



APIs and URLs for Social TV

Dan Brickley <danbri@danbri.org>
NoTube Project & Vrije Universiteit, Amsterdam

with Libby Miller, Mo McRoberts, Vicky Buser

a joint W3C position paper from NoTube & Project Baird

W3C Web & TV Workshop, Berlin, Feb 2011

Today

- From me...
 - 3 requirements from Linked Social TV
 - Via motivating scenarios & examples
 - Suggestions for W3C next steps
- A few words from a like-minded special guest (Matt Hammond of BBC)
- Coffee!

(who am I?)

- In W3C community since 1997
- Joined W3C team to help start Semantic Web project, RDF specs and groups
- 2006/7 Libby's 'Widget / social' team at Joost.com startup - TV re-built in the Web
- NoTube project, also recently co-chaired W3C SocialWeb Incubator Group

The 3 Requirements

Achievable, inter-dependent and foundational

- Let metadata flow widely - *advertising content*, rather than be a hidden asset
- Identify and *link* content with useful URLs(*)
- Open APIs to control TV and link devices

* *CRIDs are great, but people share HTTP URLs*

see also CRID resolver demo services.notu.be

Scenario-led analysis

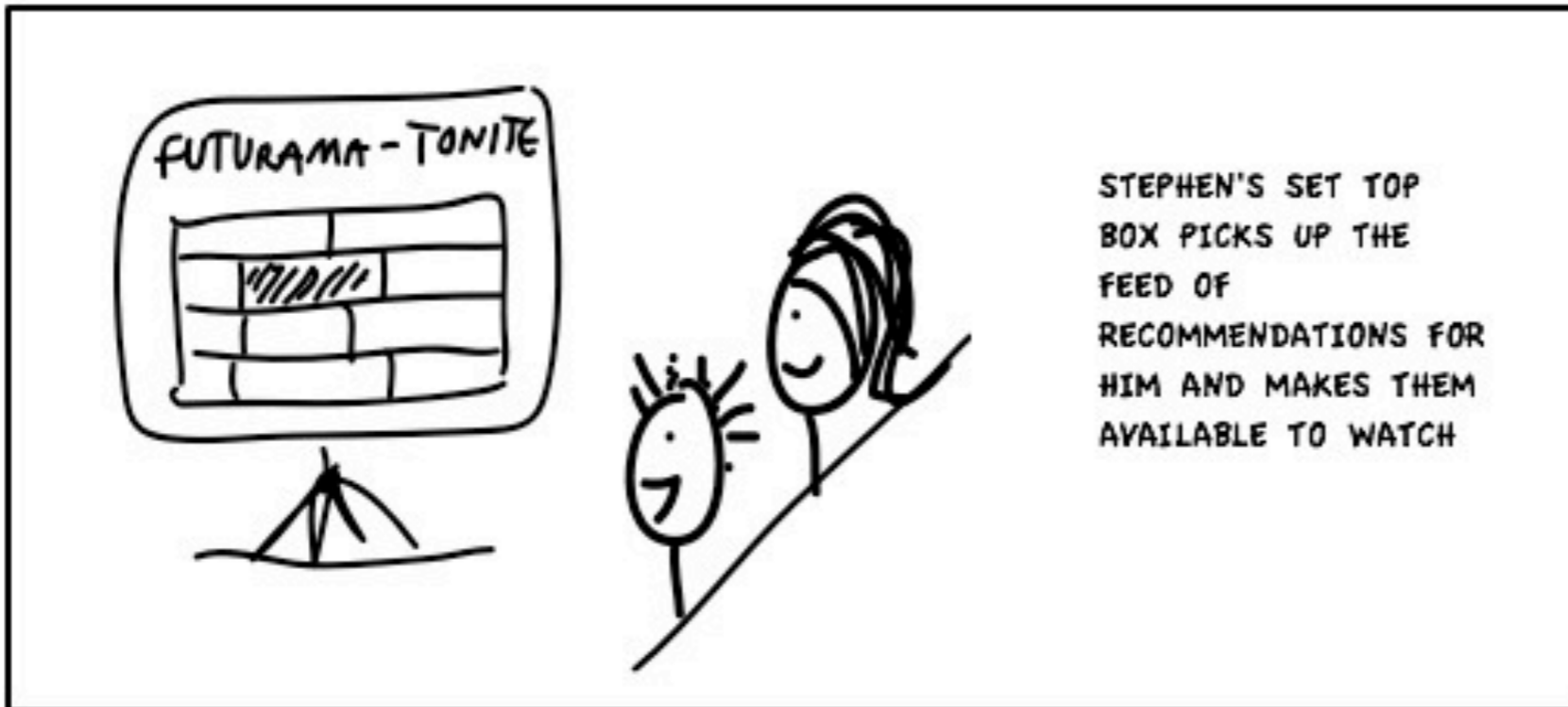
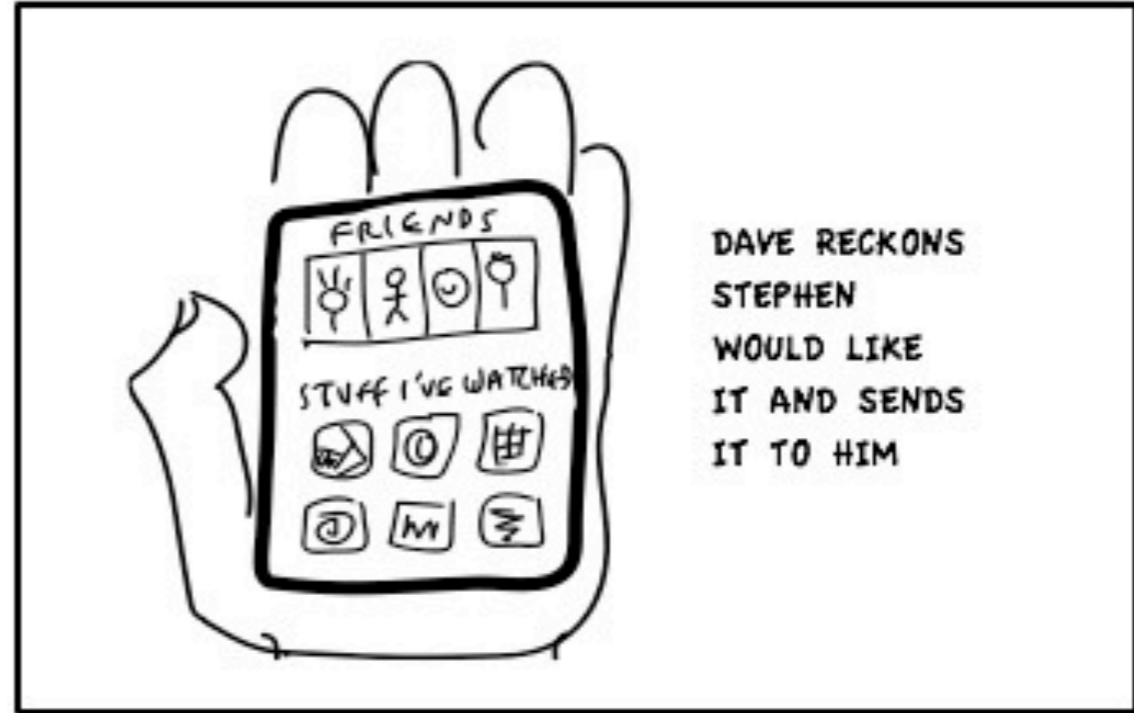
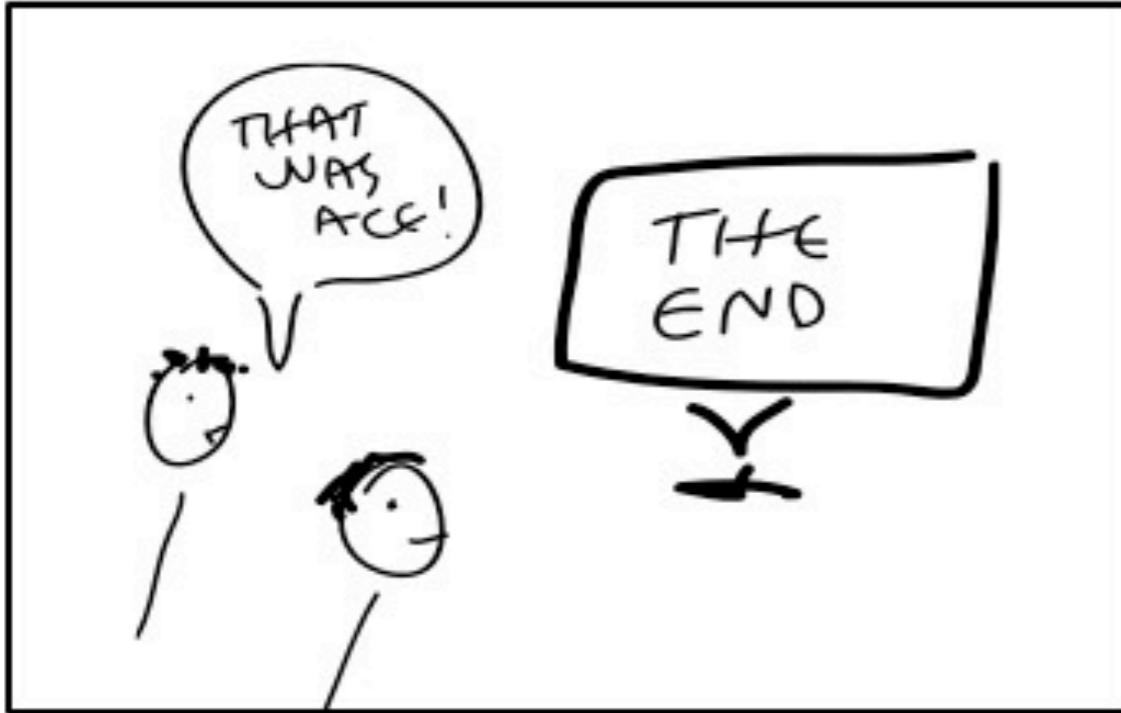
TV - not as a device, but as a part of people's lives

World Wide Web - not just a technology component

but as a *linked information network...*

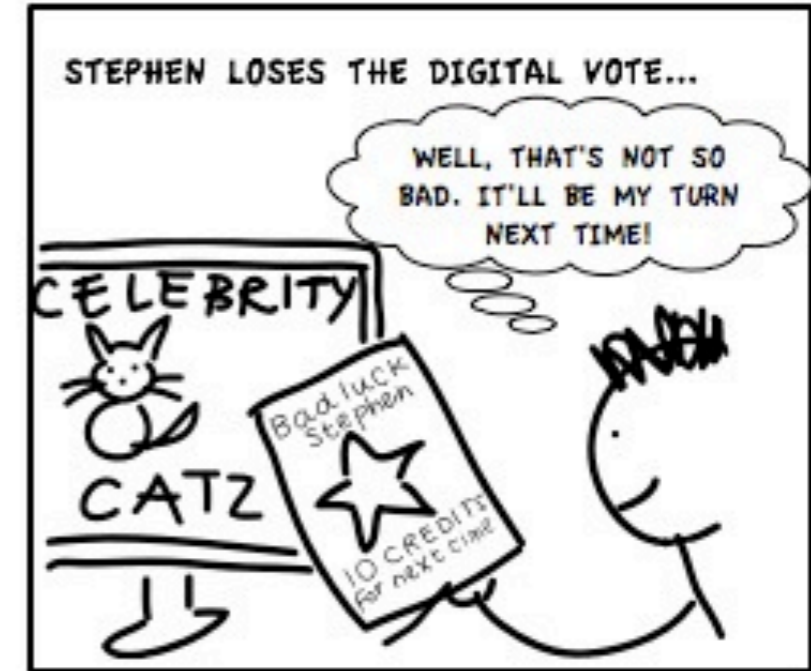
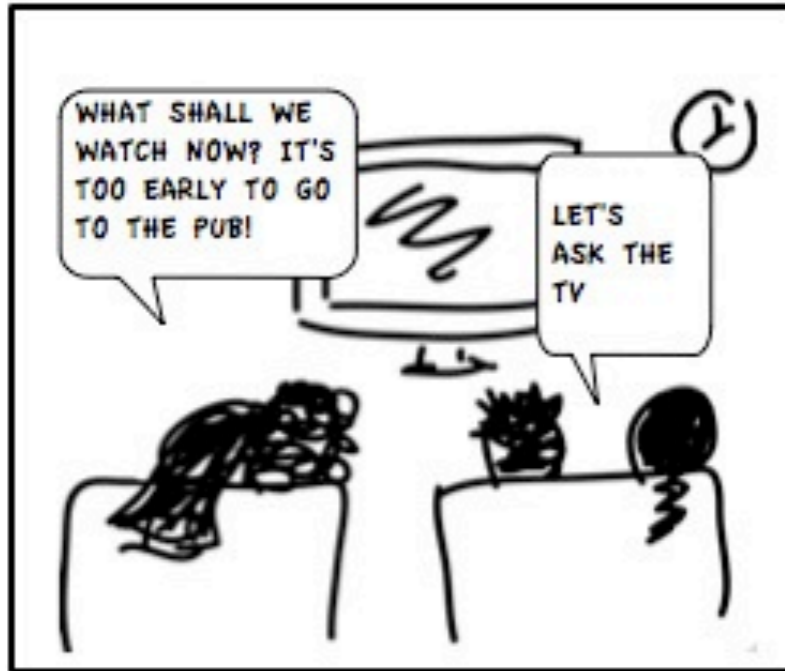
...and as something that *connects billions of people*

DAVE AND MATT HAVE JUST WATCHED THE LATEST EPISODE OF FUTURAMA



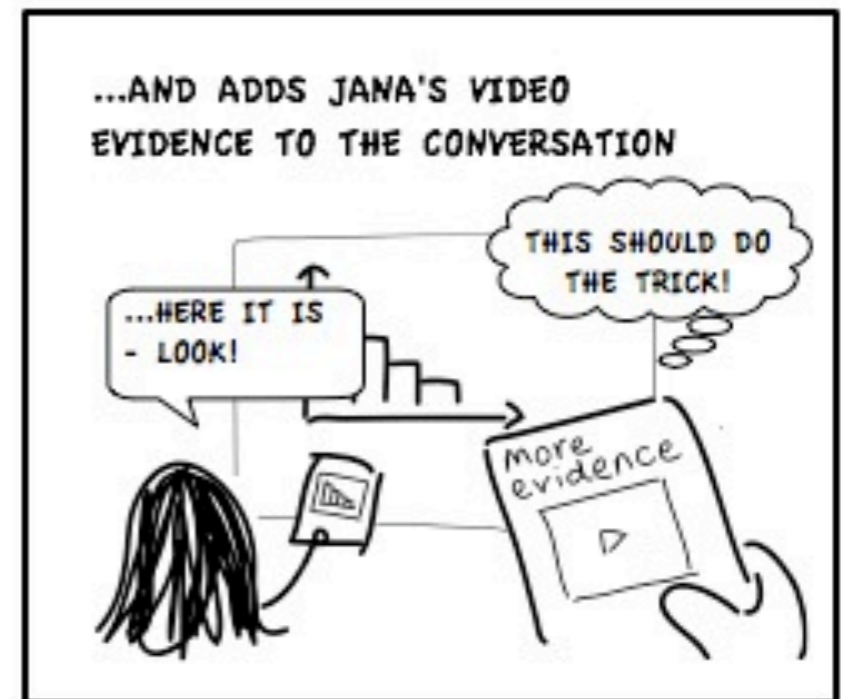
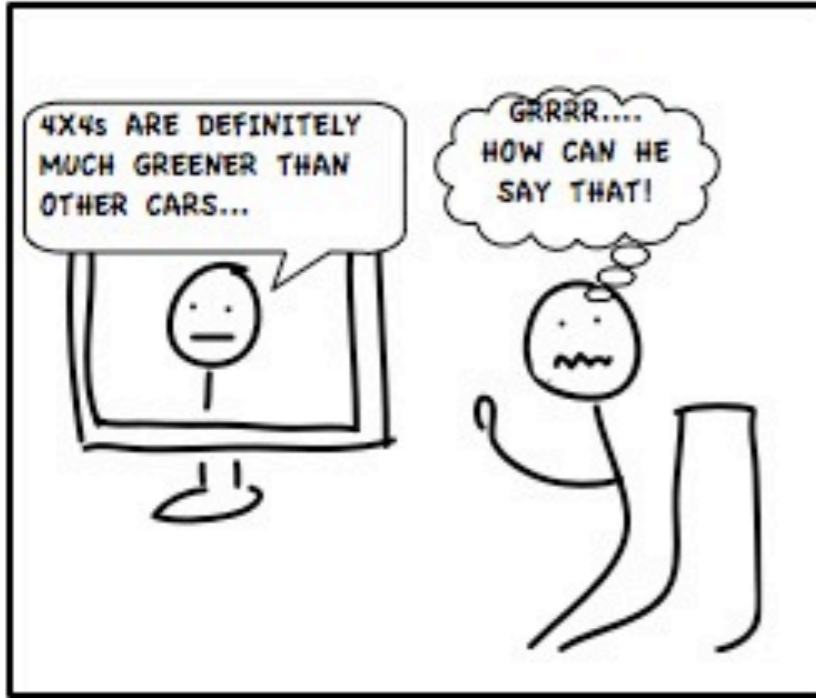
MORE AT
[HTTP://BLOG.NOTU.BE](http://blog.notu.be)

SATURDAY EVENING AT JANA & STEPHEN'S...



MORE AT [HTTP://BLOG.NOTU.BE](http://blog.notu.be)

STEPHEN'S FRIEND MAX IS WATCHING THE DEBATE...



MORE AT [HTTP://BLOG.NOTU.BE](http://blog.notu.be)

... and we noticed

- Nobody says, “I want to see recommendations from other people who bought the same TV as me”
- Nobody says, “I want to learn a new interface and controller for every device I use”
- Or “I wish watching TV was more like using a computer.”

Prototypes and demos

From Widgets to APIs and the second screen

(and third, fourth, and fifth...)

(and sometimes no screens at all...)

Clock

Channel Chat

Started talking in the 'Fifth Gear Shortcuts' chatroom as guest-81c5f483

You can personalize your nickname using Actions > Change nickname

Started talking in the 'Fifth Gear Shortcuts' chatroom as netzkobold

44

Notice Board

Welcome to My Joost. This area contains the first widgets that hopefully will make your viewing experience richer, deeper, and more social. The current widgets are made by us, but soon, you and the content owners can also create your own widgets - so check this area often. We will update this text when these become

Instant Messaging

Offline

Username

Password

Remember my password

Sign in using your Jabber or Gmail account

Sign in

Advanced Settings

When Exiting Joost: Leave on standby

Launch Joost in: Full screen

When in window mode: Keep always on top

To watch programs, viewers must be over : 17

To watch programs a PIN number is required:

Choose a PIN number:

Save Settings

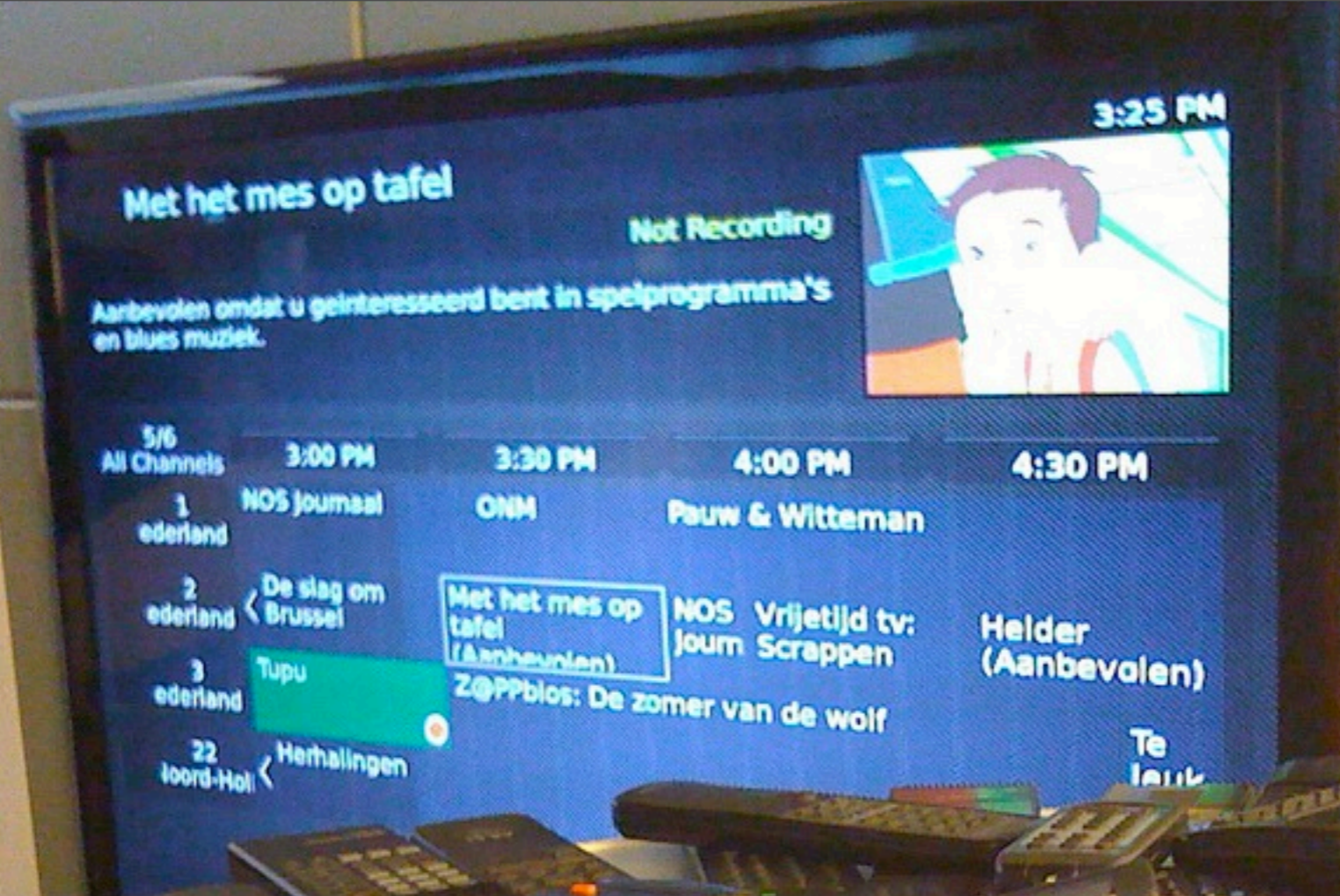
Invite Friends

You have sent a total of 112 invites so far.

Friend's name	Status
Steve Tung	invited
David Trautmann	invited
Josh Firetracer	invited
Tim Spec	invited
Daniel Kniffin	sent
Michael Legare	invited
Paris Asta	invited
Scott Fowle	invited
Peter McCormack	invited
Travis Dovor	invited
Peter McKelvey	invited
Carl Barkfeldt	invited

Close status

Widget Menu



5/6 All Channels	3:00 PM	3:30 PM	4:00 PM	4:30 PM
1 ederland	NOS Journaal	ONM	Pauw & Witteman	
2 ederland	De slag om Brussel	Met het mes op tafel (Aanbevolen)	NOS Vrijetijd tv: Jouw Scrappen	Helder (Aanbevolen)
3 ederland	Tupu	Z@PPbios: De zomer van de wolf		Te leuk
22 Noord-Hol	Herhalingen			



Period drama series. Soames tries for one last chance with Irene, only for her to spurn him and marry Young Jolyon. To catch up, go to www.itv.com/itvplayer. Recommended because in categories: Period television series, BBC television dramas

Not Recording



4/19
All Channels

7
BBC THREE

9
BBC FOUR

10
ITV3

11:30 AM

12:00 PM

12:30 PM

1:00 PM

This Is BBC Three

This Is BBC Three

This Is BBC Four

The Forsyte Saga (Recommendation)

Heartbeat

Las Vegas, California & Hawaii

Coach Trip

Coach Trip

Velvet Gown

Signature Detective Recommendations

Monday 10 11:54

SAMSUNG





Experiments with pairing protocols

eg. QR Codes (“xmpp:bob.notube@gmail.com/tv1234”)



When disaster hits the Titanic, the Doctor uncovers a threat to the whole human race.

[BBC website](#)

[Load far](#)

Categories: [tragedy](#) [danger](#) [unhappiness](#) [threats](#) [industrial sabotage](#) [insurance fraud](#) [christmas](#) [aliens \(extra terrestrial\)](#) [comets \(astronomy\)](#) [earth \(astronomy\)](#) [death](#) [damaged spacecraft](#) [repair of spacecraft](#) [waiting \(waiters\)](#) [time travel](#)



The Green Balloon Club:

The Green Team learn the story of the Nativity, told by the animals. From Sunday, 21 December, 2008 at 09:12AM
[BBC Website](#)

Linked by [christmas](#)



Blue Peter:

Helen and Joel race one another on the ice, while Andy visits Coronation Street. From Thursday, 18 December, 2008 at 08:12AM
[BBC Website](#)

Linked by [christmas](#)



Scoop: Out Of This World

Digby tries to launch Hacker into orbit for a competition, and they encounter an alien. From Monday, 16 March, 2009 at 07:03AM
[BBC Website](#)

Linked by [aliens \(extra terrestrial\)](#)



The Cbeebies Starry Christmas Show:2008

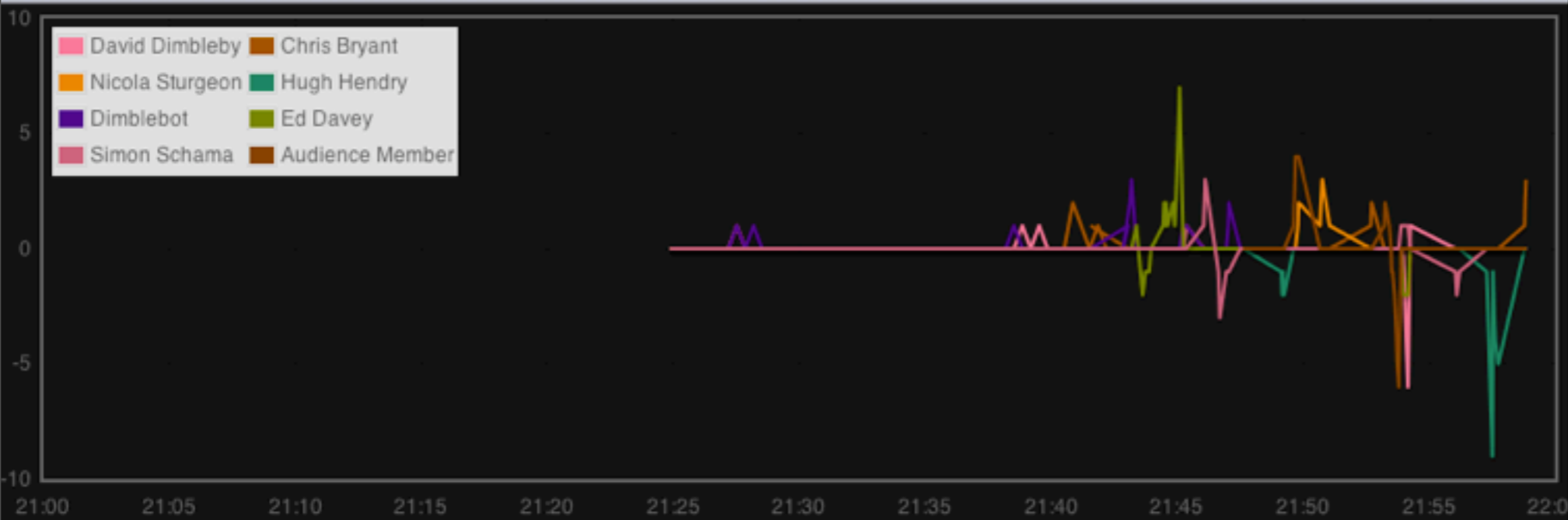
It is up to Chris, Sid, Andy and Pui to help the Cbeebies Christmas Fairy find her star. From Wednesday, 24 December, 2008 at 08:12AM
[BBC Website](#)

Linked by [christmas](#)

connected

2nd screen archive browser on a tablet computer

Clapometer



Your vote counts!



What's happening?

libbymiller [Sign out of twitter](#)



dimblebot

DIMBLEBOT CALCULATES THAT "HENDRY" HAS PARTAKEN IN TOO MANY "HERBAL REFRESHMENTS" IN THE #BBCQT GREEN ROOM

1 minutes



JohnNor

#bbcqt me too, he's gone all Starkey RT @Lucy Mangan I am feeling very conflicted about Simon Schama on #questiontime

0 minutes



dimblebot

"STURGEON" IS IN DANGER FROM THE FLAILINGS OF "SCHAMA". THIS IS BIO-DIMBLEBY'S BIRTHDAY TREAT. #BBCQT

0 minutes



JohnNor

Has Schama gone all Starkey (e.g. Tory Historian) or is he still cool? #confused #bbcqt

1 minutes



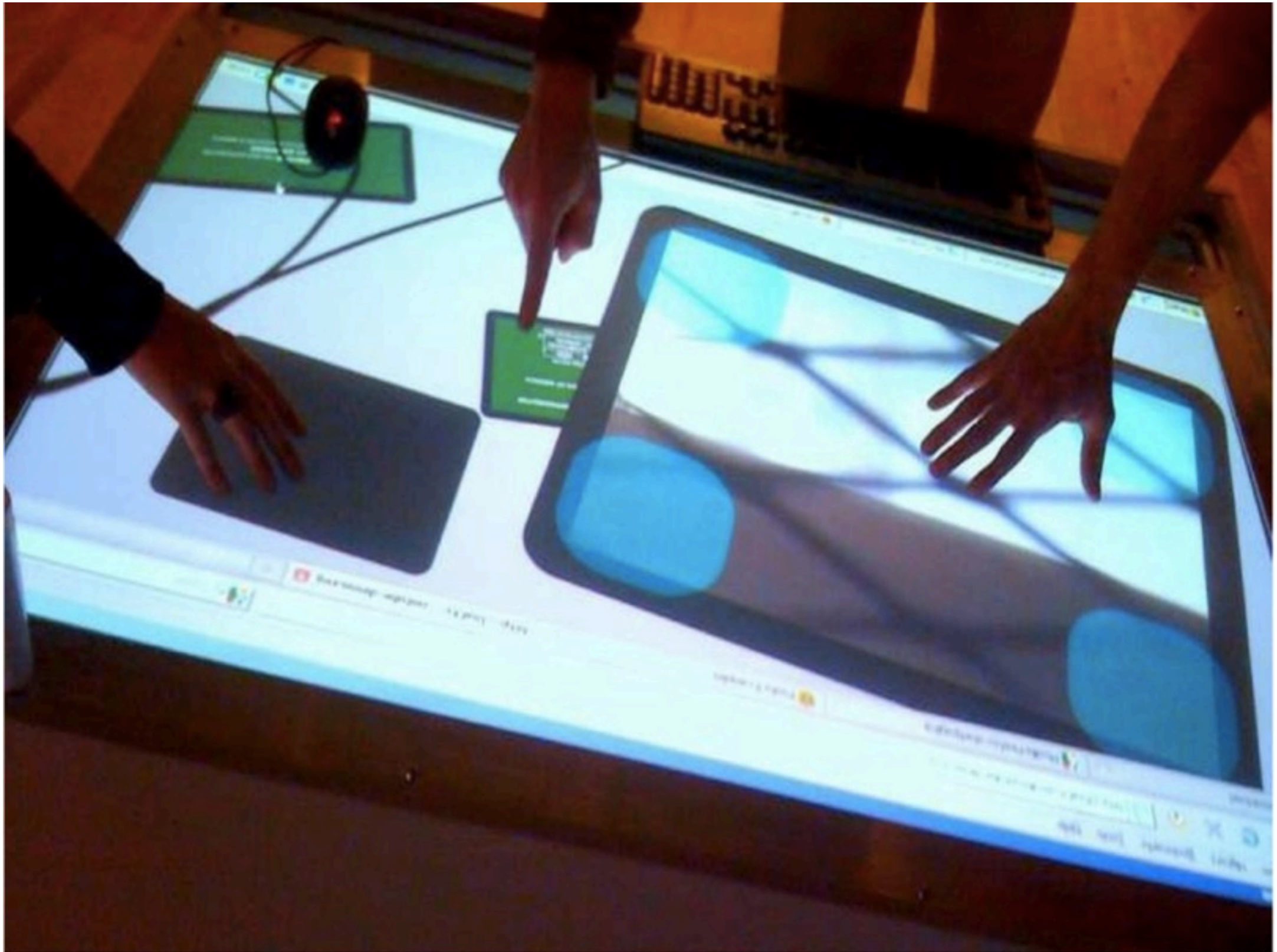
Charonqc

Angela Merkin's poodle?

Custom 2nd screen apps (OAuth/Twitter for 'social')



NoTube Network: Your friend LIBBY MILLER suggests DR WHO, starting soon on BBC1



(scope: can a table be a 'remote control?')



(scope: is a projector a 'TV'?)

Observations

- Second screen APIs have huge potential
- Standard protocols needed (HTTP, XMPP?)
- Useless without content identifiers, free-flow of metadata
- “Social TV” is happening online *anyway* (even if people didn’t care to connect their TV’s ethernet cable)

Linked TV data

Connecting Archive.org films via Wikipedia to IMDB, Rotten Tomatoes, Facebook and to other users...

(24 hour collab with Kingsley Idehen)

SPARQL Query Results | describedBy: http://buttons.notube.tv/moredata/archive.org/films/_archivemeta.nt >

Tile View Table View Map View Sort: release date ▾

Clear All

Search...

runtime (<http://dbpedia.org>)

amgId

based on

country

director

distributor

Sort: Quantity

- American International 8
- Paramount Pictures 8
- Monogram Pictures 7
- United Artists 7
- Metro-Goldwyn-Mayer 5
- Universal Pictures 4
- Columbia Pictures 3
- Eagle-Lion Films 3

gross

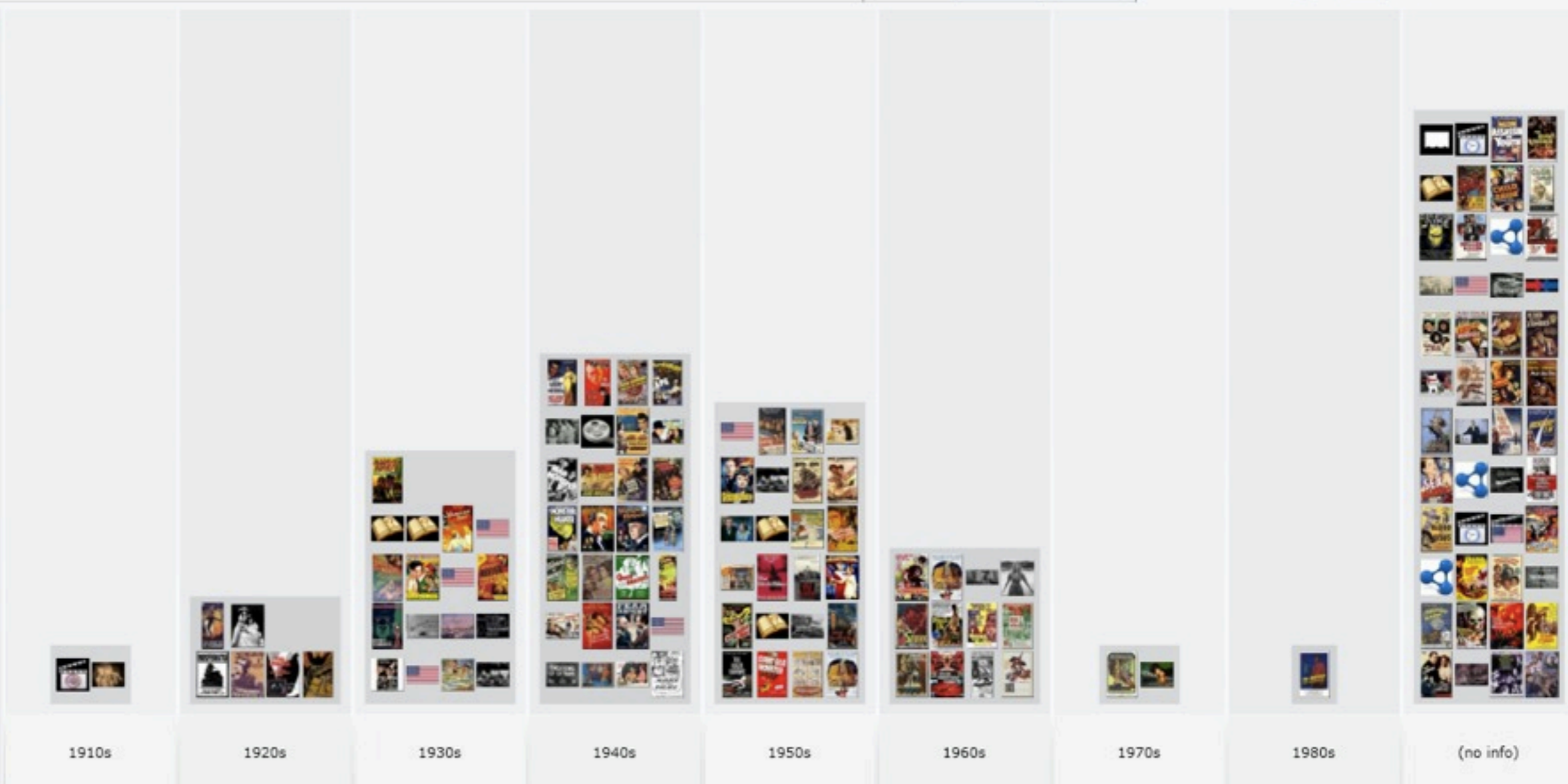
IMDB id

music composer

narrator

previous work


producer




We linked Archive.org video URLs to Wikipedia/DBpedia URLs
We can visualize and navigate content using info from Wikipedia.
Now, whenever Wikipedia is improved, so is Archive.org.
And not just the “content” but related entities...

Microsoft Pivot Viewer - laptop as 2nd screen

“Show films by distributor, in the 1940s”

Clear All 


Search... 

previous work

producer

product

related

release date 

- 1910s 2
- 1920s 6
- 1930s 17
- 1940s 28
- 1950s 24
- 1960s 12
- 1970s 2
- 1980s 1

runtime

starring




















subsequent work

thumbnail

writer

after

amg id

Distributor	Film 1	Film 2	Film 3	Film 4	Film 5	Film 6
Columbia Pictur						
Eagle-Lion Film						
Metropolis Prod						
Monogram Pict						
Paramount Pict						
Producers Rele						
Republic P						



← → ↗

Plan dziewięć z kosmosu

narrator
[The Amazing Criswell](#)

runtime
4,740

starring
[Tor Johnson](#)
[Maila Nurmi](#)
[Gregory Walcott](#)
[Bunny Breckinridge](#)
[Tom Keene \(actor\)](#)
[Dudley Manlove](#)
[Béla Lugosi](#)

thumbnail
<http://upload.wikimedia.org/w>

writer
[Ed Wood](#)

budget
60000.0

cinematography
[William C. Thompson \(cinema](#)

editing
[Ed Wood](#)

language
[English language](#)

reference
<http://secondsupper.com/revi>

Subject Type
[Work](#)

Dynamic collection generation by
OpenLink Virtuoso

(via Pivot embedded in OpenLink's RDF/SPARQL db)

Plan 9 from Outer Space



Theatrical release poster

Directed by	Ed Wood
Produced by	J. Edward Reynolds
Written by	Ed Wood
Narrated by	Criswell
Starring	Gregory Walcott Mona McKinnon Tom Keene Tor Johnson Dudley Manlove Joanna Lee John Breckinridge Vampira Bela Lugosi
Music by	Frank Worth
Cinematography	William C. Thompson
Editing by	Ed Wood
Distributed by	Distributors Corporation of America (under Vallant Pictures)
Release date(s)	July 1959
Running time	79 minutes
Country	United States
Language	English
Budget	\$60,000

Each entity of interest gets an URL, a page, some descriptive metadata...

...and more links by URL

Ed Wood

October 10, 1924 – December 10, 1978 (aged 54)



Wood in *Glen or Glenda* (1953)

Place of birth	Poughkeepsie, New York, United States
Place of death	Los Angeles, California, United States
Allegiance	 United States
Service/branch	 United States Marine Corps
Years of service	1942-1946
Battles/wars	World War II <ul style="list-style-type: none">Guadalcanal CampaignBattle of Tarawa
Relations	Norma McCarty (m. 1955–1956) Kathleen O'Hara (m. 1959–1978)
Other work	Screenwriter, film director, film producer, actor, author, and editor

Ed Wood, Jr.

Scroll to:
Film
Author
People



Edward Davis Wood, Jr. (October 10, 1924 – December 10, 1978), better known as Ed Wood, was an American screenwriter, director, producer, actor, author, and editor, who often performed many of these functions simultaneously. In the 1950s, Wood made a run of cheap and poorly produced genre films, now humorously celebrated for their technical errors, unsophisticated special effects, large amounts of ill-fitting stock footage, idiosyncratic dialogue... [More](#)
[W](#) [Read article at Wikipedia](#)

Date of birth: Oct 10, 1924
Date of death: Dec 10, 1978 (age 54 years)
Profession: Author, Screenwriter, Film Producer, Film Director, Actor, Writer
Country of nationality: United States of America

Film

Films directed



[View Ed Wood, Jr. movies >](#)

Edward D. Wood Jr. (1924–1978)

[More at IMDbPro](#) »[Writer](#) | [Director](#) | [Actor](#)

Hacks are nothing new in Hollywood. Had Edward D. Wood been born a decade or so earlier it's easy to imagine him working out of some poverty row outfit in Gower Gulch, competing with the likes of [Victor Adamson](#), [Robert J. Horner](#) and [Dwain Esper](#) for the title of all-time hack. He would've fit in nicely at Educational Pictures in the early 30's or PRC in the following decade... [See full bio](#) »

Born: [Edward Davis Wood Jr.](#)
[October 10, 1924](#) in [Poughkeepsie, New York, USA](#)

Died: [December 10, 1978](#) (age 54) in [North Hollywood, California, USA](#)

[9 videos](#) | [172 news articles](#) »

Known For



[Plan 9 aus dem Weltall \(1958\)](#)



[Jail Bait \(1954\)](#)



[Die Rache des Würgers \(1955\)](#)



[Glen or Glenda \(1953\)](#)

Quick Links:

Share this page: [f](#) [t](#) [+](#)

[f](#) Dan Brickley and 55 others like this. [Unlike](#)



Related Videos



[at Internet Archive](#) »

Plan 9 from Outer Space (1956)

TOMATOMETER ?

All Critics | Top Critics



65%



No consensus yet.

Average Rating: 4.9/10
Reviews Counted: 31
Fresh: 20 | Rotten: 11

AUDIENCE ?



45%

liked it
Average Rating: 2.8/5
User Ratings: 22,171

Dan Brickley and 53 others like this. [Unlike](#)

You like **Plan 9 from Outer Space**. [Unlike](#)

What's on your mind?

your friends' ratings!

MOVIE INFO

Genre: [Horror](#), [Science Fiction & Fantasy](#), [Cult Movies](#)

Synopsis: Aliens resurrect dead humans as zombies and vampires to stop human kind from creating the Solaranite (a sort of sun-driven bomb). [More](#)

Rated: Unrated

Running Time: 1 hr. 18 min.

In Theaters: Jul 2, 1959 Wide

Distributor: Passport

Directed By: [Edward D. Wood Jr.](#)

Written By: [Edward D. Wood Jr.](#)

URLs + public metadata:

```
<span property="v:best" content="100"></span>
<p class="critic_stats">
  Average Rating: <span>4.9/10</span><br />
  Reviews Counted: <span property="v:count">31</span><br />
  Fresh: 20 | Rotten: 11
</p>
```

```
lass="tomato_consensus">
```

```
<div class="tomato_bar"><span class="tomato_fill">
```

```
<p class="critic_consensus" property="v:summary">No consensus
```

RDFa in IMDB and Rotten Tomatoes HTML

Request:

GET https://graph.facebook.com/http://www.rottentomatoes.com/m/plan-9-from-outer-space/

API Response

```
{
  id: "103208103067318",
  name: "Plan 9 from Outer Space",
  picture: "http://profile.ak.fbcdn.net/hprofile-ak-snc4/41779_103208103067318_6405_s.jpg",
  link: "http://www.rottentomatoes.com/m/plan-9-from-outer-space/",
  category: "Movie",
  website: "http://www.rottentomatoes.com/m/plan-9-from-outer-space/",
  description: "Average Rating: 4.9/10",
  fan_count: 32,
  can_post: true,
  type: "page",
}
```

Aggregated by Facebook

Conclusions & next steps

- This is not rocket science: URLs make the Web
- URL links are a foundation for Social TV
- Linking documents is easier than linking devices
- Protocol work deserves a Working Group
- Best Practices Note: collect via Interest Group

And speaking of remotes...


(see Matt's slides here)

Last week's examples


- Al Jazeera's Egyptian Twitter coverage
- Linking content with URIs


(these last slides not used..)


Livestation - Al Jazeera English



My Channels Search What's Hot **Twitter** Alerts

 [milojesekulic](#) Hvala @sandraja @skljuc @Mooshema Bas se radujem jer mnogo volim da predajem. A evo i završio sam ppt, sat pre krajnjeg roka :)
10:25 AM Sunday 30 January 2011

 [evanchill](#) Several aspects of the apparent government shutdown of AJ remain unclear, we're all waiting now. No one has come to turn us off. #jan25
10:23 AM Sunday 30 January 2011

 [cyberdoyle](#) #deact #DPI RT @ioerror: Meet the Two American Companies Helping Egypt Restrict Its People: <http://bit.ly/hyhXA9> #egypt #jan25
10:23 AM Sunday 30 January 2011


What are you watching?

Type your twitter update in here and optionally attach a picture from the current channel using the Grab Image button

Sign out danbri Preferences Grab Image Refresh Update


Livestation streaming app embeds a Twitter client


I posted a screenshot of Al Jazeera quoting someone talking about Egypt:

 **@danbri**
Dan Brickley


#aljazeera @xessiveforce #lvestation
<http://twitpic.com/3utg8r>

30 Jan via Livestation ☆ Favorite ↩ Reply 🗑 Delete

 Livestation Al Jazeera English 10:31 AM Sunday 30 Jan
*Im not rich or poor, im not muslim or christian, white or black, im neither from the north or south. i am EGYPTIAN!!
@XESSIVEFORCE AHMED MOSTAFA
TURMOIL IN EGYPT INTERNATIONAL TWITTER REACTION
GOVERNMENT HOSNI MUBARAK, SAYING IT IS NOT ENOUGH FOR HIM TO "RESI...
Tweet what you're watching with Livestation - www...

via  TwitPic

Mentioned in this Tweet

 **xessiveforce** XS
Singer-Songwriter from Egypt, lived in Abu Dhabi, Dubai & Currently Living in the US

“I’m not rich or poor,
not muslim or christian,
white or black, I’m
neither from
the north or south.
I am EGYPTIAN!”

What's happening?

Timeline

@Mentions

Retweets ▾

Searches ▾

Lists ▾

Tweets mentioning @danbri

**xessiveforce** XS

@danbri wow, i didnt expect them to post my tweet on al jazeera, thts amazing....thanx for the heads up bro

12 minutes ago

← @xessiveforce's profile

close X

**@xessiveforce**

XS

@ <http://twitpic.com/3utg8r> - thank you @AJEnglish for posting my tweet, its an honor to represent my country, TAHYA MASR!!! #Egypt

6 minutes ago via [Twitpic](#) ☆ Favorite ↻ Undo Retweet ↻ Reply

Livenessation

Al Jazeera English 10:31 AM Sunday 30 January 2011 GMT

...he noticed, and was happy, and shared this back with @AJEnglish