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AT MIT

Content strategies in a socially connected world: production, distribution and protection
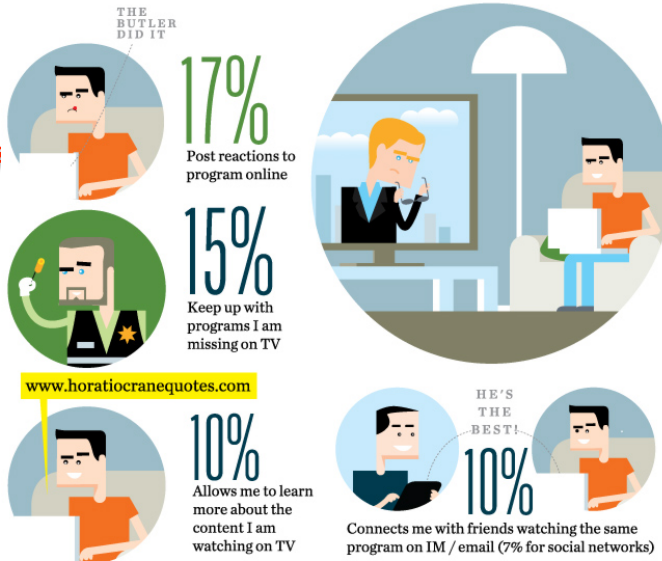
Overview and Goals

Logistics

- All presentations and lunch in 32-G449

- Demos and posters in 36-512 (follow students)

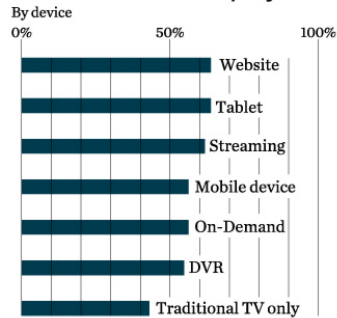- Dinner tonight at Atasca (directions to be provided)

Disruptions and Challenges in in the Telecom Industry

- Social and converged multimedia experiences
  - Use the device and network ecosystem for best experience
  - Redefine performance metrics by adding user behavior

- Content-centric and cloud based networking
  - Personal, social and centralized clouds
  - Combine and trade storage and transmission
  - Address content protection and security with minimal disruption

- Heterogeneity and Mobility
  - People are mobile not just devices
  - Viral, peer to peer and proximity-based communications for community viewing
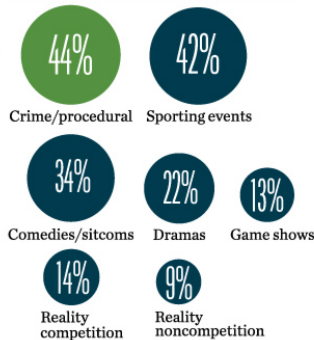 - Favor robust implementations across devices and networks
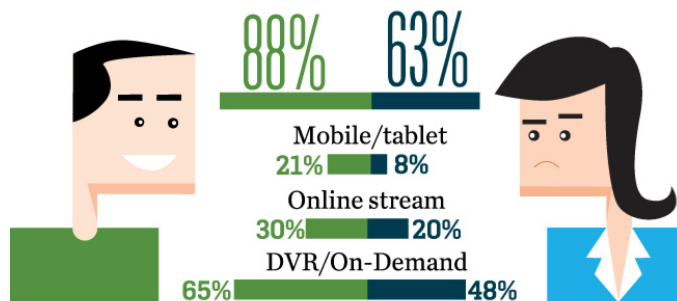
Types of online engagement

THE
BUTLER
DID IT

17%
Post reactions to
program online

15%
Keep up with
programs I am
missing on TV

www.horatiocranequotes.com

10%
Allows me to learn
more about the
content I am
watching on TV

HE'S
THE
BEST!

10%
Connects me with friends watching the same
program on IM / email (7% for social networks)

**Users watching TV
for more than 3 hours/day**
By device

0%   50%   100%

Website
Tablet
Streaming
Mobile device
On-Demand
DVR
Traditional TV only

Most anticipated fall programs

44%
Crime/procedural

42%
Sporting events

34%
Comedies/sitcoms

22%
Dramas

13%
Game shows

14%
Reality
competition

9%
Reality
noncompetition

Devices used to watch TV By gender
Using a nontraditional TV device to watch fall TV

88%   **63%**
Mobile/tablet
21%   **8%**
Online stream
30%   **20%**
DVR/On-Demand
65%   **48%**

SOURCE: INTERCLICK (SAMPLE OF 3,646 RESPONDENTS
UTILIZING AN ONLINE IN-BANNER SURVEY)

Ref: Adweek September 14
2011

The Ecosystem
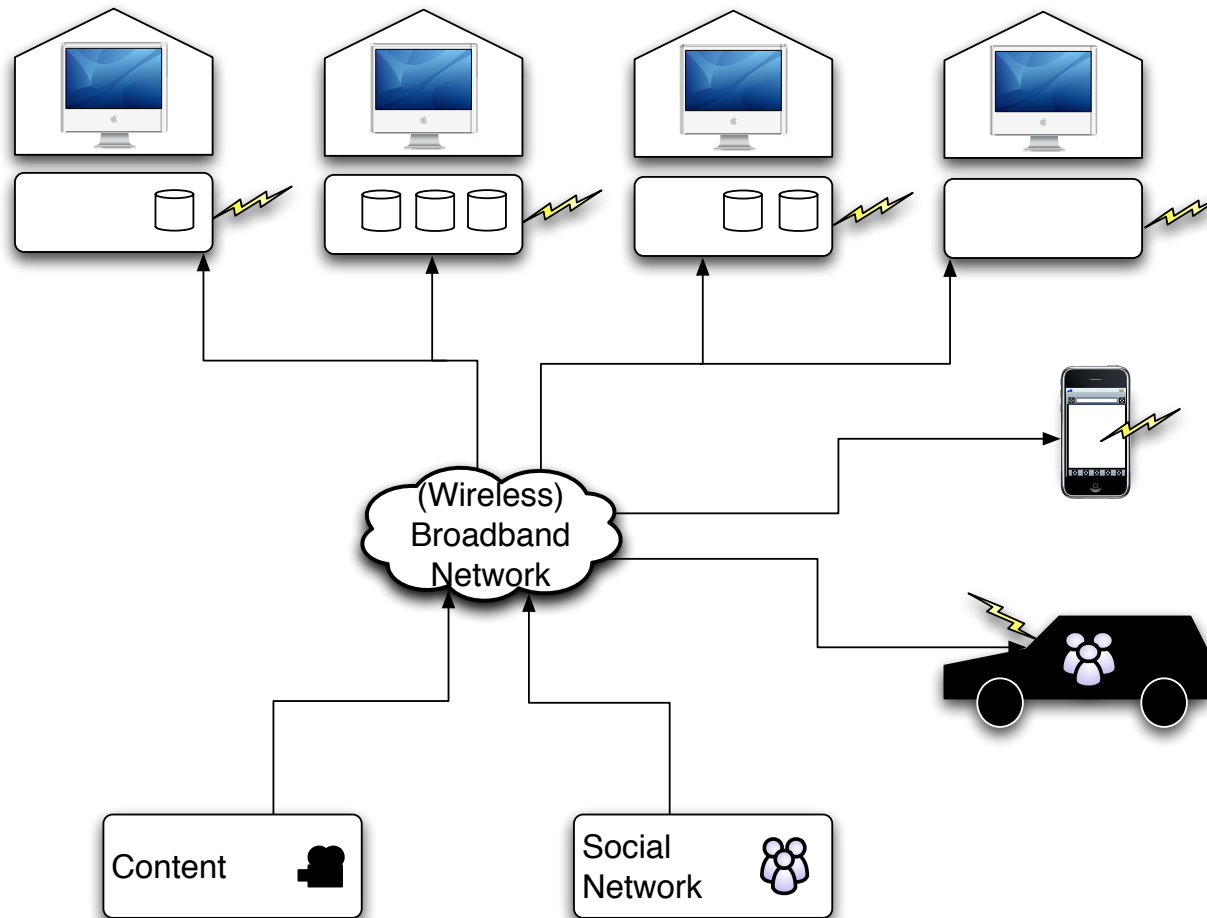
The workshop goals?

- Illustrate new content creation, distribution and consumption paradigm in the social networking world

- Show the advantages of connected/converged content using network coding techniques
  - Not a single device and networks, an ecosystem
  - Consider the mobility of users, devices and networks
  - The social network as a "virtual operator"

Novel approaches for content protection
in social distribution

Marie-José Montpetit

Socially Consumed Content

- P2P is associated with illegal content dissemination
    - But should defines how a community of users shares resources legally
    - Move from "theft" to "enabler"

- The challenge is to demonstrate the advantages of using edge and proximity networking in a secure and private way

Social Content: Impacts on the Devices

- Need to get away from the "Lord of the boxes" approach
  - No need to have the device that "rules them all"
  - Need to harness the "power" of:
    - Home devices and home networks connectivity
    - "Power users"
  - Scalability of the architecture
    - But (still) cost can be an issue
    - And the absence of common platform introduces complexities
  - Use network augmentation and device virtualization
    - Laptops/smartphones for CPU intensive applications
    - DVR for storage (local and non local)
    - Tablets for display and video rich applications
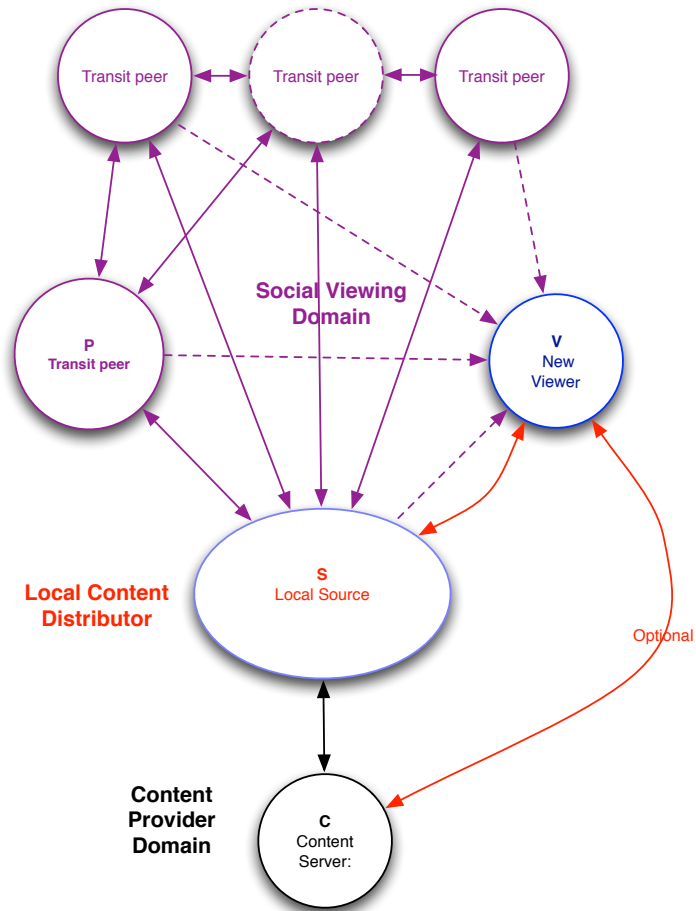   - Sensors for real time information

The virtual operator

- Use your social network as a virtual operator
  - The SN defines what the offering: collaborative filtering
  - Multi-network and multi-devices
  - Main features:
    - **Security and privacy and of course content protection when applicable**
      - Find appropriate protection for both commercial and user generated content
    - Ancillary services for increased QoE
    - Local media switching and content centric networking (no more address/channel changes, content changes)

Content Protection and Social Consumption

- Encourage legal social distribution
  - Flexibility
  - Low overhead, complexity
  - High availability and mobile content
  - Quality of experience is key

- Reduce the "cost" of content protection
  - Bandwidth
  - Storage
  - Scalability

- Protection of original content and of ancillary information
  - Exchange of rights: sharing of content
  - Allow user generated content and advertisement mixing with different protection strategy
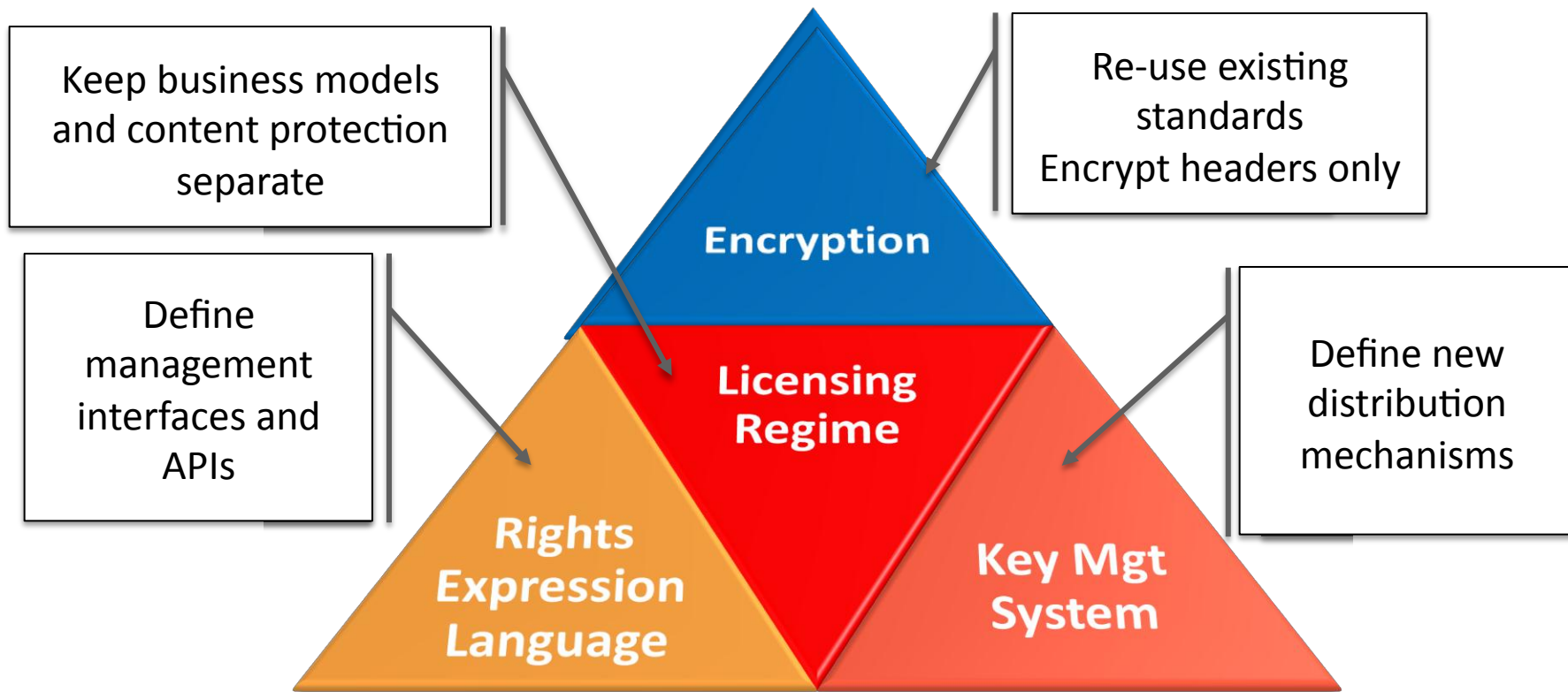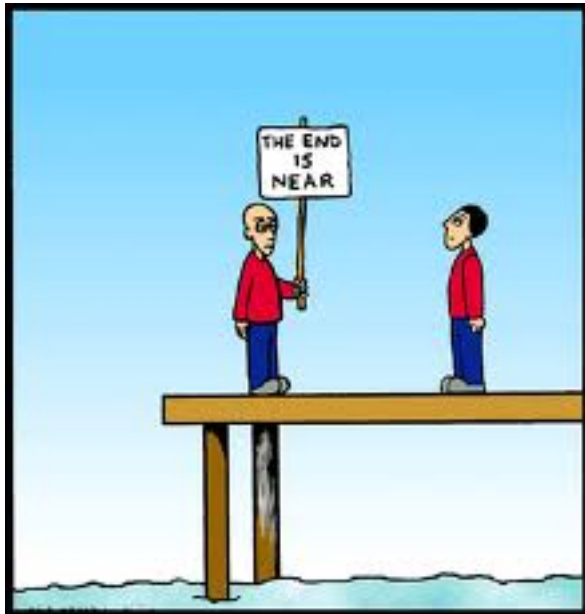
One Strategy: NC for video protection

- Network coded video packets

  – Encrypted headers

- Use homomorphic signatures

  - Allows to protect the different elements/layers of a session differently (ancillary vs. main content)

- Move the authentication/authorization to the service layer

  – Aligned with industry and standards directions

    - W3C working group on Web+TV (ongoing)

    - W3C new working group on Social TV/social viewing

- Leave the "DRM" to manage business related transactions

- Define simple policies for content management

  – Example: network coding APIs as a browser plugin

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Transit peer

Transit peer

Transit peer

**Social Viewing
Domain**

P
Transit peer

V
New
Viewer

**Local Content
Distributor**

S
Local Source

Optional

**Content
Provider
Domain**

C
Content
Server:

Signed Network
Coded Content

Signature
Verification

Original
Content

Discussion

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