

# Scholar@UPRM

**A community approach to organizing, sharing, and preserving the scientific and creative works of an institution: The case of the University of Puerto Rico (UPR), Mayagüez Institutional Repository**

Item Type	Poster
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Download date	2025-03-28 12:06:51
Link to Item	<a href="https://hdl.handle.net/20.500.11801/664">https://hdl.handle.net/20.500.11801/664</a>

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## STATEMENT

The University of Puerto Rico - Mayagüez (UPRM) Library made a commitment to support research across the entire scholarly life cycle. While liaising with faculty, embedded librarians completed an environmental scanning that identified gaps in institutional services, technology, and personnel. In particular, stakeholders expressed:

- Concern over loss of research data and inadequate storage
- Limited knowledge regarding organizing, sharing, and preserving information in a digital environment
- Difficulty in complying with open access mandates from granting agencies



A series of strategic partnerships were cultivated to address these needs.

## OBJECTIVES

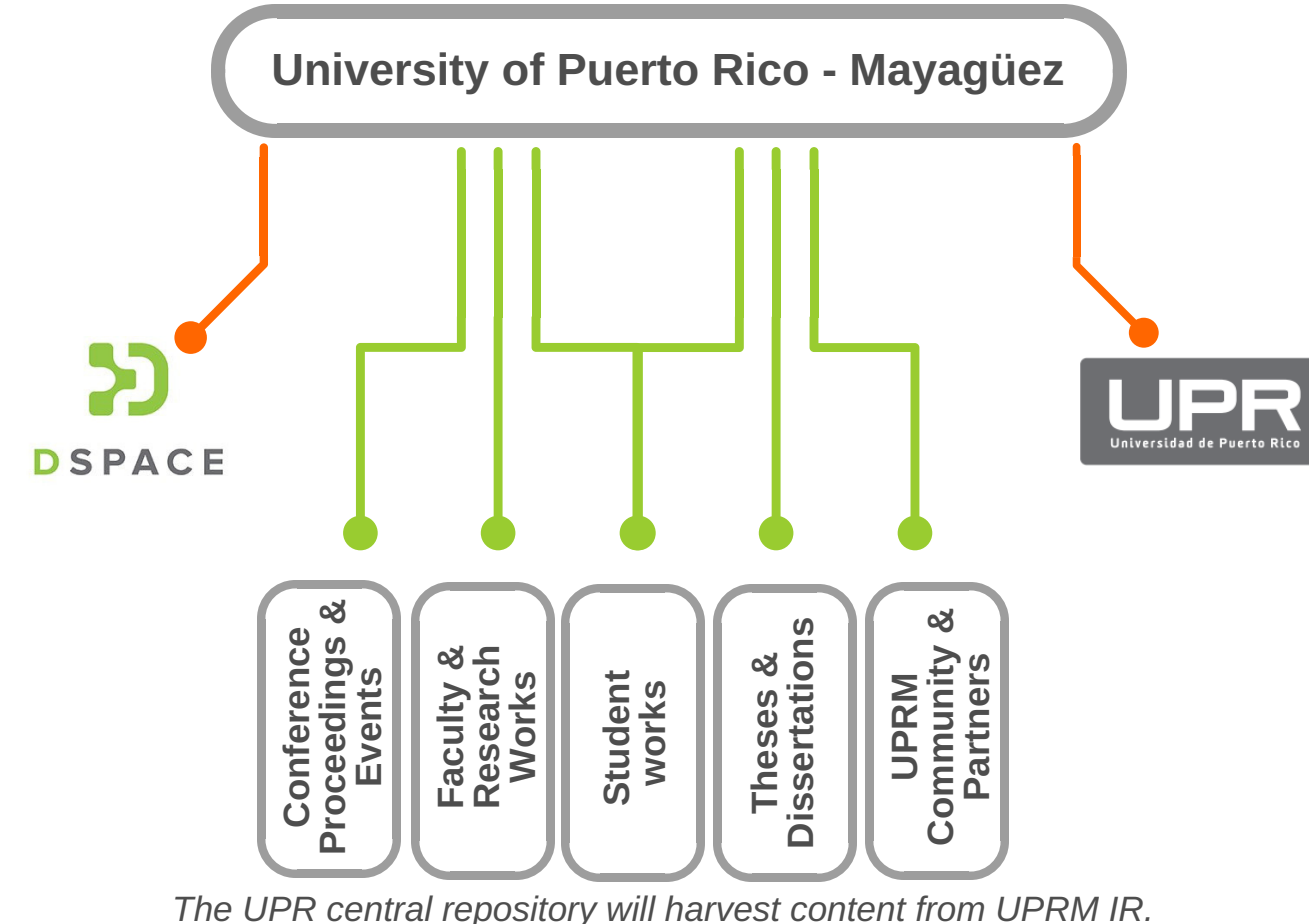
The goal of providing a comprehensive array of research services was divided into manageable projects starting with the building of an Institutional Repository (IR) to collect the scholarly products and creative works. Project objectives included:

- Plan, select, and implement the IR platform
- Define a structure and metadata schema
- Develop policies, procedures, and manuals
- Launch small-scale projects
- Promote the IR, advocate its usage, and guarantee its sustainability

The first ongoing project is the creation of a centralized point of access for Electronic Theses and Dissertations (ETDs), beginning with the Graduate Studies Office (GSO) webpage.

## PROJECT

In 2014, Dspace was selected by a team of librarians and IT personnel. Afterward, a single sign-on service (Shibboleth) was enabled; the IR hierarchical structure with a community and collections was designed, and working groups were established.



The UPR central repository will harvest content from UPRM IR.

## IMPLEMENTATION

Theses and Dissertations Collection

### Phase I: Migration from GSO webpage (launched in July 2017)

- Establish workflows & policies
- Standardize metadata fields
- Design input form
- Develop procedures manual
- Train submitters & reviewers
- Retrieve & upload records
- Edit metadata fields
- Approve deposit

### Phase II: Student self-deposit (pilot launched in January 2018)

- Agreements to support GSO in implementation
- Develop guide (print and online) for self-deposit

### Phase III: Library catalog migration

- Automate migration of ETDs

## OUTCOMES

### VALUE ADDED: METADATA AND STANDARDIZATION

**OFICINA DE ESTUDIOS GRADUADOS**  
UNIVERSIDAD DE PUERTO RICO - RECINTO UNIVERSITARIO DE MAYAGÜEZ

Tesis/dissertaciones digitales de Ingeniería Mecánica

2016  
AGOSTO - DICIEMBRE 2016  
Martínez-Rodríguez, Manuel J., 2016. Design of a Point-of-Care Incubation and Fluorescence Detection Unit for Microfluidic Lab-on-a-Chip Applications. 2.5 MB.

*enhanced search capabilities from 5 to 23 elements*

Galicia-Rodríguez, William E., 2016. Generation and Dynamic Control of Air Microbubbles Subjected to a Complex 3D Acoustic Field. 2.1 MB.

Valencia-Romero, Ambrosio De J., 2016. Elicitation of Fast-Worth Utilities of Quantified Gestalt Principles for Product Aesthetics. 6.5 MB.

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**Design of a point-of-care incubation and fluorescence detection unit for microfluidic lab-on-a-chip applications**

Some parts of the world are underdeveloped and lack access to complete laboratory facilities. Where there is access, laboratory testing is an expensive and time consuming process. The team at Weibel Lab addressed the matter by designing a microfluidic testing system, a device to perform multiple pathogen detection tests using minimal sample size in a short time. This work focused on designing a portable device capable of incubating and extracting data from microfluidic devices, specifically the Quick Chip, a device that simplifies genetic identification processes through RPA and fluorescent indicators but requires the use of a benchtop fluorescence reader. Device design thus required an optical detection mechanism as well as an excitation system to trigger sample emission. Using an equivalent concentration designated by the team at Weibel Lab, data capture centered on the use of a color CMOS camera using a series of filters. Data was then manually extracted by using ImageJ software.

View/Open  
INME\_MartinezRodriguezM\_2016.pdf (2.467Mb)

Author  
Martínez Rodríguez, Manuel J.

Metadata  
Show full item record

URI  
http://hdl.handle.net/20.500.11801/1469

From five descriptive elements available for retrieval on the GSO page, 19 metadata fields were locally selected and 5 are automatically generated by the platform to secure reliability and to enhance description, access, and discoverability.

dc.contributor.advisor	Resto, Pedro J.	en_US
dc.contributor.author	Martínez Rodríguez, Manuel J.	en_US
dc.date.accessioned	2018-04-27T11:58:04Z	en_US
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dc.description.abstract	Some parts of the world are underdeveloped and lack access to complete laboratory facilities. Where there is access, laboratory testing is an expensive and time consuming process. The team at Weibel Lab addressed the matter by designing a microfluidic testing system, a device to perform multiple pathogen detection tests using minimal sample size in a short time. This work focused on designing a portable device capable of incubating and extracting data from microfluidic devices, specifically the Quick Chip, a device that simplifies genetic identification processes through RPA and fluorescent indicators but requires the use of a benchtop fluorescence reader. Device design thus required an optical detection mechanism as well as an excitation system to trigger sample emission. Using an equivalent concentration designated by the team at Weibel Lab, data capture centered on the use of a color CMOS camera using a series of filters. Data was then manually extracted by using ImageJ software.	en_US
dc.description.abstract	Algunas partes del mundo están poco desarrolladas y no tienen acceso a facilidades de laboratorio completas. En los lugares que sí las tienen, las pruebas de laboratorio son costosas y toman mucho tiempo. El equipo en Weibel Lab se tomó la tarea de atacar el problema diseñando un sistema de pruebas microfluidico capaz de realizar múltiples ensayos de detección de patógenos en corto tiempo y con una cantidad mínima de muestra. El Quick Chip, un sistema que simplifica la identificación de genes utilizando un método de RPA junto con marcadores fluorescentes, pero se limita por el uso de una máquina de lectura de laboratorio. El diseño de este dispositivo requirió de un sistema óptico de detección además de un sistema de excitación para activar la emisión. Utilizando una equivalencia de muestra designada por el equipo en Weibel Lab, la captura de datos se centró en el uso de una cámara de color CMOS y un arreglo de filtros mientras que la data se extrajo manualmente utilizando el programa de ImageJ.	en_US
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dc.description.provenance	Made available in DSpace on 2018-04-27T11:58:04Z (GMT). No. of bitstreams: 1 INME_MartinezRodriguezM_2016.pdf:2587470 bytes, checksum: 0c9959199131c0eb0367b974e614 (MD5)	en_US
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dc.title	Design of a point-of-care incubation and fluorescence detection unit for microfluidic lab-on-a-chip applications	en_US
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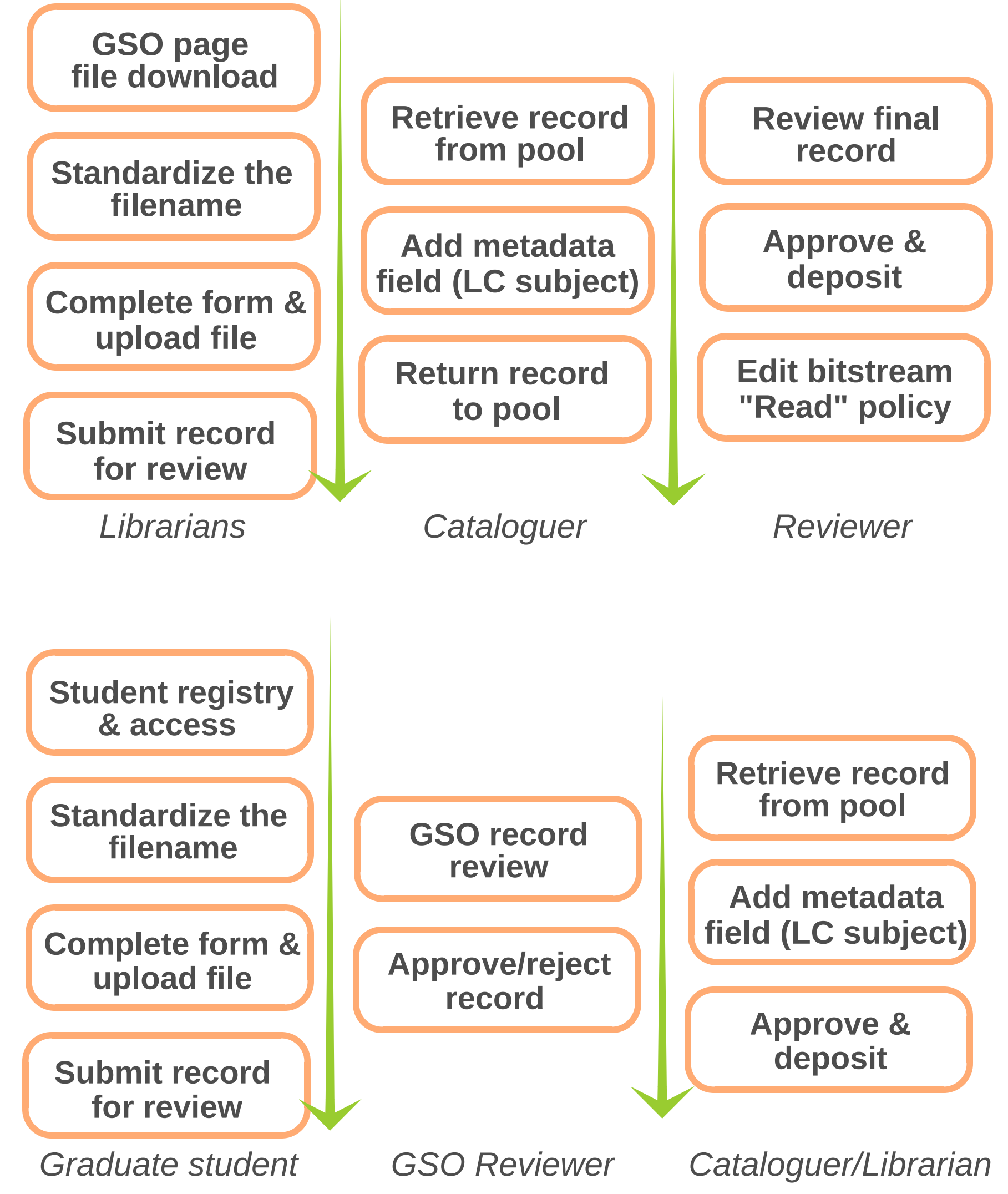
### PHASE I 2017 - Current

Due to plagiarism of original content by third parties, an additional step was needed to restrict the view of the ETDs bitstream to University of Puerto Rico accounts only.

### PHASE II 2018 - Pilot

The self-deposit is enabling students to select the rights to access and view privileges of their ETDs, via personalized Creative Commons licenses.

### ETDs WORKFLOW FOR PHASE I & PHASE II



## CHALLENGES

Challenges and drawbacks forced the team to rethink the logical steps several times. They are related to:

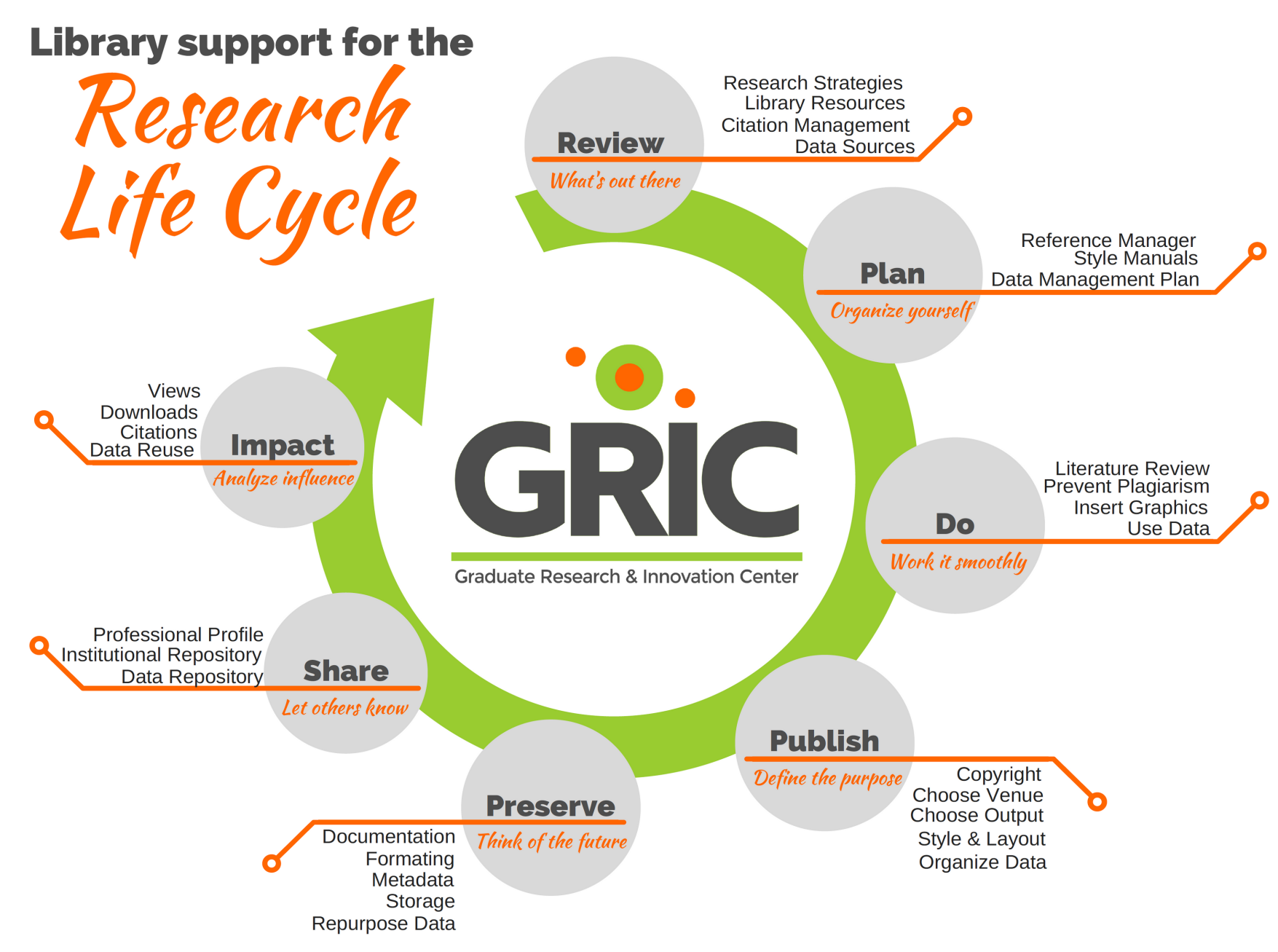
- |   |  |
|---|--|
| <p><b>Platform</b></p> <ul style="list-style-type: none"> <li>• Open source is not free!</li> <li>• Steep learning curve for Dspace</li> <li>• Requirement of local infrastructure or funding for cloud hosting</li> <li>• Definition of the permanent communities and collections</li> <li>• Maintenance</li> </ul> <p><b>Project administration</b></p> <ul style="list-style-type: none"> <li>• Implementation</li> <li>• Design of workflows</li> <li>• Standardization of metadata fields</li> <li>• Establishment of policies and procedures</li> </ul> | <p><b>Personnel</b></p> <ul style="list-style-type: none"> <li>• Steady reduction in library and IT personnel</li> <li>• Lack of dedicated personnel to carry out the tasks</li> <li>• Dearth of personnel with appropriate job skills and knowledge</li> <li>• Limited access to outside expert consultants</li> <li>• Buy-in of library staff to dedicate time to workflows</li> </ul> |
|---|--|

## OPPORTUNITIES

- Broaden meaningful partnerships across campus
- Secure library position within the Research Ecosystem of our Institution
- Availability of professional growth for personnel involved
- Develop librarians knowledge, skills, and experience related to scholarly communication and data management

## PLANS

- Guarantee long term staffing support and sustainability
- Implement ORCID (MIT Open Source license software aims to resolve author's ambiguity)
- Integrate with other open source platforms such as VIREO VIVO, and SHERPA-RoMEO
- Ingest automatically from APIs
- Expand deposit to include other types of scholarly products and creative works
- Design workshops, Libguides, and personalized consultations to raise awareness on the importance of preservation and open access to research and creative products at UPRM
- Lead campus-wide initiative created to develop an Institutional policy to collect and manage research data, creative work and innovation activities
- Create marketing and community engagement plan to showcase IR objects



UPRM Library's research life cycle highlights key stages where librarians offer tailored support to faculty and students during their research process. The institutional repository is one of research life cycle services that, in order to succeed, requires the academic community contribution.