Content

innovation Space

Where innovation starts

INTRODUCTION INNOVATION SPACE

Innovation Space in a nutschell

TU/e innovation Space is a community and facility that supports multidisciplinary hands-on education, engineering design and entrepreneurship. A place where students learn to deal with complex societal and industrial challenges, create prototypes and develop innovations in collaboration with researchers, businesses and other stakeholders.

For who is this handout?

This handout is meant for academics who are interested of doing their courses in innovation Space. The last year, we have experienced hands on what it is like to organize a course in innovation Space. With these learnings, we came up with an insightful process for you and innovation Space.

WHY

HOW

WHAT
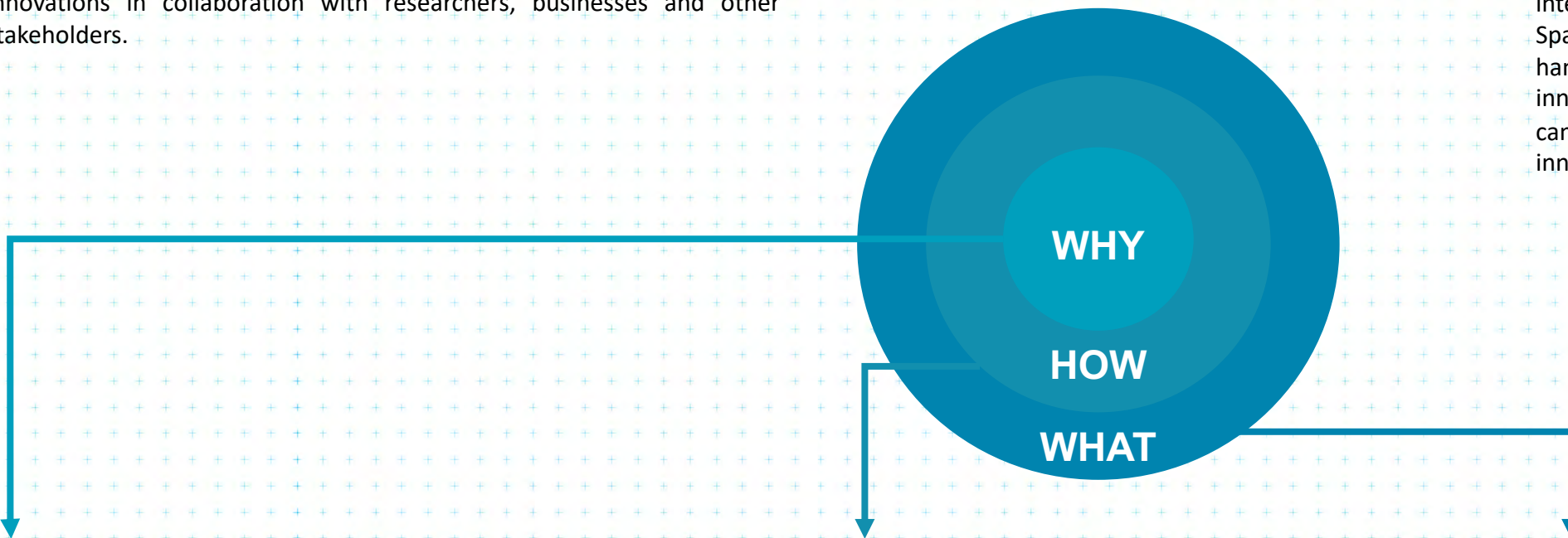
Why

Building on the strong scientific collaboration that the TU/e has with industry, innovation Space helps in developing an educational eco-system to deliver the best engineers for this industry, the "Engineers for the Future". In this way TU/e innovation Space strives to contribute to engineers that are better equipped to the demands on the job market. And serving as a visible and inspiring showcase, it would motivate current students to join, and also attract new students to TU/e.

How

TU/e innovation Space provides a platform where students and researchers work together in multidisciplinary teams, developing innovative science-based solutions to real-world challenges in collaboration with industry and the society around us. TU/e innovation Space supports and facilitates hands-on, project-based education with a multidisciplinary character.

What

TU/e innovation Space offers facilities to create multidisciplinary designed innovative prototypes and solutions - a maker space, meeting space and exhibition space - with technical support and surveillance and a community platform, e.g. for lecturers to develop new (hands-on) courses.

CORE TEAM INNOVATION SPACE

Management Team

ISABELLE REYMEN
Research director

ALFONS BRUEKERS
Managing director

Technical and communication support

EDWIN VAN DEN EINDEN
Workshop Coordinator

HUUB VAN DE PALEN
Technical Coordinator

SIMA PIODZIUTE
Education Coordinator

SANDRA PETERS
Education Coordinator

Business development

MARK COX
Business Development

MARIUS MONEN
Business Development

MATHIJS BULSINK
Business Development

JOLAN HULSCHER
Business Development

Education Cluster

SUZANNE JACOBS
Education Coordinator

LENNY APON
Education Coordinator

TOTAL PROCESS OVERVIEW

Must meet:
- Alignment and agreement on process.

Gate decider:
- Manager education innovation

Gate 1:
Initial screen

When approved:
- Innovation Space support in course development.

Stage 1
Course development

Actions to be taken:
- Develop learning objectives, assess-ment plan, and activities.

Deliverables:
- Approved course description (By EC).

Useful documents:
- Innovation space characteristics.
- Example course description.

Support offered by IS:
- Support in course design.

Must meet:
- Criteria of IS.
- Timeslot availability in IS.

Gate decider:
- Manager education innovation

Gate 2:
Course Decision

When approved:
- Official innovation Space course.
- Time slot for your course.

Stage 2
Course preparation

Actions to be taken:
- Develop study guide.
- Planning rooms.
- Equipment needed.
- Materials needed.
- Workshops offered.

Deliverables:
- Study guide.

Useful documents:
- Example study guide.
- Template study guide.

Support offered by IS:
- Course Promotion.
- Organization of rooms, equipment, materials, and workshops.

Must meet:
- Agreement between educator and education coordinator.

Gate decider:
- Education coordinator

Gate 3:
Planning Agreement

When approved:
- Course framework is ready , possible to insert existing case.

Stage 3
Case selection

Actions to be taken:
- Meeting with business development.
- Meetings with case owner.

Deliverables:
- Case assignments.
- NDA (if needed).
- Agreement on contact moments with case owners.

Useful documents:
- Example case assignment.
- Case template.

Support offered by IS:
- Input of cases.
- Mediation between educator case owners.

Must meet:
- Agreement between educator and case owner on deliverables.

Gate decider:
- Business developer.

Gate 4:
Case alignment

When approved:
- Course is ready to execute with new case.

Stage 4
Monitoring & evaluation

Actions to be taken:
- Combined meeting with ESA, Education coordinator, Business developer, and case owner.

Deliverables:
- Filled in evaluation form.

Useful documents:
- Evaluation form.

Support offered by IS:
- Organize meeting.

Manager education innovation
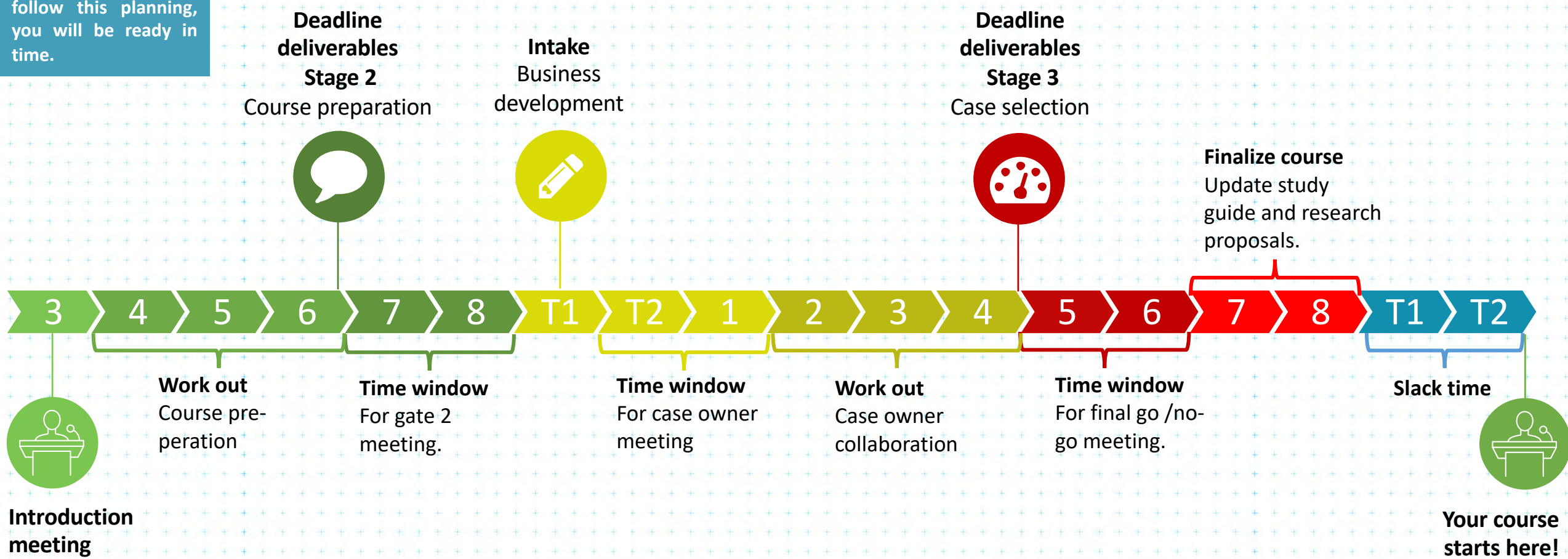
Education coordinator

Education coordinator
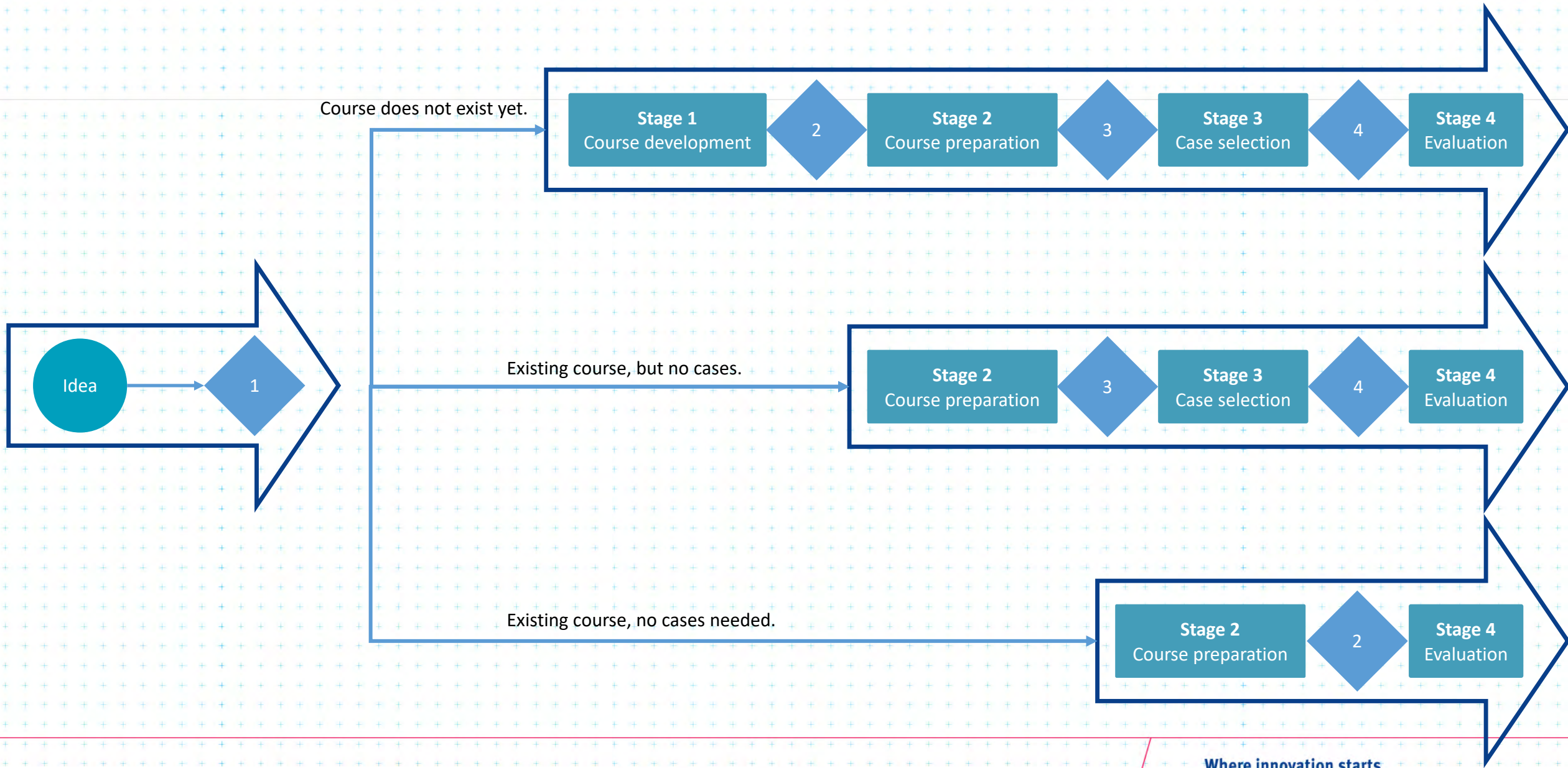
Business development

Responsible innovation space

TOTAL PROCESS OVERVIEW - TIMELINE

The other pages showed what needs to be done to give a course into innovation Space. This page shows a planning with deadlines. If you follow this planning, you will be ready in time.

Deadline deliverables Stage 2
Course preparation

Intake
Business development

Deadline deliverables Stage 3
Case selection

Finalize course
Update study guide and research proposals.

3 4 5 6 7 8 T1 T2 1 2 3 4 5 6 7 8 T1 T2

Introduction meeting

Work out
Course pre-peration

Time window
For gate 2 meeting.

Time window
For case owner meeting

Work out
Case owner collaboration

Time window
For final go /no-go meeting.

Slack time

Your course starts here!

GATE PROCESS

At each gate, a decision is made whether to continue the process or not. This decision is based on the prognosis and information available at that moment and is made different employees of innovation Space. The quality of the course is assessed at each of the gates. This concerns the quality of the execution, academic & business motivation to continue and the action plan showing what needs to be done in order for the course to have a chance at succeeding. After each gate, one of the following decisions can be made:

- **Go:** The course is good enough to move on to the next stage.

- **Kill:** The course is not good enough to develop further and is shut down right away.

- **Hold:** The course is not good enough to continue to develop it at this moment, but not so bad that it needs to be shut down immediately. It is put on hold to possibly be resumed at a later date.

- **Recycle:** The course is good enough to develop further, provided some changes are made.
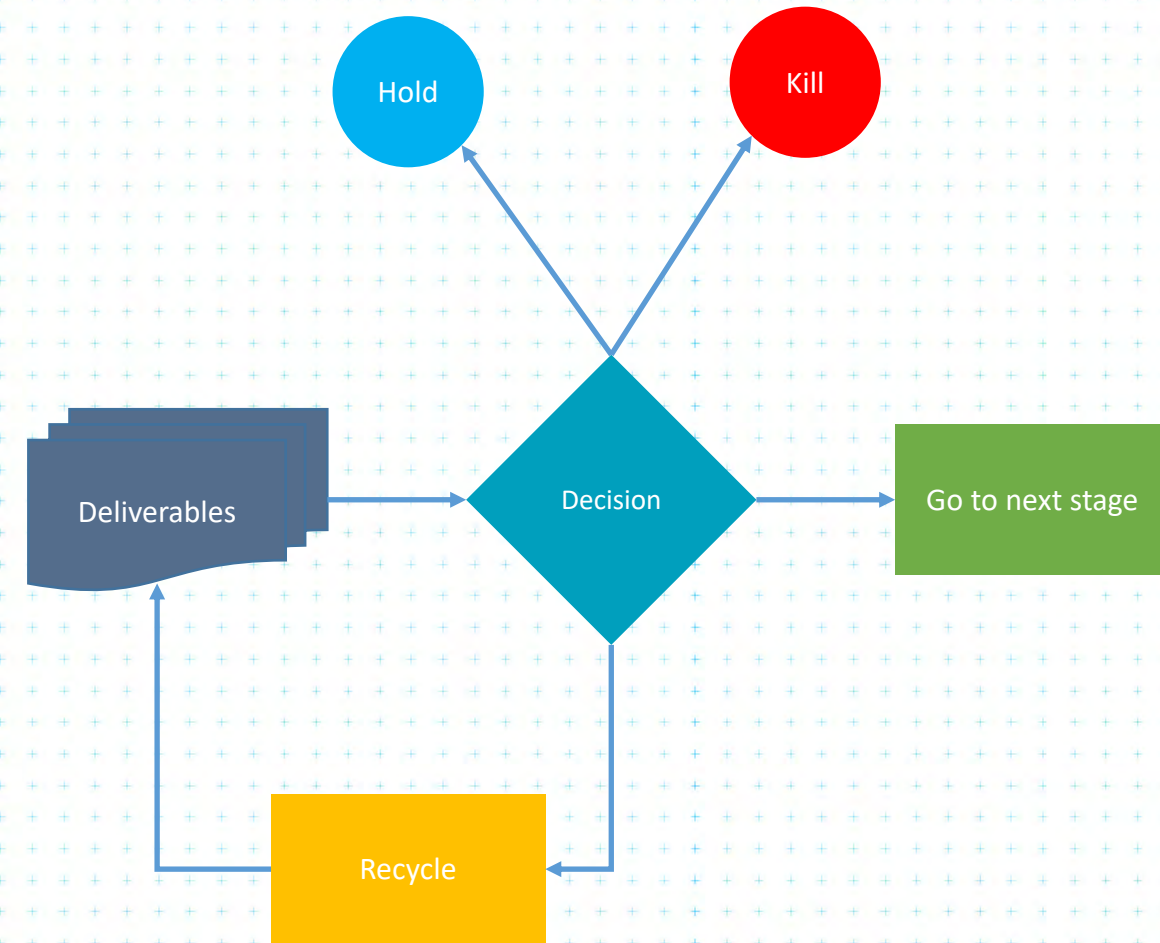
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Developing a course for innovation Space, is no other than creating a course for your faculty. However, certain factors have to be taken into account. On this page, we explain the most important steps.

Main contact person IS:
- manager education innovation.

Actions to be taken:
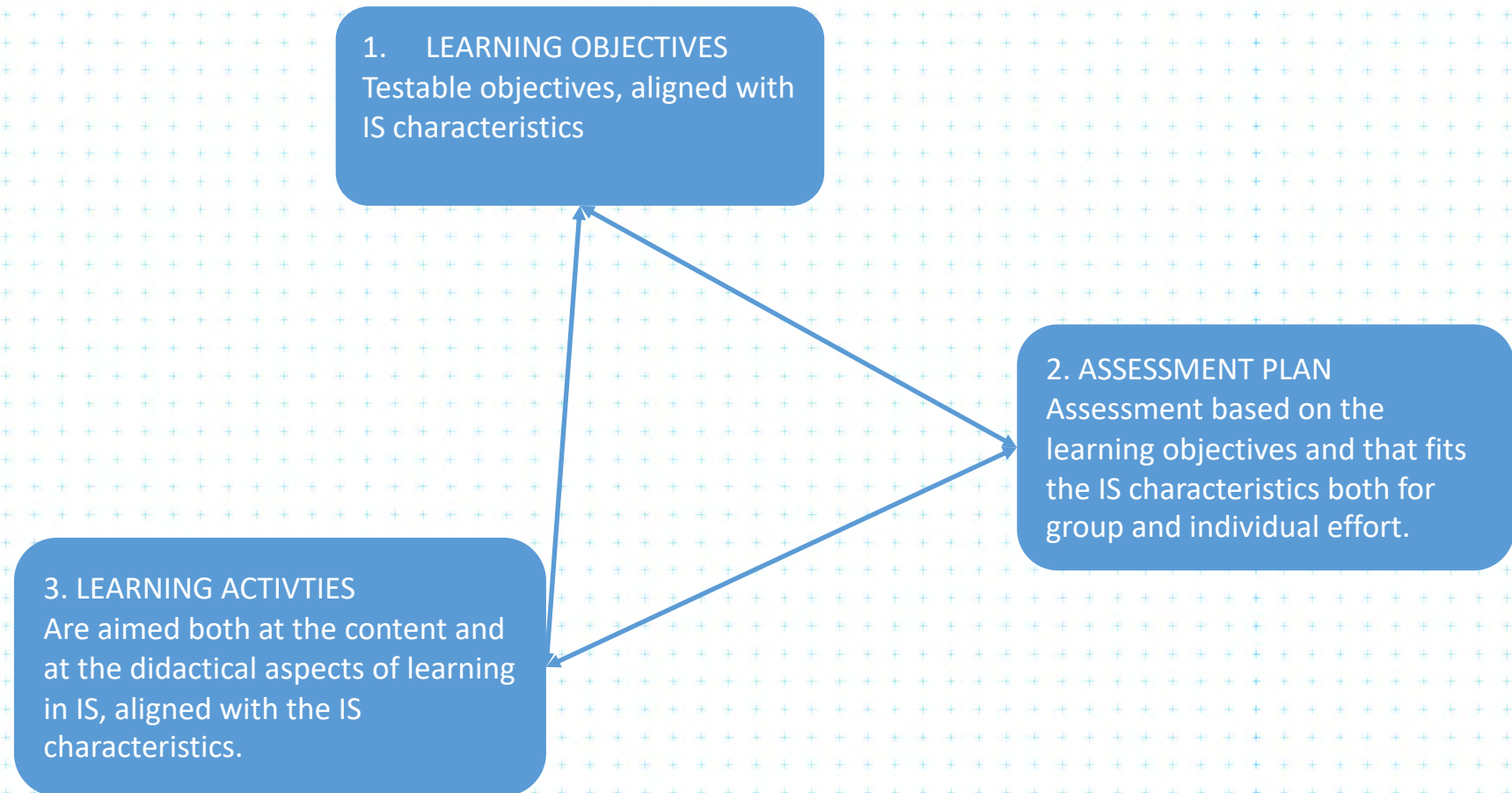- Develop learning objectives, assessment plan, and activities.

Useful documents:
- Innovation space characteristics.
- Example course description.

Support offered by IS:
- Support in course design.

Deliverables:
- Approved course description (By EC).

1. LEARNING OBJECTIVES
Testable objectives, aligned with IS characteristics

2. ASSESSMENT PLAN
Assessment based on the learning objectives and that fits the IS characteristics both for group and individual effort.

3. LEARNING ACTIVTIES
Are aimed both at the content and at the didactical aspects of learning in IS, aligned with the IS characteristics.

Gate decider: manager education innovation
When approved: We can bring the course to stage 2, you are an official innovation space course, and the timeslot is reserved for you.

Where innovation starts

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Course preparation is about creating the framework in which the course can be given. The innovation Space team helps you in a variety of tasks that are needed to be done. On the right, we guide you to this process.

Main contact person IS:
- Education coordinator

Actions to be taken:
- Develop study guide.
- Planning rooms.
- Equipment.
- Materials.
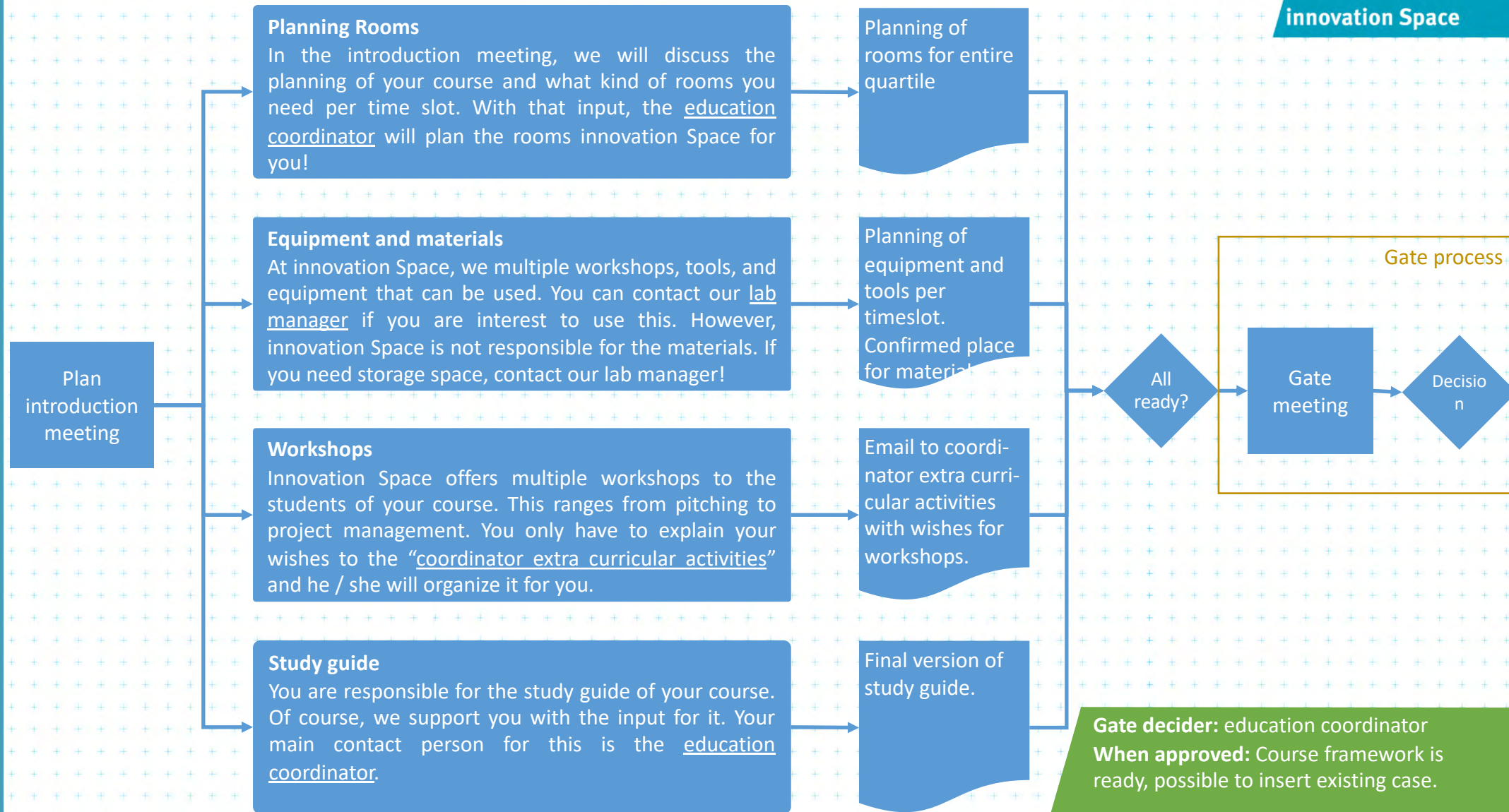- Workshops.

Useful documents:
- Example study guide.
- Template study guide.
- Menu of workshops

Support offered by IS:
- Course Promotion.
- Organization of rooms, equipment, materials, and workshops.

Deliverables:
- Study guide.

Plan introduction meeting

Planning Rooms
In the introduction meeting, we will discuss the planning of your course and what kind of rooms you need per time slot. With that input, the education coordinator will plan the rooms innovation Space for you!

Planning of rooms for entire quartile

Equipment and materials
At innovation Space, we multiple workshops, tools, and equipment that can be used. You can contact our lab manager if you are interest to use this. However, innovation Space is not responsible for the materials. If you need storage space, contact our lab manager!

Planning of equipment and tools per timeslot. Confirmed place for material.

Workshops
Innovation Space offers multiple workshops to the students of your course. This ranges from pitching to project management. You only have to explain your wishes to the "coordinator extra curricular activities" and he / she will organize it for you.

Email to coordinator extra curricular activities with wishes for workshops.

Study guide
You are responsible for the study guide of your course. Of course, we support you with the input for it. Your main contact person for this is the education coordinator.

Final version of study guide.

All ready?

Gate process

Gate meeting

Decision

Gate decider: education coordinator
When approved: Course framework is ready, possible to insert existing case.

STAGE 3: CASE SELECTION

If it would be to your interested, we can help to you implement a case into your course in innovation space. Our business collaboration team can support you in several ways. This page shows how.

Main contact person IS:
- Business development

Actions to be taken:
- Meeting with business development.
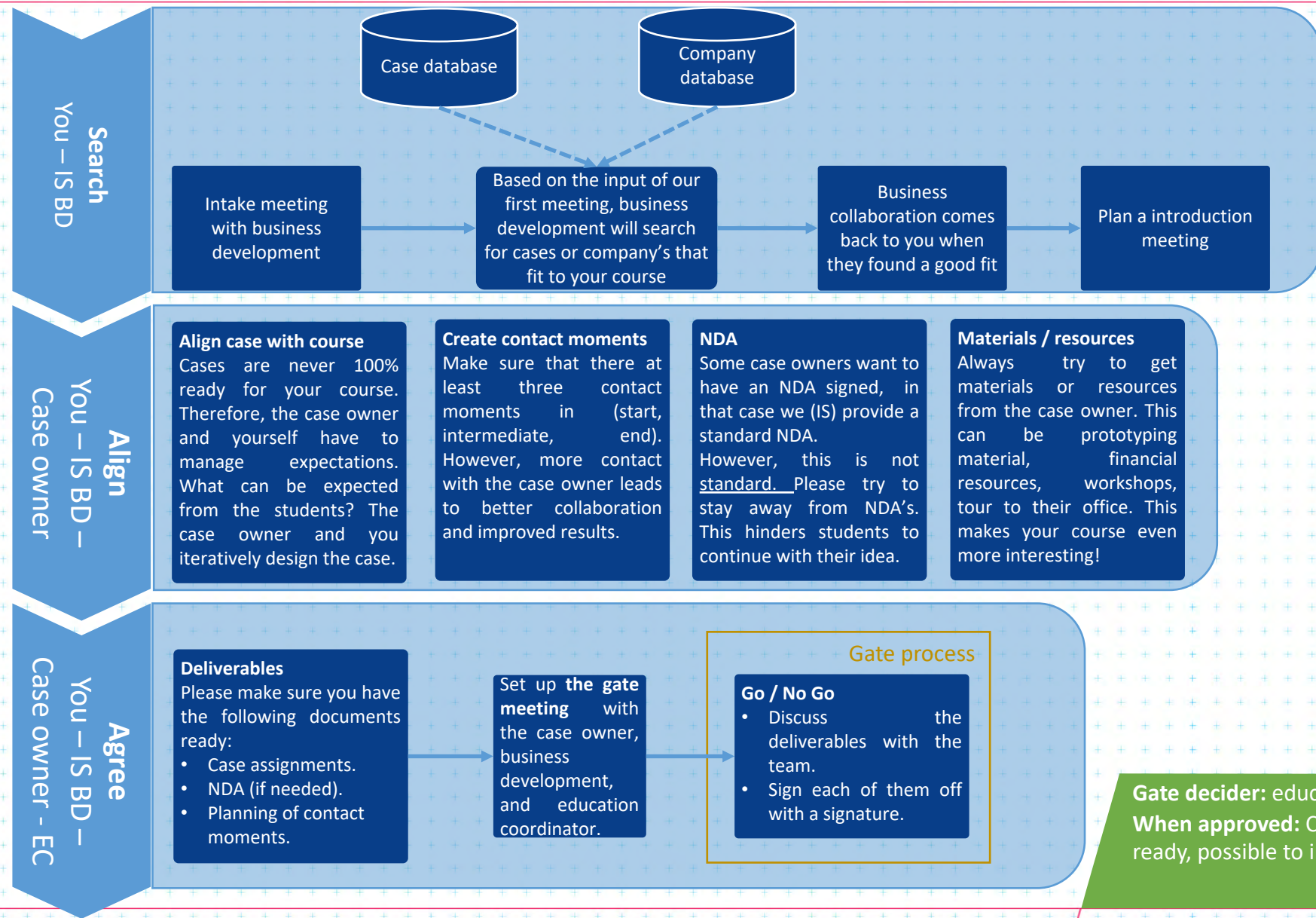- Meetings with case owner.

Deliverables:
- Case assignments.
- NDA (if needed).
- Agreement on contact moments with case owners.

Useful documents:
- Example case assignment.
- Case template.

Support offered by IS:
- Input of cases.
- Mediation between educator case owners.

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Search
You – IS BD

Case database

Company database

| Intake meeting with business development | Based on the input of our first meeting, business development will search for cases or company's that fit to your course | Business collaboration comes back to you when they found a good fit | Plan a introduction meeting |

Align
You – IS BD – Case owner

Align case with course
Cases are never 100% ready for your course. Therefore, the case owner and yourself have to manage expectations. What can be expected from the students? The case owner and you iteratively design the case.

Create contact moments
Make sure that there at least three contact moments in (start, intermediate, end). However, more contact with the case owner leads to better collaboration and improved results.

NDA
Some case owners want to have an NDA signed, in that case we (IS) provide a standard NDA.
However, this is not standard. Please try to stay away from NDA's. This hinders students to continue with their idea.

Materials / resources
Always try to get materials or resources from the case owner. This can be prototyping material, financial resources, workshops, tour to their office. This makes your course even more interesting!

Agree
You – IS BD – Case owner - EC

Deliverables
Please make sure you have the following documents ready:
- Case assignments.
- NDA (if needed).
- Planning of contact moments.

Set up **the gate meeting** with the case owner, business development, and education coordinator.

Gate process

Go / No Go
- Discuss the deliverables with the team.
- Sign each of them off with a signature.

Gate decider: education coordinator
When approved: Course framework is ready, possible to insert existing case.

STAGE 4: MONITORING & EVALUATION

If you completed all previous stages completely, you should be entirely prepared to do your course in innovation Space. However, we learned that there are always last minute changes. Therefore, we have two contacts to which you can escalate.

Actions to be taken:
- Escalate (if needed).
- Combined meeting with ESA, Education coordinator, Business developer, and case owner.

Deliverables:
- Filled in evaluation form.

Useful documents:
- Evaluation form.

Support offered by IS:
- Organize meeting.
- Ad hoc support during course (if needed).

Change in planning
When you decide to change the planning of your course, for example, change the date of the final presentations. Please inform the education coordinator. We can help you to find the right space for you activity.

Problem with case owner
When you have problems with the case owner, please contact the responsible business developer during the case selection process.

Equipment and materials
In case you need extra equipment, or equipment is broken / student lost equipment. Please contact our lab manager. If you need extra storage space for your materials / prototypes, please contact our lab manager.

Fill in the evaluation form.

All ready?

Evaluation meeting

Gate decider: education coordinator
When approved: Course framework is ready, possible to insert existing case.

KEY LEARNINGS

Course preparation

Planning rooms
Since there are not that many different rooms in innovation Space, it's essential to discuss the planning of the rooms timely (six to eight weeks before the course starts). My reccomendation: Go through your entire course week by week with the education coordinator. Explain what is needed per contact hour.

Final presentation event
In Q4 2018 , we held a large final presentation event where eight groups of two different courses presented their findings toward a large number of industrial partners. Although the students were very nervous to do this, they were super excited afterwards. They loved the fact that it was a real life case and people cared about what they were doing. They also liked that they could speak to the people from industry afterwards and share ideas on how to continue with their idea. Therefore, my recommendation: always try to host a kick-off event where a number of industrial partners is present. This makes students much more motivated to make something out of their project. Host a large final event where students can pitch their ideas to industrial partners. This is essential for follow-up after the course.

Materials and equipment
In Q1 2019, the students needed outdoor lighting prototyping material. This was not in property of the university. So what to do? Luckily, our industrial partner had four flight cases of prototyping material ready to be used. Problem: they returned from Poland the day before the students needed it. Also, there was no transport from the warehouse to the university. In the end, I borrowed a car and trailer from the URE team to pick up 450 kilo of prototyping material. It was ready to be used 5 minutes before the course started. My recommendation: always ask the industrial partner if they have prototyping material. But also always ask if they can fix the transport from their warehouse to the university.

Case selection

Alignment case with course
In Q4 2018, we held several cases on outdoor lighting. One of the ideas we wanted to continue in two other courses in Q1 2019. This was very tricky, since I had to mediate between the students, teachers and industry. All parties had to be aligned. The students feel that somebody else is going to run with their idea, which feels like steeling. The teacher had to be convinced that the continuation of this idea is better than just a random case. The idea of the students was part of a larger project of industry (Jouw Licht op 040). Therefore, the industry project had its own timeline as well. It was tricky how to fit this student project in the larger one. However, in the end, we had a very nice project and more than 10 persons from industry present at the final presentations. My recommendation: only put time in the continuation of the idea if the students are really enthusiastic in doing so.

Create contact moments (coaching)
Here, it's very important to know what kind of coaching is needed. In Q1 we needed coaching for a course. I thought it was general coaching, so I made sure the innovation manager would be present. However, the students needed expert knowledge on light design, they needed a light designer. Complete different field of expertise. In the end, I made sure that a light designer would coach for 5 sessions. My recommendation: Explain in detail what kind of coaching is needed, general case coaching or specific knowledge on a particular topic.

Don't underestimate the slowness of industrial partners
You have to understand that doing a case at innovation Space is not the primary business target for case owners. The result of this, is that case owners tend to 'forget' that they agreed on the case. I performed a lot of calls and mails to make sure everybody was aligned. Therefore my recommendation: get the agreements on black and white and sign it. This creates more ownership at case owners.

Key Achievements

Project done for:
- **The secret life of light (Q4 and Q1)**
  - Jouw licht op 040 – Tracé de Ring
  - Atlas
- **Entrepreneurship in Action (Q4 and Q1)**
  - Jouw licht op 040 – Tracé de Ring
- **The liberation of Light (Q1)**
  - Jouw licht op 040 – Tracé de Ring
  - Atlas
- **Light and Experience (Q2)**
  - Jouw licht op 040 – Eisenhowerlaan
  - Social lighting
- **Innovation Space BEP (Q3)**
  - Jouw licht op 040 – Sorama
- **Innovation Space project (Q3)**
  - Atlas

Successes
- **Final event for The secret life of light Entrepreneurship in Action**: In Q4 and Q1 we held shared final presentations to increase the community feeling for innovation Space intelligent lighting.
- **Start-ups:** Out of the project that were done, two startups called LED connect and Licht op Groen emerged.
- **Continuous innovation:** For the first time ever, we managed to continue a project from the secret life of light (Q4) into two other course. This was in the Liberation of Light (Q1) and Entrepreneurship in action (Q1).
- **Process overview:** we managed to create a clear process for professors and ourselves to implement courses in innovation Space. The process is shown in this document.
- **Materials:** We purchased both indoor and outdoor prototyping materials that students can use this year.

Materials