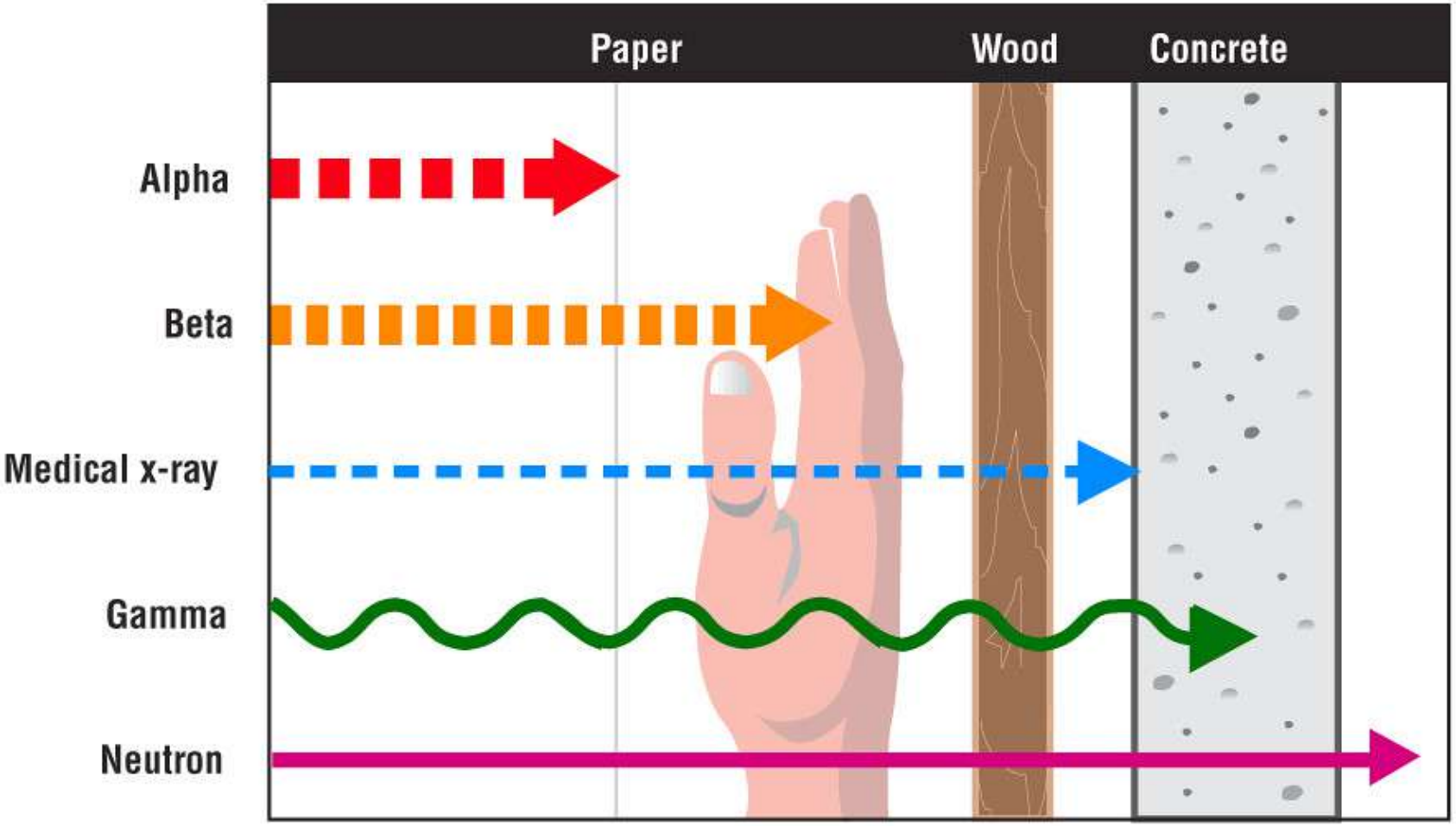
What does this image show you? What questions do you have?

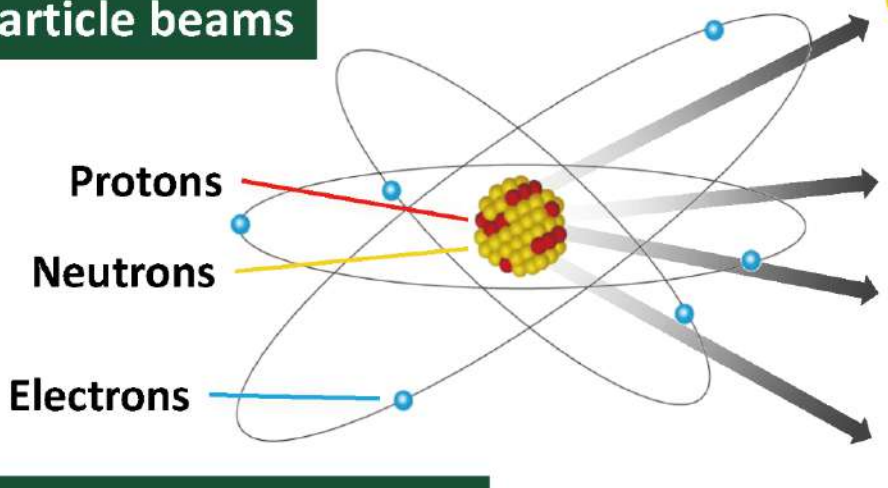


Radiation

Types of Ionizing Radiation

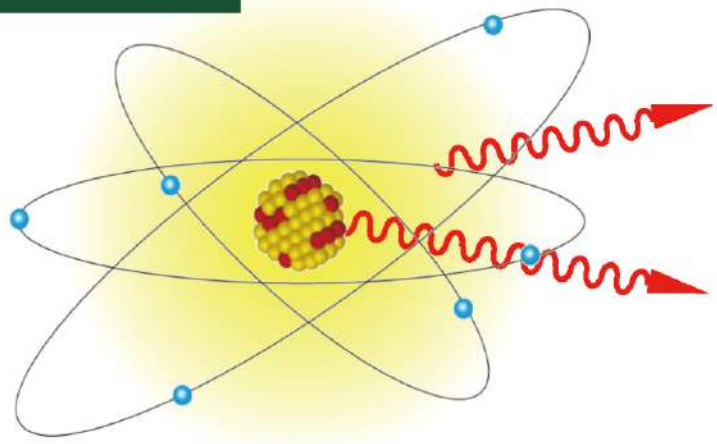
Ionizing radiation — Radiation that causes ionization

Particle beams



- **α-particles** (helium nuclei ejected from a nucleus)
- **β-particles** (electrons ejected from a nucleus)
- **Neutron beams** (produced in nuclear reactors, accelerators, etc.)
- **Proton beams** (produced in accelerators, etc.)

Electromagnetic waves



- **X-rays** (generated outside a nucleus)
- **γ-rays** (emitted from a nucleus)

Slide B

Navigate

With your partner

Use the EM radiation cards to consider the following questions:

- Which types of EM radiation are used to create images?
- Which types of EM radiation are used to send images?
- Which of these EM radiation types are we more familiar with?

Identify Relevant Interactions with Matter

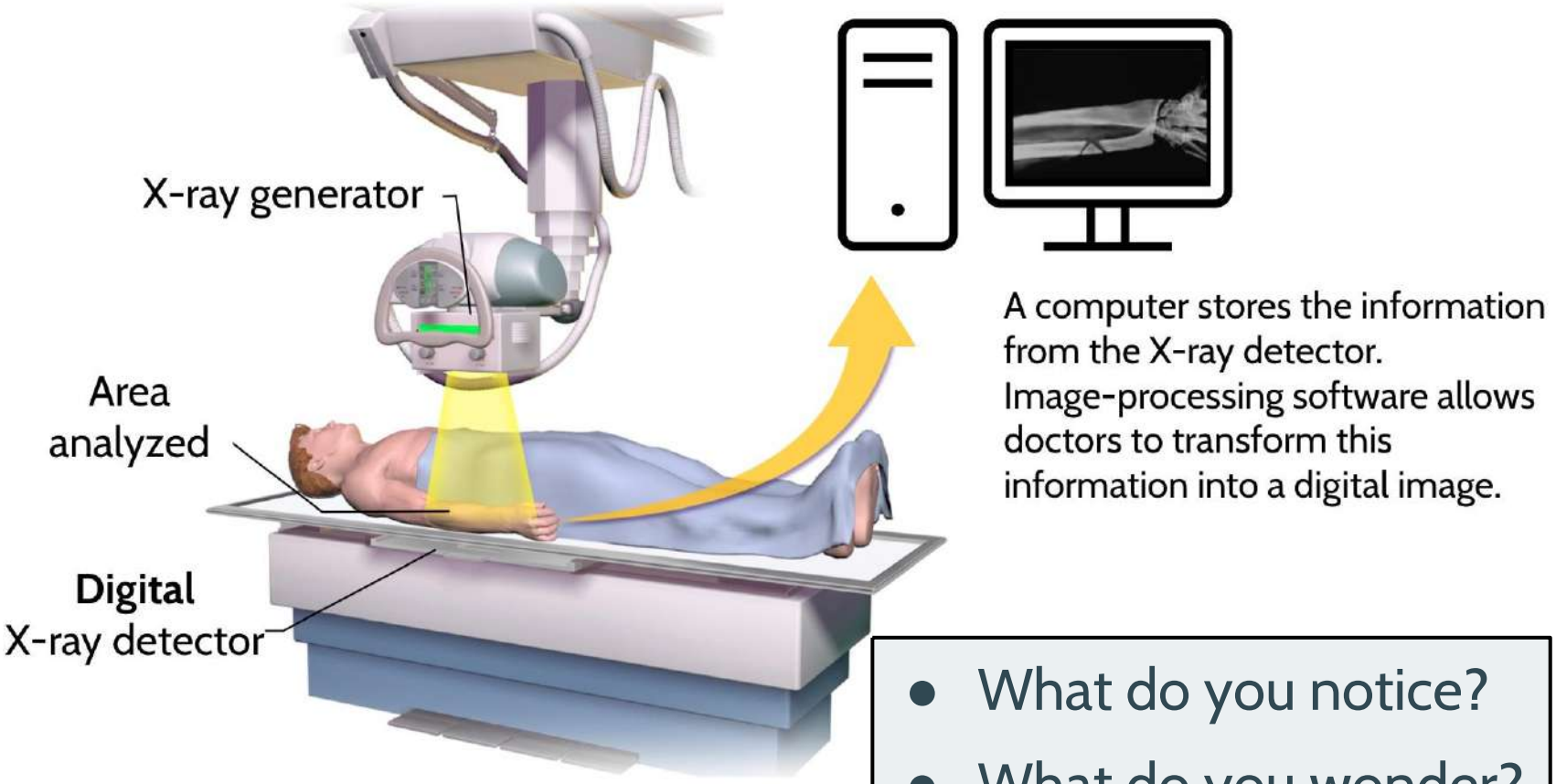
Turn and Talk

What interactions with matter do we think can help us use X-rays to create images of a fractured bone?

X-rays can transmit through some less dense materials, such as air or water; however, denser materials, such as bone or metal, tend to absorb X-rays. X-rays have the ability to knock electrons out of atoms in a process called *ionization*. This interaction can be harmful to living cells and is used in radiation therapy for cancer treatment.

Slide D

Identifying Areas of Uncertainty



- What do you notice?
- What do you wonder?

Obtain Information

On your own

- Create a T chart for Conventional vs. Digital Radiation
- With your group/partner read the article and write down what you learned
- Don’t do the questions at the bottom

Slide G

Debrief Main Ideas from the Reading

With your class

- How does the exposure time of digital radiography and conventional radiography compare?
- What explains the difference in exposure time between these technologies?
- What are the benefits of decreasing exposure time?

Navigate

With your class

- What uses of EM radiation can we explain?
- What are some uses of EM radiation that we cannot fully explain yet?

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