A slow migration from Django templates to Vue+GraphQL

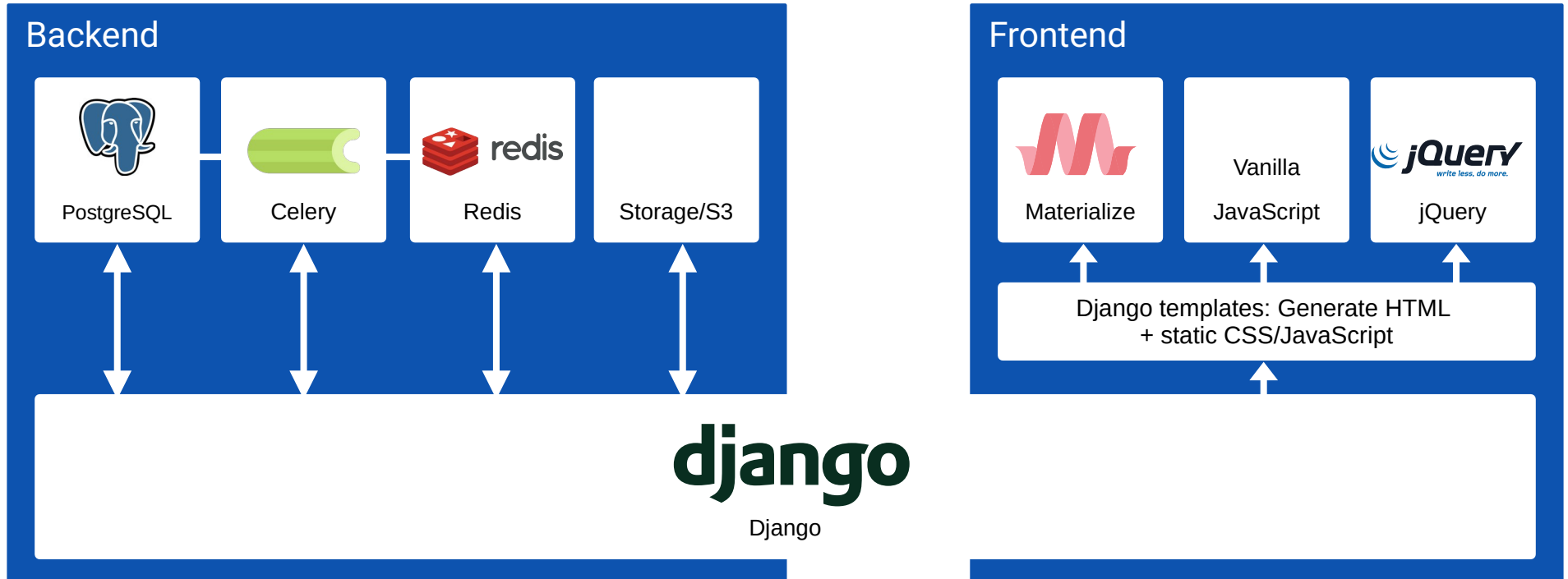Michael Bauer, Dominik George, Jonathan Weth

About AlekSIS

- Free and Open Source School Information System
  - European Union Public Licence 1.2+, partially Apache 2.0
- School organisation and management
- Modular system with AlekSIS-Core and apps
- Developed by software developers, students, and teachers
- Developed together with pilot schools

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AlekSIS' features

- Base data management

- Timetables

- Digital class register

- Seating plans

- Integration with other services
  - Matrix, OAuth/OIDC, LDAP, CSV import/export, calendar feeds

- Student ID cards, inventory management

- …

Legacy Technology Stack

Backend

PostgreSQL | Celery | Redis | Storage/S3

django

Django

Frontend

Materialize | Vanilla JavaScript | jQuery

Django templates: Generate HTML + static CSS/JavaScript

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FOSDEM 2024, 2024-02-04

Stundenplan *Klasse Eb (Eb)*

Grupenlehrkräfte: PgTw, lJUkE

SMART PLAN   ▶ REGULÄREN PLAN ANZEIGEN

‹   KW 10 (2.3.–08.03.2020)   ▾   ›

	Montag	Dienstag	Mittwoch	Donnerstag	Freitag
	2. März 2020	3. März 2020	4. März 2020	5. März 2020	6. März 2020
1. 08:00 08:45		yZLgk **MaK** 209	Tia **DeK** 209	JcQ **EnK1** G12 / asa **EnK2** 209 / BMgr **EnK3** 120 / GlpJk Fällt aus / jJB **EnK5** 107 / WTz **LaK1** 118	PgTw **PhyP** ~~PhÜ~~ → PhH *Klausur*
		Tia **DeK** Aul *Klausur*			
2. 08:45 09:30		yZLgk **MaK** 209	Tia **DeK** 209	JcQ **EnK1** G12 / asa **EnK2** 209 / BMgr **EnK3** 120 / GlpJk Fällt aus / jJB **EnK5** 107 / WTz **LaK1** 118	PgTw **PhyP** ~~PhÜ~~ → PhH *Klausur*
		Tia **DeK** Aul *Klausur*			
3. 09:45 10:30		GlpJk ~~Sp~~ → DeK ~~P-h~~ → Aul *Klausur*	LZwb **Wp** 209	NrlLq **Phi1** 118 / XoOwu Fällt aus / PMsNN **Re1** 209 / UOc **Re2** 121	Smc **Ge** 209
4. 10:35 11:20		GlpJk **Sp** P-h	LZwb **Wp** 209	dJx **Fr2** 119 / CYmT Fällt aus / nBjx **Gr1** 118 / fuEz **La3** 105	Tia **DeK** 209

Then the problems started ...

Drop-down menu on touch devices behaves strange

While I can't reproduce it on my Android phone using the Fennec browser, iPad users described and showed me, that in a Person selection, clicking on a person selects not the one clicked on, but one above (or below, don't remember).

👍 0   👎 0   ☺

Problems

- Strange bugs

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More problems

Where does Materialize stand today ? Why should one choose Materialize over other libraries ? #6441

⊙ Open **Praveen-Rai** opened this issue on Sep 6, 2019 · 40 comments

Development #6515

⊙ Open **Chrisx84** opened this issue on Feb 9, 2020 · 5 comments

Materialize Classified "Abandoned" #6438

✓ Closed **mckenzieja** opened this issue on Aug 22, 2019 · 53 comments

FOSDEM 2024, 2024-02-04

Problems

- Strange bugs

- Missing maintenance

- Requests for highly dynamic features

  - Drag and drop for seating plans, ordering, and timetable planning

  - Customizable calendar views

  - Auto-saving views (e. g. class register)

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Idea: Separate frontend and backend

- Replace Materialize → rewrite of frontend necessary

- Use of new framework(s)
    - Reactive frontend libraries

- API allows other clients like native apps or CLIs

- Better support for PWA (Progressive Web Application)

- … and of course highly dynamic features

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New Technology Stack

Backend
- PostgreSQL
- Celery
- Redis
- Storage/S3
- Django
- Graphene

GraphQL API

Frontend
- Apollo
- Vuetify
- Vue.js libraries
- Vue.js

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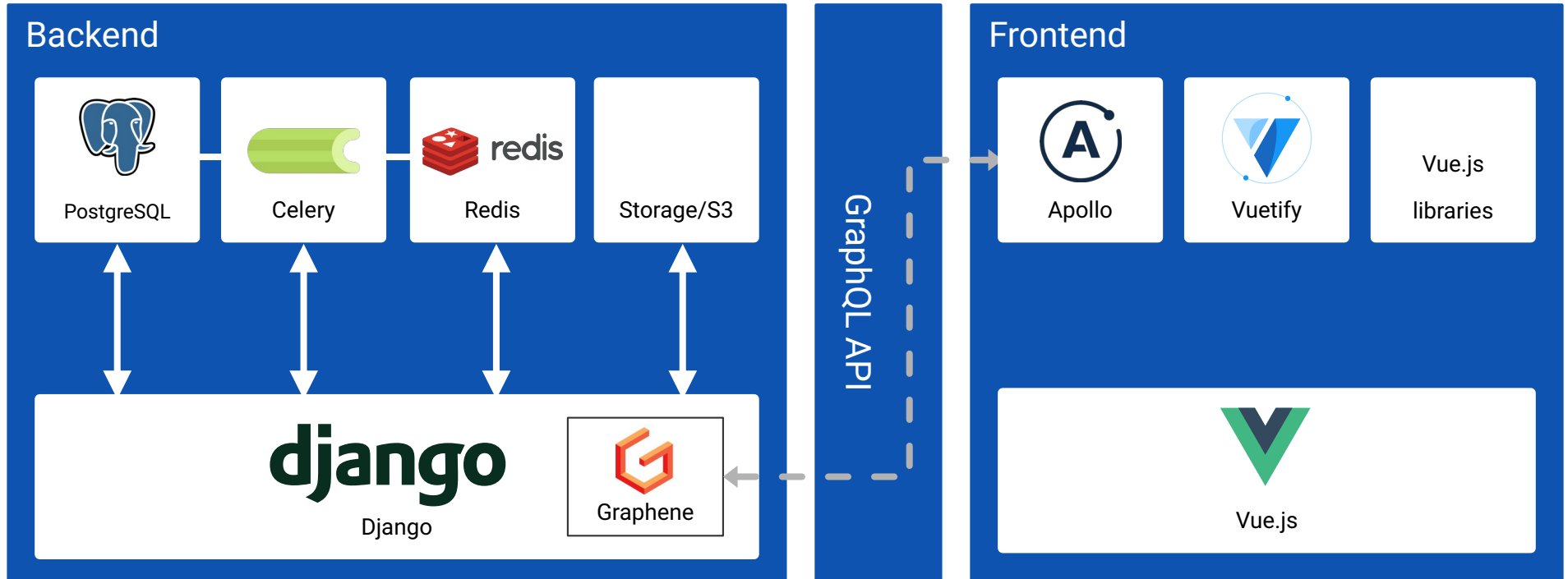
Migration: Challenges

- Complete new structure for frontend
  - Routing, Login/Logout, Updates

- Many apps need migration

- **We have never been using Vue.js and JavaScript is pain.**

AlekSIS-App-Alsijil 🌐
AlekSIS (School Information System)

AlekSIS-App-Chronos 🌐
AlekSIS (School Information System)

AlekSIS-App-CSVImport 🌐
AlekSIS (School Information System)

AlekSIS-App-DashboardFeeds 🌐
AlekSIS (School Information System)

AlekSIS-App-Hjelp 🌐
AlekSIS (School Information System)

AlekSIS-App-LDAP 🌐
AlekSIS (School Information System)

AlekSIS-App-Matrix 🌐
AlekSIS (School Information System)

AlekSIS-App-Resint 🌐
AlekSIS (School Information System)

AlekSIS-App-Stoelindeling 🌐
AlekSIS (School Information System)

AlekSIS-App-Untis 🌐
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AlekSIS-Core 🌐
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The right way

- **Frontend (Vue.js)**
  - Separate frontend development as JavaSript project
  - Bundling of whole frontend app as Single Page Application

- **Backend (Django)**
  - Django project as backend including DB and connection layers
  - Connection to frontend only via GraphQL endpoints

- **Why not this way?**

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```python
def write_vite_values(out_path: str) -> dict[str, Any]:
    vite_values = {
        "static_url": settings.STATIC_URL,
        "serverPort": settings.DJANGO_VITE_DEV_SERVER_PORT,
    }
    # Write rollup entrypoints for all apps
    vite_values["appDetails"] = {}
    for app, path in get_apps_with_frontend().items():
        if os.path.exists(path):
            vite_values["appDetails"][app] = {}
            vite_values["appDetails"][app]["name"] = app.split(".")[-1]
            vite_values["appDetails"][app]["assetDir"] = path
            vite_values["appDetails"][app]["hasMessages"] = os.path.exists(
                os.path.join(path, "messages", "en.json")
            )
    # Add core entrypoint
    vite_values["coreAssetDir"] = os.path.join(settings.BASE_DIR, "aleksis", "core", "frontend")

    # Add directories
    vite_values["baseDir"] = settings.BASE_DIR
    vite_values["cacheDir"] = settings.CACHE_DIR
    vite_values["node_modules"] = settings.JS_ROOT

    with open(out_path, "w") as out:
        json.dump(vite_values, out)
```

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```
{
    "static_url":"/static/",
    "serverPort":8001,
    "appDetails":{
        "aleksis.apps.chronos":{
            "name":"chronos",
            "assetDir":"/usr/local/lib/python3.11/dist-packages/aleksis/apps/chronos/frontend",
            "hasMessages":true
        },
        "aleksis.apps.hjelp":{
            "name":"hjelp",
            "assetDir":"/usr/local/lib/python3.11/dist-packages/aleksis/apps/hjelp/frontend",
            "hasMessages":true
        },
        ...,
        "aleksis.apps.matrix":{
            "name":"matrix",
            "assetDir":"/usr/local/lib/python3.11/dist-packages/aleksis/apps/matrix/frontend",
            "hasMessages":true
        }
    },
    "coreAssetDir":"/usr/local/lib/python3.11/dist-packages/aleksis/core/frontend",
    "baseDir":"/usr/local/lib/python3.11/dist-packages",
    "cacheDir":"/usr/local/lib/python3.11/dist-packages/cache",
    "node_modules":"/usr/local/lib/python3.11/dist-packages/cache/node_modules"
}
```

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Search

Dashboard

People

Administration

Calendar

Documents

Kolego

Course Planning

Lesson Manageme...

Timetables

EDIT DASHBOARD

EN

ENGS
bunt & gesund

- Dashboard
- Calendar
- Timetables
- Class register
- Support

Kolego

- Seating plans

EN

ENGS
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Search

- Dashboard
- People
- Administration
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- Lesson Managem...
- Digital signage
- Documents
- Timetables
- Class register
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- Course Planning

Kolego

- Seating plans

ENGS Info

EDIT DASHBOARD

About AlekSIS® — The Free School Information System ©
The AlekSIS Team

IMPRINT   PRIVACY POLICY

New problems

Mini-AlekSIS still spawns when impersonation is ended
#906 · created 5 months ago by Hangzhi Yu   2023.12 – "Falk"
part::frontend   type::bug
Closed   ⑂ 1   💬 1
closed 1 month ago

After editing an OAuth application, an AlekSIS Matrjoschka situation occurs
#927 · created 3 months ago by Jonathan Weth   2023.12 – "Falk"
part::frontend   type::bug
Closed   ⑂ 1   💬 1
closed 1 month ago

Authorized Applications spawns "mini-AlekSIS"
#839 · created 9 months ago by Julian   2023.6 – "Dewey"
type::bug
Closed   💬 2
closed 9 months ago

Changing Maintenance Mode State spawns "Mini-AlekSIS" inside AlekSIS
#814 · created 10 months ago by Julian   2023.6 – "Dewey"
type::bug
Closed   💬 1
closed 9 months ago

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New problems

- Ugly frontend bugs

- JavaScript ecosystem
    - Vuetify 3/Vue 3 still not usable for us

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Thank you!

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- Free and Open Source School Information System

- Complete freedom for organisation and management

- Full control and privacy

- Individual digitisation through modularity and integration

- Free software implies learning opportunities

✉ aleksis-dev@lists.teckids.org   🌐 https://aleksis.org/

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