

Internationalisation is a piece of cake

Eli Schütze Ramírez





ELI SCHÜTZE RAMÍREZ

WEB ENGINEER



@ELIBELLY



UNITED KINGDOM

NICARAGUA

INTERNATIONALISATION
INTERNATIONALIZATION

118N? WTF?



NUMERONYM

A number-based word, for example:

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- Numbers as sounds: **K9, l8r**

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- ... n7m

118N? WTF?



THE INTERNET™

LANGUAGES OF WEBSITES 🌐🌐🌐 INTERNET USERS BY LANGUAGE

LANGUAGES OF WEBSITES



INTERNET USERS BY LANGUAGE

51.8% - English



6.6% - Russian



5.8% - German



5.1% - Spanish



5% - Japanese



4.1% - French



2.7% - Portuguese



2.5% - Italian



2% - Chinese



1.8% - Persian



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INTERNET USERS BY LANGUAGE

25.5% - English



19.9% - Chinese



8.1% - Spanish



4.9% - Arabic



4.2% - Portuguese



3.9% - Indonesian / Malaysian



2.9% - Japanese



2.8% - French



2.7% - Russian



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**INTERNATIONALIZATION
IS PART OF ACCESSIBILITY**

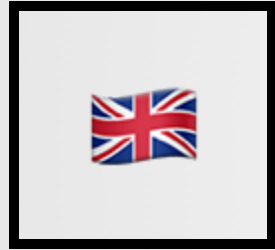
INTERNATIONALIZATION

If you internationalise, you design or develop your content, application, specification, and so on, in a way that ensures it will work well for, or **can be easily adapted for, users** from any culture, region, or language.

W3C Standards

YOU MIGHT DO SOMETHING LIKE...

localised string "resources"



Your code
except with
templates or
placeholders
instead of strings

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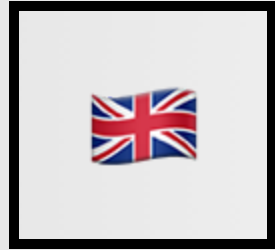
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STORE SOME STRING RESOURCES (E.G. JSON)

```
"addressForm.manualAddressForm.stateProvince": "State / Province",
  "addressForm.manualAddressForm.townCity": "Town / City",
  "addressForm.manualAddressForm.line1Placeholder": "Address line 1",
  "addressForm.manualAddressForm.line2Placeholder": "Address line 2 (optional)",
  "addressForm.manualAddressForm.line3Placeholder": "Address line 3 (optional)",
  "addressForm.manualAddressForm.line4Placeholder": "Address line 4 (optional)",
  "addressForm.manualAddressForm.line5Placeholder": "Address line 5 (optional)",
  "addressForm.postCodeSearchForm.optionalHouseNameOrNumber":
"House name or number (optional)",
  "addressForm.postCodeSearchForm.findAddress": "Find address",
  "customerJourneySummary.heading": "Your selection",
  "customerJourneySummary.quickBuy": "Quick buy ticket",
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Handlebars : `<p>{{formatMessage (intlGet "theID.of.my.string.in.the.resource.file")}}</p>`

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React :

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<SomeTextComponent>
  <SomeIcon />
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</SomeTextComponent>
```

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THINK ABOUT...

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- LANGUAGE

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- WRITING SYSTEM AND LINE BREAKS - É, โลก, 世界

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- FORMATTING DATE, TIME, CURRENCY -
08/01/19

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- WRITING DIRECTION - LTR, RTL, BIDI

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- RELATIVE TIME - 'DAYS AGO'
- *BONUS: COLOR THEORY, RESPONSIVE DESIGN

PIECE OF CAKE, RIGHT?



"I18N CAKE"



LIBRARY INTEGRATION

FORMAT JS CORE

ECMAScript INTL API

ICU

CLDR

BCP47

UNICODE

"I18N CAKE"



LIBRARY INTEGRATION

FORMAT JS CORE

ECMAScript INTL API

ICU

CLDR

BCP47

UNICODE

Optional!

THANKS, UNICODE!



咖啡

قهوة

coffee

THE UNICODE CONSORTIUM

DEVELOP, EXTEND AND PROMOTE USE OF
THE UNICODE STANDARD AND RELATED
GLOBALIZATION STANDARDS



- Unicode Standard: One number for one character - UTF-8
- CLDR and ICU Technical committees
- Bidirectional Text Algorithm

UNICODE BIDI ALGORITHM

- Each character is either strongly or weakly typed with a direction (LTR, RTL, neutral)

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```
<p dir="ltr">bahrain مصر kuwait</p>
```

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1 2 3

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<p dir="ltr">bahrain مصر kuwait</p>
```

```
<p dir="rtl">bahrain مصر kuwait</p>
```

bahrain مصر kuwait

1 2 3

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1 2 3

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<p dir="rtl">bahrain مصر kuwait</p>
```

kuwait مصر Bahrain

3 2 1

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bahrain مصر kuwait

1 2 3

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```

kuwait مصر Bahrain

3 2 1

💡 TIP: IF YOU ARE USING BIDIRECTIONAL TEXT MAKE SURE YOUR HTML TAGS HAVE A 'DIR' ATTRIBUTE

INTERNET ENGINEERING TASK FORCE

BEST COMMON PRACTICE

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BEST COMMON PRACTICE



INTERNET ENGINEERING TASK FORCE

BEST COMMON PRACTICE



BCP 47

TAGS FOR IDENTIFYING LOCALES

[Language Tag] - [Subtags] *

en-US, en-GB

mn-Cyrl-MN

zh-Hant-HK

es-419



MY LOCALES



MY LOCALES



MY LOCALES

WHAT WILL YOU SHOW ME?





**ALWAYS LET THE USER
CHOOSE THEIR OWN
LOCALE**

CLDR - COMMON LOCALE DATA REPOSITORY

The **most extensive** standard repository of locale-specific data

Maintained by Unicode Consortium

Most devs will never see it - usually wrapped in libraries

It's originally in XML

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LOCALE-SPECIFIC
FORMATTING
AND PARSING

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TIMES

TIMEZONES

NUMBERS

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TRANSLATIONS
OF NAMES OF
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LANGUAGE AND
SCRIPTS

CHARACTERS USED
WRITING DIRECTION
CAPITALIZATION
PLURAL CASES
SORTING RULES

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COUNTRY
INFO

LANGUAGE USAGE
CURRENCY
TELEPHONE
CODES
CALENDAR
CONVENTIONS

CLDR 'Days' Section - Spanish Language (en-EN)

```
<days>
  <dayContext type="format">
    <dayWidth type="abbreviated">
      <day type="sun">dom.</day>
      <day type="mon">lun.</day>
      <day type="tue">mar.</day>
      <day type="wed">mié.</day>
      <day type="thu">jue.</day>
      <day type="fri">vie.</day>
      <day type="sat">sáb.</day>
    </dayWidth>
    <dayWidth type="short">
      <day type="sun">DO</day>
      <day type="mon">LU</day>
      <day type="tue">MA</day>
      <day type="wed">MI</day>
      <day type="thu">JU</day>
      <day type="fri">VI</day>
      <day type="sat">SA</day>
    </dayWidth>
    <dayWidth type="wide">
      <day type="sun">domingo</day>
      <day type="mon">lunes</day>
      <day type="tue">martes</day>
      <day type="wed">miércoles</day>
      <day type="thu">jueves</day>
      <day type="fri">viernes</day>
      <day type="sat">sábado</day>
    </dayWidth>
  </dayContext>
```



Search or jump to...



Pull requests

Issues

Trending

Explore



unicode-cldr 

Unicode Common Locale Data Repository (CLDR) Project

<http://cldr.unicode.org>

 Repositories 36

 People 1

 Projects 0

Search repositories...


Type: All ▾

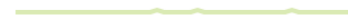
cldr-localenames-modern

★ 8  4 Updated 19 days ago



cldr-core

★ 34  15 Updated on 3 Apr



ICU

INTERNATIONAL COMPONENTS FOR UNICODE

SET OF C/C++ AND JAVA LIBRARIES

WRAPS CLDR

DEFINES MESSAGE FORMAT FOR RESOURCE
STRINGS

@elibelly

Welcome, { name } !

@elibelly

Welcome, { **name** } !

There were { **count**, **number** } people there // 1,000 vs 1.000

@elibelly

Welcome, { **name** } !

There were { **count**, **number** } people there // 1,000 vs 1.000

My birthday is { **birthday**, **date** , *short* } // 04/02/2017 vs 02/04/2017

@elibelly

Welcome, { **name** } !

There were { **count**, **number** } people there // 1,000 vs 1.000

My birthday is { **birthday**, **date** , *short* } // 04/02/2017 vs 02/04/2017

```
{ gender, select ,  
  male { He likes trains },  
  female { She likes trains },  
  other { They like trains }  
}
```

@elibelly

Welcome, { **name** } !

There were { **count**, **number** } people there // 1,000 vs 1.000

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```
{ gender, select ,  
  male { He likes trains },  
  female { She likes trains },  
  other { They like trains }  
}
```

```
{ count , plural ,  
  =0 {No more seats available }  
  one {Just a single seat left!}|  
  other { # seats left}  
} // some languages have few and many !
```

HOW TO WRITE FOR I18N

Write **full sentences** when possible

Do not try to build sentences yourself

Use complex arguments (ie. select, plural) as the outermost structure of a message

```
{ gender, select,  
    male {He},  
    female {She},  
    other {They}  
    likes to dance the cha cha in the moonlight  
}
```



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```
{ gender, select,  
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    female {She likes to dance the cha cha in the  
moonlight},  
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```



JAVASCRIPT ALERT



ECMAScript Intl API

ECMA 402

- Intl.NumberFormat
- Intl.DateTimeFormat
- Intl.Collator

```
var myNumber = 123456.789;

// the Japanese yen doesn't use a minor unit
console.log(
  new Intl.NumberFormat('ja-JP',
    { style: 'currency',
      currency: 'JPY' })
    .format(myNumber)
)
// → ¥123,457

// request a weekday along with a long date
var options = {
  weekday: 'long',
  year: 'numeric',
  month: 'long',
  day: 'numeric' };
console.log(
  new Intl.DateTimeFormat('de-DE', options).format(date)
);
// → "Donnerstag, 20. Dezember 2012"
```

- Not supported in older browsers
- Expensive (esp. in frameworks like React)

Internationalization API - OTHER

Global

83.27%

Locale-sensitive collation (string comparison), number formatting, and date and time formatting.

Current aligned

Usage relative

Date relative

Show all

IE	Edge *	Firefox	Chrome	Safari	Opera	iOS Safari *	Opera Mini *	Android Browser *	Chrome for Android
			49						
			59			10.2		4.4	
	14	54	60	10.1		10.3		4.4.4	
11	15	55	61	11	47	11	all	56	61
	16	56	62	TP	48				
		57	63		49				
		58	64						

Notes

Known issues (0)

Resources (8)

Feedback

*INTERNATIONALISATION IN JS IS STILL A WORK IN PROGRESS

For more information, look up the TC39 ECMA 402 Proposal
or the W3C TPAC Internationalization Working Group



DISCLAIMER:
THERE ARE OTHER
SOLUTIONS/LIBS



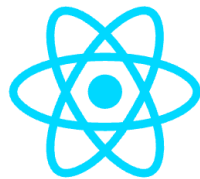
Internationalize your web apps on the client & server.

EXAMPLE

Annie took 3 photos on March 8, 2018.

Photos: Locale:

Get Started



React



Ember



Handlebars

{dust}

Dust

FORMAT JS - CORE

- Exports Javascript API with more functionality than ECMA
- Polyfills where needed

Intl MessageFormat

npm v2.1.0

Format a string with placeholders, including plural and select support to create localized messages.

Intl RelativeFormat

npm v2.1.0

Formats JavaScript dates to relative time strings.

Intl MessageFormat Parser

npm v1.4.0

Parses ICU message strings to an AST that can be used to format the messages for a person's locale.

Intl Format Cache

npm v2.0.5

Produces instances of JavaScript Intl formats, and caches them for reuse.

REACT INTL

[HTTPS://GITHUB.COM/YAHOO/REACT-INTL](https://github.com/yahoo/react-intl)

```
<Button>
  <FormattedMessage
    id="button.signIn.primary"
    defaultMessage="Sign in as {name}"
    value={{ name: 'GOTO Cph' }}
  />
</Button>
```

```
{  
  "buttons.signIn.primary": "Acceder como {name}",  
  "inputs.nameInput.placeholder": "Por favor introduzca su nombre...",  
  "app.header": "Ejemplos de React Intl",  
  "app.welcome_message": "{gender, select,  
    female {Bienvenida}  
    male {Bienvenido}  
    other {Bienvenidx}} {name}, {unreadCount, plural,  
      =0 {no tienes messages}  
      one {tienes {formattedUnreadCount} mensaje nuevo}  
      other {tienes {formattedUnreadCount} mensajes nuevos}}",  
}
```

```
intl.formatMessage({id: "inputs.nameInput.placeholder"})
```



REACT-INTL

FORMAT JS CORE

ECMAScript INTL API

ICU

CLDR

BCP47

UNICODE

I18N HAS A LOGISTICS PROBLEM

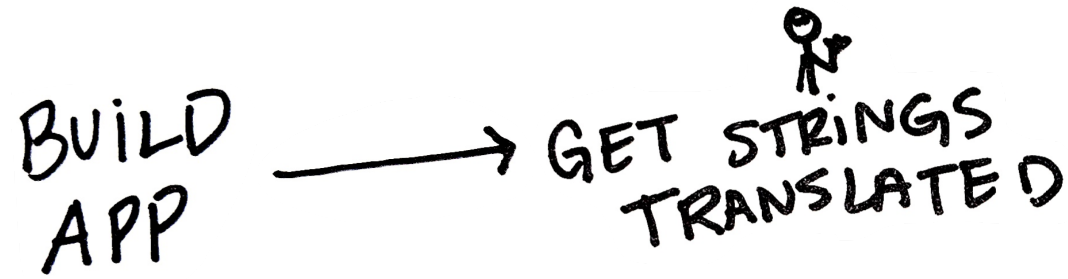
I18N HAS A LOGISTICS PROBLEM

BUILD
APP

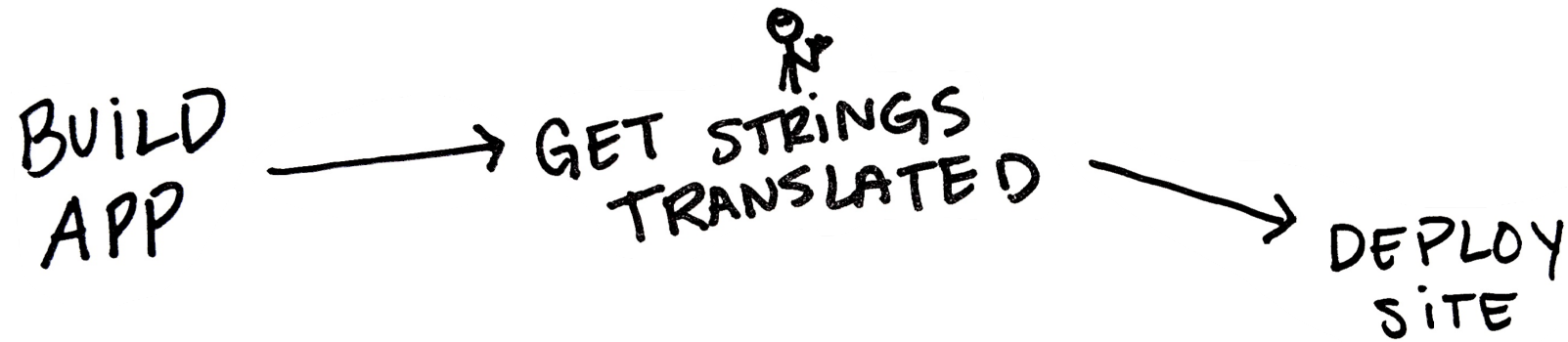
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BUILD
APP →

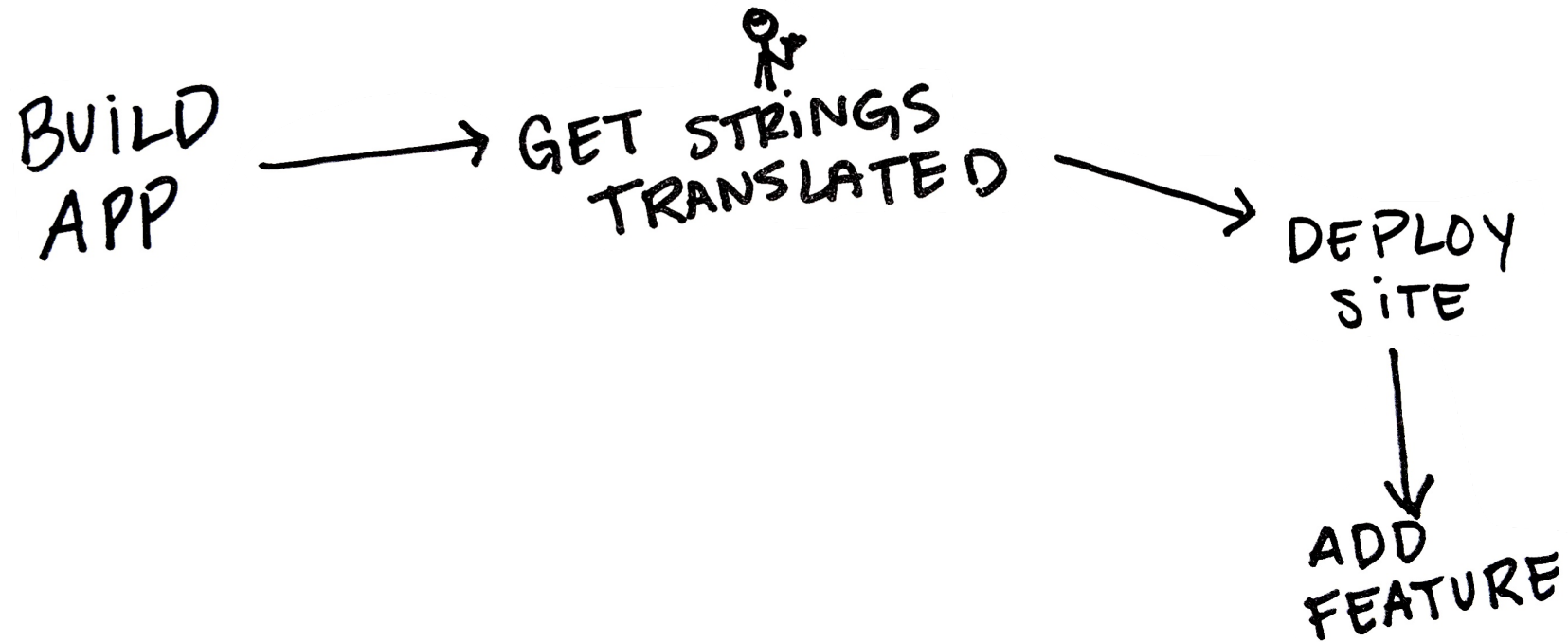
I18N HAS A LOGISTICS PROBLEM



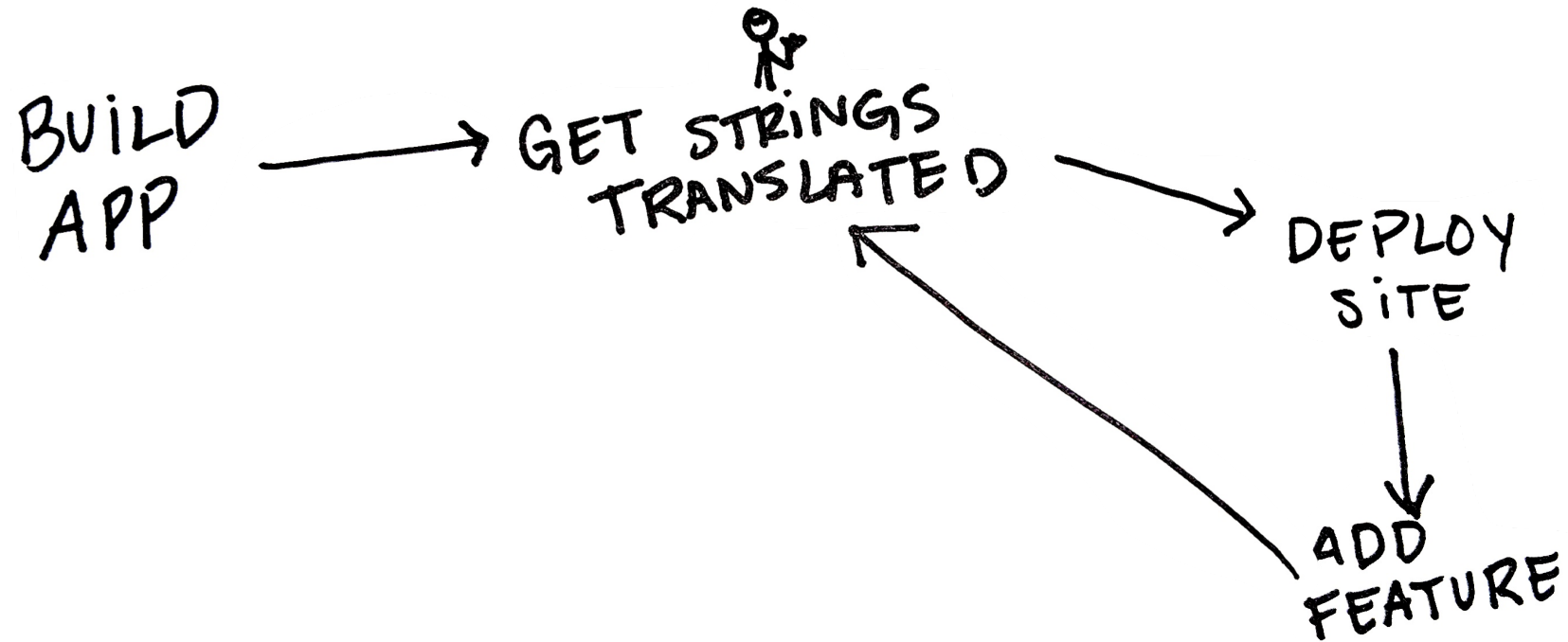
I18N HAS A LOGISTICS PROBLEM



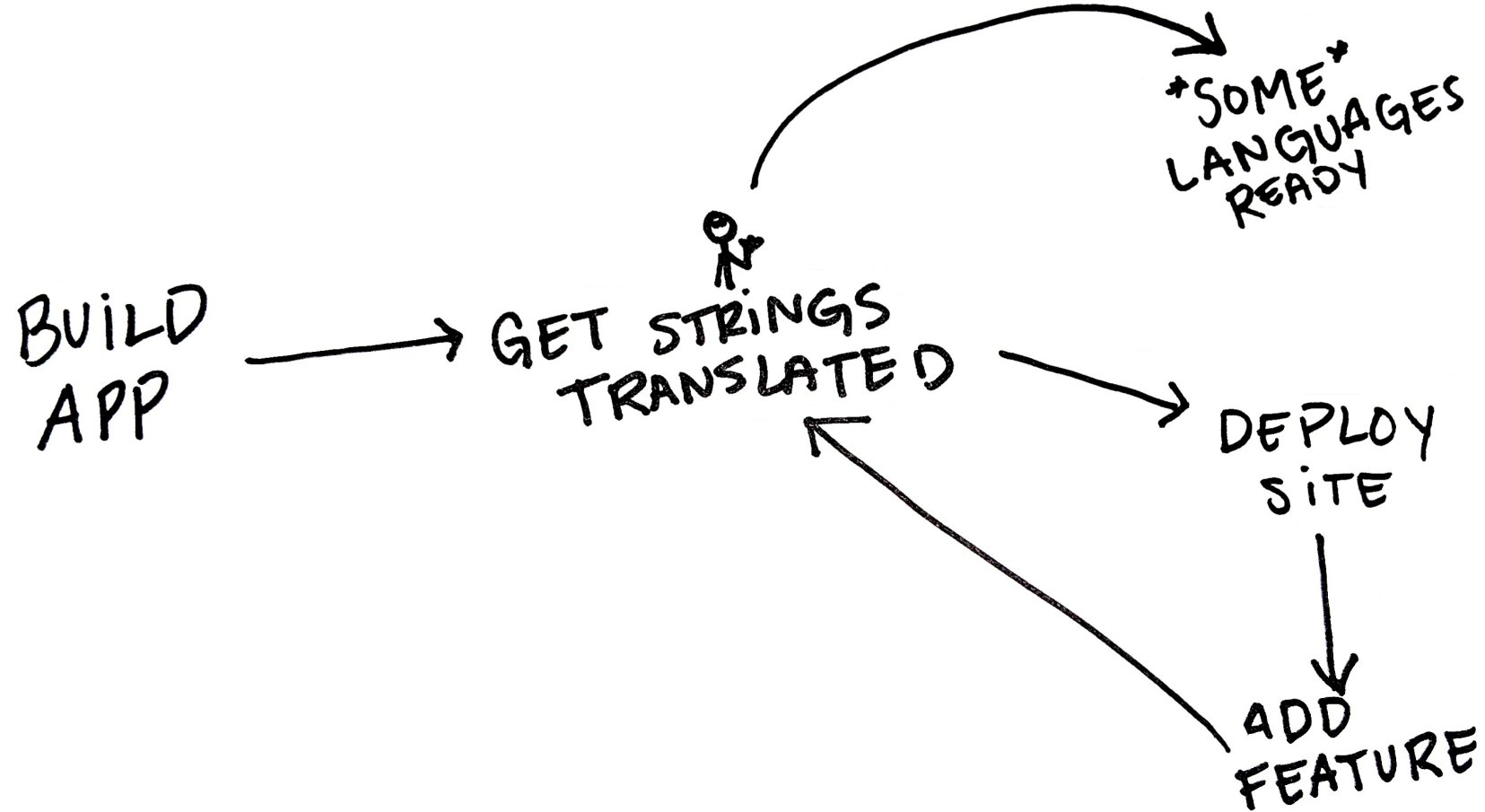
I18N HAS A LOGISTICS PROBLEM



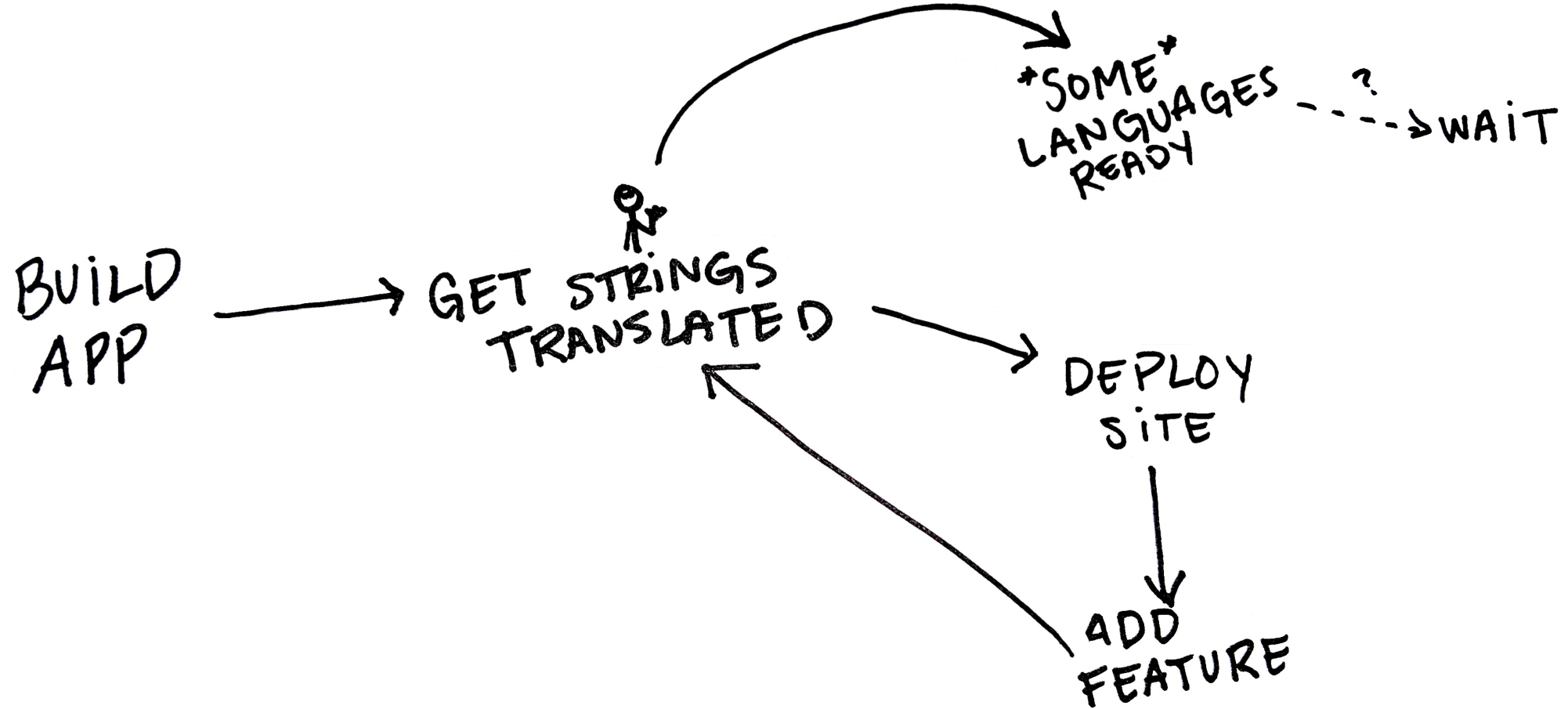
I18N HAS A LOGISTICS PROBLEM



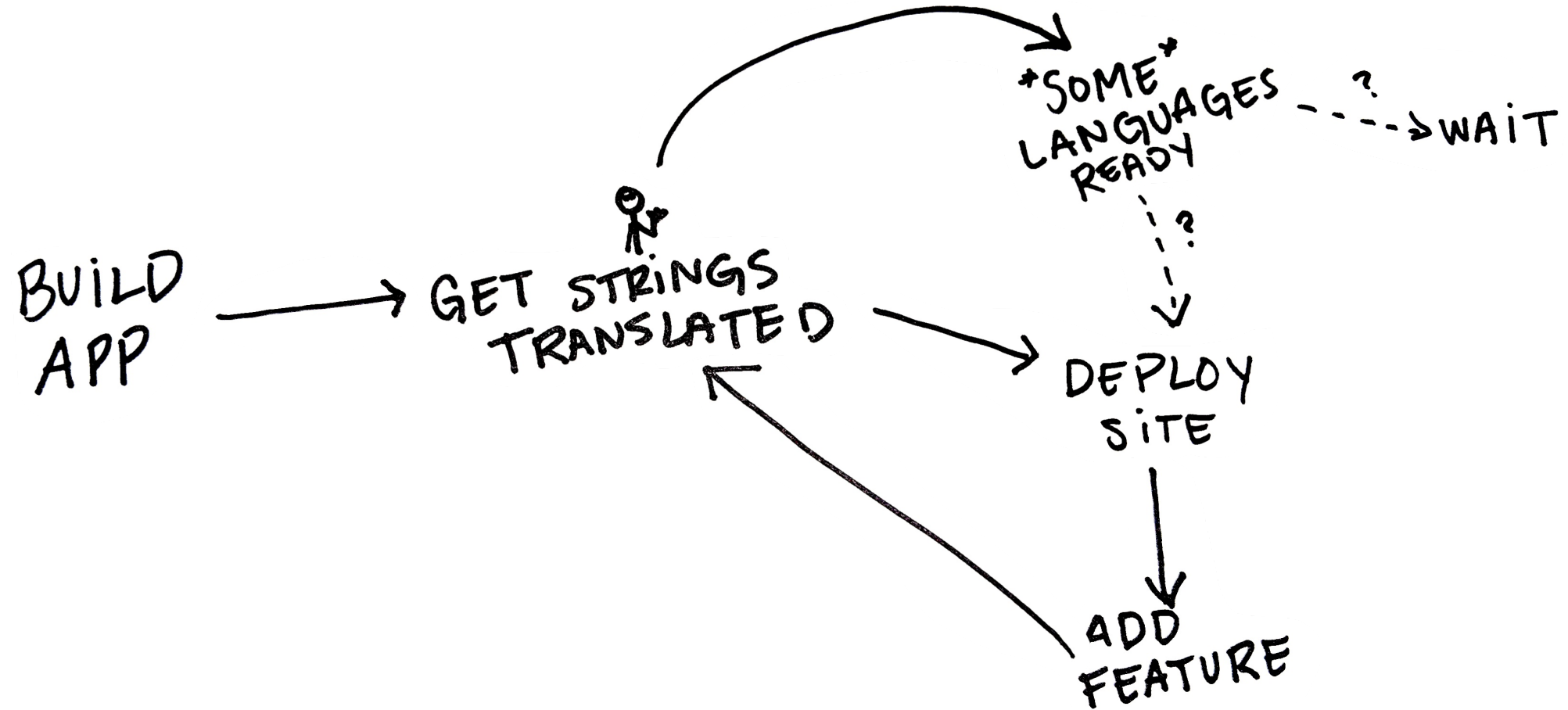
I18N HAS A LOGISTICS PROBLEM



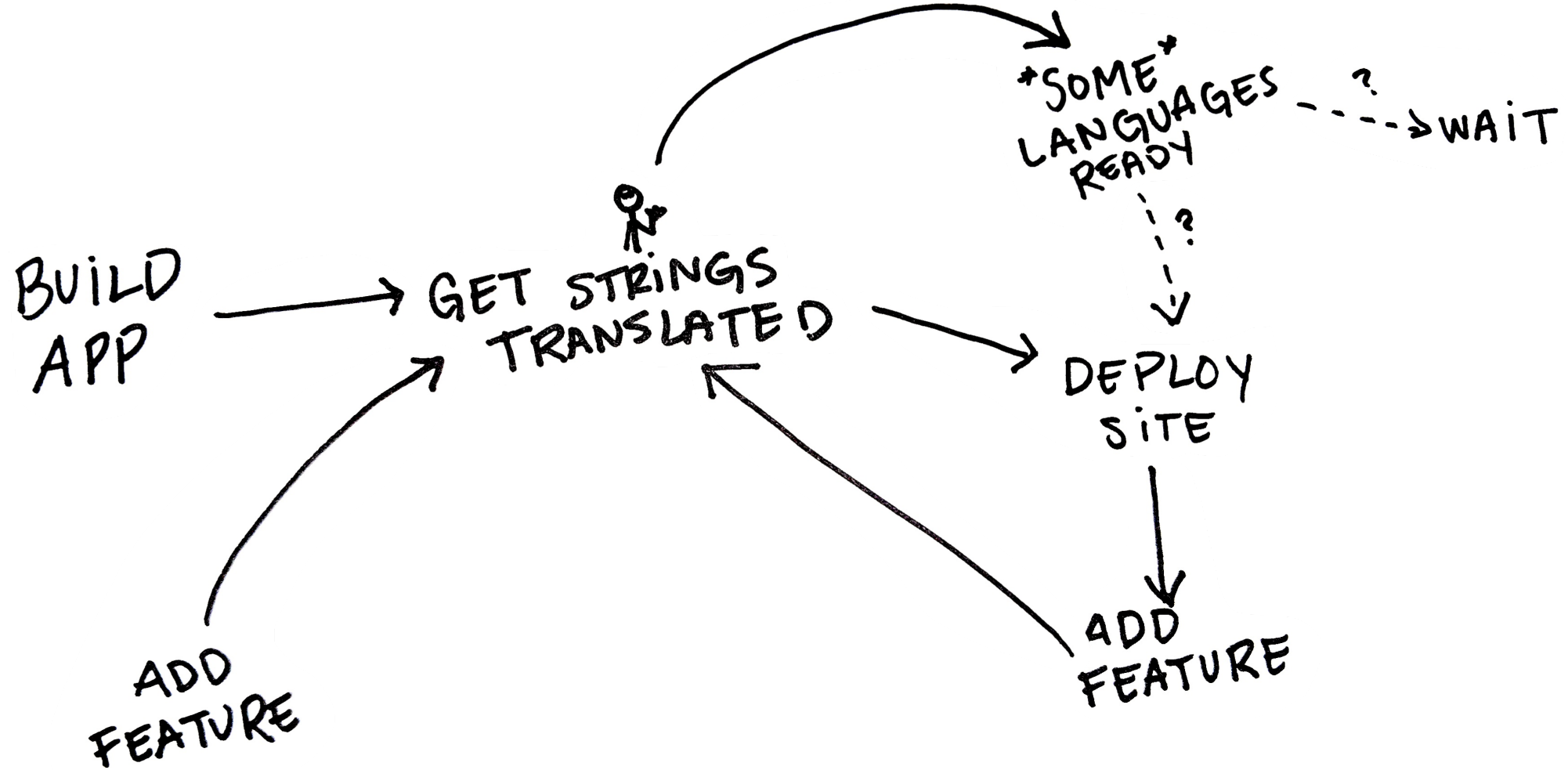
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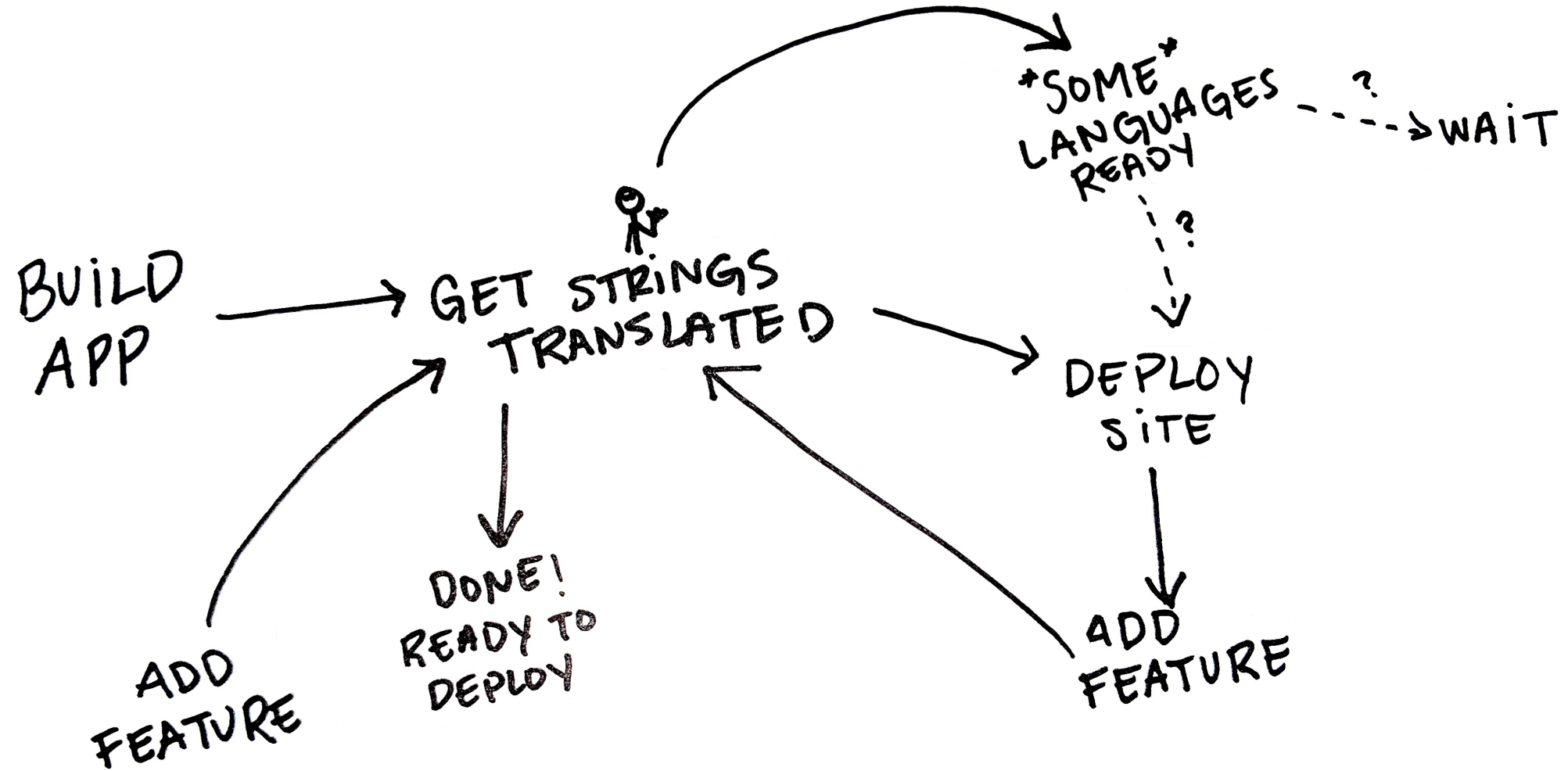
I18N HAS A LOGISTICS PROBLEM



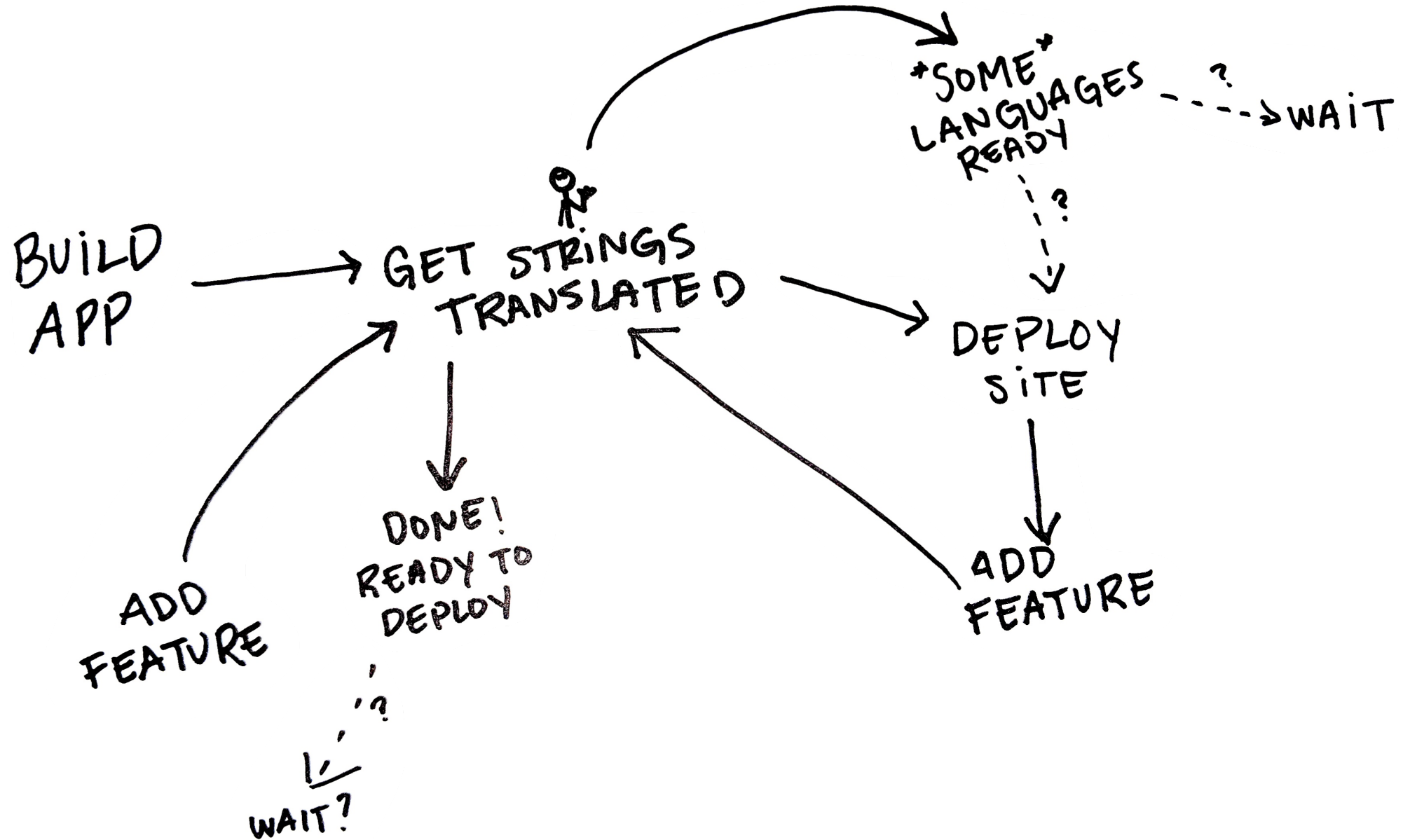
I18N HAS A LOGISTICS PROBLEM



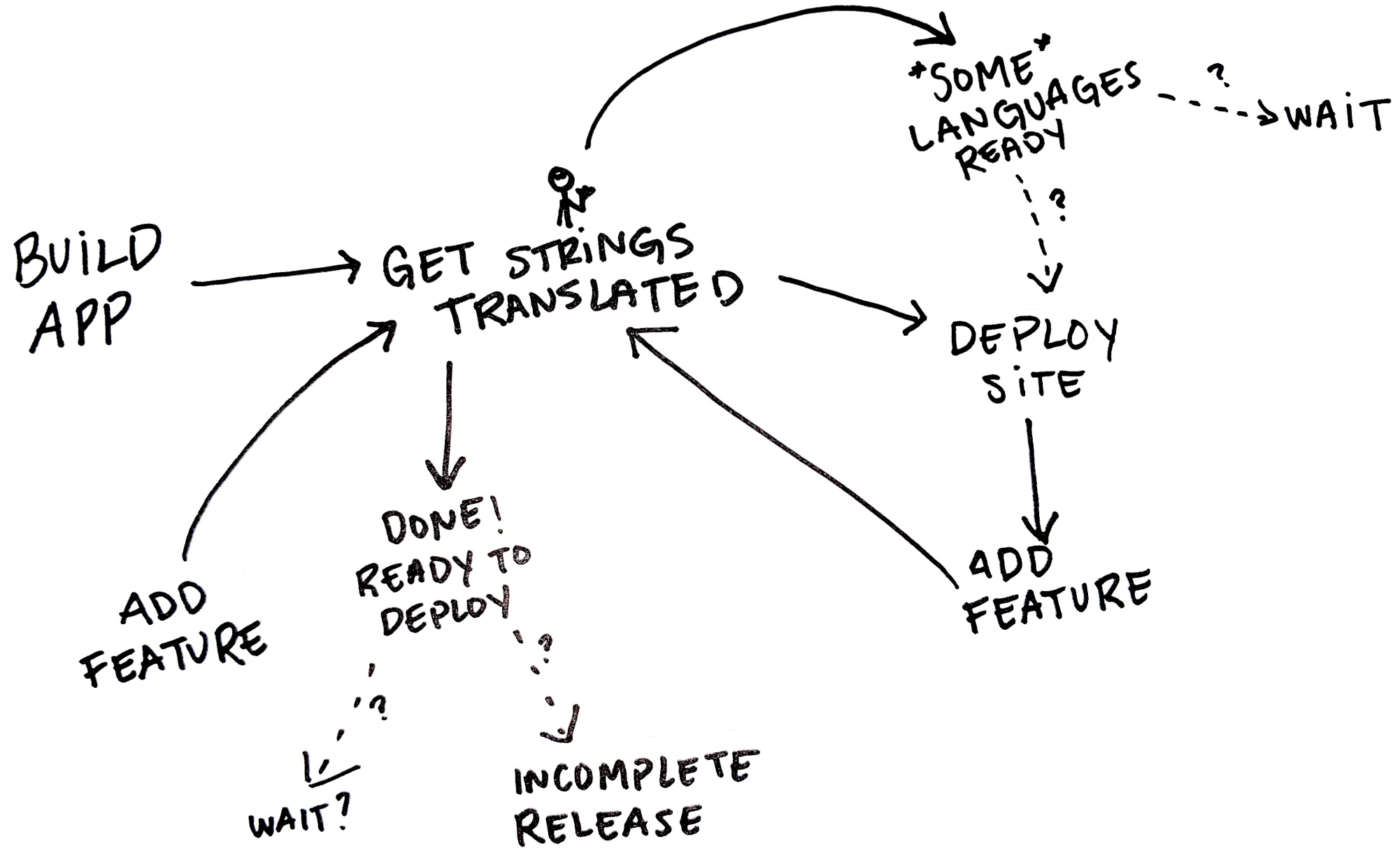
I18N HAS A LOGISTICS PROBLEM



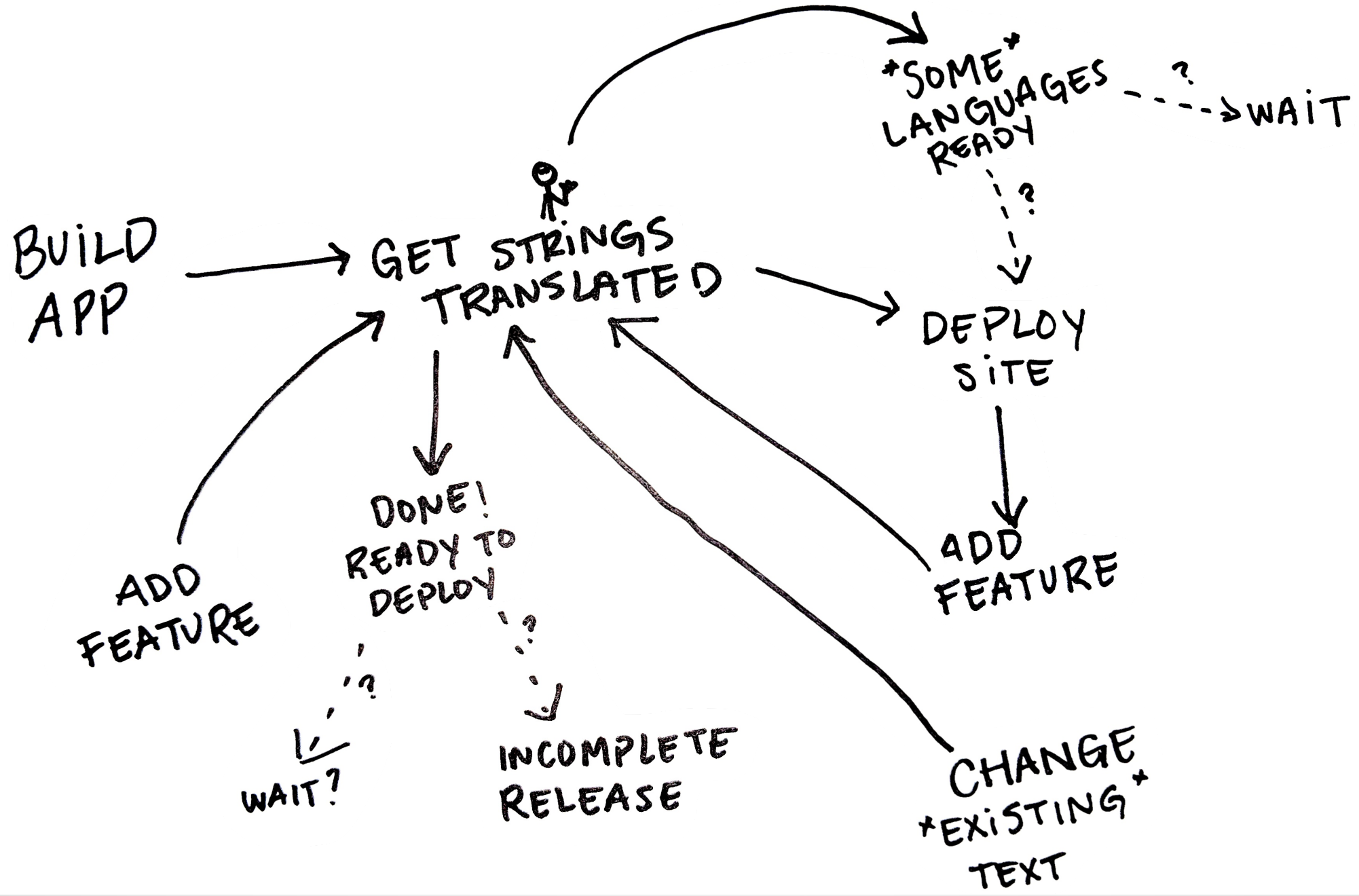
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I18N HAS A LOGISTICS PROBLEM



CONTINUOUS LOCALISATION

It is a way of automatically, seamlessly gathering new source material, publishing it for translation, acquiring translations and integrating them back into the product.



I18N IS MUCH EASIER TO
INTEGRATE INTO YOUR
PROJECT EARLY

Swiss Franc in English (en-GB)

We've selected a ticket based on
price and your search time
Feel free to pick a different one

TOTAL

CHF 1,353.24

9 adults

Continue >

Quick buy ticket



Swiss Franc in English (en-GB)

We've selected a ticket based on
price and your search time
Feel free to pick a different one

TOTAL

CHF 1,353.24

9 adults

Continue >

Quick buy ticket



Swiss Franc in German (de-DE)

Basierend auf dem Preis und Ihrer
gewünschten Reisezeit haben wir ein
Ticket für Sie ausgewählt.
Sie können sich aber auch gern für ein
anderes Ticket entscheiden.

GESAMTPREIS

788,67 CHF

9 Erwachsene

Weiter >

Quick-Buy-Ticket



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We've selected a ticket based on
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TOTAL

CHF 1,353.24

9 adults

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height: 8.57rem

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~~height: 8.57rem~~ 🎉

<u>Advance Single</u> <u>Off Peak Single (Online)</u> Internet only. Can only be booked as part of a return journey.			<input checked="" type="radio"/> £369.00 Limited availability	<input type="radio"/> £369.00 Limited availability		<input type="radio"/> £1,332.00 Limited availability	<input type="radio"/> £1,332.00 Limited availability		
	<input type="radio"/> £403.20	<input type="radio"/> £403.20	<input type="radio"/> £403.20	<input type="radio"/> £403.20				<input checked="" type="radio"/> £403.20	<input type="radio"/> £403.20

British Pound Sterling in English (en-GB)

<u>Advance Single</u> <u>Off Peak Single (Online)</u> Internet only. Can only be booked as part of a return journey.			<input checked="" type="radio"/> £369.00 Limited availability	<input type="radio"/> £369.00 Limited availability		<input type="radio"/> £1,332.00 Limited availability	<input type="radio"/> £1,332.00 Limited availability		
	<input type="radio"/> £403.20	<input type="radio"/> £403.20	<input type="radio"/> £403.20	<input type="radio"/> £403.20			<input checked="" type="radio"/> £403.20	<input type="radio"/> £403.20	

British Pound Sterling in English (en-GB)

<u>Off Peak Single (Online)</u> Internet only. Can only be booked as part of a return journey.	<input type="radio"/> 6 436,62	<input type="radio"/> 6 436,62	<input type="radio"/> 6 436,62	<input type="radio"/> 6 436,62			<input checked="" type="radio"/> 6 436,62	<input type="radio"/> 6 436,62	
				<input type="radio"/> 7 471,08 Disponibilité limitée		<input type="radio"/> 22 987,80 Disponibilité limitée	<input type="radio"/> 22 987,80 Disponibilité limitée	<input type="radio"/> 14 798,43 Disponibilité limitée	

Swedish krona in French (fr-FR)

	2nde classe	1ère classe		2nde classe	1ère classe
20:00 → 22:04 2h 4m, 0 corresp.	Indisponible à l'achat	Indisponible à l'achat	08:55 → 11:05 2h 10m, 0 corresp.	<input type="radio"/> 21 263,76 kr Disponibilité limitée	<input type="radio"/> 22 987,80 kr Disponibilité limitée
20:40 → 22:46 2h 6m, 0 corresp.	<input type="radio"/> 6 436,62 kr	<input type="radio"/> 22 269,51 kr	09:15 → 11:20 2h 5m, 0 corresp.	<input type="radio"/> 21 263,76 kr Disponibilité limitée	<input type="radio"/> 22 987,80 kr Disponibilité limitée
21:00 → 23:08 2h 8m, 0 corresp.	<input type="radio"/> 6 436,62 kr	<input type="radio"/> 22 269,51 kr	09:35 → 11:40 2h 5m, 0 corresp.	<input checked="" type="radio"/> 6 436,62 kr	<input type="radio"/> 14 798,43 kr Disponibilité limitée
21:40 → 23:49 2h 9m, 0 corresp.	<input type="radio"/> 5 890,59 kr Disponibilité limitée	<input type="radio"/> 7 471,08 kr Disponibilité limitée	09:55 → 12:02 2h 7m, 0 corresp.	<input type="radio"/> 6 436,62 kr	<input type="radio"/> 22 269,51 kr
▼ Plus tard			▼ Plus tard		

~~grid design~~



YOU *CAN* STYLE FOR SPECIFIC LANGUAGES

note: always make sure to check browser
compatibility when using intl tools and tread
carefully

CSS LANG PSEUDO SELECTOR

```
:lang( <language-code> ) { }
```


CSS LANG PSEUDO SELECTOR

```
:lang( <language-code> ) { }
```

```
<html lang="en">  
<body>  
  <p><q> Mauris placerat eleifend leo.</q></p>  
</body>  
</html>
```

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  <p><q> Mauris placerat eleifend leo.</q></p>  
</body>  
</html>
```

```
q:before { content: open-quote; }  
q:after { content: close-quote; }  
  
:lang(en) q { quotes: '“' '”'; }  
:lang(fr) q { quotes: '«' '»'; }  
:lang(de) q { quotes: '»' '«'; }
```

CSS LANG PSEUDO SELECTOR

```
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<body>
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q:before { content: open-quote; }
q:after { content: close-quote; }

:lang(en) q { quotes: '“' '”'; }
:lang(fr) q { quotes: '«' '»'; }
:lang(de) q { quotes: '»' '«'; }
```

English (en)

“Mauris placerat eleifend leo.”

French (fr)

«Mauris placerat eleifend leo.»

German (de)

»Mauris placerat eleifend leo.«

A NOTE ON LINE BREAKS

- Not all languages delimit words
- Not all languages have obvious places to break a line
- It's not always easy for a machine to programmatically determine what a word or syllable is like a human can

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ណាមួយ រួមទាំងប្រទេសរបស់ខ្លួនផង និងមាន
សិទ្ធិរំលត្រឡប់មកប្រទេសរបស់ខ្លួនវិញ។

Line break opportunities in Khmer text.

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Line break opportunities in Khmer text.

<https://www.w3.org/International/articles/typography/line-break>

@elibelly





- **i18n is part of accessibility - Internationalise all the things!**



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- **i18n is supported by a bunch of standards, helps do it "right"**



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- **Try to start early if you can**



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- **Always let your user pick their own locale**



- **i18n is part of accessibility - Internationalise all the things!**
- **i18n is supported by a bunch of standards, helps do it "right"**
- **Try to start early if you can**
- **Always let your user pick their own locale**
- **German is a great first test language!**

🙏 THANK YOU 🙏



@ ELIBELLY

If you have questions, find me during the breaks

goto;
copenhagen

 Follow us @gotocph

