

QUALITY ASSURANCE

Jacob Buck

Development Director @ Guppyworks
Coordinator IGDA Denmark Chapter



MY BACKGROUND

- Shipped more than 40 games (original and licensed IP, development & publishing)
 - As executive producer for ITE, InterActive Vision & Guppyworks
 - Established QA and support department at ITE
 - Started on game development in 1987 (programmer, producer, designer)
- Worked with many publishers and their QA departments
 - Activision, Take2, Midas, KE Media/Gamefactory, Akella, Koch, THQ, DreamCatcher, ...
- Brands/Licenses (Garfield, Top Gun, Lemony Snicket, Franklin, Apache, Lockheed,...)
- Platforms (PC, PS2, PSX, GBA, GBC, Nintendo DS, Palm/PPC, Mobile, Web, C64, Amiga)
- Msc Electronics & Software Engineering @ Aalborg Universitet (1991-1999)
 - Specialised in Intelligent Multimedia (+Edinburgh University Department of Artificial Intelligence)
- Independent SW&HW developer/consultant (1995 - 1998)
 - Aalborg University, Danish Research Council, LEGO, Noris Print-Tech, ...



GUPPYWORKS

- Concepts + stories + characters + environments
- Localization: HCA 11 languages – 60 countries
- Focus: GuppyLife (MMOG)
- Internal & External QA



AGENDA

- What is QA? Testing, quality bar, risk assessment, ...
- When and how? Planning
- The QA Landscape
- Testing
- Bug tracking
- QA Checklists
- Q & A

WHAT IS QA?

- QA vs. bugs



Copyright 2005 Hans Bjordahl

Bug Bash by Hans Bjordahl

<http://www.bugbash.net/>



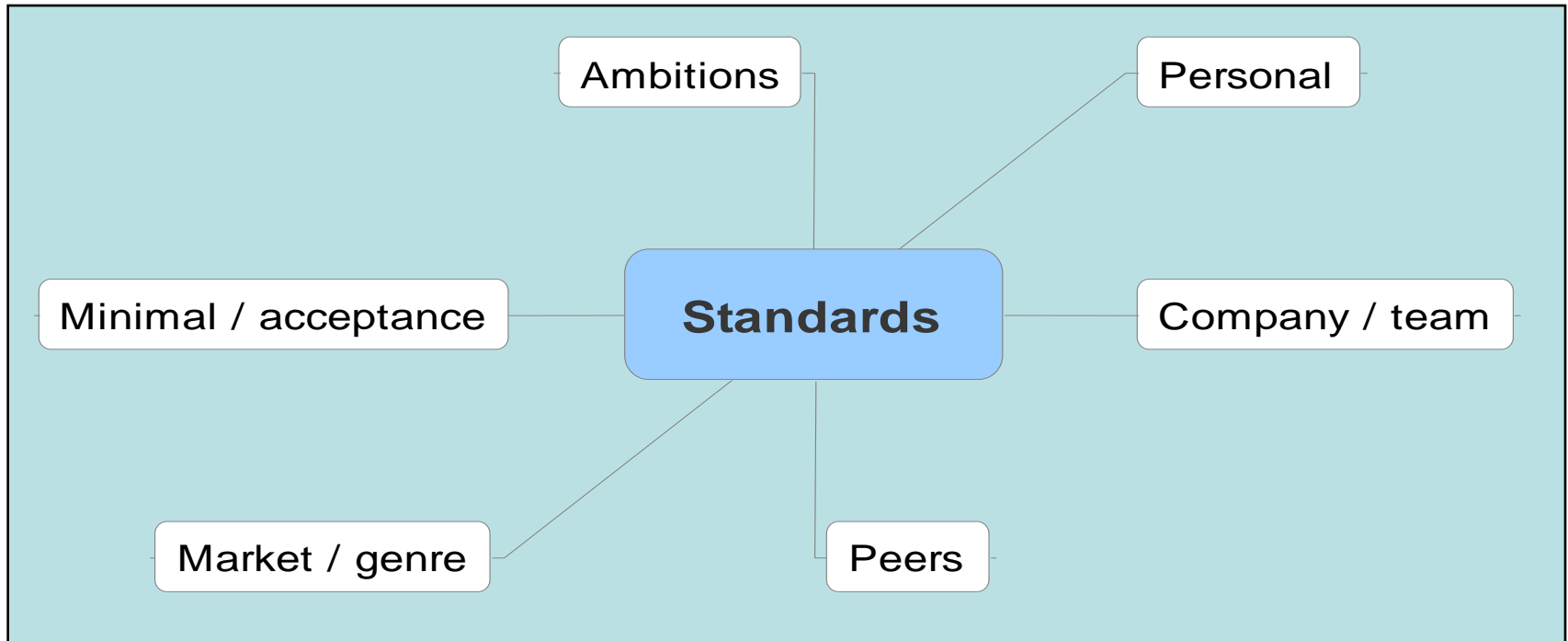
WHAT IS QA?

- QA vs. bugs
- What is quality?
-
-

- Production value, user experience/satisfaction, revenue
- Consequences of many bugs
 - Bad reviews => bad reputation
 - Frustrated customers => loss of repeat customers
 - Loss of income from returned products
 - High support costs

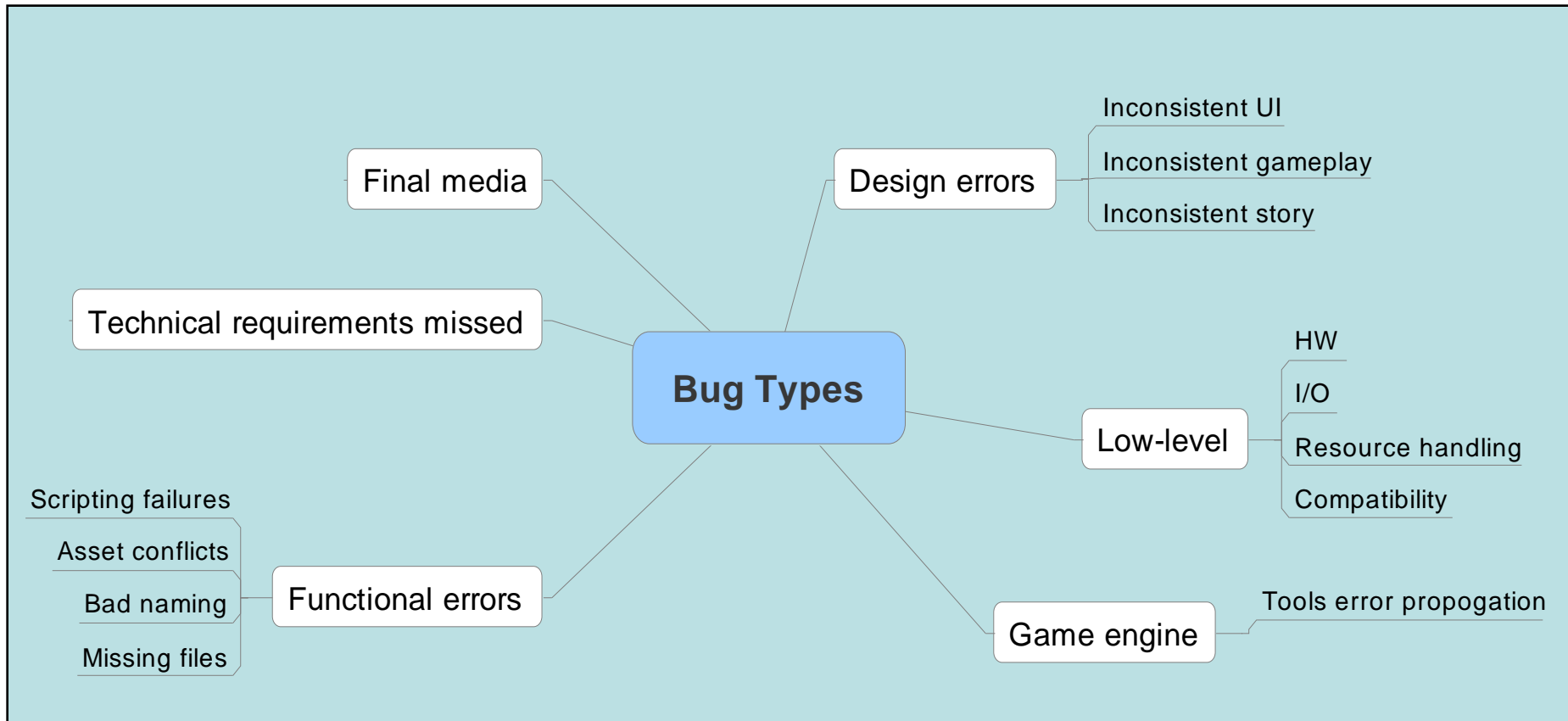
WHAT IS QA?

- QA vs. bugs
- What is quality?
- Standards: visual, audio, overall, stability?
- Risk and effect?



WHAT IS QA?

- Risk and effect?



WHAT IS QA?

- Developer
 - QA/testers => dev. Team <= QA/testers
 - Producers, sale, marketing
- Publishers, HW manufacturers, (users)
 - QA => external producers, sale, marketing

WHAT IS QA?

- Design and prototype evaluation => agile dev.
 - Focus groups, market research, market knowledge
 - Usability/play testing of prototypes/beta
- Integrity testing and debugging
 - Stub testing, crash'n'burn/smoke tests and master tests

WHAT IS QA?

- Internal
 - Resources (staff, hardware), Skill of staff vs.
 - Producers, sale, marketing
- External (+publisher's QA)
 - Specialized team and hardware – only when needed
 - Black box testing
 - Compatibility and console compliance testing (+MS Research)

WHAT IS QA?

- QA vs. bugs
- What is quality?
- Standards: visual, audio, overall, stability?
- Risk and effect?
- Who controls and assures quality and how?
- Internal vs. External testing
- When? before, during, after...

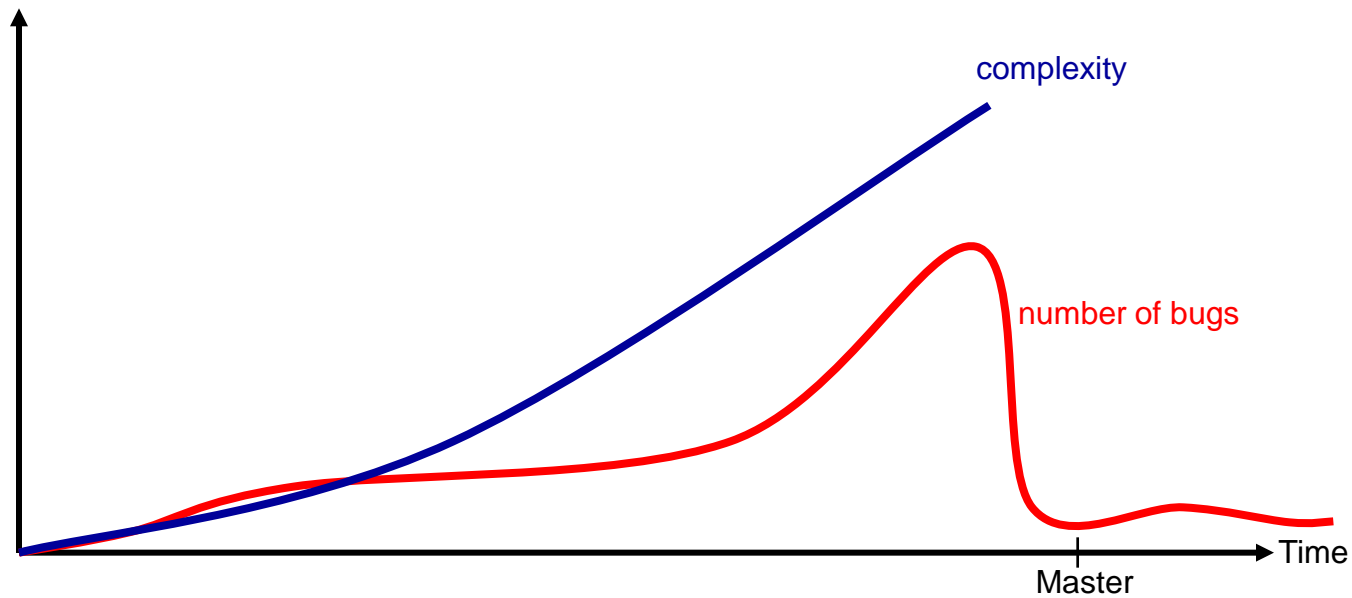
PLANNING AND TIMING

- Plan well for testing is very important
 - Expect that you will not make it right on first attempt
- Identify the phases and impact of QA in each phase
- Establish a good QA pipeline and methods early
- Keep refining your QA system

- Crunch and overtime => more bugs

COMPLEXITY vs. BUGS

and complexity

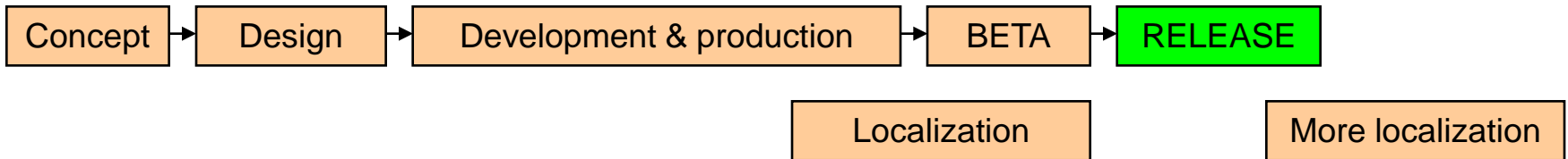


PROJECT TIMELINE

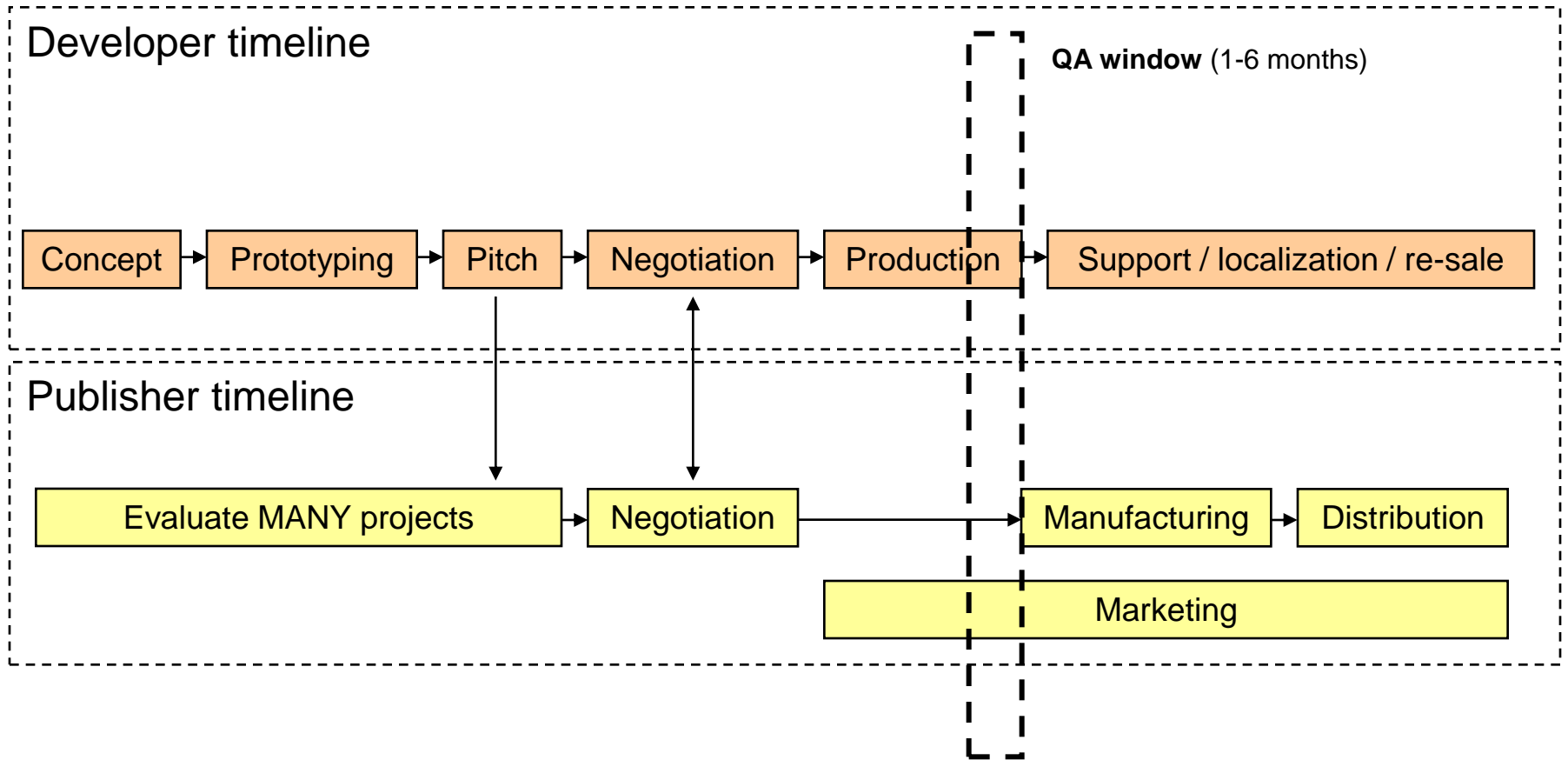
Sales oriented phases



Main development phases



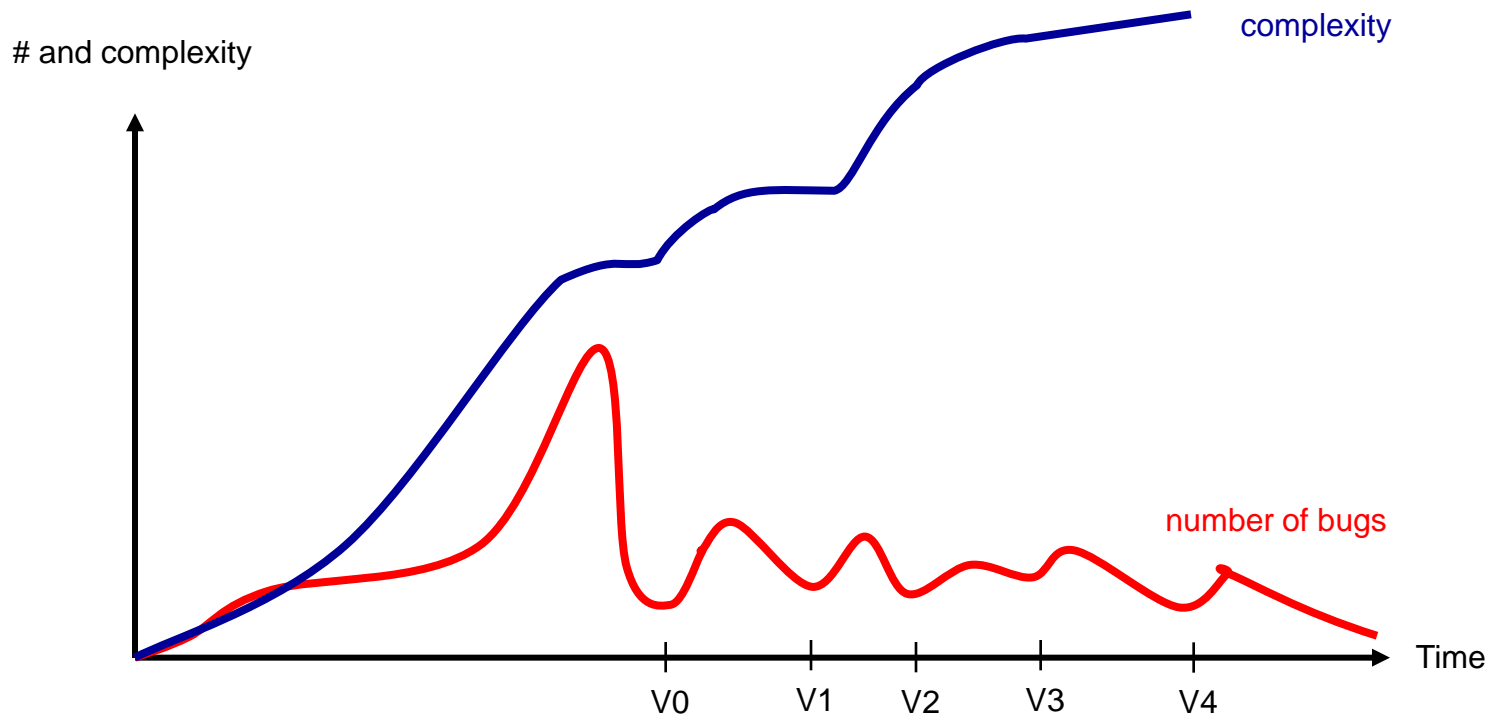
TIMELINE - PUBLISHERS



MMO QA

- MMO games typically require ongoing updates
 - New content & features
 - Patches
- Keep gathering statistics and metrics
 - How many crashes/bugs -> what to focus on fixing
 - Which features are more/less used than others
- How to deploy updates on a live game?
- How to add new features (“legal feature creep”)?
- How to keep stability and integrity?

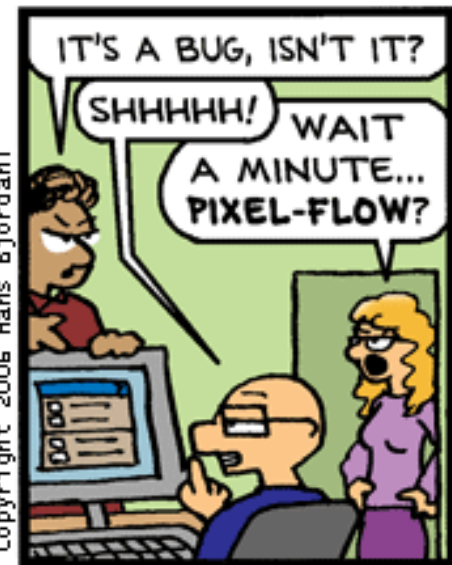
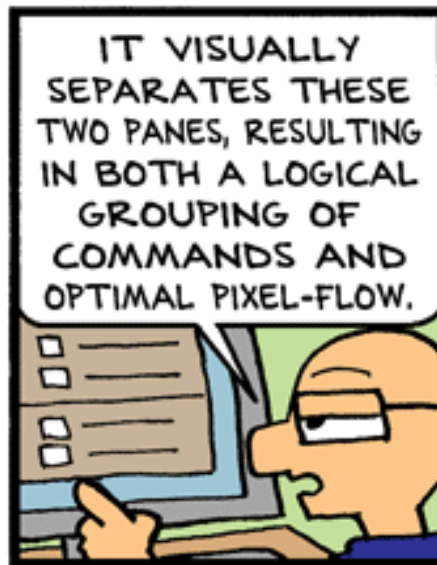
MMO release cycles



BREAK

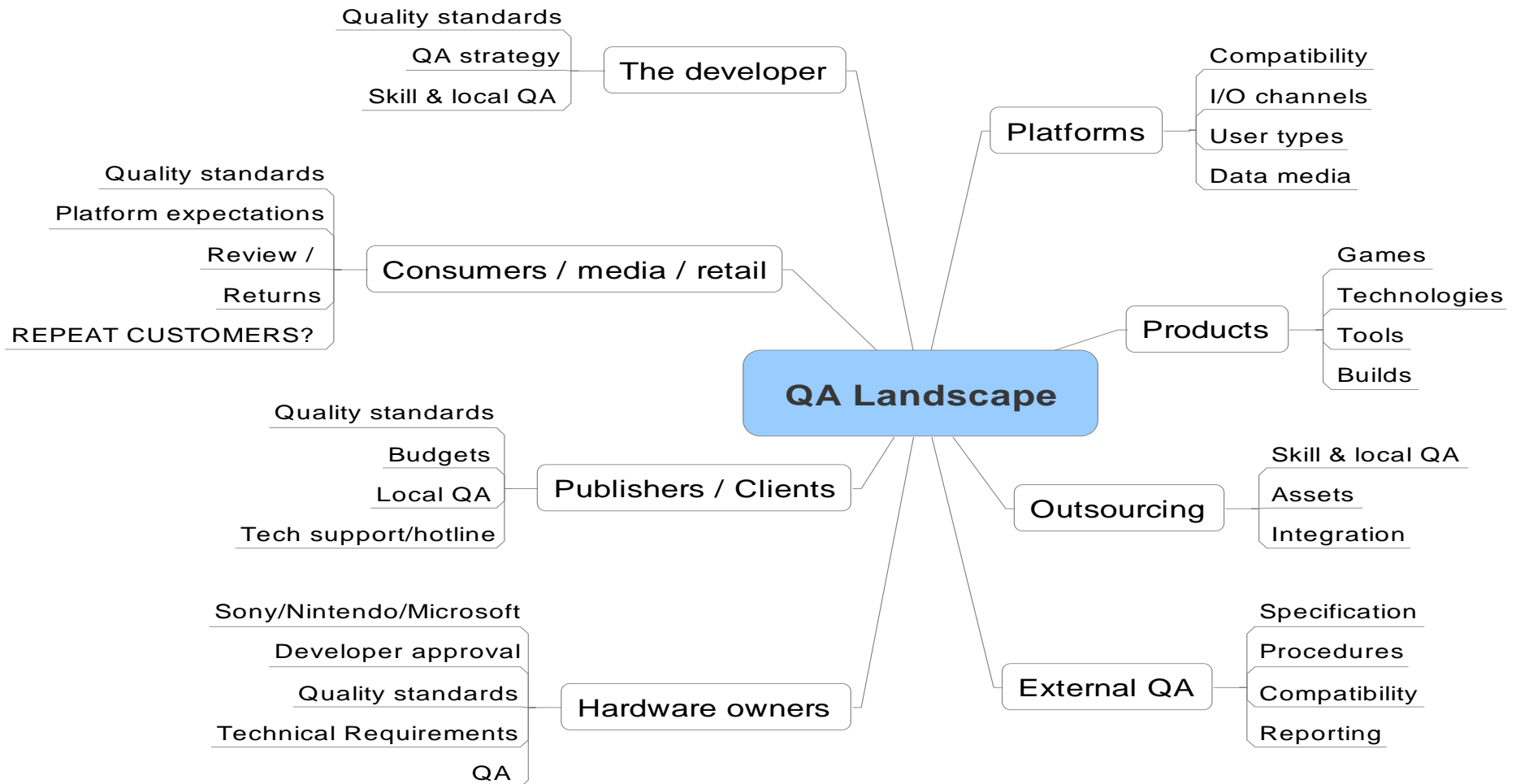


Bug Bash by Hans Bjordahl



<http://www.bugbash.net/>

QA LANDSCAPE



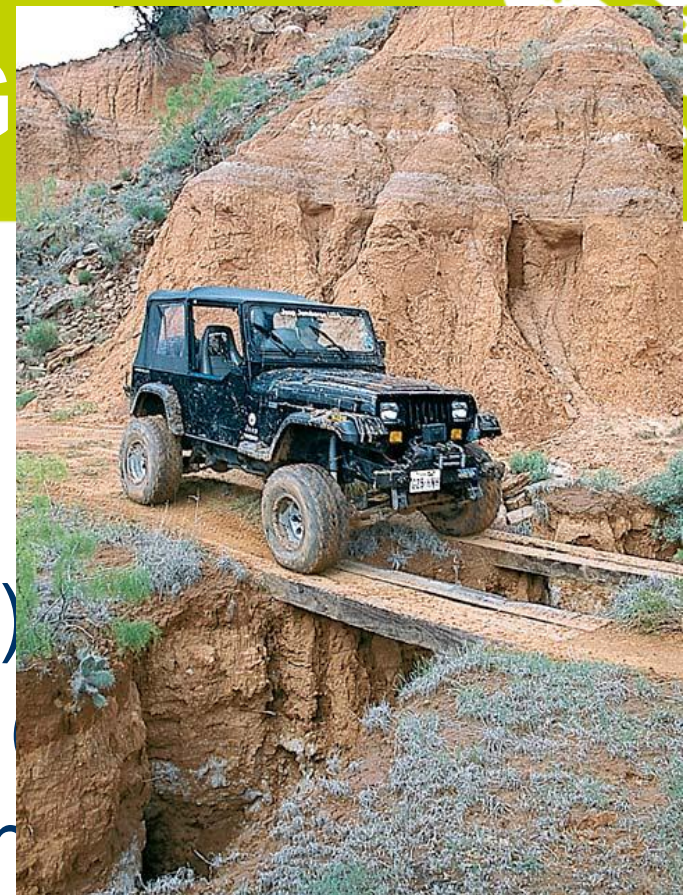
TESTING

- User/usability/**play testing**
- Compatibility testing
- Stub testing (programmers)
- Integrity and stress testing (crash/burn)
- Beta testing (internal/external)
- Simulation / automation / test tools



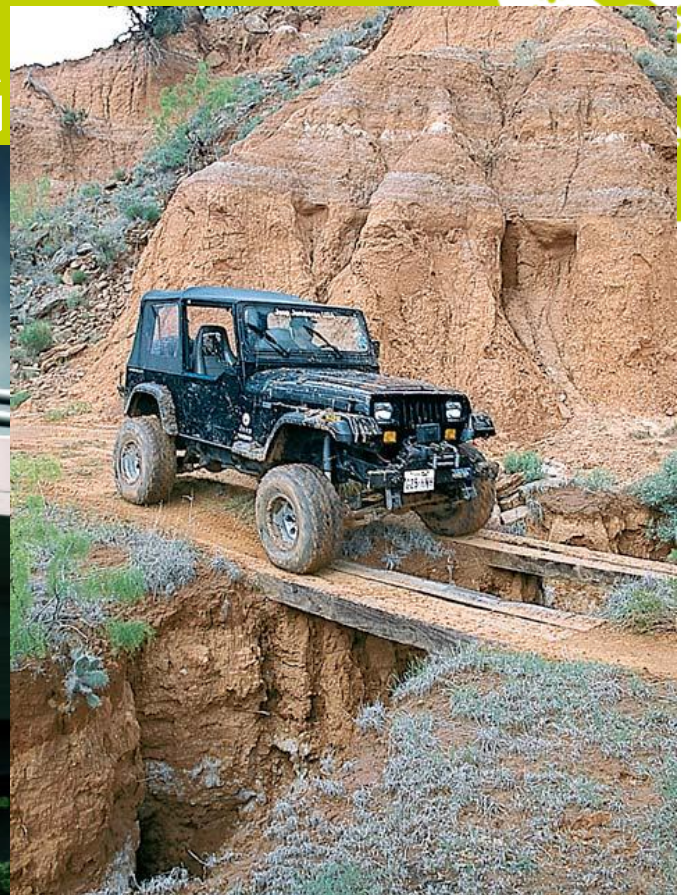
TESTING

- User/usability/**play testing**
- Compatibility testing
- Stub testing (programmers)
- Integrity and stress testing
- Beta testing (internal/external)



- Play testing: optimize experience crossing the bridge
- Integrity testing: Minimize the risk of breaking down on the way

TESTING



- Play testing: optimize experience crossing the bridge
- Integrity testing: Minimize the risk of breaking down on the way - NOT ALWAYS POSSIBLE

BUG TRACKING

- Bug tracking systems (paper or SW)
- Documenting bugs (for repro)
- Tracking procedures and rules
- Responsibilities / ownership
- Closing / accepting
- Merging bug lists / reports

Reporter: jbuck@guppyworks.dk

Product: HCA1

- Version:
- 9775
 - DemoR2655
 - DK_RC2.0558
 - RC1.0447
 - RC1.0512(DK)

- Component:
- Framework:Cutsceenes
 - Framework:GUI Programming
 - Framework:Input Controller
 - Framework:SceneViewer
 - Framework:Sound Programming

Platform: PC

OS: other

Priority: P2

Severity: blocker

Initial State: NEW

Assign To: code.monkey@guppyworks.dk

Cc:

URL: http://

Summary: Menu crashes when using any key

Description:

1. Start the game
2. Wait for the main menu
3. Press the any-key

100% reproduceability

System: Jacob's laptop (PC014)

Depends on:

Blocks:

Commit

Remember values as bookmarkable template

Bug List: PMTC

Fri May 11 2007 01:46:51 GMT+1

[Bugzilla](#) Version 2.18.3

ID	Last Changed Date	Sev	Pri	Assignee	Resolution	Summary
861	2006-10-18	crit	P3	andreas@gupp...		Crash of game after load -> load new area
933	2006-10-18	norm	P3	andreas@gupp...		BUG: Act5 game crashed when loading a game
868	2006-10-09	norm	P4	jbuck@guppyw...		Act2: The Harbour animation in Q3Entrance is very pixilated
911	2006-10-18	norm	P4	andreas@gupp...		BUG: Act1 missing particles for mrschwartz in tinderbox scene
621	2006-10-17	norm	P5	zilentinja@...		BUG: corridors need surface triggers
814	2006-10-05	norm	P5	andreas@gupp...		keyboard with confirm dialog doesnt work
920	2006-10-12	norm	P5	andreas@gupp...		BUG: goats head turns upside down when walking inside NPC
929	2006-10-18	norm	P5	andreas@gupp...		BUG: Act3 Manworker walks through stones at the sculptors house

8 bugs found.

[CSV](#) | [iCalendar](#) | [Change Columns](#) | [Change Several Bugs at Once](#) | [Send Mail to Bug Owners](#) | [Edit Search](#) | [Forget Search 'PMTC'](#)

 Actions: [Home](#) | [New](#) | [Search](#) | bug # | [Reports](#) | [My Requests](#) | [My Votes](#) | [Sanity check](#) | [Log out](#) jbuck@guppyworks.dk

 Edit: [Prefs](#) | [Parameters](#) | [Users](#) | [Products](#) | [Flags](#) | [Groups](#) | [Keywords](#)

 Saved Searches: [My Bugs](#) | [PMTC](#)

Bug List: (1 of 8) [First](#) [Last](#) [Prev](#) [Next](#) [Show list](#) [Search page](#) [Enter new bug](#) [Enter new HCA1 bug](#)

Description: [\[reply\]](#) Opened: 2006-10-07 12:41 GMT+1

Gemte spillet (er ved mølle/nissen første gang), og afsluttede, dvs jeg kom ud i først menu...hvor jeg vlagte load game. Kom ind i spillet uden problemer, talte med nissen... og ville så til q1.area igen, mens den loaded dette crashed den!

----- *Additional Comment #1* From [Claus Lyager](#) 2006-10-09 12:19 GMT+1 [\[reply\]](#) -----

This happens at random places in RC1.0447 loading new areas.

----- *Additional Comment #2* From [Jacob Buck](#) 2006-10-09 12:45 GMT+1 [\[reply\]](#) -----

Rated critical, but lower priority for a DK master. Need much more testing to figure out what the problem is to fix it.

----- *Additional Comment #3* From [Andreas Møller](#) 2006-10-18 11:02 GMT+1 [\[reply\]](#) -----

*** [Bug 869](#) has been marked as a duplicate of this bug. ***

Bug#: 861	Hardware: PC	Reporter: Sigge Stenild <zilentrinja@gmail.com>
Product: HCA1	OS: other	Add CC: <input type="text"/>
Component: Other	Version: RC1.0447	CC: <input type="text" value="claus@guppyworks.dk"/>
Status: NEW	Priority: P3	<input type="checkbox"/> Remove selected CCs
Resolution:	Severity: critical	
Assigned To: Andreas Møller <andreas@guppyworks.dk>	Target Milestone: -	
URL: <input type="text"/>		

Attachment	Type	Created	Size	Actions
Create a New Attachment (proposed patch, testcase, etc.)				View All

Bug 861 depends on: [Show dependency tree](#)

Bug 861 blocks: [Show dependency graph](#)

Additional Comments:

- Leave as **NEW**
 - Accept bug (change status to **ASSIGNED**)
 - Resolve bug, changing resolution to
 - Resolve bug, mark it as duplicate of bug #
 - [Reassign](#) bug to
 - Reassign bug to owner of selected component
-

[View Bug Activity](#) | [Format For Printing](#)

Bug List: (1 of 8) [First](#) [Last](#) [Prev](#) [Next](#) [Show list](#) [Search page](#) [Enter new bug](#) [Enter new HCA1 bug](#)

QA CHECKLISTS

- Test session checklists
- Compatibility checklists
- Technical Requirements Checklists
- Mastering checklists
- Submission checklists
- Tracking checklists
- Checklists checklist

PC MASTERING CHECKLIST

Final Master Checklist

<input type="checkbox"/>	CD does not contain any unused files (editors, text files, etc.)								
<input type="checkbox"/>	Autorun works								
<input type="checkbox"/>	Installation of DirectX (or other install items) are included and work								
<input type="checkbox"/>	Test on a machine with no/too old DX								
<input type="checkbox"/>	Game installation								
<input type="checkbox"/>	Works on different language PC's								
<input type="checkbox"/>	Detects if Indio codec is missing and installs correctly								
<input type="checkbox"/>	Splash screens show								
<input type="checkbox"/>	Intro works								
<input type="checkbox"/>	Menu works								
<input type="checkbox"/>	Credits run (and loops well)								
<input type="checkbox"/>	Outro works well								
<input type="checkbox"/>	Game finishes and cleans up correctly								
<input type="checkbox"/>	Un-install works well (and cleans up correctly)								
<input type="checkbox"/>	All game levels work								
<input type="checkbox"/>	The entire game can be played all the way through								
<input type="checkbox"/>	The game plays through all levels								
<input type="checkbox"/>	All levels are correctly accessed through the "continue game" selector								
<input type="checkbox"/>	Tested with joystick - test also callibration / sensitivity								
<input type="checkbox"/>	Designed for Windows XP								
<input type="checkbox"/>	<input type="checkbox"/> The application has passed self-testing on Windows XP								
<input type="checkbox"/>	<input type="checkbox"/> Your company has completed a Logo License Agreement with Microsoft for that specific application								
<input type="checkbox"/>	<input type="checkbox"/> Your company has submitted a copy of the application to Microsoft								



Q & A

- Contact:
 - jbuck@guppyworks.com
 - <http://www.guppyworks.com>
 - <http://www.igda.dk>



Bug Bash by Hans Bjordahl

<http://www.bugbash.net/>

STUDENT ASSIGNMENT

- Define QA strategy with priorities and focus specified
- QA: Design simple bug reporting form; programmers' input essential!
- QA: Write 2 bug reports, everyone in the team; PM coordinates
- Compile and evaluate QA material & process for May 5th
- Play testing: Plan a Think-aloud study with note taking method (no need to record & transcript; see reading hand-out)
- Play testing: Organise a playtest for game faculty members for Tuesday May the 12th; 13-15