WIBU SYSTEMS

SECURITY
LICENSING
PERFECTION IN PROTECTION

Protecting Python Applications

The simpler way

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To access the on-demand replay of this masterclass, please visit

www.wibu.com/resources/webinars/2021/python-simpler-way/access

The Classical Way

Cython

AxProtector

```
class Pi:

    def __init__(self):
        self.rounds = 100000

    def calc_pi(self):
        my_sum = 0.0
        for i in range(self.rounds + 1):
            recent_val = ( (-1) ** i ) / (2 * i + 1)
            my_sum += recent_val

        return my_sum * 4
```
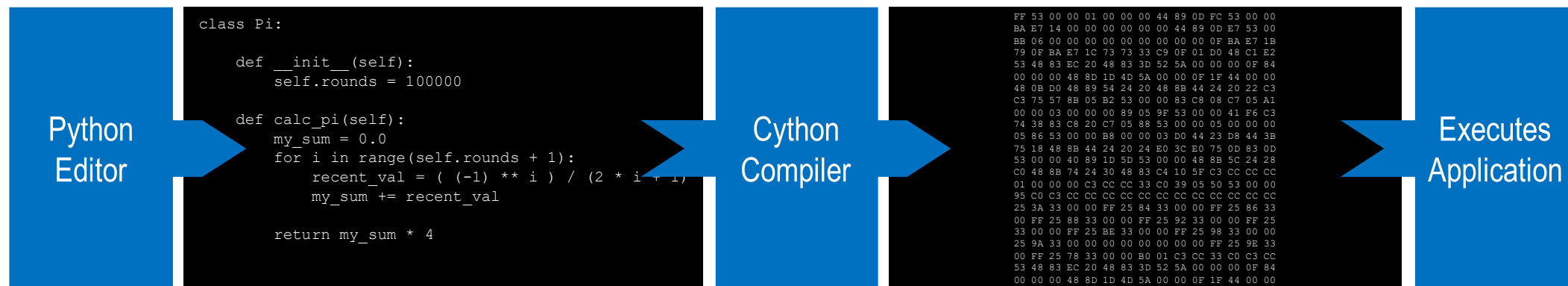
Python Editor → **Executes Application**

- Delivery as Python (text) file

- No copy protection, no IP protection

- Source code available to users, competitors, …

```
class Pi:

    def __init__(self):
        self.rounds = 100000

    def calc_pi(self):
        my_sum = 0.0
        for i in range(self.rounds + 1):
            recent_val = ( (-1) ** i ) / (2 * i + 1)
            my_sum += recent_val

        return my_sum * 4
```

Python Editor → Cython Compiler →

```
FF 53 00 00 01 00 00 00 44 89 0D FC 53 00 00
BA E7 14 00 00 00 00 00 00 44 89 0D E7 53 00
BB 06 00 00 00 00 00 00 00 00 00 0F BA E7 1B
79 0F BA E7 1C 73 73 33 C9 0F 01 D0 48 C1 E2
53 48 83 EC 20 48 83 3D 52 5A 00 00 00 0F 84
00 00 00 48 8D 1D 4D 5A 00 00 0F 1F 44 00 00
48 0B D0 48 89 54 24 20 48 8B 44 24 20 22 C3
C3 75 57 8B 05 B2 53 00 00 83 C8 08 C7 05 A1
00 00 03 00 00 00 89 05 9F 53 00 00 41 F6 C3
74 38 83 C8 20 C7 05 88 53 00 00 05 00 00 00
05 86 53 00 00 B8 00 00 03 D0 44 23 D8 44 3B
75 18 48 8B 44 24 20 24 E0 3C E0 75 0D 83 0D
53 00 00 40 89 1D 5D 53 00 00 48 8B 5C 24 28
C0 48 8B 74 24 30 48 83 C4 10 5F C3 CC CC CC
01 00 00 00 C3 CC CC 33 C0 39 05 50 53 00 00
95 C0 C3 CC CC CC CC CC CC CC CC CC CC CC CC
25 3A 33 00 00 FF 25 84 33 00 00 FF 25 86 33
00 FF 25 88 33 00 00 FF 25 92 33 00 00 FF 25
33 00 00 FF 25 BE 33 00 00 FF 25 98 33 00 00
25 9A 33 00 00 00 00 00 00 00 00 FF 25 9E 33
00 FF 25 78 33 00 00 B0 01 C3 CC 33 C0 C3 CC
53 48 83 EC 20 48 83 3D 52 5A 00 00 00 0F 84
00 00 00 48 8D 1D 4D 5A 00 00 0F 1F 44 00 00
```

Executes Application

- Delivery as platform dependent compiled library

- Readable with disassembling tools like IDA Pro

- No copy protection, extremely weak IP protection
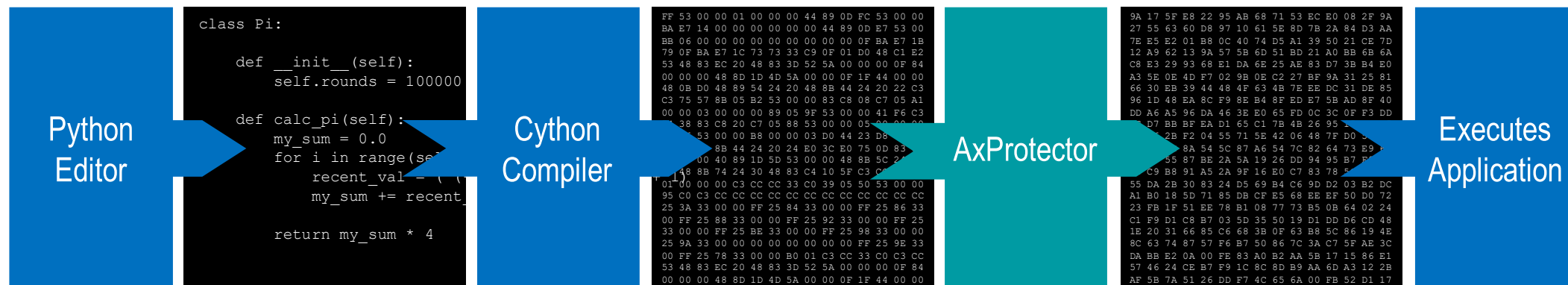
- Delivery as encrypted platform dependent library

- Strong copy protection, strong IP protection

- Licensing and protection combined for high security

- Automatically realizing different license models with AxProtector

  - Single User Licenses

  - Floating Network Licenses

  - Subscription Licenses

- Using CodeMeter Core API for additional license models (officially available since release 7.20)

  - Modular Licenses (Features On Demand)

  - Pay-per-Use Licenses
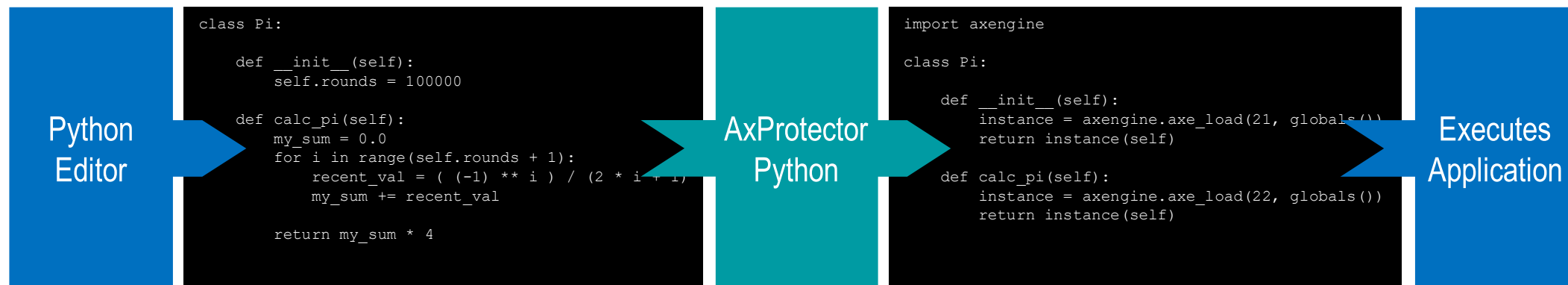
  - Protection of data files

Demo

The New Way

AxProtector Python

- The solution via Cython offers high security, but Wibu-Systems wants to offer even more

  - On-Demand Decryption during runtime

  - Modular Licenses with different cryptographic keys

- The way via Cython creates platform dependent binaries

- Simplified integration for software developers (no Cython needed)

Python Editor

```
class Pi:

    def __init__(self):
        self.rounds = 100000

    def calc_pi(self):
        my_sum = 0.0
        for i in range(self.rounds + 1):
            recent_val = ( (-1) ** i ) / (2 * i + 1)
            my_sum += recent_val

        return my_sum * 4
```

AxProtector Python

```
import axengine

class Pi:

    def __init__(self):
        instance = axengine.axe_load(21, globals())
        return instance(self)

    def calc_pi(self):
        instance = axengine.axe_load(22, globals())
        return instance(self)
```

Executes Application

- Every function is encrypted separately

  - Highest Security

- Application is still platform independent

  - CodeMeter Runtime / Protection Suite Runtime needed (Windows, Linux, macOS)

Demo

- Encryption of a simple application

- How to protect global functions

    - Moving them into a new function

- How to combine Core API and AxProtector Python

- Modular Licensing at source code level

- Error handling via exceptions

- IP Protection

- Requirements (License, CPSRT, …)

Summary

AxProtector Python

- The new AxProtector Python offers highest security

- Simplified integration for software developers

- Easy and strong implementation of modular licenses

- Combination of AxProtector Python and CodeMeter Core API is possible

  - Additional encryption of data

- The classical way via Cython and AxProtector is still available

- The principles AxProtector Python relies on are similar to those of AxProtector .NET

Thank you very much for your attention

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