



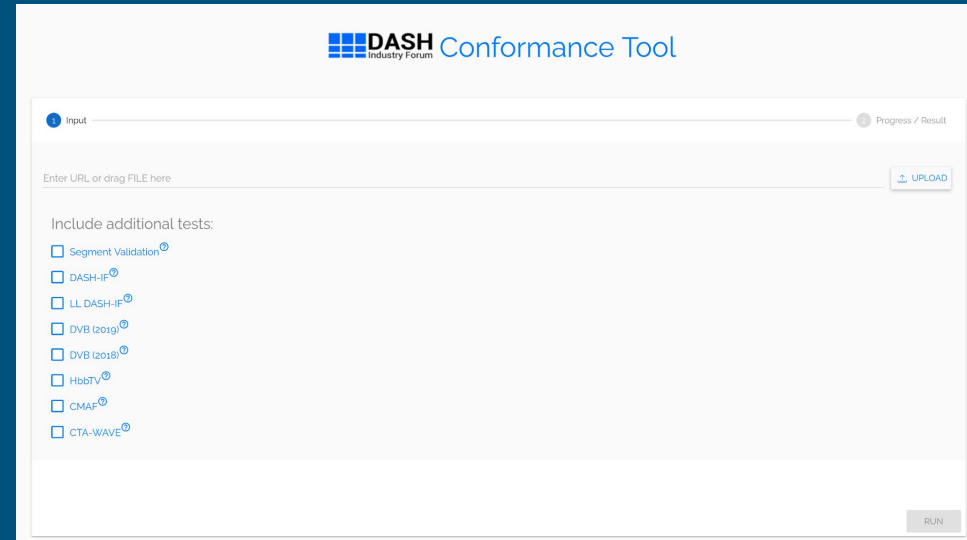
DASH-IF **Conformance** Tool:
JCCP - a joint refactoring effort
(DVB, DASH-IF, ATSC, CTA, HbbTV)

Presenter:
romain.bouqueau@motionspell.com



Overview of the DASH-IF Conformance Tool

- Well known **tool**
- Mostly used **online**
- **Popular**: ~180 input per day
- Mostly **maintained by DASH-IF**
 - Industry contributions through consortia: **DVB, HbbTV, CMAF** (by the **CTA WAVE** initiative)
- Licensed as **GPLv3**:
 - + other dependencies
 - In practice not an issue as it is deployed on servers



The screenshot shows the web interface of the DASH-IF Conformance Tool. At the top, the logo for the DASH Industry Forum and the text 'DASH Conformance Tool' are visible. Below the logo is a progress indicator with 'Input' and 'Progress / Result' stages. A text input field is labeled 'Enter URL or drag FILE here' and has an 'UPLOAD' button to its right. Underneath, there is a section titled 'Include additional tests:' with a list of checkboxes: Segment Validation, DASH-IF, LL DASH-IF, DVB (2019), DVB (2018), HbbTV, CMAF, and CTA-WAVE. At the bottom right of the interface is a 'RUN' button.

Why conformance?

- MPEG specifications describe the **client behaviour**
 - Typically a decoder
- Conformance is key for **interoperability**
 - Enforce a **common understanding**
 - Diverging can be very costly
- Conformance can take several forms:
 - Specification: **normative statements**
 - **Test vectors**
 - Reference **software** implementations:
 - Player (dash.js)
 - Robustness principle: be liberal in what you accept
 - Conformance tool:
 - Code coverage of the tool \leftrightarrow coverage of the specification

Challenges

- General **maintenance**
 - Aggregate of efforts over 10 years
 - Updates needed
 - Not enough tests despite attempts
- Difficult to **contribute**
 - Only 50 github stars!
 - Documentation scattered and specific
 - Mixing many technologies (PHP, JS, Python, C++...)
- Role w.r.t. the **standardization** processes?
 - Spec editors = sponsors
 - Enforcing restrictions
- Now necessary **beyond DASH-IF**

Decision path (9 months)

1. Reporting from contributors
2. Preliminary work in the Test & Conformance DASH-IF Task
 - a. Biweekly DASH-IF Test and Conformance calls, Wed 5pm CEST / 8am PST
3. Sponsorship by ATSC, CTA WAVE, DASH-IF, DVB, HbbTV
4. RfP won by Motion Spell and Fraunhofer Fokus.
5. 1-year effort (2022) to make the tool more accessible and more reliable

Joint team: Motion Spell and Fraunhofer Fokus

Motion Spell



- **Romain Bouqueau, GPAC**
- Area of expertise: Broadcast, Streaming, Open Source



- **Erik Zandvliet**
Senior sw developer
- Area of expertise: Streaming, Software development

Fraunhofer FOKUS



- **Daniel Silhavy**
Project Manager
- Area of expertise: (5G) Media Streaming & Video/Audio Encoding & Media Player Development & Standardization



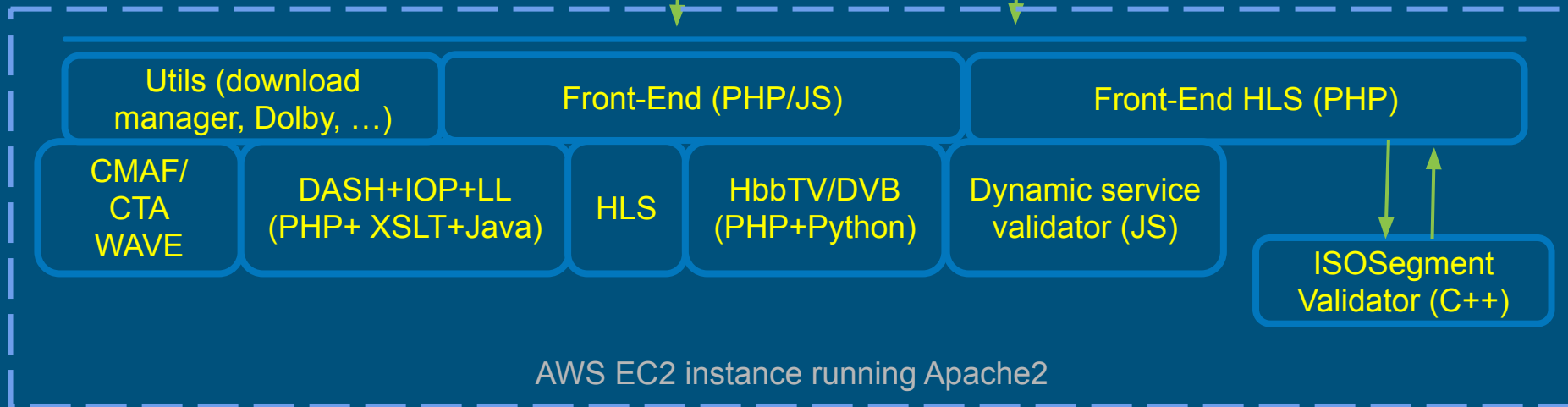
- **Alexander Futasz**
Project Manager
- Area of expertise: Software development, web technologies

Refactoring:

Web front-end

Command-line
(e.g. curl) -> broken

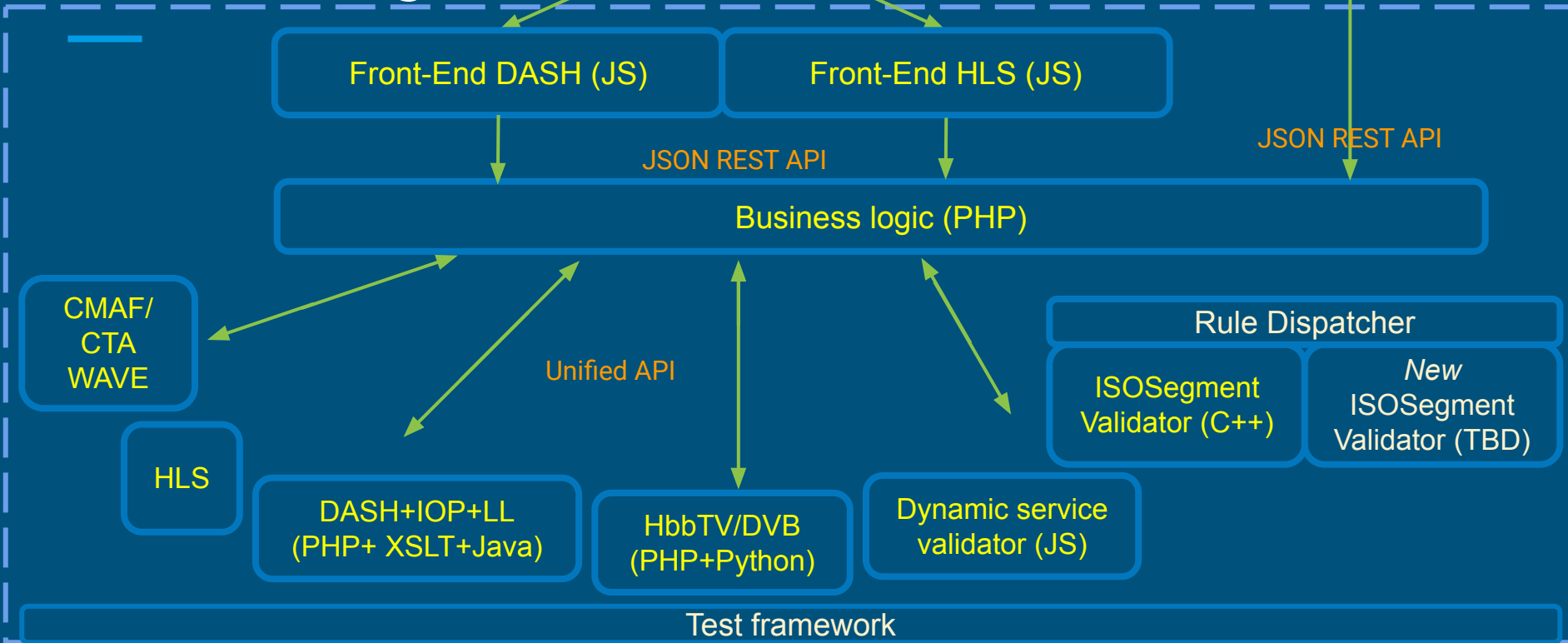
before



The front-end contains:
1) the UI
2) the business logic
3) is intricated with submodules

Refactoring:

after



1-year effort to make the tool more accessible and more reliable

1. Management & QA
2. Refactoring
3. Repair and Maintenance

/>\ special focus on testability: tests are confidence /\

1-year effort to make the tool more accessible and more reliable

- Management & QA

- Documentation
- Reproducible builds (Docker)
- CI/CD (Github Actions)
- Metrics
- Biweekly DASH-IF Test and Conformance calls, Wed 5pm CEST / 8am PST
- Monthly calls with sponsors
 - Getting early feedback
 - Moving communities

1-year effort to make the tool more accessible and more reliable

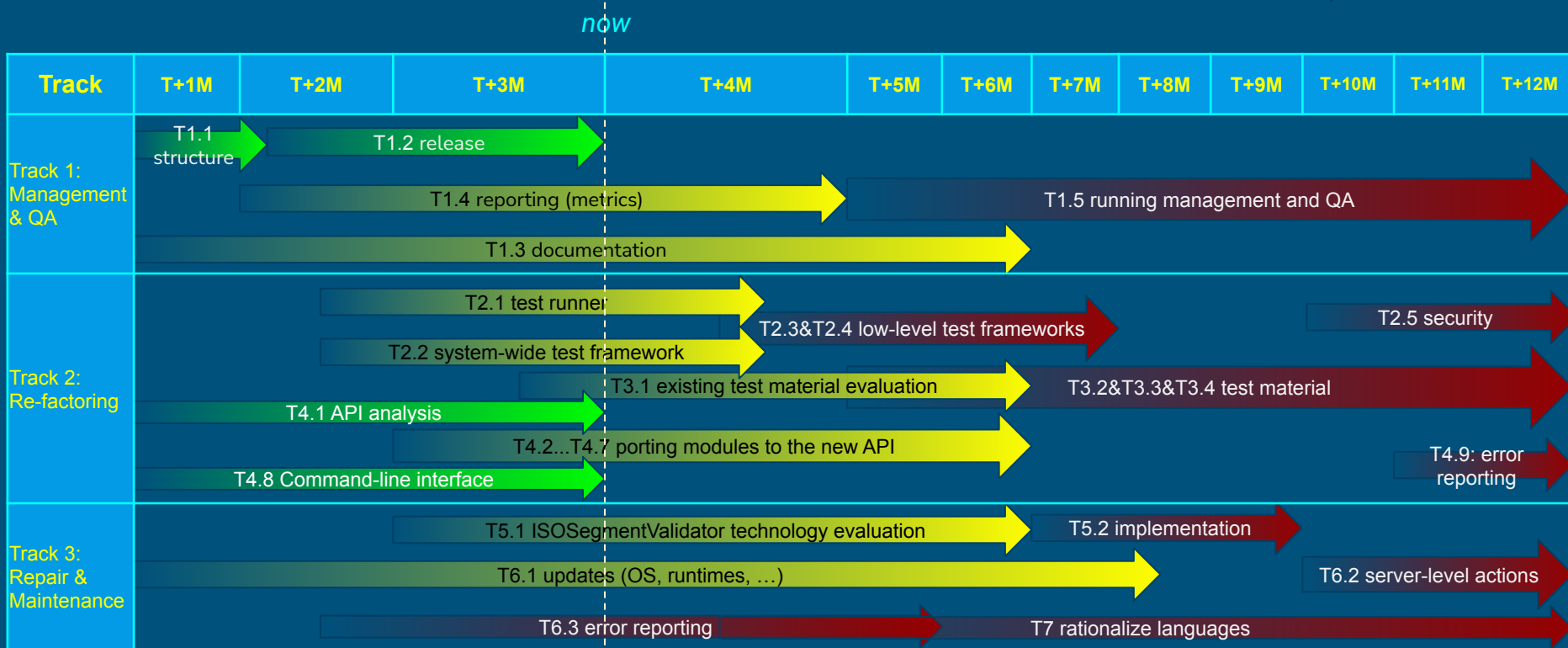
- **Refactoring**

- Creating an API
- Rewriting of problematic parts
 - ISOSegmentValidator (C++)

- **Repair and Maintenance**

- Update the server
- Reduce versions and languages
 - Modularity is key to update components independently

Execution timeline



Roadmap

- Challenge: get the **community** involved
 - We need you!
 - We need test vectors!
- Settle this development and the tool as **a base brick** for:
 - Other standardization efforts which want to test the conformance with the CLI/API
 - More tests in our industry
 - Conformance task force, less plug fests
 - Support the spec editing process

Thank you !

romain.bouqueau@motionspell.com