

CLAIRVOYANT



design



engineer



deliver

Java 9 Features

Team

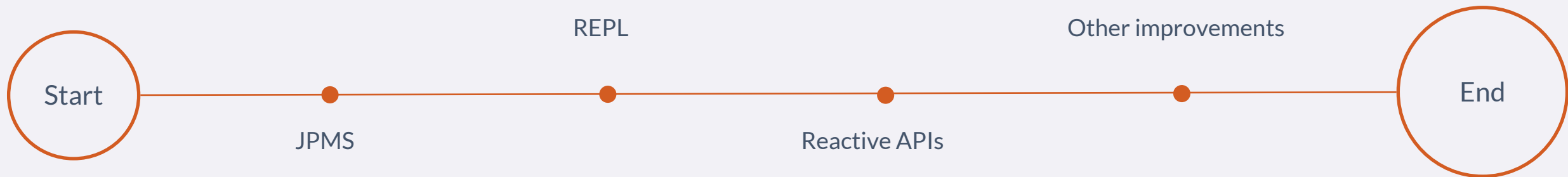
Clairvoyant India Pvt. Ltd.

CLAIRVOYANT

Disclaimer

I am still learning.
— Michelangelo

Agenda



Introduction to JPMS

- History
- Definition

Introduction to JPMS- History

- JSR-277 in 2005 for Java 7- Superseded by JSR-376
- Goals:
 - Strong encapsulation
 - Reliable configuration
 - Scalable Java platform
 - Greater platform integrity
 - Improved performance

Introduction to JPMS- Definition

- A module is a named set of packages, resources, and native libraries.
- Module declaration is defined in “*module-info.java*” file.
- Module declaration has:
 - keyword “*module*”
 - followed by “*unique module name*”
 - module body enclosed in “*braces*”
- Module directives

```
module com.clairvoyant.lib {  
  
}
```

Module Naming Convention

- **Reverse-DNS**
- Same as the name of the **super-package** - *recommended*

```
module com.clairvoyant.lib {  
  
}
```


Module Directives

- *requires, exports, provides...with, uses and opens*

Module Directives- *requires*

- *requires* - dictates the module dependencies
- *requires transitive*
- *requires static*- only required at compile time, not at runtime. Also know as *optional dependency*[\[more\]](#)

```
module com.clairvoyant.lib {  
    requires java.logging;  
    requires java.desktop;  
}
```

Module Directives- *exports*

- *exports* - All the public types and their nested public & protected types are visible to other modules.
- *exports to*- comma separated list to target modules -- **qualified exports**.

```
module com.clairvoyant.lib {  
  exports com.clairvoyant.lib;  
  exports com.clairvoyant.lib to com.clairvoyant.api, com.clairvoyant.test;  
}
```

Module Directives- *open*, *opens*, *opens..to*

- *opens* - All the public types and their nested public & protected types are visible to other modules at *runtime* only.
- *opens to*- comma separated list to target modules -- **qualified exports**.
- **All types are accessible via Reflection.**

```
module com.clairvoyant.lib {  
  opens com.clairvoyant.lib;  
  opens com.clairvoyant.lib to com.clairvoyant.api, com.clairvoyant.test;  
}
```

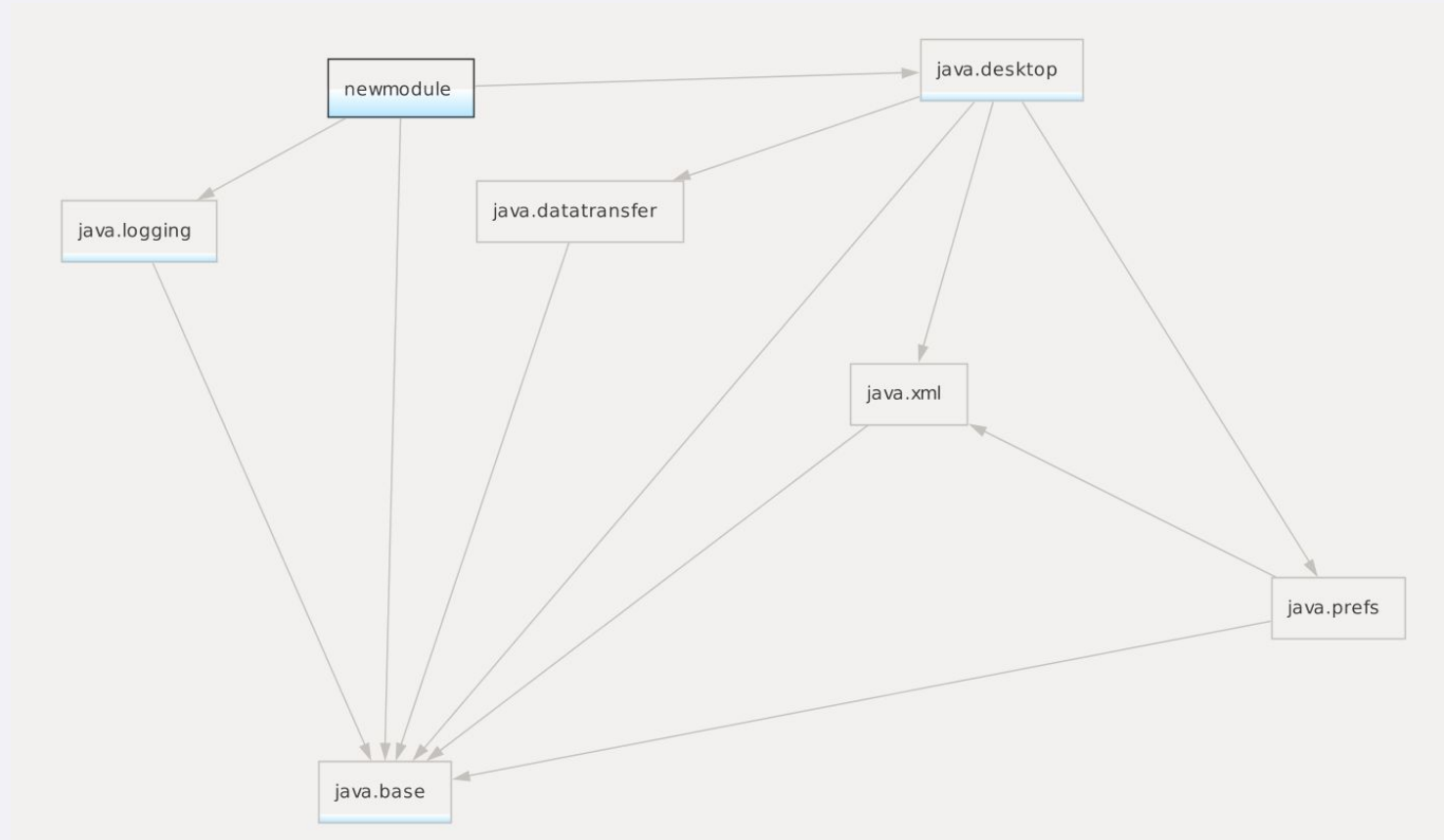
```
open module com.clairvoyant.lib {  
  // other module directives  
}
```

Modular app structure

```
module-demo/  
└── src  
    ├── com.clairvoyant.lib  
    │   ├── com  
    │   │   └── clairvoyant  
    │   │       └── lib  
    │   │           └── Utility.java  
    └── module-info.java
```

```
AppName  
  src  
    ModuleName  
      packages  
        -- classes  
        module-info.java
```

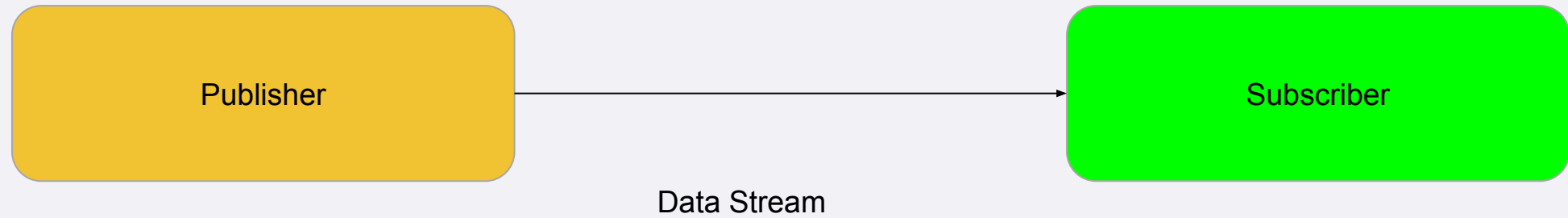
Module Dependency Graph



REPL

- imports
- expressions
- variables
- methods
- Commands
 - `/vars`
 - `/methods`
 - `/list` and `/list -all`
 - `/edit`
- Feedback modes
 - Verbose
 - Normal
 - Concise
 - Silent

Reactive APIs



Reactive APIs- Flow API

- Publisher
- Subscriber
- Processor
- Subscription

Reactive APIs- Flow API

```
@FunctionalInterface
```

```
public static interface Flow.Publisher<T> {  
    public void    subscribe(Flow.Subscriber<? super T> subscriber);  
}
```

```
public static interface Flow.Subscriber<T> {  
    public void    onSubscribe(Flow.Subscription subscription);  
    public void    onNext(T item) ;  
    public void    onError(Throwable throwable) ;  
    public void    onComplete() ;  
}
```

```
public static interface Flow.Subscription {  
    public void    request(long n);  
    public void    cancel() ;  
}
```

```
public static interface Flow.Processor<T,R> extends Flow.Subscriber<T>, Flow.Publisher<R> {  
}
```

Other improvements

- Static factory methods
- HTTP/2.0 support
- Stream improvements
 - `dropWhile`
 - `takeWhile`
- Private methods in interfaces
- `Underscore(_)` is not a valid variable name

Copyright and References

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