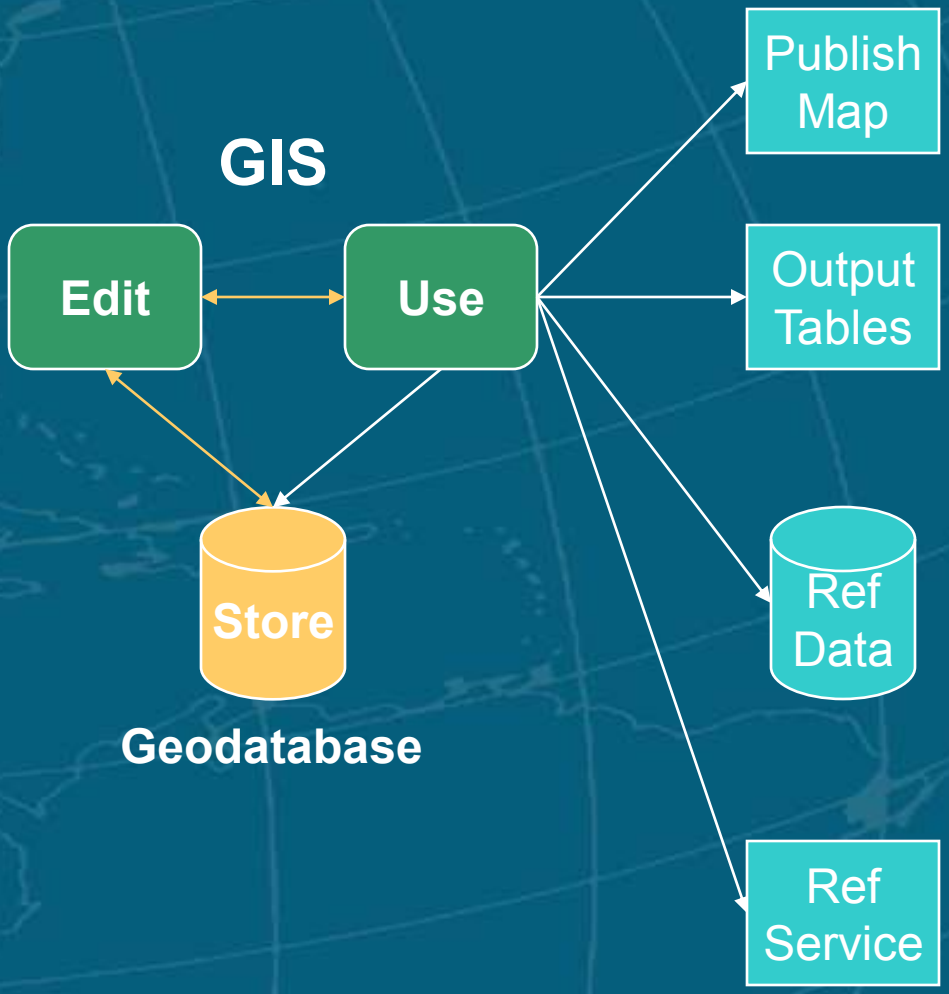
ESRI & Autodesk

Getting from here to there
and back again

Overview

Guido Stein
GIS Analyst
Applied Geographics, Inc. (Boston)

- Technology Review
- Approaches
- Conclusions



Process
Data Store
Information Products

Autodesk's Approach to GIS

- Map 3D Classic Tools
  - Import/export Shape Files into DWG drawing file
  - Object Data
  - Labeling using block templates
- Map 3D Feature Data Objects (FDO)
  - Access GIS data using FDO connection
    - Including personal GeoDatabase and Shapefiles
  - Symbolize and organize FDO connections similarly to other GIS packages
  - Edit Shape Files

Autodesk's Approach to GIS Constraints

- Map 3D Classic Tools
  - Cannot edit GIS data in place
  - Poor symbolization data tools
- Map 3D Feature Data Objects (FDO)
  - FDO data do not work seamlessly with other CAD drawing files
  - Only allow editing of shape file currently

ESRI's Approach to CAD

- ArcGIS Map
  - Easily add DWG and Block Attributes to map
- ArcGIS for Autodesk
  - Map services as reference data within Autodesk
  - OpenDWG attribute view/capture
- ArcGIS Info
  - Export GIS data to NEW OpenDWG standard
    - Looks like a GDB from ArcCatalog
    - Retains Attributes
    - Follows simple CAD Layer Name Standard for features

ESRI's Approach to CAD Constraints

- ArcGIS Map
  - Can not read Object Data from Map3D
- ArcGIS for Autodesk
  - Attribute data cannot be used by Autodesk Map 3D
- ArcGIS Info
  - Open DWG is not supported by Autodesk
    - Need to write custom code to access
    - Can use ArcGIS for Autodesk (in CAD) to view and edit attributes

Example Situation: Glastonbury, CT
GIS utility network integration with CAD

CAD Resources

- Existing CAD expertise within staff
- Existing CAD data
  - hopefully in state plane feet
- Currently create/store/publish in CAD

GIS objectives

- Implementation of new GIS data model
  - Pick list for data, Geometric Network, Facility Asset Management Attributes collected

CONSTRAINT

- Clients do not own Safe Soft FME

Approach 1: CAD and GIS integration
Using OpenDWG data for native CAD editing

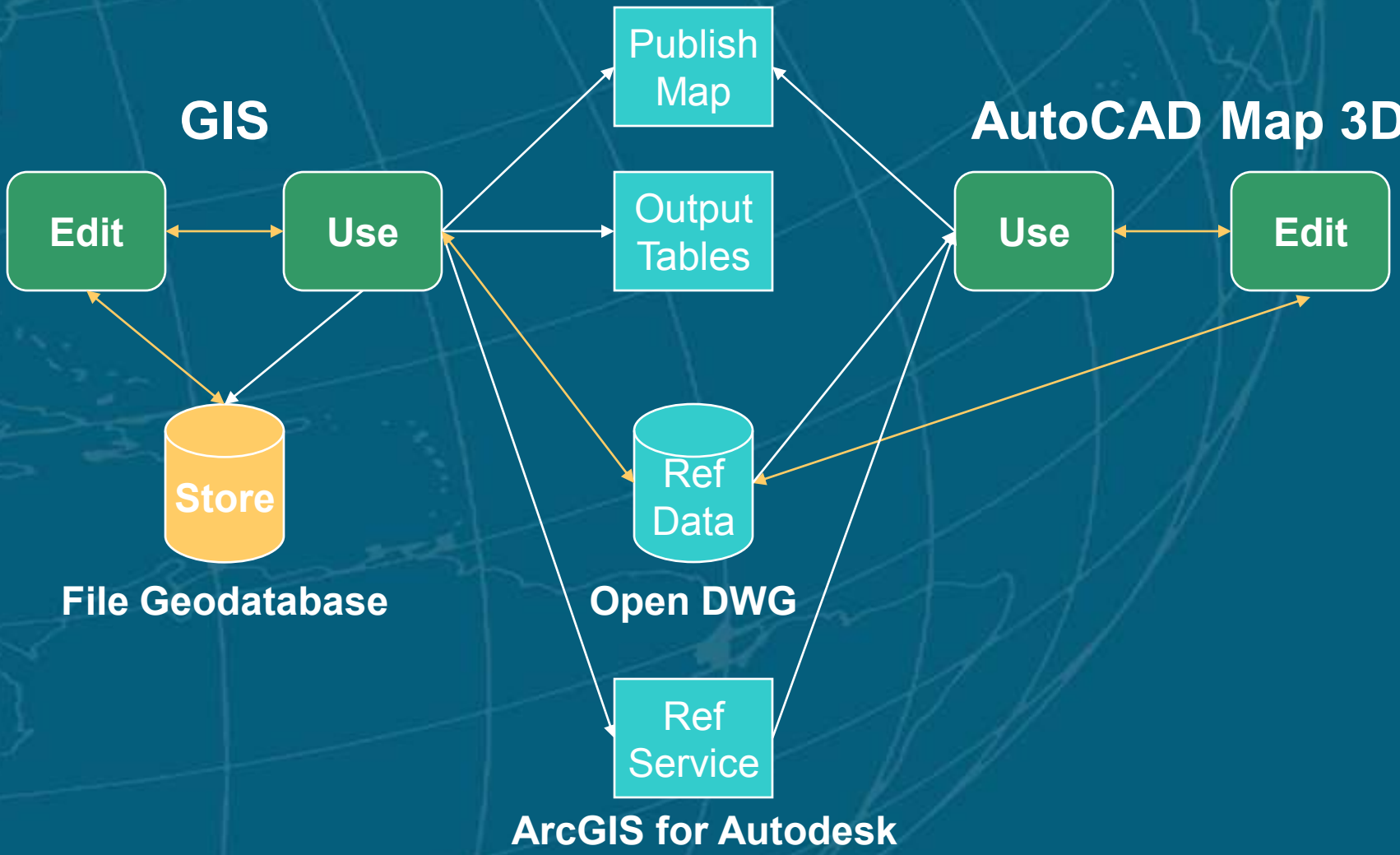
Procedure

- Export to OpenDWG from Geodatabase
  - Retains attribute data
  - Viewable attributes using ArcGIS for Autodesk
- Import OpenDWG to GeoDatabase
  - Features are one to one import

Goals

- Edits and new data capture in CAD
- Features classes retained using CAD Layers
- Native CAD format editing

Approach 1: CAD and GIS integration
Using OpenDWG data for native CAD editing



Approach 1: CAD and GIS integration
Using OpenDWG data for native CAD editing

Constraints

- Not symbolized or labeled
- Feature layer management issues
- Only see attributes using ArcGIS for Autodesk

Approach 2: CAD and GIS integration
Editing Shapefiles using FDO in CAD

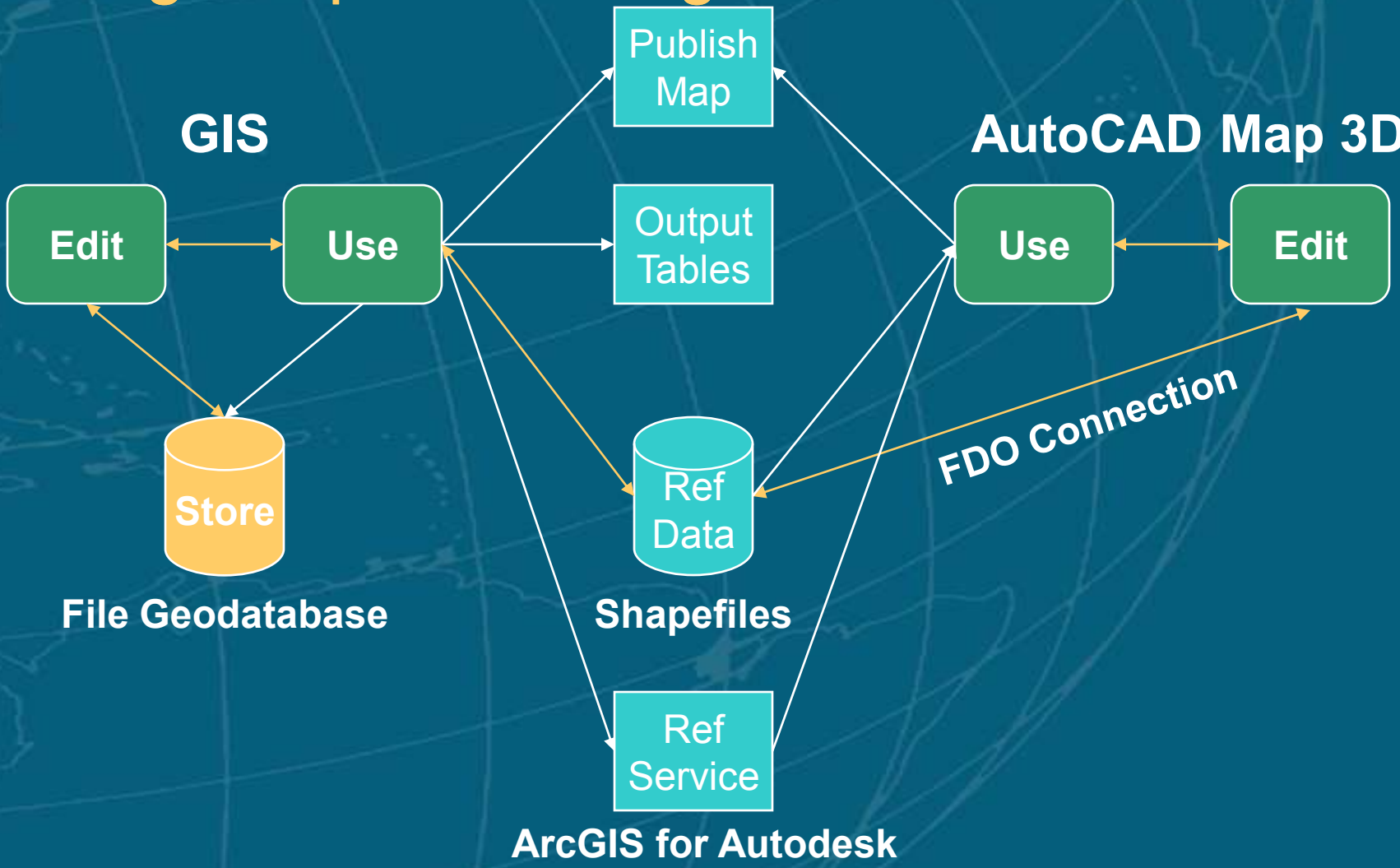
Procedure

- Export to Shapefiles from geodatabase
  - Use FDO Connection to symbolize, label, rotate data
  - Use FDO to edit shape files
- Import Shapefiles to geodatabase

Goals

- Direct editing of GIS Data within CAD
- GIS similarity in Autodesk using Map 3D

Approach 2: CAD and GIS integration
Editing Shapefiles using FDO in CAD



Approach 2: CAD and GIS integration
Editing Shapefiles using FDO in CAD

Constraints

- Cannot reference symbolization from other DWG drawings
- Shapefiles field length constraints
- FDO objects inflexible
  - Could not tilt to fit map format
  - Could not convert to block
- FDO is not familiar to most CAD users

Approach 3: CAD and GIS integration
Using CAD Blocks and Seed file for integration

Procedures

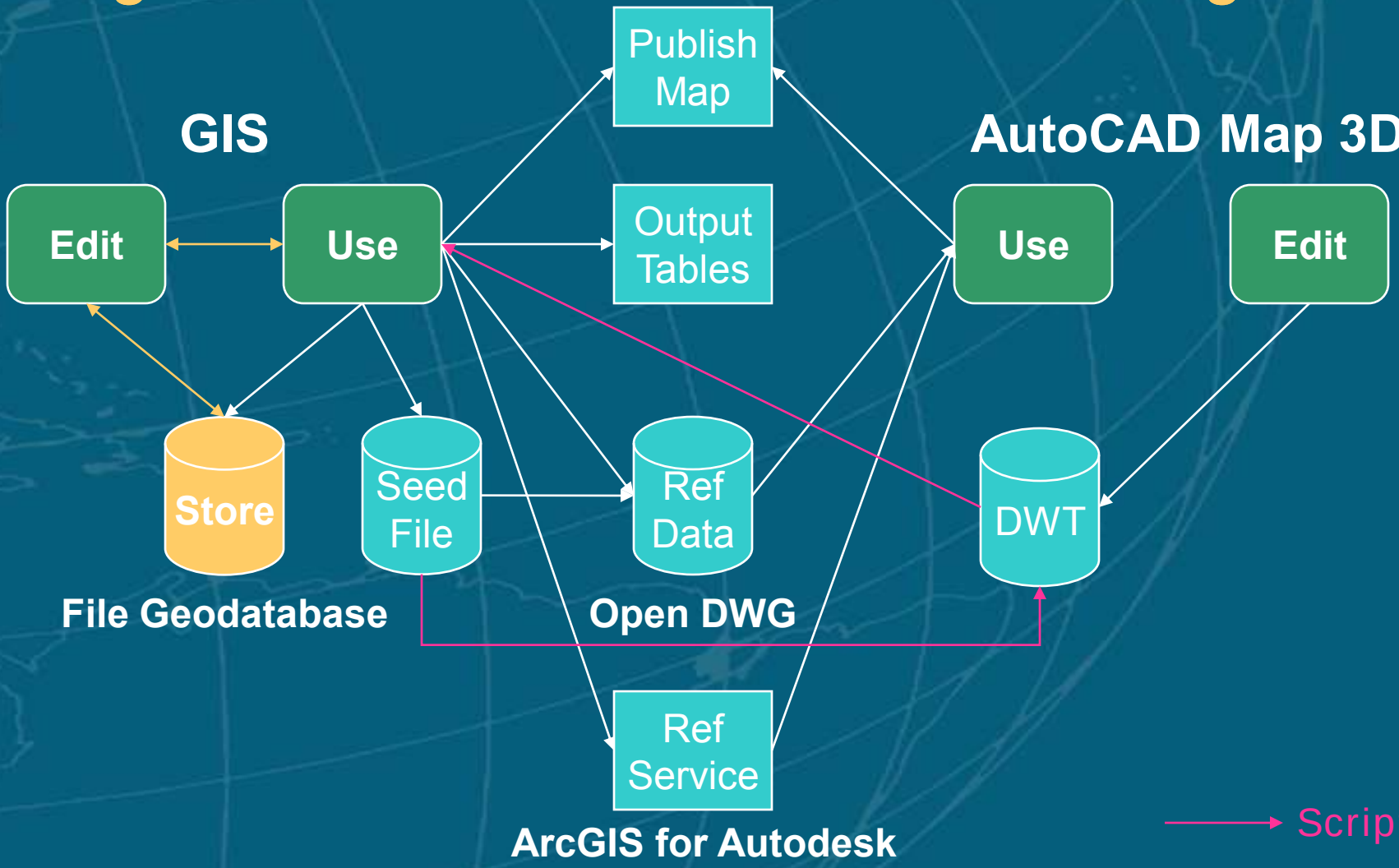
- Export to OpenDWG from geodatabase
  - Python script & seed file
  - Clip and rotate using Attach and Query in Map 3D
- Data capture/edit information in CAD
  - Use seed file to create CAD template file (DWT)
  - Add needed/relevant attributes to block (some hidden)
- Use GIS to import capture/edit files
  - Copy/paste capture/edit CAD files
  - QA/QC against original plan
  - Capture extra attribute information from original plan

Approach 3: CAD and GIS integration
Using CAD Blocks and Seed file for integration

Goals

- Work with Tiled CAD files
- Make data available for DWG reference (XREF)
- Simplify data capture with blocks
- Use blocks for symbology/labeling

Approach 3: CAD and GIS integration
Using CAD Blocks and Seed file for integration



Approach 3: CAD and GIS integration
Using CAD Blocks and Seed file for integration

Constraints

- Complicated setup
- Intermediate files for capture/editing

Conclusions

- Need shared open data format
- ESRI OpenDWG solution is promising
  - Need an Object enabler for Autodesk
- FDO in Map3D has some major shortcomings
- A well planned work-flow goes a long way
  - Understand your tools

Resources

- ArcGIS For AutoDesk

http://www.esri.com/software/arcgis/arcgis-for-autocad/

- AutoDesk Map 3D

http://usa.autodesk.com/adsk/servlet/index?id=3081357&siteID=123112

ESRI & Autodesk

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Guido Stein

guido@guidostein.com