

BLOCKCHAIN IN HIGHER EDUCATION

*Personalizing*

BLOCKCHAIN

TECHNOLOGY



**KATHALEEN REID- MARTINEZ, PH.D.**  
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**OCTOBER 22, 2019**  
**OKLAHOMA CITY**

# INTERNATIONAL ADVISING AND SPEAKING



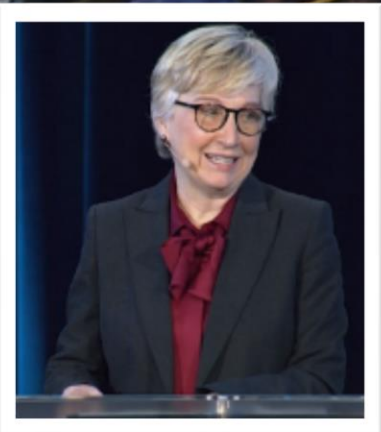
**Partners for Peace  
Consortium**



**United Nations**

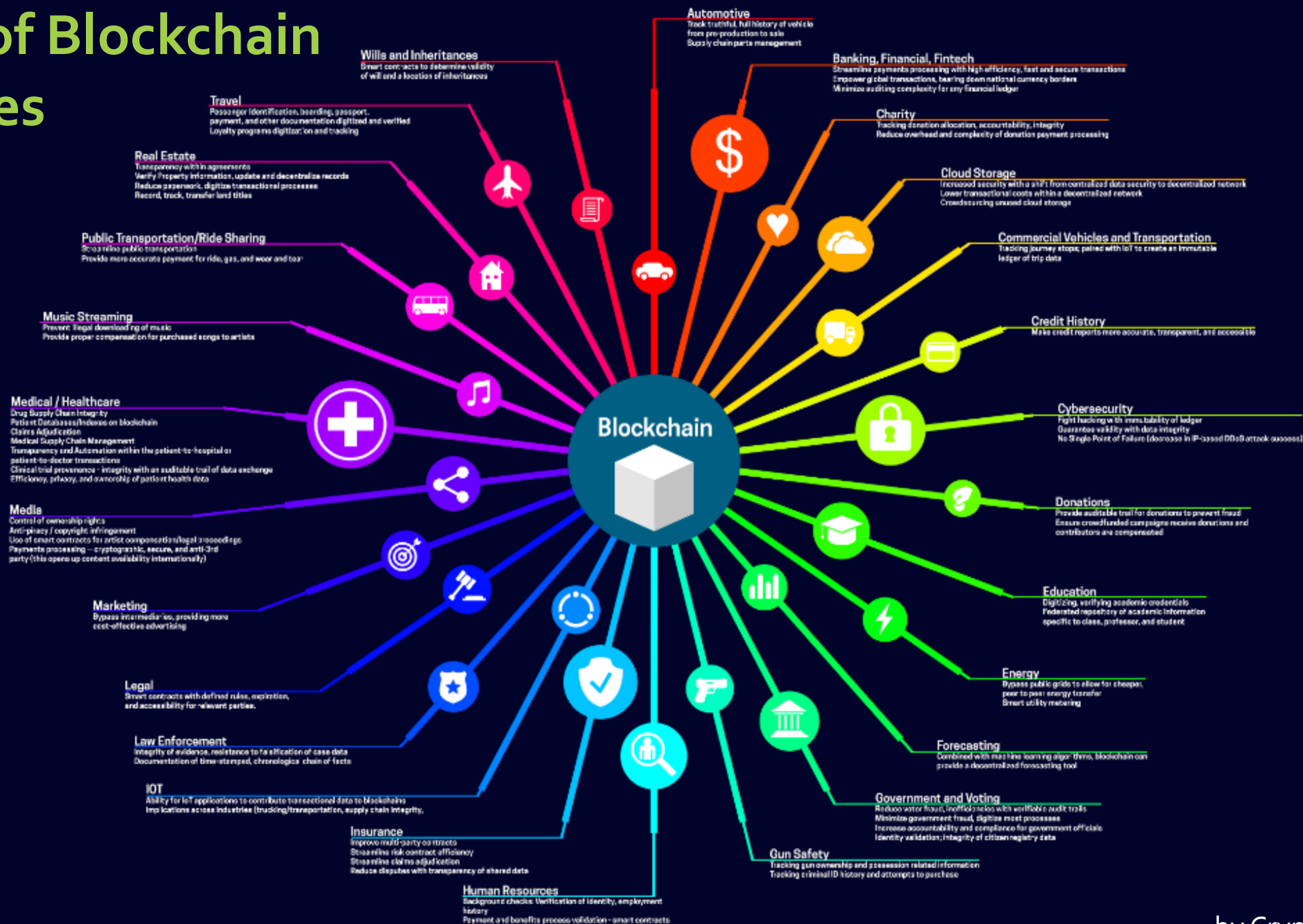


**North Atlantic  
Treaty  
Organization  
(NATO)**



- Education & Online Learning
- Advanced Technology
- Blockchain
- Peacekeeping
- Human Rights
- Communication
- Security
- Global Leadership

# An A-Z of Blockchain Use Cases



# Blockchain



## Cybersecurity

Fight hacking with immutability of ledger  
Guarantee validity with data integrity  
No Single Point of Failure (decrease in IP-based DDoS attack success)



## Donations

Provide auditable trail for donations to prevent fraud  
Ensure crowdfunded campaigns receive donations and contributors are compensated



## Education

Digitizing, verifying academic credentials  
Federated repository of academic information specific to class, professor, and student



## Energy

Bypass public grids to allow for cheaper, peer to peer energy transfer  
Smart utility metering



## Forecasting

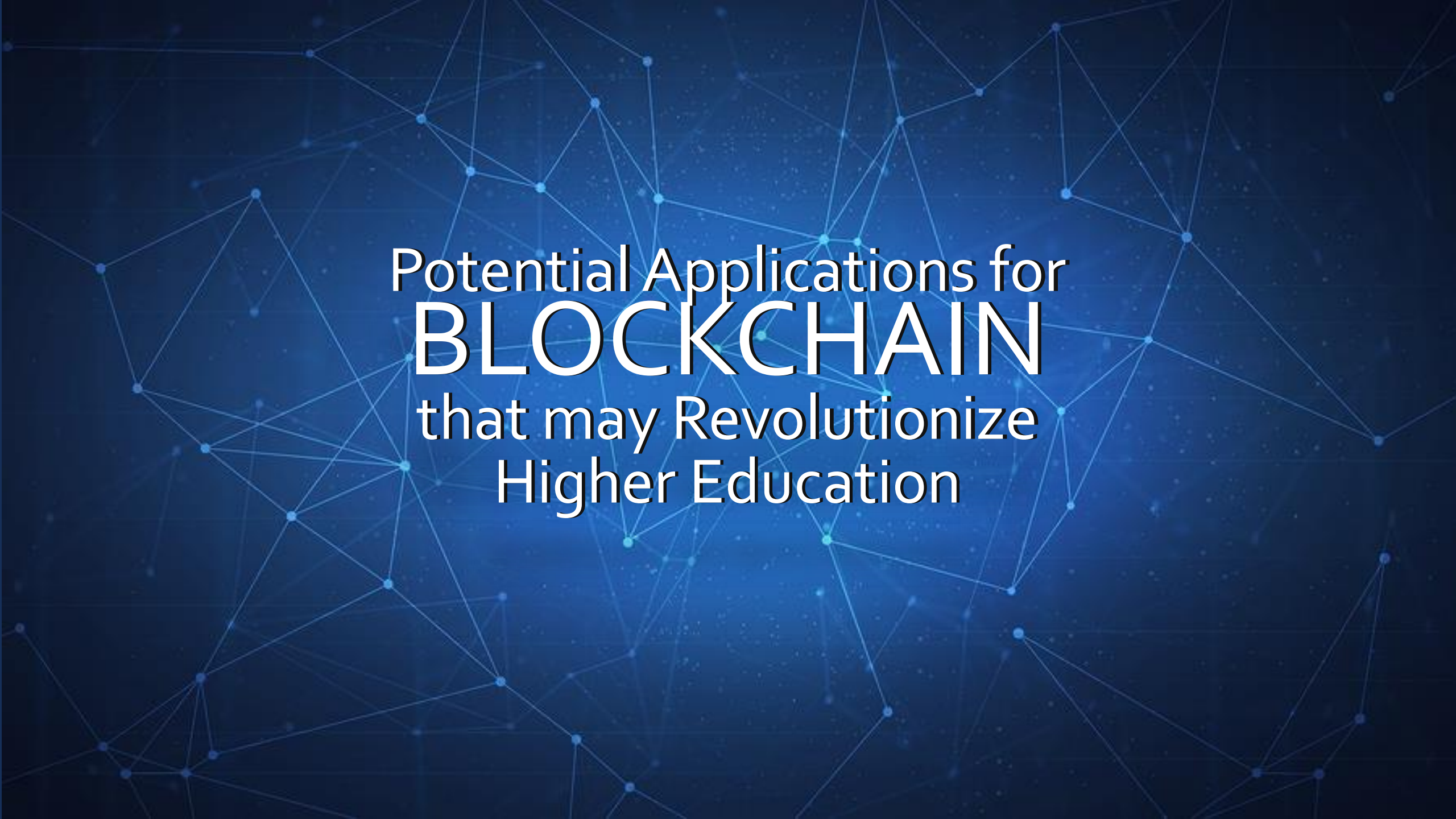
Combined with machine learning algorithms, blockchain can provide a decentralized forecasting tool



## Government and Voting

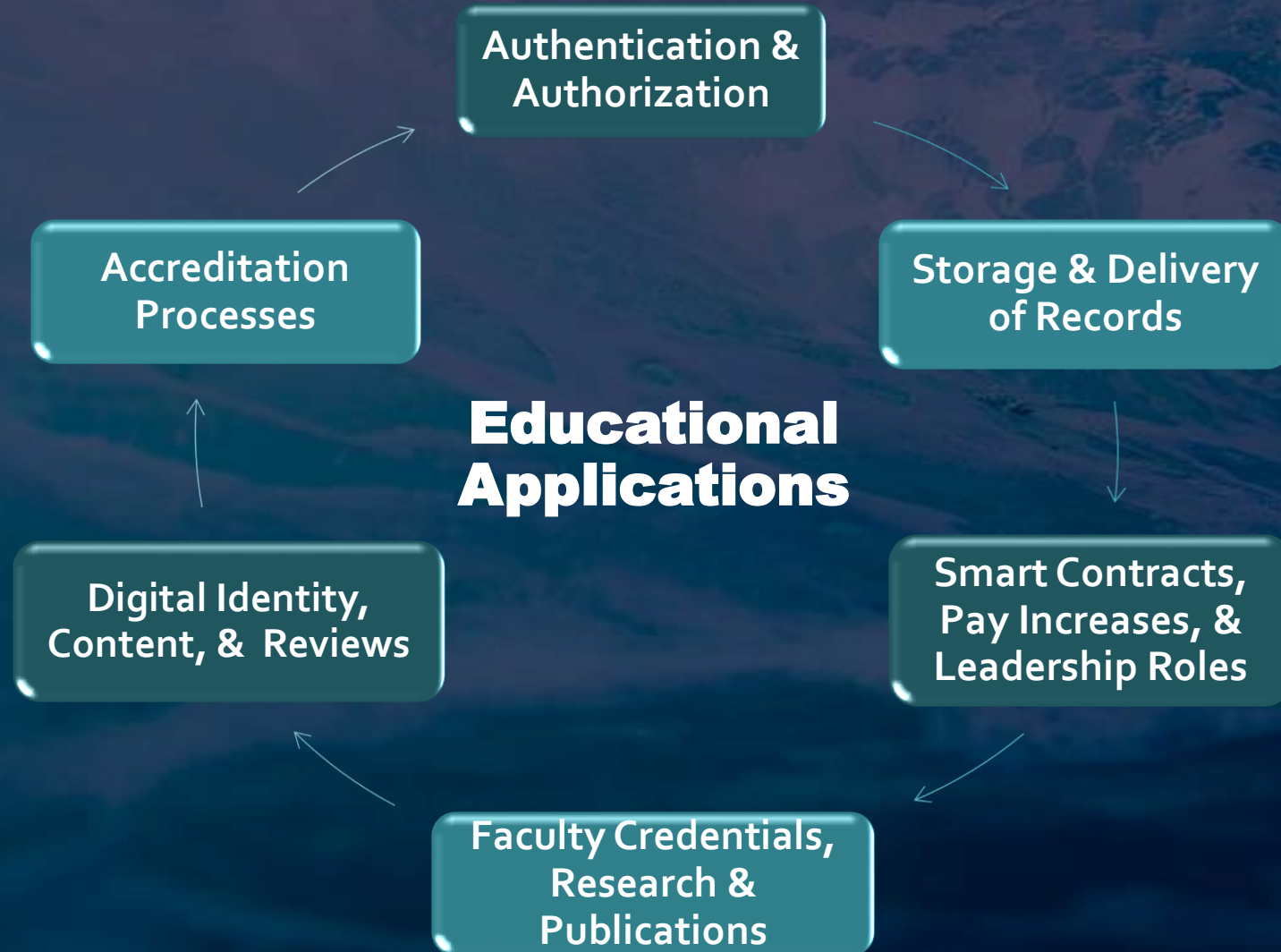
Reduce voter fraud, inefficiencies with verifiable audit trails  
Minimize government fraud, digitize most processes  
Increase accountability and compliance for government officials  
Identity validation; integrity of citizen registry data



The background is a dark blue gradient with a complex network of thin, light blue lines connecting small, glowing blue dots, resembling a digital or blockchain network.

# Potential Applications for **BLOCKCHAIN** that may Revolutionize Higher Education

# SPECIFIC APPLICATIONS FOR BLOCKCHAIN IN EDUCATION



**FACULTY  
PROFESSIONAL  
EXPERIENCE,  
INCLUDING  
AUTHENTICATION  
&  
AUTHORIZATION**



# Accreditation is Another Academic Use for Blockchain



This technology will streamline and easing the Accreditation Processes through block-by-block validation, as you go.





# Student Records

**Blockchain is a Natural  
Technology for Authenticating  
and Storing Academic Records  
and Experiences**

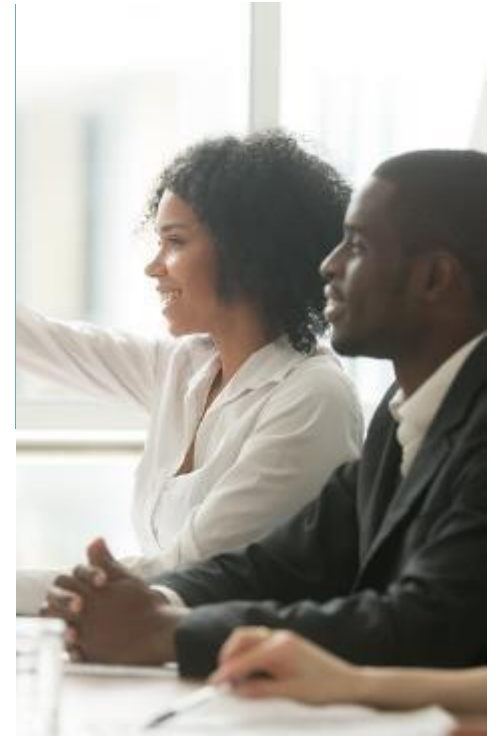
# Student Records

- Major and Minor
- Grade and Transcript Authentication
- Professional Organizations
- Internships
- Awards



# STUDENT LEARNING EXPERIENCES

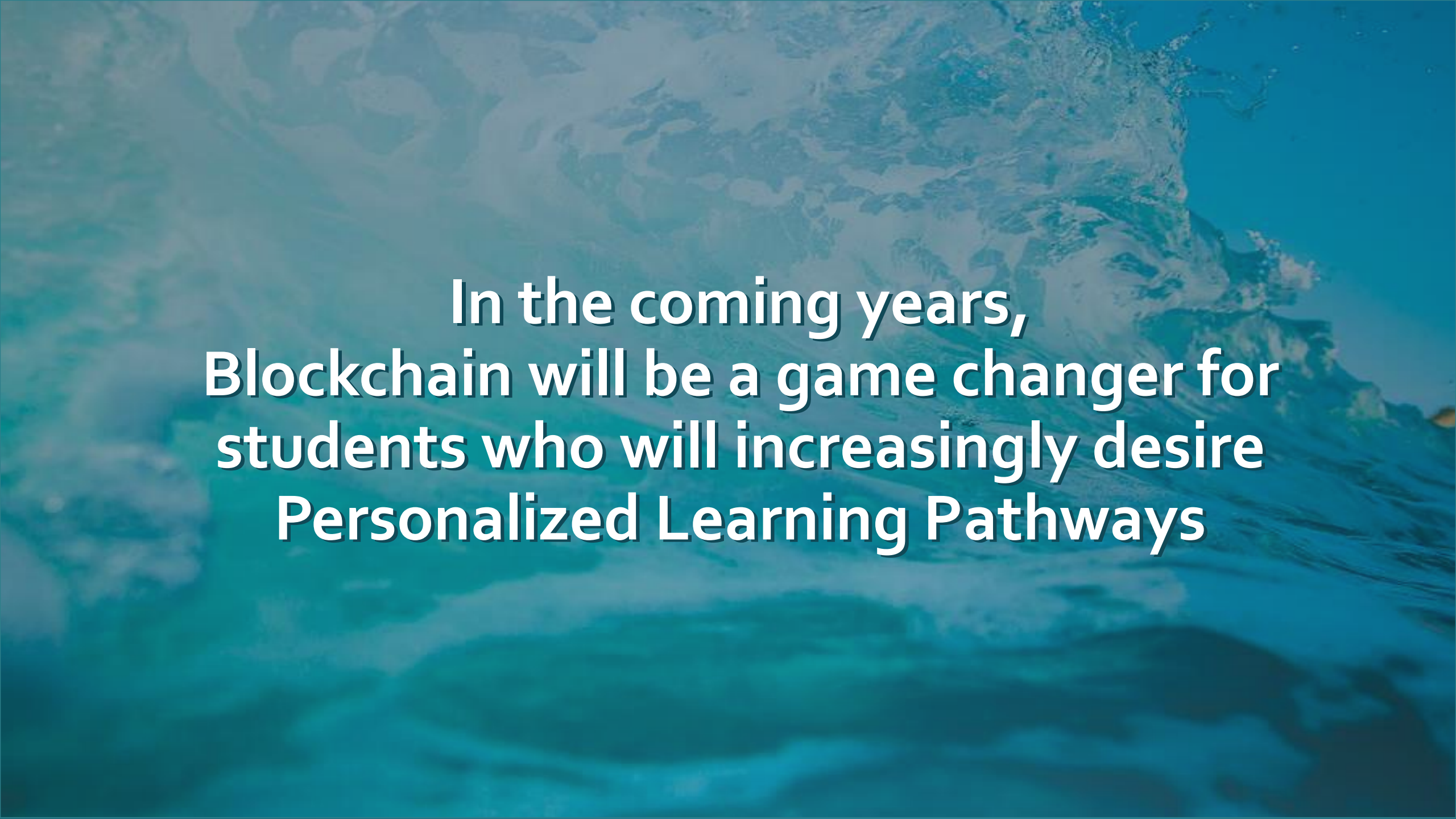
- Workshops
- Professional Presentations
- Conference Attendance
- Research Presentation
- Co-Publishing with Faculty
- Training in Media Equipment & Technology
- Creative Content, like Films, Documentaries, & Music Compositions



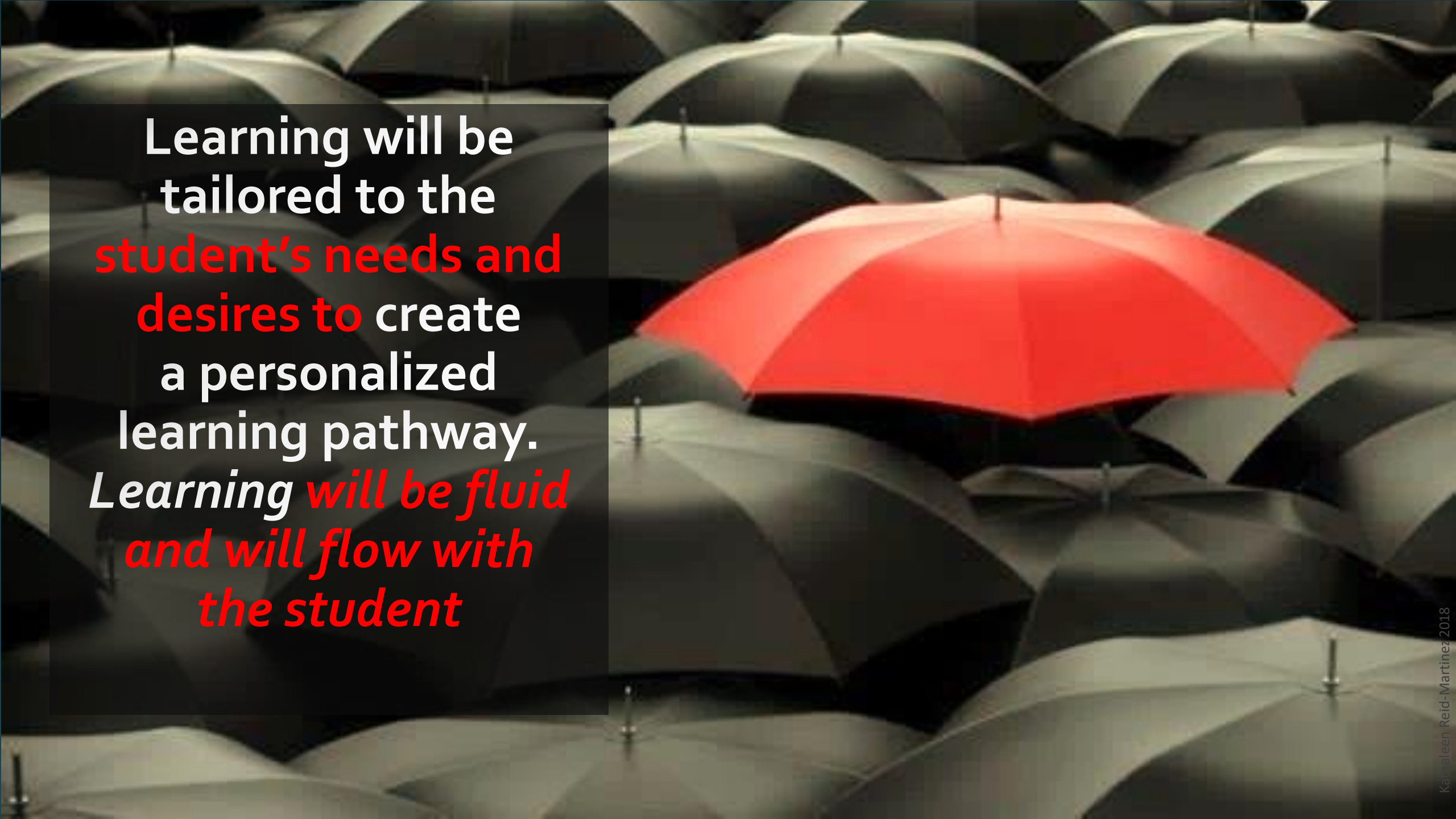
# STUDENT LEARNING EXPERIENCES

- Study Abroad
- Volunteering
- Student Government or other Leadership
- Mentoring and Tutoring
- Student Teaching
- Learning Assessment Outcomes






**In the coming years,  
Blockchain will be a game changer for  
students who will increasingly desire  
Personalized Learning Pathways**



Learning will be  
tailored to the  
**student's needs and  
desires to create**  
a personalized  
learning pathway.  
*Learning will be fluid  
and will flow with  
the student*

A large number of black umbrellas are arranged in a dense field, creating a repetitive pattern. In the center-left of the image, a single red umbrella stands out prominently. The text is overlaid on the right side of the image, with the words 'INSTITUTION' and 'LEARNER' in red and the rest in white.

This will shift the  
locus of control  
from the  
**INSTITUTION** to  
**the LEARNER**



Creating a Student's **Personalized  
Learning Pathway** Block-by-Block:  
**AUTHENTICATED  
VALIDATED  
CREDENTIALLED**

# Meet Joe and his **Personal Learning Pathway**

- In control of his education—plan his own path
- He and his wife are globally minded
- They travel the world doing internships and volunteering
- His mentor at “Pathway University” guides his learning process, overseeing credentialed-based education



# Creating a Degree in Environmental Digital Media

Pathway University uses  
Blockchain to track Joe's  
credits in:

- Marine Photography  
& Digital Filmmaking
- Marine Biology
- Spanish—Foreign  
Language
- Internship



## Joe Uses Blockchain for his Digital Media to:

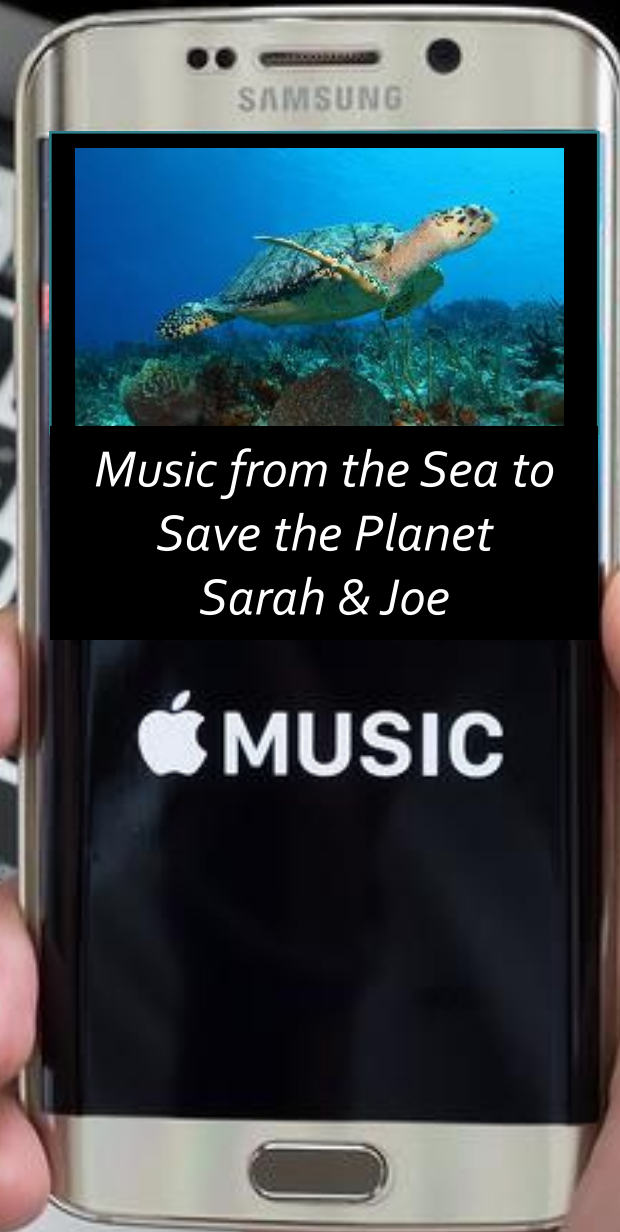
- **Prove ownership** of original art and versions of his photos
- Sell images using Smart Contracts & to manage digital rights
- Authenticate reviews of his work
- Authenticate endorsements from the organizations that hire him`





Sarah blockchains all of her songs and lyrics to:

- Prove ownership
- Sell & Maintain rights
- Authenticate reviews



# A Few Ways Blockchain Touches Joe's Life

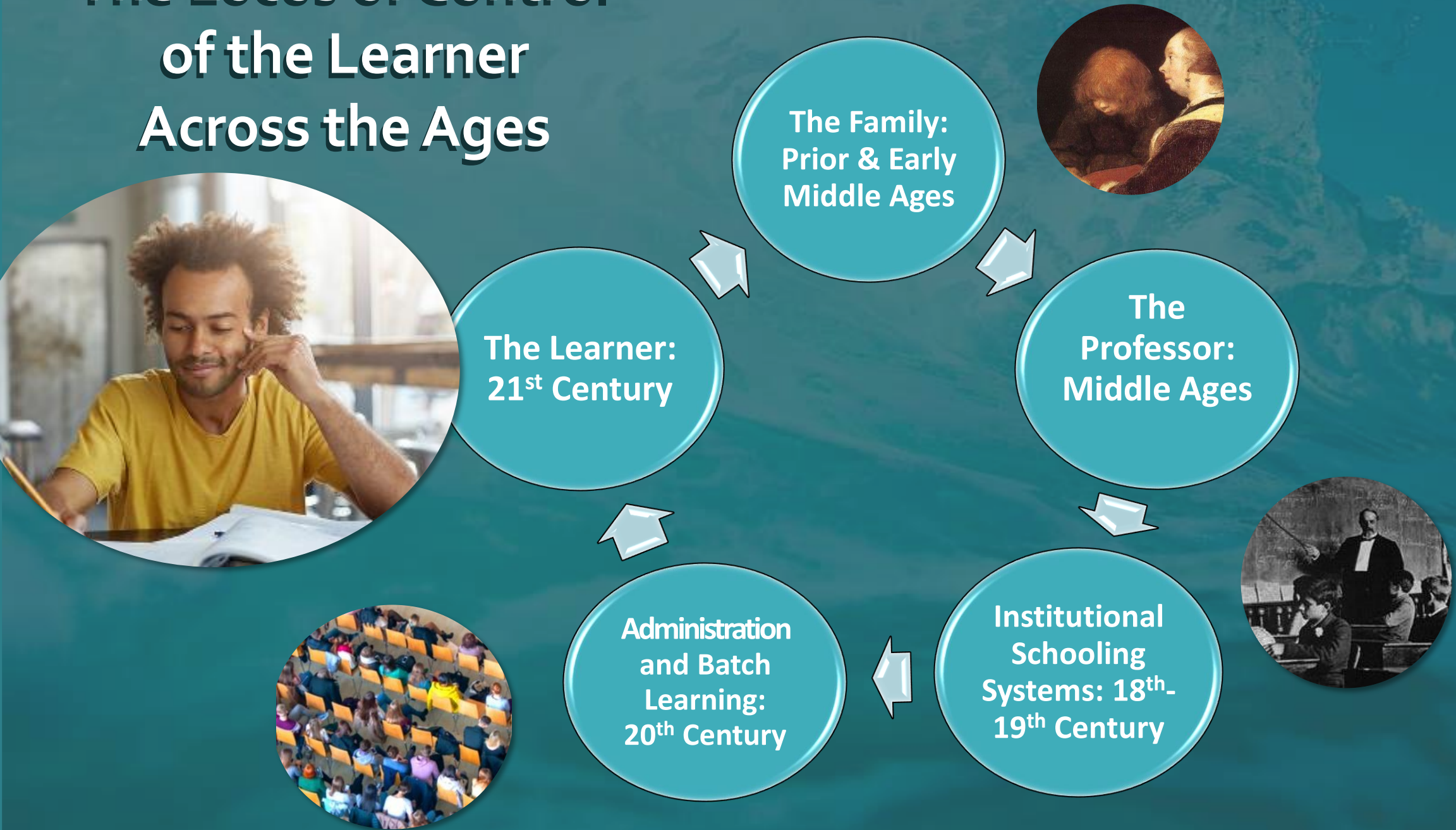


Blockchain will be at  
the Center of **Disruptions**  
to Higher Education

# DISRUPTION #1: CHANGING LOCUS OF CONTROL

Who's in Control:  
The Institution | Or the Learner?

# The Locus of Control of the Learner Across the Ages



# **DISRUPTION #2**

## **CHANGING UNIVERSITY EXPERIENCE**

1. How will the lines cross between curricular and extra-curricular activities—on campus and off?
2. What kind of campus and social experience will students be expecting?
3. How will we change our campuses to accommodate these new learners?
  - university campus?
  - the campus community?
  - the social milieu?



# **DISRUPTION #3**

## **CHANGING LOCUS OF QUALITY CONTROL AND ACCREDITATION**

1. What will be the contemporary role of the university?
  - Will we teach HOW to learn or continue to teach WHAT to learn?
2. What constitutes learning and quality control?
3. Who determines the quality control of your programs, faculty, & institution?
4. Who controls the validation process?
5. Who should accredit whom? And at what level?
  - The institution? The program? The faculty?  
Companies and organizations?

A man with dark hair and glasses, wearing a blue hoodie and jeans, is sitting on a wooden chair. He is looking down at a laptop on his lap. The background is a light-colored wall, and the floor is dark. Numerous US dollar bills are floating in the air around him, some falling from above and others rising from below, creating a sense of financial flux or disruption.

## DISRUPTION #4

# FINANCIAL MODELS

1. What do we do with my financial model when we replace batch learning?
2. What models do we create around personalized and customized learning?
  - *When do we unbundle the faculty role?*
  - *When do we outsource?*
  - *When do we partner?*

## DISRUPTION #5 Systems

1. Are your data systems being transformed to be AI equipped and Blockchain authenticated?
2. Who will oversee and perform the records transition to Blockchain to assure privacy and security with each step to assure the overall security of the record?
3. Can your systems adapt quickly enough to meet the needs of today's student as consumer? How will you by-pass the systems that cannot adapt fast enough?



# DISRUPTION #6

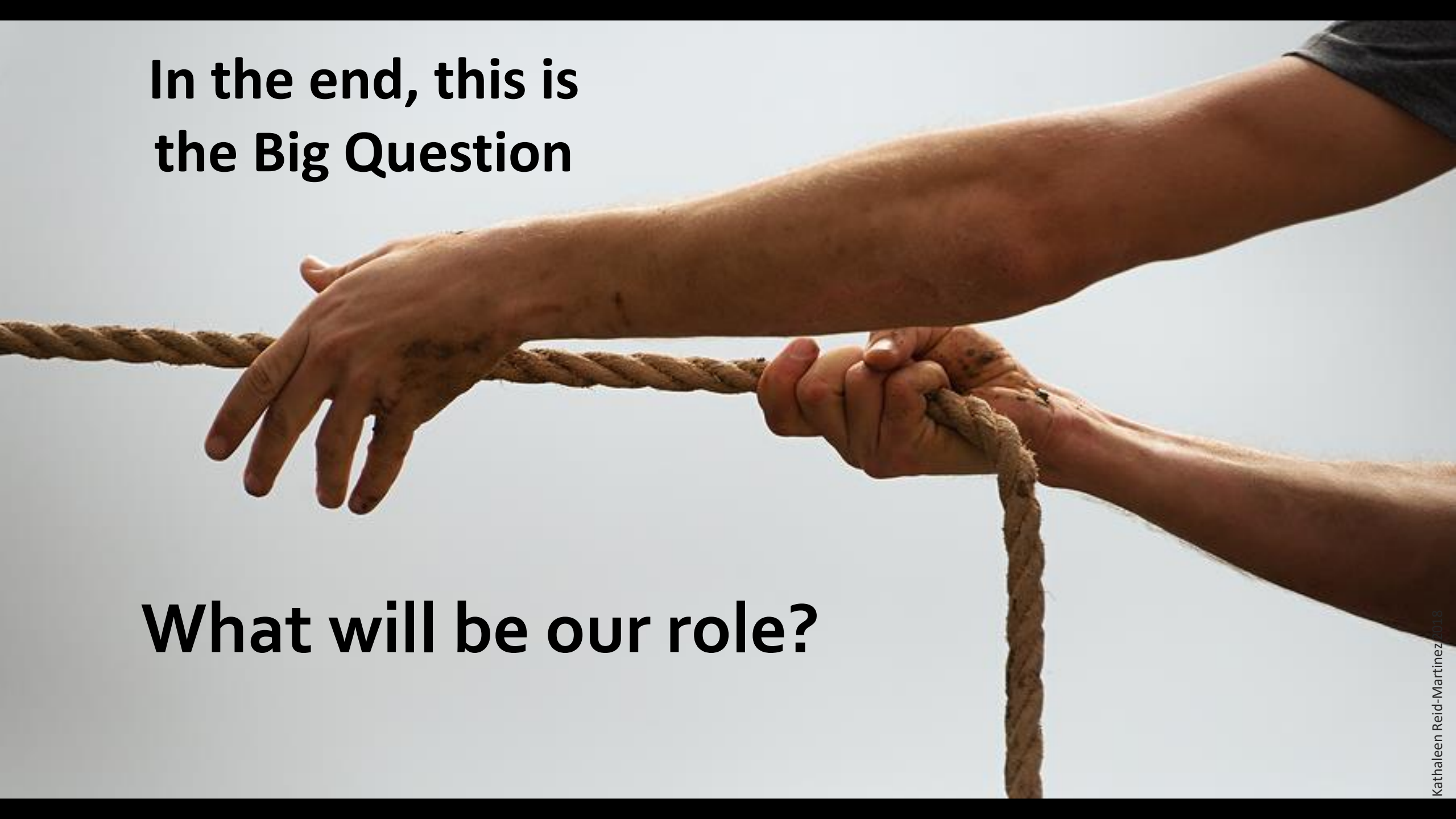
## HUMAN RESOURCES

1. How will we handle the disruption to your human resources?
2. How will we continue to “unbundle” the role of the faculty?
3. What kind of persons and skillsets should we be hiring?
  - *Do you need professors?*
  - *What are their roles?*
  - *What credentials do they need?*



**In the end, this is  
the Big Question**

**What will be our role?**



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# Questions? More Information?

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