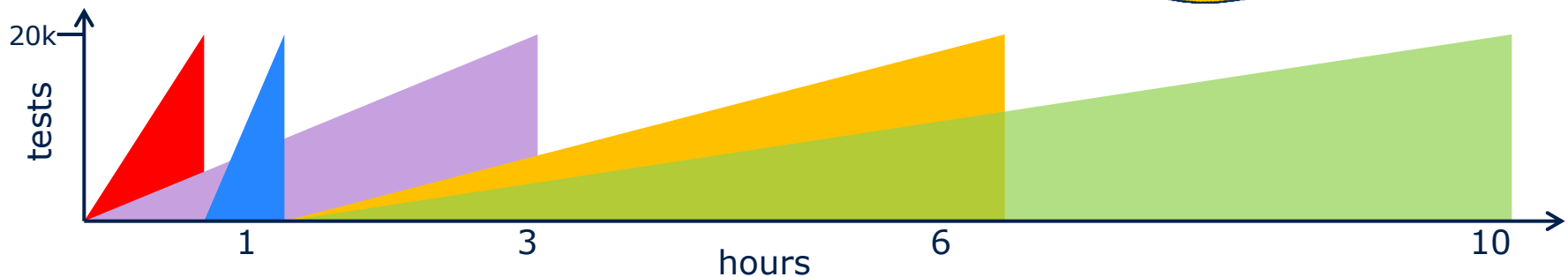
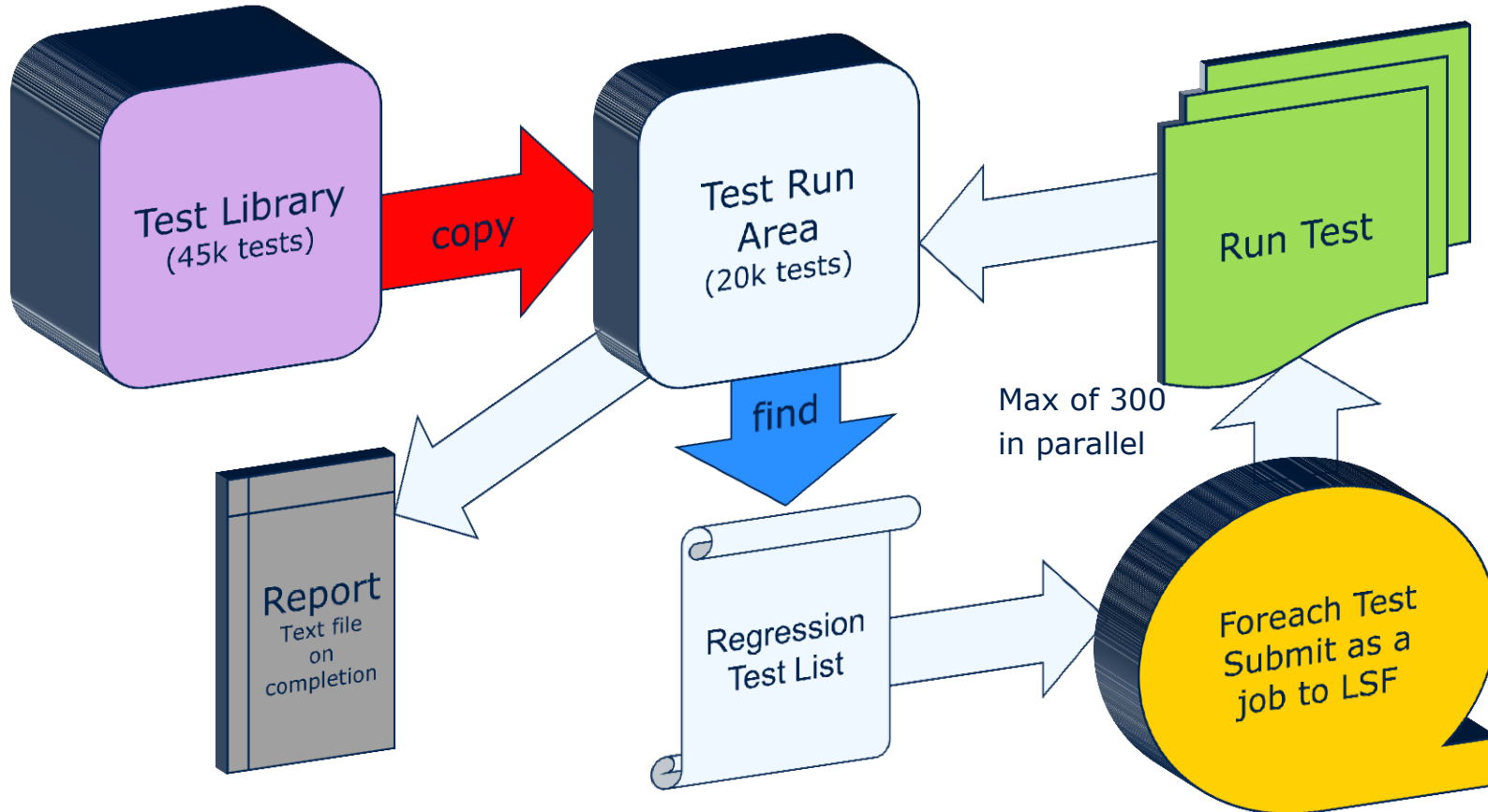


10x Faster Regressions.

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

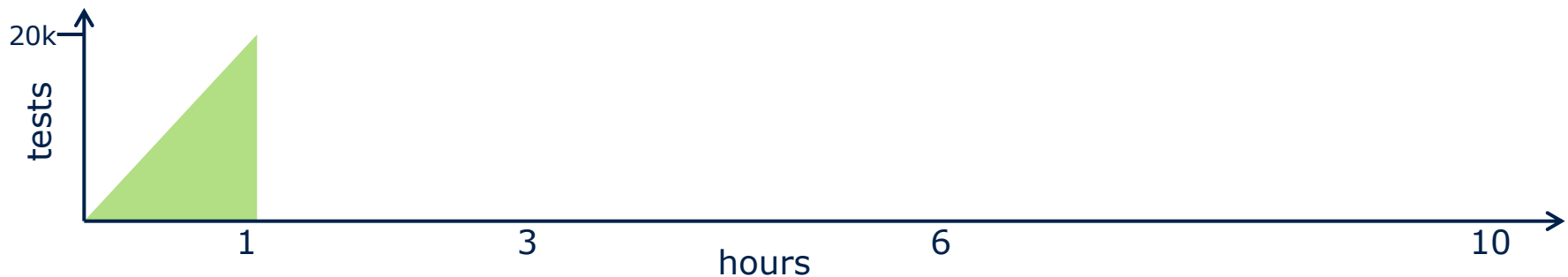
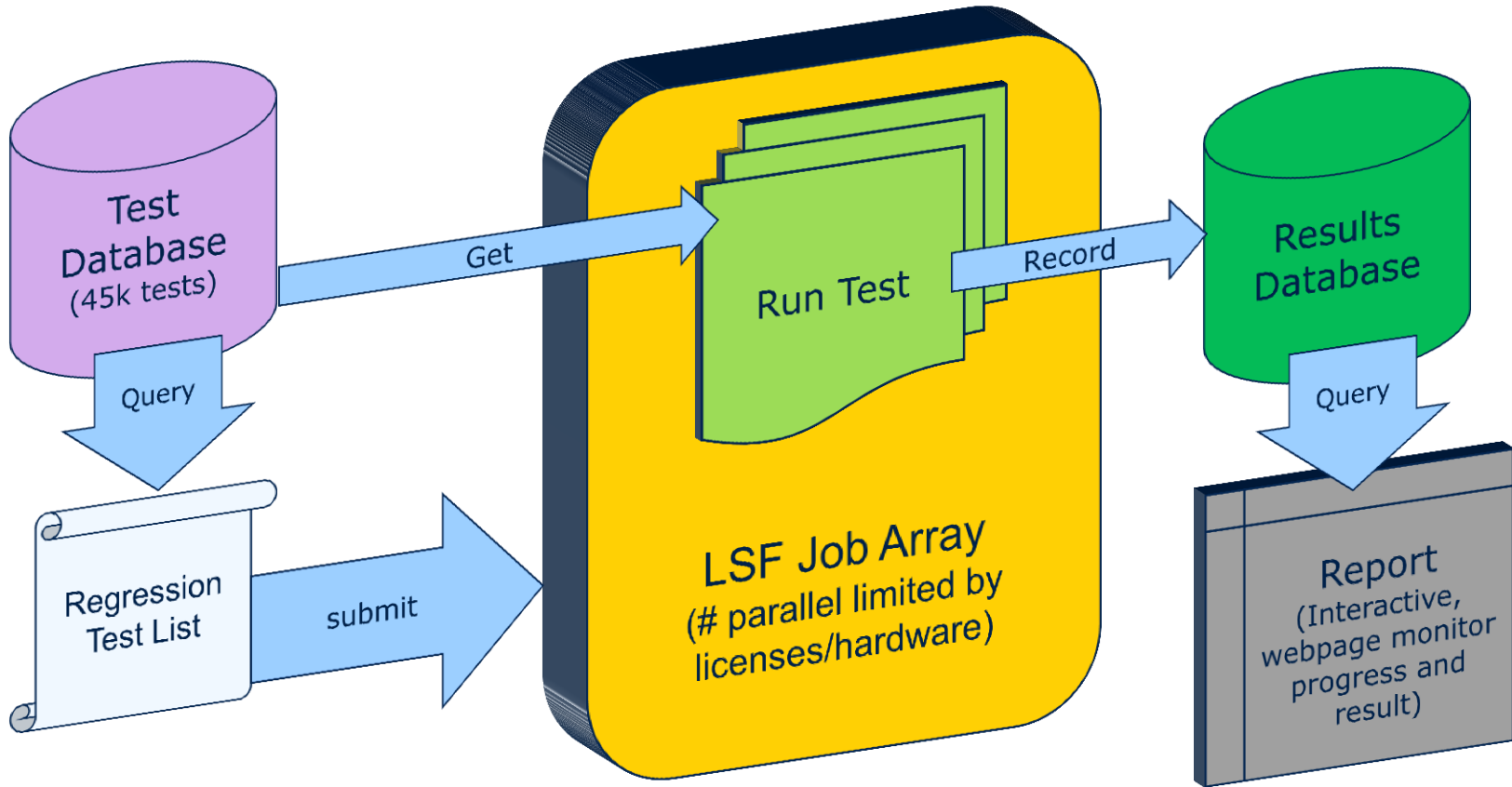
■ Issues: Slow Job Submission

- 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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