



Dart

- **Language**
- **Libraries**
- **Tools**
- **Compilation to Javascript**

Dart is open source

- **BSD-style license**
- **dart.googlecode.com**
- **GitHub mirror**
- **Contributing guide**
- **ECMA Standard (TC52)**
- **Production ready (1.4)**





Compiles to JavaScript, runs across the modern web



**Run Dart on the server
with the Dart VM**



Dart

- **New language, familiar syntax**
- **Rich libraries**
- **Consistent semantics**

Missing getter?

"Coffee".missing // ??



Class 'String' has no instance getter 'missing'. NoSuchMethodError : method not found: 'missing' Receiver:

"Coffee"

Arguments: []

String compared to number?

"2" > 1 // ??

Unhandled exception:

Class 'String' has no instance method '>'.

NoSuchMethodError : method not found: '>'

Receiver: "2"

Arguments: [1]



```

class Hug {
  int strength;
  Hug(this.strength); // Terse syntax!

  Hug.light() {          // Named constructors!
    this.strength = 0;
  }

  Hug operator +(Hug other) {
    return new Hug(this.strength + other.strength);
  }

  void patBack({int hands: 1}) {/* Named or optional params, w/default values*/}

  /* One-line functions, string interpolation! */
  String toString() => "Embraceometer reads $strength";
}

main() {
  Hug a = new Hug(5);
  Hug b = new Hug.light();
  print(a + b); // Embraceometer reads 5
}

```


Built-in libraries

async
collection
convert
core
html
indexed_db
io
isolate

js
math
mirrors
svg
typed_data
web_audio
web_gl
web_sql



Kansas City Public Library

```
import 'dart:html';
```

```
InputElement todoInput;
```

```
UListElement todoList;
```

```
• void main() {  
    todoInput = querySelector('#to-do-input');  
    todoList = querySelector('#to-do-list');  
    todoInput.onChange.listen(addToDoItem);  
}  
  
• void addToDoItem(Event e) {  
    var newToDo = new LIElement();  
    newToDo.text = todoInput.value;  
    todoInput.value = '';  
    todoList.children.add(newToDo);  
}
```

```
import 'dart:io';
```

```
main() {  
  HttpServer.bind('0.0.0.0', 8080).then((server) {  
    server.listen((HttpRequest req) {  
      // Handle $req  
    });  
  });  
}
```

```
• main() {  
    String name = 'John Doe';  
    print(initials(name)); // J.D.  
}  
  
• String initials(String name) {  
    StringBuffer retValue = new StringBuffer();  
    name.split(" ").forEach((String part) {  
        retValue.write(part[0] + ".");  
    });  
    return retValue.toString();  
}
```

```
• main() {  
    var name = 'John Doe';  
    print(initials(name)); // J.D.  
}  
  
• initials(name) {  
    var retValue = new StringBuffer();  
    name.split(" ").forEach((part) {  
        retValue.write(part[0] + ".");  
    });  
    return retValue.toString();  
}
```


Asynchronous and concurrent programming

- **Futures**
- **Streams**
- **Isolates**



<https://www.flickr.com/photos/huskyte/8519749145/in/photostream/>

```
import 'dart:async' show Future, Completer;
```

```
main() {  
  loadNews().then((news) {  
    // Do something with $news  
  });  
  print("Immediately printed!");  
}
```

```
Future loadNews() {  
  var completer = new Completer();  
  // Insert very slow process here  
  completer.complete(/* return value */);  
  return completer.future;  
}
```

```
import 'dart:async';

main() {
  var data = [1,2,3,4,5]; // some sample data
  var stream = new Stream.fromIterable(data); // create the stream

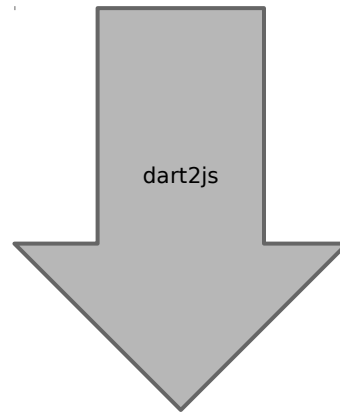
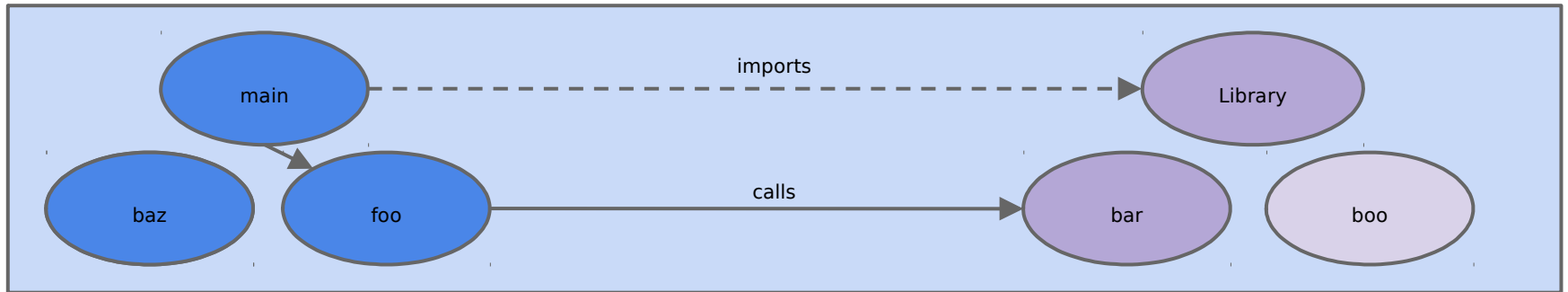
  // subscribe to the streams events
  stream.listen((value) { //
    print("Received: $value"); // onData handler
  }); //
}
```

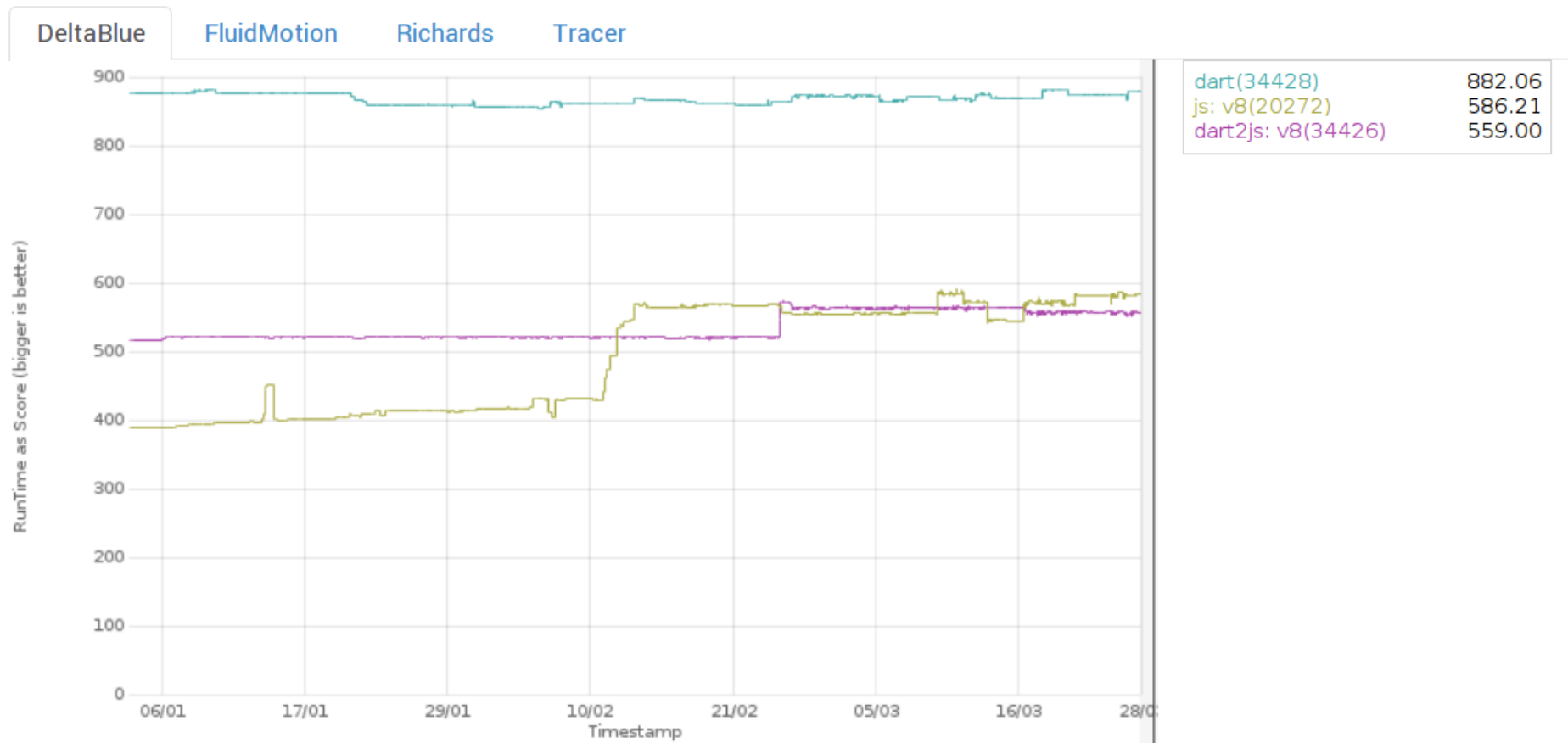

Dart-to-JS Compiler & Performance

Dart2js' s features:

- **Minification & Source Maps**
- **Global type inference**
- **Tree-shaking**
 - **Compile-time dead code elimination**

Tree shaking





<https://dartlang.org/performance>

Language, Libraries & Tools

- IDE: *Dart Editor*
- Package Manager: *pub*
- JS compiler: *dart2js*
- Library documentation generator: *docgen*
- Static analyzer: *dartanalyzer*
- Chromium with Dart VM: *Dartium*



Dart

Homepage: <https://dartlang.org>

API Reference: <https://api.dartlang.org>

Pub Packages: <https://pub.dartlang.org>

AngularDart: <https://angulardart.org>

Polymer.dart: <https://dartlang.org/polymer-dart>

Live coding!

Download Dart Editor:

<https://dartlang.org/tools/download.html>

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