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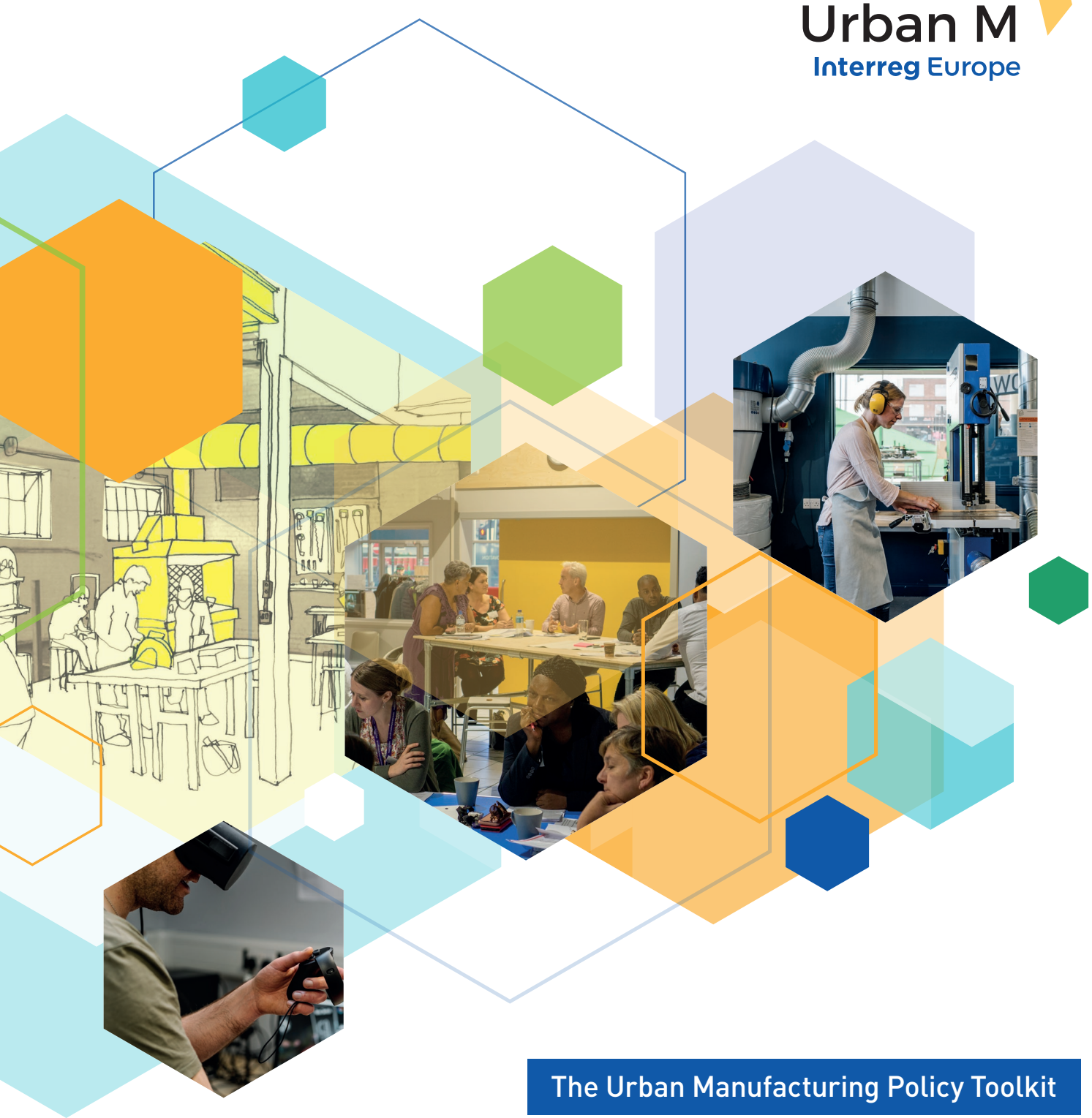

The Urban Manufacturing Policy Toolkit

SCOPE YOUR MAKERSPACE

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Designing policies to support collaborative makerspaces.

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Introduction

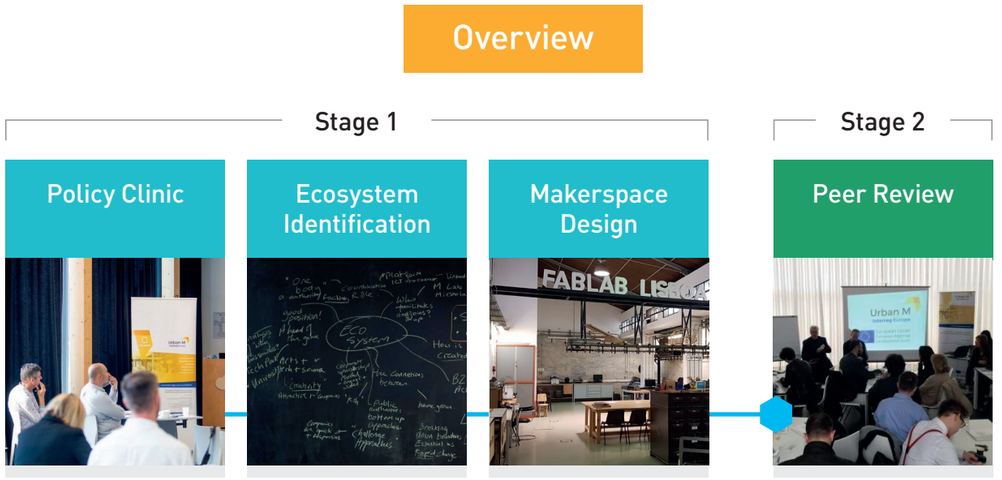
The Urban Manufacturing project is funded by the Interreg Europe programme and explores how innovation policies can be designed to help create and sustain collaborative makerspaces. The project is led by the STEAM Team at Birmingham City University and involves a partnership of eight European cities and regions: Birmingham, Bratislava, Kranj, Lazio, Lisbon, San Sebastián, Vilnius and Zagreb.

Collaborative makerspaces take many forms, but common to all is the idea of producing physical objects through cooperation. This commitment to 'working together' is found throughout their operating models, often in the stages of ideas generation and fabrication, and is particularly effective when knowledge from different sectors is combined. The benefits are numerous, including an enhanced sense of community and the creation of products that respond to multiple perspectives. Examples of collaborative makerspaces include Fab Labs, Open-access Workshops and Craft Centres.

This Toolkit is intended for use by policy makers, to help ensure that collaborative makerspaces thrive. It was developed by experts from STEAMhouse (Birmingham, UK) and consists of four parts across two stages, all of which were devised and tested during the first phase of the project, resulting in eight policy action plans. The Toolkit can be downloaded for free and used without direction but is experienced at its best when facilitated by a member of the Urban Manufacturing partnership.

We hope you enjoy scoping your makerspace!

Overview



The Urban Manufacturing Policy Toolkit

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STAGE 1 – INVESTIGATION

Part 1 – Policy Clinic

Session 1 – Frame

What is a Policy Clinic?

A Policy Clinic is a thematic workshop for policy makers. The approach is participatory and is designed to help you develop your innovation strategy through inviting other cities and regions to comment on how you might create and sustain collaborative makerspaces. The focus is on applying learning from live case studies to a specific challenge that you are facing. The process helps to identify key points of interest and asks you to consider how these could be applied to your particular context, highlighting requirements for a policy action plan.

INSTRUCTIONS

TIME REQUIRED: 2 hours

1. **Locate the innovation strategy for your city or region.** This can take a number of different forms, depending on the governance mechanisms and priorities of your area. It's possible you might have more than one, in which case select the strategy that most clearly responds to the practicalities of how new thinking will be stimulated and commercialised. The strategy does not need to mention collaborative makerspaces at this stage, as the point of the Policy Clinic is to identify ways in which they could be included and developed.
2. **With the help of trusted colleagues, try to identify the thematic areas of the strategy:** what are the main concerns for your city or region in supporting innovation? To help you, when reviewing strategies for Urban Manufacturing, seven themes were identified:

   - Communities
   - Ecosystems (including location)
   - Enterprise (including start-ups and entrepreneurship)
   - Funding
   - Results of investment (including regeneration)
   - Routes to market (including supply chains and market potential)
   - STEAM (Science, Technology, Engineering, Arts and Maths)

3. **Take your themes and consider if any are of particular importance to your city or region.** Choose the theme that is most pressing and/or within your area of control - this is the lens through which you will consider the role of makerspaces. Explore this theme through Template 1.

Template 1 – Policy Clinic Framing

Use this template to record your thoughts about the nature of your innovation strategy and any challenges you can identify that might be restricting support and/or development of makerspaces in your area. You will be asked to identify one challenge as the focus of your Policy Clinic. At this stage, you are not expected to know all the answers, the point is to understand the wider context and what help you might need.

Provide responses to the following – keep a written record as it will help you in the future.

A. Which theme have you chosen from your innovation strategy?

B. Why do you consider that theme to have importance in your city or region?

C. How do makerspaces relate to that theme (answer as fully as you can given your current understanding)?

D. Write down everything you know about makerspaces in your city or region.

E. Having done that write down any gaps in your knowledge.
E.g. how many makerspaces are in my city, where are my makerspaces located, how many people use makerspaces?

F. What kind of support do you now think makerspaces might need in your area?

G. So, what challenge needs to be overcome in order to address this?

H. Would that challenge be best tackled through a change in governance, strategy or by developing a new project? Write down your thoughts.

I. What would you consider to be a successful outcome from the Policy Clinic?
E.g. new project ideas, better understanding of users, linking a change in strategy to evidence of what works well.

Session 2 – Deliver

4. **Having completed Template 1, you are now ready to organise your Policy Clinic.** This is best tackled with support from a member of the Urban Manufacturing partnership but can be arranged alone. The aim is to gain insight into your challenge, originally recorded in box G of Template 1.

5. **You will need ...**

- A room large enough to hold your group
- Tables and chairs
- Projector and screen
- Flip chart
- Template 2 and pens
- A schedule for the day, allowing for travel and approx 1 hour 30 mins per study visit
- Transport between study visits (if required)
- Lunch and refreshments
- A facilitator
- People from outside your city or region to provide external reflection

Suggested Schedule:

DAY 1

- 30 mins Welcome and coffee
- 30 mins Policy Clinic challenge introduced
- 30 mins Policy Clinic process explained by facilitator
- 60 mins Travel to Study Visit 1
- 30 mins Lunch
- 90 mins Study Visit 1
- 15 mins Reflections – complete first column of Template 2
- 60 mins Travel to Study Visit 2
- 90 mins Study Visit 2
- 15 mins Reflections – complete second column of Template 2

DAY 2

- 60 mins Travel to Study Visit 3
- 90 mins Study Visit 3
- 15 mins Reflections – complete third column of Template 2
- 60 mins Travel to final destination
- 90 mins Actions – complete fourth column of template and collectively consider potential solutions to the challenge

6. **The Policy Clinic is arranged around a series of study visits that you feel offer perspectives on the challenge you have identified.** These perspectives can be positive or negative, but the idea is to demonstrate the breadth of approaches that relate to the area being investigated. Examples include visiting the different types of makerspace in a city or region, or the shops from which makers sell their products. It is ideal if at least one of the study visits includes the opportunity to talk with a makerspace manager, to help in understanding the practicalities of running such a facility.

7. **During the Urban Manufacturing project, 3 study visits of 90 minutes each were found to provide a good amount of material for discussion.** You should include your colleagues in the Policy Clinic, so that you can build institutional knowledge. It is an essential part of the process that policy makers and/or other experts from cities or regions outside your own are also invited to take part. This is so your assumptions can be tested and that insights can be spread to multiple locations.

8. **The Policy Clinic requires use of Template 2. This provides space for participants to reflect on what has been seen/experienced. It maps out 3 broad areas:**

- The challenge being considered
- The notable elements of each study visit
- The action that could result

The people from the host city or region should consider the challenge in relation to their own situation. The people from the visiting cities or regions are asked to consider what might be insightful for the host and also to reflect on what might have been learned for application in their own contexts. It helps if the people from the visiting cities or regions share an interest in the challenge being tackled, with the information from Template 1 circulated beforehand to check alignment.

9. **To run your Policy Clinic, book a room, resources, facilitator and study visits, and invite your participants.** Prepare a short introduction to your challenge and follow the suggested schedule. Use Template 2 to collect the thinking of the group (one per participant). An Urban Manufacturing partner can help with identifying the most fitting study visits, budgetary requirements, organisation and facilitation of the Policy Clinic. Version of Template 2, with questions related to specific challenges, can be created on request.

Template 2 – Policy Clinic Collection

POLICY CLINIC	STUDY VISIT 1	STUDY VISIT 2	STUDY VISIT 3	SUMMARY
CITY OR REGION:	How was this makerspace established? (e.g. who were the founders, what funding was secured?)	How was this makerspace established? (e.g. who were the founders, what funding was secured?)	How was this makerspace established? (e.g. who were the founders, what funding was secured?)	What action could the host city or region take to progress their challenge?
DATE:	How is this makerspace sustained? (e.g. what is the business model, is there a membership scheme?)	How is this makerspace sustained? (e.g. what is the business model, is there a membership scheme?)	How is this makerspace sustained? (e.g. what is the business model, is there a membership scheme?)	
THEME:	How could this makerspace develop over the next 1-3 years? (e.g. how might the city or region grow, what are the emerging strengths?)	How could this makerspace develop over the next 1-3 years? (e.g. how might the city or region grow, what are the emerging strengths?)	How could this makerspace develop over the next 1-3 years? (e.g. how might the city or region grow, what are the emerging strengths?)	What action could a visiting city or region take to embed learning from this Policy Clinic?
CHALLENGE:	What evidence is there of collaboration? (e.g. what social events are organised, what incentives exist for sharing IP?)	What evidence is there of collaboration? (e.g. what social events are organised, what incentives exist for sharing IP?)	What evidence is there of collaboration? (e.g. what social events are organised, what incentives exist for sharing IP?)	

Session 3 – Record

INSTRUCTIONS

TIME REQUIRED: 1 hour

10. **In the final action of Day 2, the facilitator should have allowed you 90 minutes to consider potential solutions to your challenge, through group discussion.** The focus of this should have been the summary points collected in the fourth column of the Template 2s.

11. **At the end of the session, you should have collected all the completed Template 2s.** In the few days after the Policy Clinic you should record the nature of the activity you have undertaken and write up the findings to solidify the kind of changes that could be made to your innovation strategy to help makerspaces thrive. Below are suggested prompts for this work.

- Title of Policy Clinic
- Location
- Date
- Name of the strategy from which the challenge was derived
- Policy Clinic Theme (e.g. Ecosystems)
- The type of change the city is hoping to make (Question H, Template 1)
- The challenge set for the Policy Clinic
- Attendees (name, city, role)
- Schedule
- Summary of each of the Study Visits (who, what, where, photos)
- Summary of the final action of Day 2 – the collectively considered potential solutions to the challenge
- Potential barriers to policy change
- Potential areas of development

12. **It is also recommended to obtain feedback from the facilitator of the Policy Clinic, who will be able to provide an alternative perspective on the discussions and learning.** Below is a suggested format for their input.

A potential solution to the challenge
E.g. A platform to connect makerspaces.

How that solution could be realised
E.g. Through building a web-based platform linked to a Creative Industries Federation.

The result and/or effect of realising the solution
E.g. Makers are better connected to makerspaces and can help stakeholders navigate the city's offer.

Part 2 – Ecosystem Identification

Session 1 – Position

What is an Ecosystem?

An ecosystem, and specifically in the case of Urban Manufacturing a makerspace ecosystem, is the interdependent collection of people, places and resources that support making, production and innovation in a city or region.

Participants include makers, scientists, artists, entrepreneurs, investors, funders, researchers and policy makers, as well as business support services such as accountants, designers and those who provide professional development.

The characteristics and priorities of the people, places and resources affect the degree to which the ecosystem can be said to be flourishing.

What is this session for?

This session will help you understand what stage of development your makerspace ecosystem has attained, and so, what the next stage of development might be. The characteristics shown on the right are based on analysis of the situations in the 8 partner cities and regions of the Urban Manufacturing project: Birmingham, Bratislava, Kranj, Lazio, Lisbon, San Sebastián, Vilnius and Zagreb.

INSTRUCTIONS

TIME REQUIRED: 30 mins

1. **Gather your colleagues together. Ideally this will take place after your Policy Clinic, so that you have had a chance to explore your city or region.** Look at the collection of characteristics – they are organised into four groups, each representing a different stage of ecosystem development. Circle the statements that you feel are most representative of the current situation in your city or region, then turn over to page 16.

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CHARACTERISTICS

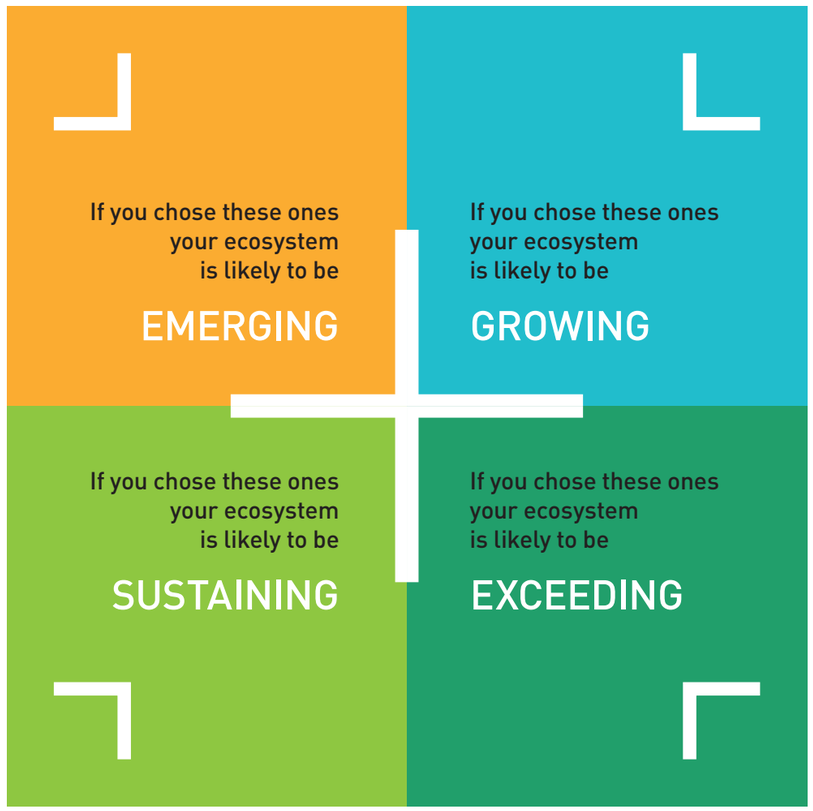
- Conversations about makerspaces are taking place
- There are measures to improve innovation skills
- Communities of makers can be identified
- Small-scale infrastructure for makers exists
- Innovation festivals are held and involve knowledge infrastructure such as schools and universities

- Maker infrastructure exists, but there are plans to introduce more
- The role of the city/region in supporting innovation is built into the overarching city/region strategy
- Policy makers are aware of the 'innovative city' concept
- Existing maker infrastructure connects to technology parks
- There are concrete measures to improve conditions for manufacturing

- Making is listed specifically in city/region policy
- There are clear ladders of support across different stages of making
- Platforms exist to connect makers, for example through the work of engagement managers
- Policy makers have adopted the 'innovative city' concept
- More than 2 makerspaces are established and collaborate

- Platforms to connect makers exist and are highly activated
- City/region policies are developed through open access ecosystem analysis
- Established and highly effective channels exists for innovators to connect with policy makers
- Themed zones for making exist in the city/region
- Investors look to support the products created by makerspaces

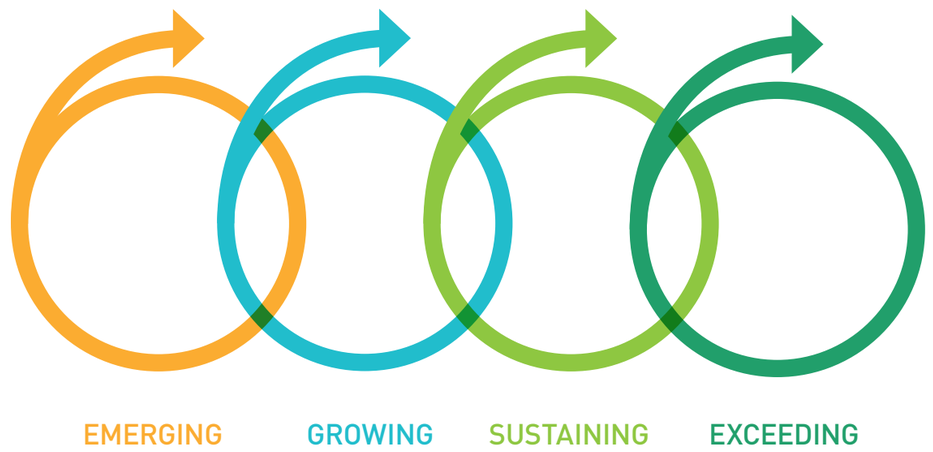
Categorisation



Visualisation

The Urban Manufacturing partnership considers that the stages of the makerspace ecosystem are not discrete and overlap. The general trend we have observed is from emerging, to growing, to sustaining, to exceeding but it is possible for cities and regions to miss out stages or move in the opposite direction, depending on the scale and deliverability of the innovation strategies supporting makers.

Understanding where your ecosystem sits, and comparing this with the situation in reference cities and regions, will help in devising measures that enable makerspaces to thrive, particularly if there is a clear desire or need to move from one stage to another.



Part 3 – Makerspace Design

What is this part of the Toolkit for?

This part is included to help you begin to design a makerspace for your city or region. It is intended to provide an introduction rather than a complete solution and consists of 3 sessions, each of 20 minutes' duration – short bursts to send you in a productive direction. You can work through the sessions on your own but they are most enjoyable with two or more people.

Why consider designing a makerspace?

As a policy maker, you might be responsible for high-level strategies that are then implemented by other people. If you take the time to understand the processes involved in designing a makerspace, your decisions will be better informed and more likely to benefit the people you are hoping to target. Plus, imagining what a makerspace might look like, and who it might serve, is an engaging activity that provides some relief from more regular tasks.

This part of the Toolkit will also help you understand the type of change you might need to bring about in your city or region: will you need to find money for a new project, change your governance structures to make better decisions or write a whole new strategy?

The first session begins on page 20.

Examples of makerspaces from across Europe

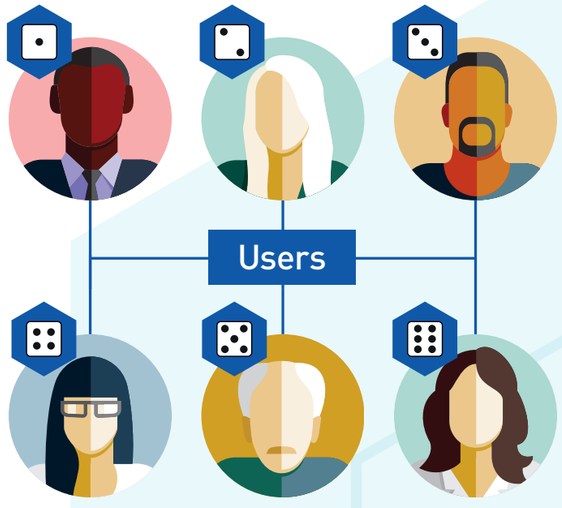
Session 1 – Identify

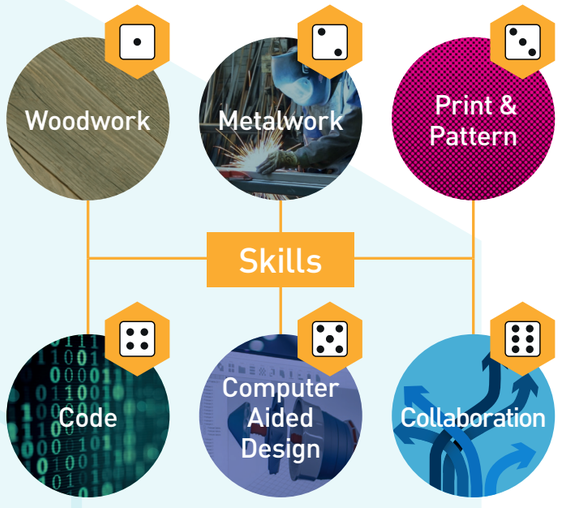
INSTRUCTIONS

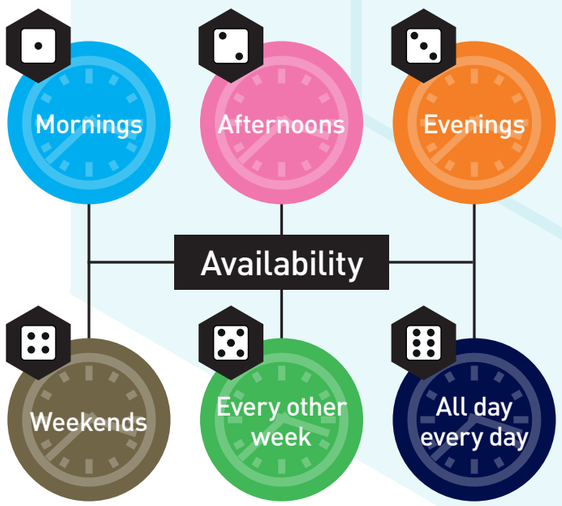
TIME REQUIRED: 20 minutes

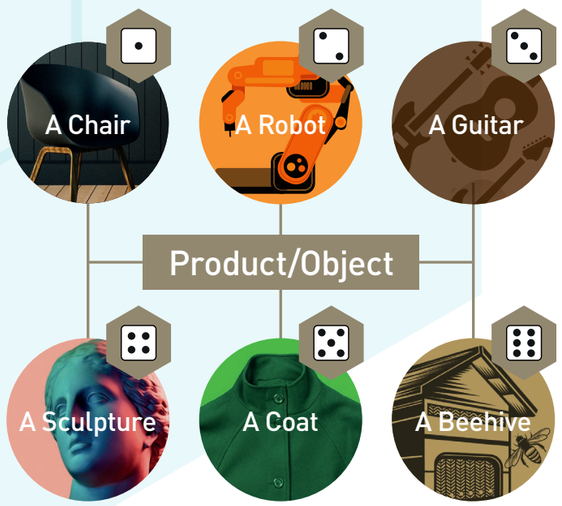
Makerspaces attract all kinds of people. Follow these steps to build your potential users.

- Find a die and some pens/pencils.
- Gather a group together.
- Decide who will go first, second and so on.
- **Player 1:** roll the die and note the number (1 to 6).
- Find the image that corresponds to this number in the users section.
- Give this user a name and tell your group.
- **Other players:** repeat these steps until you all have a named user.
- Repeat this process for the Skills, Availability and Product/Object sections.
- At the end, each player should have created their own named user with a particular skill, availability pattern and proposed product/object which they will be looking to create in the new makerspace.









Use die to randomly select one from each section.

Session 2 – Prioritise

INSTRUCTIONS

TIME REQUIRED: 20 minutes

Designing a makerspace requires consideration of many different elements. Follow these steps to determine where your priorities lie.

- Take your pens/pencils.
- Look at the makerspace elements listed below.
- In your group briefly discuss what you understand by each term.
- Each player should now decide which is the most important element for the user they built in stage 1, which is second and which is third (keep this in your head).
- **Player 1:** using the grid below, take your pen/pencil and fill in 3 cells against the element you consider most important for your user, 2 against the second and 1 against the third.
- **Other players:** repeat this process in turn for all users.
- You now have a visual representation of the collective priorities of your users, with the longest bar showing the element requiring the most attention. Take this information through to session 3.

	To be coloured in to show importance
Accessibility	
Atmosphere	
Collaboration	
Community	
Creative freedom	
Equipment	
Expertise	
Innovation	
Location	
Other	

Session 3 – Create

INSTRUCTIONS

TIME REQUIRED: 20 minutes

This is your chance to start mapping out your makerspace. You have built your users, and identified which elements are of most importance to them. Now follow these steps to create a potential layout in which your users can make their products and objects.

- Take your pens/pencils.
- Template 3 (p24 & 25) is divided into 6 connected sections – player 1 should use section 1, player 2 section 2, and so on.
- Huddle together round a table with Template 3 at the centre.
- Now, all at the same time, and restricting yourselves to only 5 minutes, each player should draw in their section a layout that would appeal to their user, bearing in mind what they are trying to make and the collective priorities determined through session 2.
- What will this space include? To help you, refer to the list of typical makerspace items on Template 3.
- If you want to team up with another player or players, that is fine. Discuss joint requirements and draw across your individual sections.
- Embrace the chaos.
- Step back and admire your work!
- Consider if particular policy measures would be required to help establish the makerspace which you have outlined.

Template 3 – Makerspace Layout

1

4

2

5

3

6

List of Typical Makerspace Items

- Arduino kit
- Bandsaw
- CNC machine
- Computer workstation
- Laser cutter
- Metal sheet roller
- Pillar drill
- Pipe bender
- Print Bed
- Scanner
- Sewing machine
- Virtual Reality headset
- Welder (MIG/TIG)
- 3D printer

STAGE 2 – EVALUATION

Part 4 – Peer Review

What is a Peer Review?

In the frame of the Urban Manufacturing project, a Peer Review is a process that helps policy makers in a city or region receive structured feedback on proposed policy changes contained within an action plan. The policy changes are designed to help makerspaces thrive and are typically concerned with what can be achieved through harnessing the power of the European Regional Development Fund. However, the fundamental process is applicable to other policy measures and can be customised, as required.

PRACTICALITIES

Through the first stage of this Toolkit you should have identified a challenge and discussed potential solutions (Part 1 – Policy Clinic), positioned your city or region (Part 2 – Ecosystem Identification) and outlined a possible makerspace layout (Part 3 – Makerspace Design). The knowledge from these three parts should have given you better perspective on changes which could be made to your innovation policy to help create and sustain makerspaces.

In order for the second stage to be effective, you need to have produced an action plan outlining how these changes will be realised in your city or region along with the likely outputs and outcomes. This should then have been sent to the reviewing city or region at least one week before the Peer Review takes place.

The Peer Review involves you presenting your proposed changes to a different city or region, which responds with queries and recommendations. This works best face-to-face and, as such, requires a venue which can be reached by you both. It is common for the city or region providing feedback to host the presenting city or region. This is so that study visits can be organised.

It is suggested that the Peer Review takes place over 2 half-days, to allow an evening for reflection. You should use Template 4 to record findings from Day 1 and Template 5 for Day 2. It is also recommended to engage a facilitator, to help run the sessions.

If you would like guidance on any of the above, please feel free to contact a member of the Urban Manufacturing partnership.

Session 1 (Day 1) – Review

INSTRUCTIONS

TIME REQUIRED: 2 hours

(In these instructions the city or region presenting their action plan is called the 'visiting city' whilst the city or region providing feedback is called the 'host city').

1. Facilitator introduces the Peer Review.
2. Participants introduce themselves.
3. Visiting city presents its action plan, focusing on proposed policy changes (30 mins).
4. Host city provides initial reaction and comments on any aspects they find to be of interest (30 mins).
5. Joint discussion occurs, as appropriate.

Session 2 (Day 1) – Explore

INSTRUCTIONS

TIME REQUIRED: 2 hours

6. Visiting and host cities are invited, collectively, to identify up to 10 themes emerging from the presentation and ensuing discussion.
7. Visiting city is invited to remove any themes they do not consider to be of relevance.
8. Facilitator writes remaining themes on large, individual pieces of paper, which are attached to the wall.
9. Participants, including the facilitator, explore the themes individually, writing any questions, suggestions or points of interest on sticky notes, and then adding them to the relevant pieces of paper (45 mins).
10. Facilitator invites visiting city to review the sticky notes and organise them into sub-themes.
11. Visiting city explains their sub-theme groupings to the host city and facilitator.
12. Based on the explanation, the host city is invited to suggest 3 possible areas of policy focus for the visiting city. This can involve combining themes and sub-themes.
13. Visiting city indicates whether or not they agree with the host city and confirm which 3 areas they will focus on in day 2.

DAY 1

Template 4 – Peer Review

Session 1 – Review of visiting city's action plan

Proposed Policy Changes

Reaction and Comments

Notes

Session 2 – Exploring the themes

Themes

Questions, Suggestions, Points of Interest

Sub-Themes

3 Areas of Policy Focus for Day 2

Session 3 (Day 2) – Define

INSTRUCTIONS

TIME REQUIRED: 2 hours

14. Based on the 3 areas of policy focus determined at the end of Day 1, the visiting city and host city collectively produce 3 policy statements for the visiting city. These provide direction for the rest of the Peer Review, so as much time as is necessary should be taken.
15. The policy statements take the form of "how might we design a policy to ...?", and should be completed with an emphasis on action rather than speculation.
16. The policy statements can be as wide or as narrow as the visiting city requires, but should respond directly to the areas of policy focus.
17. The policy statements should make clear the level of ambition associated with the area of policy focus and any potential policy changes.
18. The facilitator should emphasise teamwork in creating the policy statements and all members of the visiting city are asked to agree the final wording.
19. The policy statements are written on large, individual pieces of paper, which are attached to the wall.
20. To end the session, the visiting city is asked to select only 2 of the 3 policy statements to take through to sessions 4 and 5, in order to provide focus and promote prioritisation. These statements represent potential new or amended policy changes.

Session 4 (Day 2) – Consider

INSTRUCTIONS

TIME REQUIRED: 1 hour

21. Having narrowed the field to 2 statements, the facilitator puts up 2 large, individual pieces of paper, one next to each statement.
22. On these pieces of paper are written the headings "typical user", "what does the policy look like", "where does the user engage", "what is the overall effect".
23. Collectively, but with the visiting city taking the lead role, comments are invited against each heading in turn (45 mins).
24. The result is a user profile for each potential policy change.

Session 5 (Day 2) – Progress

INSTRUCTIONS

TIME REQUIRED: 1 hour

25. Having completed the user profiling, the facilitator puts up another 2 large, individual pieces of paper, one next to each statement.
26. On these pieces of paper are written the headings "who owns the policy", "who writes the policy", "how is the policy approved", "what are the timescales", "which committees/ budgets are involved".
27. Collectively, but with the visiting city taking the lead role, comments are invited against each heading in turn (45 mins).
28. The result is a logistical overview for each potential policy change.
29. The visiting city is invited to reflect on the success, or otherwise, of the process.
30. The visiting city is invited to identify one immediate action against each policy statement. This should take the form of "the first thing I will do to progress this policy change when I return home is ... "
31. Close.

DAY 2

Template 5 – Peer Review

Session 3 – Defining the policy change

Policy statement 1: how might we design a policy to ... ?

Level of ambition (e.g. number of users, amount of funding)

Policy statement 2: how might we design a policy to ... ?

Level of ambition (e.g. number of users, amount of funding)

Policy statement 3: how might we design a policy to ... ?

Level of ambition (e.g. number of users, amount of funding)

Session 4 – Considering the user

For statement 1

Who is the typical user?

What does the policy change look like/result in from the user's perspective?

Where does the user engage with the policy change?

What is the effect of the policy change on the user?

For statement 2

Who is the typical user?

What does the policy change look like/result in from the user's perspective?

Where does the user engage with the policy change?

What is the effect of the policy change on the user?

Session 5 – Testing the policy change

For statement 1

Who owns the policy?

Who writes the policy?

How is the policy approved?

What are the timescales?

Which committees/budgets are involved?

For statement 2

Who owns the policy?

Who writes the policy?

How is the policy approved?

What are the timescales?

Which committees/budgets are involved?

Reflections

Reflections

Action1: the first thing I will do to progress this policy change when I return home is ...

Action 2: the first thing I will do to progress this policy change when I return home is ...

End Notes

We hope you have enjoyed using the Urban Manufacturing Policy Toolkit. By following the 4 parts across 2 stages you should have identified a challenge, discussed potential solutions, positioned your city or region, outlined a possible makerspace, produced a policy action plan, tested this plan, and identified actions to bring about policy changes.

If you wish to learn more about the techniques included in the Toolkit, or want advice on organising or delivering particular sessions, please do contact a member of the STEAM Team at STEAMhouse, Birmingham City University, UK. We are very happy to help.

We look forward to hearing about the success of your makerspace!

Urban M
Interreg Europe

The Urban Manufacturing Policy Toolkit

Designers
Dr. Tom Cahill-Jones
Laura Veart

Contributors
Dr. Steve Harding
Dr. Bastian Lange
Urban Manufacturing partners
STEAM Team, STEAMhouse, Birmingham City University

Layouts
Simran Gill

Graphic Design
Justin Robert Price

Contact
www.steamhouse.org.uk
www.interregeurope.eu/urbanm

European Union
European Regional Development Fund

STEAM house

BIRMINGHAM CITY University

Designing policies to support collaborative makerspaces.

VILNIUS

BSC Poslovno podporni center Kranj Regionalna razvojna agencija Gorenjske

donostiasustapena fomentosansebastián SAN SEBASTIAN ECONOMIC DEVELOPMENT AGENCY

REGIONE LAZIO

Birmingham City Council

BRATISLAVA

LISBOA CÂMARA MUNICIPAL