



WAVEBINDER

REVOLUTIONIZING FRONT-END DATA MANAGEMENT

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THE GROWING DEMAND FOR WEB APPLICATIONS REQUIRES INCREASINGLY COMPLEX FRONT-ENDS THAT ARE CHALLENGING TO DEVELOP AND MAINTAIN.

WAVEBINDER IS A LIBRARY DESIGNED TO HELP FRONT-END DEVELOPERS EASILY MANAGE DATA DEPENDENCIES IN FRONT-END APPLICATIONS.



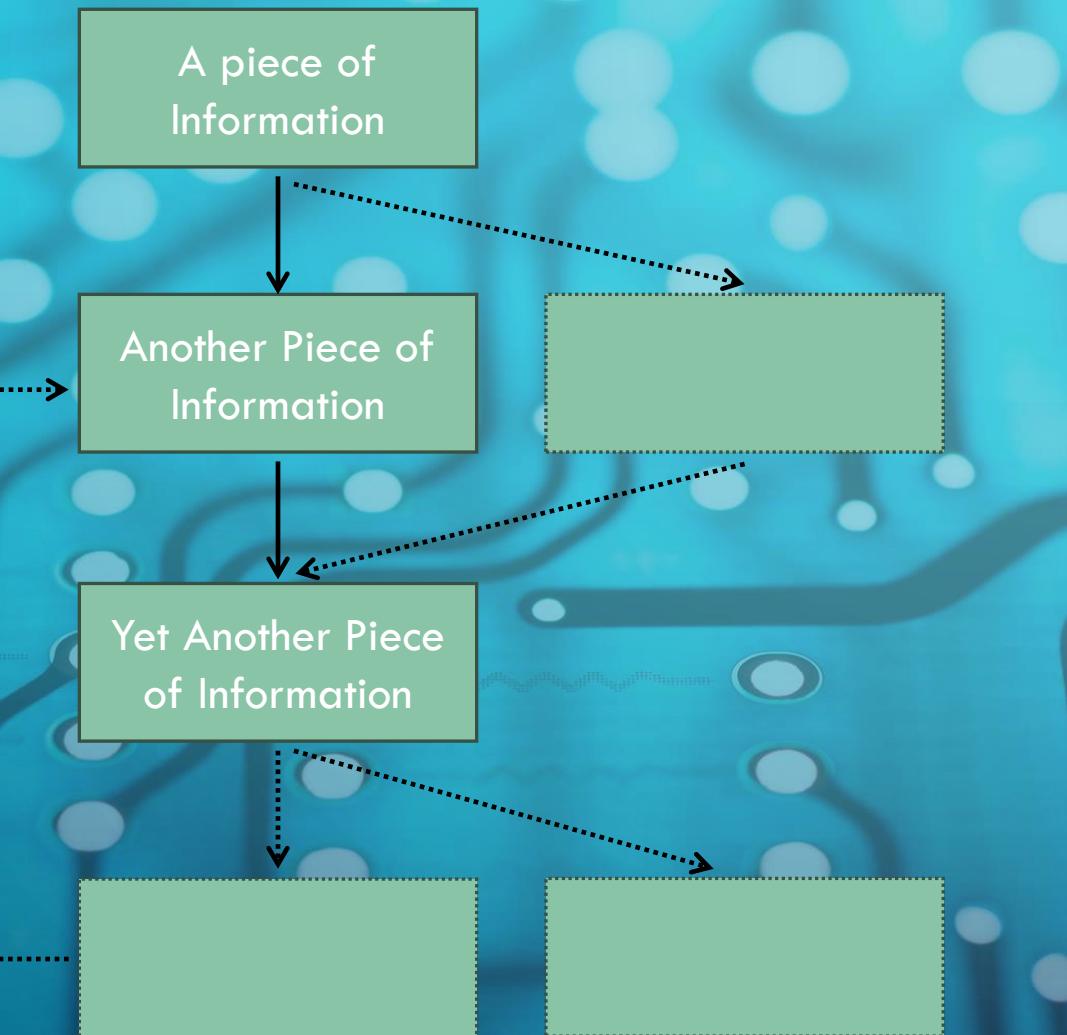
THE DATA FLOW CHALLENGE

WHY IS DATA MANAGEMENT SO CHALLENGING?

In modern applications, each field and component relies on other data.

Data does not update linearly.

Interfaces are increasingly complex and dynamic



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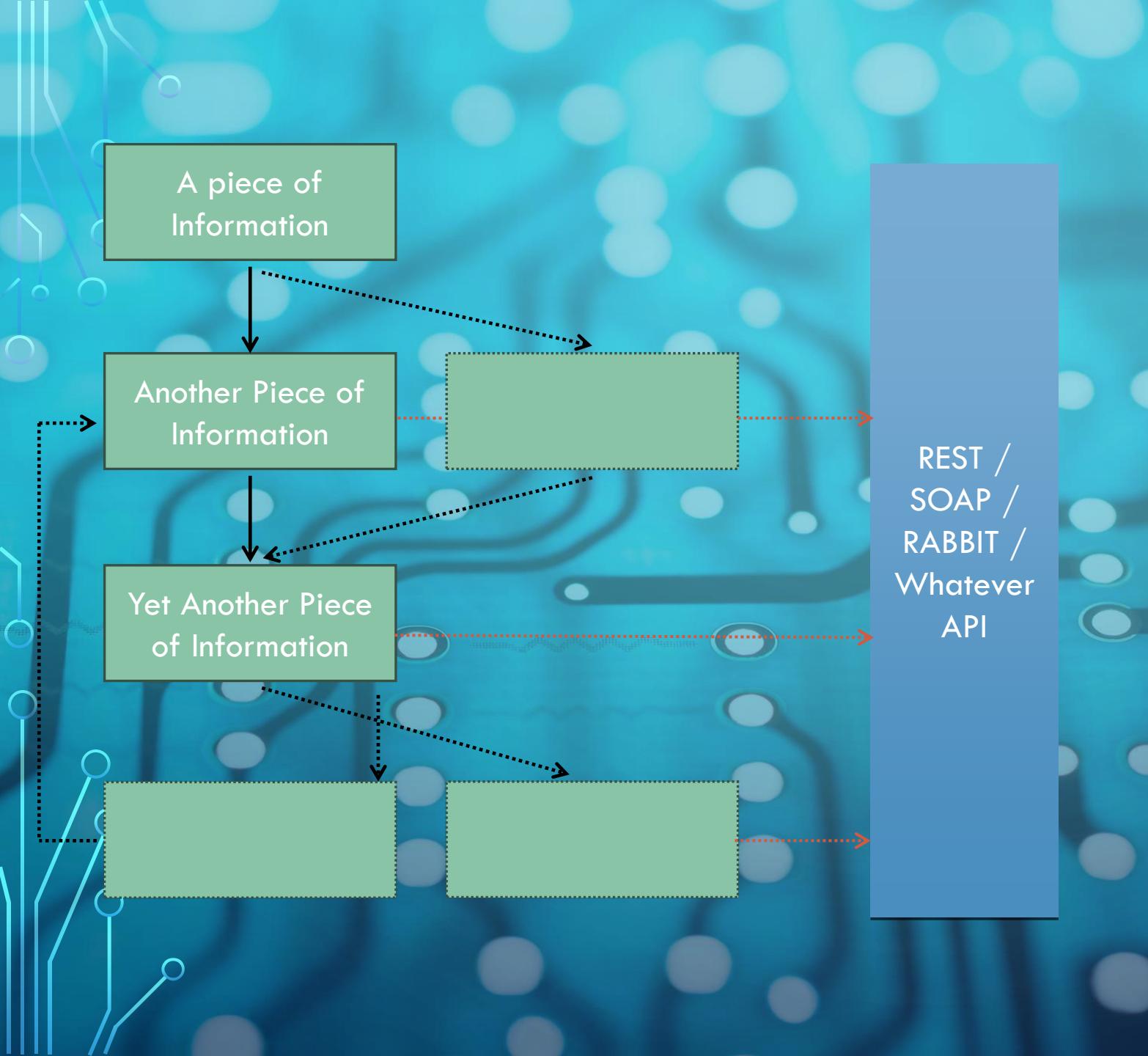
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Data does not update linearly.

Interfaces are increasingly complex and dynamic

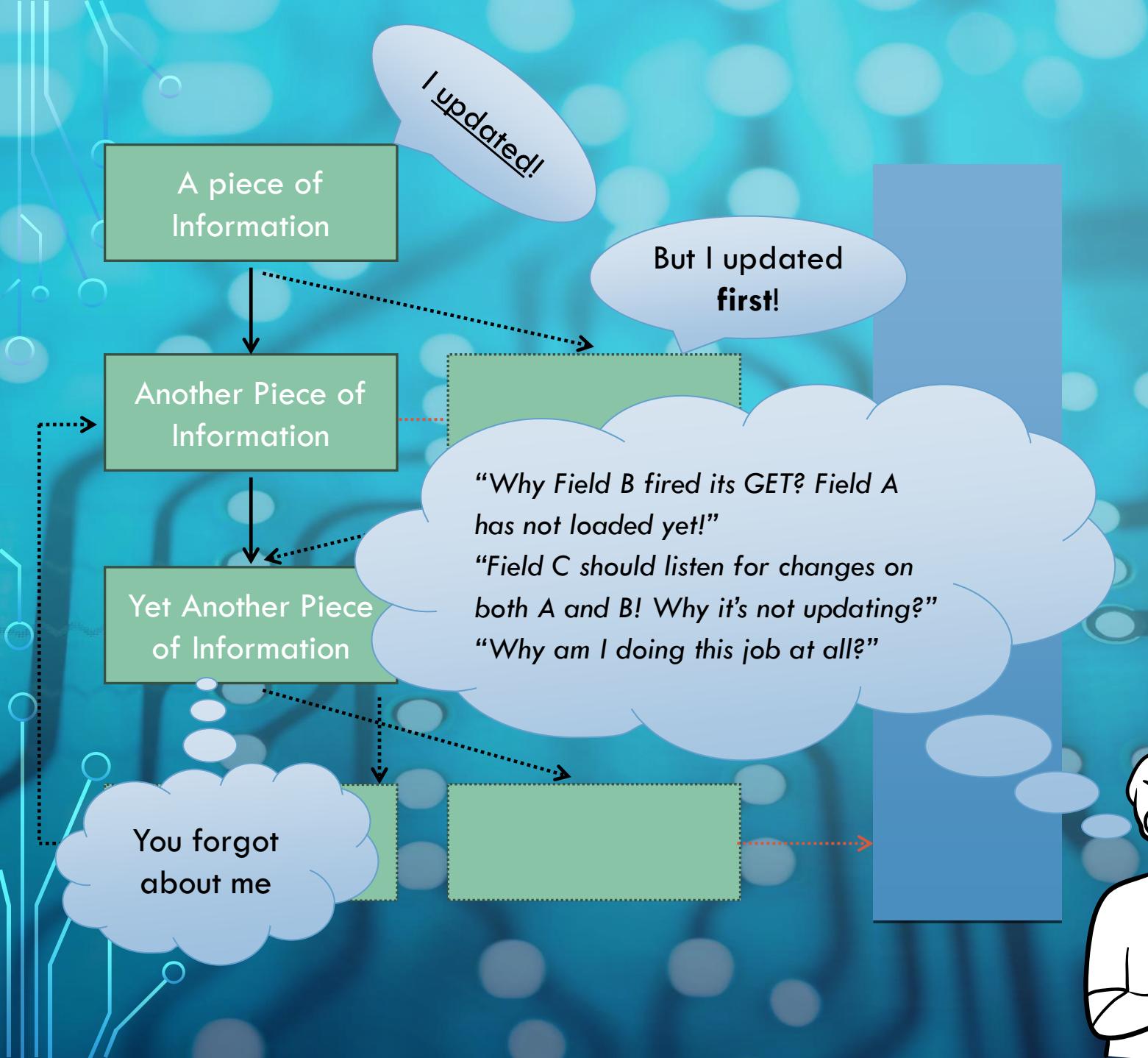
Complexity grows when using slow, asynchronous APIs



THE DATA FLOW CHALLENGE

WHAT ARE THE CONSEQUENCES?

1. Long development times and interface delays
2. Errors and undesirable behaviors
3. Suboptimal user experience
4. Difficulty in maintaining and updating logic



THE FRONT-END MARKET AND ITS CHALLENGES



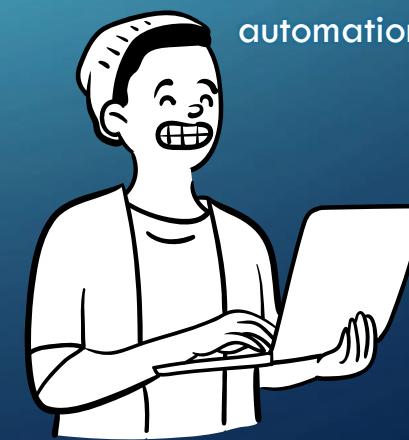
I'LL
HANDLE IT!

WHAT DO FRONT-END DEVELOPERS NEED?

Front-end developers look for tools that simplify their work and optimize data flow between components.

Manual management of data dependencies becomes unsustainable in complex applications.

WAVEBINDER was developed to meet these needs, offering automation, flexibility, and control.





WAVEBINDER™

WAVEBINDER

WAVEBINDER offers compatibility and ease of use, making it ideal for integration into your front-end projects.

Here are some of its key features:

- Available as an NPM package

- Based on RXJS

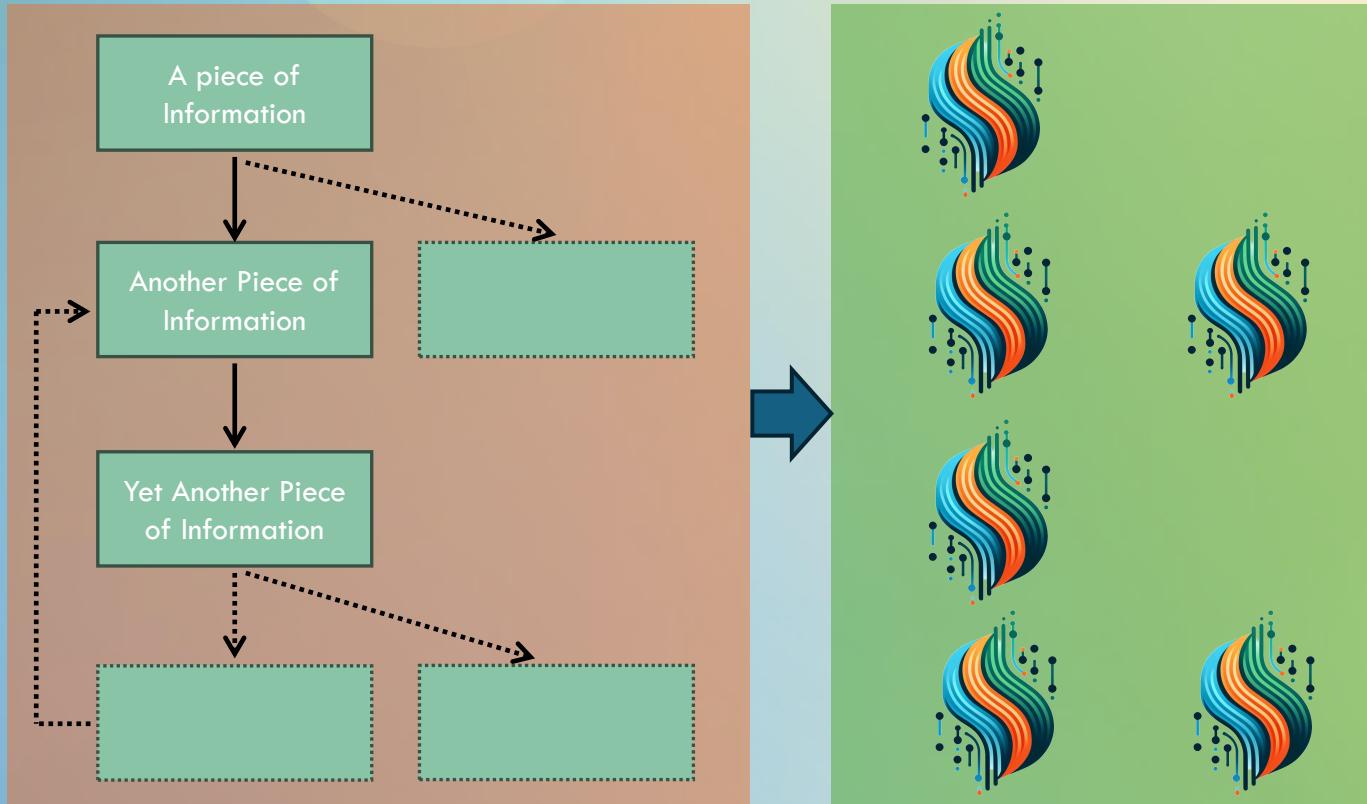
- Works seamlessly with major frameworks:

- Vue.js
- Angular
- React



HOW WAVEBINDER WORKS

THE POWER OF NODE-BASED MODELING



Data is modeled as nodes in a graph.

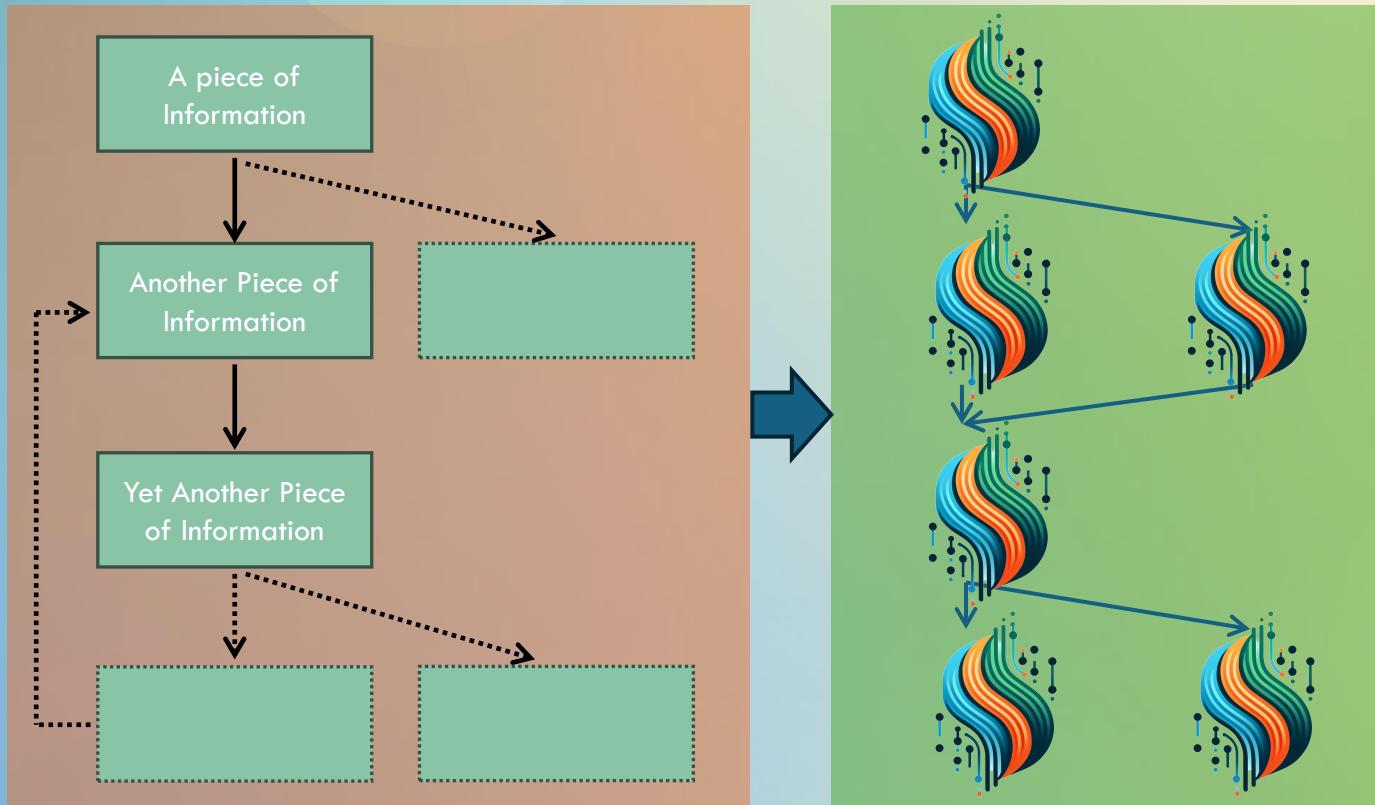
Define nodes in a JSON object like this:

```
const config : {[path: string, la: {type: str... =  
[  
  {  
    "name": "region",  
    "type": "MULTI",  
    "path": "/region",  
    "la": {  
      "type": "GET",  
      "addr": "/region/list",  
      "serviceName": "RETRIEVE_DATA"  
    },  
    "dep": []  
  },  
  {  
    "name": "province",  
    "type": "MULTI",  
    "path": "/province",  
    "la": {  
      "type": "GET",  
      "addr": "/{region}/province/list",  
      "serviceName": "RETRIEVE_DATA"  
    },  
    "dep": []  
  }  
];
```

HOW WAVEBINDER WORKS

THE POWER OF NODE-BASED MODELING

Dependencies between nodes are also specified here.



```
{  
  "name": "city",  
  "type": "MULTI",  
  "path": "/city",  
  "la": {  
    "type": "GET",  
    "addr": "/{region}/{province}/city/list",  
    "serviceName": "RETRIEVE_DATA"  
  },  
  "dep": [  
    {  
      "nodeName": "region",  
      "isOptional": false,  
      "onUpdate": true,  
      "type": "PATH_VARIABLE"  
    },  
    {  
      "nodeName": "province",  
      "isOptional": false,  
      "onUpdate": true,  
      "type": "PATH_VARIABLE"  
    }  
  ]  
},
```

HOW WAVEBINDER WORKS

```
const config :[{path: string, la: {type: str...  =  
[  
  {  
    "name": "region",  
    "type": "MULTI",  
    "path": "/region",  
    "la": {  
      "type": "GET",  
      "addr": "/region/list",  
      "serviceName": "RETRIEVE_DATA"  
    },  
    "dep": []  
  },  
  {  
    "name": "province",  
    "type": "MULTI",  
    "path": "/province",  
    "la": {  
      "type": "GET",  
      "addr": "/{region}/province/list",  
      "serviceName": "RETRIEVE_DATA"  
    }  
  }  
]
```

THE POWER OF NODE-BASED MODELING

You can specify many properties for each node:

The type of data it contains (e.g., a single value, a list, an object, ...)

The path to store it in a model

The action required to load its value (e.g., an API call, a user selection, ...)

Its dependencies on other nodes

HOW WAVEBINDER WORKS

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The path to store it in a model

The action required to load its value (e.g., an API call, a user selection, ...)

Its dependencies on other nodes

We've developed a CLI tool to make it incredibly simple.

AMAZING!

```
const config : [{path: string, la: {type: str...  =  
    [ {  
        "name": "prov",  
        "type": "MULTI",  
        "path": "/province",  
        "la": {  
            "type": "GET",  
            "addr": "/{region}/province/  
            "serviceName": "RETRIEVE_DATA"  
        },  
        "dep": []  
    },  
    {  
        "name": "region",  
        "type": "LIST",  
        "path": "/region/list",  
        "la": {  
            "type": "GET",  
            "addr": "/region/list",  
            "serviceName": "RETRIEVE_DATA"  
        },  
        "dep": []  
    }  
];
```



HOW WAVEBINDER WORKS

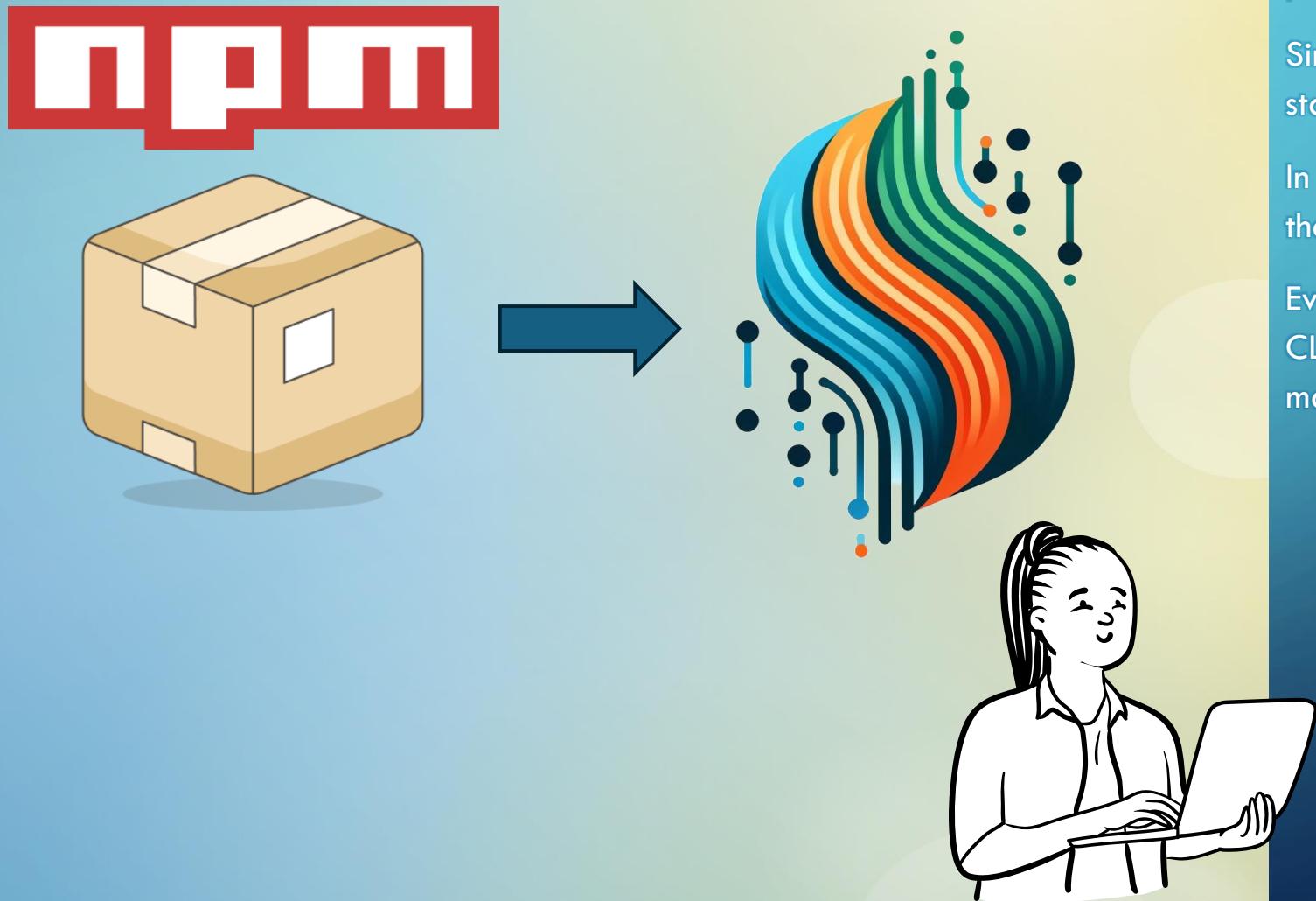
EASY INSTALLATION AND CONFIGURATION

WAVEBINDER integrates easily into existing projects.

Simply run `npm install wave-binder` to get started.

In a few steps, you can configure nodes and their dependencies using JSON.

Even for developers new to using nodes, the CLI tool simplifies the creation and management of data dependencies.



HOW WAVEBINDER WORKS

FEATURES

Once WAVEBINDER is installed and you've modeled your problem within the configuration structure, you're almost ready to go.

- Provide the configuration to a new instance of WAVEBINDER.
- Instruct WAVEBINDER to build the dependency network.
- Done



What?! Done?!
Done with what?

```
const wb :WaveBinder = new m.WaveBinder(config);  
  
wb.tangleNodes();
```

```
const regionNode :null = wb.getNodeByName( name: 'region')
regionNode.setSelection(1);
```

```
const listNode :null = wb.getNodeByName( name: 'myListNode')
listNode.next( value: 3);
```

```
const regionsListNode :null = wb.getNodeByNameAndType( name: 'regionsList' , type: 'LIST')
regionsListNode.children[1].setSelection(1);
```

```
public constructor(protoNodes: ProtoNode[], Show usages new*
                  extApis: Map<string, HttpServiceSetting>,
                  customFunctions: FunctionInstance[]) {
}

public tangleNodes():void { no usages new*

}

public getNodes(): WaveBinderNode[] { no usages new *

}

public getDataPool():void { no usages new *

}

public getNodeInfo(logDepth?: number): WaveBinderNodeView[] { no usages new *

}

public getNodeByName(name: string): WaveBinderNode { no usages new *

}

public getNodeByNameAndType(name: string, no usages new*
                           type: string): WaveBinderNode {

}

public getNodeByNameAmongNodes(name: string, no usages new*
                               nodes: WaveBinderNode[]): WaveBinderNode {

}

public getNodeByNameAndTypeAmongNodes(name: string, no usages new*
                                       type: string,
                                       nodes: WaveBinderNode[]): WaveBinderNode {

}
```

HOW WAVEBINDER WORKS

FEATURES

WAVEBINDER espone:

- I metodi necessari per recuperare i nodi
- Various ways to interact with them.



The screenshot shows the homepage of the **wavebinder™** website. At the top, there's a decorative graphic of colorful, flowing lines resembling waves or data streams. Below it, the **wavebinder™** logo is prominently displayed. A subtitle reads: "A dependency manager to simplify data relationships, so you can focus on business logic." Underneath, a section titled "Why Choose wavebinder™?" is shown. It includes a brief description: "Data relationships are messy, APIs are slow, and dependencies make everything harder. WaveBinder helps you manage it all with ease." Three key features are highlighted in boxes: "Data as Graph Nodes", "Powered by RXJS", and "Multi-framework Support". At the bottom of this section are two buttons: "Documentation" (which is circled in red) and "Example #1".

HOW WAVEBINDER WORKS

DOCUMENTATION

Every aspect of configuring and managing WAVEBINDER is documented on www.wavebinder.it.

This ensures developers have continuous guidance for advanced configurations and specific cases.

The screenshot shows a detailed documentation page for the **IterationObj** interface. On the left, a sidebar navigation tree lists various components under the **wave-binder** namespace, with **IterationObj** currently selected. The main content area starts with a heading for **Interface IterationObj**, which is described as representing an object used to track iteration data during certain operations. Below this, the **IterationObj** interface definition is shown in code:

```
interface IterationObj {
  fatherName: string;
  index: number;
}
```

 A note indicates it's defined in [wvb/node-defs:126](#). The page then details the **Properties** of the interface: **fatherName** (with a description of being the name of the parent node or context) and **index**. To the right, there are **Settings** for member visibility (Protected, Inherited, External) and a **THEME** dropdown set to OS. A link to "On This Page" is also present.

WHY DOES IT WORK?

THE SECRETS OF WAVEBINDER

A powerful library.

Years of experience.

The vision to abstract complexity once and for all, allowing everyone to focus solely on what the client truly wants:

Business Logic.



WHY DOES IT WORK?

ORDER AND PRECISION:

DEPENDENCIES AND ACTIONS THAT ORGANIZE YOUR CODE

For each node, you're asked to specify two very important things:

- **Dependencies**
- **Azione di caricamento**

Dependencies are simply references to other nodes

If at any point those referenced nodes are fully and correctly loaded, the loading action is triggered

This, of course, can trigger the loading actions of other nodes

```
"dep": [  
    {  
        "nodeName": "region",  
        "isOptional": false,  
        "onUpdate": true,  
        "type": "PATH_VARIABLE"  
    },  
    {  
        "nodeName": "province",  
        "isOptional": false,  
        "onUpdate": true,  
        "type": "PATH_VARIABLE"  
    }  
]
```

```
"la": {  
    "type": "GET",  
    "addr": "/region/list",  
    "serviceName": "RETRIEVE_DATA"  
},
```

WHY DOES IT WORK?

CONSTANT CONTROL OVER EVERY ACTION IN YOUR INTERFACE

Each node keeps a record of what has happened to it

- Updates from other nodes set as its dependencies
- Loading action executed when dependencies are satisfied

```
"eventsLog": [  
    {  
        "what": "INSTANTIATED",  
        "when": "2024-06-26T14:01:41.864Z"  
    },  
    {  
        "what": "RECEIVED undefined FROM region",  
        "when": "2024-06-26T14:01:41.885Z"  
    },  
    {  
        "what": "RECEIVED undefined FROM province",  
        "when": "2024-06-26T14:01:41.886Z"  
    },  
    {  
        "what": "RECEIVED null FROM region",  
        "when": "2024-06-26T14:01:41.895Z"  
    },  
    {  
        "what": "RECEIVED Toscana FROM region",  
        "when": "2024-06-26T14:01:43.898Z"  
    },  
    {  
        "what": "RECEIVED null FROM province",  
        "when": "2024-06-26T14:01:43.900Z"  
    },  
    {  
        "what": "RECEIVED Prato FROM province",  
        "when": "2024-06-26T14:01:44.893Z"  
    },  
    {  
        "what": "GET REQ SENT: http://localhost:3000/retrieve/Toscana/Prato/city/list",  
        "when": "2024-06-26T14:01:44.894Z"  
    },  
    {  
        "what": "SELECTION INVALIDATED, PROPAGATED NULL",  
        "when": "2024-06-26T14:01:44.895Z"  
    },  
    {  
        "what": "CHOICES SET TO: Poggio a Caiano, Montemurlo, Carmignano",  
        "when": "2024-06-26T14:01:44.895Z"  
    }  
]
```

