We create digital tools to explore academic research in new ways.

KDL PRACTICES: Team, Systems, Data and Models Part 2
King’s Digital Lab

Digital researchers and data experts

We create digital tools to explore academic research in new ways.

Dr. Arianna Ciula

- Deputy Director of King’s Digital Lab
- Senior Research Software Analyst
- @ariciula
- arianna.ciula@kcl.ac.uk
Co-constitution (biodirectional influence & dependencies)

Ciula and Smithies (forthcoming).
Software Development Life Cycle & Lab Methods

Design Methods

- Initial Contact
- Design
- Requirement Assessment
- Monitor
- Build
- Evolutionary Development
- Kick Off
- Funding Application
- Deployment
- Release
- Post Project
- Maintain

Smithies and Ciula (forthcoming).
Double Diamond


Image ©Design Council
Workflows by RSE role

## Workflows by role

<table>
<thead>
<tr>
<th>Project Manager</th>
<th>Monitor methods</th>
<th>Monitor methods</th>
<th>Monitor methods</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Project management tools</td>
<td>Project management tools</td>
<td>Project management tools (upgrade tasks)</td>
</tr>
<tr>
<td></td>
<td>Communication and meetings (internal and external)</td>
<td>High level project timeframe (change freeze, release, user acceptance, events)</td>
<td>Communication</td>
</tr>
<tr>
<td></td>
<td>Governance documentation (including financial) and review</td>
<td>Communication</td>
<td>Governance documents (including SLA renewal, decommission authorisation)</td>
</tr>
</tbody>
</table>

- **Pre-Project**:
  - Discover / Define

- **Start**:
  - Evolving and iterative Cycle
  - Define, Design & Develop

- **Launch**

- **Post Project**:
  - Maintenance, Archive & Decommission
# Team, Systems, Data and Models

<table>
<thead>
<tr>
<th>Pre-Project</th>
<th>Start</th>
<th>Launch</th>
<th>Post Project</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discover / Define</strong></td>
<td><strong>Evolving and iterative Cycle</strong></td>
<td><strong>Define, Design &amp; Develop</strong></td>
<td><strong>Maintenance, Archive &amp; Decommission</strong></td>
</tr>
</tbody>
</table>

**Monitor methods**
- Project management tools
- Communication and meetings (internal and external)
- Governance documentation (including preliminary requirements and forward planning) and review

**Design methods**
- Research and technical assessment (e.g., terminology, standards, models, datasets, tools)
- Analysis, requirements elicitation and prioritisation (MoSCoW); project conceptualisation (including funding application)
- Review (meetings, workshops and focus groups) (monitor)

**Build methods**
- QA and Testing (e.g., following deployments; acceptance testing)
- Technical documentation
- Increments definition and timeboxing
- Release process and change freeze

**Maintain methods**
- Governance documents and review (including SLA renewal, decommissions process)
- Archiving (including data deposit) and sustainability

**Analyst**

**Monitor methods**
- Project management tools
- Communication (including website and social media) and meetings
- Governance documentation

**Design methods**
- Research and analysis
- Requirements refinement and re-prioritisation
- Modelling (abstract, data, standards mapping)
- Review (meetings, workshops and focus groups) and reports (monitor)
## Team, Systems, Data and Models

### PRE-PROJECT

**DISCOVER / DEFINE**

- Monitor methods
  - Project management tools
  - Communication and meetings
  - Governance documentation and review

- Design methods
  - Research and technical assessment (e.g. terminology, standards, models, datasets, tools, re-usability of components)
  - Analysis (e.g. mapping requirements to architecture and datasets), requirements elicitation and prioritisation; project conceptualisation and preliminary modelling (including high level solution architecture)
  - Review (meetings, workshops and focus groups) (monitor)

- Build methods
  - Logical and physical data modelling (including data structures and formats)
  - Information architecture
  - Translation and re-use of algorithms/software modules & packages
  - Data workflows pre-processing tools (e.g. import/export/cleaning/Validation)
  - Environment set up
  - Back-end interface and functionalities (including search) and mapping to CMS
  - Front-end templates and functionalities
  - Code and other technical documentation (Github - monitor)
  - QA, Testing (e.g. browser testing; unit tests; acceptance testing) and Debug (including server stack side)
  - Optimisation and code refinement
  - Increments definition and timeboxing (monitor)
  - Deployments (to development, staging and live environments)
  - Software upgrade
  - Release process and change freeze (monitor)

### START

- Evolving and iterative Cycle
  - Define, Design & Develop

- Monitor methods
  - Project management tools
  - Communication and meetings
  - Governance documentation

- Design methods
  - Research and analysis
  - Requirements refinement and re-prioritisation
  - Modelling (conceptual, data, standards mapping, algorithms)
  - Review (meetings, workshops and focus groups) (monitor)

- Build methods
  - Logical and physical data modelling (including data structures and formats)
  - Information architecture
  - Translation and re-use of algorithms/software modules & packages
  - Data workflows pre-processing tools (e.g. import/export/cleaning/Validation)
  - Environment set up
  - Back-end interface and functionalities (including search) and mapping to CMS
  - Front-end templates and functionalities
  - Code and other technical documentation (Github - monitor)
  - QA, Testing (e.g. browser testing; unit tests; acceptance testing) and Debug (including server stack side)
  - Optimisation and code refinement
  - Increments definition and timeboxing (monitor)
  - Deployments (to development, staging and live environments)
  - Software upgrade
  - Release process and change freeze (monitor)

### LAUNCH

**MAINTENANCE, ARCHIVE & DECOMMISSION**

- Monitor methods
  - Project management tools
  - Communication (e.g. bugs) and meetings
  - Governance documentation (including SLA renewal) and project review

- Maintain methods
  - Governance documents and review (including SLA renewal, decommission process)
  - Archiving and sustainability (including curation, backup, migration, upgrade)

- Build methods
  - Server/ices configuration
  - Software upgrade

---

MaDiH, RSE Training, King’s College London, 2 July 2019
<table>
<thead>
<tr>
<th>PRE-PROJECT</th>
<th>START</th>
<th>LAUNCH</th>
<th>POST PROJECT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DISCOVER / DEFINE</strong></td>
<td><strong>DEFINE, DESIGN &amp; DEVELOP</strong></td>
<td><strong>MAINTENANCE, ARCHIVE &amp; DECOMMISSION</strong></td>
<td></td>
</tr>
<tr>
<td>Monitor methods</td>
<td>Monitor methods</td>
<td>Monitor methods</td>
<td></td>
</tr>
<tr>
<td>- Project management tools</td>
<td>- Project management tools</td>
<td>- Project management tools</td>
<td></td>
</tr>
<tr>
<td>- Communication and meetings</td>
<td>- Communication and meetings</td>
<td>- Communication (e.g. bugs) and meetings</td>
<td></td>
</tr>
<tr>
<td>- Governance documentation and review (including sign off)</td>
<td>- Governance documentation</td>
<td>- Governance documentation (including SLA renewal) and project review</td>
<td></td>
</tr>
<tr>
<td>Design methods</td>
<td>Design methods</td>
<td>Design methods</td>
<td></td>
</tr>
<tr>
<td>- Research (e.g. identity) and analysis (including user research and analytics if applicable)</td>
<td>- Research (e.g. identity) and analysis (including user research and analytics if applicable)</td>
<td>- Research (e.g. identity) and analysis (including user research and analytics if applicable)</td>
<td></td>
</tr>
<tr>
<td>- Requirements elicitation (e.g. via questionnaire) and prioritisation; project conceptualisation and preliminary modelling (including content map, user flows and journeys/paths, site map)</td>
<td>- Requirements elicitation (e.g. via questionnaire) and prioritisation; project conceptualisation and preliminary modelling (including content map, user flows and journeys/paths, site map)</td>
<td>- Requirements elicitation (e.g. via questionnaire) and prioritisation; project conceptualisation and preliminary modelling (including content map, user flows and journeys/paths, site map)</td>
<td></td>
</tr>
<tr>
<td>- Requirements refinement and re-prioritisation</td>
<td>- Requirements refinement and re-prioritisation</td>
<td>- Requirements refinement and re-prioritisation</td>
<td></td>
</tr>
<tr>
<td>- Modelling (conceptual, refinement of content map, user flows/journeys/paths, site map)</td>
<td>- Modelling (conceptual, refinement of content map, user flows/journeys/paths, site map)</td>
<td>- Modelling (conceptual, refinement of content map, user flows/journeys/paths, site map)</td>
<td></td>
</tr>
<tr>
<td>- User testing</td>
<td>- User testing</td>
<td>- User testing</td>
<td></td>
</tr>
<tr>
<td>- Review (meetings, workshops and focus groups) and report (e.g. usability) (monitor)</td>
<td>- Review (meetings, workshops and focus groups) and report (e.g. usability) (monitor)</td>
<td>- Review (meetings, workshops and focus groups) and report (e.g. usability) (monitor)</td>
<td></td>
</tr>
<tr>
<td>Build methods</td>
<td>Build methods</td>
<td>Build methods</td>
<td></td>
</tr>
<tr>
<td>- Style (e.g. concepts and colours) and design (e.g. project title)</td>
<td>- Style (e.g. concepts and colours) and design (e.g. project title)</td>
<td>- Style (e.g. concepts and colours) and design (e.g. project title)</td>
<td></td>
</tr>
<tr>
<td>- Prototyping (wireframes, mockups)</td>
<td>- Prototyping (wireframes, mockups)</td>
<td>- Prototyping (wireframes, mockups)</td>
<td></td>
</tr>
<tr>
<td>- Translation and re-use of software modules &amp; packages</td>
<td>- Translation and re-use of software modules &amp; packages</td>
<td>- Translation and re-use of software modules &amp; packages</td>
<td></td>
</tr>
<tr>
<td>- Environment set up</td>
<td>- Environment set up</td>
<td>- Environment set up</td>
<td></td>
</tr>
<tr>
<td>- Back-end templates (e.g. Django)</td>
<td>- Back-end templates (e.g. Django)</td>
<td>- Back-end templates (e.g. Django)</td>
<td></td>
</tr>
<tr>
<td>- Front-end templates and interfaces</td>
<td>- Front-end templates and interfaces</td>
<td>- Front-end templates and interfaces</td>
<td></td>
</tr>
<tr>
<td>- Code (HTML, CSS, Javascript) and other technical documentation (Github - monitor)</td>
<td>- Code (HTML, CSS, Javascript) and other technical documentation (Github - monitor)</td>
<td>- Code (HTML, CSS, Javascript) and other technical documentation (Github - monitor)</td>
<td></td>
</tr>
<tr>
<td>- QA, Testing (e.g. browser testing, devices portability; staging environment testing; instructions for partners; acceptance testing)</td>
<td>- QA, Testing (e.g. browser testing, devices portability; staging environment testing; instructions for partners; acceptance testing)</td>
<td>- QA, Testing (e.g. browser testing, devices portability; staging environment testing; instructions for partners; acceptance testing)</td>
<td></td>
</tr>
<tr>
<td>- Optimisation and code refinement</td>
<td>- Optimisation and code refinement</td>
<td>- Optimisation and code refinement</td>
<td></td>
</tr>
<tr>
<td>- Increments definition and timeboxing (monitor)</td>
<td>- Increments definition and timeboxing (monitor)</td>
<td>- Increments definition and timeboxing (monitor)</td>
<td></td>
</tr>
<tr>
<td>- Deployments (to development, staging and live environments)</td>
<td>- Deployments (to development, staging and live environments)</td>
<td>- Deployments (to development, staging and live environments)</td>
<td></td>
</tr>
<tr>
<td>- Release process and change freeze (monitor)</td>
<td>- Release process and change freeze (monitor)</td>
<td>- Release process and change freeze (monitor)</td>
<td></td>
</tr>
<tr>
<td>- Add analytics</td>
<td>- Add analytics</td>
<td>- Add analytics</td>
<td></td>
</tr>
</tbody>
</table>
## Team, Systems, Data and Models

<table>
<thead>
<tr>
<th>Pre-Project</th>
<th>Start</th>
<th>Launch</th>
<th>Post Project</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discover / Define</strong></td>
<td></td>
<td></td>
<td><strong>Maintenance, Archive &amp; Decommission</strong></td>
</tr>
</tbody>
</table>

**Evolving and Iterative Cycle**

### Define, Design & Develop

- **Monitor methods**
  - Project management tools
  - Communication
  - Governance documentation
  - Security reviews (systems)

- **Design methods**
  - Technical assessment of infrastructure requirements (e.g. storage, CPU power, network bandwidth)
  - Requirements refinement

- **Build methods**
  - Environment set up and refinement to support back-end and front-end functionalities
  - Users set up (LDAP accounts)
  - Technical documentation
  - QA, Testing and Debug (systems)
  - Software upgrade

- **Maintain methods**
  - Project management tools
  - Communication and meetings
  - Governance documentation (including SLA renewal)

  - Archiving and sustainability (including migration, upgrade)

  - Server/ices configuration
  - Software (VM/OS) and infrastructure upgrade
We create digital tools to explore academic research in new ways.

Dr. Arianna Ciula

Deputy Director of King’s Digital Lab

Senior Research Software Analyst

@ariciula

arianna.ciula@kcl.ac.uk