SafeFITS Web Application:
Architecture and User Interface

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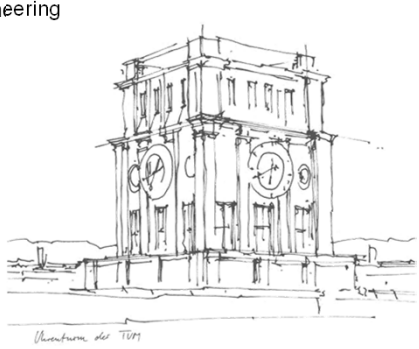
www.tse.bgu.tum.de



Outline

SafeFITS Application Functionalities and Requirements

High Level Architecture

Data Model

Website Platform Structure

User Interface

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Introduction

Successful deployment of SafeFITS is linked to the dissemination potential

Components:
- Interactive Visualizations
- Implementation of the Statistical Model

Expected Functionalities:
- Forecasting of road safety related indicators
- Benchmarking among different countries
- Produce reports with the results of the model

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Core Functional Requirements

Implementation of Statistical Model
- Base year estimation
- Forecast based on intervention groups
- Manual Selection of interventions and reactive behaviour

Visualization
- Interactive
- Responsive

Report Generation
- Results
- Visualization
- Multiple formats

Database Integration
- Concise expandable database structure

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Supporting Functional Requirements

User Interface
- Follow widely accepted design conventions and guidelines
- Concise and logical structure of the different functionalities
- Following a path logic starting from general and moving to specific

User Management
- Password protected
- Authorized users

System Documentation
- System Administrators
- End-users (help)

User Interactions
- Straightforward platform design
- Predictable behaviour

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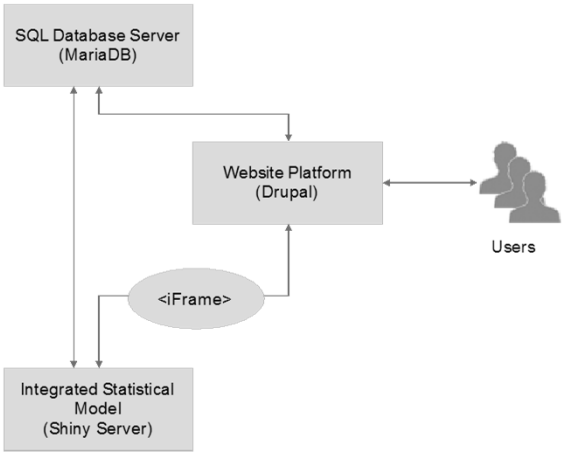
High Level Architecture

Components:

- Database: MariaDB
- Website Platform: Drupal
- Statistical Model: Shiny
- Connection: <iFrame>



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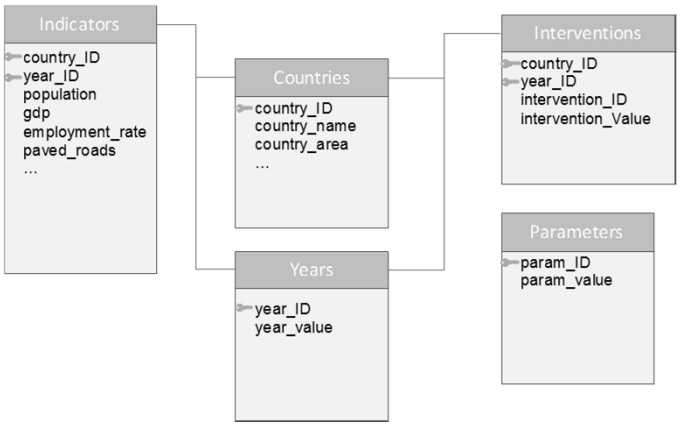
Data Model

Structured tabular form

Normalized

Extendable

Concise



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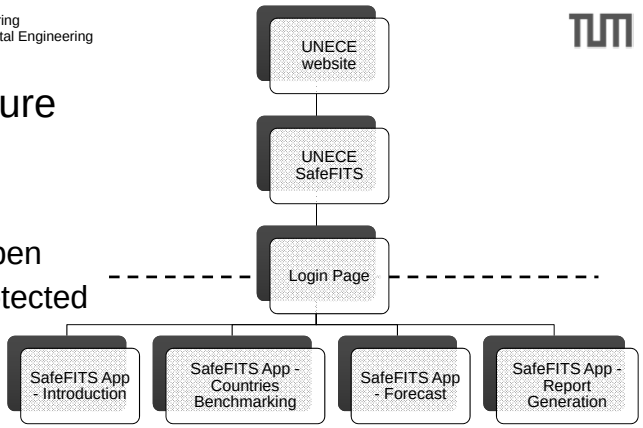
Website Structure

Combination of Open and Password Protected



Webpages	**Access (user group)**	**Platform**
SafeFITS Home	Open	Drupal (external)
SafeFITS Login	Open	Drupal (external)
SafeFITS app - Introduction	Password Protected	Shiny - iframe
SafeFITS app – Countries Benchmark	Password Protected	Shiny - iframe
SafeFITS app - Forecast	Password Protected	Shiny - iframe
SafeFITS app – Report Generation	Password Protected	Shiny - iframe

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User Interface Design

Top navigation bar: tab-based interface

Persistent: Move across tabs without loss of information

Responsive: Reactive Design (without submit button)

Forgiving: Reset opportunity

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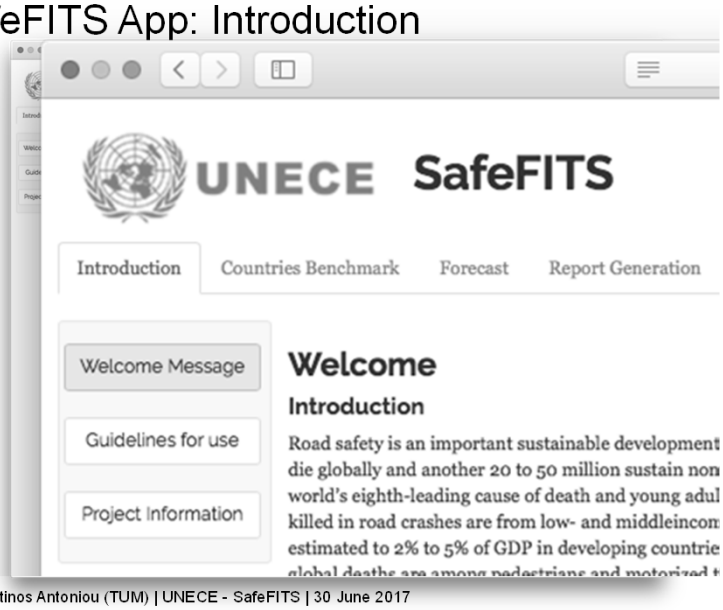
SafeFITS App: Introduction



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SafeFITS App: Countries' Benchmark

General Information

Base year

Diagrams for countries' rank

Global and Regional

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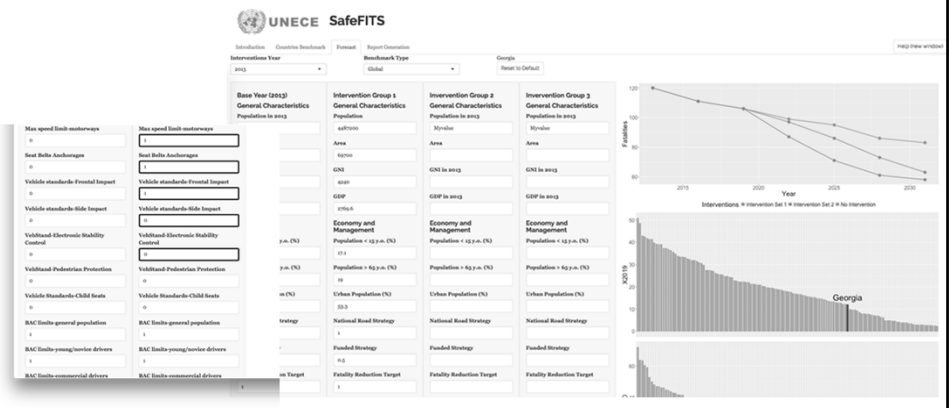
SafeFITS App: Forecast

Implementation of the Statistical Model
Benchmarking of country with implementation of interventions
Manual selection and implementation of interventions



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Integrated Statistical Model Application

Shiny R

- Based on R Language for Statistical Computing
- Fills the gap between offline statistical implementations and web-based solutions
- Dedicated and directly integrated, application server
- Modular design
- Libraries for model estimation and prediction

https://www.r-project.org

https://www.rstudio.com

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Report Generation and Documentation

Report Generation

- Optional Report Generation
- Multiple Data formats (pdf, html, MS Word)

Documentation

- User-friendly tool-tips
- Help in separate webpage

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Live demo

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Next steps

Today's discussion and feedback!

Finalization of the UI
Completion of the back-office logic
Pilot test
Beta testing
Deployment!

Thank you for your attention!

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