

BLOCKCHAIN APPS



IN C# AND .NET

.Net tabanlı Kripto Paraların Uygulamaları ve Madenciliği

Gökhan Tezer
SW Design Architect
Antalya Bilim Üniversitesi



Neden .Net

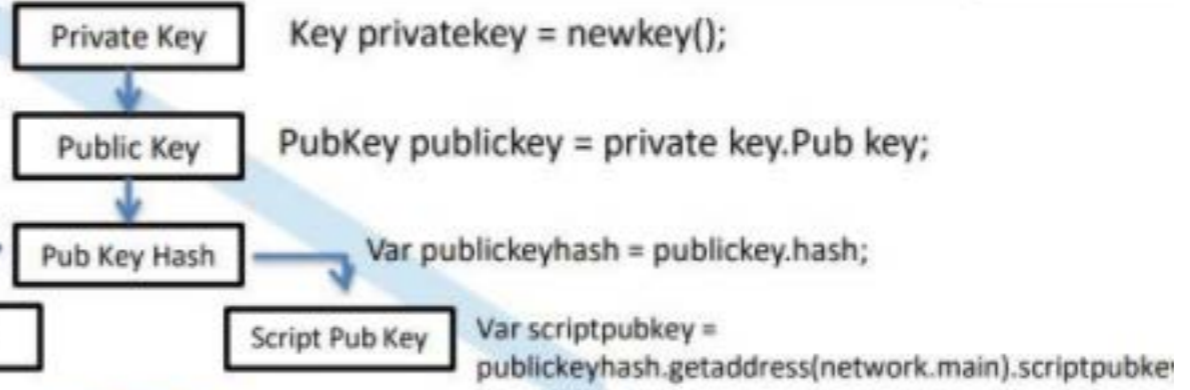
- .NET çerçevesi, şirket ortamlarında popülerliği
- Girişimciler ve Developer'lar için başarılı bir araç
- Taşınabilir ücretsiz kod (iOS, Android, Windows tablet, gömülü cihazlar, vb. arasında işlev gören)
- Açık kaynak kodludur.
- BizSpark programı, tüm açılış işlemlerinin 150 \$ / ay Azure hizmeti de dahil olmak üzere tüm Microsoft araçlarını ücretsiz olarak almasını sağlar.
- Visual Studio Topluluğu 2015, profesyonel bir IDE
- Büyük bir geliştirici tabanı tarafından kolayca okunabilen C #, Java ve C ++.
- NBitcoin adı verilen .NET için en popüler Bitcoin Framework'ü (2014-2016 Nicolas Dorier)
- C # ile ilgili tanıştığımız her insan, o anda kullandığı kişi olmasa bile, orada en iyi dil olduğunu söyleyecektir.

The Blockchain

#1 Creating An Address

Pubkey.getaddress(network.main)

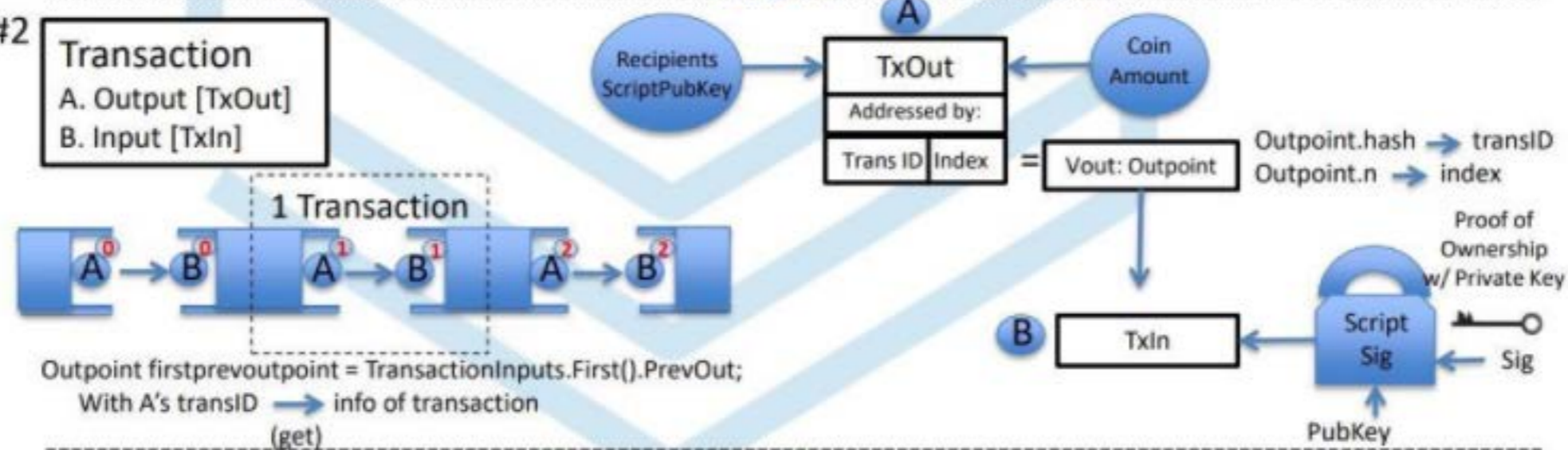
in C#



Net ID

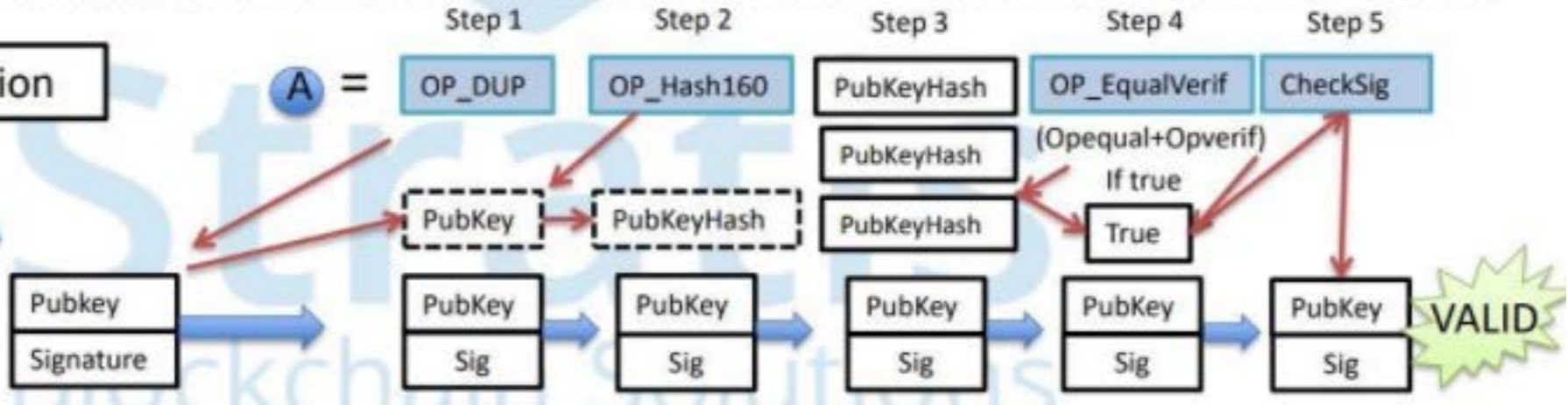
#2 Transaction

A. Output [TxOut]
B. Input [TxIn]



#3 Validation

Presented By:
@Oscar.Stratis
Oscar Correa, PMP
Stratis Group Ltd.





.Net temelli Kripto Paralar

Neblio

- Verimlilik
- Proof-of-stake
- Mining
- Yedekleme ile güvenli ortam
- Düşük Maliyet



Ardor

- Nxt'nin çocuk zincirlerini (child chain) kullanmaktadır.
- Belli ölçüde kişiselleştirilebilen "hafif" bir zincir olan çocuk zinciri,
- Kendi blok zincirinizin kolaylıkla kendi kendini konuşturulmasını sağlamak için tasarlanmıştır.
- Nxt, kullanıcıların güvenlik konusunda "endişelenmeleri gerekmeyeceğini" iddia ediyor, çünkü bu bölüm ana zincir (Ardor) tarafından ele alınıyor olacak.
- Ardor platformundaki ilk çocuk zinciri, devam eden bir kitle satışın başlatıldığı Ignis olacak.



Stratis

- BaaS (Blockchain-as-a-Service)
- Stratis, şirketlerin özel blok zinciri uygulamalarını ihtiyaç duydukları özelliklerle oluşturmalarına ve geliştirme süreçlerini basitleştirmelerine ve blockchain projeleri için geliştirme yaşam döngüsünü hızlandırmalarına olanak tanır.



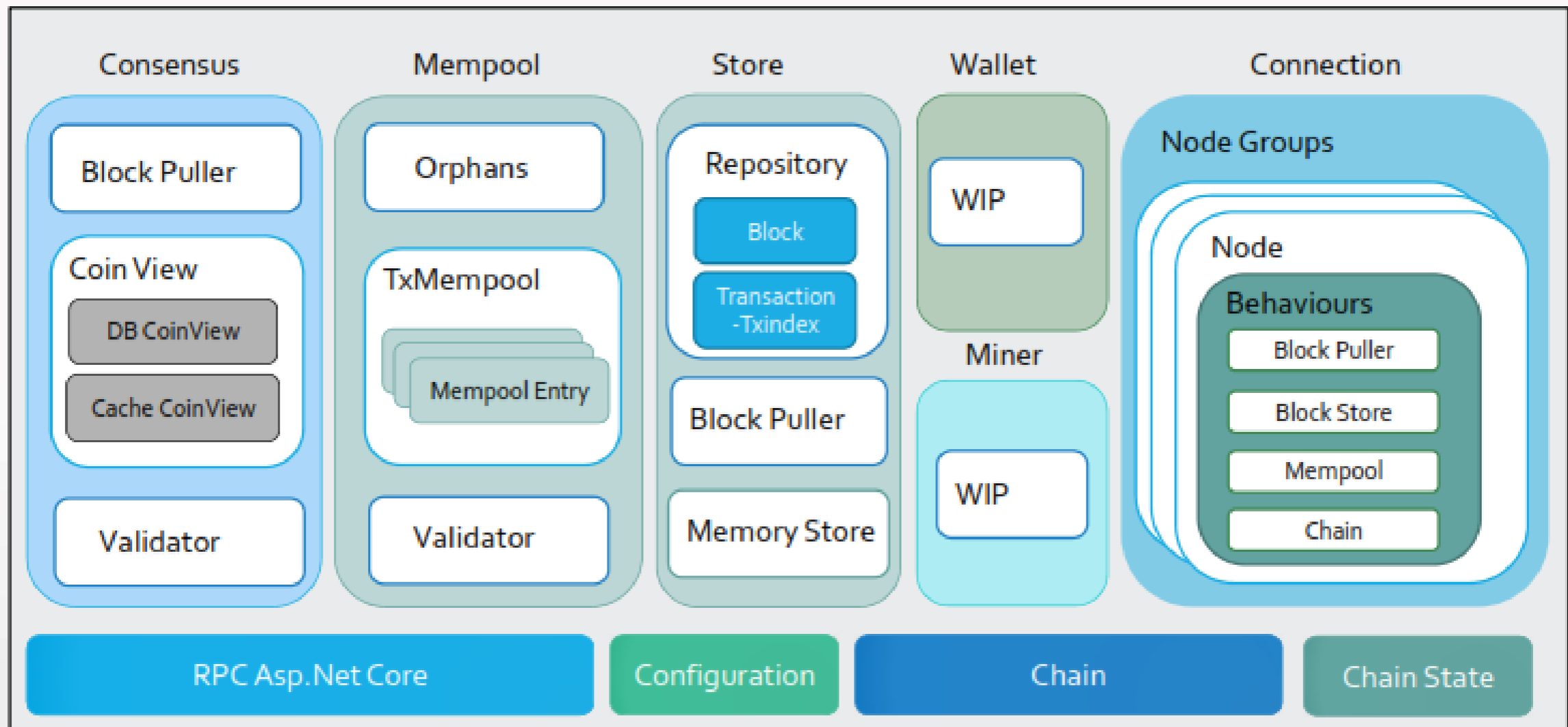
Stratis

- Hashing Algoritma: X13
- Bulut Temelli Azure
- Un-minable
- Kolaylık, Hız ve Esneklik



Stratis Fullnode Architecture

Fullnode .NET Core



Stratis Development Roadmap

2017 Q2

Technology

- StratisPort Identity Protocol v1
- Breeze Tumbler Node & Wallet (BTC only)
- Stratis Master Node

Go To Market

- StratisPort Azure Proof of Concept
- Funding campaigns
- C# Developers Engagement
- Documentation
- Events Participation (USA)

2017 Q3

Technology

- Privacy Protocol
- Breeze Wallet (Stratis support)
- Breeze Wallet (BTC <> STRAT)
- Stratis Sidechains (TVE onboarded)
- Stratis TumbleBit Service
- Tumble Service B2b / B2C
- Stratis Fullnode GUI
- Stratis Smart Contracts

Go To Market

- Stratis Smart Contract PoC
- Global BizDev Activities
- Stratis Academy Training Certifications
- Documentation
- Events Participation (NL)
- Stratis BaaS Readiness
- Ramp-Up Consulting Services

2017 Q4

Technology




- Stratis Platform Java API
- Stratis Platform Javascript API
- Stratis Platform On-Premise Solution
- Stratis Cross Platform Mobile App

Go To Market

- Governance Proof of Concept
- Continue C# Developers Engagement
- Stratis Academy Training Certifications
- Expand PoC and Consulting Services
- Kick off global BaaS BizDev & Marketing

Roadmap

Karşılaştırma

	NEO	STRATIS	ETHEREUM
			
▪ Position	7	15	2
▪ Ciculating Supply	50,000,000 NEO	98,502,820 STRAT	93,993,108 ETH
▪ Total Supply	100,000,000 NEO	98,502,820 STRAT	93,993,108 ETH
▪ Scalable	Yes	Yes, through sidechains	No
▪ Market Cap	\$2,250,000,000	\$492,514,100	\$28,197,932,400
▪ Language	C#	C#	Solidity
▪ Launch Date	9 September 2016 (11 Months)	9 August 2016 (1 year)	30 July 2015 (2 years)
▪ Segwit Status	Not sure / not applicable	Ready for segwit	Working on plasma
▪ Mining	BFT / Easy to stake	POS / Easy to stake	POW / Expensive to mine
▪ Masternode	Not available	Yes, available soon	Not available
▪ Security	Unproven	Built on Bitcoin	Repeatedly compromised
▪ Private transactions	Not confirmed	Breeze wallet	Not confirmed

Bitcoin vs Stratis



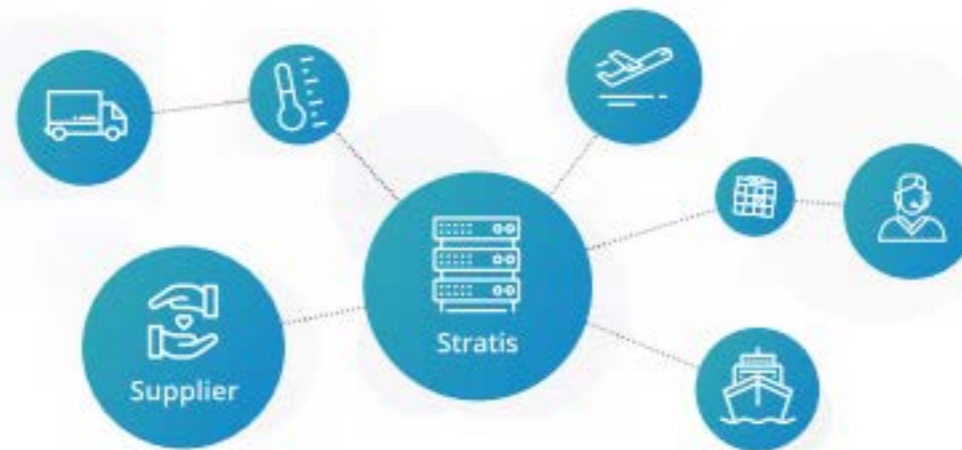
Symbol	BTC	STRAT
Total supply:	21,000,000	98,000,000
Approximate block time:	10 minutes	1 minute
Approximate blocks p/d:	144	1440
Mining algorithm:	POW (proof of work)	X13 POW/POS (proof of stake)
Block Reward:	50 BTC (halving every 210,000 blocks)	1 STRAT
Language	C++	C#

Use Cases

The Stratis Blockchain for data recording and management

Internet of Things

Freight transportation is a complex process with many inputs. Stratis Blockchain Solutions can accelerate development on an IoT-enabled blockchain to store critical data.



Access to database without the need for central control and management.

Verification of public ledger by customers and suppliers preventing disputes.

Immutable guarantee that all parties can trust the data and take action.

Stratis solutions can be applied to a wide array of problems modern day businesses face. From Fintech to Internet of Value and emerging technologies, our C# and .Net development, deployment and consulting capabilities can help streamline and accelerate your blockchain project development process.

Blockchain Made Easy. With Stratis.
www.stratisplatform.com



The Stratis Blockchain for identity management

Fintech

Financial Institutions need a trusted form of identification for their customers. Stratis Blockchain Solutions grant institutions access to authoritative identity records and transparency.



Operational savings due to unified, trusted database of customer records.

Greater level of regulatory compliance and increased transparency.

Build and manage a network of associated trusts for any individual.

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The Stratis Blockchain for transparency of publications

Medical Research

Medical and clinical trials face criticism around the transparency and privacy of research publications. Stratis Blockchain Solutions provide an immutable and efficient database of records.



Data is easily accessible and verifiable for everyone in a single database.

Even the smallest of amendments to a protocol can be detected.

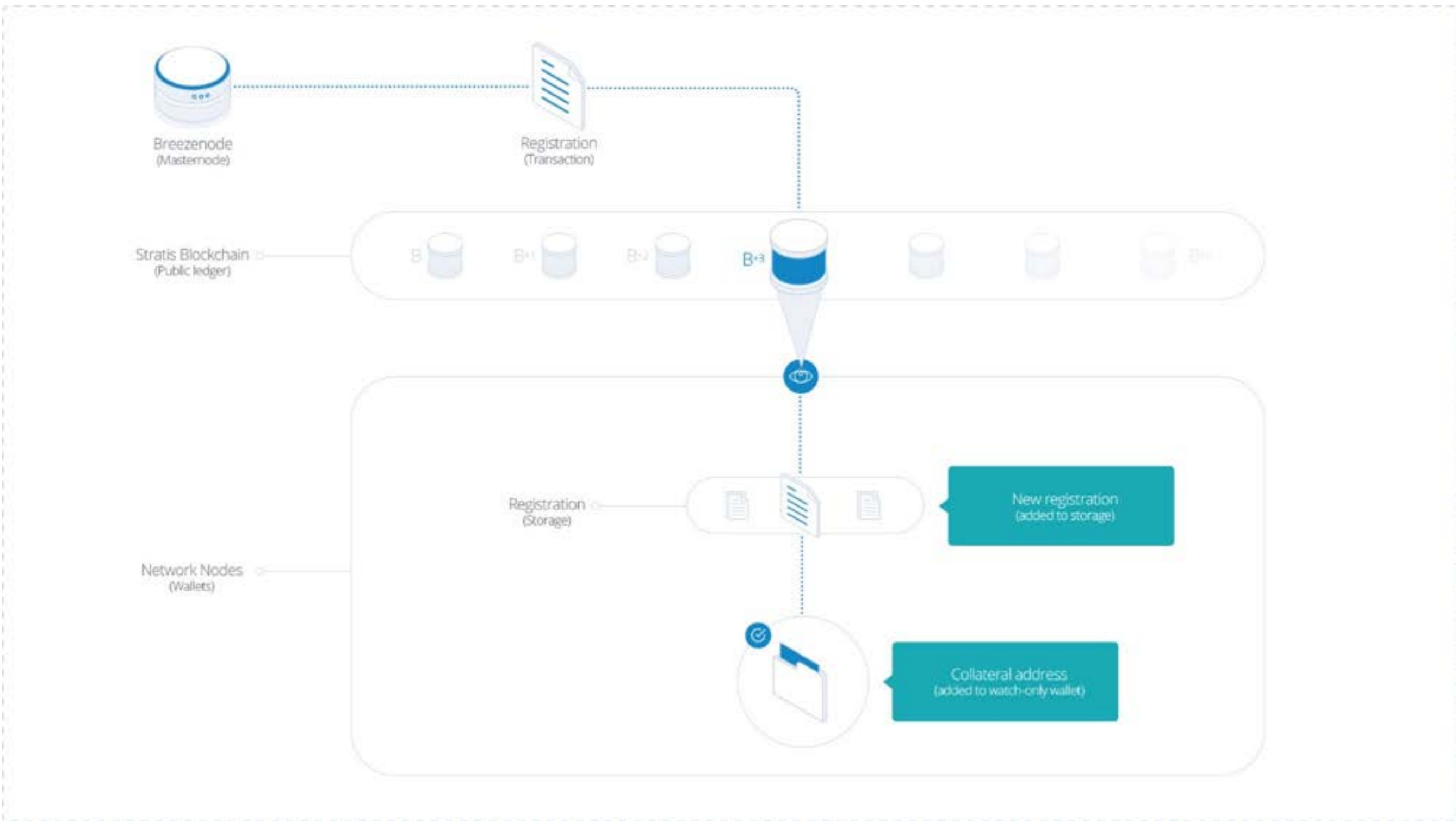
An immutable record of existence can be created for a protocol.

Stratis solutions can be applied to a wide array of problems modern day businesses face. From Fintech to Internet of Value and emerging technologies, our C# and .Net development, deployment and consulting capabilities can help streamline and accelerate your blockchain project development process.

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Arařtırmalarımız...

Under Development

Breeze - wallet

- Bitcoin/Stratis token wallet
- Leverage the TumbleBit protocol for privacy and scalability
- Decentralized BTC/STRAT exchange



```

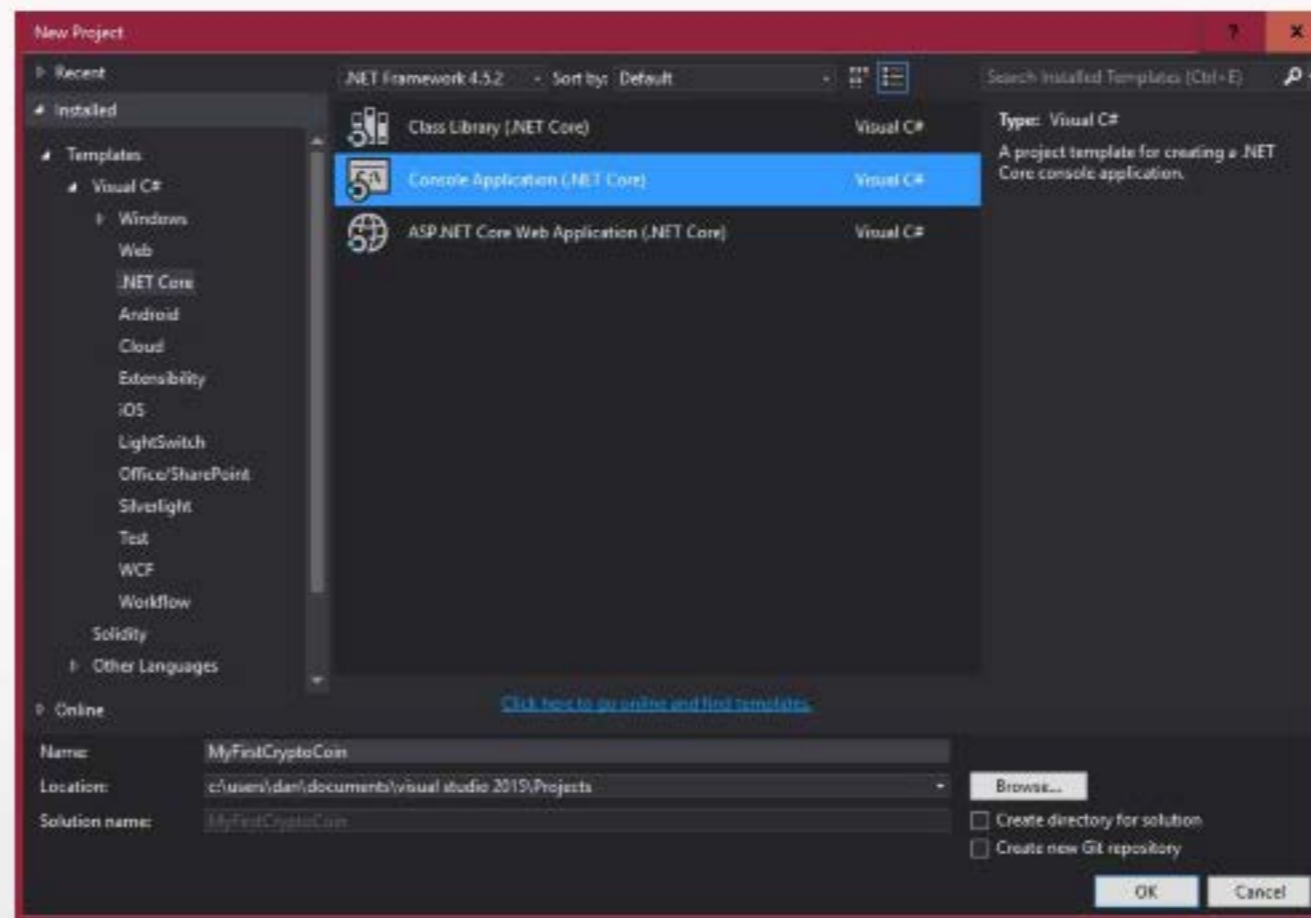
using System;
using NBitcoin;

namespace teststrat2
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine(VanityGenerate("SA"));
        }

        private static string VanityGenerate(string prefix)
        {
            Key privateKey;
            while (true)
            {
                privateKey = new Key();
                string address = privateKey.PubKey.GetAddress(Network);
                string privateKeyForDisplay = privateKey.GetWif(Network);
                // Write the WIF and corresponding address if the address starts with the prefix
                if (address.ToUpper().StartsWith(prefix.ToUpper()))
                {
                    return privateKeyForDisplay + " " + address;
                }
            }
        }
    }
}

```

Build your own private chain



Reference Stratis Packages

The screenshot displays the NuGet Package Manager interface within a Visual Studio environment. The search bar contains the text 'stratis'. The results list two packages:

- Stratis.Bitcoin** by Stratis Platform, 74 downloads, v1.0.0. Description: Stratis Bitcoin FullNode.
- NStratis** by Stratis Platform, 533 downloads, v3.0.2.12. Description: .NET Stratis Blockchain Framework.

The details for the **Stratis.Bitcoin** package are shown on the right:

- Version:** Latest stable 1.0.0. An **Install** button is visible.
- Options:** (Section header)
- Description:** Stratis Bitcoin FullNode.
- Version:** 1.0.0
- Author(s):** Stratis Platform
- Date published:** Monday, March 20, 2017 (3/20/2017)
- Project URL:** <https://github.com/stratisproject>
- Report Abuse:** <https://www.nuget.org/packages/Stratis.Bitcoin/1.0.0/ReportAbuse>
- Tags:** (Section header)
- Dependencies:**
 - .NETStandard.Version=v1.6
 - Microsoft.AspNetCore.Diagnostics (>= 1.1.0)
 - Microsoft.AspNetCore.Mvc.Formatters.Json (>= 1.1.1)
 - Microsoft.AspNetCore.Server.IISIntegration (>= 1.1.0)
 - Microsoft.AspNetCore.Mvc.ViewFeatures (>= 1.1.1)
 - NBitcoin (>= 3.0.2.3)
 - Microsoft.AspNetCore.Mvc.Core (>= 1.1.1)
 - Microsoft.Extensions.Logging.Abstractions (>= 1.1.0)
 - Microsoft.AspNetCore.Server.Kestrel (>= 1.1.0)
 - DBreeze (>= 1.33.0)

The Solution Explorer on the right shows the project structure for 'MyFirstCryptoCoin', including 'Properties', 'References', 'Program.cs', and 'project.json'.

Network Builder

A network represents the properties of a crypto currency.

```
var builder = new NetworkBuilder()
    .SetConsensus(new Consensus
    {
        LastPOWBlock = 12500,
        PowTargetTimespan = TimeSpan.FromSeconds(16*60), // 16 mins
        PowTargetSpacing = TimeSpan.FromSeconds(64),
        HashGenesisBlock = uint256.Parse("0x0000000091e46e5a204d42c89e12b4963b2ee6be230b443e9159020539d972af"),
        PowLimit = new Target(new uint256("00000000ffffffffffffffffffffffffffffffffffffffffffffffffffffffff")),
        ProofOfStakeLimit = new BigInteger(uint256.Parse("0000000000000000000000000000000000000000000000000000000000000000").ToBytes(false)),
        ProofOfStakeLimitV2 = new BigInteger(uint256.Parse("0000000000000000000000000000000000000000000000000000000000000000").ToBytes(false))
    })
    .SetMagic(0x5223570)
    .SetBase58Bytes(Base58Type.PUBKEY_ADDRESS, new byte[] {(63) })
    .SetBase58Bytes(Base58Type.SCRIPT_ADDRESS, new byte[] {(125) })
    .SetBase58Bytes(Base58Type.SECRET_KEY, new byte[] {(63 + 128) })
    .SetPort(16178).SetRPCPort(16174)
    .SetName("StratisNetwork")
    .SetGenesis(CreateGenesisBlock(1470467000, 1831645, 0x1e0fffff, 1, Money.Zero))
    .AddDNSSeeds(new[]
    {
        new DNSSeedData("seed.stratisplatform.com", "seed.stratisplatform.com"),
        new DNSSeedData("seed.cloudstratis.com", "seed.cloudstratis.com")
    });

return builder.BuildAndRegister();
```


Node Builder

Using the builder pattern to add features to a node

```
public class Program
{
    public static void Main(string[] args)
    {
        var network = NetworkBuilder.BuildStratis();

        var node = new FullNodeBuilder()
            .SetNetwork(network)
            .UseNodeSettings(NodeSettings.FromArguments(args))
            .UseConsensus()
            .UseBlockStore()
            .UseMempool()
            .AddMining(true)
            .AddRPC()
            .Build();

        node.Start();

        Console.ReadLine();
        node.Dispose();
    }
}
```