

Designing Mission Critical Experiences

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instone.org/wud-mission-critical

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MICHIGAN STATE UNIVERSITY

College of Arts & Letters



experience
architecture

Experience Architecture

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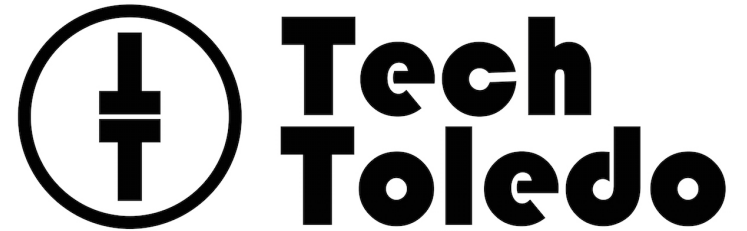
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Session description

- Digital technologies disrupting business & society
- Organizations turning to various design disciplines
- Organizations have to change the way they work to survive

Future





WE ARE HERE



	Hunter – Gather Era	Agricultural Era	Industrial Era	Information Era	Augmented Era
TIMESPAN	1,000,000s	1000s	100s	10s	TBD
TALENT	Strength + Speed	Know How + Stamina	Efficiency + Optimization	Acquired Knowledge + Skill	Creativity, Agility + Adaptability
TOOLS	Labor Efficiency	Labor Augmentation	Labor Replacement	Cognitive Reduction	Cognitive Augmentation
SKILLS	Generalist	Specialists	Hyper-specialists	Neo-generalist	

From: <http://www.futureislearning.com/kb35wg5t76nsd6f0v8h89ghv8tddmu>

Navigating the next industrial revolution

Revolution	Year	Information	
	1	1784	Steam, water, mechanical production equipment
	2	1870	Division of labour, electricity, mass production
	3	1969	Electronics, IT, automated production
	4	?	Cyber-physical systems

From: World Economic Forum

<https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>

The Future of Workforce

Repetitive



- Social IQ
- Creativity
- Manipulation

Non-Repetitive



Cognitive

Manual

← Artificial Intelligence/
Machine Learning/
Smart Data

The Future of Employment

Trends in job automation:

- Algorithms
- Big data
- Sensor networks
- Robotics

Bottlenecks to automation:

- Dexterity
- Clever ideas
- Fine arts
- Social perception
- Negotiation
- Persuasion
- Empathy

The Future of Employment: How susceptible are jobs to computerisation? Frey & Osborne, 2013.

Paper: http://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf

Slides: http://futureoflife.org/data/PDF/michael_osborne.pdf

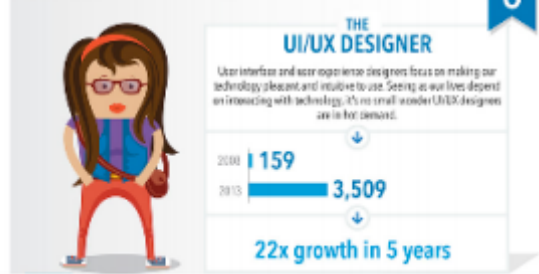
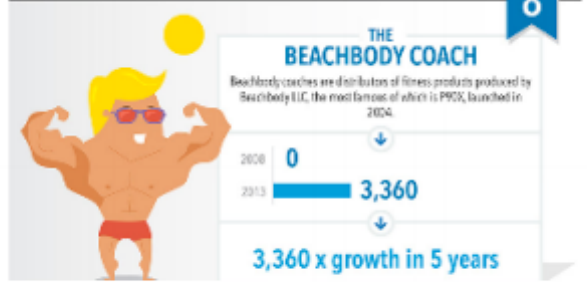
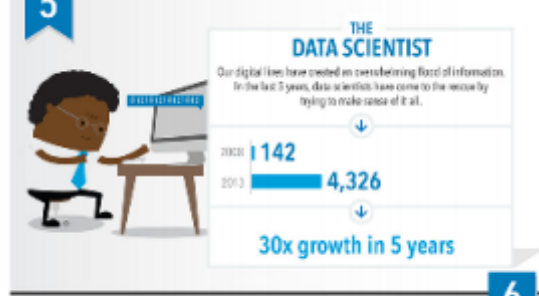
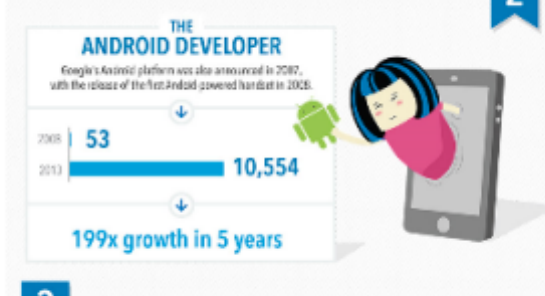
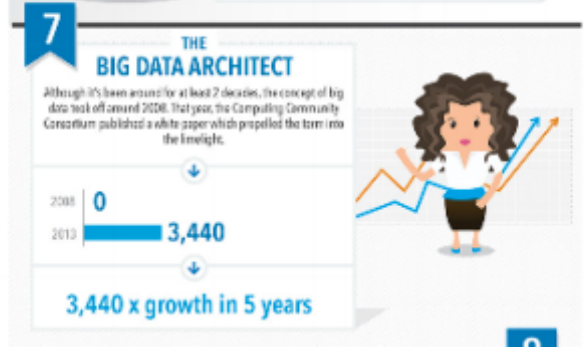
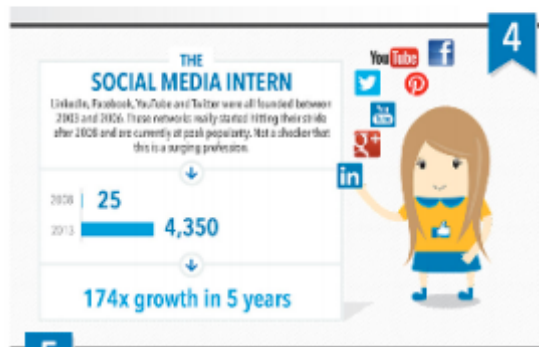
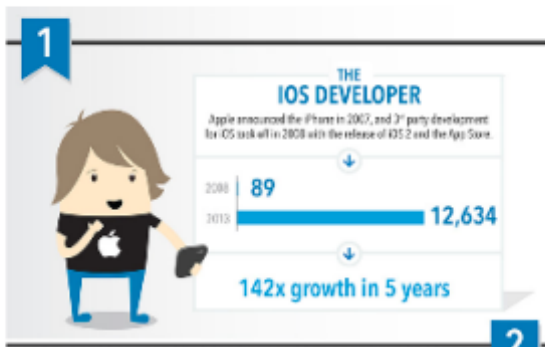
Probability of Computerisation (by 2033)

- 00% Healthcare social workers
- 03% Writers and authors
- 04% Software application developers
- 08% Graphic designers
- 13% Urban planners
- 21% Web developers
- 37% Actors
- 48% Explosives workers and blasters
- 55% Customer service representatives
- 69% Delivery truck drivers
- 77% Bartenders
- 85% Utility meter readers
- 89% Technical writers
- 91% Health information technicians
- 96% Restaurant cooks
- 99% Telemarketers



Otto delivered the autonomous load of Budweiser via a partnership with Anheuser-Busch.

So, if machines can drive, serve customers, and look through data, **what are humans still good for?** We suggest: **creativity, social intelligence and manipulation.**



From: http://futureoflife.org/data/PDF/michael_osborne.pdf

“Design thinking”

Question: How many design
(thinkers, doers) will it take
to screw in a light bulb?

“Design thinking”

Question: How many design (thinkers, doers) will it take to screw in a light bulb?

Answer: Why a light bulb?

How to prepare people for this future?

- New types of jobs created as old types go away
 - 65 percent of today’s grade-school kids may end up doing work that has not been invented yet
- Creative destruction: lifespans of top companies are shrinking
 - 75% of S&P 500 will be replaced by 2027

“Welcome to first grade! Let’s get started preparing you for a job that has not been invented yet, to work for a company that has not been created yet.”

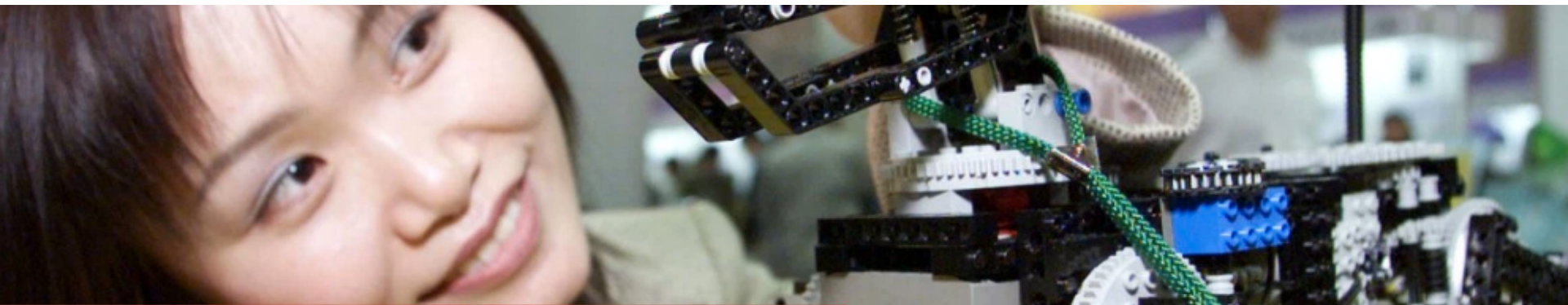
Sources:

Cathy N. Davidson, co-director of the annual MacArthur Foundation Digital Media and Learning Competitions

https://www.innosight.com/wp-content/uploads/2016/08/creative-destruction-whips-through-corporate-america_final2015.pdf

For the educators in the room...

Replace education as
“transfer of fixed knowledge” with
“develop capacity to explore, make sense, & innovate”



BROWN CENTER CHALKBOARD

Education and accelerated change: The imperative for design learning

Daniel Araya and Heather McGowan · 09/14/2016

BROWN CENTER CHALKBOARD

<https://www.brookings.edu/blog/brown-center-chalkboard/2016/09/14/education-and-accelerated-change-the-imperative-for-design-learning/>

Current state of
the “industry”



Michigan CEO Summit
Thursday, November 10, 2016
8:00am-2:00pm; The Westin Book Cadillac Detroit
Event Agenda

10:35-11:10am

Transforming Your Business Through Innovation

Those who master digital technologies to deliver high levels of product innovation will transform customer experiences and grow their bottom line.

Ric DeVore, Executive Vice President & Regional President, Detroit and Southeast Michigan,
PNC Financial Services Group

Jim Keane, President & Chief Executive Officer, **Steelcase**

Howard Ungerleider, Vice Chairman & Chief Financial Officer, **The Dow Chemical Company**

Moderator: Christy McDonald, Anchor, MiWeek



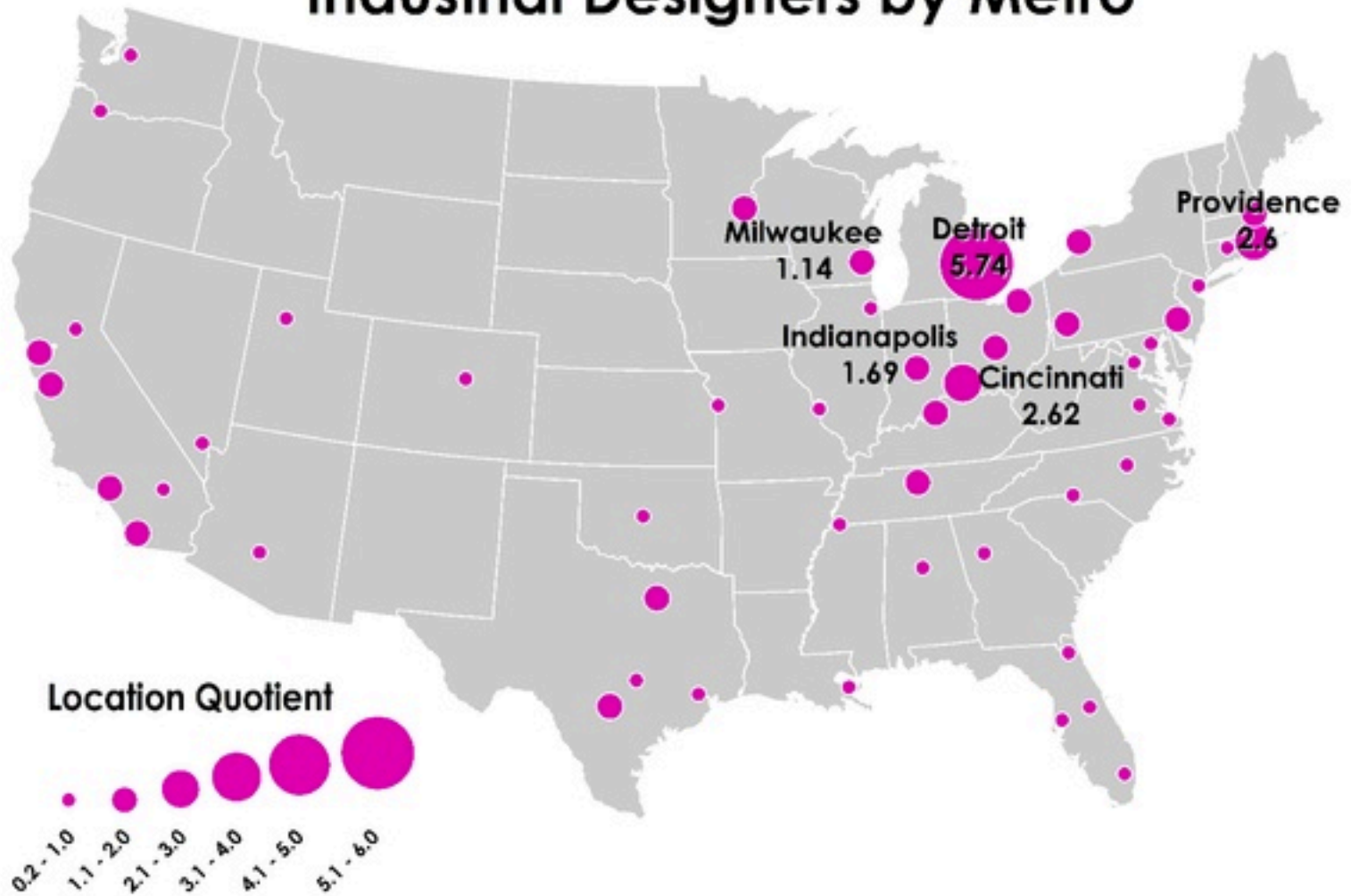
Tom Kelley, General Manager, **IDEO**



Tom Kelley is the best-selling author of *Creative Confidence*, *The Art of Innovation* and *The Ten Faces of Innovation* as well as General Manager at the globally-renowned design and innovation consultancy IDEO. His ability to foster a culture of creativity in the companies he works with has made him one of the most beloved figures in innovation.

Under Kelley's management, IDEO has won more admiration and awards than any other design firm in the last decade. At the heart of IDEO's success is the Creative Confidence

Commercial and Industrial Designers by Metro



Talent Mix Today

	2008	2011	2016	
• Virtual Modeling	50	70	100	+ 43%
• User Experience	3	16	30	+ 100%
• Interior	15	20	32	+ 60%
• Administration	30	26	27	+ 1%
• Exterior	33	32	52	----
• Clay Model	90	79		
• CORE He	174	320		- 23%

“89%

of companies believes that customer **experience** will be their primary basis for competition by 2016, versus 36% four years ago.*
— Gartner

“81%

of executives surveyed place the personalized customer **experience** in their top three priorities for their organization, with 39% reporting it as her top priority.”
— Accenture

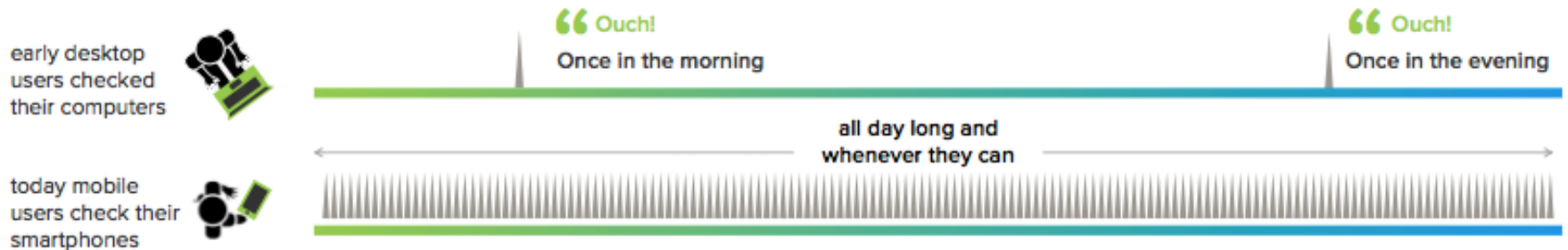
“90%

of executives surveyed agreed that customer **experience** and engagement are objectives of their corporation's digital strategy.”
— MIT Sloan / Deloitte

“6x

more likely to buy with a positive emotional **experience**, 12x more likely to recommend the company, and 5x more likely to forgive a mistake.”
— Temkin Group

EXPERIENCE Matters A Lot, Because We Experience Digital Products A Lot



Reports from Gartner, Accenture, Deloitte, Temkin all indicate that *experience* matters. Linda Holliday calls the new kind of design as “multi-dimensional” — it crosses social science, computer science, into something new and necessary.

Source // @kpcb #DesignInTech @Gartner_Inc @AccentureDigi @mitsmr @DeloitteDigital @TemkinGroup

<http://www.kpcb.com/blog/design-in-tech-report-2016>
experience-report-2016-01-14-15010409/customer-experience-focusthrough-2016-information/ @accnture/digital-transformation @gartner/insights @deloitte/digital @temkin/survey-surveys-confirm-customer-experience-new-battlefield @gartner.com/joe-sullivan/gartner-surveys-confirm-customer-experience-new-battlefield



Source: Design in Tech report, 2016
<http://www.kpcb.com/blog/design-in-tech-report-2016>

#DesignInTech by the **NUMBERS**

42 design firms have been acquired since 2004. Roughly half of which have been acquired within the last year.

We're reaching a peak.

1

9 of the **25** top VC-funded startups have designer co-founders. Up from **5** in 2015.

Designer co-founded companies are here to stay.

2

More designers entered VC in the last **2** years than the previous **4** years combined.

There are many at accelerators as well.

3

Major corporations are investing in design as a core competency through M&A activity, designer co-founded startups continue to raise billions of dollars in capital, and VCs increasingly see the importance of design.

Source // @kpcb #DesignInTech @Johnmaeda

www.kpcb.com



Source: Design in Tech report, 2016

<http://www.kpcb.com/blog/design-in-tech-report-2016>

“Good design is good business.” Has Been, And Will Continue Evolving

time →

Birth of Traditional Design for Large Corporations Corporate Identity+Image and Product Styling

1950s / GM



1966 / IBM



GM's CEO makes the first executive position in design with Harley Earl elevated to VP.

Memo to IBM employees by CEO TJ Watson Jr. about the emerging importance of design to the company.

Birth of Modern Product Design Firms

From Traditional Design, to Design of Systems+Services

1969

frog



From 1982 Apple's design language begins to form with Hartmut Esslinger's direction.



1991



David Kelley, Bill Moggridge, Mike Nutall join forces and change the course of design by co-founding IDEO.

Birth of “Design Thinking” and Design Strategy

Harnessing the Creative Problem Solving Skills of Designers

2005



Hasso Plattner = Co-Founder of SAP

2008 - 2009

Roger L. Martin describes design thinking at the CEO level with P&G's AG Laffley and his book on *The Design of Business*.



Innovation & Design
P&G Changes Its Game
By Andrew Ross | July 28, 2009

“Design Thinking” Mainstreams as Whole Business Strategy

Re-contextualizing Design, Making B-Schools into D-Schools

2015



IBM

Phil Gilbert leads IBM's \$100M bet to bring design back to IBM.

2015



Tim Brown and Roger L. Martin open the introductory issue for HBR on “The Evolution of Design Thinking.”

SAP and P&G were a few of the early executive adopters of “Design Thinking,” but looking back in time, CEOs of companies like GM and IBM took strong interest in design as a competitive advantage as far back as the 1950s.

Source: @kpcb @philgilberts @ibmdesign @frogdesign @ideo @stanfordschool @harvardbiz @proctorgamble @nytimes @rogerlmartin @business

<http://www.bloomberg.com/news/articles/2008-07-28/p-and-g-changes-its-game-businessweek-businessweek-stock-market-and-fortune-magazine> <http://www.3d.com/3d/blog/2011/01/01/gooddesign/>

Design
in Tech KPCB

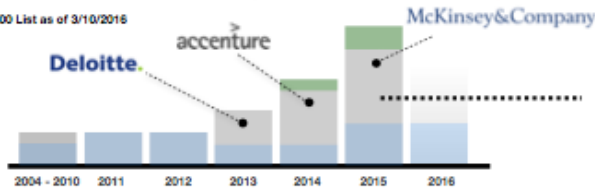
Source: Design in Tech report, 2016

<http://www.kpcb.com/blog/design-in-tech-report-2016>

Of the 2015 Fortune 100, Over 10% Place Design as an Executive Priority

1 Walmart, 2 Exxon Mobil, 3 Chevron, 4 Berkshire Hathaway, 5 Apple, 6 General Motors, 7 Phillips 66, General Electric, 9 Ford Motor, 10 CVS Health, 11 McKesson, 12 AT&T, 13 Valero Energy, 14 UnitedHealth Group, 15 Verizon, 16 AmerisourceBergen, 17 Fannie Mae, 18 Costco, 19 HP, 20 Kroger, 21 JP Morgan Chase, 22 Express Scripts Holding, 23 Bank of America Corp., 24 IBM, 25 Marathon Petroleum, 26 Cardinal Health, 27 Boeing, 28 Citigroup, 29 Amazon.com, 30 Wells Fargo, 31 Microsoft, 32 Proctor & Gamble, 33 Home Depot, 34 Archer Daniels Midland, 35 Walgreens, 36 Target, 37 Johnson & Johnson, 38 Anthem, 39 MetLife, 40 Alphabet, 41 State Farm Insurance Cos., 42 Freddie Mac, 43 Comcast, 44 PepsiCo, 45 United Technologies, 46 AIG, 47 UPS, 48 Dow Chemical, 49 Aetna, 50 Lowe's, 51 ConocoPhillips, 52 Intel, 53 Energy Transfer Equity, 54 Caterpillar, 55 Prudential Financial, 56 Pfizer, 57 Walt Disney, 58 Humana, 59 Enterprise Products Partners, 60 Cisco Systems, 61 Sysco, 62 Ingram Micro, 63 Coca-Cola, 64 Lockheed Martin, 65 FedEx, 66 Johnson Controls, 67 Plains GP Holdings, 68 World Fuel Services, 69 CHS, 70 American Airlines Group, 71 Merck, 72 Best Buy, 73 Delta Air Lines, 74 Honeywell International, 75 HCA Holdings, 76 Goldman Sachs Group, 77 Tesoro, 78 Liberty Mutual Insurance Group, 79 United Continental Holdings, 80 New York Life Insurance, 81 Oracle, 82 Morgan Stanley, 83 Tyson Foods, 84 Safeway, 85 Nationwide, 86 Deere, 87 Dupont, 88 American Express, 89 Allstate, 90 Cigna, 91 Mondelez International, 92 TIAA- CREF, 93 INTL FCStone, 94 Massachusetts Mutual Life Insurance, 95 DirecTV, 96 Halliburton, 97 Twenty-First Century Fox, 98 3M, 99 Sears Holdings, 100 General Dynamics 101 Publix Super Markets, 102 Philip Morris International, 103 TJX, 104 Time Warner, 105 Macy's, 110 Nike, 107 Tech Data, 108 Avnet, 109 Northwestern Mutual, 110 McDonald's, 111 Exelon, 112 Travelers Cos, 113 Qualcomm, 114 International Paper, 115 Occidental Petroleum, 116 Duke Energy, 117 Rite Aid, 118 Gilead Sciences, 119 Baker Hughes, 120 Emerson Electric, 121 EMC, 122 USAA, 123 Union Pacific, 124 Northrup Grumman, 125 Alcoa, 126 Capital One Financial, 127 National Oilwell Varco, 128 US Foods, 129 Raytheon, 130 Time Warner Cable, 131 Arrow Electronics, 132 Aflac, 133 Staples, 134 Abbott Laboratories, 135 Community Health Systems, 136 Fluor, 137 Freeport-McMoRan, 138 U.S. Bancorp, 139 Nucor, 140 Kimberly-Clark, 141 Hess, 142 Chesapeake Energy, 143 Xerox, 144 ManpowerGroup, 145 Amgen, 146 AbbVie, 147 Danaher, 148 Whirlpool, 149 PBF Energy, 150 HollyFrontier, 151 Eli Lilly, 152 Devon Energy, 153 Progressive, 154 Cummins, 155 Icahn Enterprises, 156 AutoNation, 110 Kohl's, 158 Paccar, 159 Dollar General, 160 Hartford Financial Services Group, 161 Southwest Airlines, 162 Anadarko Petroleum, 163 Southern, 164 Supervalu, 165 Kraft Foods Group, 166 Goodyear Tire & Rubber, 167 EOG Resources, 168 CenturyLink, 169 Altria Group, 170 Tenet Healthcare, 171 General Mills, 172 eBay, 173 ConAgra Foods, 174 Lear, 175 TRW Automotive

From the Fortune 500 List as of 3/10/2016



But with the many acquisitions of design firms into the client services sector, it's not impossible to imagine that design will enter these organizations now through the board room.

Source: @kpcb #DesignInTech @fortune @johnmaeda

<http://www.kpcb.com/blog/design-in-tech-report-2016>



Source: Design in Tech report, 2016

<http://www.kpcb.com/blog/design-in-tech-report-2016>

Digital IT Mindset

	Traditional	Digital
Strategy	Efficiency	Innovation
Culture	Hierarchy	Collaboration
Talent	Low cost	High skill
Technology	Legacy	Cloud, mobile, apps
User experience	"Who cares?"	Mission critical
IT Philosophy	Default to "No"	Default to "Yes"
Project management	Waterfall	Iterative (agile)
Business model	Service & support	Relationship & partner

How

Don't Care

Important, But...

Mission Critical

User Interface Design

Lipstick on a Pig

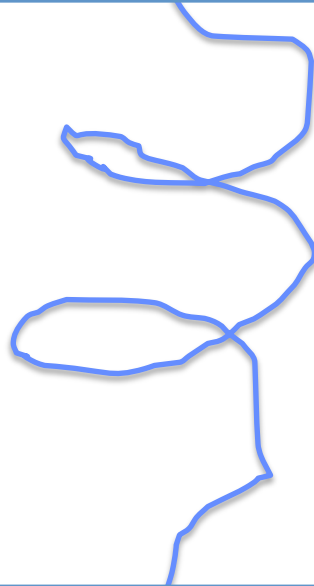


UI Specs: Usable, Low Cost, Biz Value

How it behaves

Requirements Process

Spreadsheets of Features



Priorities: Deep User Insights

What to build

Project Management

Waterfall: Dates & Costs

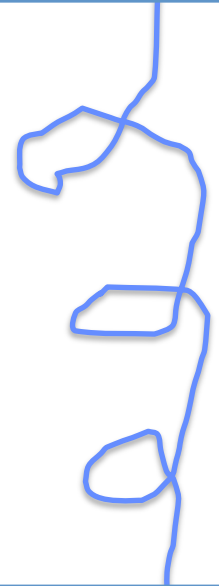


Iterative: Quality, Learning, Satisfaction

How to build

Governance

Tech-driven Decisions



Portfolios: User & Business Benefits

How to make decisions

User Interface Design

Don't Care

- Just make it pretty
- We settle for lipstick on the pig

Important,
But...

- Our managers think they know how to design
- Just copy someone else
- Our design agency has all the smarts
- You don't have time to get good at UI

Mission
Critical

- We follow published UI specs
- We design for the long term and get continuous benefits
- We collaborate

Requirements Process

Don't Care

- We love our spreadsheets of features
- Our design process is iterative but our requirements are waterfall

Important,
But...

- We only do research to guide requirements for some projects
- Design concepts are just a nice-to-have
- The product owner does not care about the user experience

Mission
Critical

- We communicate requirements visually and interactively
- We have a user research program and we prioritize based on user insights

Project Management

Don't Care

- Shut up and do it by the book
- We do agile “our own special way” (wrong)

Important,
But...

- Time & budget always trump quality
- You have to convince the PM to do any usability testing
- Our PMs do not understand digital or UX
- We use MS Project & love Gantt charts

Mission
Critical

- Our execs are comfortable with the uncertainty of agile
- “Failures” are valued
- PMs demand quality (as needed)

Governance

Don't Care

- We make decisions based on technology
- We like it all to be chaotic

Important,
But...

- We are not going to change our org chart, budgets, or processes
- That is owned by someone else
- The UX team cannot make the decision
- We just go with our gut in the end

Mission
Critical

- We make decisions based on research, data and facts
- We have a portfolio of products based on UX benefits

Net

- The future is here: Design matters
- *How* to design mission critical experiences: it depends

Time	Description
8:00-8:30	Registration
8:30-8:35	Opening Remarks
8:35-9:10	<u>"Designing Mission Critical Experiences"</u> Keith Instone , Experience Architect in Residence, <u>Michigan State University</u>
9:10-9:45	<u>"Getting the House in Order: Card Sorting to Improve Findability"</u> Carol Righi , Principal, <u>UX Research</u> (St. Louis)
9:45-10:15	Break
10:15-10:50	<u>"Optimizing UX Culture and Maturity Levels"</u> Darren Hood , User Experience Manager, <u>Bosch</u> (Detroit)
10:50-11:25	<u>"Usable for Everyone: Accessibility as UX"</u> Sylvia Pellicore , Web Accessibility Advisor, <u>Blue Cross and Blue Shield of North Carolina</u>
11:25-12:00	<u>"Sustainable Development: Insights from Design Research in Rural Kenya"</u> George Hope Chidziwisano , Graduate Research Assistant, <u>MSU Department of Media and Information</u> Ian O'Bara , Graduate Research Assistant, <u>MSU UARC</u>
1:00-3:00	UARC Open House (Kellogg Center, 219 S. Harrison Rd, Room 93)

Thanks! Stay in touch!

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- [@keithinstone](#)



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