Research, Applied Technology, Education and Service, Inc.

Sphinx extension to extract slide content embedded in narrative content for generating sphinx-revealjs presentations.

Project Deliverable ID Manual

Andrew Ernest ‹anernest@ratesresearch.org›

Aug 22, 2022

Approval Page

Technical Review By:

_____
Andrew Ernest
Lead Software Developer

Final Approval For Submission:

_____
Andrew Ernest
President and CEO

August 22, 2022

CONTENTS

ONE

SPHINX SLIDES

Converting Todo Extension:

- Copied todo.py
- Sustituted `todo` for `slide`
- Copied slidelist code to slideshow

Refining SlideShow:

- Removed `slide_ref`

Slide Title:

- Subsection of document

References:

- [Sphinx Extension Tutorials](#)

INDICES AND TABLES

- genindex
- modindex
- search

GLOSSARY

API
    Application Programming Interface

API.RGVFlood.com
    RGVFlood.com data assimilation service.

AU
    Assessment Unit

AWS
    Amazon Web Services

Azure
    Microsoft's Cloud Computing Platform

Bernoulli
    The Bernoulli equation is a simplification of the Navier-Stokes equations assuming inviscid fluid and steady (non-time-variant) flow.

BLE
    Base Level Engineering

Celery
    A task scheduling and messaging application used to maximize parallel task processing.

CentOS
    A *Linux* distribution

CI
    Cyberinfrastructure

CLI
    Command-Line Interface

Clover
    Cloud Virtual Water Model Executor

COP
    Common Operating Picture

CPU
Centralized Processing Unit

Crowdsource
Data collection from open, relatively un-controlled, sources.

CUAHSI
Consortium of Universities for the Advancement of Hydrologic Science

Cyberinfrastructure
computing systems, data storage systems, advanced instruments and data repositories, visualization environments, and people, all linked by high speed networks

DEM
Digital Elevation Model

Deterministic
Approaches to describing processes that do not rely on randomness.

DFIRM
Digital Flood Insurance Rate Map

DHS
Department of Homeland Security

DIKW
Data, Information, Knowledge, Wisdom

Django
<https://www.djangoproject.com/>

DO
Dissolved Oxygen

Docker
Docker is a container deployment platform that allows for the rapid deployment of a applications in the cloud, independent of the physical infrastructure.

DRF
Django ReST Framework

DSS
Decision Support System

EC2
AWS Elastic Cloud Compute

Eeyore
URL: Eeyore.ratesresearch.org CPU: Dual Intel(R) Xeon(R) E-2124 CPU @ 3.30GHz Memory: 16GB HD: 4TB OS: Ubuntu Linux 20.04

FEMA
Federal Emergency Management Agency

FIF

Flood Infrastructure Fund

FOSS

Free and Open Source Software

GCE

Google Compute Engine

GCP

Google Cloud Platform

GCS

Google Cloud storage

GeoNode

<https://geonode.org/>

GeoNode/db

PostgreSQL with *PostGIS* extensions database server storing *GeoNode Django* and *GeoServer* data.

GeoServer

Open source server for sharing geospatial data.

GeoTIFF

A public domain metadata standard which has the georeferencing information embedded within the *TIFF* file.

GIS

Geospatial Information System

GKE

Google *Kubernetes* Engine

H&H

Hydrologic and Hydraulic

HAND

Height Above Nearest Drainage <http://handmodel.ccst.inpe.br/>

HEC

Hydrologic Engineering Center

HEC-DSS

HEC Data Storage System

HEC-HMS

Hydrologic Engineering Center Hydrologic Modeling System. <https://www.hec.usace.army.mil/software/hec-hms/>

HEC-RAS

Hydrologic Engineering Center River Analysis System. <https://www.hec.usace.army.mil/software/hec-ras/>

HEC-RTS

Hydrologic Engineering Center Real Time Simulation

HPC

High Performace Computing

HPCC

HPC cluster

HTML

Hypertext Markup Language

HUC

Hydrologic Unit Code

HWMD

Hidalgo/Willacy Main Drain

IBWCNF

USIBWC North Floodway

IDV

Integrated Data Viewer from *UniData*

InfoWorks ICM

<https://www.innovyze.com/en-us/products/infoworks-icm>

IT

Information Technology

K8s

Kubernetes

Kubernetes

An orchestration system facilites the deployment and management of containerized applications, with a specific focus on scaling to increase demand for the provided services.

LaTeX

A high-quality typesetting system including features designed for the production of technical and scientific documentation

LiDAR

Light Detection and Ranging

Linux

An open source operating system that is made up of the kernel, the base component of the OS, and the tools, apps, and services bundled along with it.

LLM

Lower Laguna Madre

LLM/BSC

Lower Laguna Madre/Brownsville Ship Channel watershed.

LRGV

Lower Rio Grande Valley

LRGVDC

Lower Rio Grande Valley Development Council

LSM

Land Surface Models focus on describing the processes driving the exchange of terrestrial water with atmospheric.

Mechanistic

Formulations describing physical, biological or chemical processes based on a theoretical understanding.

MIKE Urban+

<https://www.mikepoweredbydhi.com/download/mike-2019/mike-urban-plus?ref=%7B5399F5D6-40C6-4BB2-8311-37B615A652C6%7D>

MPI

Message Passing Interface

NAT

Network Address Translation

Navier-Stokes

The Navier-Stokes equations are mathematically representations of conservation of mass and momentum for simple fluids such as water.

NCAR

National Center for Atmospheric Research

NetCDF

NetCDF (Network Common Data Form) is a set of software libraries and machine-independent data formats that support the creation, access, and sharing of array-oriented scientific data. It is also a community standard for sharing scientific data. The Unidata Program Center supports and maintains netCDF programming interfaces for C, C++, Java, and Fortran. Programming interfaces are also available for Python, IDL, MATLAB, R, Ruby, and Perl. Reproduced from NetCDF.

NGINX

High performance web server.

NIC

Network interface controller

NLDAS

North American Land Data Assimilation System

NOAA

National Oceanic and Atmospheric Agency

NWC

National Water Center

NWM

National Water Model

NWS

National Weather Service

ODM

Observations Data Model

PostGIS

Spatial database extender for *PostgreSQL*

PostgreSQL

Open source object-relational database system, available with *PostGIS* extensions

Primo

Parallel raster inundation model

PWA

Progressive Web Application, an application format that allows installation as native applications onto mobile devices and desktop PCs directly from the web.

Python

<https://www.python.org/>

R

A language and environment for statistical computing and graphics

RabbitMQ

An open-source inter-process message broker

RATES

Research, Applied Technology, Education and Service, Inc., a non-profit technology-based company.

RBAC

Role Based Access Control

REON

River and Estuary Observation Network. A partnership of organizations, supported by cloud software, committed to furthering the Democratization of Water Intelligence by sharing water data, analytics and models for local and regional decision making.

REON.cc

Cloud-based cyber-infrastructure that supports *REON*'s goals.

REON/db

PostgreSQL with *PostGIS* extensions database server storing *REON* specific data for *RTHS*, *REON/WM* & *REON.cc* data.

REON/RGV

Instantiation of *REON* with specific application to the Lower Rio Grande Valley - this includes the collection of *RTHS* stations, the *REON* partners with a stake in the LRGV, and the application of the *REON/WM* to the *LRGV*.

REON/WM

REON Water Model

ReST

REpresentational State Transfer

RGVFlood

Instantiation of the *REON* Cyberinfrastructure specific to the *LRGV*.

RGVFlood.com

The domain name and *URL* for *RGVFlood*.

RTHS

Real Time Hydrologic System

RTHS.us

Cloud server of *RTHS* network data

RVD

Raymondville Drain

RWRAC

Regional Water Resources Advisory Committee

SA

Situational Awareness

SaaS

Software as a Service

SMT

Simultaneous Multi-Threading

SONAR

Sound Navigation Ranging, a technique for detecting and determining the distance and direction of underwater objects by acoustic means.

Sphinx

Documentation generator supporting multiple output formats

SPRNT

Simulation Program for River Networks

Spyce

Smartphone Python Computing Environment

Stochastic

Approaches to describing processes in statistical terms.

SWMM

Stormwater Management Model

SWTF

Stormwater Taskforce

Tastypie

a webservice *API* framework for *Django*

TGLO

Texas General Land Office

Tier I

Tier I Real-Time Regional Hydrologic Modeling Framework

Tier II

Tier II On-Demand Sub-Regional Hydraulic Modeling Framework

Tier III

Tier III Off-Line Urban Stormwater Modeling Framework

TIFF

Tag Image File Format, a computer file used to store raster graphics and image information.

Tigger

URL: Tigger.water-wizard.org CPU: Dual Intel(R) Xeon(R) CPU E3-1245 v3 @ 3.40GHz Memory: 16GB HD: 4TB OS: Ubuntu Linux 20.04

TIN

Triangular Irregular Networks are a form of vector-based digital geographic data and are constructed by triangulating a set of vertices.

TWDB

Texas Water Development Board

TWDB/FIF

The Texas Water Development Board Flood Infrastructure Fund.

Ubuntu

A *Linux* distribution

UCAR

University Corporation for Atmospheric Research

UI

> User Interface

UniData

> A *UCAR* community program focused on sharing geoscience data and the tools to access and visualize that data.

URL

> Uniform Resource Locator

USACE

> United States Army Corps of Engineers

USGS

> United States Geological Survey

USIBWC

> United States International Boundary Water Commission

UTRGV

> University of Texas Rio Grande Valley

vCPU

> Virtual *CPU*

VIC

> Variable Infiltration Capacity (VIC) Macroscale Hydrologic Model. <https://vic.readthedocs.io/en/master/>

VM

> Virtual Machine

Water Wizard

> A suite of decision support tools designed for regional decision makers.

Wizard.RGVFlood.com

> A web, mobile and desktop client-side application that, working with the server-side components at *RGVFlood.com*, provides the end-user with the up-to-date analytics, visualization and decision support services from the core *REON.cc CI*.

WPP

> Watershed Protection Plan

WPS

> WRF Preprocessing System

WRDA

> Water Resources Development Act

WRF

> Weather Research and Forecasting Model

WRF-Hydro
    WRF Hydrological modeling system. <https://ral. .edu/projects/wrf_hydro/overview>

INDEX