



# CASE STUDY OVERVIEW

<b>Title of the case</b>	StartRails and StartNets: Mapping experiential pathways toward entrepreneurship at two large universities
<b>Sales pitch</b>	How to create visual directories of experiential entrepreneurship education opportunities at large universities and create a sense of belonging in an entrepreneurial community.
<b>Start year</b>	UNSW: Started and failed in 2012. Successful in 2016, continuing to 2017. UTS: Started and failed in 2017. Successful in 2018



# CASE STUDY PROFILE

## 1. BACKGROUND & OBJECTIVES (1000 TO 4000 CHARACTERS, INCL. SPACES)

How can experiential entrepreneurship education opportunities at large universities be coordinated and communicated to students? This presentation summarises successes and failures at creating visual directories of experiential entrepreneurship education opportunities at UNSW and UTS, each also creating a sense of belonging in a community.

How universities support startups and innovation remains a black-box for most students and external stakeholders. Recent overviews by Universities Australia (2017) including over 100 programs across 40 universities only scratches the surface of each university. The growth of these applied programs is fuelled further by state funding, such as the Boosting Business Innovation Program by the NSW Department of Industry (2017). However, these co-curricular programs are still only part of the picture and are complemented by the myriad of coursework programs.

Universities to more than produce raw talent and scientific knowledge. They are increasingly a source of startups and entrepreneurial talent. Research on innovation systems and entrepreneurial ecosystems has limited use if universities are consistently portrayed in a simplistic form as suppliers of talent and knowledge. Instead, more work needs to be done that recognises that universities are complex systems and that they provide a plethora of engagement opportunities between students and industry.

The objective of this pair of case studies is to provide guidelines with which to develop visualizations of universities as ecosystems consisting of interconnected experiential entrepreneurship education opportunities. Such visualisations are particularly useful if they are not oversimplified and not overly complex, as presented with multiple examples in this paper.

Generally, visualization of innovation systems and ecosystems can provide immense value, but involves significant compromises in deciding what to include and how to include it in the graphic. These compromises and tradeoffs are apparent in the genealogical visualization of 1,400 firms in British Columbia (Smith, 2002), 700 firms in Puget Sound (Mayer & Armstrong,

2011), and in more recent visualizations of the startup ecosystems in Sydney and Melbourne (<http://www.startrail2015.com/>).

The paper reflects on multiple attempts at mapping two university-based entrepreneurial ecosystems. This includes a failed attempt in 2012 followed by a successful series of visualizations from 2016 to 2017 at UNSW, as well as a series of attempts in 2017, ultimately abandoned until a new approach was taken in 2018 at UTS. Both university's maps resulted in static (printable) versions, as well as interactive and hyperlinked online versions. These serve as a guide to over 50,000 students per campus to find their way towards an entrepreneurial career path. The maps also provide a visual directory for startups, investors and other organisations searching for entrepreneurial talent.

## **2. STRATEGY & ACTIVITIES UNDERTAKEN (1000 TO 4000 CHARACTERS, INCL. SPACES)**

Before 2012, a handful of members in the Sydney tech startup ecosystem came together to create a 'mindmap' of the ecosystem. The resulting map was laid out as a tree-like diagram with categories of organizations, but lacked detail of how organizations were connected. Reading the map required scrolling across a large area and was not easily representable on a single page.

In 2012, inspired by the impact of the first and second versions of the BC Techmap (Smith, 2002), members of the Centre for Innovation & Entrepreneurship (CIE) and the technology transfer office at UNSW collaborated with BlueChilli to create a more immersive and interactive version of the map, using TheBrain™ software (CIE, 2012). While more explicit about the connections across firms and categories, at any given point, only the next-nearest organizations were shown, thus still making it impossible to view the entire system or get a sense of how to navigate it. This approach was abandoned.

Simultaneously, BlueChilli branched out to create their own ecosystem map, visualized in the spirit of the London Underground. While lacking in complexity, the overwhelmingly positive response to it remained an inspiration. A sticking point for universities, was that they were represented as a single node or dot on the map, despite being large complex organisations. BlueChilli's maps provided an impetus to revisit, simplify and update efforts to develop a university-based ecosystem map to the benefit of internal and external stakeholders.

Creating and visualizing the UNSW startup ecosystem map was based on the layout of BlueChilli's StartRail maps and involved three simple rules:

1. Left to right: people progress from learning to learning-by-doing, to doing
2. Hubs own or collaborate on initiatives
3. Nodes are initiatives.
  - a. Initiatives owned by only one 'hub' are on a spur line away from that hub
  - b. Collaborative initiatives are on the lines connecting the collaborating hubs

An initial version of the map was prepared by the ex-director of the CIE and a research assistant, based on prior efforts and interactions with relevant stakeholders. The map was emailed out to all stakeholders with the request to (i) review it for error or omissions, (ii) provide feedback (by email or a 3-question online survey), and (iii) forward it to others they thought should see it. Over one month, 5 iterations of the map were generated, at which point the map was published online.

Starting in 2017, a similar approach was adopted at UTS, based on a crawl of the online handbook for all subjects and courses related to entrepreneurship. After one private and two

public iterations, the StartRail-like layout was abandoned because UTS has significantly more coursework offerings and visualising them as an interconnected system was too complex. By mid-2018, almost immediately after the first publicly released iteration, a decision was made to replace the layout. After several discussion with multiple designers and potential end-users a simplified layout was adopted. Simultaneously, the map was designed to be interactive using Scalable Vector Graphics instead of PowerPoint (as with the UNSW versions).

Consistent with other recent attempts to survey the ecosystem (Bliemel et al, 2016), a bandwagon effect was observed at both universities. Only after publishing the map online, did people ask why their initiative or journey was not included on the map. In many cases, these requests were despite them having ignored previous requests for feedback. This phenomenon is otherwise known as known as Cunningham’s Law: “The best way to get the right answer on the Internet is not to ask a question, it’s to post the wrong answer.”<sup>1</sup>

### 3. OUTCOMES / IMPACT (1000 TO 4000 CHARACTERS, INCL. SPACES)

The most tangible outcome is the map itself. Figure 1 below represents the second published version for UNSW, as at December, 2016.

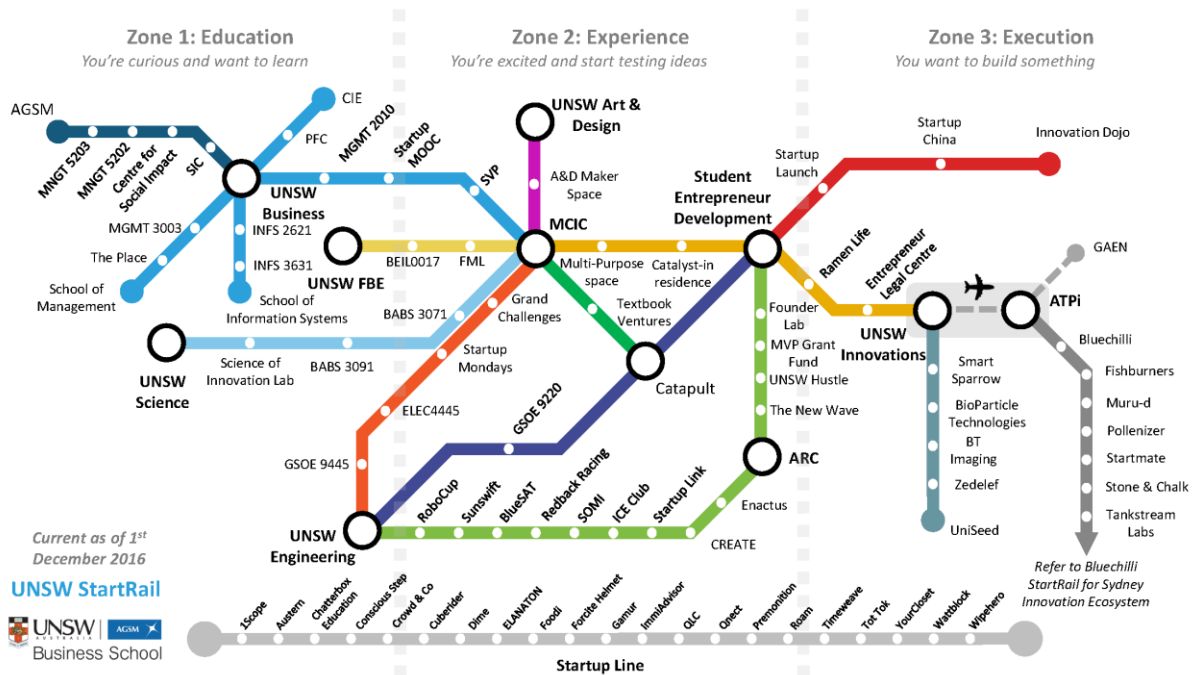


Figure 1: V1.1 of the “UNSW StartRail”

The second page (or backside, if printed double-sided) includes a legend or guides for each of the nodes in the map, shown in Figure 2.

<sup>1</sup> [https://meta.wikimedia.org/wiki/Cunningham's\\_Law](https://meta.wikimedia.org/wiki/Cunningham's_Law)

## Guide to UNSW StartRail



### Zone 1: Education

#### AGSM:

CSI – Centre for Social Impact courses  
**Strategy, Innovation and Change (SIC)** – Executive Education program  
 MGMT5202 – Entrepreneurship and Innovation  
 MGMT5203 – Entrepreneurship from the Inside

#### UNSW Business School:

CIE – Centre for Innovation & Entrepreneurship  
 MNGT2010 – Innovation & Entrepreneurship  
 MNGT3003 – Global Entrepreneurship  
 Startup MOOC – “How to validate your startup idea” based on MGMT2010  
 MOOC Meetups – Fortnightly meet-up based on the MOOC  
 PFC – Annual Peter Farrell Cup business competition  
 The Place – “Flipped classroom” setting  
 INF52621 – Enterprise Systems  
 INF53631 – Innovation & Technology Management

#### UNSW Engineering:

ELEC4445/GSOE9445 – Entrepreneurial Engineering  
 Start-up Mondays – Weekly workshop series at MCIC  
 UNSW Grand Challenges – Engineering disruption program  
 Catapult Program – Co-working space in collaboration with MCIC and UNSW Innovations SED

#### UNSW Science:

BAB53071 – Commercial Biotechnology  
 BAB53091 – Professional Issues in Biotechnology involved with PFC  
 Science of Innovation Lab – Neuroscience research into entrepreneurship, collaboration with UNSW Science



### Zone 2: Experience

#### ARC (Student clubs):

BlueSat – Engineering easy-access space projects  
 CREATE – Practical workshops in developing, engineering, innovation and design  
 Enactus – Social Entrepreneurship  
 AGSM ICE Club – Innovation, Commercialisation, Entrepreneurship Club  
 Redback Racing – Building an open-wheel race car  
 SOMI – Society for Medical Innovation  
 Start-up Link – Platform to connect student to startups  
 Sunswift – Engineering and racing solar-powered cars

#### Michael Crouch Innovation Centre (MCIC):

Catalyst-in-residence – Mentorship for students  
 Multi-Purpose Space – Event/Co-Design/Maker/Exhibit space available in the MCIC for a range of activities  
 Startup Validation Program (SVP) – Basics for founders  
 Textbook Ventures – Student-led venture capital fund

#### Catapult:

Catapult – MCIC, Engineering & UNSW Innovations collaboration  
 GSOE9220 – Launching a startup

#### UNSW Built Environment (FBE):

BEIL0017 – Business StartUp  
 Friday Maker Lab (FML) – Friday night design workshop

#### UNSW Art & Design:

Maker Space – Platform and incubator for collaborative making



### Zone 3: Execution

#### UNSW Innovations:

Student Entrepreneur Development (SED) – 12 stage entrepreneur coaching and connecting program  
 Entrepreneur Legal Centre (ELC) – Pro-bono legal service and introduction to external providers  
 FounderLab – Software dev & technical mentorship program  
 Innovation Dojo – Japan-Australia cultural program  
 MVP Grant Fund – Grants fund run by ARC & UNSW Innovations  
 Ramen Life – Online platform for UNSW Startup Community  
 Startup China – China-Australia cultural program  
 Startup Launch – 4 week startup program  
 The New Wave – UNSW female entrepreneurship initiative by UNSW Innovations, Capital W and Women in Engineering  
 UniSeed – Venture fund investing in research spinouts (co-owned by UNSW)  
 UNSW Hustle – Volunteer service provided by AGSM students  
 Smart Sparrow – Innovative leaning platform

#### Industry:

ATPI – Commercialisation hub for technology (co-owned by UNSW)  
 BlueChilli – Tech accelerator + corporation innovation  
 Fishburners – Largest tech co-working space  
 Muru-d – Telstra accelerator program  
 Pollenizer – Corporate Innovation Program  
 Startmate – Founders for founders accelerator  
 Stone & Chalk – Fintech Hub  
 Tank Stream Labs – Co-working space and community  
 GAEN – UNSW Global Alumni Entrepreneurs Network

**Figure 2:** Guide to the “UNSW StartRail” (V1.1)

The pdf of the map was downloaded via [http://bit.ly/UNSW\\_Startup\\_Roadmap](http://bit.ly/UNSW_Startup_Roadmap) ~700 times in its first month and over 1000 times since then. Click-through analysis reveals that the most effective medium was Facebook (mainly students), direct links (from emails to participating stakeholders), and Yammer (staff). Within Facebook, the posts, including preview graphics, were ‘liked’ several hundred times and shared by members of the start-up community. Graphic (png and JPG) versions were also posted on Twitter and LinkedIn (both with mixed audiences), with a link to the pdf. On Twitter, version 1 had over 2,500 impressions and version 1.1 had over 2,200 impressions. On LinkedIn, version 1 had over 1,000 views and version 1.1 over 900 views.

The UNSW map soon made its way into public presentations to students interested in entrepreneurship. Verbal feedback has indicated that some of those students have used the map to successfully access support for their ventures, including seed capital. Private communication with the DVC(Enterprise) confirmed that the map served as a very useful guide as the university develops and implements its ‘2025 Strategy’ and the marketing team for the Business School converted the map into an interactive web-based graphic in 2017.

The first public version of the UTS map mimicked the StartRail layout. Because of the larger volume of subjects and courses offered, the education zone was expanded to half the page, with many subjects buried within a single node representing a full degree program, as shown in Figure 3.

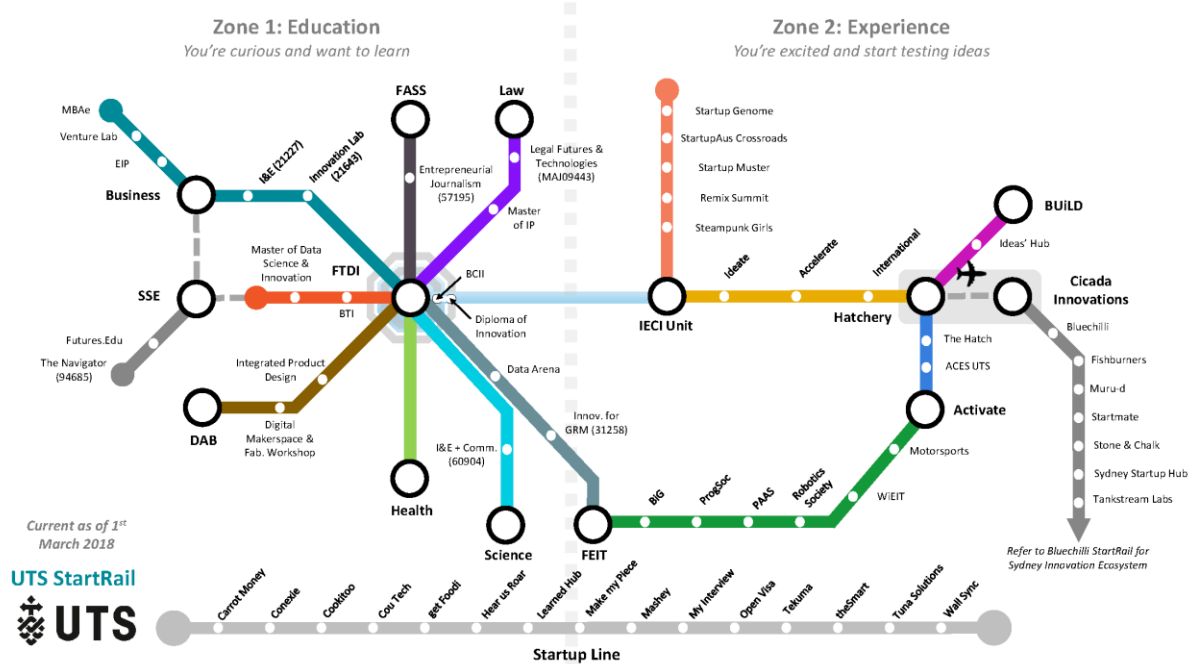
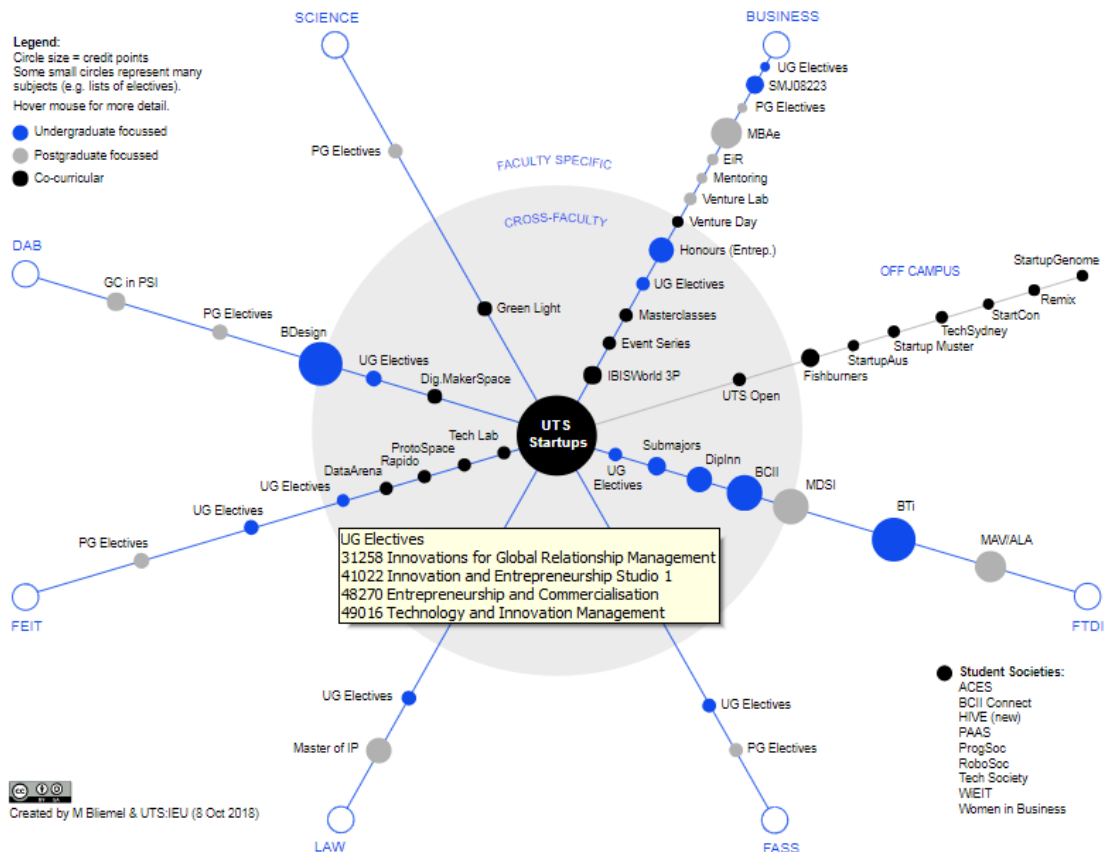


Figure 3: V2.1 of the “UTS StartRail”

This version was only circulated by email to approximately 20 people and downloads of the pdf via [http://bit.ly/UTS\\_StartRail](http://bit.ly/UTS_StartRail) remained a modest 250 in the first month. However, twitter and LinkedIn versions in png form were viewed over 4,000 and 2,000 times respectively in the first month, organically climbing to nearly 6,000 views on twitter within 4 months. By this time, a decision was made to stop promoting it because of flaws in the layout, which suggested all students are required to pass through FTDI.

Instead, a radial layout was chosen, including an inner circle that captured all offerings that are available across faculties, and outer branches that represent faculty-specific offerings, as shown in Figure 4. The new layout also included changing the size of each dot to reflect the volume of learning. Most dots are interactive in two ways: (i) they include a mouse-over text that provides a more detailed description in lieu of a legend on the ‘back of the pdf’, and (ii) they include a hyperlink to the webpage with more information. At the time of this writing, the StartNet is not yet embedded in UTS’ website and is available as a prototype on the author’s personal homepage [www.bliemel.com](http://www.bliemel.com). Once it is ‘live’ at UTS, it will be actively promoted. Nonetheless, the prototype has already received generous informal support from other faculty members and students who know about it.



**Figure 4:** The “UTS StartNet” with example mouse-over text for FEIT cross-faculty UG Electives

#### 4. FURTHER INFORMATION

Link to the latest map:

[http://bit.ly/UNSW\\_Startup\\_Roadmap](http://bit.ly/UNSW_Startup_Roadmap)

[http://bit.ly/UTS\\_StartRail](http://bit.ly/UTS_StartRail)

<http://www.bliemel.com> (location of prototype UTS StartNet)

References:

CIE (2012) “Announcing ... the GIG Engine” Friday, June 29, 2012 <http://cie-uns.w.blogspot.com.au/2012/06/announcing-gig-engine.html>

Mayer, H., & Armstrong, S. (2011). Featured graphic: the visual genealogy of spinoff companies in the technology sector in Seattle, 2008. *Environment and Planning A*, 43(4), 763-764.

NSW Department of Industry (2017) “Boosting Business Innovation Program” <https://www.industry.nsw.gov.au/business-and-industry-in-nsw/innovation-and-research/boosting-business-innovation-program>

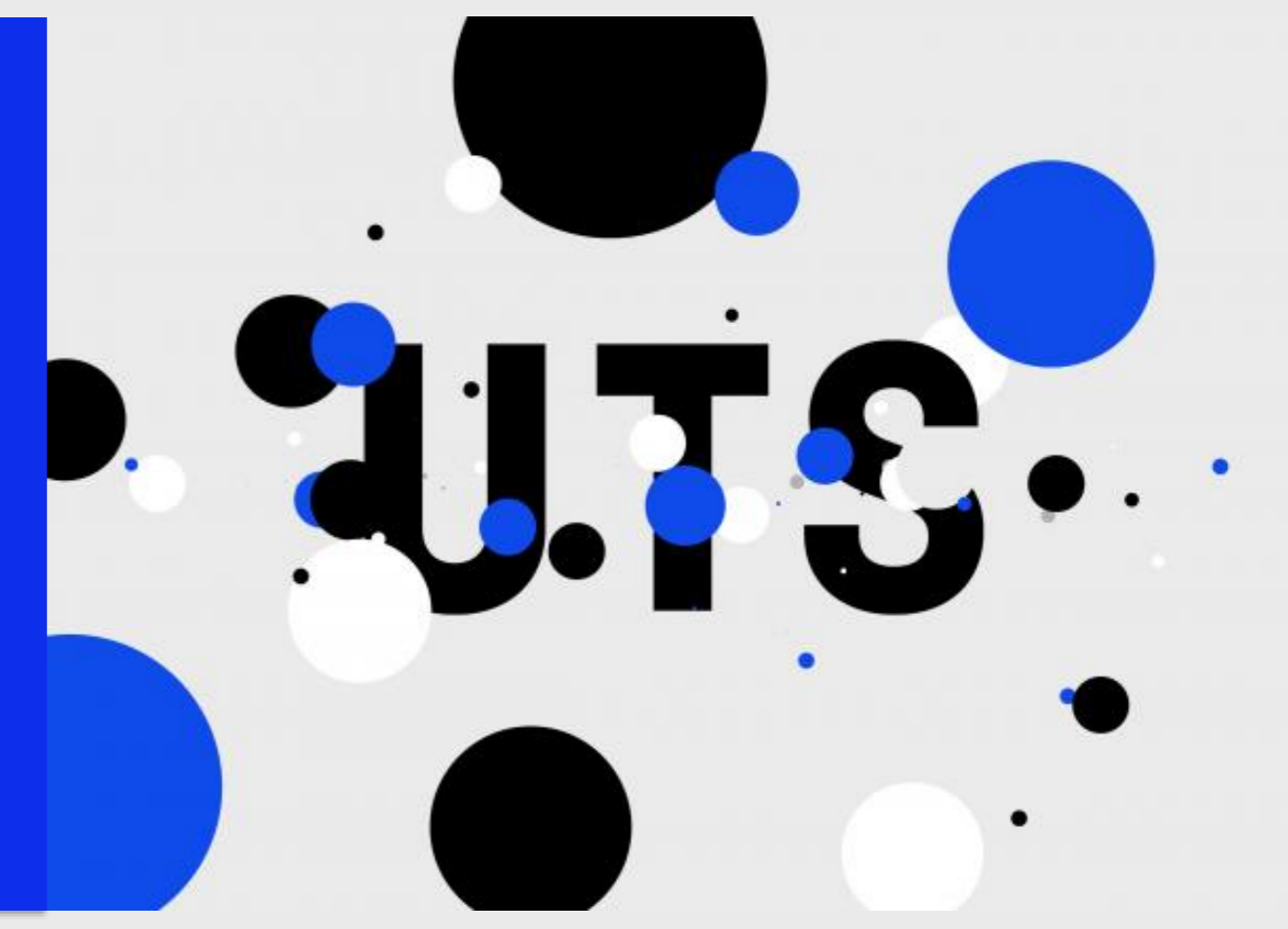
Smith, R. (2002). Techmaps: a tool for understanding social capital for technological innovation at a regional level. *Innovation and Entrepreneurship in Western Canada: From Family Businesses to Multinationals*, 59.

Universities Australia (2017). “Startup Smarts: Universities and the Startup Economy” <https://www.universitiesaustralia.edu.au/australias-universities/Universities-and-the-startup-economy>

# StartRails and StartNets

Mapping experiential pathways toward entrepreneurship at two large universities

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## MOTIVATING QUESTION

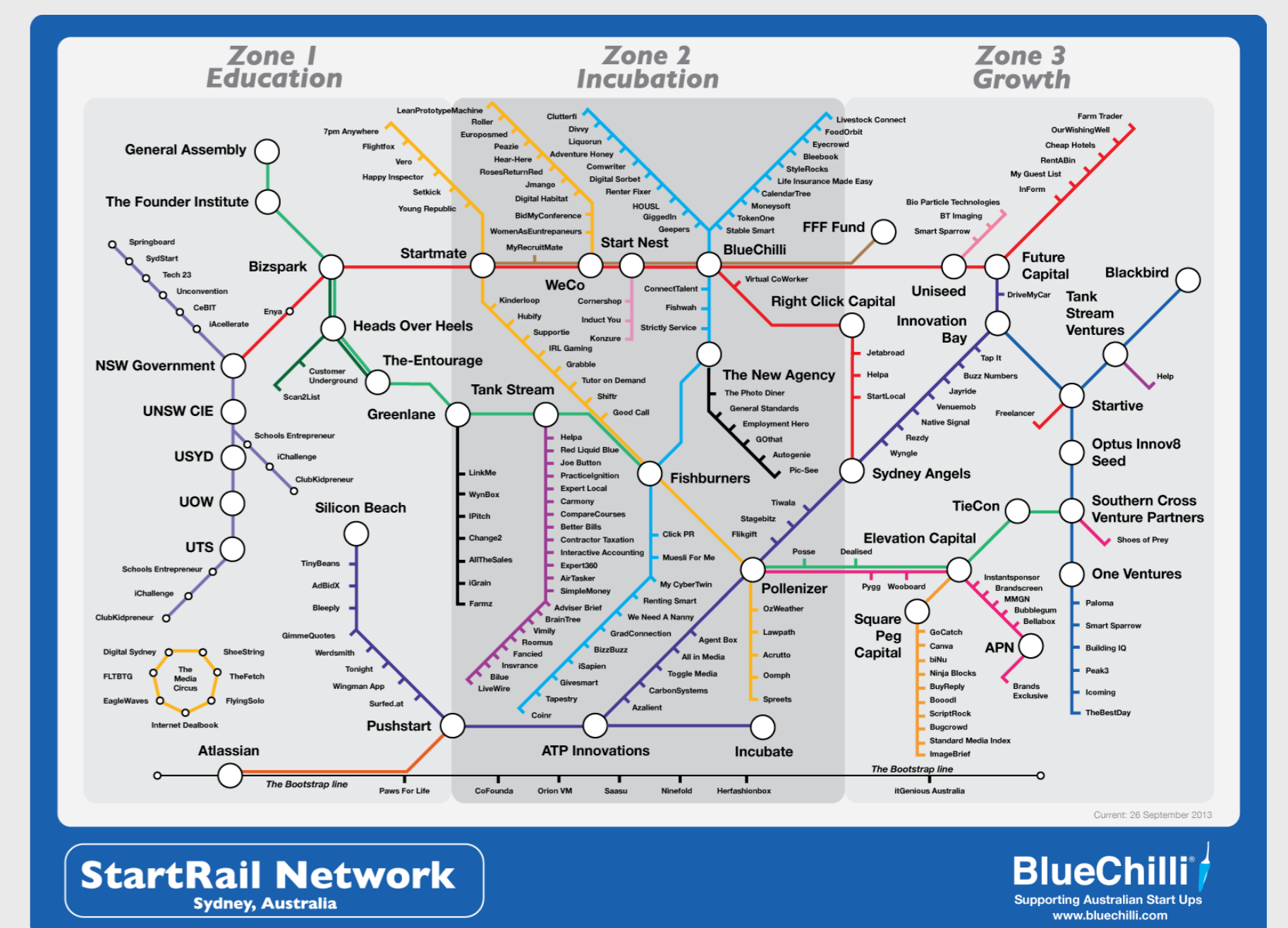
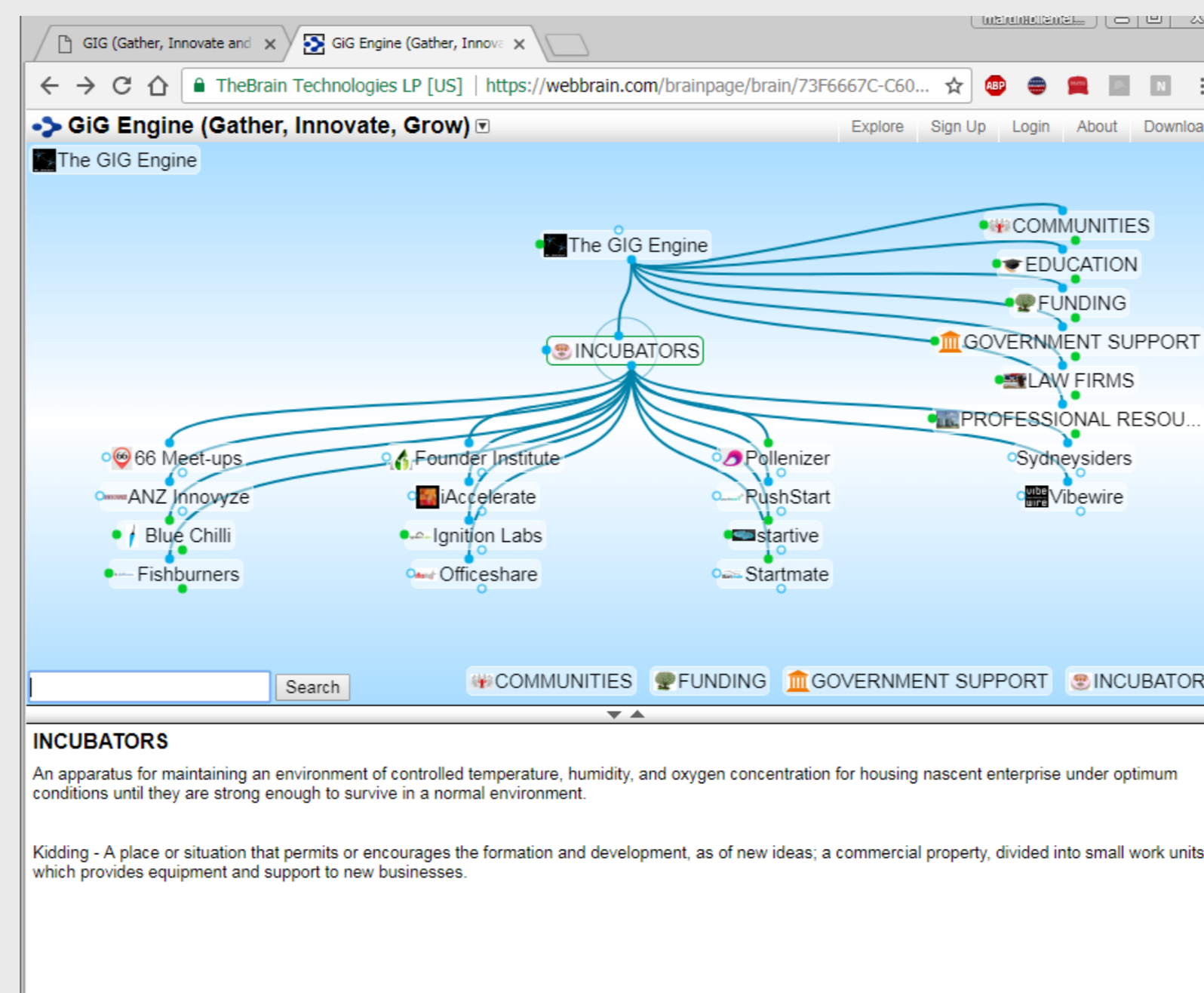
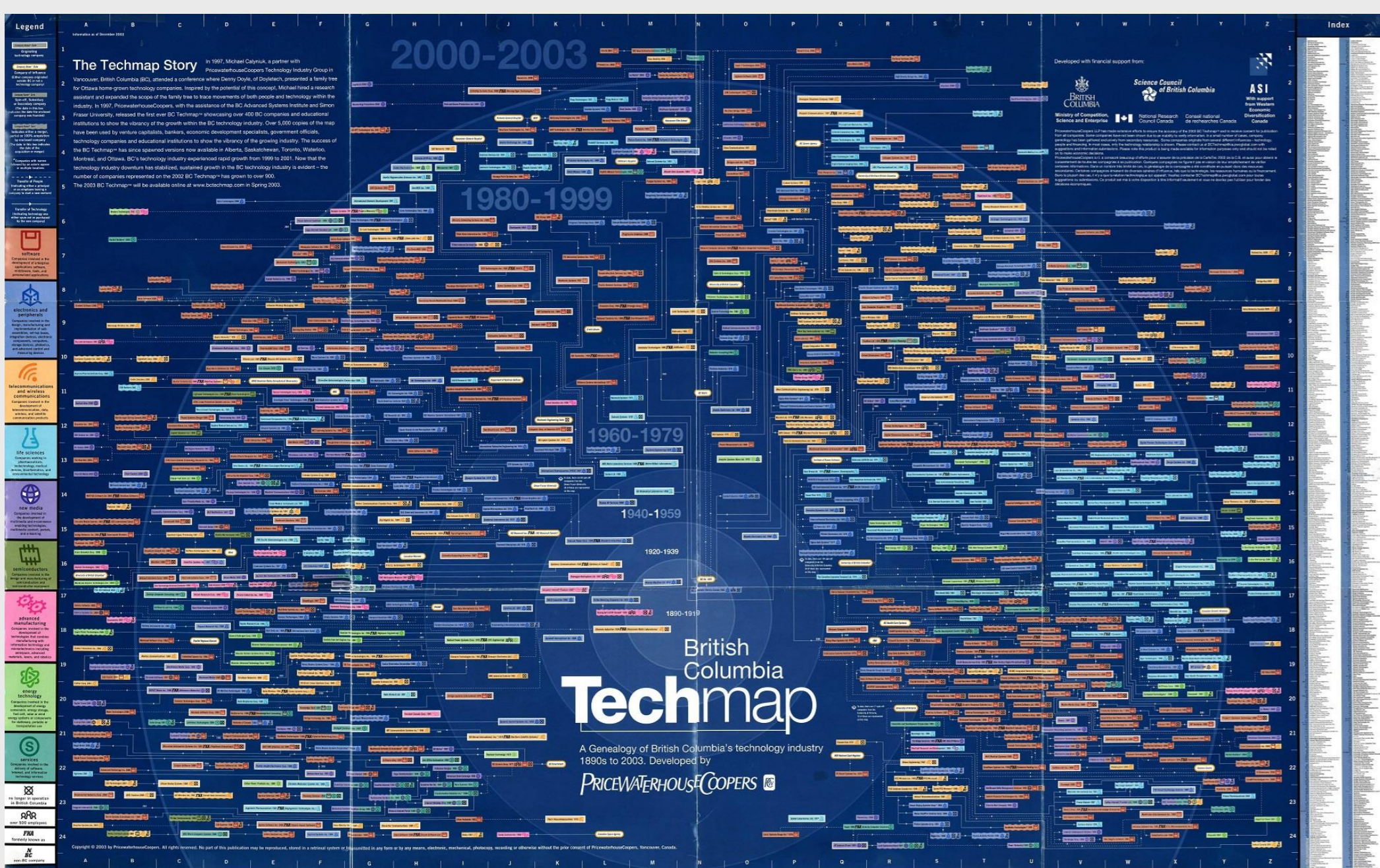
How can experiential entrepreneurship education opportunities be coordinated and communicated to students?

## LAYOUT IDEAS

Inspired by (genealogical) TechMaps

Challenge: complexity and overview (trees & forest)

## INSPIRATION ... FAILURE ... FURTHER INSPIRATION

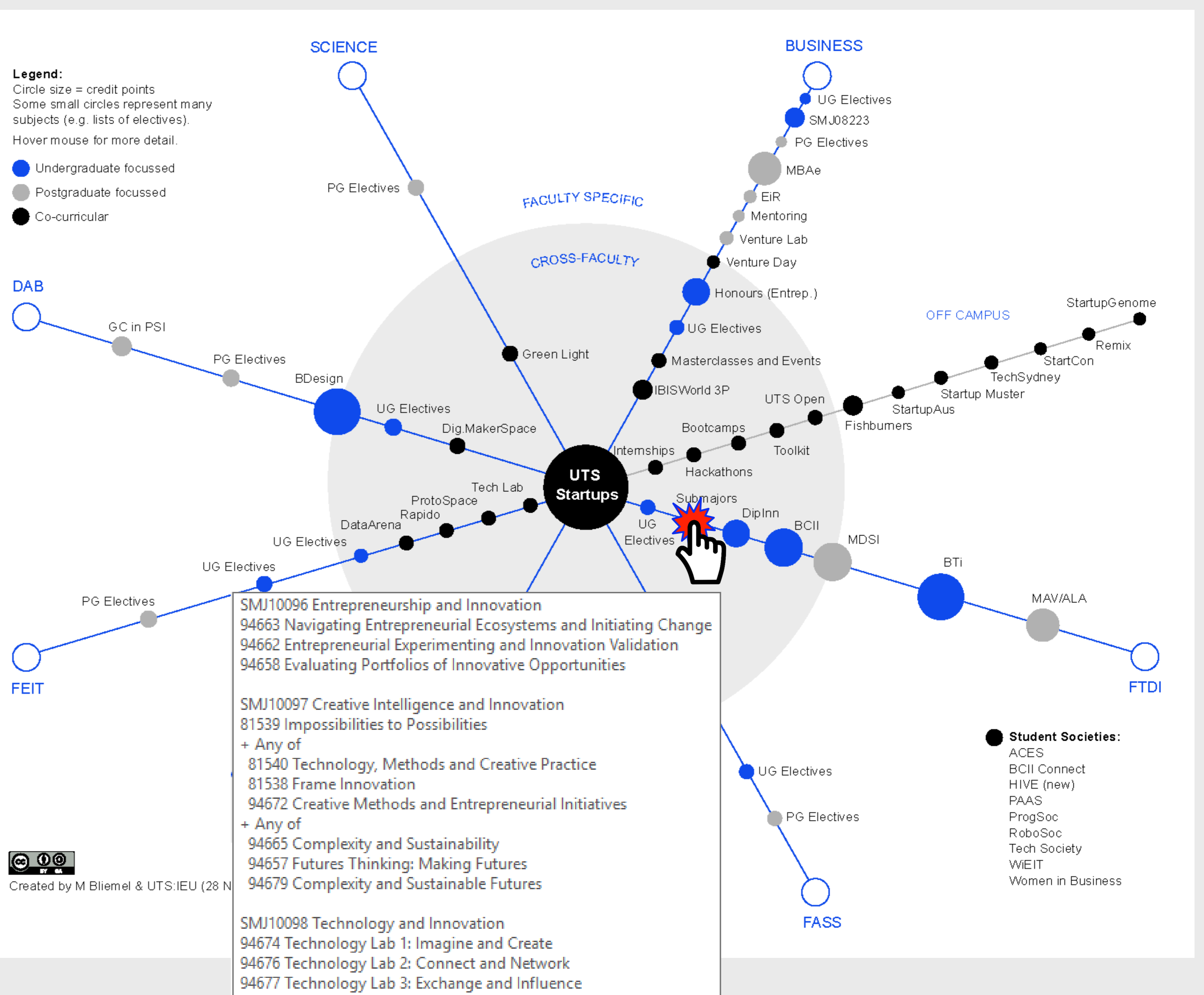
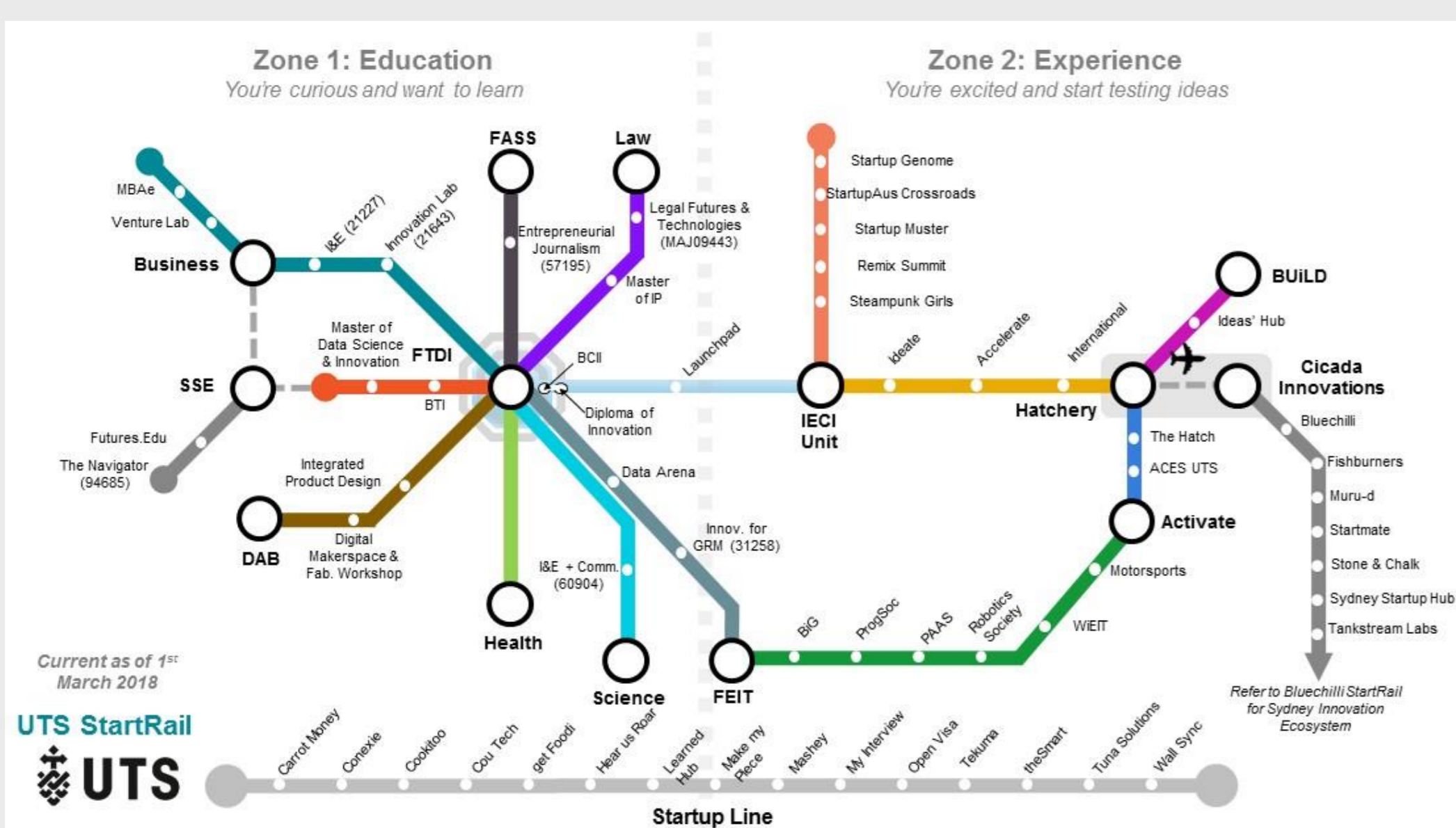


## LAYOUT 1: THINK → TRY → DO

Hubs own initiatives (e.g., Faculty)  
Nodes are initiatives (e.g., course) owned by one or more hubs

## LAYOUT 2: HUB AND SPOKE

Spokes are faculties and Innovation & Entrepreneurship Unit  
Nodes are initiatives  
Cross-faculty initiatives are 'pooled'



## CUNNINGHAM'S LAW

"The best way to get the right answer on the Internet is not to ask a question, it's to post the wrong answer."

## ADDED DEPTH

Mouse-over text and hyperlinks (+ accessibility version).  
Analytics enabled.

Interactive UTS StartNet at [www.bliemel.com](http://www.bliemel.com)