User Interfaces

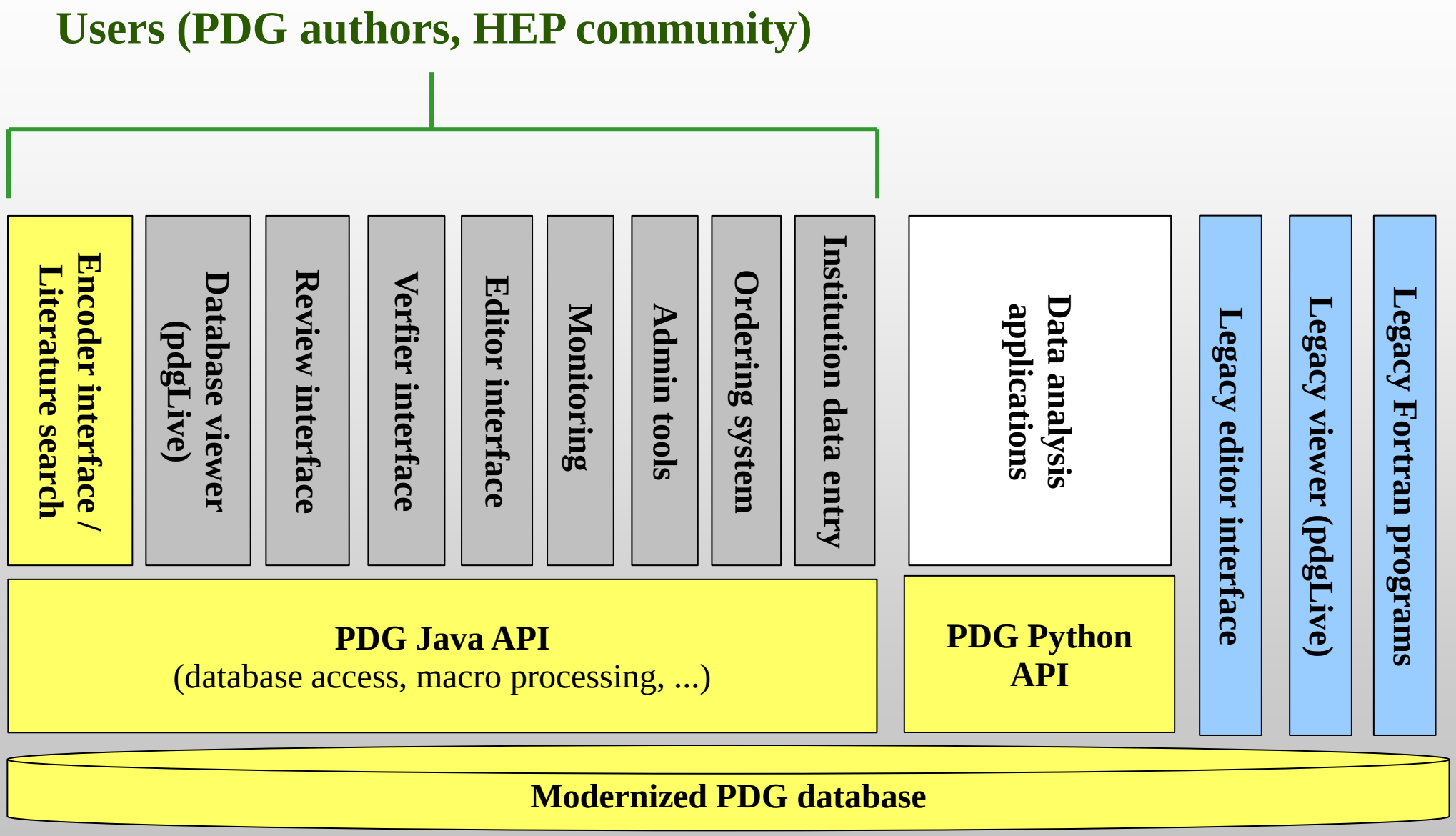
PDG Workspace

Sarah Poon
Computational Research Division
Lawrence Berkeley National Laboratory

Outline:

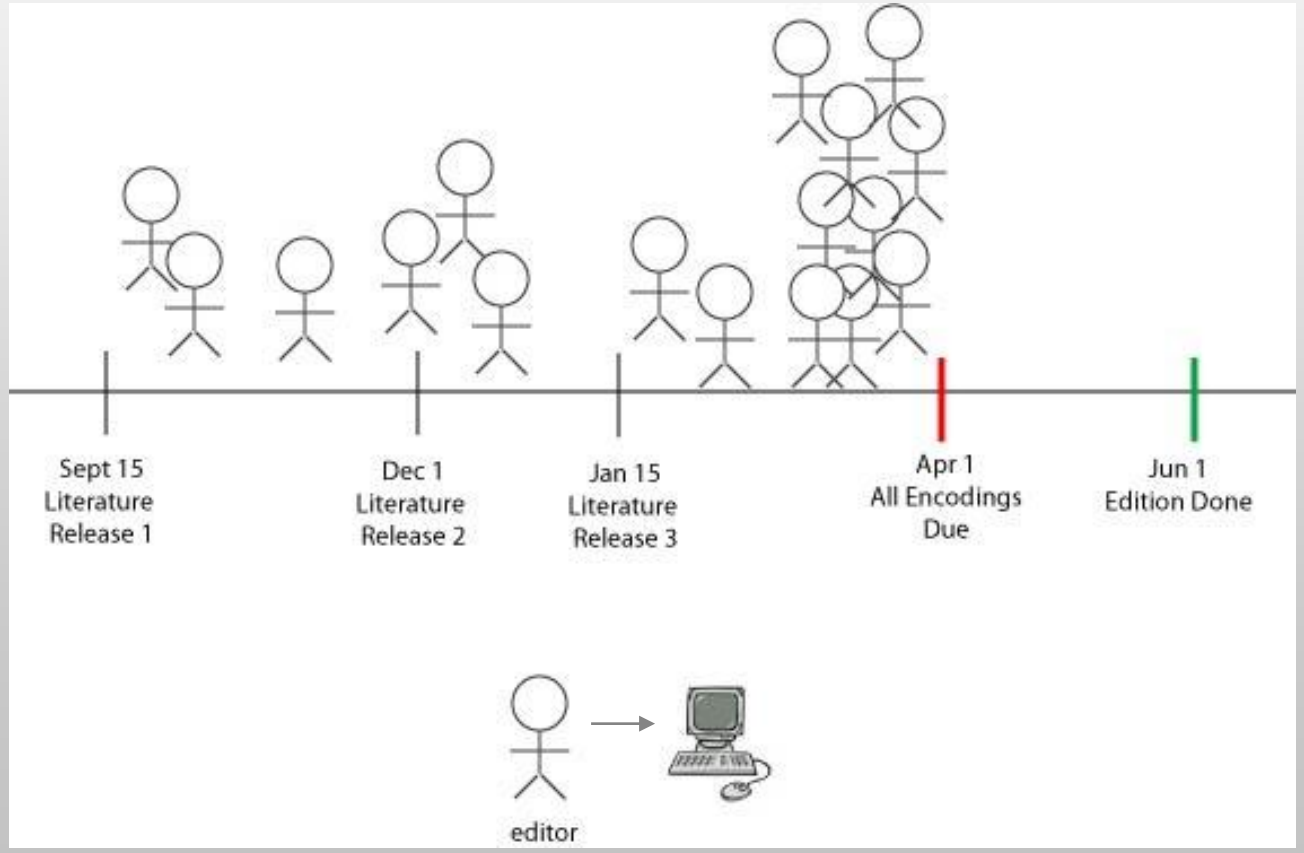
- Motivations
- User-Centered Design
- Technical Implementation
- Pilot User Study
- Ancillary Efforts

PDG System & Components



Why do we need PDG Workspace?

- **2010 edition, 2158 new measurements**
- **176 authors**
- **Currently, the editor does all database input of encodings**

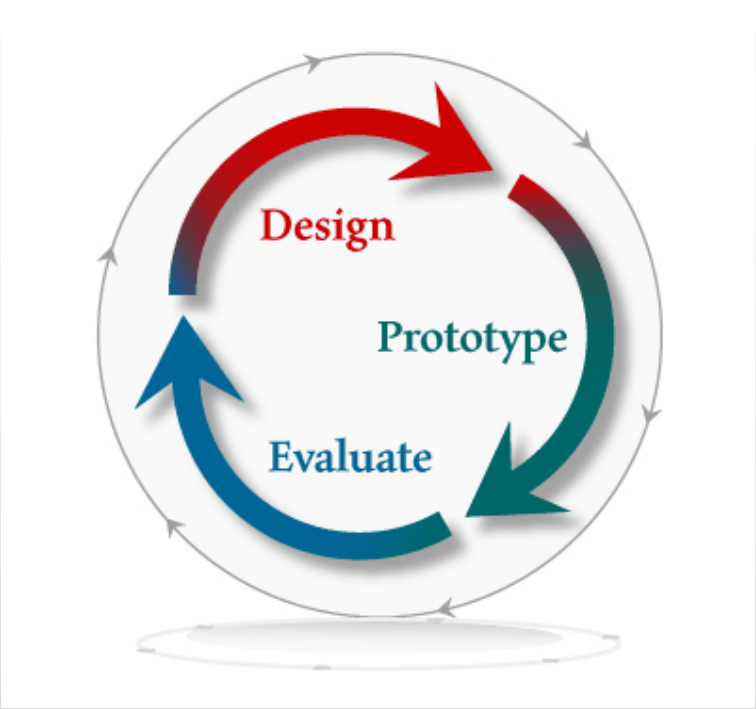


Why do we need PDG Workspace?

```
************* CREATE NEW DECAY NODE *******************
****S049RXX: \Gamma(B->\bar Dl^+\nu)/\Gamma(B->l^+\nu anything) after
            Node=S049S39 (DESIG=147) Indented under S049S45


MEASUREMENTS:

S041B04  AU   0.255+-0.009+-0.009       BABR  e+e- ->Y(4S) (used)
S041R68  BE   0.0229+-0.0008+-0.0009    BABR  e+e- ->Y(4S) (used)
S042B84  AU   0.230+-0.011+-0.011       BABR  e+e- ->Y(4S) (used)
S042R35  BE   0.0221+-0.0011+-0.0011    BABR  e+e- ->Y(4S) (used)
S049RXX  A    0.223+-0.006+-0.009       BABR  e+e- ->Y(4S) (used)
S052CB2  B    0.0423+-0.0019+-0.0014    BABR  e+e- ->Y(4S) (used)

FOOTNOTES:
S041B04 LINKAGE=AU
S041R68 LINKAGE=BE
S042B84 LINKAGE=AU
S042R35 LINKAGE=BE
S049RXX A Uses a fully reconstructed B meson as a tag on the recoil side.
S052CB2 B Obtained from a fit to the combined B->\bar Dl^+\nu sample in which
          a hadronic decay of the second B meson is fully reconstructed and
          \rho^2=1.20+-0.09+-0.04.

**************NOTE ******************************
S041B04: set AUBERT 07AN not used, Repl. by AUBERT 10
S042B84: set AUBERT 07AN not used, Repl. by AUBERT 10
S042R35: set AUBERT 08Q not used, Repl. by AUBERT 10
```

User-Centered Design

- **Needs assessment**
  - Interviews
  - Participant observation
- **Defining design goals & challenges**
- **Prototyping**
  - Iterative process
  - Continuous scientist feedback
- **Usability Tests**
  - Pilot study completed
  - Further studies planned



User Profile

- Geographically dispersed
- A small number of expert users
- Mostly casual users - as rarely as once per year
- 20’s - 70+ yrs - varied technical readiness

Roles

Literature searchers: scan the published HEP literature for new measurements

Encoders: experts who carefully read papers, decide exactly what information should be included into RPP, and produce the encodings

Overseers: read papers and cross-check encoders, oversee fits & averages, produce summary tables, handle Reviews

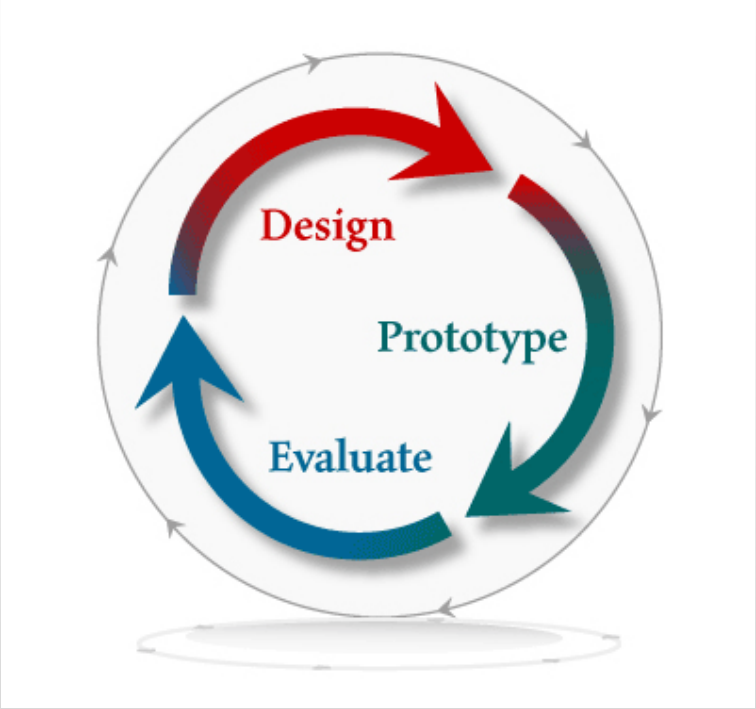
Editor: handles all computing, editorial, etc. tasks

Task Analysis

- **Keep track of assigned papers**
- **Enter in new measurements**
  - ex) 0.672 +-0.001 +-0.011
- **Create new data blocks**
  - ex) decay modes
    $K^+ \rightarrow \mu^+ \nu_\mu \gamma$
  - ex) branching ratios
    $\Gamma(\pi^0 e^+ \nu_e)/\Gamma(\mu^+ \nu_\mu)$
- **Use to facilitate a workflow**
  - Passing encodings from encoder to overseer

User-Centered Design

- **Needs assessment**
  - Interviews
  - Participant observation
- **Defining design goals & challenges**
- **Prototyping**
  - Iterative process
  - Continuous scientist feedback
- **Usability Tests**
  - Pilot study completed
  - Further studies planned



Design Goals & Challenges

- **Multi user-system**
  - Task tracking is important
- **Customizable**
  - Both expert and casual users
- **Intuitive to use**
  - Some will only use once a year
- **Math display**
  - A major challenge displaying math in a browser
- **Cross Browser Compatibility**
  - Javascript toolkits, standard CSS
- **Ability to perform complex tasks easily**
  - Ex) Entering in a branching ratio

Design Challenge - BR's

K^+ BRANCHING RATIOS

NODE=S010245

Leptonic and semileptonic modes

NODE=S010405

$\Gamma(e^+\nu_e)/\Gamma(\mu^+\nu_\mu)$ Γ_1/Γ_2

NODE=S010R28

See the note on "Decay Constants of Charged Pseudoscalar Mesons" in the D_s^+ Listings.

NODE=S010R28

NODE=S010R28

VALUE (units 10^{-5})	EVTS	DOCUMENT ID		TECN	CHG
2.493±0.025±0.019	13.8K	[10] AMBROSINO	09E	KLOE	±
• • • We do not use the following data for averages, fits, limits, etc. • • •					
2.51 ±0.15	404	HEINTZE	76	SPEC	+
2.37 ±0.17	534	HEARD	75B	SPEC	+
2.42 ±0.42	112	CLARK	72	OSPK	+

[10] The ratio is defined to include internal-bremsstrahlung, ignoring direct-emission contributions. AMBROSINO 09E determined the ratio from the measurement of $\Gamma(K \to e\nu(\gamma), E_\gamma < 10$ MeV$)$ / $\Gamma(K \to \mu\nu(\gamma))$. 89.8% of $K \to e\nu(\gamma)$ events had E_γ <10 MeV.

NODE=S010R28;LINKAGE=AM

$\Gamma(\mu^+\nu_\mu)/\Gamma_{total}$ Γ_2/Γ

NODE=S010R1

See the note on "Decay Constants of Charged Pseudoscalar Mesons" in the D_s^+ Listings.

NODE=S010R1

NODE=S010R1

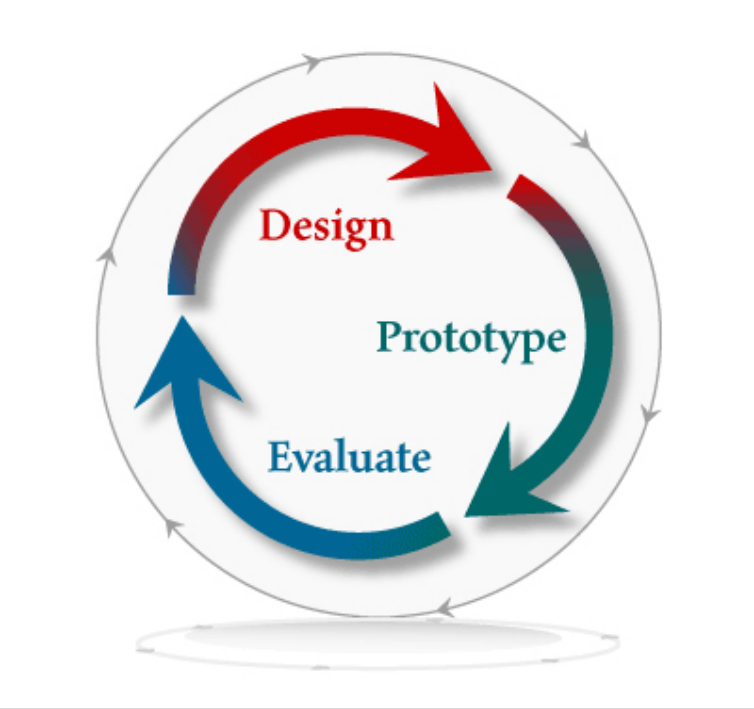
VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
63.55±0.11 OUR FIT Error includes scale factor of 1.2.						
63.60±0.16 OUR AVERAGE						
63.66±0.09±0.15	865k	[11] AMBROSINO	06A	KLOE	+	
63.24±0.44	62k	CHIANG	72	OSPK	+	1.84 GeV/c K^+

[11] Fully inclusive. Used tagged kaons from ϕ decays.

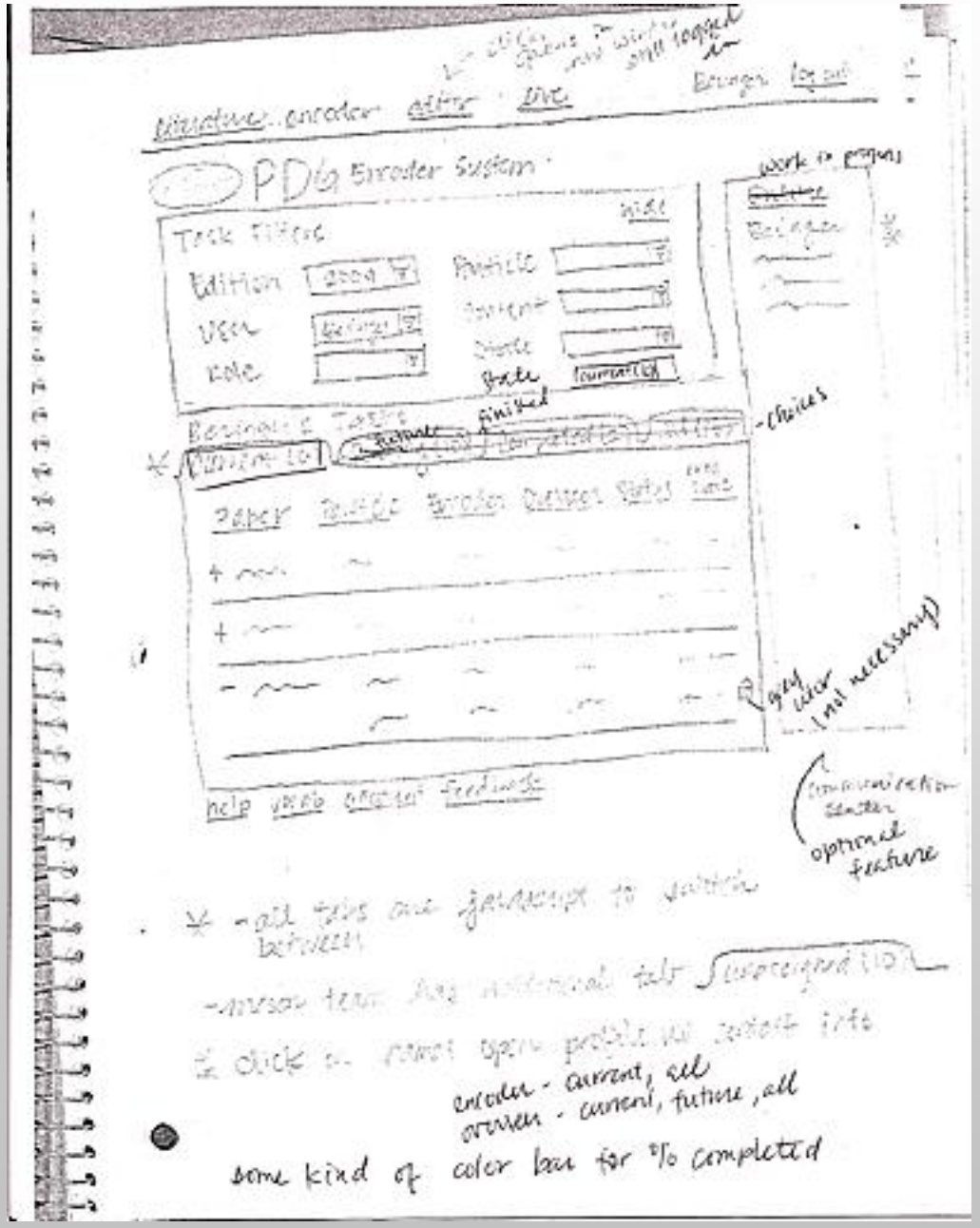
NODE=S010R1;LINKAGE=AM

User-Centered Design

- **Needs assessment**
  - Interviews
  - Participant observation
- **Defining design goals & challenges**
- **Prototyping**
  - Iterative process
  - Continuous scientist feedback
- **Usability Tests**
  - Pilot study completed
  - Further studies planned



Prototyping - Sketches



Prototypes - Design #1

PDG workspace | Literature Search | Encoding System | Editor Interface | Database Viewer | more.. | Beringer account log out

Task: AKHMETSHIN 2005

paper info | measurement info | toolbox | review & signoff | return to task list

enter new measurements

Prop ID	Measurement	Events	CL	TECN	Inline Comment	Place	
S023AA						used	save

Footnotes:

saved measurements

S023R11	0.018 +0.007-0.005 +-0.002	9		KTEV	#p{p} nucleus 800 GeV	used	edit
add/edit footnotes							
S023R11	0.018 +0.007-0.005 +-0.002	9		KTEV	#p{p} nucleus 800 GeV	used	edit
add/edit footnotes							

help vocabulary feedback

Prototypes - Design #1

PDG workspace | Literature Search | Encoding System | Editor Interface | Database Viewer | more.. Beringer account log out

Task: AKHMETSHIN 2005

paper info | measurement info | toolbox | review & signoff | return to task list

enter new measurements

Prop ID	Measurement	Events	CL	TECN	Inline Comment	Place
S023AA						used

save

Footnotes:

saved measurements

S023R11	0.018 +0.007-0.005 +-0.002	9
add/edit footnotes		
S023R11	0.018 +0.007-0.005 +-0.002	9
add/edit footnotes		

help vocabulary

PDG workspace **Particle Browser**

Grab's Assigned Particles

- K*(1680) - M095
  - Mass - ID M095M
  - Width - ID M095W
  - Decay Modes
  - Branching Ratios

All Particles

- Gauge & Higgs Bosons
- Leptons
- Quarks
- Mesons
- Baryons
- Others

Data Block for K*(1680) Mass - ID M095M

Value (MeV)	Document ID		TECN	CHG	Comment
1717+-27	Our Average				Error includes scale factor of 1.4
1677+-10+-32	ASTON	88	LASS	0	11 #d{K- p --> K- pi+ n}
1735+-10+-20	ASTON	88	LASS	0	11 #d{K- p --> K- pi+ n}
*** We do not use the following data for averages, fits, limits, etc ***					
1677+-10+-32	ASTON	88	LASS	0	11 #d{K- p --> K- pi+ n}
1735+-10+-20	ASTON	88	LASS	0	11 #d{K- p --> K- pi+ n}

Prototypes - Design #2

PDG workspace | Literature Search | Encoding System | Editor Interface | Database Viewer | more.. | Beringer account log out

Task: AKHMETSHIN 2005

paper info | measurement info | toolbox | review & signoff | return to task list

Particle Browser

Grab's Assigned Particles

- K*(1680) - M095
  - Mass - ID M095M
  - Width - ID M095W
  - Decay Modes
  - Branching Ratios

All Particles

- Gauge & Higgs Bosons
- Leptons

Data Block for K*(1680) Mass - ID M095M

Value (MeV)	Document ID		TECN	CHG	Comment
1717+-27	Our Average				Error includes scale factor of 1.4
1677+-10+-32	ASTON	88	LASS	0	11 #d{K- p --> K- pi+ n}
1735+-10+-20	ASTON	88	LASS	0	11 #d{K- p --> K- pi+ n}
*** We do not use the following data for averages, fits, limits, etc ***					
1677+-10+-32	ASTON	88	LASS	0	11 #d{K- p --> K- pi+ n}
1735+-10+-20	ASTON	88	LASS	0	11 #d{K- p --> K- pi+ n}

New Measurements

Prop ID	Measurement	Events	CL	TECN	Inline Comment	Place	
S023AA						used	save

Footnotes:

Saved Measurements

S023R11	0.018 +0.007-0.005 +-0.002	9	KTEV	#p{p} nucleus 800 GeV	used	edit
add/edit footnotes						
S023R11	0.018 +0.007-0.005 +-0.002	9	KTEV	#p{p} nucleus 800 GeV	used	edit
add/edit footnotes						

V0 Design

PDG workspace | Add Reference | Encoding System | Log Viewer — Cheng-Ju Lin log out

BATLEY 2010B (PL B686 101)

reference details | add measurements | toolbox | review & sign off — return to task list

Add New Measurement

* Node	Document ID	* Used?	Value	EVTS	CL%	TECN	Comment
	BATLEY 2010B	select...					

Footnote:

save measurement

Data Block Browser

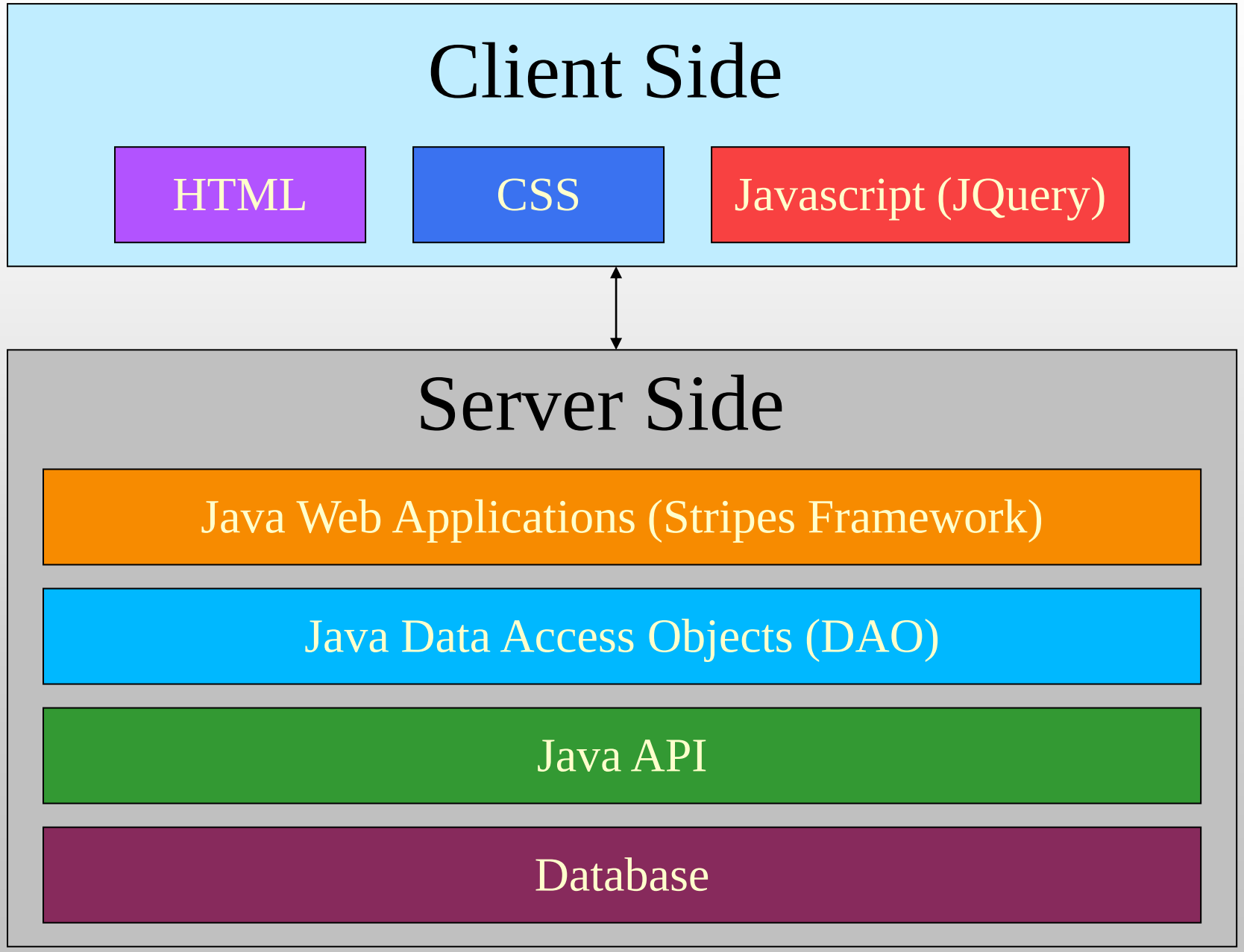
Particle S010 - K+-

Node	Header
S010M	K+- MASS
S010DM	mK+-m[Ljava.lang.String;@318dd605
S010T	K+- MEAN LIFE
S010DT	τK+-τ[Ljava.lang.String;@735fda93/τverage
S010W1	
S010W2	
S010D1	null RATE DIFFERENCE/AVERAGE
S010D2	null RATE DIFFERENCE/AVERAGE
S010D3	null RATE DIFFERENCE/AVERAGE
S010D4	null RATE DIFFERENCE/AVERAGE
S010D5	null RATE DIFFERENCE/AVERAGE
S010R79	Γ(K+- → e νμ e e) / Γtotal
S010R68	Γ(K+ → π0 π0 π0 e+ νe) / Γtotal
S010R2	Γ(K+ → π+ π0) / Γtotal
S010R17	Γ(K+ → π+ π0) / Γ(K+ → π+ π+ π-)

Data Block for K+- #p{K+-} MASS - Node S010M

Value	Document ID		TECN	CHG	Comment	Actions
493.696+-0.007	DENISOV [1]	1991	CNTR	-	Kaonic atoms	....
493.636+-0.011	GALL [2]	1988	CNTR	-	Kaonic atoms	....
493.640+-0.054	LUM	1981	CNTR	-	Kaonic atoms	....
493.670+-0.029	BARKOV	1979	EMUL	+-	$e^+ e^- \to K^+ K^-$	....
493.657+-0.020	CHENG [3]	1975	CNTR	-	Kaonic atoms	....
493.691+-0.040	BACKENSTOSS	1973	CNTR	-	Kaonic atoms	....
*** We do not use the following data for averages, fits, limits, etc ***						
493.806+-0.095	GALL	1988	CNTR	-	$K^- {}^{null}W {}^{null}W$ (11 → 10)	....
493.709+-0.073	GALL	1988	CNTR	-	$K^- {}^{null}W {}^{null}W$ (9 → 8)	....
493.675+-0.026	GALL	1988	CNTR	-	$K^- {}^{null}Pb {}^{null}Pb$ (11 → 10)	....

Technical Implementation



Math Display

Reviewed 3 technologies: jsMath, MathML, mimeTeX

MathML Test#1

MathML Test#1

MathML Test #1

1. ABBIENDI 04 search for $\tilde{e}_R\tilde{e}_R$ production in acoplanar di-election final states in the 183-208 GeV data. See Fig. 13 for the dependence of the limits on $m_{\tilde{\chi}_1^0}$ and for the limit at $\tan\beta = 35$ This limit supersedes ABBIENDI 00G.
2. ABDALLAH 03M looked for acoplanar dielectron +/E final states at $\sqrt{s} = 189 - 208$ GeV. The limit assumes $\mu = -200$ and $\tan\beta = 1.5$ in the calculation of the production cross section and $B\left(\tilde{e} \rightarrow e_{\tilde{\chi}_1^0}\right)$. See Fig. 15 for limits in the $(m_{\tilde{e}_R}, m_{\tilde{\chi}_1^0})$ plane. These limits include and update the results of ABREU 01
3. $\left(\sqrt{a \times b}\right) \times c$
4. π
5. Γ_1
6. /R
7. $f_0(t) = f_+(0)\exp\left[\frac{t}{m_K^2 - m_\pi^2}(\ln[C] - G(t))\right]$
8. $\bar{D}^*(2460)^0 \ell^+ \nu_\ell \times B\left(\bar{D}_0^{*0} \rightarrow D^+\pi^-\right)$
9. $D^{(*)}\, n\, \pi \ell^+ \nu_\ell (n \geq 1)$
10. γ

Done

Test Summary Chart

			jsMath Test #1		jsMath Test #2		MathML Test #1		MathML Test #2		mimeTeX Test #1		mimeTeX Test #2		
browser	os	TeX? fonts installed?	load time	problems rendering?	load time	problems rendering?	load time	problems rendering?	load time	problems rendering?	load time	problems rendering?	load time	problems rendering?	Comments
firefox 2	mac osx	no	9 s	no	15 s	no	1 s	radical renders strangely. bar above D missing	1 s	bar above D missing	1 s	no	1 s	no	Without TeX? fonts installed, jsMath math renders slowly but correctly. MathML? has some rendering problems. mimTeX renders very quickly and correctly, but the serif font doesn't look as nice rendered against the sans serif font.
Firefox 3.0.10	Linux (OpenSuSE? 11.1)	no	8s (first time) / 2s (using browser cache)	no, although spacing doesn't look good	9s / 4s	no	<1s	no	<1s	width of 2nd column toow small	1s	scaling/alignment issues, depending on zoom settings	1s	scaling/alignment issues, depending on zoom settings	Indentation sometimes not correct. MimeTex? initially worked fine, but suddenly stopped - perhaps a server problem?
Firefox 3.0.10	Linux (OpenSuSE? 11.1)	yes	5s (first time) / 2s (using browser cache)	no	7s / 4s	no									Installing fonts can be tricky on Linux systems. Firefox 3 has a preference setting that doesn't allow web pages to use their own fonts.
Firefox 3.5.1	Linux (Ubuntu 9.04)	texlive-fonts-2007 installed, but JSMath complains that I have no TeX? fonts	3s	\not misplaces the diagonal strikethrough (see fig. 1, below)	4s	[a]s, %s and many expnents are missing altogether	1s	Bar above "D" so short it's nearly invisible. \not misplaces the strikethrough like jsMath	1s	all [a]s, several exponentials, all % signs missing	1s	No	1s	No	mimeTeX has hideous, jagged-looking fonts, but is the only engine that renders all the pages correctly for me
Konqueror 4.2.2	Ubuntu 9.04	yes	2s	\not misplaced as abov; tan-beta overwrites ABIENDI 04	4s	same as for test#1	inst.	All symbols are the same size on a single level, i.e. no superscripts, sub.	inst.	again single level display	1s	quality low	2s	No	MimeTeX quality much worse than others
Firefox 3.0.11	Ubuntu 9.04	yes	3s	\not E,R problem	7s	same as for test#1	2s	\not E, R problem; bar over D short; \pi could be more distinct; wonder how \gamma would look like	2s		1s	quality low	2s	quality low	MimeTeX? quality much worse than others
SeaMonkey? 1.0.9	Scientific Linux 4	no	4s	\not E,R problem	16s	same as for test#1	inst.	not E, R problem; bar over D short; \pi could be more distinct;	ins.		inst	quality low	inst	quality low	MimeTeX? quality much worse than others
Firefox 3.0.11	Windows XP	no	4s	\not E,R problem	5s	no	inst.	\not E,R problem	inst.	width of 2nd col too small (numeral 10 split)	inst.	no symbols rendered (broken image sign)	inst.	no symbols rendered (broken image signs throughout)	MimeTex didn't render; jsMath looked the best but was a bit slower with no fonts installed (but not unacceptably slow)

Math Display - Summary

- **MathML (chosen)**
  - XML for describing math, product of World Wide Web Consortium (W3C)
  - Rendering quickly, quality depends on browser support
  - Hard to author the XML
    - ASCIIMathML.js for converting subset of TeX to MathML
    - Js solution can be slow, so considering Macro to MathML or server-side translator

$$\bar{D}^*(2460)^0\ell^+\nu_\ell \times \mathrm{B}\left(\bar{D}_0^{*0} \to D^+\pi^-\right)$$

- **mimeTeX**
  - fallback solution for users with browsers that don't support MathML well
  - cgi script that produces images
  - Renders decently, but inline vertical alignment is hard to adjust
  - Consistent across browsers

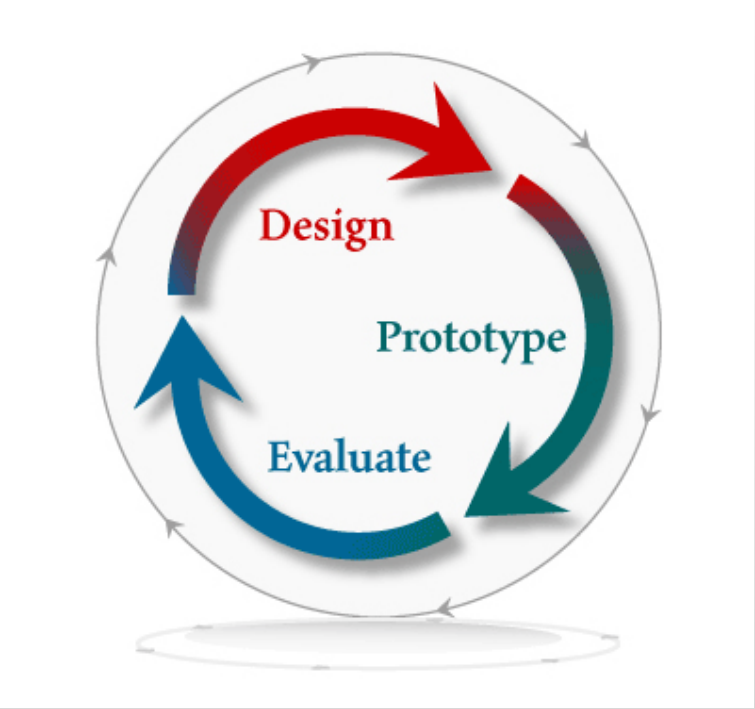
$$\overline{D}^*(2460)^0\ell^+\nu_\ell \times \mathrm{B}(\overline{D}_0^{*0} \to D^+\pi^-)$$

- **jsMath**
  - Javascript
  - Renders very nicely but can be very slow

$$\bar{D}^*(2460)^0\ell^+\nu_\ell \times \mathrm{B}(\bar{D}_0^{*0} \to D^+\pi^-)$$

User-Centered Design

- **Needs assessment**
  - Interviews
  - Participant observation
- **Defining design goals & challenges**
- **Prototyping**
  - Iterative process
  - Continuous scientist feedback
- **Usability Studies**
  - Pilot study completed
  - Further studies planned



Pilot Usability Test

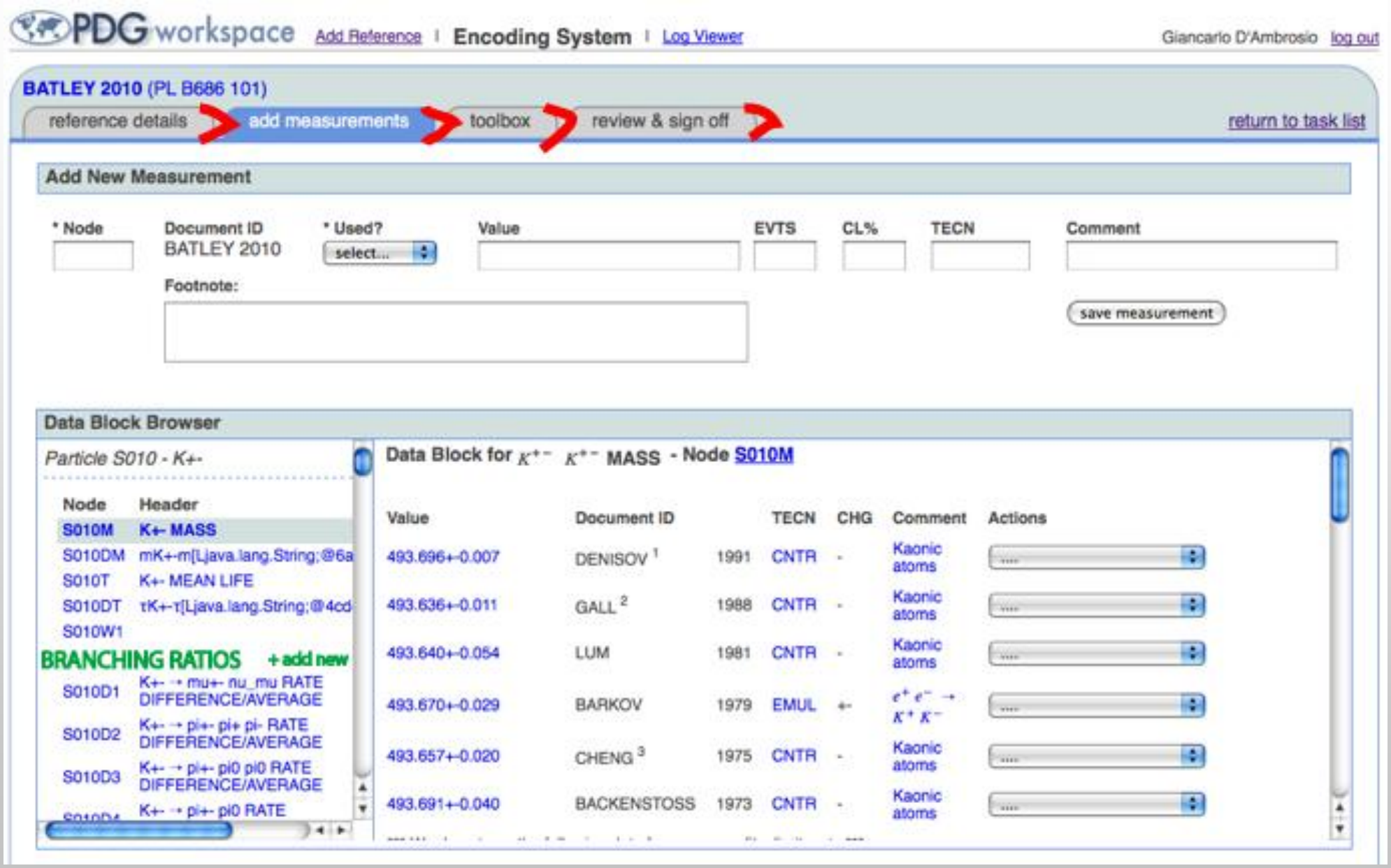
- **User test to recognize major design flaws by someone not very familiar with the work**
- **Participant is a casual user, high technical readiness**
- **Given a task list, the participant tries to complete the tasks without any help or direction**
  - Intervention by test giver usually indicates a design flaw
  - Tasks:
    - edit paper details
    - add measurement
    - create decay
    - create br
    - sign off encoding

Pilot Study - Results

Task	Difficulty	Test Result
Edit paper details	Easy	Completed < 2 min
Add measurement	Medium	Completed < 5 min
Add decay	Difficult	Intervention needed
Add branching ratio	Difficult	Completed < 5 min, but after previous intervention
Signoff	Easy	Completed < 1 min

- **Results:**
  - Of the 5 tasks, 1 required intervention (though another only discovered after intervention)
    - These were related to functionality discovery (where do you add a new branching ratio)
  - Once functionality discovered, participant felt the interaction was very easy and was surprised that such difficult tasks were possible
  - Felt there should be more cues that a certain workflow is involved
  - Overall felt ready to use the system to encode

Design Changes



Ancillary Efforts

Web GUI Testing

- **Functional Tests**
  - Junit, mock objects
- **Integration Tests**
  - Canoo Web Tests

WebTest Test Report – Test Result Overview

webtest
WebTest Test Report Tests started at Tue Aug 31 13:15:53 PDT 2010

Result Summary

WebTests	#	%	Graph
✓	2	100	
✗	0	0	
Sum	2	100	

Steps	#	%	Graph
✓	7	100	
✗	0	0	
▫	0	0	
Sum	7	100	

Server Roundtrip Timing Profile

Secs	#	%	Histogram
0 - 1	2	67	
1 - 3	1	33	
3 - 5	0	0	
5 - 10	0	0	
10 - 30	0	0	
> 30	0	0	
Sum	3	100	
Avg		798 ms	

Test Scenario Overview (2395)

#	Result	Name	# Steps	Timing profile Duration	%	Graph	Failing step
1	✓	check that Workspace is running	2 / 2	1874	78		
2	✓	check that Workspace is running and that we can log in	5 / 5	521	22		

Created using Canoo Webtest (R_1808). Report created at 31.08.2010 13:15

webtest is an Open Source project founded and hosted by canoo

Documentation

- **Code Documentation**
  - Stripes tutorial, how to add pages to the web application
  - Javadoc

Class EncoderTaskListActionBean

```
java.lang.Object
  └ pdgworkspace.action.BaseActionBean
      └ pdgworkspace.action.encoding.EncoderTaskListActionBean
```

All Implemented Interfaces:
net.sourceforge.stripes.action.ActionBean

```
public class EncoderTaskListActionBean
extends BaseActionBean
```

Action bean for listing and handling the list of encoding tasks for an authenticated user

---

Field Summary

Fields inherited from class pdgworkspace.action.BaseActionBean
changeDao, encodingDao, measurementDao, personDao, referenceDao

Constructor Summary

EncoderTaskListActionBean()

Method Summary

boolean	checkContentFilter(pdg.db.tableModel.Encoding e) runs the encoding against the general content filters
void	filterEncodingList() the main method, called from the html filter form, for filtering the encoding tasks according user entered form filter options.
net.sourceforge.stripes.action.Resolution	filterEncodings() calls EncoderTask to filter the list of encodings by a user selected filters

- **User Documentation**
  - User Manuals - ‘getting started guides’ and faq’s
  - Demos - flash or Coscripter demos (Firefox add-on)

End User Feedback

PDG Feedback Page - Mozilla Firefox

http://pdg1.lbl.gov/cgi-bin/feedback.cgi?url=http://pdglive.lbl.gov/Rsummary.brl?nodein=Q007

Feedback Page

Thank you very much for taking time to give us your feedback on our web applications!

This form provides a number of fields. You do not need to fill out all of the fields, but please bear in mind that the more information you give us, the more useful your feedback will be. This is particularly true if your comments address bugs or specific features of our web interface.

While we may not be able to reply individually to your comments, your feedback will be considered seriously. After clicking the Submit button below, you will see a printable copy of your comments in case you would like to save them for future reference.

Subject:

For **which interface** are you giving us feedback? Public interface

What describes best the **nature of your comments**? --- Please select ---

You seem to come from the following page: http://pdglive.lbl.gov/Rsummary.brl?nodein=Q007

Is this the page you are commenting about? If not, please tell us which page you are referring to (give the **URL** or describe how to get there):

Your **browser** identified itself as follows (please correct if necessary):

```
Mozilla/5.0 (X11; U; Linux x86_64; en-US; rv:1.9.0.14)
Gecko/2009090900 SUSE/3.0.14-0.1.2 Firefox/3.0.14
```

Please enter your comments here:

May we contact you with any questions we may have regarding your comments? If so, please tell us your **e-mail** address (we will not use your e-mail address for any other purpose):

Submit feedback

If you should encounter any difficulties with this feedback form, please send e-mail to pdg@lbl.gov. Thank you.

Done FoxyProxy: Disabled Open Notebook

Conclusion

- **PDG Workspace enables a new way for collaborative authoring of the RPP using modern methods that scale and are maintainable**
- **Careful design and evaluation paid off**
  - Pilot study showed the system easy to use, even for complex operations
- **A significant number of encodings could already be entered today using the existing version of the encoding system (after testing is completed)**
  - All the normal encodings + many complex operations could be done
- **All the difficult work has been done once as part of the encoding system, and can now be replicated to build the other user interfaces**
  - The building blocks for pdgLive exist within the encoding system (the datablock browser)
  - Technologies and ingredients have been proven to work

Backup Slides

Overview of Current Design

Task List

PDG workspace | Add Reference | Encoding System | Log Viewer

Giancarlo D'Ambrosio log out

Task Filters reset to defaults

simple filters

Show All Tasks for user D'Ambrosio

Edition all | Role any | Content any

Particle any | Task Status any

Task Name find reset

Task List

Task		Paper	Particle	Encoder	Overseer	Task Status	Comments
ABE	2006A	PR D73 072005	S010	D'Ambrosio	Trippe	Published	KEK-E246, T violation
ABOUZAID	2006	PRL 96 101801	S011	D'Ambrosio	Trippe	Published	
ABOUZAID	2006	PRL 96 101801	S013	D'Ambrosio	Trippe	Published	
ABOUZAID	2006A	PR D74 032004	S013	D'Ambrosio	Trippe	Published	KTEV
ABOUZAID	2006B	PR D74 039905 (errat.)	S013	D'Ambrosio	Trippe	Published	
ABOUZAID	2006C	PR D74 097101	S013	D'Ambrosio	Trippe	Published	KTeV
ABOUZAID	2007B	PRL 99 051804	S013	D'Ambrosio	Lin	Published	KTeV
ABOUZAID	2007C	PRL 99 081803	S013	D'Ambrosio	Lin	Published	KTeV
ABOUZAID	2007D	PR D76 052001	S013	D'Ambrosio	Lin	Published	KTeV
ABOUZAID	2008	PR D77 112004	S013	D'Ambrosio	Lin	Published	KTEV
ABOUZAID	2008A	PR D78 032009	S013	D'Ambrosio	Lin	Published	KTEV
ABOUZAID	2008B	PR D78 032014	S013	D'Ambrosio	Lin	Published	KTEV
ABOUZAID	2008C	PRL 100 131803	S013	D'Ambrosio	Lin	Published	KTEV
ADLER	2008	PR D77 052003	S010	D'Ambrosio	Lin	Published	E949 (Also Ref to ANIMI..04)
AHN	2006	PR D74 051105R	S013	D'Ambrosio	Trippe	Published	E391
AHN	2006B	PR D74 079901 (errat.)	S013	D'Ambrosio	Trippe	Published	

Reference Details

PDG workspace | Add Reference | Encoding System | Log Viewer — Giancarlo D'Ambrosio log out

BATLEY 2010 (PL B686 101)

reference details | add measurements | toolbox | review & sign off — return to task list

Author(s): J.R. Batley ☑ et al.

Verifier: NA48/2

Collaboration(s): NA48/2 Collab

save details

Assigned Particles

Particle Code	Particle Name	Finder	Comments
S010	K^{+-}		

assign another particle to this reference

Further Details

Appears as "Also" reference

This reference is currently not attached to any other references.

add as "Also" reference

Add Measurement

PDG workspace | Add Reference | Encoding System | Log Viewer — Giancarlo D'Ambrosio log out

BATLEY 2010 (PL B686 101)

reference details | add measurements | toolbox | review & sign off — return to task list

Add New Measurement

* Node	Document ID	* Used?	Value	EVTS	CL%	TECN	Comment
	BATLEY 2010	select...					

Footnote:

save measurement

Data Block Browser

Particle S010 - K+-

Node	Header
S010M	K+- MASS
S010DM	mK+-m[Ljava.lang.String;@6a
S010T	K+- MEAN LIFE
S010DT	τK+-τ[Ljava.lang.String;@4cd
S010W1	
S010W2	
S010D1	K+- → mu+- nu_mu RATE DIFFERENCE/AVERAGE
S010D2	K+- → pi+- pi+ pi- RATE DIFFERENCE/AVERAGE
S010D3	K+- → pi+- pi0 pi0 RATE DIFFERENCE/AVERAGE
S010D4	K+- → pi+- pi0 RATE

Data Block for K^{+-} K^{+-} MASS - Node S010M

Value	Document ID		TECN	CHG	Comment	Actions
493.696+-0.007	DENISOV [1]	1991	CNTR	-	Kaonic atoms	....
493.636+-0.011	GALL [2]	1988	CNTR	-	Kaonic atoms	....
493.640+-0.054	LUM	1981	CNTR	-	Kaonic atoms	....
493.670+-0.029	BARKOV	1979	EMUL	+-	$e^+ e^- \to K^+ K^-$	....
493.657+-0.020	CHENG [3]	1975	CNTR	-	Kaonic atoms	....
493.691+-0.040	BACKENSTOSS	1973	CNTR	-	Kaonic atoms	....

Decay Mode Editor

PDG workspace | Add Reference | Encoding System | Log Viewer — Giancarlo D'Ambrosio log out

ABAZOV 2008A (PR D77 011106R)

reference details | add measurements | toolbox | review & sign off — return to task list

decay mode editor | branching ratio editor | data block editor | correlations editor

decay modes for S010

1: $K^+ \to e^+ \nu_e$
2: $K^+ \to \mu^+ \nu_\mu$
3: $K^+ \to e^+ \nu_\mu e^+ e^-$
4: $K^{+-} \to \mu^{+-} \nu_\mu$
5: K^+
6: $K^+ \to \pi^0 e^+ \nu_e$
7: K^+
8: $K^+ \to \pi^0 \mu^+ \nu_\mu$
9: K^+
10: $K^+ \to \pi^0 \pi^0 e^+ \nu_e$
11: $K^+ ightarrowmathite^+ mathitu_e mathrmm$
12: $K^+ \to \pi^+ \pi^- e^+ \nu_e$
13: $K^+ \to e \nu_e e e$

Add New Decay Mode for K^{+-} (S010)

Drag particles from the right to add to the form below

$K^+ \to$

add

particle selector

GAUGE AND HIGGS BOSONS

γ
g
graviton
W
Z

LEPTONS

e^+
e^-
μ
τ
ν_e
ν_μ
ν_τ
ν

Branching Ratio Editor

PDG workspace | Add Reference | **Encoding System** | Log Viewer — Giancarlo D'Ambrosio log out

ABAZOV 2008A (PR D77 011106R)

reference details | add measurements | toolbox | review & sign off — return to task list

decay mode editor | **branching ratio editor** | data block editor | correlations editor

branching ratios for S010

1: $\Gamma(K^+ \to e^+ \nu_e) / \Gamma_{total}$

2: $\Gamma(K^+ \to e+ \nu_e e+ e-) / \Gamma(K^+ \to \pi^+ \pi^0)$

3: $\Gamma(\{K) / \Gamma(K^+ \to \pi^+ \pi^0)$

4: $\Gamma(\{K) / \Gamma(K^+ \to \pi^0 e^+ \nu_e)$

5: $\Gamma(K^+ \to e^+ \nu_e) / \Gamma(K^+ \to \mu^+ \nu_\mu)$

6: $\Gamma(K^+ \to \mu^+ \nu_\mu) / \Gamma_{total}$

7: $\Gamma(K^+ \to \mu^+ \nu_\mu) / \Gamma(K^+ \to \pi^+ \pi^+ \pi^-)$

8: $\Gamma(K^+ \to \pi^0 e^+ \nu_e) / \Gamma_{total}$

9: $\Gamma(K^+ \to \pi^0 e^+ \nu_e) / \Gamma(K^+ \to \mu^+ \nu_\mu)$

10: $\Gamma(K^+ \to \pi^0 e^+ \nu_e) / \Gamma(K^+ \to \mu^+ \nu_\mu K^+ \to \pi^+ \pi^0)$

Add New Branching Ratio for K+- (S010)

Select Equation Type: Γ1 / Γ2 example: $\Gamma(K^+\pi^-) / \Gamma(K^-\pi^+ + K^+\pi^-)$

Drag decays from the right to add to the form below

Γ_1 /

Γ_2

add

decay mode selector

1: $K^+ \to e^+ \nu_e$

2: $K^+ \to \mu^+ \nu_\mu$

3: $K^+ \to e^+ \nu_\mu e^+ e^-$

4: $K^{+-} \to \mu^{+-} \nu_\mu$

5: K^+

6: $K^+ \to \pi^0 e^+ \nu_e$

7: K^+

8: $K^+ \to \pi^0 \mu^+ \nu_\mu$

9: K^+

10: $K^+ \to \pi^0 \pi^0 e^+ \nu_e$

11: $K^+ ightarrowmathite^+ mathitu_e mathrmma$

12: $K^+ \to \pi^+ \pi^- e^+ \nu_e$

13: $K^+ \to e \nu_e e e$

Review & Sign Off

PDG workspace | Add Reference | **Encoding System** | Log Viewer | Giancarlo D'Ambrosio log out

BATLEY 2010 (PL B686 101)

reference details | add measurements | toolbox | review & sign off | return to task list

Reference Details

Reference	Authors	Collaboration
BATLEY 2010 (PL B686 101)	J.R. Batley, et al.	NA48/2 Collab

New Measurements for S010

	Node	Document ID	Used?	Value	EVTS	CL%	TECN	Comment	
1)	S010GTP	BATLEY 2010	used	0.6259 +-0.0043 +-0.0093			CALO		edit
2)	S010R81	BATLEY 2010	used	7.0+-1.3			NA48		edit

Sign off Encodings

Task History

Table	Modifier	Time Modified	Description
relationship	D'Ambrosio	2010-09-08 15:25:56.663401	created new branching ratio
task	Wohl	2010-09-08 14:41:40.669872	added new reference
reference	Wohl	2010-09-08 14:41:40.669872	added new reference
encoding	Wohl	2010-09-08 14:41:40.669872	added new reference
author	D'Ambrosio	2010-09-08 14:48:27.569071	updated reference details

Add Reference

PDG workspace **Add Reference** | Encoding System | Log Viewer Giancarlo D'Ambrosio log out

Add New Reference

Document Name:
Document Year:
Publication Name:
Assigned Particle:

Author(s): ☐ et al.

Verifier:
Collaboration(s):
add another collaboration

save paper

Log Viewer

PDG workspace Add Reference | Encoding System | **Log Viewer** Giancarlo D'Ambrosio log out

	Table Name	Table Row	Task ID	Person	Username	Time Modified	Comment	
1	result_summary	1040386	0	0	pdgdev	2010-09-08 17:55:50.588039	auto generated user params	view xml
2	result_summary	1040384	0	0	pdgdev	2010-09-08 17:55:50.588039	auto generated user params	view xml
3	result_summary	1040385	0	0	pdgdev	2010-09-08 17:55:50.588039	auto generated user params	
4	result_summary	1040385	0	0	pdgdev	2010-09-08 17:55:50.588039	auto generated user params	view xml
5	result_summary	1040383	0	0	pdgdev	2010-09-08 17:55:50.588039	auto generated user params	view xml
6	result_summary	1040386	0	0	pdgdev	2010-09-08 17:55:50.588039	auto generated user params	
7	result_summary	1040383	0	0	pdgdev	2010-09-08 17:55:34.392119	auto generated user params	view xml
8	result_summary	1040384	0	0	pdgdev	2010-09-08 17:55:34.392119	auto generated user params	
9	result_summary	1040381	0	0	pdgdev	2010-09-08 17:55:34.392119	auto generated user params	view xml
10	result_summary	1040382	0	0	pdgdev	2010-09-08 17:55:34.392119	auto generated user params	view xml
11	result_summary	1040384	0	0	pdgdev	2010-09-08 17:55:34.392119	auto generated user params	view xml
12	result_summary	1040383	0	0	pdgdev	2010-09-08 17:55:34.392119	auto generated user params	
13	result_summary	1040382	0	0	pdgdev	2010-09-08 17:35:50.675381	auto generated user params	
14	result_summary	1040379	0	0	pdgdev	2010-09-08 17:35:50.675381	auto generated user params	view xml