

# Creating map-centric applications with Vue.js

*VueJS Oslo meetup #2*

*March 6, 2018*

Kjell Magne Fauske

# THE FALKLANDS WAR



**MARTIN MIDDLEBROOK**

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# Falklands War

From Wikipedia, the free encyclopedia

*This article is about the 1982 war. For the 1770 diplomatic crisis, see Falklands Crisis (1770).*

The **Falklands War** (Spanish: *Guerra de las Malvinas*), also known as the **Falklands Conflict**, **Falklands Crisis**, **South Atlantic Conflict**, and the ***Guerra del Atlántico Sur*** (Spanish for "South Atlantic War"), was a ten-week war between Argentina and the United Kingdom over two British overseas territories in the South Atlantic: the Falkland Islands, and South Georgia and the South Sandwich Islands. It began on Friday, 2 April 1982, when Argentina invaded and occupied the Falkland Islands (and, the following day, South Georgia and the South Sandwich Islands) in an attempt to establish the sovereignty it had claimed over them. On 5 April, the British government dispatched a naval task force to engage the Argentine Navy and Air Force before making an amphibious assault on the islands. The conflict lasted 74 days and ended with the Argentine surrender on 14 June 1982, returning the islands to British control. In total, 649 Argentine military personnel, 255 British military personnel, and three Falkland Islanders died during the hostilities.

The conflict was a major episode in the protracted confrontation over the territories' sovereignty. Argentina asserted (and maintains) that the islands are Argentine territory,<sup>[5]</sup> and the Argentine government thus characterised its military action as the reclamation of its own territory. The British government regarded the action as an invasion of a territory that had been a Crown colony since 1841. Falkland Islanders, who have inhabited the islands since the early 19th century, are predominantly descendants of British settlers, and favour British sovereignty. Neither state officially declared war, although both governments declared the islands a war zone. Hostilities were almost exclusively limited to the territories under dispute and the area of the South Atlantic where they lie.

The conflict has had a strong effect in both countries and has been the subject of various books, articles, films, and songs. Patriotic sentiment ran high in Argentina, but the outcome prompted large protests against the ruling military government, hastening its

## Falklands War

Map outlining the British recapture of the islands

**Date**

2 April – 14 June 1982<sup>[1][2]</sup>  
(2 months, 1 week and 5 days)

**Location**

Falkland Islands, South Georgia and the South Sandwich Islands and surrounding sea and airspace

**Result**

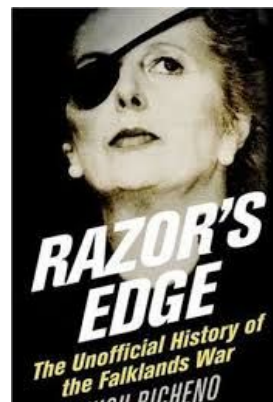
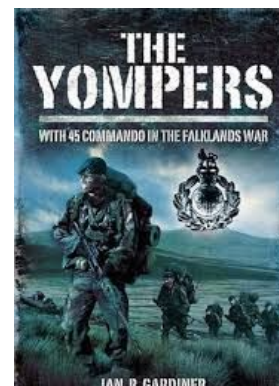
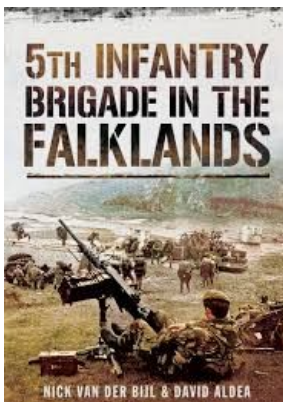
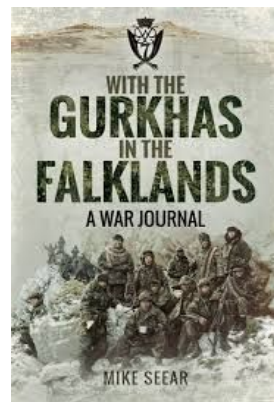
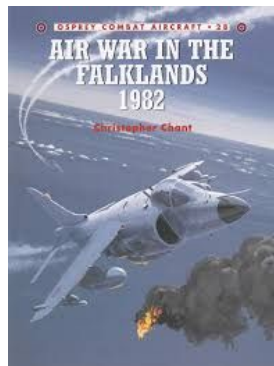
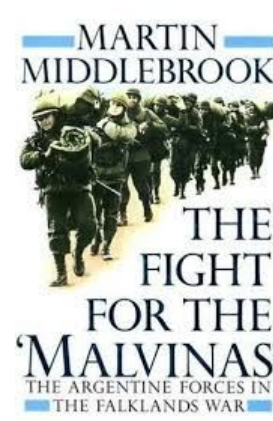
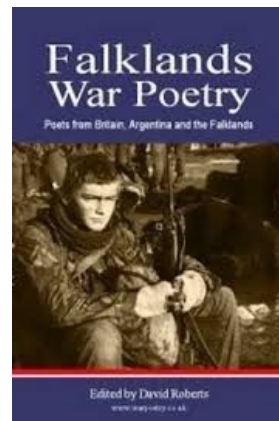
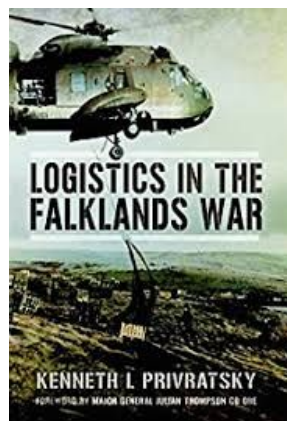
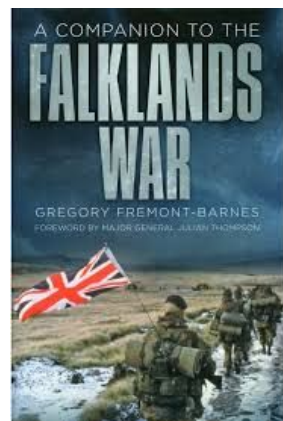
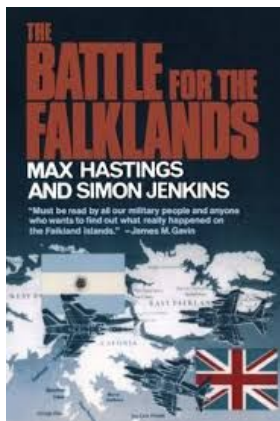
British victory

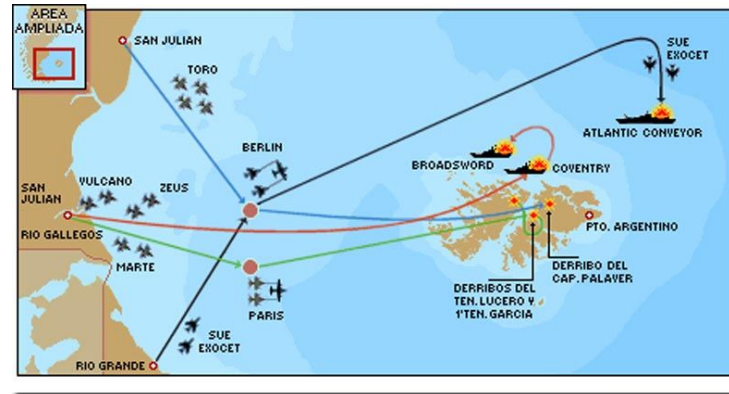
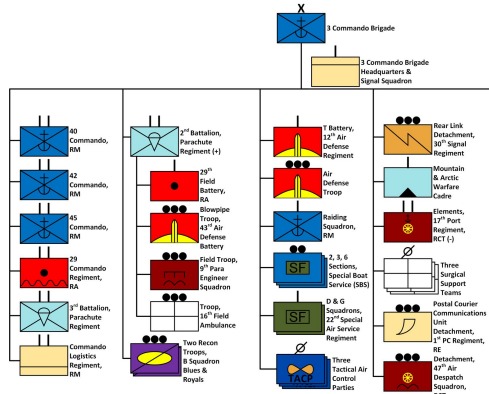
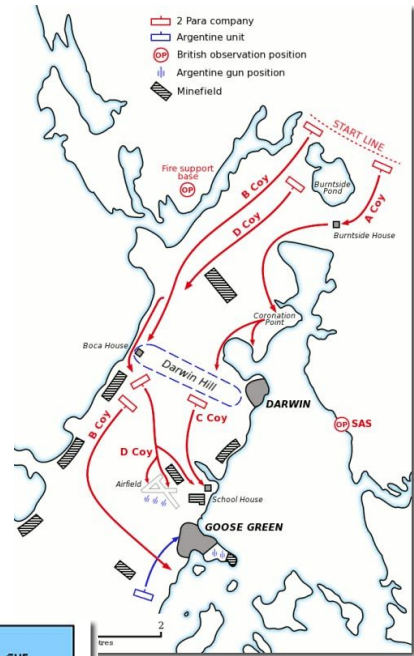
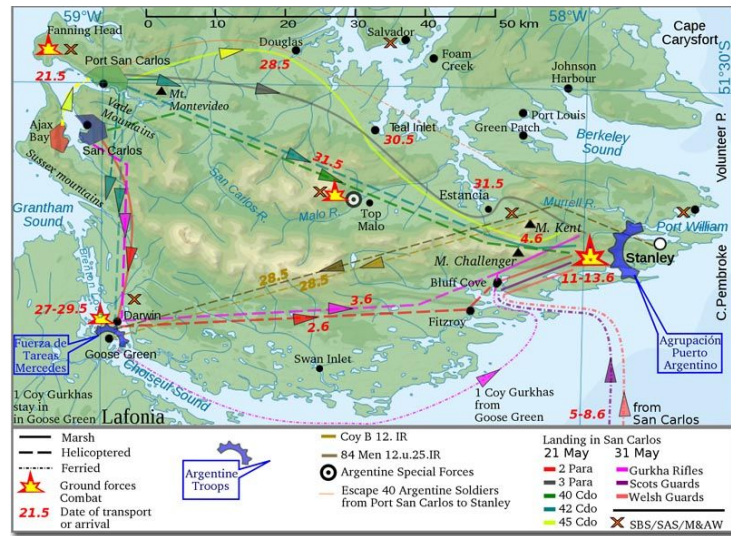
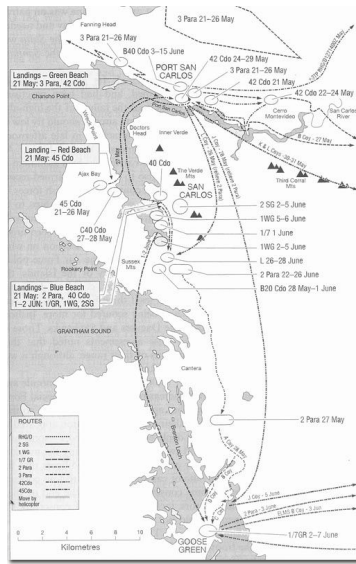
- Relations severed until 1989
- Argentine military government replaced with democratic government

Belligerents	
<span><span></span></span> United Kingdom	<span><span></span></span> Argentina
Commanders and leaders	
<span><span></span></span> Margaret Thatcher	<span><span></span></span> Leopoldo Galtieri
<span><span></span></span> Sir Terence Lewin	<span><span></span></span> Jorge Anaya
<span><span></span></span> Sir John Fieldhouse	<span><span></span></span> Basilio Lami Dozo
<span><span></span></span> Sandy Woodward	<span><span></span></span> Juan Lombardo
<span><span></span></span> Jeremy Moore	<span><span></span></span> Ernesto Crespo
<span><span></span></span> Julian Thompson	<span><span></span></span> Mario Menéndez
<span><span></span></span> Tony Wilson	
Casualties and losses	
255 killed <sup>[nb 1]</sup>	649 killed <sup>[nb 3]</sup>
775 wounded	1,657 wounded <sup>[4]</sup>
115 PoWs <sup>[nb 2]</sup>	11,313 PoWs
2 destroyers	1 cruiser
2 frigates	1 submarine
1 LSL ship	4 cargo vessels
1 LCU craft	2 patrol boats
1 container ship	1 spy trawler
24 helicopters	25 helicopters
10 fighters	35 fighters
1 bomber (interned in Brazil)	2 bombers
	4 cargo aircraft
	25 COIN aircraft
	9 armed trainers
3 civilians killed by British shelling	

[https://en.wikipedia.org/wiki/Falklands\\_War](https://en.wikipedia.org/wiki/Falklands_War)







# **Goal:**

Create a tool for  
visualizing historic  
battles and military  
operations



# What we need

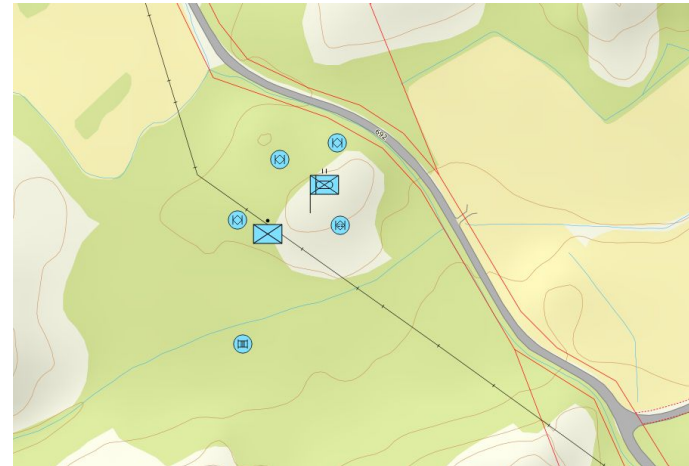
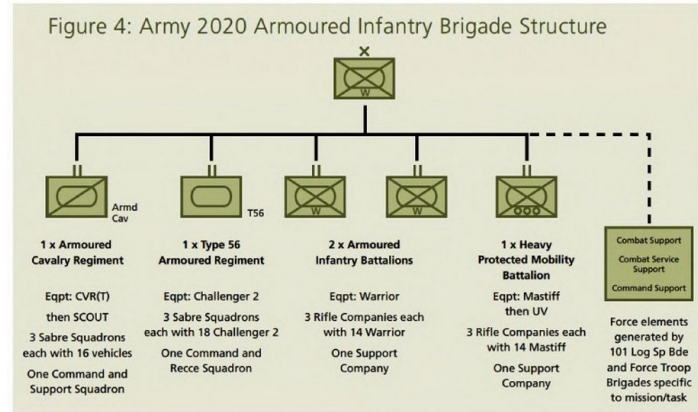
**Order of Battle (ORBAT)** - basically a military organization chart

**Military symbology** - markers/icons

**Maps**

**Locations and time**

[Example from ThinkDefence.co.uk](http://ThinkDefence.co.uk)



Navigation

Order of battle

Map



# What we need

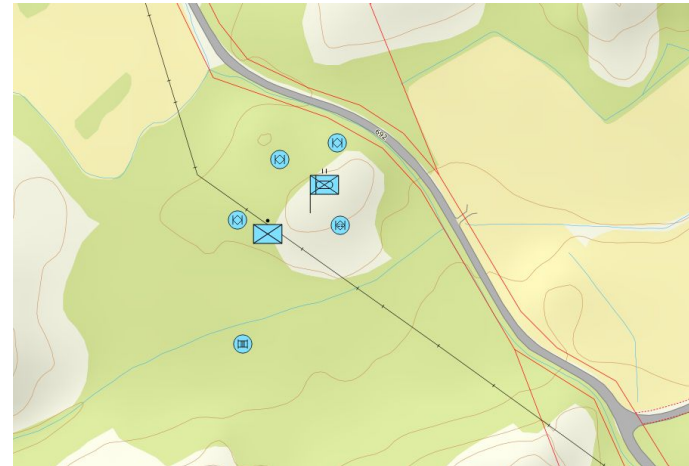
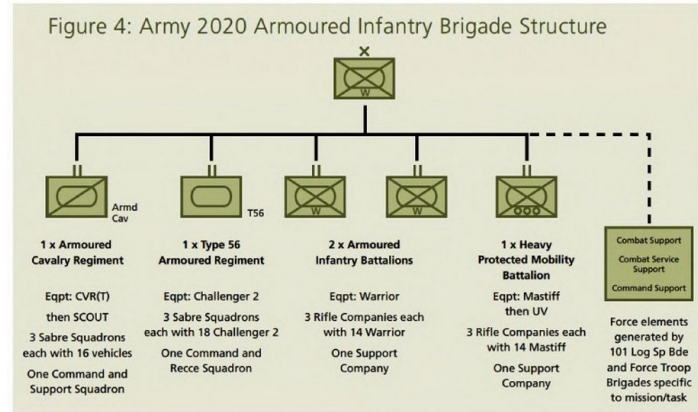
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**NATO STANDARD**  
**APP-6**  
**NATO JOINT MILITARY SYMBOLOGY**

Edition D Version 1  
OCTOBER 2017



**NORTH ATLANTIC TREATY ORGANIZATION**  
**ALLIED PROCEDURAL PUBLICATION**

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[PDF]

NOT MEASUREMENT  
SENSITIVE

MIL-STD-252SD  
10 JUNE 2014

SUPERSEDING  
MIL-STD-252SC  
17 NOVEMBER 2008

**DEPARTMENT OF DEFENSE**  
**INTERFACE STANDARD**  
JOINT MILITARY SYMBOLOGY



Distribution A: Approved for public release, distribution is unlimited.

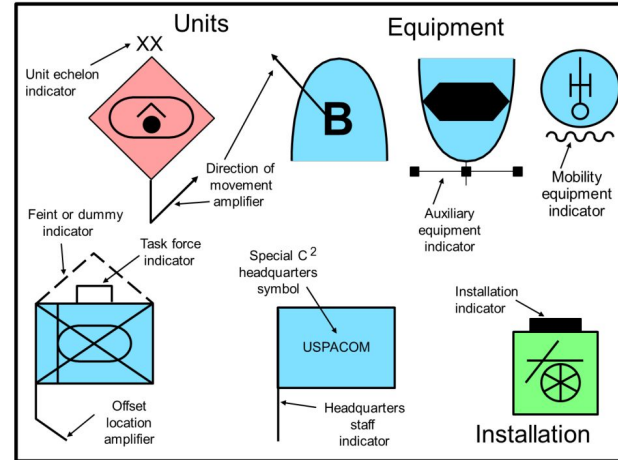
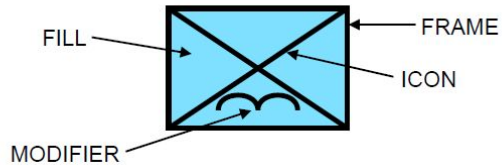
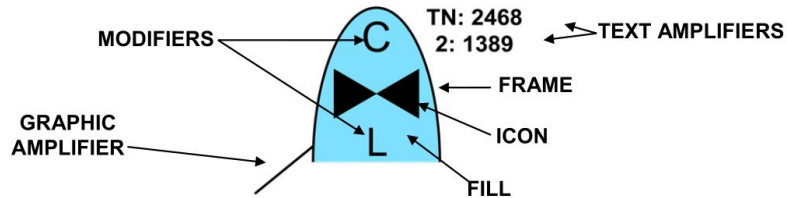
AMSC N/A

AREA INST

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Check the source to verify that this is the current version before use.

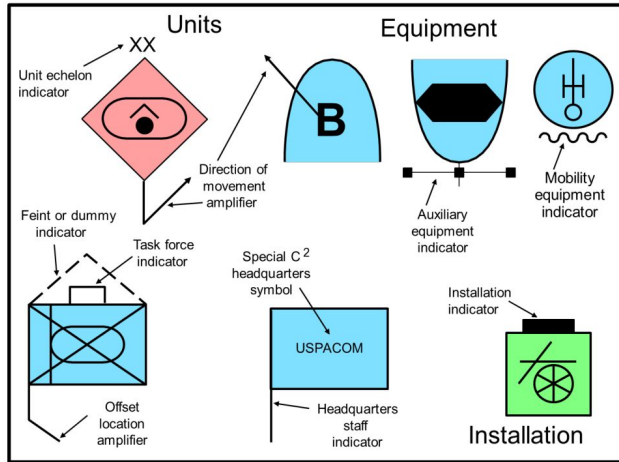
[PDF]

# Anatomy of a military symbol



<http://explorer.milsymb.net/#/home>

# A symbol can be encoded as a 20 digit number



## FIRST TEN DIGITS

$\frac{3}{1}$	$\frac{0}{2}$	$\frac{0}{3}$	$\frac{2}{4}$	$\frac{0}{5}$	$\frac{1}{6}$	$\frac{0}{7}$	$\frac{0}{8}$	$\frac{0}{9}$	$\frac{0}{10}$
VERSION	STANDARD IDENTITY	SYMBOL SET	STATUS	HQ TASK FORCE DUMMY	AMPLIFIER/ DESCRIPTOR				

## SECOND TEN DIGITS

$\frac{1}{11}$	$\frac{1}{12}$	$\frac{0}{13}$	$\frac{7}{14}$	$\frac{0}{15}$	$\frac{0}{16}$	$\frac{0}{17}$	$\frac{0}{18}$	$\frac{0}{19}$	$\frac{0}{20}$
ENTITY	ENTITY TYPE	ENTITY SUBTYPE	SECTOR 1 MODIFIER	SECTOR 2 MODIFIER					

## OPTIONAL THIRD TEN DIGITS

$\frac{1}{21}$	$\frac{1}{22}$	$\frac{0}{23}$	$\frac{7}{24}$	$\frac{0}{25}$	$\frac{0}{26}$	$\frac{0}{27}$	$\frac{0}{28}$	$\frac{0}{29}$	$\frac{0}{30}$
SYMBOLGY ORIGINATOR IDENTIFIER	SYMBOLGY ORIGINATOR SYMBOL SET	SPECIFIED BY THE SYMBOLGY ORIGINATOR							

<http://explorer.milsymb.net/#/home>



# milsymbol to the rescue



SPATIAL ILLUSIONS

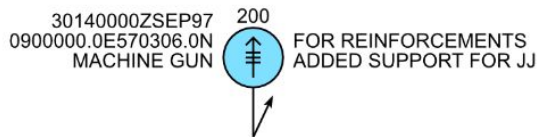
[INTRODUCTION](#) [EXAMPLES](#) [DOCUMENTATION](#)



## milsymbol

Military symbology made easy - in JavaScript

```
> npm install milsymbol
```



```
new ms.Symbol("sfgpewrh--mt", {  
  size: 35,  
  quantity: 200,  
  staffComments: "for reinforcements".toUpperCase(),  
  additionalInformation: "added support for JJ".toUpperCase(),  
  direction: (750*360/6400),  
  type: "machine gun".toUpperCase(),  
  dtg: "30140000ZSEP97",  
  location: "0900000.0E570306.0N"  
}).asSVG();
```

### Milsymbol - military symbology in JavaScript

Milsymbol is a small library in pure JavaScript that creates military unit symbols according to MIL-STD-2525 and STANAG APP6.

[Get The Code From GitHub](#)

<https://www.spatialillusions.com/milsymbol/>

# MilSymbol.vue

```
<template>
  <span class="milsymbol"></span>
</template>
```

```
<script>
import ms from "milsymbol";

export default {
  name: "MilSymbol",
  props: {
    sidc: String,
    size: {
      type: Number,
      default: 15
    },
    modifiers: {
      type: Object
    }
  },
}
```

```
<mil-symbol sidc="10031002181211020000"/>
```

```
mounted() {
  this.setSymbol();
},
methods: {
  setSymbol() {
    let symb = new ms.Symbol(this.sidc, {size: this.size},
      this.modifiers || {});
    this.$el.innerHTML = symb.asSVG();
  }
},
watch: {
  sidc: function (v) {
    this.setSymbol();
  },
  size: function (v) {
    this.setSymbol();
  }
},
};
</script>
<style></style>
```

# What we need

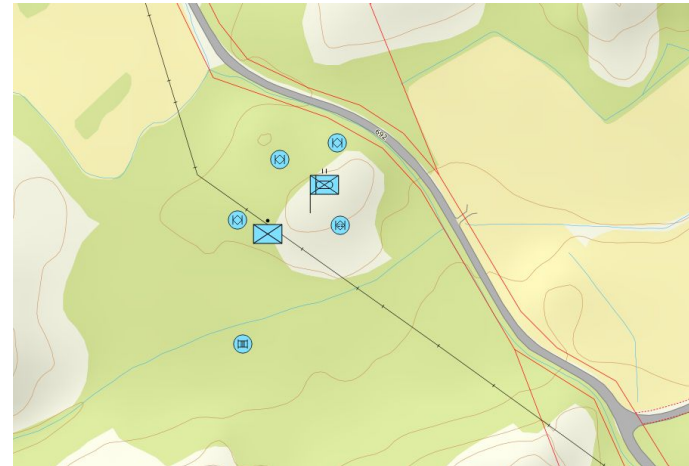
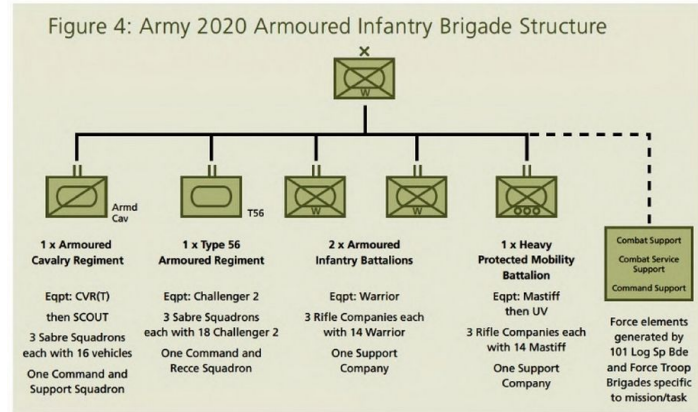
## Order of Battle (ORBAT)

## Military symbology

## Maps

## Locations and time

Example from [ThinkDefence.co.uk](http://ThinkDefence.co.uk)

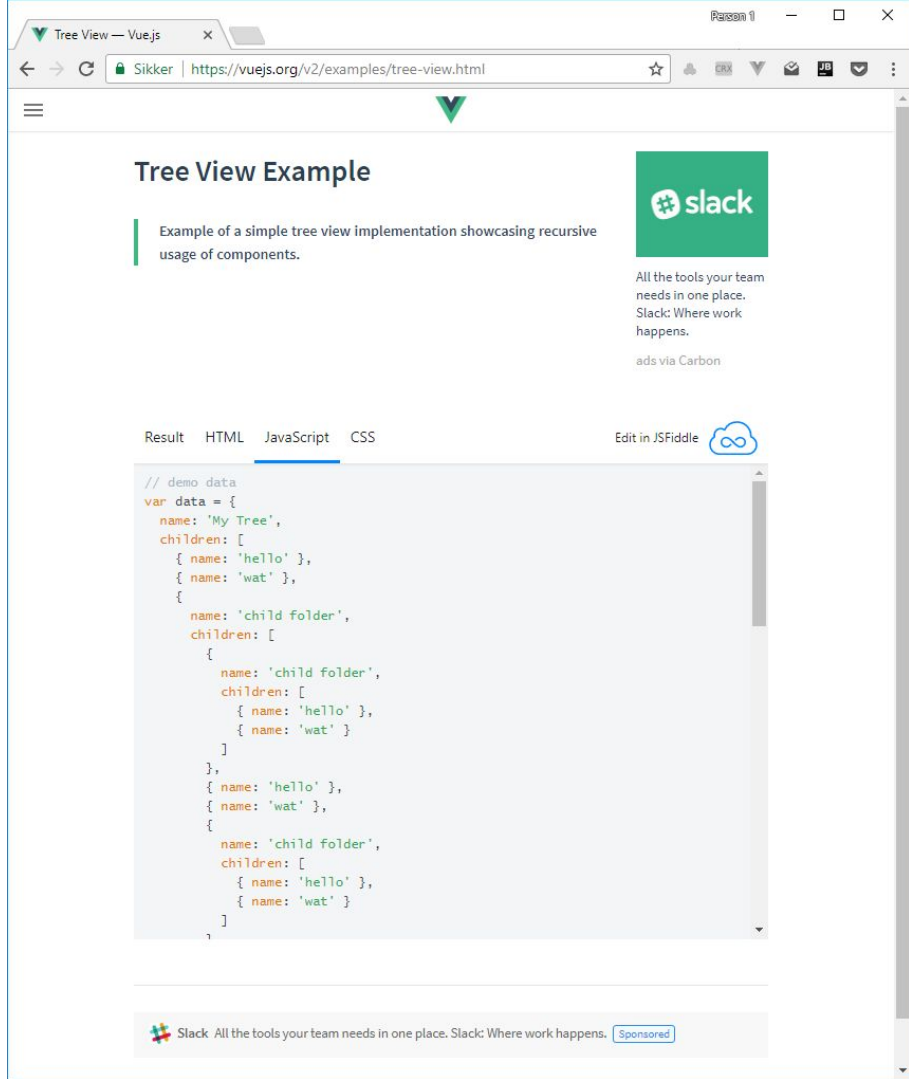


# Order of Battle JSON structure

```
[
  {
    "name": "3 Cdo Bde",
    "sidc": "10031000181211004600",
    "subUnits": [
      {
        "name": "29 Cdo RA",
        "sidc": "10031000161303000000"
      },
      {
        "name": "2 Para",
        "sidc": "10031000161211000001",
        "subUnits": [
          {
            "name": "29 FB",
            "sidc": "10031000151303000000"
          },
          {
            "name": "43 AD",
            "sidc": "10031000141301020000"
          }
        ]
      }
    ]
  }
]
```



# ORBAT component inspired by the Tree View example on vuejs.org



The screenshot shows a web browser displaying the 'Tree View Example' on the Vue.js website. The page title is 'Tree View — Vue.js' and the URL is 'https://vuejs.org/v2/examples/tree-view.html'. The main heading is 'Tree View Example', followed by a description: 'Example of a simple tree view implementation showcasing recursive usage of components.' To the right, there is a Slack advertisement with the text 'All the tools your team needs in one place. Slack: Where work happens.' Below the main content, there is a code editor showing the 'demo data' in JavaScript. The code defines a recursive tree structure with nodes like 'My Tree', 'child folder', and 'hello'. At the bottom, there is a sponsored Slack advertisement.

Tree View — Vue.js

Example of a simple tree view implementation showcasing recursive usage of components.

slack

All the tools your team needs in one place. Slack: Where work happens.

ads via Carbon

Result HTML JavaScript CSS

Edit in JSFiddle

```
// demo data
var data = {
  name: 'My Tree',
  children: [
    { name: 'hello' },
    { name: 'wat' },
    {
      name: 'child folder',
      children: [
        {
          name: 'child folder',
          children: [
            { name: 'hello' },
            { name: 'wat' }
          ]
        },
        { name: 'hello' },
        { name: 'wat' },
        {
          name: 'child folder',
          children: [
            { name: 'hello' },
            { name: 'wat' }
          ]
        }
      ]
    }
  ]
}
```

Slack All the tools your team needs in one place. Slack: Where work happens. Sponsored

# OrbatTree.vue component

```
<template>
  <ul>
    <orbat-item v-for="rootUnit in units" :unit="rootUnit"></orbat-item>
  </ul>
</template>
```

```
<script>
import OrbatItem from "./OrbatItem";

export default {
  components: {OrbatItem},
  name: "orbat-tree",
  props: {
    units: {type: Array, required: true}
  }
}
</script>
```

# OrbatItem.vue component (simplified)

```
<template>
  <li>
    <span @dblclick="toggle">
      <mil-symb :sidc="sidc"/>
      {{unit.name}}
      <span v-if="isParent">
        <i class="far" :class="{ 'fa-minus-square': isOpen, 'fa-plus-square': !isOpen}"
          @click="toggle"></i>
      </span>
    </span>
    <span>
      <ul v-show="isOpen">
        <orbat-item :unit="subUnit" v-for="subUnit in unit.subUnits"/>
      </ul>
    </span>
  </li>
</template>

...
```

# What we need

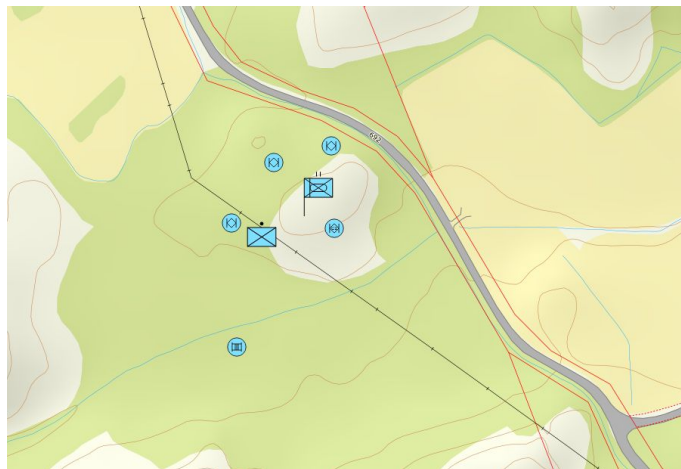
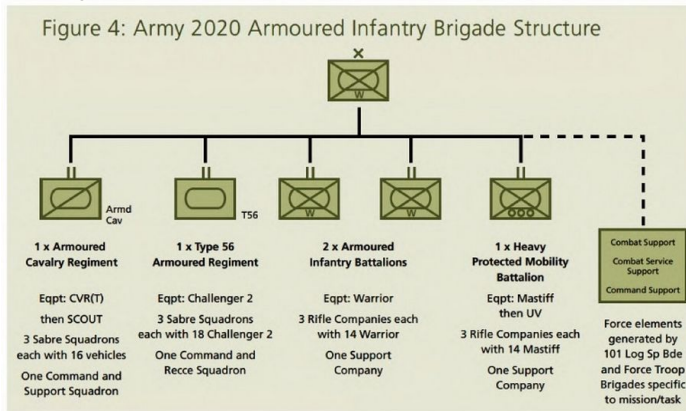
~~Order of Battle (ORBAT)~~

~~Military symbology~~

Maps

Locations and time

[Example from ThinkDefence.co.uk](http://ThinkDefence.co.uk)





# Maps



<https://vuelayers.github.io/#/>



<https://github.com/KoRiGaN/Vue2Leaflet>

# LeafletMap.vue

```
<template>
  <div id="map"></div>
</template>

<script>
import * as L from 'leaflet';
import 'leaflet-providers';

export default {
  name: "leaflet-map",

  props: {
    zoom: {type: Number, default: 8},
    center: {type: Array, default: () => [0, 0]}
  },
  ...
}
```

```
mounted() {
  let map = L.map("map");
  this.map = map;
  map.setView(this.center, this.zoom);
  let osm = L.tileLayer('http://{s}.tile.osm.org/{z}/{x}/{y}.png', {
    attribution: '&copy; <a
href="http://osm.org/copyright">OpenStreetMap</a> contributors'
  });
  let satellite = L.tileLayer.provider('Esri.WorldImagery');
  osm.addTo(map);

  let baseLayers = {"OpenStreetMap": osm, "Esri.WorldImagery":
satellite};
  L.control.layers(baseLayers).addTo(map);
  L.control.scale({imperial: false}).addTo(map);

  this.$emit('map-initialized', map)
},
...
</script>
```

[Demo](#)

# What we need

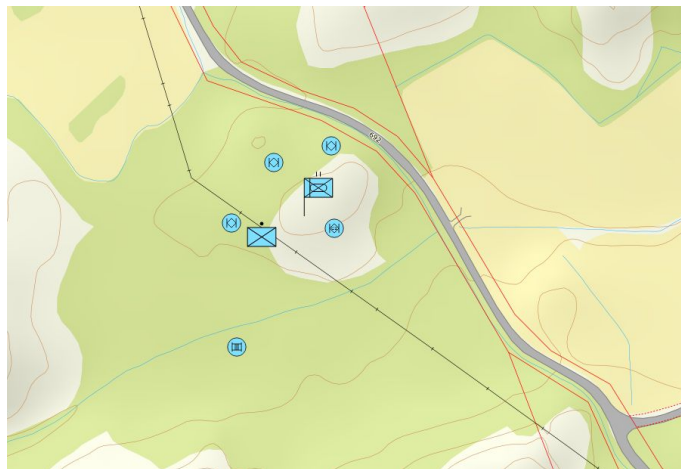
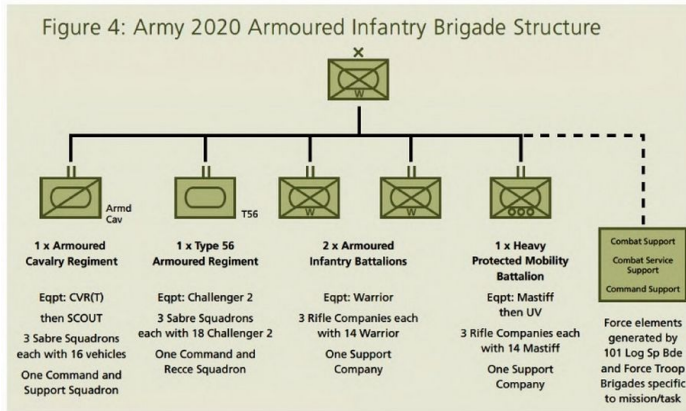
~~Order of Battle~~ (ORBAT)

~~Military symbology~~

~~Maps~~

**Locations** and time

[Example from ThinkDefence.co.uk](http://ThinkDefence.co.uk)



# HTML5 drag and drop

## Drag: OrbatItem.vue

```
<template>
  <li>
    ...
    <span draggable="true" @dragstart="dragStart"
@dragend="dragEnd"><mil-symb :sidc="sidc"/></span>
    ...
  </li>
</template>
...
methods: {
  dragStart(ev) {
    this.$store.commit(SET_DRAGGED_UNIT, this.unit);
    ev.dataTransfer.setData("text", "move-unit");
    ev.dataTransfer.dropEffect = "copy";
    ev.target["style"].opacity = .5;
  },

  dragEnd(ev) {
    ev.target["style"].opacity = "";
    this.$store.commit(CLEAR_DRAGGED_UNIT);
  }
}
```

## Drop: MapPanel.vue

```
<template>
  <div class="a-map" @dragover="onDragOver" @drop="onDrop">
    <leaflet-map :center="center" :zoom="8" class="a-map"
@map-initialized="onMapInitialized"/>
  </div>
</template>

methods: {
  onDragOver(ev) {
    ev.preventDefault();
  },
  onDrop(ev) {
    ev.preventDefault();
    let data = ev.dataTransfer.getData("text");
    if (data == "move-unit") {
      let unit = this.$store.state.draggedUnit;
      let dropPosition = this.map.mouseEventToLatLng(ev);
      let marker = this.createUnitMarker(unit, dropPosition);
      this.markers.addLayer(marker);
    }
  }
}
```

[Demo](#)



# What we need

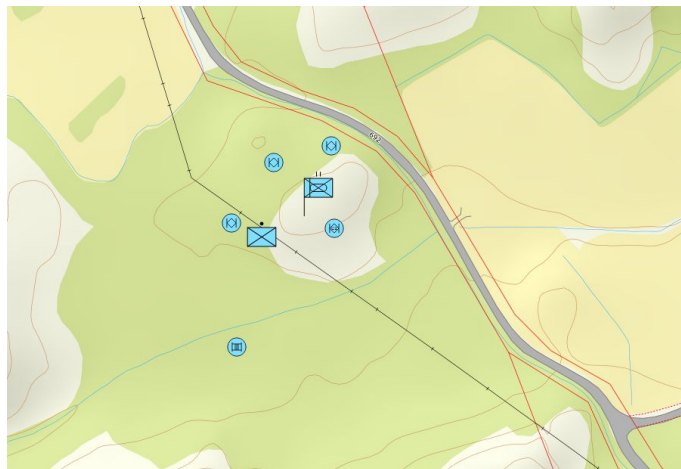
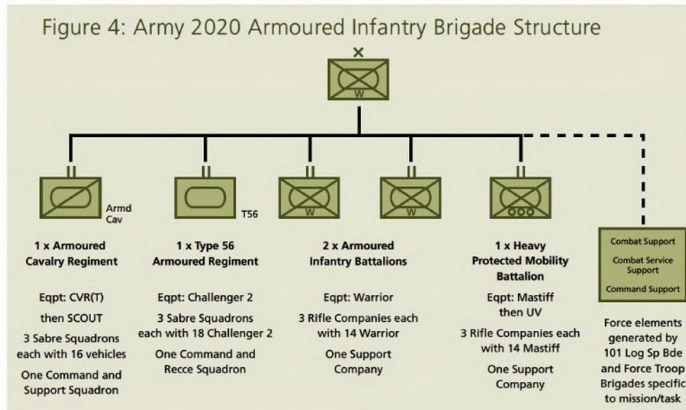
**Order of Battle (ORBAT)**

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[Example from ThinkDefence.co.uk](http://ThinkDefence.co.uk)



Putting everything  
together

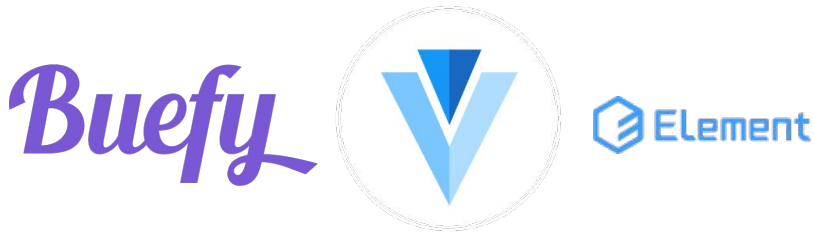
Demo time!

# Lessons learned

You quickly get tired of writing UI-markup and code. Use a UI-library or write your own wrapper components.

Vuex can really simplify your code (but it is a bit boring to type getters and setters)

Object Change Detection Caveats



# What's next?

Typescript FTW!

Improve UI

ORBAT editing

Add map tools (distance, range, drawing)

More options for import and export

Finish the Falklands war scenario

# Contact

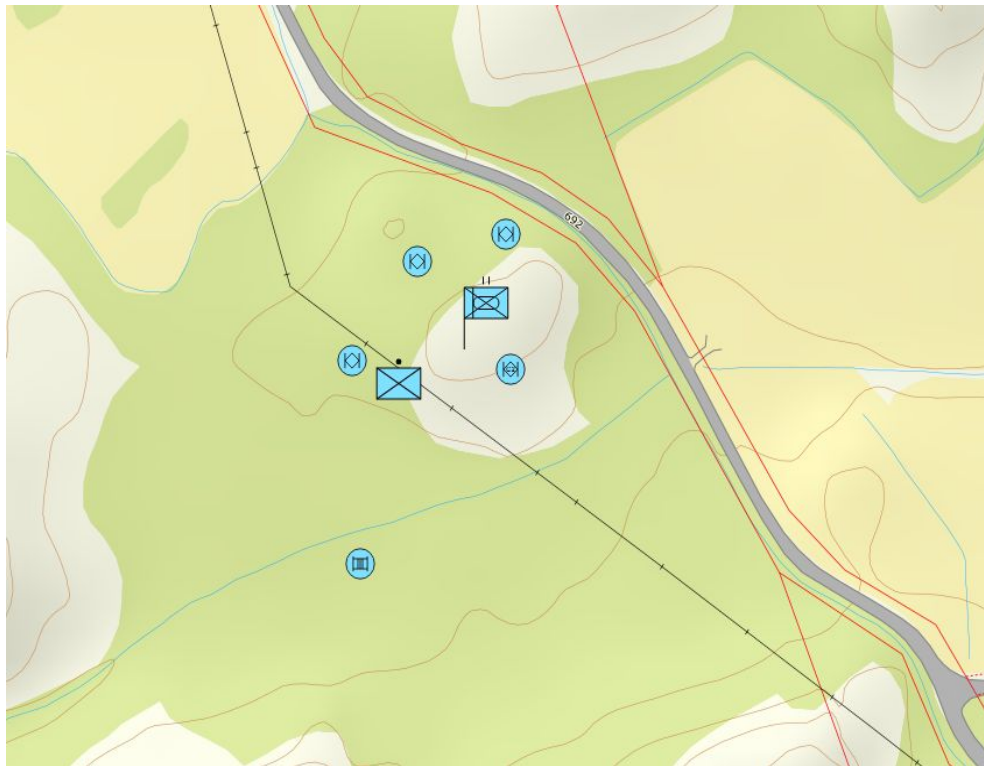
**Kjell Magne Fauske**

[kjellmf@gmail.com](mailto:kjellmf@gmail.com)

<https://github.com/kjellmf/>

You'll find the code at

<https://github.com/kjellmf/vuejs-oslo-meetup2>







Here be dragons