System Dynamics Society Strategy

Interim Findings and Recommendations

Strategy Committee[1]: February 2014

Introduction

This document updates the Interim report submitted to the Policy Council in January 2013. A number of steps have been taken in the intervening period, and additional initiatives started. The document is presented in the form of the 2013 Report with **changes and additions in red-bold text** (Executive Summary only). The Committee is grateful to Etiënne Rouwette and Inge Bleijenbergh for organising and documenting the results of the Policy Council's strategy debate at the July Conference, key elements of which are included in this update. The documentation itself is attached.

The 2013 Report offered recommendations for means by which ***the Society might increase progress in development of the field***. This updated report therefore considers the field as a whole, not solely the Society itself.

The report's ***scope is incomplete*** on some issues, but particularly so in regard to the consulting firms in the field and the providers of software and training services to the field. The actions required to ***implement the strategy*** are also incomplete, since they require input and support from those who might do so.

The Policy Council is asked to help progress the Report's recommendations, recognising that most of the recommendations imply initiatives and efforts to be taken by certain officers and groups in the Society. Acceptance of the Report ***does not*** imply acceptance of decisions that would normally need to be submitted for Policy Council (PC) approval– notably new expenditures, the appointment of new Vice Presidents and changes to the role of SIGs.

The Report's findings arise from efforts taken early in 2012 to ***collect opinions*** from people with knowledge of System Dynamics (SD), concerning the field's development from 2005 to 2012, and ***plausible aims*** that might be pursued out to 2020. Those opinions were processed through a manual but ***SD-compliant*** analysis of the SD-field's operating system and its potential performance over that time-scale.

The Strategy Committee in 2013 considered those mid-term aims, and developed a set of ***initiatives*** and an initial list of ***action-options*** that might enable those aims to be realised. The report describes:

(a) the desired medium-term future for the field
(b) the short-list of principal initiatives
(c) an incomplete list of actions to implement the strategy … which may be converted to a time-phased plan.

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Executive Summary
1. Description of the process
2. A draft Vision for the field
3. Scale, progress and mid-term aims for system dynamics

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[1] Edward Andersen (2014 President), Kim Warren (2013 President), Jim Lyneis, Birgit Kopainsky, Erling Moxnes, Jürgen Strohhecker (2015 President).

- in application domains (topics to which SD is applied, such as economics, environment, health …)
- on issues that span the whole field, such as education, consulting and the Society

4. Initiatives and actions to deliver the strategy

Executive Summary

Vision for the field unchanged

The System Dynamics Society is an international, non-profit organization devoted to encouraging the development and use of system dynamics and systems thinking around the world. Its Vision for the field is that:

System Dynamics will transform society by making improvements to decision-making in government, commerce and other organisations. Powerful examples of its impact will be widely known amongst the general public, and people with authority will be aware of how system dynamics can raise the effectiveness of the organisations they lead. Organisations will employ or seek support from large numbers of experienced professionals with deep skills that are defined, recognised and valued. Those professionals will emerge from Universities and other training institutions that provide high-quality training, drawing on an extensive resource of accessible and rigorous teaching materials. The topic will be understood and respected in the academic community. System dynamics will feature in all parts of the education system, leading to public understanding and demand for better policy-making throughout society.

State of the field

The main conclusions from the consultation about the state and potential of the field, and the system of elements that make it up are:

- The field naturally divides into **three main portions** – academia, practice, and pre-college schooling. This does not imply separation between those portions, merely that each consists of distinct and interdependent sets of resources. The practice portion is disadvantaged, relative to other professional fields, in being highly fragmented amongst **many application domains**.
- The field appears to have made **limited progress** in recent years towards what is believed to be a much greater potential scale and impact, and the Society can and should work to **pick up the pace** of that progress. Respondents to the consultation identified desirable increases in the rate of activity and growth of resources across the field – more so on some issues, such as public awareness, pre-college education, and well-documented cases, but less so on other issues, such as numbers of academics and higher-degree-level education.
- Within its current scale, the **academic portion** of the field is in reasonable health, although additional potential can and should be pursued. There is an established community of experienced academics, a moderate stream of quality publications, and good educational programs generating a flow of well-trained Masters/PhD level graduates. Challenges concern how to grow both the number of junior and tenured SD-focused Professors and how to raise their recognition and status relative to other fields. **Recent changes to the *System Dynamics Review* are already showing signs of progress on this issue, but that recognition and status remains low.**
- The **practice portion** of the field is in less good shape. Although much good quality and impactful work is being done, the mutual reinforcement that should exist between practitioners, their work and application knowledge, and the users/clients they serve is **barely functioning**. (*It is in better shape in certain domains, such as healthcare and environment, than others*). The fragmentation between application domains does not help, but the most serious connection missing from the system is the lack of documentation and publicity of successful work. "*Just do good work*" is not enough –"*… and shout about it.*" needs to be added. **Limited progress has been made on this issue during 2013, except for the recent approval and appointment of a Vice-President for Professional Practice and a Vice-President for Marketing and Communications. However, 2013 Membership**

reached close to highest-ever levels, at 1159, and Home Office has some increased capacity to support more growth.

- The *pre-college schooling portion* of the field is in fair shape. A solid core of people in the Society are active in this aspect of system dynamics, established leaders are known and well respected within the community, and there are on-going practices and support activities. However, more progress is possible by incorporating these members more fully into the Society and strengthening the relationships between pre-college schooling of system dynamics and the academic and practice portions of the field. **Limited progress has been made on this issue during 2013.**

- Not only is this under-functioning of the SD-practice system holding back the field's fulfilment of its potential, it is also disadvantaging *newly-trained professionals*, through limited career opportunities. This under-functioning of the practice-portion of the field also explains the large proportion of struggling, *isolated practitioners*.

- *The Society* could potentially act to fix the dysfunctional elements of the system, through efforts to re-engage the large fraction of SD practitioners who are not involved in the wider activities of the field or the Society. Key to this fix are actions to increase the role and *activity of SIGs* (since these represent the domains in which practice occurs), especially in encouraging active engagement by practitioners, delivering events and publicity within their domains, and identifying, presenting and *promoting high quality work* to the outside world. To achieve these aims, the Society will need to capture more of the missing practitioners into its membership, and raise its cash flow. **A start was made on efforts to engage with practitioners at the July 2013 conference, and the appointment of a VP for Professional Practice should build on that work. The re-launch of the Business SIG (one of the largest SD application domains) should also contribute to attracting and supporting practitioners.**

Figure 1 summarises the *main Initiatives* that the Strategy Committee feels might enable this consolidation of the field and acceleration of its progress. The implication is that priority should focus on items with *high impact and limited effort*, though there is interdependency between some items. A later section of the report makes a start on identifying actions that might contribute to each initiative.

Figure 1. The Effort required and potential Impact of recommended Initiatives to develop the field
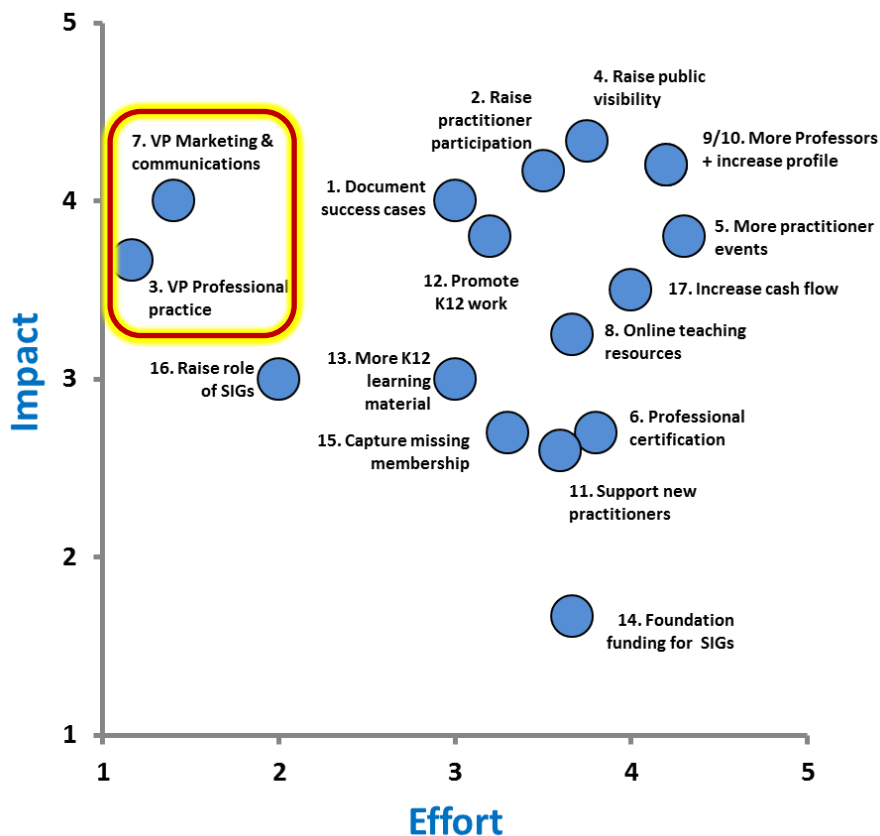
Of these proposed actions, only the appointment of the two VPs has been substantially progressed, although efforts by Home Office and Etiënne Rouwette have had some success in capturing missing members. However, other items have progressed somewhat, through other initiatives:

- **The February 2013 Policy Council meeting recognised an important gap in the Society's efforts – the move to default conference sites in NW Europe and N America risks under-supporting the field in other parts of the world. Members and Chapters in Asia-Pacific were encouraged to aim to fill this gap by developing regular conferences in the region, the first being in Tokyo in February 2014. The formation of a South Africa chapter with substantial membership is also encouraging, as is the application for a new Africa Regional chapter.**
- **Approved changes to the Field Development Fund are also aimed at supporting activity in regions other than NW Europe and N America, and funding has already supported both the Tokyo conference and a successful 2-day workshop in Italy. Events by the Creative Learning Exchange at the 2013 Conference were also supported.**
- **Individual Society members are leading the development of online learning materials, such as Erik Pruyt's Open e-Book and models, and Gene Bellinger and Scott Fortmann-Roe's interactive e-book "Beyond Connecting the Dots". . Member Bobby Powers' new project Approachable System Dynamics aims to bring classical stock and flow modeling and existing system dynamics models to the web.**
- **Substantial efforts by Bob Eberlein, Karim Chichakly, Steve Adler and other members on the XMILE initiative are strengthening connections with other information-system domains, notably Big Data.**

Possible outcomes

If successful, these initiatives may make it possible to achieve the faster rate of progress that the respondents to the consultation believe to be possible and desirable by 2020, including:

- a 3-fold increase in the number of well-documented high-quality cases of successful SD work, of general-media mentions of system dynamics, and the number of practice-oriented events taking place
- a 5-fold increase in SD-focused job placement of new graduates
- a 4-fold increase in the number of organisations purposefully using SD and a doubling of the number of SD-informed decision-makers in those organisations
- a doubling in the number of junior and tenured SD-focused professors in Universities, and in the rate of basic SD training for executives and other potential users of SD work
- a 5-fold increase in the number of pre-college (K-12) teachers using SD, and in the rate of education in schools and the graduation-rate of SD-informed young adults (*though even this falls short by orders-of-magnitude of a desirable outcome*).

At this time, it is not evident that significant progress is being made towards these outcomes.

The July 2013 Policy Council discussion led to a number of significant, additional proposals, some of which are already in the process of being implemented:

- **Greater use of virtual conferences, webinars and other online-events.**
- **Greater diversity amongst the Society's leadership – *Nominations Committee has pursued this aim during 2013, with some progress in representation of women and non-Anglo-Saxons on the Policy Council and in other leadership positions*.**
- **Asia-based events – *already in progress*.**
- **Africa and Middle-East chapters – *S Africa chapter already formed.***
- **Development of stronger membership benefits.**
- **Assistance and mentorship support for people new to the field.**
- **Development and offering of MOOCs (Massively Open Online Courses)**
- **Cooperation with other Societies in related fields.**
- **Building visibility and connections with Gaming communities.**

1. The 2012 Strategy Process

Developing a strategy where none previously exists requires:

- clarifying a Vision for the medium- to long-future, expressed in terms to which people can relate
- setting out how "the system" works that should deliver those outcomes
- quantifying (approximately) the scale and rates-of-change to key parts of the system that must happen in order to achieve the desired outcomes
- extracting from these estimates the actions that need to be taken, at what rate, over what time, done by whom.

Professional Societies

Most professional societies are made up of three main resources – the practitioners, the knowledge or methods they deploy, and the users of the work done by those practitioners (*supply, product and demand*). The work generates new knowledge, and its impact encourages new users to ask for more work, and new practitioners to join the field to do it.

Around this core, academics and teachers add to the field's knowledge, train new-comers, feeding the practitioner population. An administrative system coordinates and promotes activity and may provide services, such as conferences, certification, publicity and information.

A notable *addition* for us is the pre-college (K-12) teaching initiative and the population of informed citizens that emerge from that process.

A notable *omission* for us, compared with other professional societies, is the lack of a certification system, with the body of knowledge (BoK), training and testing that would normally be part of such a system.

> **A major *challenge* for us – different from most other professional fields – is that our users, practitioners and knowledge/methods are fragmented amongst multiple "application domains": environment, health, economics, biology, business and so on.**

So the SD field consists of practitioners, users and knowledge "summed" across those domains, with the academic and pre-college sectors ("Academics" in Figure 2) and administrative system spanning all domains.

Figure 2: The resource structure of a professional field
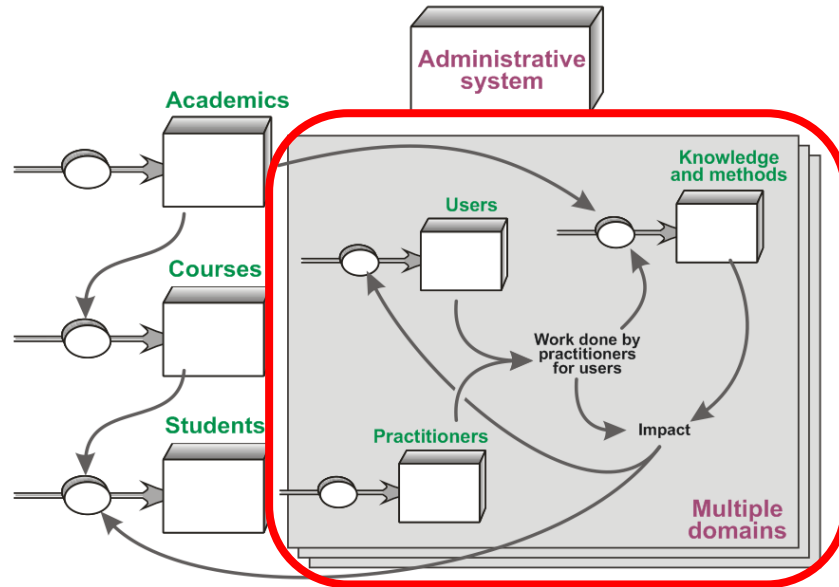
Stakeholders

The process aimed to address the interests of key stakeholder groups in the system dynamics field:

- Society Members (whether users, practitioners or academics)
- The wider community of practitioners, including consultants
- Users (corporate, governmental and other), represented indirectly through practitioners
- Academics and their institutions
- Students (adult and school/college-age)
- The providers of tools for deploying the knowledge, notably software providers (*this remains to be successfully accomplished*)
- Those involved in the administrative support system

Given the practical difficulties in communicating directly with such a diverse population, inputs were sought through a mid-scale group of about 50 people, having substantial experience across the different parts of Figure 2. This group included representatives of the following:

Society administration and critical functions.	Finance & Admin	Domains (SIGs).	Conflict, Defence, Security
	Admin and conference		Education
	Society procedures and protocols		Energy
	Publications		Environment
	Electronic presence		Health Policy
	Meetings		Information Science
	Strategy Committee		Psychology
			Bio-medical
Stakeholders.	Students - adult	Domains (other)	Project Management
	Students – pre-college (K-12)		Economics
	Members and Chapters		Business
	Consulting		Operations Management +
	Software and other providers		Supply chain
	Universities		Public Policy

Respondents were mostly people with many years' experience in the field, or with specific knowledge. The group was asked to provide:

- their Vision for the medium-term future of the field
- their estimates of the current state of the field (2012), its recent progress (since 2005), and plausible aims (for 2020)

Each person was asked to provide estimates for key indicators across any parts of the field with which they were familiar. Between 2 to 5 respondents provided information on each of the application domains. The responses were summed or averaged, and embedded in a quantified (but not simulated) field-wide model which displays:

- the key resources or stocks in the field, such as practitioners, cases, teachers
- the implied flow-rates to meet the mid-term aims, such as publication rates, and training rates
- other important indicators or enablers, such as SD projects undertaken, SD-related events, and the field's reputation
- … and the interdependencies amongst these elements

Strategy initiatives and actions

From the model of the field, the Strategy Committee identified a short-list of required initiatives – broad sets of activity that will need to be done, at some rate, over some time, in order to achieve the desired outcomes.

2. A Vision for the field

The views of the respondents who were consulted on what should feature in a Vision for the future of the field is summarised in Figure 3, which results from coding their verbal statements.

Figure 3: Factors to feature in a Vision for the future of the field.
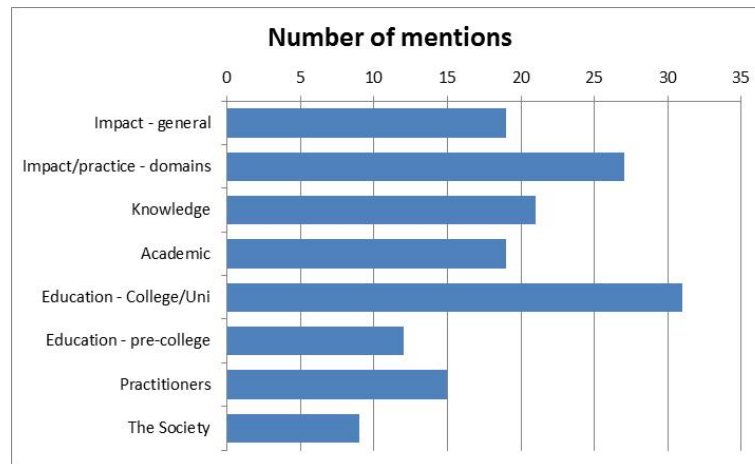
The number of mentions is not an unequivocal indication of the relative importance of each factor:
- infrequently mentioned items could nevertheless be seen by respondents as important
- items not mentioned could be 'taken as given' by some respondents
- enabling factors could have been under-stated relative to impact indicators

Nevertheless, Figure 3 gives a sense of what respondents feel is important in a Vision for the field. The main sub-topics under each broad heading, in descending order of mentions are as follows:

Impact - general	Widely known/understood Big impact examples Publicity International penetration	**Impact/practice - domains**	Senior demand SD as a preferred method Success stories Uptake by non-SD folk Articles
Knowledge	Adoption by/with others Cases Domain knowledge/ tools Conferences SIGs/ Chapters	**Academic**	Papers in other fields' Journals + Ranking Quality of SD work Academic path
Education: higher	Taught in other topics Learning materials SD graduates Programs/courses	**Education: pre-college**	Taught in other topics Student numbers Learning materials Classes
Practitioners	Certification Quality of work Numbers Training	**The Society**	Member numbers Out-reach/visibility Services Finance

Vision for the field

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3. The state and progress of the field (2012)

Responses are summarised in two sections:

1. Information, issues and actions relating to specific domains in which System Dynamics is applied – the section of the field's structure highlighted in Figure 2
2. Information, issues and actions relating to field-wide issues – the remainder of Figure 2

Numbers reported reflect the best judgement of the people consulted, not detailed research. Estimates varied widely, and some respondents were unable to provide all estimates. Nevertheless, the results reflect the best insights available and accessible at present.

Required actions are highlighted in purple, **who might do them is highlighted in pink**.

Application domains

Analysis of the application domains is subdivided into three topics:

*   the work done and knowledge in the domain
*   users or clients for the work
*   the practitioners

Work and publicity

Figure 4 summarises the rate at which projects are carried out, cases documented and publicity and events occur.

Figure 4: Work, cases and publicity in the application domains
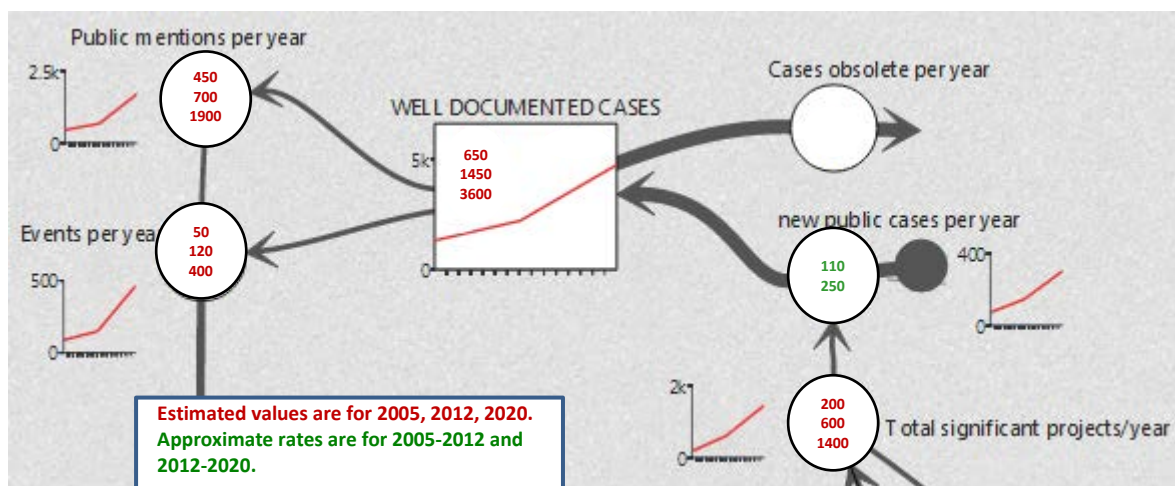
Observations and issues:

*   The number of significant projects being carried out looks plausible, and is consistent with the number of practitioners carrying out a <u>very</u> low average rate of SD projects – less than one per year (see below). This in turn is consistent with findings from Ken Cooper's 2011 review of the SD consulting field.
*   The number of well-documented cases appears very high, reflecting large numbers estimated for several domains (not skewed by 1-2 large estimates). It is likely that respondents gave views for the number of cases documented by those who commissioned or did the work, <u>for their own purposes</u>, not as was intended, the number of cases publicly available.
*   The number of public mentions and SD-related events also appear high, but plausible.

Action-implications re SD work and publicity:

Increase public documentation of successful cases from 130/year to 290/year by 2020 (practitioners), at least to the extent of summarising:

-   the issue addressed, and its value or importance

- what was done, for whom and by whom
- the findings and resulting actions, decisions or policy-changes
- the value of the work (or other impact-indicator)

Note: refereed journal articles are a special and important sub-set of "documented cases", but much shorter, simpler documents or presentations fulfil an important purpose also.

Increase substantially the participation of the Practitioner community in the wider activity of the field (SIGs)

Appoint VP Professional Practice for this purpose (PC)

**Appoint a VP Marketing & Communications to lead efforts to raise public awareness of SD (PC)**

Increase public mentions of SD from 700/year to 1900/year by 2020, in diverse media (SIGs, chapters, VP Marketing, the Society Office).

Increase the number of events for users and practitioners from 120 to 400/year by 2020 (SIGs).

The SIGs play a critical role here, being the groups to which domain-practitioners relate. **Geographic Chapters** play a vital role in enabling local events. It is assumed that **the Society** would assist with publicity and promotion, if it could employ the services of communications professionals.

Practitioners

Figure 5: Estimated numbers and targets for in-house and consultant SD practitioners.
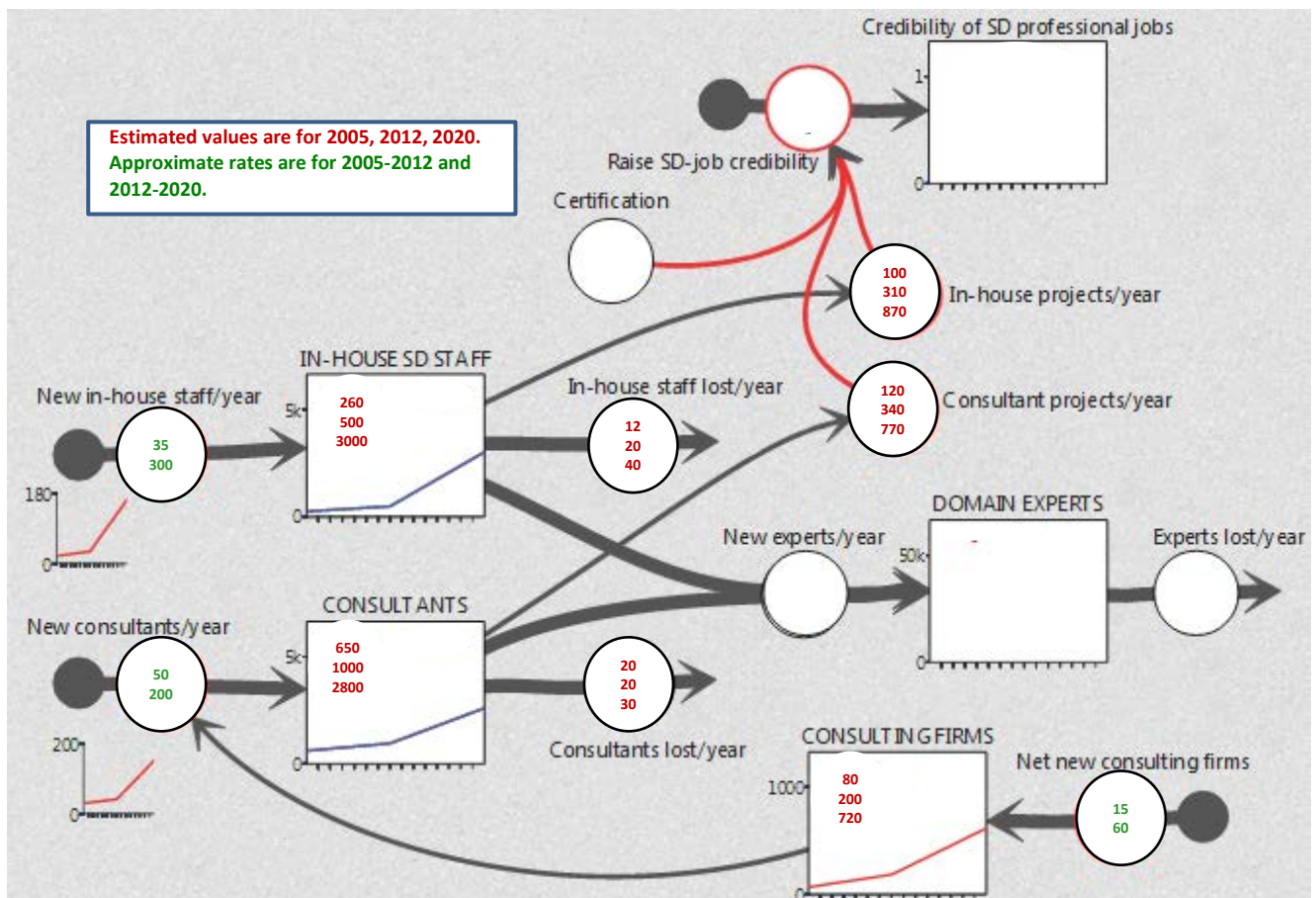
Observations and issues:

- The number of consulting firms and consultants is consistent with Ken Cooper's 2011 study, but the number of SD-skilled and active consultants is <u>very</u> small.
- The number of in-house SD-active staff is also very small.
- The number of new practitioners per year is consistent with the estimated stocks, and not only small, but a very small fraction of the estimated number of SD-skilled graduates (approaching 2000

per year) emerging from Universities. This is consistent with the very low rate of graduate engagement with SD-based jobs found in a 2008 Mannheim study.

- Respondents appear to have interpreted "domain experts" as meaning simply people who had worked in the field for some time, rather than – as intended – the small number of thought-leaders in each domain.

Action-implications re practitioners:

There are few direct action-levers available to any stakeholder group in the field to increase the rate at which the consultant or in-house practitioner communities grow. There appears to be very little recognition or credibility to SD-focused professional jobs.

> **A VP Professional Practice is needed, to lead efforts to define and disseminate good standards of practice in the field (PC).**
>
> **The Society should assess the potential benefits of establishing a certification program to establish this credibility, and the feasibility of creating such a program (VP Professional Practice).**

Otherwise, growth in consultant and in-house practitioner communities is dependent on building demand (see below), in which area action will have to focus.

Users and demand

Figure 6: Informed user organisations, decision-makers and demand
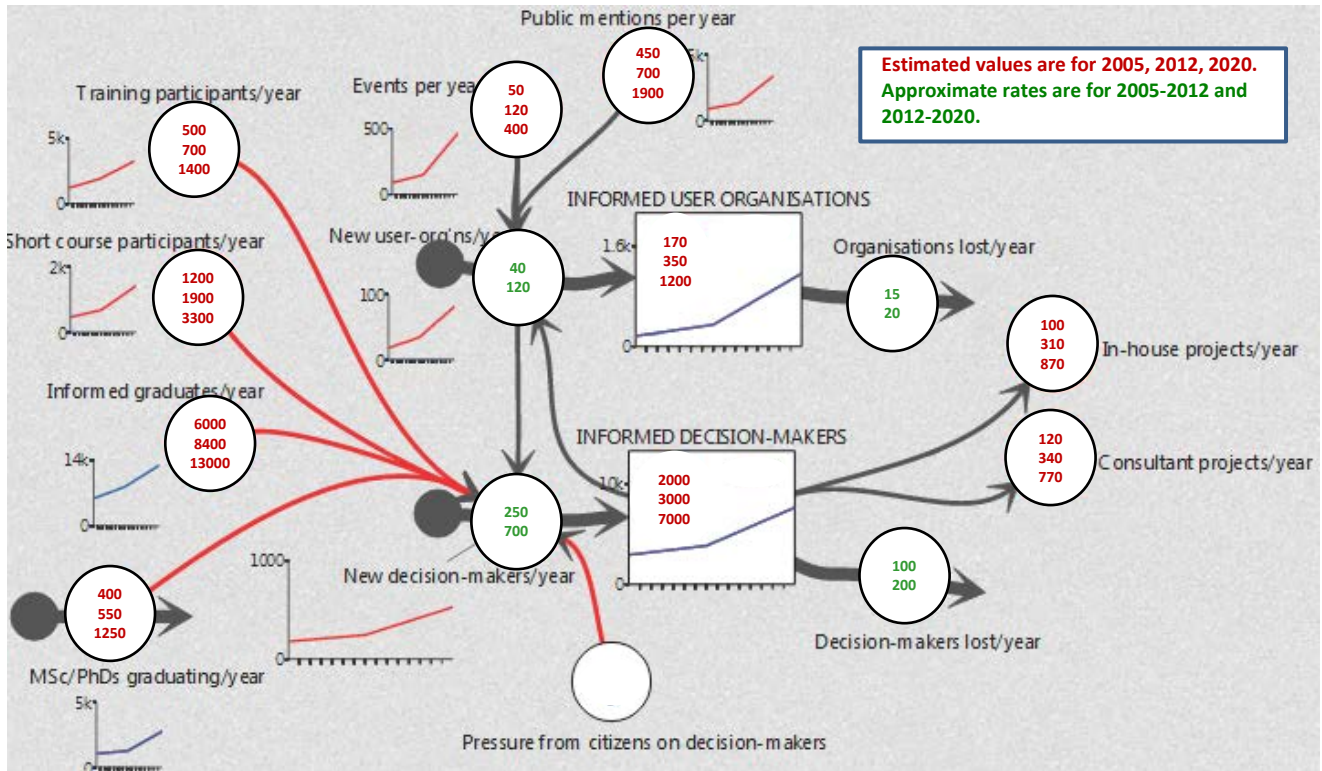
Observations and issues:

- The numbers of SD-informed organisations and decision-makers are both minuscule, compared with the potential universe.
- The number of SD-based events and public mentions in media have both been small, and even when ramped up for the future are not expected to have substantial impact. However, it is possible that this leverage is badly under-stated – much greater impact has been achieved in other fields.
- The rate of increase in informed decision-makers should be boosted by flows of people through SD training, short courses, degree programs that include some SD, and SD-specialist graduates, but the very slow rate of conversion (which appears realistic) reflects
  o the small fraction of people who understand SD that reach decision-making levels

    o the long lead-time, even if this occurs
    o the 'forgetting' of SD during this process
- "Pressure from citizens" is a key feature of the strategic focus on K-12 education.

Action-implications re users and demand for SD:

Demand-growth is a key weakness in the field – across all application-domains, estimated numbers of informed people and organisations are insignificant, with the possible exception of healthcare and public policy in some geographies.

> **A VP Marketing & Communications (or similar) should lead efforts to increase substantially the field's public visibility (PC)**

> **It is vital to document and publicise successful SD interventions (SIGs, VP Marketing, Chapters, Society Office).**

> **Substantial numbers of events are needed to inform decision-makers in all domains of SD's potential, including exploiting on-line facilities (SIGs, Chapters, VP Professional Practice, VP Marketing, academics)**

> **Education of decision makers and potential decision makers needs to expand at all levels and in all sectors (in practice, universities and colleges, and pre-college). Support for those students after their initial training in system dynamics needs to be provided to maintain their impact as they progress to their decision making positions. (VP Professional Practice, Academics)**

Cross-field issues

This section is organised in the following topics:

- University academic s and degrees
- University and other adult training
- Pre-college (K-12) teaching
- The International System Dynamics Society

Two important aspects of the field have not received sufficient attention in the study – suppliers of software and other services, and the SD-based consulting firms.

University academics and degrees

Figure 7: Professors, degree programs and graduates (Data on articles remains to be added, including SDR/other split. Tenured professor numbers to be added)
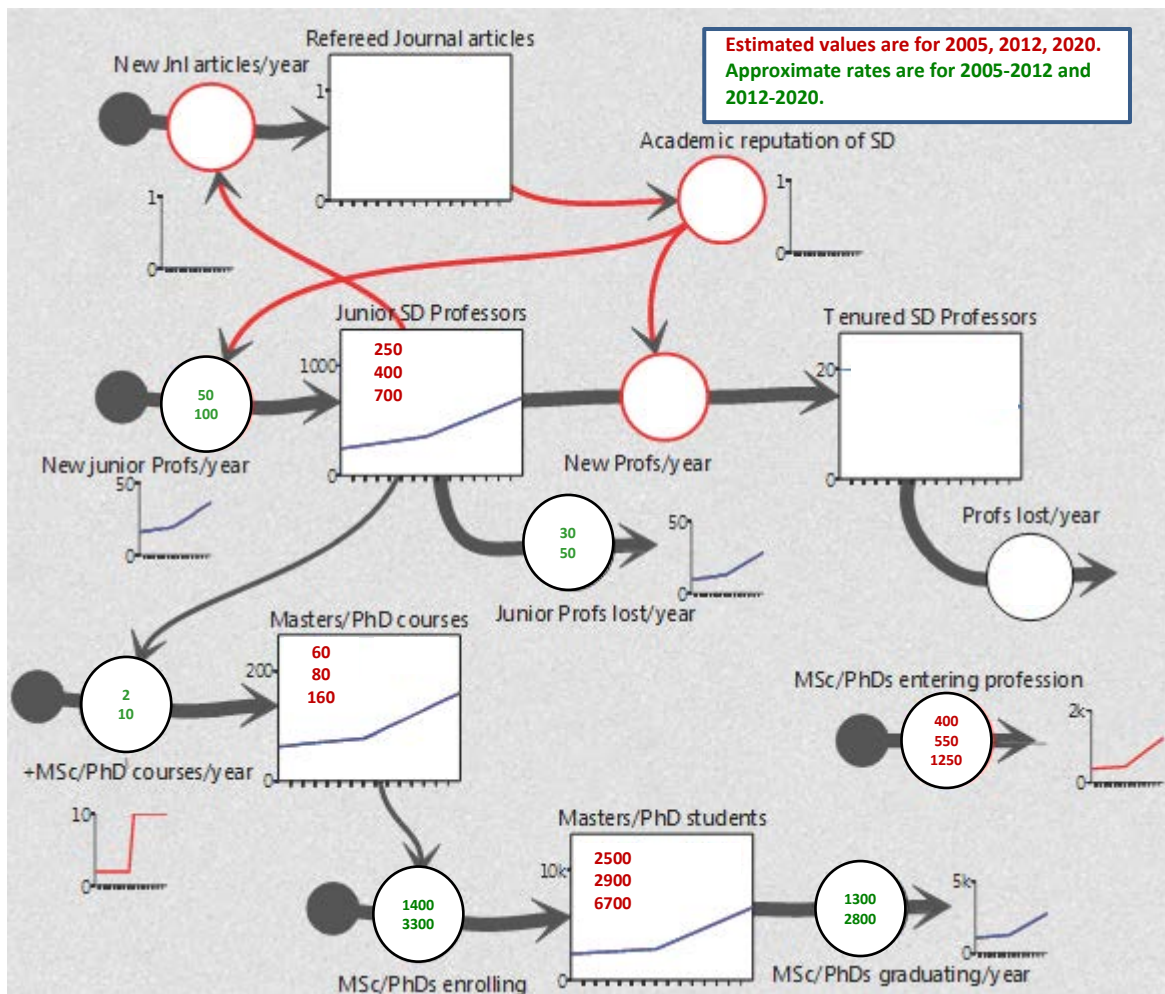
Observations and issues re University academics and degrees:

- <mark>Estimated numbers of Masters/PhD students in SD do not appear correct – supporting evidence is needed.</mark>
- The higher-education system is generating a strong number of top-end graduates each year, but few are believed to be entering the profession (getting jobs where they routinely use SD). Even this estimate is greater than is consistent with the estimated stock of practitioners (see earlier section).
- There may be additional numbers of 1st-degree graduates with significant SD skills missing from these data.
- Even with considerable effort, the launch of more courses will take a long time and only every reach limited numbers of students
- The number of SD-focused professors is modest, but strong growth is desired.
- There are inexorable forces at work in academia acting against the interests of the field.
  - "Publish or perish" is forcing academics to associate strongly with more recognised disciplines
  - … and it is increasingly difficult for Tenured professors to be appointed on the basis of strong SD capability alone

Action-implications re University academics and degrees:

These forces at work in the academic field raise the risk that neither the desired growth in professors, nor in degree-courses and graduates will be achievable.

Develop more high quality online teaching resources, including whole courses, and promote them aggressively (SD academics)

The academic community urgently needs a strategy that offers the possibility of growing junior and tenured professor numbers, whilst raising their recognition and status relative to established disciplines (SD academics).

Figure 8: Adult training – University and other
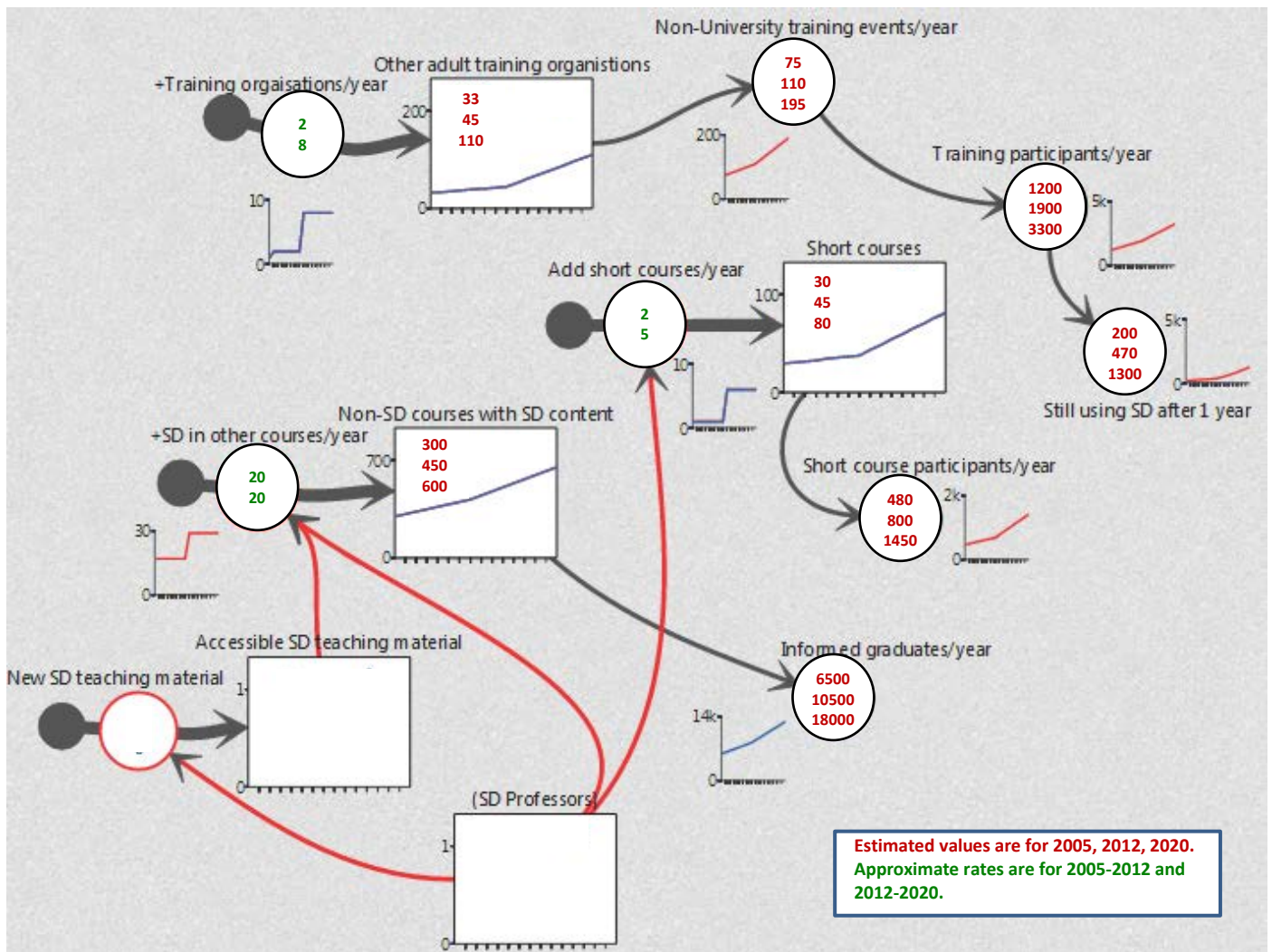
Observations and issues re University and other adult training:

- There is a significant rate of introductory adult training in SD, though insignificant in relation to the potential population.
- Even with considerable effort, the development of new face-to-face training will take a long time and only every reach limited numbers of people.
- Given this training rate, the field appears to be converting only a very small percentage to "informed decision-makers" (estimated stock of just 3,000). *This is especially remarkable, given sales of The Fifth Discipline estimated at >1million.*
- Very few of these trainees appear to develop into serious SD practitioners.

Action-implications re University and other adult training:

The poor conversion of SD adult trainees into practitioners and SD-informed decision-makers suggests that action needs to be taken to consolidate their skills, and to enhance the perceived value of those skills amongst their peers.

Current adult training needs to be extended by supporting recent trainees in their efforts to apply SD and deploy the results of their work (SD-academics and trainers).

Develop more high quality online teaching resources, including whole courses, and promote them aggressively (SD academics and trainers)

Considerable effort is needed to document and promote the results of good SD work (SD-academics and trainers + SIGs + conference organisers)

The Society might assist with this effort, if it were able to resource strong marketing and promotion activity for SD work.

K-12 Teaching and students

Figure 9: Pre-college teaching and students (K-12)
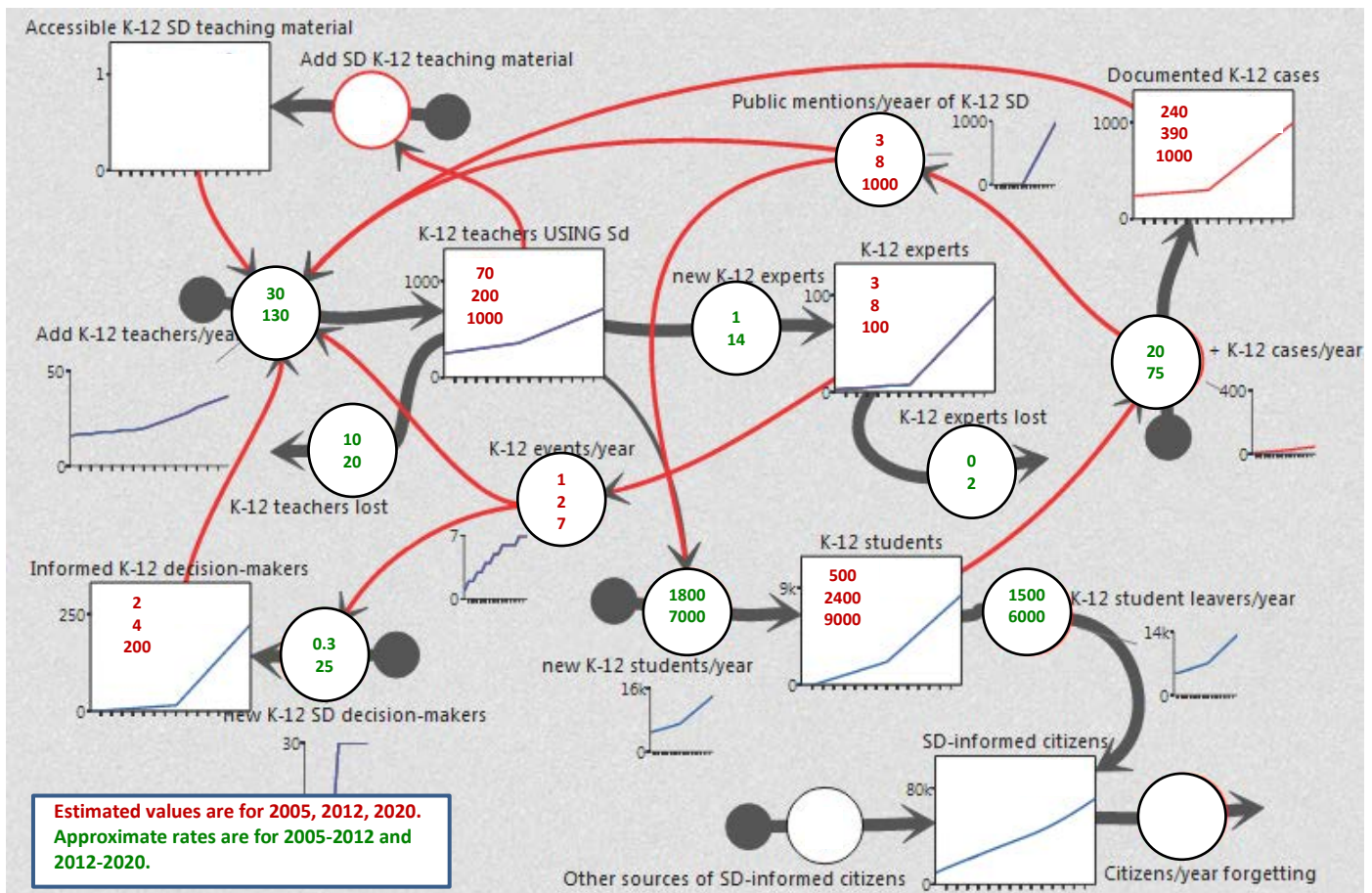
The pre-college education segment causal structure is as follows:

- Teachers enroll students in classes, who then graduate and join the community of SD-informed citizens.
- Students generate case examples, that can feature in public mentions, and support additional pre-college education
- New K-12 SD teachers are brought in due to the support of informed decision-makers, public mentions and events, availability of good materials, and documented case examples.
- Experienced K-12 teachers become experts who can promote events and develop additional pre-college SD teachers.
- An additional feature not explicit in the diagram is the roll of other organisations, such as the Creative Learning Exchange and the Waters Foundation in providing resources and channels for pre-college (K-12) efforts.

Observations and issues re pre-college (K-12) education:

- The enthusiastic efforts to promote SD in K-12 education have made progress against dis-interest from informed decision-makers in the education establishment.
- Hoped-for progress is at a much more rapid rate than in the past.
- This progress is dependent on strong flows of new, engaging learning material, public mentions, public events, and conversion of decision-makers.

Action-implications re K-12 education:

Considerable effort is needed to document and promote the results of good SD inputs in K-12 education, including a strong stream at the annual conference (SD-teachers)

This might be assisted by an equally considerable increase in the visibility of SD work done in the adult world (SIGs, Chapters)

Engage practitioners and higher-education professionals with K-12 leaders to generate powerful and engaging learning materials (Education and other SIGs, Academics)

The International System Dynamics Society

Implications for the Society itself follows on from the developments aspired to by the wider community.

Membership. The Society's membership is extremely small, both in comparison with other professional societies and with the likely population of people interested in the subject. Moreover, growth has been very slow and churn very high. Membership penetration is believed to be high amongst academics, but very low amongst practitioners and probably insignificant amongst users/clients.

This implies that potential members – especially practitioners – find little benefit from membership (*a conclusion supported by a brief inspection of those benefits*). A similar conclusion, probably to a lesser degree, can be drawn concerning pre-college educators. To make progress towards any of the aims supporting the community's Vision requires a substantial – perhaps orders-of-magnitude – increase in membership growth, and reduction in member turnover.

The Society would also benefit from a substantial Corporate membership (where "corporate" implies any type of organisation, not just businesses), both as a source of membership income and to reinforce access to individual practitioner-members.

Identify and develop membership benefits likely to be valued by potential individual and corporate members (VP Membership + VP Practice)

Estimate the desired target number and profile of the Society's membership, both individual and corporate, and develop plans to achieve those targets (VP Membership + VP Practice)

Cash. The Society has adequate cash reserves for its current and planned activities. However, any major effort to pursue the ambitious objectives noted in previous sections will require a substantial up-rating of its cash-flow. Options for achieving this include:

- Significantly larger membership numbers
- Greater participation at the annual conference, especially from user-organisations willing to pay for access to valuable content
- Building up a stock of products and services for sale
- Running more events, especially targeted at commercial clients

Identify and develop additional sources of cash flow (VP Marketing, SIGs, Chapters)

A more fundamental and potentially transformative option is to seek backing from external Foundations. This would not only boost the Society's resources, but also raise the public profile of the field. The most promising channel to pitch for such support may be through the SIGs, since that is where the Users, Practitioners and Knowledge all reside, along with (possibly) relationships with potential Foundations.

Assess the options for raising Foundation funding for SIGs (SIGs)

The SIGs. Much of the focus in this report lands on the application-domain SIGs, since (as explained) that is where the Users, Practitioners and Knowledge mostly reside. In other Societies, practice interest groups play a major role, including the running of conference streams and topic-focused conferences, engagement of user organisations and the steering of standards for professional practice. In some cases, such groups have a more substantial and formal status, sometimes termed 'Divisions' or similar.

In contrast, ISDS SIGs are low-key interest groups which mostly undertake limited activity and play a relatively minor role. This may in part reflect the limited practitioner membership in the Society. The existing SIGs also do not cover all of the main application-domains for SD, with notable omissions being Business and Public Policy. SIGs are also only loosely linked to the topic threads for the annual conference.

If the Society is to engage more practitioners and user/client organisations, SIGs need to play a more substantial leadership role.

Increase the role, status and authority of SIGs, including greater responsibility for Conference Threads, if necessary changing the specification of their nature and activity (VP Membership, Org & Bylaws Committee)

Encourage the formation of new SIGs to achieve coverage of all significant SD application domains (VP Membership)

The Chapters (geographic). The increased focus on the SIGs begs the question of what role the geographic Chapters play in the Strategy. Three substantial contributions may be needed:

- Facilitate local participation in domain-focused activities (in simple terms, make sure local Healthcare people know of and participate in international/online Healthcare activities, for example)
- Ensure that domain-focused work is strongly publicised in their locality (make sure great Healthcare SD work gets featured in local media).
- Encourage the translation of good quality content into local languages.

… in addition to their current role in networking amongst local SD practitioners, academics and students.

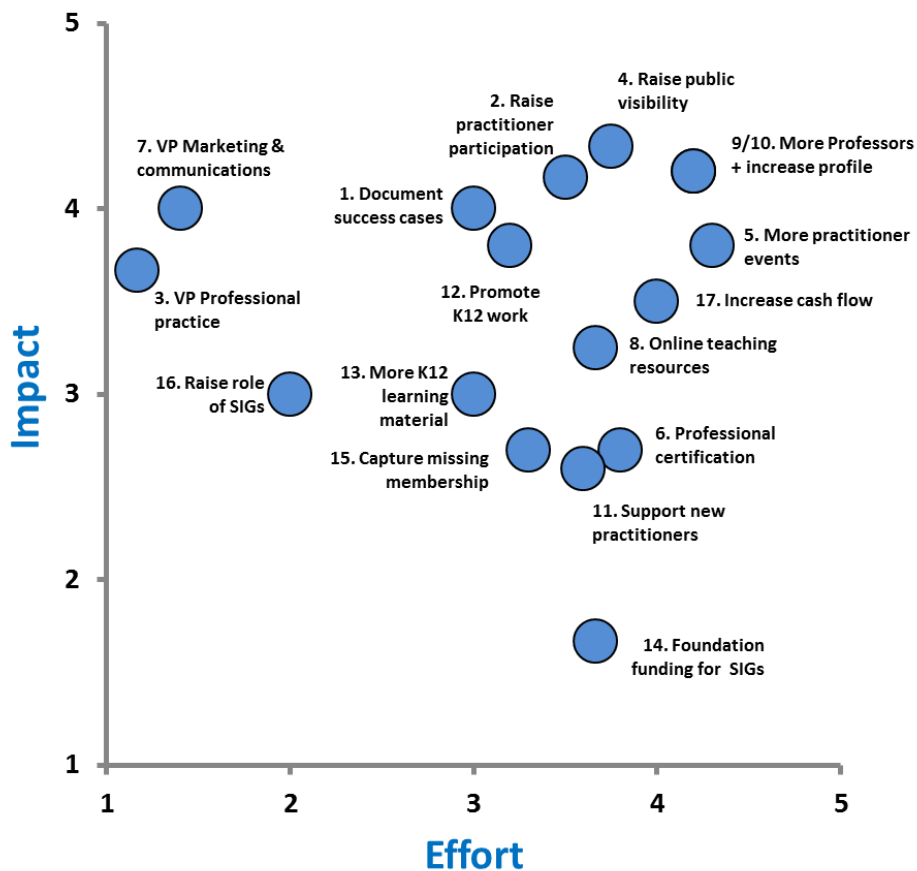# 4. Initiatives and Actions to implement the Strategy

Summary of Initiatives

The Strategy Committee has summarised and evaluated the initiatives listed in previous sections, and their assessment is as shown in Figure 1 (repeated below).

Points to note:

- Acceptance of the strategy report **does not** imply approval of these Initiatives
- There are dependencies between initiatives. For example, appointment of VPs for Marketing and Practice may be necessary to enable certain other items.
- The items are not mutually exclusive and collectively exhaustive – there is overlap between some items and others may be missing.

Figure 1: Assessment of Effort and Impact for identified Initiatives.

Action-options for implementing the Initiatives

The Strategy Committee has attempted to identify actions that may be necessary in order to pursue the Initiatives above. Points to note include:

- Acceptance of the strategy report **does not** imply approval of these actions
- The list of possible actions is not complete – additional suggestions are welcome
- Selection of, and support for, these actions will depend in many cases on the advice of certain VPs or Committees
- As a group of volunteers, any action will only be possible if individuals and groups are willing to pursue them, but it would be helpful if we could know which those items are.

Table 1: Action-options to implement the Strategy Initiatives.

Initiative	Action-options	Led by …

1. Document large numbers of successful cases.	Short success cases on web-site	<mark>???</mark>
	Best-paper cases from conference	
	Develop standard form for success cases [DONE]	
	Establish high quality standards for success cases	
	Start a practice-journal	
2. Increase practitioner participation in wider activity	Make conference program attractive to practitioners	
	Practice-oriented conferences + events	
	Seek support from s/w providers for practice-oriented events	
	Advertise the existing practitioner award outside the SD community, to attract users	
3. Appoint VP Professional Practice	Appoint VP Professional Practice	
4. Considerable increase in visibility of SD work amongst the public.	Engage publicist/PR professional	
	Set up marketing budget	
	Create an annual award for best highly-visible SD work. Endow the award and provide cash award.	
5. Deliver events for users, decision-makers and practitioners.	VP Membership encourage SIGs to run events	
	Establish means for online conferences	
	Set up online conference facilities for Society	
6. Assess the benefits of a certification program.	VP Practice to carry out this assessment	
	Start by surveying members	
	List pros and cons	
7. Appoint VP Marketing and Communications.	Appoint VP Marketing	
8. Develop and distribute more high quality online teaching resources.	Aggregate and evaluate information on existing resources. Develop a strategy for expansion of resources and their delivery and use.	
9. More junior and tenured professors	Develop and implement a strategy for supporting tenure track faculty working in system dynamics	
10. Increase the visibility of SD work on other academic fields.	Encourage and support academics to participate in domain-specific conferences	
	Encourage and support academics to publish in domain-specific journals	
	Develop and implement a strategy to raise awareness of the value of system dynamics within organizations based on established disciplines (e.g.	

	academic departments, internal business consulting operations)
11. Support recent adult trainees in applying SD.	Encourage course providers to offer this service
	Develop and support one or more sub-communities of novice SD people (perhaps a "Novice Modelers" SIG)
12. Document and promote good SD results in pre-college (K-12) education.	Set up strong focused K-12 stream at conference
	Seek Foundation funding for travel/attendance
13. Increase in engaging pre-college (K-12) learning material	Pair up K-12 educators with practitioners to develop exercises
	Pair up K-12 educators with higher-ed academics to develop exercises
14. Raise Foundation funding for SIGs.	Approach foundations to investigate potential and means
15. Identify and capture desired number and make-up of Membership	Seek s/w providers assistance in estimating non-member numbers
	Seek s/w providers assistance in estimating corporate SD numbers
	Develop member benefits likely to appeal to practitioners
16. Increase the role of SIGs in the Society	Revise role-definitions of SIGs
	Identify missing SIG domains and encourage their formation
	Tie SIGs to conference threads more closely
17. Increase Society cash flow	Identify and offer potential products and services
	Offer more events, including online [maybe via SIGs]
	Charge for Web attendance at conference

Issues and suggestions arising from the Policy Council strategy debate: July 2013.

[*Numbers refer to the coding applied to the items after the conference*].

Diversity and the regions (11 items)
1. Fund translation of materials
2. Virtual conferences: exposing more people than is possible in physical conferences alone
3. Inclusion: we should include people from Asian Pacific and Africa in governing bodies, we should have women and colored people on important positions (key notes/ prize winners)
4. Increasing SDS membership in Asia-Pacific and developing membership in Africa, Middle East and Central Asia
5. Other languages: SD resources for places where the majority is not comfortable with English
6. Regions: support/ build Asia-Pacific (etc.)
7. Events in Asia: The Society, in conjunction to Chapters should sponsor at least one significant event on the pacific rim every two years
8. How to increase membership in the SDS leadership pipeline
9. Put out a call/ organize major SD event in Asia every second year
81. Applications Award only given in the US [alternate years] ... offer it annually - and a separate award for Asia-Pac
83. Need an Africa SIG and Middle-East/Arabic SIG? [Egypt struggling?] ... but what about Israel?
84. Refer to 'Asia Pacific' not Pacific Rim - unless we want to treat Indian subcontinent separately?

Staffing and training (4 items)
10. Should home office staff be increased to deal with growth in activities
11. Vacant: filling vacant positions (e.g. VP's)
12. Manual for new PC members (half to one page)
13. Keeping the (young) newcomers in the society and integrating them into society, linked issue: not losing existing SD centers (e.g. universities) and if possible supporting start of new centers.

Mentorship (5 items)
14. Start mentorship at conference (newcomer program)
15. Value proposition: what do we have to offer that will encourage people to become members
16. Member benefits
17. Coaching: availability for sole practitioners supported/ facilitated through Society
18. Mentorship via online forum

Practitioners/ industry (7 items)
19. Industry: how much involvement do we have from industry
20. Practitioners: most of our support/ services are for academics, not practitioners
21. Trade conferences: perhaps as an alternative to our conferences
22. Supply five hours of support as part of accreditation/ certification
23. Strong lines with problem owners
24. Constituents: ambidextrously meeting the needs/ providing value for practitioners and academics
25. Involving practitioners: invention from innovation; involve more practitioners and increase demand for our SD models; increase perception for business opportunities

Dispersion (7 items)

26. Knowledge dispersion: SD knowledge and skills should be better dispersed in society as a whole, this would also attract more people to SD and knowledge exchange Develop FAQ site
27. Develop FAQ site
28. Modeling Assistance Workshops: the SD Society should provide assistance to members working alone all year round

      a. Improve of the skills on new modelers and improve the quality of models and work being done by novice or new system dynamicists (also fits with numbers 33, 34, 35, 39, 41, 26, 28)

      b. Could be part of future credentialing process in that practitioners would perform so many hours of assistance to new members. Sort of like medical professionals needing continuing education credits. (also fits with numbers 37, 38)

      c.an additional membership benefit for those seeking assistance (also fits with numbers 16, 15, 17, 48)

      d. Could be expanded, if successful, to sole practitioners

      e. Knowledge dispersion

      f. Diversity in that people in underserved regions of the world could get quality assistance and feedback (also fits with numbers 4, 62, 66)

      g. Could be used as a requirement to gain some SD competency framework. This would be preliminary back (also fits with numbers 37, 22, 24,) (#85)

29. Interactive online demos
30. Diffusion of SD: specific measurable goals of SD as a method to resolve important issues
31. Massive Open Online Courses: MOOCs
32. Public awareness, e.g. promotion to high quality MOOC

Quality (9 items)

33. The tradeoff between quality control and accessibility
34. Quality of conference papers versus attendance at the conference
35. Improve quality of SD work around the world and sustain it
36. Improving quality of review process for the conference
37. SD competency framework for future certification
38. Credentialing
39. Quality of modeling: many poor models from "rookie" mistakes; how can we help
40. Conference presentation categories: is there a reason to separate application from extension of the field
41. Conference: quality of submission, quality of reviews, feedback to reviewers to improve quality (e.g. not helpful/ somewhat helpful/ extremely helpful)

Teaching (3 items)

42. SD-teacher training: the society should fund a boot camp for university faculty in conjunction with K-12 leadership
43. K-12 support the growth of SD based thinking in our youth and for the future of our world
44. Strengthening practices, teaching parts of SDS

Marketing (11 items)

45. Expansion of the visibility of SD: 1 as a tool for public policy. 2 as a tool for thinking for the citizenry
46. Promotion ACSB (in USA) + SC
47. Marketing both internally and externally
48. Growth of the field
49. Cooperation with other societies/organizations/ informs
50. System thinking community: how do we leverage it? Starter drug.
51. Membership: recent trends in growth
52. Increase brand awareness: Assuming that our main marketing vchallengi is to increase brand awareness, which audience do we target? Channels we have to use? What our message is?

53. Complementarity with related methods
54. Visibility and acceptance of SD
55. Pay marketing VP: determine where our marketing challenge is in brand, image, transaction, sales and then determine how much we can/need to invest.

Fun (5 items)

56. Tools for kids: software for modeling designed to be used by kids without teacher (scratch).
57. SD fun: make SD models more fun and interactive, engage more people/practicioners, emotion and design from game designers, change paradigm towards serious games.
58. Reaching students link of online videos and teaching, use of videos in classroom, reaching a wider audience of students
59. ISAGA: International Simulation and Gaming Association
60. Delft: gaming link

External relations (8 items)

61. Connectivity: how to connect with SD-ers around the world_ through SIG's, chapters, the web, and so on
62. Relations of SD Society with non-US/Eu chapters/SIG's
63. Support of educational institutions will solid SD curriculum seed the spread of SD, how can the SDS support this work?
64. Accessibility: system dynamics knowledge and skills should be as easily accessible as possible for students and practitioners, how to improve this?
65. Publications: open sourcing? Applications a journal for non-SD?
66. Publication: developing solutions/ strategies for addressing the SDR challenges presented by Dr. Oliva
67. Policy blog: a al Dana Meadows newspaper column
68. Impartiality: promote/ recommend vendor or honest broker

Funds (6 items)

69. Fund for the future: Society should raise five million to endow significant new endeavors support (#86)
70. Money: what would we do if we had unlimited funds?
71. Finance: cash flow from new sources
72. Beer game: full online version, for free/ not for free? To support revenues, so reach wider audience, self-explanatory, as a tool for teachers with (some) experience, as a prototype for other SD learning games
73. Find ten people that donate $ 1,000,000 each
74. "Big challenge" prizes

Goals (5 items)

75. Product: SD versus SD Society
76. Build/ increase endowments and clear goals for scholarships for study or conference, visiting scholars, postdoc positions
77. Ultimate goal: determine what our ultimate goal is, maximum use of the method (even if that means SD light), best possible use or most Society members
78. SD + social design: integrate design for social innovation with potential of SD models, how to do that, can we use models to explore/ improve exploration of social problems, SD solutions to social problems
79. Ideation for SD, structured process!