

# HarfBuzz

## the Free and Open Shaping Engine

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# Agenda

- Introduction
- History
- Old HarfBuzz
- New HarfBuzz
- Scope
- Design
- Status
- Roadmap



# Intro



حرف ساز



# Free and Open Unicode Shaping Engine



# History



FreeType  
OpenType  
Layout



**G N O M E**

**K D E**





Pango

Qt



# Old HarfBuzz



20006



Qt

Shapers



# Problems

- Inefficient
- Fragile
- Ugly



# New HarfBuzz



# Baking



# Scope





# Generic Shaper

- OpenType
- ATT
- Graphite
- Fallback
- ...



# Just Shaper

- No Itemizer
- No Bidi
- No Line Breaking
- No Rasterization



# Goals

- Beautiful
- Robust
- Flexible
- Efficient
- Portable



# Consumers

- GUI Toolkits
- Web Browsers
- Word Processors
- Designer Tools
- Font Design Tools
- Terminal Emulators
- Batch Doc Processors
- TeX Engines



# Design



# For Humans

hb\_face\_t

hb\_font\_t

hb\_buffer\_t



# Unicode Callbacks



# Font Callbacks





**SFNT-**

**Based**



# Garbage-In Glyphs-Out



# Fallbacks



# In-Place



# Error Handling



# Backend- Independent



# Backend

# API



Thread-  
Safe





No  
Dependencies



Well  
Some C++



MIT-  
Licensed



# OpenType 1.6

- Mark filtering sets
- cmap type 14
- Mirroring



# Status



# OpenType Layout



# API Review



# Shapers





# Test Suite



Q?

