# New Degree Proposal Routing Form

**TITLE OF PROPOSED PROGRAM:**
Telecommunication Networks (name change from Telecommunication Systems Management)

**THIS PROGRAM WILL BE DELIVERED:**
- [ ] ON CAMPUS
- [ ] ONLINE
- [ ] HYBRID

**DEPARTMENT(S) AND COLLEGE(S):**
College of Engineering

**LEAD DEPARTMENT/COLLEGE IF APPLICABLE:**
Multidisciplinary Graduate Engineering

**DATE PREPARED:**
10/13/2017

**NAME OF PRIMARY ACADEMIC CONTACT(S), CAMPUS ADDRESS, E-MAIL, AND PHONE NUMBER:**
Peter O'Reilly, 502 Dana, p.o'reilly@northeastern.edu, 5548.

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**Preliminary Proposal - Authorization to Proceed with Planning**
College Dean(s) — Please sign indicating that preliminary proposal has been discussed with Provost.

<table>
<thead>
<tr>
<th>DATE PROPOSAL RECEIVED</th>
<th>RECOMMENDATION(S) AND DATE</th>
</tr>
</thead>
</table>

**SIGNATURE OF COLLEGE DEAN(S):**

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**Formal Program Proposal**
College Dean(s) — Please sign indicating that approval has been obtained from all appropriate committees and offices within your college.

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<thead>
<tr>
<th>DATE PROPOSAL RECEIVED</th>
<th>DATE SUPPORTING OR NON-SUPPORTING MEMO FORWARDED TO PROVOST</th>
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<td>CSE Graduate Affairs Committee vote 9/14/17 5-0-0 09/19/17</td>
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**SIGNATURE OF COLLEGE DEAN(S):**

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**Vice Provost for Budget, Planning, and Administration**

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<th>DATE PROPOSAL RECEIVED</th>
<th>FINAL REVIEW AND DATE</th>
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**SIGNATURE OF VICE PROVOST:**

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**Vice Provost for Undergraduate or for Graduate Education (as appropriate)**

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<tr>
<th>DATE PROPOSAL RECEIVED</th>
<th>DATE REFERRED TO GRADUATE COUNCIL OR UNDERGRADUATE CURRICULUM COMMITTEE (AS APPROPRIATE):</th>
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<tr>
<td>09/19/17</td>
<td>09/28/17</td>
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**ACTION TAKEN, DATE, AND VOTE:**
10/11/17 9-0-0

**SIGNATURE OF VICE PROVOST:**

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TO: Art Kramer, Senior Vice Provost for Research and Graduate Education  
Phil He, Vice Provost for Graduate Education

FROM: Thomas C. Sheahan, Senior Associate Dean for Academic Affairs

SUBJECT: Name change for MS degree in “Telecommunication Systems Management” to “Telecommunication Networks”

DATE: September 19, 2017

CC: Nadine Aubry, Dean, College of Engineering  
Tristan Johnson, Assistant Dean of Multidisciplinary Graduate Education & Digital Learning

Please note the College of Engineering Graduate Affairs Committee has approved the name change for the MS degree in “Telecommunication Systems Management” to “Telecommunication Networks,” with a vote of [5-0-0] on 9/14/17. I strongly support this change and informative notice to the Graduate Council.

There are no budget implications for the attached proposal. Implementation of the proposal does not require funds from the Provost’s Office.

For questions or inquiries please contact Peter O’Reilly at p.o’reilly@northeastern.edu or x5548.
Proposal to change the name of the TSM master’s program from “Telecommunication Systems Management” to “Telecommunication Networks”

College of Engineering
September 19, 2017

Prepared by:

Dr. Peter O’Reilly, Program Director, Multidisciplinary Graduate Engineering, College of Engineering

Additional Review and Contributions by:
Program change description
The College of Engineering (COE) proposes to change the name of the MS in Telecommunication Systems Management to MS in Telecommunication Networks, effective for September 2018. No additional changes in curriculum or its delivery are necessary to implement this name change.

Program history and evolution
The TSM master's program has been in existence since 2002 with first graduates in 2004. Since then the program has graduated more than 660 students. As this is an industry-focused program, the content of the program has evolved significantly over the past 15 years driven by advances in technology, and with changes in industry practice and in marketplace demand.

Rationale for name change
The primary reasons for the name change are

(a) To attract more students to the program – especially domestic applicants, and
(b) To have the program name reflect, more accurately, the content of the program.

The current name was developed by a committee, including faculty from three colleges and outside consultants, back in the 1999-2001 timeframe. From an industry point of view, the current name is essentially meaningless, having numerous interpretations, and has been regarded as confusing and unappealing to applicants for many years. More fundamentally, the name does not accurately reflect the breadth and content of the program.

Marketing
The number of international students enrolled in this program has increased significantly over the past few years. In fact, over the last 5 years, our program here at Northeastern has been consistently one of the top two programs in the US in telecommunications for international students. However, during the same time period, the number of domestic students – both part-time and full-time – has been abysmally low. In fact, of all the telecom programs in the USA (12 currently active with Maryland, SMU and George Mason being our primary competitors), NEU has by far the fewest number of domestic students. While the program name is not only the only reason for this situation, it is the considered opinion of the program director and faculty teaching on the program that it plays a significant role.

In popular usage and indeed in the minds of many industry professionals, the term telecommunications brings to mind wireline telephony (a rather stagnant business these days) and mobile/cellular communications. What it does not generally bring to mind is the network infrastructure that supports wireline and wireless communications, irrespective of whether the application is telephony (traditional, mobile, Skype, etc.), video streaming (eg, Netflix), social media (eg, Facebook) or just information. This infrastructure is not just the cable and fiber optics that spans the globe but the network devices, application & network protocols, software systems, etc. that make all these applications available to consumers, enterprises and indeed devices. In North America in particular,
telecommunications is regarded by many as a highly regulated, backwards-looking industry. This is in contrast to networks, which bring to mind the laissez-faire Internet and applications that it supports – social media, e-commerce, YouTube, etc. – as well as technologies such as cloud computing, data centers, virtualization, etc.

Proliferation of networks in the program content
The content of the TSM program has changed significantly in the intervening 15 years. Today, three of the four core required courses use the term network in its course name as do most of the TELE electives.

However, in a world where everyone depends on mobile devices, and where wireless access to the network dominates, an understanding of the potential and the limitations of wireless communications is critical. A program like ours – and indeed, the majority of programs competing with ours nationally – addresses both communications and networking issues.

Many of our students also take electives in the networking domain from the CCIS and electives in communications from the ECE department in the COE.

Alternative names and competitive analysis
The most popular program names for competing programs in the US are “Telecommunications” (Maryland, George Mason, Colorado, NJIT), “Telecommunications Engineering” (UT-Dallas, Oklahoma, Nebraska) and “Telecommunications and Networking” (Pitt, Florida International). Others are “Telecommunication & Network Engineering” (SMU), “Telecommunication Networks” (NYU-Tandon), “Telecommunication Systems & Networking” (Pace), “Electrical & Telecommunications Engineering” (Drexel), and “Telecommunications & Computers” (GWU). It should be noted that programs with the term Engineering in the title are solely offered by Colleges of Engineering. (Students on our program have approved electives in both CCIS and DMSB.) In fact, “Telecommunications Engineering” is an ABET-approved undergraduate major generally offered by ECE departments.

Many of the competing programs in the US have a business component in the program. The MS programs at Maryland, George Mason, Colorado and Pace have a requirement to take at least two business courses (like our program at NEU). None have the term Management in the program name. The two existing US programs in “Telecommunications and Networking” require at least one business course. Furthermore, having the term Management in the current program name may have also deterred applications because of the perception that TSM was primarily a management program and not a STEM program.

Alternative names for the program have been floated for many years. An internal informal survey of Sprint employees a few years ago by a member of the Industrial Advisory Board of the program (then at Sprint) had the current name, “Telecommunication Systems Management”, ranked last in the survey. The primary conclusion of the survey was that the program name should include the term networking as, to quote one respondent, “this is where everyone wants to be.”
On a survey of students on the program in Spring 2013 (104 responses, 6 choices given), "Telecommunications and Networking" was the top choice by a clear margin; "Telecommunication Systems Management" was the second to last choice.

In a LinkedIn survey of program graduates, also in Spring 2013, more than half of the responses had the term networks or networking in the title (no choices were provided in this survey). Furthermore, it has been observed that on LinkedIn, many graduates of the program do not say they received a MS in Telecommunications System Management at NEU. Instead they use a phrase that includes the term Networks or Networking.

Having considered all the permutations that use the terms telecommunication(s) and network(s) or networking, and their limitations, "Telecommunication Networks" appears to be the most marketable, especially in its abbreviated form, Telecom Networks. To summarize, the proposed program name provides a much more accurate reflection of the program content, and should be attractive to both domestic and international applicants.