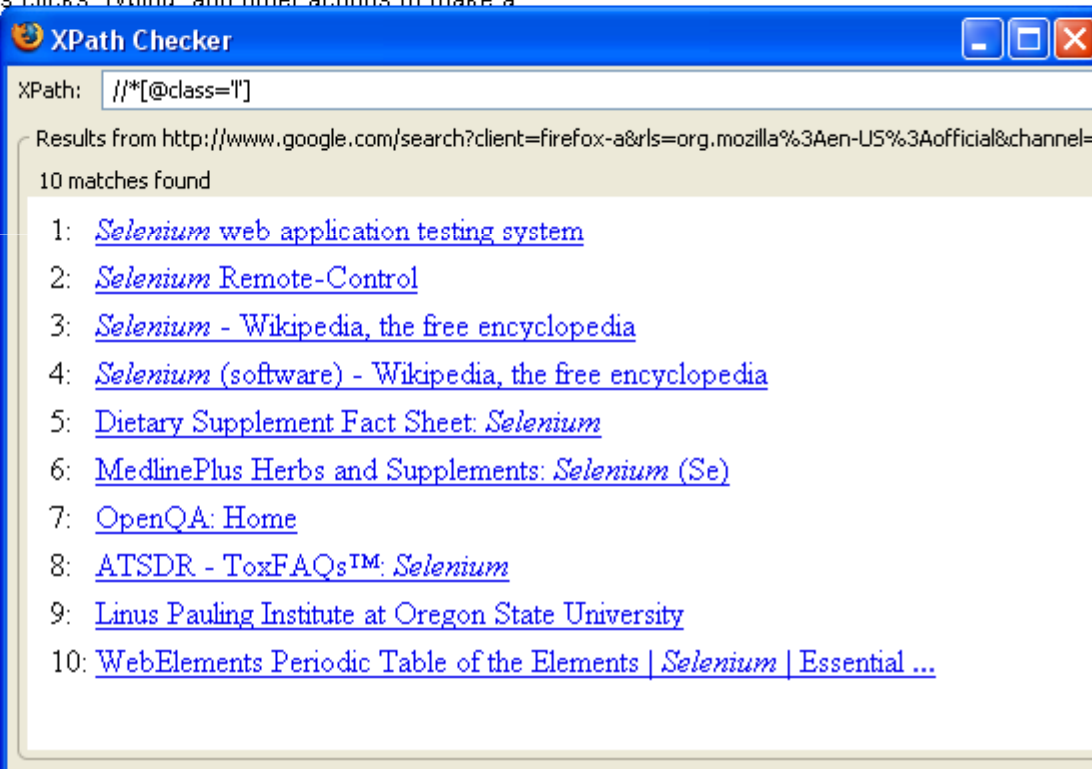
Selenium (pronounced /sa'li:zi:am/) is a chemical element represented by the chemical symbol Se, an a
[en.wikipedia.org/wiki/Selenium](#) - 163k - [Cached](#)

[Selenium \(software\) - Wikipedia](#)

Selenium is a portable software testing framework written as HTML tables or coded in a n
[en.wikipedia.org/wiki/Selenium_\(software\)](#)

[Dietary Supplement Fact Sheet: Selenium](#)

1 Aug 2004 ... **Selenium** is a trace mineral that is found in small amounts [1,2]. **Selenium** is incorporated into proteins
[ods.od.nih.gov/factsheets/selenium.asp](#) - 66k



The screenshot shows a window titled "XPath Checker" with a search bar containing the XPath `//*[class='I']`. Below the search bar, it displays the source URL: `Results from http://www.google.com/search?client=firefox-a&rls=org.mozilla%3Aen-US%3Aofficial&channel=`. It reports "10 matches found" and lists the following results:

- 1: [Selenium web application testing system](#)
- 2: [Selenium Remote-Control](#)
- 3: [Selenium - Wikipedia, the free encyclopedia](#)
- 4: [Selenium \(software\) - Wikipedia, the free encyclopedia](#)
- 5: [Dietary Supplement Fact Sheet: Selenium](#)
- 6: [MedlinePlus Herbs and Supplements: Selenium \(Se\)](#)
- 7: [OpenQA: Home](#)
- 8: [ATSDR - ToxFAQs™: Selenium](#)
- 9: [Linus Pauling Institute at Oregon State University](#)
- 10: [WebElements Periodic Table of the Elements | Selenium | Essential ...](#)

Locators: XPath

[Selenium web application testing system](#)

Selenium IDE is a Firefox add-on that records click test, which you can play back in the browser. ...

[seleniumhq.org/](#) - 13k - [Cached](#) - [Similar pages](#)

[Selenium Remote-Control](#)

Selenium Remote Control (RC) is a test tool for application UI tests in any programming language.

[seleniumhq.org/projects/remote-control/](#) - 9k

[More results from seleniumhq.org »](#)

[Selenium - Wikipedia, the free encyclopedia](#)

Selenium (pronounced /sə'li:niəm/) is a chemical element represented by the chemical symbol Se, an atomic number 34.

[en.wikipedia.org/wiki/Selenium](#) - 163k - [Cached](#) - [Similar pages](#)

[Selenium \(software\) - Wikipedia, the free encyclopedia](#)

Selenium is a portable software testing framework written as HTML tables or coded in a number of programming languages.

[en.wikipedia.org/wiki/Selenium_\(software\)](#) - 10k

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[ods.od.nih.gov/factsheets/selenium.asp](#) - 66k - [Cached](#) - [Similar pages](#)

[MedlinePlus Herbs and Supplements: Selenium](#)

30 Jan 2009 ... Initial evidence has suggested that selenium may have antioxidant properties.

The screenshot shows the XPath Browser interface. The XPath expression `//a[@class='l']` is entered in the search bar. Below the search bar, a table lists 10 matching nodes. The selected node (number 8) is "ATSDR - ToxFAQs™: Selenium". The content of the selected node is displayed in the bottom panel, showing the text "ATSDR - ToxFAQs™: Selenium".

no	content	full XPath
1	Selenium web application testing system	/html/body[@id='gsr']/div[@cla...
2	Selenium Remote-Control	/html/body[@id='gsr']/div[@cla...
3	Selenium - Wikipedia, the free encyclopedia	/html/body[@id='gsr']/div[@cla...
4	Selenium (software) - Wikipedia, the free encyclopedia	/html/body[@id='gsr']/div[@cla...
5	Dietary Supplement Fact Sheet: Selenium	/html/body[@id='gsr']/div[@cla...
6	MedlinePlus Herbs and Supplements: Selenium (Se)	/html/body[@id='gsr']/div[@cla...
7	OpenQA: Home	/html/body[@id='gsr']/div[@cla...
8	ATSDR - ToxFAQs™: Selenium	/html/body[@id='gsr']/div[@cla...
9	Linus Pauling Institute at Oregon State University	/html/body[@id='gsr']/div[@cla...
10	WebElements Periodic Table of the Elements Selenium ...	/html/body[@id='gsr']/div[@cla...

Content of the selected nodes

Text Inner HTML Web Clipping XPaths Info

ATSDR - ToxFAQs™: Selenium

Locators: Firebug



Locators: Firefinder

Все результаты

Картинки

Карты

Selenium - Web Browser Automation
seleniumhq.org/ - Перевести эту страницу
Selenium automates browsers. That's it. What you do with that power is entirely up to you. Primarily it is for automating web applications for testing purposes, but ...

Консоль HTML CSS Сценарий DOM Сеть Cookies FirePath Page Speed **Firefinder** Inline Code Fin...

F-F Firefinder - Find elements matching one or several CSS expressions, or an XPath filter

a

Matching elements: 132

- ▶ `` FriendlyFire | Inspect
- ▶ `` FriendlyFire | Inspect
- ▶ `` FriendlyFire | Inspect
- ▶ `` FriendlyFire | Inspect

Locators: Firepath

The screenshot displays the Selenium IDE interface with the FirePath extension. The top section shows search results for 'Selenium - Web Browser Automation' on seleniumhq.org. The FirePath panel at the bottom shows the DOM tree with the following structure:

- <document>
 - <html itemtype="http://schema.org/WebPage" itemscope="itemscope">
 - <head>
 - <body id="gsr" class="vsh" link="#12c" vlink="#61c" text="#222" bgcolor="#fff" align="center">
 - document.gbqf.q.focus();}}catch(e){}if(document.images)new Image().src='/images/nav_
 - <div id="pocs" style="display:none;position:absolute">
 - <div id="pocs0">
 -
 - <a href="/support/websearch/bin/answer.py?answer=186645&form=bb&hl=ru-UA" (highlighted)
 - <div id="pocs1">
 - <div id="pocs2">Для поиска нажмите "Ввод" (highlighted)
 - <a style="left:-1000em;position:absolute" href="/setprefs?prev=https://www.google.com/" (highlighted)

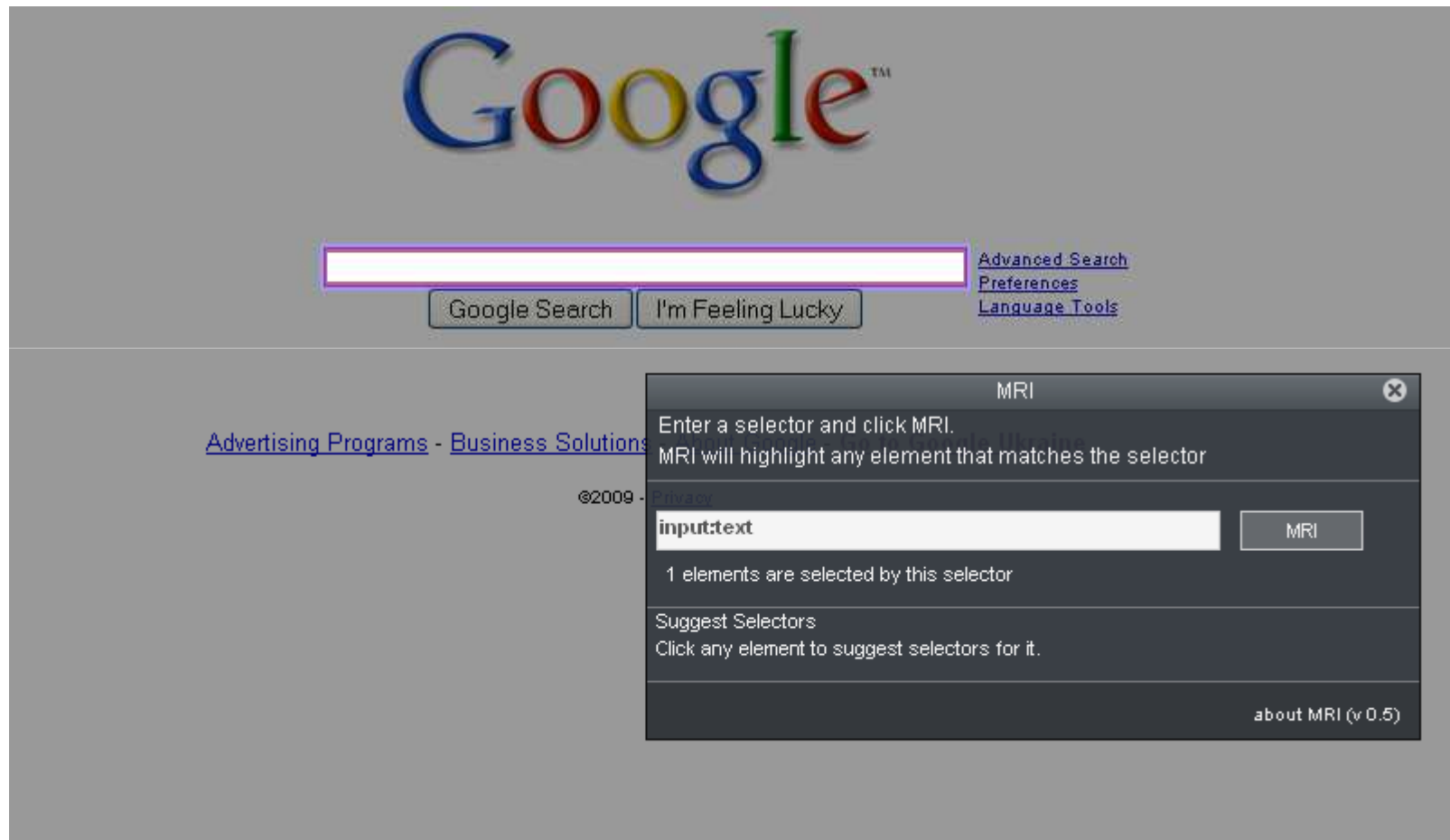
The XPath locator shown in the panel is `//a`.

A screenshot of the Google homepage. At the top, there is a navigation bar with links for "Web", "Images", "Maps", "Videos", "Gmail", "Google Scholar", "Google News", "Google Books", "Google Finance", "Google Shopping", "Google Local", "Google Labs", and "Google Translate". Below this is a search bar containing the text "input:text". To the right of the search bar are buttons for "Clear (2)", "Toggle Position", "Help", and "X". The Google logo is centered below the search bar. Below the logo is a red rectangular box that highlights the search bar area. Inside the box, the text "td input" is visible. To the right of the box are links for "Advanced Search", "Preferences", and "Language Tools". At the bottom of the page are links for "Advertising Programs", "Business Solutions", "About Google", and "Go to Google Ukraine". The copyright notice "©2009 - Privacy" is at the very bottom.

©2009 - [Privacy](#)

©2009 - [Privacy](#)

Locators: MRI



Locators: Web Developer

The screenshot shows a web browser window with the 'Web Developer' toolbar active. The toolbar includes icons for 'Отключить' (Disable), 'Cookies', 'Ошибок CSS нет' (No CSS errors), 'Формы' (Forms), 'Графика' (Graphics), 'Инфо' (Info), 'Разное' (Misc), 'Контур' (Outline), 'Размеры' (Dimensions), and 'Инструменты' (Tools). The address bar shows the URL: `html > body #gsr.vsh > div #mngb > div #gb.gbcsi > div #gbw > div #gbzw > div #gbz > ol #gbzc.gbtc > li .gbt > a #gb_5.gbzt gbzt-hvr > s`.

The DOM tree is displayed on the left side of the browser window. The selected element is a `span` with the class `gbts`. The DOM tree structure is as follows:

- `span.gbts`
 - Атрибуты
 - `class = gbts`
 - Позиция
 - Левый: 303px
 - Верх: 2px
 - Ширина: 72px
 - Высота: 27px
 - Другие
 - Набор шрифтов: Arial,sans-serif
 - Размер шрифта: 13px
 - Родительские элементы
 - `html`
 - `body #gsr.vsh`
 - `div #mngb`
 - `div #gb.gbcsi`
 - `div #gbw`
 - `div #gbzw`
 - `div #gbz`
 - `ol #gbzc.gbtc`
 - `li .gbt`
 - `a #gb_5.gbzt gbzt-hvr`
 - Дочерние элементы
 - Нет

The page content shows a search bar with the text 'selenium' and a search button. Below the search bar, the text 'Результатов: примерно 1 580 000 (0,09 сек.)' is displayed. The main content area contains the following text:

[Selenium - Web Browser Automation](#)
[seleniumhq.org/](#) - Перевести эту страницу
Selenium automates browsers. That's it. What you do with that power is entirely up to you. Primarily it is for automating web applications for testing purposes, but ...
[Downloads](#) - [Documentation](#) - [Selenium IDE](#) - [Selenium WebDriver](#)

Below this, there is a section titled 'Downloads - Selenium' with the text: [seleniumhq.org/download/](#) - Перевести эту страницу
Downloads. Below is where you can find the latest releases of all the Selenium components. You can also find a list previous releases, latest releases, source ...

Selenium: Tips and Tricks

- Restart browser after batch of test (10-20)
 - To avoid memory leaks and improve performance
- Working with popup window
 - `waitForPopUp`, `selectWindow`, `close`
 - `switchTo().window()`, `getWindowHandles()`
- Working with alerts and prompts
 - `switchTo().alert()`, `alert.getText()`, `alert.accept()`
 - `chooseXXXOnNextConfirmation`, `answerOnNextPrompt`, `assertAlertXXX`, `assertConfirmationXXX`
- Browser popup dialogs
 - Configure browser profile to not show such dialogs
- File downloading
 - Configure default download directory and access results directly

Questions & Answers

