

# Content Delivery on the Web

## Case Studies



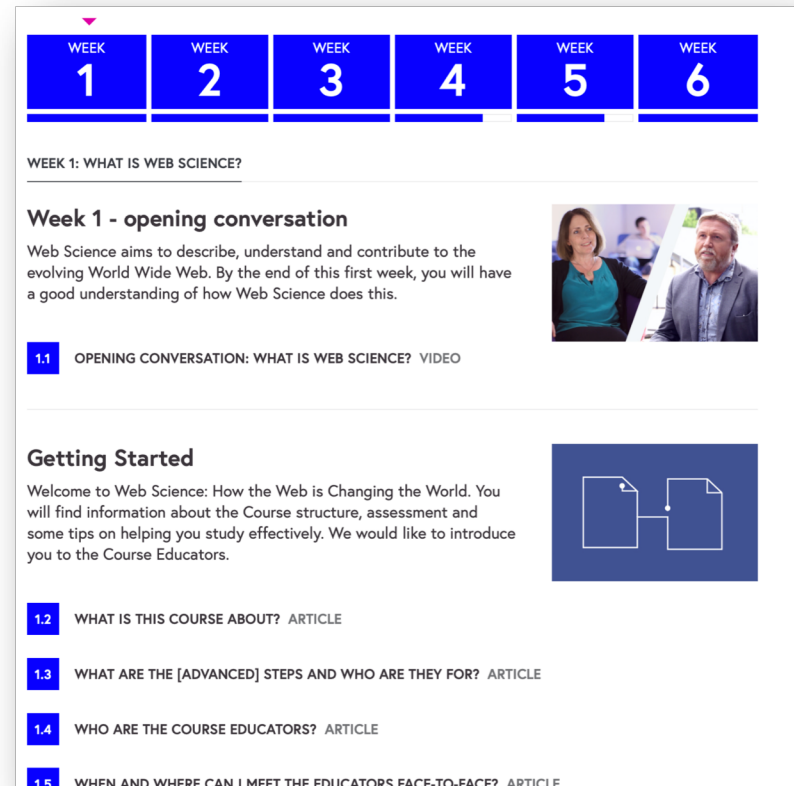


# Use Case: FutureLearn

- FutureLearn is a digital education platform founded in December 2012. The company is wholly owned by The Open University in England. It is a Massive Open Online Course (MOOC) learning platform, and includes 143 UK and international partners, including non-university partners.
- We offer a diverse selection of courses from leading universities and cultural institutions from around the world. These are delivered one step at a time, and are accessible on mobile, tablet and desktop, so you can fit learning around your life **futurelearn.com**

# Web Science MOOC

- 6 week curriculum
  - 58 ARTICLE
  - 1 AUDIO
  - 25 DISCUSSION
  - 5 QUIZ
  - 1 TEST
  - 32 VIDEO



The screenshot displays the course interface for 'Web Science MOOC'. At the top, there is a navigation bar with six blue buttons labeled 'WEEK 1' through 'WEEK 6'. Below this, the page title is 'WEEK 1: WHAT IS WEB SCIENCE?'. The main content area is titled 'Week 1 - opening conversation' and includes a paragraph: 'Web Science aims to describe, understand and contribute to the evolving World Wide Web. By the end of this first week, you will have a good understanding of how Web Science does this.' To the right of this text is a photograph of two people, a woman and a man, in a professional setting. Below the paragraph is a list of items for Week 1, each with a blue square icon containing a white number: '1.1 OPENING CONVERSATION: WHAT IS WEB SCIENCE? VIDEO'. Further down, there is a section titled 'Getting Started' with a blue square icon containing a white document symbol. This section includes a paragraph: 'Welcome to Web Science: How the Web is Changing the World. You will find information about the Course structure, assessment and some tips on helping you study effectively. We would like to introduce you to the Course Educators.' Below this paragraph is a list of items, each with a blue square icon containing a white number: '1.2 WHAT IS THIS COURSE ABOUT? ARTICLE', '1.3 WHAT ARE THE [ADVANCED] STEPS AND WHO ARE THEY FOR? ARTICLE', '1.4 WHO ARE THE COURSE EDUCATORS? ARTICLE', and '1.5 WHEN AND WHERE CAN I MEET THE EDUCATORS FACE-TO-FACE? ARTICLE'.

# Use Case: FutureLearn

- Video Data
- 7.1 million users
- Learners from 153 countries
  - Large proportion from: the Middle East, Asia and Latin America
- Over 700 courses



# Case Study

- FutureLearn run a large international education website containing LOTS of media.
- Can you estimate the size of their web hosting bill?
  - What information would you need?
    - About Future Learn?
    - About web hosting services?

# CDN server considerations

- Support HTML5 live streaming
- Number of servers
- Location/distribution
  - NA/EU servers are cheaper than South American

# Video CDNs

- Akamai
  - more than 240,000 servers in 130 countries
  - Pricing based on features required, the size of business, and bandwidth requirements
- Cloudflare
  - Monthly plans range from \$20-\$200/month per website,
  - Larger Enterprise plans available as well.
- CloudFront
  - Good in US, Canada, Europe, Asia, and South America. No coverage in Africa.
  - Pricing based on geographic region, bandwidth usage and features

# Video CDNs

- Wowza
  - “live event” pricing,
  - API-based pricing
  - Monthly plans
    - Standard plan \$199/month –bandwidth 3TB
    - Plus plan \$499/month – bandwidth 7TB
    - Premier plan \$999 per month, bandwidth 15TB
- IBM Cloud Video
  - HD broadcasting up to 720p resolution and 1080 supported on Enterprise plan
  - Silver plan \$99/month (100 viewer hours)
  - Gold plan \$499/month (some customer branding and more viewing hours)
  - Platinum \$999/month (full customer branding and unlimited viewing hours)
- Livestream
  - Basic plan \$42/month
  - Mid level plan \$199/month
  - Enterprise plan \$799+/month for professional live video streaming



# Amazon Cloudfront Pricing

- **Charge for storage in an Amazon S3 bucket.** You pay normal Amazon S3 storage charges to store objects in your bucket.
- **Charge for serving objects from edge locations.** You incur CloudFront charges when CloudFront responds to requests for your objects.
- **Charge for submitting data to your origin.** You incur CloudFront charges when users transfer data to your origin, which includes DELETE, OPTIONS, PATCH, POST, and PUT requests.
- For more details see <https://aws.amazon.com/cloudfront/pricing/>

