

# Introducing Keyman

Keyman is created by SIL International

# SIL @ NPIC

- The SIL Language Software Development Unit at NPIC started work in May 2017
- Our first project at NPIC will be Keyman



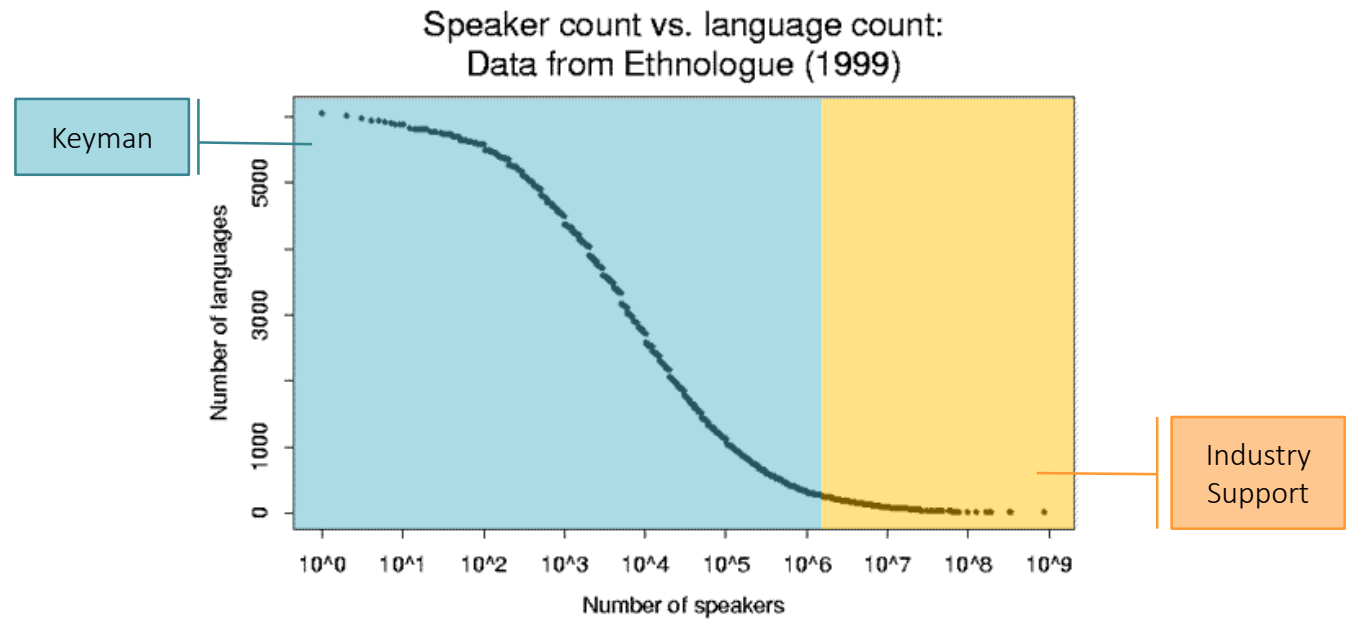
# What is Keyman?

- The Keyman project is a set of Open Source tools for creating and using keyboard layouts for any language in the world



# Why does Keyman exist?

- Industry supports about 200 languages
  - Top priority on Latin script
- **But!** 7,099 world languages
  - Cambodia – 19 languages
  - Thailand – 50 languages
  - Laos – 71 languages
  - Myanmar – 112 languages
  - Papua New Guinea – 839 languages!
- Keyman supports the “long tail” of languages



# Why use Keyman?

- Keyman was born in South-East Asia
- Keyman emphasises equal support for all languages:
  - South-East Asian languages
  - Indic languages
  - Right-to-left scripts such as Arabic
  - Minority languages

# Who uses Keyman?

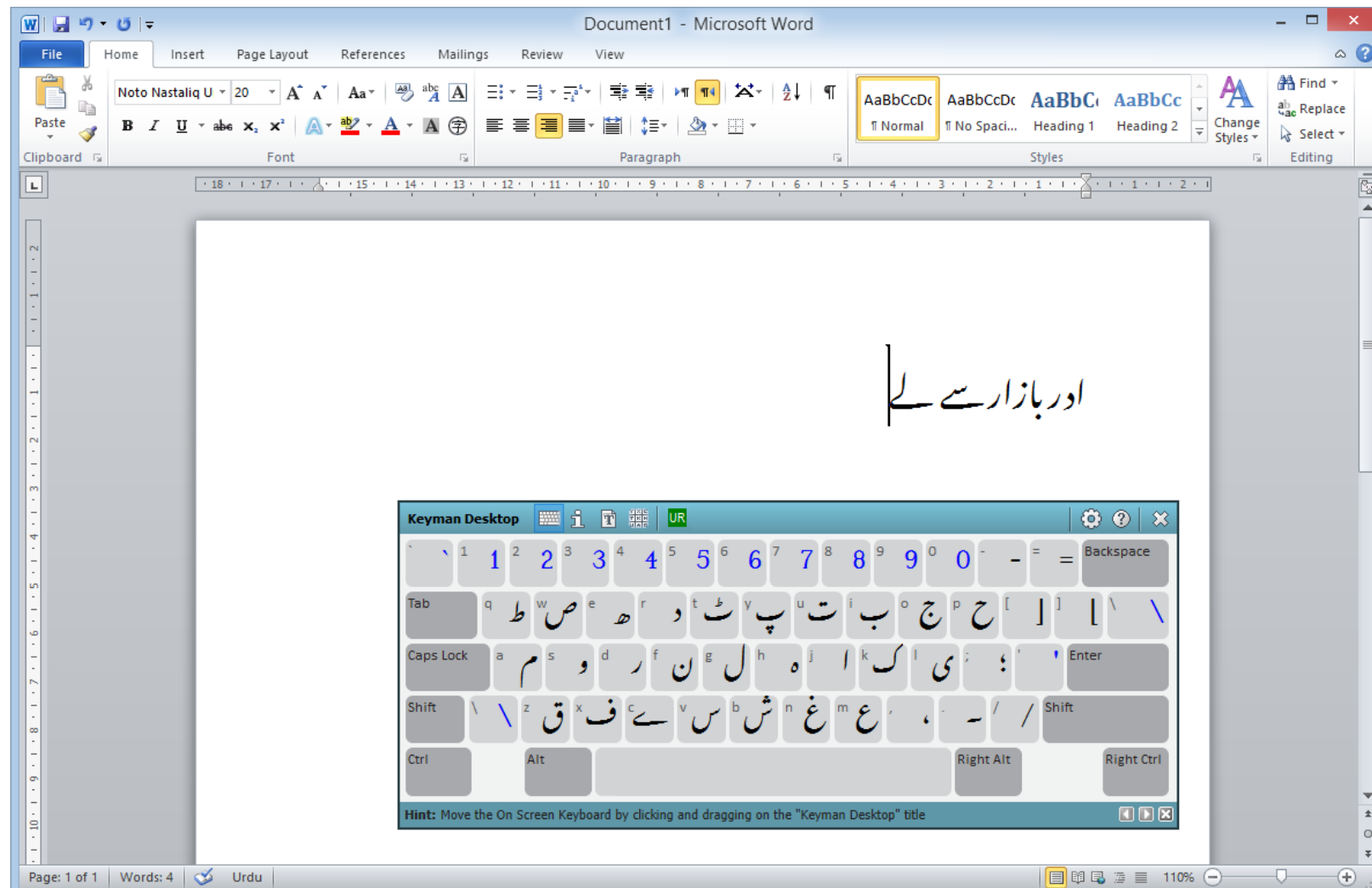
- SIL members worldwide and associates – many thousands
- Large multilingual organisations, e.g. BBC World Service
- Governments, e.g. Indian state governments, Canada, Australia
- Non Government Organisations – many around the world
- Individuals and businesses – thousands more each week

# Keyman works on many systems

- Windows
- Mac OS X
- Android
- iPhone and iPad
- Web
- Linux (with the Keyman KMFL clone)

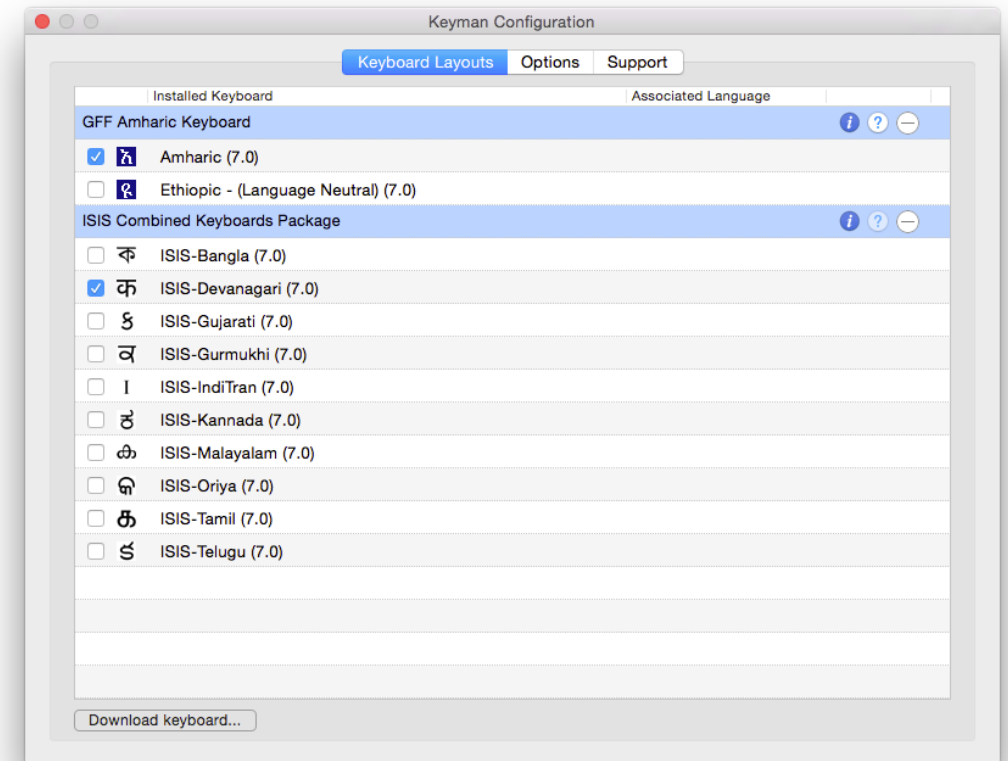


# Keyman runs on Windows

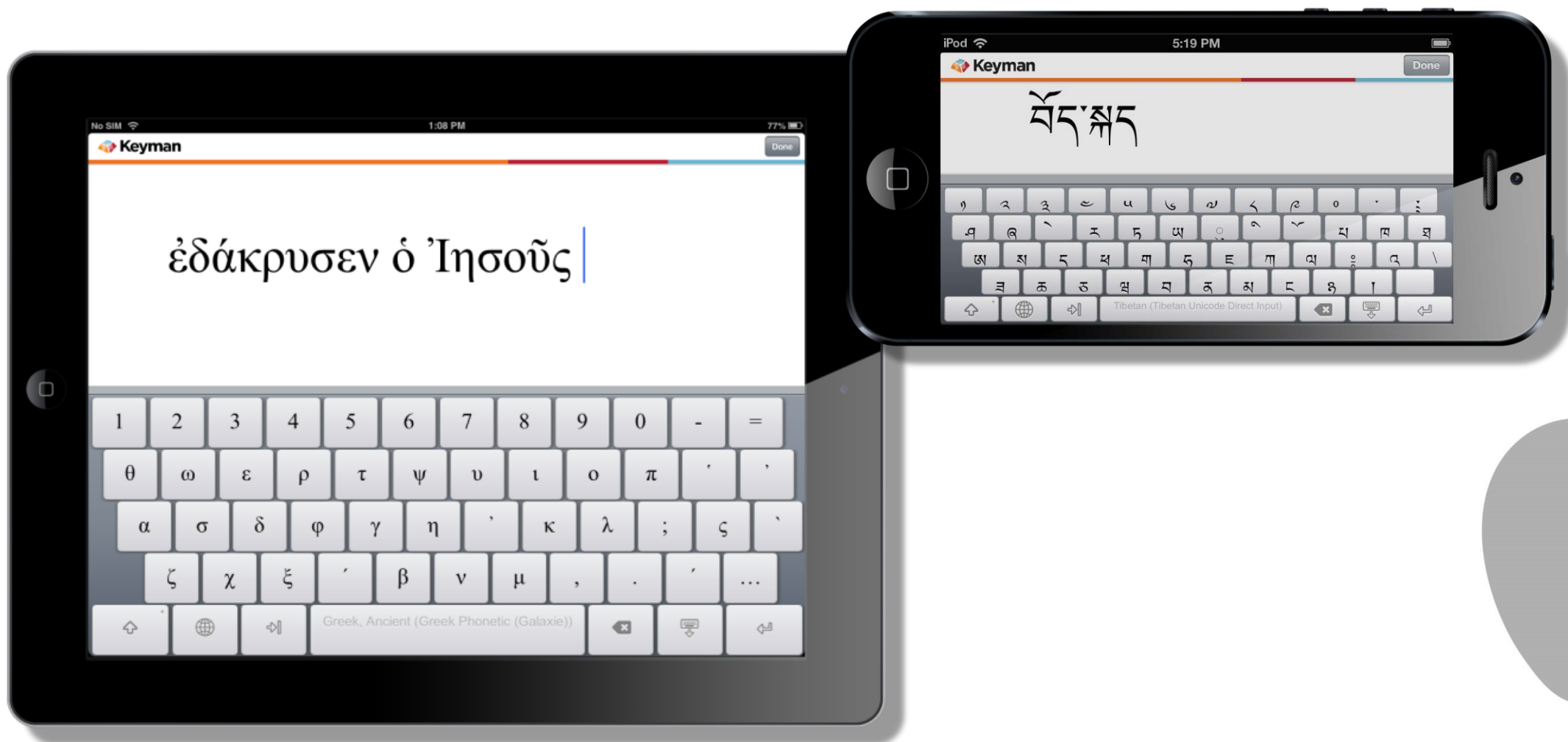




# Keyman runs on Mac OS X



# Keyman runs on iPhone and iPad



# Keyman runs on Android



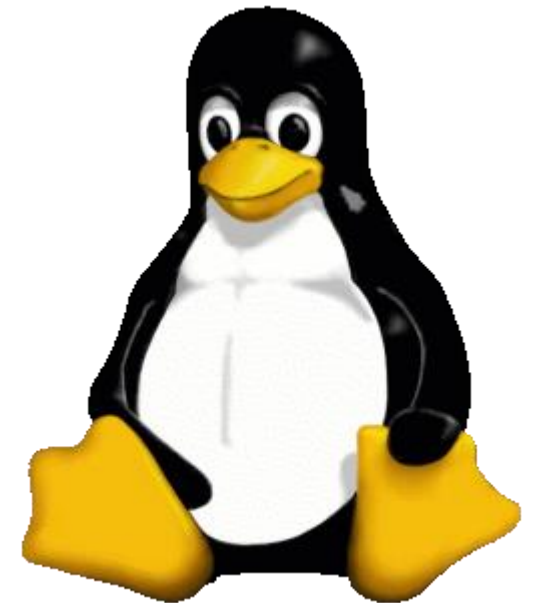
# Keyman runs on the Web

- Desktop *and* mobile
- [www.keymanweb.com](http://www.keymanweb.com)



# Keyman even runs on Linux

- A Keyman clone called KMFL is available for Linux
- [kmfl.sourceforge.net](http://kmfl.sourceforge.net)



# A Brief History of Keyman

- 1992 – Keyman 1.0
  - For Windows 3.1
  - Lao language
  - Not Unicode
- 1994 – Keyman 3.0
  - Still for Windows 3.x
  - Supported user-defined keyboard layouts
  - Used for many languages in South East Asia and elsewhere
- 1996 – SILKey
  - Clone of Keyman released for Mac OS 9




# A Brief History of Keyman

- 2000 – Keyman 5.0 
  - Unicode support
- 2002 – Keyman 6.0 
  - Windows XP means Unicode starts to become better used
- 2006 – KeymanWeb 1.0 
  - Keyman keyboards run as JavaScript on WWW



# A Brief History of Keyman

- 2013 – Keyman for iPhone and iPad
- 2014 – Keyman for Android
- 2014 – KeymanWeb 2.0 is Open Source
  - Supports desktop and mobile browsers
- 2014 – Keyman Desktop 9.0 
  - Deep support for Windows 8 and later versions
- 2015 – Keyman for Mac OS X
  - First beta release
- **2015 – SIL acquires Keyman**

# Why use Keyman?

- Keyman advantages
  - Open source
  - Robust and well supported
  - Library of existing keyboard layouts
  - On-screen and hardware keyboards
- Unique features
  - Cross-platform
  - Development tools
  - Powerful and flexible keyboard layouts



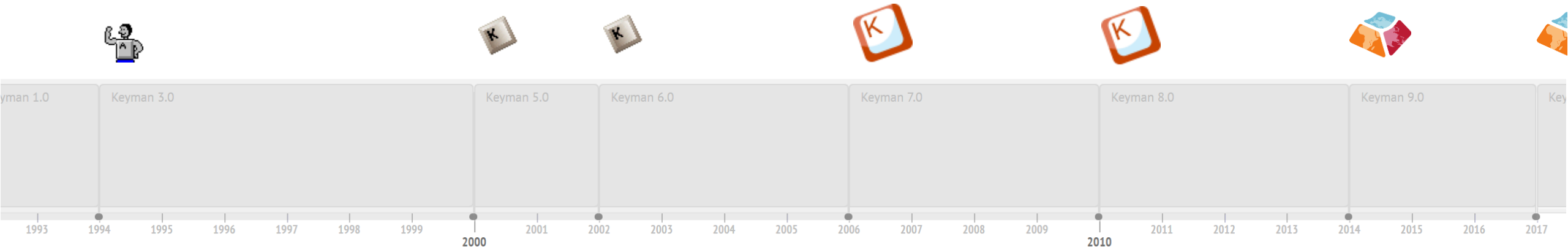
# Advantage: Open Source

- The Keyman project is going completely Open Source
- This will be our initial goal at NPIC
- <https://github.com/keymanapp>



# Advantage: Robust and well supported

- Keyman Desktop has been under active development for 25 years
- Keyman-specific support in many products, e.g. LibreOffice, Firefox
- Microsoft have even added features in Windows to support Keyman



# Advantage: Library of keyboard layouts

- Over 1,000 different languages
- Many languages have multiple layouts
- Future goal: Full source code for all layouts

## Choose a keyboard for your language

Select a language to download a suitable keyboard for your device. We've listed some of the more popular below, if yours isn't there, use the search tool to find it.

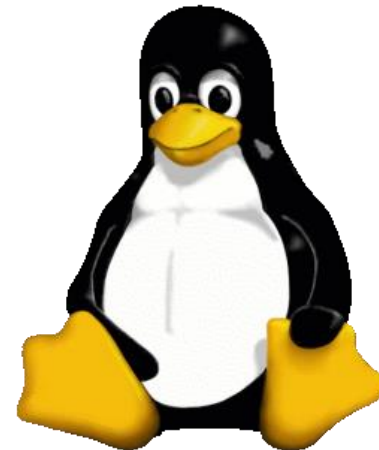
Albanian   Gjuha shqipe	Amharic   አማርኛ	Arabic   العربية
Assamese   অসমীয়া	Bengali   বাংলা	Burmese   မြန်မာဘာသာ
Cherokee   ᏣᏔᏰᏍᏏ ᏌᏉᏂᏚᏂᏚᏂ	Cheyenne   Tséhesenèstsestotse	Dinka   Thuɔŋjäŋ
Dutch   Nederlands	Egyptian (Ancient)   ⲙⲓⲣⲓⲥⲟⲩⲓⲛⲓ	Farsi   فارسی
French   Français	German   Deutsch	Greek (Ancient)   Ἑλληνική
Greek (Modern)   νέα ελληνικά	Hebrew (Ancient)   עברית מקראית	Hebrew (Modern)   עברית
Hindi   हिन्दी	Igbo   Igbo	IPA   aɪ phi:ei
Italian   Italiano	Lao   ພາສາລາວ	Malayalam   മലയാളം
Maltese   Malti	Marathi   मराठी	Mongolian   Монгол хэл
Nepali   नेपाली	Oriya   ଓଡ଼ିଆ	Rawang   Kṛangku
Russian   русский язык	Serbian   српски	Sindhi   سنڌي
Sinhala   සිංහල	Spanish   español	Swedish   Svenska
Tamil   தமிழ்	Thai   ภาษาไทย	Tibetan   བོད་སྐད་
Tigrigna   ትግርኛ	Urdu   اُردُو New!	Yiddish   ייִדיש
Yoruba   èdè Yorùbá		

Search over 1000 languages

Search

# Feature: Cross-platform

- Every platform has a different input method system
- There are no other established open multi-platform input method systems
- Keyman provides a common base system for input methods
- Develop a keyboard layout once, use it everywhere



# Feature: Development Tools

- Keyman has powerful tools to create keyboard layouts
- Visual and code-based tools
- We will introduce Keyman Developer in the next session

### Design your keyboard layout

Character Set: Unicode  
Font: [Font is Galatia SIL](#)

```
304      ... + "=" > index(dasia-perispomeni-iotasub, 1)
305      any (psili-perispomeni-iotasub) + "=" > index(psili-iotasub, 1)
306      any (dasia-perispomeni-iotasub) + "=" > index(dasia-iotasub, 1)
307
308      any (base-vowels) + "_" > index(macron, 1)
309      any (vrachy) + "_" > index(macron, 1)
310      any (macron) + "_" > index(base-vowels, 1)
311
312      any (base-vowels) + "+" > index(dialytika, 1)
313      any (dialytika) + "+" > index(base-vowels, 1)
314      any (varia) + "+" > index(dialytika-varia, 1)
315      any (dialytika-varia) + "+" > index(varia, 1)
316      any (oxia) + "+" > index(dialytika-oxia, 1)
317      any (dialytika-oxia) + "+" > index(oxia, 1)
318      any (perispomeni) + "+" > index(dialytika-perispomeni, 1)
319      any (dialytika-perispomeni) + "+" > index(perispomeni, 1)
```



# Vision: LDML + Unicode

- SIL have been asked by the Unicode Consortium to develop an open standard for keyboard layouts
- Keyman will be the reference platform for this open standard
- Brings the opportunity to be visible on the global stage as the standard is finalised and implemented by major industry vendors
- More about LDML and Unicode on Thursday

# Developing Keyboards

# A Keyman Developer Tutorial

- An introduction to creating Keyman keyboards based on Khmer NiDA keyboard



# Discussion Questions

- Is it easy to learn to type Khmer with Unicode?
- Can you remember learning to type?
- What sorts of problems did you experience?
- Did you learn to type on Khmer Limon keyboard?
- Was it easy to move to Khmer NiDA?

Our first word of the day

ସ୍ବେଚ୍ଛା

# Encoding “ខ្មែរ”

- First, understand the encoding
- ខ្មែរ in Unicode is encoded as:

ខ	្រ	ម	ៃ	រ
U+1781	U+17D2	U+1798	U+17C2	U+179A

- or as:

ខ	ៃ	្រ	ម	រ
U+1781	U+17C2	U+17D2	U+1798	U+179A

# Google Fight: ខ្មែរ VS ខ្មែរ

ខ	្ម	ម	ៃ	រ
U+1781	U+17D2	U+1798	U+17C2	U+179A

Google ខ្មែរ

About 29,400,000 results (1.03 seconds)

Remix dj Hern ហៀយ 2016 khmer

About 29,400,000 results (1.03 seconds)

Remix dj Hern ហៀយ 2016 khmer sky ខ្មែរ - YouTube

<https://www.youtube.com/watch?v=bRc3ZkAuUAY>

Apr 28, 2015 - Uploaded by Djហៀយ គន្ធី Remix\_2015

យក្សជំនេញយក្សតូច កូន ខ្មែរ Re Mix ឌីជេ អ្នកល្បី និង Dj Vilthy Friend Re Mix 2016 - Duration: 3:58. DDJ GOUN KHMER ...

ខ្មែរ

[www.rfa.org/khmer](http://www.rfa.org/khmer) Translate this page

ក្រសួងការពារជាតិកម្ពុជាប្រកាសថា ទាហានម្នាក់ទៀតខ្មែរព្រម ...

ខ្មែរ - វិគីភីឌា

<https://km.wikipedia.org/wiki/ខ្មែរ> Translate this page

ពាក្យខ្មែរសរសេរ ភាសាខ្មែរ - ១១ ជាង ៨ ខែ - ខែកក្កដា - ខែសីហា - ខែតុលា - ខែវិច្ឆិកា - ខែធ្នូ

ខ	ៃ	្ម	ម	រ
U+1781	U+17C2	U+17D2	U+1798	U+179A

Google ខ្មែរ

About 179,000 results (0.40 seconds)

ខ្មែរ - YouTube

About 179,000 results (0.40 seconds)

ខ្មែរ - YouTube

<https://www.youtube.com/watch?v=m2kfLy58Lfo>

Dec 25, 2015 - Uploaded by Prum Sophal

ចំបងមានផ្លូវ ចំបែកពីអ្នក ពេជ្រ លោក ខ្មែរ Video Clip & Karaoke - Duration: 7:41. seda681 1,961 views · 7:41. MOV01896 ...

ខ្មែរ remix - YouTube

<https://www.youtube.com/watch?v=ov37dWzEvu0>

Nov 3, 2016 - Uploaded by TENG LP

ចំបងមានផ្លូវ ចំបែកពីអ្នក ពេជ្រ លោក ខ្មែរ Video Clip ... ខ្មែរ | khmer ប្រចាំខែដោយ យក ដួងតារា [Audio song] ...

1 ខែ 10 ថ្ងៃ - YouTube



# Typing to match encoding

ຂ	໐ <sub>+</sub>	ຜ	ໂ <sub>໐</sub>	ຮ
U+1781	U+17D2	U+1798	U+17C2	U+179A

X

J

M

SHIFT E

R

ຂ	ໂ <sub>໐</sub>	໐ <sub>+</sub>	ຜ	ຮ
U+1781	U+17C2	U+17D2	U+1798	U+179A

X

SHIFT E

J

M

R

# Keyman Code to support “ខ្មែរ”

*c This keyboard definition supports only one word: ខ្មែរ*

```
store(&VERSION) '9.0'  
store(&NAME) 'Basic Khmer'  
begin Unicode > use(main)
```

```
group(main) using keys
```

*c Keys for ខ្មែរ*

```
+ [K_X] > U+1781  
+ [K_J] > U+17D2  
+ [K_M] > U+1798  
+ [SHIFT K_E] > U+17C2  
+ [K_R] > U+179A
```

# Add a rule to reorder the user's input

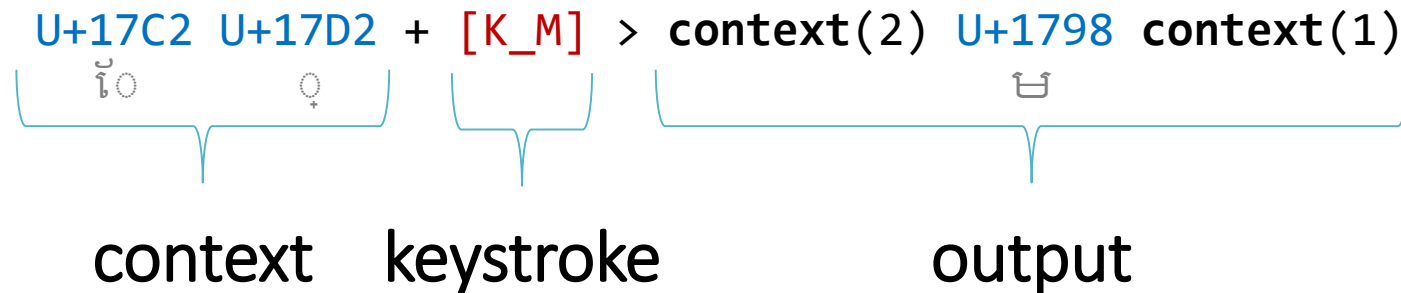
*c Keys for ၵၵ*

+ [K\_X] > U+1781 ၵ  
+ [K\_J] > U+17D2 ၵ  
+ [K\_M] > U+1798 ၵ  
+ [SHIFT K\_E] > U+17C2 ၵ  
+ [K\_R] > U+179A ၵ

*c Fixup when user types vowel before coeng+m*

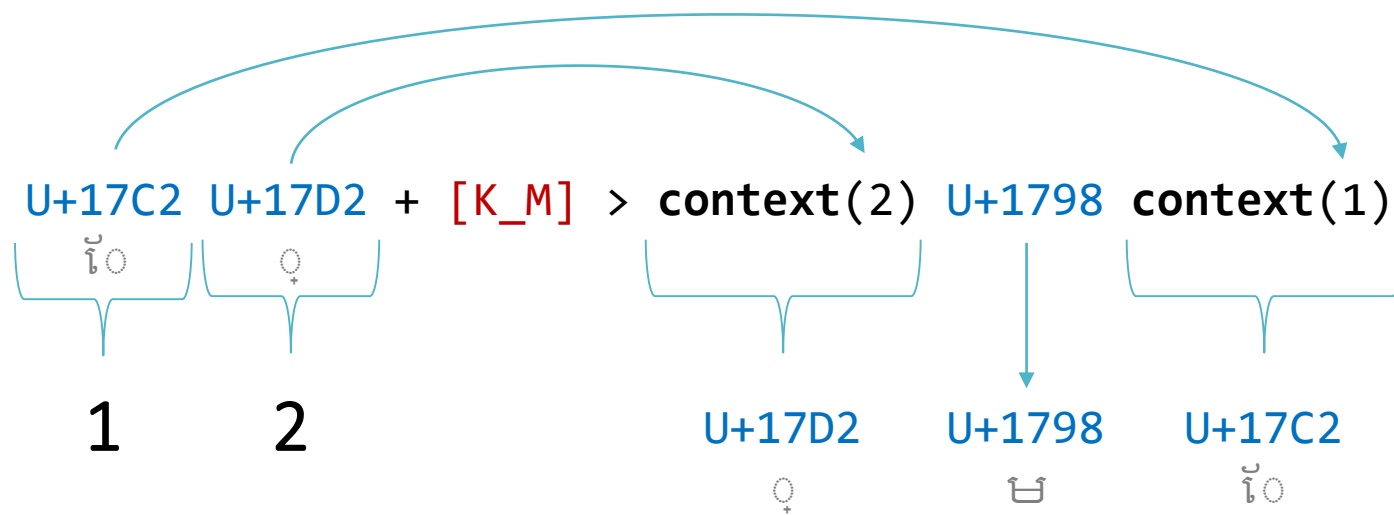
U+17C2 ၵ U+17D2 ၵ + [K\_M] > context(2) U+1798 ၵ context(1)

# Anatomy of a Keyman keyboard rule



- **context**: what is already on screen (“text store”)
- **keystroke**: what the user types
- **output**: a transform which replaces *context* in the text store.

# Anatomy of a Keyman keyboard rule



- **context()** statement copies a character from the *context* to the *output*

Introducing our next word



# Encoding “ស៊ី”

- ស៊ី in Unicode is encoded as:

ស	្ក	្គ
U+179F	U+17CA	U+17B8

- but people sometimes type:

ស	្ក	្គ
U+179F	U+17BB	U+17B8

ស	្គ	្ក
U+179F	U+17B8	U+17BB

ស	្ក	្គ
U+179F	U+17C9	U+17B8

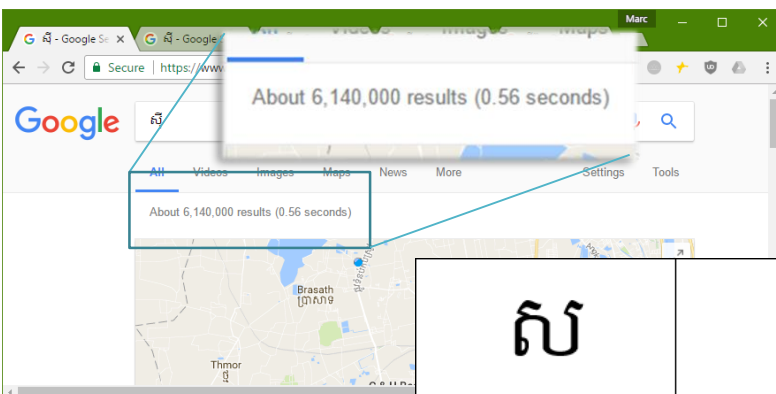
ស	្គ	្ក
U+179F	U+17B8	U+17CA

I love  
iPhone!

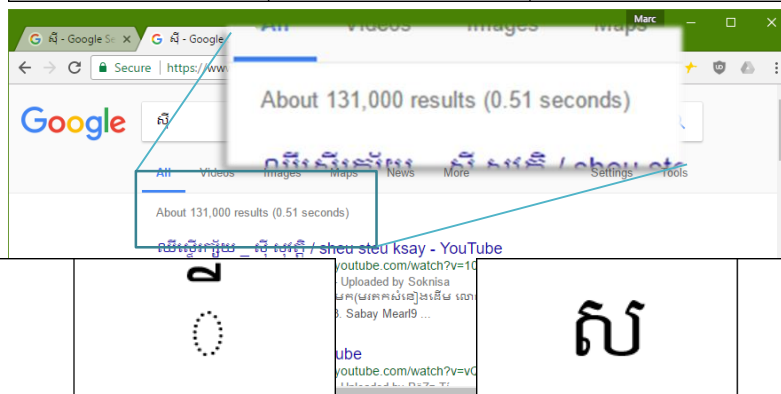


# Google Fight: ស៊ី vs ស៊ី vs ...

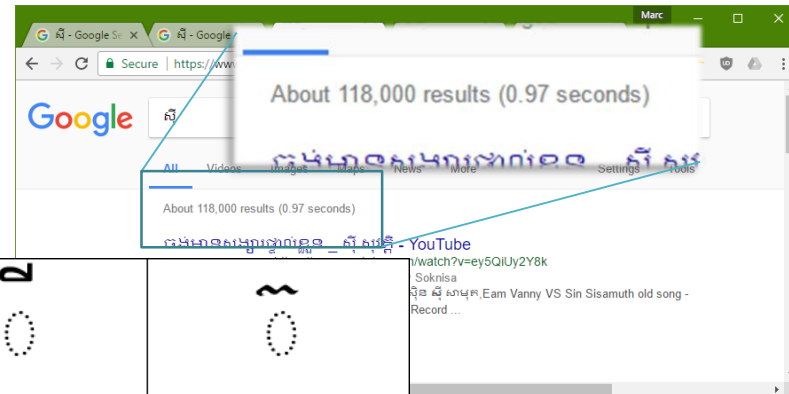
ស	ី	្គ
U+179F	U+17CA	U+17B8



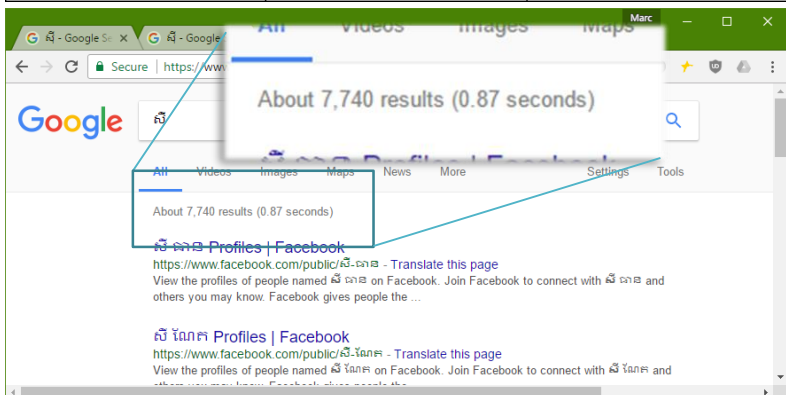
ស	ី	្គ
U+179F	U+17BB	U+17B8



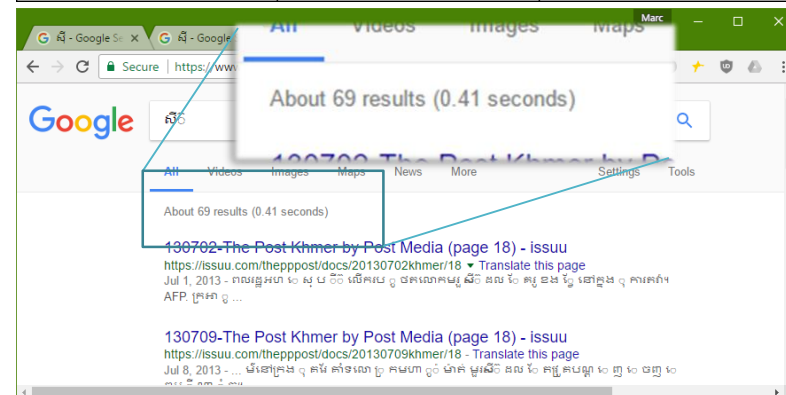
ស	្គ	ី
U+179F	U+17B8	U+17BB



ស	ី	្គ
U+179F	U+17C9	U+17B8



ស	្គ	ី
U+179F	U+17B8	U+17CA



# Typing “ស្ទី”

ស	្ទ	ី
U+179F	U+17CA	U+17B8
S	/	SHIFT I

ស	្ទ	ី
U+179F	U+17BB	U+17B8
S	U	SHIFT I

ស	ី	្ទ
U+179F	U+17B8	U+17BB
S	SHIFT I	U

# ស្តី Keyman Code

*c This keyboard definition supports only one word: ស៊ី*

```
store(&VERSION) '9.0'  
store(&NAME) 'Basic Khmer'  
begin Unicode > use(main)
```

```
group(main) using keys
```

*c Keys for ស៊ី*

+	[K_S]	>	U+179F	c	ស៊
+	[K_U]	>	U+17BB	c	្ក
+	[K_SLASH]	>	U+17CA	c	្គ
+	[SHIFT K_I]	>	U+17B8	c	្ង

# Correcting the output

*c Keys for ſ̃*

+	[K_S]	>	U+179F	c	ſ̃
+	[K_U]	>	U+17BB	c	ſ̃̇
+	[K_SLASH]	>	U+17CA	c	ſ̃̃
+	[SHIFT K_I]	>	U+17B8	c	ſ̃̂

*c Fixup when user types in the wrong Letter*

U+179F	U+17BB	+	[SHIFT K_I]	>	context(1)	U+17CA	U+17B8
U+179F	U+17B8	+	[K_U]	>	context(1)	U+17CA	context(2)

# Correcting the output – analysis

U+179F U+17BB + [SHIFT K\_I] > context(1) U+17CA U+17B8  
ស ័ ័

U+179F U+17B8 + [K\_U] > context(1) U+17CA context(2)  
ស ័ ័

- Can you suggest a rule to correct this mistake?

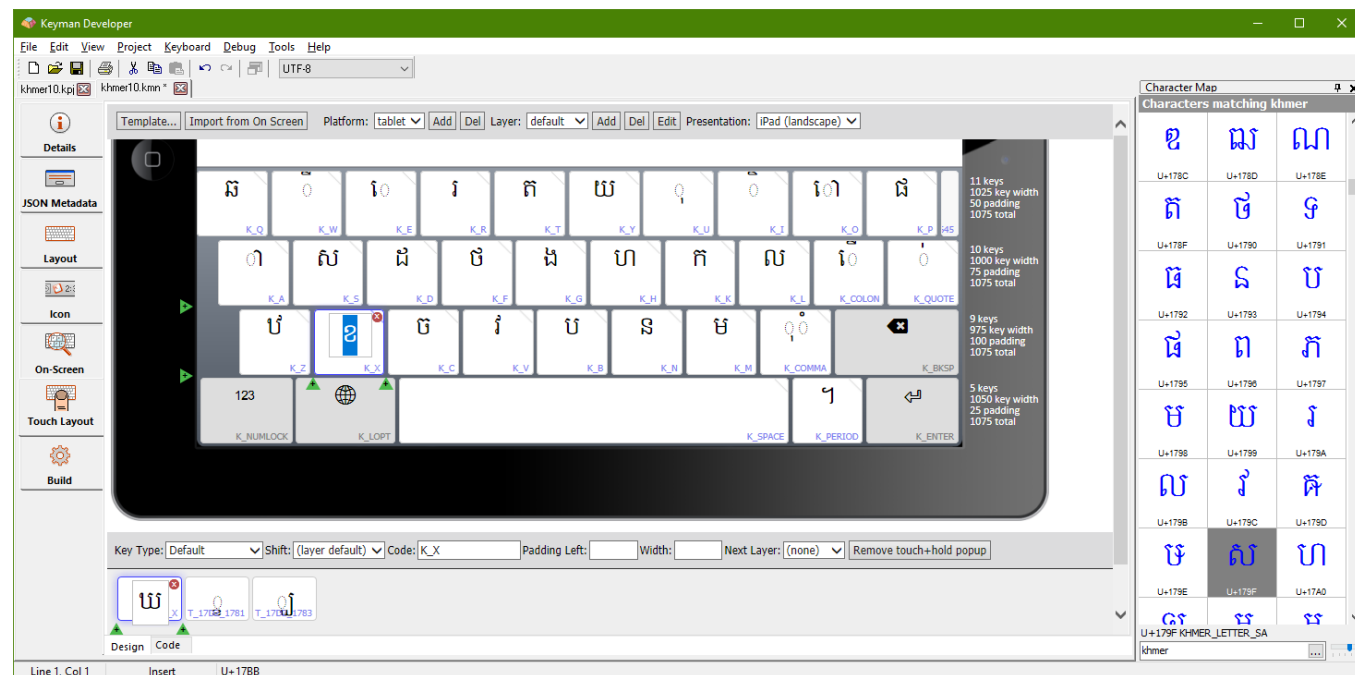
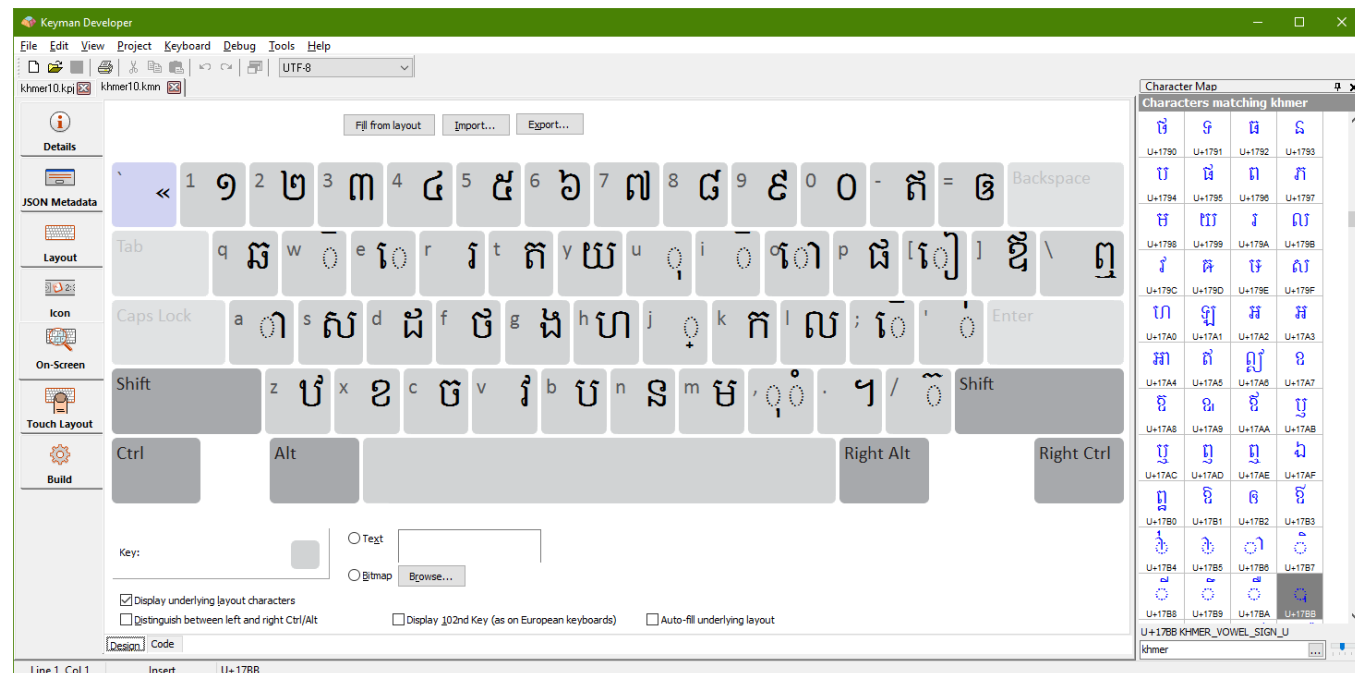
ស	័	័
U+179F	U+17C9	U+17B8

# Keyboard Rules - Summary

- **Reorder** to fix mistyped words - ခွဲ
- **Block** invalid keystrokes - နှိ + ဝိ
- **Substitute** incorrect letters - နှိ
- **Combine** decomposed letters - ဝိ + ဝိ → ဝိ
- **Break Apart** composed letters

# Multipatform Keyboards

- Keyman Developer rules apply on every platform
- But presentation of the keyboard can vary
- Import basic layout from Desktop to Touch
- Optimise for use on small devices



# Deploying Keyboards

- Create a keyboard layout in Keyman Developer
- Push to GitHub
- Create a Pull Request on <https://github.com/keymanapp/keyboards.git>
- When accepted, the layout is automatically available on every device through Keyman keyboards menu
- Full details at <https://help.keyman.com/developer/keyboards>



# Question and Discussion Time

- Learn more:
  - [www.keyman.com](http://www.keyman.com)
  - [www.sil.org](http://www.sil.org)