

# Introduction to ADIwg ISO Metadata Toolkit

2015 CDI Conference Training Session

May 11, 2015

Stan Smith, USGS ASC;  
Josh Bradley, Arctic LCC;  
Dennis Walworth, USGS ASC

# Workshop Outline



- Project overview and toolkit introduction
- Generating metadata using the toolkit
- Toolkit integration with systems



# Overview



- Project introduction
- Development background
- Toolkit introduction
- Documentation



# About ADIwg

## The Alaska Data Integration Working Group (ADIwg)

- Mission: to examine and address the technical barriers to efficiently integrate and share data within and among participating organizations
- Steering Committee: Alaska Climate Change Executive Roundtable (ACCER)
- ADIwg technical work group implements objectives



# Who is ADIwg?



- **Federal**
  - BLM, BOEM, NPS, USFWS, USFS, USGS
- **State of Alaska**
  - University of Alaska (UAF, UAS)
  - Geographic Information Network of Alaska (GINA)
  - International Arctic Research Center (IARC)
- **Non-Governmental Organizations (NGOs)**
  - Arctic Ocean Observing System (AOOS)
  - Arctic Research Mapping Application (ARMAP) - Nunatech Consulting
  - North Pacific Research Board (NPRB)
  - North Slope Science Initiative (NSSI)
- **Cooperatives/Joint-Ventures**
  - Arctic LCC



# ADIWg ISO Metadata Requirements



- Adoption of ISO 19115-2 as standard for ADIWg
- Share high investment cost for comprehension and implementation
- Support diversity of requirements and implementation skills across ADIWg membership
- Transition existing project metadata standard to ISO

# Project Objectives



- **Eliminate necessity to learn ISO 19115 family of standards**
- **Make it easier for organizations to:**
  - Achieve ISO compliance
  - Integrate ISO support into local applications and services
  - Implement custom web services with ISO metadata capability
- **Host a public web service for generation of ISO metadata records**
- **Support both project and data metadata in ISO**
- **Host a public web app for PIs to enter and edit metadata**



# Project Scope



- Support creation of *original* metadata records
- Portable, open source code library for developers
- Create a user-friendly metadata preparation tools
- Accommodate diverse needs and technical abilities
- Extensible (create metadata in multiple standards)



# Out of Scope

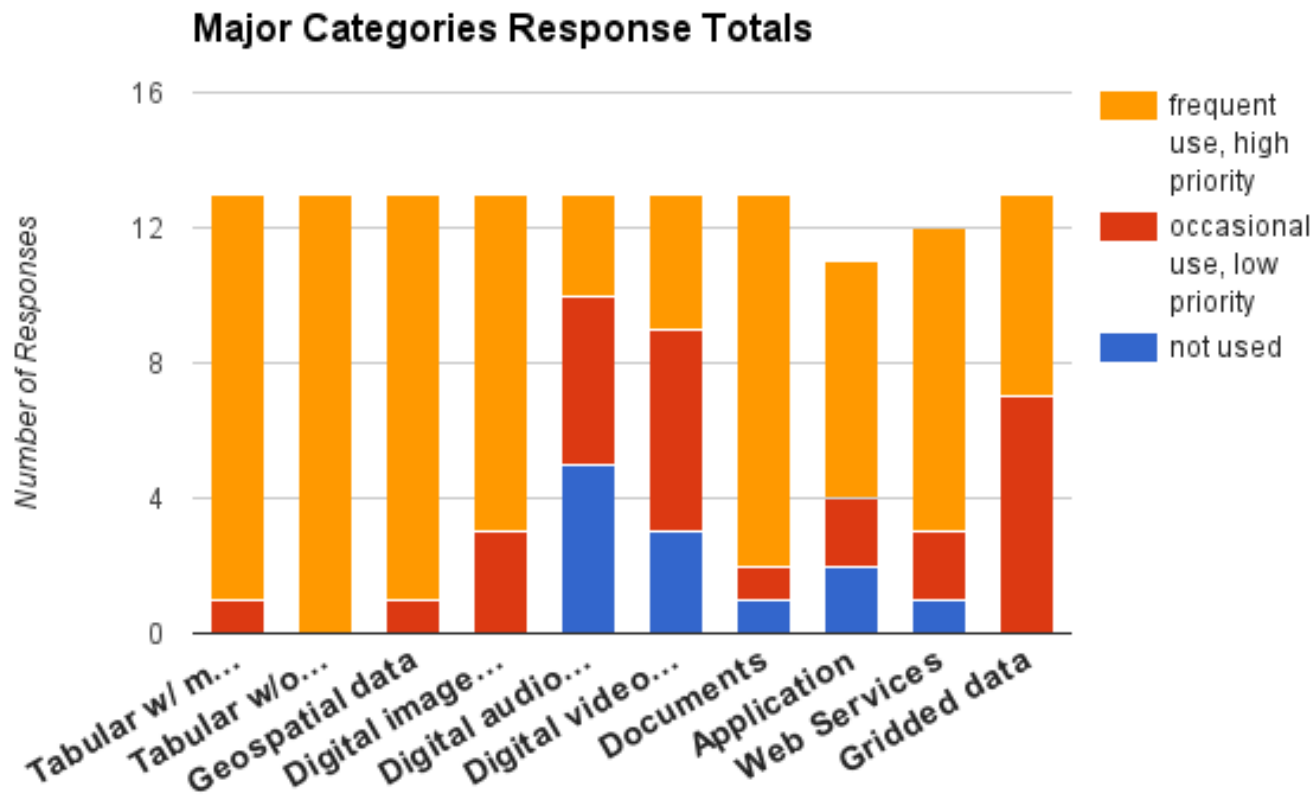


- Metadata clearinghouse
- Translation between XML metadata standards (e.g. FGDC->ISO)
- Provide metadata snippets to other metadata tools

# Choosing a Standard



Polled members for types of data produced



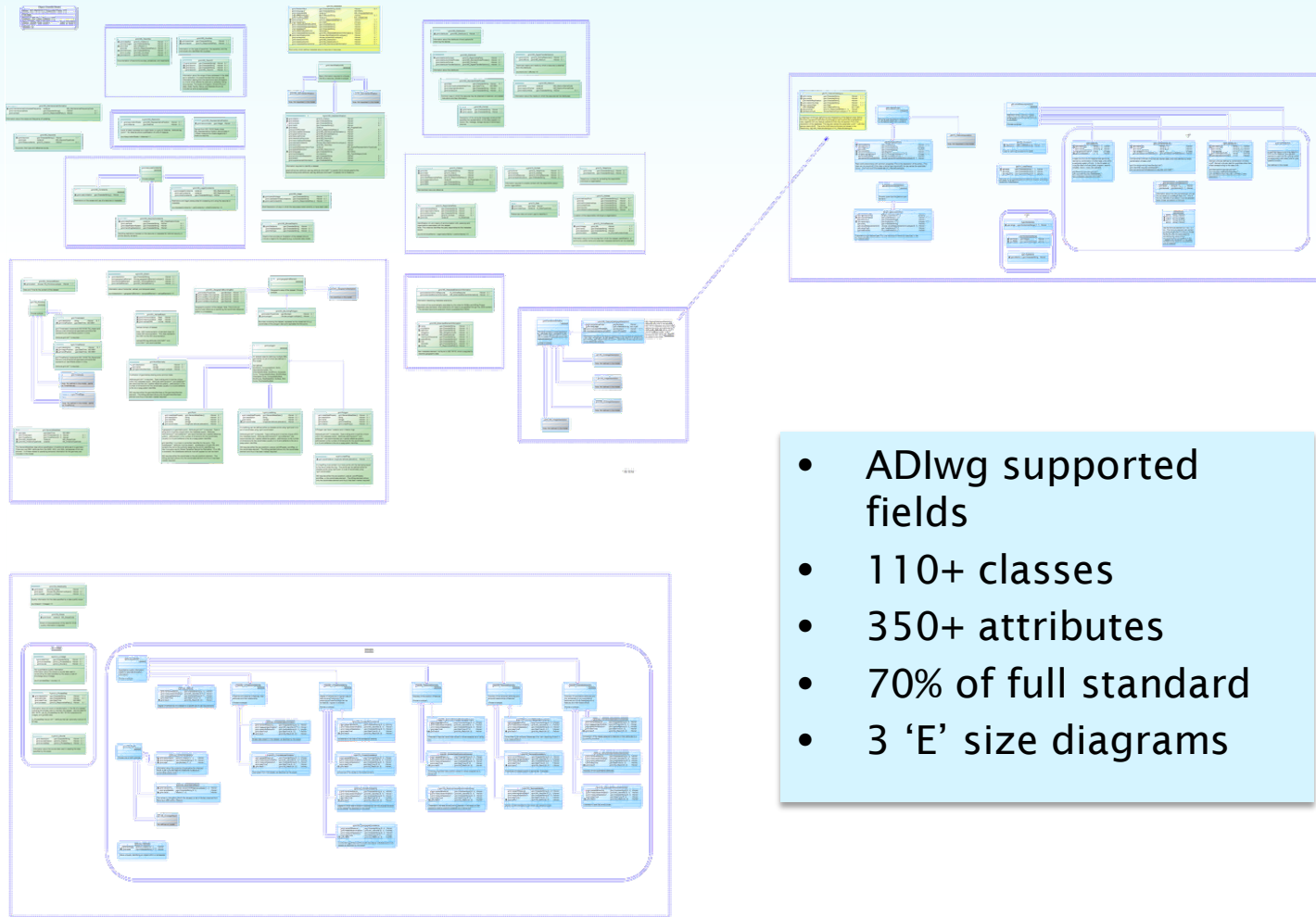
# Choosing a Standard



- Defined metadata content requirements
- Analyzed common standards for best solution
  - FGDC, Dublin Core, EMI, ISO
- Selected ISO standard



# Supported ISO Fields



- ADIwg supported fields
- 110+ classes
- 350+ attributes
- 70% of full standard
- 3 'E' size diagrams

# ISO Metadata Toolkit



- Transition to branded open source project
- Core Alaska group from ADIwg
- Growing participation from interested parties
- Sponsorship from CDI and NCCWSC



# Metadata Developer's Toolkit - Toolkit Development

2015 CDI Workshop

May 11, 2015

Josh Bradley, Arctic LCC



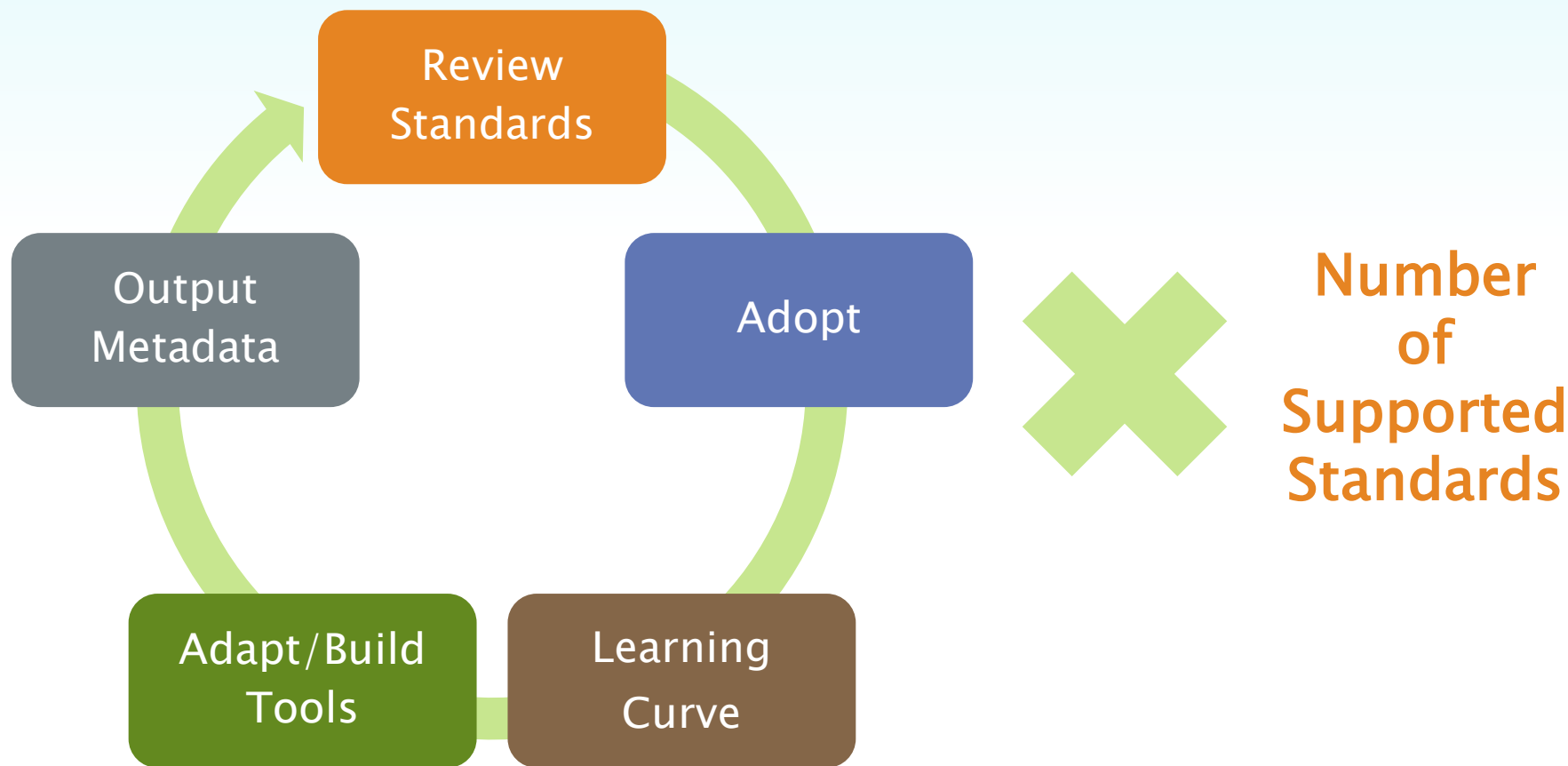
# Project Objectives



- **Share metadata easily and efficiently among organizations**
- **Support both project and data metadata**
- **Eliminate necessity to learn ISO 19115 family of standards**
- **Make it easier for organizations to:**
  - Achieve ISO compliance
  - Integrate ISO support into local applications and services
  - Implement custom web services with ISO metadata capability
- **Host a public web service for generation of ISO metadata records**
- **Host a public web app for PIs to enter and edit metadata**



# Traditional Process







# Choices



- Which Standard?
  - FGDC CSDGM, Dublin Core, EML, ISO/TC 211, ...
- Which Version?
  - 19115, 19115-2, 19115-1, ...
- Which Profile?
  - Based on ISO 19115: North American Profile, WMO Core, INSPIRE, Polar Metadata Profile, ...

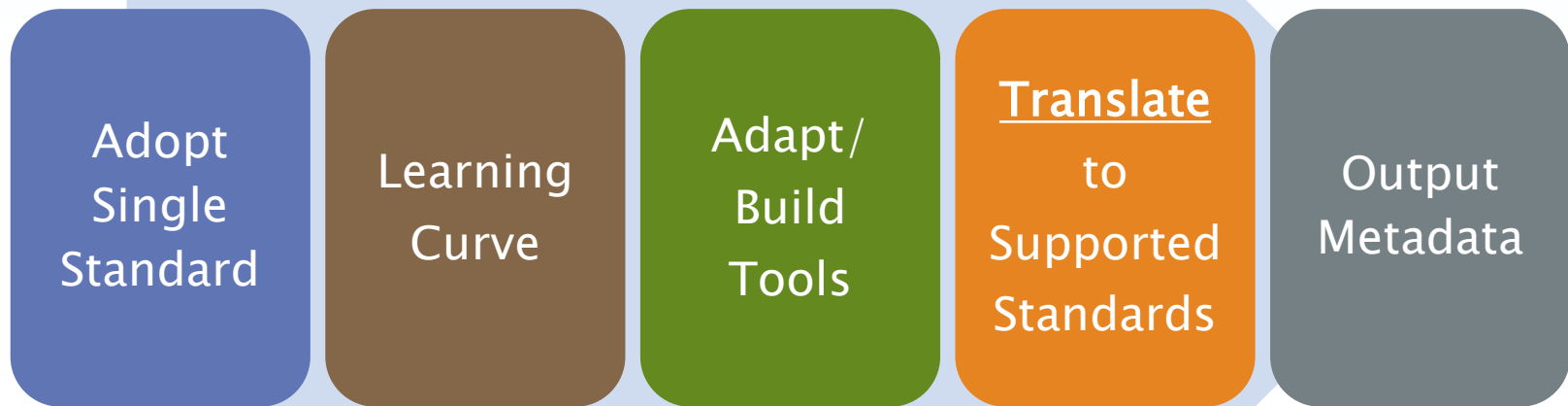


# ISO (19115-2) Metadata



- Comprehensive, a great starting point
- Learning curve is steep!
- Too heavy & complex for common data-interchange
- Rigid, not easily extended (and still validate)
- Another profile???

# ADIWg Concept





# Solution



Create a new, independent standard that is flexible, adaptable, lightweight, and capable of being translated into other standards and formats, including ISO 19115.

# JavaScript Object Notation



```
{
  "firstName": "John",
  "lastName": "Smith",
  "age": 25,
  "active": true,
  "address": {
    "streetAddress": "21 2nd Street",
    "city": "New York",
    "state": "NY",
    "postalCode": "10021"
  },
  "phoneNumber": [
    {
      "type": "home",
      "number": "212 555-1234"
    },
    {
      "type": "fax",
      "number": "646 555-4567"
    }
  ]
}
```



# Why JSON?



- Easy Input/Output for both humans and machines
- Focus is on the data, not markup
- Wide support by programming languages
- Excellent for data-interchange
- JSON Schema for validation



# { "JSON" : "KISS" }

- Two basic (nestable) structures:
  - A collection of name/value pairs, i.e. object
  - An ordered list of values, i.e. array
- Values are: a “string”, or a number, or true or false or null (or an object or an array)
- Simple but powerful - can represent complex OO data structures

# GeoJSON



- Drop-in support for spatial extents
- Widely supported in common frameworks and APIs: OpenLayers, Leaflet, MapServer, GDAL, Google, ESRI, etc...
- Easy to extract

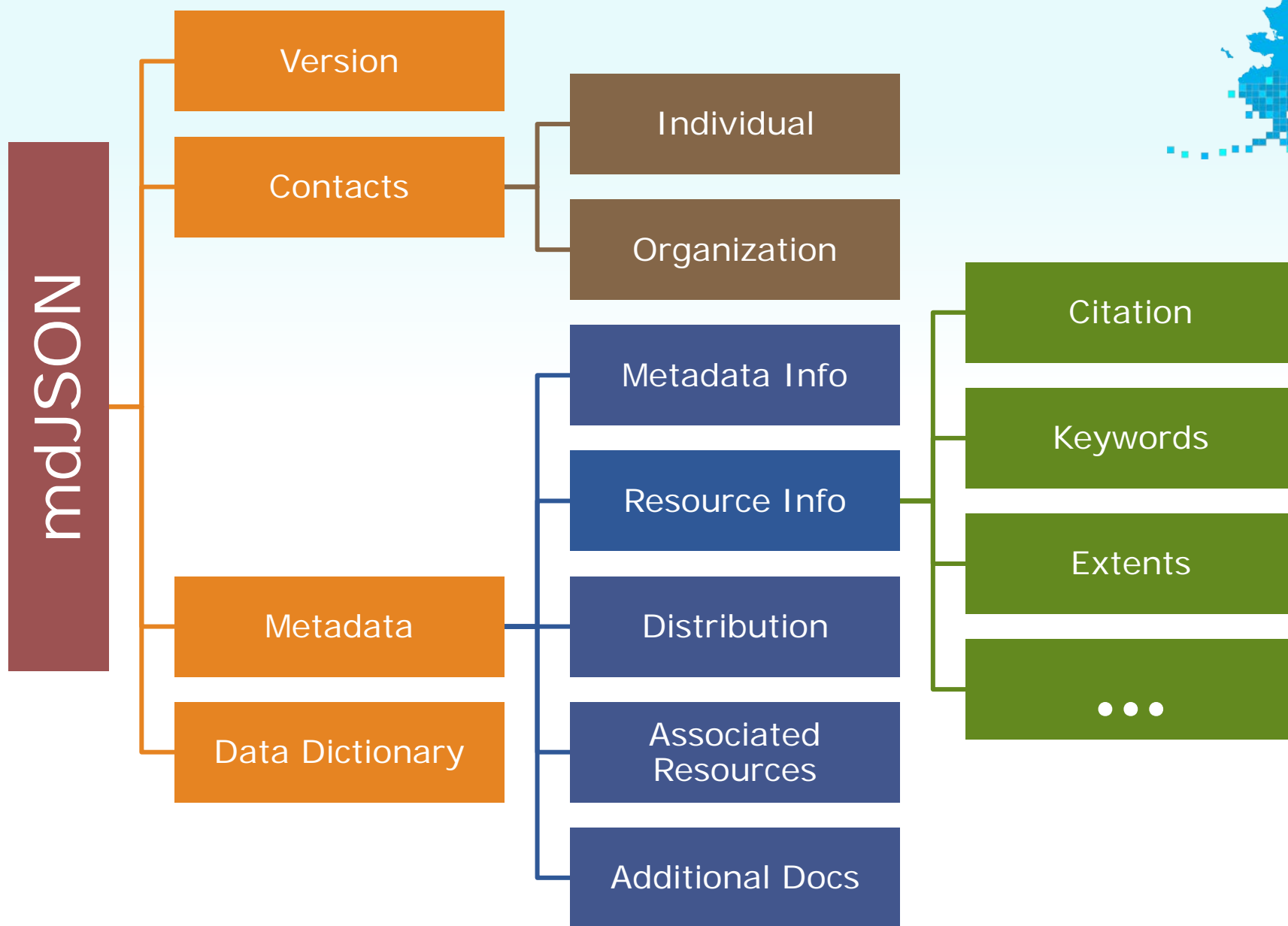




# mdJSON Design



- Influenced by ISO 19115-2/19110
- Mapped to FGDC CSDGM
- Define and validate via JSON Schemas
- Support both project and data metadata





# Tools Needed



- Needed to develop schemas
- Major focus on documentation
  - Traditional reference docs
  - Interactive, Graphical
- At a minimum, support ISO 19115-2
- Make everything easily available
- Lay groundwork for developing a mdJSON editor

# Questions?



[github.com/adiwg/mdWorkshop](https://github.com/adiwg/mdWorkshop)

[www.adiwg.org/mdTools](http://www.adiwg.org/mdTools)

[mdtranslator.adiwg.org](http://mdtranslator.adiwg.org)

[mdbook.adiwg.org](http://mdbook.adiwg.org)



# ISO Developer's Toolkit - Intro to ISO Toolkit

2015 CDI Workshop

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Stan Smith, USGS

# ISO Toolkit Components

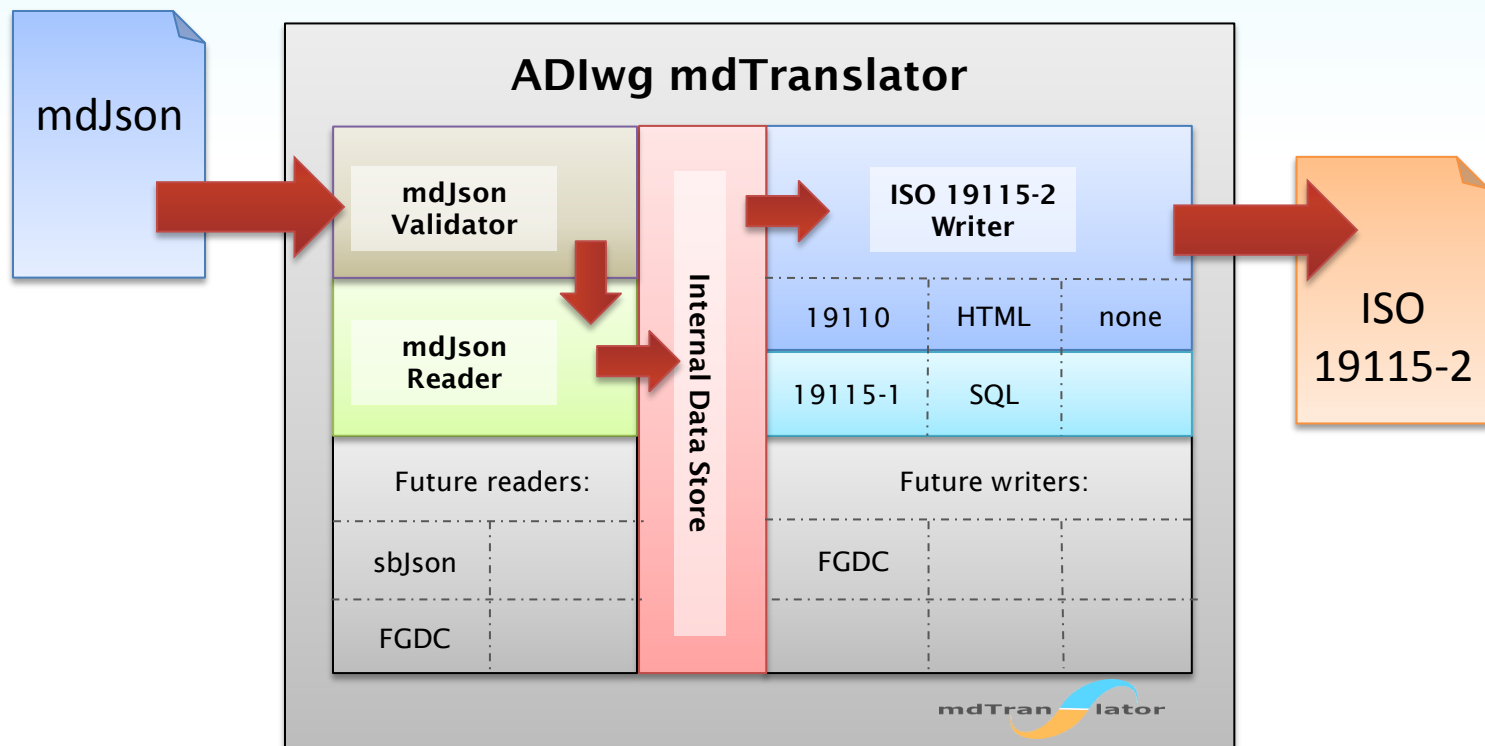


- **mdJson**
  - Standard for encoding project and data metadata
- **mdTranslator**
  - Provides translation to established metadata standards
- **mdTools**
  - Groups documentation, validation, and translator interface tools
- **mdEditor**
  - Online preparation and editing of mdJson files
- **mdBook**
  - Online documentation for all tools in the ISO Metadata Developer's Toolkit
- **mdCodes**
  - Standard ISO codelists for populating metadata editors
- **mdJson-schemas**
  - Schema definition for mdJson for validating mdJson file structure and content
- **mdTranslator-rails**
  - Ruby on Rails website for public access to hosted mdTranslator

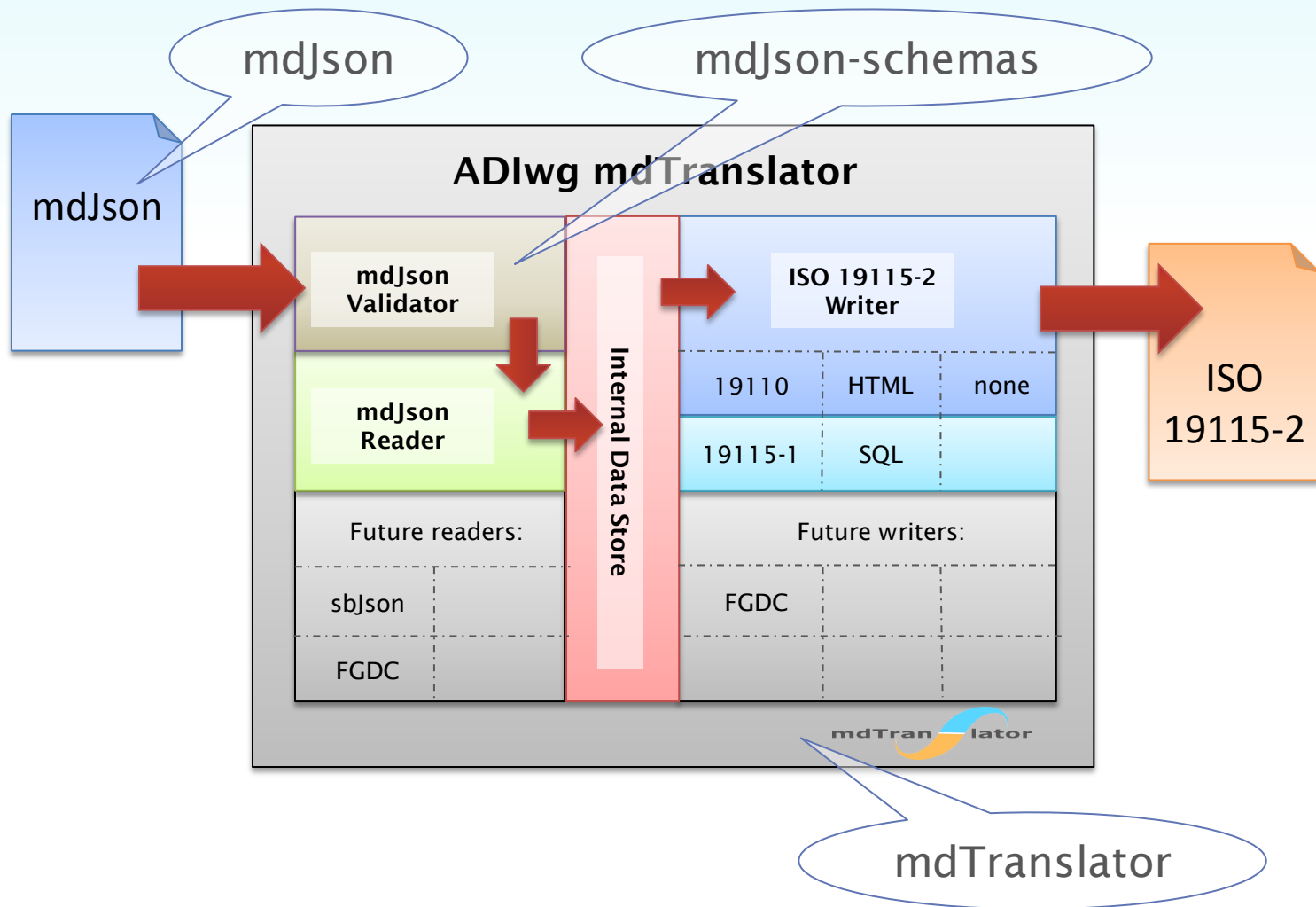


Code available on GitHub:  
<https://github.com/adiwg/>

# Core: mdTranslator

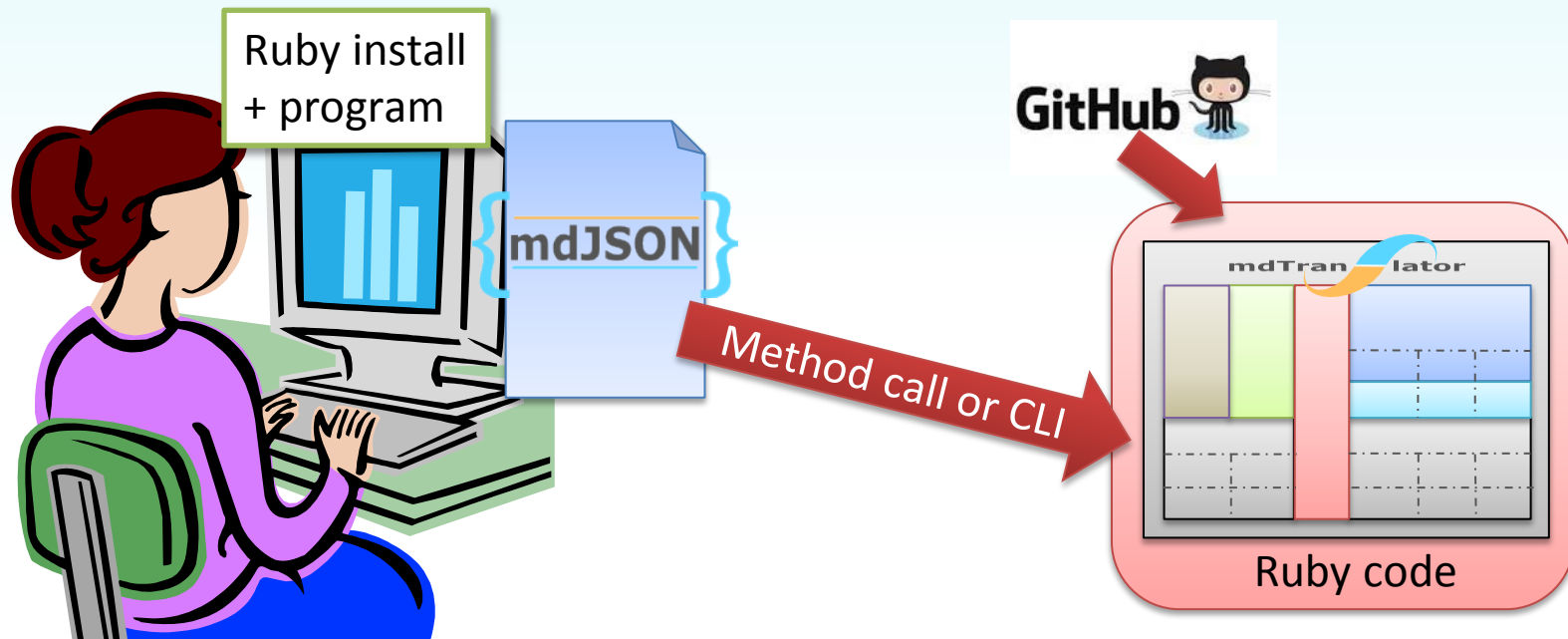


# Core: mdTranslator

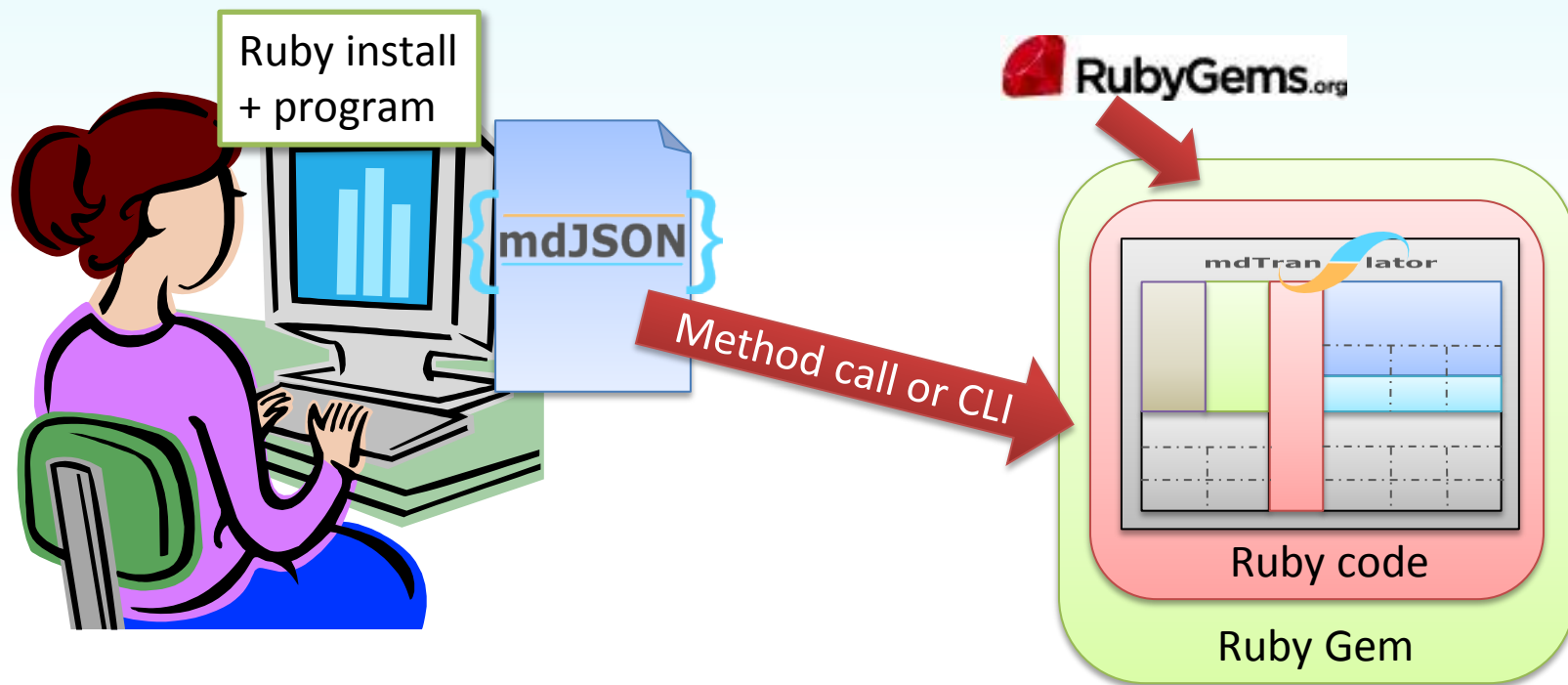




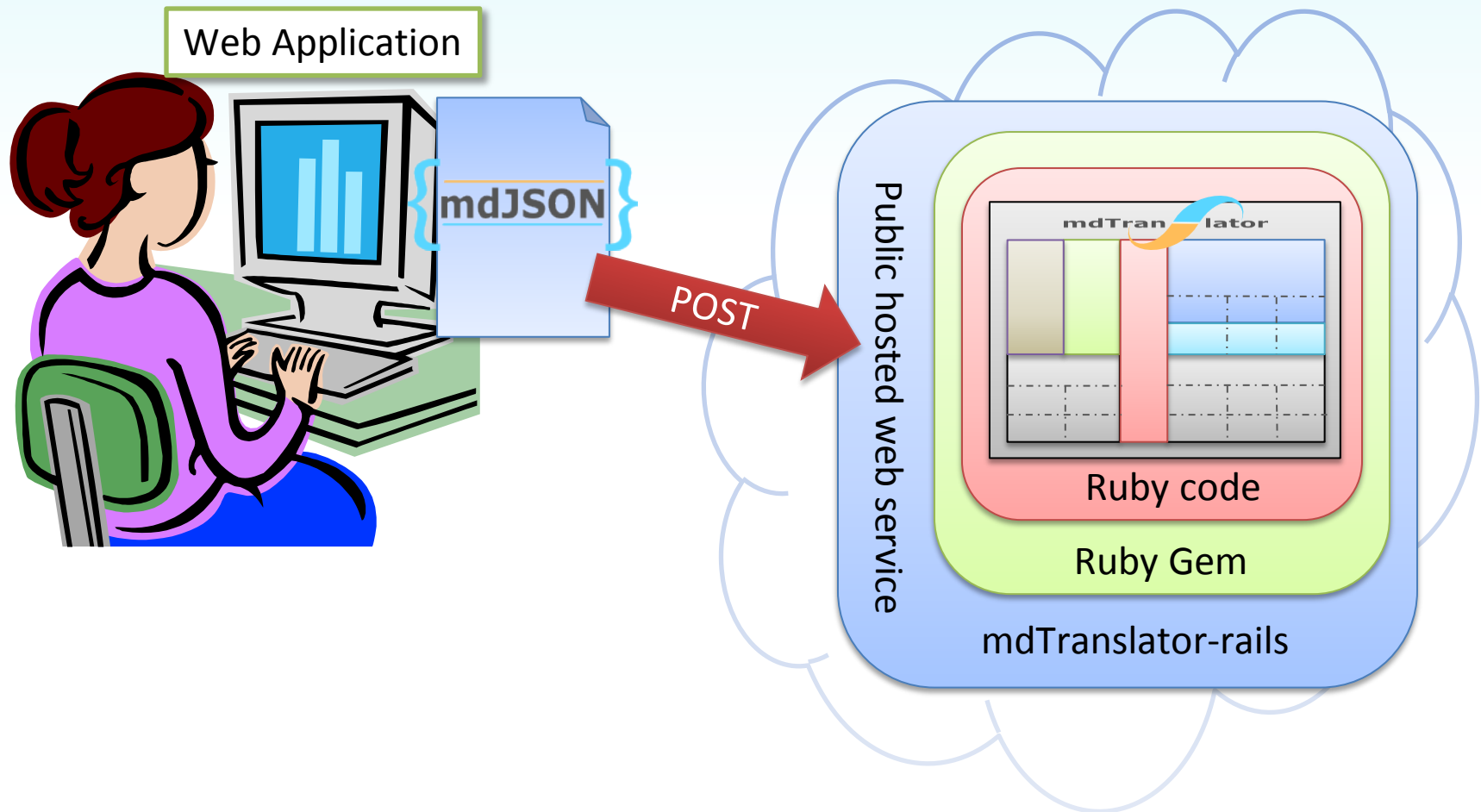
# mdTranslator as code



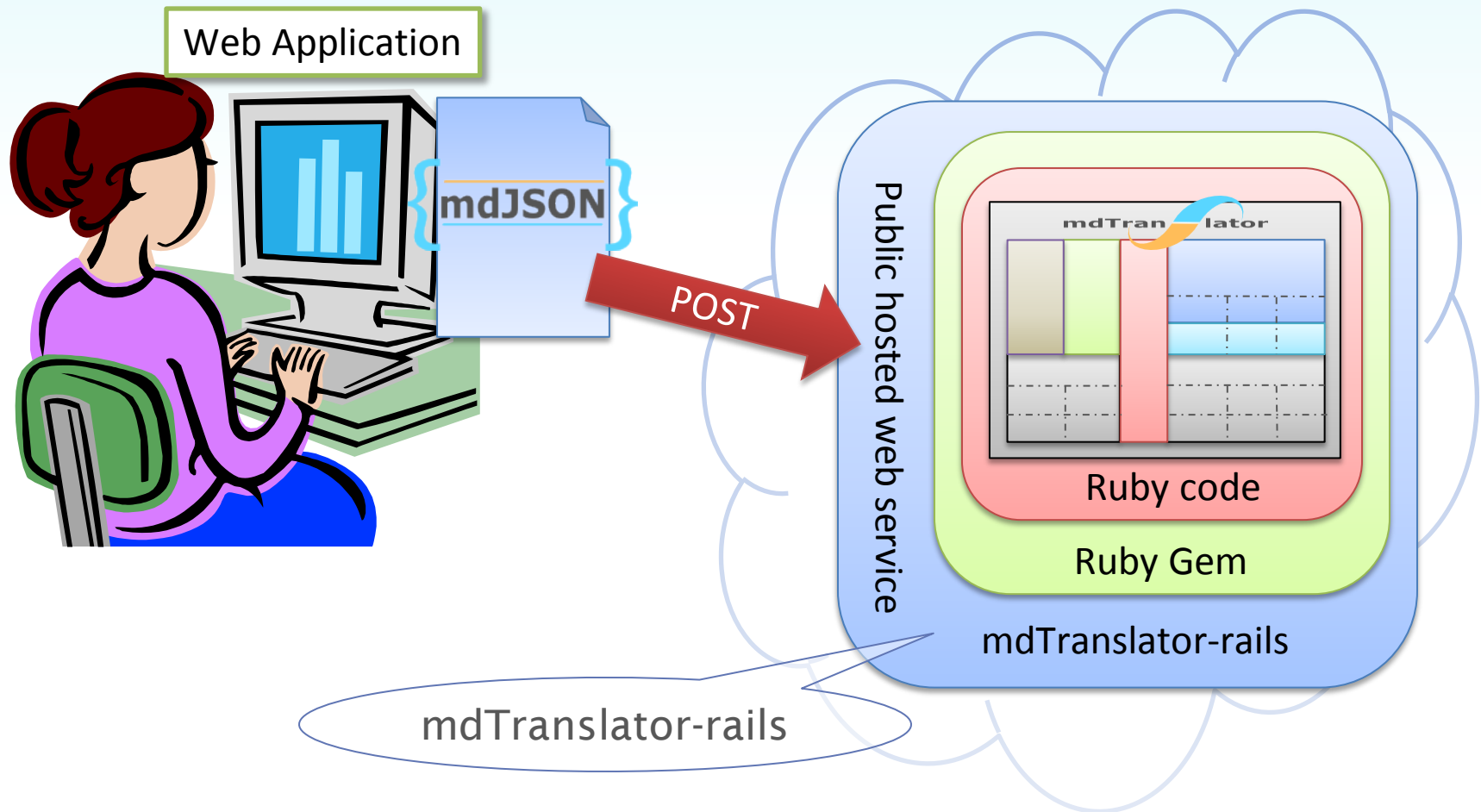
# mdTranslator as gem



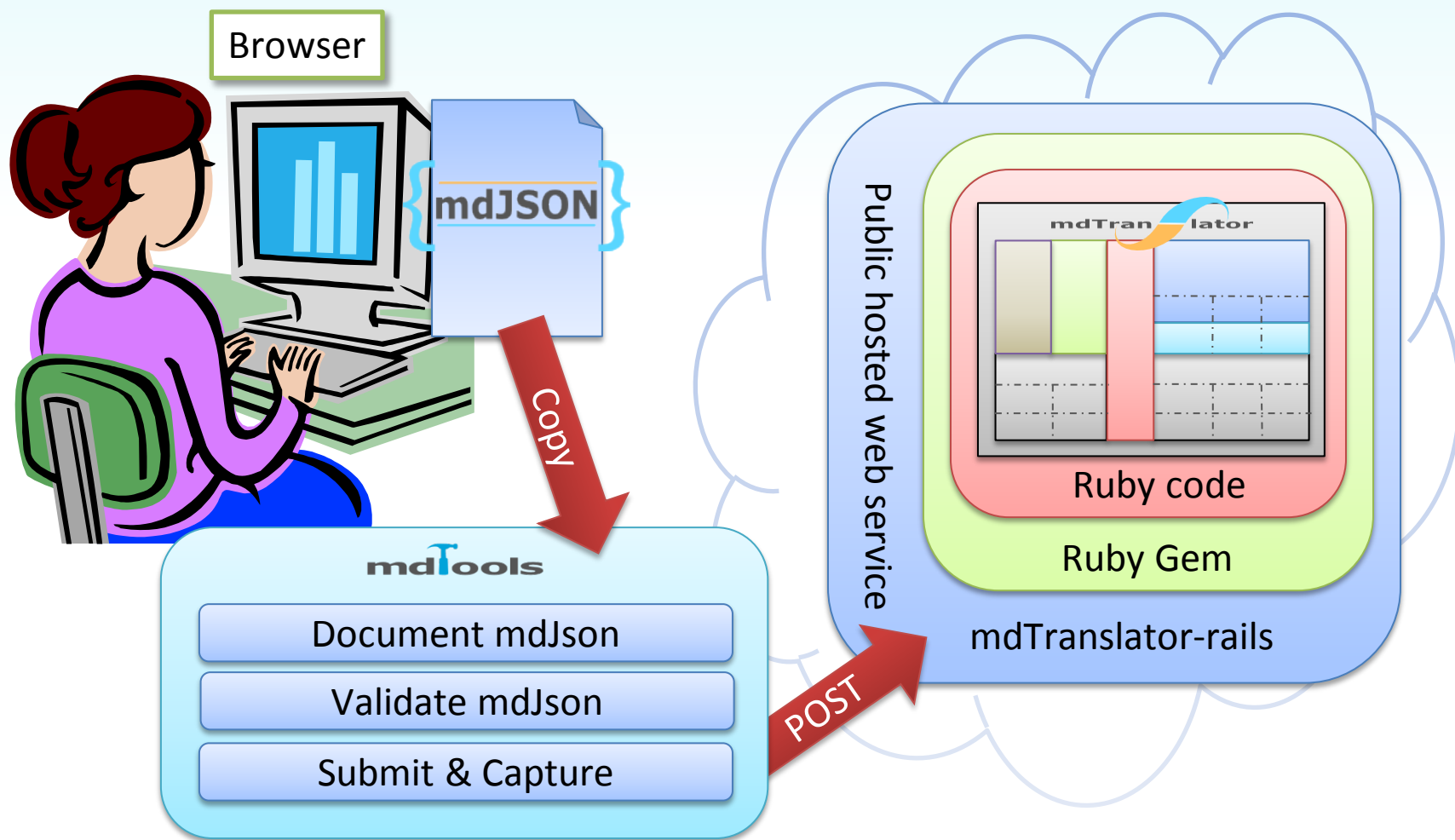
# mdTranslator as web service



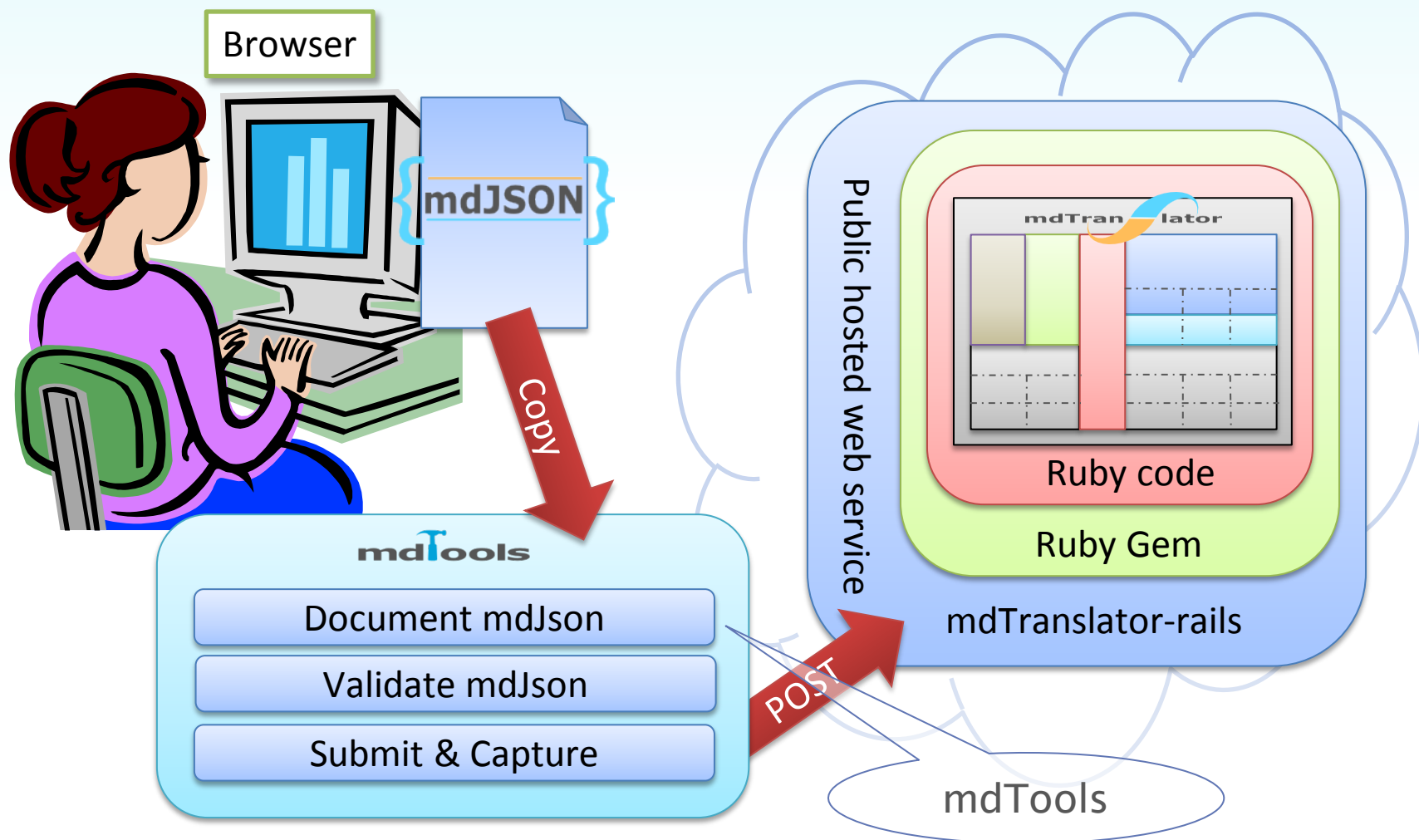
# mdTranslator as web service



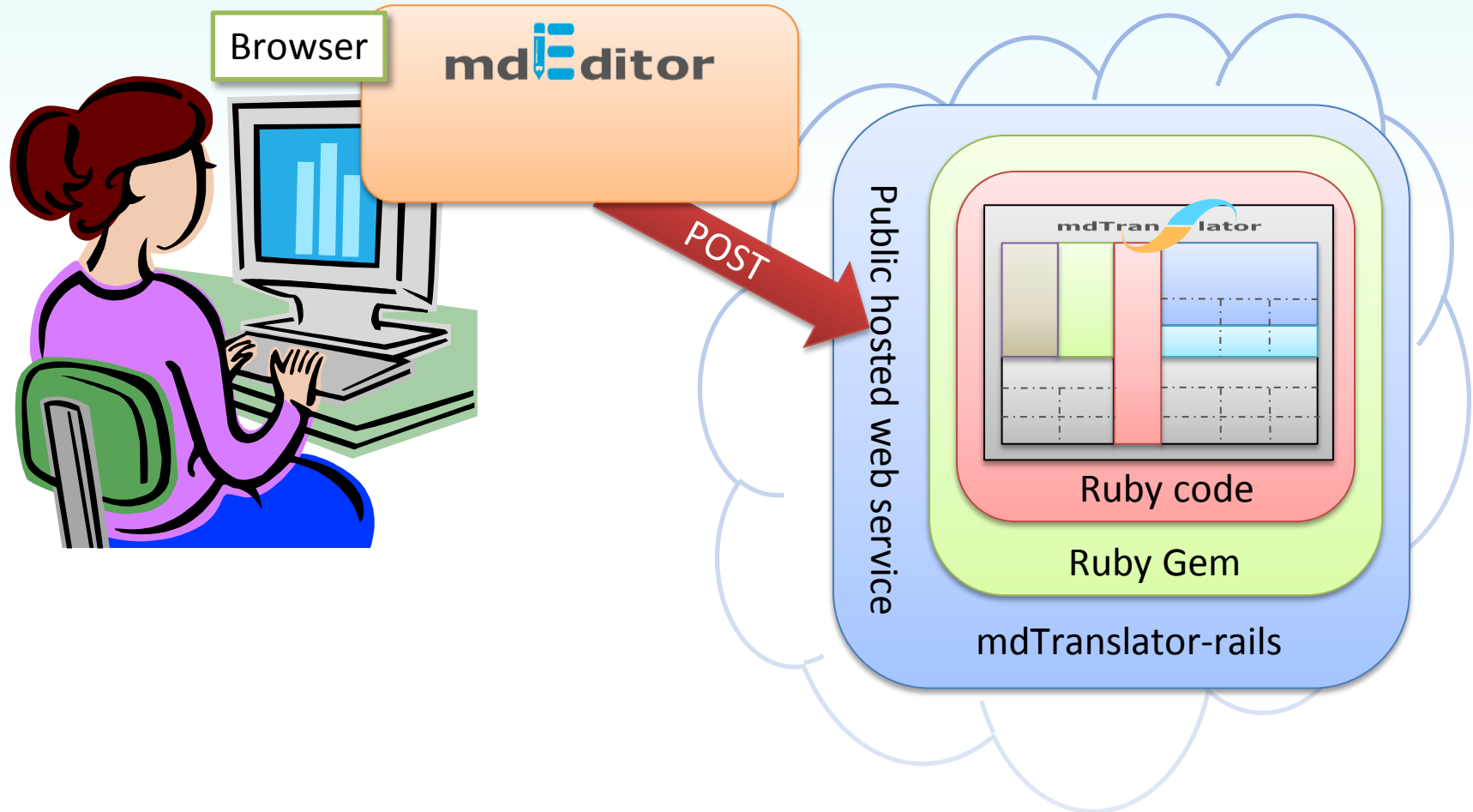
# mdTranslator in mdTools



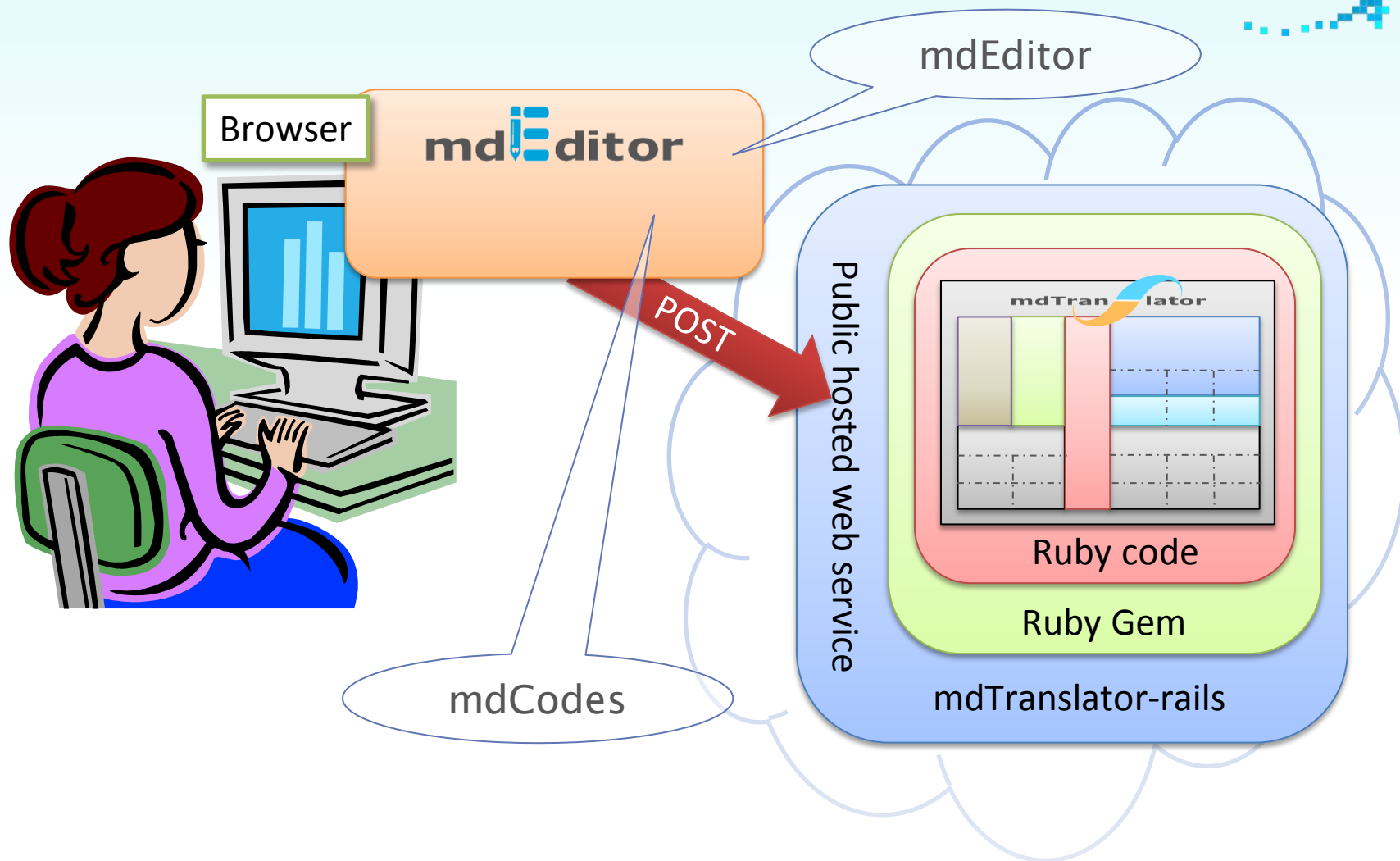
# mdTranslator in mdTools



# mdTranslator with mdEditor

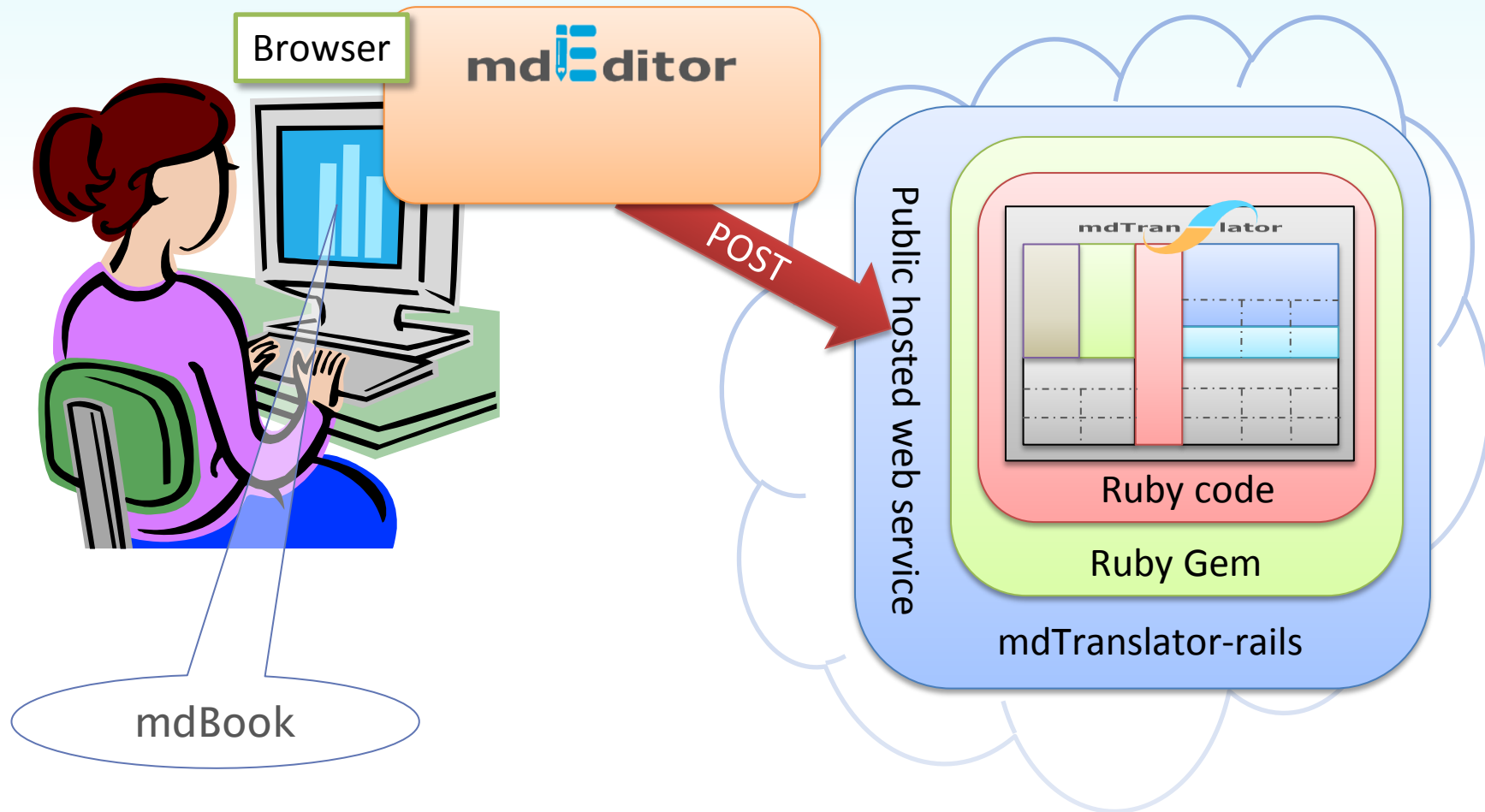


# mdTranslator with mdEditor

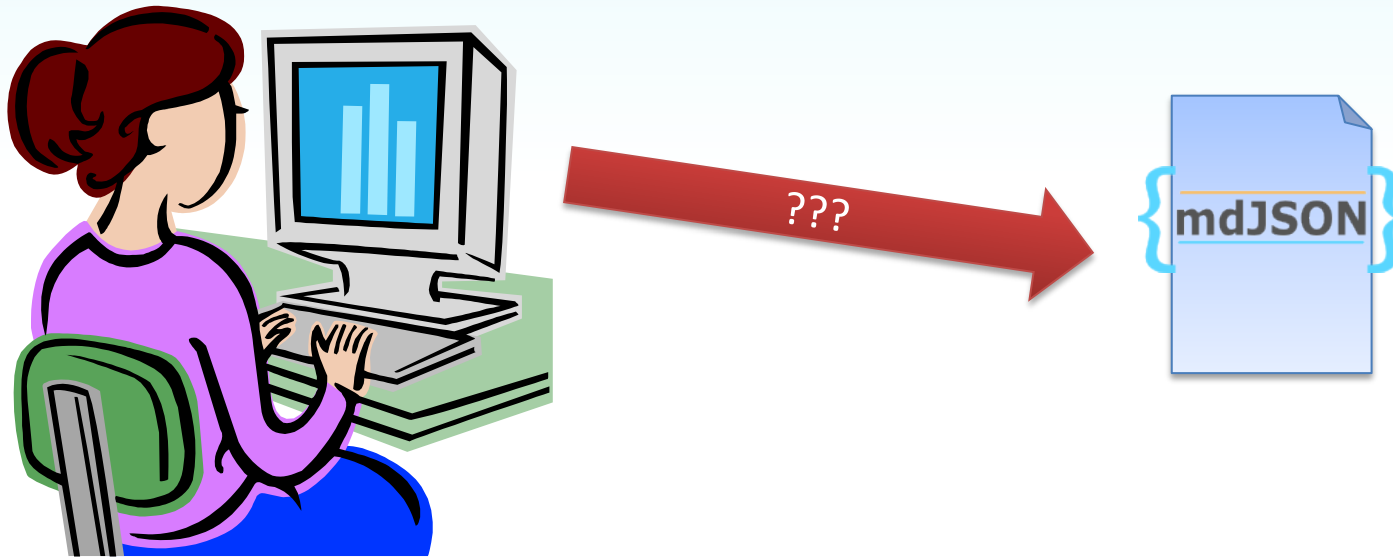




# mdTranslator with mdEditor



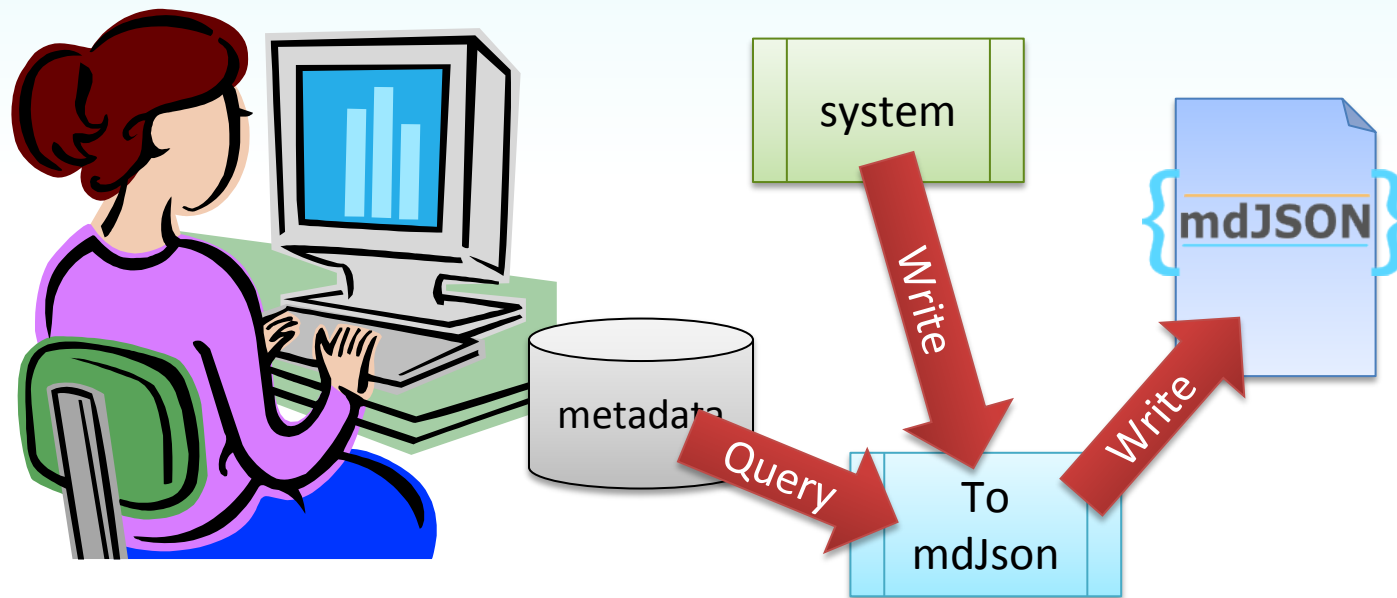
# mdJson file?



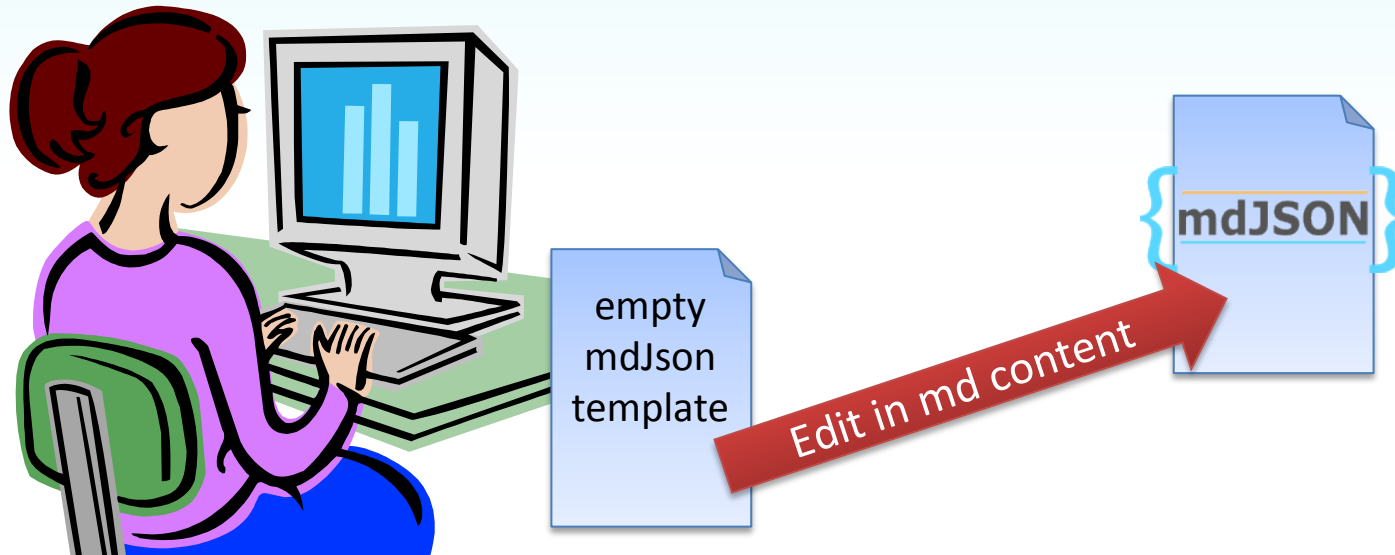
# mdJson from mdEditor



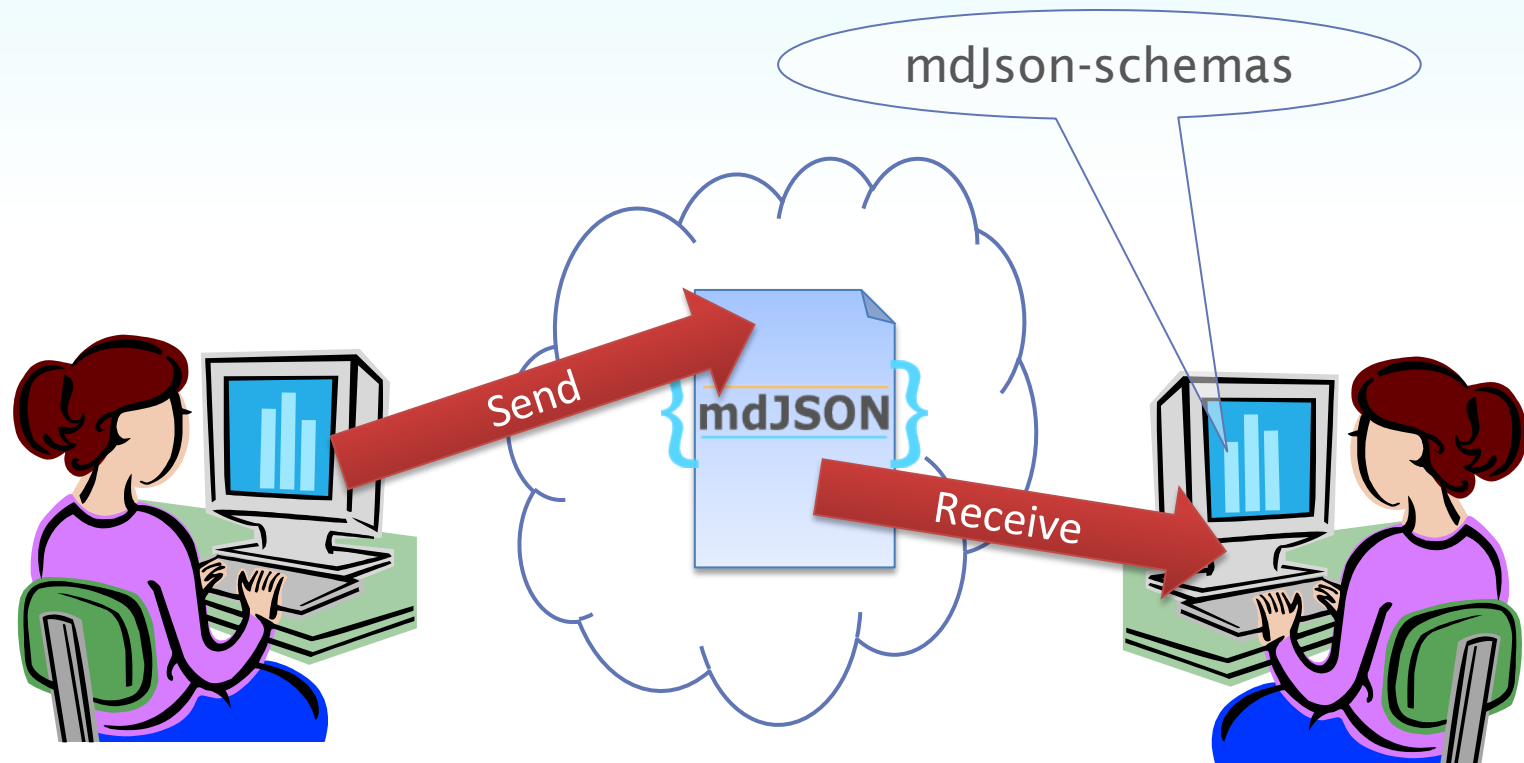
# mdJson from system



# mdJson from template



# Distributing mdJson



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# Documentation

mdBook



# mdBook



- GitBook
- Metadata Toolkit documentation
- [mdbook.adiwg.org](http://mdbook.adiwg.org)



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