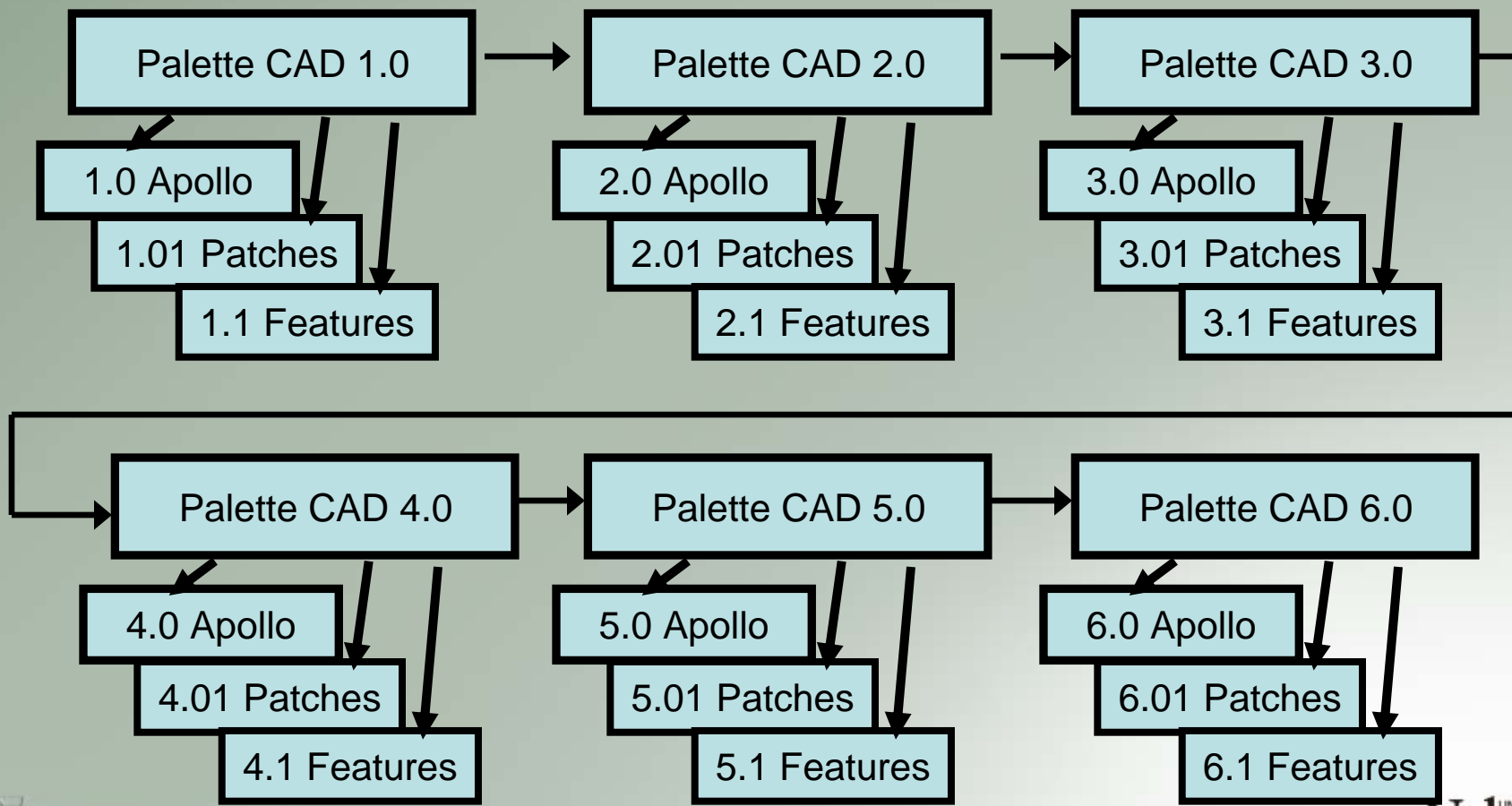


4 Minute Madness Slides

Gregg Rothermel

Evolving Software



Testing Evolving Software: Research Questions

- What tests do we need to re-run?
- In what order should we run our tests?
- Do we need to keep **all** of these tests?
- My software is (mission critical, desktop, ...); what sort of testing should I do?
- I use (agile methods, component-based engineering, ...); what sort of testing should I do?

End-User Programmers



√: User Notices a Correct Value...

Testing also flows upstream, marking other affected cells too.

Cell turns more blue (more "tested").

	NAME	ID	HWAVG	MIDTERM	FINAL	COURSE	LETTER
1	Abbott, Mike	1,035	89	91	86	88.4	? B ?
2	Farnes, Joan	7,649	92	94	92	92.6	? A ?
3	Green, Matt	2,314	78	80	75	77.4	? C ?
4	Smith, Scott	2,316	84	90	86	86.6	? B ✓
5	Thomas, Sue	9,857	89	89	89	93.45	? A ?
6							
7	AVERAGE		86.4	✓ 88.8	✓ 85.6	✓ 87.69	? ?

At any time, user can check off correct value.

X: User Notices an Incorrect Value...

And this one's wrong too.

User notices that this value is wrong and "X"s it out.

	NAME	ID	HWAVG	MIDTERM	FINAL	COURSE	LETTER
1	Abbott, Mike	1,035	89	91	86	88.4	B
2	Farnes, Joan	7,649	92	94	92	92.6	A
3	Green, Matt	2,314	78	80	75	77.4	C
4	Smith, Scott	2,316	84	90	86	86.6	B
5	Thomas, Sue	9,857	89	89	89	93.45	A
6							
7	AVERAGE		86.4	88.8	85.6	87.69	

The formula error is in one of these red cells -- probably the darkest.

Helping End-Users Create more Dependable Spreadsheets

	A	B	C	D	E	F	G
1	Name	Id	HW Average	Midterm	Final	Course	Letter
2	Abbott, Mike	1035	89	91	86	<input type="checkbox"/>	87.5 <input type="checkbox"/> B
3	Farnes, Joan	7649	92	94	92	<input type="checkbox"/>	93.3 <input type="checkbox"/> A
4	Green, Matt	2314	78	80	75	<input type="checkbox"/>	76.4 <input type="checkbox"/> C
5	Smith, Scott	2316	84	90	86	<input type="checkbox"/>	87.2 <input type="checkbox"/> B
6	Thomas, Sue	9857	89	89	89	<input checked="" type="checkbox"/>	90.1 <input checked="" type="checkbox"/> A
7							
8	Average		<input type="checkbox"/> 86.4	<input type="checkbox"/> 88.8	<input type="checkbox"/> 85.6	<input type="checkbox"/> ?	86.88

Beyond Spreadsheets

- Web applications
- Matlab programs
- E-mail filtering rules
- The “programmable home”
- By-demonstration macro languages
- CAD systems

Research Methodologies

- How should we evaluate new software engineering technologies?
 - analytical vs empirical methods
- Creating infrastructure to facilitate studies

Courses of Interest

- CS 990 - Software Testing and Program Analysis
- CS 990 courses by Cohen, Dwyer, Elbaum