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Internationalization (i18n) Guide

Version: 5.52.29 | **Last Updated:** January 25, 2026 | **Audience:** All Users & Developers

This guide covers RADIANT’s internationalization features, including 18 supported languages, RTL support for Arabic, and multi-language search with CJK (Chinese, Japanese, Korean) support.

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Overview

RADIANT supports 18 languages across all applications, with special handling for:

- **Right-to-Left (RTL)** languages like Arabic
- **CJK (Chinese, Japanese, Korean)** languages with bi-gram search
- **Locale-specific** date, time, and number formatting

```
graph TB
    subgraph "Language Features"
        L[18 Languages]
        RTL[RTL Support]
        CJK[CJK Search]
        FMT[Locale Formatting]
    end

    subgraph "Applications"
        TT[Think Tank]
        CU[Curator]
        TA[Tenant Admin]
        RA[RADIANT Admin]
    end

    L --> TT
    L --> CU
    L --> TA
    L --> RA

    RTL --> TT
    RTL --> CU
    RTL --> TA
    RTL --> RA
```

Supported Languages

RADIANT supports 18 languages with varying levels of full-text search support:

Language	Code	Native Name	Direction	Search Method
English	en	English	LTR	PostgreSQL FTS
Spanish	es	Español	LTR	PostgreSQL FTS
French	fr	Français	LTR	PostgreSQL FTS
German	de	Deutsch	LTR	PostgreSQL FTS
Portuguese	pt	Português	LTR	PostgreSQL FTS

Language	Code	Native Name	Direction	Search Method
Italian	it	Italiano	LTR	PostgreSQL FTS
Dutch	nl	Nederlands	LTR	PostgreSQL FTS
Polish	pl	Polski	LTR	PostgreSQL simple
Russian	ru		LTR	PostgreSQL FTS
Turkish	tr	Türkçe	LTR	PostgreSQL FTS
Japanese	ja		LTR	pg_bigm bi-gram
Korean	ko		LTR	pg_bigm bi-gram
Chinese (Simplified)	zh-CN		LTR	pg_bigm bi-gram
Chinese (Traditional)	zh-TW		LTR	pg_bigm bi-gram
Arabic	ar		RTL	PostgreSQL simple
Hindi	hi		LTR	PostgreSQL simple
Thai	th		LTR	PostgreSQL simple
Vietnamese	vi	Tiếng Việt	LTR	PostgreSQL simple

Language Detection

RADIANT automatically detects the primary language of your content for optimal search indexing:

flowchart TD

```

A[User Input] --> B{Detect Language}
B -->|CJK Characters| C[Use pg_bigm]
B -->|Arabic Script| D[Use simple FTS]
B -->|Latin/Cyrillic| E[Use Native FTS]

C --> F[Bi-gram Indexing]
D --> G[Simple Tokenization]
E --> H[Stemming + Stop Words]
```

Changing Your Language

In Think Tank / Curator

1. Click your **avatar** in the top-right corner
2. Select **Settings**
3. Click **Language & Region**
4. Select your preferred **language** from the dropdown
5. The interface updates immediately

In Tenant Admin / RADIANT Admin

1. Click your **avatar** in the top-right corner
2. Select **Account Settings**
3. Navigate to **Preferences** → **Language**
4. Select your language
5. Click **Save**

During Sign-In

The sign-in page automatically detects your browser language. To change it:

1. Look for the **language selector** (usually bottom of the page)
2. Click and select your language
3. The sign-in page reloads in your language

Right-to-Left (RTL) Support

When using Arabic, the entire interface automatically adapts:

What Changes

Element	RTL Behavior
Text direction	Flows right-to-left
Navigation	Moves to the right side
Icons	Directional icons are mirrored
Buttons	Order is reversed
Forms	Labels and inputs are flipped
Tables	Columns flow right-to-left

What Stays Left-to-Right

Certain elements remain LTR for clarity:

Element	Reason
Email addresses	Standard format worldwide
URLs	Technical format
Code blocks	Programming languages are LTR
Passwords	Consistency and security
Phone numbers	International format
MFA codes	Numeric sequences

Visual Example

LTR Layout (English)

```
[Logo] Navigation [Avatar ]

[Sidebar] Main Content Area

Form Label: [Input Field    ]
[Cancel]           [Submit  ]
```

RTL Layout (Arabic)

```
[ [                                     [  ]
                                     ] [

[           [           :
[  ←]       [  ]
```

Multi-Language Search

RADIANT provides intelligent search across all supported languages.

How It Works

```
flowchart LR
    subgraph "Search Query"
        Q[User Query]
    end

    subgraph "Language Detection"
        D{Detect Script}
    end

    subgraph "Search Strategy"
        FTS[PostgreSQL FTS<br/>Stemming, ranking]
        BIGM[pg_bigm<br/>Bi-gram matching]
        SIMPLE[Simple FTS<br/>Basic tokenization]
    end

    Q --> D
    D -->|"Latin (en,es,fr...) "| FTS
    D -->|"CJK (ja,ko,zh) "| BIGM
    D -->|"Arabic, Hindi..." | SIMPLE
```

CJK Search (Chinese, Japanese, Korean)

CJK languages don't have word boundaries, so traditional full-text search doesn't work. RADIANT uses **bi-gram indexing** (pg_bigm):

Feature	Description
No word segmentation needed	Works without dictionaries
Substring matching	Find partial words/phrases
Mixed-language support	Search CJK + English together
Fuzzy matching	Find similar terms

Example:

Searching for (artificial intelligence) finds: - Exact matches: (AI technology) - Partial matches: (AI technology) - Mixed: AI (Difference between AI and artificial intelligence)

Western Language Search

For Latin-script and Cyrillic languages, RADIANT uses PostgreSQL's native full-text search:

Feature	Description
Stemming	"running" matches "run", "runs"
Stop words	Common words ("the", "is") are ignored
Ranking	Results sorted by relevance
Phrase search	"exact phrase" matching

Search Tips by Language

Language	Tip
English	Use quotes for exact phrases: "machine learning"
Spanish	Accents are normalized: <code>café</code> = <code>cafe</code>
German	Compound words are split: <code>Softwareentwicklung</code>
Japanese	Hiragana, katakana, and kanji all work
Chinese	Both simplified and traditional are indexed
Korean	Hangul syllables are bi-gram indexed
Arabic	Diacritics are normalized

For Developers

Using Translations in Code

React (Admin Dashboard):

```
import { useTranslation } from '@hooks/useTranslation';

function MyComponent() {
  const { t, language, setLanguage, isRTL } = useTranslation();

  return (
```

```

    <div dir={isRTL ? 'rtl' : 'ltr'}>
      <h1>{t('auth.login.title')}</h1>
      <p>{t('auth.login.description')}</p>
      <button>{t('common.submit')}</button>
    </div>
  );
}

```

Translation Files Structure:

```

locales/
  auth/
    en.json
    es.json
    fr.json
    ja.json
    ko.json
    zh-CN.json
    ar.json
    ...
  index.ts

```

Example Translation File (en.json):

```

{
  "auth": {
    "login": {
      "title": "Sign In",
      "description": "Welcome back! Please sign in to continue.",
      "email_placeholder": "Enter your email",
      "password_placeholder": "Enter your password",
      "submit": "Sign In",
      "forgot_password": "Forgot password?",
      "no_account": "Don't have an account?",
      "sign_up": "Sign up"
    },
    "mfa": {
      "title": "Two-Factor Authentication",
      "enter_code": "Enter the 6-digit code from your authenticator app",
      "verify": "Verify",
      "use_backup": "Use a backup code"
    }
  },
  "common": {
    "submit": "Submit",
    "cancel": "Cancel",
    "save": "Save",
    "delete": "Delete",
    "loading": "Loading...",
    "error": "An error occurred"
  }
}

```

```

    }
}

```

RTL CSS Utilities

RTL-aware CSS classes (rtl.css):

```

/* Automatic margin/padding flipping */
[dir="rtl"] .ml-4 { margin-left: 0; margin-right: 1rem; }
[dir="rtl"] .mr-4 { margin-right: 0; margin-left: 1rem; }
[dir="rtl"] .pl-4 { padding-left: 0; padding-right: 1rem; }
[dir="rtl"] .pr-4 { padding-right: 0; padding-left: 1rem; }

/* Text alignment flipping */
[dir="rtl"] .text-left { text-align: right; }
[dir="rtl"] .text-right { text-align: left; }

/* Flex direction flipping */
[dir="rtl"] .flex-row { flex-direction: row-reverse; }

/* Preserve LTR for specific content */
.ltr-preserve {
  direction: ltr !important;
  unicode-bidi: embed;
}

/* Apply to emails, codes, passwords */
input[type="email"],
input[type="password"],
.code-input,
.mfa-code {
  direction: ltr;
  text-align: left;
}

```

useRTL Hook

```

import { useRTL } from '@hooks/useRTL';

function MyComponent() {
  const { isRTL, dir, flipMargin, flipPadding, flipTextAlign } = useRTL();

  return (
    <div
      dir={dir}
      className={` ${flipMargin('ml-4')} ${flipTextAlign('text-left')} `}
    >
      { /* Content */ }
    </div>
  );
}

```



```
);  
}
```

Multi-Language Search API

```
// Search with automatic language detection  
const results = await searchService.search({  
  query: ' ', // Japanese  
  tenantId: 'tenant_123',  
  // Language is auto-detected, but can be overridden:  
  // languageHint: 'ja'  
});  
  
// Results include detected language  
console.log(results.detectedLanguage); // 'ja'  
console.log(results.searchMethod); // 'pg_bigm'
```

For Administrators

Setting Default Language

Tenant Admins:

1. Navigate to **Admin** → **Settings** → **Localization**
2. Set **Default Language** for new users
3. Set **Fallback Language** (used when translation is missing)
4. Click **Save**

Platform Admins:

1. Navigate to **Platform Admin** → **Configuration** → **Localization**
2. Set platform-wide defaults
3. Enable/disable languages per tenant tier

Translation Management

Viewing Translation Coverage:

1. Navigate to **Admin** → **Settings** → **Localization** → **Coverage**
2. View translation status by language:
 - **100%** - Fully translated
 - **90%+** - Nearly complete
 - **<90%** - Missing translations

Custom Translations

Tenants can override default translations:

1. Navigate to **Admin** → **Settings** → **Localization** → **Custom**
2. Select a language

3. Search for the key to override
4. Enter your custom translation
5. Click **Save**

Custom translations take precedence over defaults.

Search Configuration

Enabling CJK Search:

CJK search requires the `pg_bigm` PostgreSQL extension. This is automatically configured for all tenants.

Search Indexing:

Content is automatically indexed in the detected language. To re-index:

1. Navigate to **Admin** → **Settings** → **Search**
 2. Click **Rebuild Index**
 3. Wait for indexing to complete (can take several minutes)
-

Related Documentation

- [Authentication Overview](#)
- [User Guide](#)
- [Search API Reference](#)
- [Section 41: Internationalization](#)