

Using Maps to Manage Software Projects

SOFTWARE FOR DOMAIN EXPERTS

"Digital Transformation – the Mapmaking as a Service Business Opportunity." Zois Kokkonis

The Cube, Athens, October 17th 2019

Digital Transformation – business and operating models ...



NICKIA

"IDC estimates that there is the potential for over \$18 trillion of new value to be harvested." — Bob Parker, Group Vice President and Digital Transformation lead at IDC

© 2019 Nokia

... and human society ...





"The change from atoms to bits is irrevocable and unstoppable. Why now? Because the change is also exponential — small differences of yesterday can have suddenly shocking consequences tomorrow."

- N. Negroponte [1995] "Being Digital"

Redefining "value" and "work"



PAY 619-1219 2017

Theresa May v Brussels Ten years on: banking after the crisis South Korea's unfinished revolution

Biology, but without the cells

The world's most valuable resource



NOKIA



Data and the new rules of competition

© 2019 Nokia

The Digital Twin – creating a digital replica





Building physical models...

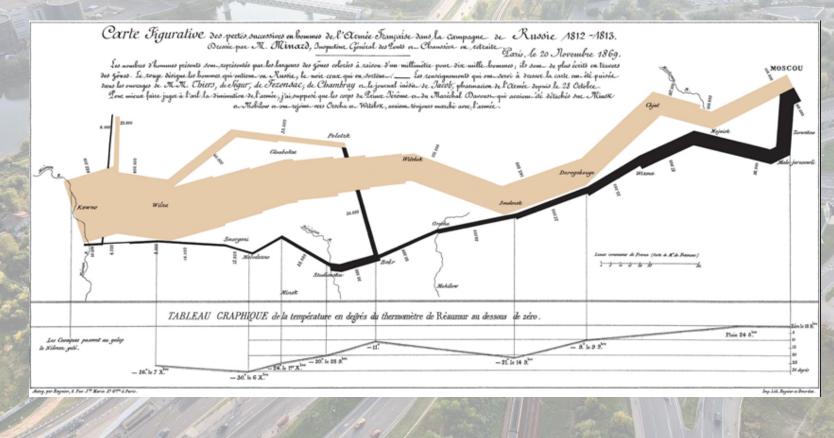


NOKIA

Ptolemy – the World Map



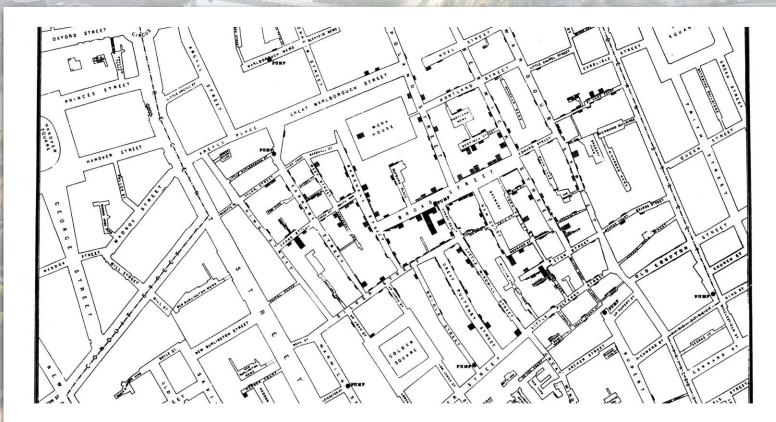
Charles Joseph Minard – Napoleon's campaign in Russia



8

NOKIA

John Snow - The Broad Street cholera outbreak



NOKIA

Ptolemy – the World Map



Google Maps

2

CHIE

KEN 4205

Google

Q Explore

Search here

A406 B4491. Gunnersbury

Royal Botanic

G Royal Mid Sul

Fatilitie 1 9

٢

Explore Chiswick >

Commute

GO

For you



Gather input data from several sources ...

Bugs

Tests

Code

Requirements

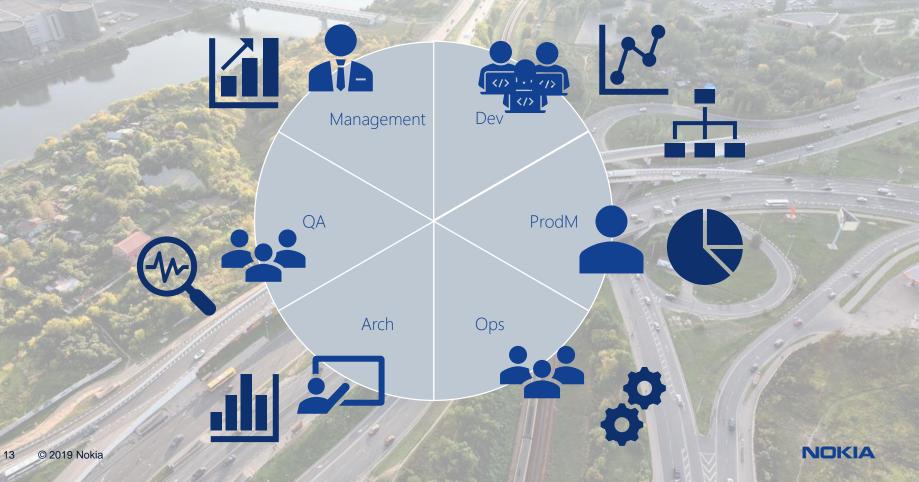
Monitoring

Profiling

•••

NOKIA

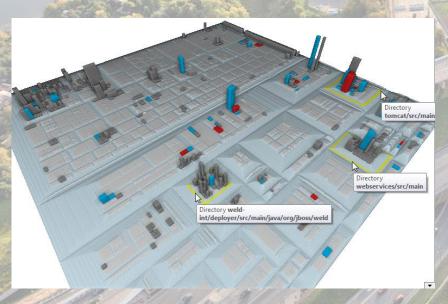
... create the appropriate visual representation for each stakeholder



Data Visualization for Software Analysis - an active research area

Source:

Johannes Bohnet and Jürgen Döllner. "Monitoring Code Quality And Development Activity By Software Maps". Proceedings Of The IEEE ACM ICSE Workshop On Managing Technical Debt, 9-16, 2011.





Source:

Daniel Limberger, Willy Scheibel, Jürgen Döllner, and Matthias Trapp. "Advanced Visual Metaphors And Techniques For Software Maps". 12th International Symposium On Visual Information Communication And Interaction (Vinci 2019). ACM, 2019.

Nokia Athens Technology Center – Software Quality Evaluation Platform

Source Code

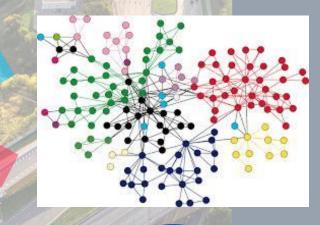


foreach(\$this->rules as \$keymotrule) (
if (\$details('role_id') == \$rule('role_id') &# \$effect
if (\$access == false) (

Test Cases

g) v trainin	and the second se			uny. Not	*			
Second Av	and the state of t		10					66.10
400 C 1	Historia X200 Solai An	and the	+ 100 + 6	the winds	04.(9)+	4		
*Il Ind *Discour Ion *Discour Ion *Discour Ion *Discour Ion	Next As Present on the Section of the sector of the							
	+ 1 tan.+*	Loose San	Septem.	int immediate	104.15	100.17	54++	-
			-		11.9		- 4	181
	Distant bie Million			814-025				
10.000	D minima and			618/90				
	E phanestan.W	2 months		14.075				
partie 1	C Disting	1						
no fra control Generatio e stratement e sera hengelo e sta hingelon	Cogno.commun.	17		10 m- (00)	the law	Notes in the	1000	-88
	1.5 gine anim min	100	et teas	in access	Technol.	Autom Ser	-	9
	O Brounsmaine	-	=7.61=	1000-000	in the	(10)	(see a	11
	C. Brownerson	-	-	1.00.000	10.00	MIN N.	Inner-	ñ.
	0 from resources and services	and the		and the second	-	10,111	time.	10
	C generation	1041			14.00	M	1000	ä
0	C Distances and	10.00			(when	(mi-	-	XX.
	T. Bing count spann a long	81.81			and him	Alente	in.	ŝi.
	(granusante)	TRANK.		ka.mi	4150	10.111	Adda	
	0. One instant	Nim.		114.000	60.00	1011	Sec.	ġ.
	C Stream	44. ber-			-	14	(res)	XX
	C Quality	44				hit.		ä

Graph Representation Focus: *Relations*



Cneo4j

✓ Graph theory
✓ Clustering
✓ Time series analysis

✓ Machine learning

Work by a Nokia Athens Al/ML team: Petros Nanouris, Loukas Leontopoulos, Thalia Ikonomou, Marina Kesoglou, Giota Eftaxia, Panos Karantzias, Dimitris Fotiadis Presented in Oπe\n Conf, Athens 2019





Thank you!

