

# LSDG – RETURN TO CHRYSLER

FUNDAMENTALS OF  
BETTER SOFTWARE  
DEVELOPMENT [USING  
XP]

# AGENDA

- Why LSDG?
  - Community of Practice for those developing software
  - State of Software Development
- Talk: Return to Chrysler – Fundamentals of Software Development
  - Lessons from the founders of XP
- Everyone Codes
  - The importance of coding
- Dev Intro: Python
  - Hello World
- Drinks / Networking

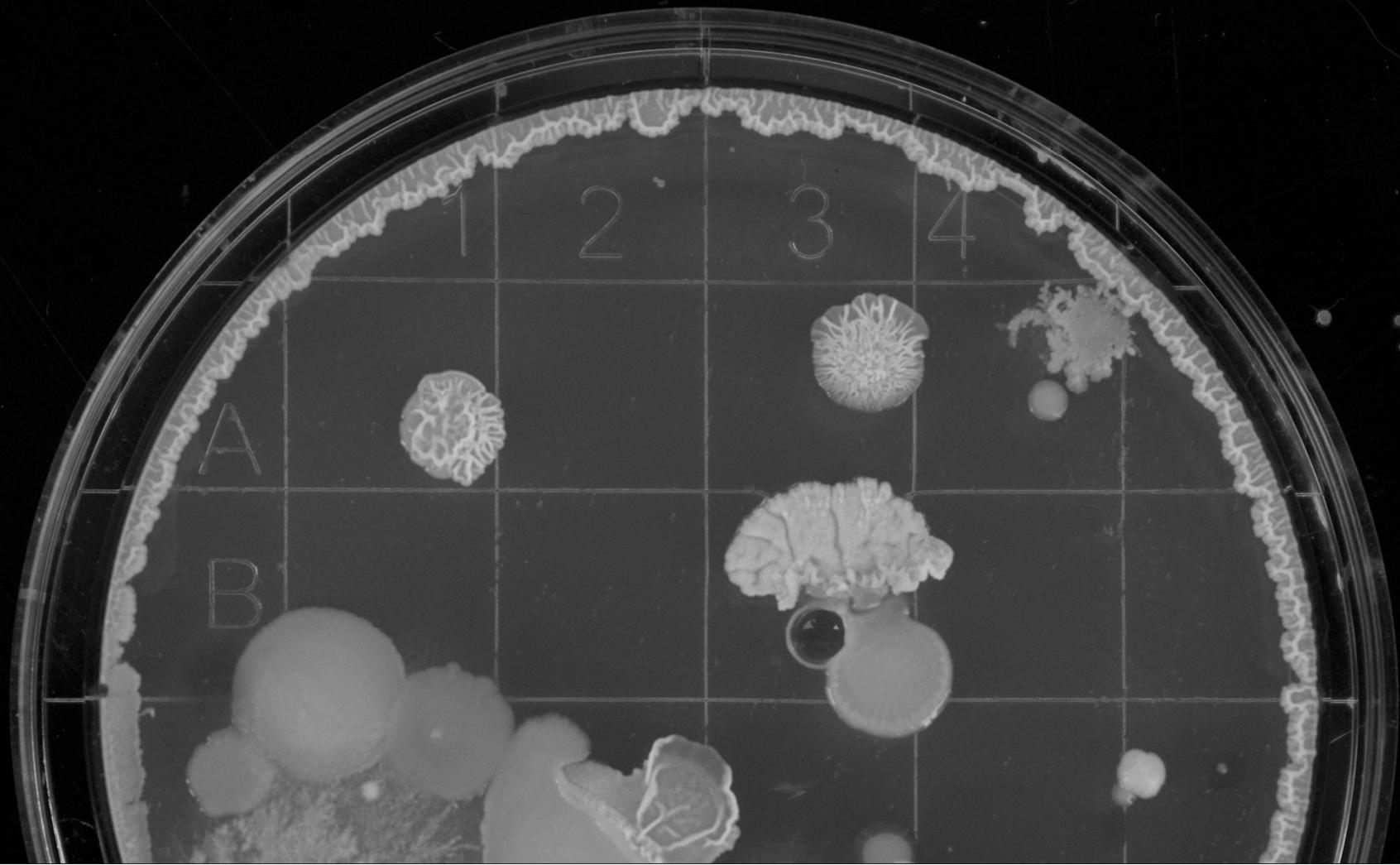
Thank  
you!

# WHY SETUP THE LSDG?

- The reason why I set up the London Software Development Group

# 1987 – first program





2007 – {WEB DEVELOPER}



# 2017 – Consultant



A black and white photograph showing the back of a person wearing a hooded jacket. The person is looking out over a vast, hilly landscape covered in low-hanging clouds or fog. The sky above the hills is clearer.

# What's next? (after agile)

# LSDG

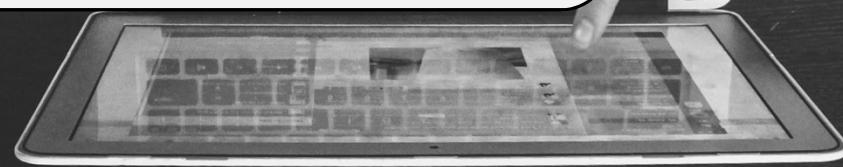
Discovering better  
methods and environments  
by software developers for  
everyone



# LSDG

## Community of Practice

- **Domain:** Software development
- **Practice:** Developing software
- **Community:** LSDG

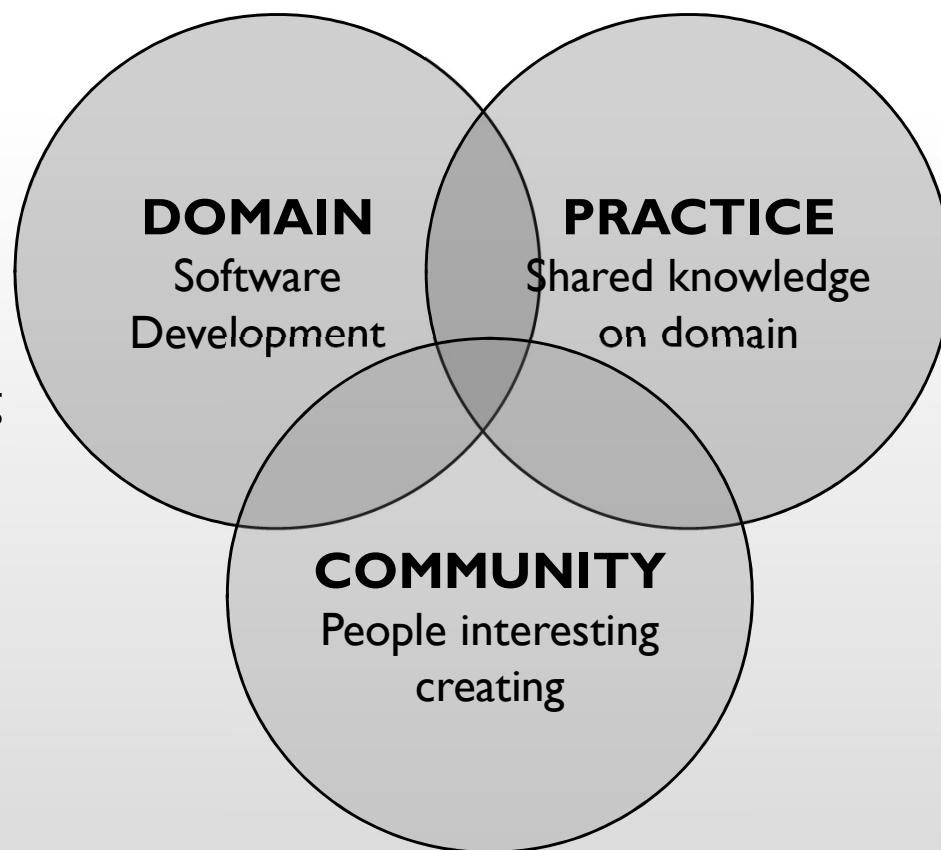


# COMMUNITY OF PRACTICE (COP)

## - LEARNING THROUGH SHARING EXPERIENCES

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- Active and **shared domain of interest** were knowledge can be shared
- **Community** to extend domain knowledge consisting of novice and experienced people
- **Social learning** by sharing practiced knowledge



### LSDG

- **Build a community** interested in sharing and learning common practices of software development
- **Publish common practice** to people outside of the community
- **Increase awareness** of how software development is done

20+

DOMAIN  
Software  
Delivery

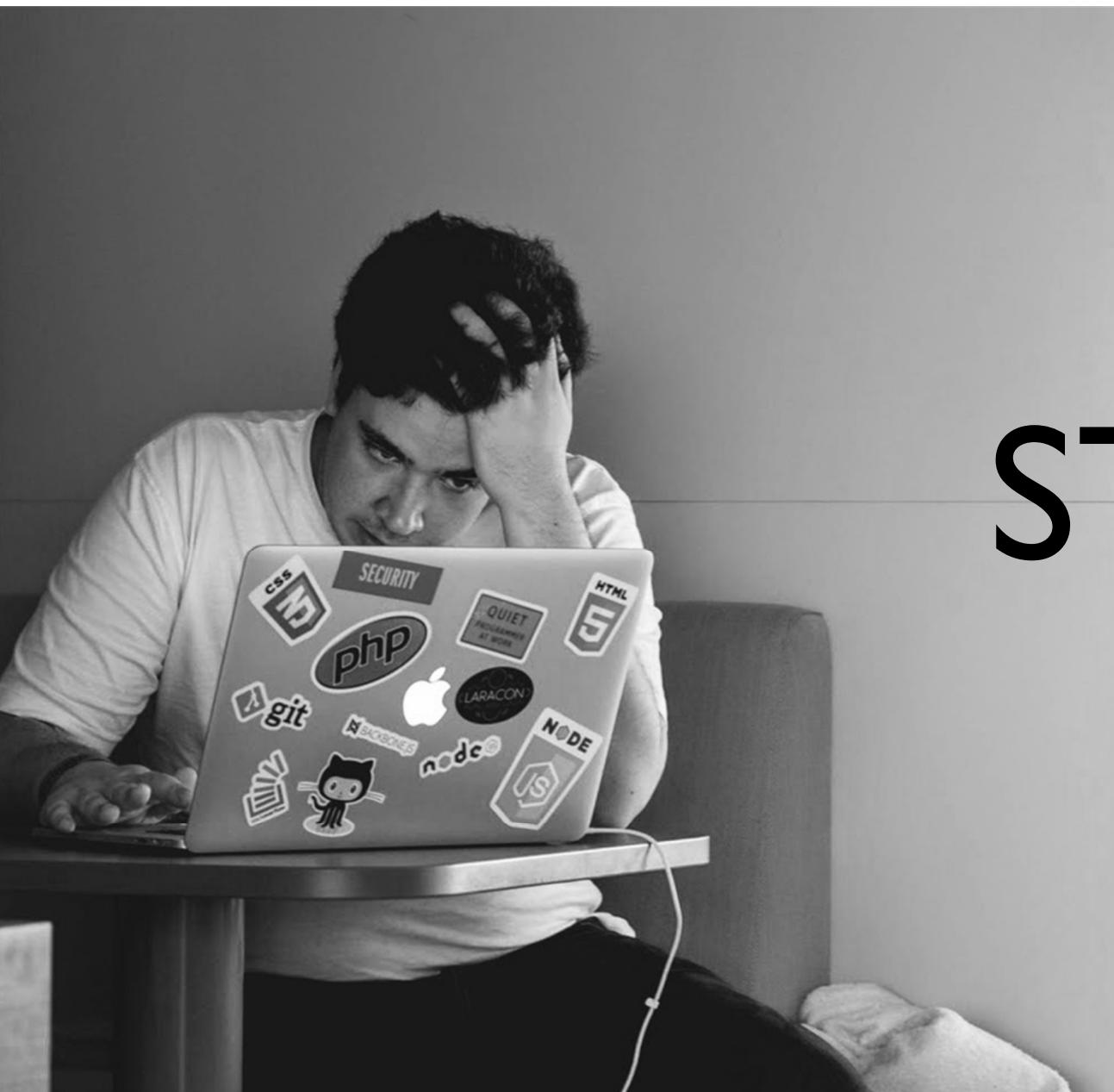
Can we make  
better software?

Can I be a better at  
developing software?



# CONTENT?





# STRESSED?





# SOFTWARE DEVELOPERS ARE IN DEMAND AND POPULAR

## Software development jobs continues to be a popular

Glassdoor survey 25 Best Jobs 2019 nine are related to software development

- 5 directly related to software development
  - **Software Developer**
  - **Solutions Architect**
  - **Web Developer**
  - **Software Engineer**
  - **Front End Developer**
- 4 indirectly related to software development
  - **Product Manager**
  - **Data Scientist**
  - **Business Analyst**
  - **Project Manager**

Reference: [https://www.glassdoor.co.uk/List/Best-Jobs-in-UK-LST\\_KQ0,15.htm](https://www.glassdoor.co.uk/List/Best-Jobs-in-UK-LST_KQ0,15.htm)

25 Best Jobs in the UK for 2019				
Job Title	Median Base Salary	Job Satisfaction	Job Openings	
#1 Audit Manager	£52,000	4.5/s	1,124	<a href="#">View Jobs</a>
#2 Finance Manager	£60,000	3.8/s	2,001	<a href="#">View Jobs</a>
#3 Marketing Manager	£42,500	3.9/s	1,966	<a href="#">View Jobs</a>
#4 Product Manager	£52,500	3.8/s	1,697	<a href="#">View Jobs</a>
#5 Sales Manager	£42,000	3.8/s	2,795	<a href="#">View Jobs</a>
#6 Risk Manager	£60,000	3.9/s	1,111	<a href="#">View Jobs</a>
#7 Data Scientist	£46,000	4/s	995	<a href="#">View Jobs</a>
#8 Operations Manager	£42,000	3.7/s	2,226	<a href="#">View Jobs</a>
#9 Design Manager	£55,000	4.1/s	719	<a href="#">View Jobs</a>
#10 Business Analyst	£40,000	3.7/s	2,949	<a href="#">View Jobs</a>
#11 Front End Developer	£35,000	4/s	1,841	<a href="#">View Jobs</a>
#12 Commercial Manager	£57,000	4/s	701	<a href="#">View Jobs</a>
#13 Business Development Manager	£37,060	3.7/s	3,915	<a href="#">View Jobs</a>
#14 Project Manager	£39,000	3.6/s	7,320	<a href="#">View Jobs</a>
#15 HR Manager	£49,000	4.1/s	664	<a href="#">View Jobs</a>
#16 Contract Manager	£40,000	3.7/s	1,687	<a href="#">View Jobs</a>
#17 Communications Manager	£43,700	4.1/s	651	<a href="#">View Jobs</a>
#18 Software Engineer	£43,000	3.5/s	4,876	<a href="#">View Jobs</a>
#19 Executive Assistant	£37,000	4.1/s	853	<a href="#">View Jobs</a>
#20 HR Business Partner	£49,000	3.8/s	753	<a href="#">View Jobs</a>
#21 Engagement Manager	£48,000	4.3/s	405	<a href="#">View Jobs</a>
#22 Web Developer	£31,000	3.9/s	1,586	<a href="#">View Jobs</a>
#23 Recruiter	£25,000	4.4/s	2,862	<a href="#">View Jobs</a>
#24 Solutions Architect	£70,000	3.4/s	1,597	<a href="#">View Jobs</a>
#25 Software Developer	£37,000	3.5/s	3,088	<a href="#">View Jobs</a>

# SOFTWARE COMPANIES ARE POPULAR TO WORK FOR

## Software development companies report to be popular

From Glassdoor survey Best Places to 2019 5 are software development organizations

- Salesforce
- SAP
- Microsoft
- Google
- AppDynamics

### 2019 BEST PLACES TO WORK EMPLOYEES' CHOICE

The screenshot shows the Glassdoor 'Best Places to Work' page for 2019, specifically the 'Employees' Choice' section. The top company is Anglian Water (#1), followed by Bain & Company (#2), XPO Logistics (#3), Bromford (#4), Sky Betting & Gaming (#5), Hiscox (#6), Royal London (#7), Taylor Wimpey (#8), SAP (#9), Gartner (#10), Google (#11), Microsoft (#12), IKEA (#13), Capital One (#14), Synter (#15), IKEA (#16), Arnold Clark (#17), HomeServe UK (#18), Nando's UK & IRE (#19), Metro Bank (#20), AppDynamics (#21), and Arcadis (#22). Each company entry includes its rank, logo, average rating (e.g., 4.5, 4.4), employee reviews, and job search links.

Rank	Company	Avg. Rating	Description (Excerpt)
#1	Anglian Water	4.5	The workforce is clearly proud, passionate and really cares about the work they do, which results in a really positive culture and working environment.
#2	Bain & Company	4.5	Fantastic culture, smart, motivated, inspirational people who genuinely care about each other and their clients.
#3	XPO Logistics	4.5	Everyone helps each other to achieve success. The work atmosphere is relaxed but everyone is required to accomplish the high standards...
#4	Bromford	4.5	Great colleagues, flexible working, excellent training, innovative and your opinions matter.
#5	Salesforce	4.4	Great to work in an exciting and fast paced environment. Teams are full of talented individuals and the company supports your career...
#6	Sky Betting & Gaming	4.4	Vibrant, exciting, fast paced. A place to think big and really achieve things you couldn't in other businesses.
#7	Hiscox	4.4	The workplace is friendly and communications is open, technology is available to allow a fantastic work/home balance, with facilities.
#8	SAP	4.4	Culture, innovation, self development, career opportunities, brand, benefits, salaries; SAP really takes good care of its employees.
#9	Taylor Wimpey	4.4	Fantastic environment, great atmosphere, support, training opportunities, clear direction and strategic approach to the industry.
#10	Royal London	4.4	Very people focused and encourages development and innovation. Flexibility is offered and the working environment is great.
#11	Microsoft	4.4	The culture, the people, the community, the opportunities, the general growth mindset and the energy. All add up to make this the best...
#12	Gartner	4.4	The company continuously invest on you through training, improvement feedbacks, career opportunities - one of the best sales school...
#13	Google	4.4	Lots of interesting projects at Google and the flexibility to move between teams every year or so.
#14	Synter	4.4	As a company, Synter strives for diversity and to treat staff as individuals and are happy to give us a more home work life balance.
#15	Capital One	4.3	There's no blame culture and people are really helpful and supportive in everything that needs to be done.
#16	IKEA	4.3	Thousands of opportunities to develop your career in 27 countries.
#17	Arnold Clark	4.3	Lots of incentives to do your job and make sure the customers are looked after. Forward thinking company always looking to improve.
#18	HomeServe UK	4.3	HomeServe is a very employee focused company. They focus on the wellbeing of each employee and strive to make the working life as happy...
#19	Nando's UK & IRE	4.3	Really cares about your personal growth and development. Superb progression opportunities!
#20	AppDynamics	4.3	Ensly feel that all members of the team across all departments are in sync, and are working towards a common goal.
#21	Metro Bank	4.3	There is a strong emphasis on a really positive culture at Metro. People really do try to help each other out.
#22	Arcadis	4.3	A very friendly and a relaxed environment with constant communication between employees.

# SOFTWARE DEVELOPMENT SKILLS ARE IN DEMAND

- Science, Engineering, and Technology degrees are in the top 10 most popular degrees (1)
- Software Professional skills are identified by UK Visa bureau (2)
  - Software Developer
  - Systems Engineer
  - Shader Writer

A screenshot of a web browser window displaying a list of the most popular degrees in the UK. The page title is "Scrum Patterns". The main content area lists various degree categories such as "Degree In The UK", "Graduate Schools", "Degrees In The UK", "College In UK", "UK", "Schools In UK", "In UK", and "In UK". To the right of the list, a text block states: "Among a wide spectrum of degrees offered at UK universities, there are some which enjoy a higher global popularity." Below this, a section titled "Most popular degrees in UK are the following:" lists ten categories: Business, Natural Sciences, Engineering and Technology, Medicine, Law, Social Sciences, Sports Science, Media and Communication, Arts, and Hospitality and Tourism. The "Engineering and Technology" category is highlighted with a black rectangular box.

A screenshot of a web browser window showing shortage occupations in the UK. The page title is "Scrum Patterns". The main content area shows a search bar with "Name..." and a dropdown menu listing "Radiotherapy Physicist" and "Staff Working in Diagnostic Radiology (Including Magnetic Resonance Imaging)". Below this, a section titled "» Software Professionals (2132)" is highlighted with a black rectangular box. It lists three roles: "Software Developer", "Systems Engineer", and "Shader Writer". A text below the list states: "The following roles within visual effects and 2D / 3D computer animation for film, television or video games:". The "Software Professionals" section is also highlighted with a black rectangular box.

is everything



# HYPOTHESIS: SOFTWARE DEVELOPERS ARE HAPPY IN THEIR WORK

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**Would you help with creating and responding to surveys on the state of software development?**

- **Demographic information:**
  - Gender
  - Age
  - Ethnicity
  - Education
  - Employment Status
  - Job title/Role
  - Years in employment
- **Skills information:**
  - Development skill (infra, data, code)
  - Programming languages
  - Development methods/processes
  - Workflow tools
- **Work information:**
  - Sector of work
  - Location of work
  - Organization type
  - Organization size

A black and white photograph of a young child with dark, curly hair. The child is wearing round, clear-framed glasses and a light-colored shirt with a small, repeating pattern. They are looking directly at the camera with a neutral, slightly curious expression. The background is a plain, light color.

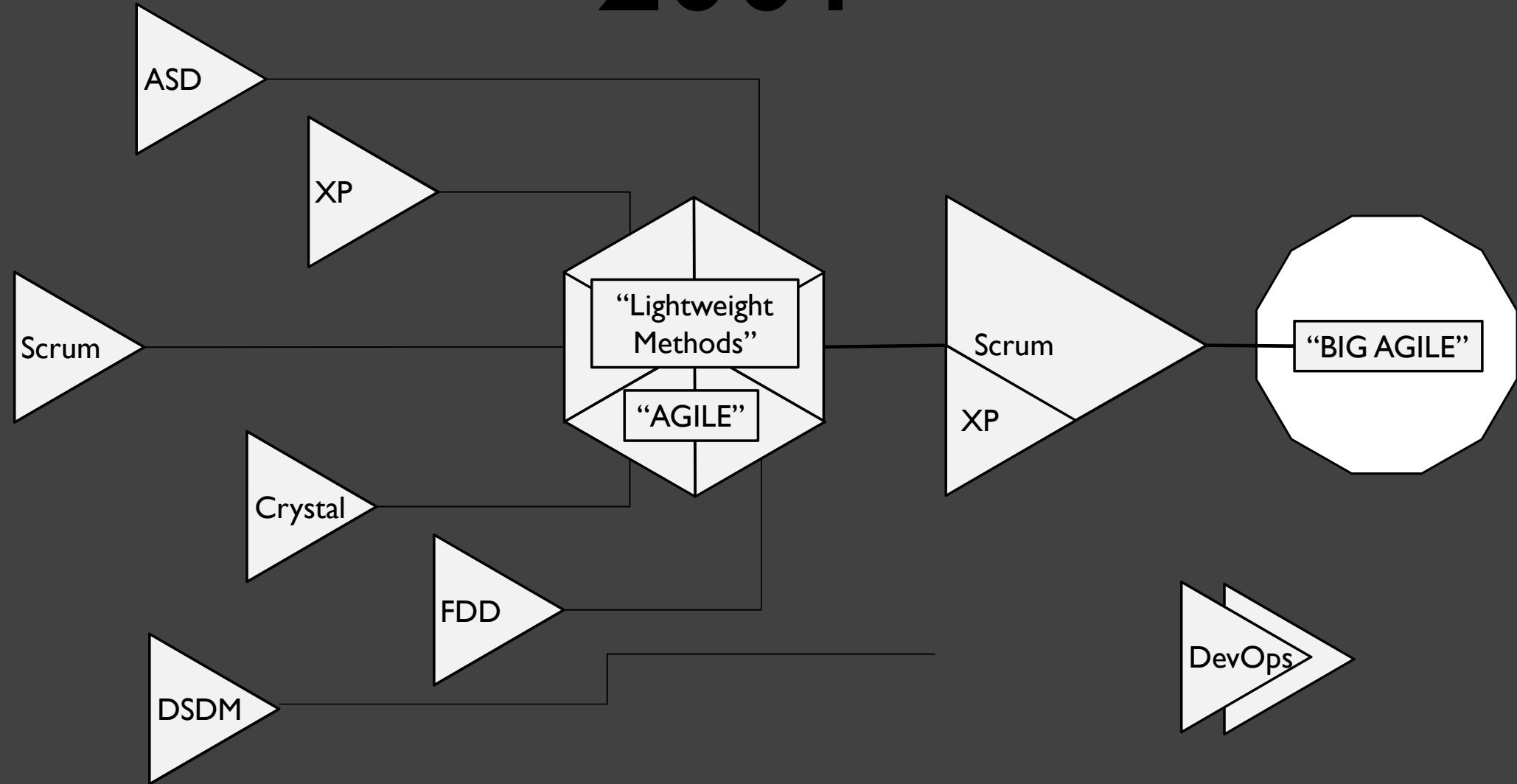
**But why?**

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## TALK: RETURN TO CHRYSLER

- How software developers succeeded but the project failed

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# AGILE MANIFESTO AUTHORS DIFFERENT APPROACHES – COMMON AIM

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Kent Beck

Mike Beedle

Arie van Bennekum

Alistair Cockburn

Ward Cunningham

Martin Fowler

James Grenning

Jim Highsmith

Andrew Hunt

Ron Jeffries

Jon Kern

Brian Marick

Robert C. Martin

Steve Mellor

Ken Schwaber

Jeff Sutherland

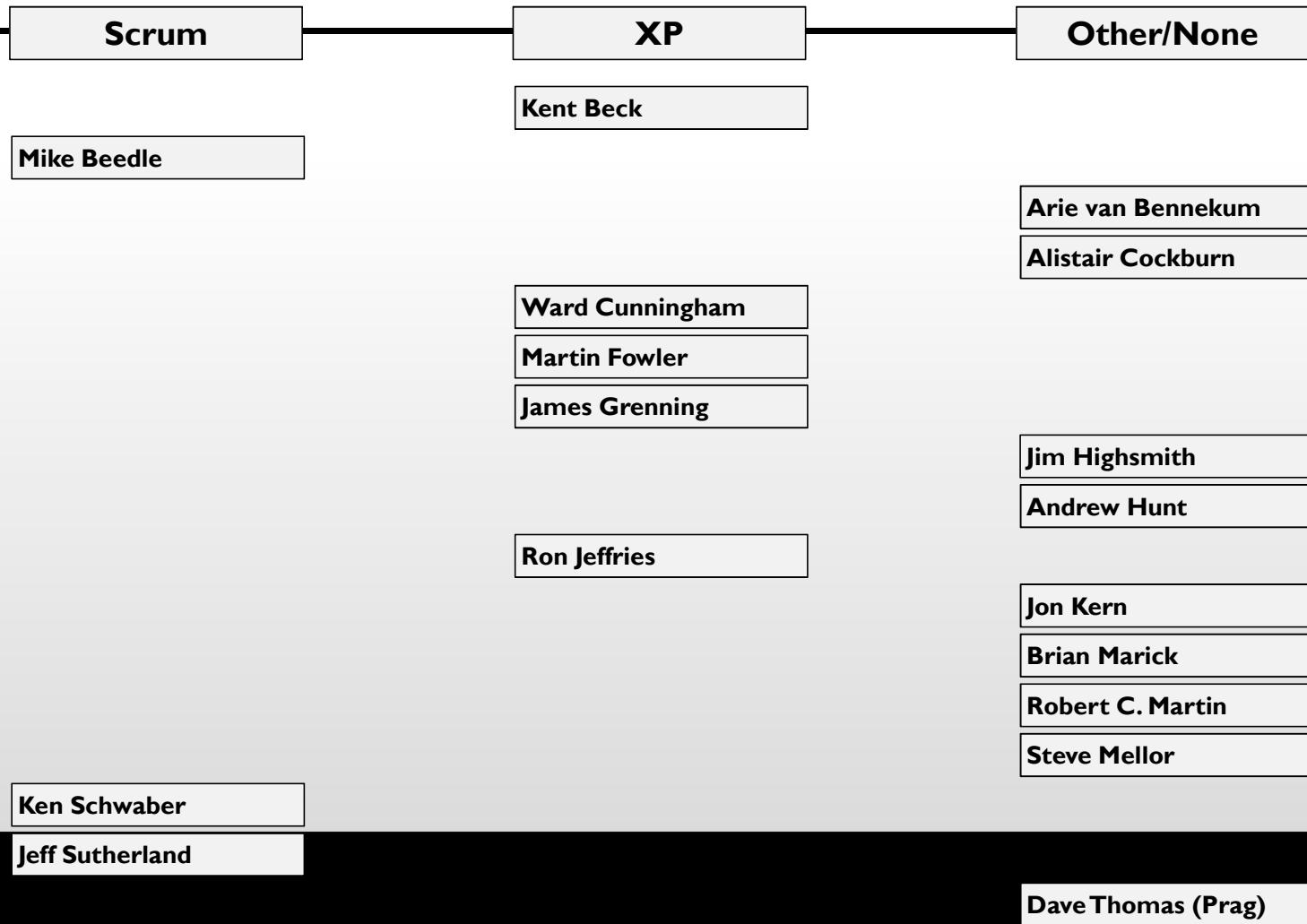
Dave Thomas (Prag)

# AGILE MANIFESTO AUTHORS DIFFERENT APPROACHES – COMMON AIM



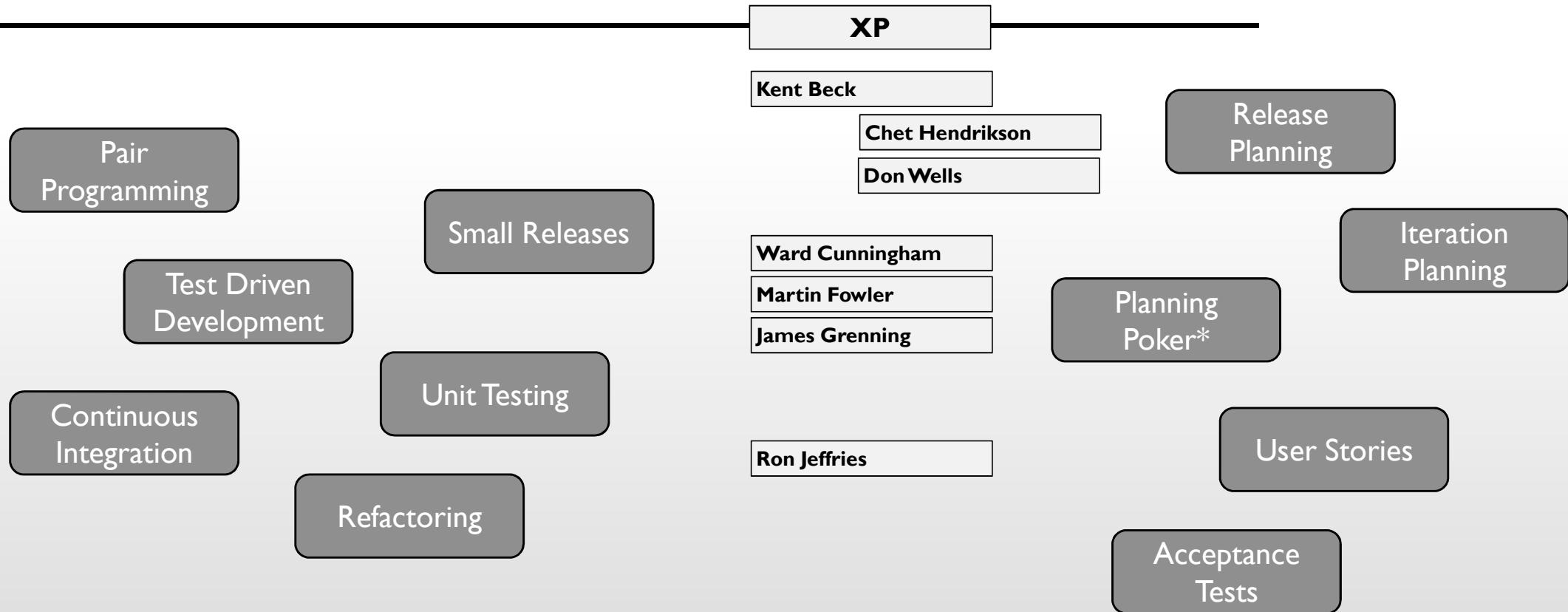
Kent Beck
Mike Beedle
Arie van Bennekum
Alistair Cockburn
Ward Cunningham
Martin Fowler
James Grenning
Jim Highsmith
Andrew Hunt
Ron Jeffries
Jon Kern
Brian Marick
Robert C. Martin
Steve Mellor
Ken Schwaber
Jeff Sutherland
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# AGILE MANIFESTO AUTHORS DIFFERENT APPROACHES – COMMON AIM



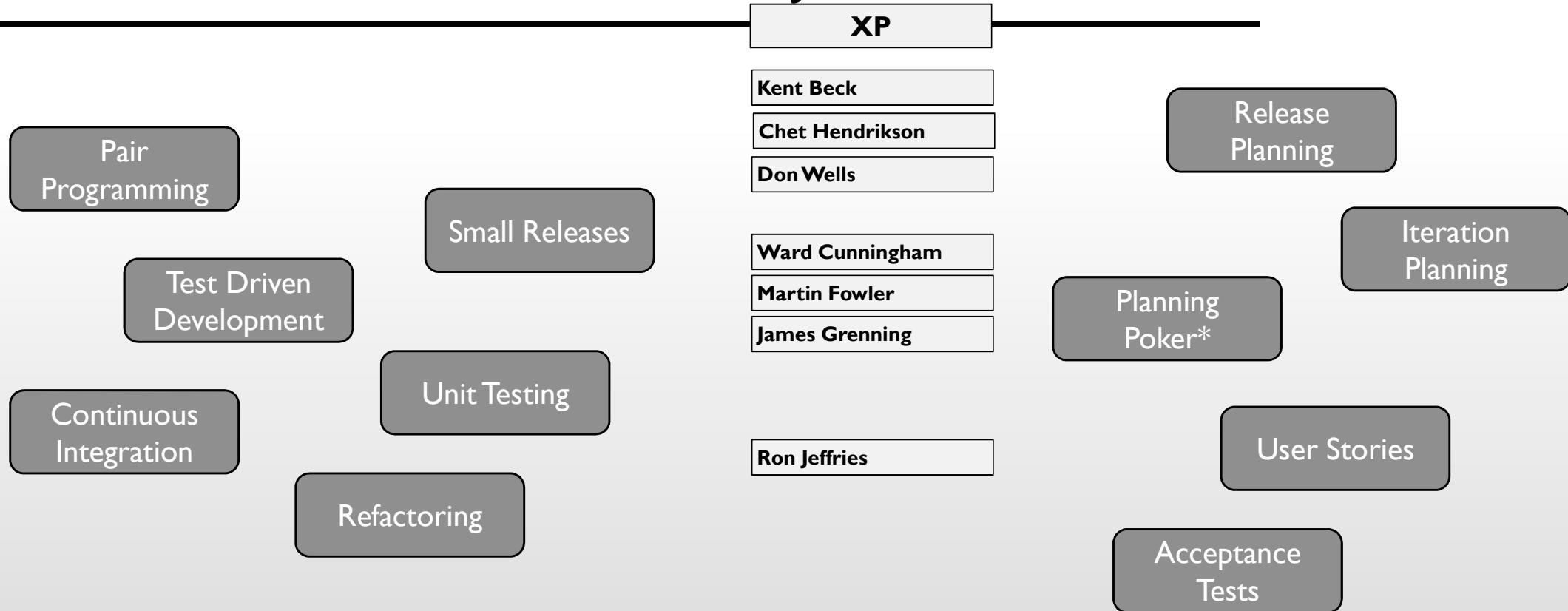
# EXTREME PROGRAMMING (XP)

## “NOMINATES CODING AS THE KEY ACTIVITY”



# EXTREME PROGRAMMING (XP) – C3 PROJECT

## XP CREATED FROM A FAILED PROJECT





# Chrysler: C3 Birth of Developer / Customer practices - XP

# C3 PROJECT CLASSIC PROJECT

- 1993 - Project started with estimated completion date 1996
- 1994 – Smalltalk dev starts
- 1996 – Kent Beck hired and brings in Ron Jeffries.  
First release estimated at 12month March 1997
- 1997 – Customer rep leaves due to stress
- 1998 – Chrysler bought by Daimler
- 2000 – 1 Feb C3 cancel paying 10,000 people

## CASE STUDY

### The Business Case

THE C3 SYSTEM will allow Payroll Services and IS to more easily manage the requirements for accurate and timely service to its 86,000 employees by reducing the duplication of effort the legacy systems require. Chrysler divides its employees into four groups for payroll purposes; each group is paid with a separate payroll system.

The hourly system pays 60,000 union-represented employees each week. The salary system pays 16,000 union and nonunion employees every other week. The executive system pays 10,000 management and technical employees once a month. The incentive compensation system pays 1,500 nonunion upper-management and international employees once a month. The corporate payroll department is responsible for the hourly, salary, and executive payrolls; the human resources group is responsible for the incentive compensation payroll.

The payroll department's three systems are twenty years old and showing it. Designed when a user interface meant an eighty-character punch card, each system requires a separate programming staff to maintain it and a separate customer staff to use it.

**Quest for New System** In the early 1990s, the Payroll Services Department and the Information Services

group decided to replace the three systems under their control with a unified system. The C3 team first tried a payroll package from a leading vendor. It couldn't handle the complexities of Chrysler's pay rules, and further analysis showed that no package could. The only option was to design and write a new payroll system.

#### Advantages of C3

- Simplified movement between payroll systems. A complex and often manual procedure is required to move employees between payroll systems. C3 eliminates this procedure, since there will only be one system.
- Improved quality of manual input. Manual input is currently written on forms and sent out for keypunch. C3 allows direct entry and immediate editing of data through GUIs.
- Elimination of paper and microfiche reports. Payment history can be viewed online.
- Automation of manual procedures. Many processes now done manually are automated in C3.
- Better support for decision making. C3 stores earnings and deduction information at the finest granularity. Reporting is done by adding up detail instead of backing down from aggregate values.

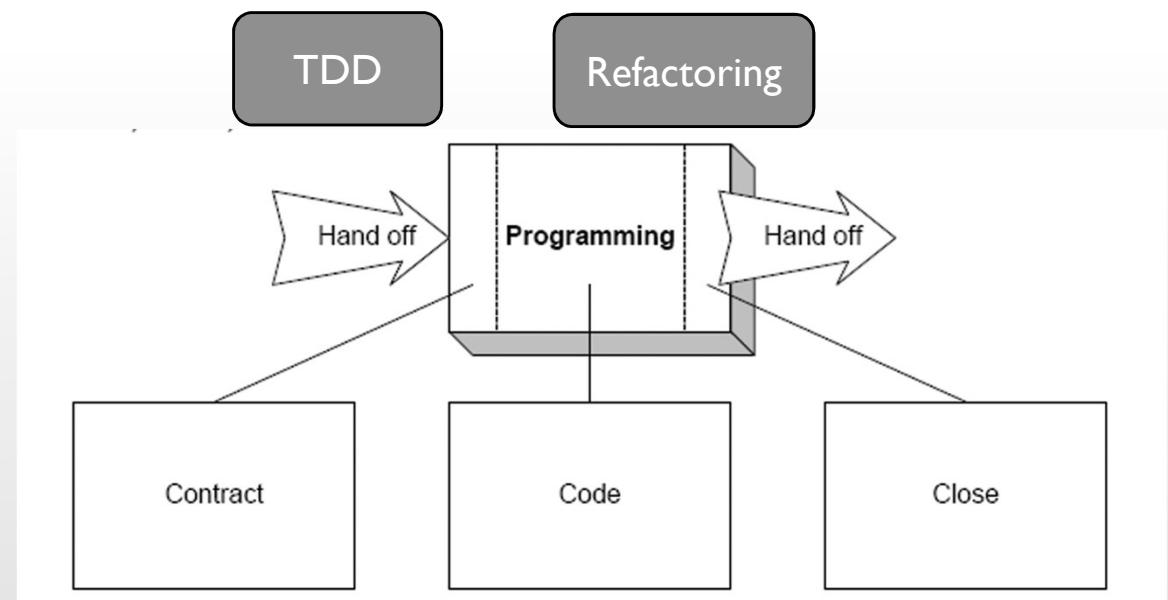
- Simplified external interfaces. Systems providing input to payroll now divide their data into separate feeds for each payroll system and in return receive separate reconciliation reports. Transactions sent to the wrong payroll system require manual correction in the payroll department and may result in the employee being incorrectly paid. Systems that feed payroll can send their files to a single point and C3 will find the employee's record regardless of pay frequency.
- Opportunity to improve external interfaces. The core of the legacy systems is its flat file masters and unit record transactions. However the systems that interact with payroll upgraded their technology, they couldn't alter their interfaces. While C3 supports the legacy master files and transactions, it does so only as a convenience. C3 can accept input from almost any source, including directly reading the other system's relational table or a Web-based GUI using CORBA.

By the end of October, the salary system's 16,000 employees will be paid by the C3 system. They will be joining the 10,000 executive system employees C3 has been paying since May of 1997. It is expected that the remaining 60,000 employees will move to C3 in mid-1999.

# C3 PROJECT APPROACH: PEOPLE COMMUNICATING WITH PEOPLE

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- Customer present everyday (Gold Owner)
  - Payroll Supervisor **Marie DeArment** customer representative
- Double facing
  - Backwards – working with BA
  - Forward – working with QA
- Continuous integration
- Everyone owns the code base



# C3 PROJECT FAILED BECAUSE PEOPLE – SUCCEEDED BECAUSE PEOPLE

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- XP very stressful to everyone
- Practices very disciplined
- “Will XP kill customer?” (Chet Hendrikson)
- Gold Owner and Gold Donor not the same leading to confusion and failure
- Set best practices now used by developers in practice notably DevOps

OLD WAY	EXTREME WAY
Limited Customer Contact	Dedicated Customers on Team
No metaphor	Good metaphor
Central up-front design	Open evolving design
Build for the future	Evolve to the future, just in time
Complex implementation	Radical simplicity
Developers in isolation	Pair programming
Tasks assigned	Tasks self-chosen
Infrequent big-bang integration	Continuous integration
GUI-driven	Model driven
Fear	Aggressiveness
Ad-hoc workspace testing	Unit / Functional Testing
Limited top-down communication	Communicate, communicate, communicate

Using the process described, the C3 team was able to start over on a very difficult problem and deliver a high-quality application on time and within budget. The combination of simplicity, communication, testing, and aggressiveness, applied by a disciplined team, gave the best results—and the most fun—any of us has ever seen. ☺

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Ann Anderson, Ralph Beattie, Kent Beck, David Bryant, Marie DeArment, Martin Fowler, Margaret Fronczak, Rich Garzaniti, Dennis Gore, Brian Hacker, Chet Hendrickson, Ron Jeffries, Doug Joppie, David Kim, Paul Kowalsky, Debbie Mueller, Tom Murasky, Richard Nutter, Adrian Pantea, and Don Thomas are the C3 Team, Chrysler Corporation.

# Discussion



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## DISCUSSION: EVERYONE CODES

- Everyone needs to understand and own the code.  
Everyone.

# EVERYONE MUST OWN THE CODE COLLECTIVE OWNERSHIP OF CODE AND TEXT

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**PROPOSAL:** A team has to agree to achieve a single outcome to be truly successful and happy. To agree that outcome everyone involved must own the means to achieve it.

Therefore:

- To improve the quality and speed of software development everyone owns the code. To do this everyone needs to know how to create software (code).
- **Collective Ownership of Code and Text**
  - Ward Cunningham (2003)
  - Positives
  - Negatives



# DEV INTRO: PYTHON BASICS OF PYTHON PROGRAMMING

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- History

- Created in the late 1980s by Dutchman Guido van Rossum
- Descendant of the ABC programming Language which GvR was involved in
- Named after Monty Python rather than the snake with idea of not being taken too seriously

- Popularity

- 3<sup>rd</sup> most popular “language” after JavaScript and Java
- Top 10 most wanted skill based on job market data

- Aim

- An easy and intuitive language just as powerful as major competitors
- Open source, so anyone can contribute to its development
- Code that is as understandable as plain English
- Suitability for everyday tasks, allowing for short development time



# DEV INTRO: PYTHON HELLO WORLD TO GUESSING NUMBERS

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- Version
  - Newest version: 3.8
  - Latest downloadable version: 3.7.3
- Install from <https://www.python.org/downloads/release/python-373/>
- On install watch the location so create a path environmental variable
- Create .py files to execute python
- Create file
- Enter `print("Hello World from the LSDG!")`
- Save as helloworld.py
- Run `python helloworld.py`

# DEV INTRO: PYTHON GUESSING NUMBERS

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- Guessing game:

```
# Number guessing game
import random
n = random.randint(1,99)
guess = int(input("Enter an integer from 1 to 99 >> "))
while n != "guess":
    print
    if guess < n:
        print ("HIGHER!\nYour guess is too low")
        guess = int(input("Enter a number from 1 to 99 >>"))
    elif guess > n:
        print ("LOWER!\nYour guess is too high")
        guess = int(input("Enter a number from 1 to 99 >>"))
    else:
        print ("You're correct. You are AWESOME")
        print ("AWESOMEAWESOMEAWESOME\nAWESOMEAWESOMEAWESOME\n")
        break
    print
```

Thank  
you!

**NETWORK**

