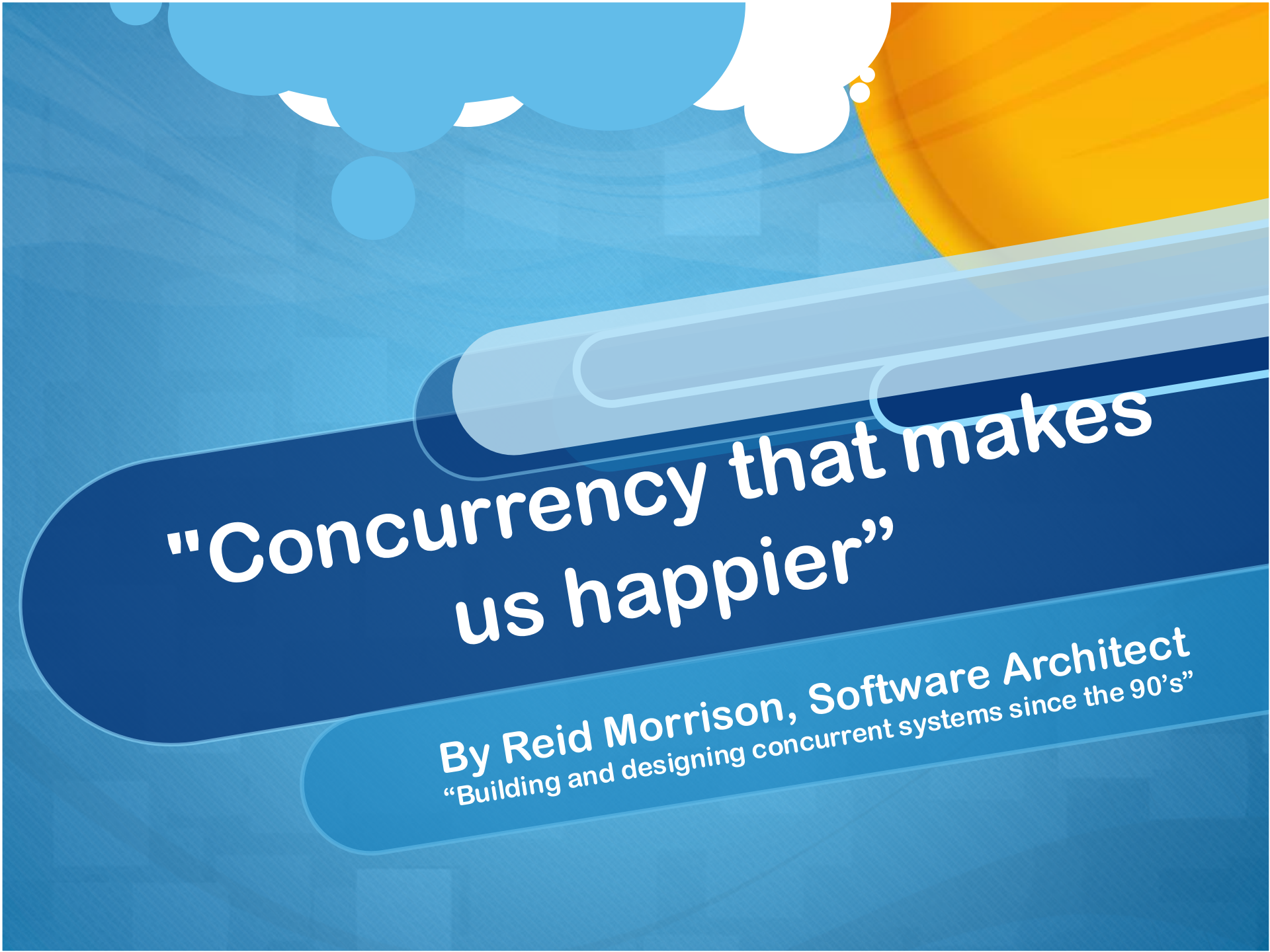




"Concurrency that makes us happier"

By Reid Morrison, Software Architect
"Building and designing concurrent systems since the 90's"

Concurrency is hard

- “Threading is hard”
 - RubyConf 2014 - Letting concurrency help you today - Richard Bishop
- Options
 - Celluloid - Actors, Supervisors
 - Event Machine
 - Promises
 - jruby-go
 - Go routines, channels
- **“How do I teach others concurrency?”**



Pragmatic Concurrency

Existing sequential code

```
# Some long running code
count = User.where('created_at <= ?', date).count

# Do other work here...

puts "Found #{count} records"
```

Pragmatic Concurrency

```
minion = ParallelMinion::Minion.new(10.days.ago) do |date|  
  # Some long running code  
  User.where('created_at <= ?', date).count  
end
```

```
# Do other work here...
```

```
count = minion.result  
  
puts "Found #{count} records"
```





Parallel Minion

- Minions
 - Simple
 - Stateless
 - Do the task then go away
 - Existing blocks of code
 - Exceptions returned to caller
 - Timeout
- **In Production !!**
 - Highly concurrent, high volume, mission critical system



Parallel Minion

- ◊ Logs everything
 - ◊ Start Time
 - ◊ Processing Time
 - ◊ Wait Time
 - ◊ Timeouts
- ◊ Copies current thread state
 - ◊ Tagged logging
 - ◊ Dynamic Scope (ActiveRecord)
- ◊ Cleans Up
 - ◊ ActiveRecord database connection



Performance

- JRuby 1.9
 - Create new Minion: **10 ms**
 - `thread.pool.enabled`: **0 ms**
- MRI
 - **< 1ms**



Considerations

- **Pass by copy**
 - Go, Erlang
 - Highly recommended
- Pass frozen objects
- Pass by reference
 - Thread-safe objects only!
 - ThreadSafe::Array, ThreadSafe::Hash
- Not For:
 - Long Running Tasks



Future

- ◊ Based on community demand
 - ◊ Wait for any minion to finish
 - ◊ Fibers
 - ◊ Hordes
 - ◊ Collection of Minions
 - ◊ Max threads



Other Gems

- For mission critical, high performance, low latency systems.:
- **symmetric_encryption**
 - Encrypt sensitive data in flight and at rest - 47,887 downloads
- **semantic_logger**
 - Next generation logging system for Ruby - 38,926 downloads
- **active_record_slave**
 - Redirect ActiveRecord reads to slave databases - 16,472 downloads
- **jruby-jms**
 - Java Messaging Client (JMS) Client for JRuby - 13,143 downloads
- **rubywmq**
 - MQ messaging client for MRI - 11,542 downloads
- **sync_attr**
 - Thread-safe Class Instance Variables - 10,917 downloads
- **net_tcp_client**
 - Net::TCPClient with failover and recovery - 7,900 Downloads
- **data_cleansing**
 - Cleanse inbound data - 7,349 rubygem downloads



Questions?

Parallel Minion:

http://reidmorrison.github.io/parallel_minion/

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