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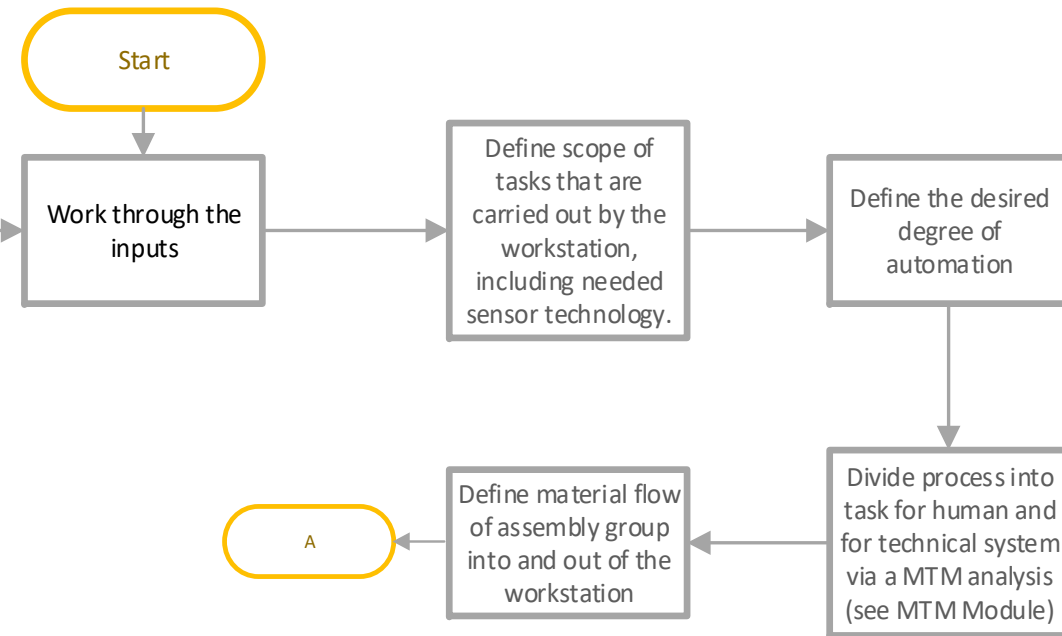


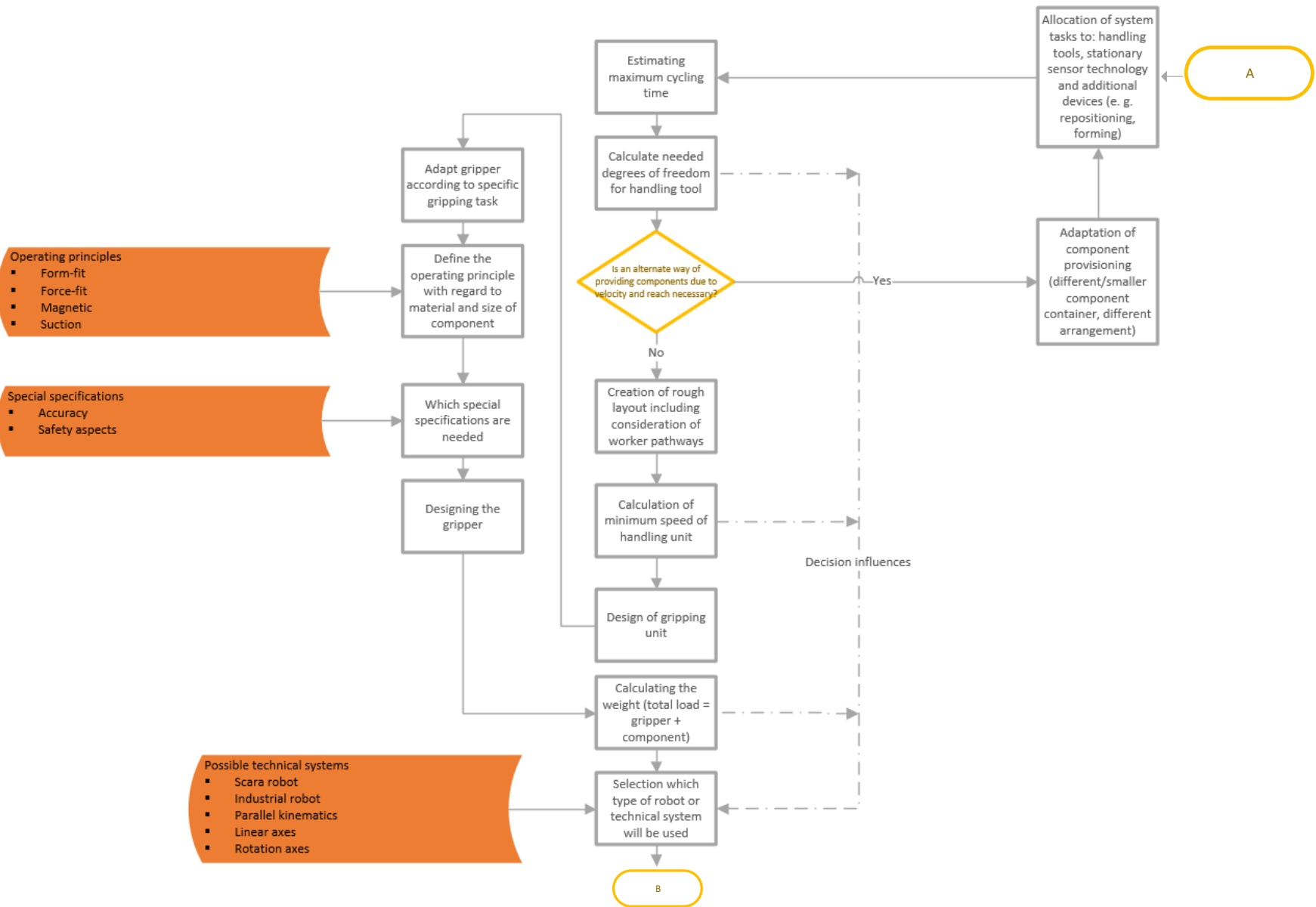
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Handling and assembly module  
FhG IWU

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- Budget framework / payback period
- Variety of variants / range of components / batch sizes
- Max. Workspace
- Available sources (electrical voltage, max. current, working pressure compressed air or hydraulics, vacuum, suction)
- Fire and occupational safety regulations
- Can the delivery position of the individual parts be changed?
- Can the component's design be adapted according to the assembly strategy?
- Condition of the components: Weight, surface geometry, surface structure, material
- Desired degree of automation, is human-robot-collaboration desired?
- What is the aim of (re)planning? Reduce costs, increase output, save floor space, new environmental regulations, more / (significantly) fewer parts to be used, increased quality requirements, increase ergonomics, reduce shift work, etc.
- Specific requirements: Clean room, explosion-proof, special requirements in food industry, use for medical products, use of ESD parts, etc.
- Which quality factors are to be tested? Test intervals? Archiving?
- Software interfaces, e.g. order database, quality assurance, control integration (stand-alone station, entire plant, entire hall, entire factory, cross-plant)
- Logistics requirements (batch sizes, loading direction, loading times, ...)
- Is it necessary to consider later adaptation of the system due to component changes?
- Are upstream or downstream discontinuous processes present? Is buffer necessary?
- Is comparable plant technology already available? (Use of know-how regarding operation, modification, programming, maintenance, repair, tools)
- Climate conditions





- Special specifications
- Clean room application
  - Protection against splash water
  - Close interaction between worker and robot necessary
  - Protection from explosions (dust, ignition, sparks, does also apply for tools)

- Dimensions of technical system
- Payload
  - Reach
  - Mounting: floor, table, overhead, mobile (AGV)
  - Media connections

- Additional peripherals
- Input / output devices
  - Human-Machine-Interfaces
  - Size and amount of controls
  - Valve clusters
  - Compressed air/vacuum generators or conditioners
  - Hydraulic power units
  - Automatic lubrication
  - Bad quality component take-up
  - Suction system
  - Vibration decoupling

- Safety equipment
- Partition walls
  - Separating grids
  - Light grids
  - Safety doors
  - Floor scanners
  - Presence sensors

B

Which special specifications are needed

Dimensioning the system / choosing the robot model

Determination of additional peripherals

Definition of the safety equipment

Calculation of needed space for workstation

In depth safety concept, mechanical design and control technology

Detailed planning of vision system (see module vision system)

End