

Group 1: Features of Dataset Applications

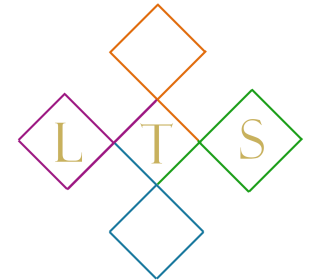
User Interface Features Typical of Dataset Applications

The code for each dsC data set includes a customized “Dataset Application” which displays individual samples and groups of samples via 2D, 3D, and native-compiled GUI controls. Each Dataset Application can thereby make use of advanced visual and interactive features that are uniquely possible when using customized, native-compiled GUI classes. The following screenshots will show several examples of these features, including:

Specialized Top-Level Controls Tree Widgets, Stacked Widgets, and Graphics Scenes.

Context Menus Systematically organize functionality around UI layouts.

Multi-Window Displays Divide application functionality in multiple specialized top-level windows and/or dialog boxes.



Linguistic Technology Systems



Initial Application Window

Customize Build

Activate TCP

Screenshot

Main

Flow

Temperature

Oxygen

Index	Flow	Time With / Average	Time Against / Delta	Temperature C° / K°	Oxygen (calculated)
▶ 1	0.561	0.000219893	0.000220329	49.60	
▲ 2	1.17	0.000219764	0.000220614	49.70	
		0.000220189	8.49999e-7	322.15	93
%	0.106536			67.3623	1
#	159			322	394
▶ 3	5.133	0.000218866	0.000221751	49.70	
				48.90	
				49.50	
				49.60	

In addition, nested rows can display supplemental information, such as data values' rank (3) and percentage (2) (on the scale of the least to greatest value) relative to all other values for each statistical parameter.

Using a "tree widget" (a two-layer spreadsheet), instead of a conventional spreadsheet, allows the Dataset Application to distinguish primary values (those measured directly by physical devices and experimental equipment) from intermediate values calculated via algorithms.

Graphics

☐ 2D 25x25 ☐ 2D 12x12 ☐ 2D 3x3 ☐ 2D 37x75

☐ 3D 25x25 ☐ 3D 12x12 ☐ 3D 3x3 ☐ 3D 37x75

Peer First

DOUBLE

* Minimize

Close

Proceed

Copy

Customize Build Activate TCP Screenshot

Main Flow Temperature Oxygen

2

Index	Flow	Time With / Average	Time Against / Delta	Temperature C° / K°	Oxygen (calculated)
33	0.589	0.00022861 0.000228828	0.000229046 4.35997e-7	5.40 278.15 7.25373	80 0 34
%	0.0531...				
#	111			1	
34	1.098	0.000228924	0.000229746	5.40	
39	4.988	0.000228814	0.000231814	5.40	
35	5.044	0.000227894	0.000230985	5.40	
37	0.554	0.000229983	0.00023039	5.50	
38	1.057	0.000229819	0.000230657	5.50	
31	5.057	0.000229433	0.000232403	5.50	
30	1.108	0.000230476	0.000231223	5.70	
29	0.484	0.000230511	0.000230934	5.80	

1

About/ Show in Document (may require XPDF)
Copy Column to Clipboard (values)
Copy Column to Clipboard (ranks)

Despite being implemented as a tree widget instead of a two-dimensional spreadsheet, the primary window for this Dataset Application has many spreadsheet-like features, such as copying columns of data (1) and sorting columns by switching notebook tabs (2); each notebook page shows the data sorted on a specific parameter.

4

Sample Up/Down

Peer Up/Down

3

First

Peer First

Graphics

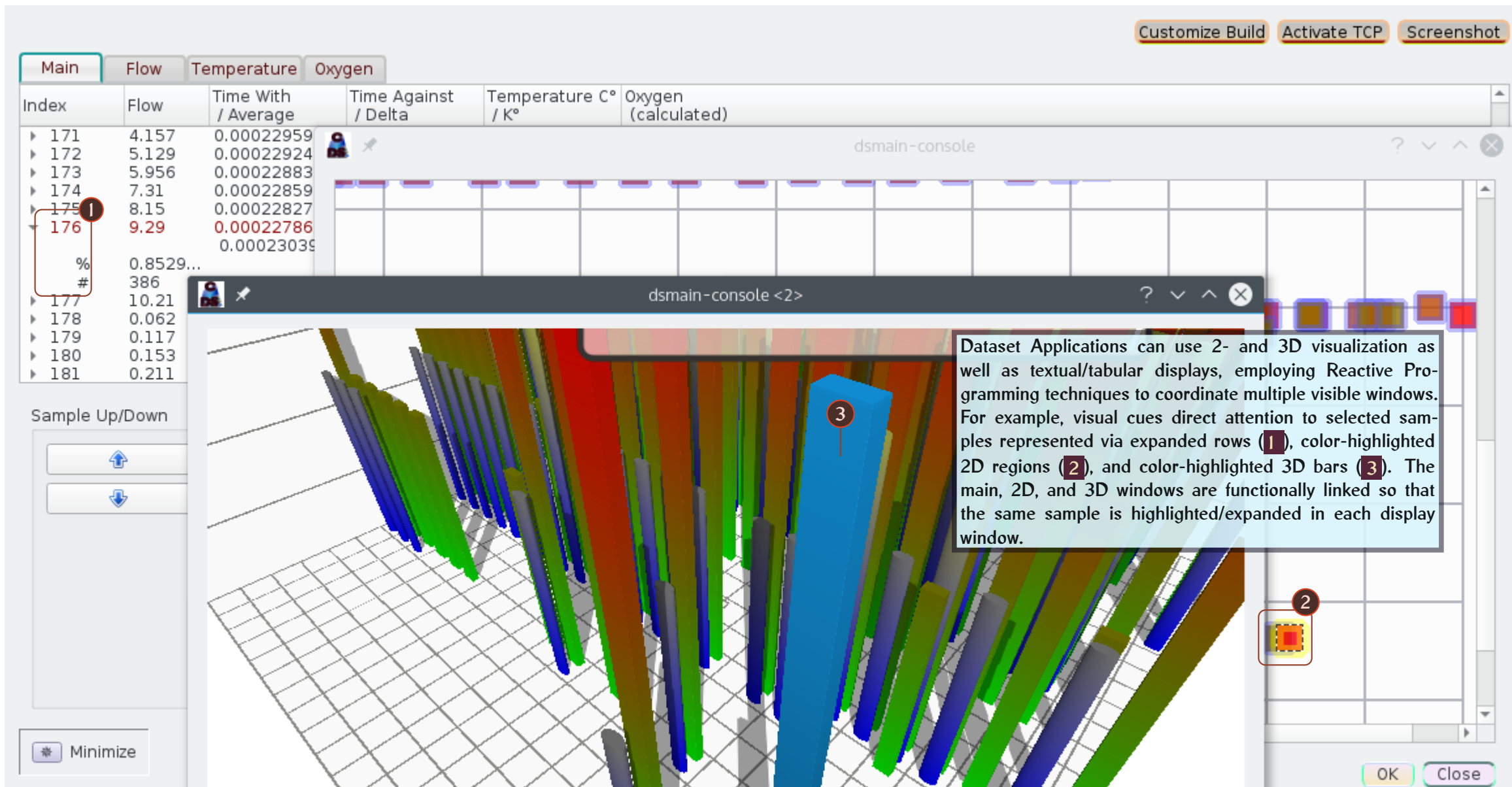
☐ 2D 25x25 ☐ 2D 12x12 ☐ 2D 3x3 ☐ 2D 37x75

Two different sets of navigation buttons enable the user to scroll through samples according to the currently selected sort parameter (3), or according to the primary index (4).

Minimize

OK Proceed Close

Coordinating



Oxy

[Customize Build](#)

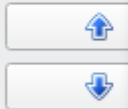
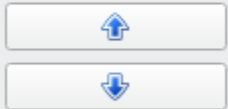
Activate TCP

Screenshot

Main	Flow	Temperature	Oxygen
Index	Flow	Time With / Average	Time / De
▶ 171	4.157	0.00022959	
▶ 172	5.129	0.00022924	
▶ 173	5.956	0.00022883	
▶ 174	7.31	0.00022859	
▶ 175	8.15	0.00022827	
▼ 176	9.29	0.00022786	
		0.00023039	
%	0.8529...		
#	386		
▶ 177	10.21	0.00022762	
▶ 178	0.062	0.00022844	
▶ 179	0.117	0.00022852	
▶ 180	0.153	0.00022852	
▶ 181	0.211	0.00022905	

Sample Up/Down

Peer Up/Dov

 Minimize Minimize

dsmain-console

Scroll to Top Left

Contract Nearby Items (1 cell)

Contract Nearby Items (2x2 cells)

Contract Nearby Items (2xAll cells)

Contract Nearby Items (4x4 cells)

Contract Nearby Items (8x8 cells)

Contract (All cells)

Dataset Applications make extensive use of context menus to organize functionality and provide advanced interactivity. In this screenshot a context menu action (1) has been selected which alters the 2D display, visually emphasizing a restricted set of data points (2) and contracting all others (3).

Highlight Oxygen = 93

Highlight Oxygen = 90

Highlight Oxygen = 87

Highlight Oxygen = 80

Unhighlight Oxygen

OK

Close

Getting Information About Modeling Parameters

Using Dataset Applications as Pedagogical Tools

In addition to interactive visualization, Dataset Applications are useful tools for understanding experimental protocols and research methods. Within Dataset Applications, modeling units such as statistical parameters and record fields are visible in situ within a GUI — identified by labels, buttons, and other interactive micro-controls. As a result, users encounter modeling elements in a structured visual-intracative context. To learn more about modeling elements, Dataset Applications are equipped with several pedagogical features shown on the following screenshots:

“About” Dialogs Brief summaries of research trms and parameters.

XPDF Links Links back to research articles read in an embedded PDF viewer.

XPDF Enhancements The XPDF viewer can be customized for each data set and included with dataset code, with extra features to integrate article or book texts with Dataset Applications.

About

Customize Build Activate TCP Screenshot

Main Flow Temperature Oxygen

Index	Flow	Time With / Average
33	0.589	0.000228
34	1.098	0.000228
	%	0.0999...
	#	154
39	4.988	
35	5.044	
37	0.554	
38	1.057	
31	5.057	
30	1.108	
29	0.484	

Sample Up/Down

Minimize

Flow of Oxygenated Air

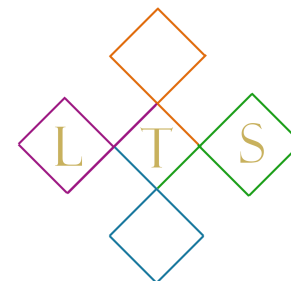
Click 'Show Details' for a summary or 'More' for PDF/Original Article links.

More (PDF) ... Cancel Hide Details...

The Flow measurements calculate the flow of oxygenated air (as needed for Continuous Positive Airway Pressure (CPAP) devices) given inputs of ambient temperature and sound time travel. The third (nested) row beneath the Flow value shows each sample's Flow 'rank' (where lower ranks mean that a sample has less Flow; the rank #1 is the sample with least flow). The second nested value shows each sample's flow measurement as a fraction of the maximum measurement

OK Proceed Close

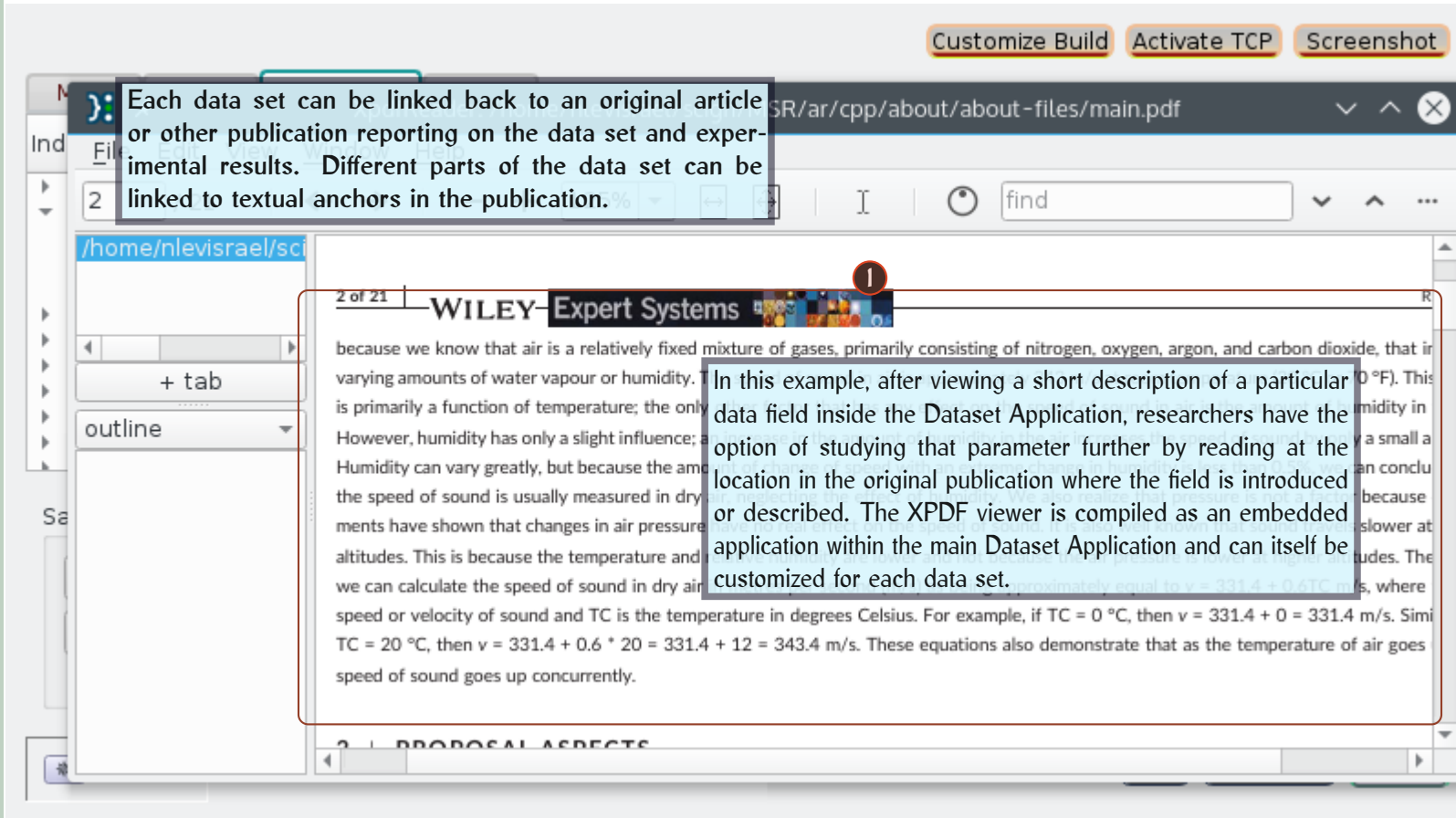
Context menus also allow users to obtain information and explanations about individual parts of the data set, such as individual statistical parameters. In this screenshot, the user has right-clicked on a data column (Flow) and has chosen a context menu action which shows, via a dialog box, a precis of the quantities represented in that column and their significance for the data set as a whole.



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XPDF



Testing and Fine-Tuning Dataset Applications

Tools for Editors and Developers

Although ordinary users can explore and visualize dsC data sets “Out of the Box”, advanced users have many options for customizing their build of the application in terms of their specific roles and available 3rd-party libraries. These fine-tuning possibilities include:

Test Suites Tools for creating and/or running test suites to ensure that the Dataset Application works across platforms.

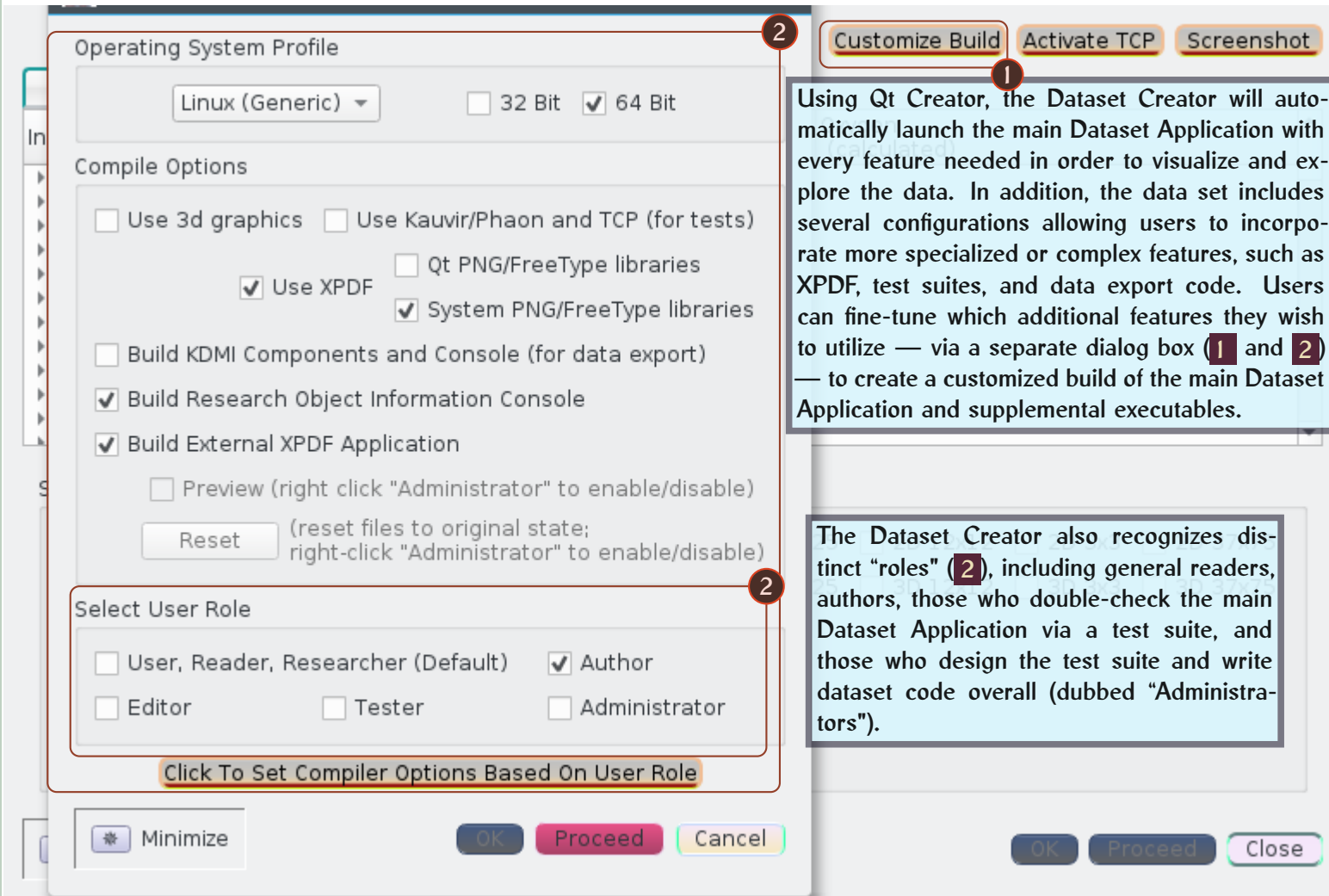
Data Export Tools for reusing data in other projects.

External Libraries Some features like XPDF and 3D graphics require libraries that cannot be published with the data set in source code form. Advanced users can select which of these libraries to incorporate into their version of the Dataset Application.

Scripting Data sets can compile their own scripting environment to automate testing and manipulation of research data.

Networking Dataset Applications can use an embedded TCP server to communicate with other applications, enabling multi-application workflows (this is also how testing is implemented).

Config



The screenshot shows the 'Config' window of the Dataset Creator. It has two main sections: 'Operating System Profile' and 'Compile Options'. The 'Operating System Profile' section includes a dropdown for 'Linux (Generic)' and checkboxes for '32 Bit' and '64 Bit'. The 'Compile Options' section has several checkboxes for features like 'Use 3d graphics', 'Use Kauri/Phaon and TCP (for tests)', 'Use XPDF', 'Qt PNG/FreeType libraries', 'System PNG/FreeType libraries', 'Build KDMI Components and Console (for data export)', 'Build Research Object Information Console', 'Build External XPDF Application', and 'Preview'. There is a 'Reset' button and a note about resetting files. Below this is the 'Select User Role' section with checkboxes for 'User, Reader, Researcher (Default)', 'Author', 'Editor', 'Tester', and 'Administrator'. A button at the bottom says 'Click To Set Compiler Options Based On User Role'. At the top right, there are three buttons: 'Customize Build' (callout 1), 'Activate TCP', and 'Screenshot'. At the bottom, there are 'OK', 'Proceed', and 'Cancel' buttons. A text box on the right explains that using Qt Creator will launch the main Dataset Application with every feature needed, and that users can fine-tune features via a separate dialog box (callout 1 and 2) to create a customized build. Another text box at the bottom right explains that the Dataset Creator recognizes distinct 'roles' (callout 2), including general readers, authors, those who double-check the main Dataset Application via a test suite, and those who design the test suite and write dataset code overall (dubbed 'Administrators').

Operating System Profile

Linux (Generic) 32 Bit 64 Bit

Compile Options

☐ Use 3d graphics ☐ Use Kauri/Phaon and TCP (for tests)

☒ Use XPDF ☐ Qt PNG/FreeType libraries

☒ System PNG/FreeType libraries

☐ Build KDMI Components and Console (for data export)

☒ Build Research Object Information Console

☒ Build External XPDF Application

☐ Preview (right click "Administrator" to enable/disable)

Reset (reset files to original state; right-click "Administrator" to enable/disable)

Select User Role

☐ User, Reader, Researcher (Default) ☒ Author

☐ Editor ☐ Tester ☐ Administrator

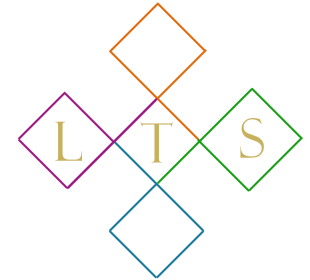
Click To Set Compiler Options Based On User Role

Customize Build Activate TCP Screenshot

Using Qt Creator, the Dataset Creator will automatically launch the main Dataset Application with every feature needed in order to visualize and explore the data. In addition, the data set includes several configurations allowing users to incorporate more specialized or complex features, such as XPDF, test suites, and data export code. Users can fine-tune which additional features they wish to utilize — via a separate dialog box (1 and 2) — to create a customized build of the main Dataset Application and supplemental executables.

The Dataset Creator also recognizes distinct "roles" (2), including general readers, authors, those who double-check the main Dataset Application via a test suite, and those who design the test suite and write dataset code overall (dubbed "Administrators").

Minimize OK Proceed Cancel OK Proceed Close



Linguistic Technology Systems



Testing

Dataset Creator includes a sophisticated framework for building and running test suites to ensure that raw data is processed correctly and that User Interface components work properly on different Operating System platforms. This includes a separate testing application that sends instructions to the main Dataset Application via TCP (1).

The testing application has several features to facilitate running tests, including options to repeat tests, mark success or failure (2), and examine the system clipboard (3).

Index	Flow	Copy Oxygen Ranks	<input type="checkbox"/>	/home/nlevisrael/scign/MSR/ar/cpp
		Copy Oxygen Values	<input type="checkbox"/>	/home/nlevisrael/scign/MSR/ar/cpp
		Copy Temperature Ranks	<input checked="" type="checkbox"/>	/home/nlevisrael/scign/MSR/ar/cpp
		Copy Temperature Values	<input checked="" type="checkbox"/>	/home/nlevisrael/scign/MSR/ar/cpp
		Expand Sample	<input type="checkbox"/>	/home/nlevisrael/scign/MSR/ar/cpp

Customize Build Activate TCP Screenshot

Test Returned

Test Copy Temperature Ranks: Pass or Fail?

Pass Fail Hide Details...

Note: For tests which involve values copied to the system clipboard, you can use the text area below as a scratch pad to examine the clipboard contents.

318
322
323
284
317

Minimize

OK Proceed Close

Copy Temperature Ranks: This test should result in the Temperature ranks (sorted by index) being copied to the system clipboard, which can be verified by pasting the clipboard into a blank file and comparing the lines (there should be one sample per line) to the Temperature column as viewed in the tree table dialog.

Testers can also read a description of each test (4), and view the scripts used to create them.

Features of Dataset Applications for Books

Datasets Compiled From Book Examples

The remaining screenshots demonstrate how data sets can be used even outside of a lab context generating experiment data. The pictured data set represents a corpus of linguistic examples mined from Wiley's *Blackwell Handbook of Pragmatics*. Creating data sets from book-length publications can encompass several steps:

Text Mining In the case of linguistics, this involves locating example sentences within linguistics texts and storing them as an independent corpus.

Canonical Formatting If possible, linguistics texts should be annotated so that extracting examples can be automated.

Annotation Linguistic corpora are often annotated to identify structural details, beyond raw text, in each sample.

Chapter

Filter Forms

☒ Text ☒ Dialog
☒ Intonation ☒ Paragraph

Filter Issues

☒ Ambiguity ☒ Context ☒ Logic ☒ Scope
☒ Polarity ☒ Belief ☒ Convention ☒ Idioms

I have received the e-mail. ?Nevertheless it's in Dutch.

Text

▶ She'll be better off in a new place.

▶ I have received the e-mail, but it's in Dutch.

▼ I have received the e-mail. ?Nevertheless it's in Dutch.

I have received the e-mail. ?Nevertheless it's in Dutch.

▼ Her husband is in hospital. Yet she's seeing other men.

Her husband is in hospital. Yet she's seeing other men.

▶ Her husband is in hospital and she's seeing other men.

▶ Her husband is in hospital. But she's seeing other men.

▶ Her husband is in hospital. Nevertheless she's seeing other men.

▶ Oscar knocked the vase and it broke.

▶ Did Oscar break the vase?

Filtered Up/Down

Examples Up/Down

Peer Up/Down

Chapter Start/End

Chapter Up/Down

First

Auto Expand

ON

OK

Proceed

Activate TCP

Customize

<select>

Cancel

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

This screenshot shows a linguistics dataset that illustrates several advanced interactive features made possible by the Dataset Creator's Qt-based front-end technology. Useful features include context menus embedded with drop-down selections (1) and button/checkbox groups for filtered scrolling through a list of samples (2 and 3).

LINGCOPY

Filter Forms

- ☒ Text
- ☒ Dialog
- ☒ Intonation
- ☒ Paragraph

Filter Issues

- ☒ Ambiguity
- ☒ Context
- ☒ Logic
- ☒ Scope
- ☒ Polarity
- ☒ Belief
- ☒ Convention
- ☒ Idioms

Activate TCP

Screenshot

Customize Build

Show Original

OFF

I have received the e-mail. ?Nevertheless it's in Dutch.

Text	Form	#	Issue	Page	Chapte
▶ She was never really happy here. So she's leaving.	Text	19	(N_A)	256	10
▶ She'll be better off in a new place.	Dialog	20	(N_A)	256	10
▶ I have received the e-mail.	Text	21	(N_A)	257	10
▶ I have received the e-mail.	Text	22	(N_A)	257	10
▶ I have received the e-mail.		22		257	10
▶ Her husband is in hospital.	Text	23	(N_A)	257	10
▶ Her husband is in hospital.	Text	24	(N_A)	257	10
▶ Her husband is in hospital.	Text	25	(N_A)	257	10
▶ Her husband is in hospital.	Text	26	(N_A)	257	10
▶ Oscar knocked the vase ar	Text	27	(N_A)	260	10
▶ Did Oscar break the vase?				260	10

- Show in Document (requires XPDF)
- Copy Text to Clipboard
- Launch Triple-Link Dialog with Text
- Copy Samples to Clipboard
- Highlight (scroll from here)

The linguistic samples comprising this data set are all example sentences, phrases, or dialog-snippets that are used, in the *Blackwell Handbook of Pragmatics*, as expository samples for case-studies of various linguistic phenomenon and pragmatics, semantics, and grammatical theories.

Filtered Up/Down

Examples Up/Down

Peer Up/Down

First

Auto Expand

ON

Minimize

OK

Proceed

Close

Nixon

Filter Forms

- ☒ Text
- ☒ Dialog
- ☒ Intonation
- ☒ Paragraph

Filter Issues

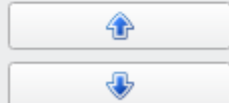
- ☒ Ambiguity
- ☒ Context
- ☒ Polarity
- ☒ Belief

In France, Watergate wouldn't

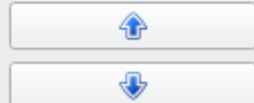
Text

- ▶ On the table.
- ▶ Every bottle is empty.
- ▶ She seized the knife and stabbed her husband.
- ▶ The Boston Marathon will take place next week. Max thought
- ▶ My friends were under the impression that I was running a
- ▶ Sue believes Luke has a child and that Luke's child will visit
- ▼ In France, Watergate wouldn't have done Nixon any harm.
 - In France, Watergate wouldn't have done Nixon any harm
 - ▶ In France, Watergate wouldn't have done Nixon any harm k
 - ▶ The crook paid them with fake money.
 - ▶ The crook thought he was paying them with fake money, b
 - ▶ We do not know much about this part of the brain, which p

Filtered Up/Down



Examples Up/Down



Peer Up/Down



Minimize



XpdfReader: /home/nlevisrael/scign/HP/ar/cpp/about/about-files/main.pdf

File Edit View Window Help

690 / 867

← → - + 113%

find

/home/nlevisrael/scign/HP/ar/cpp/ab

After browsing through the data set, users can link back to the original text to see the current author's discussion of particular examples. + tab

outline

- 15. The Pragmatics o...
- 16. Pragmatics of La...
- 17. Constraints on Ell...
- ▼ III Pragmatics and its Int...
- 18. Some Interaction...
- 19. Pragmatics and A...
- 20. Pragmatics and S...
- 21. Pragmatics and t...
- 22. Pragmatics and t...
- 23. Pragmatics and l...
- 24. Historical Pragma...
- 25. Pragmatics and L...
- 26. Pragmatics and C...
- ▼ IV Pragmatics and Cogni...
- 27. Relevance Theory
- 28. Relevance Theory...
- 29. Pragmatics and C...
- 30. Pragmatic Aspect...
- 31. The Pragmatics o...
- 32. Abduction in Nat...

Bibliography
Index

from the matched spaces to create a **blended mental space** with emergent structure. This creates a conceptual integration network of the form shown in figure 29.4. The generic space represents the structure shared by the inputs. The square in the blended space stands here for the emergent structure which arises in the blending.

So, for example, one way to understand the counterfactual in (6):

(6) In France, Watergate wouldn't have done Nixon any harm.

is to build a conceptual integration network that partially matches two input spaces with prominent aspects of the American political system and the French political system, respectively, and develops an emergent blended space

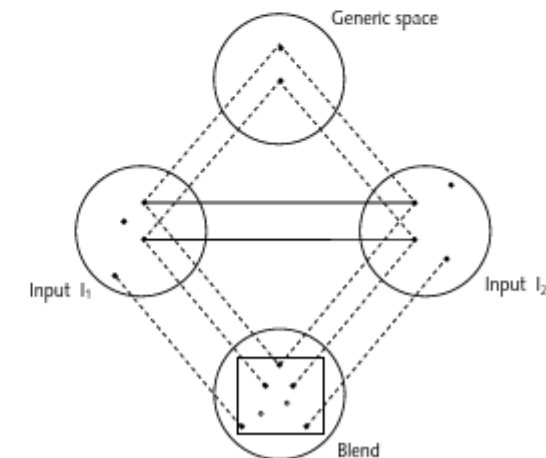


Figure 29.4 Diagram showing conceptual blending

A Linguistics Annotation System

Tools to Facilitate Annotating Linguistic Corpora

The final three screenshots show an example of how a custom-signnd application can facilotat the task of building an annotated corpus from a linguistics text. The components demonstrated here enable several strategies (which can be combined) for dscribing parsing structures and the logical composition of language samples:

S-Expressions Representing linguistic units as semantic and syntactic transformations triggered by words assigned to “functional” types.

Deepndency Grammar Representing phrase structures viabinter-word syntactic relationships.

Link Grammar Representing linguistic structure via connectors internal to each word-sense. Inter-word links are activatd when each word in the pair has a connector compatible with the other word's connector. Intuitively, a connctor represents how one word's meaning or grammatic contribution can be “completed” by linking to a separate word.

Filter Forms

☒ Text ☒

☒ Intonation ☒

Text

- ▶ We do not know
- ▶ Fred won't order
- ▶ Him be a doctor
- ▶ It's not good, but
- ▶ Did Louise order
- ▶ She doesn't have
- ▶ She didn't get it
- ▶ You couldn't get
- ▶ She has invited
- ▶ She has invited
- ▶ At least five

Filtered Up/Down

☒ Minimize

dsmain-console <2>

She has invited at least Sarah and James

Add at least Reset

Clear <- (((->)) -> Copy Read Splice Back Splice

SXPR Mode

	Pivot	lg:Source Expectation	lg:Target Expectation	lg:Description	dg:Source Expectation
0 {0}	has invited				
1 {1}	invited She				
2 {2}	Sarah James				
3 {3}	at least				

Users can select word-pairs from samples being annotated and then identify the relationship between the selected words, as understood according to Link or Dependency Grammars. The list of link/dependency relations provides an interface to research and read overviews about the relationships.

Dependency Grammar (Refinement Layer)

acl	advcl	advmod	amod
appos	aux	case	cc
ccomp	clf	compound	conj
cop	csubj	dep	det
discourse	dislocated	expl	fixed
flat	goeswith	iobj	list
mark	nmod	nsubj	nummod
obj		than	parataxis
punct		t	vocative
xcomp			

Show Info

Unmark

Auto Insert

OK Proceed Cancel

Text
▶ We do not know much about this part of the world.
▶ Fred won't order shrimp, let alone Louise, let alone
▶ Him be a doctor!?
▶ It's not good, but superb.
▶ Did Louise order squid?
▶ She doesn't have an odd number of books.
▶ She didn't get an odd-numbered ticket, let alone
▶ You couldn't get a poor man to wash your car.
▼ She has invited at least Sarah and James.
She has invited at least Sarah and James.
At least five students passed.

-

Page 10 of 10

{ has invited }

	Pivot	lg:Source Expectation	lg:Target Expectation	lg: Description	dg:Source Expectation	dg:Ta Expect

< >

⌵ Minimize

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float

The list of link/dependency relations is also isolated as a "dock widget" that may be dragged to float above the other application windows (1), or "docked" at different positions (left or right) on its parent window. This screenshot also shows a dialog box used for a precis of the individual CoNLL-U (Conference on Natural Language Learning - Universal) and Link Grammar relations (2).

Filter Forms

- ☒ Text
- ☒ Intonation

Text

- ▶ We do not k
- ▶ Fred won't c
- ▶ Him be a do
- ▶ It's not goo
- ▶ Did Louise c
- ▶ She doesn't
- ▶ She didn't g
- ▶ You couldn't
- ▶ She has inv
- ▶ She has
- ▶ At least

Filtered Up/Down

Filter Issues

0 {0} has invited

1 {1} invited She

2 {2} Sarah James

Dependency Grammar (Refinement)

acl	advcl	advmod
appos	aux	case
ccomp	clf	compound
cop	csubj	dep
discourse	dislocated	expl
flat	goeswith	iobj
mark	nmod	nsubj
obj	obl	orphan
punct	reparandum	root
xcomp		

Dependency: nsubj

nsubj: nominal subject

Ok Hide Details...

A nominal subject (nsubj) is a nominal which is the syntactic subject and the proto-agent of a clause. That is, it is in the position that passes typical grammatical test for subiecthood. and

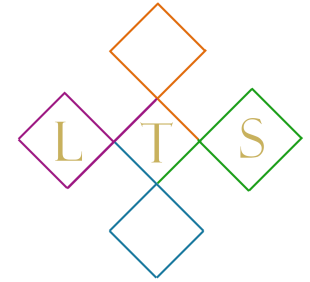
Minimize

OK Proceed Cancel

A3R Document Viewers

A3R applications may embed viewers for document formats such as e-Pub, HTML, and PDF; then supplement conventional publications with special components customized for individual manuscripts: e.g. (as in this case), a widget allowing readers to visually explore patterns in classical Indian music.

The screenshot displays the A3R Document Viewer interface. On the left, a sidebar contains icons for 'Preferences', 'Library', and 'Reading', along with tabs for 'HTML Source', 'Lisp', 'CSS', and 'XML'. The main content area shows a journal article titled 'Ethnographer as Apprentice: Embodying Musical Knowledge in South India' by 'da Weidman', published on '26 December 2012'. A 'Full publication history' link is visible. Overlaid on the article is a 'Display Tala Types' widget for 'Jhoomra/Dhamar (14 beats)'. The widget features a visual representation of a 14-beat tala pattern using red and green boxes. Below this, a 'Patterns' section includes a slider for 'Pattern 1 (3-4-3-4)' and 'Pattern 2'. The file path '/extension/ScignSeer/articles/svg/tala.svg' is shown at the bottom of the widget. The background of the page includes the journal title 'ANTHROPOLOGY AND HUMANISM' and the issue information 'Volume 37, Issue 2, December 2012, Pages 214-235'.



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A3R Document Viewers as Embedded Components

Document Viewers may also be embedded in host applications which provide domain-specific visualization capabilities. For example, chemistry papers might be viewed within IQmol (a Qt-based program for molecular visualization and physical/chemical analysis) via an A3R document-viewer plugin.

Display Build Calculation SONIC Help

Configure
Select All
Reperceive Bonds
Duplicate Geometry
Atomic Charges
Remove
SONIC
Springer Keyword Search: Cysteine
Springer Web Search Home
Search Saved Articles

Springer

Showing 157 results.

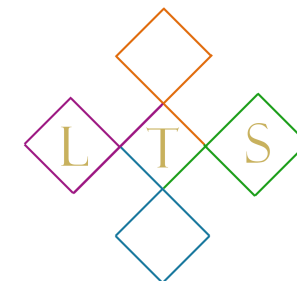
Book

Cysteine Proteases of Pathogenic Organisms

Robinson, M. W. (Ed), Dalton, J. P. (Ed) (2011)

Cysteine proteases expressed by pathogenic organisms play key roles in virulence including host

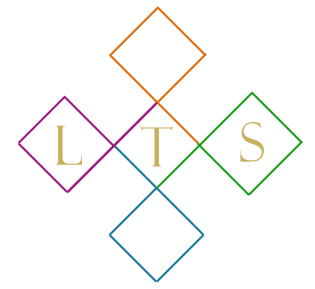
www.springer.com/gp/search?query=cysteine&submit=Submit



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Document Viewers Augmented With APIs



Another strategy for interactive publications is linking documents with APIs maintained by publishers, or by cultural or educational institutions.


API

Open Folder

View

Instructions

As an example, documents mentioning artifacts held in a museum can provide features to view more information about those museum-pieces through the host institution's API.



MEDAL

✚ Click the icon to save this object

This is a **Medal**. We acquired it in **1920**. Its m is a part of the **Product Design and Decorativ** department.

Cite this object as

Medal; bronze; 1920-31-1

Row: 0 Column: 0

Embedded Multimedia

Custom-built A3R document viewers can provide convenient access to multimedia content embedded in or linked to texts — including audio files, videos, and 3D graphics scenes or models.

In this case a video player is launched in a dialog box, floating above the article text. For those reading digital books or articles, videos and other multimedia content can be presented through secondary windows launched via context menus; text and multimedia may thereby be viewed side-by-side.



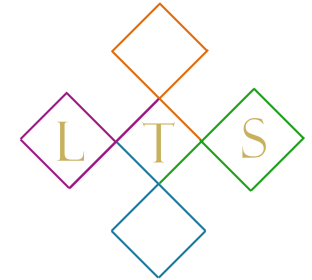
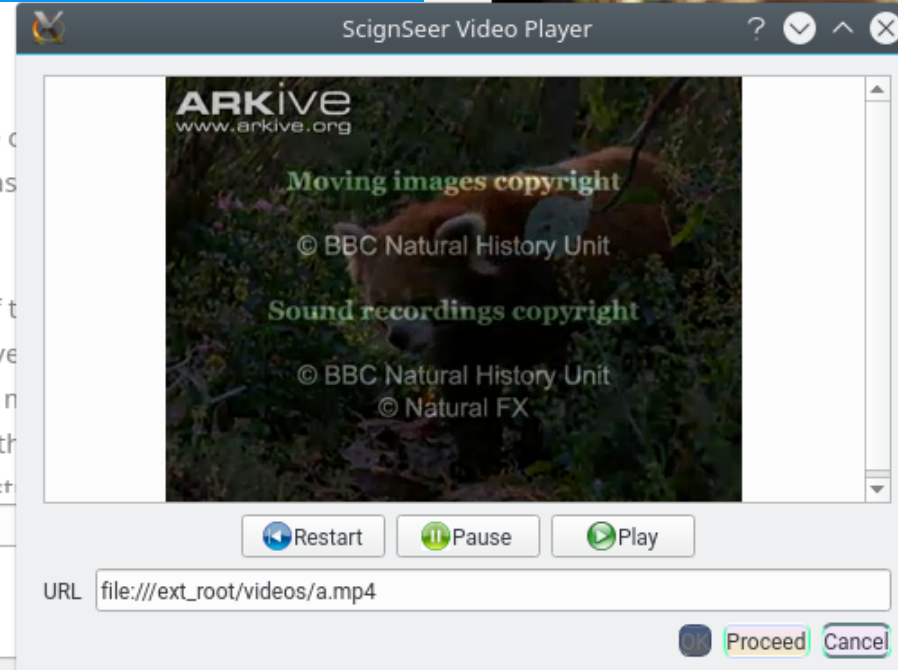
Behavior

Red pandas are generally solitary, but there are a couple of exceptions. They develop extended associations with their mothers that last through the breeding season.



In terms of behavior, red pandas tend to have a solitary lifestyle. This means they search for their own patchily distributed

ark.org/red_panda/about-the-red-panda/



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