Context Based A/B Test Validation

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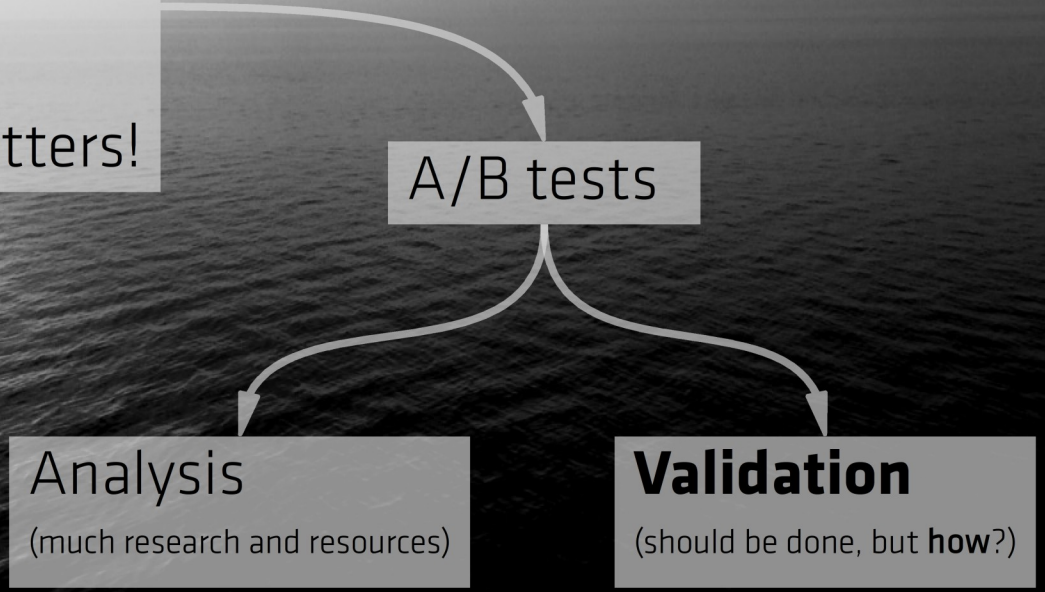
SEVENVAL TECHNOLOGIES

FRONTEND-EXPERTS SINCE 1999

- 17 YEARS OF EXPERIENCE
- FRONTEND MONITORING AND OPTIMIZATION
- 150 EMPLOYEES
- 3 LOCATIONS IN EUROPE
- MORE THAN 300 SATISFIED CUSTOMERS

Optimizing Web Applications

- Data driven
- Efficient
- Reliable
- **Frontend quality** matters!



WHY VALIDATE?

Assert that interpretation of analysis is correct.

Example:

- Backend performance improvement
- Control (A) performs better than Treatment (B)

Why?

- No improvement
- Assignment of backend systems uneven
- Assignment of user systems uneven

CHALLENGES

for validating A/B tests

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Browsers
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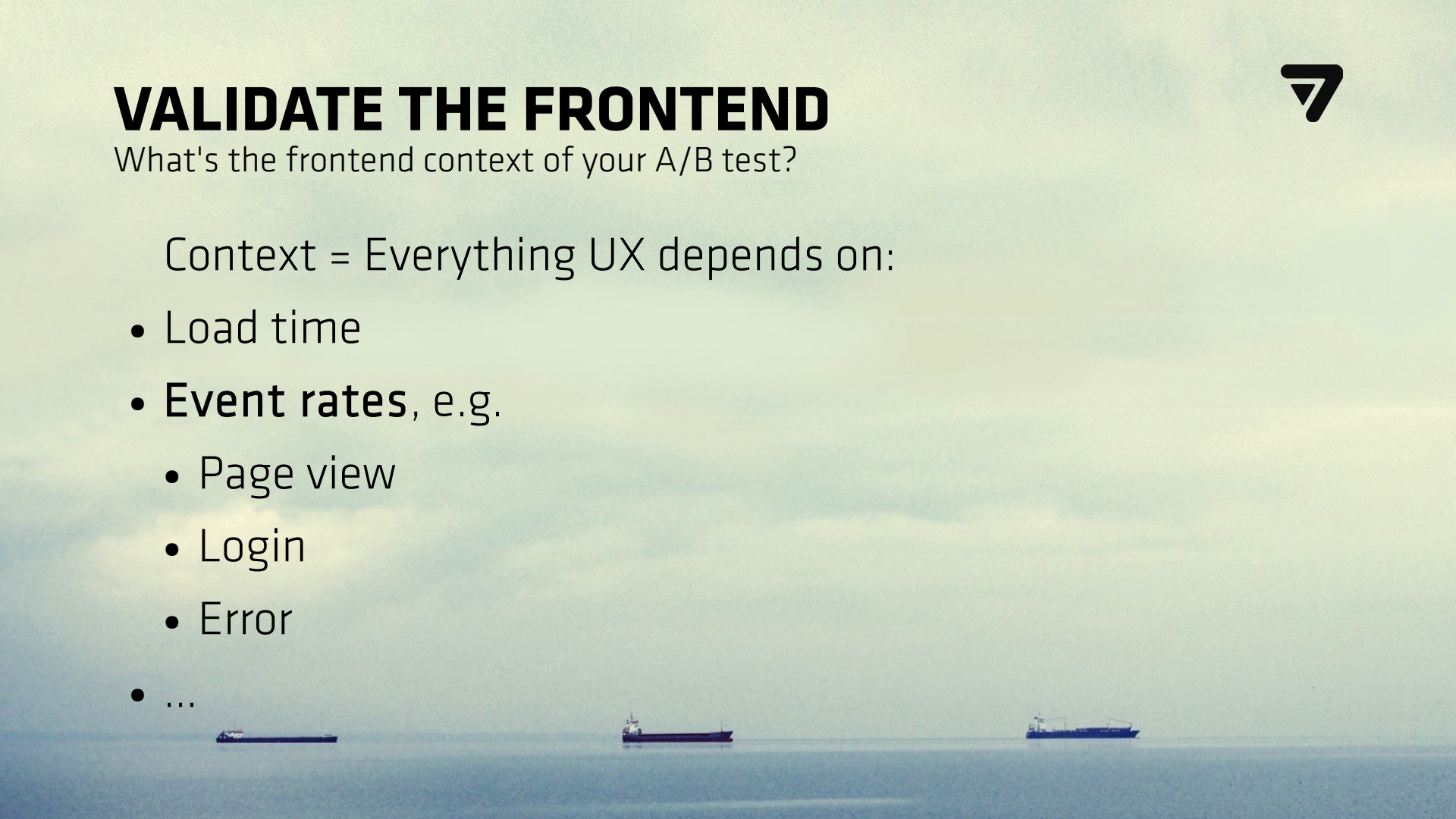
VALIDATE THE FRONTEND

What's the frontend context of your A/B test?

Context = Everything UX depends on:

- Load time
- **Event rates**, e.g.
  - Page view
  - Login
  - Error
- ...



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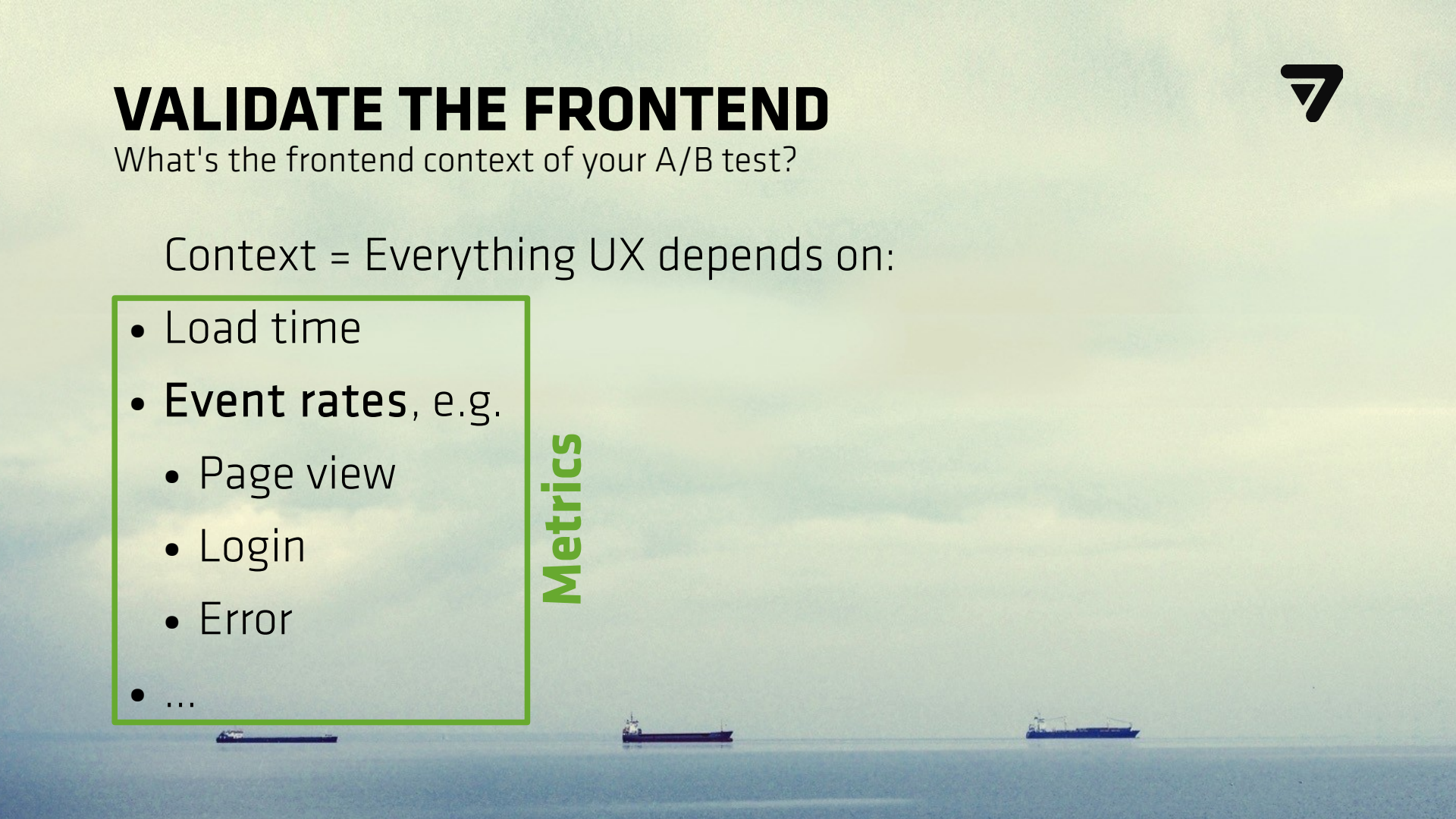

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Metrics

Record (via JS)

&

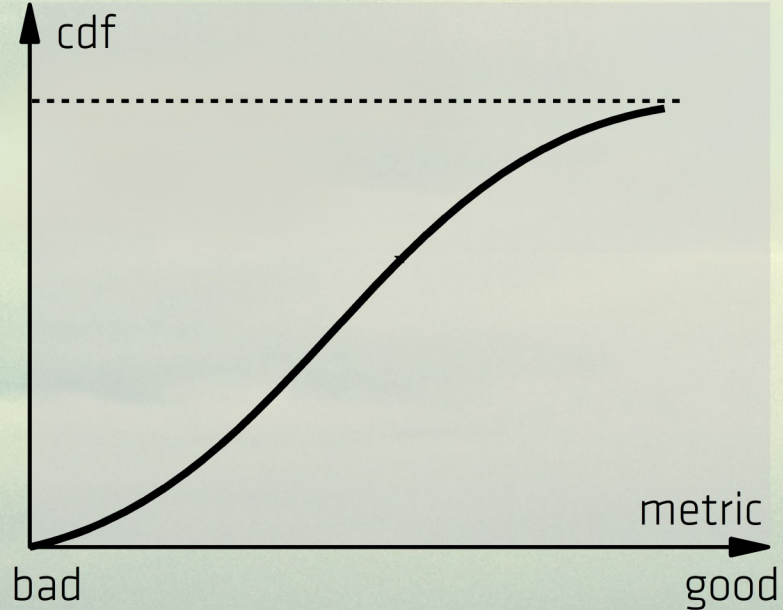
Evaluate

- Efficient (use pre-test sample for comparison)
- Compare A & B with pre-test sample

EVALUATING METRICS

Is your A/B test valid?

1. Define **target space**
   bootstrap from pre-test sample



EVALUATING METRICS

Is your A/B test valid?

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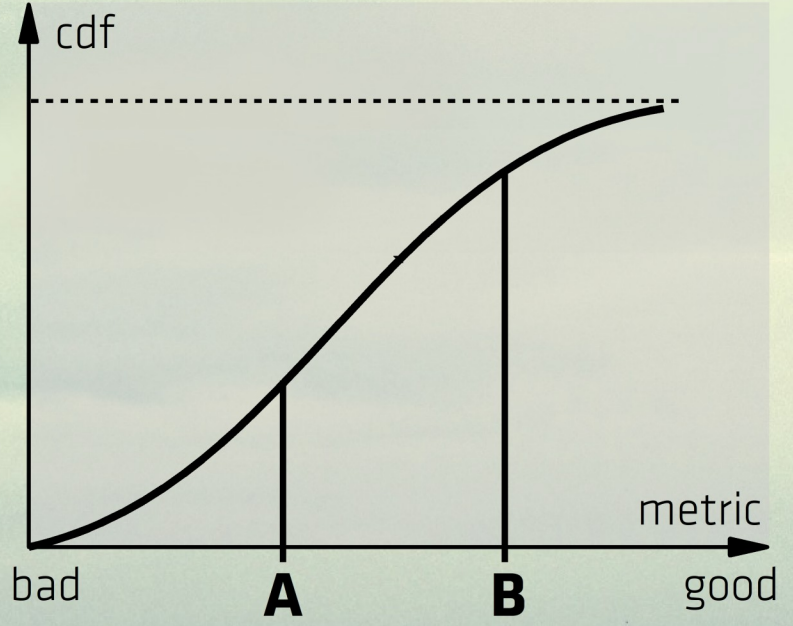
2. Calculate metrics of A & B
   Locate in target space ⇒ p-values
   (prob. to find worse data)



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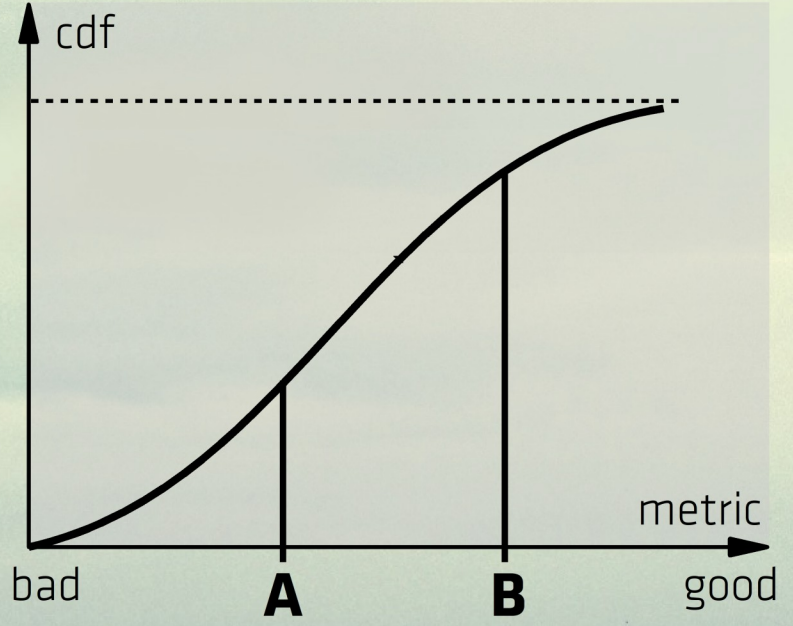
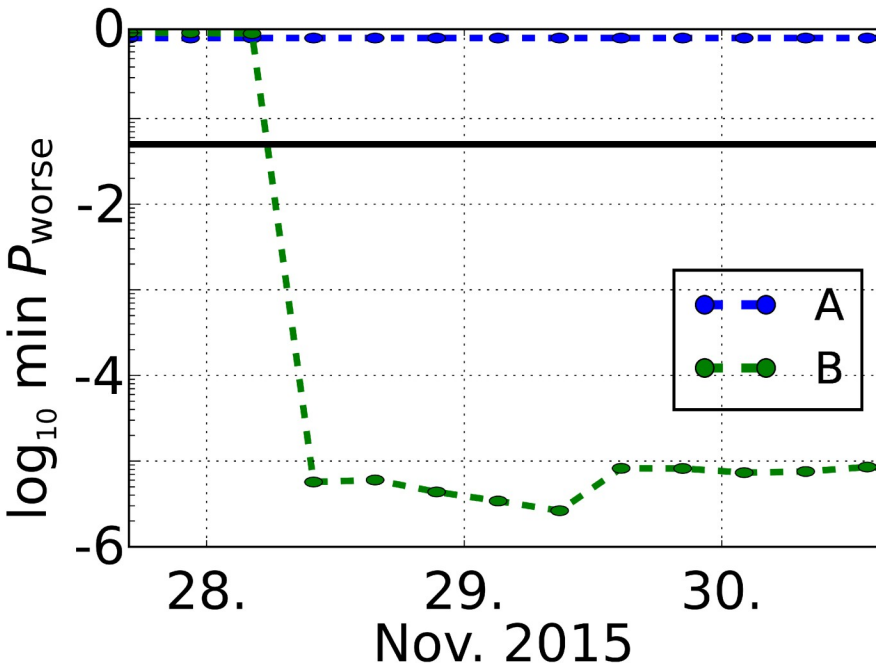
3. Check that A & B do not deviate significantly from each other and pre-test sample



EXAMPLE

Conver 160 pi/h web app to SPA

- Intention:
  Decrease load time
- Conditions:
  A: normal
  B: SPA
- Metrics:
  - Load time
  - Page views
  - JS Errors



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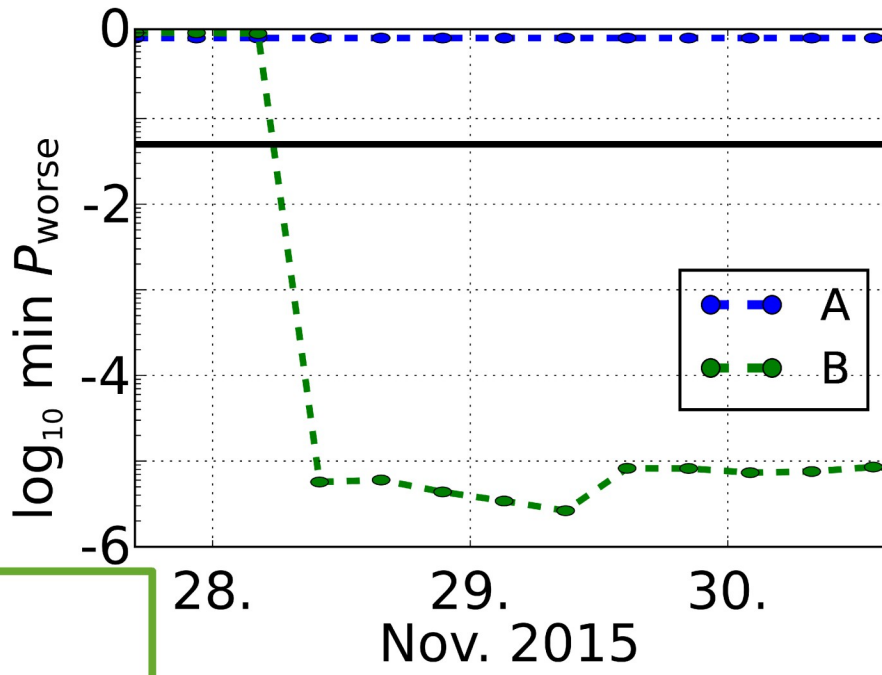
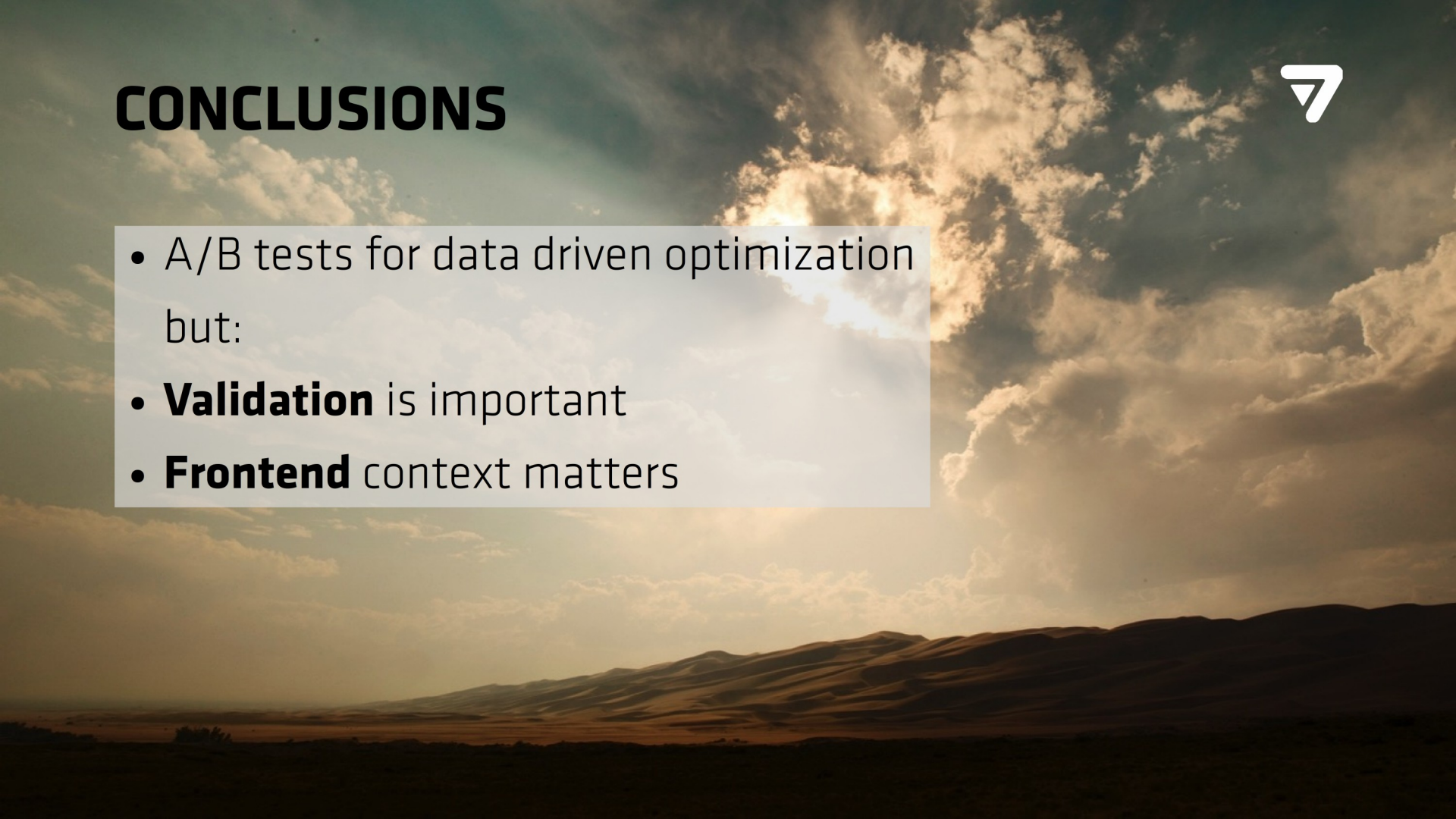


Result:
B worse than A!
Why?
New JS error introduced.

CONCLUSIONS



- A/B tests for data driven optimization

  but:
- **Validation** is important
- **Frontend** context matters