

Lecture 6

*Job Trees – The Calculus of
the cohort!*



Understand
Jobs to be Done

Solution *independent*
Non-comparative
"Goals" of someone's work

Quantify *and*
rank order
criteria for
choosing
solutions

Tied to *solutions*
Driven by *context*
Used to *compare*
Addressed by Features

**Common
Job
Verbs**

***NO COMPARATIVE
VERBS!!!***

OFF LIMITS

- INCREASE
- MAXIMIZE
- IMPROVE
- DECREASE
- MINIMIZE

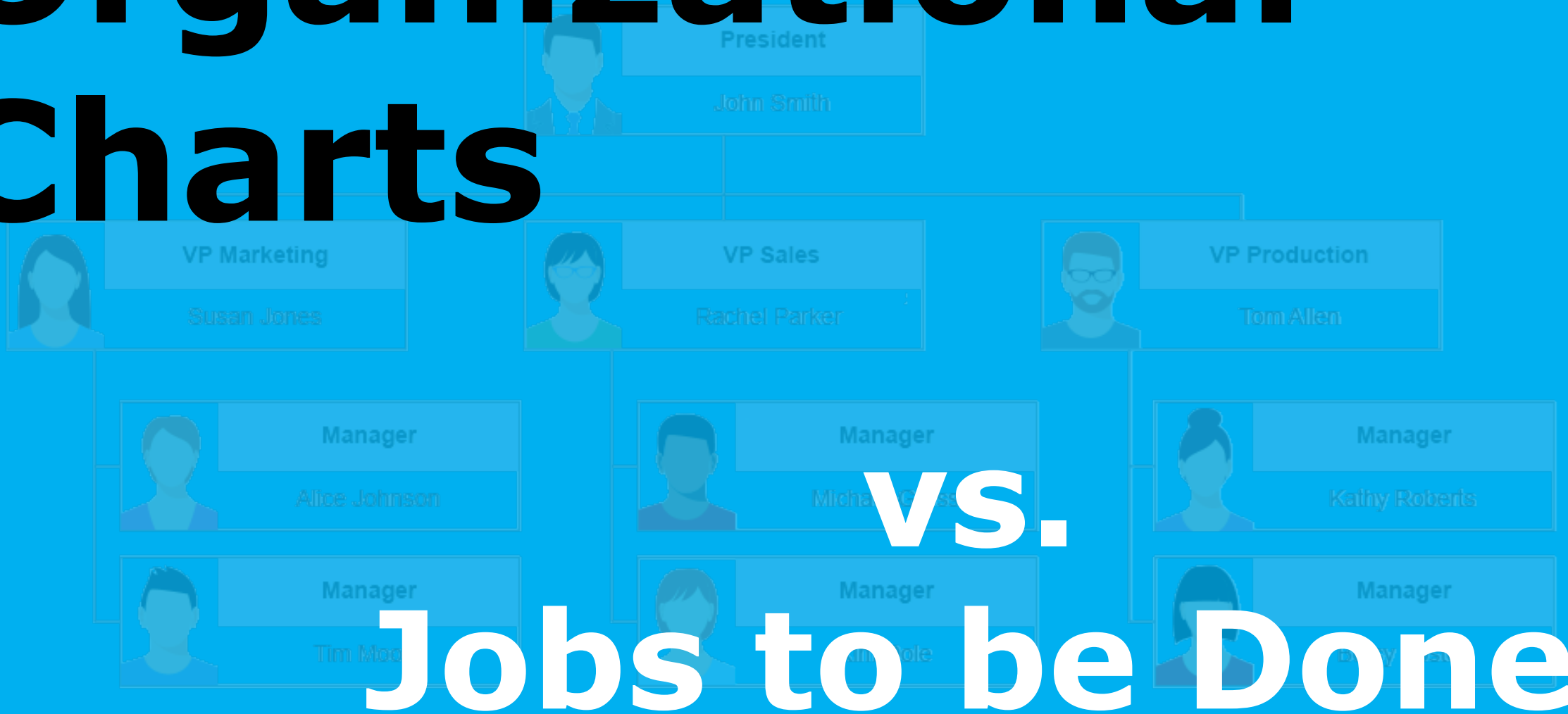
**Common
Criterion
Verbs**

***ONLY COMPARATIVE
VERBS!!!***

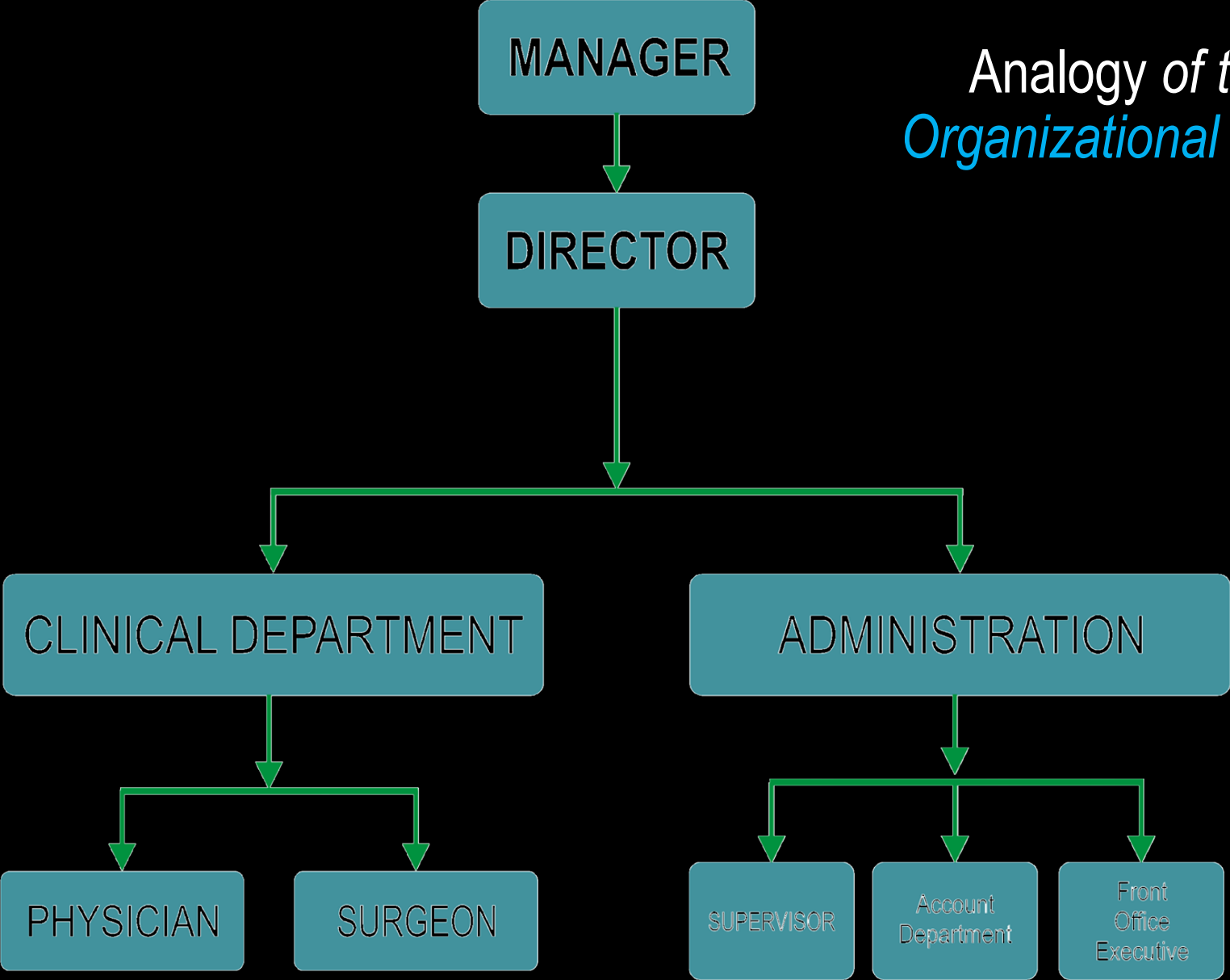
ON LIMITS

- INCREASE
- MAXIMIZE
- IMPROVE
- DECREASE
- MINIMIZE

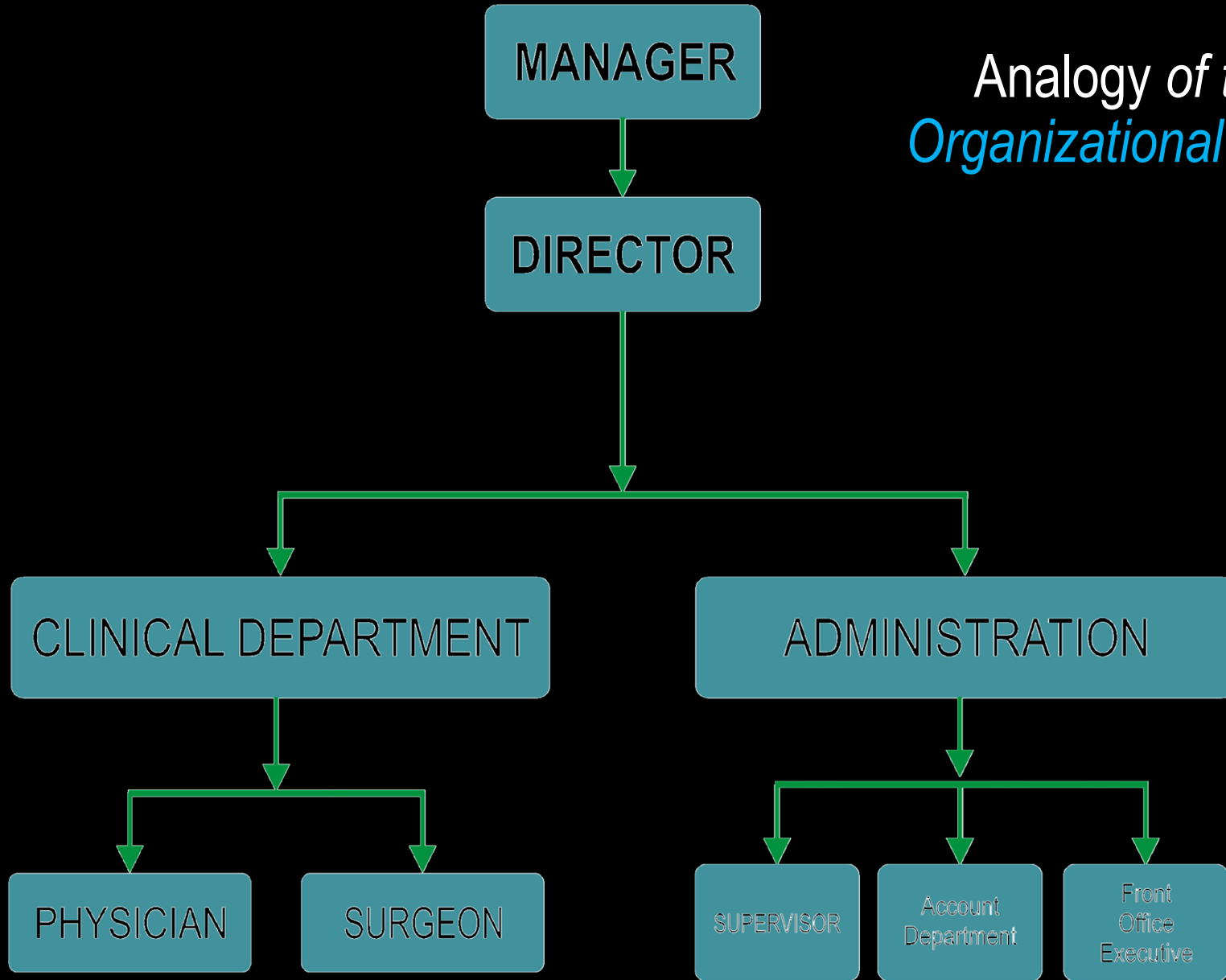
Organizational Charts



*Analogy of the
Organizational Chart*



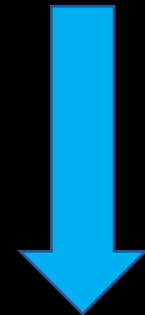
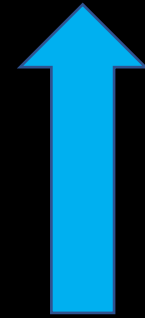
Analogy of the
Organizational Chart



At any level

Look up... *JOBS*

Look down... *SOLUTIONS*





Scoping the Job to be Done

**New Tool
Job Trees**

*Start with the **functional job** your idea is hired
to complete!*

*Start with the functional job your idea is hired
to complete!*

*We can improve the performance of solid
adsorbents when removing carbon from the
air using the Direct Air Capture process*

Start with the functional job your idea can do!

*We can improve the performance of solid adsorbents when **removing carbon from the air** using the Direct Air Capture process*

Start with the functional job your idea can do!

*We can improve the performance of **solid adsorbents** when **removing carbon from the air** using the **Direct Air Capture** process*

Start with the functional job your idea can do!

We can *improve the performance* of *solid adsorbents* when *removing carbon from the air* using the *Direct Air Capture* process

Understanding Job Level - *Example*

Jobs

Solutions

Remove CO₂ from the air
with solid adsorbent DAC

Understanding Job Level - *Example*

Jobs

Solutions

Remove CO₂ from the air
with solid adsorbent DAC

Our Solution

Option B

Option N

Understanding Job Level - *Example*

Jobs

Solutions

Remove CO₂ from the air
with solid adsorbent DAC

Our Solution

Option B

Option N

Get Bigger Slice of
Existing Solid DAC Market

Why would a customer pick my solid
adsorbent DAC over in-kind
alternatives? Can we capture larger
part of the solid adsorbent market
(i.e., can we get larger slice of pie)?

Understanding Job Level - *Example*

Jobs

Solutions

Remove CO₂ from the air
with solid adsorbent DAC

- A
 - B
 - C
 - Etc.
- Decision Criteria used to "choose" a solid adsorbent based DAC solution – assuming multiple options exist.

Our Solution

Option B

Option N

Get Bigger Slice of
Existing Solid DAC Market

Why would a customer pick my solid adsorbent DAC over in-kind alternatives? Can we capture larger part of the solid adsorbent market (i.e., can we get larger slice of pie)?

Understanding Job Level - *Example*

Jobs

Solutions

Solid adsorbent

Liquid adsorbent

Hybrid adsorbent

Remove CO₂ from the air with solid adsorbent DAC

- A
- B
- C
- Etc.

Decision Criteria used to "choose" a solid adsorbent based DAC solution - assuming multiple options exist.

Our Solution

Option B

Option N

Get Bigger Slice of Existing Solid DAC Market

Why would a customer pick my solid adsorbent DAC over in-kind alternatives? Can we capture larger part of the solid adsorbent market (i.e., can we get larger slice of pie)?

Understanding Job Level - *Example*

Jobs

Solutions

Solid adsorbent

Liquid adsorbent

Hybrid adsorbent

Remove CO₂ from the air with solid adsorbent DAC

- A
- B
- C
- Etc.

Decision Criteria used to "choose" a solid adsorbent based DAC solution – assuming multiple options exist.

Our Solution

Option B

Option N

Get Bigger Slice of Existing Solid DAC Market

Why would a customer pick my solid adsorbent DAC over in-kind alternatives? Can we capture larger part of the solid adsorbent market (i.e., can we get larger slice of pie)?

Understanding Job Level - *Example*

Jobs

Solutions

Remove CO₂ from the air with DAC

Solid adsorbent

Liquid adsorbent

Hybrid adsorbent

Remove CO₂ from the air with solid adsorbent DAC

- A
- B
- C
- Etc.

Decision Criteria used to "choose" a solid adsorbent based DAC solution - assuming multiple options exist.

Our Solution

Option B

Option N

Get Bigger Slice of Existing Solid DAC Market

Why would a customer pick my solid adsorbent DAC over in-kind alternatives? Can we capture larger part of the solid adsorbent market (i.e., can we get larger slice of pie)?

Understanding Job Level - *Example*

Jobs

Solutions

Remove CO₂ from the air with DAC

- A
- B
- C
- etc

Decision Criteria used to "choose" a DAC solution.

Solid adsorbent

Liquid adsorbent

Hybrid adsorbent

Remove CO₂ from the air with solid adsorbent DAC

- A
- B
- C
- Etc.

Decision Criteria used to "choose" a solid adsorbent based DAC solution - assuming multiple options exist.

Our Solution

Option B

Option N

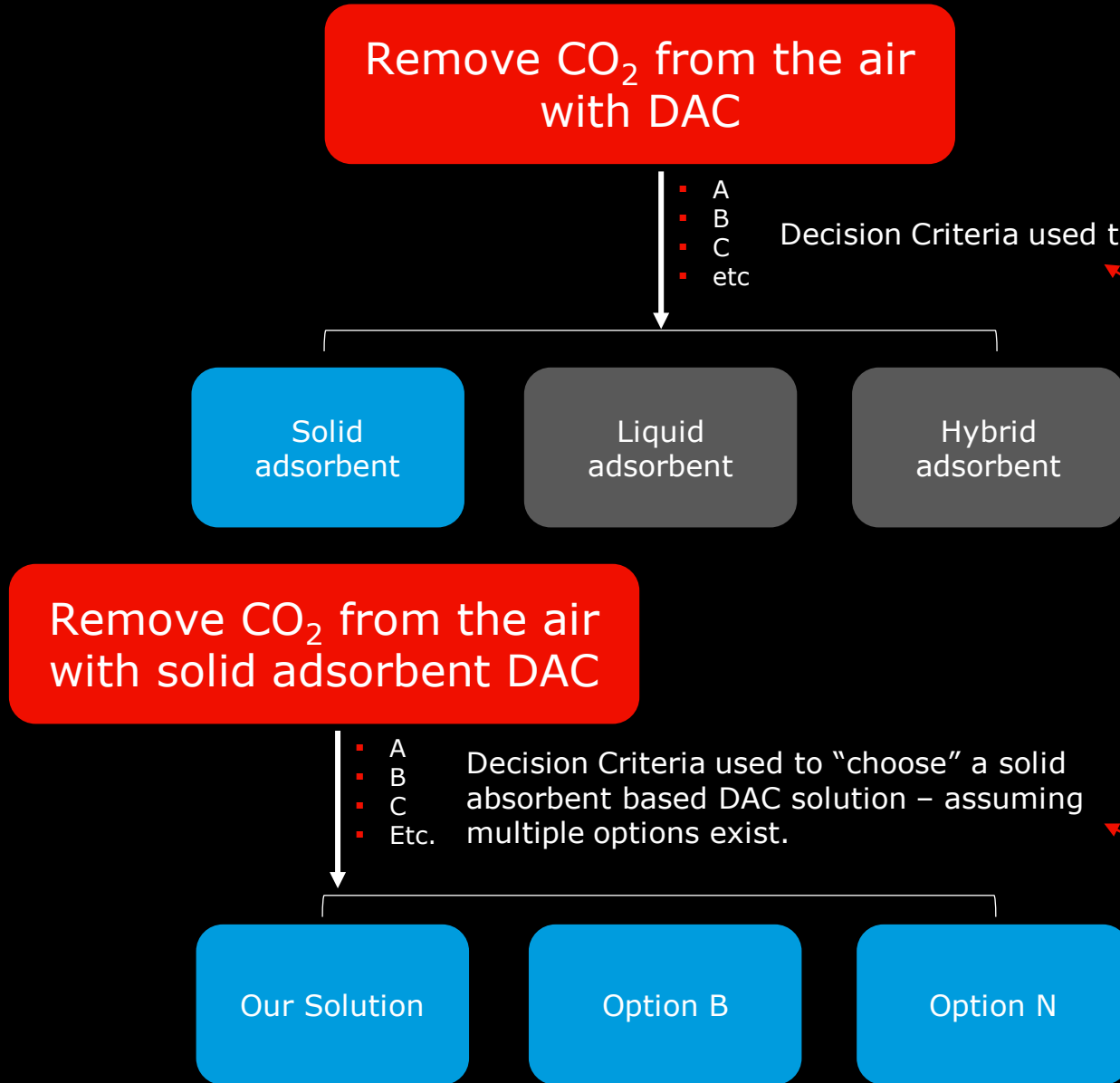
Get Bigger Slice of Existing Solid DAC Market

Why would a customer pick my solid adsorbent DAC over in-kind alternatives? Can we capture larger part of the solid adsorbent market (i.e., can we get larger slice of pie)?

Understanding Job Level - Example

Jobs

Solutions



Grow Solid DAC Market

Why would a customer pick solid adsorbent DAC over out-of-kind alternatives? Would our solid adsorbent DAC beat Liquid, other in some cases where current solid DAC does not (i.e., can we increase the size of the solid DAC market pie)? In other words, can we attract current non-consumers of solid DAC with our improved solution?

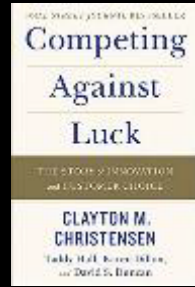
Get Bigger Slice of Existing Solid DAC Market

Why would a customer pick my solid adsorbent DAC over in-kind alternatives? Can we capture larger part of the solid adsorbent market (i.e., can we get larger slice of pie)?

Understanding Job Level - Example

Jobs

Solutions



Remove CO₂ from the air with DAC

- A
- B
- C
- etc

Decision Criteria used to "choose" a DAC solution.

Solid adsorbent

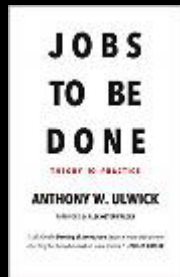
Liquid adsorbent

Hybrid adsorbent

Remove CO₂ from the air with solid adsorbent DAC

- A
- B
- C
- Etc.

Decision Criteria used to "choose" a solid adsorbent based DAC solution - assuming multiple options exist.



Our Solution

Option B

Option N

Grow Solid DAC Market

Why would a customer pick solid adsorbent DAC over out-of-kind alternatives? Would our solid adsorbent DAC beat Liquid, other in some cases where current solid DAC does not (i.e., can we increase the size of the solid DAC market pie)? In other words, can we attract current non-consumers of solid DAC with our improved solution?

Get Bigger Slice of Existing Solid DAC Market

Why would a customer pick my solid adsorbent DAC over in-kind alternatives? Can we capture larger part of the solid adsorbent market (i.e., can we get larger slice of pie)?

*We can **continue** this exercise until the
solutions are no longer in the job*

Understanding Job Level - *Example*

Jobs

Solutions

Remove CO₂ from the air
with DAC

- A
- B
- C
- etc

Decision Criteria used to "choose" a DAC solution.

Solid
adsorbent

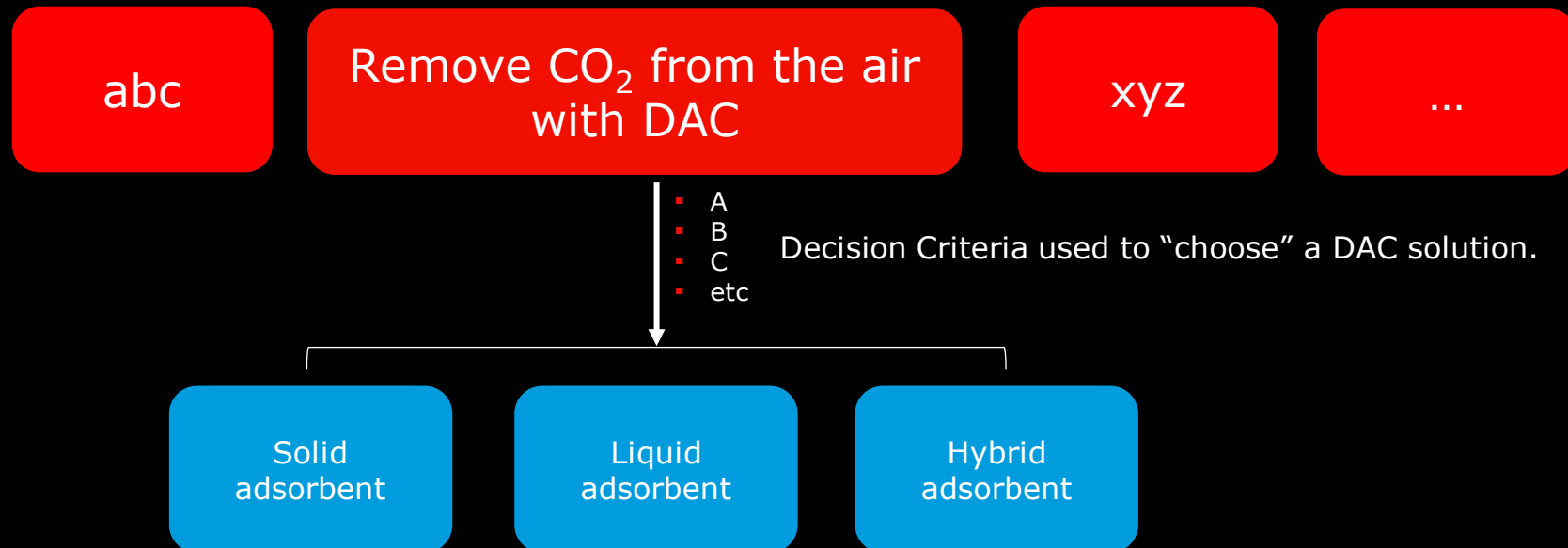
Liquid
adsorbent

Hybrid
adsorbent

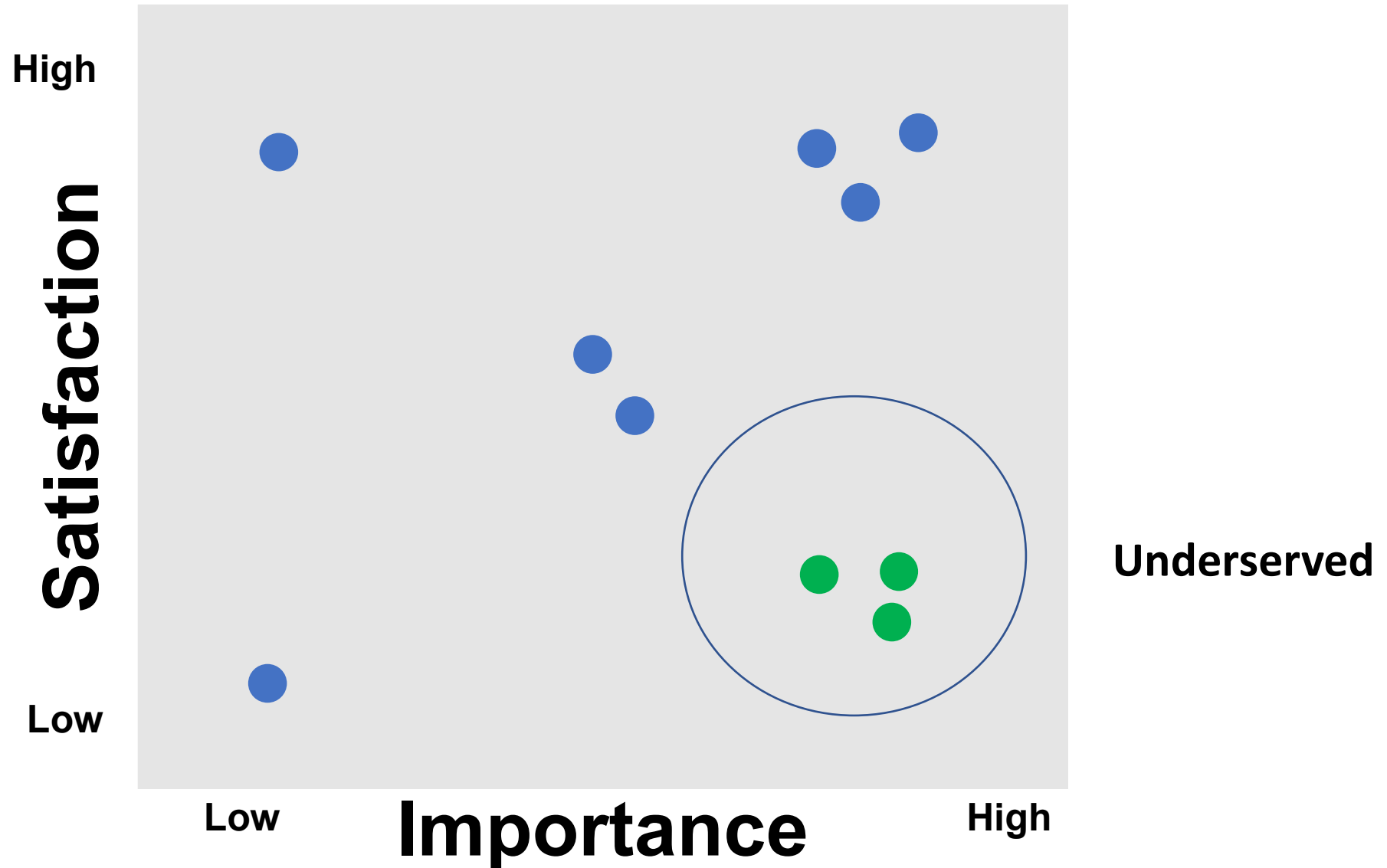
Understanding Job Level - *Example*

Jobs

Solutions



Customer Jobs

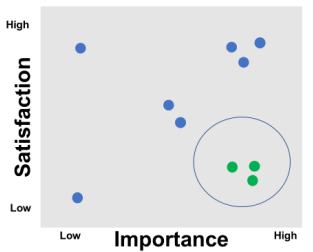


Understanding Job Level - *Example*

Jobs

Solutions

Customer Jobs



abc

Remove CO₂ from the air
with DAC

xyz

...

- A
- B
- C
- etc

Decision Criteria used to "choose" a DAC solution.

Solid
adsorbent

Liquid
adsorbent

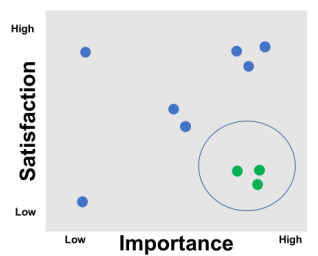
Hybrid
adsorbent

Understanding Job Level - *Example*

Jobs

Solutions

Customer Jobs



abc

Remove CO₂ from the air with DAC

xyz

...

- A
- B
- C
- etc

Decision Criteria used to "choose" a DAC solution.

Solid adsorbent

Liquid adsorbent

Hybrid adsorbent

Understanding Job Level - Example

Jobs

Solutions

DAC

abc

Remove CO₂ from the air
with DAC

xyz

...

- A
- B
- C
- etc

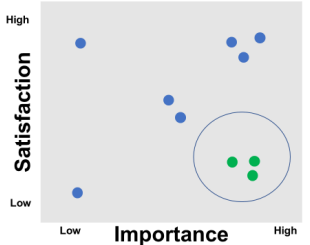
Decision Criteria used to "choose" a DAC solution.

Solid
adsorbent

Liquid
adsorbent

Hybrid
adsorbent

Customer Jobs



Understanding Job Level - Example

Jobs

Solutions

Accelerated Weathering

Terrestrial BCCES

Ocean Fertilization

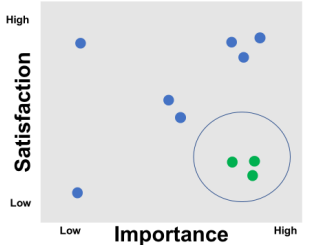
DAC

Reforestation

Aquatic BCCES

Silos

Customer Jobs



abc

Remove CO₂ from the air with DAC

xyz

...

- A
- B
- C
- etc

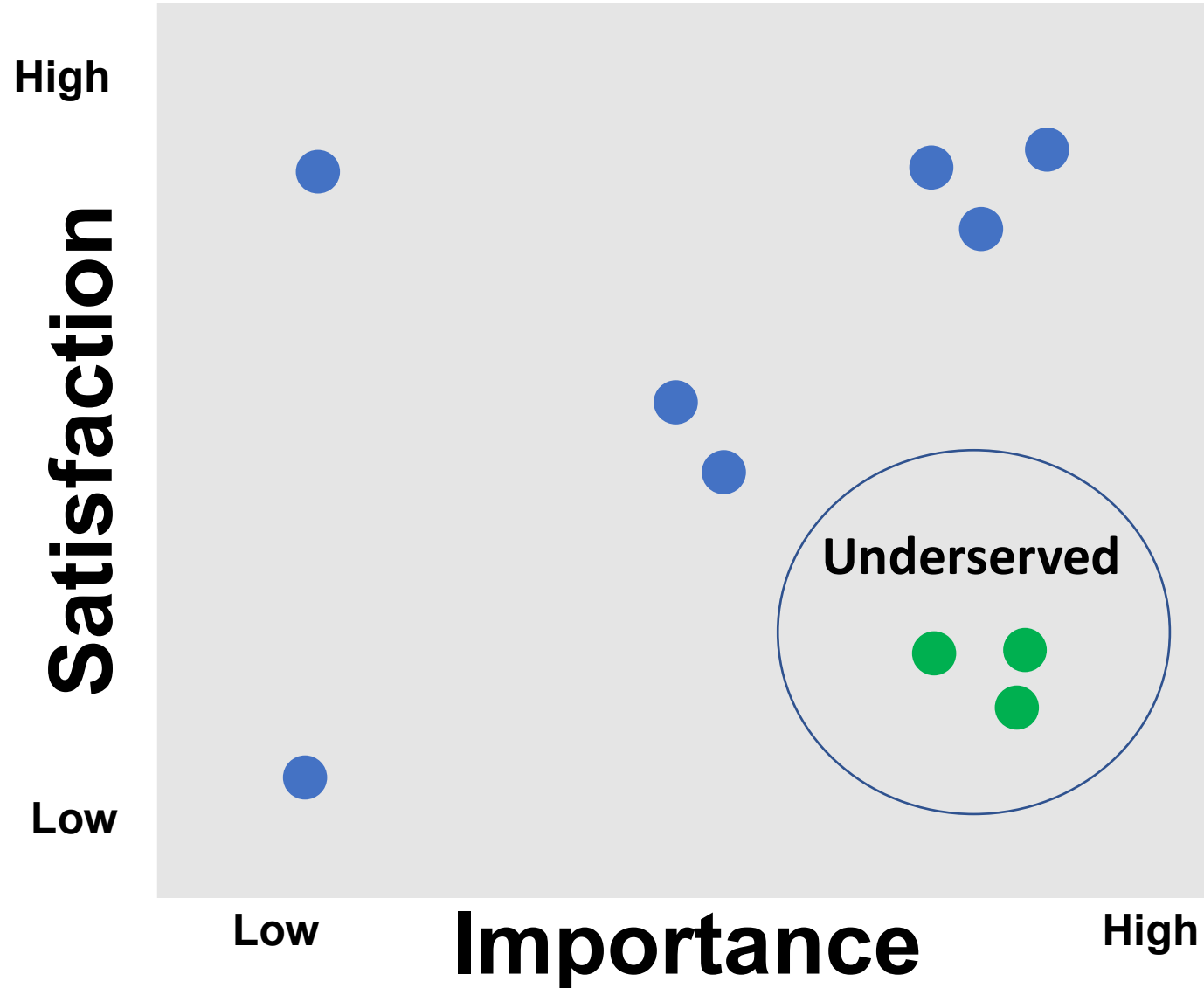
Decision Criteria used to "choose" a DAC solution.

Solid adsorbent

Liquid adsorbent

Hybrid adsorbent

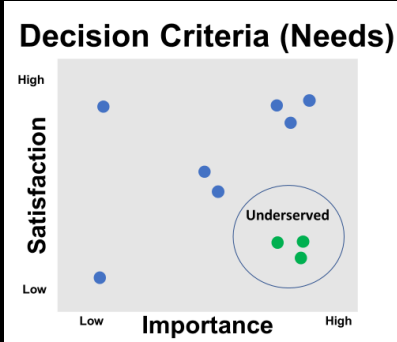
Decision Criteria (Needs)



Understanding Job Level - Example

Jobs

Solutions



Remove CO₂ from the air

Accelerated Weathering

Terrestrial BCCES

Ocean Fertilization

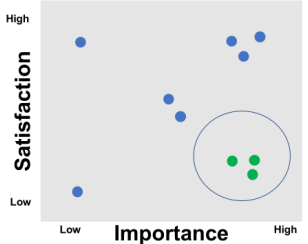
DAC

Reforestation

Aquatic BCCES

Silos

Customer Jobs



abc

Remove CO₂ from the air with DAC

xyz

...

- A
- B
- C
- etc

Decision Criteria used to "choose" a DAC solution.

Solid adsorbent

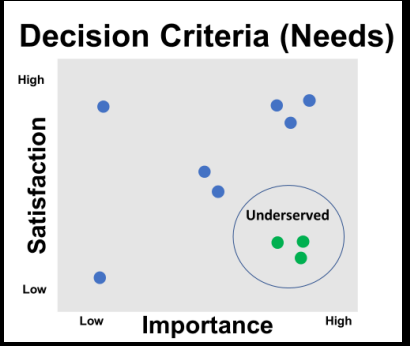
Liquid adsorbent

Hybrid adsorbent

Understanding Job Level - Example

Jobs

Solutions



Remove CO₂ from the air



- A
- B
- C
- etc.

Decision Criteria used to "choose" a carbon capture solution.

Accelerated Weathering

Terrestrial BCCES

Ocean Fertilization

DAC

Reforestation

Aquatic BCCES

Silos



abc

Remove CO₂ from the air with DAC

xyz

...



- A
- B
- C
- etc.

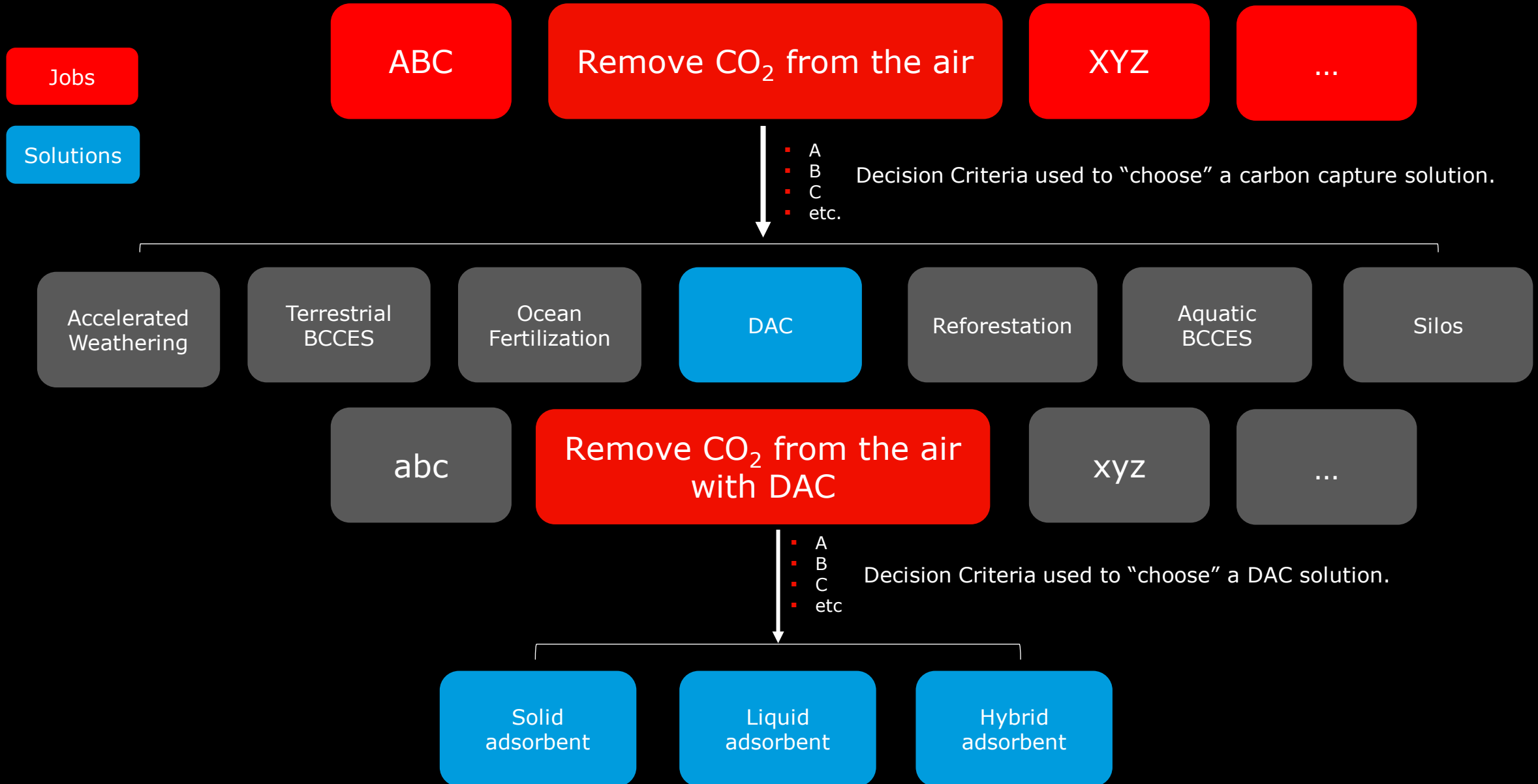
Decision Criteria used to "choose" a DAC solution.

Solid adsorbent

Liquid adsorbent

Hybrid adsorbent

Understanding Job Level - Example



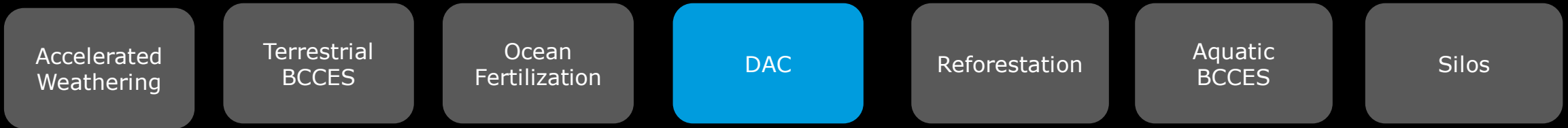
Understanding Job Level - Example



Solutions

- A
- B
- C
- etc.

Decision Criteria used to "choose" a carbon capture solution.



- A
- B
- C
- etc.

Decision Criteria used to "choose" a DAC solution.



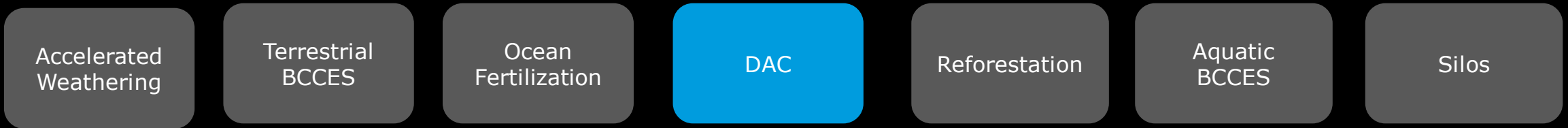
Understanding Job Level - Example



Solutions

- A
- B
- C
- etc.

Decision Criteria used to "choose" a carbon capture solution.



- A
- B
- C
- etc.

Decision Criteria used to "choose" a DAC solution.



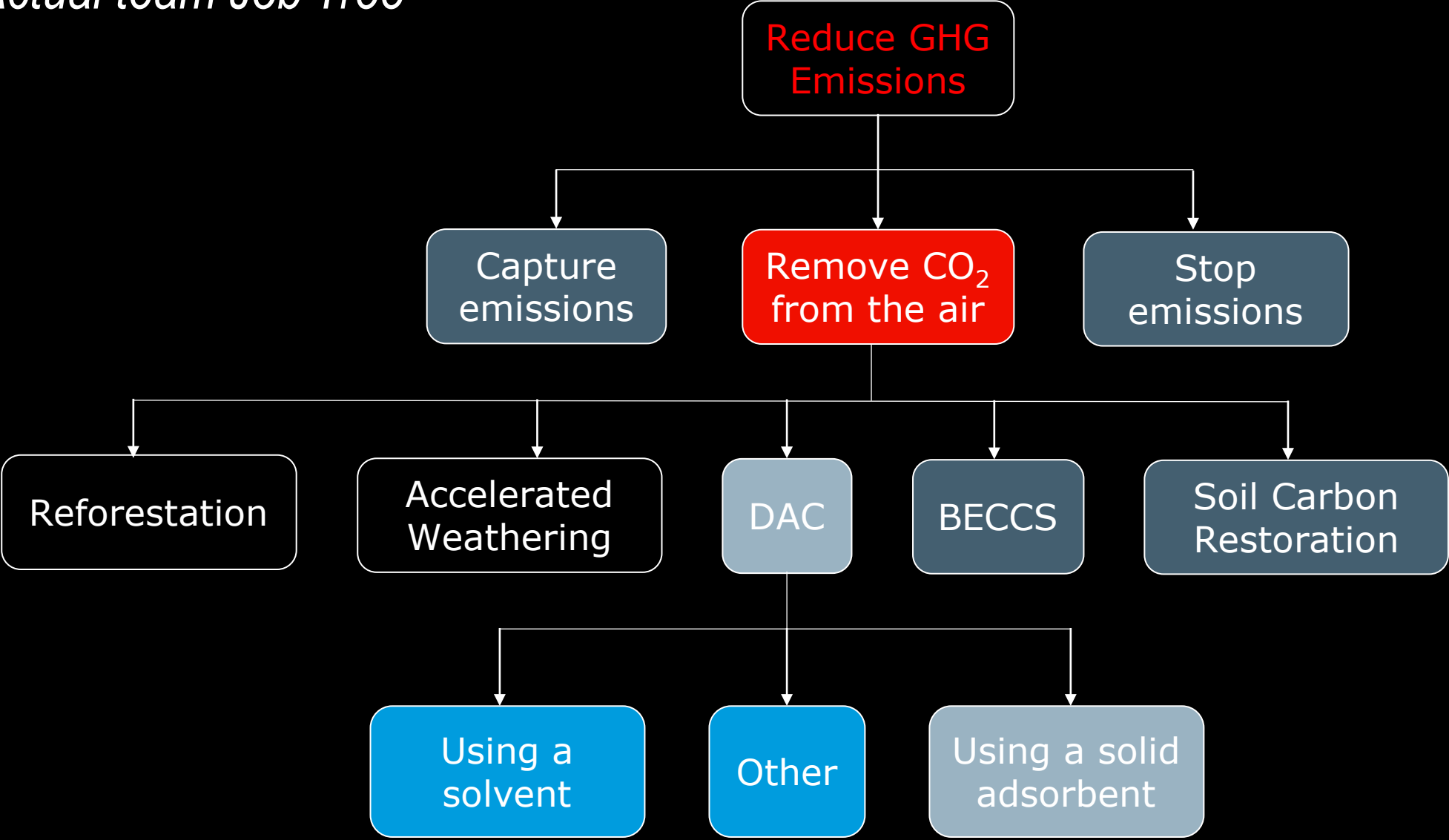
Remove CO₂ from the air

*Is there a **solution** in this “top level” job?*

or

*Is this “top level” job a **solution** in itself”*

Actual team Job Tree





Jobs – Orthopedic Surgeon

Hospitals:

Admin.

On Call

Clinic

Teaching

Research

Surgery

Surgery Centers:

Admin.

Clinic

Surgery



Jobs – Orthopedic Surgeon - Hospital

Hospitals:

Admin.

On Call

Clinic

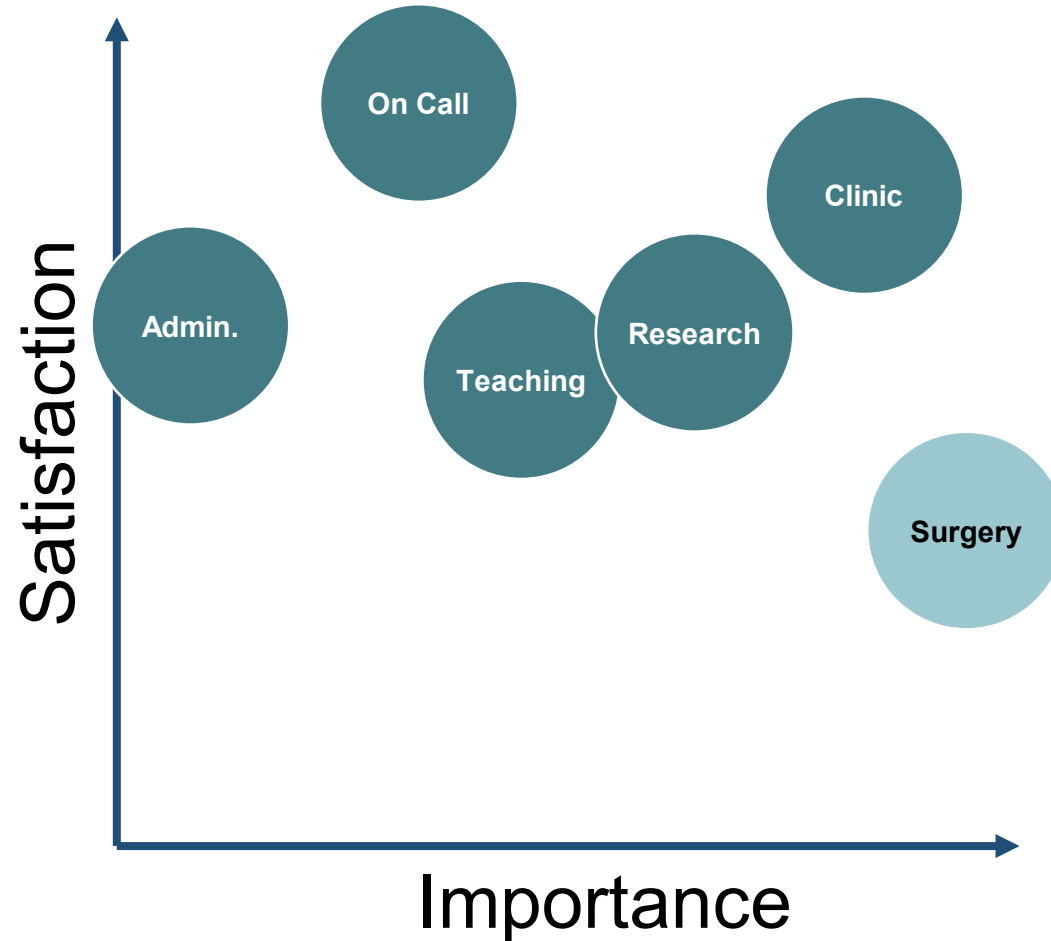
Teaching

Research

Surgery

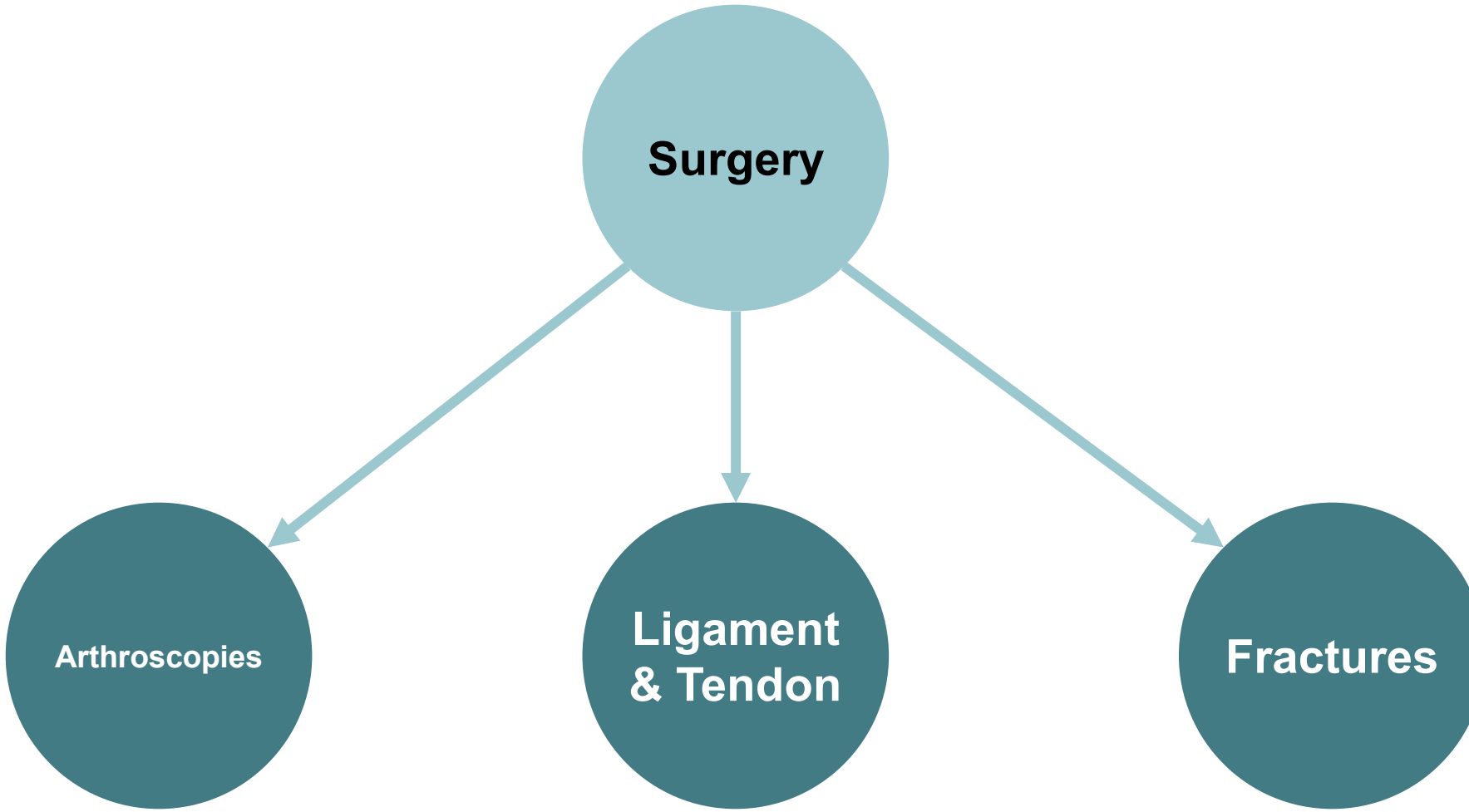
Satisfaction Importance

Jobs – Orthopedic Surgeon - Hospital



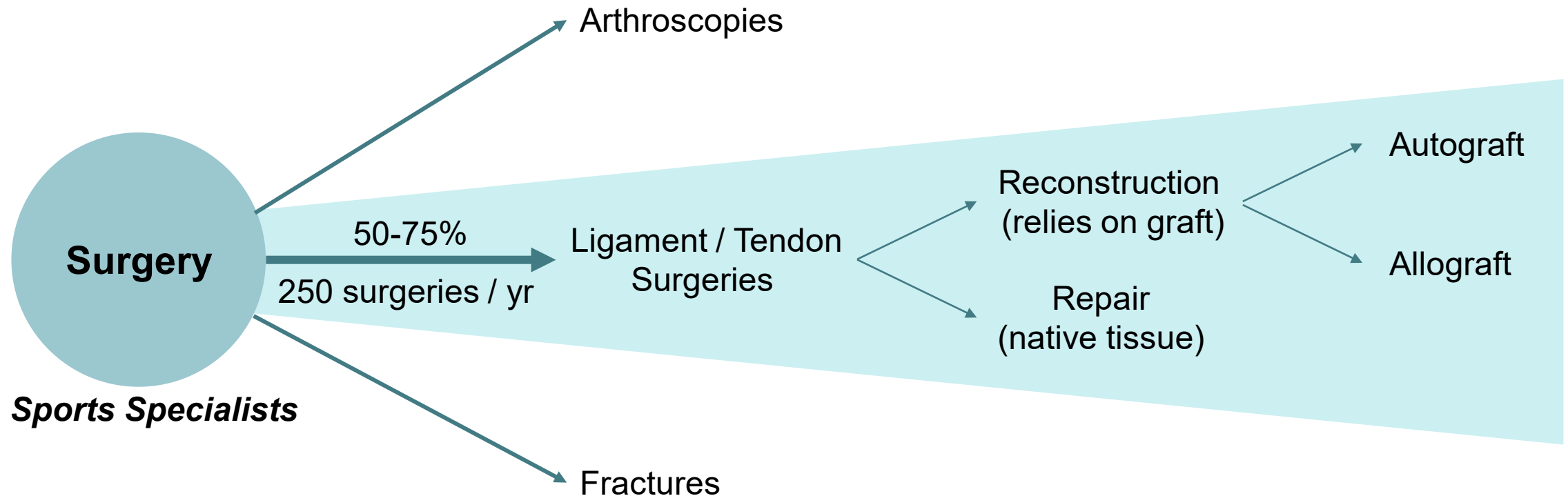


Jobs – Orthopedic Surgeon - Hospital



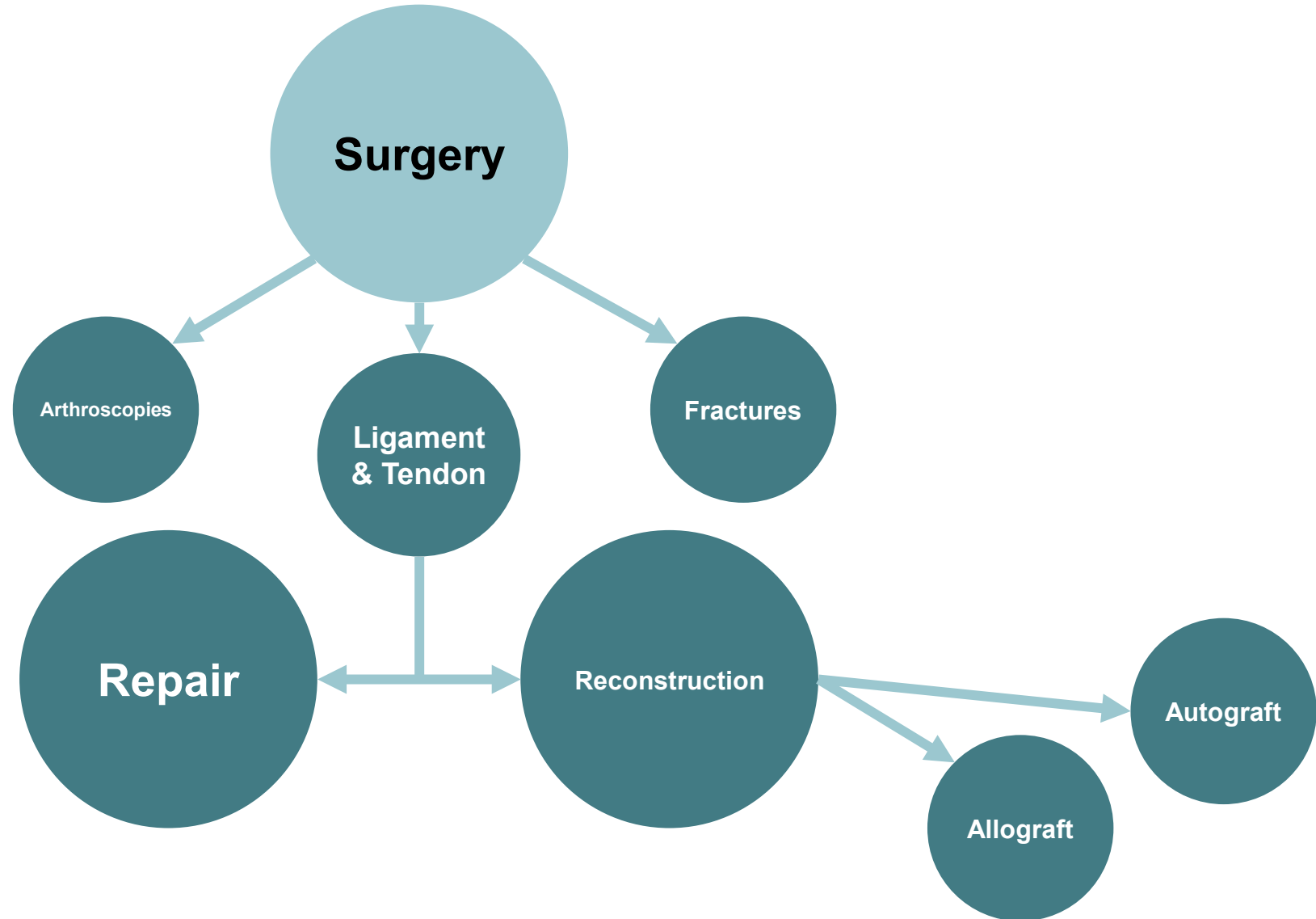
The Job Our Product is Being Hired to Do

Stitching in Ligament and Tendon Reconstruction





Jobs – Orthopedic Surgeon - Hospital



“ The three **big risk factors for infection** are smoking, diabetes, and **operative time**. If you're saving any operative time you're doing if you're doing a good thing. ”

-Orthopedic Surgeon for NFL Team

“ **Time is money** in the operating room. ”

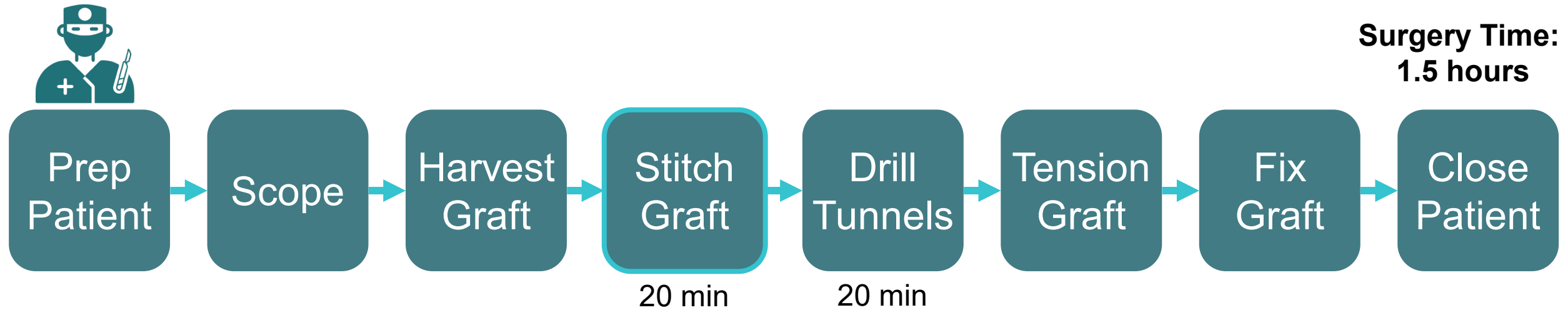
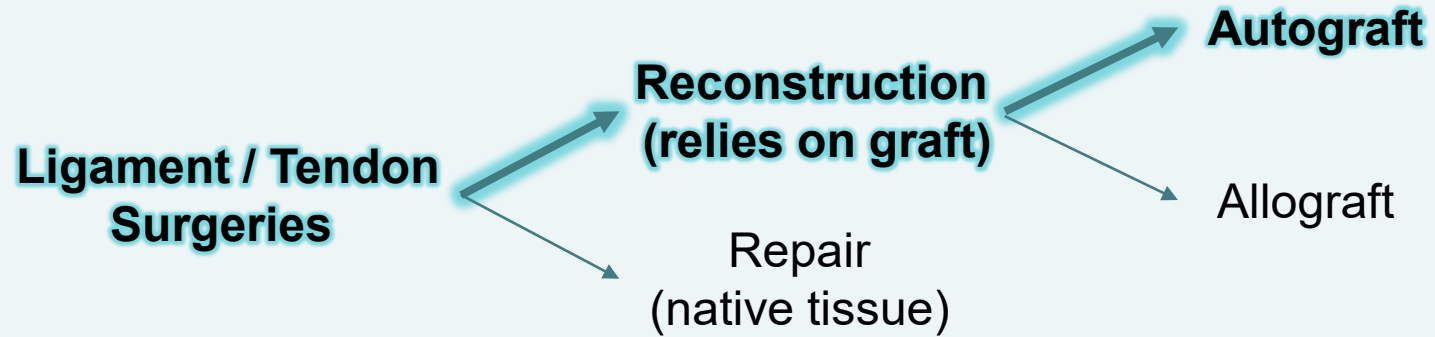
- Private Practice Orthopedic Surgeon



Workflow:

Autograft Jobs

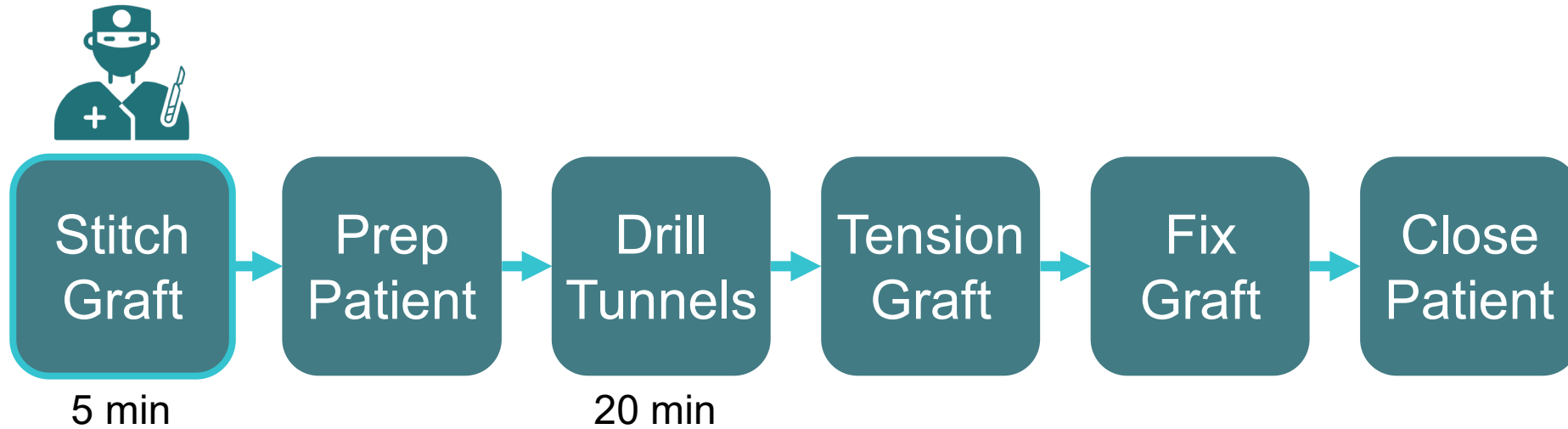
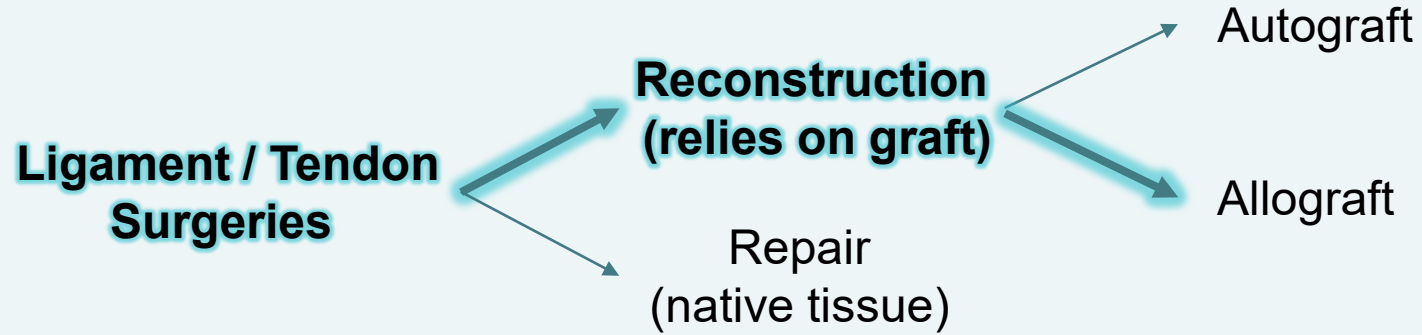
a "graft" is harvested from the patient's own body



Workflow:

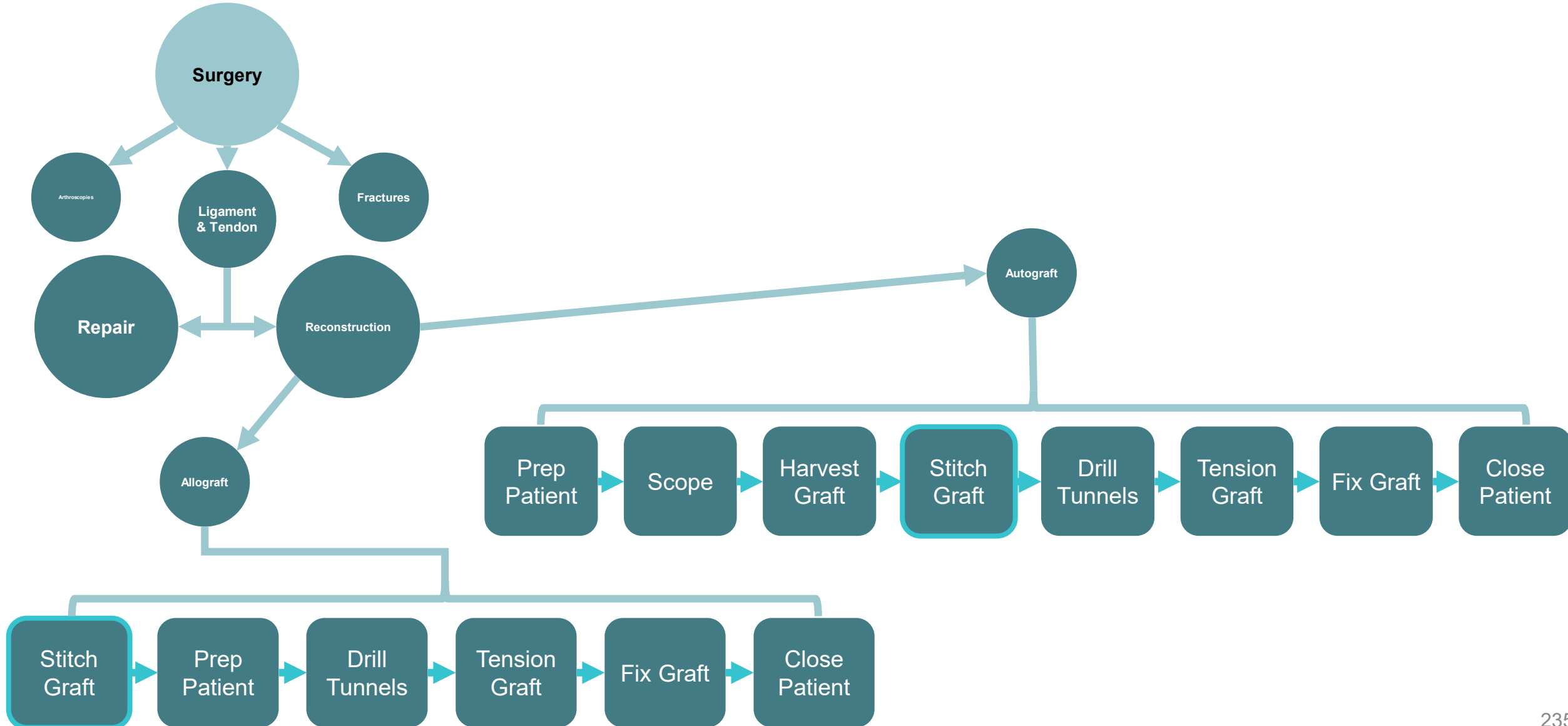
Allograft Jobs

a "graft" is harvested from a cadaver

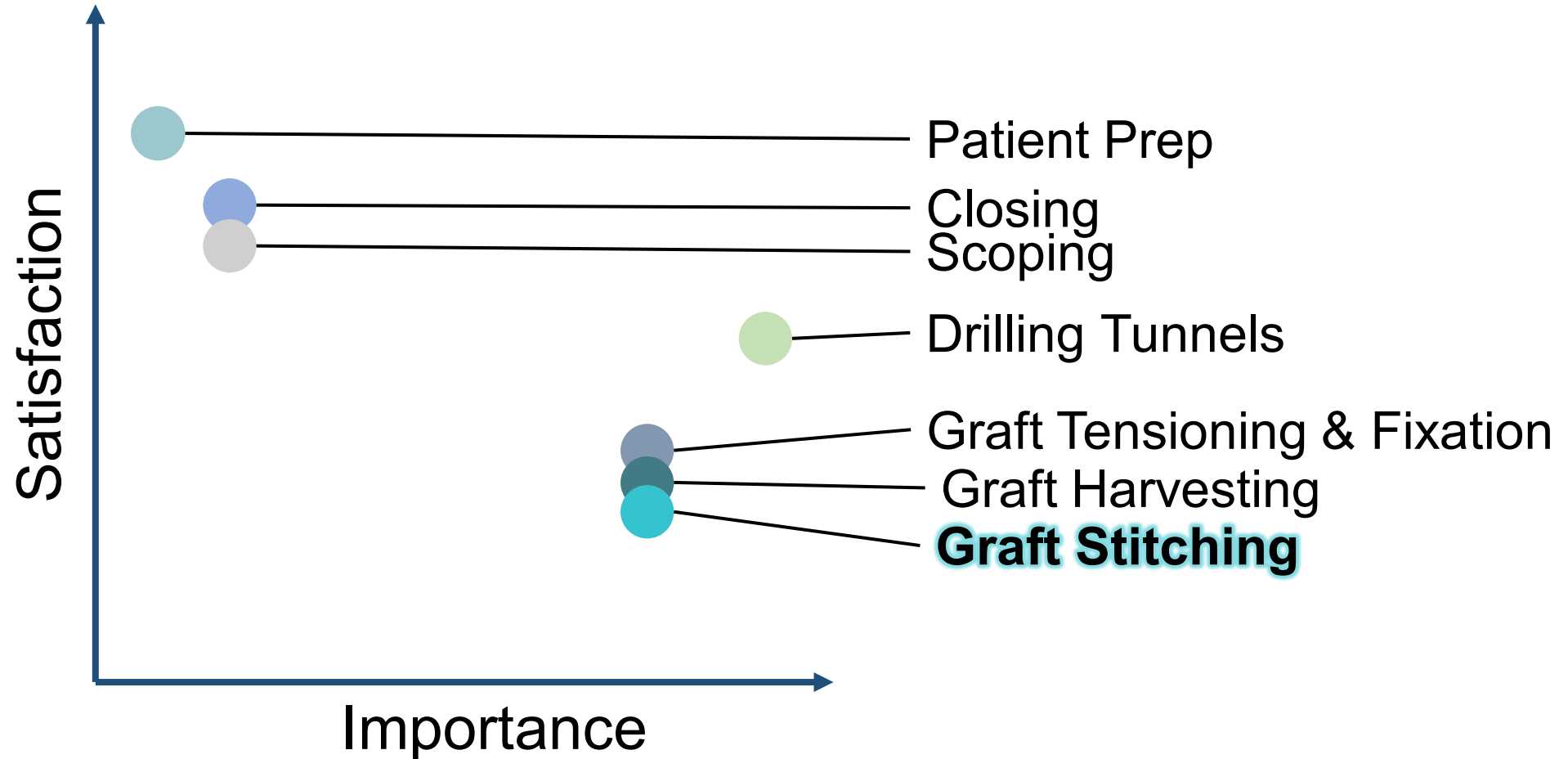




Jobs – Orthopedic Surgeon - Hospital



Jobs Satisfaction Importance - Hospitals



Preparing a graft is a top-of-mind area for improvement

“ I would typically hold the graft with a clamp which is kind of a **fumbling pain** in the *******, to be quite honest. ”



“ It's a **pain in the butt** trying to pass the sutures through it. I need someone to hold the other end and keep it stable. ”



“ Stitching's not that challenging for me now that I'm late in my career, it's just **tedious**. ”



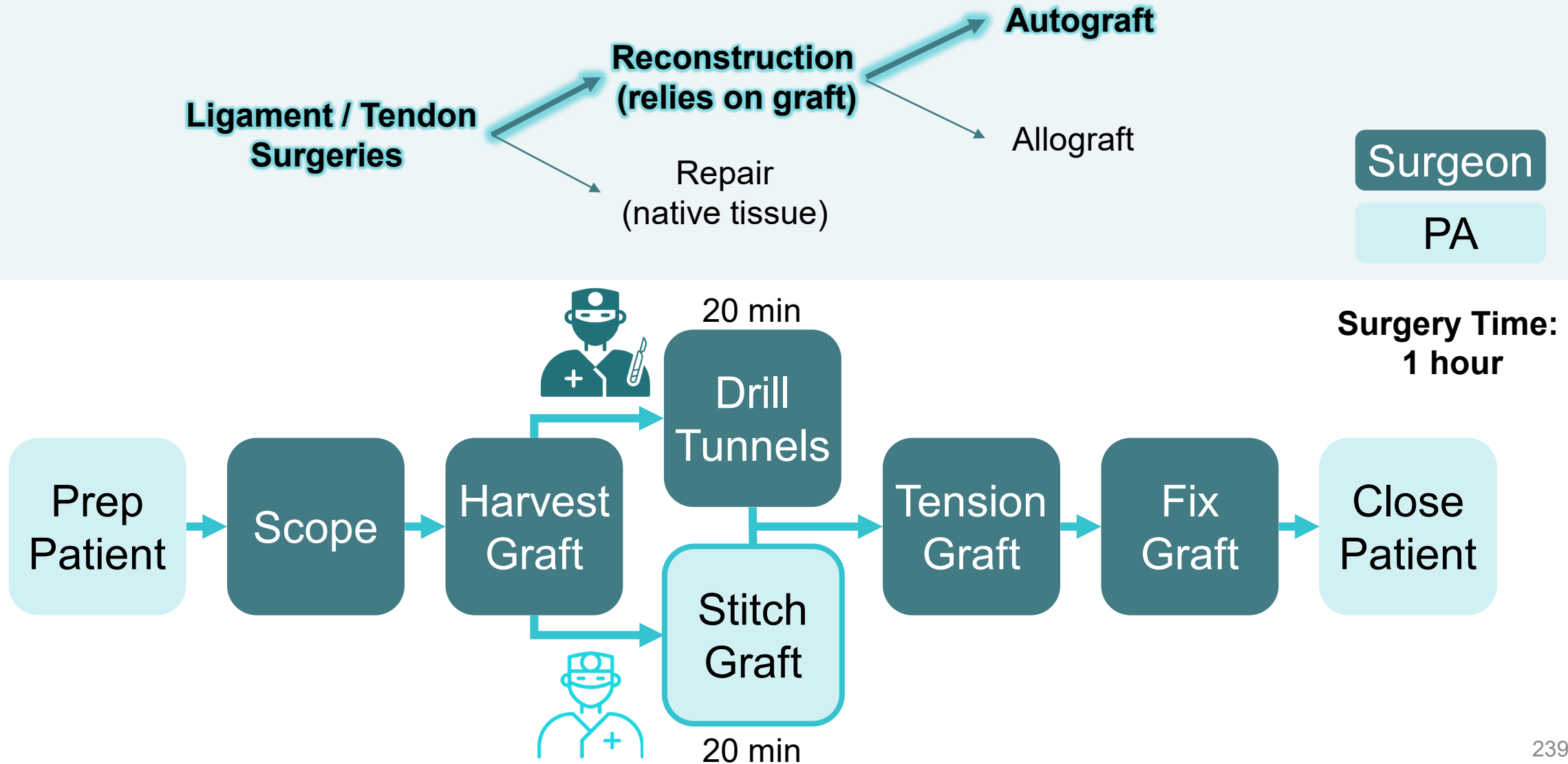
“ **Time is money** in the operating room. ”

Are there solutions already? How do you choose?

Workflow:

Autograft w/ Physician Assistant (PA)

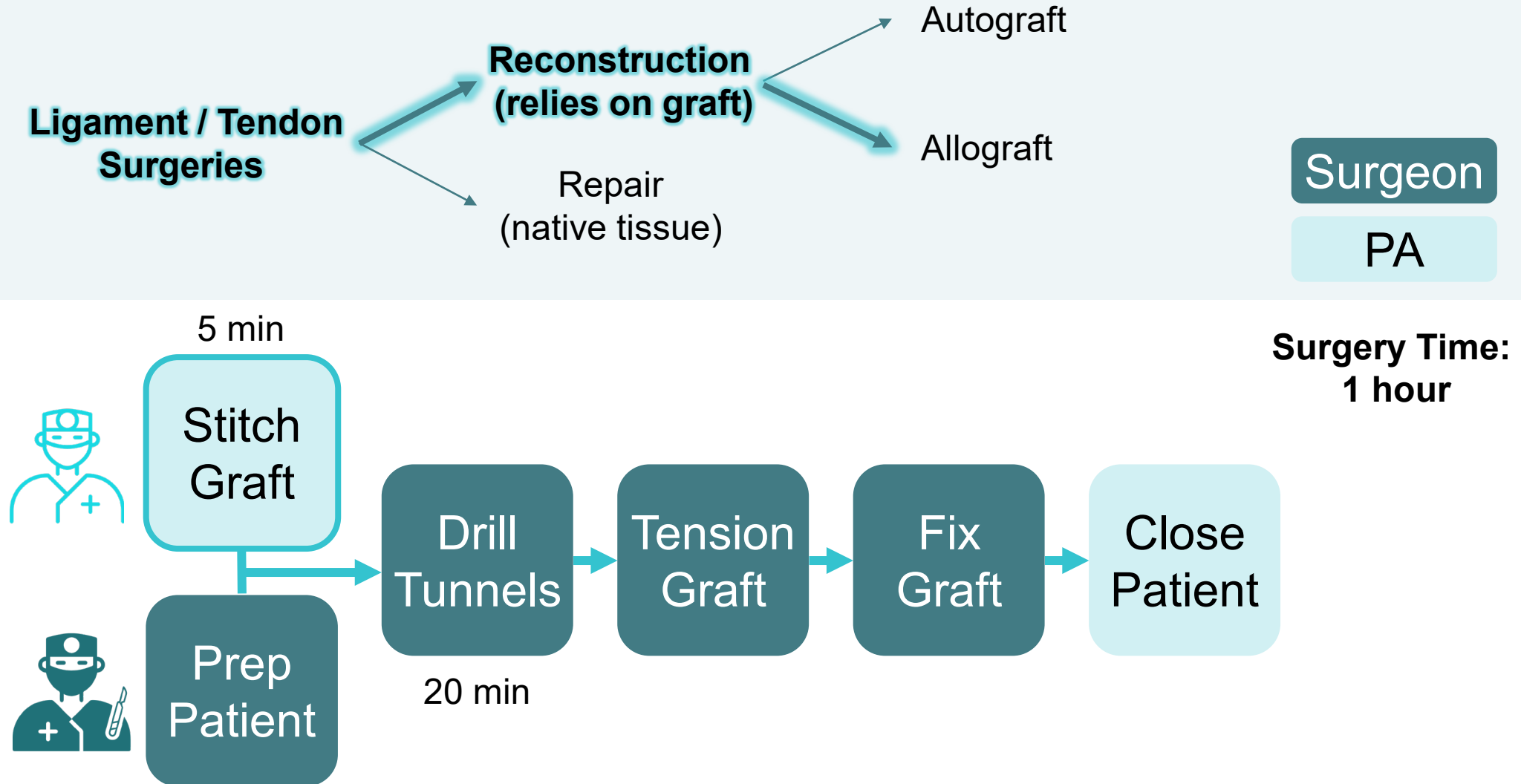
a "graft" is harvested from the patient's own body



Workflow:

Allograft w/ Physician Assistant (PA)

a "graft" is harvested from a cadaver





Jobs – Physician Assistant

Hospitals:

Admin.

On Call

Clinic

**Minor
Procedures**

**Surgery
1st Assist**

Surgery Centers:

Admin.

On Call

Clinic

**Minor
Procedures**

**Surgery
1st Assist**

“ It’s a race against the surgeon. The goal is for me to be done with the graft before they’re ready to need it. That is my biggest frustration with quad tendon grafts, because **the surgeon is ready before I’m done stitching.** ”

- Sports Medicine PA



Selection Criteria for Stitching

Criteria	# Mentions
Maximize Ease of Use	10
Maximize Strength of Stitch	9
Minimize Time under anesthesia	8
Minimize Cost	8
Suture Material	7
Minimize disruption to existing supplier relationships	3

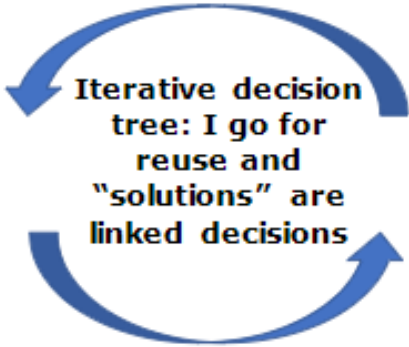
Others: Maximize Availability, Color (Max Visibility), Minimize Learning Curve, Minimize Failure/Rework Rate, Maximize Quality (undefined), Minimize collateral risks, Maximize Reliability, Maximize Reproducibility (procedural and doc to doc)



“ If you save time in suturing without compromising quality or success rate, we are curious. Improve on quality and success rate as well and we all win! ”

Jobs

Solutions



Manage Collected Water when sustainability or economic evaluation applies

- Sustainability (anticipate to right to operate issues)
- Economic: intake + discharge tariffs



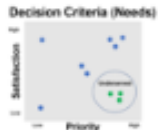
- Find usage/users for the reclaimed water
- Infrastructure available/possible between production and usage point
- RoI < 2 years (or reclaimed water price < other options). Consider capital availability from corporate programs/or additional value extracted from the marketing aspects of reuse
- Process Robustness vs fluctuations and uncertainties (runs unattended, attendance not increased vs. "treat for disposal")
- Reclaimed water quality robustness vs fluctuations and uncertainties (usage regulation or technical specification)



Assuming decision is made to treat for reuse, what decision criteria drive solution choices?

What are jobs (uses) for reused water that we can think of that drive specific needs?

Manage collected water by treating for reuse



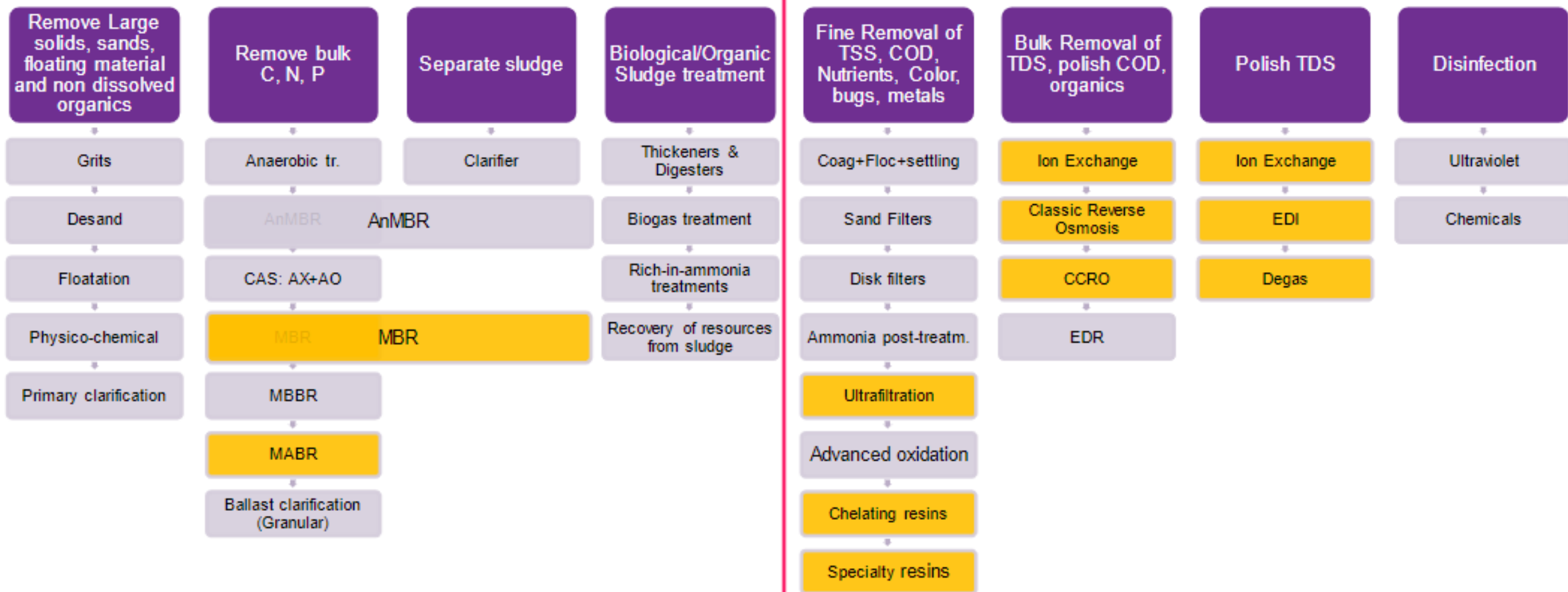
- WW characteristics and origin: projects with "biology" or without "biology"
- Reclaimed water Usage requirements (regulation or industrial specifications)
- Performance consistency (24h/365d) – Ease of operation
- Monitoring and control
- Proofs (references/warranties) of the technology/**combination of technologies in similar/same applications**
- Certification for some specific removal capacity (e.g. virus)
- **CAPEX and OPEX for the RoI analysis**
- Footprint availability



Jobs in Treat WW

WW treatment

Advanced treatment



Example

**Art of the
Possible!**

Insulin Delivery

Insulin Delivery

Who is responsible for choosing the solution hired to “*do the job of insulin delivery?*”

Endocrinologists

Endocrinologists

Help manage health for patients with hormone imbalances

Endocrinologists

Help manage health for patients with hormone imbalances

thyroid disorders

diabetes mellitus

Endocrinologists

Help manage health for patients with hormone imbalances

thyroid disorders

diabetes mellitus

Manage blood-glucose levels

Endocrinologists

Help manage health for patients with hormone imbalances

thyroid disorders

diabetes mellitus

Manage blood-glucose levels

Manage lifestyle

Insulin Therapy

Endocrinologists Example

Help manage health for patients with hormone imbalances

thyroid disorders

diabetes mellitus

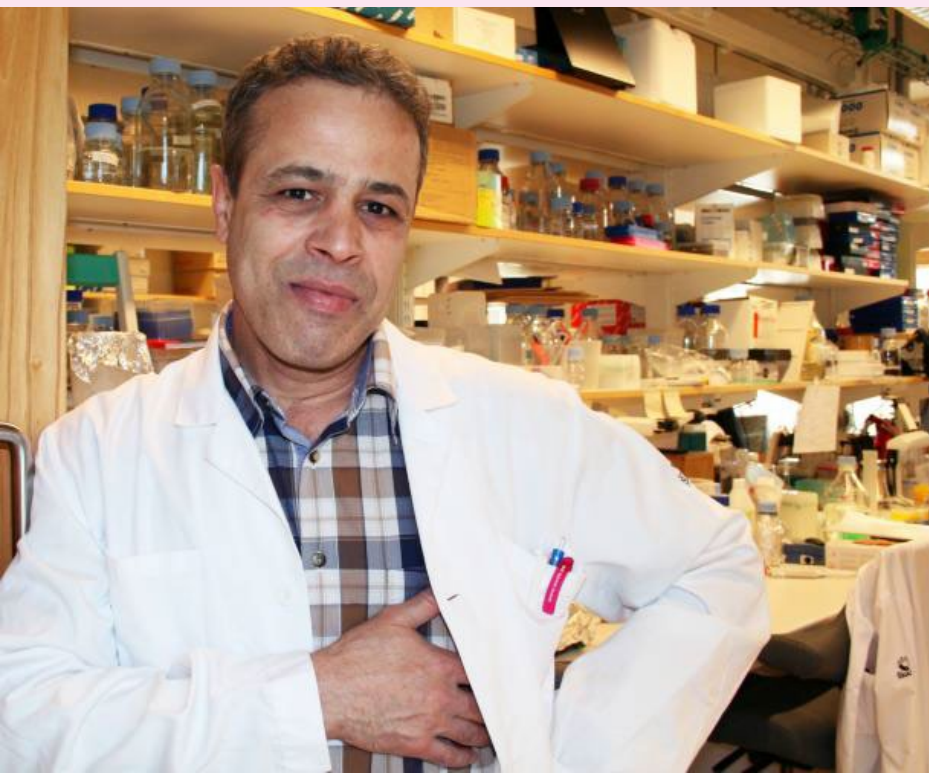
Manage blood-glucose levels

Manage lifestyle

Insulin Therapy



NEWS AND PRESS RELEASES



By blocking a protein, VDAC1, in the insulin-producing beta cells, it is possible to restore their normal function in case of type 2 diabetes. In preclinical experiments, the researchers behind a new study have also shown that it is possible to prevent the development of the disease. The findings are published in the scientific journal *Cell Metabolism*.

Endocrinologists Example

Help manage health for patients with hormone imbalances

thyroid disorders

diabetes mellitus

Manage blood-glucose levels

Restore function to insulin cells

Manage lifestyle

Insulin Therapy

Endocrinologists Example

Help manage health for patients with hormone imbalances

thyroid disorders

diabetes mellitus

Manage blood-glucose levels

Restore function to insulin cells

Manage lifestyle

Insulin Therapy

