

# Taking Vista to the UK



Vista Community Meeting 2014

Chris Casey

# Chance Meetings



- Osehra – Robert Guarjardo
- EHI Live – Robert Guarjardo
  - Dr. Ed Billings
  - Dr. Tony Shannon
  - Rob Tweed

NHS Announcement of 'Vendor day'

Dr. Shannon's requirement for an RCP demonstrator

# Building on Ideas



- ClinUIP
  - Designed by Dr. Tony Shannon
  - Developed by Chris Casey
  - Presented at Fairfax VistA meeting 2012/2013
- Bootstrap + EWD.js
  - Originated at Oroville
- Anglicized VistA
  - Work done by Medsphere + General Dynamics

# The Challenge



- NHS announcement on 5<sup>th</sup> November of event 3<sup>rd</sup> December
- Deliver a prototype UK VistA demonstrator in less than a month from scratch
- Get agreements in place with people travelling

# The Team



- Medsphere
  - Dr. Ed Billings
  - Keith Avery
  - Robert Killian
- GDIT
  - Robert Guarjardo
- Dr. Tony Shannon
- Rob Tweed
- Chris Casey

# Design Philosophy



- Twitter Bootstrap – run on any platform
- Based on design presented in Rob’s training
- Build on ClinUIP concepts
  - Enterprise level view
  - Ward level view
  - Patient View
- Based on Royal College of Physicians Core Clinical Headings
- Due to timescales keep it simple

# Initial Problems



- Normal Trans-Atlantic time zone issues
- Thanksgiving
- Initial server Cache/Windows
- Bug found in Intersystem's node interface (on that specific version combination)
- Rebuild entire system on GT.M/Linux

Resulted in nearly 1 week being lost

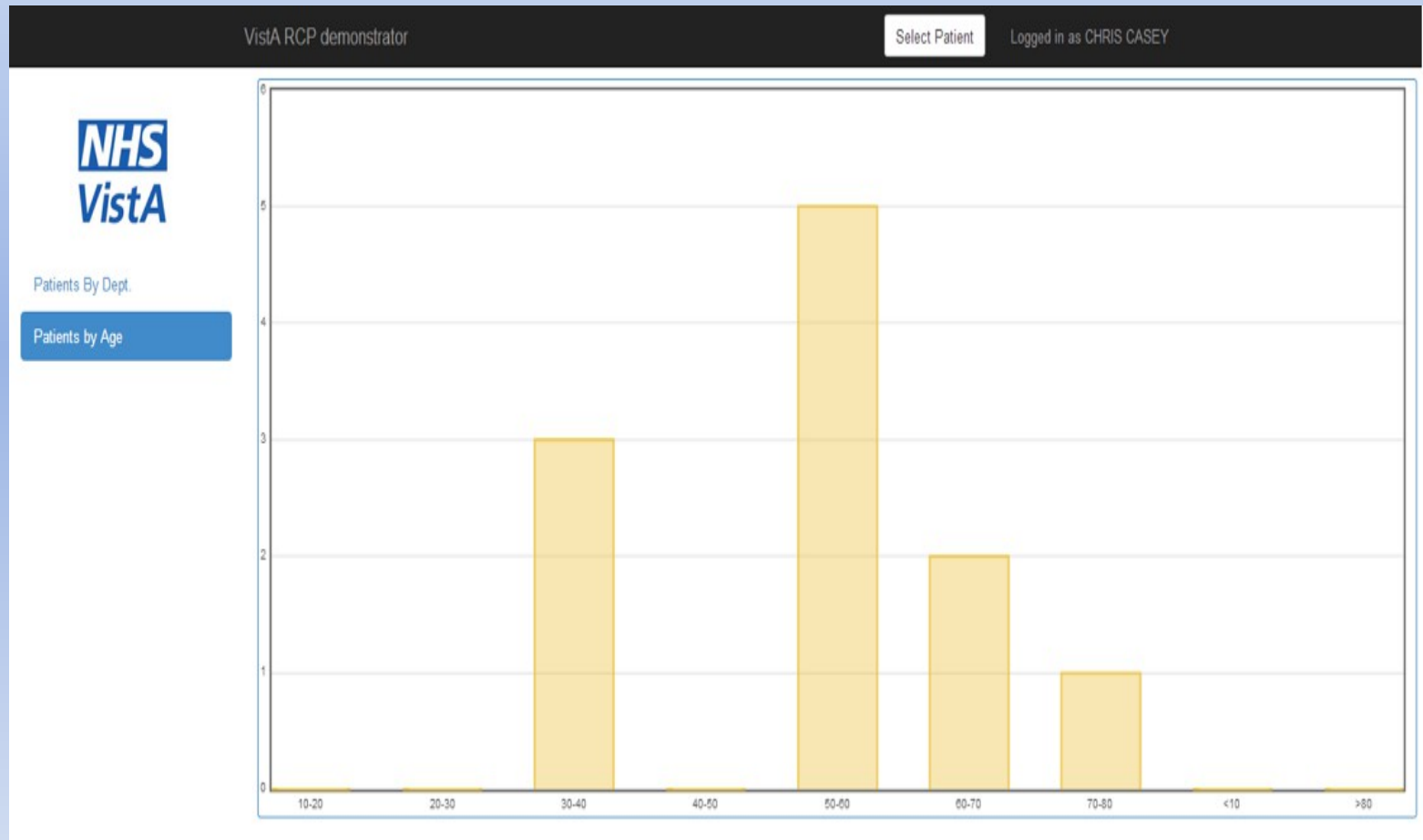
## Live Demo



- <http://awsgsddev02.medsphere.com:8080/ewd/VistaRCP/index.html>



# Overview of system



# Ward view



VistA RCP demonstrator

Select Patient

Logged in as CHRIS CASEY



Patients By Dept.

Patients by Age

Patients in Ward: WARD 1

Show  entries Search:

Id	Name	Sex	DOB	NHS No
1	ALDEN, GEORGIA	FEMALE	30/12/1944	314 400 2687
3	BLOGGS, OLIVIA	FEMALE	27/04/1955	289 982 4628
7	DAVIES, JANE	FEMALE	15/01/1975	634 964 4649
17	MIDDLETON, KATHERINE	FEMALE	30/08/1945	248 116 3418
18	ROBINSON, KATE	FEMALE	06/01/1960	184 819 8025
22	TOULSON, MICHAEL	MALE	06/08/1978	108 626 9352
23	TREVENA, NICOLA	FEMALE	14/09/1954	941 353 8085
24	TURPIN, MEGAN	FEMALE	12/03/1960	409 491 2280
25	WILLIAMS, LEAH	FEMALE	01/01/1962	500 198 2434

Showing 1 to 9 of 9 entries ◀ Previous Next ▶

# Patient View



VistA RCP demonstrator

Select Patient

Logged in as CHRIS CASEY



Patients By Dept.

Patients by Age

Patient Demographics

Reasons for Contact **24**

Presenting Complaints/ Issues

Family History

Problems, Issues & Diagnoses **6**

Procedures **1**

Investigations & Results **20**

Medications **104**

Allergies & Adverse Reactions **18**

Safety Alerts

Plans & Requested Actions

DAVIES, JANE id: 7 Born: 15 JAN 1975 (38) Gender: FEMALE NHS No: 634 964 4649

Close

## Patient Demographics

Name	DAVIES, JANE	Primary Address	Next of Kin
Date of Birth	15 JAN 1975	3315 PARK LANE ABERDEEN	
Age	38		
Sex	FEMALE	Phone Number	Phone Number
Ethnicity		08881 393269	
NHS Number	634 964 4649		
Other Identifier			
Location			
Participation in Research			

# Vitals Signs



Vista RCP demonstrator

Select Patient

Logged in as CHRIS CASEY



- Patients By Dept.
- Patients by Age

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- Patient Demographics
- Reasons for Contact 1
- Presenting Complaints/ Issues
- Family History
- Problems, Issues & Diagnoses
- Procedures
- Investigations & Results 17
- Medications 20
- Allergies & Adverse Reactions 2
- Safety Alerts
- Plans & Requested Actions

TREVENA, NICOLA id: 23 Born: 14 SEP 1954 (59) Gender: FEMALE NHS No: 941 353 8085
Close

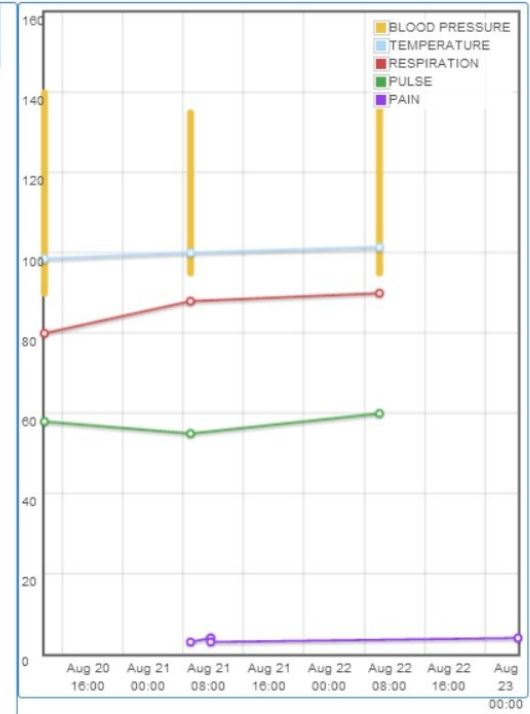
Vital Signs

Show 10 entries Search:

Date/Time	Type	Measurement
20 AUG 2013@14:40	BLOOD PRESSURE	140/90
20 AUG 2013@14:40	TEMPERATURE	98.6
20 AUG 2013@14:40	RESPIRATION	80
20 AUG 2013@14:40	PULSE	58
21 AUG 2013@10:00	BLOOD PRESSURE	135/95
21 AUG 2013@10:00	TEMPERATURE	100.1
21 AUG 2013@10:00	RESPIRATION	88
21 AUG 2013@10:00	PULSE	55
21 AUG 2013@10:00	PAIN	3
21 AUG 2013@12:46:06	PAIN	4

Showing 1 to 10 of 17 entries ◀ Previous Next ▶

Show on graph



# Problem Details



VistA RCP demonstrator

Select Patient

Logged in as CHRIS CASEY



Patients By Dept.

Patients by Age

Patient Demographics

Reasons for Contact **77**

Presenting Complaints/ Issues **1**

Family History

**Problems, Issues & Diagnoses** **3**

Procedures **4**

Investigations & Results **92**

Medications **10**

Allergies & Adverse Reactions **17**

Safety Alerts

Plans & Requested Actions

TOULSON, MICHAEL id: 22 Born: 6 AUG 1978 (35) Gender: MALE NHS No: 108 626 9352

Close

## Problems and Issues

Show 10 entries

Search:

Problem No	Date Entered	Description
1	21 AUG 2013	Intrinsic Asthma Nos
2	22 AUG 2013	Spleen Injury Nos-closed
3	22 AUG 2013	Fracture Patella-open

Showing 1 to 3 of 3 entries

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## Problem Details

DateEntered	22 AUG 2013
DateLastModified	22 AUG 2013
DateOfOnset	22 AUG 2013
Diagnosis	822.1
Facility	MEDSPHERE
Nmbr	3
Author	BILLINGS, EDMUND MD
DateNoteAdded	22 AUG 2013
NoteNarrative	Right Knee with 5 cm horizontal laceration
NoteNmbr	1
NoteFacility	MEDSPHERE
PatientName	TOULSON, MICHAEL
ProviderNarrative	Fracture Patella-open
RecordingProvider	BILLINGS, EDMUND MD
Status	ACTIVE
id	68

# Procedure with images



BROWN,LUKE id: 4 Born: 18 NOV 1938 (75) Gender: MALE NHS No: 618 238 6505

Close

## Procedures

Show 10 entries

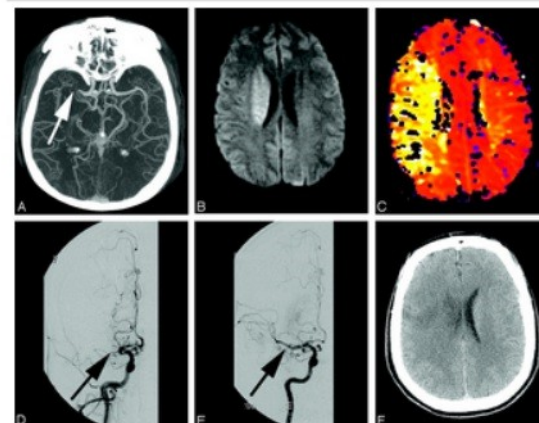
Search:

Date/Time	Name	Note
3 NOV 2008@07:19	CT ABDOMEN W/O & W/DYE	CT ABDOMEN W&W/O CONT
3 NOV 2008@07:21	X-RAY EXAM OF ABDOMEN	ABDOMEN 2 VIEWS
14 APR 2009@13:21	X-RAY EXAM SERIES ABDOMEN	ABDOMEN MIN 3 VIEWS+CHEST
13 MAY 2010@11:29	CT ABDOMEN W/DYE	CT ABDOMEN W/CONT
13 MAY 2010@11:31	CHEST X-RAY	CHEST PA & LAT
7 MAR 2011@09:29:08	ISCHM STROKE SYMP LT3 HRSB/4	
7 MAR 2011@09:29:08	ISCHM STROKE SYMP LT3 HRSB/4	
3 JAN 2013@10:00	X-RAY EXAM OF ABDOMEN	ABDOMEN 1 VIEW OR KUB
21 FEB 2013@12:44	CHEST X-RAY	CHEST 1V PA OR AP
21 FEB 2013@12:45	X-RAY EXAM OF WRIST	WRIST RT 3 OR MORE VIEWS

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## Procedure Details



Cpt	1065F
CptShortName	ISCHM STROKE SYMP LT3 HRSB/4
EncounterProvider	SMALL, KAREN
EventDateAndTime	7 MAR 2011@09:29:08
PatientName	BROWN,LUKE
Quantity	1
Visit	7 MAR 2011@09:29:08
id	52

# Update Allergy



A RCP demonstrator Select Patient

**BROWN,LUKE** id: 4 Born: X

Allergies

Show  entries

Date

- 16 DEC 2008@13:06
- 16 DEC 2008@13:07
- 14 APR 2009@13:22:35
- 3 DEC 2013

Showing 1 to 4 of 4 entries

[Add new Allergy](#)

## Add Allergy

Reactant

Symptoms

Comments

## Issues with current system



- Not all headings filled/complete
- Most of data retrieved via one generic *GETS^DIQ call*
- *Gets all data, including redundant and duplicate*
- *Horrible data refactoring*
- *Not the fastest code*
- Only one update written thus far



# Some Code



```
gets(z)      ;generic call to GETS^DIQ
n fieldName,fileName,fileNo,fields,fln,fn,ien,ienX,inputs,outputs,results,sf,sfCount,sflen,sfLvl,sfName
m inputs=^%zewdTemp($j,"inputs")
k results
s fileNo=$g(inputs("fileNo")) i 'fileNo q "no file supplied"
s ien=$g(inputs("recordId")) i 'ien q "no record Id supplied"
s fields=$g(inputs("fields")) i fields="" s fields="*" ;default is all fields, subfields and multiples
s flags=$g(inputs("flags")) i flags="" s flags="RNIE" ;default is internal, external, fieldnames, no null results
s ienX=ien_" ,"
s fileName=$$validName($p($G(^DIC(fileNo,0)),"^",1))
s outputs(fileName,"id")=ien
d GETS^DIQ(fileNo,ienX,fields,flags,"results")
d treelt
m ^%zewdTemp($j,"outputs")=outputs
q ""
```

# The Horrible Code



treelt

```
n count,fileno,parent,parentName,previous,resetxt,subfiletxt,treeIndex,treeout,tree
k treeout
s fileno="" f s fileno=$(results(fileno)) q:fileno="" d
. s subfiletxt="" f s subfiletxt=$(results(fileno,subfiletxt)) q:subfiletxt="" D
.. s resetxt=$$reverse(subfiletxt)
.. m treeout(resetxt,fileno)=results(fileno,subfiletxt)
s parent="",previous="",sflen="" f s sflen=$(treeout(sflen)) q:sflen="" d
. s parent=$p(sflen,"",1,($l(sflen,"")-2))_","
. i $l(sflen,"")=$l(previous) s count=0 s previous=sflen
. s fn="" f s fn=$(treeout(sflen,fn)) q:fn="" d
.. i fn'=fileNo s sfName=$p($g(^DD(fn,0)), "^",1) s:$L(sfName," SUB-FIELD")>1 sfName=$p(sfName," SUB-FIELD",1) S sfName=$$validName(sfName)
.. s count=$(tree(parent,sfName,"",-1) s:count="" count=count+1 s:count="" count=0
.. s fieldName="" f s fieldName=$(treeout(sflen,fn,fieldName)) q:fieldName="" d
... i fn=fileNo m outputs(fileName,$$validName(fieldName))=treeout(sflen,fn,fieldName) q
... m tree(parent,sfName,count,$$validName(fieldName))=treeout(sflen,fn,fieldName)
... s treeIndex(sflen)=count
s sflen="" f s sflen=$(tree(sflen),-1) q:sflen=ienX q:sflen="" d
. s parent=$p(sflen,"",1,($l(sflen,"")-2))_","
. s parentName=$(tree(parent,""))
. m tree(parent,parentName,treeIndex(sflen))=tree(sflen)
. k tree(sflen)
m outputs(fileName)=tree(ienX)
q
```

# The node javascript end



```
getVital: function(patientId,problemId,ewd) {  
    var vitalRes = new ewd.mumps.GlobalNode("%zewdTemp",[process.pid]);  
    vitalRes._delete();  
    vitalRes._setDocument({'inputs':{'fileNo':120.5,'patientId':patientId,'recordId':problemId}});  
    var result=ewd.mumps.function('gets^ZZCPCR00','xx');  
    var document=vitalRes._getDocument();  
    vitalRes._delete();  
    return document.outputs;  
},
```

## Next Steps



- Use proper API's for data retrievals
- Complete the 'missing' headers
- Multi-option patient lookup
- Admission reconciliation
- Discharge Reconciliation
- NHS 4 hour rule status display
- Patient lists – rounds/nursing/handover
- Graphical/interactive Bedboard
- Further Anglicization

# Questions and Contacts



- boroChris9@gmail.com
- Skype: boroChris99
- Twitter: @ChrisPCasey
- Blog: [chrispcasey@wordpress.com](http://chrispcasey.wordpress.com)
- Source code: <https://github.com/boroChris/RCPClinicalHeadings>

This presentation will be available on my blog soon