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Creating a Knowledge Base to research the history of UK Museums through Rapid Application Development

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B. HANDLING YEAR-VALUED DATA IN THE SEARCH FACILITY

All date values are stored in the database as a pair of numbers (f,t) , where f and t are years. If the recorded value in the input spreadsheet is a single year, 'XXXX', then $(f,t) = ('XXXX','XXXX')$. If the recorded value in the input spreadsheet is a range of years 'XXXX:YYYY', then $(f,t) = ('XXXX','YYYY')$. Suppose the user creates in Search a filter of the form 'Year Opened/Closed ComparisonOperator d ', where d is a year. Then, the various possible comparison operators are implemented as follows when undertaking a test ' (f,t) ComparisonOperator d ':

Name of the operator in the Search UI	Operator and its modality (definitely/possibly)	Implementation
SPECIFIC YEAR ONLY	$(f,t) =_{def} d$	$f = d$ and $t = d$
BEFORE	$(f,t) <_{def} d$	$t < d$
BEFORE AND INCLUDING	$(f,t) \leq_{def} d$	$t \leq d$
AFTER	$(f,t) >_{def} d$	$f > d$
AFTER AND INCLUDING	$(f,t) \geq_{def} d$	$f \geq d$
APART FROM	$(f,t) \neq_{def} d$	$t < d$ or $f > d$
POSSIBLY A SPECIFIC YEAR	$(f,t) =_{poss} d$	$f \leq d$ and $d \leq t$
POSSIBLY BEFORE	$(f,t) <_{poss} d$	$f < d$
POSSIBLY BEFORE AND INCLUDING	$(f,t) \leq_{poss} d$	$f \leq d$
POSSIBLY AFTER	$(f,t) >_{poss} d$	$t > d$
POSSIBLY AFTER AND INCLUDING	$(f,t) \geq_{poss} d$	$t \geq d$
POSSIBLY APART FROM	$(f,t) \neq_{poss} d$	not $(f=d$ and $t=d)$

If the user creates in Search a filter of the form 'Year Opened/Closed between $df:dt$ ', where df and dt are a pair of years, then the operator 'between' is implemented as follows when undertaking a test ' (f,t) between $df-dt$ ':

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Name of the operator in the Search UI	Operator and its modality (definitely/possibly)	Specification
BETWEEN	(f,t) between _{def} (df,dt)	(f,t) DEFINITELY AFTER AND INCLUDING df and (f,t) DEFINITELY BEFORE AND INCLUDING dt (as defined in the table above)
POSSIBLY BETWEEN	(f,t) between _{poss} (df,dt)	(f,t) POSSIBLY AFTER AND INCLUDING df and (f,t) POSSIBLY BEFORE AND INCLUDING dt (as defined in the table above)

C. DATE-VALUED DERIVED ATTRIBUTE ‘IN EXISTENCE’

If a museum m has a recorded Year Open = (fo,to) and a recorded Year Closed = (fc,tc) then the following comparison operators are supported on the derived attribute ‘In Existence’:

Name of the operator in Search	Specification	Implementation
SPECIFIC YEAR ONLY	m is in existence in year d	$(fo,to) \leq_{def} d$ and $(fc,tc) >_{def} d$
BEFORE	m is in existence before year d	$(fo,to) <_{def} d$
BEFORE AND INCLUDING	m is in existence before or on year d	$(fo,to) \leq_{def} d$
AFTER	m is in existence after year d	$(fo,to) >_{def} d$
AFTER AND INCLUDING	m is in existence on or after year d	$(fo,to) \geq_{def} d$
APART FROM	m is not in existence in year d	$(fc,tc) <_{def} d$ or $(fo,to) >_{def} d$
BETWEEN	m is in existence between years df and dt	$((fo,to) <_{def} df$ and $(fc,tc) >_{def} df)$ or $((fo,to) \geq_{def} df$ and $(fo,to) \leq_{def} dt)$
POSSIBLY A SPECIFIC YEAR	m is possibly in existence in year d	$(fo,to) \leq_{poss} d$ and $(fc,tc) >_{poss} d$
POSSIBLY BEFORE	m is possibly in existence before year d	$(fo,to) <_{poss} d$
POSSIBLY BEFORE AND INCLUDING	m is possibly in existence before or on year d	$(fo,to) \leq_{poss} d$
POSSIBLY AFTER	m is possibly in existence after year d	$(fo,to) >_{poss} d$
POSSIBLY AFTER AND INCLUDING	m is possibly in existence on or after year d	$(fo,to) \geq_{poss} d$
POSSIBLY APART FROM	m is possibly not in existence in year d	$(fc,tc) <_{poss} d$ or $(fo,to) >_{poss} d$
POSSIBLY BETWEEN	m is possibly in existence between years df and dt	$((fo,to) <_{poss} df$ and $(fc,tc) >_{poss} df)$ or $((fo,to) \geq_{poss} df$ and $(fo,to) \leq_{poss} dt)$

D. SUMMARY OF THE USER STUDY ACTIVITIES

Tasks Using Browse

Task 1.

(a) How many museums with Governance status “Government: Cadw” are there?

Answers:	Correct: 15 Incorrect: 0
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(b) What are their Names and Subjects?

Answers:	Correct: 13 Partially correct: 2 Incorrect: 0
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	very easy	easy	mixed feelings	difficult	very difficult
Using the left-hand side menu is	10	4	1		
Finding the answers is	7	8			
Using the List view is	10	4	1		

Task 2.

(a) How many museums relate to Bicycles, according to the project’s 2018 Classification?

Answers:	Correct: 14 Incorrect: 1
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(b) For the BROOKEBOROUGH VINTAGE CYCLES MUSEUM, what is its Accreditation status and Governance status?

Answers:	Correct: 15 Incorrect: 0
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	very easy	easy	mixed feelings	difficult	very difficult
Using the left-hand side menu is	11	4			
Finding the answers is	9	6			
Using the Details view is	9	6			

Tasks Using Search

Task 3.

(a) How many museums are in the SG1 postcode area?

Answers:	Correct: 14 Incorrect: 1
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(b) How many of these are Unaccredited?

Answers:	Correct: 13 Incorrect: 2
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(c) What is the MM_size of the museums in part (b) ?

Answers:	Correct: 12 Partially correct: 1 Incorrect: 2
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	very easy	easy	mixed feelings	difficult	very difficult
Specifying the queries is	5	4	4	1	
Finding the answers is	3	4	5	1	

Task 4.

(a) How many museums relate to Sea and seafaring according to the Classification 2018?

Answers:	Correct: 15 Incorrect: 0
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(b) How many of the museums in part (a) definitely opened before the year 2013?

Answers:	Correct: 13 Incorrect: 2
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(c) How many of the museums in part (a) opened possibly in, or after, 2013?

Answers:	Correct: 13 Incorrect: 1 Not provided: 1
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(d) Are all of the museums in part (c) located in coastal areas?

Answers:	Correct: 12 Incorrect: 1 Not provided: 2
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	very easy	easy	mixed feelings	difficult	very difficult
Specifying the queries is	4	7	2	3	1
Finding the answers is	4	4	5	1	

Tasks Using Visualise

Task 5.

(a) How many museums were open in 1960 / 1970 / 1980 ?

Answers:	Correct: 13 Incorrect : 2
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(b) As of 1960 / 1980 / 2017: which region of England has the most museums, and which region has the least?

Answers:	Correct: 11 Partially correct: 2 Incorrect : 2
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	very easy	easy	mixed feelings	difficult	very difficult
Using the left-hand side menu is	5	5	4		
Finding the answers is	3	8	3		
Understanding the graphs and charts is	6	7	1	1	

Task 6.

(a) In which decade did the number of museum openings first sharply increase?

Answers:	Correct: 15 Incorrect : 0
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(b) Is there a difference in the increases between the Government and the Independent museums?

Answers:	Correct: 13 Partially correct: 1 Not provided : 1
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(c) Did numbers rise more or less in different parts of UK: England, NI, Scotland, Wales?

Answers:	Correct: 11 Partially correct: 1 Not provided : 3
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	very easy	easy	mixed feelings	difficult	very difficult
Using the left-hand side menu is	2	5	6		
Finding the answers is	2	3	7	1	
Understanding the graphs and charts is	2	3	8		

Task 7.

Where are museums relating to Industry and Manufacturing located? Which countries / regions have the most? (Hint: Use "Plot")

Answers:	Correct: 12 Partially correct: 1 Not provided: 2				
	very easy	easy	mixed feelings	difficult	very difficult
Using the left-hand side menu is	4	4	4		
Finding the answers is	2	5	6		
Understanding the graphs and charts is	2	5	4		

General Questions

About the Mapping Museums Web Application

Navigating through the left-hand side menus is	very easy 5	easy 5	mixed feelings 5	difficult	very difficult
Accuracy of the descriptions on screen is	very good 5	mostly good 9	mixed quality 1	mostly poor	very poor
Knowing what to do next is	very easy 1	easy 8	mixed feelings 5	difficult 1	very difficult
Understanding the search results is	very easy 1	easy 8	mixed feelings 5	difficult	very difficult
The response time of the system is	very good 8	mostly good 7	mixed feelings	mostly poor	very poor

Please provide any comments you have on how the system could be improved:

“Need to address scaling on charts, colours to make lines distinguishable, downloads for data of charts. County is sometimes filled, sometimes not, and gives different counties for same place e.g. Norfolk, Avon (abolished 1996), Somerset.

Not clear what are in the menu on the LHS, could be made clearer”

“Not sure at what point it is relevant to use the select output attributes” [Indeed, we did not explain this in the introduction to the evaluation session, because that feature was not needed for the activities.]

“A warning not to use the browser back button.”

“Visually it is quite boring - extend colour ways? Browse and search functions were easier for me to interpret than the visualisation one.”

“There were a few examples on the map where I clicked more details and the details of a different museum came up. I meant back onto the menu later and this was no longer the case. The museum was Valentines Mansion and Gardens - IG1 4XA.

The zoom functionality was a little limited, had to click a number of times to see whole county, wished of having a zoom bar. When I changed the location I wanted to look at on map it took a while to zoom out from where I was, find the new location and zoom back in.

Arundel castle is marked as closed but is open to the public.

Would be good to see MM size and subject matter in details and understand how these are determined”

Conclusion

Do you find the system to be a useful tool that you would use?	very useful	useful	mixed feelings	of little use	not useful
	7	5	1		

Please provide comments of how the system would be useful to you in your role:

“Subject-specific museum identification (for research purpose)” [Academic (museums)]

“I work as a museum consultant. I would find the tool very useful as back up to Feasibility Studies but I need it several degrees simpler and more obvious to be commercially useful.” [Museums consultant]

“It could be useful to direct researchers to if they are research a specific subject area” [Digital archivist]

“Links to stat. reporting for Accreditation. ACE are trying to improve data capture, especially around museums. A lot of overlaps with definition issues e.g. governance type, size” [Museum Accreditation assessor]

“Knowing the more recent developments would be very valuable to us - data we receive from ACI is not always complete or correct.” [Museum Development Officer]

“Really interesting seeing UK wide data. Not sure how the actual numbers are kept up to date. We publish updates after every period (5 a year) so numbers fluctuate. When does this finish? Has it stopped end 2017 or kept live? Track closure trends and governance change most useful for me” [Museums Accreditation manager]

“It would be useful to understand all museums in one area and look at accreditation status. Additionally helpful to understand dates of closure when researching collections within my current museum. Also helpful of previous names” [Cultural Heritage expert]

“Current information and type of museum, accredited + non Acc. Status. Reporting on local picture for stakeholders and users.” [Regional Museums Development officer]

“Drilling down museums by type and sub collection type where this exists. Patterns on closures for advocacy if needed.” [Regional Museums Development officer]

“AA fund work with 700 particular museums currently and we’d like to expand this network so the first step is knowing what is out there. Will it be updated in the future to avoid a similar exercise being undertaken in another 60 years?” [Senior Manager in non-governmental museum organisation]

Do you find the system to be a useful tool that could be used by other people/institutions?	very useful	useful	mixed feelings	of little use	not useful
	6	7			

Please provide comments of how the system would be useful to others in their roles:

“Useful for the museums sector

– networking with similar orgs;

– sharing expertise e.g. have a question on a collection-specific item” [Museum Accreditation assessor]

“Provides great statistics + trends to show development, particularly of independent museums sector - gives data for setting strategy.” [Museum Development Officer]

“Museum development and understanding where to target cluster locations for training etc. E.g. if high concentration of unaccredited museums could target ‘recruitment’ drive to scheme” [Museums Accreditation Manager]

“Baseline for understanding what museums are open in research of historic loans, merged collections and accreditation status. Also useful to know who are considered National and Accredited for potential loans/collaborations/disposals. This could hugely support future collections management” [Cultural Heritage expert]

“Museums would like to find other museums like them and see patterns of their development over time” [Regional Museums Development officer]

“It would be useful to anyone wanting to understand the museum sector as this is the closest we’ve ever had to getting a full picture of it.” [Senior Manager in non-governmental museum organisation]