A. **Handout for above lecture (5-mins)**

**Classification of Assistive Technology**

Assistive Technology can be broadly classified based on different parameters. These include:

i. The user spectrum – Every product design begins from a need identified or derived from an end user/a user group.

- Some products focus on a **specific user group**: Say, wheelchairs are designed to cater to the needs of People with Mobility challenges. These include people with spinal cord injury, cerebral palsy, multiple sclerosis, among other mobility impairments, and People with temporary mobility difficulties like elderly, pregnant women, people who undergo surgeries, etc.
- Others, focus over a **spectrum of users**. Example: a picture-based communication chart supports any user who is non-verbal and has challenges in expressing. This applies to People with Cerebral Palsy, Autism, hearing loss, etc.

ii. The level of technology involved – Classification based on complexity of the technology behind the design.

- **Low tech** – Devices that are designed with minimum or easily available materials. These do not require special training to understand and use. These are low-cost solutions that can be designed without any expert guidance.
- **Medium tech** – Simple to operate or solutions that functions on battery. These could be electrical and electronic devices that do not require complicated hardware or software development. These require minimum training and are reasonably priced.
- **High-tech solutions**. Sophisticated or multifunctional technology involving advanced computer hardware and software components.

iii. The design principle -

- **Universal Design**:

  *"Universal Design" means the design of products, environments, programmes and services to be usable by all people to the greatest extent possible, without the need for adaptation or specialised design and shall apply to assistive devices including advanced technologies for a particular group of persons with disabilities.*

  *RPwDA- Rights of Persons with Disabilities Act, 2016.*

Example: Features in mobile phones like speech to text, read-aloud, image recognition, captions, etc. were evolved as components of accessibility to support People with Disabilities but have now become go-to functions for everyone including you and me. This also played a key role in mainstreaming the product.

[Overview of Accessibility in Android](#)



- **Customized design**: Technology adapted to cater to specific needs of a user. Say, a universally designed chair needs wedges and restraints as positioning support for someone with low neck and trunk balance.

**Iv. The usage** – The purpose of the design. The technology may be used for one of the following areas – Mobility, Education, Communication, Leisure, Employment/vocational, Travel, Independent living, etc.

**v. Availability and cost**: Being one of the key barriers to ensuring access to quality assistive technology for all, these two components are closely related and interdependent. A quality product becomes unusable if the user cannot afford it. Similarly, every user is different and so are the needs. And these needs evolve over time. Hence, every solution will require an upgrade in design in reference to the changing needs of the user. And every advancement needs to be accessible for the required user. Not every product developed in the field of Assistive Technology reaches the commercial market, which in turn affects the overall cost.

In India, Assistive technology remains in research silos. If the product and awareness continue to remain niche, the elements of scalability and impact will decrease over time. Hence, this again re-emphasizes the importance and need for more products in the market from a new generation of entrepreneurs.

**HAAT Model: The Human-Activity-Assistive Technology Model.**

The HAAT model was developed by Cook, Hussey and Polgar to facilitate understanding that the role of Assistive Technology is not to remediate Disability but to enable the functional abilities of a Person with Disability in performing a specific task to the fullest of his/her potential. The model has four components human, activity, Assistive Technology and the context in which the former three components exist. The model aids an AT developer in ensuring that these crucial elements are not overlooked during the design process and defines the role of AT in the life of a Persons with Disability as an enabler. This also ensures that the process remains person-centric and not technology-centric.

- **Human**: Attributes of the human user that revolve around the specific task (skills and abilities).
- **Activity**: The performance area for which the solution is explored. These could be activities in daily living, productivity (work and vocational) and even leisure.
- **Context:** The other external components that act as barriers to the individual in performing the activity. These could be physical barriers like environmental factors, social/attitudinal barriers like acceptance/rejection to the solution, stigma, acceptance by peers, cultural barriers and institutional barriers -economical, legal and political components.
- **Assistive Technology:** The interface to enable enhanced performance of the activity by the individual in the specific context. This includes understanding the following interactions: Human- Activity, Human-context, and Human- AT.