

FOLIO Insights: Evolving Open Source SaaS Services

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Transform lives by providing relevant and reliable information when, where, and how people need it.

Modern Software Landscape is Exceedingly More Open



Transparency



Interoperability



Access



Partnerships



Considerations for Research Libraries

Can Open
Source Satisfy?

Creation

Evolving needs in how scientific literature is created, shared and understood

Consumption

Evolving user expectations to find, access and use reliable information in teaching, learning and research

Management

Evolving need for innovation and choice in library workflows

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Challenges with research today: beyond the article

Data, computational code, methods

- Efficiency
- Findability
- Re-use and reproducibility
- Collaboration
- Publishing
- 'Compliance'



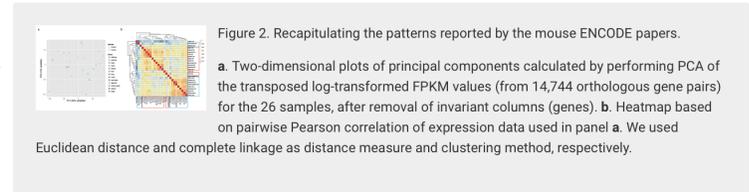
- Dissemination
- Discovery
- Preservation
- Insights

Where is the underlying code, data and methods?

How best to publish, share, collect and preserve the underlying output?

values (computed, using Cutlinks¹⁴, based on the read alignments to the genome). This analysis was done within R environment v 3.1.3 GUI 1.65 Snow Leopard build (6912)¹². See Supplementary Text 1 for detailed commands, and a supplement zip file for the R input (available in Zenodo: <http://dx.doi.org/10.5281/zenodo.17606>).

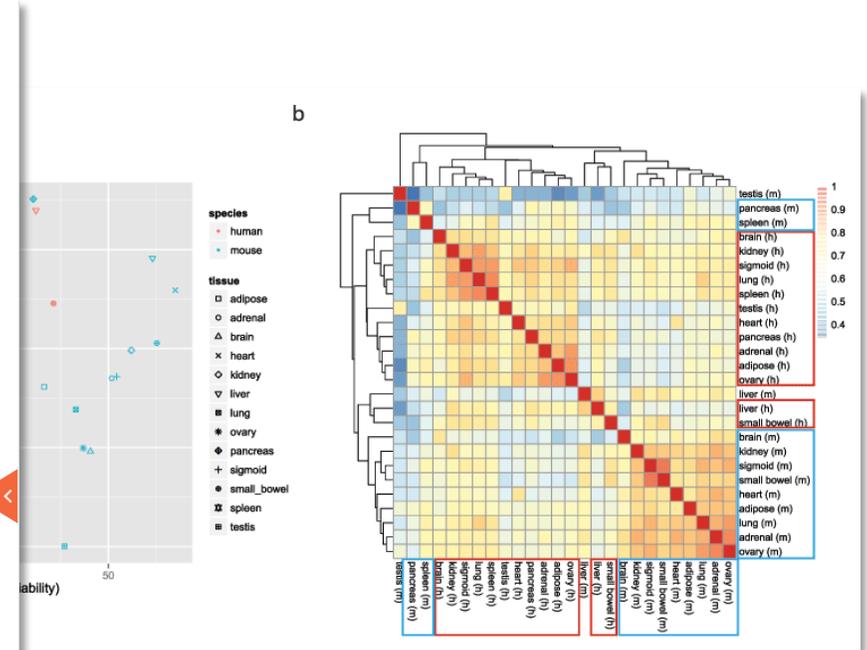
We log₂-transformed the FPKM matrix (after adding 1 to avoid undefined values). To visualize the data, we used an approach that is similar in principle to that used by the ENCODE mouse consortium and Lin *et al.* Specifically, we used the function 'prcomp' (with the 'scale' and 'center' options set to TRUE) to perform principal component analysis (PCA) of the transposed FPKM matrix (so that samples were now in rows and genes in columns), after removal of invariant columns (genes). Scatter plots of the PCA results were generated using the ggplot2 package¹³. In agreement with the findings of Lin *et al.*² the samples cluster mostly by species (Figures 2a, Figure S1 and Figure S2). We also plotted the heatmap of the matrix of Pearson correlations between the 26 samples, using the pheatmap function from the pheatmap package v1.0.2¹⁴ with default settings (i.e. complete linkage hierarchical clustering using the Euclidean distances). Again, samples from the same species tend to cluster together (Figure 2b).



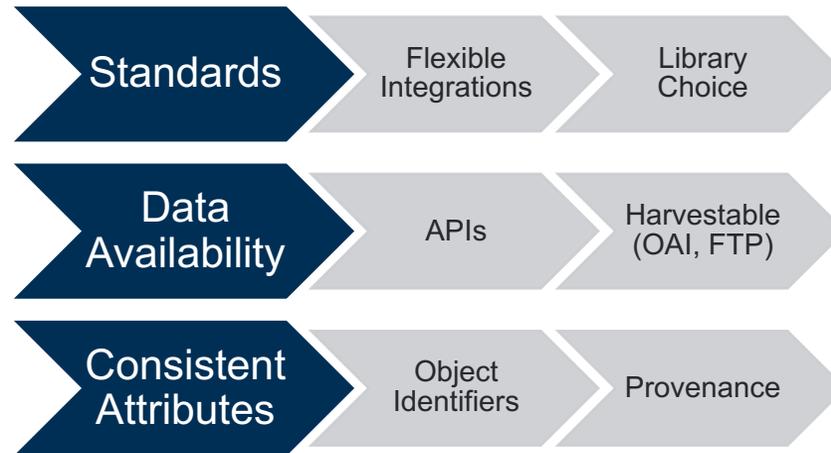
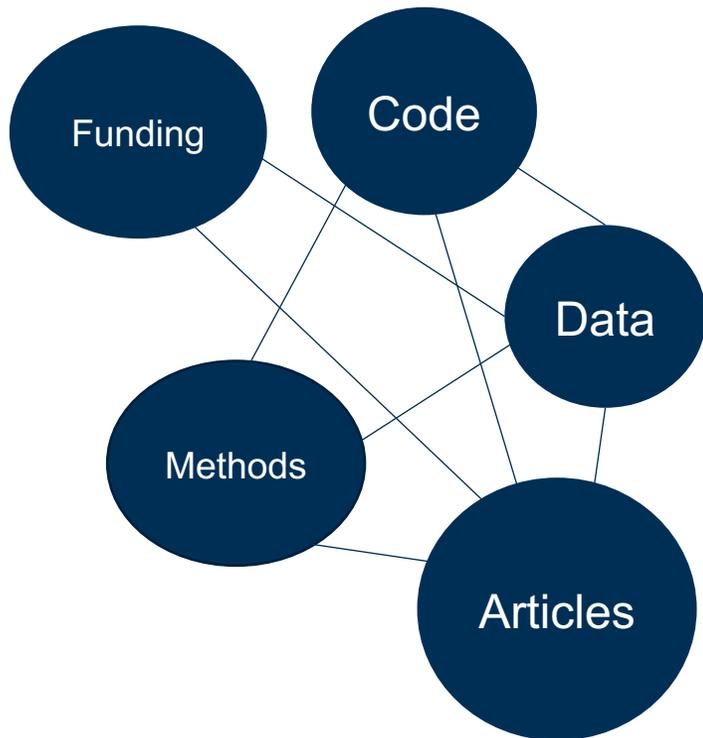
Analysis of normalized data after accounting for batch effects yields clustering by tissue

A previous evaluation of normalization methods for RNA-Seq data¹⁵ suggested that FPKM values were not optimal for clustering analysis. Therefore, as a basis for our reanalysis, we used the matrix of per-gene raw fragment counts. The entire analysis was done within R environment v 3.1.3 GUI 1.65 Snow Leopard build (6912)¹². See Supplementary Text 2 for detailed commands, and a supplement zip file for the R input (available in Zenodo: <http://dx.doi.org/10.5281/zenodo.17606>).

Following Li *et al.*¹⁶ we removed the 30% of genes with the lowest expression as determined by the sum of fragment counts across all samples. Next, due to the presence of mitochondrial genes among the overrepresented sequences in the data, we also removed reads that map to the 12 mitochondrial genes. This left us with expression data from 10,309 genes for analysis. We note that merely limiting the analysis to this subset of genes does not have a marked effect on the patterns reported by Lin *et al.* (Figure S3; detailed commands in Supplementary Text 3, and a supplement zip file for the R input (available in Zenodo: <http://dx.doi.org/10.5281/zenodo.17606>)). We performed within-column normalization to remove the GC bias in the data, indicated by the initial quality assessment. To this end, we applied the 'withinLaneNormalization' function from the EDASeq package v2.0.0¹⁷ to each column in the matrix, using the gene GC



Desirable Open Infrastructure



Discovery, analytics, IR, LSP

Disseminate, collect, understand and manage

Research output





OPEN ACCESS PEER-REVIEWED

RESEARCH ARTICLE

Validation of functional calibration and strap-down joint drift correction for computing 3D joint angles of knee, hip, and trunk in alpine skiing

Benedikt Fasel, Jörg Spörri, Pascal Schütz, Silvio Lorenzetti, Kamiar Aminian

Published: July 26, 2017 <https://doi.org/10.1371/journal.pone.0181446>24
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Introduction

Methods

Results

Discussion

Conclusion

Supporting information

Acknowledgments

References

Abstract

To obtain valid 3D joint angles with inertial sensors careful sensor-to-segment calibration (i.e. functional or anatomical calibration) is required and measured angular velocity at each sensor needs to be integrated to obtain segment and joint orientation (i.e. joint angles). Existing functional and anatomical calibration procedures were optimized for gait analysis and calibration movements were impractical to perform in outdoor settings. Thus, the aims of this study were 1) to propose and validate a set of calibration movements that were optimized for alpine skiing and could be performed outdoors and 2) to validate the 3D joint angles of the knee, hip, and trunk during alpine skiing. The proposed functional calibration movements consisted of squats, trunk rotations, hip ad/abductions, and upright standing. The joint drift correction previously proposed for alpine ski racing was improved by adding a second step to reduce separately azimuth drift. The system was validated indoors on a skiing carpet at the maximum belt speed of 21 km/h and for measurement durations of 120 seconds. Calibration repeatability was on average $<2.7^\circ$ (i.e. 3D joint angles changed on average $<2.7^\circ$ for two consecutive measurements).

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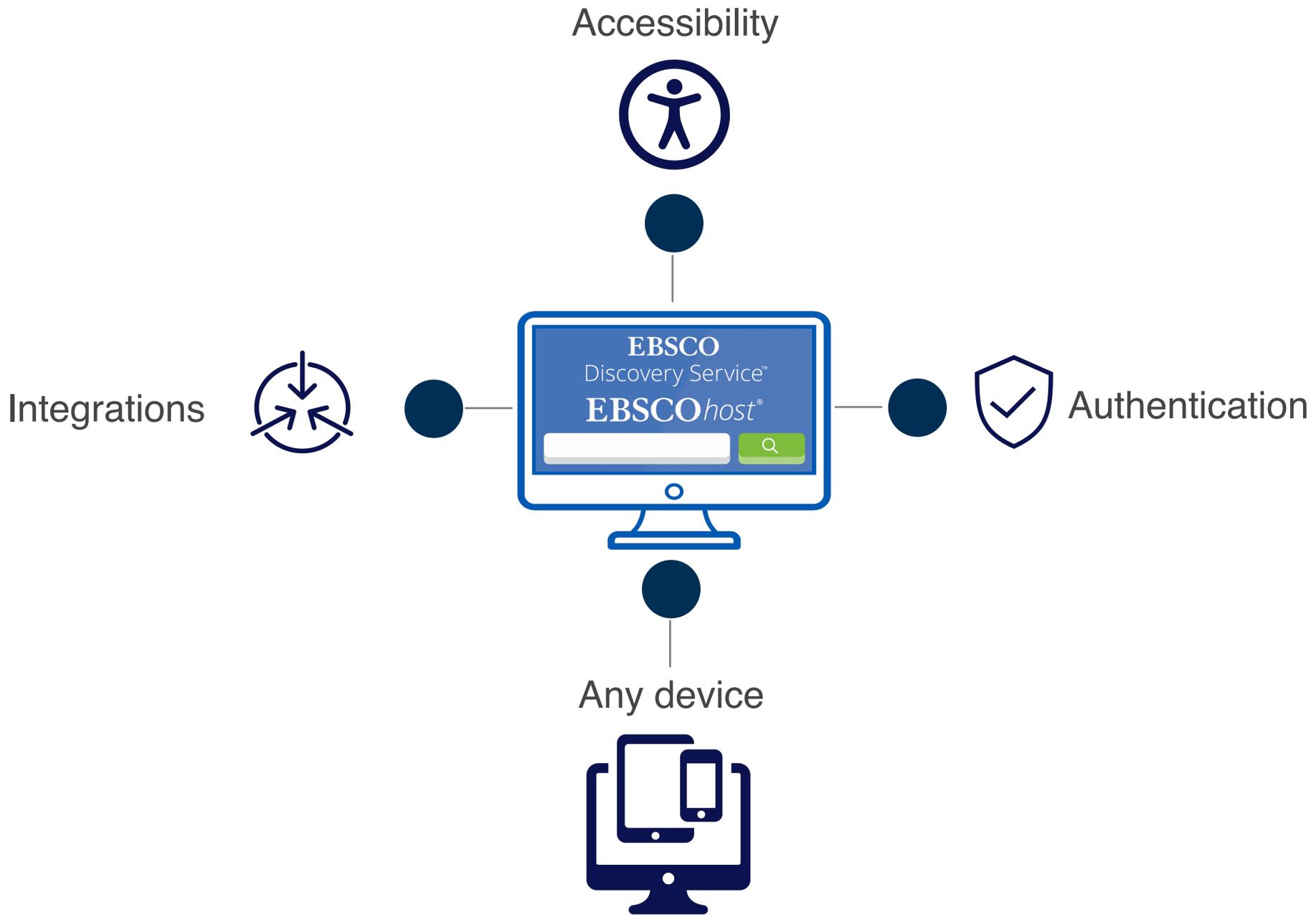
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User experience: what people expect





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UNIVERSITY OF GEORGIA  <https://doi.org/10.1371/journal.pone.0181446>

Peer reviewed | Article

Validation of functional calibration and strap-down joint drift correction for computing 3D joint angles of knee, hip, and trunk in alpine skiing.

PLoS ONE, 7
Fasel, Bened

UNIVERSITY OF GEORGIA  Search articles, books, journals & more.

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Title
Validation of functional calibration and strap-down joint drift correction for computing 3D joint angles of knee, hip, and trunk in alpine skiing

Authors
Fasel, Bened
Spörri, Jörg
Schütz, Pasca
Lorenzetti, S
Aminian, Ka

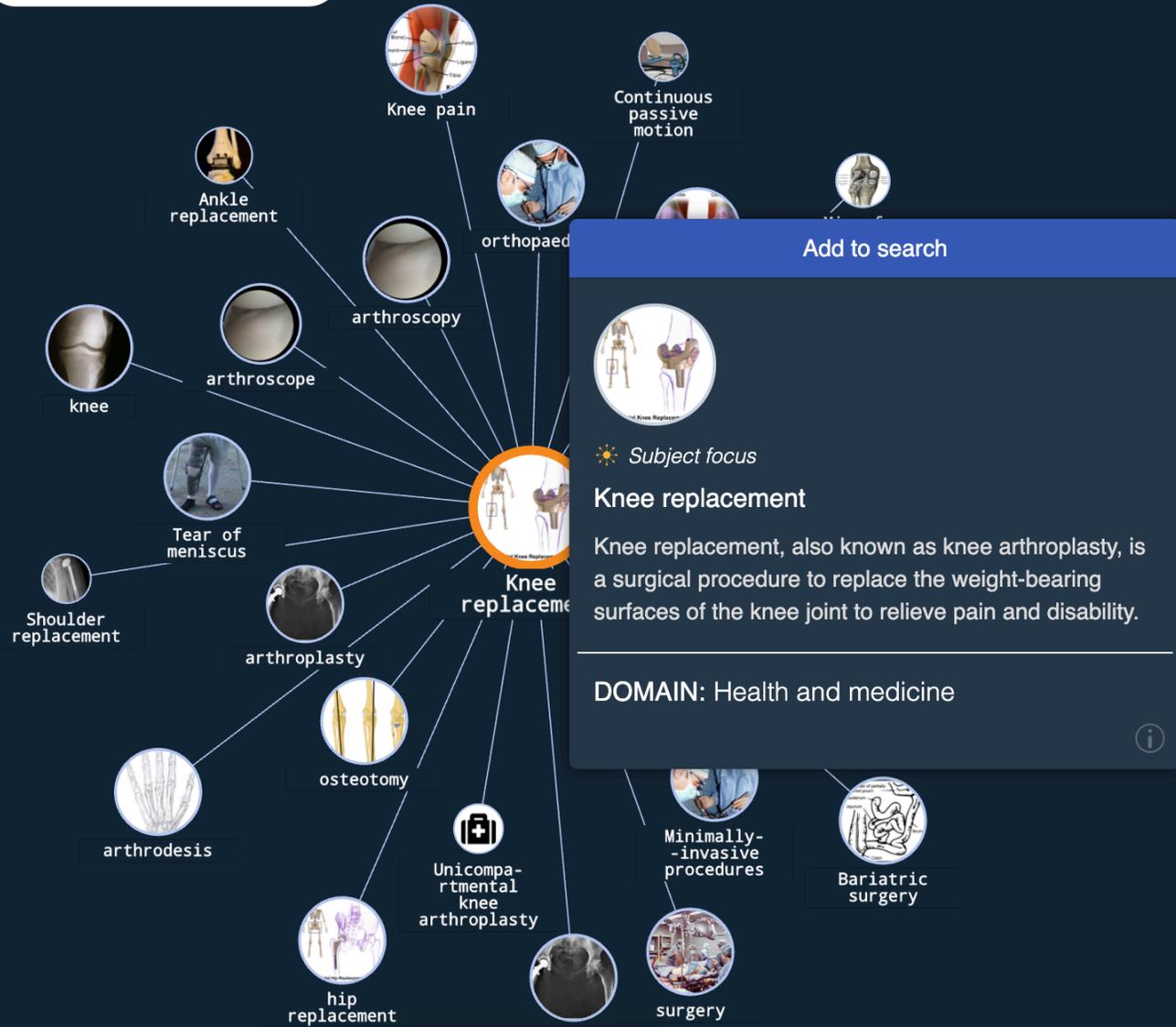
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Original Paper
Pre-existing cerebrovascular disease and poor outcomes of COVID-19 hospitalized patients  

⌚ 8/14, 11:30 AM



Add to search

Subject focus

Knee replacement

Knee replacement, also known as knee arthroplasty, is a surgical procedure to replace the weight-bearing surfaces of the knee joint to relieve pain and disability.

DOMAIN: Health and medicine

(Information icon)

osteoarthritis × **AND**

Continuous passive motion ×

See Full Results

Content Preview ▾

Evolving Open Source UX too!

The screenshot displays the National Library of Florence website interface. At the top, there is a navigation bar with links for HOME, SEARCHES, DEWEY NAVIGATOR, LIBRARIES, ASK A LIBRARIAN, and IT | EN. A search bar on the left contains the text "Insert search te" and a magnifying glass icon. Below the search bar, there is a dropdown menu set to "Everywhere". To the right of the search bar, there are controls for "Results per page" (set to 1) and "Results ordered by" (set to Score). Further right are buttons for "UNIMARC", "Tabular view", and "Search history". The main content area shows 11 search results for the query "knee replacement". The first result is a workshop report from 2001, and the second is a thesis from 2007. On the right side, there is an "Additional Filter" section with several filter boxes: "Library", "Format", "Bibliographic level", "Author (Person)", and "Author (Corporate)". A red user profile icon is visible in the top right corner.

HOME SEARCHES DEWEY NAVIGATOR LIBRARIES ASK A LIBRARIAN IT | EN

11 Results. Search done: knee replacement

Use the checkbox to select each document and to enable the functionality of printing, sending email, download available formats, export to RefWorks of the record (s).

New search

Insert search te

Everywhere

Search in other catalog

Library of Congress

British Library

SEARCH

Results per page: 1 Results ordered by: Score

UNIMARC Tabular view Search history

Workshop: Total knee replacement in the relatively young and active patient with osteoarthritis : Florence 11-13 January, 2001

Publication: \S. l. : s. n.!, stampa 2001 (Firenze : TAF)

Description: 369 p. : ill. ; 24 cm

Format: Book | Owned by: Biblioteca nazionale centrale di Firenze

Design, model and control of an hybrid robot in the total knee replacement procedure : ph.d. in mechanical system engineering, 19 cycle : ph.d. thesis / by Ivan Espinosa ; coordinator: Gianpiero Mastinu ; supervisor: Stefano Bruni ; tutor: Alberto Rovetta

Publication: [Milano, 2007?]

Description: 1 volume : ill

Format: Book | Owned by: Biblioteca nazionale centrale di Firenze

In-vivo instrumental evaluation of total knee replacement : dottorato di ricerca in bioingegneria : tesi di dottorato /

Additional Filter

Library

Format

Bibliographic level

Author (Person)

Author (Corporate)

National Library of Florence – FOLIO + Osee Genius UX

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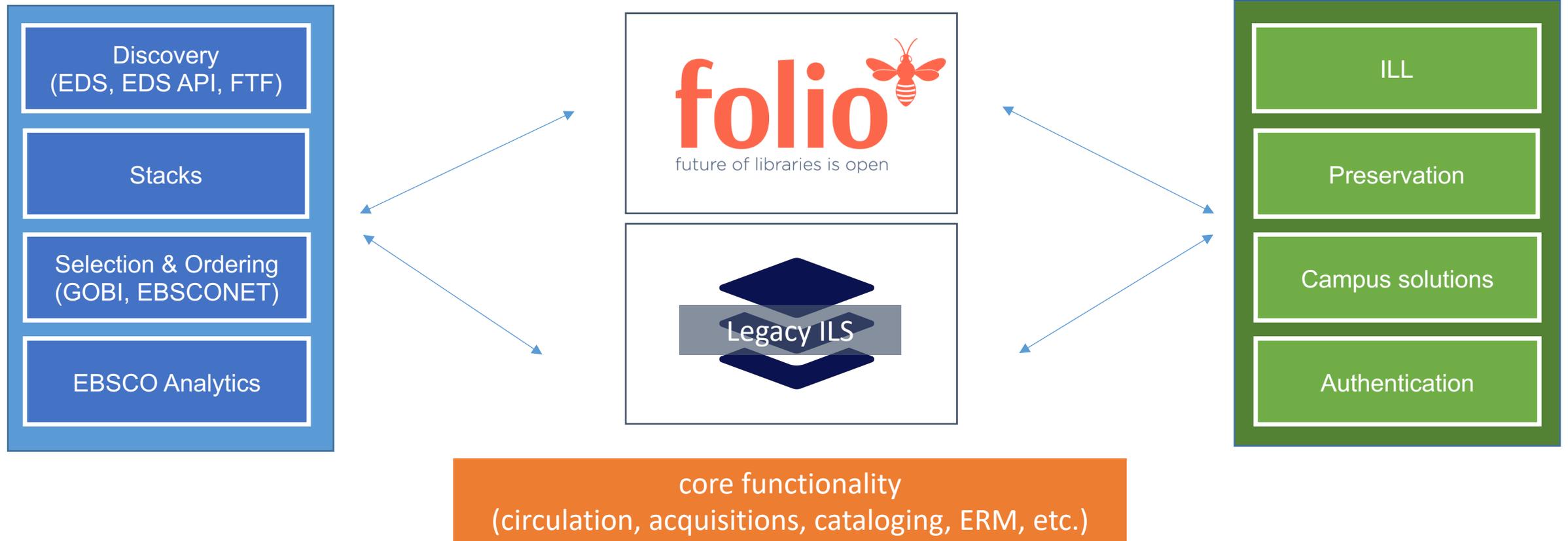
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FOLIO is the
next-generation open source
library services platform,
built for innovation and
supported worldwide.

Integrating **CHOICE** as part of the Solution



Considerations for Research Libraries

Can Open
Source Satisfy?

Yes.



Transparency



Interoperability



Access



Partnerships

Thank You

