Requirements Engineering: Business Case Analysis

CECS 590

Recap time!

- What is a Framework?

- What are these standards?
  - Volere template
  - IEEE 830

- What is an (RE) Artifact?

- What is an Artifact Model?

- Which AMDiRE content items can you remember?

Requirements Engineering - Outline

- WHY do we need Requirements Engineering and what is it?
- Principles: Definitions, process, roles, problem/solution view, artifact orientation
- System Models: Decomposition and abstraction, system views
- Frameworks: What reference structures can I use for requirements?
- **Business Case Analysis: Why are we building this system?**
- Stakeholders: Who are the people to talk to about requirements?
- Goals and Constraints: What are the major objectives for the system?
- System Vision: What exactly do we want to achieve?
- Domain Models: What are the surrounding systems ours interacts with?
- Usage Models: How will the system interact with the user?
- Software quality models: How to determine the quality characteristics?
- Quality requirements: How to specify which qualities need to be met?
- Process requirements: How to specify constraints for development?
- Towards a system specification: How to hand over to design?
- Quality assurance: How to ensure that RE is done in a good way?
- Change management: How to evolve requirements?

Business Case Analysis

- Why?

- What is a business case?

- How do I write one?

- What are the elements?

- What tools are available?

Business Case Analysis: Why?

I keep six honest serving men
(They taught me all I knew);
Their names are What and Why and When;
And How and Where and Who.
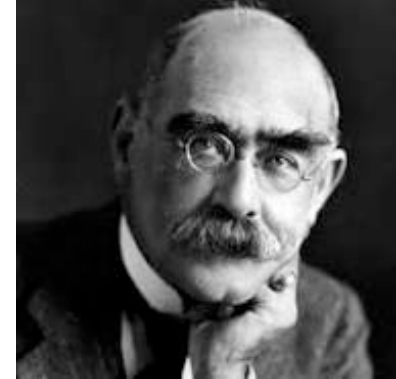
- Rudyard Kipling

Joseph Rudyard Kipling was an English short-story writer, poet, and novelist. He lived form 1865 (Mumbai) to 1936 (London) and is chiefly remembered for his tales and poems of British soldiers in India and his tales for children.

My favorite of his works: "The jungle book"

Business Case

- A business case is an argument, usually documented, that is intended to convince a decision maker to approve some kind of action.

- The document itself is sometimes referred to as a business case.

Business Case Analysis Document

1. Executive summary
2. Problem statement
3. Analysis
4. Solution options
5. Project description
6. Cost-benefit analysis
7. Recommendations

Business Case: 1. Executive summary

- High-level view of the business case document
- Representation: Condensed form and plain language
- Content: the problem that the proposed project is intended to solve, the major considerations, the resources required to complete the project, the desired outcome, the predicted return on investment and a projection of when that ROI should be achieved.
- Careful: Some stakeholders may only read the executive summary, so it's crucial to include any information that is essential to an informed decision.
- Order: Like the abstract of an academic article, the executive summary is presented first but written after the rest of the document is completed.

Business Case: 2. Problem statement

- Straightforward articulation of the problem that the project is supposed to solve.

- It identifies the area or areas where there are issues that need to be addressed, such as inefficiencies, missed opportunities, unacceptable market performance or unfavorable consumer response to a product or service.

Business Case: 3. Analysis

- The situation behind the problem in more detail and how the situation came about.

- General projections about potential events if the current situation continues.

- The conclusion of the analysis should lead naturally to the next section.

Analysis Tools: Background research

- Business information websites & data services
  - Security and exchange commission
  - Hoovers
  - NASDAQ, Dow Jones
- News sites
  - Wall Street Journal, Business Week, Fortune, Money
  - CNN, NY times, LA times, etc.
- Search engines: yes, there are alternatives
  - Lycos: highly customizable search with Boolean terms
  - Altavista: scores higher with keywords early in document
  - Excite: matches synonyms
  - Yahoo: catalog created from submissions by authors
- Company webpages
  - News (that your customer might have forgotten to tell you)
  - Annual reports

Analysis Tools: Number crunching

- Reveal data by background research

- Develop charts, tables, and graphs to support your statements

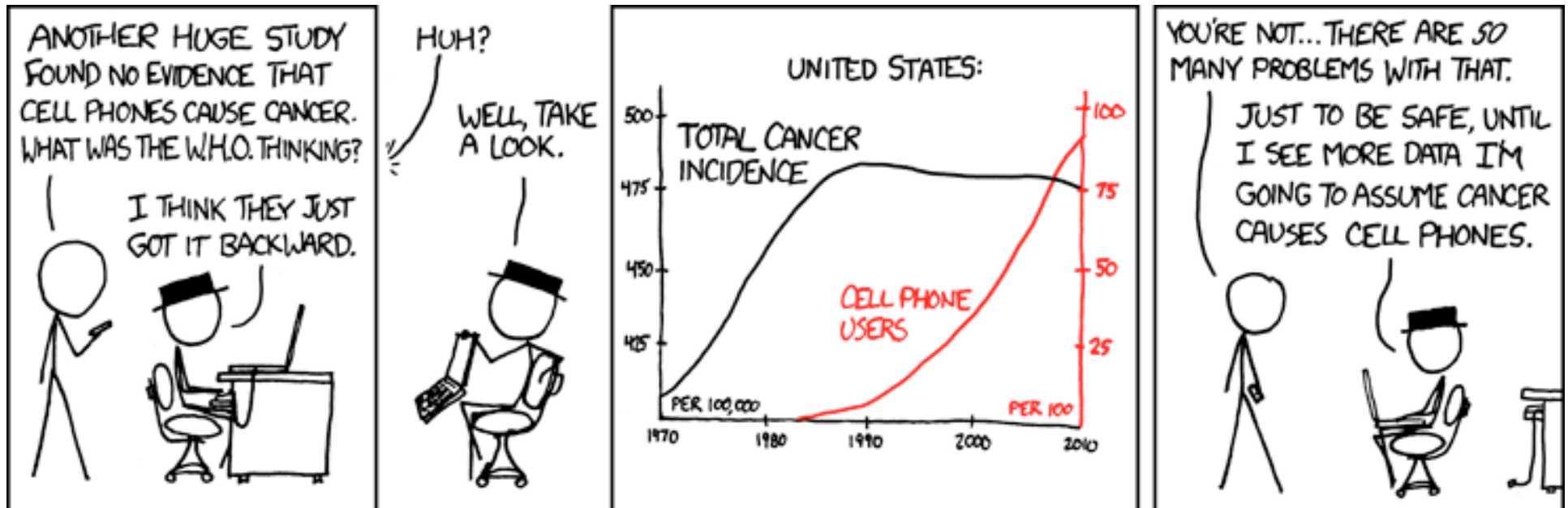- Careful with internet sources:
"Do not trust any statistics you did not fake yourself." – Winston Churchill
(Prime Minister of the United Kingdom
from 1940 to 1945 and again from 1951 to 1955)

→ Data allows for different interpretations

Attention: Number crunching

Business Case: 4. Solution Options

- Identify potential solutions to the problem and describe them in sufficient detail for the reader to understand them.

- If, for example, the solution proposed is the implementation of desktop virtualization, you would define the term and discuss the use of the technology within your industry.

- For most problems, there are multiple solutions possible and you should explore all solutions that are potentially the best option.

Business Case: 5. Project description

- This section describes the project, including all the resources required for its implementation, the project budget and a timeline with measurable goals for all project milestones.

- List any assumptions that the reader should be aware of, such as, for example, that government regulations pertinent to the project will not change. You should also list any dependencies, such as completion of other projects or the availability of key individuals.

- Note any risks involved with the project and briefly sketch a plan for dealing with them. In the budget section, include financial projections for relevant metrics such as ROI and total cost of ownership (TCO). You should also include a figure -- usually an additional 15-20% of the total -- for scope creep.

- Identify and describe all stages of the project, including a post-project review. Include measurable criteria to determine the success of the project.

Business Case: 6. Cost-benefit analysis

- This section evaluates the costs and benefits for all options, including the proposed solution to the problem and any likely alternatives – which include, of course, taking no action at all.

- Illustrate your case with data from similar projects and case studies, if possible. Charts and graphs are often included in this section or may be in an appendix at the end.

- In any case, graphs can illustrate points that are hard to extrapolate from text-based data, so be sure to include as many as will be helpful.

- This section should include the projected financial benefit to the company and a projection of when that payoff is expected as well as major risks to success.

Business Case: 7. Recommendations

- In this section, you make your recommendations for the project and how it is to be conducted.

- The recommendation for implementation is a brief restatement of compelling results of the cost-benefit analysis and a final statement that you believe the project should go ahead.

- Articulate the circumstances under which it should be undertaken, including key individuals and actions.

- Include a recommendation for scheduled reexamination of the project status. If there is any question as to the availability of key resources, make that clear.

- Include a recommendation for regularly scheduled reexamination of the project status.

- Refer the reader back to relevant document sections and graphical presentations where it might be helpful.

Examples

- Tablets for health systems: "Mobilizing high quality care"
by Intel

- Digital signage case study: "Proof of performance in digital signage"
by On Campus Media

→ What kind of business case analysis can we find online and in print media?

→ What do we need to be careful about?

Mobilizing high-quality care

Physicians at Inca Local Hospital use Intel® technology-based tablets to access critical medical information on the move

Govern de les Illes Balears
Hospital Comarcal d'Inca

"Users are demanding mobile access to their IT systems, so now that we have the devices, the next step is to ensure our applications are optimized for tablet features. When these issues are resolved, the benefits will be clear and users will adopt them with enthusiasm."

COMPANY

The Local Hospital at Inca, on the island of Mallorca, believes itself to be one of the best examples of a paperless hospital in Spain. Wanting to maintain its leading position in the field of information and communication technologies (ICT), the hospital is pioneering the introduction of mobile platforms for use by healthcare professionals.

CHALLENGE

Doctors and nurses at the hospital were eager to have mobile access to its core IT systems and applications, recognizing the potential value of being able to find and input information at any time, through devices that they can carry with them. The hospital also believed this sort of on-the-move access would enhance the quality of care it could deliver to patients, so it decided to evaluate the mobile computing options available.

SOLUTION

One area in which the hospital tested the Fujitsu Q207* 2 in 1 devices, powered by Intel® Core™ i5 processors, was coordinating transplants. It assessed how staff could use the devices to receive alerts generated automatically when an organ becomes available, and which need a rapid response. The hospital also tried the devices in nursing units and during doctors' medical visits.

It looked at the manageability of the devices as well, identifying that the IT support team could use the devices to attend to any issues remotely.

BENEFITS

The hospital believes it has found the device model that will meet the increasing need for anytime, anywhere access to its systems. With the new solution, staff will have more precise information at hand and be able to make more informed decisions. In the meantime, the Intel® technology and Microsoft Windows* 8-based model means the solution integrates seamlessly with the Balearic Health Service's corporate domain and policies.

Inca Local Hospital has also found that Windows 8 performs much better than previous versions. Combined with the strong performance of the Intel technology, this means the devices present many possibilities for the hospital to continue improving its patient care.

Example: Digital signage case study

Proof of Performance in Digital Signage – ROI for Advertisers

Today's marketplace is loud. And crowded. And non-distinct. With so many messages, it's hard to hear above the din. That's why businesses are turning to more precise and place-based delivery methods for their marketing efforts, the most promising of which is on-site digital signage. With full sight, sound and motion, digital signage provides a far more tailored experience for the shopper, and a highly effective one for the retailer selling in-store products and promoting brands.

With nearly $14 billion spent worldwide on digital signage in 2013 alone, the technology is here to stay, and on the rise. Analysts project 5+ percent annual gains thru 2017.[1] Exciting? Yes. But with this amazing explosion of growth comes increased demands for audience measurability and demonstrated messaging efficacy. Retailers, advertisers and media buyers want quantifiable results.

With 55-inch screens located in college retail book stores on 400 top college campuses, On Campus Media, a youth-focused provider of directed digital messaging, reaches over 4.5 million college students. When the nation's largest DOOH college network provider set out to solve the mystery of dwell time, impressions and proof of performance, Arrow and Intel stepped in to write a new chapter. By offering some of the most sophisticated reporting ever created, On Campus Media, Arrow and Intel have rewritten the future of digital signage.

The revolutionary solution analyzes viewers anonymously providing new and critical answers necessary for successful digital signage measurement:

"Digital signage advertising is tricky business, but leveraging our relationship with Arrow allows us to stay on top of technology with the support of a trusted advisor." — **Steve Friedmann, COO, On Campus Media**

"We are always looking for new ways to support our customers. When Arrow brought Intel in to demonstrate this product we immediately saw the application for proof of performance." — **Scott Krantz, CEO, On Campus Media**

"Our team was able to interface with both the Arrow and Intel team and deploy this network in record time." — **Jim Lynch, Vice President of Operations, On Campus Media**

Example: Digital signage case study

Meeting the Measurability Challenge

Traditionally measured like static point of sale, digital advertising evaluation often relies on loose estimates of foot traffic—literally, how many customers came through the door, cars passed by the freeway sign, or customers glanced at a taxi cab's sign on the roof. Obviously this methodology leaves many key questions unanswered and devoid of scientific measurement.

How many people really saw my message?

Who exactly am I reaching?

How long did they watch?

And, of course, did they buy?

This case study demonstrates the industry's best and brightest technology and a new platform that brings an innovative solution for evaluating viewership demographics. By determining the true length of attention, combined with intelligent technology to present customer-directed messages, Intel and Arrow have brought digital signage into the 21st Century of advertising.

Turning Possibility Into Reality—Together

When On Campus Media sought to measure student traffic and dwell time more accurately, they turned to Arrow and Intel to prove digital advertising as an effective tool for their clients (brands, media buyers and retail book store colleges marketing). By partnering with Arrow OEM Computing Solutions (OCS) and Intel they now have the most advanced viewership measurement and directed messaging delivery technology available in the world.

Turning the Page on Vague ROI

To scientifically determine the true potential of the bookstore's digital signage efficacy, they needed both a new level of accuracy and a real time solution to engage students. To achieve these objectives, Arrow OCS developed a technology solution, utilizing internal engineering expertise to design customized devices for each store in a 25-campus pilot program. The proof of concept was completed in the fall of 2013.

Writing the Book on Logistics

Successfully deployed in record time, Arrow OCS's considerable resources streamlined the rollout of the test, giving On Campus Media a single, reliable source for all of their technological and logistical needs.

- **Expert Engineering and Design Services** — single source for industry-leading expertise and technology
- **Stringent Quality Testing** — proven reliability and increased efficiency
- **Customized New Product Introduction (NPI)** — assures projects are on strategy, on budget and on time
- **Supplier Technology Expertise** — unparalleled access to dedicated experts
- **Global Supply Chain** — instant infrastructure worldwide
- **Certified Program and Project Management** — options such as Microsoft® Embedded and System Builder operating systems and applications, or embedded Linux offerings from Timesys®
- **World-Class CopyXact™ Facilities** — streamlines manufacturing across multiple locations

Jose Avalos, Visual Retail Worldwide Director for Intel notes, "On Campus Media reaches 4.5 million students with their in store digital network, offering the richer, more captivating shopping engagements that today's connected shoppers seek. Using Intel® Retail Client Manager software with viewer analytics, they can gather the demographics information that will enable them to better connect students with the more personal, valuable brand and product experiences they want."

Who's Watching What?

Selected to provide crucial real time information about On Campus Media customers and to gauge attentiveness to ads and content, Intel® Audience Impression Metric Suite Technology featuring Anonymous Viewer Analytics (AVA) is now producing new and surprising results. Each viewing student now receives real time advertising relevant to their identified demographic, improving dwell time, engagement and impressions.

Benefits That Count

- Views – compares number of views to overall potential views based on passing traffic
- Interaction Analysis – duration of engagement, time of day and content viewed
- Demographics – determines gender and age while maintaining complete anonymity

Right Audience; Right Time; Right Message

Intuitive and easy to use, Intel® Retail Client Manager (Intel® RCM) was chosen to manage a series of viewer-specific ads and content.

Based on data provided by the software, viewer appropriate ad content was deployed in real time, increasing effectiveness and ensuring relevancy.

- Delivers intelligent marketing content in real time
- Provides remote management with increased uptime and lower costs
- Captures time-critical sales opportunities
- Engages relevant audience segments improving effectiveness
- Customizes content on the fly on multiple screens
- Receives real time error reports
- Creates content using any combination of video, images and sound across multiple touchpoints

Results That Read Like a Best Seller

The graphs to the right demonstrate just how impressive this new technology is performing; the reviews continue to come in as real-time results of proof of performance are available online. Contact your local Arrow OCS representative today to learn more and make this epic tale your own.
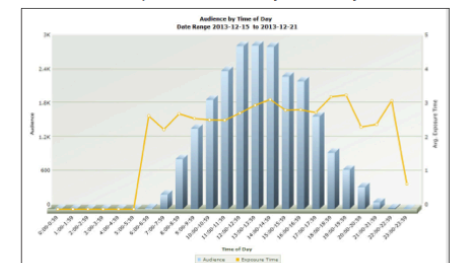

Sample data: Age Audience by Time of Day
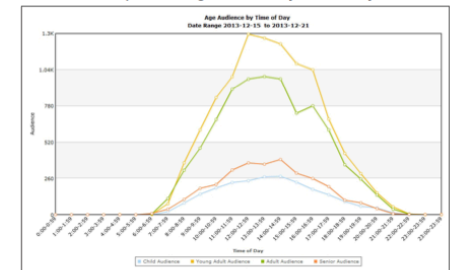
Sample data: Age by Venue
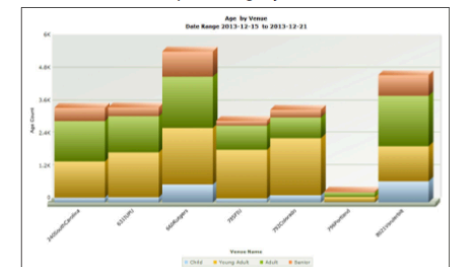
Sample data: Audience by Time of Day

In-class exercise

- Team up with your neighbor
- Develop a short business case analysis for your new project "The CSULB online store" (yes, I know, the 49er shop exists…)

Business Case Analysis
"The CSULB online store"

1. Executive summary

2. Problem statement

3. Analysis

4. Solution options

5. Project description

6. Cost-benefit analysis

7. Recommendations

Business Case: Checklist

Check your document content to ensure that it's well-constructed and includes all the key elements.

- Does your problem statement follow naturally from the analysis of the situation?
- Does the problem statement clearly indicate that action should be taken?
- Is your list of potential solutions to the problem adequate? Does it omit any solutions that should be included?
- Is your project description detailed enough?
- Are the data and calculations in the budget section correct?
- Do you have enough supporting data in your cost-benefit analysis?
- Have you approached at least one major stakeholder for preliminary support?
- Does your executive summary include all the essential elements and follow the same order as the complete document?

Business Case Study Examples

- http://businesscasestudies.co.uk/
- http://www.caseplace.org/
- http://www.intel.com/content/www/us/en/library/case-studies.html
- https://www.aub.edu.lb/sao/cps/case-study/Pages/index.aspx

Business Case Study References

- http://www.mhhe.com/business/management/thompson/11e/case.htm
- http://whatis.techtarget.com/definition/Business-case-analysis-and-a-business-case-guide

After the business case:

- Vision, for example according to UP template

- See Beachboard

- In your work you might be more likely to understand a business case (as opposed to writing one) and to then develop the vision based on the business case.

Remember: Team building

- Select your team
- Send an email with a paragraph about your system and rationale behind it
- By Monday 16th