

Building a Public Library Impact Data Hub: a Global Libraries “Data Atlas” for Storytelling, Strategy Development, and Collaboration

Tyler Schrag

Data Systems Director, Community Attributes Inc. (CAI), Seattle, USA.

tyler@communityattributes.com

Chris Mefford

President & CEO, Community Attributes Inc. (CAI), Seattle, USA.

chris@communityattributes.com

Julia Cottrill

Vice President, GMMB, Washington D.C., USA.

julia.cottrill@gmmb.com

Jeremy Paley

Program Officer, Global Libraries, Bill & Melinda Gates Foundation, Seattle, USA.

Jeremy.paley@gatesfoundation.org



Copyright © 2015 by the Bill & Melinda Gates Foundation, Community Attributes Inc., and GMMB. This work is made available under the terms of the Creative Commons Attribution 3.0 Unported License: <http://creativecommons.org/licenses/by/3.0/>

Abstract:

The Global Libraries initiative (GL) of the Bill & Melinda Gates Foundation provides access to information through technology in public libraries around the world — with an emphasis on national programs in developing and transitioning countries. The initiative’s multi-year grants fund efforts to understand local community needs, purchase computers and other equipment for libraries to help meet those needs, train library staff, and help libraries build public support for long-term funding.

Building and sustaining public support increasingly requires public libraries to show evidence of their ability to contribute to development—not just through traditional performance indicators, but in measurable, user-focused outcomes like job skills developed, education attained, employment found, money saved, and livelihoods improved.

In 2012-2013, GL grantees worked together to develop a Common Impact Measurement System (CIMS), which they now employ to quantify their individual and collective impact on public library users. Data collected through CIMS enables public libraries to expand their focus from the services they provide to the outcomes they help individuals and communities realize. The CIMS framework includes required and optional indicators across seven categories: Digital Inclusion, Health,

Education, Economic Development, Communication, Culture & Leisure, and Government & Governance.

In 2014 Global Libraries worked with a data management and software development firm, Community Attributes Inc., to build an innovative, dynamic online results reporting and visualization system for the data that grantees collected, called the Data Atlas. This new website presents public library data in an interactive way, giving the Global Libraries initiative and grantees insight into dynamic results as they are reported.

The paper will describe how the Data Atlas was designed specifically for use in global advocacy before concluding with a vision for how the Atlas could become a valuable impact data hub for public libraries – and the institutions that support them – beyond the confines of this cohort of foundation grantees.

Keywords: data, advocacy, analytics, impact, outcomes, performance, public libraries, M&E, assessment, metrics, indicators, development, software, mapping, evaluation

Building a Public Library Impact Data Hub: a Global Libraries “Data Atlas” for Storytelling, Strategy Development, and Collaboration

Background on the Global Libraries Program of the Bill & Melinda Gates Foundation

Knowledge has the power to transform lives and strengthen communities. Particularly in developing and transitioning countries, people need relevant and timely information to engage and compete in a dramatically changing world. As information and public resources move online, any gap in digital access and skills can quickly become a gap in opportunity. Among their many services, public libraries provide communities with access and support to close this gap.

Bill and Melinda Gates identified the unique potential of public libraries more than two decades ago when they chose libraries as the recipients of their Foundation’s first grants. It’s why they decided to fund free Internet access in U.S. public libraries as a way to give all people ready access to information and the opportunities that come with digital skills and connectivity. And it is why the Bill & Melinda Gates Foundation’s Global Libraries program (GL) has grown to strengthen public library infrastructure and capacity in more than 25 countries around the world.

GL focuses on providing access to technology in public libraries throughout entire countries with an emphasis on developing and transitioning countries. GL’s multi-year grants (or “Country Grants”) fund efforts to understand local information needs, purchase equipment for libraries that can help meet those needs, train library staff, and help libraries build public support for long-term funding.

Measuring the Impact of Public Library Services

As advances in technology have changed communities’ needs and shaped the services that libraries offer, they have also made it possible for libraries to better understand and steer their impact. Ensuring that library services can keep up with the changing needs of their communities begins with the ability to assess those needs and measure how the public library rises to meet them.

In a modern, digital world, public libraries support development by helping people be better informed, better connected, and more engaged as learners, creators, and producers. Yet often libraries struggle to articulate, particularly in quantitative terms, how their services are improving people’s lives. Long-term funding for public libraries all over the world is threatened because libraries have not been able to articulate their value in a digital age.

For this reason, GL has encouraged each country grant to dedicate substantial effort – and funding – toward assessing the impact that each country’s public libraries are having on users’ lives. The impact assessment work that GL’s Country Grantees conduct is based on the importance of understanding local needs, designing services to meet those needs, and measuring progress for the purposes of learning, improvement, accountability, and advocacy.

For almost fifteen years, grantees have designed and implemented programs tailored to local environments by targeting individuals’ and communities’ needs as well as local governments’ priorities. By addressing local funders’ particular priorities and promoting libraries’ impact in these domains, library development programs have demonstrated the important contributions that they make and have attained increased, sustainable funding.

This approach theoretically means library programs should focus on measuring only what is locally relevant. And while GL had long used a set of standard output measures (known as Performance Metrics, these indicators covered topics such as libraries reached, public Internet access workstations installed, library staff trained, library users trained, changes in library budgets, etc.)¹, how to assess user outcomes and impacts was left entirely to grantees’ discretion.

Eventually the lack of standardization created challenges for both advocacy and management of the global portfolio of similar grants. Without standard impact measures across projects, GL could not communicate about aggregate achievements to an internal Foundation audience or to the external public library field. Advocacy and communication efforts were further limited by GL’s inability to situate any single grantee’s work within an international context. Libraries were missing out on the opportunity to be a part of the international conversation about development. Several of the grantees measured similar concepts, such as public libraries’ contribution toward reducing unemployment, but did so in dissimilar ways, making comparison impossible. As a result, any information about how public libraries contribute to Millennium Development Goals or the successor Sustainable Development Goals was likely to be anecdotal, rather than systematic and comparable across countries.

From Shared Outputs to Shared Impact: the Common Impact Measurement System (CIMS)

While the set of output-oriented Performance Metrics has allowed grantees to measure the growth of their technology and services, it became clear to GL’s leaders, staff, and grantees that in order to continuously improve libraries’ services, evaluate the global scope of their impact, seek new types of partnerships, and advocate for more government support, Country Grantees needed a standardized way to demonstrate how providing access to technology in libraries *improves people’s lives*. In turn, to advocate effectively for funding that sustains access to information through technology, individual libraries must also be able to communicate the benefits they provide to individuals and communities.

Today, the Global Libraries initiative seeks to equip public libraries with evidence of their ability to drive development—not just through traditional performance indicators, but in measurable results like job skills developed, education attained, employment found, money saved, and livelihoods improved. GL staff and Country Grantees co-designed – and now employ – a Common Impact Measurement System (CIMS) to quantify their work’s impact on public library users.

¹ The Global Libraries Performance Metrics are a set of required and recommended indicators that measure the implementation achievements and monitor the progress of GL’s country grant programs. These metrics closely follow the international standards in ISO 2789/2006 and ISO 11620/2008. GL consulted with grantee impact specialists to design and refine the metrics and to ensure that all grantees collect data in standard, comparable ways, using identical definitions and methods. By providing a standard set of definitions and methods for use across countries, the PMs enable grantees to collect data that can be compared and aggregated for the purpose of collective learning, improvement, accountability, and advocacy. Today, all GL Country grantees use these metrics.

Data collected through CIMS enables public libraries to shift their focus from the services they provide to the outcomes they help individuals and communities realize. By agreeing to report the same measures using standardized definitions and methods, the Global Libraries initiative and Country Grantees are able to:

- **Aggregate data** to determine the total impact of GL Country Grantees and enhance their ability to advocate for the importance of public libraries.
- **Track data over time** to identify and monitor trends in public library use and reach, and incorporate this information into Country Grant programs and library services.
- **Compare data across countries** to allow grantees to learn from one another’s successes and challenges.
- **Refer to a central, definitive source** in communications and advocacy activities, so there is no confusion about where the numbers come from or how they are calculated.

The CIMS framework is composed of outcomes and that span seven issue areas:

Term	Definition
Digital Inclusion	People use public library services to access technology, build technology-related skills and confidence, and make beneficial use of digital content and services that meets their needs. Public libraries are a place where library staff, volunteers and visitors can help an individual or groups become more digitally included.
Culture and Leisure	People use public library services to enrich their lives, preserve or promote their cultural heritage, and enjoy recreational or leisure activities. Public libraries are social hubs and catalysts for community engagement.
Education	People use public library services to gain and impart knowledge and skills, improve their academic performance, acquire job-related skills and qualifications, and engage in lifelong learning.
Communication	People use public library services to communicate and connect with others, and enhance their sense of inclusion and community.
Economic Development	People use public library services to identify employment opportunities, increase their income and productivity, and improve their livelihoods.
Health	People use public library services to inform health-related decisions and improve their own or others’ mental and physical health.
Government and Governance	People use public library services to access government information and services, engage in civic activities, and interact with government officials.

The Seven CIMS Categories (for a complete list of indicators, see the Data Atlas at www.glatlas.org)

It is important to note that despite the move toward standardization over the past three years since CIMS was introduced, other data points remain important to grantees. Global Libraries still encourages grantees to collect information that is relevant to their local efforts and priorities. For example, grantees often collect data about capacity of library staff, the strength of library partnerships, the efficacy of the policy environment, and people’s perceptions about libraries – none of which are covered by the standard measurement systems introduced by GL.

Developing the Data Atlas to Bring CIMS to Life

It was also clear that the substantial new investments in collecting CIMS data would be worthless without a way to manage and engage with the data. GL heard from several Advocacy Specialists (members of the Country Grant teams who design and implement advocacy trainings for library staff and are charged with helping their project teams make the most powerful and convincing case to policymakers) that it was important to give all of the grantees access to the data and provide tools to help them use it for advocacy. GL realized it would not be acceptable to have the data remain in the hands of data managers who would provide custom reports but also serve as gatekeepers. We needed an open access solution that would also be easy for anyone to use, even people with no background in statistics, computer programming, and research.

So in 2014 GL worked with a data management and software development firm, Community Attributes Inc., to build an innovative, dynamic online results reporting and visualization system for the data that grantees collected. We called this the “Data Atlas.” This new website (accessible at www.glatlas.org) presents public library data in an interactive way, giving the Global Libraries initiative and grantees insight into dynamic results as they are reported.

The Data Atlas would allow CIMS to fulfill its potential, but would also enable GL and grantees to:

- Tell stories about libraries’ work within the context of their communities’ needs by bringing together disparate data sets.
- Refer to a central, definitive source in communications and advocacy activities, so there is no confusion about where the numbers come from or how they are calculated.

After a detailed process of gathering requirements for the system, Community Attributes designed the Atlas with the following primary user groups and use cases in mind:

- **Global Libraries Program Staff** - program officers (POs) need data and analysis to monitor their grantees’ progress and identify which programs are most effective. Ideally data should help program officers discover patterns and relationships in measures that explain differences among grantees. The director and deputy director needed a system that could provide on-demand access to data that could be used in speeches.
- **Global Libraries Monitoring and Evaluation (M&E) Staff** – GL has dedicated staff who coordinate the team’s approach to program evaluation and impact assessment. As internal thought leaders, they assume primary responsibility for maintaining the list of standard metrics and overseeing the development of the Data Atlas system.
- **Grantees: Impact Specialists** - Impact Specialists are responsible for entering results into the system. They use the system to analyze, visualize, and share data.
- **Grantees: Advocacy Specialists** - Advocacy Specialists use data for story-telling and reinforcing anecdotal evidence about libraries’ impact. They are interested in incorporating outputs of the system (data and data visualizations) into materials they use to advocate on behalf of libraries. Other members of the grantee teams (such as the program directors) may access and use the data in similar ways.
- **Partners and Other Parties** – Partners and other external parties may benefit from access to data about the impact GL grantees are having in their countries. For example, policymakers and advocates in one country could use the impact data from a neighboring country to advocate for a similar investment.
-

Finding the Right Tools to Use the Data: What Advocacy Specialists Asked For

Advocacy Specialists from all GL grant programs are experienced in using data about the impact of public libraries as a tool to advocate for long-term library funding and supportive policies and the local, regional, and national levels. To help ensure that the Data Atlas would be a useful and relevant advocacy tool beyond the original cohort of grantees, GL invited these Advocacy Specialists to experiment with an early version of the Data Atlas and offer their input on how the tool could be improved to support advocacy in their countries and beyond.

In October 2014, the Advocacy and Impact Specialists from nearly 20 GL country grant programs met for a two-day joint convening in Bucharest, Romania, as part of a longer week of meetings for both

groups. The convening was organized to provide an opportunity for GL grantees to discuss the intersection of their advocacy and impact work and practical tools that grantees can use to strengthen the library field – and the Data Atlas featured prominently in this discussion.

In that meeting, Advocacy Specialists recommended additional information or features that the system could provide that would be beneficial to their advocacy work. Three important themes emerged:

- There was a clear desire for ways to pull forward components of the data in customized ways.
- There was strong interest in ways the system could provide additional context for the data, such as links to further country information or explanation of the methodology behind the findings.
- There was a general consensus to use the tool as a platform to link to external resources rather than adding more components to the Data Atlas.

The two most popular suggested enhancements were the ability to generate customizable fact sheets or infographics to use as advocacy tools, and the ability to display aggregated data points among any selected countries and show a comparison between any two data points. Other proposed additions or improvements to the Data Atlas included:

- Provide a tool to generate **customizable fact sheets or infographics** using uploaded data
- Allow for **aggregation of specific data points** – such as displaying data for multiple countries at once (not just regional, but any combination of countries) – enabling users to compare selected variables across countries, and allowing comparison or segmentation of data points by country characteristics like population or type of library system
- Include a **public-facing narrative** about the collective impact of GL grantees that would be relevant for external audiences
- Embed a **sharing tool or function** that allows users to link to a graphic or data point from an outside web page (such as a blog post or report) or share charts or maps via social media
- Include impact data reported by **other global library organizations** like EIFL and IFLA.
- Provide a way for users to **import their own data** (rather than working through Community Attributes or another intermediary to upload the data)
- Link to existing **quantitative library impact evidence**, such as databases of library success stories
- Enable users to **download raw data** from the system
- Add introductory level **context for the data**, such as definitions of key terms like “public library”
- Provide tools to **simplify data analysis**, such as a summary of most important data points or access to the survey instruments that were used to generate the data

Advocacy Specialists who were part of the review process enthusiastically agreed that the Data Atlas has the potential be a valuable advocacy tool, as both a hub for impact data and a tool for connecting those data with additional compelling qualitative evidence of the impact of public libraries. By allowing individual libraries, national libraries, library associations, and other library sector organizations to upload their data, compare results across common metrics, and share stories, GL grantees envision the Data Atlas as an accessible global platform for using impact data to make the case for sustained funding for public libraries.

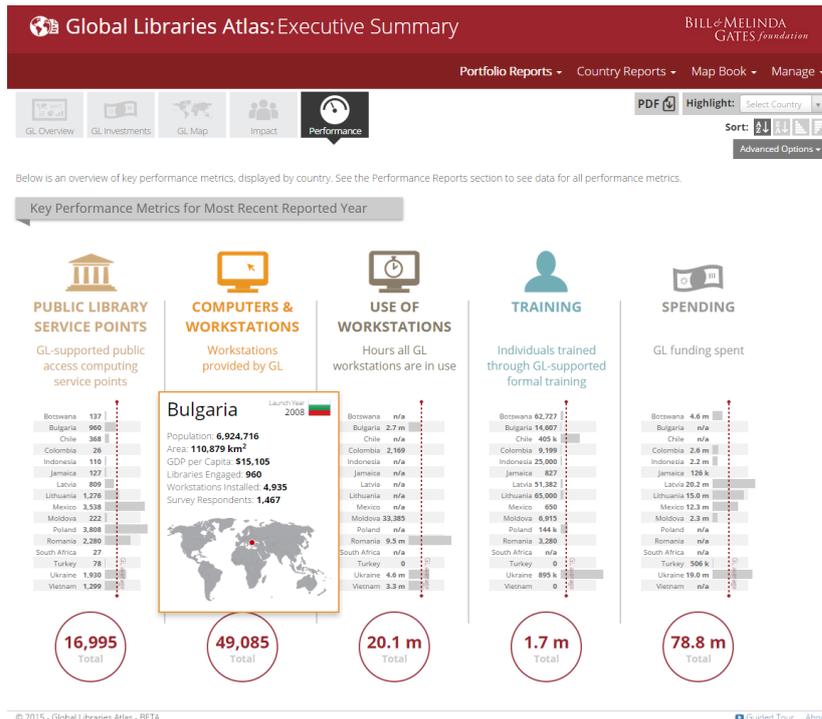
Building the Tools: The Global Libraries Data Atlas Today

The following sections of this paper display and detail the functionality developed for the Data Atlas:

Data Dissemination: Summary Reports

The central content of the Data Atlas resides in the various summary reports on the site, which display over 75 metrics related to public libraries for each country. While the ultimate vision of the Atlas is to accommodate any data related to public libraries, current data are segmented into two categories:

- 1) **Performance** – Performance Metrics detail library infrastructure, logistics, and activities across six areas: Public Library Service Points, Computers and Workstations, Use of Workstations, Spending, Training, and Library Activities.



Executive Summary: Key Performance Metrics

- 2) **Impact** – Impact metrics relate to how patrons use public libraries, which are drawn from surveys administered by each country adhering to the Common Impact Measurement System (CIMS) framework, mentioned above.



Executive Summary: Key Impact Metrics

Displaying such a vast amount of data points on one website is no small challenge, and for this reason the Data Atlas uses a feature called “mouse-overs” to embed additional information in an interactive way. Moving the computer mouse around each page can reveal additional data and context. In the picture above, a mouse-over is providing demographic details and cross-tabs for CIMS metric Number 8, pertaining to the number of library visitors who have saved money as a result of using the technology provided by the public library.

Impact Modeling: User Outcomes at the Country Level

Over 40 metrics are recorded for each country that administers surveys as prescribed by the Common Impact Measurement System (CIMS), providing a rich perspective on the way that patrons are using public libraries in each country.

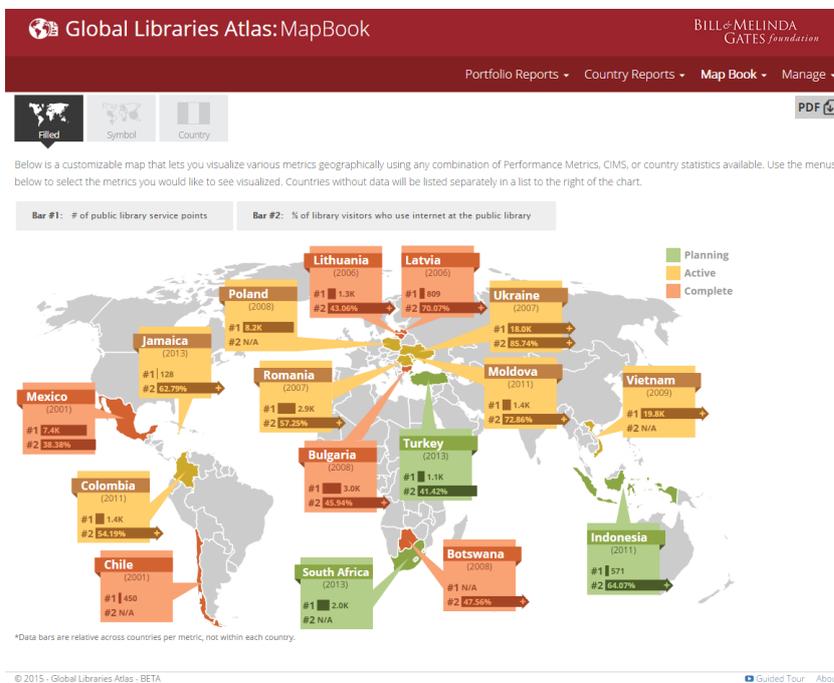
CIMS surveys also ask respondents to provide demographic information, which can reveal powerful insights into not only how library users are experiencing the library, but who the users are.



Country Reports: Digital Inclusion Impact Metrics

Maps: Making Data Personal

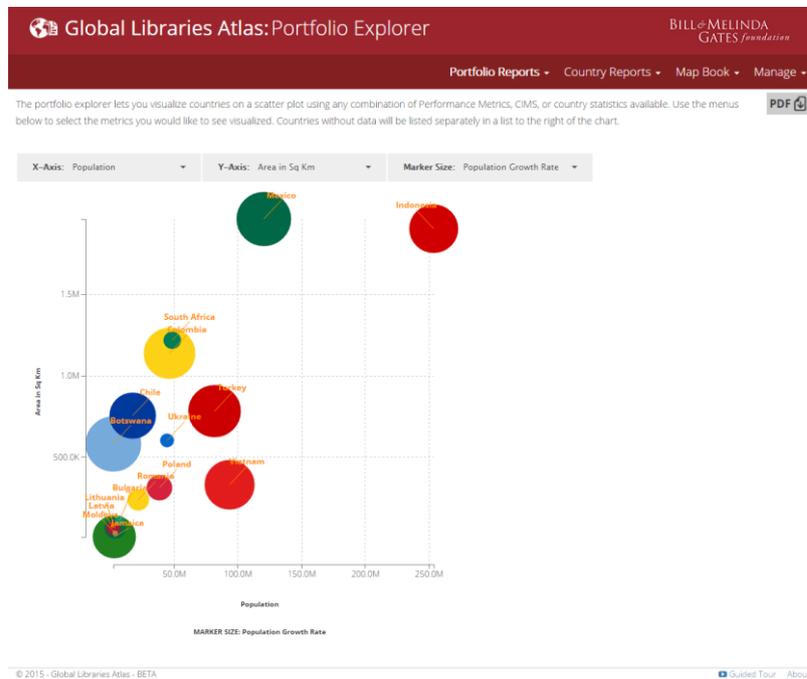
Maps have an amazing ability to personalize data by showing it in the context of where we live, while also reminding us of the universal role that public libraries are fulfilling across the world. The GL Atlas can map any of the 75+ metrics tracked in the system at the country level, and work is currently underway to implement mapping at the local community level in several pilot countries.



Map Book: Filled Label Map

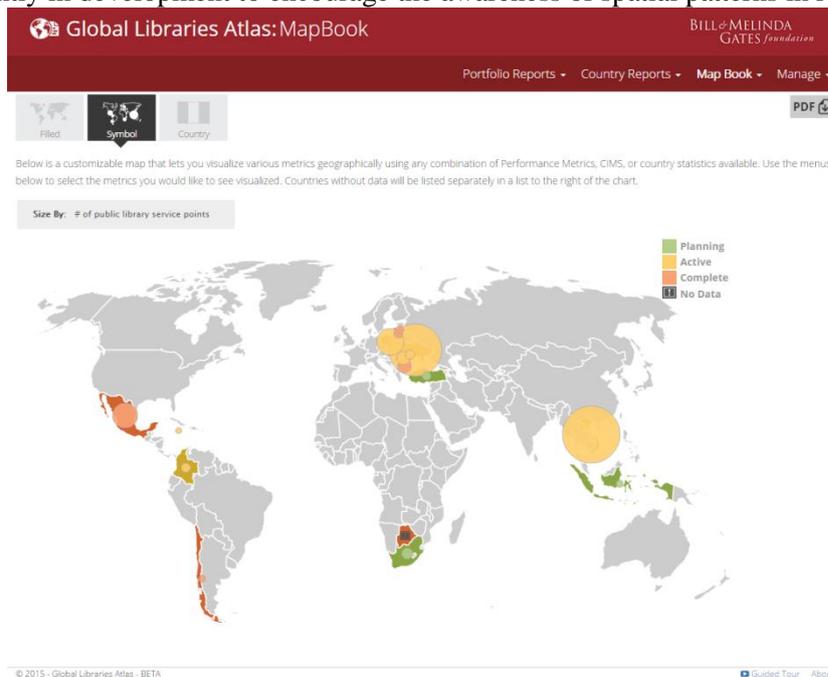
Data Exploration: Finding Stories in the Data

The GL Atlas also features several data visualization and mapping tools designed to foster exploration of insights and patterns within the data. The Portfolio Explorer is a scatter plot tool in which countries are displayed with any combination of three metrics assigned to the X Axis, Y Axis and size of the circle, respectively. Scatter plot tools like this can very valuable to examine potential relationships between various metrics.



Portfolio Explorer Scatter Plot Tool

Several mapping tools have also been developed, in which any metric(s) can be displayed as sized points or labels on an interactive worldwide map. Additional mapping functionality like this is currently in development to encourage the awareness of spatial patterns in reported data.



Map Book: Symbol Map

Qualitative Context: Aligning Personal Stories with Data

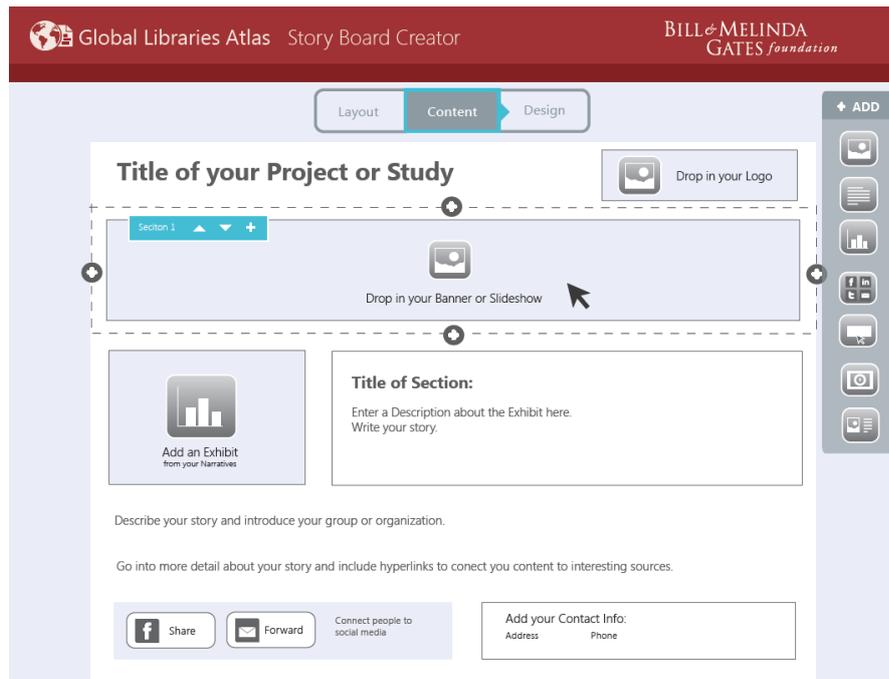
While statistics can tell compelling stories, data often does not tell the full story. The Data Atlas will soon feature the ability to tag pictures, videos, websites, and short text pieces with countries, metrics, and/or projects tracked on the GL Atlas, allowing quantitative and qualitative evidence of the value of public libraries to be organized in one place. The example below shows how a short movie can be “tagged” to the indicator that pertains to a similar theme. In this way, stories can be paired with statistics.

The screenshot displays the 'Global Libraries Atlas: Impact Summary' interface. The top navigation bar includes 'Home', 'Portfolio Reports', and 'Impact Summary'. The main content area is titled 'Narratives' and features a filter for 'CIMS 5' and 'Country Grant'. Below this, there are sections for 'Links to Websites (5)', 'Videos and Pictures (3)', and 'Highlights (2)'. A large video player is featured, titled 'Providing Internet Access in Latvia's Public Libraries', showing a man and a woman at a computer. The video player includes a description, date (April 27, 2009), and tags (Latvia, Country Grant, CIMS 5, CIMS 14, CIMS 30). At the bottom, there is a form to 'Add a Narrative' with fields for Type, Link, Title, Description/Highlight Text, and Tags.

PRELIMINARY DESIGN: Qualitative Content Integration

Advocacy Tools: Empowering Storytelling

Later this year, Data Atlas users will be able to save and compile any charts or maps found throughout the site with saved qualitative content (pictures, videos, etc.) into a storyboard featuring a customizable layout. Users can customize titles, text, logos and colors to produce a branded product to be used for advocacy, and storyboards will be able to be explored as a PDF or shared as an interactive website that will always feature the most up-to-date data.



PRELIMINARY DESIGN: Storyboard Creator

Vision for the Future: A Tool for Libraries and their Advocates around the World

Our hope is that the Data Atlas offers GL’s program officers and grantees a tool that they can use to make good decisions about how to allocate resource to the programs and services that are having the most impact, as well as to create compelling visual products that will resonate with policymakers and other stakeholders.

But the application and utility of the Data Atlas need not be limited to the universe of GL grantees. Public library partners, agencies, governments, aid organizations, advocates, and coalitions can use the data already included in the Data Atlas to demonstrate the value of public libraries and learn more about engaging with libraries to meet community development goals. Anyone can access the site and its data, which today cover Botswana, Bulgaria, Chile, Colombia, Indonesia, Jamaica, Latvia, Lithuania, Mexico, Moldova, Poland, Romania, South Africa, Turkey, Ukraine, the United States, and Vietnam. New data sets are frequently added. Potential ways that others could use these data may include:

- Building a case for public libraries as key implementation partners in development projects.
- Implementing outcomes-based measurement in other library systems or community programs.
- Choosing impact measures to incorporate into future library development projects.

And while the Global Libraries Data Atlas was originally designed specifically to house data from Bill & Melinda Gates Foundation grantees, development is currently underway to explore the expansion of the tool to broader audiences in the library field, including government officials, library directors, library associations, librarians, and partner organizations. **Efforts are currently underway to integrate additional datasets from non-grantee countries**, including detailed local-level library and community data.

As a truly *global* “library impact data hub,” with library system and impact data mapped, contextualized, and open to all, the Atlas could become a platform that individual libraries, National Libraries, Ministries, library associations, and other library sector organizations use to upload their data, compare results across common metrics, share stories, develop and track the progress of strategies, collaborate to turn findings into messages, and conduct advocacy.

We hope the Data Atlas will help library leaders and staff worldwide understand and communicate the impact of their libraries' services and programs, so that public libraries can continue to respond to their communities' evolving needs long into the future.

Acknowledgments

Kelly Carey, GMMB

Anne Green, Luma Consulting

References

None