e-engineering
A disciplined approach to the web

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CTO

Prosumer solutions

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Introduction

- Richard M Marshall
  - PhD (in Computer Science)
  - CTO of Prosumer Solutions
  - A founder of QSS and one of the original DOORS crew
  - Created the DOORS and DXL training material
- Interests
  - Making things happen
  - Helping do things well
  - Anything with large motors in it
- Prosumer Solutions
  - The core DOORS development team
  - Software to help non-technical people build website
  - Based in Edinburgh

The web is different

The web uniquely combines several disciplines:

- Publishing
  - Constant revision
  - Wide distribution
- Design
  - It has to be easy to use
  - It has to look good
- Engineering
  - It has to work
  - Failure is a PR disaster
- Service
  - Everything is visible to anyone
  - We're all in a service business

Forming new disciplines

- Web construction is a very new profession
- Even now it is still the “wild west”
- Where did these people come from?
  - Graphical design
  - Print media
  - Marketing
  - Light-weight software
  - Not to mention the catering industry…
- **Not from systems engineering!**

What makes a good website?

- It’s got to look way cool
- It’s got to use funky graphics
- More Flash! Intro page!
- It’s got to put over our corporate branding
- It’s got to be easy to use
- It’s got to work with V2 browsers
- It’s got to be secure
- I’ve got to be able to find what I want
- Don’t make me think
- I want to find out about my account
- I want to get my job done quickly and easily

So, no consensus?

- Guess what - it's about requirements!
- Let's do some system engineering
- User types:
  - End users
  - Corporate
  - Marketing
  - Sales
  - IT
  - Graphical community
  - Press
- How many are valid?

Looking at end users

- Web end users come in several grades:
  - "Drive by" users
  - Information researchers
  - Purchasers
  - Regular users
  - Occasional-use employees
  - Intensive-use employees
- Each type's needs varies with the site purpose

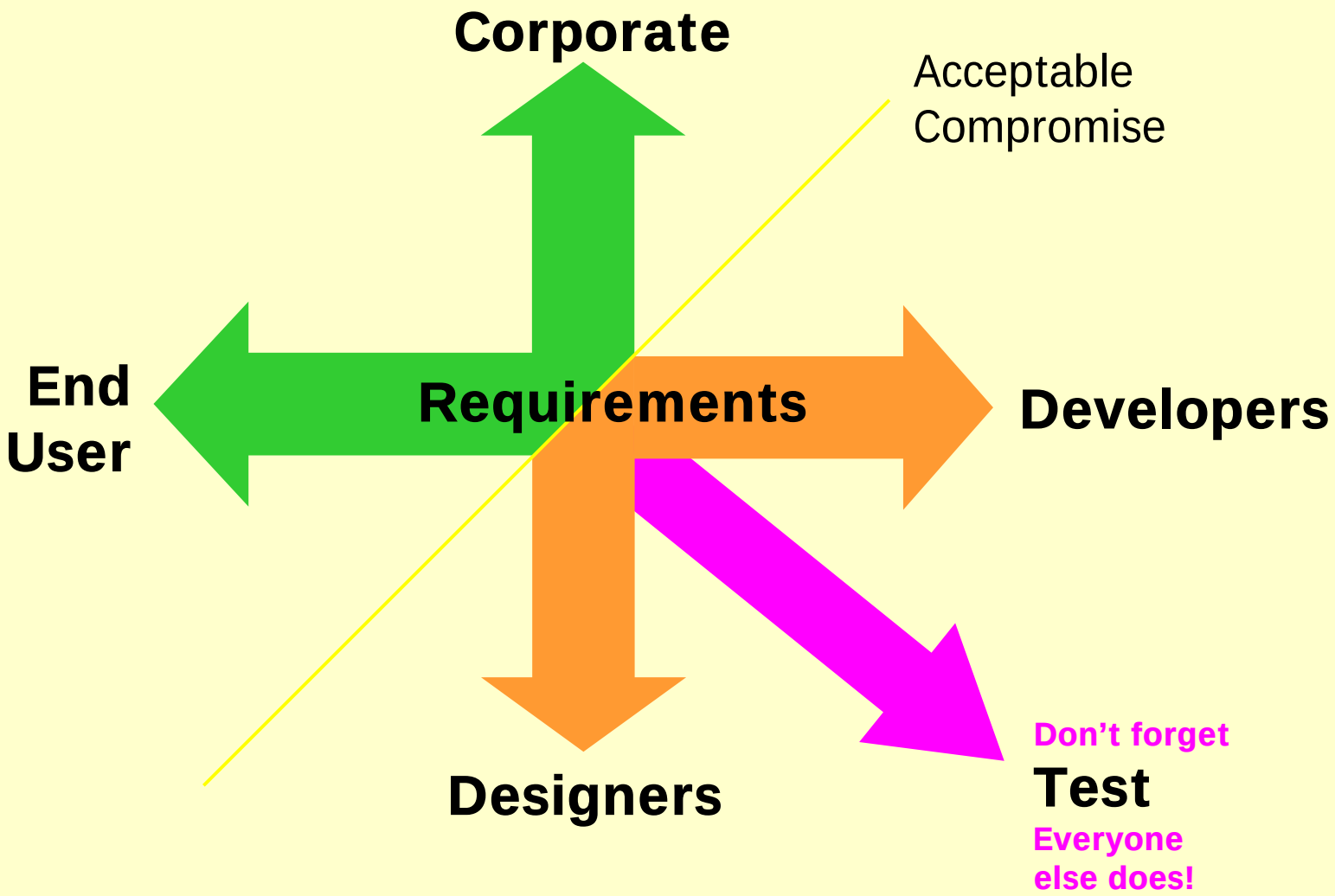
Site objectives

- Objectives are derived from corporate requirements
- Not all websites are conventional business:
  - Entertainment sites
  - Art sites
  - Not-for-profit sites
  - Technology showcases
  - Design showcases
  - Community
- These sites still have objectives and requirements
- User analysis must be closely aligned with objectives

Current approaches

- Graphics-led projects
  - Start with purely graphic mock ups
  - Designed for appearance
  - Driven by marketing and design objectives
- IT-led projects
  - Start with existing infrastructure
  - Add on new web software infrastructure
  - Layer front end over this
  - Driven by IT expediency
- **Neither approach is entirely satisfactory**

A systems-engineering approach



Practical issues

- Designers have no engineering training
  - Different concepts
  - Different vocabulary
- Need to put in place procedures
  - Need single point of contact
  - Need requirements management
  - Need change control
- Need configuration management
  - Once a paper design is done, it's done
  - Need to learn configuration control

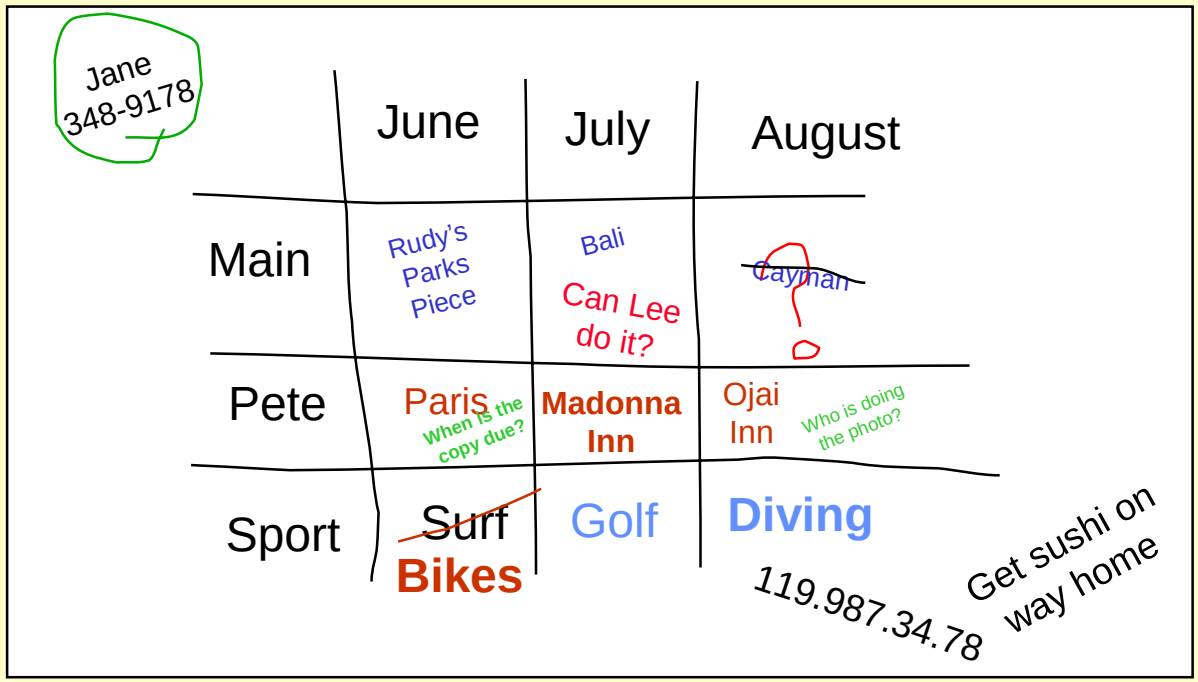
But you need more

- Systems engineering doesn't do it all
  - Origins in large, relatively static projects
  - Designed to stabilize and control
- Web sites must be very dynamic
  - Constant change may be required
  - Planning is oriented around many different functions
  - Responsiveness is key
  - Yet stability must be maintained

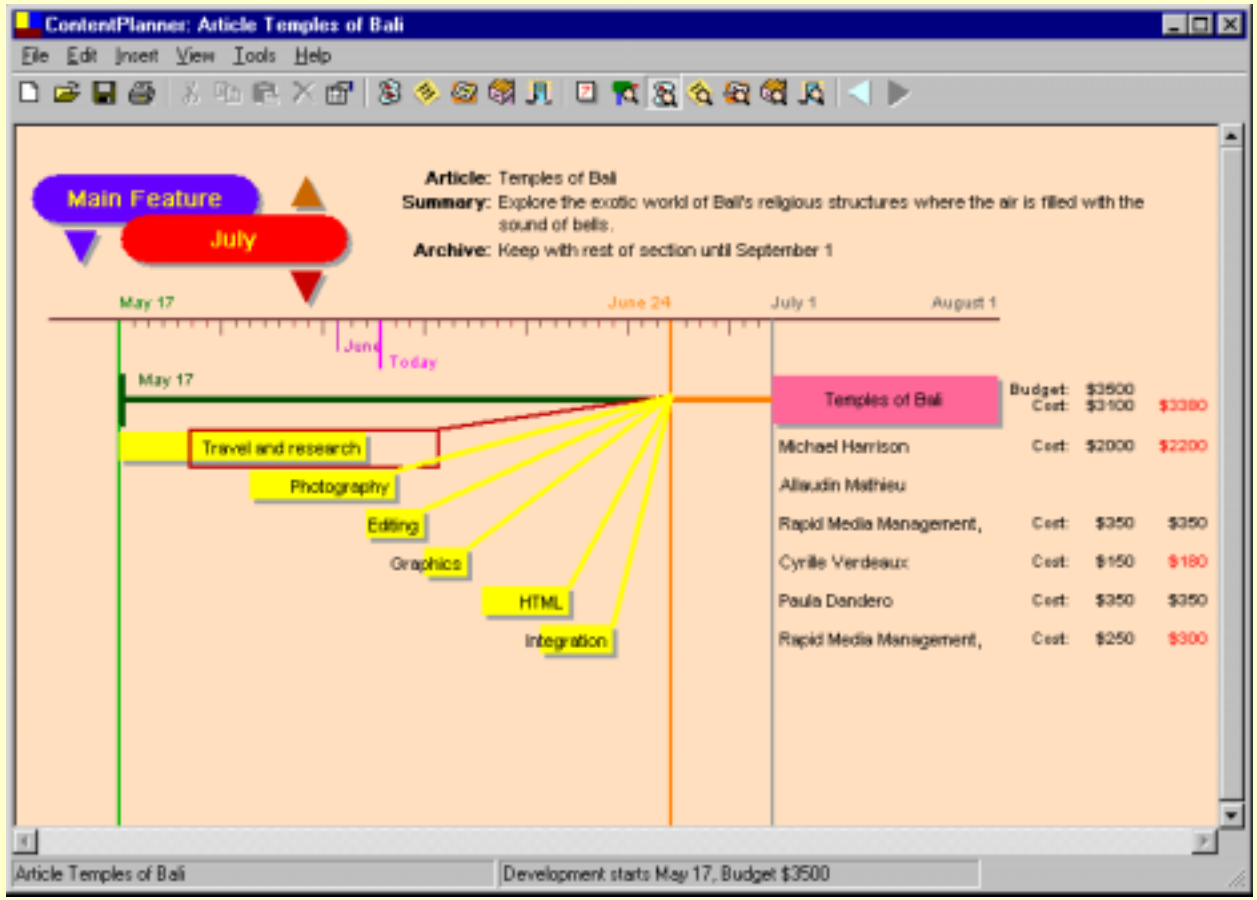
Planning approaches

- Normal, forward planning
  - Starting from the start date, how long will it take
  - Take each planned task and add them up
  - This is the normal engineering method
  - Does not integrate with marketing or sales objectives
- Backward planning
  - Start from when the work is to be complete
  - Needs to synchronize with marketing events
  - Work out how many tasks can be done in time
  - Common in publishing – very good for web work

Content planning today



Structured content planning



Publishing engineering

- Task breakdown beyond engineering
- Integration with business processes
- Time-line based deliveries
- Infrastructure for constant, structured change
- Long- and short-term planning
  - Infrastructure development
  - Content development
  - Corporate themes
  - Product line evolution

Controlling change

- Conventional systems engineering not sufficient
- Content-driven changes
  - News updates
  - Product line evolution
- Infrastructure-driven changes
  - Technologies
  - Defects
- Each needs its own approach

Infrastructure-driven changes

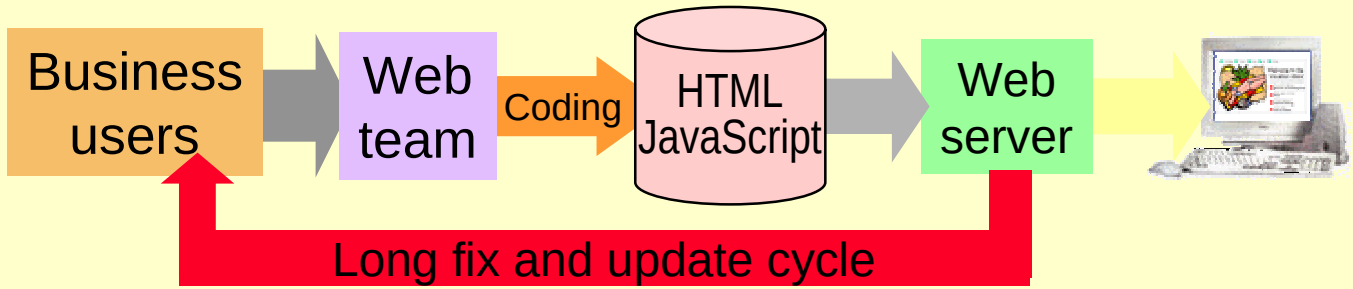
- This is engineering
- Apply standard systems-engineering techniques:
  - Change control
  - Bug tracking
  - Version management
- Educate the other stakeholders
  - Marketing
  - Designers
  - Remember that they don't have your training!
  - Explain why, don't impose

Content-driven changes

- This is more like publishing
- Standard techniques and practices are unfamiliar
- Need to develop new processes
- Need wide buy-in to integrate the web to the business core
  - More stakeholders!
  - More data management
- Automate where possible
  - Content management systems
  - Workflow systems
  - Prosumer Suite for dynamic activity

Remember the typing pool?

The web bottleneck



- Often long delays on servicing updates
- Often stonewalling for updates - technical excuses
- Web team have no context
- Frequent error injection
- Lack of business control of a business resource
- Continual expense, high total cost of ownership TCO

Site automation

- Software allows direct update
- Workflow controls who can change what
- Reduced error rates
- Control remains with those responsible
- Greatly reduced TCO

Automation tools

- Tools allowing business people to update sites:
  - Day
  - Dynabase
  - Interwoven
  - MediaSurface
  - Microsoft Content Management Server
  - Reef
  - Vignette
- Dynamic, interactive site construction
  - Prosumer Suite
- Toolkits for automation
  - ATG
  - BroadVision
  - Microsoft

Service with a smile

Suddenly we're all in service roles

- Previously engineering was hidden
- The web changes this:
  - Many sites are open to everyone
  - Failure is very public
  - Word of mouth (or email) is an important force
- Web engineering is a customer-facing role
- Sloppy work can no longer be tolerated

Conclusions

Wait a minute -
didn't we forget something?

Ah yes, test

- Testing is fundamental to good engineering, *but* the web is the land that test forgot:
  - Low reliability
  - No resilience to bad data
  - Frequent service outages
  - Little internal checking (e.g. 404 errors, missing graphics)
  - Platform incompatibility
  - Poor usability
  - Different bandwidths (modem, broadband)
- Test according to all key requirements
  - Corporate — Availability, branding
  - Design — Usability, design
  - User — Achieving their tasks
  - IT — Reliability and compatibility

Conclusions

- The web is crying out for good engineering practice
- A new discipline is forming, combining skills:
  - Engineering
  - Design
  - Publishing
  - Management
- Change is both fundamental and hazardous
- Web TCO is going to become a serious issue
- Software can improve web engineering *and*
- Software can reduce cost of ownership

Web aware today or not, it's coming your way