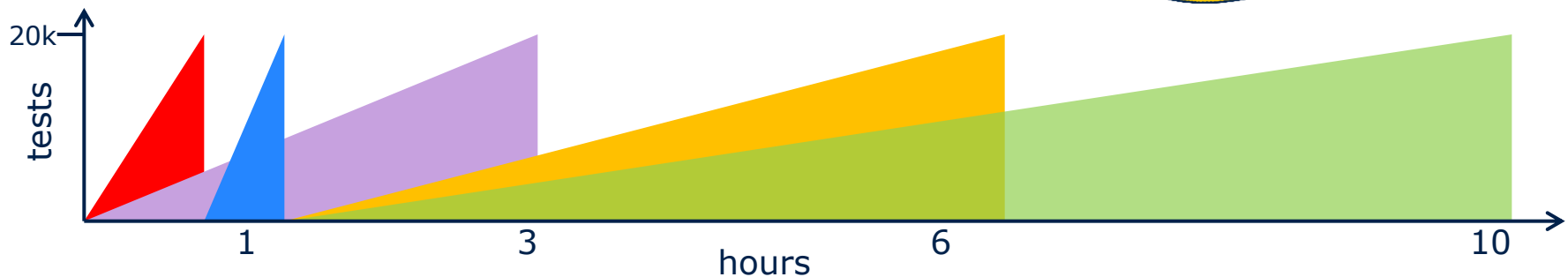
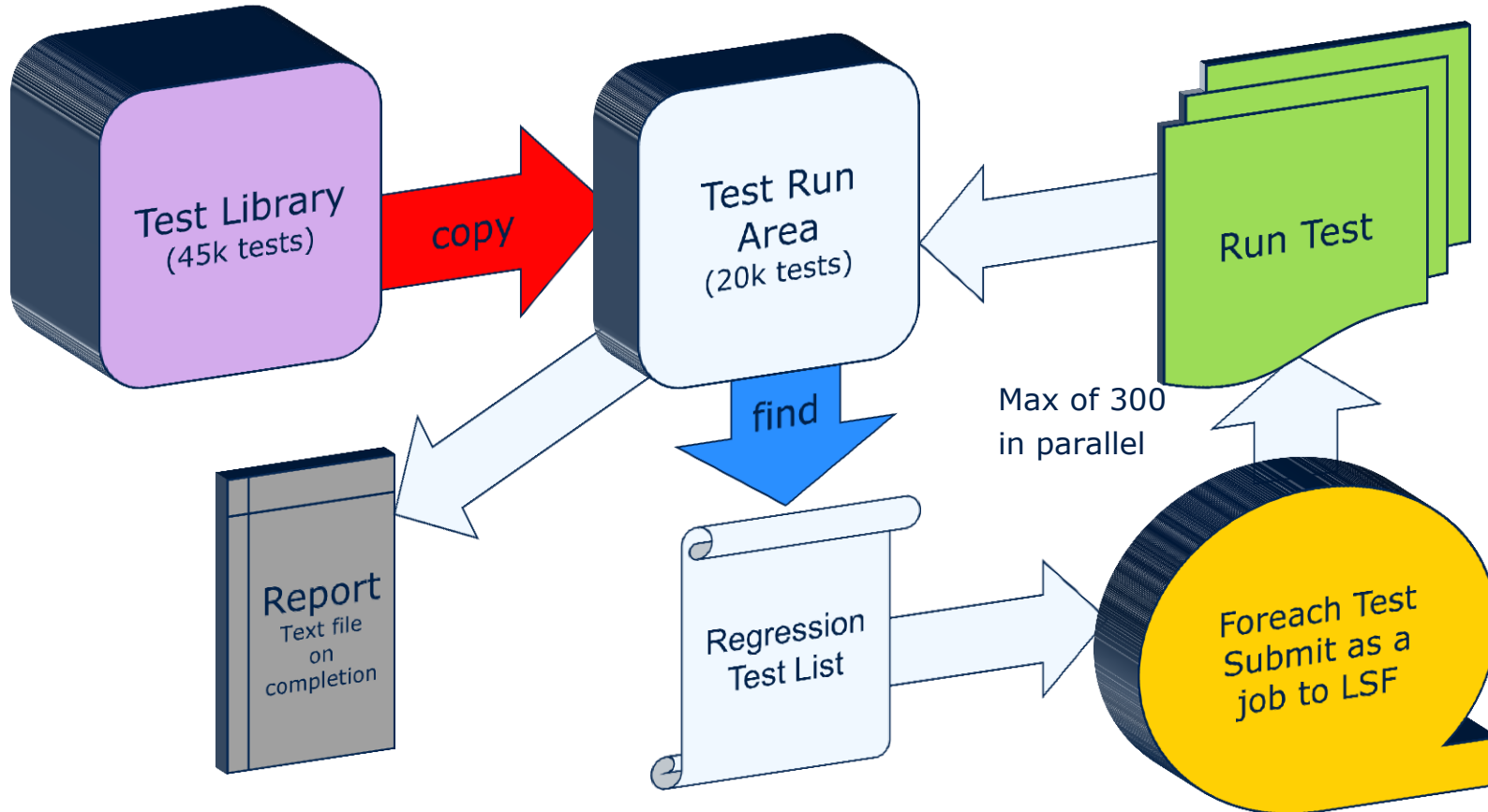


# 10x Faster Regressions.

Mark Daniel



# The Original Test and Regression Flow



# Areas for Improvement

- Test Library
- Network Storage
- LSF: Slow submission

# Test Library -> Test Database

## ■ Issues with Test Library

- Clearcase labelling very slow, hours
- Exceeded Clearcase vob storage capacity, >200k elements

## ■ Solution Test Database

- Create a MySQL database to store all testcases (TestDB)
- Developed interface script for users
- Direct access to meta data (testcase parameters)
  - Enables fast searching
  - Enables fast test list creation
- Testcase files also stored in database
- Implemented version control/labelling within the database
  - Labelling is instant
  - Checkout/Checkin at test level

# Network Storage -> Local Execution

## ■ Issues: Network storage

- Slow to create large directory trees for regression run area
- Slow to write to when executing tests
- Ceiling of 300 parallel jobs writing to network disk
- Then you need to clean up at some point

## ■ Solution: Execute each test on local disk

- No need for large directory trees
- typically saves 20 secs of I/O time per test
- Record result into database (ResultsDB), and remove run directory
- No ceiling can now run 1000 jobs in parallel...

# LSF: Slow Job Submission -> JobArrays

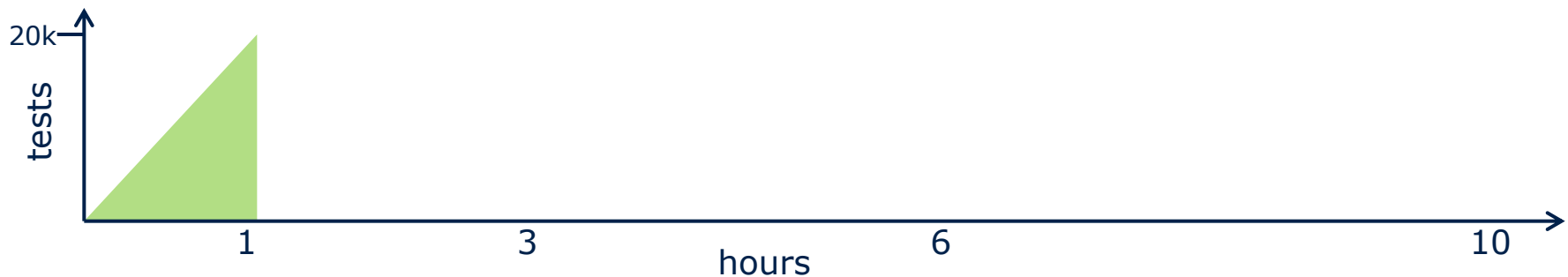
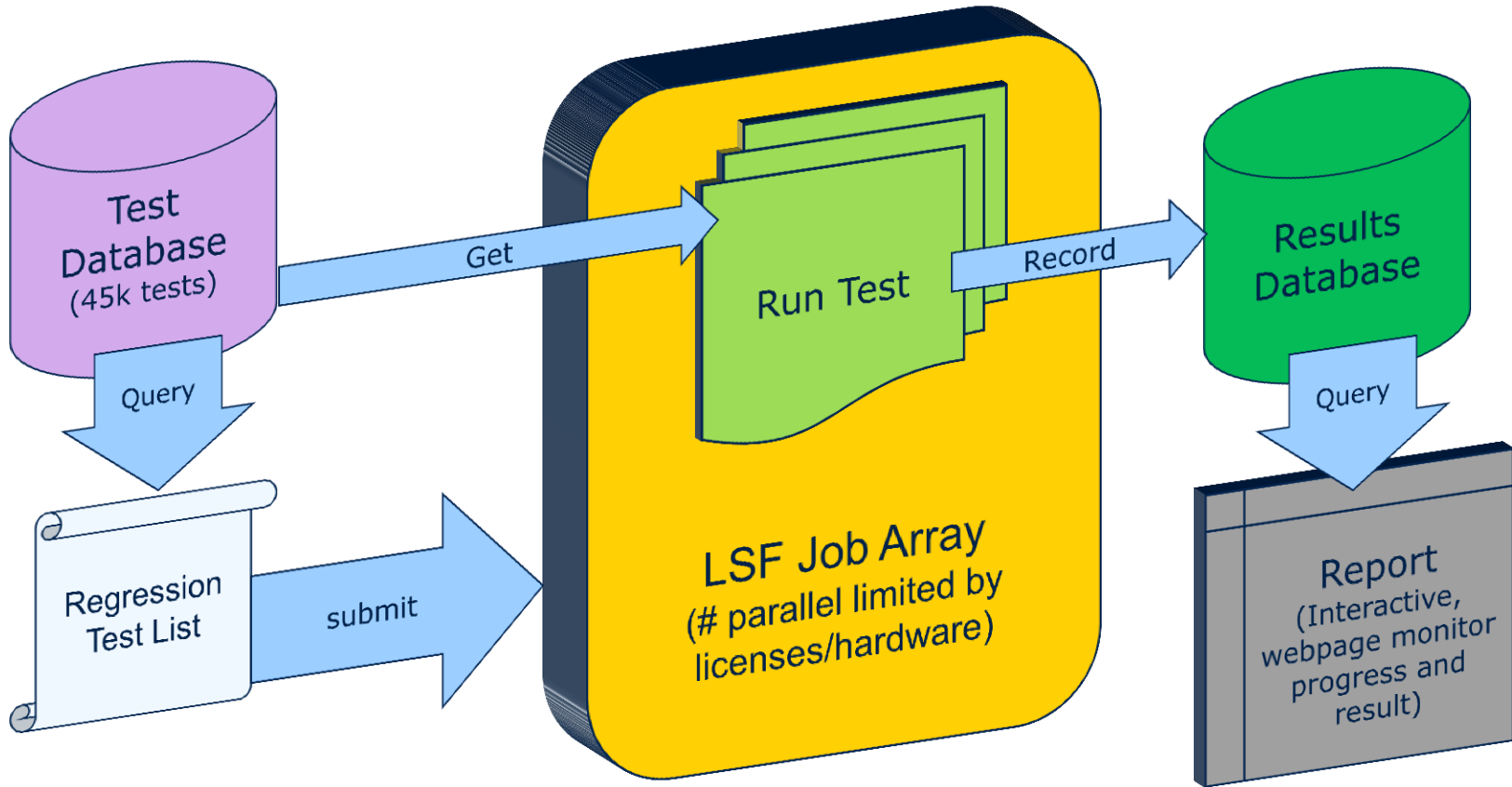
## ■ Issues: Slow Job Submission

- Submit 1 test per second
- Numerous jobs to handle

## ■ Solution: JobArrays

- Instant submission of N jobs
- All jobs in regression handled as one
  - Same parameters
  - Less load on LSF
  - Faster scheduling of jobs by LSF
  - Job chunking
- Easier to gather statistics on performance

# The New Test and Regression Flow



# Summary

- Faster Regressions
  - Mini (200 tests) 20 -> 2 minutes
    - Sanity Check
  - Midi (1200 tests) 80 -> 10 minutes
    - Results in better quality commits from design & verification
  - Full (20000 tests) 600 -> 50 minutes
    - Turn around multiple releases each day
  
- All done with free tools, without new hardware or the need for any new EDA software.



# Questions?

- Thanks for listening.



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