Building Blocks

- Toolkit of 5 core modules / building blocks
- R2 Testapp (sample and test purpose)
- R2 Workspace (getting started quickly)
- Native Environment
  - Xcode 10.1 moving to 10.2
  - Swift 4.2 moving to 5
  - iOS (min target 9.0)
  - Android Studio 3.4.1
  - Kotlin 1.3.31
  - Android (min sdk 21)

iPhone & iPad,
Android Phone, Tablet & Chromebook
Essential building block of R2 iOS, Android and desktop apps (can also be used in any reading system!)

Some key features:
- Pagination: Right-To-Left (e.g. Arabic), Vertical (e.g. Japanese)
- Custom fonts (e.g. dyslexia)
- Color themes (e.g. dark/nigh, sepia)
- Text alignment, line height, word spacing, etc.

https://github.com/readium/readium-css

Readium
“Web Publication Manifest”

- Optimized interface between:
  - “Server / backend” (produces JSON)
  - “Client / frontend” (consumes JSON)
- “Stream” publications in smaller chunks (e.g. individual chapters)
- Web features: HTTP caching, prefetching, integrity checking, etc.

Where are we?
# Mobile - Where are we?

<table>
<thead>
<tr>
<th>Feature</th>
<th>R2 Swift</th>
<th>R2 Kotlin</th>
</tr>
</thead>
<tbody>
<tr>
<td>ePub 2 &amp; 3 support</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Custom Styling</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>CBZ support</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>PDF support</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Readium Web Publication Manifest</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>RWPM EPUB</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>RWPM Audiobook</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>OPDS 1 &amp; 2 support</td>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>

- ✔️ - Done
- ✔️ - In Progress

June 25-26, 2019
## Mobile - Where are we? (cont.)

<table>
<thead>
<tr>
<th>Feature</th>
<th>R2 Swift</th>
<th>R2 Kotlin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Readium LCP ePub</td>
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<td>✅</td>
</tr>
<tr>
<td>FXL support (1 page)</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>FXL support (2 page)</td>
<td></td>
<td>✅</td>
</tr>
<tr>
<td>RTL support</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>Locators</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>Accessibility</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>Popup Footnotes</td>
<td></td>
<td>✅</td>
</tr>
<tr>
<td>TTS with Overlay</td>
<td></td>
<td>✅</td>
</tr>
</tbody>
</table>

- **✅** - Done
- **✅** - In Progress
So, is it ready yet?
<table>
<thead>
<tr>
<th>Component</th>
<th>R2 Swift</th>
<th>R2 Kotlin</th>
</tr>
</thead>
<tbody>
<tr>
<td>R2-Shared</td>
<td>1.2.13</td>
<td>1.0.10</td>
</tr>
<tr>
<td>R2-Streamer</td>
<td>1.0.14</td>
<td>1.0.10</td>
</tr>
<tr>
<td>R2-Navigator</td>
<td>1.0.13</td>
<td>1.0.10</td>
</tr>
<tr>
<td>R2-OPDS</td>
<td>1.0.10</td>
<td>1.0.9</td>
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<td>R2-LCP</td>
<td>1.0.10</td>
<td>1.0.10</td>
</tr>
<tr>
<td>R2 Test App</td>
<td>V2.0.0-beta.7</td>
<td>V2.0.0-beta.6</td>
</tr>
</tbody>
</table>

Mobile - Stable in Production (github.com/readium)

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Where are we going next?
# Mobile - Where are we going?

<table>
<thead>
<tr>
<th>Feature</th>
<th>R2 Swift</th>
<th>R2 Kotlin</th>
</tr>
</thead>
<tbody>
<tr>
<td>RWPM Audiobook</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>FXL support (2 page)</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Popup Footnotes</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>PDF support</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Readium LCP PDF</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>PositionList</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Annotations (Highlights)</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>RWPM Digital Visual Narratives</td>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>

- **Done**
- **In Progress**
- **Planned**
## Mobile - Where are we going? (cont.)

<table>
<thead>
<tr>
<th>Feature</th>
<th>R2 Swift</th>
<th>R2 Kotlin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Search</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>TTS with Sentence Highlighting</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Media Overlay</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>More Accessibility</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

- ✓ - In Progress
- ✗ - Planned

June 25-26 2019
# Mobile - Use Cases

-Mobile - Use Cases (github.com/readium)

<table>
<thead>
<tr>
<th>I want to read books located on my device offline</th>
<th>R2-Shared</th>
<th>R2-Streamer</th>
<th>R2-Navigator</th>
<th>R2-OPDS</th>
<th>R2-LCP</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I want to read ePubs that are LCP protected</th>
<th>R2-Shared</th>
<th>R2-Streamer</th>
<th>R2-Navigator</th>
<th>R2-OPDS</th>
<th>R2-LCP</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I want to read books that are not on my device but streamed from a remote server</th>
<th>R2-Shared</th>
<th>R2-Streamer</th>
<th>R2-Navigator</th>
<th>R2-OPDS</th>
<th>R2-LCP</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I want to download books from an OPDS feed and read them offline</th>
<th>R2-Shared</th>
<th>R2-Streamer</th>
<th>R2-Navigator</th>
<th>R2-OPDS</th>
<th>R2-LCP</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I want to listen to an audiobook that is provided through an OPDS feed and streamed from a remote server</th>
<th>R2-Shared</th>
<th>R2-Streamer</th>
<th>R2-Navigator</th>
<th>R2-OPDS</th>
<th>R2-LCP</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I want to read a pdf that is LCP protected</th>
<th>R2-Shared</th>
<th>R2-Streamer</th>
<th>R2-Navigator</th>
<th>R2-OPDS</th>
<th>R2-LCP</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I want to just browse an OPDS catalog</th>
<th>R2-Shared</th>
<th>R2-Streamer</th>
<th>R2-Navigator</th>
<th>R2-OPDS</th>
<th>R2-LCP</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>

- ✔ - modules you need
- ✔ - modules that are included in other modules
# Mobile - Native Platforms

<table>
<thead>
<tr>
<th>R2 Swift -&gt; iOS, iPadOS?, MacOS?</th>
</tr>
</thead>
<tbody>
<tr>
<td>iPhone</td>
</tr>
<tr>
<td>iPad</td>
</tr>
<tr>
<td>Mac ?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>R2 Kotlin -&gt; Android</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phone</td>
</tr>
<tr>
<td>Tablet</td>
</tr>
<tr>
<td>Chromebook</td>
</tr>
</tbody>
</table>

- ✔ - fully supported
- ✔ - needs better keyboard support
- ✔ - TBD
Mobile - How to? (Kotlin example)
dependencies {
    implementation fileTree(dir: 'libs', include: ['*.jar']
    implementation 'org.jetbrains.kotlin:kotlin-stdlib-jdk7:$kotlin_version'
    implementation 'androidx.appcompat:appcompat:1.0.2'
    implementation 'androidx.core:core-ktx:1.0.2'
    implementation 'com.google.android.material:material:1.0.0'
    implementation 'androidx.constraintlayout:constraintlayout:1.1.3'
}

// Readium R2 Modules
implementation 'com.github.readium:r2-shared-kotlin:1.0.10'
implementation 'com.github.readium:r2-navigator-kotlin:1.0.10'
 implementation 'com.github.readium:r2-streamer-kotlin:1.0.10'

implementation 'org.nanohttpd:nanohttpd:2.3.2-SNAPSHOT'
implementation 'org.nanohttpd:nanohttpd-nanolets:2.3.2-SNAPSHOT'

// Anko
implementation 'org.jetbrains.anko:anko-commons:0.10.8'
implementation 'org.jetbrains.anko:anko-sdk25:0.10.8'
implementation 'org.jetbrains.anko:anko-appcompat-v7:0.10.8'
implementation 'org.jetbrains.anko:anko-design:0.10.8'
implementation 'org.jetbrains.anko:anko-sdk25-coroutines:0.10.8'
implementation 'org.jetbrains.anko:anko-appcompat-v7-coroutines:0.10.8'
}
class MainActivity : AppCompatActivity() {
    private lateinit var server: Server
    private var localPort: Int = 0

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)

        val s = ServerSocket(port = 0)
        s.localPort
        s.close()

        localPort = s.localPort
        server = Server(localPort)

        linearlayout {
            this: LinearLayout.VERTICAL
            orientation = LinearLayout.VERTICAL
            assets.listFiles { it.endsWith(endsWith: ".*epub") }.let { list:List<String> ->
                for (element: String! in list) {
                    val input :InputStream = assets.open(fileName: "Samples/$element")
                    val fileName :String = UUID.randomUUID().tostring()
                    val publicationPath :String = appPath + "/" + fileName
                    input.tofile(publicationPath)
                    button {
                        text = "Open $element"
                        setOnClickListener { (it:View) ->
                            val parser = EpubParser()
                            val pub :PubBox = parser.parse(publicationPath)
                            pub.let { (it:PubBox) ->
                                server.addEpub((pub:publication, pub:container, fileName: "$/fileName", userPropertiesPath: appPath + "/styles/UserProperties.json")
                                startActivity{
                                    intentFor<EpubActivity>("params: "publicationPath" to publicationPath, "epubName" to fileName, "publication" to pub.publication")
                                }
                            }
                        }
                    }
                }
            }
        }
    }
}
Mobile - How to? (Kotlin example)
R2 Reader “test apps”

- Distributed via official stores, but only for tests / demos!
- Fluid user experience (instant rendering, fast page turns)
- Accessible user interface
- Minimal bookshelf functionality (basic OPDS browser)
- Minimal reader features (e.g. no shared annotations, dictionary, etc.)

**Goal:** facilitate the integration of R2 building blocks into publisher apps, vendor ecosystem, etc.
Mobile - Implementations (OPDS)
Mobile - Implementations (bookshelf)
A new classroom for Joan

This is a new classroom.

Chapter I

Down the Rabbit-Hole

Alice was beginning to get very tired of sitting by her sister on the bank, and of having nothing to do. Once or twice she had...
Mobile - Implementations (Navigator)

[Image of a navigation interface with titles such as "A new classroom for Joan", "Alice's Adventures in Wonderland", and "Communication in the Real World: An In..." and contents like "titlepage", "chapter01", etc.]

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Mobile - Implementations (OPDS)
Chapter 2

The next morning the youth discovered that his tall
comrade had been the fast-flying messenger of a mistake.
There was much scoffing at the latter by those who had
yesterday been firm adherents of his views, and there
was even a little sneering by men who had never
believed the rumor. The tall one fought with a man from
Chatfield Corners and beat him severely.

The youth felt, however, that his problem was in no
wise lifted from him. There was, on the contrary, an
irritating prolongation. The tale had created in him a
great concern for himself. Now, with the newborn
question in his mind, he was compelled to sink back into
his old place as part of a blue demonstration.

For days he made ceaseless calculations, but they were
all wondrously unsatisfactory. He found that he could
establish nothing. He finally concluded that the only way
to prove himself was to go into the blue, and then
figuratively to watch his legs to discover their merits and
faults. He reluctantly admitted that he could not sit still
and with a mental slate and pencil derive an answer. To
gain it, he must have blaze, blood, and danger; even as a
chemist requires this, that, and the other. So he fretted
for an opportunity.

Meanwhile he continually tried to measure himself by
his comrades. The tall soldier, for one, gave him some
assurance. This man’s severe unconcern dealt him a
measure of confidence, for he had known him since
childhood, and from his intimate knowledge he did not
see how he could be capable of anything that was beyond
him, the youth. Still, he thought that his comrade might
obscure, but, in reality, made to shine in war.

The youth would have liked to have discovered another
who suspected himself. A sympathetic comparison of
mental notes would have been a joy to him.

He occasionally tried to fathom a comrade with
seductive sentences. He looked about to find men in the
proper mood. All attempts failed to bring forth any
statement which looked in any way like a confession to
those doubts which he privately acknowledged in
himself. He was afraid to make an open declaration of his
concern, because he dreaded to place some unscrupulous
confidant upon the high plane of the unconfessed from
which elevation he could be derided.

In regard to his companions his mind wavered
between two opinions, according to his mood. Sometimes
he inclined to believing them all heroes. In fact, he
usually admitted in secret the superior development of
the higher qualities in others. He could conceive of men
growing very insignificantly about the world hearing a load
of courage unseen, and although he had known many of
his comrades through boyhood, he began to fear that his
judgment of them had been blind. Then, in other
moments, he flouted these theories, and assured himself
that his fellows were all privately wounding and
quaking.

His emotions made him feel strange in the presence
of men who talked excitedly of a prospective battle as if of
drama they were about to witness, with nothing but
eagerness and curiosity apparent in their faces. It was
often that he suspected them to be liars.

He did not pass such thoughts without severe
condemnation of himself. He dinned reproaches at times.
He was convicted by himself of many shameful crimes
against the gods of tradition.

In his great anxiety his heart was continually
clamoring at what he considered the intolerable slowness
of the generals. They seemed content to perch tranquilly
A quick comparison to the experience of French language Canadian-owned publishers (see Chart 12) shows that they also have experienced a decline in total sales of Canadian-authored books in the domestic market, moving from $495 million in 2011-12 to $350 million in 2016-17. The decline was 27 per cent, considerably less than the 44 per cent in English Canada.

As with English language books, exports have been strong but there has been no recent increase (Chart 13).

A decline in Canadian-owned publishers’ sales of Canadian-authored books in Canada is a strong indicator of a decline in Canadian book reading. But it is an indirect indicator. The data that would provide a direct measure of this phenomenon is statistics on the leisure reading of Canadians, and in particular how much of what kinds of books Canadians are reading.

There is good survey data about the amount of time people spend on leisure reading of books – and this time commitment has held up well in the face of challenges from all forms of screen-based leisure activities. What is not measured is the authorship and other specifics of the books people are reading. There is currently no ongoing reporting on the types of books Canadians are reading, as opposed to what they are buying. We have to rely on a variety of one-time reader studies and surveys to answer this question.

A major Statistics Canada study of reading carried out with a very large sample in 1978 found that Canadian books then accounted for 14 per cent of reading. Studies in the 1980s and 1990s pointed to the fact that this number had increased significantly. However, in 2005 a major study put Canadian-authored books at 27 per cent of purchases and 15 per cent of reading. A small survey in December 2017-January 2018 put the number of Canadian-authored books read by that sample at 23 per cent for Atlantic Canadian readers (Chart 14).
Mobile - Implementations (LCP)

A new classroom for Joan

Chapter I
Down the Rabbit-Hole

Although models of useful blueprint to see cross works, they are not what communication.

Chris Searle – Blue

The internal cognitive participants to send, receive, and react.
Thank you!

- GitHub.com/readium
  - r2-<module>-swift, r2-<module>-kotlin
  - r2-testapp-swift, r2-testapp-kotlin
- ... get involved! :) 
- https://www.edrlab.org
DEMO: iOS: https://github.com/readium/r2-testapp-swift
Android: https://github.com/readium/r2-testapp-kotlin

Questions?