What is CORS?

As a standard, browsers implement Same-Origin Policy, which means requesting data from the same origin is allowed, but requesting data from another URL will throw an error. This is implemented for security reasons.

https://planet-a.com
With CORS, resources can be requested from one URL to another.
https://planet-b.com

CORS (Cross-Origin Resource Sharing) is an HTTP-based mechanism that enables the browser to access resources outside a given domain.

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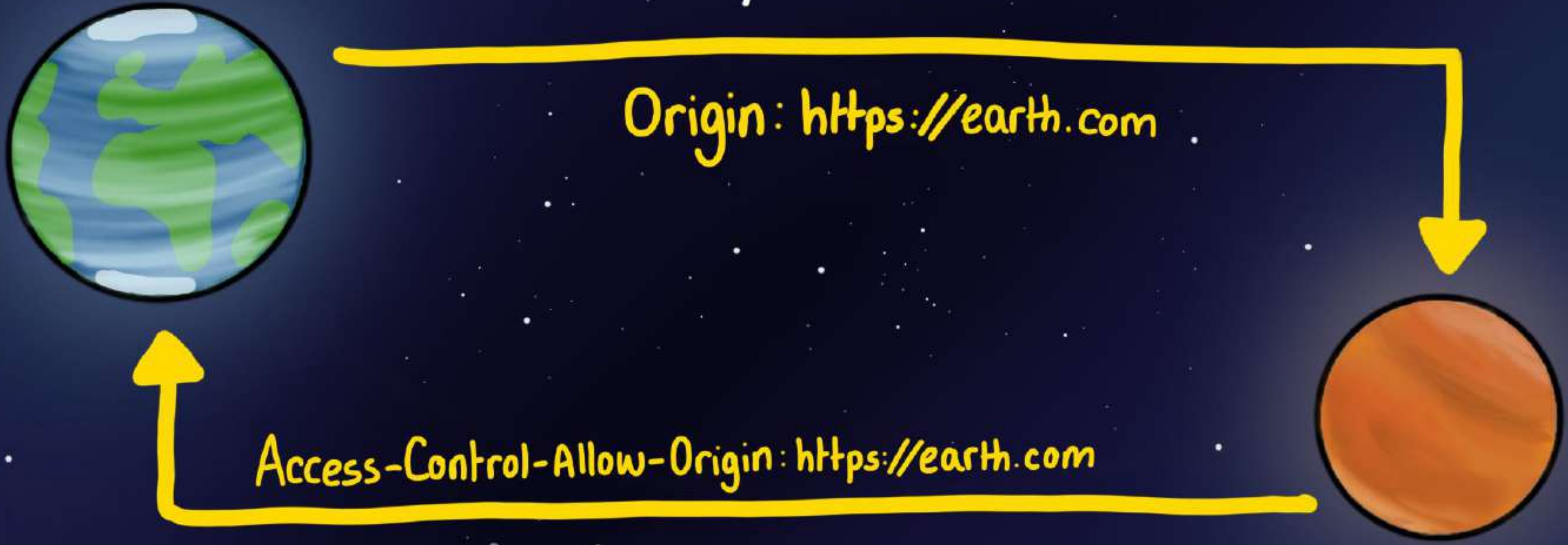
A breakdown of CORS:

When the browser makes a cross-origin request, it will add an 'Origin' header that states the scheme (protocol), and port number.


Origin: https://earth.com
Access-Control-Allow-Origin: https://earth.com

The Sever responds and adds an 'Access-Control-Allow-Origin' header in the response.

IF this header's origin is the same as the origin sent in the request, access to the resource is granted.

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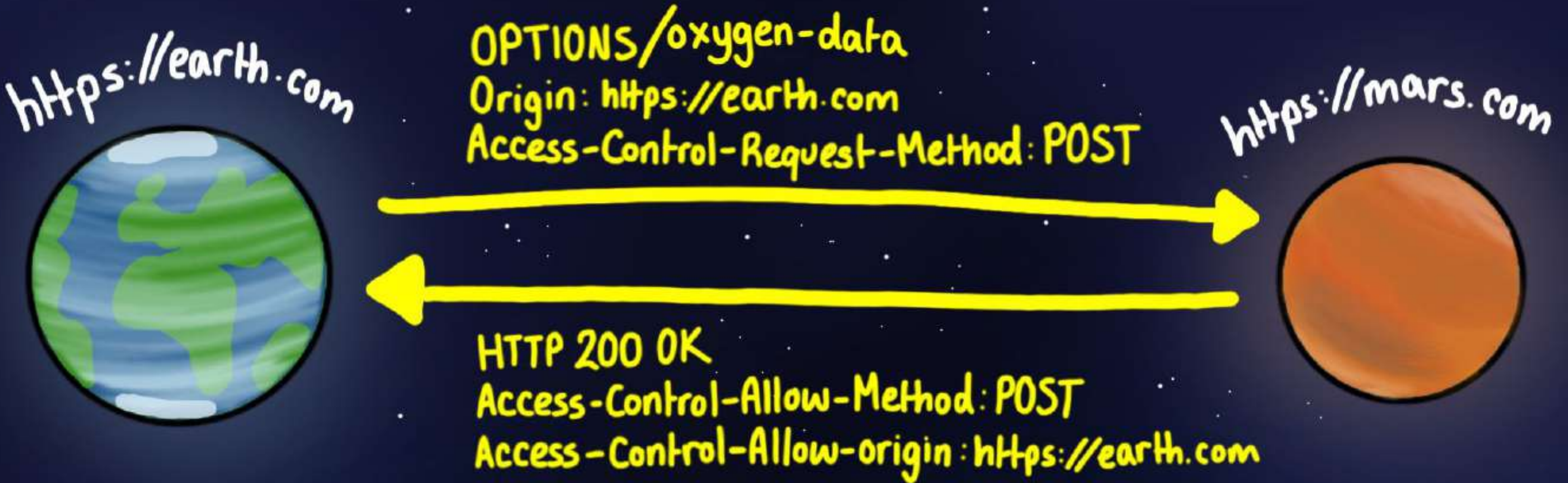
Preflight Requests

You've seen how a basic CORS request works, but some HTTP Methods (all except GET, POST, and HEAD) require a preflight request before the main request is sent.


https://earth.com
OPTIONS/oxygen-data
Origin: https://earth.com
Access-Control-Request-Method: POST
https://mars.com
HTTP 200 OK
Access-Control-Allow-Method: POST
Access-Control-Allow-origin: https://earth.com

Preflight requests start with the browser sending an HTTP OPTIONS request with the proposed request Method of the main request.

The server will respond with the 'Access-Control-Allow-Method` header. If the browser is requesting a Method the resource holder considers invalid, the request fails. If not, it is accepted and the main CORS request follows.

CORS with Preflight Example

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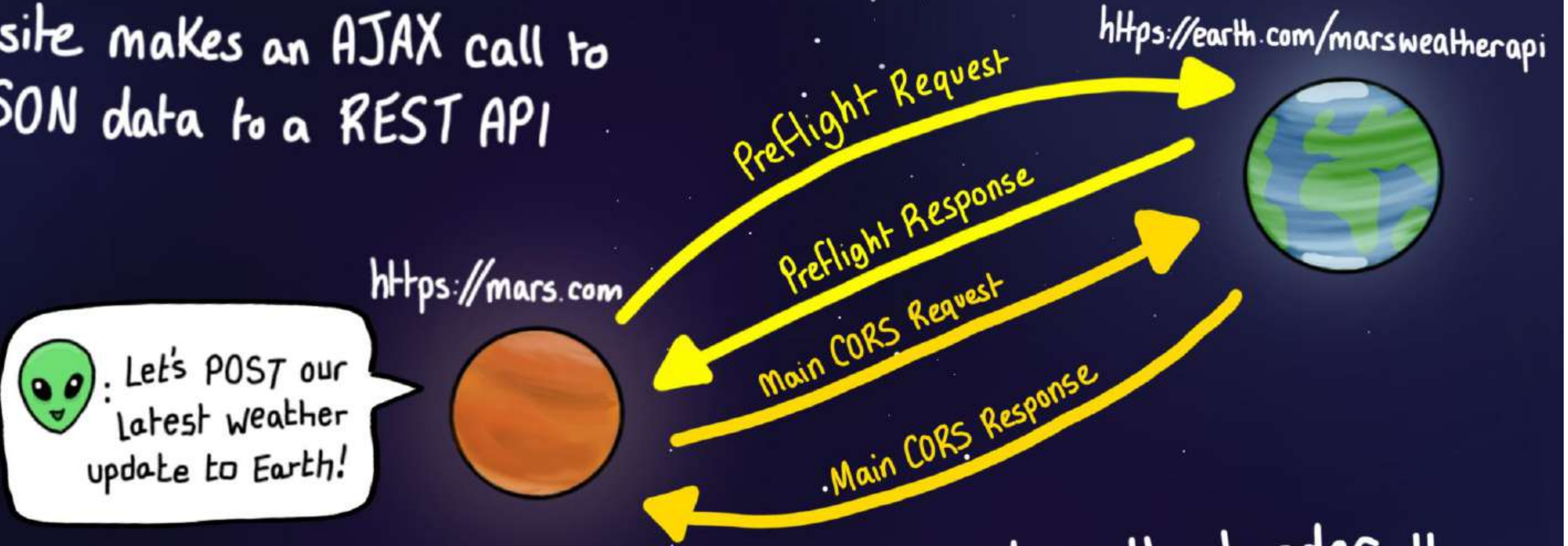
A website makes an AJAX call to POST JSON data to a REST API



The response to a preflight request may also contain an 'Access-Control-Max-Age' header specifying the time the response must be cached within.

Using this header, the the client won't need to send a preflight request everytime it wants to access the CORS resource.