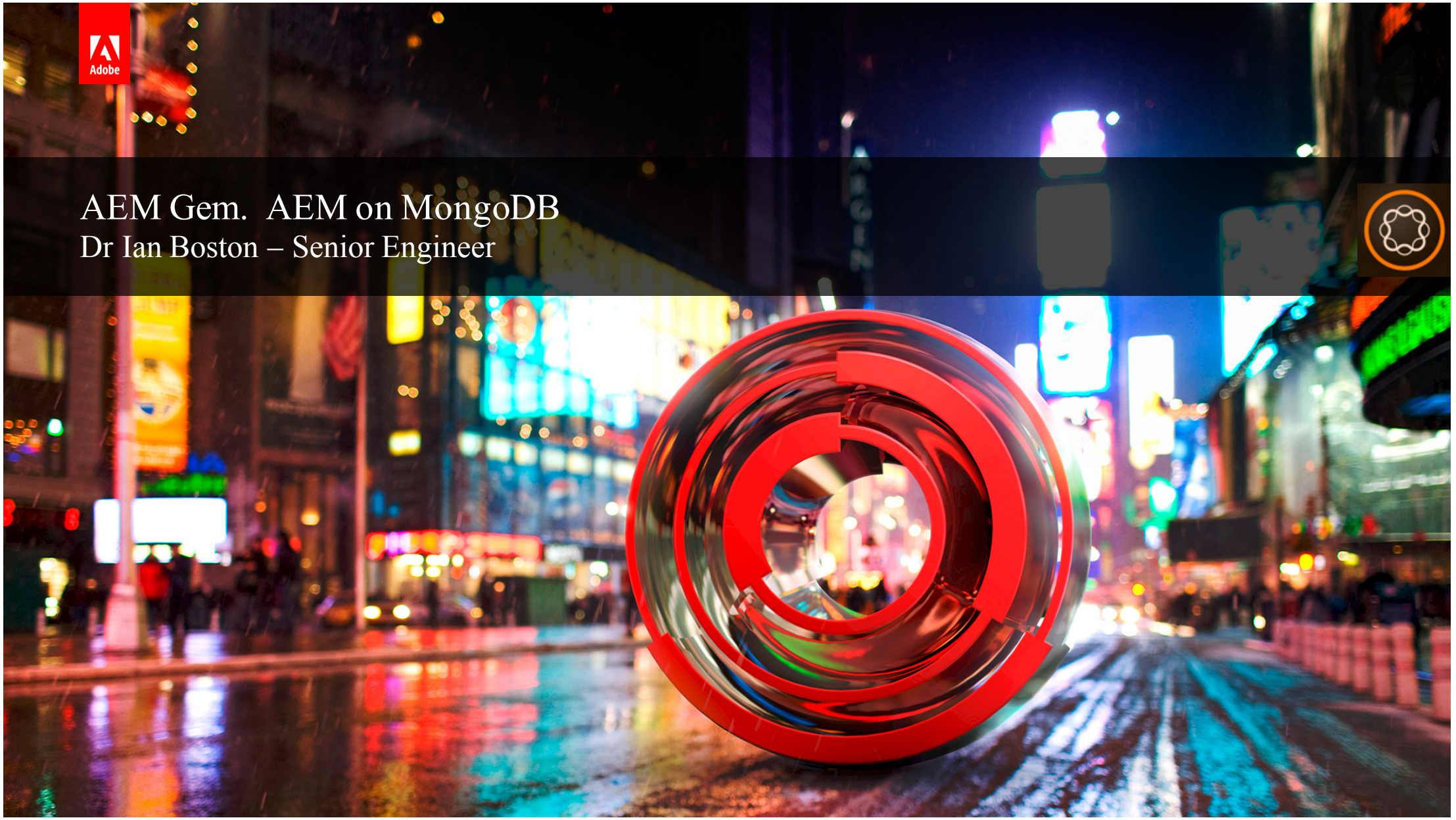
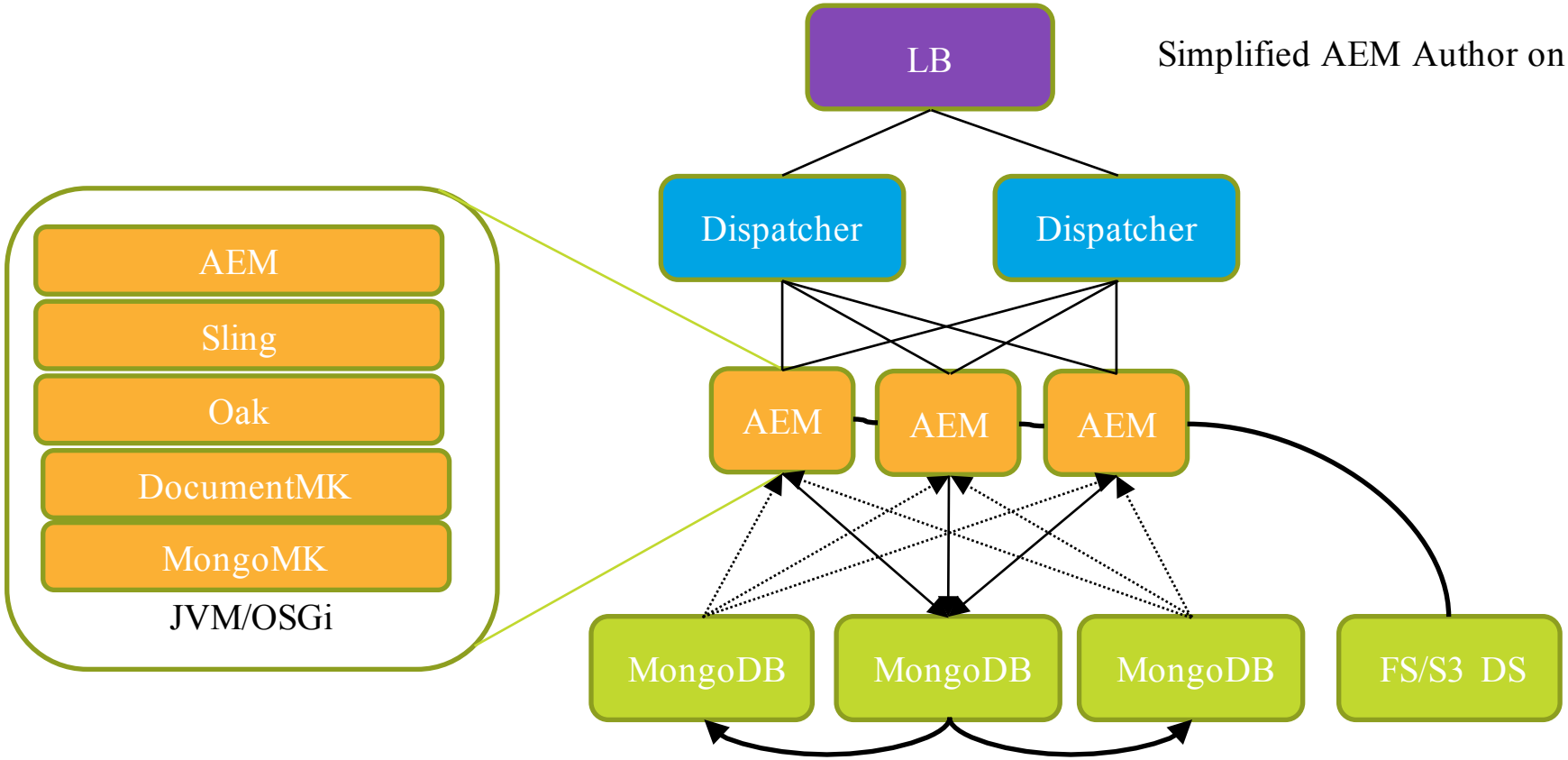


AEM Gem. AEM on MongoDB

Dr Ian Boston – Senior Engineer

AEM on MongoDB



Simplified AEM Author on MongoDB deployment

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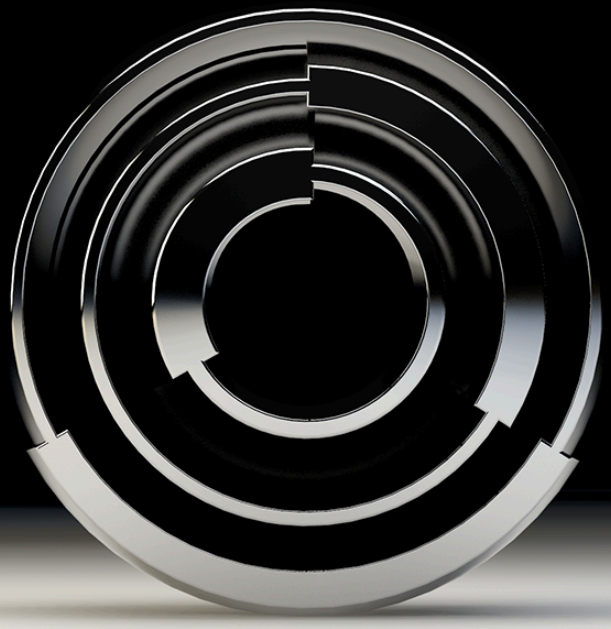
Before considering AEM on MongoDB

Only supported for Author deployments that are expecting:



> 1000 unique users/authors per day.
> 100 concurrent authors.
High volumes of page edits.
Large volumes of rollouts.

Normally Adobe Engineering will confirm support once the deployment Architecture is available.

https://docs.adobe.com/content/docs/en/aem/6-1/deploy/platform/aem-with-mongodb.html

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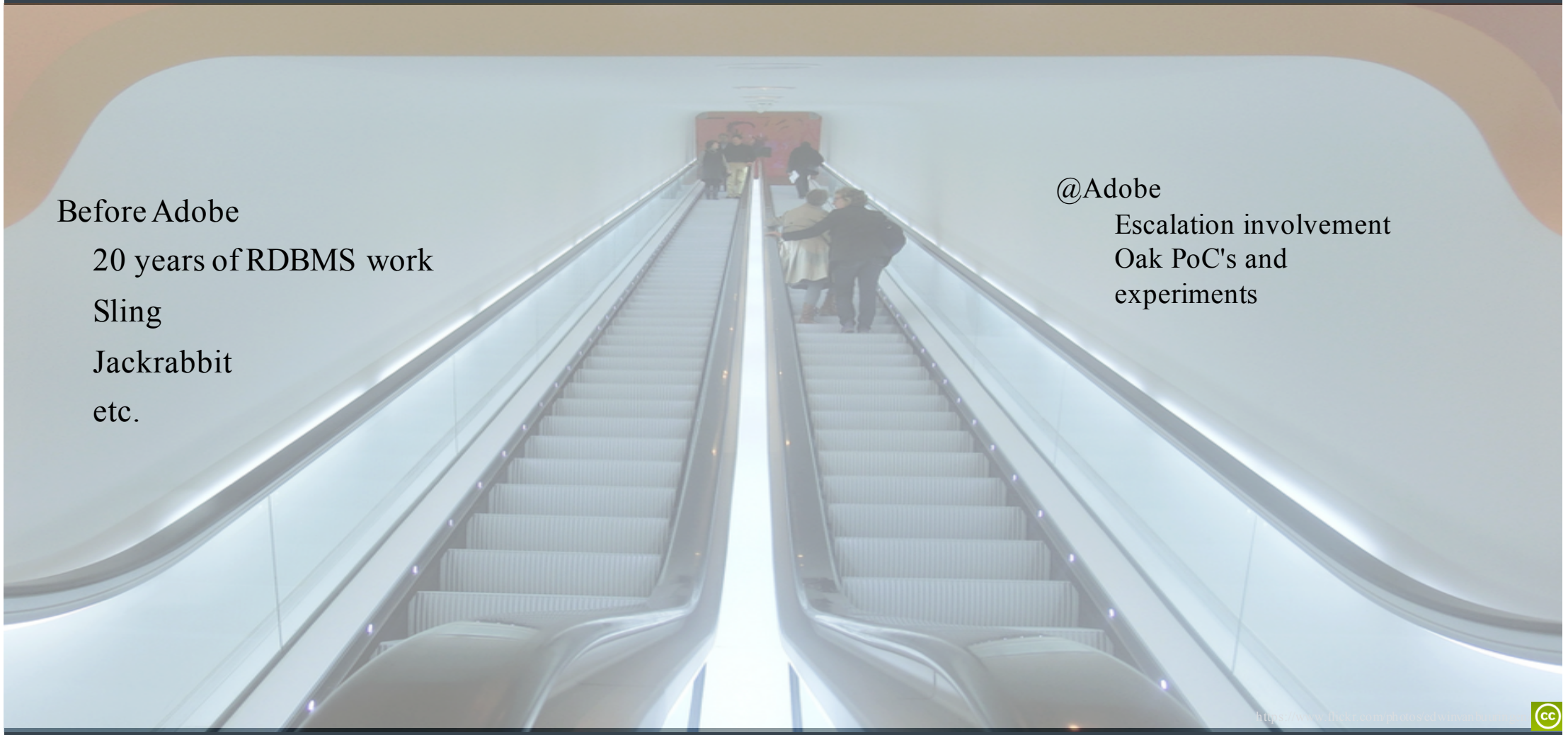
Exposure to MongoDB



Before Adobe

- 20 years of RDBMS work
- Sling
- Jackrabbit
- etc.

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- Escalation involvement
- Oak PoC's and experiments

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Version Compatibility

- AEM 6.0 - MongoDB 2.6
- AEM 6.1 – MongoDB 2.6, 3.0
- AEM 6.2 – MongoDB 2.6, 3.0, 3.2 (TBC)

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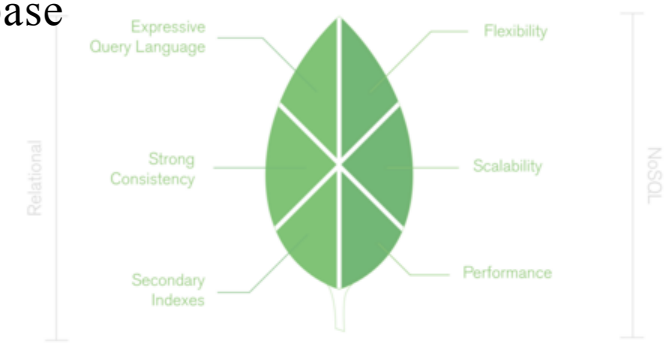
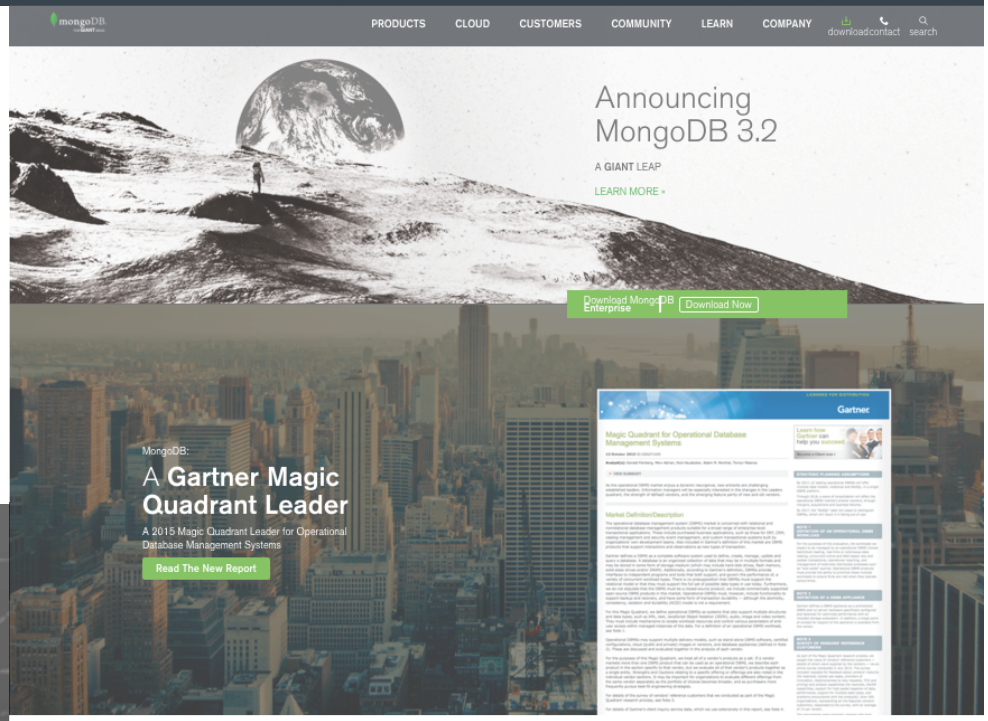
What is MongoDB ?

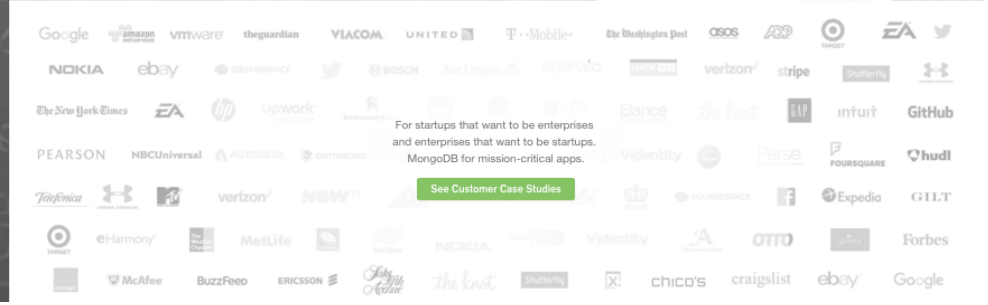
- Commercial Open Source
- NoSQL Column Database
- Key Value Store
- Secondary indexes
- Query language



	MongoDB
Key-value Queries	Yes
Secondary Indexes	Yes
Index Intersection	Yes
Range Queries	Yes
Geospatial	Yes
Text Search	Yes
Aggregation	Yes
MapReduce	Yes
Idiomatic Drivers	Yes
Left Outer JOINs ($Lookup)	Yes

To learn more about the differences in data models, download our Rela





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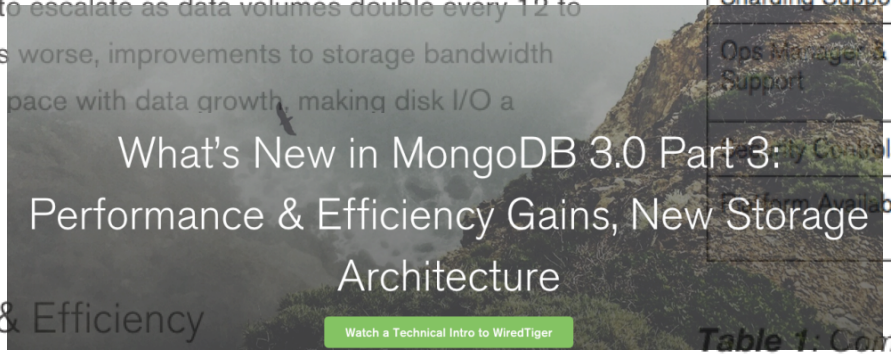
Images from mongoDB.

Storage Engine Versions

- MongoDB 2.6 with MMAPv1 Storage Engine
- MongoDB 3.x or later with WiredTiger

Compression: Up to 80% Reduction in Storage Costs

Despite data storage costs declining 30% to 40% per annum, overall storage expenses continue to escalate as data volumes double every 12 to 18 months. To make matters worse, improvements to storage bandwidth and latency are not keeping pace with data growth, making disk I/O a



Higher Performance & Efficiency

Between 7x and 10x Greater Write Performance

	MongoDB WiredTiger	MongoDB MMAPv1
Write Performance	Excellent Document-Level Concurrency Control	Good Collection-Level Concurrency Control
Read Performance	Excellent	Excellent
Compression Support	Yes	No
MongoDB Query Language Support	Yes	Yes
Secondary Index Support	Yes	Yes
Replication Support	Yes	Yes
Sharding Support	Yes	Yes
Ops Manager & MMS Support	Yes All features including deployment, upgrade backup, restore, and monitoring	Yes All features including deployment, upgrade backup, restore, and monitoring
[illegible]ls	Yes	Yes
[illegible]ility	Linux, Windows, Mac OS X	Linux, Windows, Mac OS X, Solaris (x86)

***Table 1**: Comparing the MongoDB WiredTiger and MMAPv1 storage engines*

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Images from mongoDB.

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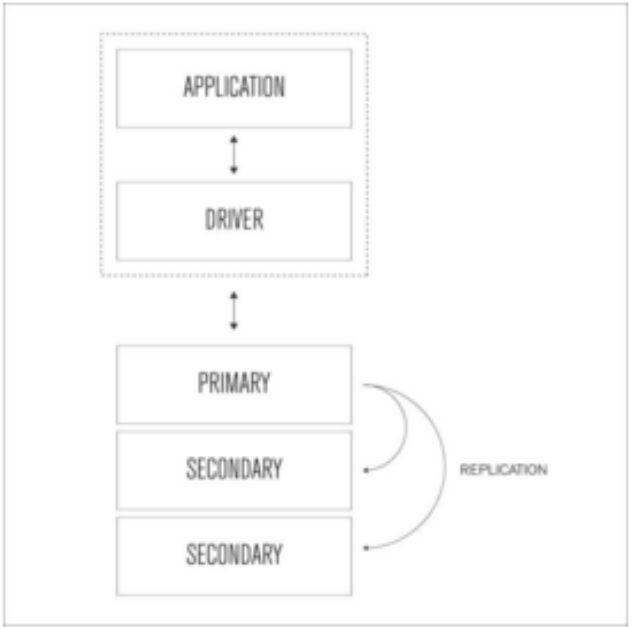
Scaling

- Read:
  - Replica Sets, 1 Primary, many secondaries, scaling read.
  - Some reads in Oak always go to primary.
- Write:
  - Shards of ID index scaling replica sets.
  - Not elastic, must be managed, not truly horizontal.
  - Post deployment sharding



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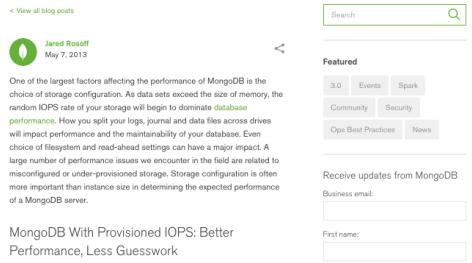
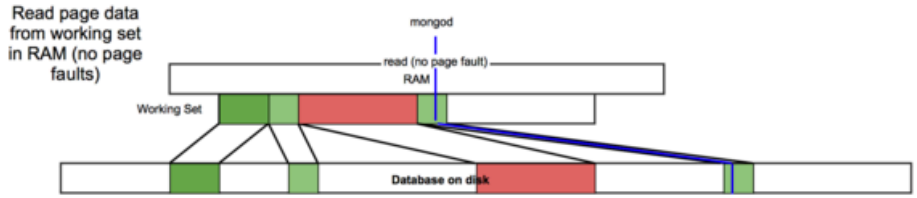
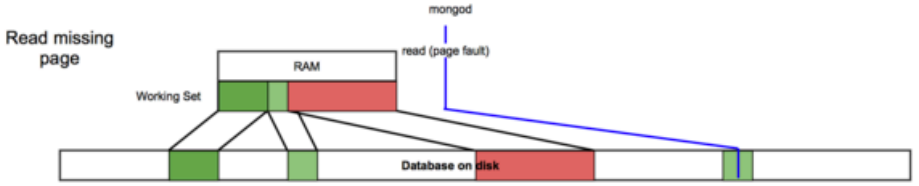
Images from mongoDB.

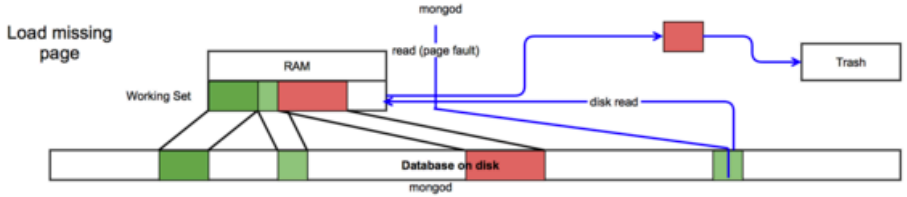
Operational

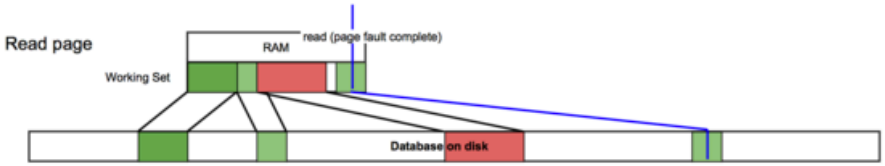
- In memory database.
- Working Set always in RAM
- IOPS











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Images from mongoDB.

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Replication - OPLog

P Primary MongoDB instance

S Secondary MongoDB instance

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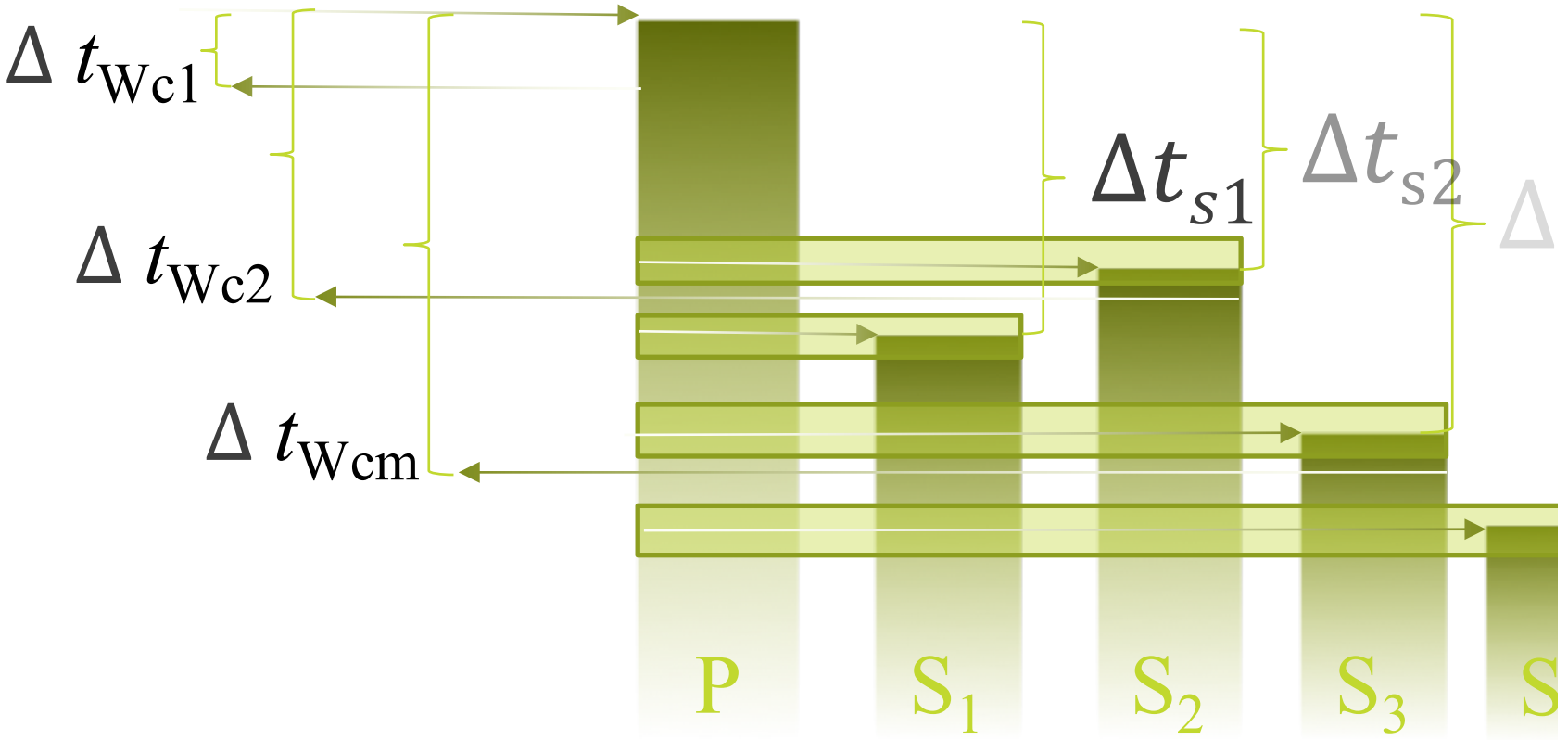
Write Concern Impact



$\Delta\ t_{Wc0} \rightarrow 0$

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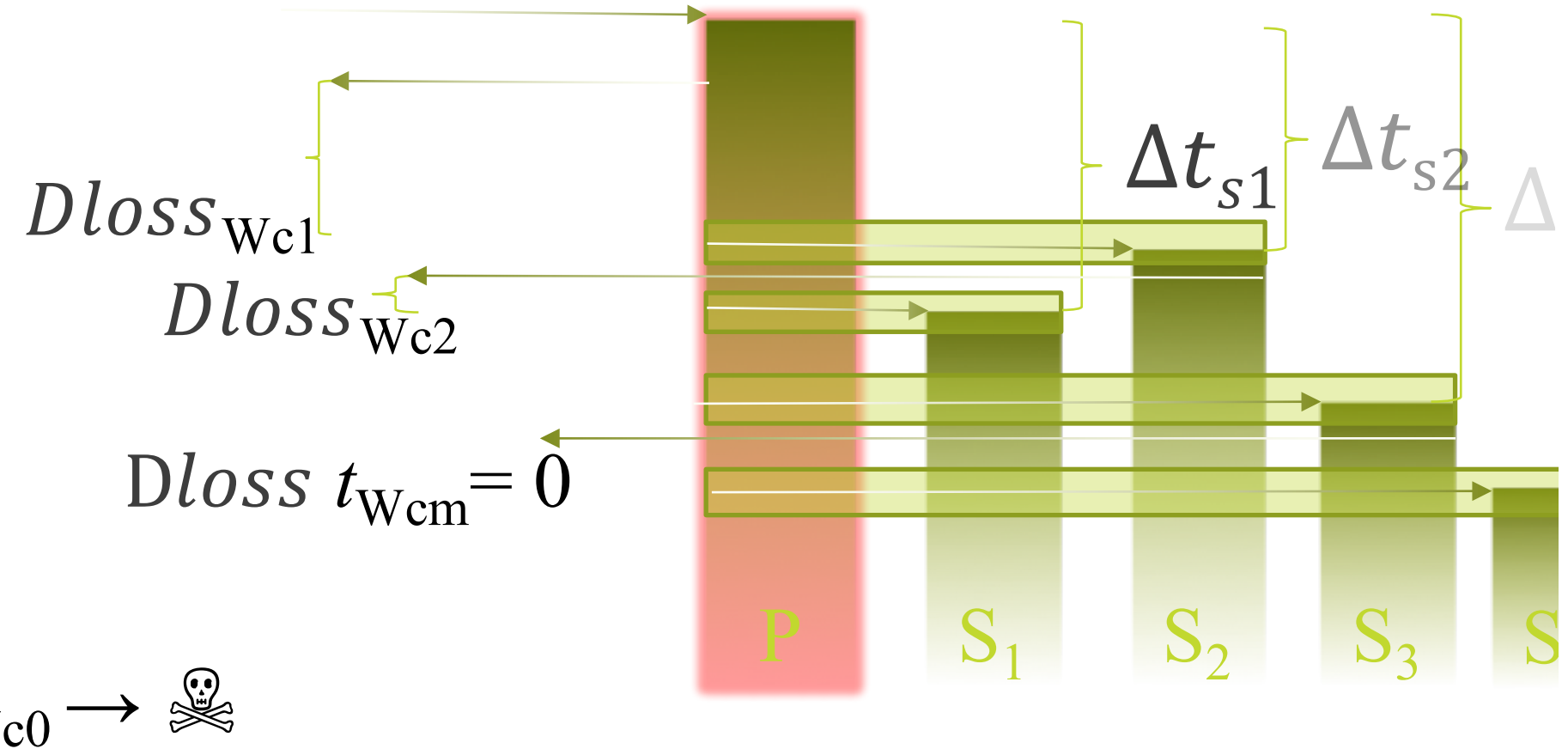
Resilience and data loss



$\Delta Dloss_{Wc0} \rightarrow$ ☠

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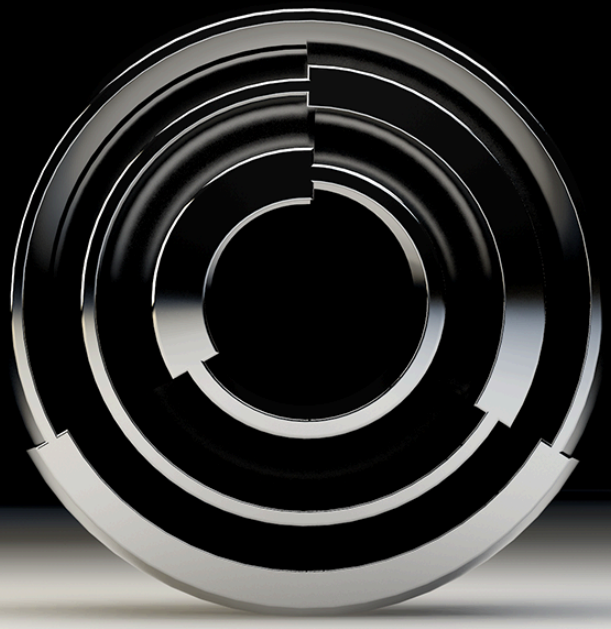
Summary



- Pre-requisites.
- Latest Supported version
- Sufficient RAM
- 3 Way Replica Set
- Write Concern of Majority
- FS or S3 DataStore
- Monitor OPLog and Page Faults
- Optimize Oak for 99% read first.

https://docs.adobe.com/content/docs/en/aem/6-1/deploy/platform/aem-with-mongodb.html

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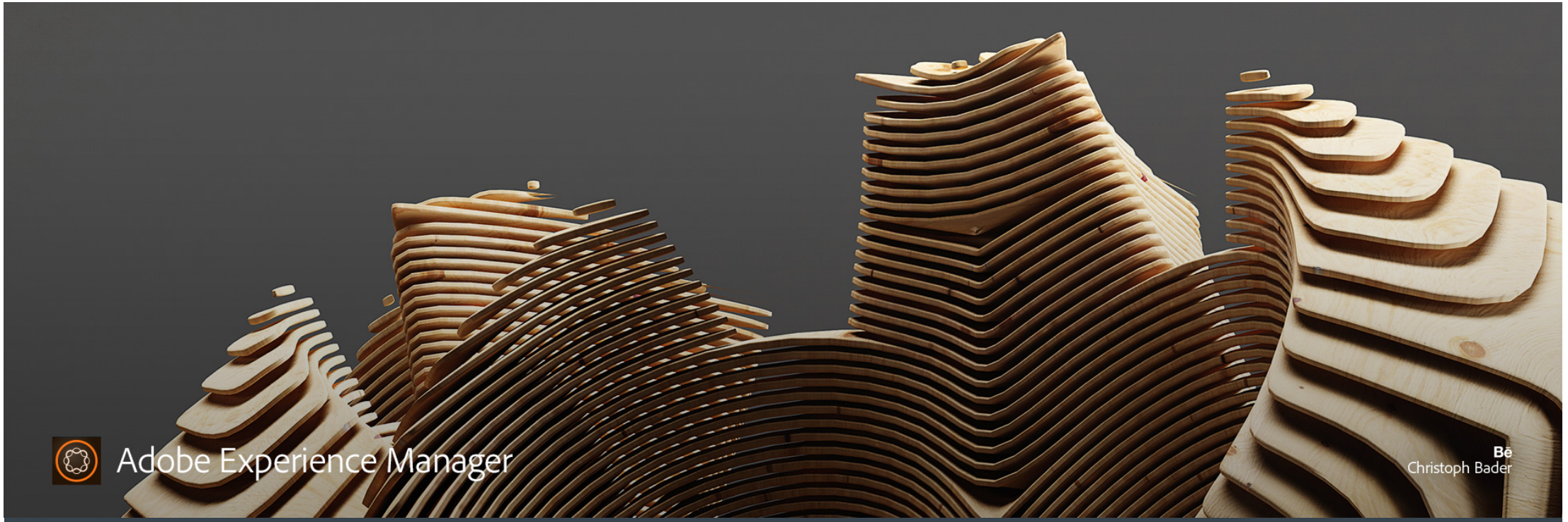
Questions ?



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