

Application Development for Mobile and Ubiquitous Computing

Splittify

Final Presentation

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1. Application Scenario

Motivation for **Splittify**

- ☞ Organizing monetary Balance in shared Flats is tedious
(Effort/Tediousness increases dramatically when Number of Room Mates rises above 2)
- ☞ Often hard to keep Track of expenses, both on Paper and in Mind
- ☞ Current Apps let you type in different Spendings and let you categorize them → still (or especially) inconvenient for Groceries

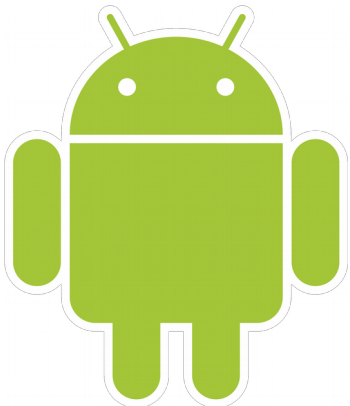
1. Application Scenario

Solution

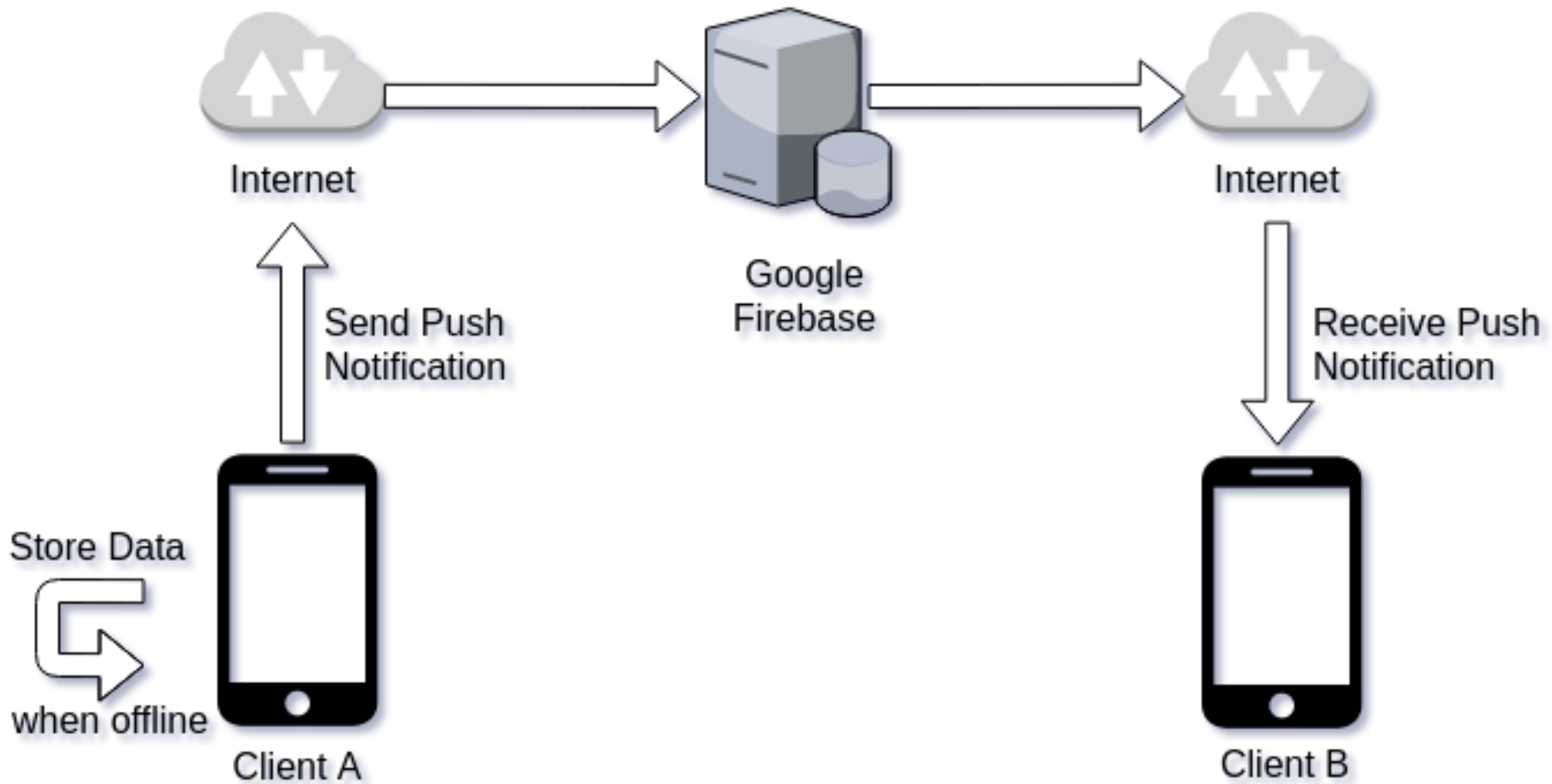
- App (**Splittify**) that let's you keep track of everything automatically
 - Register the amount of Flat Mates
 - Scan Receipts from e.g. Groceries
 - Assign Items to Mates or Groups of Mates
 - Send Push Notifications with Payment to Mate

2. Technologies

- ✓ Android SDK
- ✓ Programming Language: Java
- ✓ Mobile Vision Text API for Android for OCR
- ✓ Google Firebase



3. Structure



4. Challenges

Offline Challenge

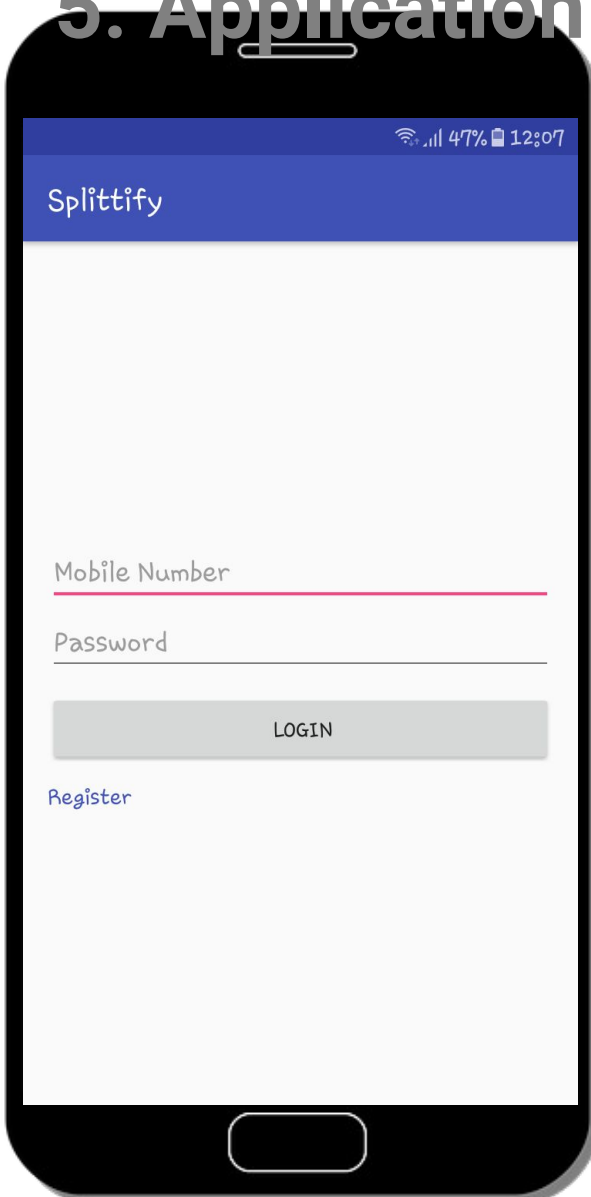
- Detect offline status → Context
 - → No Wifi Connectivity, no mobile broadband due to unreachable carrier base station (e.g. underground, in tunnels etc)
 - Detection via the `getActiveNetworkInfo()` method of the `ConnectivityManager`
- Tell User there is no Connectivity
- Store Data persistently on Device → Adaptation (1/2)
- Remind User upon next Visit that there is an open Invoice → Adaptation (2/2)

4. Challenges

Connectivity

- Detect challenged Connectivity → Context, e.g:
 - Low Bandwidth (sub UMTS, dependant on testings)
 - High Latency (above 5000ms) or even
 - Timeouts, where packets are lost on the way → >5 Timeouts are considered offline
- Reduce the Amount of Data being transferred (Adaptation) by leaving out Receipt Scan, solely textual Information
- Make sure Data will get to the Recipient eventually (Adaptation)

5. Application Walkthrough – Basics



← Register and login to your account via your mobile phone number

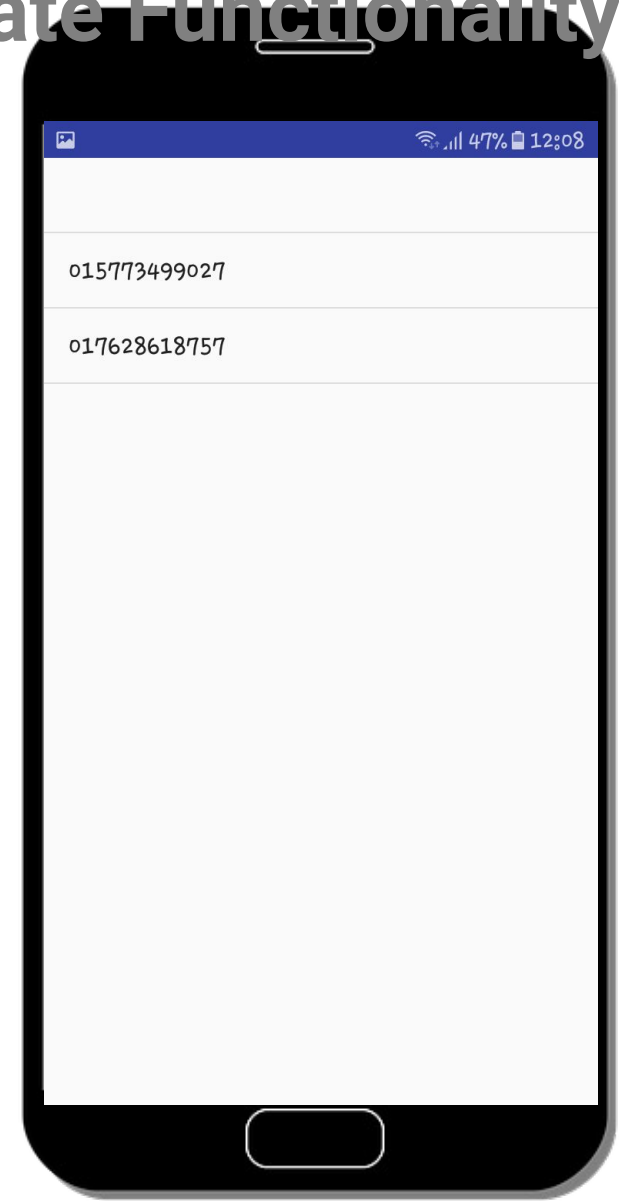
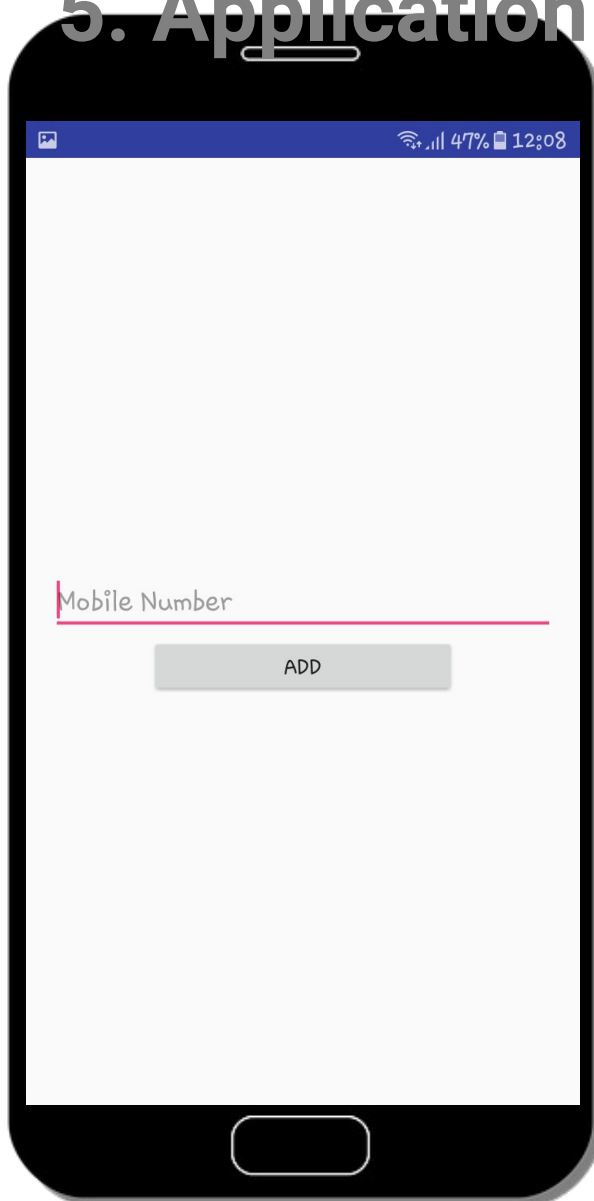
Choose your Action in the Sidebar →



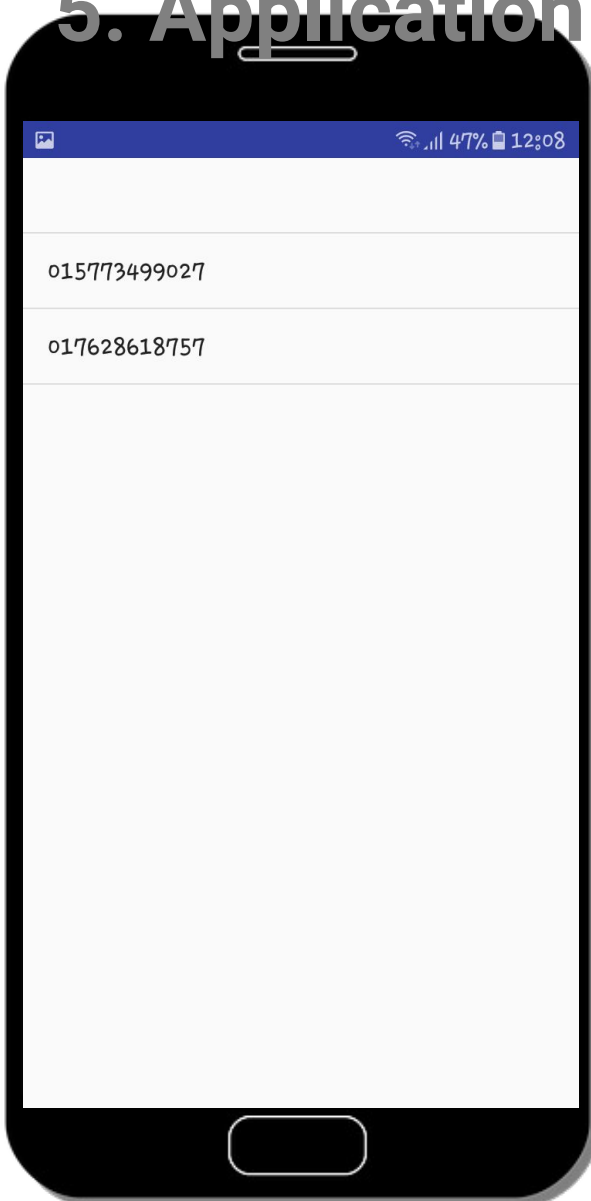
5. Application Walkthrough – Mate Functionality

← Add your desired Mate through his Mobile Phone Number

Mate gets added to the Mate List →

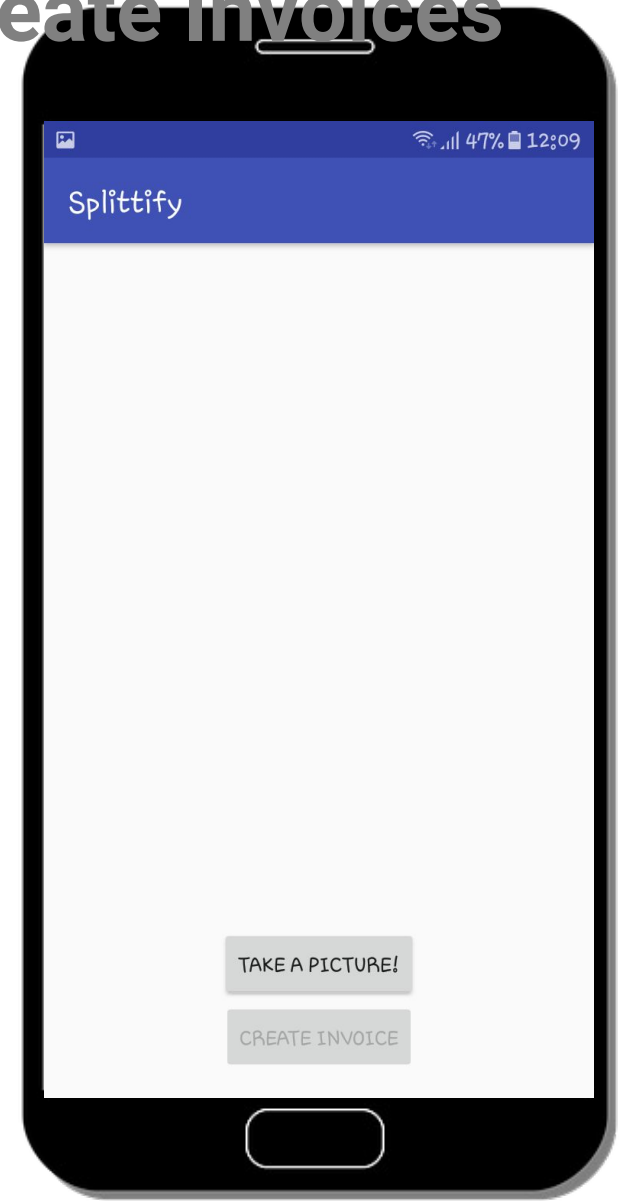


5. Application Walkthrough – Create Invoices



← Choose the Mate
you want to create an
Invoice for

Press Take A Picture!
Button →



5. Application Walkthrough – Scan the Receipt

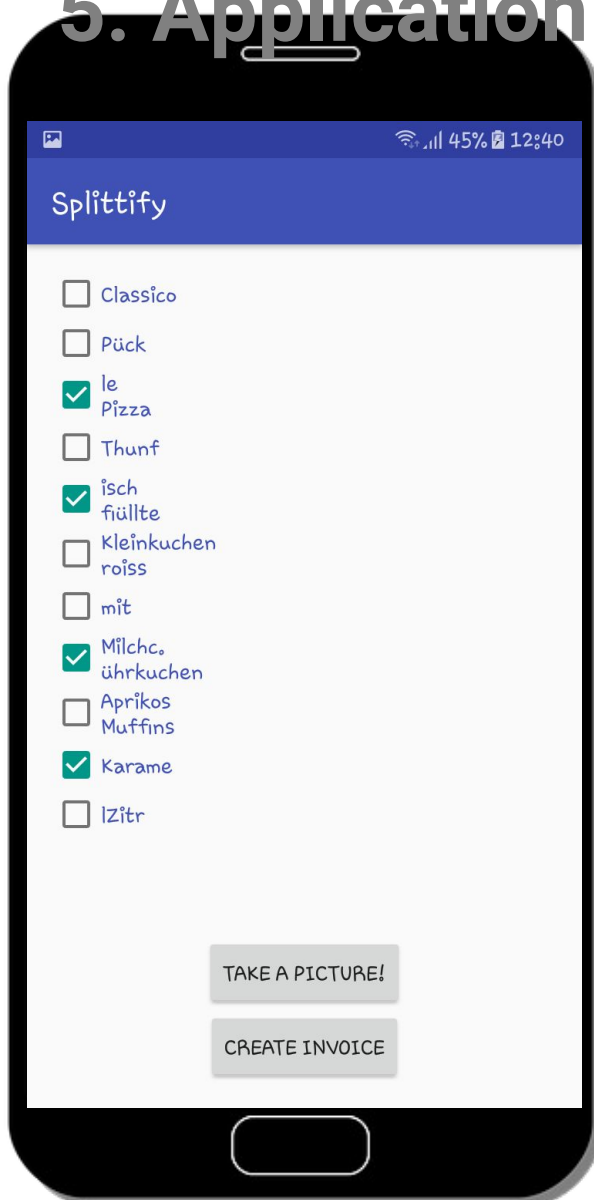


← Scan the Receipt

Crop the Part of the Receipt you want to recognize →

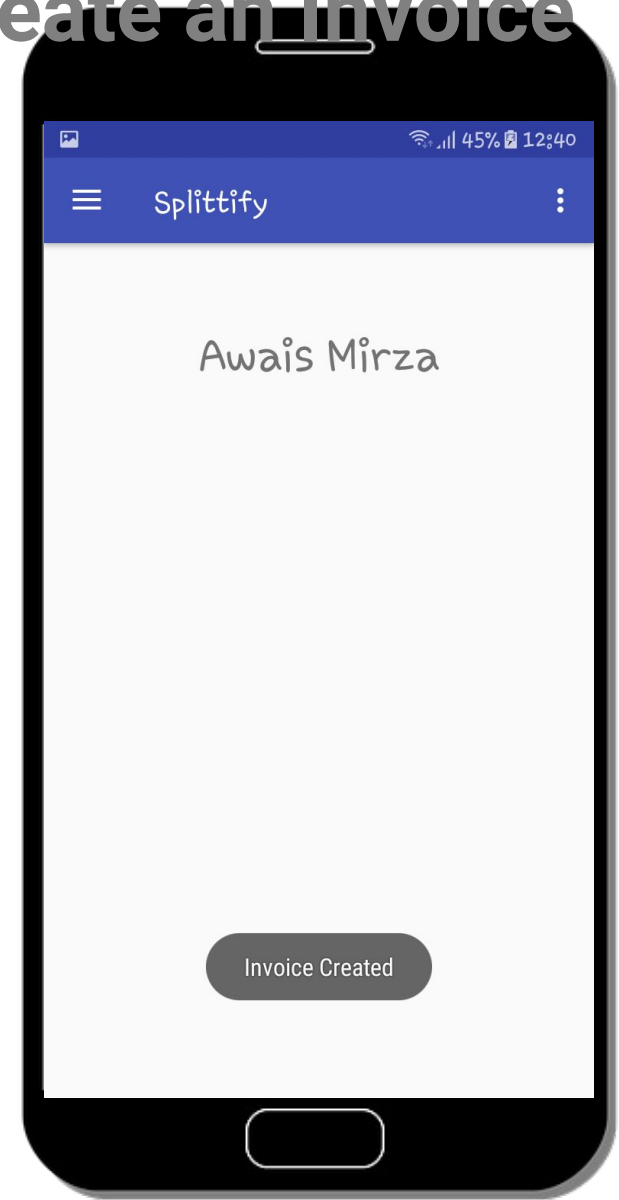


5. Application Walkthrough – Create an Invoice



← Pick the items you want to get payed for

Create the Invoice →



6. Open Issues

- x OCR works only under too strict conditions
- x Saving scanned Images efficiently/elegantly
- x Cut functionality due to Scoping Reasons
- x Minor Bugs

6. Lessons Learned

- ✓ Code an Android App
- ✓ Use OCR Technology
- ✓ Integrate Database
- ✓ Use Adaptation Techniques
- ✓ ‚Perfect‘ is the opposite of ‚good‘

Thanks for your attention

Any questions?