COURSE TITLE: INNOVATION IN FINTECH

LECTURE: BLOCKCHAIN AS A BUSINESS SOLUTION

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DIGITAL CONTENT— ESSENTIAL RAW MATERIAL

- Why have states not mandated that all text books and educational materials purchased must be in both analog (paper) or digital form?
- Furthermore, since most of the cost of paper materials is NOT in the content development

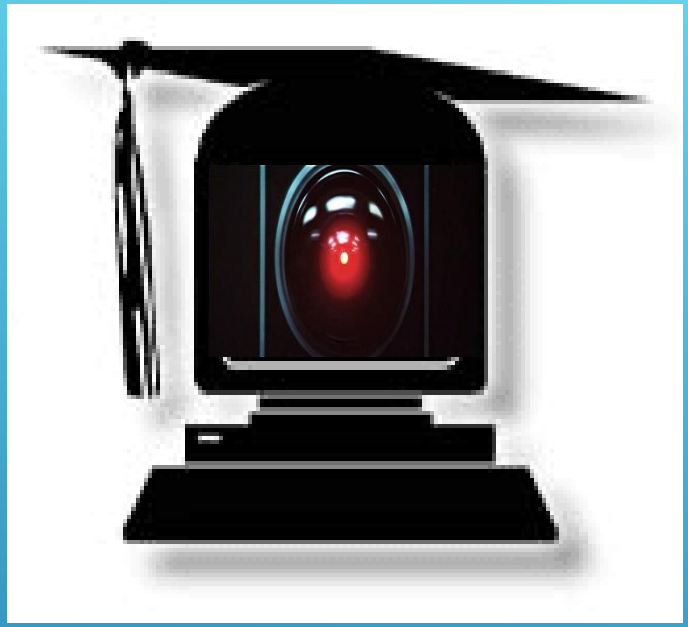
  but in the manufacture and distribution,

  states should pay less for the digital

  copy and subscribe to updates like other software maintenance.
- If you feel lonely, put a trigger to make sure 10 or some number of states pass it before it goes into effect.

DO WHAT STUDENTS DO

- Games and simulation
- Mix, mash and create
- IM
- Txt
- Cell
- MP3/Podcasts
- Stream-of-consciousness surfing
- Blogging
- Email
- Collaborate
- Music
- TV
- DVD's
- Viral advertising

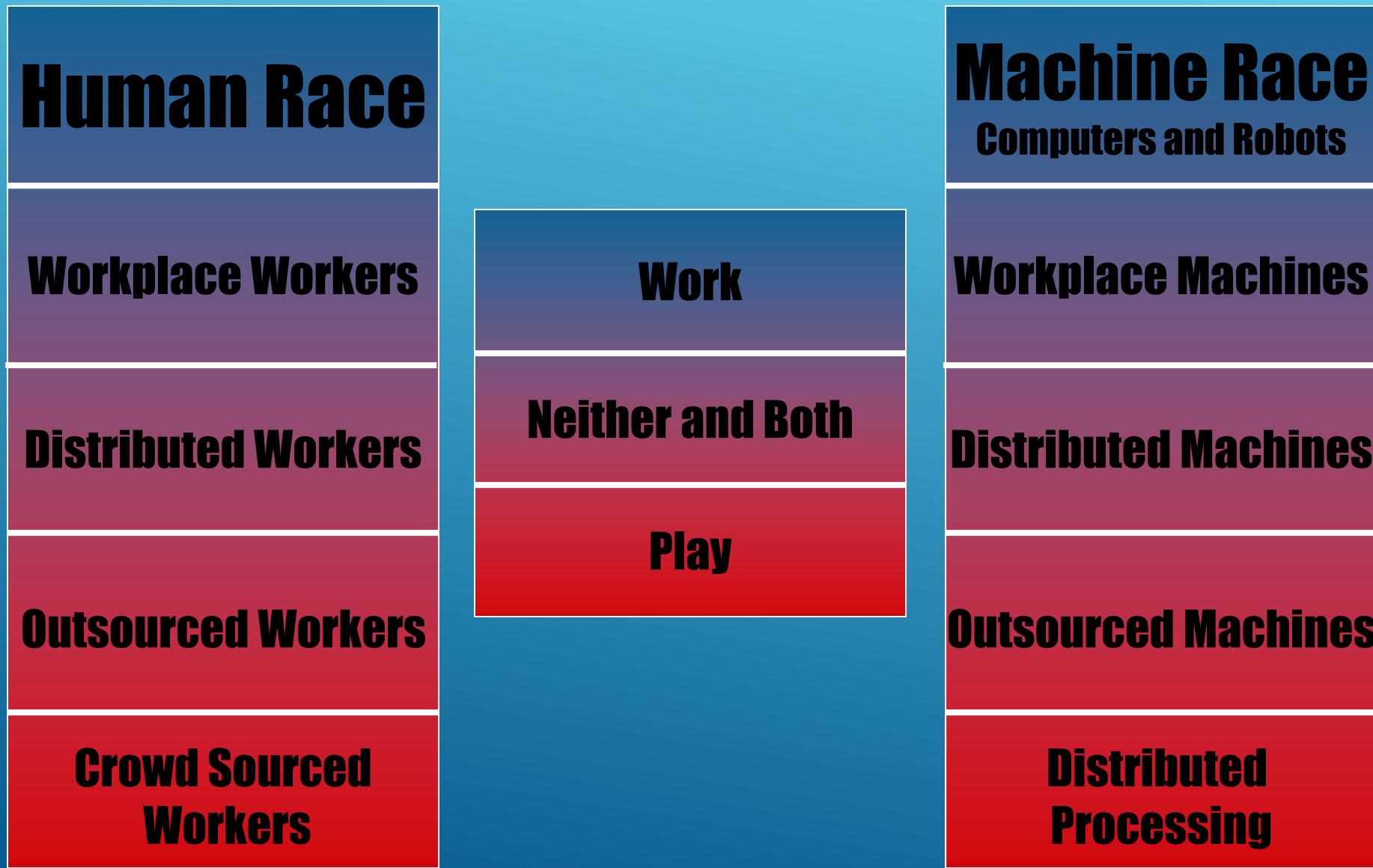


WHERE CAN WE GO FROM HERE?

DATA-BASED DECISIONS

- Being able to see and use all allowable data in multiple formats:
  - Textual
  - Tabular
  - Spatial
  - Simulation
- The ability to know actual outcomes of programs from enterprise data and other private data sources.

WHAT AND WHERE IS WORK AND WHO OR WHAT DOES IT?



UNBUNDLING THE TEACHING PROFESSION

- One job category
- Job description?
- Do it all and do it well.
- What does that mean?
- We need to face up to our teaching disabilities.

JOB DESCRIPTION FOR A TEACHER

- Teaching
- Assessment expert
- Diagnostic expert
- Curriculum designer
- Advisor
- Mentor
- Researcher/Writer
- Public servant
- Social worker
- Community and Parent Liaison
- Bureaucrat
- Policymaker
- Medical manager
- Content expert
- Technology integrator
- Disciplinarian
- Disability manager
- Secretary and data entry clerk
- And did I mention you have a life?

CONVERGED SCIENCE

- Neuroscience
  - Psychometrics
- Biology
- Psychology
  - Communication and Persuasion
- Chemistry
- Physics
- How these will be applied to the teaching and learning process

CONSIDER THE MEDICAL MODEL AND DISTRIBUTED WORK

- How the health care work force is organized:
  - We pay doctors a lot but there is still a huge supporting cast of specialist and professionals.
  - They have insurance and customers shilling for them and occasionally annoying them.
- Consider how the converging sciences of information technology, neurology, assessment and so on can be used to diagnose successful and unsuccessful learning strategies and activities and vary how we approach education.

CONVERGED LEARNING MANAGEMENT

- Student portfolios to document learning
- New evaluation methods
- The link between material use, brain research and real-time monitoring
- Diagnostics with physical capabilities
- Formative assessments can be:
  - Technology like Web Ex, Groupsystems.com, and audience response systems
  - Or cheap and simple
    - Red dot, green dot
    - A-E letters

THE OLD NEW KEY QUESTIONS

- Who teaches it?
- What is taught?
- When is it taught?
- Where is it taught?
- Why is it taught?
- How is it taught?
- How do we measure teaching?

- Who learns it?
- What is learned?
- When is it learned?
- Where is it learned?
- Why is it learned?
- How is it learned?
- How do we measure learning?

PUT SIMPLY…

- What aspects of teaching and learning do we want to:
  - Augment?
  - Replace?
  - Automate?
  - Decentralize?
  - Reform?

EXAMPLE: NOTE TAKING

- Is this the reason we go to school?
- It is the most practiced act.
- Granted: it has the benefit for some learners of reinforcing and as a memory aid.
- It is not part of the curriculum, evaluated, credited, improved.
- Alternatives
  - Notes in advance
  - Lecture capture, preview, or synopses
  - Real-time voice to text
  - Moving on to the next level of discourse rather than recording the sage on the stage

- Policy implications
- Practice recommendations
- Product recommendations

- Remediation
  - You want to spend less class time on bringing everyone up to the same level and on addressing general study skill issues, subject matter gaps and literacy problems.

- Technical Training
  - You want learners to learn to use tools and systems that are not in themselves part of the curriculum by using self-paced, virtual and hands-on tutorials.
- Customized Learning
  - You want use technology to match the teaching and learning methods and materials to be tailored to the individual knowledge, skills, learning styles and objectives of

    each learner.

- Diagnostic Model of Education
  - You want to use brain research, assessment, real time feedback and (if it becomes commonly available) physical indication of learning activity in the brain to know if a learner is in fact learning and responds accordingly.
- Extended Learning
  - You want the exceptional and the motivated learners to go beyond what is required in the class or program and beyond what you have time to teach them.

- Self-Directed Learners
  - You want learners who can and will learn on their own to be able to do so and receive credit for what they learn. You want to be able to spend more time being a mentor, motivator, creator, guide, evaluator and/or expert learner.

- Collaborative Learning
  - You want your learners to work in collaborative teams and networks that are not bound by the walls and grounds of your location.
- More Learning
  - You want your learners to learn more than previously possible through print technology and gain greater mastery over the subject matter.

- More Cost-Effective Learning
  - You want learning the amount of learning per dollar spent to be greater.

- Differentiating Roles and Specializing
  - You want to allow each person to focus more on the more narrowly defined role, specialize, and improve the quality of their work on their areas of expertise (e.g., assessment, curriculum development, discussion, administrative processes, lecture, mentoring, counseling, etc.) and use technology to help free up time and reorganize the work to make this possible.

- Virtual Reality
  - You want to be able to simulate real environments that are too dangerous, expensive and/or remote to provide at your school.

- Courseware Development
  - You want to do what was once only the province of textbook companies, moviemakers and computer specialists: make multimedia courseware.

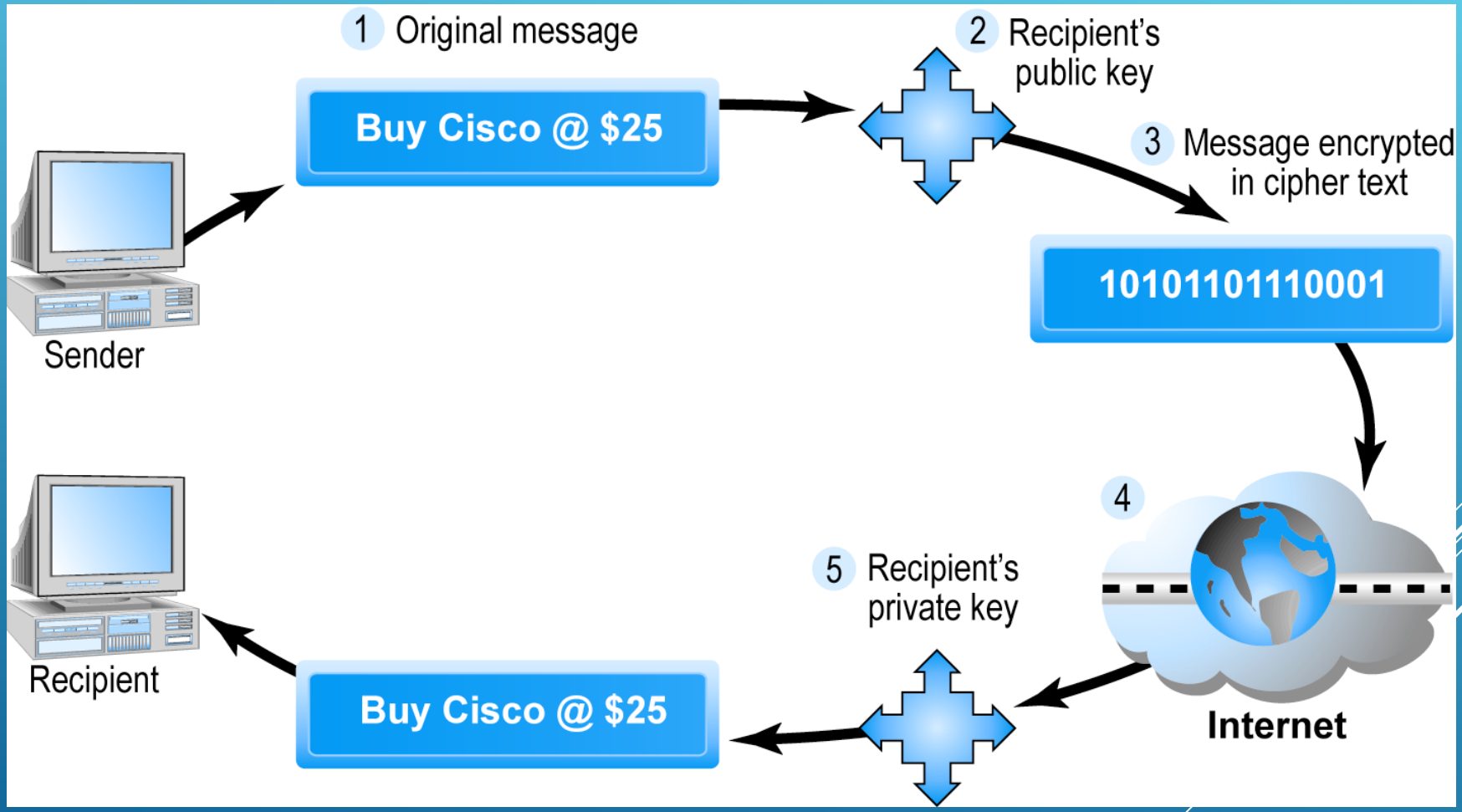
- Reach New Markets
  - You want to export your unique and high quality programs into areas beyond the magic 30-minute, 30-mile barrier.

- Expand Offerings
  - You want to be able to increase your offerings beyond what is possible and/or affordable with conventional educational delivery systems. You want to do this to attract and keep more students and increase the value of your programs.

- Survival
  - You want to make sure you are not bypassed by other delivery systems

    and that your school is equal to or better than the competition in the use and availability of education materials and information technology.

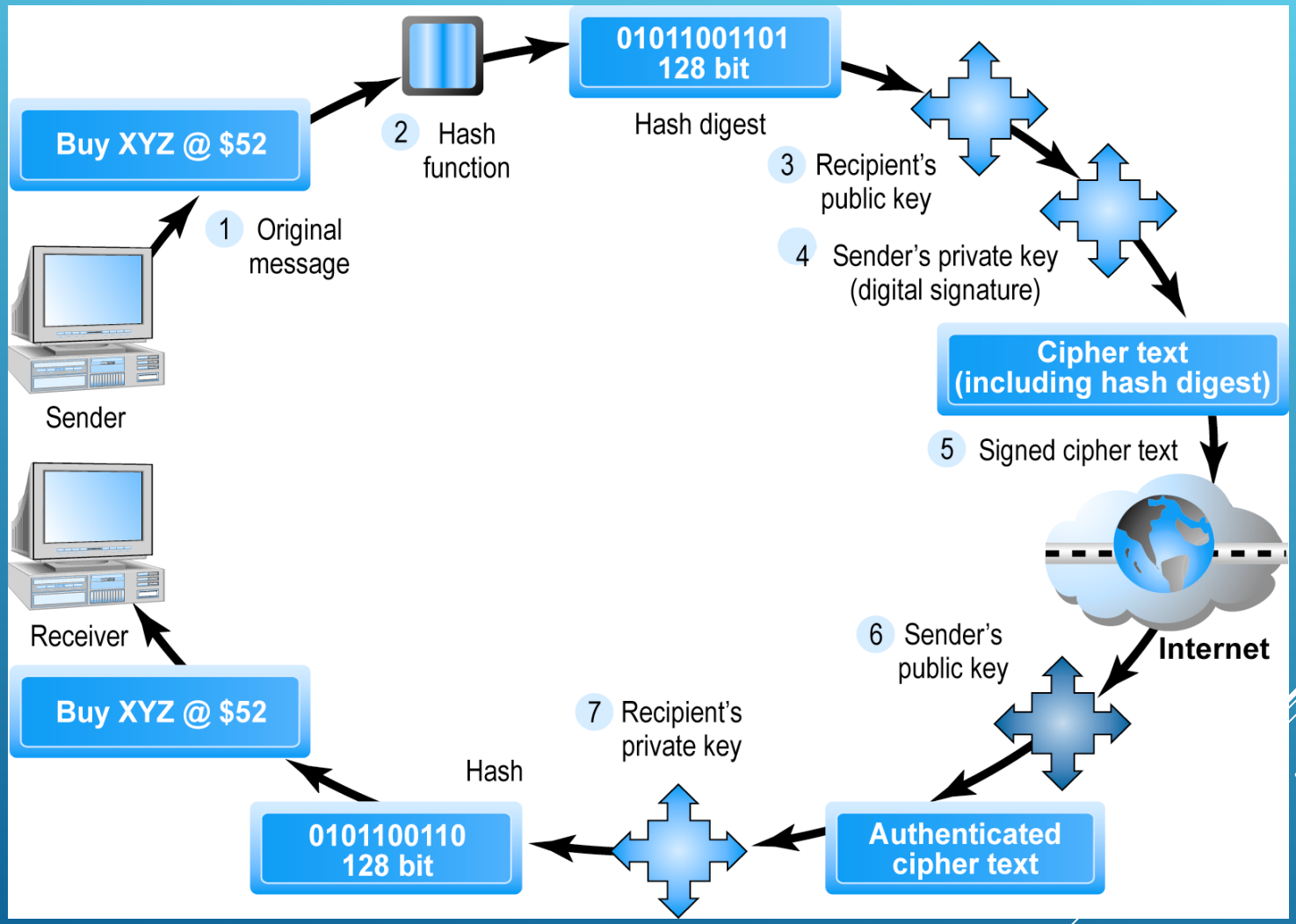
PUBLIC KEY CRYPTOGRAPHY—A SIMPLE CASE



PUBLIC KEY ENCRYPTION USING DIGITAL SIGNATURES AND HASH DIGESTS

- Hash function:
  - Mathematical algorithm that produces fixed-length number called message or hash digest
- Hash digest of message sent to recipient along with message to verify integrity
- Hash digest and message encrypted with recipient's public key
- Entire cipher text then encrypted with recipient's private key—creating digital signature—for authenticity, nonrepudiation

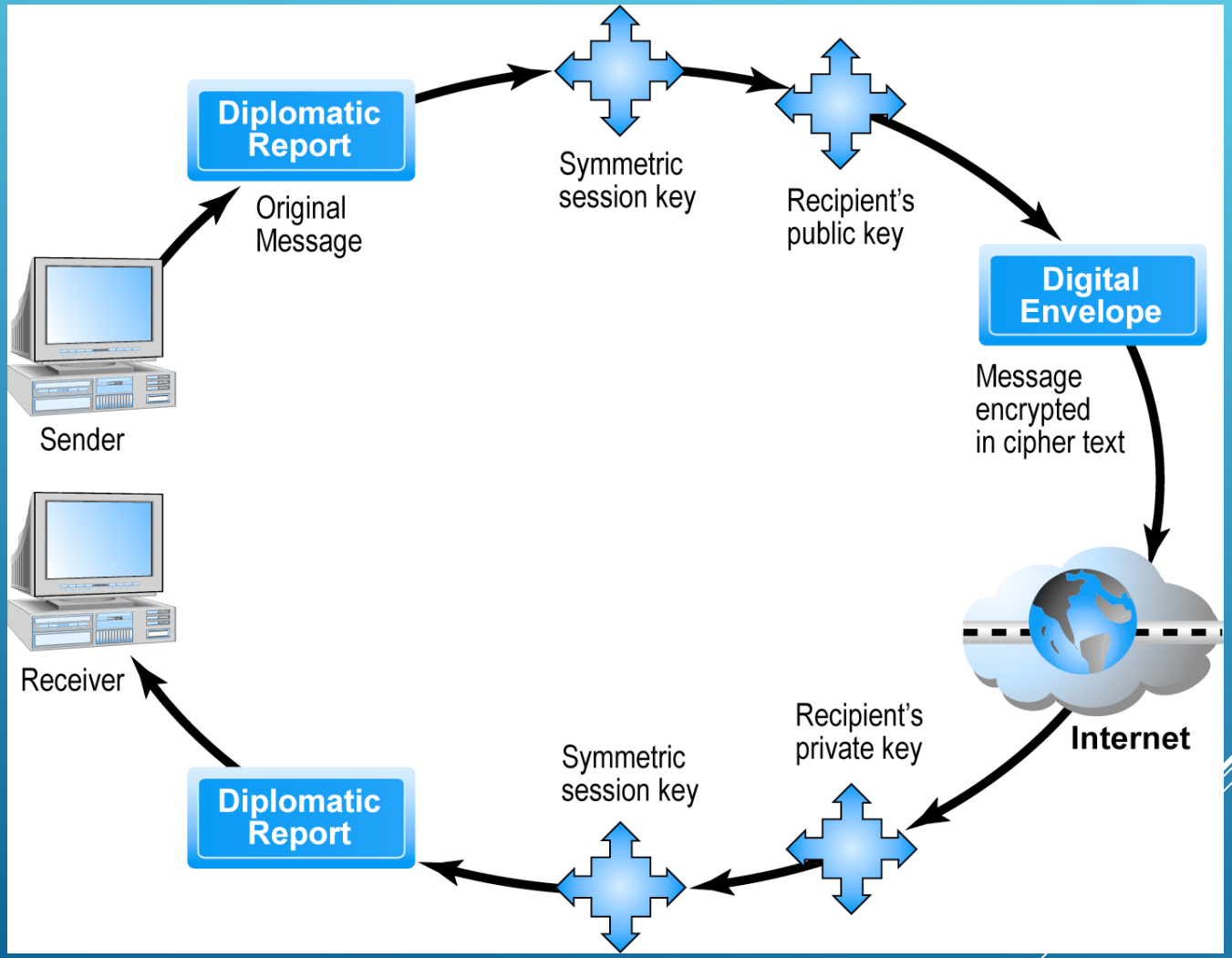
PUBLIC KEY CRYPTOGRAPHY WITH DIGITAL SIGNATURES



DIGITAL ENVELOPES

- Addresses weaknesses of:
  - Public key encryption
    - Computationally slow, decreased transmission speed, increased processing time
  - Symmetric key encryption
    - Insecure transmission lines
- Uses symmetric key encryption to encrypt document
- Uses public key encryption to encrypt and send symmetric key

CREATING A DIGITAL ENVELOPE



DIGITAL CERTIFICATES AND PUBLIC KEY INFRASTRUCTURE (PKI)

- Digital certificate includes:
  - Name of subject/company
  - Subject's public key
  - Digital certificate serial number
  - Expiration date, issuance date
  - Digital signature of certification authority (trusted third party institution) that issues certificate
- Public Key Infrastructure (PKI):
  - CAs and digital certificate procedures that are accepted by all parties

Reference

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