



Linked data LMS -experiences from production



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Axiell Group

We provide software and solutions to libraries, archives, museums and schools.

We are present in 60 countries, offices in 15 countries. 380 coworkers and 13 000 customers.

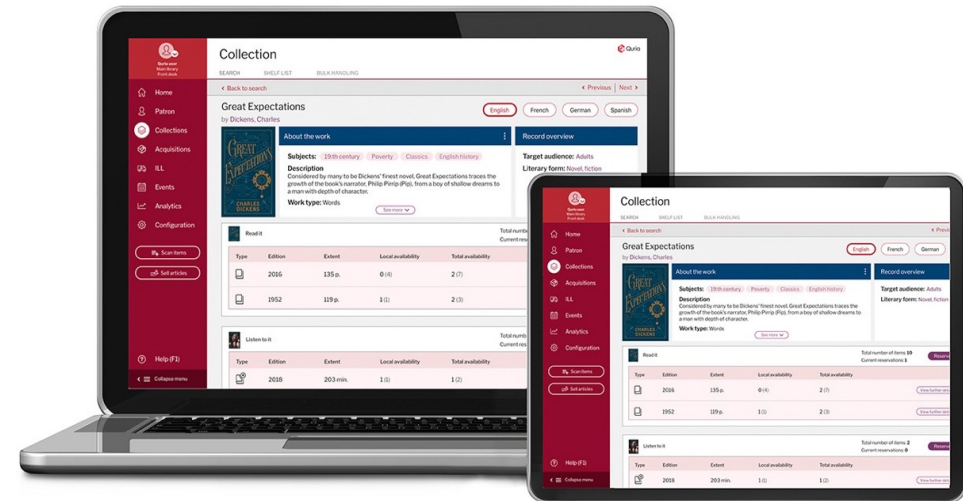


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Quria – Next generation Library Services Platform (LSP)

Axiell's Library Services Platform **Quria** is a linked data native library system that has been used in production since 2017.

Today over 300 public-, school- and special libraries in Sweden, Norway, Finland, Germany and Switzerland are users of Quria and the community is growing.



Agenda



Qurias linked data format



Conversion process



Clustering of entities



Presenting, searching, circulating



Benefits & Challenges



LDQ – Quria Linked Data

Based primarily on RDA Registry – with adjustments

Basic entities are work, expression, manifestation, item (WEMI)

Data driven format

LDQ in numbers

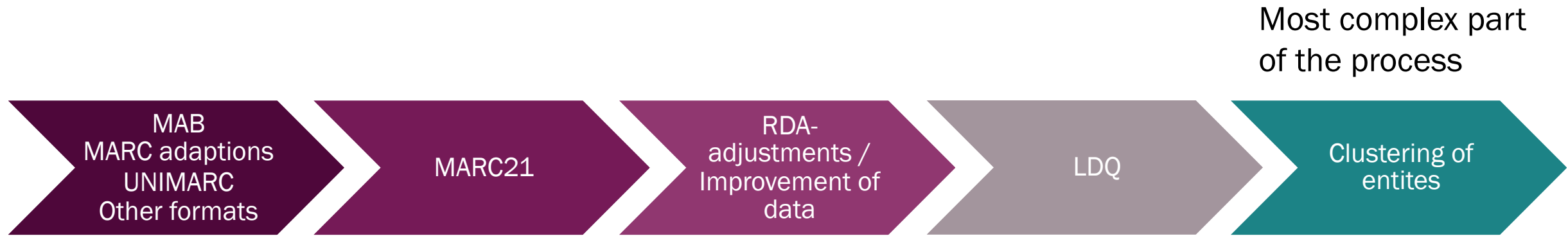
150-200 library collections converted to linked data (including major consortias)

15 million works in the environment

12 000 new works created every day



Conversion process



All conversions
via MARC21



RDA – adjustments & data improvement

RDA ContentType, RDA CarrierType, RDA MediaType

Access points for Contributors/Agents

Adaption of relationships

Adding language and target audience if missing

Adding vital missing values that are required for clustering entities

Why? - since data quality highly effects the result of linked data and entity creation!!



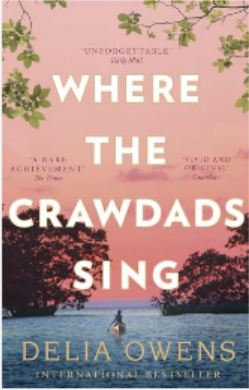
Local works, expression and manifestations; examples of the same title as work in two Quria-installations.

Since Quria is a local system, a Quria tenant use the system internal data to create WEMs.

No common database for WEMs. Every customer/library has their own "local" WEMs

Where the crawdads sing

by Owens, Delia



About the work

Subjects: Abandoned children Barn - Oslo, Norge, Danma
Ensamhet Eremitic life ... Show all

Genres: Romaner, Deckare

Classifications: 813.6, Hcee.01, 823, 813/.6, 362.21

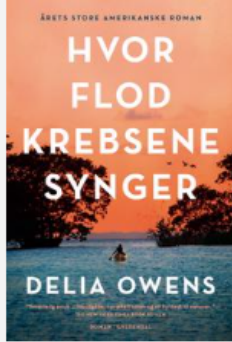
Description
#1 New York Times Bestseller "I can't even express how much I love this book." Reese Witherspoon. "Painfully beautiful." The New York Times Bestseller

Work title: Where the crawdads sing

Depending on the quality of the data, WEMs also match & merge differently.

Where the crawdads sing

by Owens, Delia



About the work

Subjects: 1950-1959 1960-1969 Abandoned children Barn

Genres: Historiska skildringar, Utvecklingsromaner, Deckare, Fiction, Mysterier, Romaner, Ljudböcker, Kärleksskildringar, Skönlitteratur, psykologiska romaner, skönlitteratur

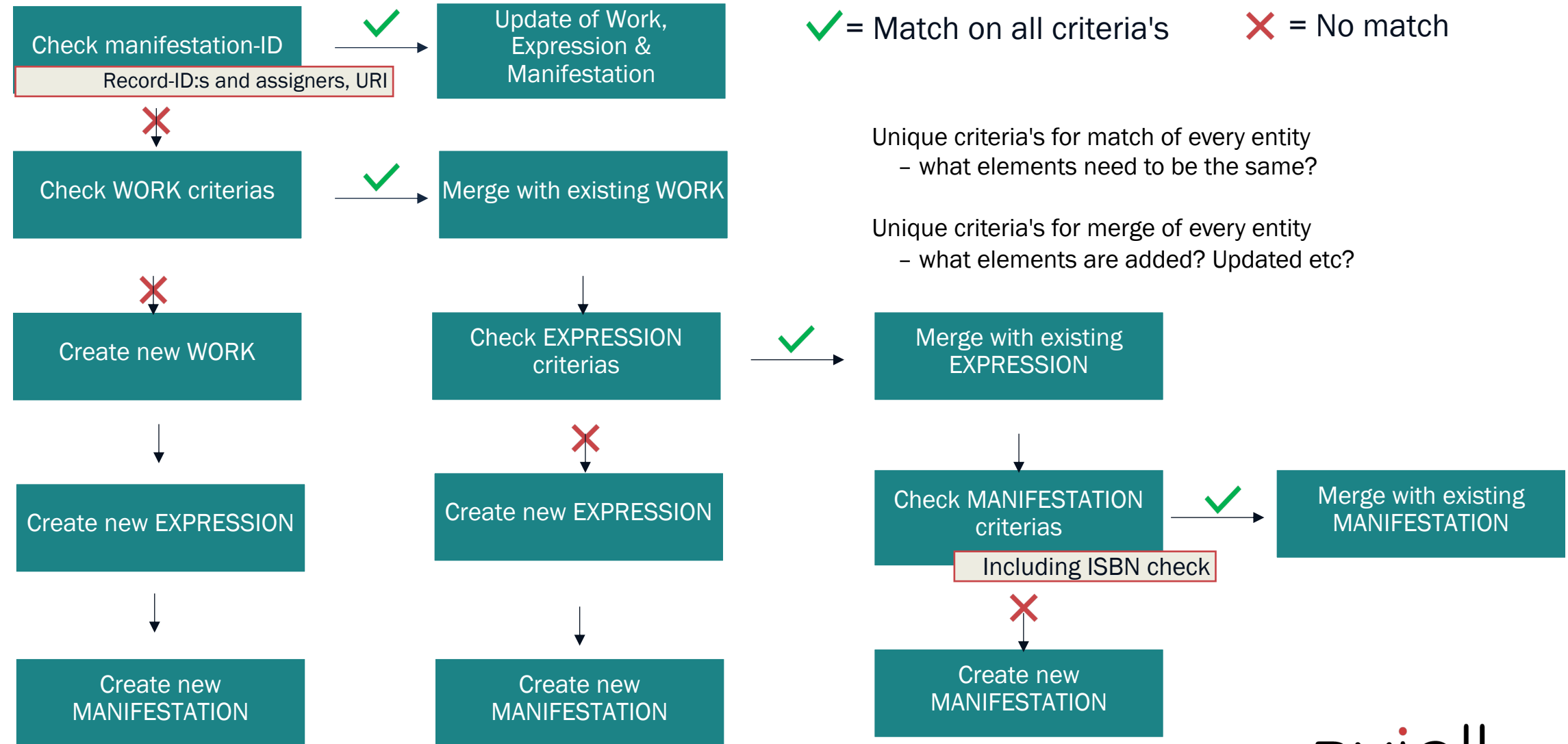
Classifications: 813.6, 823, He.01/LC, He.01, 891.991, Hrfce.01, 820, 84.2

Description
For years, rumors of the "Marsh Girl" have haunted Barkley Cove, a quiet town unfit for polite society. So in late 1969, when handsome Chase Andrews is found dead, the locals immediately suspect Kya Clark, the town's notorious "Marsh Girl." But Kya is not what they say. Abandoned at age ten, she has survived on her own in the marsh, an isolated and treacherous world that provides her with a sense of peace and safety. But while she could have lived in solitude forever, the time comes when two young men from town, who are each intrigued by her wild beauty, Kya opens herself to a new world of possibility—and to one heart-breaking, unthinkable happens

Work title: Where the crawdads sing



Clustering of entities; WORK, EXPRESSION, MANIFESTATION



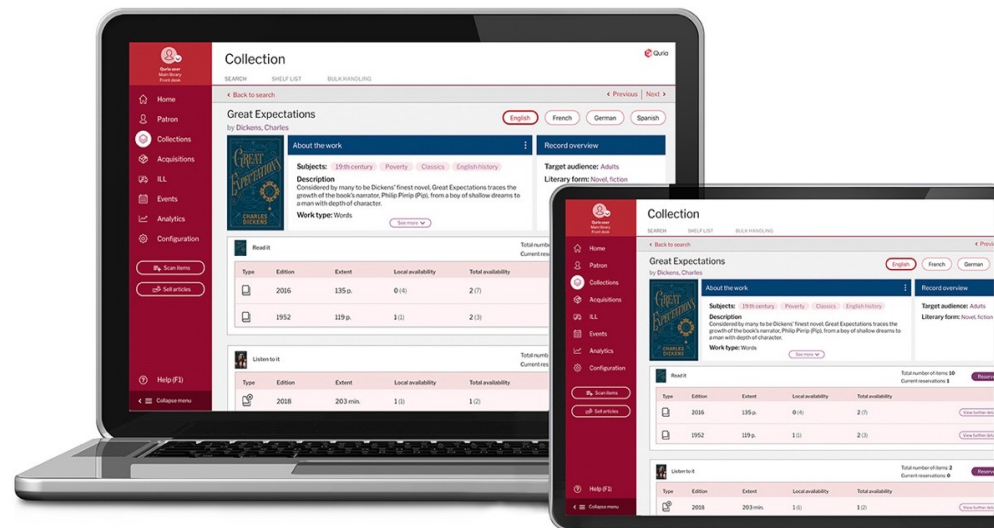
Looking in to Quria

Creating WEM via import of MARC-data

Limitations in the clustering process and manual entity management

Search and view

Reservations



<h3>Title</h3>		<h3>General</h3>	
Creator	Title	Year (range)	
<input type="text" value="Not selected"/>	<input type="text" value="Not selected"/>	<input type="text" value="Not selected"/>	
Series	Related title	Language	
<input type="text" value="Not selected"/>	<input type="text" value="Not selected"/>	<input type="text" value="Arabic"/>	
		Target audience	
		<input type="text" value="Not selected"/>	
		ISBN/ISSN/EAN	
		<input type="text" value="Not selected"/>	

<h3>Content</h3>	
Subject	Genre
<input type="text" value="Egypt"/>	<input type="text" value="Not selected"/>

Limit search to

Available at my branch

Scan items

Search results: 0


An example of how metadata is more efficiently used when structured as RDA-classes.

Picture shows a search for the subject "Egypt" in Arabic. System finds no hits.

Collections



SEARCH **EXTERNAL SOURCES** SHELF LIST ITEMS RESERVATIONS SUBSCRIPTIONS TITLES IN DEMAND W/E/M

Sa'dāwī, Nawāl.	The circling song	0862328160	 Import
--------------------	-------------------	------------	--

Now the English translation is imported to Quria. The record is converted from MARC21 to LDQ and entities are matched and merged.



Collections

SEARCH EXTERNAL SOURCES SHELF LIST ITEMS RESERVATIONS SUBSCRIPTIONS TITLES IN DEP

Enter search query

Refine search (2 filters active)

Title

Creator: Not selected

Title: Not selected

Series: Not selected

Related title: Not selected

General

Year (range): Not selected

Language: Arabic

Audience MARC: Not selected

Manifestation type: Not selected

Content

Subject: Egypt

Genre: Not selected

Limit search to: Not selected

Available at my branch

Scan items

Search results: 2

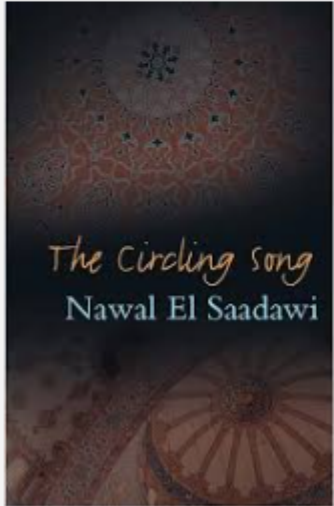
Creator	Title	Language
Sadāwī, Nawāl	The circling song	English
Sadāwī, Nawāl	Ughniyat al-aṭfāl al-dā'iriyah	Arabic

We perform the search again. Now the search result includes an *Arabic* title..

The Arabic title was there before but had no subject –headings until we imported the English translation.

Ughniyat al-aṭfāl al-dā'irīyah

by Sadāwī, Nawāl



About the work

Subjects: Egypt - Fiction Twins - Fiction

Classifications: 892/.736

Work title: Ughniyat al-aṭfāl al-dā'irīyah

Variant titles: The circling song

Work type: Words

Date of work: 1983



Read it

text (txt)

Type	Edition	Title and series
	1983, al-Ṭab'ah 2.	Ughniyat al-aṭfāl al-dā'irīyah: riwāyah

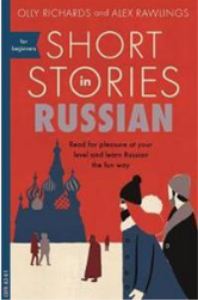
The subject headings are connected to the work, and thus valid for all underlying expressions

A concrete example of how metadata is more efficiently used when structured as RDA-classes.

Lack of creators, work-title, content-type - no automatic merge, due to risk of wrong-match.

Example of no automatic merge of the works – needs intellectual /manual handling.

Alyonka




About the work


Classifications: 891.7, Hma(s)
Series: Russian readers for beginners
Work title: Alyonka
Variant titles: Alenka
Work type: Words
Date of work: 1963

Expand ▾

Read it text (txt) Other: Baklanov, Grigorij Jakovlevič Current reservations: 0
Total number of items: 0

Type	Edition	Title and series	Content	Local availability	Total availability
	1963	Alyonka: short stories Series: Russian readers for beginners	109 s. Non-fiction	0 (0)	0 (0)

Alyonka




About the work

Series: Russian readers for beginners
Work title: Alyonka
Work type: Words

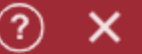
Expand ▾

Read it text (txt) Current reservations: 0
Total number of items: 0

Type	Edition	Title and series	Content	Local availability	Total availability
	1967	Alyonka: Collection of short stories by Soviet authors Series: Russian readers for beginners	Non-fiction	0 (0)	0 (0)



Collections basket



Action

- Reservation
- Move or merge

Non-master objects will be merged into the master object. Items, reservations and orders will follow.

Objects (2)

Move

Merge

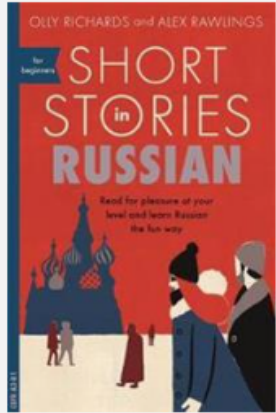
Object	
<input checked="" type="radio"/>	Work: Alyonka └── Expression: Alyonka - Read it (Baklanov, Grigorij Jakovlevič [Other]) , Russian
<input type="radio"/>	Work: Alyonka └── Expression: Alyonka - Read it , Russian

Work/Expression has been merged.

There are two manifestations under the language expression.

Alyonka

Russian



About the work

Classifications: 891.7, Hma(s)

Series: Russian readers for beginners

Work title: Alyonka

Variant titles: Alenka

Work type: Words

Date of work: 1963

Expand



Read it

text (txt)

Other: Baklanov, Grigorij Jakovlevič

Current reservations: 0

Total number of items: 0

Reserve

Type	Edition	Title and series	Content	Local availability	Total availability			
	1963	Alyonka: short stories Series: Russian readers for beginners	109 s. Non-fiction	0 (0)	0 (0)			
	1967	Alyonka: Collection of short stories by Soviet authors Series: Russian readers for beginners	Non-fiction	0 (0)	0 (0)			

Add work – or not?

Add record - work title ? ×

Work title

Work title

crawdads

Add as new work >

Matching works

Title	Creator	Type	
Where the crawdads sing	Owens, Delia	Words	Go to this work

Add record

Start with searching for a work to see if it needs to be added from start or just add a new expression or manifestation



Add/edit work, expression, manifestation

Where the crawdads sing

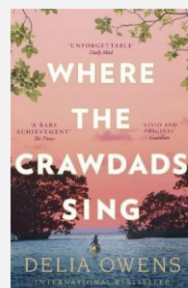
by Owens, Delia

English

Bulgarian

Swedish

Finnish



About the work

Subjects: Clark, Kya alkoholister alkoholistit avlidna ... Show all

Genres: psykologiset romaanit, esikoisteokset, romaanit, kaunokirjallisuus, englanninkielinen kirjallisuus, psykologiska romaner, debutverk, romaner, skönlitteratur, engelsk litteratur, käännökset, översättningar, lukemisesteisten äänikirjat

Classifications: 84.5, 84.2, 84.31, 84.761

Description

En oförglömlig berättelse om naturens krafter och ensamhetens pris. Kya Clark lever ensam och i samspel med naturen utanför en liten stad vid North Carolinas kust. Byborna kallar henne Träskflickan och har i många år spridit elaka rykten om henne. När en stilig quarterback hittas död i våtmarken blir hon därför omedelbart misstänkt och en mordutredning inleds. Men Kya är långt ifrån den obildade enstöring som alla tror, och snart uppdagas sanningen om hennes liv.

Expand

- Add to basket
- Edit work
- Add expression
- View raw data



Read it
text (txt)

Current reservations: 0
Total number of items: 3

Reserve

- Add to basket
- Edit expression
- Add manifestation
- Delete expression

Type	Edition	Title and series	Content	Local availability	Total availability
	2019, Paperback edition	Where the crawdads sing	370 sivua : 1 kartta Adults Novels	0 (0)	2 (2) ⓘ
	2019, New edition	Where the crawdads sing	370 sivua : kartta Adults Novels	0 (1)	0 (1) ⓘ



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Add/edit other entities

on: Der Gesang der Flusskrebse

ads sing
Read it (W
ssion
sskrebse
n) [Transl
on

Add contributor

Contributor type *

Person

Contributor - Person *

timmer|

Add 'timmer'

Julia Timmerbeil (1)

Timmermann, Klaus, 1955- (6)

✓

Cancel Save

Edit person

i This change will affect all titles connected to this reference

Not authorised [Authorise](#)

Family name

Franke

Given name

Annika

Displayed name *

Franke, Annika

Fuller form of name

Title

Country/geographic area code

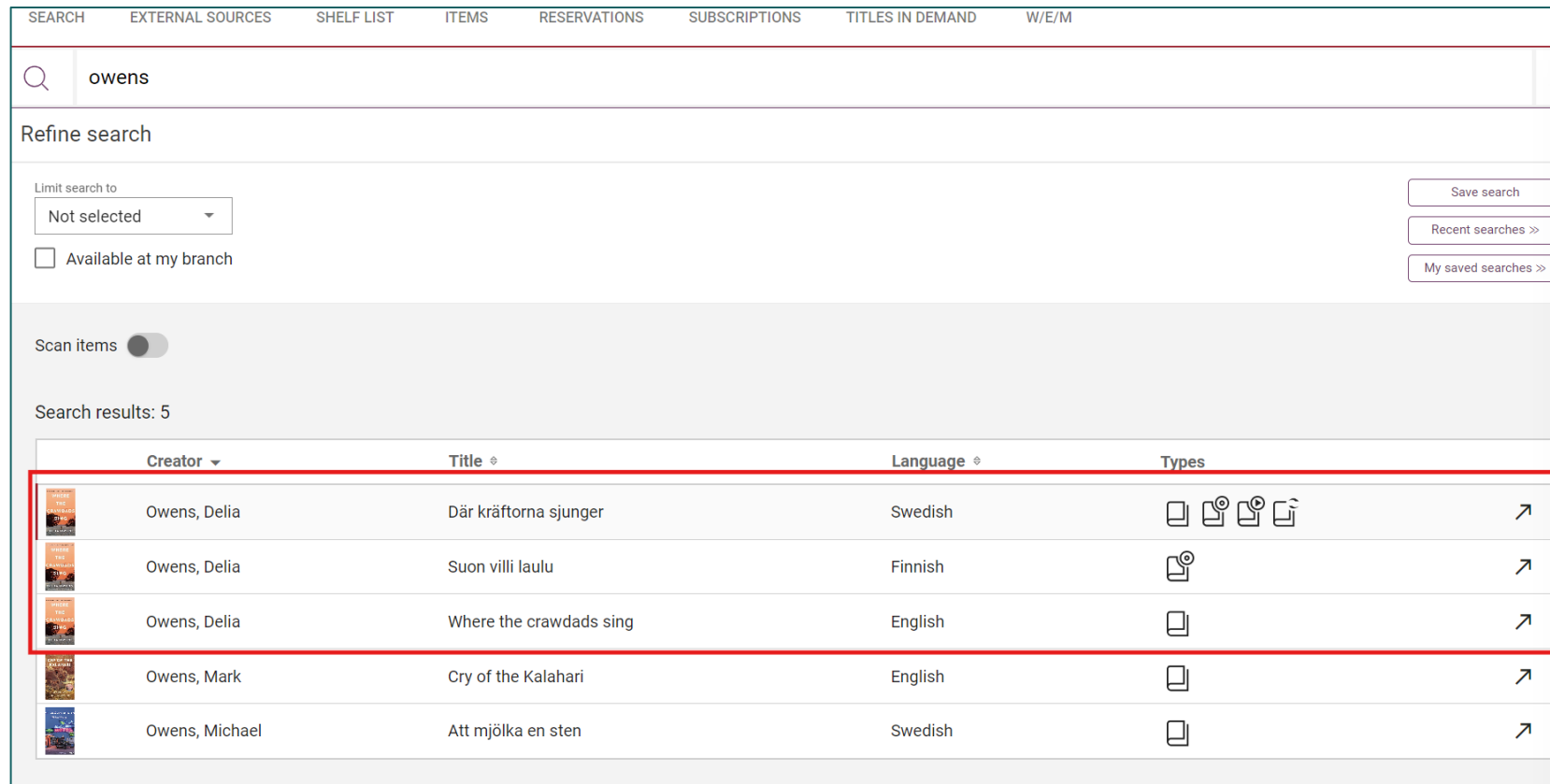
Numeration

Date of birth



Search and view results

Search result is presented per *language expression*



The screenshot shows a library search interface with a search bar containing 'owens'. Below the search bar is a 'Refine search' section with a dropdown menu set to 'Not selected', a checkbox for 'Available at my branch', and buttons for 'Save search', 'Recent searches >>', and 'My saved searches >>'. A 'Scan items' toggle is also present. The search results are displayed in a table with 5 entries. The first three rows are highlighted with a red border, indicating different language expressions for the same creator.

Creator	Title	Language	Types
Owens, Delia	Där kräftorna sjunger	Swedish	[Icons]
Owens, Delia	Suon villi laulu	Finnish	[Icon]
Owens, Delia	Where the crawdads sing	English	[Icon]
Owens, Mark	Cry of the Kalahari	English	[Icon]
Owens, Michael	Att mjölka en sten	Swedish	[Icon]



Expressions

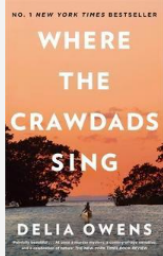
Where the crawdads sing

by Owens, Delia

Swedish

English

Finnish



About the work

Subjects: Barn - Förenta staterna - genusaspekter, hälsoaspekter Clark, Kya ERmitter Förenta staterna ... Show all

Genres: Historiska skildringar, Utvecklingsromaner, Deckare, psykologiset romanit, esikoisteokset, romanit, kaunokirjallisuus, käännökset, psykologiska romaner, romaner, skönlitteratur

Classifications: 813.6, 84.2, 823

Description

For years, rumors of the "Marsh Girl" have haunted Barkley Cove, a quiet town on the North Carolina coast. She's barefoot and wild; unfit for polite society. So in late 1969, when handsome Chase Andrews is found dead, the locals immediately suspect Kya Clark. But Kya is not what they say. Abandoned at age ten, she has survived on her own in the marsh that she calls home. A born naturalist with just one day of school, she takes life lessons from the land, learning from the false signals of fireflies the real way of this world. But while she could have lived a quiet life, the time comes when she yearns to be touched and loved. Drawn to two young men from town, who are each intrigued by her wild beauty, Kya opens herself to a new and startling world – until the unthinkable happens.

Expand

Read it
text (txt)

Current reservations: 0
Total number of items: 3

Reserve

Type	Edition	Title and series	Content	Local availability	Total availability			
	2023	Where the Crawdads Sing	384 sidor Fiction	0 (0)	2 (2) ⓘ			
	2018	Where the crawdads sing	370 pages : map Adults Fiction	1 (1)	1 (1) ⓘ			

Listen to it
spoken word (spw)

Narrator: Smith, Neil
Current reservations: 0
Total number of items: 1

Reserve

Type	Edition	Title and series	Content	Local availability	Total availability			
	2019	Where the crawdads sing		1 (1)	1 (1) ⓘ			



Manifestations

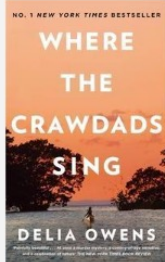
Where the crawdads sing

by Owens, Delia

Swedish

English

Finnish



About the work

Subjects: Barn - Förenta staterna - genusaspekter, hälsoaspekter Clark, Kya EREmitter Förenta staterna ... Show all

Genres: Historiska skildringar, Utvecklingsromaner, Deckare, psykologiset romanit, esikoisteokset, romanit, kaunokirjallisuus, käännökset, psykologiska romaner, romaner, skönlitteratur

Classifications: 813.6, 84.2, 823

Description

For years, rumors of the "Marsh Girl" have haunted Barkley Cove, a quiet town on the North Carolina coast. She's barefoot and wild; unfit for polite society. So in late 1969, when handsome Chase Andrews is found dead, the locals immediately suspect Kya Clark. But Kya is not what they say. Abandoned at age ten, she has survived on her own in the marsh that she calls home. A born naturalist with just one day of school, she takes life lessons from the land, learning from the false signals of fireflies the real way of this world. But while she could have lived a quiet life, ever, the time comes when she yearns to be touched and loved. Drawn to two young men from town, who are each intrigued by her wild beauty, Kya opens herself to a new and startling world – until the unthinkable happens.

Expand

Read it

text (txt)

Current reservations: 0

Total number of items: 3

Reserve

Type	Edition	Title and series	Content	Local availability	Total availability			
	2023	Where the Crawdads Sing	384 sidor Fiction	0 (0)	2 (2) ⓘ			
	2018	Where the crawdads sing	370 pages : map Adults Fiction	1 (1)	1 (1) ⓘ			

Listen to it

spoken word (spw)

Narrator: Smith, Neil

Current reservations: 0

Total number of items: 1

Reserve

Type	Edition	Title and series	Content	Local availability	Total availability			
	2019	Where the crawdads sing		1 (1)	1 (1) ⓘ			

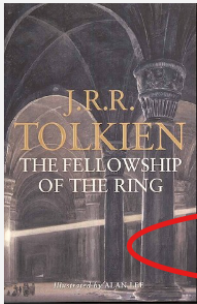


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Relationship between works

The fellowship of the ring

by Tolkien, J. R. R.



About the work

Genres: Fantasy

Classifications: Hcee.01, 839.78

Series: The Lord of the rings

Continued by: Tolkien, J. R. R. - **The two towers**

Is part of: Tolkien, J. R. R. - Härskarringen

Description

Första delen i trilogin om Härskarringen. Trollkarlen Sauron har en gång fö

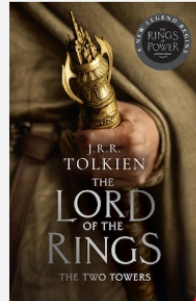


Read it
text (txt)

Type	Edition	Title and series
	2008, Illustrated ed.	The fellowship of the ring Series: The Lord of the rings - number part 1

The two towers

by Tolkien, J. R. R.



About the work

Subjects: Baggins, Frodo DAISY Fantasy Ringar ... Show all

Genres: Fantasy, Romaner, Talbok Daisy

Classifications: 823.912, 839.78, Hcee.01/TO, 823, He.01

Series: The Lord of the rings

Continues: Tolkien, J. R. R. - **The fellowship of the ring**

Continued by: Tolkien, J. R. R. - The return of the king

Is part of: Tolkien, J. R. R. - Härskarringen

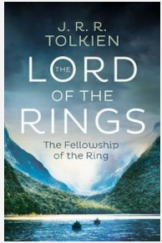
Expand ▾



Reservations

The fellowship of the ring
by Tolkien, J. R. R.

Polish Swedish **English**



About the work

Genres: Fantasy, Äventyrsskildringar, Romaner
Classifications: Hcee.01, 839.78, 823
Series: The Lord of the rings
Continued by: Tolkien, J. R. R. - **The two towers**
Is part of: Tolkien, J. R. R. - **Härskarringen**

Description
Första delen i trilogin om Härskarringen. Trollkarlen Sauron har återvänt till en av Maktens Ringar med förmågan att förvandla gott till

Expand

Read it - The Fellowship of the Ring
text (txt) Current reservations: 0 Total number of items: 6 **Reserve**

Type	Edition	Title and series	Content	Local availability	Total availability		
	1997	The Fellowship of the Ring	448 sidor Fiction	1 (2)	2 (3) ⓘ	↗	⋮
	2020, Paperback edition	The fellowship of the Ring	448 sidor Novels	1 (1)	1 (1) ⓘ	↗	⋮
	2008, Illustrated ed.	The fellowship of the ring	531 s. : ill. (chiefly col.) , maps	0 (0)	2 (2) ⓘ	↗	⋮

Possibility to place reservations on a specific

- Expression
- Manifestation
- Item



Benefits

- Improvement of the local metadata
- Reduces the need of cataloguing
- Reservation possibilities (expression level)
- Search results for language expression
- New relationships

Challenges

- Complexity of clustering entities
- Data quality
- National adaptations
- Incompatibility with MARC
- Datasets not adapted to FRBR, i.e. Genre/Form



Thank you!

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