

# Putting it all together

# Why Software Carpentry?



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## ...SCIENTISTS AND THEIR SOFTWARE

A survey of nearly 2,000 researchers showed how coding has become an important part of the research toolkit, but it also revealed some potential problems.

> **45%** said scientists spend more time today developing software than five years ago."

> **38%** of scientists spend at least one fifth of their time developing software.

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> **45%** said scientists spend more time today developing software than five years ago."


> **38%** of scientists spend at least one fifth of their time developing software.

> Only **47%** of scientists have a good understanding of software testing.

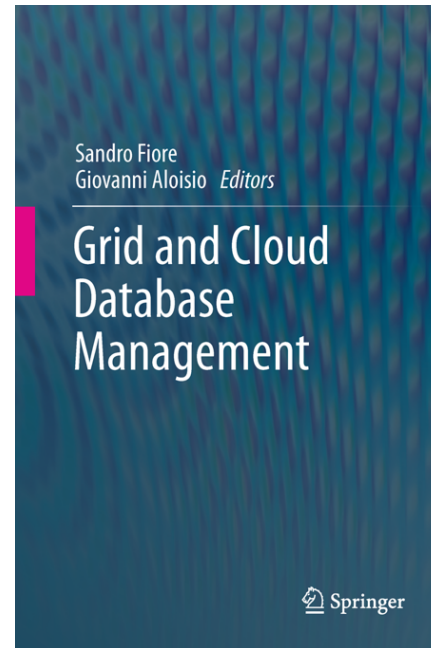
> Only **34%** of scientists think that formal training in developing software is important.

Images by Greg Wilson and Neil Chue Hong. Data from Hannay et al, "**How Do Scientists Develop and Use Scientific Software?**"

SECSE '09 Proceedings of the 2009 ICSE Workshop on Software Engineering for Computational Science and Engineering, IEEE Computer Society, 2009. DOI: 10.1109/SECSE.2009.5069155

**Software development  $\neq$  research**  software carpentry

# Software development $\neq$ research software carpentry



# Remember Geoffrey Chang!

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22 December 2006 | \$19  
**Science**

Breakthrough  
of the Year



The  
Poincaré  
Conjecture  
PROVED

AAAS



# Remember Geoffrey Chang!



We wish to retract our research article ... and both of our Reports...

An **in-house data reduction program** introduced a **change in sign** for anomalous differences...

Unfortunately, the use of the multicopy refinement procedure still allowed us to obtain reasonable refinement values for the **wrong** structures.

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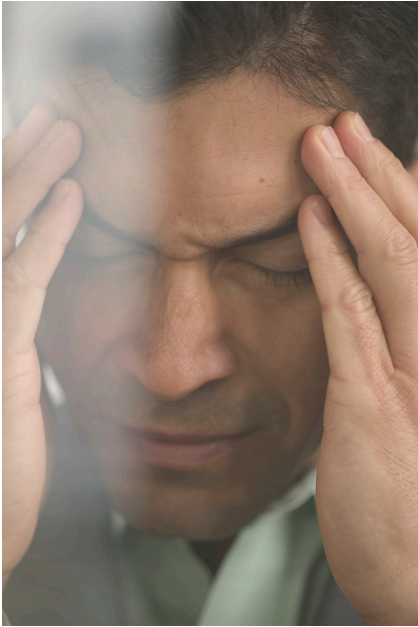
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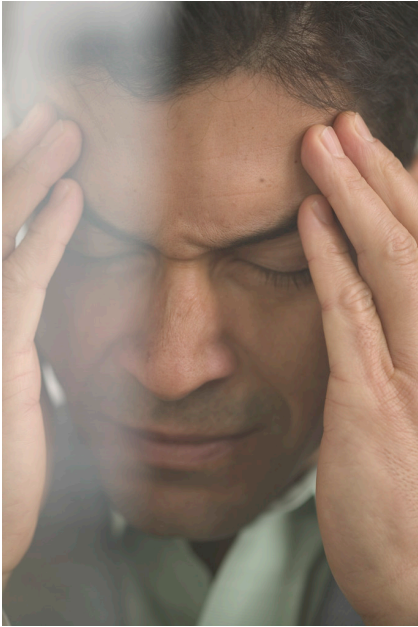


**Correctness isn't compelling, so...**  software carpentry

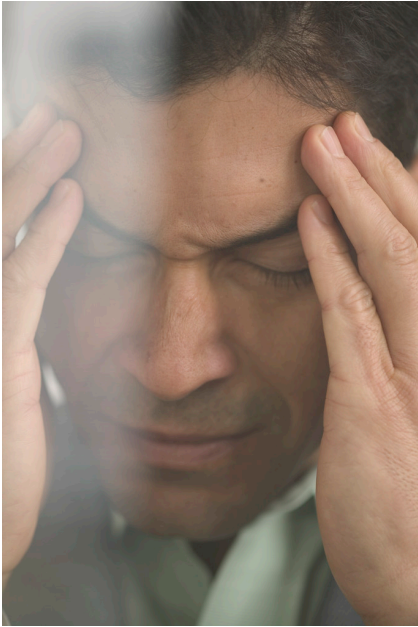
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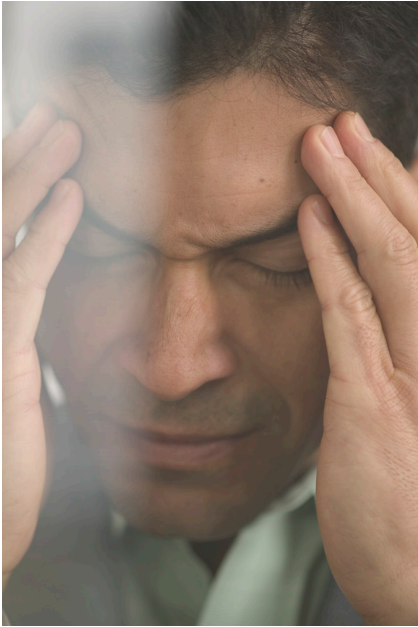
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**Correctness isn't compelling...**  software carpentry



# Correctness isn't compelling...



# Correctness isn't compelling...



```
history  
!123  
history | grep 'ssh'
```

# Correctness isn't compelling...



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```
configure.sh  
build.sh  
install.sh
```

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history | grep 'ssh'
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```
filename = "data.txt"
source = open(filename, 'r')
actual_count = 0
expected_count = None
# Count number of data records.
for line in source:
    if line.startswith('#-'): # Number of records
        trash, expected_count = line.split()
        expected_count = int(expected_count)
    if line.startswith('#'): # Skip comments.
        pass
    elif line.startswith('D'): # Skip title line.
        pass
    else:
        actual_count += 1
source.close()
```

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```
class Stack:
    """
    A simple FIFO stack.
    """
    def __init__(self):
        pass

    def push(self, item):
        """
        Add item to stack.
        @param self Stack object
        @param item Item to add
        """
        pass

    def pop(self, item):
        pass

    def is_empty(self):
        pass
```

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configure.sh  
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install.sh

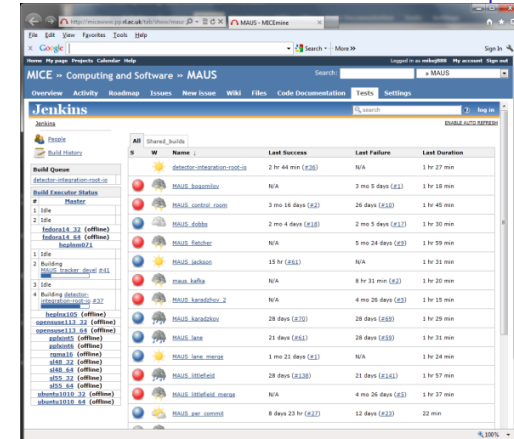


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```
def test_push_pop():  
    stack.push(123)  
    assert stack.pop() == 123
```

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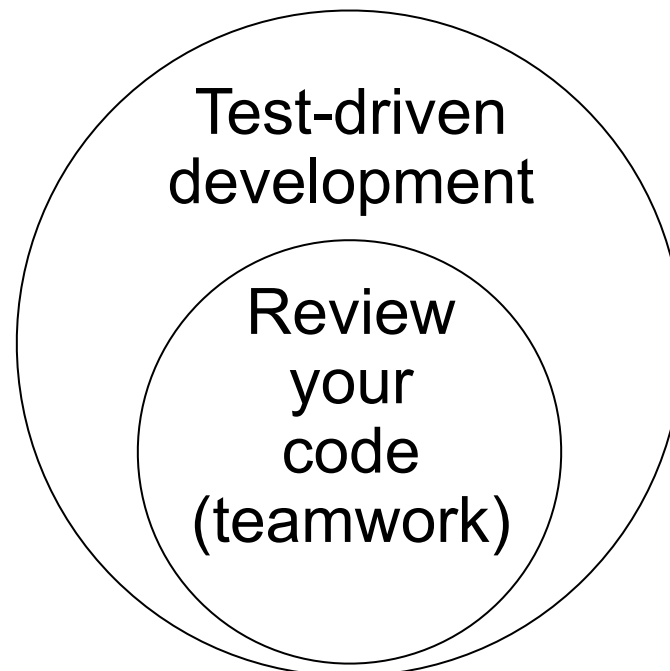
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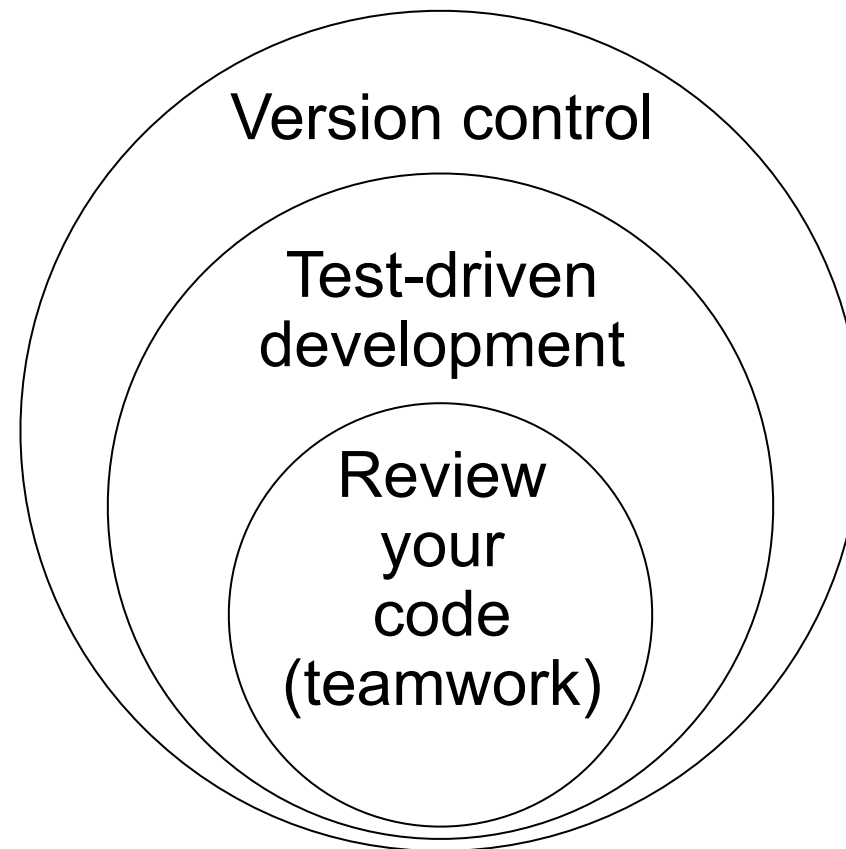


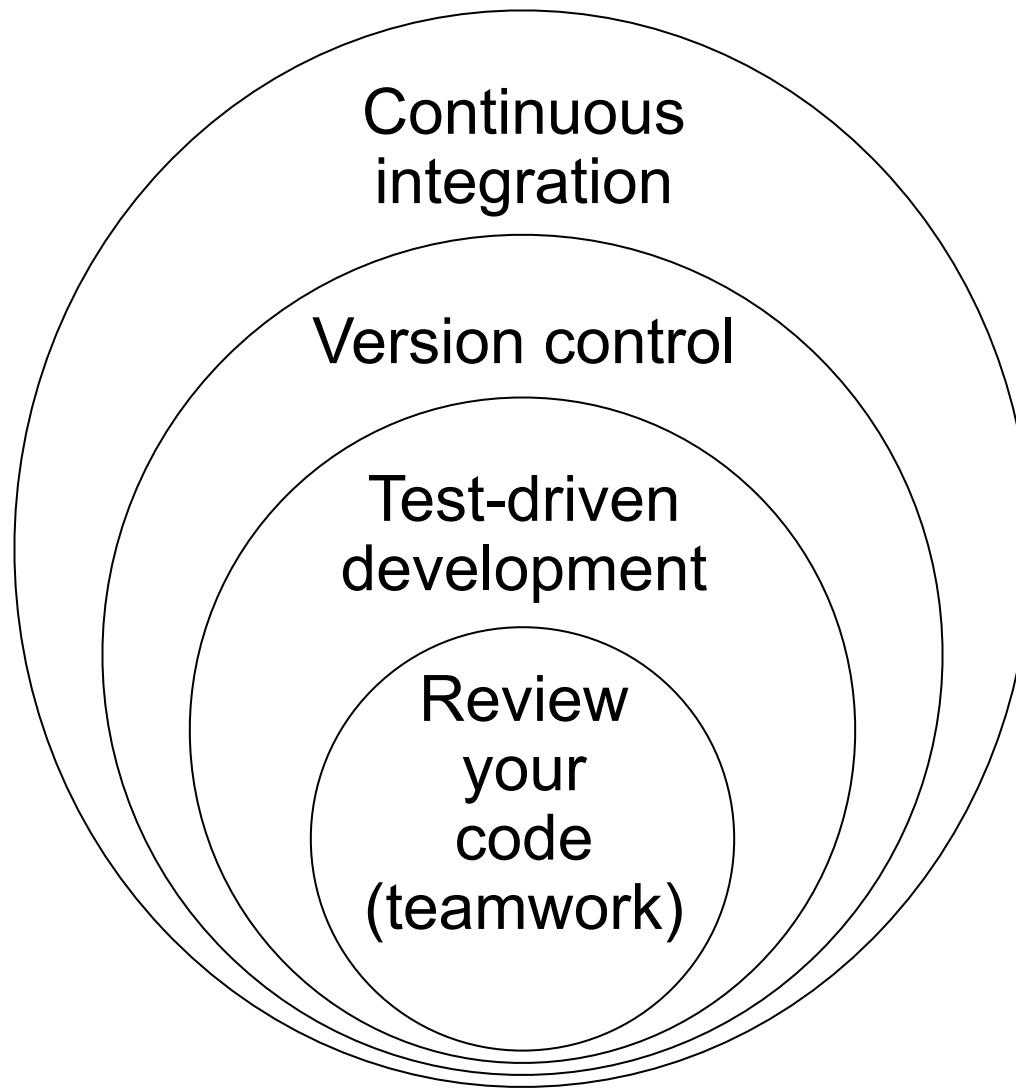


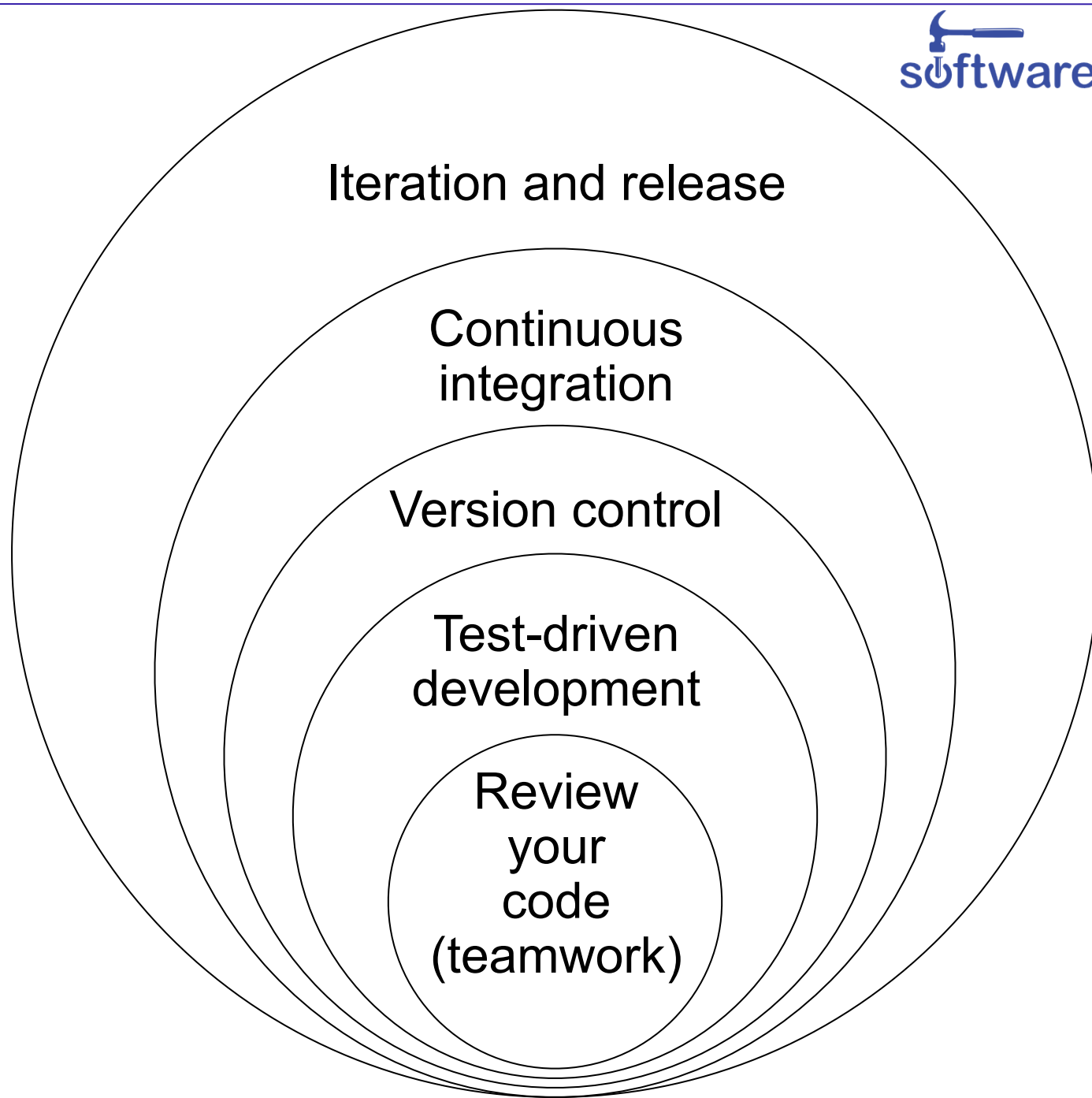
Review  
your  
code  
(teamwork)











# Have your say...

# Have your say...

# Have your say...

Iterative development does not just

# Have your say...

Iterative development does not just  
apply to software



# Have your say...

Iterative development does not just  
apply to software

so

# Have your say...

Iterative development does not just  
apply to software

so

what did you think of this boot camp?

# current activity:

135 instructors  
(30, training)

115 bootcamps

3500 learners



# Want to get involved?



# Want to get involved?



# Want to get involved?



# Want to get involved?



# Want to get involved?



[admin@software-carpentry.org](mailto:admin@software-carpentry.org)

<http://software-carpentry.org/bootcamps>