

ARTEMIS Lite



RIPE NCC
RIPE NETWORK COORDINATION CENTRE

Community Projects Fund Recipients 2022

George Nomikos

(Joint work with: Alexandros Kornilakis, Antonis Xatzivasiliou and Xenofontas Dimitropoulos)

7 March 2023

About me...

George Nomikos



- Lead Research Engineer in FORTH-ICS
 - Software engineering focused on Internet measurements
 - Data analysis with respect to routing performance and security concerns
- Contact info:
 - ✉ gnomikos@ics.forth.gr
 - <https://www.linkedin.com/in/georgenomikos>

Previously RIPE NCC funded Projects

2017 - ARTEMIS: *Neutralizing BGP Hijacking within a Minute* [1]

- Real-time detection and mitigation of BGP prefix hijacks
- Based on BGP feeds from route collectors (**Control plane**)

2019 - *Verification and monitoring of BGP prefix hijacking incidents using RIPE Atlas probes in the ARTEMIS open source detection tool* [2]

- Evaluate and monitor the impact of hijacks through traceroutes to the affected IP prefixes (**Data plane**)

[1] https://labs.ripe.net/author/vasileios_kotronis/artemis-neutralising-bgp-hijacking-within-a-minute/

[2] <https://www.ripe.net/support/cpf/previous-funding-recipients/funding-recipients-2019>

What we have...

1. ARTEMIS, an open-source mature system (www.bgp.artemis.org)
2. Accurate BGP prefix hijack detection of high coverage and mitigation mechanism
3. High performance (resource hungry)
4. Sophisticated Internet traceroute-based measurements for further monitoring
5. Already adopted from industry along with positive feedback from the tech community

What we do not have (1/2) - **Artemis Lite**

Further **flexibilities**:

- Single-Page Web Application with *fresh* and *lightweight* design
 - Based on Web Assembly (Wasm)
 - Up to 800% faster
 - Existing web services have made the move, e.g. GOOGLE Earth, Figma
- No installation process
- Easy way to get familiarized with ARTEMIS
- An alternative (but inferior in terms of functionalities) security system
- A higher level of:
 - Accessibility
 - Portability
 - Privacy

What we do not have (2/2) - **Artemis Lite**

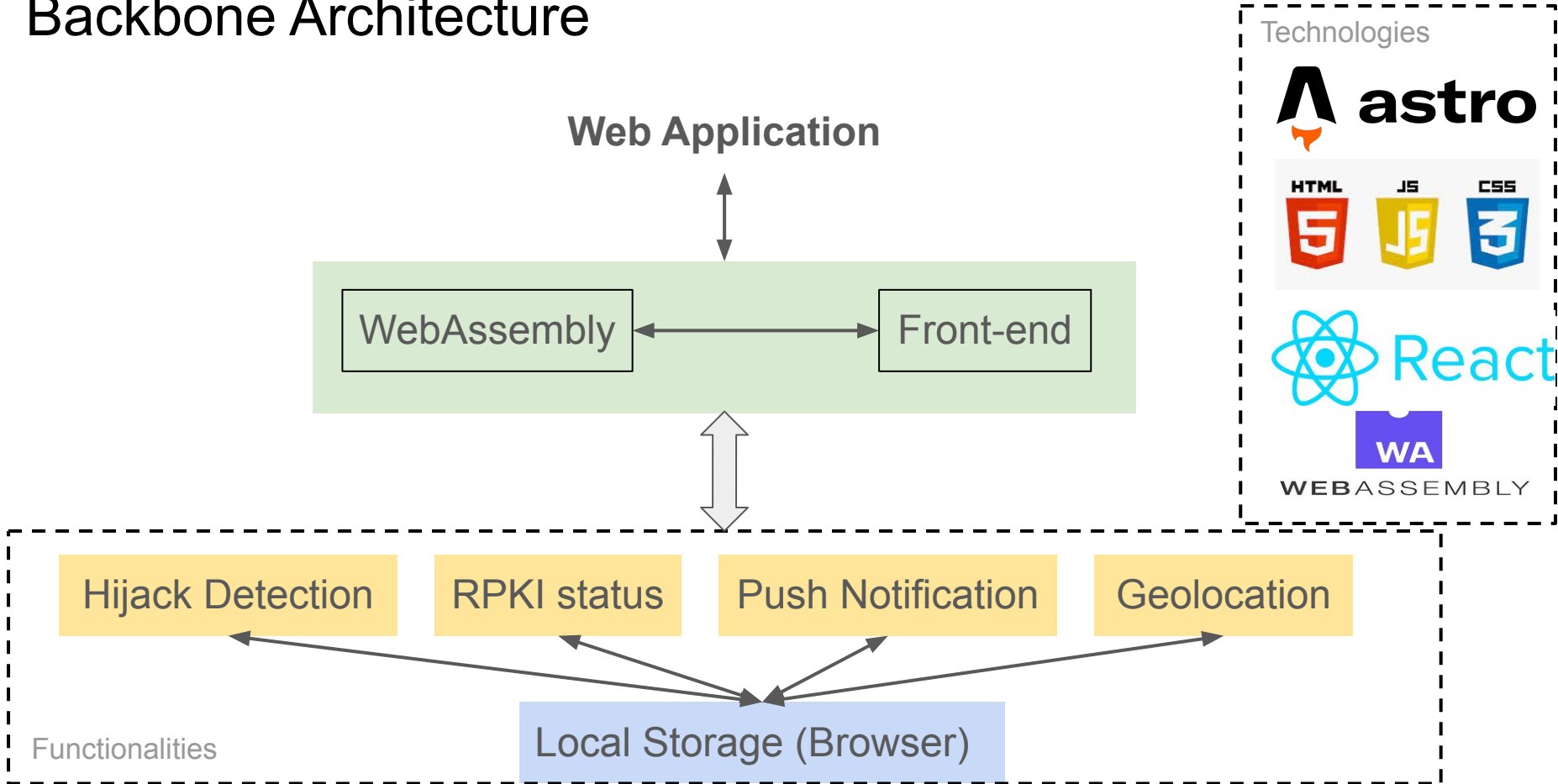
Further **functionalities**:

- Geolocation impact (country level) of hijack events & Visualization
- Client-side push notification system
- Automatically report invalid RPKI status and ROAs expirations
- Can be packed as a library

BUT

- Support only for type-0/1 BGP hijacks
- No mitigation module (at least for now)

Backbone Architecture



Last but not Least: **Clarification**

We **DO NOT** replace ARTEMIS



We **DO** complement ARTEMIS with a lightweight Web App



Thank you



www.inspire.edu.gr