

09/10: Risks and Prototypes

The Capstone Experience

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*From Students...
...to Professionals*

Risks and Prototypes

➤ Risks

- Prototypes

Identifying Risks

- What You Don't
 - Know
 - Understand
 - Know How to Do
- Normally
 - Major Project Features
 - “Showstoppers”
- Varies From
 - Not Familiar With But (Probably) Can Learn to
 - Absolutely No Idea How to Do It

What are you worried about?

What should you be worried about?



Example Risks

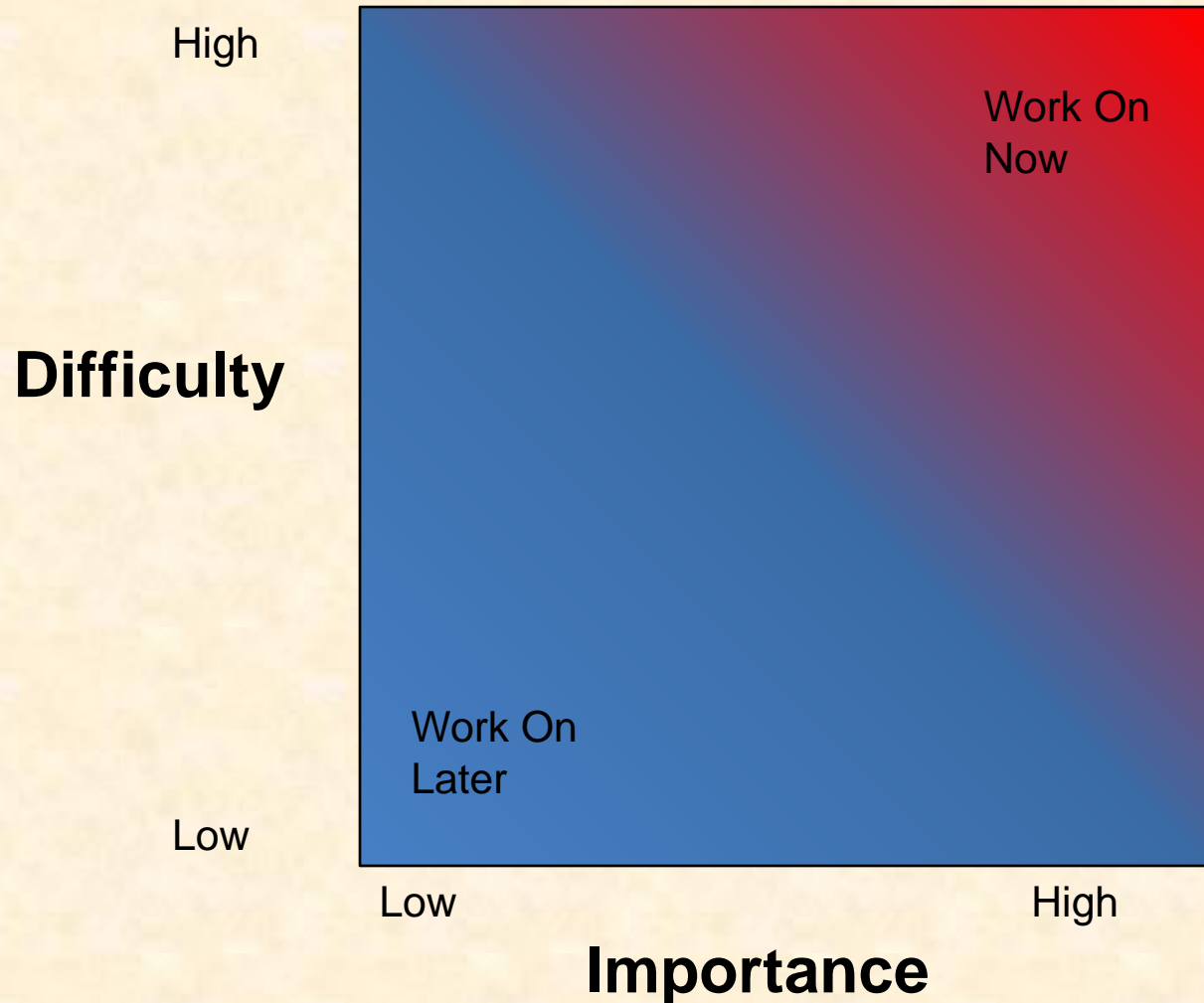
Including but not limited to...

- Key Application Features
- Hardware Systems
- Software Systems
- Development / Programming Environments
- Programming Languages
- Etc...

Prioritizing Risks

- Classify Difficulty
 - High Very Hard, No Idea How to Do
 - Medium
 - Low Not Hard, Probably Doable
- Classify Importance
 - High Showstopper, Must Have
 - Medium
 - Low Not Vital, Nice to Have

Prioritizing Risks

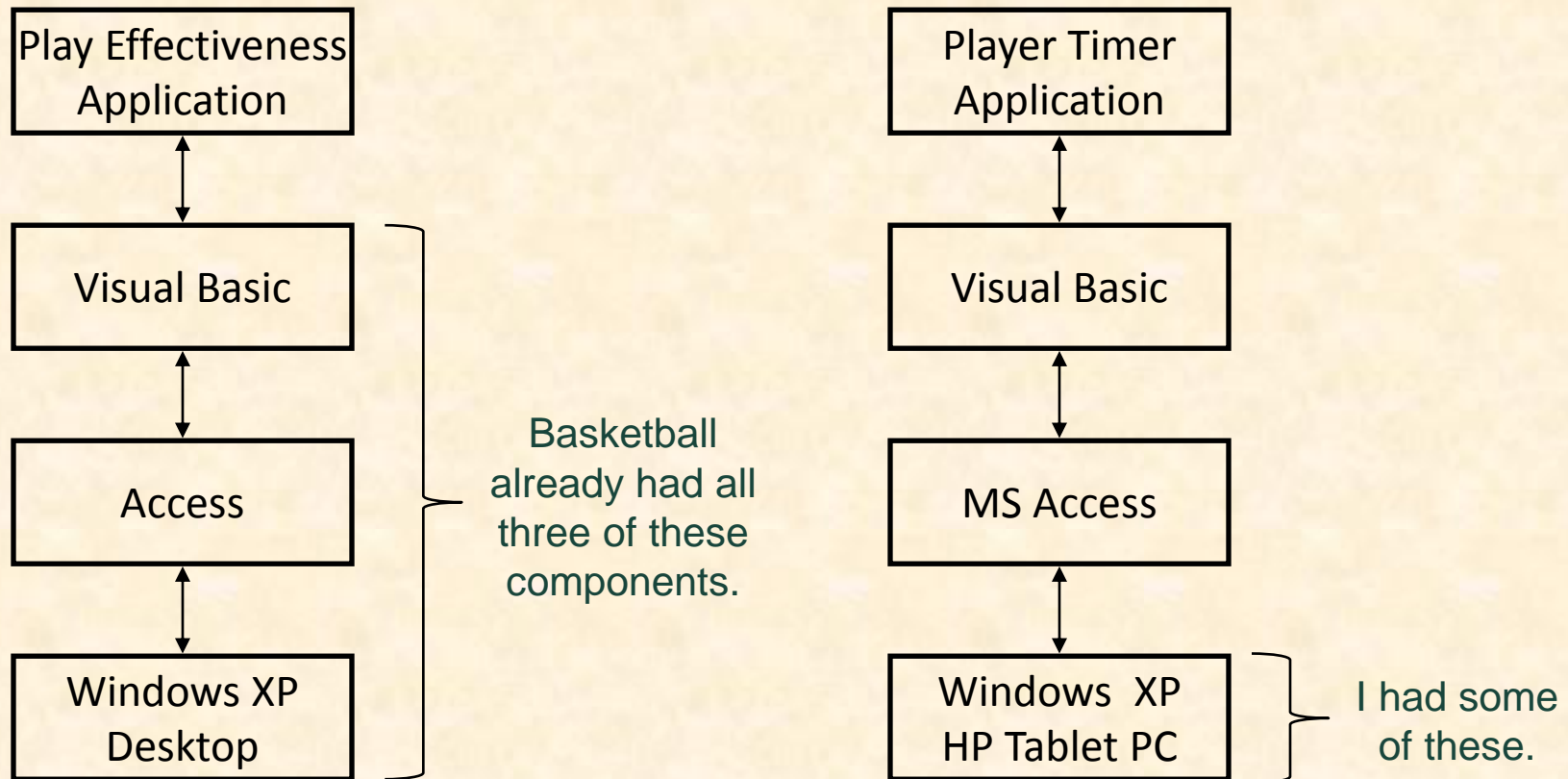


Case Studies: Basketball Apps

- Play Effectiveness
 - Determine Effectiveness of Plays
 - Record All Plays with Results
 - Produce Reports of Effectiveness
- Player Timer
 - Keep Track of Player Times
 - Record Minutes Played and Rested
 - On the Bench, During the Game



Basketball Apps Architectures



Basketball Apps Risks

- What SDK should I use?
- How do I program in Visual Basic?
- How do I make a GUI in VB?
- How do I interface VB with Access?
 - Create/Open/Save a Database?
 - Read/Write Records?
 - Traverse Records?
- How do I do clocks in Windows?
 - Game Clock?
 - Wall Clock?

How would you
classify these risks?



Mitigating Risks

- Use Existing Resources

- Including But Not Limited To

- Product Demos
 - Book Sample Code
 - Downloadable Examples
 - Etc...

Nota Bene:

1. Check license if including in project.
2. Document.
3. Inform client.

- Test Drive

- Install
 - Compile
 - Extend
 - Etc...

- Build Prototypes

- Single Purpose
 - Quick-and-Dirty



Basketball Apps Risk Mitigation

- Game Clock
 - Start /Stop
 - Counts Down
 - By Minutes:Seconds
- Handling Access Records
 - Write Number
 - Read Number
 - Add Up Numbers

Start	19:55
Stop	

Write	7
Read	14
Add Up	55



Your Risks?

- Team Auto-Owners
- Team Boeing
- Team Ford
- Team GE Aviation
- Team Google
- Team Meijer
- Team Mozilla
- Quicken Loans
- Team Spectrum Health
- Team TechSmith
- Team Urban Science
- Team Whirlpool

What are your risks?

Former Capstone Teams

- Men's Basketball
- Ford



Risks and Prototypes

✓ Risks

➤ Prototypes

Prototypes

- Developed
 - Early
 - Rapidly
- Implement Subset of the Requirements
- Done for Variety of Reasons
- Are Not Finished Goods
- “Hacking” (Good Sense)

Why? Answer Questions

Help Determine...

- Specifications
 - Functional
 - Design
 - Technical
- Usability
- How Existing Code Works
- Programming Languages
- Development Environments
- Operating Environments
- What to Panic About
- Etc...



Why? Determine Schedule

Determine how long it will take to...

- ...learn the new programming language.
- ...learn the development environment.
- ...learn the existing code.
- ...convert the existing code.
- ...convert the existing database.
- ...get libraries working.
- ...deploy the application.
- Etc....



Why? Reduce Risk

- Operability
 - How do we make a game clock?
 - Where do we store the data?
- Interoperability
 - How does the game clock work with other tablets?
 - How do the tablets all write to the same database?
- Scalability
 - Will the game clock propagate in real time?
 - Will the database engine keep up?
- Reliability
 - What happens if the clock tablet dies?
 - What happens if the database tablet dies?
- Etc...



Speed (to Write)

- Critical
- 2-3 Day Tasks
- Use Whatever Works
 - RAD Languages
 - SDK's
 - IDE's
 - Design Tools
 - Wizards
 - Sample Code
 - Etc...
- Stop When Questions Answered



Tradeoffs: Speed (to Write) vs...

- Speed vs Best Practices
 - Testing
 - Documentation
 - Security
 - Software Engineering
 - Usability
 - Performance
 - Coding Standards
 - User Interface Standards
 - Using Real Data
 - Etc...
- Hence, Normally Not Appropriate in Final Deliverable

Challenge/Danger

- “Hack” Solution
 - It works.
 - It’s ***a*** way to do something.

vs

- “Correct” Solution
 - It works.
 - It’s the ***“right”*** way to do something.
(There may be more than one “right” way to do something.)

Often My Biggest
Frustration



Basketball Prototypes Case Studies

- Play Effectiveness
- Player Timer
- Radio Stats
- Real Time Play Stats
- Plus/Minus

Play Effectiveness App

- Functional Specifications
 - Determine Effectiveness of Plays
 - Record All Plays with Results
 - Produce Reports of Effectiveness
 - Each Play
 - # of Success / # of Attempts
- Design Specifications?
- Technical Specifications?

Initial Meeting with Video Coordinator

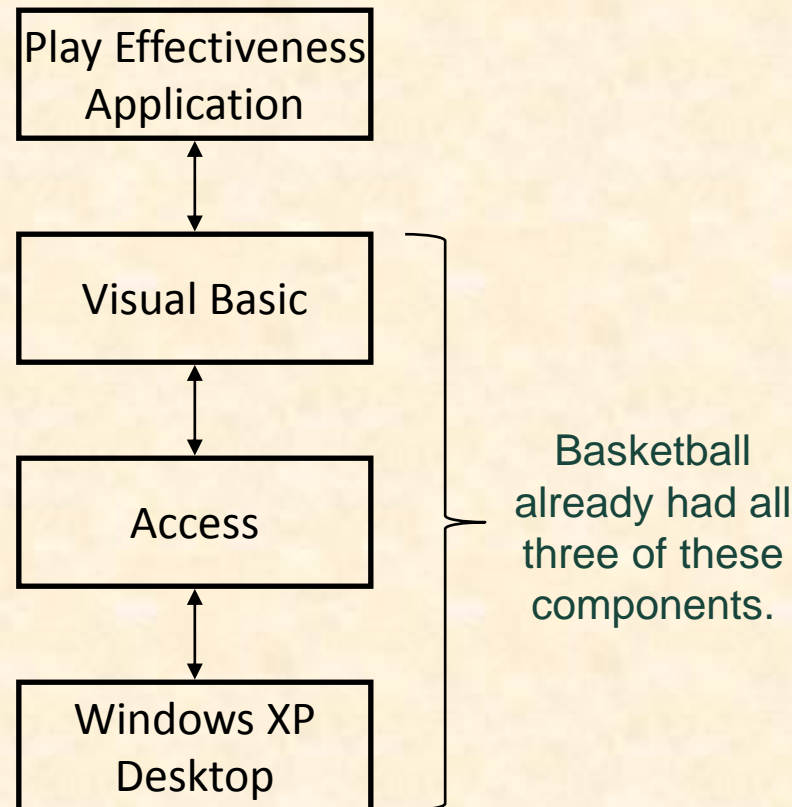
I Learned...

- Done After Game
 - On Desktop Computer
 - From DVR
- Lots of Plays (~ 200) in Play Book
- ~60-80 Plays Run Per Game
- Plays Categorized
 - Early Offense 1,2 (i.e., Fast Breaks)
 - Offense 1,2 (i.e., Half Court Plays)
 - Special Situations 1,2 (i.e., Out of Bounds)
- Overwhelming ← Can you relate?

The
Business
Processes



Play Effectiveness Architecture



Risks

- Learning Basketball Business Processes
- Programming in Visual Basic
- Making a GUI in VB
- Interfacing VB with Access
 - Creating/Opening/Saving a Database
 - Reading/Writing Records
 - Traversing Records
- Generating Reports in Access
- Etc...

BB Stats Alpha V1

Detail

Game

Opponent	Harvard University	Location	Boston
Date	July 4, 1776	Number	1776070401

Play

P#	48
T	12:34
C#	426
EO1	Run
EO2	Gun
O1	1-4 Screen
O2	Low Post
SS1	SLOB
SS2	Blah
R	Two Pointer
Notes	Feed to Adams. Washington always gets the rebound. Jefferson or Hamilton should take the shot.

Roster

1	00:00	00:00	Adams, John
2	00:00	00:00	Jefferson, Tom
3	00:00	00:00	Washington, George
4	00:00	00:00	Franklin, Ben
5	00:00	00:00	Hamilton, Alex

Next Play

BB Stats AV1

Fields

- P# Play Number
- T Time
- C# Clip Number
- EO Early Offense
- O Offense
- SS Special Situations
- R Result

Nota Bene

- Just Screen Layout
- No Code (Underneath)
- Never Have All Entries Filled at Once



What I Learned From AV1

(1 of 2)

- Wanted to Identify Plays Within a Possession
- Plays Categorized Series / Set
 - Set is Variation on Series (“Parameterized Plays”)
 - E.g.
 - Series: Thumbs
 - Sets: Up, Down, Circle
 - Plays: Thumbs Up, Thumbs Down, Thumbs Circle
 - 1, 2 Notation
 - EO1 = Early Offense Series
 - EO2 = Early Offense Set
 - ST (Special Teams) Missing

Huge
Impact On
Design



What I Learned From AV1

(2 of 2)

- Results Coded
 - *XN* Missed *N* Pointer (X1, X2, X3)
 - *ON* Made *N* Pointer (O1, O2, O3)
 - *FF* Foul on the Floor
 - *TO* Time Out
 - Etc...
- Wanted to Record Notes on Defense
- Didn't Care About
 - Player Times
 - Video Clip Number

BB Stats Alpha V1

Detail

Game

Opponent	Harvard University	Location	Boston
Date	July 4, 1776	Number	1776070401

Play

P#	48
T	12:34
C#	426
EO1	Run
EO2	Gun
O1	1-4 Screen
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SS1	SLOB
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1	00:00	00:00	Adams, John
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3	00:00	00:00	Washington, George
4	00:00	00:00	Franklin, Ben
5	00:00	00:00	Hamilton, Alex

Next Play

So, from this to...

BB Stats AV1

Fields

- P# Play Number
- T Time
- C# Clip Number
- EO Early Offense
- O Offense
- SS Special Situations
- R Result

Nota Bene

- Just Screen Layout
- No Code (Underneath)
- Never Have All Entries Filled at Once



BB Stats Alpha V2

Detail

Play

T 12:34 PO# 12 PL# 17

	Series	Set
EO	Early Offense	Corner (Rescreen-Post)
OF	Zone Offense	Jersey - Side Ball Screen
ST	BLOB	Quick Post for Perimeter
SS	2 For 1	Blah Blah
R	O2	
DF	Man-to-Man	
Notes	Feed to Adams. Washington always gets the rebound. Jefferson or Hamilton should take the shot.	

Roster

1	Adams, John
2	Jefferson, Tom
3	Washington, George
4	Franklin, Ben
5	Hamilton, Alex

Commands

Insert Play Insert Possession

Clear Play

Save Play

Delete Play

Game

Opponent	Harvard University	Location	Boston
Date	July 4, 1776	Number	1776070401

BB Stats AV2

Fields

- PO#
Possession Number
- PL#
Play Number
- SS
Special Situations
- DF
Defense

Nota Bene

- Just Screen Layout
- No Code (Underneath)
- Would **NOT** Have Entries in All Fields



What I Learned From AV2

- Wanted to Grade Effectiveness of Plays
- Wanted to Record Player Steals and Assists (Remember this...)
- Needed to Navigate Plays and Possessions

Detail

Play

PE#	2	Time	12:34	PL#	17	MSU	37	Op	23
	Series			Set			Effectiveness		
EO	Early Offense			Corner (Rescreen-Post)			Great		
ST	BLOB			Quick Post for Perimeter			Poor		
OF	Zone Offense			Jersey - Side Ball Screen			So-So		
R	X			O			Outstanding		
DF	Man-to-Man			Something Else			Good		
SS	2 For 1			Blah Blah			Unreal		

Notes

Feed to Adams. Washington always gets the rebound. Jefferson or Hamilton should take the shot.

Game

Opponent	Harvard University	Location	Boston
Date	11/17/2003	Number	1776070401

Roster

P	Player	S	A
1	Unbound	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	Jefferson, Tom	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Washington, George	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Franklin, Ben	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Hamilton, Alex	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Commands

Next Play	Next Possession
Previous Play	Previous Possession
Delete Play	Delete Possion
Exit	



What I Learned From AV3

- Wanted...
 - Grades to Be A, B, C, D, F
 - Results to Be X1, O1, X2, O2,...
 - Results Associated With Players
 - Series/Set Combined
("Thumbs Up" Rather Than "Thumbs", "Up")
 - To Record Player Rebound
- Will be used by...
 - Video Coordinator, GAs, and Managers
 - Very Familiar with DVR Controls
- Did NOT Want to Record Player Steals or Assists



Season

Game

OpponentHarvardDateThursday, July 04, 1776

LocationBoston, MATime7:00 PM

VenueIvy League ChallengeTVNot Yet

123456789101112

Game ID17760704

Possessions

Clock

Period1Possession0MSU0

Time20:00Play0Opponent0

Game ID17760704

Series / Set

Early Offense

Offense

Special TeamsBLOB, 3 Across

Special Situations

Offense ResultX3Offense GradeB

Defense

Defense ResultDefense Grade

Roster

ResultRebnd#Player

1Adams, John

2Jefferson, Tom

X33Washington, George

4Franklin, Ben

5Hamilton, Alex

ResultRebnd#Player

Notes

Possession Buttons

123456789101112

Play Buttons

123456789101112

Miscellaneous Buttons

123456789101112

Record: 1 of 6

No Filter

Search

BB Stats
Beta 1

First Version
With Code



What I Learned From Beta 1

- Entering a Play
 - Some Things Calculated Automatically
 - Play/Possession Number
 - Score
 - Most Things Entered With Mouse Via Pull-Down Menus
 - Series / Set
 - Result
 - But Time Entered With Keyboard Via Typing Numbers
- Need
 - Mouse-Only Input
 - Easy Way to Adjust Clock



Season

Game

OpponentHarvardDateThursday, July 04, 1776

LocationBoston, MATime7:00 PM

VenueIvy League ChallengeTVNot Yet

Game ID17760704

Possessions

Clock

Period1Possession1MSU0Time18:07

Play1Opponent0

Series / Set

Early Offense

Offense1-4 Series, 1-4 Go

Special Teams

Special Situations

Offense ResultO2Offense Grade

Defense

Defense Result

Defense Grade

Roster

ResultRebnd#Player

1Adams, John

2Jefferson, Tom

O23Washington, George

4Franklin, Ben

5Hamilton, Alex

ResultRebnd#Player

Notes

Possession Buttons

Miscellaneous Buttons

Play Buttons

Game ID17760704

Record: 1 of 1

BB Stats
Beta 2

Still Not Much
Implemented



Season

Game

OpponentHarvardDateThursday, July 04, 1776

LocationBoston, MATime7:00 PM

VenueIvy League ChallengeTVNot Yet

Game ID17760704

Possessions

Clock

Period1Possession1MSU0Time18:07

Play1Opponent0

Series / Set

Early Offense

Offense1-4 Series, 1-4 Go

Special Teams

Special Situations

Offense ResultO2Offense Grade

Defense

Defense Result

Defense Grade

Roster

ResultRebnd#Player

1Adams, John

2Jefferson, Tom

O23Washington, George

4Franklin, Ben

5Hamilton, Alex

ResultRebnd#Player

Notes

Possession Buttons

Miscellaneous Buttons

Play Buttons

Game ID17760704

Record: 1 of 1

BB Stats V1.0



Basketball Prototypes Case Studies

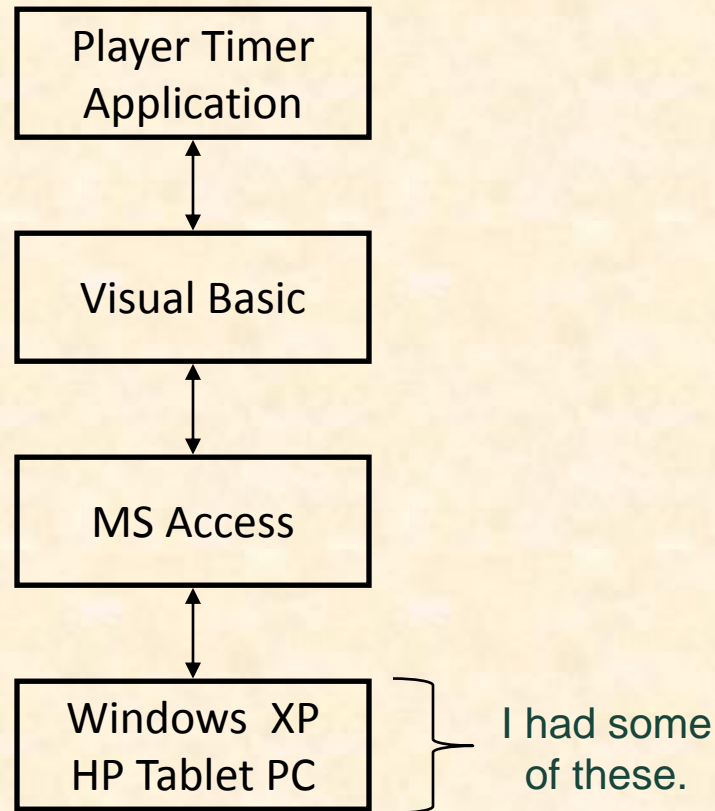
- ✓ Play Effectiveness
 - Player Timer
 - Radio Stats
 - Real Time Play Stats
 - Plus/Minus

Player Timer App

- Keep Track of Player Times
- For Each Player Record
 - Minutes Played
 - Game Clock Time
 - Consecutive & Total
 - Minutes Rested
 - Wall Clock Time
 - Consecutive
- Must
 - Be Usable on the Bench, During the Game
 - Be Portable and Not Require Electrical Outlet
 - Feel Like a Pen and a Clipboard



Player Timer App



Risks

- Learning Basketball Processes
- Implementing Clocks in Windows?
 - Game Clock
 - Wall Clock
- Very Limited Screen Real Estate
- Computing and Displaying Cumulative Times
- Hidden Risk (“Danger Will Robinson!”)



Player Timer Development

- Knew Exactly What They Wanted, So...
 - Designed “Final” Version
 - User Interface
 - Data Base Schema
 - Etc...
 - Coded “Final” Version
 - Lab Tested “Final” Version
 - Field Tested “Final” Version
 - At a Scrimmage
 - Totally and Completely Unusable
 - Scrapped “Final” Version UI and Started Over
- Huge Mistake!



Player Timer - Spartan Basketball Stats

Home

Period

↑

↓

1

Michigan State Spartans
Men's Basketball

Time

↑

↓

16:19

Start the Clock

Activate All Warnings	Select Player	Checked Out				Check Player	Checked In			
		Time		#	Player		#	Player	Time	
		Current	Remaining						Current	Remaining
<input checked="" type="checkbox"/>	1	1:12	1:48		←	3	Allen	0:04	3:56	
<input checked="" type="checkbox"/>	2	1:52	1:08	41	Gray	→		0:33	3:27	
<input checked="" type="checkbox"/>	3	0:00	3:00	23	Green	→		0:00	4:00	
<input checked="" type="checkbox"/>	4	0:00	3:00		←	40	Herzog	3:07	0:53	
<input checked="" type="checkbox"/>	5	0:00	3:00	0	Ibok	→		0:00	4:00	
<input checked="" type="checkbox"/>	6	0:27	2:33	1	Lucas	→		3:37	0:24	
<input checked="" type="checkbox"/>	7	0:00	3:00	34	Lucious	→		0:00	4:00	
<input checked="" type="checkbox"/>	8	0:00	3:00		←	2	Morgan	3:41	0:20	
<input checked="" type="checkbox"/>	9	0:00	3:00	10	Roe	→		0:00	4:00	
<input checked="" type="checkbox"/>	10	0:00	3:00		←	15	Summers	2:58	1:02	
<input checked="" type="checkbox"/>	11	0:00	3:00		←	14	Suton	3:41	0:20	
<input checked="" type="checkbox"/>	12	0:00	3:00	5	Walton	→		0:00	4:00	

Start the Clock

View Game Stats

3

Check Out All

Begin the Period

End the Period

Load Roster

Open

Exit

Form View

Player Timer



Software Updates

- Enable Clock Adjustments (While Clock Stopped)
- Enable Check In/Out By Touching
 - Check In/Out Button
 - Player Name
 - Player Slot
- Allow > 5 Players Checked In (While Clock Stopped)
- Enable Pending Check In (While Clock Running)
- Eliminate All Modal Dialog Boxes

Basketball Prototypes Case Studies

- ✓ Play Effectiveness
- ✓ Player Timer
 - Radio Stats
 - Real Time Play Stats
 - Plus/Minus

Microsoft Access - [Bader's Radio Statistics]

File Edit View Insert Format Records Tools Window Help

Type a question for help

Michigan State University							
LR	SR	R	"-"	PF	O1	X1	Total
Brown, Shannon			3	0	4 / 4	100%	2 1 11
<input checked="" type="checkbox"/> 1		R		PF	O1	X1	Total
Hill, Chris			5	2	2 / 2	100%	0 0 2
<input checked="" type="checkbox"/> 2		R		PF	O1	X1	Total
Neitzel, Drew			12	2	1 / 2	50%	2 0 5
<input checked="" type="checkbox"/> 3		R		PF	O1	X1	Total
Ager, Maurice			13	3	2 / 3	67%	6 0 14
<input checked="" type="checkbox"/> 4		R		PF	O1	X1	Total
Anderson, Alan			15	4	2 / 2	100%	3 3 17
<input checked="" type="checkbox"/> 5		R		PF	O1	X1	Total
Torbert, Kelvin			23	5	0 / 0	-	2 1 7
<input checked="" type="checkbox"/> 6		R		PF	O1	X1	Total
Bograkos, Tim			30	0	0 / 0	-	0 0 0
<input checked="" type="checkbox"/> 7		R		PF	O1	X1	Total
Naymick, Drew			34	1	0 / 0	-	0 0 0
<input checked="" type="checkbox"/> 8		R		PF	O1	X1	Total
Davis, Paul			40	3	8 / 10	80%	6 0 20
<input checked="" type="checkbox"/> 9		R		PF	O1	X1	Total
Rowley, Delco			50	0	0 / 0	-	0 0 0
<input checked="" type="checkbox"/> 10		R		PF	O1	X1	Total
Ibok, Idong			0	0	0 / 0	-	0 0 0
<input checked="" type="checkbox"/> 11		R		PF	O1	X1	Total
Gray, Marquise			42	0	0 / 0	-	0 0 0
<input checked="" type="checkbox"/> 12		R		PF	O1	X1	Total

Duke							
LR	SR	R	"-"	PF	O1	X1	Total
Redick, J.J.			4	0	2 / 2	100%	1 3 13
<input checked="" type="checkbox"/> 1		R		PF	O1	X1	Total
Ewing, Daniel			5	3	2 / 4	50%	5 2 18
<input checked="" type="checkbox"/> 2		R		PF	O1	X1	Total
Melchionni, Lee			13	1	2 / 2	100%	1 2 10
<input checked="" type="checkbox"/> 3		R		PF	O1	X1	Total
McClure, David			14	0	0 / 0	-	0 0 0
<input checked="" type="checkbox"/> 4		R		PF	O1	X1	Total
Dockery, Sean			15	3	0 / 0	-	0 0 0
<input checked="" type="checkbox"/> 5		R		PF	O1	X1	Total
Nelson, DeMarcus			21	2	2 / 4	50%	3 0 8
<input checked="" type="checkbox"/> 6		R		PF	O1	X1	Total
Williams, Shelden			23	5	9 / 10	90%	5 0 19
<input checked="" type="checkbox"/> 7		R		PF	O1	X1	Total
Love, Reggie			30	4	0 / 0	-	0 0 0
<input checked="" type="checkbox"/> 8		R		PF	O1	X1	Total
Perkins, Ross			40	0	0 / 0	-	0 0 0
<input checked="" type="checkbox"/> 9		R		PF	O1	X1	Total
Davidson, Patrick			41	0	0 / 0	-	0 0 0
<input checked="" type="checkbox"/> 10		R		PF	O1	X1	Total
Randolph, Shavlik			42	3	0 / 2	0%	0 0 0
<input checked="" type="checkbox"/> 11		R		PF	O1	X1	Total
Pagliuca, Joe			45	0	0 / 0	-	0 0 0
<input checked="" type="checkbox"/> 12		R		PF	O1	X1	Total

2

Period

78

MSU

68

Duke

19 / 23

83%

MSU

17 / 24

71%

Duke

13 PF

MSU

12 PF

Duke

Scoring Runs

Open

Exit

Form View

NUM



Real Time Play Stats

Spartan Basketball Plus/Minus - Spartan Basketball Plus/Minus
Home

Period
Michigan State Spartans Men's Basketball
Time

2
Illinois
0:00

Start the Clock

Player Roster
Assign Player to Position

1	1	Lucas	1	2	3	4	5
2	34	Lucious	1	2	3	4	5
3			1	2	3	4	5
4	2	Morgan	1	2	3	4	5
5	3	Allen	1	2	3	4	5
6	13	Thornton	1	2	3	4	5
7	15	Summers	1	2	3	4	5
8	22	Dahlman	1	2	3	4	5
9			1	2	3	4	5
10	10	Roe	1	2	3	4	5
11	23	Green	1	2	3	4	5
12	40	Herzog	1	2	3	4	5
13	41	Sherman	1	2	3	4	5
14	50	Nix	1	2	3	4	5
15			1	2	3	4	5
16			1	2	3	4	5
17	20	Kebler	1	2	3	4	5
18	25	Crandell	1	2	3	4	5

Players in Positions

1	20	Kebler
2	13	Thornton
3	22	Dahlman
4	25	Crandell
5	40	Herzog

Scoring

Michigan State

73

O1 O2 O3 ↺

Start the Clock

Illinois

63

O1 O2 O3 ↺

Start the Clock

Exit Open Game View Report Reset Positions Begin the Period Load Roster

Form View

Plus/Minus



Your Prototypes?

- Team Auto-Owners
- Team Boeing
- Team Ford
- Team GE Aviation
- Team Google
- Team Meijer
- Team Mozilla
- Quicken Loans
- Team Spectrum Health
- Team TechSmith
- Team Urban Science
- Team Whirlpool



Risks and Prototypes

✓ Risk

✓ Prototypes

What's ahead?

(1 of 3)

- Team Status Report Presentations
 - PowerPoint Template The key word is “status”.
 - Due Midnight, Tuesday, September 11
 - Email to Dr. D.
 - Subject: Team <Company Name>: Status Report
Subject: Team Auto-Owners: Status Report
 - Attachment: team-<company-name>-status-report-presentation.ppt
Attachment: team-urban-science-statue-report-presentation.ppt
 - Dr. D. Will Combine Into Single PowerPoint
 - To Speed Things Up During Meeting
 - Do NOT Modify Master Slide Page
 - Each Team Presents
 - Using Dr. D.'s Laptop
 - At Most 5 Minutes (Rehearse Timing)
 - Single or Multiple Presenters (Your Choice)



What's ahead?

(2 of 3)

- All-Hands Meetings
 - W, 09/12: Team Status Reports
 - M, 09/17: Team Project Plan Presentations
 - W, 09/19: Team Project Plan Presentations
 - M, 09/24: Team Project Plan Presentations
 - W, 09/26: Team Project Plan Presentations
 - M, 10/01: Resume Writing and Interviewing
 - W, 10/03: [Career Gallery](#)



What's ahead?

(3 of 3)

- Project Plan Presentations
 - PowerPoint Template
 - Download Now
 - Read the Read Me Slide (Over and Over and Over...)
 - Submission
 - Both Project Plan Document and PowerPoint Slide Deck
 - Due Midnight, Sunday, September 16
 - See Submission Instructions in Template
 - Presenting
 - 3 Teams Per Meeting Over 2 Meetings
 - Schedule Posted Sunday Evening
 - Strict 15 Minute Time Limit
 - Use Team Member Laptop
 - ❖ Bring Power Cord
 - ❖ Test In Meeting Room (in Advance)
 - Rehearse
 - 5% of Final Grade
 - Business Casual Dress
 - Formal Team Photos
 - Immediately Following Meeting
 - In Capstone Lab



MICHIGAN STATE
UNIVERSITY

10/01:

Resume Writing and Interviewing

The Capstone Experience

Dr. Wayne Dyksen

Department of Computer Science and Engineering

Michigan State University

Fall 2012



*From Students...
...to Professionals*