Automation In Practice – What It Is & What It Should Be

Software Testing, Validation & Verification - UTD

Fall, 2015

Who Is This Guy?

- Paul Grizzaffi

- Automation Program Architect & Manager

- MedAssets – a healthcare performance improvement company

- "Software Pediatrician"

- Career focused on automation
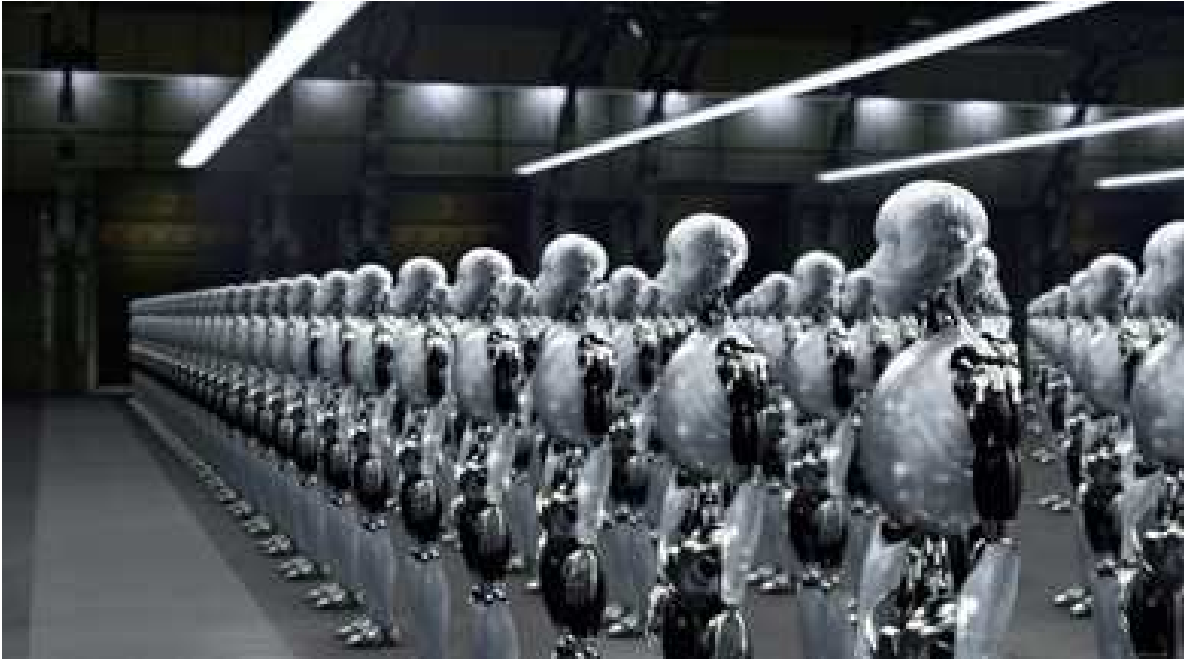
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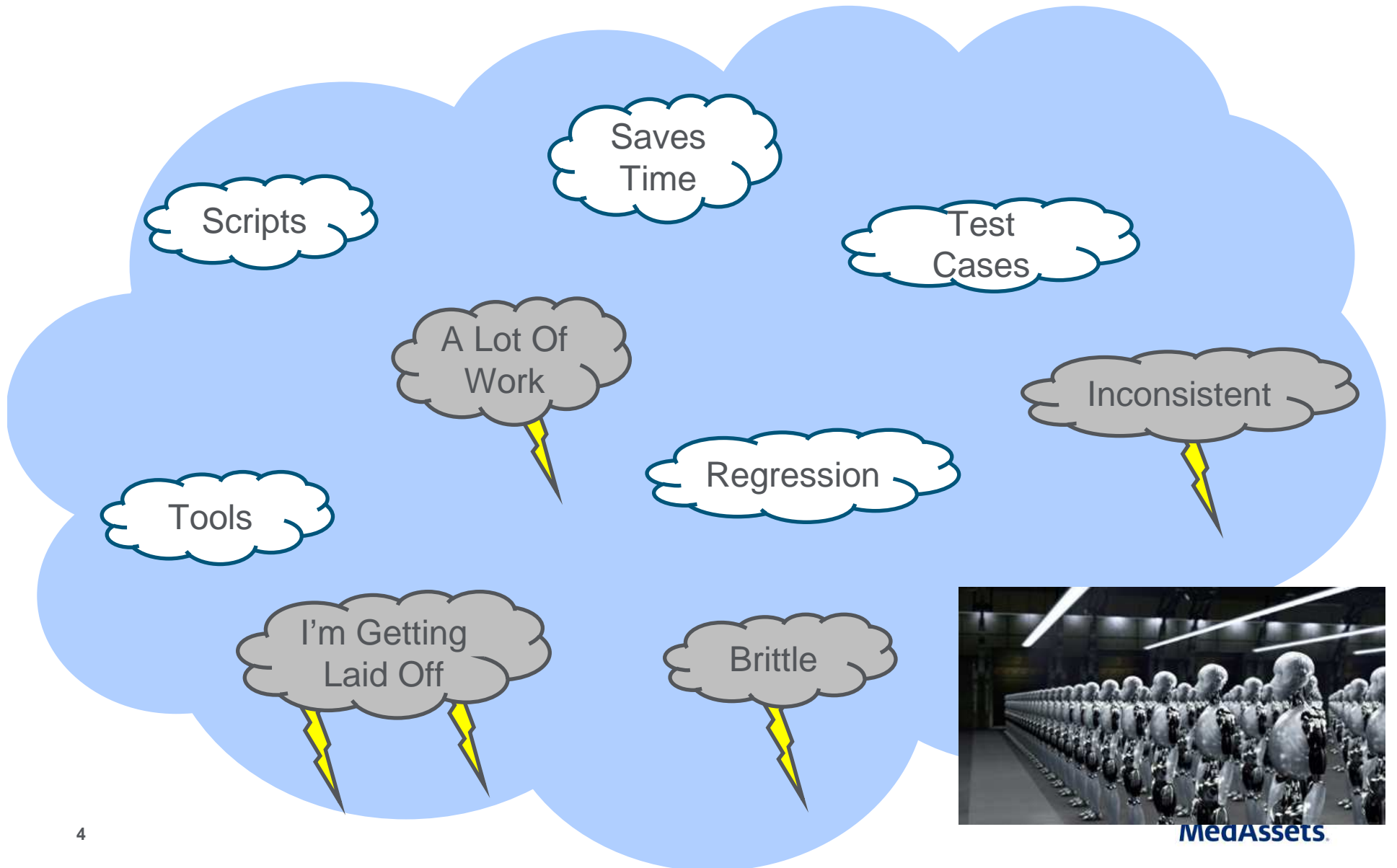
🐦 @pgrizzaffi

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What Comes To Mind?

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What Comes To Mind?

What's It Like Out There?

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What's It Like Out There?

- How many test scripts do you have?

- How much of regression is automated?

- Why aren't you using QTP? (or Selenium? or TestComplete? or…)

- Why do we need testers?

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What's It Like Out There?

- Primarily based on test cases

- Big focus on smoke and regression

- Big focus on UI (but that's changing)

- Tool-centric
  - Selenium (open source)
  - QTP/UFT (HP)
- Testing is dead (no I'm not)

- SDETs – we don't need testers

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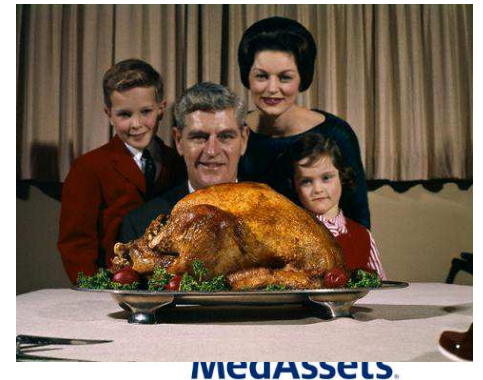# Traditions Can Be Important

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Traditions Can Be Important

- Traditional automation

  - Detect behavior changes
  - Reduce effort on smoke and regression
  - Earlier execution, earlier alerts
  - Scheduled execution

- This is what most companies call automation

- MedAssets has this and it's valuable

- Is there something else?

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What If We Think Differently?

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What If We Think Differently?

- "Let's help the humans"

- What makes us more efficient or more effective?

- What's valuable?

- What hurts?

- Instead of *automation*, do we need *assistance?*

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Automation Assist

- Umbrella term for non-traditional automation

  - "Words mean things" – Patrick Amaku

  - Changing meanings is difficult

  - New vocabulary for new concepts

- Things that increase the value of manual effort

  - "Off label" tool usage

  - New tools, applications, scripts

  - Tools not traditionally thought of as automation

Lets Look At Some Examples

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Movin' On Up

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MIRV

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MIRV

- The premise
    - Data center migration for a large, complex product
    - Aggressive dates, limited testing time, limited staff
    - Experience: system will work or "be egregiously broken"
- The solution
    - Scripts based on existing tool to find egregious issues
    - Execute against multiple facilities simultaneously
    - Running on repurposed laptops
    - TestComplete scripts: several weeks of effort
- Why that solution?
    - Quick, shallow checks can maximize humans' value
    - Existing tool reuse reduces effort
    - 7 – 12 business critical incidents prevented

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High Volume Automated Testing

High Volume Automated Testing

"…a family of testing techniques that enable the tester to create, run and evaluate the results of arbitrarily many tests"

Workshop on Teaching Software Testing (WTST) 2013

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High Volume Automated Testing

- Aka HiVAT

- Research from Florida Institute of Technology (FIT)

- Dr. Cem Kaner, J.D., Ph.D.

- Andy Tinkham

- http://kaner.com/?p=278

- Interesting facets for MedAssets

  - Many executions
  - Random execution
  - Results vetted by humans

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Scud

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Scud

- The premise

  - Product is large, complex, aging
  - Not feasible to enumerate and follow all paths

- The solution

  - Random menu clicker – "Scud"
  - Looking for things that "don't seem right"
  - Selenium-based Python script: 32 hours of effort
  - Found four issues in the first week of use

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Scud (cont.)

- Why that solution?
  - Value shown at GameStop
  - TestComplete not appropriate for this activity
  - Open source so broad license usage
  - Not competing for traditional automation licenses
  - Why a scripting language?
    - Learning curve is relatively shallow
    - Development is "faster"
    - Python expertise is available in our area

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Data Regressor

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Data Regressor

- The premise

  - "Regression" testing between software versions
  - Volatile stock market data
  - Takes about 8 hours of effort

- The solution

  - Comparison tool
  - Connect to both servers and compare
  - Time to test reduced 1 minute
  - C++ program: "Break Even point": 6 weeks

- Why that solution?

  - Traditional test scripts not appropriate
  - Existing API into the product
  - C++ primary development language
  - Product bug found during first execution

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Results Dashboard

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Results Dashboard

- The premise

  - Current tool exercises backend, batch processes
  - Generates data and compares to "golden files"
  - Thousands of results files – hard to establish trends

- The solution

  - Program to collate data and give "day minus one" trends
  - C# program: 16 hours

- Why that solution?

  - Minimum behavior delivered quickly
  - Windows/.Net shop
  - Easy to distribute executable

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MATS Results Dashboard

| | Current Results (2013/08/13) | | | | | | Previous Results (2013/08/12) | | | | | | |
Archive	Version	Build	Percent Passed	Compares Passed	Compares Failed	Compares Total	Version	Build	Percent Passed	Compares Passed	Compares Failed	Compares Total	Trend
AP DRG	13.3.0	5173_1250	86%	33	5	38	13.3.0	5173_1249	84%	33	6	39	▲
APR--DRG	13.3.0	5173_1250	73%	118	42	160	13.3.0	5173_1249	73%	118	42	160	●
ARFEED Files	13.3.0	5173_1250	90%	27	3	30	13.3.0	5173_1250	90%	27	3	30	●
Canary Claims	13.3.0	6131.8	100%	3	0	3	13.3.0	5173_1250	100%	2	0	2	●
CC Claim Level	Not Run		0%	0	0	0	13.3.0	5173_1250	69%	80	35	115	▼
CCI Edits	Not Run		0%	0	0	0	13.3.0	5173_1250	100%	30	0	30	▼
CM PRO	13.3.0	5173_1250	39%	29	45	74	13.3.0	5173_1249	36%	29	50	79	▲
COB	13.3.0	5173_1250	67%	55	27	82	13.3.0	5173_1250	68%	56	26	82	▼
Contract Term	13.3.0	5173_1250	88%	75	10	85	13.3.0	5173_1249	88%	75	10	85	●
Critical Change_Overrides	13.3.0	5173_1250	100%	6	0	6	13.3.0	5173_1249	100%	6	0	6	●
Groupers	13.3.0	5173_1250	100%	34	0	34	13.3.0	5173_1249	100%	34	0	34	●
ICD-10	13.3.0	5173_1250	62%	65	39	104	13.3.0	5173_1249	60%	63	41	104	▲
Imports with XMITTBLS format	Not Run		0%	0	0	0	13.3.0	5173_1250	82%	64	14	78	▼
Modeling	13.3.0	5173_1250	100%	21	0	21	13.3.0	5173_1250	100%	21	0	21	●
Pat Liability	13.3.0	5173_1250	99%	107	1	108	13.3.0	5173_1250	99%	107	1	108	●
PayAdj	13.3.0	6131.8	100%	4	0	4	13.3.0	5173_1250	100%	4	0	4	●
Payment Varience Calculations	13.3.0	5173_1250	100%	12	0	12	13.3.0	5173_1250	100%	12	0	12	●
RBRVS NEW	13.3.0	5173_1250	74%	29	10	39	13.3.0	5173_1249	82%	32	7	39	▼
Reprice - General	13.3.0	5173_1250	72%	64	24	88	13.3.0	5173_1250	72%	64	24	88	●
Reprice AER	13.3.0	5173_1250	100%	12	0	12	13.3.0	5173_1249	100%	12	0	12	●
Reprice Bill Types	13.3.0	5173_1250	90%	45	5	50	13.3.0	5173_1249	90%	45	5	50	●
Reprice CPT Bundling	13.3.0	5173_1250	100%	87	0	87	13.3.0	5173_1249	100%	87	0	87	●
Reprice Daily Charge Grouping	13.3.0	5173_1250	97%	68	2	70	13.3.0	5173_1249	97%	68	2	70	●
Reprice EAPG	13.3.0	5173_1250	100%	112	0	112	13.3.0	5173_1249	100%	112	0	112	●
Reprice Mom Baby	13.3.0	5173_1250	100%	6	0	6	13.3.0	5173_1249	100%	6	0	6	●
Reprice OHAS	13.3.0	5173_1250	100%	4	0	4	13.3.0	5173_1249	100%	4	0	4	●
Reprice Stop Loss	13.3.0	5173_1250	100%	43	0	43	13.3.0	5173_1249	100%	43	0	43	●
SB	13.3.0	5173_1250	100%	15	0	15	13.3.0	5173_1249	100%	15	0	15	●
Grand Totals			79%	1074	213	1287			88%	1249	266	1515	▼

Results Legend	
Percent Pass	
🟩	100
🟨	75 - 99
🟧	50 - 74
🟥	Less than 50

Zero Remover

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Zero Remover

- The premise
  - Thousands of "golden files"
  - In some cases DB now returns NULL instead of 0.00
  - Manual effort estimate: 4 – 6 weeks
- The solution
  - A program to do the file transformation
  - C# program: 5 hours
- Why that solution?
  - Disposable
  - Windows/.Net shop
  - Easy to distribute executable
- Don't forget about "record and playback"

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Some Words About Effort

- Effort is a funny thing

- "There Ain't No ROI In Testing"
  - http://blog.smartbear.com/testing/there-aint-no-roi-in-software-testing/

- Instead, think about…
  - Value
  - Opportunity cost
  - Cost Benefit Analysis

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Takeaways

- This is different

- Nothing wrong with scripting test cases, but that's an implementation

- This is software development

- Situational – the "knowns" help guide

- Coverage: direct or indirect

- Usage profile: running, distributing

- Life span: disposable or long term

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Questions?

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Appendix

What's It Like Out There?
(Mike Cohn's Automation Pyramid)

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