MPS

Create your own domain-specific language

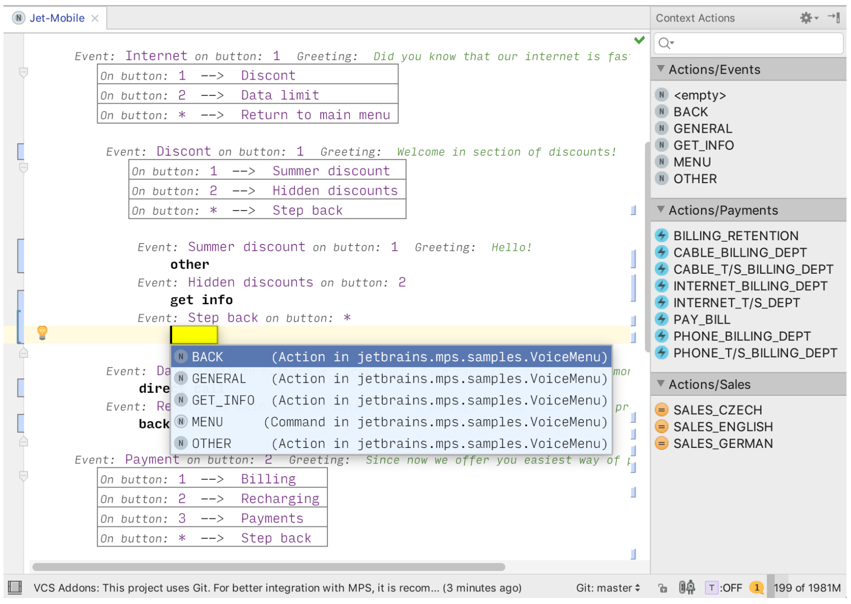
What is MPS?

MPS is an **open source** IDE for developing domain-specific languages (DSLs). MPS began as a research prototype with the goal of changing the paradigm of how programming is done. Now it is being used every day to solve complex real-world problems. Our clients are using it across a diverse spectrum of areas, ranging from the automotive and healthcare industries to tax return calculation for an entire country.

Why do you need a DSL?

The end-user of the DSL becomes more efficient at working with their domain, because **the level of abstraction is higher** and they only need to understand the domain-specific part of the system – not the whole system. A DSL allows you to separate essential elements of the domain from the complexity of the code. This improves communication between the domain experts and the programmers.

Using DSLs can **improve code quality in a number of ways, including reducing the number of bugs, improving architectural conformance, and making code easier to maintain**. This is achieved by limiting the user to modifying only certain components of the code, avoiding duplication, and automating repetitive work. In contrast to libraries and frameworks, DSLs can come with tooling support. Code completion, visualizations, debuggers, simulators, and other niceties can be provided to improve the user experience.



```
Event: Internet on button: 1  Greeting: Did you know that our internet is fas
    On button: 1  -->  Discont
    On button: 2  -->  Data limit
    On button: *  -->  Return to main menu

        Event: Discont on button: 1  Greeting: Welcome in section of discounts!
            On button: 1  -->  Summer discount
            On button: 2  -->  Hidden discounts
            On button: *  -->  Step back

            Event: Summer discount on button: 1  Greeting: Hello!
                other
            Event: Hidden discounts on button: 2
                get info
            Event: Step back on button: *
                
                BACK      (Action in jetbrains.mps.samples.VoiceMenu)
                GENERAL   (Action in jetbrains.mps.samples.VoiceMenu)
                GET_INFO  (Action in jetbrains.mps.samples.VoiceMenu)
                MENU     (Command in jetbrains.mps.samples.VoiceMenu)
                OTHER     (Action in jetbrains.mps.samples.VoiceMenu)
        Event: Da
            dire
        Event: Re
            back
Event: Payment on button: 2  Greeting: Since now we offer you easiest way of
    On button: 1  -->  Billing
    On button: 2  -->  Recharging
    On button: 3  -->  Payments
    On button: *  -->  Step back
```

Actions/Events
- <empty>
- BACK
- GENERAL
- GET_INFO
- MENU
- OTHER

Actions/Payments
- BILLING_RETENTION
- CABLE_BILLING_DEPT
- CABLE_T/S_BILLING_DEPT
- INTERNET_BILLING_DEPT
- INTERNET_T/S_DEPT
- PAY_BILL
- PHONE_BILLING_DEPT
- PHONE_T/S_BILLING_DEPT

Actions/Sales
- SALES_CZECH
- SALES_ENGLISH
- SALES_GERMAN

VCS Addons: This project uses Git. For better integration with MPS, it is recom... (3 minutes ago) Git: master T :OFF 1 199 of 1981M

An example of a DSL

How does it work?

With MPS you can create your own languages and extend existing ones to better fulfill the needs of your domain. **The MPS code generator will translate the DSL code into a target platform of your choice**, such as Java, C, XML, JavaScript, or anything that fits your project needs. You can also achieve language modularity by using a set of independently developed languages together in one file or model.

MPS uses a Projectional Editor, which allows users to edit code on the logical rather than textual level. Users interact with the code through intuitive on screen visuals, and they can even switch between these visuals to get different views of the same code. Using this approach, both textual notations and **other notations, such as graphs, mathematical notations, diagrams, and forms, can be used in the editor**.

Interested?
Check out these resources:

MPS website ↗
MPS case studies ↗
Slack community ↗
Quickstart online course ↗